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December 12, 2012

#### VIA ELECTRONIC FILING

The Honorable Lisa R. Barton Acting Secretary U.S. International Trade Commission 500 E Street, SW Washington, DC 20436

> Re: Certain Electronic Devices, Including Wireless Communication Devices, Portable Music and Data Processing Devices, and Tablet Computers; Inv. No. 337-TA-794

Dear Acting Secretary Barton:

On behalf of Complainants Samsung Electronics Co., Ltd. and Samsung Telecommunications America, LLC, enclosed please find a public version of Samsung's Initial Submission in Response to Commission Notice of Review.

Please contact me with any questions you may have regarding this filing.

Respectfully submitted,

/s/ S. Alex Lasher

Counsel for Complainants Samsung Electronics Co., Ltd. and Samsung Telecommunications America, LLC

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# UNITED STATES INTERNATIONAL TRADE COMMISSION Washington, D.C.

In the Matter of

CERTAIN ELECTRONIC DEVICES, INCLUDING WIRELESS COMMUNICATION DEVICES, PORTABLE MUSIC AND DATA PROCESSING DEVICES, AND TABLET COMPUTERS

Investigation No. 337-TA-794

COMPLAINANT SAMSUNG'S INITIAL SUBMISSION IN RESPONSE TO COMMISSION NOTICE OF REVIEW

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# TABLE OF ABBREVIATIONS

Abbreviation	Full Citation
ID	Initial Determination on Violation of Section 337 and Recommended
	Determination on Remedy and Bond
Tr	Hearing Transcript
CPet	Complainant Samsung's Petition for Review of the Initial Determination
RPet	Respondent Apple's Petition for Review of the Initial Determination
SPet	Commission Investigation Staff's Petition for Review of the Initial Determination
CRPet	Complainant Samsung's Reply Petition for Review of the Initial Determination
RRPet	Respondent Apple's Reply Petition for Review of the Initial Determination
SRPet	Commission Investigation Staff's Reply to Petition for Review of the Initial
	Determination
CPost	Complainant Samsung's Initial Post-Hearing Brief
CRPost	Complainant Samsung's Reply Post-Hearing Brief
RPost	Respondent Apple Inc.'s Post-Hearing Brief
RRPost	Respondent Apple Inc.'s Post-Hearing Reply Brief
SPost	Commission Investigation Staff's Posthearing Brief
SRPost	Commission Investigation Staff's Reply Brief
CMarkman	Complainant's Opening Claim Construction Brief
CRMarkman	Complainant Samsung's Claim Construction Brief in Response to Respondent
	Apple Inc.'s Opening Markman Brief
RMarkman	Respondent Apple Inc.'s Opening Markman Brief
RRMarkman	Respondent Apple Inc.'s Responsive Markman Brief
'348 patent	U.S. Patent No. 7,706,348
'644 patent	U.S. Patent No. 7,486,644
'980 patent	U.S. Patent No. 6,771,980
'114 patent	U.S. Patent No. 7,450,114

#### INTRODUCTION

As outlined in Samsung's Petition for Review, the ID contained significant errors including the ALJ's findings that all four patents are not infringed by Apple and not practiced by Samsung. These errors have led to a manifest injustice; once rectified, the result is a violation. Samsung responds below to the Commission's questions, as set forth in its Notice of Review.

#### RESPONSES TO FRAND RELATED QUESTIONS

### I. Background

# A. Samsung Has Led the Development of ETSI Wireless Communication Standards

The widespread availability of industry standards has been critical for Samsung's business, which includes making and selling UMTS-compliant devices. (Tr. at 158:6-10.) Since introducing its first mobile phone in the United States in 1997, Samsung has been a leading developer of wireless communication standards through its membership in the European Telecommunications Standards Institute ("ETSI"), the 3rd Generation Partnership Project ("3GPP"), and other major standard setting organizations ("SSOs"), contributing innovations that have helped make wireless standards like UMTS a success. (Tr. at 1329:2-5; 1331:2-24.) Samsung takes its ETSI membership obligations seriously and has complied with ETSI's Intellectual Property Rights ("IPR") Policy by timely disclosing potentially relevant IPRs during standardization and willingly licensing its declared-essential patents on fair, reasonable, and non-discriminatory ("FRAND") terms and conditions. (CX-0546C.)

### B. Samsung Has a Well-Established History of Licensing its Patents

Samsung has entered into broad cross-license agreements with numerous industry participants that cover the '348 and '644 patents, as well as Samsung's entire portfolio of UMTS

declared-essential patents.<sup>1</sup> (CRPost at 78-79.) Samsung offered such a license to Apple, but Apple rejected it without making a counteroffer or attempting to negotiate a better deal and filed the first of numerous lawsuits in jurisdictions around the globe. (CX-0769.0006.) Later, Apple requested, and Samsung again willingly offered, terms for a one-way FRAND license limited to Samsung's portfolio of UMTS declared-essential patents. (CX-1589 (proposing an initial rate for negotiation, also known as a "headline rate," of 2.4% of handset price).)<sup>2</sup> Apple rejected that offer as well, and has since rebuffed Samsung's efforts to engage in meaningful arm's-length negotiations. (CX-0769.0006; CX-1589C.) Of the leading U.S. smartphone sellers, only Apple has refused to negotiate a license for these patents.

### C. Apple Has No Interest in a FRAND License to Samsung's UMTS Patents.

Many companies, like Samsung, through their longstanding investments in mobile communications technology, have earned extensive portfolios of patents that reflect their contributions to wireless standards. These companies typically voluntarily license one another to such patents. (*Id.*) Apple is different. When Apple entered the mobile phone market in 2007 and introduced its first 3G phone in 2008, it had to know it would necessarily infringe patents declared essential to UMTS, like the '348 and '644 patents, but Apple chose not to seek such a license from Samsung. When Samsung offered to license Apple, Apple refused, as it had with other declared essential patent holders like Motorola and Nokia, and to date Apple has made no meaningful effort to engage Samsung in substantive arms-length negotiations for such a license.

2

As the evidence showed, Samsung has cross-licensed its UMTS portfolio broadly,

(CX-0769.0006; *see also* CX-1589.) Although Apple pays lip service to the need for a FRAND license, Apple's actions demonstrate that it has no intention of voluntarily paying one penny for a license to Samsung's patented UMTS technology, which has permitted Apple to derive significant revenue from the sales of the accused products.

Apple's dispute with Samsung came to a head in July 2010, when Apple accused Samsung of infringing Apple's mobile device patents.

On April 15, 2011, Apple fired the opening salvo in its ongoing war against rival manufacturers of Android-based smartphones and tablets, suing Samsung in the Northern District of California, *Apple Inc v. Samsung Elecs. Co. Ltd.*, No. 11-cv-1846-LHK, Dkt. No. 1 (N.D. Cal. 2012). Samsung countersued on April 27, 2011 in the same forum, alleging infringement of its patents, including several declared essential to the UMTS standard. (*See Samsung Elecs. Co. Ltd. v. Apple Inc.*, No. 5:11-cv-02079-LHK (N.D. Cal. 2011).) Shortly thereafter, Apple requested that Samsung quote terms for a one-way FRAND license for Samsung's UMTS patent portfolio. (CX-1074C.) Two days after receipt of a signed nondisclosure agreement from Apple, Samsung specified that it would agree to a 2.4% royalty rate on sales of Apple products practicing the UMTS standard in exchange for a license to

Samsung's portfolio of patents and pending patent applications declared essential to the UMTS/WCDMA standards. (CX-1589C.)

Apple responded on August 18, 2011, rejecting Samsung's offer and alleging that Samsung's headline rate was inconsistent with Samsung's FRAND obligations. Apple did not counter with its own FRAND offer. Since then, although Samsung has continued to request a serious counteroffer to be negotiated in good faith, Apple has not made such an offer and has not returned to the negotiating table.

#### D. Legal Principles Concerning FRAND Defenses

Courts have recognized that in certain circumstances, egregious misconduct in violation of SSO policies can form the basis of a defense to patent enforcement. *See, e.g., Qualcomm Inc. v. Broadcom Corp.*, 548 F.3d 1004, 1019-1024 (Fed. Cir. 2008) (hereinafter "*Broadcom*") (intentional breach of disclosure obligations to standards organization as basis for waiver or equitable estoppel defense). In Section 337 investigations, as in the district courts, an infringer who seeks to show a patent is unenforceable bears the burden of proving the affirmative defense by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd., Partnership*, 546 U.S. ----, 131 S. Ct. 2238, 2243 (June 9, 2011); *Hynix Semiconductor Inc. v. Rambus Inc.*, 645 F.3d 1336, 1348 (Fed. Cir. 2011); *Broadcom*, 548 F.3d at 1020; *Certain L-Lysine Feed Products, their Methods of Production and Genetic Constructs for Production*, Inv. No. 337-TA-571, Comm'n Op. at 47 (July 31, 2008) ("L-Lysine").

Neither the Commission nor the courts have ever held that the existence or alleged breach of a FRAND commitment must bar an ITC action. Respondents have, however, asserted FRAND defenses in several Section 337 investigations. For example, in *Certain Optoelectronic Devices, Components thereof, and Products Containing Same*, Inv. No. 337-TA-669, the respondent asserted it was entitled to a license on reasonable and non-discriminatory terms, but

the ALJ rejected that defense, concluding that under the language of the relevant SSO policies, the patent-in-suit was not subject to RAND; the Commission ultimately issued a limited exclusion order. *Optoelectronic Devices*, 2011 WL 7628061. Likewise, in *Certain Semiconductor Chips and Products Containing Same*, Inv. No. 337-TA-753, the respondent contended the asserted patents were subject to RAND obligations precluding injunctive relief in any form, including an exclusion order, but the ALJ rejected that defense, concluding that the asserted patents were not subject to RAND under the relevant SSO bylaws. *Semiconductor Chips*, 2012 WL 927056, Initial Determination at 179.

Although breach of a FRAND commitment may, in theory, form the basis for a defense to patent enforcement, determining whether a FRAND violation has occurred is a fact-intensive question that will depend on the specific terms and conditions of any relevant contracts or undertakings. To determine whether a patent holder has violated FRAND requires consideration of a number of factors including, *inter alia*, the relevant policies of the SSO in question; the nature and scope of the patent holder's FRAND commitment; the history of negotiations, if any, between the parties, including any license offers and terms proposed; the patent holder's existing and past license agreements and negotiations; the practices of others in the industry; and so on. Only after considering all the relevant facts, to the extent they are proven in the record, can an ALJ or the Commission determine whether the existence and possible breach of a FRAND commitment could form the basis of a defense to enforcement of a complainant's patents.

A bright-line rule barring enforcement of all FRAND-committed patents would be contrary to the policies of SSOs, like ETSI, and go against the public's interest in enforcing intellectual property rights. ETSI, whose FRAND policies Apple contends apply to the '348 and '644 patents, expressly recognizes the rights of patent owners. ETSI's IPR Policy states that it

"seeks a balance between the needs of standardization for public use in the field of telecommunications and the rights of the owners of IPRs," and that IPR holders "should be adequately and fairly rewarded for the use of their IPRs in the implementation of STANDARDS and TECHNICAL SPECIFICATIONS." (CX-0908C at §§ 3.1 and 3.2.) ETSI does not require patent holders to waive their rights and expressly contemplates that they should receive a reasonable royalty for the use of their patents. (See *id.* at § 6.1.) Likewise, Commission precedent recognizes that there is a strong public interest in the enforcement of intellectual property rights. *See, e.g., Certain Baseband Processor Chips and Chipsets, Transmitter and Receiver (Radio) Chips, Power Control Chips, and Products Containing the Same, Including Cellular Telephone Handsets*, Inv. No. 337-TA-543, Comm'n Op. at 59 (June 19, 2007) ("*Baseband Processor Chips*"). To hold that all FRAND-committed patents are *per se* unenforceable would fly in the face of this well-established interest.

Of particular concern is the situation where, despite the patent holder's best efforts, an infringer refuses to negotiate in good faith for a FRAND license. In such cases, the infringer should not be permitted to continue to willfully infringe without consequence. Here, Apple chose to enter the cell phone market without obtaining a license to Samsung's standards essential patents.<sup>3</sup> And the record shows that, even after Samsung offered to license its portfolio of patents declared essential to the UMTS standard to Apple at an initial rate of 2.4% for each relevant end product (CX-1589), Apple rejected Samsung's offers and failed to provide any counteroffer for meaningful negotiation or discussion. Rather than making a counteroffer or engaging in negotiations, Apple's reply to Samsung merely critiqued Samsung's offer. (RX-1659C.) Although Apple contends that Samsung's offer was too high (RPost at 138-40), Apple

submits no evidence to suggest that it has ever made a counterproposal concerning what it contends would be a reasonable royalty for a license to Samsung's patents or that it would ever voluntarily enter into a license for any Samsung declared essential patents in the absence of an exclusion order. When faced with an intransigent licensee engaging in "reverse hold-up," a standards-essential patent holder has the right to seek and receive any statutory remedies available to it.

The Commission should reverse the ALJ, find infringement of Samsung's asserted patents, and a violation of Section 337. In light of the facts and legal principles discussed above, Samsung respectfully responds to the questions raised by the Commission.

TOPIC 1. Does the mere existence of a FRAND undertaking with respect to a particular patent preclude issuance of an exclusion order based on infringement of that patent? Please discuss theories in law, equity, and the public interest, and identify which (if any) of the 337(d)(1) public interest factors preclude issuance of such an order.

No, the existence of a FRAND undertaking with respect to a particular patent does not preclude the issuance of an exclusion order based on infringement of that patent. There is no basis in law, equity or the public interest that would warrant adoption of a bright-line rule that would bar access to the Commission for holders of patents that are subject to some "FRAND undertaking."

A. There Is No Statutory Basis Precluding Issuance Of An Exclusion Order for Patents Subject To A "FRAND Undertaking"

Section 337 of the Tariff Act of 1930, as amended, sets forth the ITC's mission, namely to protect U.S. industries from infringing and other unfairly competing imports. 19 U.S.C. § 1337(a)(1) (stating that unfair acts under section 337 "shall be dealt with in addition to any

<sup>&</sup>lt;sup>3</sup> Samsung's declarations to ETSI regarding IPR believed to be essential, including declarations relating to the '348 and '644 patents, are publically available at <a href="http://ipr.etsi.org">http://ipr.etsi.org</a>.

other provision of law."). Section 337 provides for only two remedies: an exclusion order, and a cease and desist order. 19 U.S.C. § 1337(d), (f). By law, the Commission is required to issue an exclusion order upon the finding of a Section 337 violation absent a finding that one of the Section 337(d)(1) public interest factors precludes otherwise. 19 U.S.C § 1337(d)(1) ("If 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, unless, after considering the effect of such exclusion upon the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive alternatives in the United States, and United States consumers, it finds that such articles should not be excluded from entry.") (emphasis added). The statute does not contain any special provisions or carve-outs for FRAND-committed patents or patents that may be essential to a standard, and Samsung is not aware of any statute requiring special treatment for such patents.

In the absence of an express change by Congress to the ITC's statutory authority, there is no legitimate basis for the Commission to create a bright-line rule preventing it from issuing the only relief it can grant, solely because an asserted patent may be subject to some type of FRAND obligation. FRAND issues have been raised in numerous investigations (*e.g.*, Investigation Nos. 577, 578, 601, 613, 669, 745, and 753), but, to Samsung's knowledge, not once has the Commission concluded it lacks the authority to issue an exclusion order solely because an asserted patent is subject to a FRAND obligation. (SPost at 67.) Nothing in any statute enacted by Congress supports such a position and no court or tribunal has ever concluded otherwise. *See Certain Semiconductor Chips*, Investigation No. 337-TA-753, 2011 WL 4737050, Order No. 55 at 3 (U.S.I.T.C. 2011).

# B. A Bright Line Rule That Precludes ITC Jurisdiction Whenever a FRAND Undertaking Has Been Made Lacks Any Legitimate Basis and Would Be Highly Unfair

As a preliminary matter, it is not helpful to discuss a "FRAND undertaking" in the abstract. There are many SSOs in existence, each with its own policy and protocols with respect to the incorporation of intellectual property in its standards. Accordingly, each SSO may have different requirements for the undertakings that IPR owners must make and the rights, if any, that they give up in making such an undertaking. Since the undertaking defines the relationship between the IPR owner and the SSO, the specific language and intent of the undertaking must be considered to ascertain whether any legitimate basis exists to preclude a particular IPR holder from enforcing its rights in the ITC.

To put this in context, some SSOs promulgate standards intended to be free from royalties and therefore seek to avoid adopting technical solutions that are encumbered by patents and therefore require members to agree to license any standard-essential patents on a royalty free basis. *See, e.g.*, W3C Patent Policy, Section 5: W3C Royalty-Free (RF) Licensing Requirements, available at http://www.w3.org/Consortium/Patent-Policy-20040205 (requiring that all standard essential patents are available for free to W3C Members and nonmembers). Other SSOs seek the best possible technical solutions and therefore not only accommodate, but welcome the use of IP in their standards.

ETSI, the SSO whose rules and history are at issue, is an example of the latter type of SSO. (See CX-0908C at §§ 3.1 and 3.2 ("STANDARDS shall be based on solutions which best meet the technical objectives of the European telecommunications sector" and "IPR holders . . . should be adequately and fairly rewarded for the use of their IPRs in the implementation of STANDARDS.").) Extensive evidence of ETSI's policies and practices was introduced at the hearing, including testimony from Dr. Michael Walker, former Chairman of the ETSI Board.

Walker testified that nothing in any ETSI rule or policy precludes or could preclude injunctions. (Tr. at 1448:17-1149:1; 1450:14-1451:6.)

ETSI encourages, but does not require, that its members commit to a so-called FRAND undertaking. Section 6.1 of ETSI's IPR Policy specifies:

When an ESSENTIAL IPR relating to a particular STANDARD is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give within three months an undertaking in writing that it is prepared to grant irrevocable licenses on fair, reasonable and non-discriminatory terms and conditions under such IPR . . . . The above undertaking may be made subject to the condition that those who seek licences agree to reciprocate.

(CX-0908C.) ETSI's Guide on IPRs further explains that members are encouraged to make a general IPR undertaking, the "FRAND undertaking" (or "general declaration") and then proceed to make specific declarations relating to individual IPRs:

Members are encouraged to make general IPR undertakings/licensing declarations that they will make licenses available for all their IPRs under FRAND terms and conditions related to a specific standardization area and then, as soon as feasible, provide (or refine) detailed disclosures. This process reduces the risk of the standards making process being blocked due to IPR constraints.

(CX-0902 at § 2.1.1.)

Here, Samsung submitted a general IPR declaration in 1998, long before the standards proposals or patent applications at issue existed, that it was "prepared to grant licenses to its essential IPRs on a fair, reasonable and non-discriminatory basis in accordance with the terms and conditions set forth in Clause 6.1 of the ETSI IPR Policy" to any patents that might become essential to UMTS. (Tr. at 1406:25-1407:4; available at http://ipr.etsi.org/GdDetails.aspx?IPRD\_ID=899&IPRD\_TYPE\_ID=1&MODE=2) As Walker explained, Samsung was "committing in advance that [it] will . . . make that IPR available on fair, reasonable and non-discriminatory terms" and thereby "conforming" with Clause 6 of the ETSI IPR Policy. (Tr. at 1407:5-12.) Samsung then declared members of the '348 and '644 patent families—along with dozens of other patents and pending patent applications—as

essential to the UMTS standard to ETSI in December 2003 and May 2006. (RX-0164C; RX-0133.)

Notably, Samsung unequivocally stated in its general declaration to ETSI that it would license "essential IPRs" on FRAND terms and conditions. Samsung's specific declarations covering the '348 and '644 patents similarly stated (per ETSI's declaration form attached to the ETSI Guide on IPRs, see CX-0902 at Annex 2) that it was "prepared to grant irrevocable licenses under the IPRs on terms and conditions which are in accordance with Clause 6.1 of the ETSI IPR Policy, in respect of the STANDARD, to the extent that the IPRs remain ESSENTIAL." (RX-0164C; RX-0133 (emphasis added).) In that regard, Samsung's specific declarations asserted that the patents and patent applications listed, including family members of the '348 and '644 patents, were "IPRs [that] may be considered ESSENTIAL to the Standards." Accordingly, by the language of its FRAND commitments, Samsung is obligated to license its patents to the extent they remain essential to the standard. Apple repeatedly and unequivocally argued that these patents were not essential.<sup>4</sup> (Tr. at 76:17-25; Apple's Response to Samsung's First Set of Requests for Admission at Responses to Request Nos. 120-125 (February 20, 2011); Apple's Motion for Summary Determination as to the '644 and '348 Patents Based On Samsung's Agreements With Chip Suppliers and FRAND Commitments at 3 (March 5, 2012).) If Apple is fact correct that the '348 and '644 patents are not essential and the Commission nonetheless find that these patents are infringed when it applies properly construed claims to Apple's accused products, as Samsung has demonstrated it should, Apple will have succeeded in removing the fundamental factual predicate that underlies its FRAND defenses—since Samsung's FRAND

<sup>&</sup>lt;sup>4</sup> Notwithstanding, Samsung proved infringement both through analysis of the standard if the patents are in fact essential and through source code if the patents are not essential to the standards. (*See generally*, Min Tr.)

commitment, using ETSI's own required language, was to be prepared to license its patents on FRAND terms "to the extent" they remain essential. Although Samsungs stands by its obligation to license these patents to Apple on FRAND terms and conditions, whether or not Commission or any other tribunal determines them essential, any public interest basis to challenge Samsung's proposed FRAND license offer for those patents necessarily fails if the Commission merely finds them infringed, since neither Apple nor Samsung's petition requires the Commission to reach the separate issue of essentiality.

### C. Patent Law Has Well-Developed Legal Doctrines To Deal With FRAND-Committed Patents

As described above, a robust body of law concerning standards-based defenses already exists, including unenforceability due to waiver, equitable estoppel, and unclean hands. Where these defenses are pled, the Commission can apply that law to determine whether the patent holder specifically waived its rights to seek injunctive relief from the ITC through its participation in the standard-setting process. Apple itself asserted a number of these "FRAND" defenses in this Investigation. (Apple's Resp. to Samsung's Compl. at 36 (asserting affirmative defense of unenforceability based on "estoppel, waiver, unclean hands, . . . and/or other equitable doctrines").<sup>5</sup>

With an arsenal of FRAND-related equitable defenses at a respondent's disposal, there is no need for a blanket rule barring enforcement of all FRAND-committed patents. Where

rely on estoppel, unclean hands or any other equitable doctrine other than implied waiver under *Broadcom* to support its affirmative defense of unenforceability. Order No. 11; Ground Rule 7.2.

Ultimately, however, in its prehearing brief, Apple limited its unenforceability contention to the equitable doctrine of waiver as addressed in *Broadcom*. (Apple's PHB at 32-35, 68-69, 163.) Apple made no attempt—either in its prehearing brief or at the hearing—to articulate a basis other than waiver for the ALJ to find unenforceability due to Samsung's conduct and cited no cases other than Broadcom to support that position. Accordingly, Apple "waived" its ability to

appropriate, respondents may assert and will bear the burden of proving one or more of these defenses. There is no reason for the ITC to depart from the practice of considering these FRAND defenses individually, relying on the facts brought to light at the hearing. If a respondent meets its burden of proving the factual basis for a defense such as implied waiver, an ALJ may exercise its discretion preclude the patent holder from asserting its patents assuming the conduct is sufficiently egregious. On the other hand, if a respondent fails to meet its burden of proving such a defense, or, even if proved, where the ALJ chooses, based on all the facts and circumstances, not to exercise judgment to hold such patents unenforceable, then the patent holder should not be precluded from exercising its statutory rights under Section 337.

# D. The ALJ Correctly Concluded Apple Failed to Prove Any of Its FRAND Defenses

Apple asserted that the '348 and '644 patents were unenforceable for waiver due to Samsung's alleged breach of duties owed to ETSI. Specifically, Apple alleged that Samsung had failed to timely disclose Korean patent applications related to the '348 and '644 patents, and failed to offer Apple a FRAND license for the '348 and '644 patents. (RPost at 1, 62-66, 126-131.) Ultimately, the ALJ correctly found that Apple failed to meet "its evidentiary or legal burden for establishing" that the '348 and '644 patents "should be held unenforceable by reason of Samsung's ETSI activities." (ID at 487.) With respect to the timeliness of Samsung's disclosure of its IPRs to ETSI, the ALJ found:

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With respect to its waived defenses, Apple did not offer any evidence, or even allege, that it was aware of or reasonably relied on Samsung's alleged delay in disclosing the '348 or '644 patents as required for its equitable estoppels defense by *A.C. Aukerman Co. v. R.L Chaides Const. Co.*, 960 F.2d 1020, 1028 (Fed. Cir. 1992) (en banc). Finally, Apple failed to prove by clear and convincing evidence, that Samsung intentionally and in bad faith deceived ETSI and breached its duties to ETSI, required for a affirmative defense of unclean hands. *See Certain L-Lysine Feed Products, Investigation* No. 337-TA-571, 2008 WL 3872209, \*66 (U.S.I.T.C. 2008).

Apple failed to prove Samsung did not use reasonable endeavors to timely inform ETSI that it had filed confidential Korean patent applications that might have related to certain proposals that were before the standards body. What constitutes "timely" is not specified, but it stands to reason that the members have views on that matter which may differ not only among each other but also, by way of their consensus, with what an Administrative Law Judge might determine in the context of a Section 337 investigation, not having the benefit of the members' thinking on the matter, as far as effectuating the policies of ETSI.

(*Id.* at 486.) Apple introduced no evidence as to the reasonableness of the timing of Samsung's disclosure of family members of the '348 and '644 patents. Dr. Walker, Apple's own expert, confirmed the lack of any evidence that Samsung intentionally delayed in disclosing its patents to ETSI. (Tr. at 1418.58.)

Likewise, the ALJ correctly "conclude[d] that the evidence does not support Apple's allegation that Samsung failed to offer Apple licenses to Samsung's declared-essential patents on FRAND terms." (ID at 469.) Specifically, the ALJ found that "[i]t is not enough for Apple to complain that Samsung's license offer of 2.4 percent of the selling prices of Apple's devices, is unreasonable, since there is insufficient evidence of customs and practices of industry participants showing that Samsung's demand is invidious with respect to Apple." (ID at 470.)

Given the complete absence of any evidence for Apple's FRAND-based unenforceability defenses, there is no reason why the Commission should adopt a rule that would preclude Samsung from enforcing its declared essential patents.

# E. None of the Public Interest Factors Supports a Bright-Line Rule Forbidding Assertion of Patents Subject to a FRAND Commitment

Here, the undisputed evidence shows that, at Apple's request, Samsung offered Apple a license to Samsung's portfolio of declared-essential UMTS patents, including the patents-in-suit, on fair, reasonable, and non-discriminatory terms and conditions, long before this Investigation was initiated. (CX-0769.0006.) Apple failed to show that Samsung "renege[d] on its FRAND commitments," because it offered no evidence that Samsung's original cross-license offer and

later July 25, 2011 offer were not FRAND-compliant. Moreover, Apple was not even willing to negotiate a license on any terms to the patents in-suit.

Indeed, despite a number of recent litigations involving FRAND-committed patents, there has never been any evidence of "patent hold-up" inhibiting the implementation of standards as far as Samsung is aware. See, e.g., Apple Inc. v. Motorola, Inc., 11-CV-08540, 2012 WL 2376664 (N.D. Ill. June 22, 2012); Apple Inc. v. Motorola Mobility, Inc., 11-CV-00178 (W.D. Wis. Nov. 28, 2012); Microsoft Corp v. Motorola, Inc., 10-CV-01823 (W.D. Wash.). Apple's own expert, Walker, testified that patent hold-up has never been a problem at any time from 1988 to the present and he was not aware of any situation in which an ETSI standard had been blocked by an essential patent or in which a patent owner had refused to license on FRAND terms a patent that had been disclosed "late." (Tr. at 1440:21-1442:5.) In that regard, Walker explained that ETSI does not define FRAND and that FRAND terms are subject to commercial negotiation between the parties. (Tr. at 1442:17-1443:14.) Walker also testified that it was the obligation of the party seeking a FRAND license to enter into negotiation with the patent owner, but did not know either way whether Apple had done that. (Tr. at 1446:4-1447:5.) Walker was aware of Samsung's FRAND offer and confirmed he was not offering the opinion that it was inconsistent with FRAND terms and conditions. (Tr. at 1444:8-1446:3.)

As discussed above, by statute, the Commission is required to issue an exclusion order upon the finding of a Section 337 violation, absent a finding that one of the Section 337(d)(1) public interest factors precludes otherwise. 19 U.S.C § 1337(d)(1). As the Federal Circuit recognized, on only three occasions has the Commission determined that public interest factors precluded imposition of an exclusion order. *See Certain Automatic Crankpin Grinders*, Inv. No. 337-TA-60, Comm'n Op., USITC Pub. No. 1022 (Dec. 1979) ("*Crankpin Grinders*")

(determining that an exclusion order was not in the public interest to fulfill an independent Congressional mandate); Certain Inclined-Field Acceleration Tubes and Components Thereof, Inv. No. 337-TA-67, Comm'n Op., USITC Pub. No. 1119 (Dec. 1980) ("Field Acceleration Tubes") (finding that an exclusion order relating to nuclear research during the Cold War was not in the public interest because of the effect to public health and welfare); Certain Fluidized Supporting Apparatus and Components Thereof, Inv. No. 337-TA-182/188, Comm'n Op., USITC Pub. No. 1667 (Oct. 1984) ("Fluidized Supporting Apparatus") (denying an exclusion order where the domestic manufacturer was unable to meet demand within a commercially reasonable time, and no therapeutically comparable product was available).

In each of these cases, as the Federal Circuit notes, "the exclusion order was denied because inadequate supply within the United States – by both the patentee and domestic licensees – meant that an exclusion order would deprive the public of products necessary for some important health or welfare need: energy efficient automobiles, basic scientific research or hospital equipment." *Spansion, Inc. v. ITC*, 629 F.3d 1331, 1359-60 (Fed. Cir. 2010), *rehearing and rehearing en banc denied*, March 29, 2011. In contrast, in this Investigation, there is no inadequate supply of smartphones. Apple does not, and cannot dispute that there are adequate licensed or non-infringing substitutes available on the market. (*See* Ex. B , Decl. of Carla Mulhern at 5.) As set forth above, Samsung has extensively licensed its portfolio of UMTS standard-essential patents, and major handset manufacturers such as Nokia and Motorola are presently licensed under Samsung's essential patents.

As set forth above, Section 337(d)(1) provides for four public interest factors: (1) the public health and welfare, (2) competitive conditions in the United States economy, (3) the production of like or directly competitive articles in the United States, and (4) United States

consumers. None of the five statutorily enumerated public interest factors should preclude issuing an exclusion order based on Samsung's FRAND commitments; nor should they automatically preclude exclusion orders in general for standards essential patents. Instead, the facts and circumstances of each case should be analyzed, including whether—as was the case here—the infringer was an unwilling licensee.

#### 1. Factor 1: The Public Health and Welfare

The Commission has relied upon these factors only in truly exceptional cases. Each of the three instances where the Commission found that the public interest concerns outweighed the strong public interest in enforcing U.S. patents against unlawfully infringing imported products involved an overriding public health or welfare need, whether energy efficient automobiles, basic scientific research or hospital equipment. *See supra*. Such issues are not presented here with respect to the accused iPhones, iPods and iPads. Current law provides that access to such products does not present an overriding public interest, especially when other non-infringing smartphones and tablets are available. Indeed, in Investigation No. 710, also directed to smartphones, the Commission rejected public interest arguments for these products, with the Commission issuing an exclusion order against HTC. As in that case, Apple's products do not represent the sort of paramount public interest that overrides the statutory remedy.

Samsung's FRAND commitments for its UMTS essential patents do not change the public interest analysis. Samsung produces its own non-infringing smartphones that are available in the U.S. and, consistent with Samsung's FRAND commitments, many other smartphone sellers, including Nokia and Motorola are licensed to use Samsung's patents. Here, the facts proven at the hearing demonstrate that Samsung offered Apple a FRAND license-which Apple rejected without negotiation and without making any counteroffers for negotiation or discussion. Thus, factor 1 does not counsel against imposition of an exclusion order.

### 2. Factor 2: Competitive Conditions in the U.S. Economy

Likewise, though Apple may argue that, in theory, granting exclusion orders barring infringement of a FRAND-committed patent may negatively impact competitive conditions in the U.S. economy, Apple cannot identify any actual harm to competition and the Declaration of Anne Layne-Farrar submitted herewith shows that concerns of such harm are not warranted. The facts proven by Samsung at the hearing show that there are non-infringing or licensed alternatives to Apple's infringing iPhone handsets available in the market. Samsung and its licensees.

", sell smartphone products that compete with Apple's infringing iPhone products. (Tr. at 163:11-169:1.) Indeed, of all the major smartphone manufacturers, only Apple has refused to take a license from Samsung, choosing instead to free-ride on the years of research and development spending that Samsung, and other companies who helped develop the UMTS standard, have invested. Competition will ultimately be served by barring unlawful infringement where others in the market are competing fairly and free-riding on the patented technology of others is discouraged. Accordingly, Factor 2 does not counsel against the imposition of an exclusion order here.

# 3. <u>Factor 3: The Production of Like or Directly Competitive Articles in the United States</u>

As a threshold matter,

The U.S. cellular handset and smartphone market is robust and competitive,
and Apple cannot show that the public's demand for 3G handsets cannot be met by the many like
or competing and non-infringing or licensed alternatives available in the market. Accordingly,
Factor 3 does not counsel against the imposition of an exclusion order here.

#### 4. Factor 4: United States Consumers

U.S. customers will not be harmed if an exclusion order is entered here. To the contrary, the interests of U.S. consumers favor the enforcement of standard-essential patents against unlawful, unlicensed infringement. Consumers have a strong interest in the standardization and adoption of superior cellular and wireless technologies, such as 3G and LTE connectivity for mobile devices. The adoption of improved wireless technologies, in turn, allows for the development of applications and other technologies that take advantage of improved network capabilities, allowing consumers to access the Internet, music, video and other content wirelessly. Consumers have an interest in access to the best available wireless technology, regardless of whether that technology is subject to patent rights.

Samsung's participation in standards setting bodies like 3GPP/ETSI and its numerous technical contributions to those standards have benefitted U.S. consumers. Issuance of an exclusion order will help to uphold U.S. patent rights and is consistent with the balance ETSI struck between the desire to include the best technical solutions in its standards and the IPR rights of its members; permitting an exclusion order will encourage innovation and continued participation in standards setting bodies. Although Apple may argue that U.S. consumers have a strong interest in obtaining a variety of cellular handsets and smartphones, including Apple's iPhone, free of increased prices resulting from patent "hold-up," Apple ignores the negative effects of "reverse hold-up." (Ex. A, Decl. of Anne Layne-Farrar ¶ 29-34.) As an unwilling licensee using a competitor's FRAND commitments to avoid a remedy for its unlawful infringement, Apple is altering the balance between the rights of innovators like Samsung and implementers of standards that has long served the industry in bringing breakthrough products to U.S. consumers. Apple's "hold-up" arguments are hypothetical. As set forth above, in this Investigation, Apple failed to produced evidence at the hearing to support any implied license,

waiver or other patent hold-up type defense. (ID at 469, 486-487.) Apple cannot show that it has actually been the victim of any hold-up, nor can it show that any hold-up price has been or is at risk of being passed on to consumers.

Protecting the rights of standards-essential patent owners furthers the public's interest in improved wireless networks because it permits and encourages innovators to contribute their proprietary technology for use in standards. It is widely recognized that FRAND licensing schemes that permit for enforcement of patents (as opposed to, for example, policies that require a standards contributor to waive any patent rights relating to that standard or submit to a compulsory licensing scheme) incentivize and encourage patent owners to engage and contribute to the standards-setting process. (Ex. A, Decl. of Anne Layne-Farrar ¶ 11-12.) Apple itself admits "the ETSI IPR Policy does not expressly forbid injunctions" and Apple's expert confirmed that ETSI could not impose such a rule. (Tr. at 1450:14-1451:6.) Accordingly, Factor 4 does not counsel against the imposition of an exclusion order here.

#### 5. Other Considerations

It should not be the rule that exclusion orders are prohibited, particularly where, as here, the respondent refuses a FRAND offer and introduces no evidence that it even attempted to negotiate better terms. As the ALJ acknowledged, very few accused infringers would ever voluntarily agree to pay for a license if injunctive relief were not available: "As a practical matter, if the ITC were precluded from performing its mandate as set forth in the authorizing statute, an infringing party could, by making unrealistic counter-offers to the patent holder, while claiming that such counter-offers more accurately reflect FRAND than the offers proposed by the patent holder, hold-up or frustrate Section 337 investigations." (ID at 462.)

TOPIC 2. Where a patent owner has offered to license a patent to an accused infringer, what framework should be used for determining whether the offer

complies with a FRAND undertaking? How would a rejection of the offer by an accused infringer influence the analysis, if at all?

Nothing in Section 337 or in any other legal doctrine or decision requires a patent holder to prove affirmatively that it has offered to license its patents on FRAND terms, or that an offer that has been made complies with a FRAND undertaking as a predicate for Section 337 relief, and no reason exists for the ITC to impose such a duty now. To the extent these issues arise at all in an ITC investigation, they arise in the context of one or more affirmative defenses asserted by a respondent, who, in accordance with well-established legal and equitable principles, bears the burden of proving such defenses. In the context of such a defense, there is no set framework that the ITC should necessarily apply in determining whether a particular license offer complies with a particular FRAND undertaking in the context of the policies and rules of a particular SSO.

As noted earlier, a "one size fits all approach" to this question should not apply, particularly in light of the wide range of standards and applicable rules that may be impacted by the assertion of declared-essential patents. Each SSO may have different requirements for the undertakings that IPR owners must make; the body of law governing the FRAND undertaking should therefore always be considered.

If an SSO specifies a particular analytic framework that its members must apply in licensing declared-essential patents, then it may be appropriate for the ITC to employ that framework in deciding whether a respondent has met its burden with respect to an applicable defense, based on an alleged failure to license in accordance with a FRAND undertaking. On the other hand, if, as is the case with ETSI, the standards body does not define what FRAND means (Tr. at 1442:17-1443:14), but rather specifies that the patent holder and the implementer of the standard must negotiate to arrive at appropriate terms and conditions, then it may be difficult to

apply a single formulaic framework.7 (*Id.*; ID at 459-60; CX-1503 at FAQ #7; Brooks et. al, *Taking Contracts Seriously: The Meaning of the Voluntary Commitment to Licence Essential Patents on "Fair and Reasonable" Terms* 8 n. 17 (Mar. 12, 2010, *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract\_id=1569498.) In such cases, the inquiry should focus only on whether the offer was grossly outside of any acceptable FRAND range.8 Brooks at 3.

Despite Apple's claims, Samsung's opening offer is in line with other published FRAND rates in the industry (*e.g.*, Nokia (which charges 2% of the end-device implementing the standard), Alcatel-Lucent (which charges 2% of the end-device implementing the standard), and Qualcomm (which charges 3.25% of the price of the end-device implementing the standard).)<sup>9</sup> Indeed, the jury in the Northern District of California also rejected Apple's claim that Samsung breached its contractual obligations to ETSI by failing to license its "declared essential" patents on FRAND terms. (Verdict, *Apple Inc v. Samsung Elecs. Co. Ltd.*, No. 11-cv-1846-LHK, Dkt. No. 1931 (N.D. Cal. 2012).) In letter after letter, Samsung has invited Apple back to the negotiating table—but, to date, Apple has not accepted that invitation and has done nothing to suggest Apple would voluntarily pay any proposed royalty to Samsung without being compelled to do so.

<sup>7</sup> At various times over its history, ETSI specifically considered whether to adopt specific terms and conditions, such as royalty caps (see Brooks article) but its membership has uniformly rejected such proposals. Brooks at 5-6; *Compare* ETSI/GA 9 (90)9 at 4 (Clause 6 of the draft ETSI IPR Policy) *with* ETSI/GA20(94)2, Annex XVIII at 5.

Although members are permitted to disclose ex ante licensing terms, the current "List of Ex Ante Disclosures of Licensing Terms" on ETSI's website does not identify the license terms for a single company, including Apple. *See* <a href="http://www.etsi.org/WebSite/AboutETSI/IPRsInETSI/Exante-list-of-disclosures.aspx">http://www.etsi.org/WebSite/AboutETSI/IPRsInETSI/Exante-list-of-disclosures.aspx</a>. *See also Royalty Rates and Licensing Strategies For Essential Patents On LTE (4G)Telecommunication Standards*, les Nouvelles, 114-119, 116 Sep. 2010, available at <a href="http://www.investorvillage.com/uploads/82827/files/LESI-Royalty-Rates.pdf">http://www.investorvillage.com/uploads/82827/files/LESI-Royalty-Rates.pdf</a>.

<sup>&</sup>lt;sup>9</sup> See id.

To put this question in context, it is helpful to consider the actual issues that the ALJ was required to decide in rejecting Apple's affirmative defenses based on Samsung's alleged failure to license the '348 and '644 patents on fair, reasonable, and non-discriminatory terms. The ETSI IPR Policy allows, though does not require, owners of patents that may be essential to one or more ETSI standards or technical specifications, to pledge in writing (preferably on a form provided by ETSI) that they are "prepared to grant irrevocable licenses on fair, reasonable and non-discriminatory terms and conditions under such IPR" and notes that such an undertaking "may be made subject to the condition that those who seek licences agree to reciprocate." (CX-0908C.) With respect to the asserted declared-essential patents, Samsung executed two types of undertakings—(1) a general declaration and (2) specific declarations directed at family members of the '348 and '644 patent as described above. These declarations obligated Samsung to be prepared to license its declared essential patents on FRAND terms and conditions to extent those patents remain essential to the relevant ETSI standards.

As a defense to Samsung's claims of infringement of the '348 and '644 patents, Apple contended Samsung breached its obligations to ETSI by failing to make a FRAND offer. (Post HB at 137.) As such, it was Apple's burden to show that Samsung's 2010 cross-license offer, July 2011 offer of a one-way license to Samsung's UMTS declared-essential patents, and subsequent requests that Apple meet with Samsung to negotiate such a license offer were unfair, unreasonable or discriminatory, among the other requirements underlying its defense of waiver. It was also Apple's burden to show that Samsung's declared essential patents are, in fact, essential to the standards. But as noted above, Apple repeatedly and unequivocally argued the

opposite—that Samsung's patents are not actually essential. (Tr. at 76:17-25; Apple's Response to Samsung's First Set of Requests for Admission at Responses to Request Nos. 120-125 (February 20, 2011); Apple's Motion for Summary Determination as to the '644 and '348 Patents Based On Samsung's Agreements With Chip Suppliers and FRAND Commitments at 3 (March 5, 2012).) Given that Apple's defenses based on the alleged failure to offer a FRAND license are predicated on the '348 and '644 patents being actually essential to the ETSI UMTS standard and neither Apple nor Samsung has asked the Commission to determine that the patents are, in fact, actually essential—Samsung has merely requested that the Commission find them infringed—this fact alone should permit the Commission to reject these defenses without further analysis.<sup>10</sup>

Moreover, the record shows that Samsung typically enters into cross-licenses with other companies. (*See, e.g.*, RX-0199C; RX-0193C.) Before Apple initiated its lawsuit in the Northern District of California, and before Samsung responded by countersuing and initiating this Investigation, Samsung offered a cross-license to Apple which would have included the '348 and '644 patents. (CX-0769.006) As such, Apple cannot argue that Samsung discriminated against it when Samsung offered Apple the same type of cross-license it has offered and entered into with many other major companies in the telecommunications industry.

After Apple brought its various lawsuits against Samsung and initiated its "thermonuclear war" against Android, only then did Apple request a so-called FRAND license to a limited subset of Samsung's declared-essential patents. In response, Samsung made an opening, or headline, FRAND offer for a one-way license to its UMTS declared essential patents. (CX-1589C.)

Samsung hoped that Apple would engage in meaningful good-faith negotiations, likely initiated

<sup>&</sup>lt;sup>10</sup> See Response to Question 1, Part B.

with a counteroffer. Instead, Apple vehemently asserted that Samsung's 2.4% opening offer was manifestly not FRAND. (*See e.g.* RX-1659C; RPost at 138-40.) As a result, Apple also accused Samsung – a contributing member of ETSI in good standing since 1998 – of violating its commitments to the SSO. (Apple's PHB at 163.) Yet outside of its litigation campaign, Apple has never even "availed itself of the process and procedures of the ETSI under Clause 4.3 of the ETSI Guide on IPRs, which provides for mediation by ETSI Members or the Secretariat. (RX-0713 at Clause 4.3.)" (ID at 470.)

Indeed, in a similar dispute involving Apple's defense against Motorola's declaredessential standards patents, Apple asked the court in the Western District of Wisconsin to devote
time and effort to calculate and set a FRAND rate, but then informed the Court it would only
accept her rate if it did not exceed \$1 and happened to comply with Apple's other myriad
requirements. (*See* Order and Opinion, *Apple Inc. v. Motorola Mobility Inc.*, Case No. 3:11-cv00178-bbc, Dkt. 509 at 5 (W.D. Wis. 2012) ("[Apple] added, however, that it would be willing to
pay a rate of no more than \$1 for each Apple device going forward, while it retained the right to
appeal any award higher than \$1, as well as to refuse any such rate and proceed to further
infringement litigation.") As a result, Judge Crabb dismissed Apple's entire FRAND case. (*See Apple Inc. v. Motorola Mobility Inc.*, Case No. 3:11-cv-00178-bbc, Dkt. 498,509 (W.D. Wis.
2012).)

Although Apple cries foul when its competitors use their declared-essential patents to defend themselves, Apple's own behavior has revealed a more serious problem: the potential for "reverse hold-up" to occur when a potential licensee refuses to negotiate a FRAND license in good faith. (Ex. A, Decl. of Anne Layne-Farrar ¶¶ 30-32.) Apple contends it has the freedom to charge whatever it wants for its own allegedly commercially-essential user experience patents,

but balks at its competitors' offered FRAND rates for the 3G wireless technology that allows

Apple to charge a \$350-\$550 premium for the iPhone (unsubsidized) as compared with a

virtually identical, but non-3G enabled iPod touch. (Tr. at 986:13-987:11.) Apple has never

stated what it believes to be a fair, reasonable, and non-discriminatory licensing rate for essential

patents that enable its UMTS-compliant devices to operate on 3G—a feature so important that it

was part of its second generation iPhone's name, the "iPhone 3G."

In any event, the ALJ concluded "that the evidence does not support Apple's allegation that Samsung failed to offer Apple licenses to Samsung's declared-essential patents on FRAND terms." (ID at 469.) Apple's own witness, Walker, explained that ETSI does not define FRAND and that FRAND terms are subject to commercial negotiation between the parties. (Tr. at 1442:17-1443:14.) Walker also testified that it was the obligation of the party seeking such a license to enter into negotiation with the patent owners, but did not know either way whether Apple had done that. (Tr. at 1446:4-1447:5.) Samsung initially made an offer that it believed to fair, reasonable, and consistent with its approach to other companies (CX-0769.0006) and then, in response to a specific request limited to UMTS, made another, specific FRAND offer in its July 25, 2011 letter to Apple. (CX-1589C.)

As a general rule, the ITC should not put itself in the position of having to determine a single FRAND rate, or FRAND range, that applies to one or more asserted patents that happen to be the subject of some type of "FRAND undertaking." Companies like Apple should not put the Commission in the position that Judge Crabb found herself, asked to determine a FRAND rate that Apple reserved the right to reject. At most, the Commission, upon a petition for review,

should limit its inquiry to whether a respondent met its burden of proving that a specific offer was outside the normative FRAND range in connection with the equitable defenses pled, as ALJ Gildea properly did here.

How would a rejection of the offer by an accused infringer influence the analysis, if at all?

Rejection of an offer, standing alone, should not be dispositive of whether an offer is FRAND—especially where the evidence shows that a respondent refused to negotiate in good faith, or even make a counteroffer. In this case, the undisputed evidence showed that Apple not only rejected Samsung's offers, but did not show any willingness to engage in good faith negotiations for a FRAND license to Samsung's patents. As the ALJ concluded, Apple failed to present any evidence that it made a counteroffer to Samsung's July 2011 2.4% headline rate or ever returned to the negotiating table as requested in each of Samsung's letters to Apple since July 2011. (ID at 469-470.) ALJ Gildea noted that "an infringing party could, by making unrealistic counter-offers to the patent holder, while claiming that such counter-offers more accurately reflect FRAND than the offers proposed by the patent holder, hold up or frustrate Section 337 investigations." (ID at 462.) This is exactly the role Apple has assumed, an unwilling licensee that wants only to continue to compete unfairly in the US marketplace with infringing imports. Under cover of its so-called FRAND defenses, Apple is simultaneously engaging in "reverse hold-up" of standards essential patents that poses far more harm to the future of standardization than the theoretical "patent holdup" concerns that underlie its own defenses. (Ex. A, Decl. of Anne Layne-Farrar ¶¶ 30-32.)

Apple's rejection of Samsung's offers and refusal to return to the negotiating table were among the many factors the ALJ relied on in concluding that Apple failed to meet its burden of establishing its affirmative defenses. (ID at 469-470. ("Apple's evidence does not demonstrate that Apple put forth a sincere, bona fide effort to bargain with Samsung."))

# TOPIC 3. Would there be substantial cost or delay to design around the technology covered by the '348 and '644 patents asserted in this investigation? Could such a design-around still comply with the relevant ETSI standard?

Apple can take a license to the '348 and '644 patents as offered by Samsung. If Apple takes a license, it will be licensed to practice the patent, and comply with the relevant ETSI standard. Moreover, if Apple continually refuses to negotiate a license in good faith, Apple could choose to avoid offering 3G devices entirely, it could, e.g., market a 2G, 2.5G, WiMax, or WLAN-only compliant device. Marketing such a device would permit Apple to sell its products without needing to comply with the relevant standards.

## TOPIC 4. What portion of the accused devices is allegedly covered by the asserted claims of each of the '348 and '644 patents? Do the patents cover relatively minor features of the accused devices?

The '348 and '644 patents cover important features of the Accused Devices.

Specifically, the baseband processors and related hardware and software is covered by both the '348 and '644 patents. The '348 and '644 patents are critical to the operation of the devices on the 3GPP, UMTS and HSUPA networks. Without this technology, the products could not reliably communicate on the network. Consumers demand fast, reliable communications. These patents allow user experience such as music and video streaming and downloading, synchronization and storage of materials through the iCloud. The '348 and '644 patents cover these core foundational features driving consumer demand.

Apple recognizes the importance of these patents. The iPod Touch is has all of the features of an iPhone except the 3GPP network connectivity. But, the price differential is significant. The unsubsidized cost of an iPhone 4S, for example, in February 2012, where the cost of an iPod Touch starts (See CX-0448C; Blevins Tr. 986:16-25.) This difference in price demonstrates the value of the '348 and '644 patents to Apple.

## TOPIC 5. What evidence in the record explains the legal significance of Samsung's FRAND undertakings under French law?

The ETSI IPR Policy expressly provides that it "shall be governed by the laws of France." (CX-0908C at § 12.) In accordance with that Policy, Samsung remains "prepared to grant irrevocable licences on fair, reasonable and non-discriminatory terms and conditions." (http://ipr.etsi.org/GdDetails.aspx?IPRD\_ID=899&IPRD\_TYPE\_ID=1&MODE=2.) In fulfillment of that commitment, on July 25, 2011, Samsung made a FRAND offer to Apple for Samsung's UMTS patent portfolio. (CX-1589C.)

Evidence concerning the legal significance of Samsung's FRAND undertakings under French law was submitted in the context of a motion for summary determination that Apple filed on March 5, 2012. (Mot. No. 794-042.) Apple asserted an affirmative defense of implied license, arguing that it was automatically licensed as a matter of French law based on Samsung's undertakings to ETSI and moved for summary determination on this issue, submitting a declaration from Nicholas Molfessis. (Mot. No. 794-042, Ex. P.) Samsung filed its Opposition to Apple's Motion for Summary Determination on March 15, 2012, with a declaration from Remy Libchaber, a Professor of Law at the Paris I University (Pantheon-Sorbonne).

Prof. Libchaber explained that since Samsung's declarations do not disclose the duration of the license, the geographic scope of the license, or the applicable royalty rate, then, as a matter of French law, they lack the requisite precision to constitute an offer. (Opp'n, Ex. 41, Libchaber Decl. ¶ 115.) French law also requires that both parties assent to a patent license in writing, which Apple failed to show. (Opp'n, Ex. 41, Libchaber Decl. ¶ 156.) Under French law, formation of a contract requires a clear acceptance of the offer by the promisee. (Opp'n, Ex. 41, Libchaber Decl. ¶¶ 138-139.) This principle is reflected by the ETSI Guide on IPRs and the ETSI website, which state that companies are to negotiate licenses bilaterally. (CX-1503 at

FAQ #7.) Inconsistent with any argument that it was automatically licensed, Apple requested a FRAND offer from Samsung consistent with the ETSI IPR Policy. And, Apple effectively concedes that it never accepted Samsung's offer of a license. (*See e.g.* RX-1659C; RPost at 138-40.) Nor has Apple paid any royalties to Samsung for its use of Samsung's declared-essential patents. Thus, Apple did not accept any offer and could not already have been licensed to Samsung's patents.

Prof. Libchaber also established that ETSI declarations do not constitute binding agreements under French law because they are not *intuitu personae*, that is, specifically directed at a particular person with whom the contract will be formed. (Opp'n, Ex. 41, Libchaber Decl. ¶¶ 121-134.) This requirement is consistent with ETSI Guide on IPRs, which states that licenses are to be negotiated on a bilateral basis. (CX-0908C) The ETSI IPR Policy also supports the conclusion that a declaration is not a license, as it contemplates the creation of individualized license agreements by providing that members may grant licenses "subject to the condition that those who seek licenses agree to reciprocate." (CX-0908C at § 6.1.) In other words, an ETSI IPR member may customize a license offer, distinguishing between a party that owns other declared-essential patents and one that does not.

When ALJ Gildea rejected Apple's motion for summary determination, Apple dropped this theory from its case and failed to present any evidence relating to French law at the hearing. (Order No. 47.) Apple's French law expert, Molfessis, was on the witness list, but Apple chose not to call him or present any other evidence on the issue. Accordingly, Apple has waived this argument.

Apple likewise withdrew a similar motion for summary judgment on the same grounds in the Northern District of California case. *Apple Inc. v. Samsung Elecs. Co. Ltd.*, No. 11-cv-1846-LHK, Dkt. Nos. 660, 872 (N.D. Cal. 2012).

## TOPIC 6. Does Samsung's offer to license the '348 and '644 patents to Apple satisfy any obligation that may arise from Samsung's FRAND undertaking? Why or why not?

Yes. Samsung's offer to license its portfolio of declared-essential UMTS patents was consistent with the undertakings Samsung made to ETSI with respect to the asserted '348 and '644 patents. Given Apple's failure to date to show that it is willing to engage in arm's length negotiations for such a license, Samsung believes it has satisfied any obligation it might have with respect to these patents vis a vis Apple. As noted above, however, Samsung's offer to license Apple to its declared-essential UMTS patents remains open and Samsung will gladly engage in arm's length negotiations with Apple, once Apple indicates it is willing to do so, in an attempt to conclude such a license.

#### Why or why not?

Samsung's offer to license its declared essential UMTS patent portfolio, including the '348 and '644 patents, satisfies its obligation to ETSI under its IPR Policy, at least until such time as Apple indicates it is willing to engage in meaningful negotiations for such a license. Samsung submitted a general IPR declaration to ETSI in 1998 that it was "prepared to grant licenses to its essential IPRs on a fair, reasonable and non-discriminatory basis in accordance with the terms and conditions set forth in Clause 6.1 of the ETSI IPR Policy" to any patents that might become essential to UMTS. (Tr. at 1406:25-1407:4.) As Apple's expert, Dr. Walker explained, Samsung was "committing in advance that [it] will . . . make that IPR available on fair, reasonable and non-discriminatory terms" and thereby "conforming" with Clause 6 of the ETSI IPR Policy. (Tr. at 1407:5-12.) Samsung then declared members of the '348 and '644 patent families—along with dozens of other patents and pending patent applications—as essential to the UMTS standard to ETSI in December 2003 and May 2006. (RX-0164C; RX-0133.)

Samsung promised in its general declaration and subsequent specific declarations to ETSI relating to the '348 and '644 patents that Samsung was and remains "prepared to grant" licenses to its essential IPRs on FRAND terms and conditions. Before this Investigation was initiated, Samsung offered Apple a cross-license that would have included these patents and then over one year ago, at Apple's request, offered Apple a one-way license limited to Samsung's portfolio of UMTS-essential patents, and Samsung has unsuccessfully attempted to engage Apple in negotiations ever since. (CX-0769.0006; CX-1589C.) Samsung proposed 2.4% as a fair, reasonable, and non-discriminatory headline rate for its portfolio of UMTS essential patents. (CX-1589.0001.) Since then, Samsung has repeatedly invited Apple to meet in person to negotiate such a license. But thus far Apple has not shown any willingness to conclude such a license.

Apple has failed to meet its burden of showing that Samsung "renege[d] on its FRAND commitments" because it has not shown any evidence that Samsung's later July 25, 2011 offer was not FRAND or that Apple was even willing to negotiate a license to the patents in-suit. (Apple's PHB at 163; CX-1589C.) As described above, Samsung's proposed royalty rate and base are in line with the royalty rates of other companies for their declared-essential UMTS patents, and Apple has offered no evidence showing otherwise. Samsung stands by its

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Indeed, Judge Robart in the Western District of Washington found that to satisfy its RAND obligation to an SSO, "Motorola need not make initial offers on [F]RAND terms." *Microsoft Corp. v. Motorola, Inc.*, 864 F. Supp. 2d 1023, 1038 (W.D. Wash. 2012). Like the IEEE and ITU, the SSOs in question in that case, the language of ETSI's IPR Policy and Samsung's declarations to ETSI do not require the initial offer to be FRAND. (CX-0908C.) As such, even assuming Samsung's initial offer to Apple was not FRAND, Samsung never breached its contractual obligations to ETSI by failing to license its declared-essential patents on FRAND terms. Apple has refused to negotiate with Samsung. The jury in the Northern District of California likewise rejected Apple's FRAND defenses and antitrust claims in their entirety. (Verdict, *Apple Inc v. Samsung Elecs. Co. Ltd.*, No. 11-cv-1846-LHK, Dkt. No. 1931 (N.D. Cal. 2012).) Judge Robart clarified that "although the language of Motorola's agreements do not

commitments to ETSI and continues to be "prepare to grant" licenses to its UMTS patents, including the '348 and '644, irrespective of whether the Commission makes the final determination that these patents are in fact essential. (*See* Response to Question 1, Part B).

TOPIC 7. Does the fact that Apple has not accepted Samsung's offer to license the '348 and '644 patents influence a determination as to whether Samsung has satisfied any obligation that may arise from a FRAND undertaking? Why or why not.

Yes. The fact that Apple has not accepted Samsung's offer to license its UMTS declared-essential patent portfolio, including the '348 and '644 patents—and has not shown that it participated in meaningful negotiations for such a license—should influence a determination that Samsung has satisfied its FRAND undertaking to ETSI, particularly in light of published industry norms for headline FRAND rates<sup>14</sup>

#### Why or why not?

The fact that Apple has not accepted Samsung's offer is alone not necessarily dispositive. But when coupled with Apple's failure to present any evidence that it negotiated with Samsung or was even willing to do so should influence a determination that Samsung, at least for now, has satisfied any obligation it might have to be prepared to license Apple on FRAND terms and conditions to the '348 and '644 patents. It is Apple that has held up the FRAND process, not Samsung. Apple has failed to show it ever made a counteroffer for negotiation or discussion. Indeed, in correspondence to Apple over the past twenty months Samsung has repeatedly

require it to make offers on [F]RAND terms, any offer by Motorola (be it an initial offer or an offer during a back-and-forth negotiation) must comport with the implied duty of good faith and fair dealing inherent in every contract. *Badgett v. Sec. State Bank*, 116 Wash. 2d 563, 807 P.2d 356, 360 (1991)." *Microsoft*, 864 F. Supp. 2d at 1038. While Apple failed to produce a shred of evidence that Samsung breached the implied duty of good faith and fair dealing, its own actions—refusal to negotiate and "reverse patent hold-up"—suggest that Apple itself has not complied with its own obligation as an ETSI member to negotiate in good faith.

Pleaded with Apple time and again to sit down and negotiate—but Apple has never accepted Samsung's request outside of court mandated settlement discussions. The "reverse hold-up" problem caused by Apple's unwillingness to negotiate underscores the need for owners of SEPs to be able to seek relief from the ITC in instances where a potential licensee refuses to negotiate. (Ex. A, Decl. of Anne Layne-Farrar ¶¶ 30-32.)

ETSI's own documents, which are in the record and undisputed, establish the expectation that FRAND terms and conditions will be negotiated at arm's length and in good faith. (CX-0902; *see also* Tr. at 1442:17-1443:14). In that regard, Apple's own expert, Dr. Walker, until recently the Chairman of the Board of ETSI, explained that ETSI does not define FRAND and that FRAND terms are subject to commercial negotiation between the parties. (Tr. at 1442:17-1443:14.) Walker testified that patent hold-up has never been a problem at any time from 1988 to the present and he was not aware of any situation in which an ETSI standard had been blocked by an essential patent or in which a patent owner had refused to license on FRAND terms. (Tr. at 1440:21-1442:5.) Walker also testified that it was the obligation of the party seeking such a license to enter into negotiation with the patent owners, but did not know either way whether Apple had done that. (Tr. at 1446:4-1447:5) Although Walker had seen Samsung's opening FRAND offer, he confirmed that he was not offering the opinion that it was inconsistent with FRAND terms and conditions. (Tr. at 1444:8-1446:3.)

#### RESPONSES TO QUESTIONS RELATED TO U.S. PATENT NO. 7,706,348

TOPIC 8. With respect to the asserted claims of the '348 patent, what record evidence shows that a person of ordinary skill in the art would understand the phrase "10 bit TFCI information" to allow or preclude the use of padding bits? What is the difference between the "10 bit TFCI information" in the

<sup>&</sup>lt;sup>14</sup> Royalty Rates and Licensing Strategies For Essential Patents On LTE (4G)Telecommunication Standards, les Nouvelles, 114-119, 116 Sep. 2010, available at <a href="http://www.investorvillage.com/uploads/82827/files/LESI-Royalty-Rates.pdf">http://www.investorvillage.com/uploads/82827/files/LESI-Royalty-Rates.pdf</a>.

portion of Table 1a shown in columns 13 and 14 of '348 patent and the TFCI information with padding zeroes allegedly used in the alleged domestic industry devices? What consequence would construing "10 bit TFCI information" to allow padding bits have on the issues of infringement, validity, and the technical prong of the domestic industry requirement?

#### i. The Record Evidence Does Not Preclude the Use of Padding Bits

The record evidence, including the '348 patent specification, Hearing testimony, and the 3GPP standard setting documents, all demonstrate that a person of ordinary skill in the art would understand the phrase "10 bit TFCI information" to allow the use of padding bits. Neither the claim language nor the specification preclude the 10-bit TFCI information from including padding bits to compose the full 10-bit TFCI information. Federal Circuit authority is clear: it is error to limit the construction of a term where no such limitation exists in the claim or the specification. *See Dow Chemical Co. v. Sumitomo Chemical Co., Ltd.*, 257 F.3d 1364, 1379-1382 (Fed. Cir. 2001); *see also Nellcor Puritan Bennet, Inc. v. Masimo Corp.*, 402 F.3d 1364, 1371 (Fed. Cir. 2005). Here, the claim language merely requires a 10-bit TFCI information—10-bits that together represent the TFCI information that will be encoded into a 30- or 32-bit codeword in asserted claims 75 and 82 respectively. Samsung's evidence, unlike Apple's strained reading of the claims, requires no manipulation and hand-waiving but only a simple reading of the text.

*First*, a person of ordinary skill in the art<sup>15</sup> reading the '348 patent claims and specification would understand that a 10-bit TFCI information can allow padding bits. The '348 specification describes adding padding bits when the TFCI bits are less than the required number of bits for a biorthogonal encoder. (JXM-1 at 3:27-34; 4:8-12.) For example, the '348

One of ordinary skill in the art is one who possesses a bachelor's degree in electrical engineering or an equivalent and two to three years of experience working in telecommunications technology including digital cellular standards. (Order No. 63 at 10.)

specification discloses that where the TFCI bits are less than the required 10-bits, padding "0" bits are added; the padding bits and the TFCI bits together represent the 10-bit TFCI:

The extended TFCI are basically expressed in 10 bits. Therefore, in the case where an extended TFCI bits of less than 10 bits are input, the controller 500 adds 0s to the MSB [Most Significant Bit] of the extended TFCI bits to represent the extended TFCI in 10 bits.

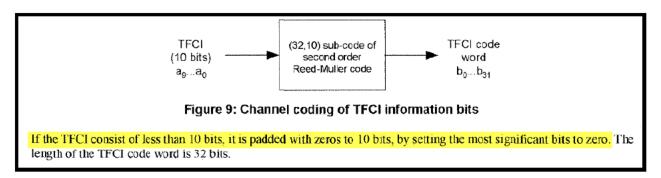
(JXM-1 at 4:8-12.) This disclosure clearly permits the use of padding bits to represent the 10-bit TFCI. A person of ordinary skill in the art reading the asserted claims in conjunction with the '348 specification would understand that the '348 patent treats the final resulting bits, made up of TFCI bits with or without padding "0" bits," as the complete 10-bit TFCI information.

*Second*, the uncontested testimony at the Hearing is consistent with the intrinsic record and confirms that a person of ordinary skill in the art would understand the phrase "10 bit TFCI information" to permit padding bits. During Apple's cross-examination, Dr. Min, Samsung's expert for the '348 patent, provided uncontested testimony that as soon as the TFCI bits are padded, those bits collectively become part of a 10-bit TFCI information:

- Q. [Apple's Counsel] Can you tell us whether a padded bit under the patent is a TFCI information bit?
- A. Well, as soon as it gets padded, my opinion is that it becomes part of a 10-bit TFCI information.
- Q. So that's your opinion?
- A. That's my opinion.
- Q. And that's your best judgment having read the patent, a padded bits is a TFCI information bit, correct?
- A. Well, in the context of having extended TFCI and then having the encoder 32, 10 to be used as an encoding 10-bit, yes.
- Q. That's your best judgment?
- A. That's my judgment.

(Min Tr. at 1248:19-1249:8.) Dr. Davis, Apple's expert, testified after Dr. Min and did not refute Dr. Min's testimony regarding his construction for the term "10 bit TFCI information." It is curious that Apple did not even ask its own expert for his opinion on the construction of "10-bit TFCI information" after cross-examining Dr. Min on his opinion. Dr. Min qualifies as one of ordinary skill in the art (Min Tr. 410:1-414:24), and therefore his uncontested Hearing testimony demonstrates that a person of ordinary skill in the art would understand the phrase "10 bit TFCI information" to allow padding bits.

*Third*, the 3GPP technical specification, TS 25.212, is further evidence that persons of ordinary skill in the art understand the phrase "10 bit TFCI information" to allow padding bits. <sup>16</sup> TS 25.212 discloses the following TFCI encoding apparatus:



(CX-1099.47.) TS 25.212 goes on to explain that bits a<sub>9</sub> . . . a<sub>0</sub>, depicted in Figure 9 above, are "TFCI information bits":

The TFCI information bits  $a_0$ ,  $a_1$ ,  $a_2$ ,  $a_3$ ,  $a_4$ ,  $a_5$ ,  $a_6$ ,  $a_7$ ,  $a_8$ ,  $a_9$  (where  $a_0$  is LSB and  $a_9$  is MSB) shall correspond to the TFC index (expressed in unsigned binary form) defined by the RRC layer to reference the TFC of the CCTrCH in the associated DPCH radio frame.

(CX-1099.48 (emphasis added).) TS 25.212 also explains that "if the TFCI [a<sub>9</sub> . . . a<sub>0</sub>] consists of less than 10 bits, it is padded with zeros to 10 bits, by setting the most significant bits to zero."

The '348 inventors' 3GPP submission from 1999 contains identical language to the cited portions of TS 25.212. (CX-236.) Since the '348 inventors are persons skill in the art of the '348 patent (Kang Tr. at 185:2-15; JX-14C at 43:3-5), this demonstrates that those of skill in the

(CX-1099.47) Since TS 25.212 allows TFCI information bits,  $a_9 \dots a_0$ , to include padding bits, TS 25.212 does not differentiate between TFCI information bits that include or do not include padding bits. As understood by the 3GPP members, who voted and adopted the '348 inventors' proposal into TS 25.212 and who are persons skilled in the art of the '348 patent, the collective 10-bits,  $a_9 \dots a_0$ , comprising TFCI bits with or without padding bits, is the "10-bit TFCI information." (*See* Kang Tr. 208:13-18.) Therefore, the 3GPP Technical Specification is further evidence that a person of ordinary skill in the art would understand the phrase "10 bit TFCI information" to permit padding bits.

## ii. There is no Difference Between the "10-Bit TFCI Information" in Table 1a and the TFCI Information in the DI Qualcomm Products

There is no difference between the "10 bit TFCI information" in the portion of Table 1a shown at cols. 13-14 of the '348 patent and the TFCI information with padding zeroes used in the DI Qualcomm Products. The TFCI information utilized in both Table 1a and the DI Qualcomm Products represent identical information and when coded, produce identical codewords. For example, Table 1a identifies "0001011010" as a possible 10-bit TFCI information:

(JXM-1 at Table 1a (emphasis added).) This TFCI information represents a specific TFCI associated with the data that will be transmitted following the transmission of the TFCI

art at the time of the invention would have understood the phrase "10 bit TFCI information" to include padding bits.

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information. According to Table 1a, when the TFCI information "0001011010" is encoded, the resulting codeword is "0111001011000110101010101010101010." (*Id.*)

. A "0" bit is a "0" bit, regardless of whether it is called padding bit. As further evidence that the TFCI information is the same, when coded, both 10-bit TFCI information inputs, from Table 1a and from the DI Qualcomm Products, produce *identical* codewords: 0111001011000110101010101010101010. Therefore, there is no

iii. The '348 Patent's Discussion of Padding Zeroes is Relevant to Show that Padding Zeroes are Part of the Invention

The '348 patent's discussion of padding zeroes at col. 3, lines 27-34 is relevant to the issue of whether the "10 bit TFCI information" can include padding bits. As described above, the '348 specification contemplates and describes adding padding bits when the TFCI bits are less than the required number of bits for a biorthogonal encoder. The discussion of padding

difference between the 10-bit TFCI information in Table 1a and the 10-bit TFCI information in

the DI Qualcomm Products.

zeroes at col. 3, lines 27-34, just like the discussion of padding at col. 4, lines 8-12, is yet another example of the '348 patent's disclosure of padding bits in the context of encoding the TFCI. The '348 specification discloses that where the TFCI bits are less than the required number of input bits for the biorthogonal encoder, which in this example is 6-bits, "0s are added to the left end, i.e., MSG (Most Significant Bit) of the basic TFCI bits to increase the number of the basic TFCI bits to 6." (JXM-1 at 3:27-34 (emphasis added), Fig. 4A.) The '348 patent treats the final resulting bits, made up of TFCI bits and padding "0" bits," as the complete TFCI information.

One of ordinary skill in the art would understand that the disclosure described at col. 3, lines 27-34 in the '348 patent for the 6-bit TFCI information input applies equally to the scenario disclosed in the asserted claims, which require encoding a 10-bit TFCI information input. (*See* CX-236.0001.) In a 3GPP submission, the '348 inventors redlined their proposal of encoding the 10-bit TFCI information over the previous scheme of encoding the 6-bit TFCI information. (*Id.*; Kang Tr. at 207:5-208:18.) While much of the previous scheme was replaced with the '348 inventors novel method of encoding the TFCI, their redlined submission kept intact the original paragraph that permitted padding bits to the TFCI bits to collectively compose the full TFCI information for encoding, changing only the number of bits from "6" to "10":

If the TFCI consist of less than 106 bits, it is padded with zeros to 106 bits, by setting the most significant bits to zero. The receiver can use the information that not all 106 bits are used for the TFCI, thereby reducing the error rate in the TFCI decoder. The length of the TFCI code word is 30 bits. Thus there are 2 bits of (encoded) TFCI in every slot of the radio frame.

(CX-0236.0001.) This document demonstrates that the '348 patent inventors, who are persons of ordinary skill in the art of the '348 patent (Kang Tr. at 185:2-15; JX-14C at 43:3-5), understood that the example set forth in the '348 patent for adding padding bits to compose a 6-bit TFCI information can apply equally to the 10-bit TFCI information scenario.

## iv. Construing "10-Bit TFCI Information" to Allow Padding Bits means the Patent is Infringed, Valid, and Practiced by the DI Products

#### 1. <u>Infringement</u>

With respect to infringement, it is undisputed between the Parties that the Accused Apple Products all satisfy the "10 bit TFCI information" limitation, and therefore construing the "10 bit TFCI information" to allow padding bits will have no affect on whether the Accused Apple Products satisfy this limitation. As correctly determined by the ALJ in his Initial Determination (ID at 35-37), Dr. Davis agreed with Dr. Min and Samsung that the Accused Apple Products infringe this limitation of claims 75 and 82:



(Davis Tr. 2082:4-6.) Furthermore, Dr. Min testified that the Accused Apple Products do not add padding bits. (Min Tr. at 1250:8-14.) Therefore, in light of Dr. Davis' clear admissions and Dr. Min's testimony, a construction of "10 bit TFCI information" that allows padding bits will not prevent the Accused Apple Products from infringing this limitation.

#### 2. Validity

Construing the "10 bit TFCI information" to allow padding bits will have no affect on the validity of the '348 patent. MacWilliams and the June 1999 Standard, the only two references Apple cites to support its invalidity defense, fails to disclose, alone or in combination, many of the limitations of the asserted claims of the '348 patent. (CPet at 30-34; CRPet at 14-

34.) MacWilliams sets forth basic concepts for error correcting codes, such as biorthogonal codes, Hamming codes, and Reed-Muller codes—tools the '348 inventors utilized to develop their novel encoding scheme. (RX-367.) While it is important to understand the basic concepts of error correcting codes in order to build a particularized code that can be used in a real world operation, the basic concepts disclosed in MacWilliams do not provide sufficient disclosure to teach any of the limitations of the asserted claims. (Min Tr. 3001:22-3002:24; Kang Tr. 193:12-195:8.) In fact, MacWilliams fails to disclose, among other limitations, "TFCI information" or even a 10-bit input to a controller, and therefore MacWilliams fails to disclose a "10 bit TFCI information," regardless of whether the construction allows or precludes padding bits. (CPet at 30-34; CRPet at 14-34.) Furthermore, whether a "10 bit TFCI information" allows or precludes padding bits will not affect the non-disclosure of the other limitations in the asserted claims, because the 10-bit TFCI information is not implicated in these other limitations.

The June 1999 Standard was a prior version of the standard that taught the *problem* the '348 invention solved. The June 1999 Standard, therefore, fails to disclose many of the inventive limitations of the asserted claims that were disclosed to overcome the issues found with the June 1999 Standard. A construction for "10 bit TFCI information" that allows padding bits will not affect whether the asserted claims are disclosed in the June 1999 Standard. For example, the June 1999 Standard discloses encoding two words of 5-bits each using a (16, 5) encoder to generate a first and second 16-bit TFCI codeword. (Min Tr. 2990:8-2991:9; RX-374 at 12; RX-371C at 29.) Since the June 1999 Standard uses a scheme whereby 5 input bits are encoded into a 16-bit codeword, the 16-bit codeword corresponds to the 5-bit input; the June 1999 Standard never satisfies the limitation "a 32-bit [or 30-bit] codeword that *corresponds* to a 10-bit TFCI

information input." (*Id.*) The June 1999 Standard fails to disclose this limitation irrespective of whether the construction for "10 bit TFCI information" allows the use of padding bits.

By way of another example, the June 1999 Standard fails to disclose puncturing 2-bits or even a 30-bit codeword. The June 1999 Standard dictated a 16 slot transmission frame size that could accommodate the two 16-bit codewords in its entirety; there was no need for the June 1999 Standard to puncture 2-bits to fit the transmission frame. (RX-374 at 13.) The June 1999 Standard fails to disclose puncturing 2-bits or even a 30-bit codeword, irrespective of whether the construction for "10 bit TFCI information" allows or precludes the use of padding bits.

#### 3. <u>Domestic Industry – DI ST-Ericsson Products</u>

It is undisputed between the Parties that the DI ST-Ericsson Products practice the "10 bit TFCI information" limitation, and therefore construing the "10 bit TFCI information" to allow padding bits will not affect whether the DI ST-Ericsson Products satisfy this limitation. The ST-Ericsson source code demonstrates that accepts a 10-bit TFCI information input, and the outputs a 32-bit TFCI codeword:



(CX-1193C at S-ITC-C4146 (emphasis added); Min Tr. 636:6-637:16.) Furthermore, the ST-Ericsson source code demonstrates that the DI ST-Ericsson Products utilize a so for each 10-bit TFCI information input,

(Min Tr. 638:7-24; CX-1193C at S-ITC-C4147 – 48.) Dr. Davis failed to provide *any* opinions at the Hearing related to the DI ST-Ericsson Products, and therefore Apple cannot dispute and has no basis to dispute that the DI ST-Ericsson Products satisfy this limitation under a construction of "10 bit TFCI information" that allows or precludes padding bits.

#### 4. Domestic Industry – DI Qualcomm Products

Under a construction of "10 bit TFCI information" that allows for padding bits, Samsung and the Staff agree that the DI Qualcomm Products satisfy this limitation. At the Hearing, Dr. Min testified that the code clearly identifies that the TFCI information input is in fact 10-bits, because 10-bits of uncoded TFCI (Min Tr. 607:11-608:22, 619:13-620:5; CX-475C at O1ITC794SC0000546 CX-480C at Q1ITC794SC0000680 This 10-bit uncoded TFCI is the input to the that is responsible for encoding the 10-bit TFCI information input into a 32-bit codeword. (Min Tr. 619:13-620:5; SPost at 47) (emphasis added).) As further evidence that a 10-bit input is utilized in the DI Qualcomm Products, the encodes the 10-bit TFCI information input into a 32-bit codeword. (Min Tr. 620:3-14; CPost 46-47.) It is undisputed that Min Tr. 621:21-622:23.) Dr. Davis admitted that the "number of sequences that we're using corresponds to the number of inputs bits." (Davis Tr. 1990:16-24.) Dr. Davis, in the Qualcomm code must correspond to 10-bits in therefore, concedes that the

the TFCI information input.

computer hardware would understand that computer registers are built in sizes that are powers of two, such as 8-bits, 16-bits, or 32-bits. To use a real world example, external memory devices, such as USB flash drives, also come in sizes that are powers of two, such as 4GB, 8GB, 16GB, or 32GB.<sup>17</sup> However, just because someone chooses to only store 10GB of music on a 16GB USB flash drive, does not mean that there is in fact 16GB of data stored on the 16GB USB flash drive. Instead, 10GB are utilized and the remaining 6GB are free space. Registers work the same way because registers are a type of computer memory. The fact that the 10-bit uncoded TFCI that Dr. Min traversed does not change the nature of the 10-bit uncoded TFCI just as saving 10GB of music on a 16GB USB flash drive does not change the nature of the 10GB of music.<sup>18</sup>

Second, Apple incorrectly argues that because

This argument is technologically inaccurate and actually flies in the face of the '348 specification. As explained above, the 10-bit input will correspond to a 32-bit codeword in the same way the 10-bit input identified in Table 1a in the '348 patent corresponds to a 32-bit codeword. For the *same 10-bit input*, both Table 1a and the DI Qualcomm Products produce the *same 32-bit codeword*. Therefore, for the same reasons the 32-bit codeword in Table 1a corresponds to a 10-bit input, the 32-bit codeword generated in the DI Qualcomm Products also corresponds to the 10-bit input.

<sup>1</sup> 

To harness the speed of binary or base-two computing, computer storage was originally designed in sizes that equaled an exponent of the number two. While it is common, for example, to find a computer that has 256MB or 512MB of random access memory (RAM), it would be very unusual to see a computer with 250MB or 500MB of RAM. The simple reason is that 256 and 512 are base-two numbers,  $(256 = 2^8, 512 = 2^9)$ , whereas 250 and 500 are not.

*Third*, in an attempt to distract the Court from the actual claim language, Apple continues to argue that because the encoder chooses to loop seven times, the DI Qualcomm Products do not practice the claimed limitations. This argument is again grounded on a misunderstanding of the technology and is *irrelevant* to the claim analysis. (Min Tr. 1256:15-18.) The reason the DI

it would be inefficient and a waste of resources

Qualcomm Products

.<sup>19</sup> (Min Tr. 1257:6-15.)

does not mean the codeword does not correspond to the 10-bit input. Using the example above, the 10-bit input "0001011010" is the only 10-bit input that produces the codeword "0111001011000110101010101010101010."

no other 10-bit input in the DI Qualcomm Products will correspond to this codeword and no other 32-bit codeword will correspond to this 10-bit input; there is a one-to-one relationship as disclosed in the '348 patent. (JXM-1 at 7:14-26).

Furthermore, the claims only require "a 32-bit [or -30 bit] codeword[] that corresponds to a 10-bit TFCI information *input* to the controller." The claims do not require the controller loop 10 times to encode the input or dictate how the TFCI encoding should occur. (Order No. 63 at 24 (concluding that Apple's proposed construction that limited the type of encoder to an encoding table was unsupported by the specification and claims).) A 10-bit TFCI information

To the extent Apple argues that the remaining "free space" is filled with padded "0" bits, this is also incorrect. The free space is just that, free space. Padding bits are not free space, because that space can no longer be used to hold other information, because it is occupied by a "0" bit.

RXM-33 at 6 (disclosing linear coding via x = uG where u is the code, G is the generator matrix, and x is the codeword; applying G to the vector u for u values of 0 is a waste of resources because, under fundamental matrix multiplication rules, the contribution to x will always be 0).

input is enough to satisfy the claim. Therefore, under a construction for a "10 bit TFCI information input" that allows padding bits, the DI Qualcomm Products satisfy this limitation.

TOPIC 9. With respect to the asserted claims of the '348 patent, what claim language, if any, limits the claim to the use of a look-up table and precludes the claim from covering the embodiment of the invention shown in Figures 8 and 14 of the '348 patent?

Samsung, the Staff, and the ALJ all correctly agree that *nothing* in the claim language limits the asserted claims to the use of a look-up table and precludes the claim from covering the embodiments shown in Figures 8 and 14 of the '348 patent. Each and every limitation in the asserted claims can be satisfied by the use of a look-up table *and* a codeword generator. Therefore, without explicit narrowing language in the claims or even the specification, Apple's narrow construction of the asserted claims flies in the face of long standing Federal Circuit law on claim construction.

The plain language of the claims require a "TFCI encoding apparatus." (JXM-1 at claims 75 and 82.) The specification defines both Figures 8 and 14 as an "embodiment of the *TFCI encoding apparatus.*" (JXM-1 at 6:8-10, 6:25-27 (emphasis added).) The claim language tracks *identical* language in the specification describing Figures 8 and 14, the same embodiments that Apple incorrectly argues is not included within the scope of the claims. By clearly defining Figures 8 and 14 as a "TFCI encoding apparatus," and then claiming a "TFCI encoding apparatus," the Applicants meant to leave no doubt that the claims include embodiments disclosed in Figures 8 and 14. To read the claims otherwise is to violate Federal Circuit law by ignoring the specification when construing the claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313-1314 (Fed. Cir. 2005) ("the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification); *see also MBO Labs., Inc. v.* 

*Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007) ("A claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.")

In order to interject a construction that is at odds with the specification and the clear language of the claim, Apple must misconstrue the '348 patent's technology. Apple's only evidence for why the claim language requires the use of a look-up table is that a generator embodiment, such as Figures 8 and 14, cannot satisfy the limitation "from among a plurality of 30- or 32-bit codewords." (RPet at 16-20.) However, Apple's argument requires ignoring the very nature of a (32, 10) encoding apparatus, which dictates that for each unique 10-bit input the apparatus will generate a different 32-bit output. (Min Tr. 552:7-25.) Without this unique oneto-one correspondence, a decoder cannot decipher the intended 10-bit input, because the codeword would correspond to multiple 10-bit inputs. This relationship dictates that when coding 10-bits into a 32-bit codeword, there exist 1024 ( $2^{32} = 1024$ ) different 32-bit codewords. (CDX-1.46; Min Tr. 552-7-25; Davis Tr. 2083:18-2084:1.) During the Technology Tutorial, Apple explained this same one-to-one correspondence between inputs and outputs of an encoder to the ALJ, demonstrating that coding a 6-bit input into a 32-bit codeword results in  $64 (2^6 = 64)$ different 32-bit codewords. (RDXM-1 (348)-24; Markman Tr. 55:15-57:20.) Therefore, when an encoder outputs one 32-bit codeword from a 10-bit input, regardless of whether the encoder is constructed using a codeword generator or an encoding table, that codeword is necessarily "from among a plurality of 32 bit codewords," because it can be any one of the 1024 possible 32-bit codewords. Since Apple agrees that the asserted claims are directed to an encoding apparatus that employs an error correcting code (RPet at 15-16), it cannot now argue that certain encoders do not practice this innate feature of encoding technology to save itself from infringement.

Apple's second argument is not even based on the language in the asserted claims or language in the specification. Instead, this argument is based on claim language in the nonasserted claims of the '348 patent (e.g., claim 36), which contain explicit limitations that require a generator. Since other claims are limited to generators, Apple makes a leaping conclusion that therefore the asserted claims *must* be limited to only a look-up table. (RPet at 18-19.) That is, Apple invents its own law in asserting that "[where] a patent claims *alternative* embodiments in separate claims, the patentee may not assert that the claims cover **both** embodiments." (RPet at 19.) In sharp contrast, the Federal Circuit is clear that there is no rule that each claim cover a different embodiment and it is improper to restrict a claim to only one embodiment where the claim language is broader. Each claim should be given its proper scope based on the claim's language. Andersen Corp. v. Fiber Composites, LLC, 474 F.3d 1361, 1369 ("Th[e] doctrine [of claim differentiation] is based on the common sense notion that different words or phrases used in separate claims are presumed to indicate that the claims have different meanings and scope.") (emphasis added); SRI Int'l v. Matsushita Electric Corp., 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc) ("A narrow disclosure in the specification does not necessarily limit broader claim language."). All that Apple's argument demonstrates is that when the patentee wanted to claim a specific embodiment (e.g., claim 36), it was claimed; but in claims 75 and 82, the patentee did not limit the claims to a specific embodiment. (CMarkman at 12; SMarkman 9-10.) Such a twisted construction of the law and the claims does not overcome the clear claim language explained by the specification.

- TOPIC 10. With respect to asserted claims 82-84 of the '348 patent, identify any support in the patent specification or the record generally for construing the term "puncturing" in asserted claims 82-84 to encompass "excluding" bits (see, e.g., '348 patent at 32:10-17). What consequence would such a construction have on the issues of infringement, validity, and the technical prong of the domestic industry requirement?
  - i. The Record Supports Construing the Term "Puncturing" to Encompass "Excluding" Bits

The patent specification and the record clearly support construing the term "puncturing" in asserted claims 82-84 to encompass "excluding" bits when it discusses shortening the 32-bit codeword into a 30-bit codeword to fit the new standard defined frame size. (*See*, *e.g.*, JXM-1 at 31:15-25.) The '348 specification discloses that the 3GPP standard that originally described a frame with 16 slots that could hold two TFCI codeword bits each (16 slots × 2-bits = 32-bits) now dictated for a frame with only 15 slots that can hold two TFCI codeword bits each (15 slots × 2 TFCI codeword bits = 30-bits). (*Id.*) The generated 32-bit TFCI codeword no longer fit within the new standard defined frame, which could now only hold 30 TFCI codeword bits. Puncturing was disclosed in the patent as a means by which to reduce the number of codeword bits to fit the newly defined transmission frame size.

Persons of ordinary skill in the art agree that "puncturing" is any means by which to adapt the size of a sequence of bits to fit an acceptable transmission size:

When the size of the blocks provided by the channel coding function is greater than that of a physical block (depending on the maximum number of data bits that a radio frame can contain), certain bits of the coded block are suppressed. This is known as 'puncturing'.

(CXM-48 [UMTS ORIGINS, ARCHITECTURE AND THE STANDARD] at 121; *see also* JX-12C at 20:3-11 ("By puncturing, you mean when you need a code that is shorter than the normal length of a code, then we can eliminate a certain portion of the code . . . ."); (JXM-11 at ¶¶ 73-75).)

Persons of ordinary skill in the art would also understand that there are many different ways to

reduce the number of bits that are transmitted. One way is to delete the bits or physically remove them prior to transmission. Another way is merely to exclude, ignore, skip, or not transmit certain bits from the codeword. (CPet at 11; see, e.g., CXM-47 [The Art of Error Correcting Code] at 112 (stating that "not sending, some output bits" is a form of puncturing); see also CXM-48 [UMTS Origins, Architecture and the Standard] at 121 ("When the size of the blocks provided by the channel coding function is greater than that of a physical block . . . certain bits of the coded block are suppressed. This is known as 'puncturing'. Puncturing is based on an algorithm for determining which bits can be suppressed . . . .").)

The process of "excluding" falls squarely within the construction of "puncturing" as defined by those skilled in the art. The term "exclude" means to not include. Excluding bits, therefore, means to not include bits. In the context of the '348 patent, excluding bits can take place in two scenarios: (1) before a codeword is generated or (2) after a codeword is generated. In the first scenario, before a 32-bit codeword is even generated, two bits can be excluded from each of the 32-bit basis Walsh sequences, basis mask sequences, and all "1" sequence. The resulting 30-bit sequences are then utilized to encode the 10-bit TFCI information input directly into a 30-bit codeword. (*See* JXM-1 at 32:10-17.) In the second scenario, after a 32-bit codeword is generated, two bits from the 32-bit codeword can be excluded, so that only 30 codeword bits are transmitted. This type of excluding is a form of puncturing a codeword, because excluding two bits is a means to shorten a codeword to fit a transmission frame size. (JXM-1 at 32:4-10.) Therefore, the term "puncturing" can include "excluding" when two bits are excluded from the generated 32-bit codeword so that 30-bits are ultimately transmitted.

#### ii. Construing "Puncturing" to Include Excluding Bits Would Mean Claims 82-84 are Infringed, Valid, and Practiced by the DI Products

#### 1. <u>Infringement</u>

When the proper construction of "puncturing" is applied to claims 82-84, Samsung and the Staff agree and Apple cannot dispute that the Accused Apple Products meet every limitation of the asserted claims. (RRPet 3; ID at 37, 38, 40, 56, and 58, 60-61.) A proper construction for "puncturing" would encompass "excluding," in the same way it would also encompass ignoring, skipping, not transmitting, deleting, or removing. (CPet at 8-12, 19-20.)

Apple does not dispute that after a 32-bit TFCI codeword is generated, the codeword is mapped to a transmission frame. (RPost at 41.) It is also undisputed that only 30-bits from the 32-bit codeword are transmitted. (RPost at 39; Min Tr. 553:12-555:13.)

Both the Intel corporate representative and Dr. Davis confirmed this understanding:

(JX-63C Intel [Schiele] Dep. 87:1-4; see id. at 53:1-4.)

(Davis Tr. 2095:11-16.) Therefore, under a construction for "puncturing," that encompasses excluding as described above, the Accused Apple Products infringe claims 82-84.

#### 2. Validity

Construing "puncturing" to encompass "excluding" will have no affect on the validity of the '348 patent. As discussed above, excluding bits is a means of puncturing a codeword by not including certain bits. Claim 82 requires "a puncturer for puncturing two bits from the 32 bit codeword output by the controller, each of the two bits being punctured at a predetermined position." Neither MacWilliams or the June 1999 Standard disclose this limitation, in addition to the other limitations, in the asserted claims.

Dr. Davis claims that MacWilliams at Figure 13.2 from Chapter 13 and pages 28 and 29 from Chapter 1 support his opinion that the "puncturer" limitation is taught in MacWilliams. However, neither of these two chapters in MacWilliams, alone or in combination, disclose the "puncturer" limitation of claim 82. Chapter 1 provides a general description of puncturing. (Min Tr. 3006:20-22; RX-367 at 28-29.) It shows that by eliminating one coordinate from an encoding table that produces 3-bit codewords, such as the (3, 2, 2) code #9 disclosed below, the encoding scheme can then directly code 2-bit codewords. (Min Tr. 3006:11-19.) This chapter does not disclose puncturing two bits from a 32-bit codeword, by excluding or any other method, as required by the claims. (*Id.*; RX-367 at 28.) Furthermore, MacWilliams does not disclose puncturing bits at a predetermined position. Even assuming, arguendo, that MacWilliams discloses puncturing 2-bits, MacWilliams never discloses that those 2-bits must be punctured at a predetermined position. Finally, puncturing two bits from a 32-bit codeword at a predetermined position would not be inherent in MacWilliams. (Min Tr. 3007:9-15.) There is nothing necessary about puncturing instead of using any one of the other tools available to reduce the length of a codeword, such as changing the encoding scheme to encode directly to a shorter

The only limitation in claims 82-84 that Apple disputes is the limitation a "puncturer for puncturing two bits," in claim 82. (CPet at 19-21.)

codeword.<sup>21</sup> (Min Tr. 2997:19-8, 3007:9-15.) *See In re Robertson*, 169 F.3d at 745. Therefore, regardless of whether puncturing encompasses excluding, MacWilliams does not disclose, directly or inherently, the claimed "puncturer" limitation.

The June 1999 Standard also fails to disclose the "puncturer" limitation of the asserted claims. As discussed above, the June 1999 Standard disclosed a 16 slot transmission frame size that could accommodate the entire 32-bit codeword. Accordingly, there was no need for the June 1999 Standard to puncture 2-bits, by excluding or by any other means, to fit the transmission frame. (*See* RX-374 at 13.) Furthermore, puncturing two bits was not inherent to the June 1999 Standard for the same reasons set forth above with respect to MacWilliams and because the June 1999 Standard did not *require* reducing the number of transmitted bits. (RX-374; Min Tr. 2997:5-2998:11.) A person of ordinary skill in the art would understand that it is always better to send more information than less to aid in error correction. (Min Tr. 435:16-438:18.) If the codewords could fit within the transmission frame in their entirety, one of skill would not reduce the number of transmitted bits. Therefore, regardless of whether puncturing encompasses excluding, the June 1999 Standard fails to teach the "puncturer" limitation.

#### 3. Domestic Industry

With respect to "puncturing," both the DI Qualcomm Products and the DI ST-Ericsson products transmit 30-bits out of a 32-bit codeword in the same way the Accused Apple Products transmit 30-bits out of the 32-bit codeword. (Min Tr. 625:24-626:14, 640:16-23.) Both sets of domestic industry products generate a 32-bit codeword and map 30-bits out of the 32-bit codeword into a transmission frame, thereby excluding twop of the generated codeword bits from the final transmission. (*Id.*) Therefore, for the same reasons the Accused Apple Products

<sup>&</sup>lt;sup>21</sup> Such a scheme would eliminate the need to puncture altogether because the codeword would be generated directly into the desired length.

infringe this limitation under a proper construction of "puncturing" that includes excluding along with skipping, ignoring, not transmission, deleting, or removing, the DI Qualcomm Products and the DI ST-Ericsson Products also practice this limitation.

#### RESPONSES TO QUESTIONS RELATED TO U.S. PATENT NO. 7,486,644

- TOPIC 11. With respect to the asserted claims of the '644 patent, what is the proper construction of "extracting"? What variable, if any, in the source code relied upon by Samsung to prove infringement and domestic industry represents a "60-bit rate-matched block" that has been extracted from a received signal?
  - i. "Extracting" Should be Construed to Mean "Processing to Obtain or Derive"

The term "extracting" should be construed as "processing to obtain or derive." This construction is consistent with the use of the term in the claim language, the specification, the technology, and the understanding of one of ordinary skill in the art. The term "extracting" appears in asserted independent method claim 9 and apparatus claim 13:

[a physical channel demapper] for **extracting** a 60-bit rate-matched block from a signal received from a Node B;

After failing to identify this term during the claim construction phase, Apple has since introduced multiple litigation-induced and unsupported constructions. Apple has proposed that the term be limited to making a "final decision" and to "exactly 60-bits." (RPost at 94-95.) Both of these proposals read in limitations not present anywhere in the intrinsic record. These unsupported constructions are completely unsupported, and litigation generated by Apple's attempts to avoid infringement. This is an improper approach to claim construction because it divorces the construction from claims, the patent specification and prosecution history. *Markman v. Westview Instr., Inc.* 52 F.3d 967, 977 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996.)

Moreover, in the ID, the ALJ reached an erroneous conclusion by reading the claims to exclude "soft bits" from the claims. In doing so, the ALJ considered an inapplicable non-

technical English language dictionary definition that is contrary to the intrinsic record, the technology and the understanding of one of ordinary skill in the art. As explained below, the ALJ's definition is not appropriate in the context of mobile communications. Using such a dictionary definition to construe the term "extracting" to exclude soft bits is contrary to the case law that requires the intrinsic record to be consulted even when considering dictionary definitions. *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1300 (Fed. Cir. 2003).

### 1. The Intrinsic Record Supports the Construction "Processing to Obtain or Derive"

Samsung's proposed construction is supported by the claim language. *Philips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (indicating that the claims themselves provide substantial guidance as to the meaning of claim terms, and the context in which a term appears in the claim can be highly instructive as to its meaning.) The '644 claims themselves already indicate *what* is extracted from the received signal (a "60-bit rate-matched block from a signal received from a Node B"). What the claim does not indicate is what occurs during an extraction. Samsung's construction resolves that ambiguity. Replacing "extracting" with Samsung's proposed construction, and "rate-matched block" with the ALJ's construction, the claim limitation reads as follows:

[a physical channel demapper] for <u>processing to obtain or derive</u> a 60-bit <u>block of</u> channel-coded bits that have been matched to transmittable bits on a physical channel by <u>puncturing or repeating bits at predetermined positions</u> from a signal received from a Node B.

Samsung's proposed construction makes clear that the objective of the "extracting" step is for the physical channel demapper to process the incoming signal to obtain the 60-bits of data that the user equipment receives. Even the ALJ's construction makes it clear that the received rate-matched block is mapped onto a physical channel. There necessarily has to be some

processing to be able to obtain or derive the bits that are received on that analog signal to a digital format.

Moreover, the rest of the claim makes clear that the objective of the "extracting" is to obtain the bits received on the physical channel for further processing. Further limitations in the claim explain these other operations that are performed on the data after it is obtained from the signal. *See* "generating" and "outputting" steps. JXM-0003.021 at 27:39-45, 28:24-29. These operations cannot be performed until the 60-bit rate-matched block is obtained or derived from the incoming signal by being processed by the physical channel demapper.

The specification also supports Samsung's construction. The specification describes the process of the user equipment "extracting" the 60-bit rate-matched block:

Referring to FIG. 4, the UE receives a signal on an E-AGCH 402. A physical channel demapper 404 extracts a rate-matched block from a 2-ms TTI in the received signal.

(JXM003 at 7:59-61. *See also* JXM003 at 9:60-62; 11:65-67; 13:66-14:1; 15:65-67; 17:30-32; 19:41-43; 21:10-12; 22:48-50; 24:19-21; 25:57-59.) The signal is transmitted and received over airwaves in an analog form. Digital bits in the form of "1s" and "0s" are not explicitly transmitted over airwaves. Instead, they are transmitted in the form of analog waveforms. Therefore, the physical channel demapper must go through some processing to determine whether those analog waveforms represent a "1" or a "0."

Moreover, the specification recognizes that there may be noise during the transmission. For example, column 5:46-6:25 includes an extensive discussion regarding the bit and block error rate, and explains how one objective of the invention is to minimize that error rate. This is because there is necessarily noise and other interference that affects a signal during the transmission. Wireless receivers must recognize this fact and account for the possible disruptions, and do so in a variety of ways. But, what is certain is that the receiver cannot count

on the received signal precisely identifying the transmitted bits. Instead, the physical channel demapper must have the ability to derive the value of the received bit in the event the signal is not strong. Therefore, for these reasons, the proposed construction "processing to obtain or derive" properly defines the process of extracting as it is described in the intrinsic record.

2. The Extrinsic Evidence in the Record Supports the Construction "Processing to Obtain or Derive"

The term "extracting" must be construed to include the process a physical channel demapper on any wireless receiver must employ to receive data from a wireless signal. Dr. Min testified at the hearing that information is not transmitted as sending ones and zeros. Instead, it is transmitted across a wireless channel:

And 60 bits, ones and zeros, will be mapped onto the signal and transmitted now, so this is the channel mapper, so instead of sending zeros and ones, it sends some signals. And that signal will be transmitted by the cell tower across the wireless channel and the user equipment will receive that signal. Now, our goal here is to get this information (indicating).

(Trial Tr. (Min) 670:4-12.) Dr. Min also explained that the physical channel demapper had to engage in certain processing to ultimately obtain the received ones and zeros:

So now from the signal the first step that takes place is opposite of what's taking place at the sender. The sender takes the 60 transmitted bits, the sender by that means base station, makes it into a signal transmitted, and then the signal received now will go through a reverse direction of processing in channel map, a physical channel mapper, which you will call physical channel demapper. And this is the – physical channel mapper is the element that are cited in claim 13.

(*Id.* at 670:23-671:8 (emphasis added)). Because the data is necessarily received as an analog channel signal, processing must occur to obtain or derive the information.

Apple's expert, Dr. Stark, also agrees that processing to obtain or derive the information must occur in the extracting process. Dr. Stark explained how the



(Trial Tr. (Stark) 2281:11-21.)

In addition, Samsung's expert, Dr. Min testified that there is noise that can affect the signal during transmission. Dr. Min testified:

Your Honor, if you recall, I have shown a similar slide like this, I believe it was yesterday, and in all this mobile moving around and within a cell region communicating uplink and downlink, and different types of data, stationary, moving, and all this creates lots of interferences and noises that can affect that information, the critical information, absolute grant information.

(Min Tr. 655:11-19.) All of these facts that apply to *all* received wireless signals means that to "extract" a 60-bit rate matched block means that the receiver will have to use some sort of processing to either obtain, or, if the signal has been distorted too much, derive the information that it receives.

#### 3. Apple's Previously Proposed Constructions are Unsupported

Apple introduced a brand new (and hence waived, per the ground rules) construction of "extract" in its post-hearing brief when it argued that:

In order to "extract" a binary digit from a sample of a received signal, a receiver would have to make a final decision about whether it received a 0 or a 1.

(RPost at 94.) Apple's can identify no evidence – no expert testimony, treatise or textbook, or anything in the intrinsic record to support a construction such as this, because there is no evidence in the record. This is nothing more than a disguised attempt to revisit its construction of "rate-matched block," where the ALJ properly rejected Apple's contention that the rate-matched block must be "contiguous." Order No. 63 at 48.

## 4. <u>The ALJ's Initial Determination Improperly Reads in Limitations</u> to Preclude Soft Bits

As outlined in Samsung's Petition for Review, the ALJ erred when he used the "extracting" term to improperly read out from the '644 claims. ID at 110-111. In analyzing claims 9 and 13, the ID incorrectly concludes that a receiver cannot meet the limitation if it generates from the received signal. (See ID at 110-112.) This is in direct contravention to the *Markman* order, when the ALJ concluded that a 60-bit rate matched block need not be contiguous. Order No. 63 at 48. The ID supports this flawed interpretation by citing to the fifth definition for "extract" in Merriam-Webster's Ninth New Collegiate Dictionary (1985): "to select (excerpts) or copy out or cite." This is a non-technical, English language dictionary that is not contemporaneous with the time the '644 patent was invented. See Phillips v. AWH Corp., 415 F.3d 1303, 1313 ("[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.") (emphasis added).) Notably, the ID does not point to anything in the intrinsic record limiting "extracting" to copying exactly 60 bits, making the reliance on this dictionary improper. See Phillips 415 F.3d at 1319 (dictionaries may be helpful to understand certain terms, so long as they do not contradict the intrinsic evidence.) The ID disregards that the claim language is broad enough to account for the 60-bit rate-matched block to be processed from the analog signal to obtain the 60-bit data therein. Moreover,

The ID also disregards the state of the art as described by both Dr. Min and Dr. Stark, and chooses a definition that is completely unrelated to digital signal processing. *See Thorner v. Sony Computer Ent't America LLC*, 669 F.3d 1362, 1366 (2012) ("Absent a clear disavowal in the specification or the prosecution history, the patentee is entitled to the full scope of its claim language." Id. at 1366 (citing *Home Diagnostics v. LifeScan*, 381 F.3d 1352, 1358.) It also

disregards the fact that the inventors used soft bits to run the simulations leading to their invention. (RX-880C at S-794-ITC-005511814.) With this in mind, the ALJ improperly limits the scope of '644 patent claim language to exclude the reversed.

## ii. The 60-bit Rate Matched Block in the

As the bits in the 60-bit rate-matched block are extracted,

which is seen in the source code at CX-0001C at 593DOC100. (Min Tr. 772:5-15.)

The process the Intel source code undertakes to retrieve the data from the received signal is shown in Intel's



(Min Tr. 752:11-753:10; CX-0014C at 799.)

The entire process necessary to extract the 60-bit rate matched block can be seen in the

(Min Tr. 769:25-770:4; CX-0001C at 593DOC000092-103.)<sup>22</sup> The

. (Min Tr. at 769:13-

 $<sup>^{22}</sup>$  For confidentiality reasons, the source code is not shown in this brief, but is included in exhibit CX-0001C.

770:20; CX-0001C at 593DOC00098-103.)	The extracting, or "processing to obtain or derive"
the 60 bits is	Min Tr. at 771:13-18, 772:11-22.)
	The ALJ construed "rate-
matched block" as "a block of channel-code	ed bits that have been matched to transmittable bits on
a physical channel by puncturing or repeatir	ng bits at predetermined positions." Order No. 63 at

48. The signal received from the Node B contains this block of channel-coded bits that complies with the 3GPP standard. (Min Tr. 670:4-671:8; CX-1748 at S-ITC-003895058-59, Fig. 24, Section 4.10.5.) The ALJ explicitly ruled that the "rate-matched block" need not be "contiguous" because there is no evidence – intrinsic or otherwise – to support Apple's argument. Order No. 63 at 48. Therefore, the receiver's (Min Tr. 772:5-773:3; CX-0001C at 593DOC100.) iii. The 60-bit Rate Matched Block in the As the bits in the 60-bit rate-matched block are extracted, they are collected

The Qualcomm code shows the processing that the iPhone 4S and DI products undertake to extract, or "process to obtain or derive" the 60-bit rate matched block. Because the 60-bit rate matched block is transmitted from the same base station according to the same standard, the

(Min Tr. 807:1-20; CX	X0472C at Q1ITC7	94SC0000207 (	4S); CX-0487C	at	
Q1ITC794SC0000987	7 (DI).)				
(Min Tr. 807:1-20; CX	K-0472C at Q1ITC	794SC0000208	(4S); CX-0487C	at	
Q1ITC794SC0000988					

As mentioned above, the ALJ construed "rate-matched block" as "a block of channel-coded bits that have been matched to transmittable bits on a physical channel by puncturing or repeating bits at predetermined positions." Order No. 63 at 48. The signal received from the Node B contains this block of channel-coded bits that complies with the 3GPP standard. (Min Tr. 670:4-671:8; CX-1748 at S-ITC-003895058-59, Fig. 24, Section 4.10.5.) The ALJ explicitly ruled that the "rate-matched block" need not be "contiguous" because there is no evidence – intrinsic or otherwise – to support Apple's argument. Order No. 63 at 48.

(Min Tr. 805:18-23, 806:21-807:20.)

#### RESPONSES TO QUESTIONS RELATED TO U.S. PATENT NO. 6,771,980

TOPIC 12. With respect to the '980 patent, has Samsung waived all infringement and domestic industry allegations except for those based on claim 10? Identify by source code file name or other specific record designation the precise "dialing program" that Samsung relies upon to prove infringement and domestic industry with respect to claim 10. Also identify, using record evidence, the conditions that trigger execution of the "dialing program" in the relevant devices.

#### i. Waiver

Samsung does not seek review of the ALJ's findings regarding the "loading" limitation in asserted claims 5 and 9. Claim 10, however, does not have the "loading" limitation, and Samsung seeks review of the ALJ's findings with respect to claims 10 and 13.

#### ii. Record Evidence of the "Dialing Program"

#### 1. Accused Products

The "dialing program" in the accused products is the same software that makes up the "phone program" of claim 5. (Cole Tr. 2408:18-22; CDX-03.83C.) Samsung's evidence regarding the "phone program" applies equally to the "dialing program." (Cole Tr. 2408:3-

2409:10.) As Samsung has consistently shown, the "dialing program" draws from both the phone and PDA sections of the smartphone and is the software that allows a user to dial and edit a phone number selected in a PDA function. (Cole Tr. 2381:16-2382:23, 2408:18-22; CDX-03.47C, CDX-03.83C.) The "dialing program" allows the user to dial directly from a PDA function by selecting a highlighted phone number. (Cole Tr. 2352:9-17.) The software in the accused products responsible for this feature is, as Samsung's expert testified, the PDA application from which the phone number is selected, and the Phone application. (Cole 2381:16-2382:23; 2383:5-2385:16; CDX-03.47C-48C.) Apple admits that the same software Samsung identified as the "dialing program" (e.g., PDA application, and the Phone application) is responsible for the accused dialing and editing features. (Ingers Tr. 2911:1-4, 2921:8-20, 2908:4-6; Santamaria Tr. 2581:12-14, 2602:21-2603:5.) In addition, the is displayed after pressing the "Add to Contacts" button on the action sheet and allows the user to edit the phone number. (Cole Tr. 2396:15-20; 3226:9-23; CDX-03.72.)

Apple does not dispute that (1) the Mail and Safari browser applications (the PDA applications) convert the phone numbers into selectable links, and (2) these applications display an action sheet that allows the user to dial, edit, or store a selected number. (Ingers Tr. 2823:20-2824:16, 2920:22-2921:25; JX-47C Apple [Novick] Dep. 87:5-21, 89:24-91:5, 91:23-92:19; Santamaria Tr. 2580:16-2581:7, 2581:19-2582:9, CDX-03.71C.)

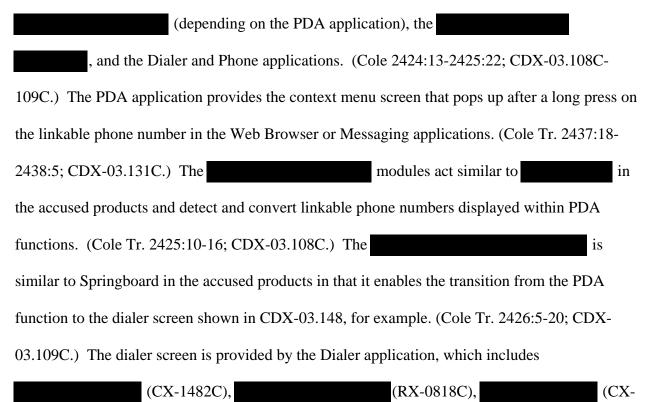
is triggered when the user selects the PDA function. (*See* JX-47C at 90:8-20; Cole Tr. 2394:13-2395:12.) When the user long presses on the linkable phone number detected by portions of the PDA application are triggered that display the "action sheet" with the "Dial" and "Add to Contacts" buttons. (Ingers Tr. 2921:8-20; Santamaria Tr.

2581:12-14, 2602:21-2603:5; JXM-47C Apple [Novick] Dep. 96:15-97:7; RDX 13-18 -19; CDX-03.74.) When the "Dial" button is pressed, and the Phone application are triggered. (*See*, *e.g.*, Ingers Tr. 2911:1-2912:13; JX-47C at 91:23-92:19; CDX-03.74.)

#### 2. <u>Domestic Industry Products</u>

Like the accused products, the "dialing program" in the DI products is the same software that makes up the "phone program" of claim 5. The "dialing program" in the DI products is the software that provides the claimed functionality that Apple concedes is in the Galaxy S (i.e., editing and dialing a phone number selected in a PDA function). (Cole Tr. 2424:13-2425:22; CDX-03.108C-109C.) It is undisputed that the Galaxy S has software that provides the accused "dialing program" features – dialing and editing a selected number – when user selects a highlighted number in PDA applications such as Web, Email, and Messaging. (Cole Tr. 2416:8-2420:21; CDX-03.92-100; Ingers Tr. 2833:16-2834:5.)

The specific software that comprises the "dialing program" is the PDA application,



(CX-1488C), (CX-1679C), and (CX-1679C), and (CX-1201C). (Cole Tr. 2427:1-2429:13; CDX-03.112C.)

are triggered when the user selects a linkable phone number displayed in the PDA function. (Cole Tr. 2429:23-2450:3, 2426:5-16; CDX-03.116.) When the user short presses the linkable phone number detected by

is triggered and provides the transition from that PDA application to the Dialer application, which also triggers the Dialer application. (Cole Tr. 2426:5-20; CDX-03.109C.) When the green call button is pressed to dial the phone number, the Phone application is triggered. (Cole Tr. 2416:8-2417:9; CDX-03.95.)

TOPIC 13. With respect to the '980 patent, if the Commission were to construe "dialing icon" to require a pictorial element," what record evidence demonstrates that Samsung's alleged domestic industry products meet that limitation?

#### i. The DI Products Contain "Dialing Icons" With Pictorial Elements

The DI products display two different green call buttons that include pictorial elements and are "dialing icons." For example, as the ID correctly found, the green call button displayed in dialer screen is a "dialing icon" with a pictorial element. (ID at 569.) The DI products also display a green call button with a pictorial element in the Messaging application after a user long presses on a linkable phone number as shown below. (CDX-03.98; CDX-03.131C; Cole Tr. 2437:21-2438:5.)



In addition to the green call icons, the linkable phone numbers displayed in the DI products are "dialing icons" with pictorial elements. (*Id.*; Cole Tr. 2416:8-2417:9) The linkable phone numbers are set off from the surrounding text by special colored font and underline, as shown below.





The special colored font and underline are pictorial elements that set the phone number apart from the surrounding text. (Cole Tr. 2437:18-2438:5; Cole 2394:2-8; CDX-03.131C.)

#### REMEDY, PUBLIC INTEREST, BOND AND OTHER REQUESTED INFORMATION

The Commission should adopt the ALJ's recommendation that the remedies for a violation of Section 337 include both (1) a limited exclusion order against Apple's infringing articles, and (2) a cease and desist order to proscribe further importation, marketing or sale of the infringing articles. These orders are appropriate and mandated by statute inasmuch as Apple cannot show that exceptional circumstances exist that warrant preclusion of remedial relief. The Commission should also set a bond rate of 4.25 percent for Apple's infringing products during the Presidential review period.

#### I. REMEDY

The ALJ correctly determined that should a violation be found, the proper remedy would be the issuance of a limited exclusion order and cease and desist order. (RD at 2, 4). The parties do not dispute the ALJ's recommendation. (*Id.* at 2-4).

#### A. The Commission Should Enter A Limited Exclusion Order

Upon a finding of a Section 337 violation, the statute directs the Commission to issue an exclusion order against the infringing articles made by or on behalf of the respondent. *See* 19 U.S.C. § 1337(d)(1). "A limited exclusion order is the usual remedy when a violation of section 337 is found." *Certain GPS Devices and Products Containing Same*, Inv. No. 337-TA-602, Comm'n Op. at 15 (Jan. 15, 2009) ("*GPS Devices*").

Consistent with its standard practice and the ALJ's recommendation, the Commission should enter a limited exclusion order in the form attached hereto as Exhibit C, which prohibits the importation into the United States of infringing articles regardless of brand name "that are manufactured abroad or imported by or on behalf of [the Respondents], or any of their affiliated companies, parents, subsidiaries, or other related business entities, or their successors or assigns." *Certain Laser Bar Code Scanners and Scan Engines, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-551, LEO ¶ 1 (May 30, 2007); *see also* RD at 2. The products to be excluded should include those manufactured by third parties in China on Apple's behalf.

As described in the Notice of Investigation and as proven during the evidentiary hearing, the limited exclusion order should not be limited to specifically-identified products, but should reach all of Apple's infringing "electronic devices, including wireless communication devices, portable music and data processing devices, and tablet computers" as described in the Notice of Investigation. *See* 76 Fed. Reg. 45860 (Aug. 1, 2011).

#### B. The Commission Should Enter A Cease And Desist Order

The Commission should adopt the ALJ's recommendation and issue a cease and desist order against Apple in the event that a violation is found. The Commission may issue a cease

and desist order in addition to or in lieu of an exclusion order. 19 U.S.C. § 1337(f)(1). A cease and desist order is typically warranted where a respondent maintains a commercially significant inventory of infringing goods in the United States. *See GPS Devices*, Comm'n Op. at 20.

As the ALJ found in Order No. 89 and in the RD, Apple's business includes importing and selling electronic devices, including wireless communication devices, portable music and data processing devices and tablet computers within the United States. (RD at 3; Order No. 89 at 4-5). The undisputed facts<sup>23</sup> show that Apple maintains commercially significant inventory of the accused products in warehouses and in its retail stores. (*See id.*). At the close of Apple's first fiscal quarter of 2012, Apple held more than iPhones worth at least each, over iPads worth at least each, and over iPod Touches worth at least each as inventory in the United States. (*See id.*). Apple's inventory at the close of Apple's first fiscal quarter of 2012 was worth iPod Touches worth at least each as inventory in the United States. (*See id.*). Apple's inventory at the close of Apple's first fiscal quarter of 2012 was worth iPod Touches worth at least each as inventory in the United States. (*See id.*). Apple's inventory at the close of Apple's first fiscal quarter of 2012 was worth each as inventory is commercially significant, a permanent cease and desist order under Section 337(f) in the form attached as Exhibit C is appropriate.

#### II. PUBLIC INTEREST

When the Commission contemplates some form of remedy, it must consider the effects of that remedy upon the public interest. *See* Notice at 2; 19 U.S.C. § 1337(d)(1) and (f)(1). The factors the Commission will consider include the effect that a remedial order would have on (1) the public health and welfare, (2) competitive conditions in the U.S. economy, (3) U.S. production of articles that are like or directly competitive with those that are subject to

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<sup>&</sup>lt;sup>23</sup> Apple did not brief whether it maintains commercially significant inventory in the United States in its post-hearing briefing, and thus waived any such argument. *See* RPost at 271-272.

investigation, and (4) U.S. consumers. *See id.* As detailed below,<sup>24</sup> none of these factors warrants preclusion of remedial relief in this investigation. As noted above, Samsung has offered to license its patents to Apple, making any impact on the public interest a problem of Apple's own doing that is within its control to avoid.

#### A. The Commission Precludes Remedial Relief Only In Limited Circumstances

In numerous Section 337 opinions, the Commission has made clear that the public interest rests in the Commission's protection of intellectual property rights.<sup>25</sup> Only under rare circumstances can that public interest yield to some greater interest. *See Baseband Processor Chips*, Comm'n Op. at 153-154 ("[T]he statute requires relief for an aggrieved patent holder, except in those limited circumstances in which the statutory public interest concerns are so great as to trump the public interest in enforcement of intellectual property rights."). Since adding the public interest factors to the statute in 1974, the Commission has only found three cases warranting preclusion of a remedy.<sup>26</sup> Thus, the question is not whether a "balancing" of the public interest factors favors a remedy; it is whether public interests exist of such critical significance that the strong public policy favoring intellectual property protection must give way to those interests. Here, they do not.

<sup>&</sup>lt;sup>24</sup> Consistent with the Commission's Notice, these public interest factors are also addressed in the context of FRAND in response to Topic 1.

<sup>&</sup>lt;sup>25</sup> See, e.g., Certain Baseband Processor Chips and Chipsets, Transmitter and Receiver (Radio) Chips, Power Control Chips, and Products Containing Same, Including Cellular Telephone Handsets, Inv. No. 337-TA-543, Comm'n Op. at 153-154 (June 19, 2007) ("Baseband Processor Chips"); Certain Laser Imageable Lithographic Printing Plates, Inv. No. 337-TA-636, Comm'n Op. at 8 (Dec. 23, 2009); Certain Digital Television Products and Certain Products Containing Same and Methods of Using Same, Inv. No. 337-TA-617, Comm'n Op. at 15-17 (Apr. 23, 2009) ("Digital Televisions").

<sup>&</sup>lt;sup>26</sup> See Crankpin Grinders, Comm'n Op.; Field Acceleration Tubes, Comm'n Op.; Fluidized Supporting Apparatus, Comm'n Op.

# B. Apple Cannot Show That Exceptional Circumstances Exist That Warrant Preclusion Of Remedial Relief

Apple has the burden to show that the public interest factors enumerated in Section 337(d)(1) and (f)(1) should preclude remedial relief. *See Certain Light-Emitting Diodes and Products Containing Same*, Inv. No. 337-TA-512, Comm'n Op. at 10 (Apr. 14, 2008). As discussed below and in the attached declarations of Anne-Layne Farrar and Carla Mulhern and accompanying exhibits, Apple cannot show that exceptional circumstances exist that warrant preclusion of remedial relief in this investigation. Indeed, with the exception of its FRAND defense-related arguments, Apple did not contend that the public interest would be negatively impacted by the issuance of a limited exclusion order and/or cease and desist order in its October 22, 2012 submission to the Commission.

## 1. An effective remedy would not have a detrimental impact on public health or welfare

To date, Apple has not alleged that the issuance of a limited exclusion order and/or cease and desist order would have a detrimental impact on public health or welfare. This is not surprising. The Commission has stated that it "has historically examined whether 'an exclusion order would deprive the public of products necessary for some important health or welfare need: energy efficient automobiles, basic scientific research, or hospital equipment." *Certain Personal Data and Mobile Communications Devices and Related Software*, Inv. No. 337-TA-710, Comm'n Op. at 73 (Dec. 29, 2011) ("*Personal Data Devices*") (quoting *Spansion, Inc. v. U.S. Int'l Trade Comm'n*, 629 F.3d 1331, 1360 (Fed. Cir. 2010)). While mobile devices such as the accused iPhone and iPad can be used to research medical information, manage home security and perform other tasks, Apple has not presented any evidence that *only* its devices perform these functions or that there are not sufficient substitutes to fulfill the market demand for such

products. Indeed, the opposite is true. Numerous other devices, including Samsung's domestic industry products, perform the same or similar functions. (Ex. B, Mulhern Decl. ¶¶ 7-24).

Given the availability of alternatives that provide the same (or better) functionality as the accused products, Apple cannot show the circumstances or immediate needs evident in the three exceptional cases where a complainant was denied remedial relief. *See Personal Data Devices*, Comm'n Op. at 73-76 (rejecting respondent's position that exclusion of its devices would have effects on the public health and welfare where suitable substitutes exist).

## 2. An effective remedy would not hamper competitive conditions in the U.S. market

Effective remedies promote, rather than hamper, competitive conditions in the U.S. market. The Commission has held that denying effective relief "would discourage investment in the development of technological innovations, which, in turn, would have a negative effect on competition in the marketplace." *Certain Display Controllers and Products Containing Same*, Inv. No. 337-TA-481/491, Comm'n Op. at 66 (Feb. 4, 2005); *see also Digital Televisions*, Comm'n Op. at 9 ("[P]rotection of intellectual property rights in the United States provides foreign and domestic businesses alike with a climate of predictability that fosters investment, innovation, and the exchange of technology and associated intellectual property rights."). Enforcement of intellectual property rights drives competition, promotes innovation and enhances competitive conditions in the United States. *See Baseband Processor Chips*, Comm'n Op. at 152.

Although Apple may argue that granting remedial relief in this investigation may negatively impact competitive conditions in the U.S. economy, Apple cannot identify any specific harm to competition. The only harm it can possibly identify is alleged potential harm to Apple. But this is insufficient as a matter of law. *See Baseband Processor Chips*, Comm'n Op.

at 69, 153 (quoting *Windsurfing Int'l Inc. v. AMF*, *Inc.*, 782 F.2d 995, 1003 n.12 (Fed. Cir. 1986) and holding that the Commission did "not accept the general proposition that, if the infringing activity is great enough, the public interest forbids a remedy.").

There are numerous alternatives to Apple's infringing devices available in the U.S. market. (Ex. B, Mulhern Decl. ¶¶ 7-24). Unlike the situation in *Personal Data Devices*, where the accused devices accounted for a majority of T-Mobile's U.S. smartphone sales, each of the carriers that sells Apple's infringing devices also sells multiple alternatives. (*Id.* at ¶¶ 8, 12). Currently, more than 200 models of smartphones are available in the U.S. across a number of national and regional carriers. (*Id.* at ¶ 8). There are also numerous suppliers of tablets and media players. (*Id.* at ¶¶ 12-13). Samsung sells a variety of devices that compete with Apple's infringing devices and that have the same or better features. (*Id.* at ¶¶ 14-24). Companies such as HTC, Motorola, RIM, Nokia, ASUS, Amazon, Microsoft, Toshiba, Acer, Barnes & Noble, Google, Sony, Nintendo and others also sell comparable devices in the U.S. (*Id.* at ¶¶ 7-13).

# 3. An effective remedy would not impact the production of like or directly competitive articles in the United States

While the Commission typically considers whether a remedial order will impact the production of like or directly competitive articles in the United States, here,

. Accordingly, as the Commission found in *Personal Data Devices*, "the issuance of an exclusion order would not result in a deficiency in the production of like or directly competitive articles in the United States." *Personal Data Devices*, Comm'n Op. at 77.

#### 4. An effective remedy would not detrimentally impact U.S. consumers

Apple is likely to argue that any exclusion order and/or cease and desist order would detrimentally impact U.S. consumers because such remedial relief would reduce consumer choice. However, such an argument could be made in every case and would render consideration of this factor irrelevant or dispositive. The Commission has previously rejected this argument. *Personal Data Devices*, Comm'n Op. at 69. Moreover, where there are reasonable substitutes for the infringing products, this factor cannot override the public's interest in protecting valid intellectual property rights. *See id.* at 69-71. As in *Personal Data Devices*, the evidence shows that there are numerous devices offered by multiple companies that offer the same features and functionality as the infringing Apple devices. (Ex. B, Mulhern Decl. ¶ 7-24).

For the foregoing reasons, the public interest factors enumerated in Section 337 (d)(1) and (f)(1) do not warrant preclusion of an effective remedy in this investigation.

#### III. BOND

The Commission sets the rate of the bond to be posted during the 60-day Presidential review period. See 19 C.F.R. § 210.50(a)(3). The bond rate must "be sufficient to protect the complainant from any injury." Id.; see also Certain Semiconductor Chips with Minimized Chip Package Size and Products Containing Same, Inv. No. 337-TA-432, Recommended

Determination (Oct. 1, 2001) ("The purpose of the bond is to protect the complainant from injury."). The Commission has recognized that "[t]he importation of any infringing merchandise derogates from the statutory right, diminishes the value of the intellectual property, and thus indirectly harms the public interest." Baseband Processor Chips, Comm'n Op. at 137, n.487.

Because Apple's importation of infringing products would thus injure Samsung, the question is not whether the Commission should set a bond to protect Samsung. The question is what rate the Commission should set.

The Commission frequently sets the bond level that would offset any price advantage enjoyed by the respondent's products. See Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes, Inv. No. 337-TA-366, Comm'n Op. at 24 (1996). Where pricing information is unclear, where prices vary and/or where the accused and domestic industry products do not directly compete, the Commission often defaults to a 100% bond rate. Id. at 24-25; Certain Digital Multimeters and Products with Multimeter Functionality, Inv. No. 337-TA-588, Comm'n Op. at 12-13 (June 3, 2008) (finding 100 percent bond where each respondent set its price differently, preventing clear differentials); Certain Unified Communications Systems, Products Used with Such Systems, and Components Thereof, Inv. No. 337-TA-598, Initial Determination (Jan. 28, 2008) ("[S]hould a violation be found, in view of the wide ranges of prices for infringing products, the [ALJ] recommends a bond in the amount of 100 percent of entered value."); Certain Self-Cleaning Litter Boxes and Components Thereof, Inv. No. 337-625, Initial Determination at 204-208 (Dec. 2008); Certain Neodymium-Iron-Boron Magnets, Inv. No. 337-TA-372, USITC Pub. No. 2964, Comm'n Op. at 15 (May 1996) ("Magnets"). In the alternative, it is also appropriate for the Commission to set the bond based on a reasonable royalty. See Digital Televisions, Comm'n Op. at 18; Certain Mobile Devices, Associated Software, and Components Thereof, Inv. No. 337-TA-744, Comm'n Op. at 33-34 (June 5, 2012) ("Mobile Devices").

In his RD, the ALJ recommended zero bond for infringing iPhones and 100 percent bond for infringing iPads and iPod Touch products. (RD at 6-7). The ALJ reasoned that Samsung was not entitled to a bond on iPhone products because it failed to compel Apple to produce necessary pricing data during discovery. (*Id.* at 6). The ALJ further concluded that because "[t]here does not appear to be a dispute that a differential would not be calculable with respect to

these products . . . the Administrative Law Judge recommends that for the accused iPad and iPod Touch a bond of 100 percent be set." (*Id.* at 7). Finally, the ALJ agreed with Samsung and the Staff that there is no evidence to permit calculation of a reasonable royalty rate based on Samsung's licenses because they are broad cross-licenses. (*Id.* at 6-7).

The Commission should reject the ALJ's recommendation of zero bond for infringing iPhones. Samsung established that a price comparison between the domestic industry products and Apple's iPhones is not practicable because the devices are sold by different carriers, through different channels, at widely-varying prices, and with widely-varying features and functionalities. (*See* Prowse Tr. 2170:19-2171:14; Mulhern Tr. 1789:22-1790:2; CX-0188C – CX-0195C; CX-0447C; CX-0448C; CX-0846C; JX-0037C Buckley Dep. 8:23-9:4, 14:14-15:13, 19:7-21:10). Indeed, the price of the Samsung domestic industry products ranges from and the model-specific price lists Apple did produce show that Apple's iPhone products range from depending on model and feature set, such as memory capacity. (CX-0846C; CX-0448C; CX-0195C).<sup>27</sup>

Notwithstanding the difficulty in determining a model-specific price differential or reasonable royalty rate based on Samsung's licenses, the importation of any infringing

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Moreover, even if Apple's proposed price differential analysis based on average sales price across all models of mobile handsets were accepted, Apple has not cited to any authority standing for the proposition that no bond should be set where the accused products' average sales price is higher than that of the domestic industry products. Rather, the Commission has set a bond rate of 5% where prices for respondents' products were equal to *or above* the prices of complainant's products. *See Certain Abrasive Products Made Using a* 

merchandise is injurious and requires a bond. *See Baseband Processor Chips*, Comm'n Op. at 137, n.487. Samsung is mindful, however, of Commission precedent that the bond rate should not be set so high as to effectively prevent importation during the Presidential review period. *See, e.g., Certain Electrical Connectors and Products Containing Same*, Inv. No. 337-TA-374, Comm'n Op., USITC Pub. No. 2981 at 20 (July 1996). In accordance with this guidance and Commission authority, Samsung submits that a bond rate based on median industry royalty rates is a reasonable alternative. *See, e.g., Certain Mobile Devices and Related Software*, Inv. No. 337-TA-750, Initial Determination at 210-211 (Jan. 13, 2012) (recommending bond based on average royalty in the industry); *Certain Semiconductor Chips with Minimized Chip Package Size and Products Containing Same*, Inv. No. 337-TA-605, Comm'n Op. at 74 (June 3, 2009) (affirming ALJ's recommended bond rate based on median royalty rate in the semiconductor industry). Of these royalty rates, the most appropriate here are for the "telecom" and "electrical and electronics" industries. (Ex. D at 6)

In 2011, the median royalty rate in the telecom industry was 4.5% and the median royalty rate in the electrical and electronics industry was 4.0%. (*Id.*). Therefore, the Commission should enter a bond of 4.25% of the entered value of Apple's infringing products during the pendency of the Presidential review period.

#### IV. OTHER INFORMATION REQUESTED BY THE COMMISSION

#### A. The Expiration Dates Of The Asserted Patents

The '348 patent expires on February 15, 2026, the '644 patent expires on August 8, 2028, the '980 patent expires on May 13, 2022, and the '114 patent expires on April 24, 2023.

*Process for Powder Preforms, and Products Containing Same*, Inv. No. 337-TA-449, Comm'n Op. on Remedy, Public Interest and Bond at 9-10, USITC Pub. No. 3530 (Aug. 2002).

## **B.** HTSUS Numbers For The Infringing Apple Products

The HTSUS numbers under which the infringing Apple products are imported are: HTSUS 8517.12.0050, 8528.59.1500, and 8471.30.01.

## CONCLUSION

For all of the reasons cited herein, Samsung respectfully requests that the Commission reverse the ID and find a violation.

Dated: December 3, 2012 Respectfully submitted,

/s/ S. Alex Lasher

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# **EXHIBIT A**

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

In the Matter of

CERTAIN WIRELESS
COMMUNICATION DEVICES,
PORTABLE MUSIC AND DATA
PROCESSING DATA DEVICES,
COMPUTERS AND COMPONENTS
THEREOF

Investigation No. 337-TA-745

<u>DECLARATION OF ANNE LAYNE-FARRAR, Ph.D.</u> <u>IN SUPPORT OF SAMSUNG'S STATEMENT ON THE PUBLIC INTEREST</u>

#### I. Introduction

- 1. I am an economist with specializations in intellectual property, standard setting, and competition policy. My CV is attached at the end of this comment.
- 2. I have been asked by Samsung's counsel to evaluate the question of whether "the mere existence of a FRAND undertaking with respect to a particular patent [should] preclude issuance of an exclusion order based on infringement of that patent?" I have based my opinion on relevant studies within the academic literature and on my own research, as noted in the footnotes herein. If called to testify, I could testify competently to the opinions expressed within this comment.
- 3. A key question faced by the International Trade Commission (ITC) in recent Section 337 investigations including the current one is whether patent holders participating in voluntary, cooperative standard setting efforts may seek exclusion orders, or more generally with respect to other courts, may seek some type of injunctive relief, for patents that are essential for the practice of standards. For at least some standard development organizations (SDOs), the patent holders typically commit to license their patents that might be "essential" for the practice of the standard on Fair, Reasonable, and Non-Discriminatory, or FRAND, terms and conditions. The question before the ITC thus boils down to whether giving a FRAND commitment to an SDO should be deemed to waive the patent holder's right to seek exclusion orders for such "essential" patents and the consequences of adopting such a rule.
- 4. Interoperability standards, like the mobile standards to which Samsung has contributed, are an ever more important part of the global economy. As product complexity continues to rise, it is increasingly difficult for a single firm no matter how large or diverse to define a good or service entirely on its own, without cooperation from other complementary suppliers within the industry ecosystem. As a result, firms in complex industries voluntarily cooperate, under the auspices of SDOs, to develop standards that set the rules of production and interaction among the various elements of the end product or service. Interoperability standards govern the operation of numerous complex products like

mobile telecommunications <sup>1</sup>, the Internet<sup>2</sup>, video and audio formats<sup>3</sup>, radio frequency IDs for product tracking <sup>4</sup>, to name just a few.

5. Because an interoperability standard can only succeed in the marketplace through the introduction of goods and services that embody the standard's specifications, any firm that will ultimately offer those goods and services for sale requires access to the intellectual property – namely patents – that cover the technologies included in the standard. Due to this necessity, some argue that FRAND commitments—regardless of the rules and practices of the SDO—should imply an enforceable license to standard essential patents (dubbed SEPs), such that all that remains for negotiation between the SEP holder and a potential licensee are the terms and conditions of the license. Taking this logic to its conclusion, this camp posits that exclusion orders and injunctions are off limits for any patents bound by a FRAND commitment. Others argue that the ability to exclude an implementer of the standard from the marketplace grants patent holders "too much" market power, which in theory could be abused in the form of "patent holdup." Patent holdup is defined as the SEP holder charging more than a fair, reasonable, and non-discriminatory rate (*i.e.*, a non-FRAND rate). In other words, because having their products excluded from the marketplace is typically such a serious consequence for a company using a standard, it is

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<sup>&</sup>lt;sup>1</sup> Examples of SDOs in the mobile telecommunications industry include the Alliance for Telecommunications Industry Solutions (ATIS), Telecommunications Industry Association (TIA), 3<sup>rd</sup> Generation Partnership Project 2 (3GPP2), Global System for Mobile Association (GSM Association), International Telecommunication Union (ITU), Cellular Telecommunications & Internet Association (CTIA), European Telecommunications Standards Institute (ETSI), and TD Industry Association (TDIA).

<sup>&</sup>lt;sup>2</sup> Examples of SDOs in the internet industry include the World Wide Web Consortium (W3C), Internet Engineering Task Force (IETF), EMCA International, Internet Assigned Numbers Authority (IANA), Organization for the Advancement of Structured Information Standards (OASIS), CTIA, Institute of Electrical and Electronics Engineers (IEEE), Extend the Internet Alliance (ETI), Third Generation Internet Protocol Forum (3G.IP), and Wi-Fi Alliance.

<sup>&</sup>lt;sup>3</sup> Examples of SDOs in the video and audio formats industries include the International Organization for Standards (ISO) and International Electrotechnical Commission (IEC).

<sup>&</sup>lt;sup>4</sup> Examples of SDOs in the radio frequency IDs for product tracking industry include the International Organization for Standards (ISO) the International Electrotechnical Commission (IEC), and ASTM International.

<sup>&</sup>lt;sup>5</sup> For a recent expression of this view, see Hovencamp, H. 2012. Competition in information technologies: standard-essential patents, non-practicing entities and FRAND bidding, *U Iowa Legal Studies Research Paper No. 12-32*.

<sup>&</sup>lt;sup>6</sup> See, e.g., Farrell, J., Hayes, J., Shapiro, C., Sullivan, T., 2007. Standard setting, patents, and hold-up, *Antitrust Law Journal*, 74:3, 603-670.

claimed that even the threat of an exclusion order could pressure implementing firms to pay above FRAND rates to SEP holders.<sup>7</sup>

- 6. This declaration will demonstrate the shortcomings of the arguments summarized above. In particular, I highlight the asymmetries in the proposition that ITC exclusion orders (or, more broadly, court-backed injunctions) should be categorically banned for SEP holders making FRAND commitments to an SDO. Instead, I present the argument for a case-by-case evaluation of exclusion orders. The key points of this counter argument are:
  - SEPs are not synonymous with market power, so seeking an exclusion order or injunction, without more, cannot be deemed an abuse of market power.
  - The ability to seek exclusion orders or injunctions helps to balance the bargaining power
    of SEP holders and implementers, limiting the equally significant risk of reverse holdup
    of licensors by licensees.
  - Congress presumably had good reasons for enacting Section 337 and permitting patent
    holders, where warranted, to seek exclusion orders for trade violations without placing
    any restrictions on the types of patents (e.g., SEPs vs. non-SEPs) that could be asserted;
  - Exclusion orders, and typically injunctions, are not granted automatically. Courts
    currently require substantial evidence before this form of relief is granted; this approach
    guards against the use of injunctions for patent holdup. It also implies that a mere threat
    to seek an exclusion order or injunction will not be sufficient to accomplish patent
    holdup.
  - Thus the current regime, where any patent holder, of either SEPs or non-SEPs, may seek an injunction but must prove why it is needed under the specific circumstances at hand, maintains an important balance between SEP holders and implementers. This balance is crucial for encouraging participation in voluntary cooperative standard setting efforts,

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<sup>&</sup>lt;sup>7</sup> See, e.g., Lemley, M., Shapiro, C., 2007. Patent hold-up and royalty stacking, *Texas Law Review*, 85, 1991-2049.

encouraging licensing, limiting infringement, and protecting investments in innovation by all parties.

7. The remainder of this comment expands upon and explains these points. I begin in Section 2 with some important background on standard essential patents and their potential for abuse. Section 3 then discusses the many asymmetries at play in SEP licensing and patent enforcement – asymmetries that have a significant effect on firms' ability to practice holdup. Section 4 concludes.

#### II. Background

- 8. Before turning to whether or not SEP holders should be allowed to seek exclusion orders at the ITC, we need to understand the basics of how SDOs operate in addition to what exactly defines an SEP.
- 9. SDOs typically have policies governing the disclosure and licensing of intellectual property. These policies differ across SDOs depending on the goals of the members. For instance, some SDOs mandate that all members offer any intellectual property (most often patents) on royalty free terms<sup>8</sup>. Knowing these rules up front, firms wanting to earn a return on their innovation investments through licensing revenue will not join such SDOs. In contrast, the SDO overseeing the mobile standards at issue in this matter (in particular, the European Telecommunications Standards Institute, ETSI) seeks "to create STANDARDS and TECHNICAL SPECIFICATIONS that are based on solutions which best meet the technical objectives of the European telecommunications sector" and therefore "seeks a balance between the needs of standardization for public use in the field of telecommunications and the rights of the owners of IPRs," as stated in Section 3 of the ETSI IPR Policy. Accordingly, ETSI specifies that any patents relevant for the practice of the mobile standards be offered on FRAND terms. Specifically, section 6.1 of ETSI's IPR Policy states:

<sup>8</sup> Examples of SDOs that mandate royalty free terms among members include the World Wide Web Consortium (W3C) and Bluetooth Special Interest Group (SIG).

<sup>&</sup>lt;sup>9</sup> "Annex 6: ETSI Intellectual Property Rights Policy," ETSI, November 30, 2011, available at <a href="http://www.etsi.org/WebSite/document/Legal/ETSI%20IPR%20Policy%20November%202011.pdf">http://www.etsi.org/WebSite/document/Legal/ETSI%20IPR%20Policy%20November%202011.pdf</a>

- 6.1 When an ESSENTIAL IPR relating to a particular STANDARD or TECHNICAL

  SPECIFICATION is brought to the attention of ETSI, the Director-General of ETSI shall

  immediately request the owner to give within three months an irrevocable undertaking in writing
  that it is prepared to grant irrevocable licences on fair, reasonable and non-discriminatory terms
  and conditions under such IPR to at least the following extent:
- MANUFACTURE, including the right to make or have made customized components and subsystems to the licensee's own design for use in MANUFACTURE;
- sell, lease, or otherwise dispose of EQUIPMENT so MANUFACTURED;
- repair, use, or operate EQUIPMENT; and
- use METHODS.

The above undertaking may be made subject to the condition that those who seek licences agree to reciprocate.

- 10. Thus, for standards developed within ETSI, there is no royalty free requirement, but there is instead an expectation that the parties will negotiate reasonable terms and conditions.
- 11. In theory, it is possible that a particular SDO might, on an upfront basis, stipulate that members with potentially relevant patents must agree not to seek injunctions or exclusion orders on the basis of those patents. If that SDO's members agreed to such a rule *ex ante*, before any standards were developed, then firms disagreeing with the rule could choose not to join the SDO. ETSI has no such rule in place. Thus, imposing a "no exclusion order" rule now, well after members like Samsung have invested heavily in developing and implementing the standards at issue, is unjustified based on ETSI's understanding of a FRAND commitment. It is entirely unclear why the Commission should enforce a "no exclusion orders for SEPs" rule when the members of the SDO in question have never agreed to such a

<sup>&</sup>lt;sup>10</sup> Note that abstention from an SDO is not always practical. If a standard is the only means to access a particular market, participating in the standard may be for all intents and purposes mandatory.

"rule" in the first instance. Presumably, if the members of the SDO agreed that such a "rule" should be adopted, they could do so.

- 12. In considering whether SEP holders should be allowed to seek exclusion orders, it is also important to understand what constitutes "ESSENTIAL IPR" for ETSI standards. Section 4 of the ETSI IPR Policy clarifies the patent disclosure expectations for members:<sup>11</sup>
  - 4.1 Subject to Clause 4.2 below, each MEMBER shall use its reasonable endeavours, in particular during the development of a STANDARD or TECHNICAL SPECIFICATION where it participates, to inform ETSI of ESSENTIAL IPRs in a timely fashion. In particular, a MEMBER submitting a technical proposal for a STANDARD or TECHNICAL SPECIFICATION shall, on a bona fide basis, draw the attention of ETSI to any of that MEMBER's IPR which might be ESSENTIAL if that proposal is adopted.
  - 4.2 The obligations pursuant to Clause 4.1 above do however not imply any obligation on MEMBERS to conduct IPR searches.
  - 4.3 The obligations pursuant to Clause 4.1 above are deemed to be fulfilled in respect of all existing and future members of a PATENT FAMILY if ETSI has been informed of a member of this PATENT FAMILY in a timely fashion. Information on other members of this PATENT FAMILY, if any, may be voluntarily provided.
- 13. In other words, SEPs are declared as potentially essential by their holders. Members of SDOs declare patents that they believe may be or may become technically essential for the practice of the standard under development. Most SDOs do not review IPR submissions for essentiality, nor does any official third party. As a result, there is no basis for presuming that patents declared to an SDO as essential for a particular standard are in fact essential.
- 14. Given that standards tend to be under continual development over time, the technologies likely to be actually essential for their practice is very much a moving target. Determining essentiality can

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<sup>&</sup>lt;sup>11</sup> "Annex 6: ETSI Intellectual Property Rights Policy," ETSI. November 30, 2011, available at http://www.etsi.org/WebSite/document/Legal/ETSI%20IPR%20Policy%20November%202011.pdf.

also require subjective judgment. Specifically, individual patent claims, which themselves change over time through prosecution in different countries, must be compared to the evolving technical specifications of the standard to determine whether the claims read on the standard technologies. This comparison requires both a legal and technical review that is unlikely to be clear cut. Rather, it is more likely that firms will make some mistakes in naming patents as potentially essential to a standard and moreover that two different firms are likely to have different views at different times on which patents are and are not essential.

15. Regardless of any ambiguity in deciding which patents are likely to be essential for a standard, in order to promote an efficient standard development process, it seems clear that most SDOs, including ETSI, would prefer their members to err on the side of over-declaring. There are a number of reasons for this. First, to be reasonably certain that a particular patent is essential for the practice of a particular standard, the technical standard specifications must first be defined clearly. But that means waiting for the standard specifications to be voted upon and finalized, so that under such a disclosure approach, patent declarations would by necessity come after the relevant standard component has been developed. In other words, more precise patent disclosure would come at the expense of early patent disclosure. In contrast, if some ambiguity is tolerated in the declaration process, then some patents may be declared earlier, perhaps during the development of the standard. While ETSI seeks the best technical solutions for the standards it promulgates, <sup>13</sup> and hence does not consider whether a particular technology under consideration is patented or not (at least during working group meetings), it is important for members to know which firms they may need to negotiate patent licenses with. It appears that SDOs prefer members to be over-inclusive rather than under-inclusive in making declarations so that implementers have full visibility of all IPR that might be essential (which is particularly important given

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<sup>&</sup>lt;sup>12</sup> Such review is also time consuming and costly, which explains ETSI's clarification in section 4.2 of the ETSI IPR Policy that members need not conduct "IPR searches".

<sup>&</sup>lt;sup>13</sup> See, for example, the European Telecommunications Standards Institute IPR guide, section 4.1, available at <a href="http://www.etsi.org/WebSite/document/Legal/ETSI%20Guide%20on%20IPRs%20November%2020">http://www.etsi.org/WebSite/document/Legal/ETSI%20Guide%20on%20IPRs%20November%2020</a> <a href="http://www.etsi.org/WebSite/document/Legal/ETSI%20Guide%20on%20IPRs%20November%2020">http://www.etsi.org/WebSite/document/Legal/ETSI%20Guide%20on%20IPRs%20November%2020</a> <a href="http://www.etsi.org/webSite/document/Legal/ETSI%20Guide%20on%20IPRs%20November%2020">http://www.etsi.org/WebSite/document/Legal/ETSI%20Guide%20on%20IPRs%20November%2020</a> <a href="http://www.etsi.org/webSite/document/Legal/ETSI%20Guide%20on%20IPRs%20November%2020">http://www.etsi.org/webSite/document/Legal/ETSI</a> a pivotal role in the development of the UMTS/WCDMA mobile telecom standard.</a>

the problems with determining true essentiality). In the case of ETSI, a member's general FRAND commitment covering all its standard essential IPR negates the risk of an SEP not being available on FRAND terms, regardless of when an individual patent or patent application is declared as possibly essential.

- 16. Adding to the internal SDO reasons for encouraging less certain but earlier patent disclosure is one important external reason: firms wish to avoid accusations of patent ambush or deceptive failure to disclose patents by the Federal Trade Commission (FTC) and other competition authorities around the world. In fact, the FTC has brought a string of such cases against firms that failed to timely declare a patent that was later claimed to be technically essential for compliance with a standard. The possibility that competition authorities may investigate provides further incentive to patent holders to over-declare their patents as potentially essential. So, in addition to making honest mistakes in naming patents as potentially essential to a standard due to their evolving nature and legitimate disagreement over which patents are likely to be essential, patent holders are also likely to err on the side of over-disclosure: when in doubt, most firms will choose to disclose a patent as "essential".
- 17. Because the patents disclosed to a standard as essential are not guaranteed to be actually essential, it is not surprising that potential licensees can and do challenge SEPs in court.<sup>16</sup> At least some

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<sup>&</sup>lt;sup>14</sup> For instance, the European Commission has been active on this topic. See, e.g., Case COMP/38.636—Rambus, Comm'n Decision, (Dec. 9, 2009) (summary at 2010 O.J. (C30) 17), available at http://ec.europa.eu/competition/antitrust/cases/dec\_docs/38636/38636\_1203\_1.pdf.

<sup>&</sup>lt;sup>15</sup> See *Rambus Inc. v. FTC*, 522 F.3d 456 (D.C. Cir. 2008), cert. denied, 129 S. Ct.1318 (2009); Dell Computer Corp., 121 F.T.C. 616 (1996); Union Oil Co. of Cal. (Unocal), 140 F.T.C. 123 (2005).

A prominent U.S. example is *Broadcom v. Qualcomm*, which ended in a settlement. A number of FRAND challenges are in the courts today. For example, in addition to Apple's suit against Samsung Electronics Co. (*Apple, Inc. v. Motorola Mobility, Inc.*, No. 11-cv-178 (W.D. Wis. Nov. 2, 2012).), Microsoft has challenged Motorola's rates as non-FRAND (*Microsoft Corp. v. Motorola, Inc.*, No. 10-cv-1823 (W.D. Wash. Oct. 10, 2012). Licensees have also complained about non-FRAND rates to competition authorities. The European Commission has at least three such complaint-driven cases under investigation now. "Antitrust: Commission opens proceedings against Motorola," European Commission. April 3, 2012, available at <a href="http://europa.eu/rapid/press-release IP-12-345">http://europa.eu/rapid/press-release IP-12-345</a> en.htm; "Antitrust: Commission opens proceedings against Samsung," European Commission. January 31, 2012, available at <a href="http://europa.eu/rapid/press-release IP-12-89">http://europa.eu/rapid/press-release IP-12-89</a> en.htm; White, Aoife. "Huawei Files EU Antitrust Complaint Against InterDigital." Bloomberg News. May 24, 2012, available at <a href="http://www.bloomberg.com/news/2012-05-24/huawei-files-antitrust-complaint-with-eu-over-interdigital.html">http://www.bloomberg.com/news/2012-05-24/huawei-files-antitrust-complaint-with-eu-over-interdigital.html</a>.

such litigation is likely an inevitable part of an otherwise effective standardization process with checks and balances throughout: patent holders may declare more patents than are likely in the end to be found truly technically essential for the practice of the standard because more information is generally preferred to less for the standard setting process, but potential licensees are then free to challenge those declared patents as not essential, not infringed or not valid.

- automatically translate into the SEP holder having a relevant monopoly over elements of a standard or even having meaningful market power. Certainly, declaring a patent to an SDO means that any firm contemplating practicing the standard must at a minimum consider whether to take a license to that patent, <sup>17</sup> but, after review, the implementer may decide the patent is not truly essential, that the patent is not infringed by its products, or that the patent is likely to be found invalid when challenged in court. An SEP holder that attempted to charge any royalties in this instance would face stiff opposition. The outcome could be no license at all, with the SEP holder ceding to the implementer's claims; the parties might agree on a license (for a relatively low royalty rate given the implementer's challenge); or the parties might litigate. In any event, it cannot be assumed that simply because the patent holder has named its patent as potentially essential that all would-be standard implementers can be forced to take a license, and one charging an above-FRAND rate at that. It is within this context that we should consider the likelihood of patent holdup in assessing whether SEP holders should be allowed to seek exclusion orders.
- 19. Moreover, we need to be mindful of double standards in regards to patent "essentiality." It would hardly be "fair and reasonable" to allow potential licensees to argue on the one hand that all declared-essential patents are indeed essential, and as a result are ineligible for exclusion orders, while at the same time arguing that they have not infringed the patents and/or that the patents are not essential for

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<sup>&</sup>lt;sup>17</sup> For example, the following is listed under ETSI's IPR FAQs: "Question 6: Does one have to take permission from ETSI for using the patents as listed by ETSI in the Standards? Answer 6: It is necessary to obtain permission to use patents declared as essential to ETSI's STANDARDS. To this end, each STANDARD user should seek directly a license from a patent holder. In order to obtain the contact details of a patent holder, please make your request to the ETSI Legal Service." <a href="http://www.etsi.org/website/aboutetsi/iprsinetsi/IPR">http://www.etsi.org/website/aboutetsi/iprsinetsi/IPR</a> Policy FAO.aspx.

the practice of the standard. Either the licensee believes the patents are essential or they are not – the patents at issue cannot be both at the same time. Allowing licensees to take both positions simultaneously would put declared SEP holders in an untenable position of giving up otherwise legitimate patent rights (forgoing exclusion orders because the patents are essential) but not obtaining a FRAND royalty payment in exchange (because the patents could be found not valid, not infringed, or not essential). This approach would result in another form of "heads I win, tails you lose."

#### III. Making the Case for a Flexible Exclusion Order Policy

20. With a common understanding of the IPR policy within ETSI and the limits of SEPs, let us next consider in greater detail the claim that exclusion orders and injunctions necessarily lead to patent holdup. After an explanation of the arguments supporting a ban on exclusion orders for SEPs, I lay out the reasons why such support is incomplete and unconvincing.

#### A. The Relationship between Injunctions and Patent Holdup

- 21. For several years the academic literature has debated the circumstances under which an SEP holder can "holdup" standard implementers; that is, can charge license rates that exceed some recognizably FRAND level. At the forefront of the patent holdup debate are papers by Mark Lemley and Carl Shapiro. <sup>18</sup> These authors explain, outside of the standard setting context, how the threat of an injunction can impose a large on-going loss on a prospective licensee who has made an investment specific to the production of particular goods, such that moving to the production of other goods would cost the licensee some switching expenses. In this case, the patent holder could exploit the licensee's switching costs as a means of obtaining greater licensing fees than it otherwise would.
- 22. Under Shapiro's economic model, there are two specific circumstances in which a patent holder can use the threat of an injunction to holdup a licensee for royalties above the "fair" level, which Shapiro defines as the expected incremental value of the final product including the patented technology

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<sup>&</sup>lt;sup>18</sup> See, especially, Lemley & Shapiro (2007) and Shapiro, C., 2010. Injunctions, hold-up, and patent royalties, *American Law and Economic Review*.

over the product value without the patented technology.<sup>19</sup> The first circumstance for patent holdup under this framework is accidental infringement.<sup>20</sup> A licensee who inadvertently infringes a patent can be held up to the extent that the licensee faces costs to move away from the patented technology (those costs involved in ceasing infringement). The patent holder can effectively extract part of the cost that the licensee would incur in circumventing his patent.

- 23. The second circumstance with potential for patent holdup in the above framework is when there is uncertainty over patent validity. The holdup result is possible in this case even if the licensee is fully aware that his products may infringe the patent, as long as the validity of the patent is uncertain. This follows because the licensee may prefer not to incur the cost of designing around the IPR before beginning production, especially when the patent is weak. That is, if the patent has a high probability of being found invalid, then the licensee will choose not to incur the costs of avoiding the patented technology and will instead choose to infringe. But in this case, the patent holder can threaten the licensee with an injunction and the licensee will find himself in exactly the same position as if the patent had been inadvertently infringed.
- 24. Within this framework, Shapiro compares the royalties obtained by the patent holder under the threat of an injunction with the fair value that could be determined by a court. He finds that with injunctions, patent holders can extract greater holdup from licensees. This theoretical framework has driven much of the concern over exclusion orders and injunctions for SEPs. In particular, according to Shapiro's theory, if injunctions can lead to patent holdup on a general basis, *i.e.*, for non-SEPs, then

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The expectation is important here. If the patented technology adds the increment "v" to the product value, but the patent has only a  $0 \le \theta \le 1$  probability of being found valid and infringed and the patent holder has bargaining strength vis-à-vis the licensee of  $0 \le \beta \le 1$  (where the licensee has the complementary bargaining strength of l- $\beta$ ), then the expected incremental value of the patent is not v, but rather  $\theta\beta v$ , which is strictly less than v in all cases but the extreme  $\theta = 1$ ,  $\beta = 1$ .

Note that Shapiro is particularly interested in modeling what he terms "patent surprise", where patents on relatively small components of multiple component products do not surface until after the manufacturer has begun production based on its own independent invention. That circumstance is not a good match to standard setting, where patents are disclosed to SDOs and where firms submit technologies for inclusion, which even without official patent disclosure puts other members on notice that patent filings are most likely underway.

injunctions based on SEPs, which are supposed to be bound by FRAND licensing commitments, must be even more of a problem.

#### B. What the Patent Holdup Theory Ignores

25. But do exclusion orders for SEPs really pose more of a problem? As with all theoretical analysis, it is important to understand the assumptions underpinning the patent holdup predictions before concluding that they offer a solid basis for SEP exclusion order policy decisions. Implicit in the theoretical patent holdup analysis presented above are several important assumptions that affect the analysis and especially the extension of the theory to SEPs. First, under the model the licensee cannot challenge the asserted patents: it may either infringe them or not, but it may not initiate litigation. As discussed just above, this is not a realistic assumption for SEPs as standard implementers do have recourse to challenge any and all claimed essential patents. Second, in Shapiro's theoretical model the "fair" and "reasonable" royalty rate is assumed to be well known by all parties and courts are assumed to be accurate arbiters of FRAND rates. 21 Thus, in a world without injunctions courts are expected to provide adequate compensation to patent holders with valid patents (who by assumption do not compete with licensees), rendering injunctions suspect. Lastly, the framework assumes that the patent holder is not constrained in its licensing strategy – in particular, the patent holder has the ability to not license the patents to any other firm.<sup>22</sup> All three of these assumptions are critical to an assessment of exclusion orders for SEPs, as I explain next.<sup>23</sup>

#### a. Negotiation "Threat Points" Differ for SEP Holders versus other Patent Holders

26. Let's start with the last assumption implicit in the theoretical patent holdup framework: that the patent holder is not constrained in its licensing strategy. This assumption is important because it affects the patent holder's "threat point"; its ability to threaten to walk away from license negotiations if

<sup>&</sup>lt;sup>21</sup> Specifically, Shapiro assumes that a court determined reasonable royalty can be no higher than the incremental value of the patented technology.

<sup>&</sup>lt;sup>22</sup> This is a reasonable assumption for patents outside of standard setting, but as shown below, it is problematic for SEPs.

<sup>&</sup>lt;sup>23</sup> Note as well that the real world incidence of patent holdup is questioned as well. Dr. Michael Walker, former ETSI Chairman of the Board, stated in this matter that he was not aware of patent holdup being a problem for any ETSI standard since 1988. (Hearing Tr. 1440:21-1441:10).

the licensee is proposing unreasonable terms or refuses to accept reasonable offers. Without this ability to refuse to deal, licensing talks will take on more of a compulsory licensing character.

- When patents are declared as essential for the implementation of a standard at ETSI, their holders are generally expected to commit to license their technology on FRAND terms, as explained above. This is a quid pro quo for patent holders participating in standards. Inclusion of a technology in a standard is generally recognized to increase the technology's value, <sup>24</sup> so all else equal patent holders would like to have their patented technologies included in standards. That is, more firms are likely to want to license technology included within a standard as compared to without a consequence of the network effects that interoperability typically triggers. Moreover, once the specifications are agreed upon standard implementers are generally locked into licensing truly essential SEPs, so that unconstrained patent holders would be in a favorable position to hold them up.<sup>25</sup> This is where the quid pro quo comes in: FRAND commitments are meant to reduce the scope for SEP holdup. Thus, in exchange for having a patent (or patents) included in a standard, patent holders give up legitimate patent rights they would otherwise have. Specifically, an SEP holder giving a FRAND commitment cannot outright refuse to license, nor can it license on an exclusive basis; it must instead be willing to negotiate a license with any and all firms desiring to implement the standard.
- 28. In the context of patent holdup, forgoing the ability to refuse a license or license exclusively places a meaningful constraint on SEP holders' licensing options. It may negotiate over rates and terms, it may even sue for infringement if an implementer fails to take a license after a reasonable one was offered, but at the end of the day a license will be granted to any and all willing licensees. Knowing that an SEP holder cannot refuse to license alters implementers' available licensing negotiation strategies. In particular, firms implementing the standard can successively reject all of the SEP holder's license

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<sup>&</sup>lt;sup>24</sup> See, e.g., Simcoe, T., S. Graham, M. Feldman. 2007. "Competing on Standards? Entrepreneurship, Intellectual

Property and the Platform Paradox." NBER Working Paper 13632; and Rysman, M., T. S. Simcoe. 2008. "Patents and the performance of voluntary standard setting organizations." Working Paper No. 05-22, NET Institute.

<sup>&</sup>lt;sup>25</sup> The published standard specifications can be seen as equivalent to the product-specific investments in the patent holdup theory described above. See also, Farrell et al. (2007).

offers as "non-FRAND" as a means of not engaging in good faith bargaining, with an intent to either delay a license agreement (and thus postpone paying royalties) or to pressure the SEP holder into lower (perhaps even sub-FRAND) licensing terms.

- 29. If SEPs have no recourse to a penalty for such behavior from licensees, such as seeking an exclusion order against implementers not negotiating in good faith, then implementers will have little to no incentive to take licenses. In this case, it would be far more rational for implementers to take their chances with infringement: even if an SEP holder sues the implementer, it must first be successful in its infringement case, and even then the implementer will likely only have to pay a reasonable royalty. Moreover, some SEP holders will choose not to sue for infringement (meaning that infringement has no consequences), and others will be unsuccessful in their lawsuits (having their SEPs found not infringed or not valid). Over all possible outcomes, for an implementer contemplating its SEP licensing tactics the expected value of licensee holdout or a reverse holdup strategy will most likely be positive.
- 30. The potential for reverse holdup is well recognized. For example, at an FTC workshop in June 2011, Joe Farrell, previous head of the FTC's Bureau of Economics, raised the issue of "the reverse hold-up problem", which he described as "the fact that depending on the bargaining institutions, it could happen that the SSO or its implementer members squeeze the patent holder down to a penny for its intellectual property". SEP holders thus require some recourse for licensees attempting reverse holdup through bad faith negotiations; exclusion orders are an important tool in this regard.
- 31. The fact that both SEP holders and SEP licensees are capable of and may have incentives for anticompetitive licensing behavior means that IP rules must be balanced. We must be careful not to "solve" one potential problem by increasing the odds that another potential problem occurs. The ability to

<sup>26</sup> While the SEP holder might seek treble damages for willful infringement, I understand that proving willful infringement is generally difficult to do. See, for example, LaFuze, W., Valek, M. 2008. Litigating Willful Infringement in the Post-Seagate World. Landslide, 1, 8.

<sup>&</sup>lt;sup>27</sup> See transcript of "Tools to Prevent Patent 'Hold-Up'," FTC Workshop on Intellectual Property Rights and Standard Setting (21 June 2011), p. 243-45, http://www.ftc.gov/opp/workshops/standards/transcript.pdf.

seek an injunction can help to keep reverse holdup in check: it provides recourse to SEP holders when licensees are not negotiating in good faith.

32. Taking a broader view of the stakeholders in SEP licensing, it is important to note that balanced rules that account for opportunistic behavior on either side of the bargaining table are important for innovation and consumer welfare too. Specifically, in preventing or at least limiting reverse holdup, the possibility of seeking an exclusion order or an injunction also bolsters incentives to invest in technology development for standards. The potential for reverse holdup lowers the expected return on R&D investments, so reducing the reverse holdup threat raises expected returns. Because cooperative interoperability standards are seen as generally welfare enhancing, 28 encouraging participation in standard development efforts is a laudable goal and something that should be kept in mind when contemplating far-reaching rules on who can and cannot seek an exclusion order or injunction.

### b. A Broader Context for Patent Holdup

- 33. Further reflecting the importance of a broader context for assessing exclusion orders for SEP holders, we should also consider how such orders fit within the larger institutional framework surrounding standards. I am an economist and not a lawyer, so I will focus here on my layman's understanding of patent licensing negotiations and patent enforcement.
- 34. The discussion thus far has been largely theoretical and narrowly focused on whether SEP holders have need of exclusion orders beyond a potential desire to hold up licensees. The calls for banning exclusion orders for SEP holders are rooted in theory and, as shown above, there are theoretical reasons to reject such a ban and instead maintain an SEP holder's ability to seek an injunction. But the support for an SEP holder's ability to seek an exclusion order is not simply theoretical. The institutions and processes that surround SEP licensing discussions point to other reasons for maintaining SEP holders' ability to seek exclusion orders. Moreover, SEPs are typically not licensed in isolation, but are

<sup>&</sup>lt;sup>28</sup> Department of Justice & Federal Trade Commission. 2007. Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition.

more commonly part of broader commercial discussions, often involving entire portfolios of patents, both SEP and otherwise. I discuss these issues next.

### c. Standard Implementers Have Recourse against Attempted Patent Holdup

- 35. As noted earlier, one of the implicit assumptions within the patent holdup theory is that standard implementers have little control over the licensing negotiation process. Indeed, in the theoretical framework summarized above, licensees are largely passive, with the only decision factor under their control being whether or not to infringe the patents. But as already explained, this assumption does not fit SEPs: in practice, standard implementers may sue SEP holders over alleged non-FRAND rates. This option provides real teeth to FRAND commitments.
- 36. Equally important, the non-FRAND lawsuit threat must be weighed against the SEP holder's threat to seek an exclusion order. So once again the available evidence suggests balance in determining whether or not an SEP holder may seek an exclusion order, not any categorical rule that would hinder one side to the benefit of the other.

### d. Litigation Asymmetries Affect Bargaining Position

- 37. Recall also that another of the implicit assumptions underlying the theoretical patent holdup framework is that court rulings are balanced and fair and that a true FRAND rate is known by all. In practice however, judges (and juries), like all people, can make mistakes. How does the potential for errors in FRAND determination judgments affect the discussion over exclusion orders for SEPs? Precisely because those calling for a ban on exclusion orders for SEPs argue that reasonable royalties are sufficient compensation for SEP holders.
- 38. In evaluating FRAND licensing disputes, we might expect that judges are not biased in either direction. Sometimes judges will assess FRAND at too high a level and sometimes they will assess it at too low a level, but over many cases they should largely get the range "right" on average. But even if courts are not systematically biased in one or another direction, and only make mistakes around the edges

of their FRAND rulings, the uncertainty over any individual decision creates asymmetries for SEP holders that affect their licensing negotiations.<sup>29</sup>

39. Consider a patent that the court determines to be infringed and which has been found to be technically essential for a standard. One possibility is that the court's FRAND ruling favors the SEP holder, in that the court awards or endorses a royalty rate or range that is in truth above a FRAND level. This is clearly a bad outcome for the implementer, as the court has set a holdup rate, but this rate is not necessarily binding for the licensee. In particular, in the face of a "too high" licensing rate, the implementer may nonetheless be able to invent around the SEP. This could result for a couple of reasons. First, the patented technology might be technically essential but commercially unimportant, making its omission from goods and services a reasonable option for implementers to avoid paying the high royalty rate. Second, compliance with interoperability standards (such as those governing mobile telecom) is measured by output tests, not input reviews. Thus, if the implementer can find another means of achieving the same end result as the patented technology, then it can avoid infringing the SEP.<sup>30</sup> In either of these instances, the implementer will have a strong bargaining chip for renegotiating the royalty rate, lowering it from the higher court approved level. As most SEP holders prefer some royalty payment to none, the implementer will be able to force the renegotiation with the threat of these non-infringing options and the SEP holder will be unable to insist on the court approved rate. Moreover, to the extent that other as yet unlicensed implementers with no sunk costs can push for lower rates as well, again using a non-infringing alternative as their threat point to do so, then the court rate will not be binding going forward.<sup>31</sup>

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<sup>&</sup>lt;sup>29</sup> See, Denicolo, V., Geradin, D., Layne-Farrar, A., Padilla, A., 2008. Revisiting injunctive relief: interpreting eBay in high-tech industries with non-practicing patent holders, *Journal of Competition Law & Economics*, 4(3), 571-608.

<sup>&</sup>lt;sup>30</sup> For example, in *Nokia v IPCom* ([2011] EWCA Civ 6, Court of Appeal, 20 January 2011), the English Court held that an IPCom SEP was essential, and yet, simultaneously, gave a declaration of non-infringement in relation to two Nokia design-arounds, with Nokia arguing that its modified products remain standard compliant.

Note that a too-high rate set by a court may have positive externalities for the SEP holder to the extent that other unlicensed implementers committed to the standard exist. But as the following discussion makes clear, the externalities as a whole appear to tip against the patent holder.

- 40. Suppose, on the other hand, that the court errs in favor of the implementer, awarding or approving a royalty rate that falls below a FRAND rate or range of rates. In this case, the SEP holder will be bound to the court set rate while the implementer will have no reason to challenge it. Renegotiations only work if both sides are interested in talking albeit, sometimes one of the two parties may be kept at the bargaining table under threat. Furthermore, to the extent that the SEP holder has agreed to most favored licensee (MFL) clauses in prior licensing contracts, the lower court set rate may be retroactive. Thus the "too low" rate will affect not just the one party in the dispute, but all parties going forward as well as all past licensees with MFL clauses. A "too low" royalty rate therefore may have a wide reaching multiplier effect.
- 41. Taking both possible outcomes into account, despite the assumption that courts are accurate in their FRAND determinations on average, errors on one side are more likely to be binding than errors on the other side which leads to asymmetries in risks of litigating. SEP holders tend to have more at stake in FRAND litigation than implementers, because the expected downside of a "too low" rate can be broader than the expected upside of a "too high" rate. This asymmetry can affect SEP licensing strategies: if SEP holders have more to lose from bringing a case or fighting one brought against them, they will be more likely to settle, which can mean accepting sub-FRAND royalty terms. As discussed above, the ability to seek an injunction can balance the scales by pressuring bad-faith licensees, but preventing SEP holders from seeking an injunction would tip the scales further in favor of implementers.
- 42. It is for these reasons that a categorical ban on exclusion orders or injunctions for SEP holders is ill-advised. Based on the above discussion, it seems likely that relying on damages alone to compensate firms with patents that are found to be valid, infringed, and technically essential for a standard would create at least two problems. First, a ban on exclusion orders for SEPs not only appears contrary to Congress' purposes in enacting Section 337, but also ignores the potential for reverse holdup by implementers, which requires some sort of penalty (such as an exclusion order) to bring otherwise unwilling licensees to the bargaining table. Second, a categorical ban ignores the asymmetries already present in the SEP enforcement process. A categorical rule against SEP injunctions would further tip the

balance of power between patent holders and patent users, distorting SDO members' incentives to license and cross-license. If innovative SDO members do not have faith that their R&D investments will be able to earn a reasonable return (that is, if they anticipate reverse holdup or are concerned about the widespread repercussions of a "too low" court approved FRAND rate), then innovation investments will decline.

43. I find that a broad consideration of patent licensing within standard setting – looking beyond the relatively narrow confines of patent holdup theory and acknowledging reverse holdup as well – suggests that policy rules for SEPs should seek to balance the risks on both sides of the negotiation table.

### C. SEPs are not Licensed in Isolation

- 44. We must also consider that most licensing negotiations cover full patent portfolios along with other commercial dealings between the two firms. As summarized in the introduction, the potential for patent holdup is thought to be even greater for SEP holders than for other patent holders, as standard compliance can lock-in implementers to the agreed upon technologies. But is this presumption reasonable? As the global dispute between Apple and Samsung has highlighted quite clearly, design rights may not be technically essential for the practice of the mobile telecom standards, but Apple has claimed they are commercially essential for devices implementing those standards.<sup>32</sup>
- 45. If design rights are interpreted broadly, their impact would be quite far-reaching. For example, the English Court of Appeal dismissed Apple's appeal of a non-infringement finding for three Samsung tablet products. The court's October 18, 2012 judgment hinted at the "commercial essentiality" that would result should Apple's interpretation of the design right's scope be accepted by the courts:

If the registered design has a scope as wide as Apple contends it would foreclose much of the market for tablet computers. Alterations in thickness, curvature of the sides, embellishment and so on would not escape its grasp. Legitimate competition by different designs would be stifled.

<sup>&</sup>lt;sup>32</sup> Apple accused Samsung of infringing on the following design patents: D504,889, D593,087, D618,677, and D604,305.

- 46. This observation raises the question of which kinds of patents and other IP rights really have the greatest potential for use in patent holdup, particularly in regards to the threat of an exclusion order forcing supra-FRAND rates. While SEPs that have been vetted in a court (as opposed to simply declared as essential to an SDO) may carry some weight of lock-in, they are also constrained by FRAND obligations. In contrast, commercially (as opposed to technically) important patents are not declared to standards as essential and hence are not bound by FRAND commitments. As a result, if design rights and other non-SEPs are interpreted broadly, they are likely to offer a far more useful tool for extracting high royalty rates and foreclosing rivals through exclusion orders than SEPs are.
- A7. Recognizing that patents tend to be licensed in portfolios, rather than as one-off contracts, reinforces the point that we should not consider SEPs in isolation. An SEP holder may be offering a portfolio comprised largely of declared essential patents, but its potential licensee may hold a portfolio comprised largely of non-declared patents. If courts refuse, as a rule, to grant exclusion orders for SEPs, but leave any patent not declared essential eligible, then once again the balance will be upset. Non-SEP holders may use the one-sided exclusion order rule to pressure the SEP holder to accept sub-FRAND terms and conditions in a cross license. The more successful a standard is in encouraging new entry of implementers the more likely such a scenario is, because the new entrants will not have declared patents but could well have strong commercial product enhancements that spur their entry into the standardized marketplace in the first instance.<sup>33</sup>
- 48. Thinking longer term, if SEP holders are barred from exclusion orders while non-SEP holders are not, firms will face distorted incentives for innovation investments: design rights and other non-essential technologies may offer the greatest profit return on investment, so we should see more of these rights developed and asserted. Investing in the core technologies so important for the continued advancement of interoperability standards, on the other hand, will face more constraints and hence will present less attractive investments opportunities. In addition, firms may choose not to participate in

<sup>33</sup> Recall that Apple is a relative new comer to mobile telecom. In 2007, when it first introduced its iPhone, it had not declared any patents as potentially essential to the standard. Instead, it relied on the standard specifications as developed by earlier SDO members to introduce its products.

cooperative standard setting efforts as a means of avoiding the more onerous FRAND commitments, to the detriment of the quality of interoperability standards and the welfare of the consumers who purchase products implementing those standards.<sup>34</sup>

### D. Exclusion Orders and Injunctions are neither Automatic nor Immediate

- 49. As a final consideration in regards to SEP holders seeking exclusion orders, observe that such orders are not automatically granted, nor when granted do they go into effect immediately. These practical realities have important implications for the debate over SEP exclusion orders.
- 50. Consider first that exclusion orders are granted only when the patent holder can satisfy the court that one is justified, i.e., that the patent is valid and infringed. Opponents to SEP exclusion orders sometimes seem to equate the seeking of such an order with its granting, even though up to two years may intervene. That exclusion orders are not automatically granted goes to the heart of the debate over patent holdup. The same is true for the threat of an injunction more broadly since such a threat will only be useful in extracting higher royalty payments (i.e., holdup) to the extent that the threat is credible. A credible threat means that the parties 1) believe the SEP is likely to be found valid and infringed (i.e., it has reasonable odds of actually being technically essential) and 2) believe that the SEP holder has a reasonable chance of obtaining an injunction. The latter condition in turn implies, at least in the U.S., that the SEP holder is likely to meet the four factor test confirmed by the Supreme Court in the *eBay* ruling, namely that (1) the patent holder has suffered an irreparable injury; (2) remedies available at law are inadequate to compensate for that injury; (3) considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) the public interest would not be disserved by an injunction. While I understand that the ITC does not apply and is not bound by the *eBay* ruling, public

<sup>&</sup>lt;sup>34</sup> For a discussion of how restricted FRAND rates and terms can affect SDO participation, see Layne-Farrar, A., Llobet, G., Padilla, J., 2012. Payments and participation: the incentives to join cooperative standard setting efforts, *CEMFI Working Paper No. 1203*.

<sup>&</sup>lt;sup>35</sup> eBay Inc. v. MercExchange, L. L. C., 547 U.S. 388 (2006).

interest concerns are clearly one of the criteria assessed before the ITC grants an exclusion order.<sup>36</sup> Thus regardless of the venue, an exclusion order must be deemed warranted before it will be granted.

- 51. But if the threat of an exclusion order is only effective if it is credible, and such a threat is credible only when the asserted patent is likely to be valid and the public interest is not likely to be disserved by an exclusion order, isn't that precisely when an exclusion order may be warranted? When patents are weak or the SEP holder is unlikely to prevail in obtaining an exclusion order, as opposed to simply seeking one, the threat is less credible and it is doubtful that holdup could derive from it. The "threat" aspect of the justification for a ban on exclusion orders for SEPs therefore seems a moot point.
- 52. That leaves the actual granting of exclusion orders. But here too the rhetoric appears more drastic than reality. Exclusion orders can be stayed and may never reach the point of implementation. Exclusion orders are frequently appealed as well.<sup>37</sup> Suppose that an SEP holder seeks and obtains an exclusion order. If SEP validity and infringement have not yet been considered by an appeals court, the exclusion order can be stayed pending that decision where warranted. Here, the presence of a pending injunction can be a force for a reasonable settlement with an otherwise unwilling licensee. If the SEP has been tried and found to be valid and infringed, then the infringer may prevent the injunction by agreeing to pay a FRAND royalty. In short, exclusion orders can function as described above: they can offer recourse for SEP holders facing attempted reverse holdup or licensees who are not bargaining in good faith without unduly increasing the likelihood of patent holdup.

### IV. Conclusion

- 53. The argument that SEP holders should be barred from seeking exclusion orders is based largely on the premise that such orders exacerbate the patent holdup problem. I find this theoretical argument to be incomplete and unpersuasive for a number of reasons, as detailed above.
- 54. Reflecting the uncertain nature of "essentiality" for declared SEPs, in addition to the uncertainty over validity and infringement inherent in all patents, a case-by-case approach for exclusion

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<sup>&</sup>lt;sup>36</sup> 19 U.S.C. § 1337(d)(1).

<sup>&</sup>lt;sup>37</sup> "Frequently asked questions regarding section 337", International Trade Commission Trial Lawyers Association, available at http://www.itctla.org/faq.cfm.

orders makes more sense than any categorical ban. This flexible approach is further bolstered by the potential for reverse holdup, where licensees pressure SEP holders for below-FRAND terms. That opportunistic behavior is possible by SEP holders and SEP users implies that any patent policy decisions need to be carefully balanced. Individual determinations for SEP exclusion orders allow the trier of fact to achieve that careful balance, because the specific facts of the case at hand can be taken into account, with the trier of fact assessing the likelihood that either patent holdup or reverse holdup is being attempted, when evaluating whether an exclusion order is justified.

- 55. In contrast, a ban on exclusion orders for SEP holders would distort incentives for standards participants to reach licensing agreements and would increase the odds that SEP holders receive sub-FRAND royalty rates. In addition, a ban on SEP exclusion orders would also place firms whose patent portfolios are heavily weighted toward SEPs at a distinct disadvantage against their rivals whose patent portfolios are more heavily weighted toward commercially important but non-essential patents. As a result, innovative firms will have reduced incentives to invest in the pioneering technologies necessary for the continued development of interoperability standards and will have reduced incentives to participate in standard setting efforts in order to avoid onerous FRAND obligations.
- 56. Lastly, mechanisms already in place that require patent holders to make the case for why an exclusion order is needed, under the specific facts at hand, are sufficient for limiting the risk of abusive injunctions and exclusions aimed at patent holdup. This goal can therefore be achieved without resort to draconian categorical bans on exclusion orders for SEPs, which would have other undesirable side effects as explained above.

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Dr. Anne Layne-Farrar is a vice president in the Antitrust & Competition Economics Practice of CRA. She specializes in antitrust and intellectual property matters, especially where the two issues are combined. She advises clients on competition, intellectual property, regulation, and policy issues across a broad range of industries with a particular focus on high-tech and has worked with some of the largest information technology, communications, and pharmaceuticals companies in the world.

Dr. Layne-Farrar's advisory work for industry leading clients has included analyzing reasonable licensing, including RAND and FRAND; analyzing patent filings for market definition; assessing economic incentives and firm behavior within standard setting organizations; reviewing the competitive implications of licensing pharmaceuticals; calculating damages; conducting empirical research on the costs and benefits of payment instruments within the United States; and determining costs and benefits for legislative proposals covering credit and debit cards, labor unions, television ratings, software security, and e-commerce.

She has given oral and written expert testimony in a variety of courts and presented in industry conferences around the world. Additionally, she has published articles in Antitrust, Global Competition Review, and Regulation Magazine and has numerous publications in academic journals, including Antitrust Law Journal, International Journal of Industrial Organization, and Journal of Competition Law and Economics.

Prior to joining CRA, she was Senior Vice President at Compass Lexecon, Director at LECG, Senior Consultant at NERA Economic Consulting, among other roles.

### **Professional experience**

2012-Present	Vice President, Charles River Associates
2011–2012	Sr. Vice President, Compass Lexecon (2012), Vice President (2011–2012)
2004–2011	Director, Co-managing director for the Chicago office, LECG (2006–2011); Senior Managing Economist, Principal (2004–2006)
2001–2004	Senior Consultant, NERA Economic Consulting
1997–2001	Economist/Consultant, Lexecon Inc.

1993–1997	Research Assistant (Professor James J. Heckman, Nobel Laureate), University of Chicago
1989–1991	Market Researcher, GTE—Telephone Operations Headquarters (Small Business Customers)
1987–1989	Market Forecaster, GTE—Southwest, Inc.

### **Testimony (Oral)**

Deposition of Anne Layne-Farrar in *Apple Inc., and Next Software, Inc. (F/K/A Next Computer, Inc.) v. Motorola Inc. and Motorola Mobility, Inc.* to the United States District Court, Northern District of Illinois, May 17, 2012.

Testimony of Anne Layne-Farrar in *Triangle Software, LLC v. Garmin International, Inc.*; Garmin

USA, INC., Civil Action No. 1:10-CV-01457-CMH-TCB, November 3, 2011.

Depositions of Anne Layne-Farrar in *Triangle Software, LLC v. Garmin International, Inc.*; *Garmin USA, INC.*; *TomTom, Inc.*; and *Volkswagen Group of America, Inc.*, Civil Action No. 1:10-CV-01457-CMH-TCB, August 24, 2011 and August 26.

Witness, US Senate Committee on Health, Education, Labor, and Pensions Hearing on "Rebuilding Economic Security: Empowering Workers to Restore the Middle Class," March 10, 2009, webcast available at http://help.senate.gov/Hearings/2009\_03\_10/2009\_03\_10.html.

### **Testimony (Written)**

"Expert Report of Anne Layne-Farrar", a report submitted in the matter of Brandeis University and GFA Brands, Inc. v. East Side Ovens, Inc., et al. to the United States District Court, Northern District of Illinois on behalf of GFA Brands Inc., November 7, 2012.

"Enforcement of SEPs and Abuse of Dominance: Preliminary Economic Considerations on the Samsung 102 Investigation", a report submitted to the European Commission on behalf of Samsung Electronics Company. With CRA colleagues, September 21, 2012.

"Reply Expert Report of Dr. Anne Layne-Farrar," a report submitted in the matter of *Apple Inc.*, and *Next Software*, *Inc.* (*F/K/A Next Computer, Inc.*) v. Motorola Inc. and Motorola Mobility, *Inc.* to the United States District Court, Northern District of Illinois on behalf of Apple Inc., April 15, 2012.

"Determining Reasonable Royalty and Damages for Volkswagen Group of America in the Matter of *Triangle Software, LLC. v. Garmin International, Inc., Garmin USA, Inc., TomTom,* 

*Inc., and Volkswagen Group of America, Inc.,*" a report submitted to the United States District Court, Eastern District of Virginia on behalf of Triangle Software, July 26, 2011.

"Determining Reasonable Royalty and Damages for TomTom in the Matter of *Triangle Software, LLC. v. Garmin International, Inc., Garmin USA, Inc., TomTom, Inc., and Volkswagen Group of America, Inc.,*" a report submitted to the United States District Court, Eastern District of Virginia on behalf of Triangle Software, July 18, 2011.

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### Journal publications

"The Brothers Grimm Book of Business Models: A Survey of Literature and Developments in Patent Acquisition and Litigation," forthcoming in *Journal of Law, Economics and Policy*, issue 9, 2012.

"Innovative or Indefensible? An Empirical Assessment of Patenting within Standard Setting," *International Journal of IT Standards and Standardization Research*, 2011.

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"To Join Or Not To Join: Examining Patent Pool Participation and Rent Sharing Rules," with Professor Josh Lerner, *International Journal of Industrial Organization*, Vol. 29, Issue 2, March 2011.

"Non-Discriminatory Pricing: What is Different (and What is Not) about IP Licensing in Standard Setting," *Journal of Competition Law and Economics*, 2010.

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"Further Thoughts on the Cashless Society: A Reply to Dr. Shampine," with Dr. Daniel Garcia-Swartz and Dr. Robert W. Hahn, *Review of Network Economics*, Issue 4, December 2007.

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EU Competition Law & Economics, with Nicolas Petit and Damien Geradin, Oxford University Press, 2012.

"Increments and Incentives: The Dynamic Innovation Implications of Licensing Patents under an Incremental Value Rule," with Professor Gerard Llobet, and D. Jorge Padilla, in Geoffrey A. Manne and Joshua D. Wright, eds., *Regulating Innovation: Competition Policy And Patent Law Under Uncertainty*, Cambridge University Press, 2011.

"Business Models and the Standard Setting Process," in *The Pros and Cons of Standard Setting* 2010, Swedish Competition Authority, 2010.

"Does Measured School Quality Really Matter? An Examination of the Earnings-Quality Relationship," with Professor James J. Heckman and Petra E. Todd, in G. Burtless. ed., *Does Money Matter? The Link Between Schools, Student Achievement and Adult Success*, Brookings Institution, Washington, DC, 1996.

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"Rembrandts or rubbish in the attic?" with Daniel Ryan and Andrew Wynn, in *Licensing in the Boardroom 2009, IAM Magazine*.

"How to Avoid Antitrust Trouble in Standard Setting: A Practical Approach," *Antitrust*, Summer 2009.

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"Every Market That Rises Must Converge," *TechCentralStation* April 2005, with Chris Nosko and Dr. Daniel Garcia Swartz, available at http://www.techcentralstation.com/040105D.html.

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"Are Debit Cards Really More Costly for Merchants? Assessing Retailers' Costs and Benefits of Payment Instrument Acceptance," September 2011.

"Payments and Participation: The Incentives to Join Cooperative Standard Setting Efforts," with Professor Gerard Llobet and Dr. A. Jorge Padilla, July 2011, available at http://papers.ssrn.com/sol3/papers.cfm?abstract\_id=1904959.

"An Economic Take on Patent Licensing: Understanding the Implications of the 'First Sale' Patent Exhaustion Doctrine," with Professor Gerard Llobet and Dr. A. Jorge Padilla, May 2009, available at http://ssrn.com/abstract=1418048.

"An Empirical Assessment of the Employee Free Choice Act: The Economic Implications," March 2009, available at http://ssrn.com/abstract=1353305.

"A Somber Anniversary: Terrorism Insurance Five Years After 9/11," with Dr. David S. Evans and Dr. Daniel Garcia-Swartz, October 2006, available at http://papers.ssrn.com/sol3/papers.cfm?abstract\_id=936348.

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"Valuing Patents For Licensing: A Practical Survey of The Literature," with Professor Josh Lerner, March 2006.

"The Role of Trade Secrets In Intellectual Property Protection: A Survey of the Literature," with Professor Josh Lerner, August 2005.

"Defining Software Patents: A Research Field Guide," AEI-Brookings Working Paper 05–14, August 2005.

### **Selected presentations**

"Striking the Balance between Appropriability and Competition: 7 Questions on FRAND Licensing", Keynote address, Session III: IP rights, standards and markets for complex technological products - striking the balance between appropriability and competition, OECD Conference on Knowledge Networks and Markets, 26 November, 2012, Paris, France.

"An Economic Overview of Intellectual Property Issues in Competition", UK Office of Fair Trade, London, England, September 20, 2012.

Invited panelist, ABA Panel on Reverse Payment Settlements, Washington, DC, July 23, 2012.

"Moving Beyond Simple Examples: Assessing the Incremental Value Rule within Standards", 7th European Conference on Competition and Regulation, CRESSE, Crete, Greece, July 3, 2012.

"The Brothers Grimm Book of Business Models: A Survey of Literature and Developments in Patent Acquisition and Litigation," George Mason University School of Law, The Digital Inventor: How Entrepreneurs Compete on Platforms Conference, Washington, DC, February 24, 2012 (webcast available at <a href="http://www.youtube.com/watch?v=v0DJ4Kn74sc">http://www.youtube.com/watch?v=v0DJ4Kn74sc</a>).

Invited panelist, National Bureau of Economic Research, Inc. (NBER) Standards, Patents & Innovation Conference, Tucson, Arizona, January 20–21, 2012.

"Working Towards a Meaningful Definition of RAND," ANSI Legal Issues Forum, Washington, DC, October 13, 2011.

"SSO Participation and the Role of Incremental Value Licensing," 7th Conference on Standardisation and Information Technology (SIIT), Sponsored by IEEE, Berlin, Germany, September 30, 2011.

Invited panelist, FTC Workshop on Intellectual Property Rights in Standard Setting: Tools To Prevent Patent Hold-Up, Washington, DC, June 21, 2011, webcast available at http://htc 01.media.globix.net/COMP008760MOD1/ftc\_web/FTCindex.html#June21\_.

"Incremental Value and FRAND Licensing," The 3rd Annual Conference on Recent Developments in Competition Enforcement, INTERTIC & IMEDIPA, Autorità Garante della Concorrenza e del Mercato, Rome, Italy, May 6, 2011.

"Making Sense of FRAND Commitments: Theory and (EC) Application," IPR Conference, Innovation, Competition & Regulation Law Center at Korea University Law Institute, April 8, 2011.

"Business Models and the Standard Setting Process," 9th Annual Pros and Cons Conference, hosted by the Swedish Competition Authority, Stockholm, Sweden, November 12, 2010.

"Is Ex Ante the Norm? An Empirical Look at IPR Disclosure Timing within Standard Setting," 15th Annual EURAS Conference, Lausanne, Switzerland, July 2, 2010.

"IPR as a Chisel—how patents can reshape firm boundaries," Stanford University's Hoover Institution Conference on the Law, Economics, Business, and Policy Implications for Innovation and Competition of Diverse Business Models for Using Patents, Palo Alto, California, June 25, 2010.

"Be my FRAND: The Economics of Fair, Reasonable and Non-Discriminatory Licensing," AIPLA Spring Meeting, New York, New York, May 7, 2010.

"Non-Discriminatory Pricing: What is Different (and What is Not) about IP Licensing in Standard Setting," 4th European Conference on Competition and Regulation, CRESSE, Crete, Greece, July 3, 2009.

"Royalty Stacking In Mobile Telecommunications: A Closer Look At The Evidence," Georgetown Conference on Wireless Technologies: Enabling Innovation and Economic Growth, Washington, DC, April 17, 2009.

"Striking the Right Balance: IPR Rules for Standard Setting," American Bar Association Antitrust Law Section Spring Meeting, Washington, DC, March 25, 2009.

Invited panelist, FTC Hearing on the Evolving IP Marketplace: Injunctive Relief, Washington, DC, February 12, 2009, webcast available at http://htc01.media.globix.net/COMP008760MOD1/ftc\_web/FTCindex.html.

Invited panelist, FTC Hearing on the Evolving IP Marketplace: Remedies, Washington, DC, February 11, 2009, webcast available at http://htc 01.media.globix.net/COMP008760MOD1/ftc\_web/FTCindex.html.

"Reversing the Trend? A potential path to reducing reverse payments," New York State Bar Association Antitrust Law Section Annual Meeting, New York, New York, January 29, 2009.

"The Economics of Standard Setting," American Bar Association Brown Bag Series, December 2, 2008.

"The Economics of Innovation & Intellectual Property," American Bar Association Brown Bag Series, July 23, 2008.

"Ex Ante Negotiations in Standard Setting Organizations," American Bar Association Antitrust Law Section Spring Meeting, Washington, DC, March 26, 2008.

"Innovative or Indefensible? An Empirical Assessment of Patenting Within Standard Setting," 9th Annual Bank of Finland, CEPR, and Reserve Bank of Philadelphia Conference on Innovation and Intellectual Property in Financial Services, Helsinki, Finland, October 16, 2008.

"Elves or Trolls? The Role of Non-Practicing Patent Owners in the Innovation Economy," 3rd European Conference on Competition and Regulation, CRESSE, Athens, Greece, July 4, 2008.

"Revisiting Injunctive Relief in High-tech Industries with Non-practicing Patent Holders," Competition Policy Center, Conference on the Economics of Competition and Innovation, University of Berkeley, Berkeley, California, October 26, 2007.

"Standard Setting, Rand Licensing and Ex Ante Auctions: The Implications of Asymmetry," 5th Conference on Standardisation and Information Technology (SIIT) 2007, Calgary, Canada, October 18, 2007.

# EXHIBIT B

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

In the Matter of

CERTAIN ELECTRONIC DEVICES, INCLUDING WIRELESS COMMUNICATION DEVICES, PORTABLE MUSIC and DATA PROCESSING DEVICES, AND TABLET COMPUTERS

Inv. No. 337-TA-794

## DECLARATION OF CARLA S. MULHERN IN SUPPORT OF SAMSUNG'S STATEMENT ON THE PUBLIC INTEREST

**December 3, 2012** 

### I. INTRODUCTION

- 1. Samsung Electronics Co., Ltd. ("SEC") and Samsung Telecommunications America, LLC ("STA") (collectively, "Samsung") have asserted that Apple Inc. ("Apple") "has engaged in unfair acts in violation of Section 337 through unlawful and unauthorized importation, sale for importation into the United States, and/or the sale within the United States after importation, of certain electronic devices, including wireless communication devices, portable music and data processing devices, and tablet computers…"<sup>1</sup>
- 2. Samsung contends that several of Apple's electronic devices, including wireless communication devices, portable music and data processing devices, and tablet computers infringe one or more of the patents-in-suit. It is my understanding that Samsung has requested a Limited Exclusion Order ("LEO") and Cease and Desist Order ("CDO") that would implicate Apple iPhones, iPads and iPod Touch devices. I refer to these products collectively as Apple Products-At-Issue.
- 3. I have been asked by Counsel on behalf of Samsung to comment on certain issues related to public interest in the event an LEO relating to the Apple Products-At-Issue is granted in this investigation.
- 4. I am a Managing Principal at Analysis Group, Inc. ("Analysis Group"). Analysis Group provides economic and financial analysis for complex litigation, regulatory proceedings, and corporate strategic planning. Analysis Group maintains offices in Boston, Massachusetts; Dallas, Texas; Denver, Colorado; Chicago, Illinois; Los Angeles, California; Menlo Park,

In the Matter of Certain Electronic Devices, Including Wireless Communication Devices, Portable Music and Data Processing Devices, and Tablet Computers, Inv. No. 337-TA-794, Complaint Under Section 337 of the Tariff Act of 1930, as Amended, filed June 28, 2011 ("Complaint"), at 1.

California; Montreal, Quebec; New York, New York; San Francisco, California; Beijing, China and Washington, DC.

5. I am an economist whose specialty is intellectual property valuation and monetary relief assessment. Over the past 20 years, I have been involved in numerous such engagements spanning a broad range of industries including the wireless communications industry. I previously have been engaged as an expert regarding economic issues arising in Section 337 investigations before the United States International Trade Commission ("ITC"). My resume is attached as Appendix A. It describes my qualifications, my publications, and my speeches over the past ten years, including those in the intellectual property area, as well as the testimony I have given.

#### II. SUMMARY OF CONCLUSIONS

- 6. My analysis of the available evidences indicates the following:
  - In addition to Apple, there are several suppliers of smartphones, tablets and mobile media players in the U.S., including Samsung.
  - Alternative suppliers offer numerous models of smartphones, tablets and mobile media players, which would be unaffected by the proposed exclusion order.
  - A number of products from alternative suppliers including those offered by Samsung – are comparable to the Apple products at issue in terms of overall functionality and quality.

 Alternative products on the Google Android platform offer access to applications ("apps") that are similar in number and type to the apps available for use with the Apple accused products.

### III. NUMEROUS ALTERNATIVES ARE AVAILABLE

### A. Smartphones

- 7. In the second quarter of 2012, the top suppliers of smartphones in the U.S. were Apple, Samsung, HTC, Motorola and LG. Apple accounted for approximately 30 percent of total units sold, with the remaining suppliers accounting for approximately 70 percent.<sup>2</sup> Samsung's share of U.S. smartphone unit sales in Q2 2012 was nearly 25 percent.<sup>3</sup> Smartphone suppliers offer products based on a number of different operating systems (also referred to as smartphone platforms) including Apple iOS, Google Android, RIM and Microsoft Windows Phone.<sup>4</sup> Samsung's smartphone products operate on the Google Android and Microsoft Windows Phone platforms.<sup>5</sup> Over the past six months the share of U.S. subscribers that currently use smartphones operating on the Google Android platform has been increasing and is currently approximately 50 percent.<sup>6</sup>
- 8. U.S. smartphone suppliers offer numerous models with a variety of features.

  Currently, there are many models of smartphones available in the U.S. across the top four

<sup>&</sup>lt;sup>2</sup> Exhibit 1.

<sup>&</sup>lt;sup>3</sup> Exhibit 1.

Exhibit 2. List does not include proprietary operating systems. In 2011, Nokia transitioned away from the Symbian operating system and adopted Microsoft Windows Phone as its principal smartphone operating platform. *See* http://www.microsoft.com/en-us/news/press/2011/feb11/02-11partnership.aspx (viewed Dec. 3, 2012).

Exhibit 3. See, e.g. the Galaxy series of smartphones using the Android operating system and the Focus S smartphone using Windows Phone. See also http://www.samsung.com/us/mobile/cell-phones/SGH-I667UWAATT (viewed Dec. 3, 2012).

<sup>&</sup>lt;sup>6</sup> Exhibit 2.

nationwide carriers and smaller carriers.<sup>7</sup> A number of models of smartphones are offered for use on the top four nationwide wireless carriers, ranging from 28 (T-Mobile) to 41 (AT&T).<sup>8</sup> For these carriers, the share of models that would be affected by the proposed exclusion order ranges from zero (T-Mobile) to 10 percent (AT&T). Similarly, numerous smartphone models are offered for use on smaller carriers.<sup>9</sup>

### B. Tablets

9. The market for tablets in the U.S. is also characterized by numerous suppliers including: Apple, Amazon, Asus, Samsung, Microsoft, Toshiba, Acer, Google and Barnes & Noble. In 2011, Apple's iPad products accounted for approximately one-half of total units sold in North America. Since that time, tablet products from competing suppliers have gained share at the expense of Apple.

10. According to a survey conducted by the Pew Research Center in July and August of 2012, the share of tablets owned by U.S. consumers from suppliers other than Apple grew from 19 percent in 2011 to 48 percent in 2012.<sup>12</sup> The majority of these alternative tablets use Google's Android operating system.<sup>13</sup> Complainant Samsung is among the suppliers of Android operating system tablets, and is estimated to have supplied approximately 7 percent of tablets in North America in 2011.<sup>14</sup>

8 Exhibit 4.

<sup>&</sup>lt;sup>7</sup> Exhibit 3.

<sup>&</sup>lt;sup>9</sup> Exhibit 4.

Exhibits 5 and 15.

<sup>11</sup> Exhibit 5.

<sup>12</sup> Exhibit 6.

<sup>13</sup> Exhibit 6.

<sup>14</sup> Exhibit 5.

- additional market penetration in the near term. According to an October 2012 survey conducted by Cowen and Company, 57 percent of consumers who were planning to purchase a tablet in the next 18 months planned to purchase a non-Apple tablet. Consistent with this, I note that alternative suppliers have launched a number of new tablet models in recent months. These include the Microsoft Surface tablet, which uses Microsoft's proprietary Windows RT operating system, launched in October 2012<sup>16</sup> and Samsung's Galaxy Tab 2 10.1, the most recent version of its Galaxy Tab series, which was launched on multiple U.S. carriers in November 2012. Each of these products was rated favorably by Consumer Reports.
- 12. Some tablet models are sold by wireless carriers. Tablets from multiple suppliers are offered by each of the top four national carriers in the U.S.<sup>19</sup> For AT&T, Verizon and Sprint, the share of tablet models that would be affected by the exclusion order ranges from 40 percent (Sprint and Verizon) to 44 percent (AT&T).<sup>20</sup> An Apple tablet is not sold by T-Mobile, and, thus, T-Mobile would be unaffected by the proposed exclusion order. Similarly, an Apple tablet product is not sold by Cricket or U.S. Cellular.<sup>21</sup>

### C. Mobile Media Players

13. The accused Apple iPod touch products are generally characterized as mobile media players, but also offer additional functionality, such as the ability to play games.<sup>22</sup> There

<sup>15</sup> Exhibit 7.

http://www.microsoft.com/en-us/news/Press/2012/Oct12/10-25SurfaceRetailPR.aspx (viewed Nov. 29, 2012).

<sup>17</sup> Exhibit 8.

<sup>&</sup>lt;sup>18</sup> Exhibit 15.

<sup>&</sup>lt;sup>19</sup> Exhibit 8.

Exhibit 9.

<sup>21</sup> Exhibit 9.

http://www.apple.com/ipod-touch/features (viewed Nov. 29, 2012).

are numerous manufacturers of non-accused mobile media players and portable gaming devices including: Apple, Archos, Coby, Cowon, Creative, Nintendo, RCA, Samsung, SanDisk and Sony.<sup>23</sup> Among the alternative mobile media players are the Apple iPod Classic and the Samsung Galaxy Player.<sup>24</sup> Among the non-accused portable gaming devices are the Nintendo 3DS and the Sony PlayStation Vita.<sup>25</sup>

# IV. AVAILABLE ALTERNATIVES OFFER COMPARABLE FUNCTIONALITY AND QUALITY

### A. Smartphones

14. In terms of overall functionality, there are several models of smartphones from alternative suppliers that are comparable to the Apple iPhone products. For example, like the iPhone 5, the top-rated Samsung Galaxy S III, LG Optimus G and Motorola Droid Razr Maxx HD each offer functionality commonly used on smartphones, including text messaging, taking photos or videos, sending photos or videos to another person (or posting them online), playing music, internet browsing, emailing, access to various applications ("apps"), gaming, social networking, navigation, watching video, accessing Twitter, online banking and participating in a video call or video chat.<sup>26</sup>

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Peter Farago, "Apple iPhone and iPod touch Capture U.S. Video Game Market Share," Mar. 22, 2010; Pamela Tufegdzic, "Sony, Nintendo and Microsoft Change Strategies in Fragmented Handheld Gaming Market," Mar. 14, 2012; Dan Graziano, "Tablets and Smartphones are Turning Handheld Gaming Devices into a Niche," June 8, 2012; http://www.consumerreports.org/cro/electronics-computers/audio-video/mp3-players/mp3-player-ratings/rating-soverview.htm (viewed Nov. 26, 2012).

http://www.consumerreports.org/cro/electronics-computers/audio-video/mp3-players/mp3-player-ratings/ratings-overview htm (viewed Nov. 26, 2012).

Pamela Tufegdzic, "Sony, Nintendo and Microsoft Change Strategies in Fragmented Handheld Gaming Market," Mar. 14, 2012.

List of common smartphone uses from http://60secondmarketer.com/blog/2012/07/19/how-people-use-their-smartphones-infographic/ (viewed Dec. 3, 2012); http://pewinternet.org/Reports/2011/Cell-Phones.aspx (viewed Dec. 3, 2012); http://pewinternet.org/Reports/2011/Location.aspx (viewed Dec. 3, 2012). Availability of functionality based on http://www.apple.com/iphone/features/ (viewed Dec. 3, 2012);

alternative smartphone models that are comparable to the Apple iPhone products based on price and overall quality.<sup>27</sup> Apple iPhones are offered at a range of price points (depending on generation and memory capacity), and alternative smartphones offered at similar price points receive comparable ratings from Consumer Reports.<sup>28</sup> Similarly, product rankings from various sources indicate that smartphones from Samsung, Nokia, Motorola, HTC, LG and RIM compare favorably to the accused iPhone models.<sup>29</sup> In fact, for each of the three national carriers that offer the Apple iPhone, smartphones from alternative suppliers were ranked higher than the iPhone by Consumer Reports. For example, for smartphones available on AT&T, the Samsung Galaxy S III and LG Optimus G received a higher overall rating than the Apple iPhone 5.<sup>30</sup> Similarly, on the Verizon network, the Samsung Galaxy S III and several models of Motorola smartphones earned higher overall ratings than the Apple iPhone 5.<sup>31</sup>

http://www.samsung.com/us/galaxy-s-3-smartphone/ (viewed Dec. 3, 2012);

http://www.samsung.com/global/galaxys3/specifications.html (viewed Dec. 3, 2012);

http://www.att.com/shop/wireless/devices/lg/optimus-g-black.html#fbid=8dgRbV9bkO- (viewed Dec. 3, 2012);

http://www.lg.com/us/cell-phones/lg-E970-optimus-g (viewed Dec. 3, 2012);

http://www.motorola.com/us/consumers/DROID-RAZR-MAXX-HD-BY-MOTOROLA/m-DROID-RAZR-

MAXX-HD,en\_US,pd html (viewed Dec. 3, 2012); and product specifications from

http://www.phonearena.com/ (viewed Dec. 3, 2012). Social networking, online banking and accessing Twitter assumed to be conducted using either an app or a web browser.

As a measure of quality, Consumer Reports gives each mobile device an "Overall Score", which is based on a variety of functional attributes such as: ease of use, messaging, web browsing, display quality, voice quality, phoning, battery life, camera image and video quality, and portability. *See*, Exhibit 11.

<sup>&</sup>lt;sup>28</sup> Exhibit 10.

<sup>29</sup> Exhibits 10-13.

<sup>&</sup>lt;sup>30</sup> Exhibit 11.

<sup>&</sup>lt;sup>31</sup> Exhibit 11.

16. Further evidence of the comparability of the Samsung Galaxy products and the Apple iPhones is Apple's position in District Court litigation that "Samsung and the Galaxy Nexus compete directly with Apple's iPhone products." 32

17. Additionally, testimony from Apple personnel indicates that

Greg

Joswiak, Apple's Vice President of Product Marketing for products including the iPhone,
testified that

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### B. Tablets

18. There are several models of tablets that offer similar functionality to the Apple iPad products, including Samsung's Galaxy Note 10.1, Galaxy Tab 2 (10.1), Asus' Vivo Tab RT TF600T, Microsoft's Surface RT and the Kindle Fire HD. Like the Apple iPads, these products each offer functionality commonly used on tablets, including: browsing the web, email, playing

33 RX-3536C-90 through RX-3536C-92.

Apple Inc., v. Samsung Electronics Co., Ltd. et al., Case No. 12-cv-00630 LHK (PSG), Declaration of Christopher Vellturo, Ph.D., Redacted Public Version, Feb. 8, 2012, at 2.

games, viewing pictures, watching video, navigation/maps,<sup>34</sup> reading documents and magazines.<sup>35</sup>

19. According to Consumer Reports product evaluations, there are a number of alternative tablet models that are comparable to the Apple iPad products based on price and overall quality.<sup>36</sup> Apple iPads are offered at a range of price points (depending on generation, connectivity, and memory capacity), and alternative tablets offered at similar price points receive comparable ratings from Consumer Reports.<sup>37</sup> Many of these tablets are rated favorably by third parties. Of the 39 tablets receiving Consumer Reports "Recommended" or "Best Buy" ratings, 32 came from suppliers other than Apple.<sup>38</sup> Samsung's Galaxy Note 10.1 and Galaxy Tab 2 (10.1) both received overall ratings from Consumer Reports that were comparable to the ratings

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Microsoft's Surface does not have GPS functionality, but contains a compass and can be used for navigation and maps, for example, via Wi-Fi Internet, applications, or stored files. The WiFi only Kindle Fire HD does not offer GPS functionality, but GPS functionality is offered on the Kindle Fire HD with LTE functionality. Use of tablets for navigation/maps is less popular than uses including browsing the web, email, playing games, viewing pictures and watching video. See, http://www.economistgroup.com/leanback/advertising/where-and-how-people-use-tablets/ (viewed Dec. 3, 2012); http://www.microsoft.com/Surface/en-US/surface-with-windows-rt/specifications (viewed Dec. 3, 2012); http://www.amazon.com/gp/product/B008GGCAVM/ref=fs\_ta (viewed Dec. 3, 2012); http://www.amazon.com/gp/product/B008GFRBBW/ref=fs\_jw (viewed Dec. 3, 2012).

List of common tablet uses from http://www.economistgroup.com/leanback/advertising/where-and-how-peopleuse-tablets/ (viewed Dec. 3, 2012). Availability of functionality based on http://www.apple.com/ipad/features/ (viewed Dec. 3, 2012);

http://www.samsung.com/global/microsite/galaxynote/note\_10.1/benefits\_02 html?type=find (viewed Dec. 3, 2012); http://www.samsung.com/global/microsite/galaxynote/note\_10.1/specifications.html?type=find (viewed Dec. 3, 2012); http://www.samsung.com/global/microsite/galaxytab2/10.1/features.html?type=find (viewed Dec. 3, 2012); http://www.samsung.com/global/microsite/galaxytab2/10.1/spec.html?type=find (viewed Dec. 3, 2012); http://www.asus.com/vivo/en/vivoTab.htm (viewed Dec. 3, 2012);

http://www.microsoft.com/Surface/en-US/surface-with-windows-rt/home (viewed Dec. 3, 2012);

http://www.microsoft.com/Surface/en-US/surface-with-windows-rt/specifications (viewed Dec. 3, 2012);

http://www.amazon.com/gp/product/B008GGCAVM/ref=fs ta (viewed Dec. 3, 2012);

http://www.amazon.com/gp/product/B008GFRBBW/ref=fs\_jw (viewed Dec. 3, 2012); and product specifications from http://phonearena.com (viewed Dec. 3, 2012).

As a measure of quality, Consumer Reports gives each mobile device an "Overall Score", which is based on a variety of functional attributes such as: ease of use, display, touch response, versatility, battery life, and weight. See, Exhibit 15.

<sup>&</sup>lt;sup>37</sup> Exhibit 14.

<sup>38</sup> Exhibit 15.

for third and fourth generation iPads and/or the iPad mini.<sup>39</sup> Tablets from other alternative suppliers such as Google and Asus also received high ratings from third party product reviewers.<sup>40</sup>

### C. Mobile Media Players

- 20. Among the primary uses of the accused Apple iPod Touch products are taking photos, recording videos, playing music, internet browsing, app downloads, gaming, social networking, and watching videos.<sup>41</sup> The Samsung Galaxy Player offers the same basic functionality as the iPod Touch and is considered a competitive device.<sup>42</sup> Non-accused Apple devices perform some of these functions, such as playing music (iPod Classic, iPod Nano and iPod Shuffle) and watching videos (iPod Classic and iPod Nano).<sup>43</sup>
- 21. In addition to the Apple iPod Touch, Consumer Reports recommended three non-accused mobile media players, including the Samsung Galaxy Player WiFi 5.0 (which was more highly rated than the accused fourth generation iPod Touch), the Samsung Galaxy Player 4.0 and the non-accused iPod Classic.<sup>44</sup>

<sup>39</sup> Exhibit 15.

<sup>&</sup>lt;sup>40</sup> Exhibit 16.

http://www.apple.com/ipod-touch/features/ (viewed Dec. 3, 2012).

http://www.samsung.com/us/mobile/mp3-players/YP-G70CWY/XAA-features and http://www.samsung.com/us/mobile/mp3-players/YP-G70CWY/XAA-specs (viewed Dec. 3, 2012); http://www.geek.com/articles/mobile/ipod-touch-vs-galaxy-player-vs-galaxy-note-specs-showdown-2011118 (viewed Dec. 3, 2012); http://www.slashgear.com/ipod-touch-vs-galaxy-player-5-0-04193271/ (viewed Dec. 3, 2012).

http://www.apple.com/ipod-shuffle/; http://www.apple.com/ipod-nano/; and http://www.apple.com/ipodclassic/features.html (viewed Dec. 3, 2012).

http://www.consumerreports.org/cro/electronics-computers/audio-video/mp3-players/mp3-player-ratings/ratingsoverview htm (viewed Nov. 26, 2012).

# V. ALTERNATIVE PRODUCTS ALLOW ACCESS TO SIMILAR APPS ENVIRONMENT

- 22. Apple's accused iPhones, iPads and iPod Touch devices share the ability to support mobile apps. Alternative suppliers such as those providing products for use with the Google Android, Blackberry and Microsoft Windows Phone platforms also provide support for mobile apps. The total number of apps available for Android (made available through Google's online marketplace referred to as Google Play) has grown rapidly since 2008. As of the end of October 2012 the total number of apps available on Google Play was approximately 700,000, comparable to the number of apps available from the Apple App Store. 46
- 23. Demand for apps is relatively concentrated, with the most popular apps receiving hundreds of times more downloads than less popular apps.<sup>47</sup> The vast majority of app use is concentrated on free apps.<sup>48</sup> Of the 24 most popular free iPhone apps of all time, 22 identical apps were available for Google's Android platform.<sup>49</sup> Similarly, 9 of the top 10 iPhone apps recommended by PC Magazine as of November 2012 were also available for Google Android.<sup>50</sup>

https://play.google.com/store/apps?feature=corpus\_selector; http://appworld.blackberry.com/webstore/?; http://www.windowsphone.com/en-us/store/featured-apps (viewed Dec. 3, 2011).

Exhibit 17. http://www.macrumors.com/2012/09/12/live-coverage-of-apples-iphone-5-media-event/ (viewed Dec. 3, 2011); http://www.businessweek.com/news/2012-10-29/google-says-700-000-applications-available-for-android-devices (viewed Dec. 3, 2011).

For example, "a top ranked iPhone app gets 150 times more downloads than the 200th ranked app." Garg, Rajiv and Rahul Telang (2012), "Inferring App Demand From Publicly Available Data," available at <a href="http://ssrn.com/abstract=1924044">http://ssrn.com/abstract=1924044</a>. Similarly, two-thirds of apps in Apple's app store have never been downloaded. See <a href="http://gigaom.com/europe/app-store-infested-with-zombie-software-claims-analytics-startup-adeven/">http://gigaom.com/europe/app-store-infested-with-zombie-software-claims-analytics-startup-adeven/</a> (viewed Dec. 3, 2012).

Nearly 90 percent of apps downloaded are free. See http://www.gartner.com/it/page.jsp?id=2153215 (viewed Dec. 3, 2012).

Exhibit 18. Identical refers to the same app from the same publisher. This likely understates the number of comparable apps as it does not include apps from different publishers that may function similarly. For example, "Calculator for iPad Free" is a top-ranked app downloaded to iPads that is not available in the exact same title from the exact same publisher from Google Play. However, there are a number of apps that offer calculator functionality available on Google Play. See https://play.google.com/store/search?q=calculator&c=apps (viewed Dec. 3, 2012).

<sup>&</sup>lt;sup>50</sup> Exhibit 19.

24. There is also considerable overlap in the two platforms in apps associated with disaster relief for use by first responders and the public. As a public service, the Department of Health and Human Services has listed a number of apps as recommended in the event of a disaster or other hazardous event.<sup>51</sup> The majority of the apps for the iPhone are also available on at least one alternative platform such as Google Android or the Mobile Web.<sup>52</sup>

Carla S. Mulkern

Carla S. Mulhern December 3, 2012

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http://sis.nlm.nih.gov/dimrc/disasterapps.html (viewed Dec. 3, 2012).

Exhibit 20. HHS characterizes Mobile Web apps as "a link to a mobile optimized or mobile enhanced Web site, which is a reformatted version of a Web site that is easier to read on a mobile device." http://sis.nlm.nih.gov/dimrc/disasterapps.html (viewed Dec. 3, 2012).

#### **APPENDIX A**

## CARLA S. MULHERN Managing Principal

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Washington, DC 20006

Carla Mulhern, a Managing Principal at Analysis Group, specializes in the application of microeconomic principles to issues arising in complex business litigation. She has served as an expert witness on damages issues in commercial litigation matters including intellectual property and breach of contract cases. Her intellectual property damages experience spans cases involving allegations of patent, copyright and trademark infringement as well as misappropriation of trade secrets. She has also testified before the International Trade Commission on economic issues such as commercial success, domestic industry and remedy. In addition, she has worked with leading academic experts on commercial litigation matters including intellectual property, antitrust and breach of contract cases.

Ms. Mulhern's project experience spans a variety of industries including automotive, computer hardware and software, consumer products, entertainment, medical devices, pharmaceuticals, semiconductors and telecommunications. She has assisted clients in all aspects of litigation projects including development and review of pretrial discovery, development of economic and financial models to analyze damages, critique of analyses propounded by opposing experts, and preparation of testimony.

In non-litigation matters, Ms. Mulhern has assisted clients in valuing intellectual property and other business assets in the contexts of strategic alliances involving licensing and joint ventures. In addition, she has consulted on matters involving the application of economic principles to issues arising in the pharmaceutical and health care fields.

Ms. Mulhern previously held consulting and research positions at Putnam, Hayes & Bartlett and National Economic Research Associates (NERA). She holds a M.Sc. in Economics from the London School of Economics and Political Science, and a B.S. in Mathematics from Bucknell University.

#### **EDUCATION**

1988	M.Sc. in Economics, London School of Economics and Political Science, London, England
1987	Diploma with Merit in Economics, London School of Economics and Political Science, London, England
1986	B.S. in Mathematics, Bucknell University, Lewisburg, PA

#### PROFESSIONAL EXPERIENCE

1997 - present	Analysis Group, Inc., Washington, DC
1994 - 1997	Putnam, Hayes & Bartlett, Inc., Washington, DC
1989 - 1994	National Economic Research Associates, Inc., Washington, DC

#### **EXPERT REPORTS/TESTIMONY**

■ In the Matter of Certain Projectors with Controlled-Angle Retarders, Components Thereof, and Products Containing Same, Investigation No. 337-TA-815

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2012) and deposition testimony (2012) on behalf of respondents, Sony Corporation, Sony Corporation of America, and Sony Electronics Inc., regarding domestic industry in Section 337 case involving projectors.

 In the Matter of Certain Dynamic Random Access Memory and NAND Flash Memory Devices and Products Containing Same, Investigation No. 337-TA-803

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert reports (2012) and deposition testimony (2012) on behalf of respondents, Elpida Memory, Inc., Elpida Memory (USA) Inc., Hynix Semiconductor Inc., Hynix Semiconductor America, Inc., Acer Inc., Acer America Corp., ADATA Technology Co., Ltd, ADATA Technology (U.S.A.) Co., Ltd., Asustek Computer Inc., Asus Computer International, Dell, Inc., Hewlett-Packard Company, Kingston Technology Co., Inc., Logitech International S.A., Logitech, Inc., Best Buy Co., Inc., and Wal-Mart Stores, Inc., regarding domestic industry, remedy, bond and public interest in Section 337 case involving DRAM and NAND flash memory devices.

Genentech, Inc. v. UCB Celltech

American Arbitration Association, International Center for Dispute Resolution
Breach of contract: expert reports (2012) and hearing testimony (2012) on behalf of plaintiff, regarding damages arising from alleged breach of contract and fraud involving pharmaceutical products.

 Apple Inc. and Next Software, Inc. (f/k/a Next Computer, Inc.) v. Motorola, Inc., and Motorola Mobility, Inc.

U.S. District Court, Northern District of Illinois

Patent infringement: expert report (2012) and deposition testimony (2012) on behalf of Motorola Inc. and Motorola Mobility, Inc., regarding damages due Motorola associated with alleged infringement of patents directed to wireless communications functionality.

In the Matter of Certain Electronic Devices, Including Wireless Communication Devices,
 Portable Music and Data Processing Devices, and Tablet Computers, Investigation No. 337-TA-794

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2012), deposition testimony (2012) and trial testimony (2012) on behalf of complainants, Samsung Electronics Co., Ltd. and Samsung Telecommunications America, LLC, regarding domestic industry in Section 337 case involving certain electronic devices.

#### Mylan v. GlaxoSmithKline

U.S. District Court, District of New Jersey

Breach of contract: expert report (2011) and deposition testimony (2011) responding to plaintiff's claims of damages resulting from breach of contract involving generic pharmaceutical product.

#### Automated Merchandising Systems, Inc. v. Crane Co., and Seaga Manufacturing, Inc.

U.S. District Court, Northern District of West Virginia

Patent infringement: expert report (2011) regarding lost profits and reasonable royalty damages for patent infringement involving vending machines.

## ■ In the Matter of Certain Mobile Devices and Related Software, Investigation No. 337-TA-750 U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2011) and deposition testimony (2011) on behalf of respondents, Motorola Mobility, Inc. and Motorola Solutions, Inc., regarding domestic industry and appropriate amount of bond in Section 337 case involving mobile devices.

#### In the Matter of Certain Liquid Crystal Display Devices, Including Monitors, Televisions, and Modules, and Components Thereof, Investigation No. 337-TA-749C

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2011), deposition testimony (2011) and trial testimony (2011) on behalf of respondents, AU Optronics Corporation, BenQ Corporation, Chimei InnoLux Corporation, MStar Semiconductor, Inc. and Qisda Corporation, regarding domestic industry in Section 337 case involving LCD displays.

## ■ In the Matter of Certain Wireless Communication Devices, Portable Music and Data Processing Devices, Computers and Components Thereof, Investigation No. 337-TA-745

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert reports (2011) and deposition testimony (2011) on behalf of complainant, Motorola Mobility Inc., regarding domestic industry and certain secondary considerations of non-obviousness in Section 337 case involving wireless communication devices.

#### Paone v. Microsoft Corp.

U.S. District Court, Eastern District of New York

Patent infringement: expert reports (2008 and 2011) and deposition testimony (2009 and 2011) regarding reasonable royalty damages for patent infringement case involving patent related to encryption technology used in computer software.

#### Intex Recreation Corp. v. Team Worldwide Corp.

U.S. District Court, Washington, D.C.

Patent infringement: expert reports (2006 and 2011) and deposition testimony (2006) in a patent infringement case involving inflatable air mattresses. Provided testimony on lost profits and reasonable royalty damages.

#### B. Braun Melsungen et al. v. Terumo Medical Corp. et al.

U.S. District Court, District of Delaware

Patent infringement: expert report (2010), deposition testimony (2010) and trial testimony (2010) regarding commercial success of safety IV catheter and contribution of patented technology.

#### ■ Touchcom v. Bereskin & Parr et al.

U.S. District Court, Eastern District of Virginia

Professional negligence: expert report (2010) and deposition testimony (2010) regarding damages due to plaintiff as a result of defendant's alleged malpractice in preparing and prosecuting patent application directed to interactive fuel pump system.

### ■ In the Matter of Certain DC-DC Controllers and Products Containing Same, Investigation No. 337-TA-698

U.S. International Trade Commission, Washington, D.C.

Patent infringement and misappropriation of trade secrets: expert report (2010) and deposition testimony (2010) on behalf of respondents, uPI Semiconductor Corp. and Sapphire Technology, regarding injury to domestic industry and scope of exclusion order in Section 337 case involving DC-DC controllers.

#### In the Matter of Certain MLC Flash Memory Devices and Products Containing Same, Investigation No. 337-TA-683

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert reports (2010), deposition testimony (2010) and trial testimony (2010) on behalf of respondent, Samsung, regarding domestic industry, scope of exclusion order and appropriate amount of bond in Section 337 case involving patents directed to multi-level cell flash memory technology.

#### In the Matter of Certain Semiconductor Integrated Circuits and Products Containing Same, Investigation No. 337-TA-665

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2009), deposition testimony (2009) and trial testimony (2009) on behalf of respondents, LSI and Seagate, regarding domestic industry and scope of exclusion order in Section 337 case involving patents directed to semiconductor design and manufacturing processes.

#### McKesson v. Epic

U.S. District Court, Northern District of Georgia

Patent infringement: expert report (2009) and deposition testimony (2009) regarding reasonable royalty damages for patent infringement case involving patent related to health information software.

#### Samsung Electronics v. ON Semiconductor Corp.

U.S. District Court, District of Delaware

Patent infringement: expert reports (2008) and deposition testimony (2008) regarding reasonable royalty damages for patent infringement case involving patents directed to semiconductor manufacturing processes and products.

#### In the Matter of Certain Semiconductor Chips with Minimized Chip Package Size and Products Containing Same, Investigation No. 337-TA-630

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2008), deposition testimony (2008) and trial testimony (2008) on behalf of respondents, Kingston, ProMOS, Elpida and Nanya, regarding scope of exclusion order and appropriate amount of bond in Section 337 case involving semiconductor packaging technology.

## In the Matter of Certain Baseband Processor Chips and Chipsets, Transmitter and Receiver (Radio) Chips, Power Control Chips and Products Containing Same, Including Cellular Telephone Handsets, Investigation No. 337-TA-543 – Enforcement Proceeding

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2008), deposition testimony (2008) and trial testimony (2008) on behalf of complainant, Broadcom, regarding claim that respondent violated cease and desist order. Provided testimony related to maximum value of penalty associated with alleged violations.

#### adidas America v. Wal-Mart

U.S. District Court, District of Oregon

Trademark infringement: expert report (2008) and deposition testimony (2008) regarding reasonable royalty damages for trademark infringement case involving striped footwear.

#### In the Matter of Certain Semiconductor Chips with Minimized Chip Package Size and Products Containing Same, Investigation No. 337-TA-605

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2008), deposition testimony (2008) and trial testimony (2008) on behalf of respondent, ST Microelectronics, regarding domestic industry, scope of exclusion order and appropriate amount of bond to be set for products covered by exclusion order during Presidential review period in Section 337 case involving semiconductor packaging technology.

#### JDB Medical, Inc. and James D. Beeton, Flint Medical, Inc. and Keith Flint v. The Sorin Group, S.p.A. and ELA Medical, Inc.

U.S. District Court, District of Colorado

Breach of contract damages: expert report (2007) and deposition testimony (2008) responding to plaintiff's claim of damages resulting from breach of a sales agreement involving cardiac rhythm management devices.

#### TruePosition v. Andrew Corp.

U.S. District Court, District of Delaware

Patent infringement: expert report (2006), deposition testimony (2007) and trial testimony (2007) on behalf of plaintiff, True Position, in a patent infringement case involving cellular telephone location equipment. Provided testimony on lost profits damages.

## ■ In the Matter of Certain NOR and NAND flash memory devices and products containing same, Investigation No. 337-TA-560

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2006), deposition testimony (2006) and trial testimony (2006) on behalf of respondent, ST Microelectronics, regarding domestic industry, scope of exclusion order and appropriate amount of bond to be set for products covered by exclusion order during Presidential review period in Section 337 case involving NAND and NOR flash memory products.

#### In the Matter of Certain Flash Memory Devices and Components Thereof, and Products Containing Such Devices and Components, Investigation No. 337-TA-552

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert report (2006) and deposition testimony (2006) on behalf of respondent, Hynix, regarding certain secondary considerations, domestic industry, scope of exclusion order and appropriate amount of bond to be set during Presidential Review period in Section 337 case involving NAND flash memory products.

## In the Matter of Certain Baseband Processor Chips and Chipsets, Transmitter and Receiver (Radio) Chips, Power Control Chips and Products Containing Same, Including Cellular Telephone Handsets, Investigation No. 337-TA-543

U.S. International Trade Commission, Washington, D.C.

Patent infringement: expert reports (2005 and 2006), deposition testimony (2006) and trial testimony (2006) on behalf of complainant, Broadcom, regarding scope of exclusion order associated with baseband and radio chips used in cellular telephones and other handheld devices in Section 337 case.

#### In the Matter of Certain NAND Flash Memory Circuits and Products Containing the Same, Investigation No. 337-TA-526

U.S. International Trade Commission, Washington, D.C.

Patent infringement: rebuttal expert report and deposition testimony (2005) on behalf of respondent, ST Microelectronics, regarding domestic industry, scope of exclusion order and appropriate amount of bond to be set for products covered by exclusion order during Presidential review period in Section 337 case involving NAND flash memory products.

#### PDI, Inc. v. Cellegy Pharmaceuticals, Inc.

U.S. District Court, Northern District of California, San Francisco

Commercial damages: expert report and deposition testimony (2005) regarding analysis of damages arising from claims of fraud and breach of contract in case involving male testosterone hormone replacement therapy.

#### Minuteman Trucks, Inc. v. HN80 Corporation and Sterling Truck Corp.

Superior Court of Massachusetts, Suffolk County

Commercial damages: rebuttal expert report and trial testimony (2004) regarding issues related to calculation of damages associated with alleged violation of Massachusetts statue regarding dealer pricing in case involving heavy trucks.

#### Miltope Corporation and IV Phoenix Group Inc, v. DRS Technologies et al.

U.S. District Court, Eastern District of New York

Misappropriation of trade secrets: expert report and deposition testimony (2003) on reasonable royalty damages in case involving rugged personal computers.

#### John W. Evans, et al., v. General Motors Corp.

Superior Court of Connecticut, Judicial District of Waterbury at Waterbury

Misappropriation of trade secrets: expert report, deposition testimony (2002) and trial testimony (2003) on reasonable royalty damages in a case involving automotive engine technology.

#### SRAM Corporation v. AD-II Engineering, Inc.

U.S. District Court, Northern District of Illinois

Patent infringement: expert report and deposition testimony (2002) on reasonable royalty damages due patent holder and lost profits due alleged infringer arising from allegedly false accusations involving patents related to bicycle twist shifters.

#### Qwest Communications International et al. v. WorldQuest Networks, Inc.

U.S. District Court, Eastern District of Virginia

Trademark infringement and unfair competition: expert report on damages in a case involving sales of prepaid calling cards.

#### The Quigley Corporation v. GumTech International, et al.

U.S. District Court, Eastern District of Pennsylvania

Patent infringement: expert report and deposition testimony (2001) on damages in case involving patent related to the use of zinc gluconate to reduce the duration of the common cold.

#### Cytyc Corporation v. Autocyte, Inc.

U.S. District Court, District of Delaware

Patent infringement: expert report and deposition testimony (2000) on damages in a case involving liquid based cervical cancer screening tests.

#### • Hearthstone, Inc. v. Ronald M. Hawes, et al.

U.S. District Court, Eastern District of Virginia

Copyright and trademark infringement, breach of contract and unfair competition: expert report on damages involving architectural plans for log homes.

#### SELECTED LITIGATION CONSULTING ASSIGNMENTS

#### **Commercial Damages/Intellectual Property**

#### Nokia v. Apple

U.S. District Court, District of Delaware

Patent infringement: analysis of issues associated with determination FRAND royalty for patents incorporated in wireless telecommunications products on behalf of Nokia.

#### Novartis v. Teva

U.S. District Court, District of Delaware

Hatch-Waxman: analysis of commercial success of patented pharmaceutical products and extent to which patented technology contributed to that success.

#### Nokia v. Qualcomm

Delaware Chancery Court

Commercial litigation: analysis of issues associated with determination of FRAND royalty for patents incorporated in wireless communications products on behalf of Nokia.

#### O2 Micro v. Samsung Electronics

U.S. District Court, Eastern District of Texas

Patent damages: Analysis of plaintiff's claims with respect to reasonable royalty damages for patents directed to technology used in LCD screens.

#### GlaxoSmithKline v. Ranbaxy

U.S. District Court, District of New Jersev

Hatch-Waxman: analysis of commercial success of patented pharmaceutical product and extent to which the patented technology contributed to that success

#### Medinol Ltd. v. Boston Scientific Corp.

U.S. District Court, Southern District of New York

Breach of contract damages: analyze damages resulting from allegations of breach of contract and misappropriation of trade secrets in case involving coronary stents.

#### Burst.Com v. Microsoft Corp.

U.S. District Court, District of Maryland

Patent and trade secrets damages: analysis of reasonable royalty damages in case involving software used for streaming media. Respond to plaintiff's claim of lost profits damages and unjust enrichment arising from the misappropriation of trade secrets.

#### Medtronic AVE v. Advanced Cardiovascular Systems and Guidant Corp.

U.S. District Court, District of Delaware

Patent and trade secrets damages: analysis of lost profits and reasonable royalty damages in case involving coronary stents. Respond to plaintiff's claim of damages arising from misappropriation of trade secrets.

#### Titan Sports, Inc., etc. v. Turner Broadcasting Systems, Inc. et al.

U.S. District Court, District of Connecticut

Copyright and trademark damages: unjust enrichment due to misappropriation of intellectual property involving two popular wrestling characters.

#### Stairmaster Sports/Medical Products, a Limited Partnership v. Groupe Procycle, Inc. et al.

U.S. District Court, District of Delaware

Patent damages: lost profits, reasonable royalty and prejudgment interest involving patent directed to stair-climbing fitness equipment.

#### ■ BTG v. Magellan Corp./BTG v. Trimble Navigation

U.S. District Court, Eastern District of Pennsylvania

Patent damages/intervening rights: reasonable royalty, prejudgment interest, value of inventory on hand, preparation and investments made and business commenced (as of patent reissue) involving a patent directed to secret or secure communications technology employed in global positioning system products.

#### Joint Medical Products Corp. v. DePuy Orthopaedics, Inc. et al.

U.S. District Court, District of Connecticut

Patent damages: lost profits and reasonable royalty for patents directed to orthopedic implants.

#### Cordis Corp. v. SciMed Life Systems, Inc.

U.S. District Court, District of Minnesota

Patent damages: lost profits, reasonable royalty and prejudgment interest for patent directed to balloon catheters used in Percutaneous Transluminal Coronary Angioplasty (PTCA).

#### Nexstar Pharmaceuticals, Inc. v. The Liposome Company

U.S. District Court, District of Delaware

Patent damages/intervening rights: Valuation of inventory on hand, preparations and investments made and business commenced (as of patent reissuance) involving patents directed to lipid formulations of an anti-fungal pharmaceutical.

#### Autonation, Inc. v. Acme Commercial Corp., at al. (CarMax)

U.S. District Court, Sourthern District of Florida

Trademark infringement/unfair competition: reasonable royalty associated with trademark infringement and unfair competition in the auto superstore business.

#### General Motors (GM) v. Lopez

U.S. District Court, Eastern District of Michigan

Trade secrets: analysis of GM damages and VW unjust enrichment due to alleged theft of trade secrets by former GM employee.

#### **Antitrust Litigation**

#### Joe Comes et al. v. Microsoft Corp.

Iowa District Court for Polk County

Analysis of economics of computer software industry and resulting implications for market structure and firm profitability.

#### Daniel Gordon et al. v. Microsoft Corp.

Minnesota District Court for Hennepin County

Analysis of economics of computer software industry and resulting implications for market structure and firm profitability.

#### Burst.Com, Inc. v. Microsoft Corp.

U.S. District Court, District of Maryland

Examination and evaluation of plaintiff's business strategy and likely implications with respect to plaintiff's claims of actual damages due to alleged antitrust violations.

#### ■ In Re Microsoft Corp. Antitrust Litigation – All Purchaser Actions

U.S District Court, District of Maryland

Analysis of economics of computer software industry and resulting implications for market structure and firm profitability.

#### Microsoft I-V Cases

Superior Court of The State of California, for The City and County of San Francisco Analysis of economics of computer software industry and resulting implications for market structure and firm profitability.

#### Vitamin Antitrust Litigation

U.S. District Court, District of Columbia

Preliminary analysis of factors affecting supply and demand for Vitamin C.

#### Industrial Silicon Antitrust Litigation

U.S. District Court, Western District of Pennsylvania

Analysis of issues related to likelihood of successful cartelization in production of industrial ferrosilicon, magnesium ferrosilicon, and silicon metal.

#### Independent Service Provider v. IBM

Texas State Court, Corpus Christi

Analysis of issues related to liability and damages including definition of relevant market, assessment of market concentration and evaluation of antitrust damages.

#### SELECTED NON-LITIGATION CONSULTING ASSIGNMENTS

#### Intellectual Property Valuation

Assist clients with interpretation and/or negotiation of license terms for patented technology in a variety of fields including: consumer products, pharmaceuticals and semiconductors.

#### Corporate Committee of The American College of Nuclear Physicians

Analyses of the clinical and economic value of nuclear medicine in cardiology and oncology.

#### Lincoln General Hospital

Business valuation of two health care providers for use in determining relative shares of the parties in a joint venture.

#### Pharmaceutical Partners For Better Health Care

Comprehensive study of the Canadian health care system with particular emphasis on the effects of potential reforms on the pharmaceutical industry.

#### **PUBLICATIONS**

- "Recently Released FDA Guidance and Biosimilar Development: Implications for the Litigation Environment" (with Genia Long), *Update: Food and Law, Regulation and Education*, March 2012, pp. 19-21.
- "The 25% Rule Lives On" (with John Jarosz and Michael Wagner), IP Law 360 (September 8, 2010).
- "Licensing in the Presence of Technological Standards," (with J. Browning), *The Licensing Journal*, Volume 29 No. 7, August 2009, pp. 18-29.
- "Use of the 25 Per Cent Rule in Valuing IP," (with R. Goldscheider and J. Jarosz), *les Nouvelles*, Volume XXXVII No. 4, December 2002, pp. 123-133.
- "Clinical and Economic Value of Cardiovascular Nuclear Medicine," monograph published by *Meniscus Health Care Communications*, (with K. Neels), 1996.
- "The Health Care System in Canada," (with R. Rozek), Chapter 4, *Financing Health Care*, edited by U. Hoffmeyer and T. McCarthy, Kluwer Academic Publishers, 1994.
- "Discounted Cash Flow Analysis in Patent Infringement Litigation," (with R. Rozek), *Licensing Economics Review*, Volume 1, August 1991, pp. 7-10

#### SPEECHES/PRESENTATIONS

- "Calculating Reasonable Royalty Damages after *Uniloc v. Microsoft*: An Economic Perspective," Intellectual Property Law Section of the D.C. Bar, July 2011 (with Peter Strand).
- "Patent Infringement: Calculating Royalty Damages in a Post-Uniloc World," Strafford Publications Webinar, March 2011 (with Paul Michel, George Pappas and John Jarosz).
- "Clearing the Way for Biosimilars: New Complexities Around Competition and Consumer Harm," ABA Antitrust Section Teleseminar, February 2011 (Moderator, with Panelists: Seth Silber, Iain Cockburn, Julie McEvoy and Matt Cantor)
- "Damages Apportionment After Lucent," The 10th Anniversary Wilmer Hale Intellectual Property Conference, May 2010 (with Michael R. Heyison and Dominic E. Massa).
- "Licensing in the Presence of Technological Standards," Licensing Executives Society, Annual Meeting, October 2008.
- "Reasonable Royalty Determination in the Presence of Standards and University Licensing," Law Seminars International, Calculating and Providing Patent Damages Workshop, October 2006.
- "Providing Effective Royalty Testimony," Licensing Executives Society / Association of University Technology Managers Spring Meeting (Workshop 4-H), May 2006 (with John Jarosz and Lisa Pirozzolo).
- "Meeting the Standards for Price Erosion and Convoyed Sales," Law Seminars International, Calculating and Providing Patent Damages Workshop, February 2006.
- "Intellectual Property Damages from an Economist's Perspective," DC Bar Association, Trade Secret Section, November 2005 (with John Jarosz and Abram Hoffman).
- "Factors affecting Royalties" Licensing Executive Society Annual Meeting (Workshop 2-M), October 2005 (with Robert Vigil).

- "Trade Secrets Damages: What Can A Successful Claimant Expect to Recover?," Trade Secrets Committee of the Intellectual Property Law Section of the D.C. Bar, February 2005.
- "Economics of Price Erosion and Lost Convoyed Sales," Law Seminars International, Calculating and Proving Patent damages Workshop, March 2004.
- "An Economist's Perspective on Reach-Through Royalties," Law Seminars International, Calculating and Proving Patent Damages: Recent Developments and New Tools for Success, June 2003.
- "Trade Secrets Damages and Recent Developments," Trade Secrets Committee of the Intellectual Property Law Section of the D.C. Bar, May 2002.
- "Industry Royalty Rates and Profitability: An Empirical Test of the 25% Rule," Licensing Executives Society Annual Meeting (Workshop 3-L), October 2001 (with John Jarosz and Robert Vigil).
- "Estimating the Economic Value of Trade Secrets," U.S. Sentencing Commission (USSC) Symposium on Federal Sentencing Policy for Economic Crimes and New Technology Offenses, October 13, 2000.
- "Estimating Economic Recovery in Trade Secrets Cases," Trade Secrets Committee of the Intellectual Property Law Section of the D.C. Bar, September 1999.
- "Industry Royalty Rates and Profitability: An Empirical Test of the 25% Rule," Licensing Executives Society Annual Meeting, (Workshop 3-11), October 1998 (with John Jarosz).
- "Royalty Rates and Awards in Patent Infringement Cases: 1916-1996," Licensing Executives Society Annual Meeting, November 1997 (with John Jarosz).

#### PROFESSIONAL AFFILIATIONS

American Economic Association (AEA)

Licensing Executives Society (LES)

Exhibit 1

### U.S. Smartphone Unit Share NPD Group Q2 2012

Brand	Q2 2012
Apple	31.0%
Samsung	24.0%
HTC	15.0%
Motorola	12.0%
LG	6.0%
Other	12.0%
Total	100.0%

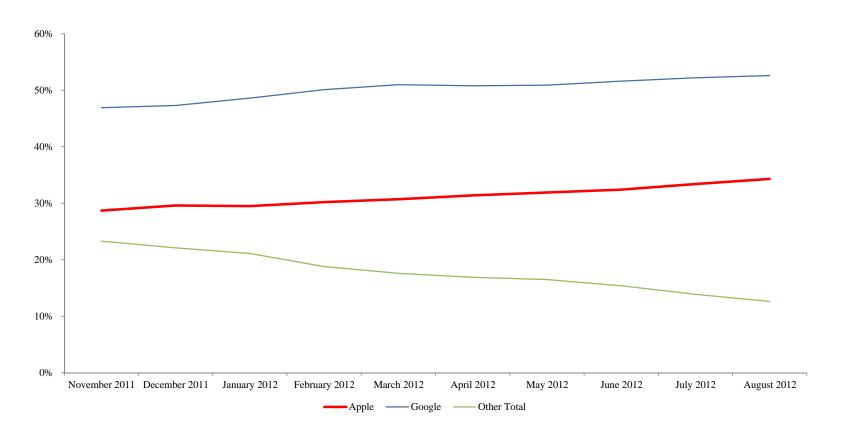
#### Notes & Sources:

Unit share based on unit sales.

'Other' calculated as 'Total' - ('Apple' + 'Samsung' + 'HTC' + 'Motorola' + 'LG'). From "The NPD Group: Rise in Smartphone Purchases Driven Entirely by Pre-Paid Phones," August 8, 2012, available at https://www.npd.com/wps/portal/npd/us/news/press-releases/pr\_120808/ (viewed November 26, 2012).

Exhibit 2

# U.S. Smartphone Subscriber Share By Operating System ComScore November 2011 – August 2012



#### Notes & Sources:

Subscriber share based on average number of smartphone subscribers for preceding 3 months.

Source data refers to 'Operating System' as 'Smartphone Platform'.

'Other Total' includes RIM, Microsoft and Symbian.

November 2011 from "comScore Reports February 2012 U.S. Mobile Subscriber Market Share," April 3, 2012, available at http://www.comscore.com/Insights/Press\_Releases/2012/4/comScore\_Reports\_February\_2012\_U.S.\_Mobile\_Subscriber\_Market\_Share (viewed November 26, 2012).

# U.S. Smartphone Subscriber Share By Operating System ComScore November 2011 – August 2012

#### Notes & Sources:

December 2011 from "comScore Reports March 2012 U.S. Mobile Subscriber Market Share," May 1, 2012, available at http://www.comscore.com/Insights/Press\_Releases/2012/5/comScore\_Reports\_March\_2012\_U.S.\_Mobile\_Subscriber\_Market\_Share (viewed November 26, 2012).

January 2012 from "comScore Reports April 2012 U.S. Mobile Subscriber Market Share," June 1, 2012, available at http://www.comscore.com/Insights/Press\_Releases/2012/6/comScore\_Reports\_April\_2012\_U.S.\_Mobile\_Subscriber\_Market\_Share (viewed November 26, 2012).

February 2012 from "comScore Reports May 2012 U.S. Mobile Subscriber Market Share," July 2, 2012, available at http://www.comscore.com/Insights/Press\_Releases/2012/7/comScore\_Reports\_May\_2012\_U.S.\_Mobile\_Subscriber\_Market\_Share (viewed November 26, 2012).

March 2012 and June 2012 from "comScore Reports June 2012 U.S. Mobile Subscriber Market Share," August 1, 2012, available at http://www.comscore.com/Insights/Press\_Releases/2012/8/comScore\_Reports\_June\_2012\_U.S.\_Mobile\_Subscriber\_Market\_Share (viewed November 26, 2012).

April 2012 and July 2012 from "comScore Reports July 2012 U.S. Mobile Subscriber Market Share," September 4, 2012, available at http://www.comscore.com/Insights/Press\_Releases/2012/9/comScore\_Reports\_July\_2012\_US\_Mobile\_Subscriber\_Market\_Share (viewed November 26, 2012).

May 2012 and August 2012 from "comScore Reports August 2012 U.S. Mobile Subscriber Market Share," October 2, 2012, available at http://www.comscore.com/Insights/Press\_Releases/2012/10/comScore\_Reports\_August\_2012\_U.S.\_Mobile\_Subscriber\_Market\_Share (viewed November 26, 2012).

Exhibit 3

Smartphones Available in the U.S.

By Carrier and by Model

Wireless Provider	Manufacturer	Operating System	Model	Release Date <sup>1</sup>
1. Alltel	Alcatel	Android	One Touch 960C Ultra	October 19, 2012
2. Alltel	HTC	Android	One V CDMA	July 27, 2012
3. Alltel	HTC	Windows	7 Pro CDMA	December 7, 2011
4. Alltel	LG	Android	Optimus Black	December 7, 2011
5. Alltel	LG	Android	Optimus L7	November 13, 2012
6. Alltel	LG	Android	Optimus M+	July 5, 2012
7. Alltel	Motorola	Android	DROID 3	October 16, 2012
8. Alltel	Motorola	Android	DROID RAZR MAXX	November 13, 2012
9. Alltel	Motorola	Android	DROID X2	January 3, 2012
10. Alltel	RIM	BlackBerry	BlackBerry Bold 9930	September 9, 2012
11. Alltel	RIM	BlackBerry	BlackBerry Curve 9310	November 12, 2012
12. Alltel	Samsung	Android	Admire	December 7, 2011
13. Alltel	Samsung	Android	Fascinate	December 8, 2011
14. Alltel	Samsung	Android	GALAXY S II CDMA	July 25, 2012
15. Alltel	Samsung	Android	Gem	February 10, 2011
16. Alltel	Samsung	Android	Repp	January 24, 2012
17. AT&T	Apple	iOS	iPhone 3GS	June 19, 2009
18. AT&T	Apple	iOS	iPhone 4	June 23, 2010
19. AT&T	Apple	iOS	iPhone 4S	October 14, 2011
20. AT&T	Apple	iOS	iPhone 5	September 21, 2012
21. AT&T	HTC	Android	One X	May 6, 2012
22. AT&T	HTC	Android	One X+ LTE	November 16, 2012
23. AT&T	HTC	Android	Vivid	November 6, 2011
24. AT&T	HTC	Windows	Titan II	April 8, 2012
25. AT&T	HTC	Windows	Windows Phone 8X	November 9, 2012
26. AT&T	Huawei	Android	Fusion	February 22, 2012
27. AT&T	Huawei	Android	Fusion 2	September 29, 2012
28. AT&T	LG	Android	Escape	September 16, 2012
29. AT&T	LG	Android	Nitro HD	December 4, 2011
30. AT&T	LG	Android	Optimus G	November 2, 2012
31. AT&T	Motorola	Android	ATRIX 2	October 16, 2011
32. AT&T	Motorola	Android	ATRIX HD	July 15, 2012
33. AT&T	Nokia	Windows	Lumia 820	November 9, 2012
34. AT&T	Nokia	Windows	Lumia 900	April 8, 2012
35. AT&T	Nokia	Windows	Lumia 920	November 9, 2012
36. AT&T	Pantech	Android	Burst	January 22, 2012
37. AT&T	Pantech	Android	Flex	September 16, 2012
38. AT&T	Pantech	Android	Pocket	November 20, 2011
39. AT&T	RIM	BlackBerry	BlackBerry Bold 9900	November 6, 2011
40. AT&T	RIM	BlackBerry	BlackBerry Curve 9360	November 20, 2011
41. AT&T	RIM	BlackBerry	BlackBerry Torch 9810	August 21, 2011
42. AT&T	Samsung	Android	Captivate Glide	November 20, 2011
43. AT&T	Samsung	Android	DoubleTime	November 20, 2011
44. AT&T	Samsung	Android	Exhilarate	June 10, 2012
45. AT&T	Samsung	Android	GALAXY Appeal	June 5, 2012

Exhibit 3

### Smartphones Available in the U.S. By Carrier and by Model

Wireless Provider	Manufacturer	Operating System	Model	Release Date <sup>1</sup>
46. AT&T	Samsung	Android	GALAXY Express	November 26, 2012
47. AT&T	Samsung	Android	GALAXY Note II	November 9, 2012
48. AT&T	Samsung	Android	GALAXY Note LTE	February 7, 2012
49. AT&T	Samsung	Android	GALAXY Rugby Pro	October 21, 2012
50. AT&T	Samsung	Android	GALAXY S II	October 2, 2011
51. AT&T	Samsung	Android	GALAXY S II Skyrocket	November 6, 2011
52. AT&T	Samsung	Android	GALAXY S III	June 22, 2012
53. AT&T	Samsung	Android	Rugby Smart	March 4, 2012
54. AT&T	Samsung	Windows	Focus 2	May 20, 2012
55. AT&T	Samsung	Windows	Focus S	November 6, 2011
56. AT&T	Sony	Android	Xperia ion	June 24, 2012
57. AT&T	Sony	Android	Xperia TL	November 2, 2012
58. Boost Mobile	HTC	Android	EVO Design 4G	May 31, 2012
<ol><li>Boost Mobile</li></ol>	Kyocera	Android	Hydro	July 17, 2012
60. Boost Mobile	LG	Android	Marquee	February 6, 2012
<ol><li>Boost Mobile</li></ol>	LG	Android	Splendor	October 10, 2012
62. Boost Mobile	Motorola	Android	XPRT	July 8, 2012
63. Boost Mobile	RIM	BlackBerry	BlackBerry Curve 9310	July 12, 2012
64. Boost Mobile	Samsung	Android	Epic 4G Touch	September 11, 2012
65. Boost Mobile	Samsung	Android	GALAXY Prevail	April 29, 2011
66. Boost Mobile	Samsung	Android	GALAXY Rush	September 21, 2012
67. Boost Mobile	Samsung	Android	Replenish	January 6, 2012
68. Boost Mobile	Samsung	Android	Transform Ultra	October 5, 2011
69. Boost Mobile	ZTE	Android	Warp	November 4, 2011
70. Boost Mobile	ZTE	Android	Warp Sequent	September 17, 2012
71. Cricket	Apple	iOS	iPhone 4 CDMA	June 22, 2012
72. Cricket	Apple	iOS	iPhone 4S	June 22, 2012
73. Cricket	Apple	iOS	iPhone 5	September 28, 2012
74. Cricket	HTC	Android	One V CDMA	September 2, 2012
75. Cricket	Huawei	Android	Ascend II	July 13, 2011
76. Cricket	Huawei	Android	Ascend Q	August 2, 2012
77. Cricket	LG	Android	Optimus Regard	November 27, 2012
78. Cricket	RIM	BlackBerry	BlackBerry Curve 9350	January 4, 2012
79. Cricket	Samsung	Android	Admire	September 12, 2011
80. Cricket	Samsung	Android	GALAXY S III	November 23, 2012
81. Cricket	ZTE	Android	Engage	October 2, 2012
82. MetroPCS	Coolpad	Android	Quattro 4G	August 28, 2012
83. MetroPCS	HTC	Android	Wildfire S CDMA	November 21, 2011
84. MetroPCS	Huawei	Android	Activa 4G	June 12, 2012
85. MetroPCS	Huawei	Android	M835	July 2, 2011
86. MetroPCS	Kyocera	Brew MP	Presto	October 10, 2011
87. MetroPCS	LG	Android	Connect 4G	March 3, 2012
88. MetroPCS	LG	Android	Esteem	September 28, 2011
89. MetroPCS	LG	Android	Motion 4G	August 23, 2012
90. MetroPCS	LG	Android	Optimus M+	April 23, 2012

Exhibit 3
Smartphones Available in the U.S.

By Carrier and by Model

	Wireless Provider	Manufacturer	Operating System	Model	Release Date <sup>1</sup>
91.	MetroPCS	Samsung	Android	Admire	August 22, 2011
92.	MetroPCS	Samsung	Android	GALAXY Attain 4G	February 6, 2012
93.	MetroPCS	Samsung	Android	GALAXY S III	October 22, 2012
94.	MetroPCS	Samsung	Android	GALAXY S Lightray 4G	August 3, 2012
95.	MetroPCS	ZTE	Android	Anthem 4G	October 5, 2012
96.	MetroPCS	ZTE	Android	Score M	March 19, 2012
97.	Southern LINC	Motorola	Android	i867	February 20, 2012
98.	Southern LINC	Motorola	Android	TITANIUM	August 26, 2011
99.	Southern LINC	RIM	BlackBerry	BlackBerry Curve 8350i	September 2, 2009
100.	Sprint	Apple	iOS	iPhone 4S	October 14, 2011
101.	Sprint	Apple	iOS	iPhone 5	September 21, 2012
102.	Sprint	HTC	Android	EVO 4G LTE	June 2, 2012
103.	Sprint	HTC	Android	Hero CDMA	October 9, 2009
104.	Sprint	Kyocera	Android	Milano	September 9, 2011
105.	Sprint	Kyocera	Android	Rise	August 19, 2012
106.	Sprint	LG	Android	Mach	November 12, 2012
	Sprint	LG	Android	Marquee	October 2, 2011
108.	Sprint	LG	Android	Optimus Elite	April 22, 2012
109.	Sprint	LG	Android	Optimus G	November 11, 2012
110.	Sprint	LG	Android	Optimus S	November 8, 2010
111.	Sprint	LG	Android	Viper 4G LTE	April 22, 2012
112.	Sprint	Motorola	Android	Admiral	October 23, 2011
113.	Sprint	Motorola	Android	PHOTON Q 4G LTE	August 19, 2012
114.	Sprint	Motorola	Windows	ES400	December 10, 2010
115.	Sprint	RIM	BlackBerry	BlackBerry Bold 9930	August 21, 2011
116.	Sprint	RIM	BlackBerry	BlackBerry Curve 3G 9330	September 14, 2010
	Sprint	RIM	BlackBerry	BlackBerry Curve 8530	December 18, 2009
	Sprint	RIM	BlackBerry	BlackBerry Curve 9350	October 2, 2011
119.	Sprint	RIM	BlackBerry	BlackBerry Tour 9630	July 12, 2009
	Sprint	Samsung	Android	GALAXY Nexus Sprint	April 22, 2012
	Sprint	Samsung	Android	GALAXY Note II	October 25, 2012
	Sprint	Samsung	Android	GALAXY S II CDMA	September 8, 2012
123.	Sprint	Samsung	Android	GALAXY S III Sprint	June 21, 2012
	Sprint	Samsung	Android	GALAXY Victory 4G LTE	September 16, 2012
	Sprint	Samsung	Android	Replenish	May 8, 2011
	Sprint	Samsung	Android	Transform Ultra	December 1, 2011
	Sprint	ZTE	Android	Flash	November 12, 2012
	Sprint	ZTE	Android	Fury	March 11, 2012
	Ting	HTC	Android	EVO 4G LTE	November 2, 2012
	Ting	Kyocera	Android	Milano	July 31, 2012
	Ting	Kyocera	Android	Rise	September 27, 2012
132.		LG	Android	Marquee	November 26, 2012
133.		LG	Android	Optimus Elite	July 31, 2012
	Ting	LG	Android	Viper 4G LTE	November 2, 2012
	Ting	Motorola	Android	PHOTON Q 4G LTE	August 17, 2012

Smartphones Available in the U.S. By Carrier and by Model

Wireless Provider	Manufacturer	Operating System	Model	Release Date <sup>1</sup>
136. Ting	Samsung	Android	Epic 4G Touch	July 31, 2012
137. Ting	Samsung	Android	GALAXY S III	August 3, 2012
138. Ting	Samsung	Android	GALAXY Victory 4G LTE	November 26, 2012
139. Ting	Samsung	Android	Transform Ultra	July 31, 2012
140. T-Mobile	HTC	Android	G2	October 4, 2010
141. T-Mobile	HTC	Android	One S	April 25, 2012
142. T-Mobile	HTC	Android	Wildfire S	August 4, 2011
143. T-Mobile	HTC	Windows	Radar	October 31, 2011
144. T-Mobile	HTC	Windows	Windows Phone 8X	November 15, 2012
145. T-Mobile	Huawei	Android	myTouch 2	August 8, 2012
146. T-Mobile	Huawei	Android	myTouch Q 2	August 8, 2012
147. T-Mobile	Huawei	Android	Prism	March 6, 2012
148. T-Mobile	Huawei	Android	U8150 IDEOS	November 8, 2010
149. T-Mobile	LG	Android	Google Nexus	November 15, 2012
150. T-Mobile	LG	Android	myTouch	November 2, 2011
151. T-Mobile	LG	Android	myTouch Q	November 2, 2011
152. T-Mobile	LG	Android	Optimus L9 T-Mobile	October 31, 2012
153. T-Mobile	Nokia	Windows	Lumia 710	January 11, 2012
154. T-Mobile	Nokia	Windows	Lumia 810	November 15, 2012
155. T-Mobile	RIM	BlackBerry	BlackBerry Bold 9780 T-Mobile	November 17, 2010
156. T-Mobile	RIM	BlackBerry	BlackBerry Bold 9900 4G	August 31, 2011
157. T-Mobile	RIM	BlackBerry	BlackBerry Curve 9360	November 20, 2011
158. T-Mobile	Samsung	Android	Dart	June 15, 2011
159. T-Mobile	Samsung	Android	Exhibit 4G	June 22, 2011
160. T-Mobile	Samsung	Android	GALAXY Note	August 8, 2012
161. T-Mobile	Samsung	Android	GALAXY Note II	October 24, 2012
162. T-Mobile	Samsung	Android	GALAXY S Blaze 4G	March 21, 2012
163. T-Mobile	Samsung	Android	GALAXY S II T-Mobile	October 10, 2011
164. T-Mobile	Samsung	Android	GALAXY S III T-Mobile	June 21, 2012
165. T-Mobile	Samsung	Android	GALAXY S Relay 4G	September 19, 2012
166. T-Mobile	Samsung	Android	Gravity SMART	June 22, 2011
167. T-Mobile	ZTE	Android	Concord	August 24, 2012
168. Tracfone	LG	Android	Optimus Zip	August 9, 2012
169. U.S. Cellular	Alcatel	Android	One Touch 988 Shockwave	October 23, 2012
170. U.S. Cellular	Alcatel	Android	Venture	August 16, 2012
171. U.S. Cellular	HTC	Android	Arrive	June 14, 2011
172. U.S. Cellular	HTC	Android	Hero S	October 14, 2011
173. U.S. Cellular	HTC	Android	Merge	June 1, 2011
174. U.S. Cellular	HTC	Android	One V CDMA	July 3, 2012
175. U.S. Cellular	HTC	Android	Wildfire S	November 18, 2011
176. U.S. Cellular	Huawei	Android	Ascend II	January 6, 2012
177. U.S. Cellular	Huawei	Android	Ascend Y	October 23, 2012
178. U.S. Cellular	LG	Android	Splendor	September 11, 2012
179. U.S. Cellular	Motorola	Android	Defy XT	August 3, 2012
180. U.S. Cellular	Motorola	Android	Electrify 2	August 1, 2012

Exhibit 3 Smartphones Available in the U.S.

By Carrier and by Model

#### Wireless Provider Manufacturer Operating System Model Release Date<sup>1</sup> 181. U.S. Cellular Motorola Android Electrify M November 8, 2012 182. U.S. Cellular Motorola Android PHOTON 4G September 22, 2011 183. U.S. Cellular RIM BlackBerry BlackBerry Curve 9350 November 21, 2011 RIM BlackBerry Torch 9850 184. U.S. Cellular BlackBerry August 26, 2011 185. U.S. Cellular Samsung Android Droid Charge April 6, 2012 186. U.S. Cellular Samsung Android Fascinate October 28, 2010 187. U.S. Cellular Samsung Android **GALAXY Axiom** November 28, 2012 188. U.S. Cellular Samsung Android GALAXY Note II October 26, 2012 189. U.S. Cellular Samsung Android GALAXY S II CDMA February 29, 2012 190. U.S. Cellular Android GALAXY S III Samsung July 12, 2012 191. U.S. Cellular Samsung Android Stratosphere August 22, 2012 192. U.S. Cellular Samsung Android Repp November 21, 2011 193. U.S. Cellular ZTE Windows Render September 29, 2012 194. Verizon iOS iPhone 4 Apple February 10, 2011 iPhone 4S 195. Verizon iOS Apple October 14, 2011 196. Verizon iOS iPhone 5 Apple September 21, 2012 197. Verizon Casio Android Wireless Casio G'zOne Commando April 28, 2011 198. Verizon HTC Android Droid DNA November 21, 2012 199. Verizon HTC Droid Incredible 4G LTE Android July 5, 2012 200. Verizon HTC Android Rezound November 14, 2011 201. Verizon HTC Android Rhyme September 29, 2011 202. Verizon HTC Windows Trophy May 26, 2011 203. Verizon HTC Windows Phone 8X Windows November 19, 2012 LG 204. Verizon Android Enlighten September 22, 2011 205. Verizon LG Android Intuition September 6, 2012 LG 206. Verizon Android Lucid March 29, 2012 LG 207. Verizon Android Spectrum January 19, 2012 LG 208. Verizon Android Spectrum 2 October 30, 2012 209. Verizon Motorola Android Droid 4 February 10, 2012 210. Verizon Motorola Android DROID RAZR November 11, 2011 211. Verizon Motorola Android DROID RAZR HD October 18, 2012 212. Verizon Motorola Android DROID RAZR M September 10, 2012 213. Verizon Motorola Android DROID RAZR MAXX January 26, 2012 214. Verizon Motorola Android DROID RAZR MAXX HD October 18, 2012 215. Verizon Nokia Windows Lumia 822 November 19, 2012 216. Verizon Pantech Android Breakout September 22, 2011 217. Verizon Pantech Android Marauder August 2, 2012 BlackBerry Bold 9930 218. Verizon RIM BlackBerry August 15, 2011 219. Verizon RIM BlackBerry BlackBerry Curve 9310 July 12, 2012 220. Verizon RIM BlackBerry BlackBerry Curve 9370 January 19, 2012 221. Verizon Samsung Android GALAXY Nexus CDMA December 15, 2011 222. Verizon Samsung Android GALAXY Note II November 27, 2012 223. Verizon GALAXY S III Samsung Android July 12, 2012 224. Verizon Android GALAXY Stellar

Stratosphere

Android

September 6, 2012

October 13, 2011

Samsung

Samsung

225. Verizon

Exhibit 3

### Smartphones Available in the U.S. By Carrier and by Model

Wireless Provider	Manufacturer	Operating System	Model	Release Date <sup>1</sup>
226. Verizon	Samsung	Android	Stratosphere II	November 23, 2012
227. Virgin Mobile	Alcatel	Android	Venture	March 15, 2012
228. Virgin Mobile	Apple	iOS	iPhone 4 CDMA	June 29, 2012
229. Virgin Mobile	Apple	iOS	iPhone 4S	June 29, 2012
230. Virgin Mobile	HTC	Android	EVO 3D	May 31, 2012
231. Virgin Mobile	HTC	Android	One V CDMA	July 9, 2012
232. Virgin Mobile	Kyocera	Android	Rise	August 31, 2012
233. Virgin Mobile	LG	Android	Optimus Elite	May 15, 2012
234. Virgin Mobile	LG	Android	Optimus Slider	October 17, 2011
235. Virgin Mobile	Motorola	Android	TRIUMPH	July 19, 2011
236. Virgin Mobile	Samsung	Android	Epic 4G Touch	November 16, 2012
237. Virgin Mobile	Samsung	Android	GALAXY Reverb	September 28, 2012
238. Virgin Mobile	ZTE	Android	Chaser	July 26, 2012

#### Notes & Sources:

Includes all smartphones listed on phonearena.com as of November 30, 2012 as being available for use on a wireless provider.

Data from individual smartphone webpages on Phone Arena, www.phonearena com, visited on November 30, 2012.

<sup>&</sup>lt;sup>1</sup> Indicates the date the smartphone was first offered to consumers by a given carrier.

Exhibit 4

Smartphones Available in the U.S.

By Carrier

		Number o	of Models		Percent Affected
Wireless Provider	Apple	Samsung	Other	Total	by LEO
AT&T	4	14	23	41	10%
Verizon	3	6	24	33	9%
T-Mobile	0	9	19	28	0%
Sprint	2	7	20	29	7%
Top 4	9	36	86	131	7%
Alltel	0	5	11	16	0%
Boost Mobile	0	5	8	13	0%
Cricket	3	2	6	11	27%
MetroPCS	0	4	11	15	0%
Southern LINC	0	0	3	3	0%
Ting	0	4	7	11	0%
Tracfone	0	0	1	1	0%
U.S. Cellular	0	8	17	25	0%
Virgin Mobile	2	2	8	12	17%
Other	5	30	72	107	5%
Total	14	66	158	238	6%

Notes & Sources: From Exhibit 3.

Exhibit 5

North America Tablet Share Based on Unit Sales
Frost & Sullivan
2011

Vendor	2011		
	<u>#</u>	<u>%</u>	
Apple	12,135	49.6%	
Amazon	5,089	20.8%	
Samsung	1,639	6.7%	
Barnes & Noble	1,859	7.6%	
Asus	758	3.1%	
RIM	783	3.2%	
Others	2,195	9.0%	
Total	24,458	100.0%	

#### Notes & Sources:

Unit sales in thousands. Unit share based on unit sales.

From "Tablet Tracker.xlsx," at sheet 'North America', Frost and Sullivan.

Exhibit 6

### U.S. Tablet Ownership Pew Research Center 2011 – 2012

Vendor	2011	2012	
Apple	81.0%	52.0%	
Android			
Amazon (Kindle Fire)	N/A	21.0%	
Other	N/A	27.0%	
Android Subtotal	15.0%	48.0%	
Other	4.0%	N/A	
Total	100.0%	100.0%	

#### Notes & Sources:

Amazon (Kindle Fire) also runs on the Android platform. 2011 breakdown for Amazon (Kindle Fire) is not available.

From "The Future of Mobile News," October 1, 2012, Pew Research Center's Project for Excellence in Journalism, at p. 7, available at http://www.journalism.org/analysis\_report/device\_ownership (viewed November 26, 2012).

Exhibit 7

## Projected 2013 U.S. Tablet Unit Sales Based on Purchase Intent<sup>1</sup> Cowen and Company

Tablet	Share
Apple	_
Apple iPad (10" display; any model)	25.0%
Apple iPad mini	18.0%
Apple Subtotal	43.0%
Other	
Amazon Kindle Fire (any model)	24.0%
Other Android Tablet (any model)	12.0%
Windows 8 Tablet (Dell, HP, etc.)	11.0%
Google Nexus Tablet (any model)	9.0%
RIM Playbook (any model)	1.0%
Other Subtotal	57.0%
Total	100.0%

#### Notes & Sources:

Share assumed to be based on unit sales.

<sup>1</sup> Estimated unit share calculated for upcoming 18 months based on consumer response to the question: "Which of the following smartphones and tablets do you personally plan to purchase in the next 18 months? Please do not include anything provided by your employer." From Cowen Consumer PC and Tablet Sentiment Survey, October 2012.
From "Microsoft," Cowen and Company, November 12, 2012, at p. 14.

Tablets Available in the U.S. By Carrier and by Model

Wireless Provider	Manufacturer	Operating System	Model	Release Date <sup>1</sup>
1. AT&T	Apple	iOS	iPad 2	March 11, 2011
2. AT&T	Apple	iOS	iPad 3	March 16, 2012
3. AT&T	Apple	iOS	iPad 4	November 2, 2012
4. AT&T	Apple	iOS	iPad mini	November 20, 2012
5. AT&T	Pantech	Android	Element	January 22, 2012
6. AT&T	Samsung	Android	GALAXY Tab 2 10.1	November 9, 2012
7. AT&T	Samsung	Android	GALAXY Tab 8.9 LTE	November 20, 2011
8. AT&T	Samsung	Windows	ATIV Smart PC	November 12, 2012
9. AT&T	Sony	Android	Tablet P	March 4, 2012
<ol><li>Cricket</li></ol>	Samsung	Android	GALAXY Tab 10.1 Wi-Fi	December 16, 2011
11. Sprint	Apple	iOS	iPad mini	November 20, 2012
12. Sprint	Apple	iOS	iPad 4	November 26, 2012
13. Sprint	Motorola	Android	XOOM Wi-Fi	May 8, 2011
14. Sprint	Samsung	Android	GALAXY Tab 2 10.1	November 11, 2012
15. Sprint	ZTE	Android	Optik	February 5, 2012
16. T-Mobile	Samsung	Android	GALAXY Tab 10.1	November 16, 2011
17. T-Mobile	Samsung	Android	GALAXY Tab 7.0 Plus	November 16, 2011
18. T-Mobile	Huawei	Android	SpringBoard	November 16, 2011
<ol><li>U.S. Cellular</li></ol>	HTC	Android	Flyer CDMA	November 18, 2011
20. U.S. Cellular	Motorola	Android	XOOM Wi-Fi	June 23, 2011
21. U.S. Cellular	Samsung	Android	GALAXY Tab	December 8, 2010
22. U.S. Cellular	Samsung	Android	GALAXY Tab 10.1 LTE	March 22, 2012
23. Verizon	Apple	iOS	iPad 2	March 11, 2011
24. Verizon	Apple	iOS	iPad 3	March 16, 2012
25. Verizon	Apple	iOS	iPad 4	November 2, 2012
26. Verizon	Apple	iOS	iPad mini	November 18, 2012
27. Verizon	Motorola	Android	Droid Xyboard 10.1	December 9, 2011
28. Verizon	Motorola	Android	Droid Xyboard 8.2	December 9, 2011
29. Verizon	Samsung	Android	GALAXY Tab	November 11, 2010
30. Verizon	Samsung	Android	GALAXY Tab 10.1 LTE	July 28, 2011
31. Verizon	Samsung	Android	GALAXY Tab 2 (7.0) LTE	August 17, 2012
32. Verizon	Samsung	Android	GALAXY Tab 7.7 LTE	March 1, 2012

#### Notes & Sources:

Includes all tablets listed on phonearena.com as of November 30, 2012 as being available for use on a wireless provider.

Data from individual tablet webpages on Phone Arena, www.phonearena.com (viewed November 26-30, 2012).

<sup>&</sup>lt;sup>1</sup> Indicates the date the tablet was first offered to consumers by a given carrier.

Exhibit 9

Tablets Available in the U.S.

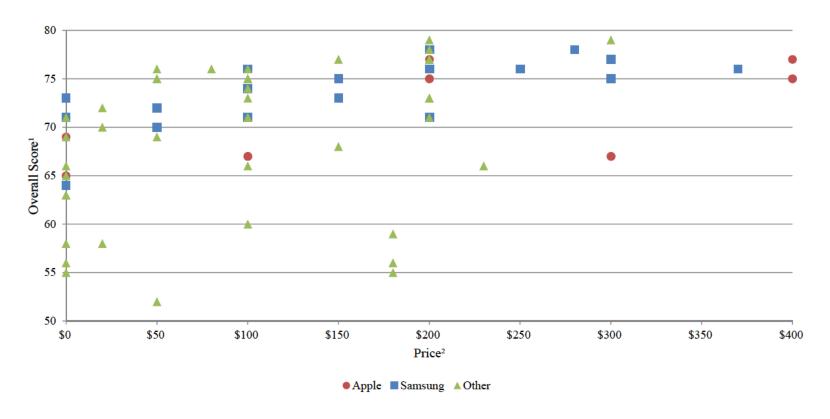
By Carrier

		Percent Affected			
Wireless Provider	Apple	Samsung	Other	Total	by LEO
AT&T	4	3	2	9	44%
Verizon	4	4	2	10	40%
T-Mobile	0	2	1	3	0%
Sprint	2	1	2	5	40%
Top 4	10	10	7	27	37%
Cricket	0	1	0	1	0%
U.S. Cellular	0	2	2	4	0%
Other	0	3	2	5	0%
Total	10	13	9	32	31%

Notes & Sources: From Exhibit 8.

Exhibit 10

#### Consumer Reports Ratings Overall Score<sup>1</sup> Smartphones



#### Notes & Sources:

- <sup>1</sup> Based mainly on ease of use, messaging, web browsing, display quality, voice quality, phoning, battery life, camera image and video quality, and portability. Music and camera features are also considered. Devices offered on multiple carriers are represented by a separate point for each carrier. The displayed score is out of a total of 100 points.
- <sup>2</sup> Based on a two-year contract in November 2012 from the indicated carriers, including rebates. Devices with multiple options for internal memory capacity are represented by two points: the low and high values of the price range. Source document does not provide price data for the Apple iPhone 4 (Sprint) or BlackBerry Torch 9850 (Sprint), and thus these models are not reflected here.

From http://www.consumerreports.org/cro/electronics-computers/phones-mobile-devices/cell-phones-services/smart-phone-ratings/ratings-overview.htm (viewed November 26, 2012).

#### Consumer Reports Ratings Smartphones By Brand and Carrier

Brand	Model	Price1	Operating System	Broadband Dat	a Overall Score <sup>2</sup>	Distinction <sup>3</sup>
AT&T						
Apple	iPhone 4	\$0	iOS	HSPA	69	
Apple	iPhone 4S	\$100	iOS	HSPA+	74	Recommended
Apple	iPhone 5	\$200-\$400	iOS	LTE, HSPA+	77	Recommended
BlackBerry	Torch 9810	\$100	BlackBerry	HSPA+	66	
HTC	One X	\$100	Android	LTE, HSPA+	76	Recommended
HTC	Titan II	\$200	Windows Phone	LTE, HSPA+	71	Recommended
HTC	Vivid	\$50	Android	LTE, HSPA+	75	Recommended
LG	Escape	\$50	Android	LTE, HSPA+	76	Recommended
LG	Nitro HD	\$50	Android	LTE, HSPA+	75	Recommended
LG	Optimus G	\$200	Android	LTE, HSPA+	79	Recommended
Motorola	Atrix HD	\$100	Android	LTE, HSPA+	75	Recommended
Nokia	Lumia 900	\$0	Windows Phone	LTE, HSPA+	71	Recommended
Pantech	Flex	\$20	Android	LTE, HSPA+	72	Recommended
Samsung	Focus 2	\$50	Windows Phone	LTE, HSPA+	70	Recommended
Samsung	Galaxy Exhilarate	\$0	Android	LTE, HSPA+	73	Recommended
Samsung	Galaxy Note	\$200	Android	LTE, HSPA+	71	Recommended
Samsung	Galaxy Note II	\$300	Android	LTE, HSPA+	77	Recommended
Samsung	Galaxy S II Skyrocket	\$100	Android	LTE, HSPA+	76	Recommended
Samsung	Galaxy S III	\$200	Android	LTE, HSPA+	78	Recommended
Samsung	Rugby Smart	\$50	Android	HSPA+	70	Recommended
Sony	Xperia ion	\$100	Android	LTE, HSPA+	71	Recommended
Apple Models:	3				commended Models:	19
Total Models:	21				Total Models:	21
% Apple:					% Recommended:	90.5%
Sprint						
Apple	iPhone 4		iOS	EV-DO	65	
Apple	iPhone 4S	\$100-\$300	iOS	EV-DO	67	Recommended
Apple	iPhone 5	\$200-\$400	iOS	LTE	75	Recommended
BlackBerry	Torch 9850		BlackBerry	EV-DO	61	
HTC	Evo 4G LTE	\$200	Android	LTE	73	Recommended
Kyocera	Rise	\$0	Android	EV-DO	55	
LG	Optimus Elite	\$0	Android	EV-DO	58	
LG	Optimus G	\$200	Android	LTE	77	Recommended
LG	Viper	\$50	Android	LTE	69	Recommended
Motorola	Photon Q 4G LTE	\$200	Android	LTE	73	Recommended
Samsung	Conquer 4G	\$0	Android	WiMAX	64	
Samsung	Galaxy Note II	\$300	Android	LTE	75	Recommended
Samsung	Galaxy S III	\$200-\$250	Android	LTE	76	Recommended
Samsung	Galaxy Victory 4G LTE	\$100	Android	LTE	71	Recommended
ZTE	Fury	\$0	Android	EV-DO	56	
Apple Models:	3				commended Models:	9
Total Models:					Total Models:	15
0/ 1 1	20.00/				2/ D	60.00/

% Apple: 20.0%

% Recommended: 60.0%

#### Consumer Reports Ratings Smartphones By Brand and Carrier

Brand	Model	Price <sup>1</sup>	Operating System	Broadband I	Data Overall Score <sup>2</sup>	Distinction <sup>3</sup>
T-Mobile						
BlackBerry	Bold 9780	\$180	BlackBerry	HSDPA	55	
BlackBerry	Bold 9900 4G	\$230	BlackBerry	HSPA+	66	
HTC	One S	\$150	Android	HSPA+	77	Recommended
HTC	Radar 4G	\$0	Windows Phone	HSPA+	66	
LG	Optimus L9	\$80	Android	HSPA+	76	Recommended
Samsung	Galaxy Note II	\$370	Android	HSPA+	76	Recommended
Samsung	Galaxy S Blaze 4G	\$100	Android	HSPA+	74	Recommended
Samsung	Galaxy S II	\$150	Android	HSPA+	75	Recommended
Samsung	Galaxy S III	\$280	Android	HSPA+	78	Recommended
Samsung	Galaxy S Relay 4G	\$150	Android	HSPA+	73	Recommended
T-Mobile	myTouch	\$0	Android	HSPA+	63	
T-Mobile	myTouch 4G	\$0	Android	HSPA+	69	Recommended
T-Mobile	myTouch Q	\$0	Android	HSPA+	63	
T-Mobile	Prism	\$20	Android	HSDPA	58	
Apple Models:	0			F	Recommended Models:	8
Total Models:	14				Total Models:	14
% Apple:	0.0%				% Recommended:	57.1%
• • • • • • • • • • • • • • • • • • • •						
Verizon						
Apple	iPhone 4	\$0	iOS	EV-DO	65	
Apple	iPhone 4S	\$100-\$300	iOS	EV-DO	67	Recommended
Apple	iPhone 5	\$200-\$400	iOS	LTE	75	Recommended
BlackBerry	Bold 9930	\$180	BlackBerry	EV-DO	59	
BlackBerry	Curve 9310	\$50	BlackBerry	EV-DO	52	
Casio	G'zOne Commando	\$100	Android	EV-DO	60	
HTC	Droid Incredible 4G LTE	\$100	Android	LTE	71	Recommended
HTC	Trophy	\$180	Windows Phone	EV-DO	56	
LG	Intuition	\$150	Android	LTE	68	Recommended
LG	Lucid	\$20	Android	LTE	70	Recommended
LG	Spectrum 2	\$100	Android	LTE	74	Recommended
Motorola	Droid 4	\$100	Android	LTE	73	Recommended
Motorola	Droid Razr	\$100	Android	LTE	75	Recommended
Motorola	Droid Razr HD	\$200	Android	LTE	77	Recommended
Motorola	Droid Razr M	\$100	Android	LTE	75	Recommended
Motorola	Droid Razr Maxx	\$200	Android	LTE	78	Recommended
Motorola	Droid Razr Maxx HD	\$300	Android	LTE	79	Recommended
Pantech	Marauder	\$0	Android	LTE	65	
Samsung	Galaxy Nexus	\$50	Android	LTE	72	Recommended
Samsung	Galaxy S III	\$200-\$250	Android	LTE	76	Recommended
Samsung	Galaxy Stellar	\$0	Android	LTE	71	Recommended
Samsung	Stratosphere	\$50	Android	LTE	72	Recommended
Apple Models:	3			F	Recommended Models:	16
Total Models:	22				Total Models:	22

Total Models: 22
% Apple: 13.6%

Total Models: 22
% Recommended: 72.7%

#### Consumer Reports Ratings Smartphones By Brand and Carrier

#### **Grand Total**

Apple Models:	9	Recommended Models:	52
Total Models:	72	Total Models:	72
% Apple:	12.5%	% Recommended:	72.2%

#### Notes & Sources:

- <sup>1</sup> Based on a two-year contract in November 2012 from the indicated carriers, including rebates. Ranges are displayed for devices with multiple options for internal memory capacity
- <sup>2</sup> Based mainly on ease of use, messaging, web browsing, display quality, voice quality, phoning, battery life, camera image and video quality, and portability. Music and camera features are also considered. The displayed score is out of a total of 100 points.
- <sup>3</sup> Recommended models are standout choices with high scores. Price is not considered, except in relation to the "Best Buy" distinction. Occasionally, high-scoring models are not recommended due to their brand repair history or other issues. *See* http://www.consumerreports.org/cro/electronics-computers/phones-mobile-devices/cell-phones-services/cell-phone-service-recommendations/smart-phone.htm (viewed November 28, 2012).
- From http://www.consumerreports.org/cro/electronics-computers/phones-mobile-devices/cell-phones-services/smart-phone-ratings ratings-overview.htm (viewed November 26, 2012)

## CNET Ratings "Best Smartphones"

					Carrier A	Availability			
R	ank	Brand	Model	AT&T	Sprint	T-Mobile	Verizon	Overall Rating <sup>1</sup>	Distinction <sup>2</sup>
	1	Samsung	Galaxy S3	✓	✓	✓	✓	8.7	Editors' Choice Award
	1	Apple	iPhone 5	✓	✓		✓	8.7	Editors' Choice Award
	3	Nokia	Lumia 920	✓				8.5	
	4	HTC	Droid DNA				✓	8.3	
	4	Motorola	Droid Razr Maxx HD				✓	8.3	

#### Notes & Sources:

- <sup>1</sup> The displayed rating from CNET's editors is out of a total of 10 points. The listed devices are all described as "Excellent," with 4 out of 5 stars.
- 2 "The CNET product reviews team recognizes tech and consumer electronics of the highest quality, design, and performance with its CNET Editors' Choice award. It's the seal of approval people look for when shopping for gadgets. Products bearing the CNET Editors' Choice graphic have been rigorously tested and carefully evaluated by our expert editors. The award is the hallmark of good product performance and value, and it signifies a product that is the best of breed in its category. An Editors' Choice product must change the competitive landscape, whether through innovative features, exceptional value for the price, remarkable ease of use, or a demonstrable boost to users' productivity." http://www.cnet.com/awards/editors-choice-award/ (viewed November 27, 2012).

#### Apple device is shaded.

From http://reviews.cnet.com/best-smartphones/ (updated November 20, 2012; viewed November 27, 2012). Device review dates range from June 19, 2012 to November 14, 2012. *See* http://reviews.cnet.com/samsung-galaxy-s3-review/ and http://reviews.cnet.com/smartphones/htc-droid-dna-verizon/4505-6452\_7-35536642.html (both viewed November 26, 2012).

Exhibit 13

## Phone Arena Ratings "Best Smart Phones"

			Carrier Availability <sup>1</sup>					
Rank	Brand	Model	AT&T	Sprint	T-Mobile	Verizon	Overall Rating <sup>2</sup>	
1	Samsung	Galaxy S III	✓	✓	✓	✓	9.3	
2	Samsung	Galaxy Note II	✓	✓	✓	✓	9	
2	Google	Nexus 4	✓		✓		9	
2	Apple	iPhone 5	1	✓		1	9	
5	HTC	One X+	✓				8.5	
5	Apple	iPhone 4S	✓	✓		1	8.5	

#### Notes & Sources:

- <sup>1</sup> See, e.g., http://www.phonearena.com/phones/carriers/AT&T; http://www.phonearena.com/phones/carriers/Sprint; http://www.phonearena.com/phones/carriers/T-Mobile/smartphones; http://www.phonearena.com/phones/carriers/Verizon; http://www.phonearena.com/phones/carriers/Verizon/upcoming; http://www.baltimoresun.com/business/technology/la-fitn-nexus-4-back-for-sale-at-noon-google-play-20121127,0,2360818.story (all viewed November 27, 2012).
- <sup>2</sup> The displayed rating by Phone Arena is out of a total of 10 points. Factors considered include release date and class, which is defined by targeted customers' preferences regarding cost, luxury level, multimedia features, and other aspects. *See* http://www.phonearena.com/howdowerate (viewed November 27, 2012).
  Apple devices are shaded.

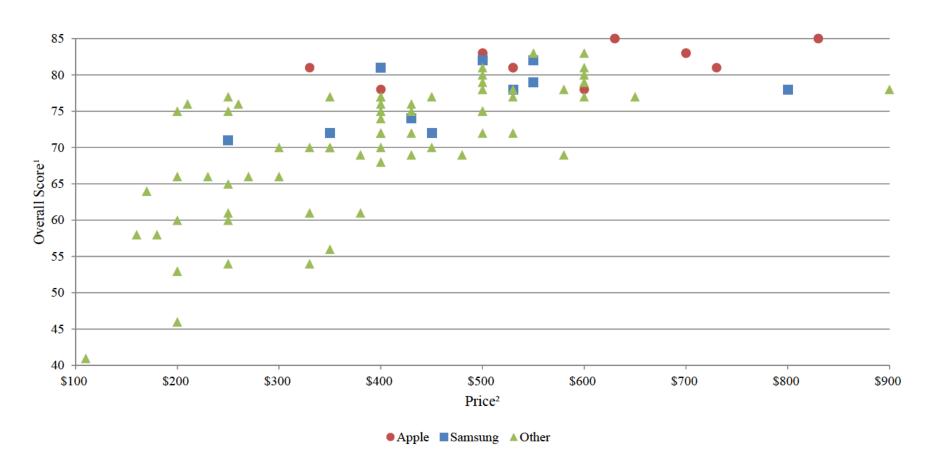
From http://www.phonearena.com/phones/best/Smart (viewed November 26, 2012). Devices were posted to this list between October 4, 2011 and October 29, 2012. Device reviews were posted between October 21, 2011 and November 19, 2012. *See* http://www.phonearena.com/reviews/Apple-iPhone-4S-Review\_id2859 and http://www.phonearena.com/reviews/Google-Nexus-4-Review\_id3192 (both viewed November 26, 2012).

Exhibit 14

Consumer Reports Ratings

Overall Score<sup>1</sup>

Tablets



#### Notes & Sources:

- <sup>1</sup> Based on ease of use, display, touch response, versatility, battery life, and weight. The displayed score is out of a total of 100 points.
- <sup>2</sup> An approximate retail price. Devices with multiple options for internal memory capacity are represented by two points: the low and high values of the price range. From http://www.consumerreports.org/cro/electronics-computers/computers-internet/tablets/tablet-ratings/ratings-overview htm (viewed November 26, 2012).

#### **Consumer Reports Ratings Tablets** By Brand

Brand	Model	Price1	Operating System	Internet Connectivity	Screen Size (in )	Overall Score <sup>2</sup>	Distinction <sup>3</sup>
		·					
Acer	Iconia Tab A100	\$250	Android 4	Wi-Fi	7	60	
Acer	Iconia Tab A200	\$300-\$330	Android 4	Wi-Fi	10 1	70	
Acer	Iconia Tab A500	\$350	Android 4	Wi-Fi	10 1	70	
Acer	Iconia Tab A510	\$400-\$450 \$430	Android 3 2	Wi-Fi, 4G	10 1 10 1	70 75	Recommended
Acer Acer	Iconia Tab A510 Iconia Tab A700	\$450 \$450	Android 4 Android 4	Wi-Fi Wi-Fi	10 1	73 77	Recommended
Amazon	Kindle Fire	\$430 \$170	Android 4	Wi-Fi Wi-Fi	7	64	Recommended
Amazon	Kindle Fire HD	\$210-\$260	Android 4	Wi-Fi	7	76	Best Buy
Apple	iPad 2	\$530-\$730	iOS6	Wi-Fi, 3G	97	81	Recommended
Apple	iPad 2	\$400-\$600	iOS 6*	Wi-Fi	97	78	Recommended
Apple	iPad (3rd gen)	\$630-\$830	iOS 6	Wi-Fi, 4G	97	85	Recommended
Apple	iPad (3rd gen)	\$500-\$700	iOS 6	Wi-Fi	97	83	Recommended
Apple	iPad (4th gen)	\$630-\$830	iOS 6	Wi-Fi, 4G	97	85	Recommended
Apple	iPad (4th gen)	\$500-\$700	iOS 6	Wi-Fi	97	83	Recommended
Apple	iPad Mini	\$330-\$530	iOS 6	Wi-Fi	79	81	Recommended
Archos	101 G9 (250 GB)	\$350	Android 4	Wi-Fi	10 1	56	recommended
Archos	101 G9 (8 GB or 16 GB)	\$330-\$380	Android 4	Wi-Fi	10 1	61	
Archos	70b Internet Tablet	\$200	Android 3 2	Wi-Fi	7	53	
Archos	80 G9	\$250-\$330	Android 4	Wi-Fi	8	54	
Archos	97 Carbon	\$250	Android 4	Wi-Fi	97	65	
Asus	Eee Pad Slider SL101	\$480-\$580	Android 4	Wi-Fi	10 1	69	
Asus	Eee Pad Transformer	\$400	Android 4	Wi-Fi	10 1	74	
Asus	Eee Pad Transformer Prime TF201	\$500-\$600	Android 4	Wi-Fi	10 1	80	Recommended
Asus	Transformer Pad Infinity TF700T	\$500-\$600	Android 4	Wi-Fi	10 1	79	Recommended
Asus	Transformer Pad TF300T	\$350-\$400	Android 4	Wi-Fi	10 1	77	Best Buy
Asus	Transformer Pad TF300TL	\$500	Android 4	Wi-Fi, 4G	10 1	75	Recommended
Asus	Vivo Tab RT TF600T	\$550-\$600	Windows RT	Wi-Fi	10 1	83	Recommended
Barnes & Noble	Nook HD	\$200-\$230	Android 4	Wi-Fi	7	66	Recommended
Barnes & Noble	Nook HD+	\$270-\$300	Android 4	Wi-Fi	9	66	Recommended
Barnes & Noble	Nook Tablet	\$160-\$180	Android 2 3	Wi-Fi	7	58	recommended
Coby	Kyros MID7035	\$110	Android 4	Wi-Fi	7	41	
Google	Nexus 7	\$200-\$250	Android 4 1	Wi-Fi	7	75	Best Buy
Lenovo	IdeaPad Tablet A1	\$200	Android 2 3	Wi-Fi	7	60	
Lenovo	IdeaTab S2109	\$250	Android 4	Wi-Fi	97	77	Best Buy
Lenovo	IdeaTab S2110	\$400-\$430	Android 4	Wi-Fi	10 1	76	Recommended
Microsoft	Surface with Windows RT	\$500-\$600	Windows RT	Wi-Fi	10 6	81	Recommended
Motorola	Droid Xyboard 10 1	\$530-\$900	Android 4	Wi-Fi, 4G	10 1	78	Recommended
Motorola	Droid Xyboard 8 2	\$430-\$530	Android 3 2	Wi-Fi, 4G	8 2	72	Recommended
Motorola	Xoom	\$500	Android 4	Wi-Fi	10 1	75	Recommended
Pandigital	SuperNova	\$200	Android 2 3	Wi-Fi	8	46	
Pantech	Element	\$400	Android 3 2	Wi-Fi, 4G	8	75	Recommended
Samsung	Galaxy Note 10 1	\$500-\$550	Android 4	Wi-Fi	10 1	82	Recommended
Samsung	Galaxy Tab 10 1	\$530-\$800	Android 3 1	Wi-Fi, 4G	10 1	78	Recommended
Samsung	Galaxy Tab 2 (7 0)	\$250	Android 4	Wi-Fi	7	71	Recommended
Samsung	Galaxy Tab 2 (10 1)	\$400	Android 4	Wi-Fi	10 1	81	Best Buy
Samsung	Galaxy Tab 2 (7 0)	\$350	Android 4	Wi-Fi, 4G	7	72	Recommended
Samsung	Galaxy Tab 7 0 Plus	\$430	Android 3 2	Wi-Fi, 4G	7	74	Recommended
Samsung	Galaxy Tab 7 0 Plus	\$350-\$450	Android 4	Wi-Fi	7	72	Recommended
Samsung	Galaxy Tab 7 7	\$550	Android 3 2	Wi-Fi, 4G	77	79	Recommended
Sony	Xperia Tablet S	\$400-\$500	Android 4	Wi-Fi	9 4	72	
T-Mobile	SpringBoard	\$400	Android 4	Wi-Fi, 4G	7	72	Recommended
Toshiba	Excite 10	\$400-\$650	Android 4	Wi-Fi	10 1	77	Recommended
Toshiba	Excite 10LE	\$530-\$600	Android 4	Wi-Fi	10 1	77	Recommended
Toshiba	Excite 7 7	\$500-\$580	Android 4	Wi-Fi	77	78	Recommended
Toshiba	Thrive	\$400	Android 3 1	Wi-Fi	10 1	68	
Toshiba	Thrive 7"	\$380-\$430	Android 4	Wi-Fi	7	69	Recommended
Velocity Micro	Cruz Tablet T510	\$250	Android 4	Wi-Fi	97	61	
ZTE	Optik	\$350	Android 3 2	Wi-Fi, 3G	7	70	Recommended
Apple Models	s: 7				Recon	nmended Models:	39
Total Models						Total Models:	58

<sup>&</sup>lt;sup>1</sup> An approximate retail price Ranges are displayed for devices with multiple options for internal memory capacity

<sup>&</sup>lt;sup>2</sup> Based on ease of use, display, touch response, versatility, battery life, and weight The displayed score is out of a total of 100 points

<sup>3</sup> Recommended models are standout choices with high scores These include Best Buys, which offer exceptional value Occasionally, high-scoring models are not recommended due to their brand repair history or other issues See http://www consumerreports org/cro/electronics-computers/computers-internet/tablets/tabletsrecommendations/tablet htm (viewed November 28, 2012) For devices with multiple options for internal memory capacity, a model is listed as Best Buy if any form of

<sup>\*</sup> Source document erroneously attributes Android 4 to some Wi-Fi-only Apple iPad 2 models
From http://www consumerreports org/cro/electronics-computers/computers-internet/tablets/tablet-ratings/ratings-overview htm; http://www consumerreports org/cro/ electronics-computers/computers-internet/tablets/tablet-ratings/features-and-specs htm (both viewed November 26, 2012)

#### Phone Arena Ratings Best Tablets<sup>1</sup>

Rank	Brand	Model	Overall Rating <sup>2</sup>
1	Google	Nexus 10	9
1	Google	Nexus 7	9
1	Asus	Transformer Prime	9
1	Asus	Transformer Pad Infinity TF700T	9
1	Apple	iPad 4	9
1	Apple	iPad 3	9

#### Notes & Sources:

- <sup>1</sup> Selected are all tablets that have an Overall Rating of at least 9.
- <sup>2</sup> The displayed rating by Phone Arena is out of a total of 10 points. Factors considered include release date and class, which is defined by targeted customers' preferences regarding cost, luxury level, multimedia features, and other aspects. *See* http://www.phonearena.com/howdowerate (viewed November 27, 2012). (While this webpage refers to phones, it appears to apply to tablets as well; *e.g.*, Phone Arena describes it as "How we rate" in hyperlinks alongside its tablet ratings.).

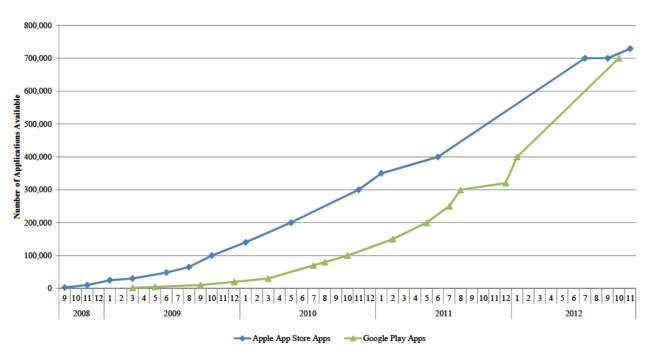
Apple devices are shaded.

From http://www.phonearena.com/phones/sort/revrating/Class/Tablet (viewed November 26, 2012). Device reviews were posted between January 27, 2012 and November 21, 2012. *See* http://www.phonearena.com/reviews/Asus-Transformer-Prime-Review\_id2946 and http://www.phonearena.com/reviews/Google-Nexus-10-Review\_id3195 (both viewed November 27, 2012).

Exhibit 17

Estimated Number of Apple App Store and Google Play Apps Available

September 2008 – November 2012



#### Notes & Sources:

Apple App Store Data from http://www.padgadget.com/2010/05/01/how-many-ipad-apps-are-there/;

http://www 148apps com/news/app-store-total-tops-10000/; http://www 148apps com/news/wowza-30000-apps-itunes-app-store/;

http://tech fortune cnn com/2009/06/10/apple-fact-check-50000-iphone-apps/; http://mashable.com/2009/08/05/flurry-iphone-apps/;

http://mashable.com/2009/10/27/iphone-100000-apps/; http://techcrunch.com/2010/03/16/google-android-market-now-serving-30000-apps/;

http://appadvice.com/appnn/2010/05/ipadbigsales; http://www apple.com/pr/library/2010/11/22Apples-iOS 4-2-Available-Today-for-iPad-iPhone-iPod-touch html;

http://www.apple.com/pr/library/2011/01/22Apples-App-Store-Downloads-Top-10-Billion html; http://148apps biz/app-store-metrics/?mpage=appcount;

http://news.cnet.com/8301-33620\_3-57471636-278/does-an-app-stores-size-matter-if-content-is-the-killer-app/; http://thenextweb.com/apple/2011/06/05/apples-app-store-passes-400000-apps-report/http://news.cnet.com/8301-1035\_3-57521252-94/can-apples-app-store-maintain-its-lead-over-google-play/ (viewed November 30, 2012)

Google Play Store Data from http://blog flurry com/bid/76874/iOS-Android-Apps-Challenged-by-Traffic-Acquisition-Not-Discovery; http://techcrunch.com/2009/12/15/android-market-20000-apps/;

http://androinica.com/2009/09/android-market-has-10000-apps-many-of-which-dont-appeal-to-users/; http://techcrunch.com/2010/03/16/google-android-market-now-serving-30000-apps/;

http://allthingsd.com/2010/715/googles-q2-may-not-wow-investors-revenue-in-line-eps-light/; http://www.androidpolice.com/2010/10/25/android-market-officially-reaches-100000-applications/;

http://www androidcentral com/150k-apps-android-market-tripled-9-months; http://www distimo com/blog/2012\_01\_google-android-market-tops-400000-applications/;

http://bgr com/2011/12/05/available-apps-across-major-mobile-platforms-approach-million-app-milestone/;

http://news.cnet.com/8301-1035\_3-57542502-94/google-ties-apple-with-700000-android-apps/ (viewed November 30, 2012)

#### Exhibit 18

#### Top Free Apps Apple App Store As of November 30, 2012

Downloaded to iPhones <sup>1</sup>			Downloaded to iPac
	A '1 11 C		

		Available from			Available from
Rank	App Name	Google Play?	Rank	App Name	Google Play?
1.	Facebook	Y	1.	Angry Birds HD Free <sup>3</sup>	Y
2.	Pandora Radio	Y	2.	The Weather Channel for iPad <sup>4</sup>	Y
3.	Words with Friends Free	Y	3.	Netflix	Y
4.	Skype	Y	4.	Skype for iPad <sup>4</sup>	Y
5.	The Weather Channel	Y	5.	Kindle - Read Books, eBooks, Magazines,	Y
6.	Google Search	Y	6.	ABC Player	N
7.	Google Earth	Y	7.	Pandora Radio	Y
8.	Angry Birds Free	Y	8.	Angry Birds Rio HD Free <sup>3</sup>	Y
9.	Shazam	Y	9.	CNN App for iPad	Y
10.	Netflix	Y	10.	Words with Friends HD Free <sup>3</sup>	Y
11.	Paper Toss	Y	11.	Google Earth	Y
12.	Twitter	Y	12.	Calculator Pro for iPad Free	N
13.	Movies by Flixster, with Rotten Tomatoes	Y	13.	Fruit Ninja HD Free <sup>3</sup>	Y
14.	Bump	Y	14.	Calculator for iPad Free	N
15.	PAC-MAN Lite <sup>2</sup>	N	15.	NYTimes for iPad <sup>4</sup>	Y
16.	Flashlight.	N	16.	USA TODAY for iPad	Y
17.	Unblock Me FREE	Y	17.	Facebook	Y
18.	Temple Run	Y	18.	MyPad - for Facebook, Instagram & Twitter	N
19.	Instagram	Y	19.	Flipboard: Your Social News Magazine	Y
20.	Touch Hockey: FS5 (Free)	Y	20.	eBay for iPad	Y
21.	ESPN ScoreCenter	Y	21.	Angry Birds Seasons HD Free <sup>3</sup>	Y
22.	Fruit Ninja Free	Y	22.	Dictionary.com Dictionary & Thesaurus for iPad4	Y
23.	Groupon	Y	23.	Twitter	Y
24.	Angry Birds Rio Free	Y	24.	Solitaire	Y
			25.	Friendly for Facebook	N
	Total Available	22		Total Available	20
	Percent Available from Google Play	92%		Percent Available from Google Play	80%

#### Notes & Sources:

<sup>&</sup>lt;sup>1</sup> App Store lists only top 24 apps downloaded to iPhone.

<sup>&</sup>lt;sup>2</sup> Available as Paid in the Google Play Store.

<sup>&</sup>lt;sup>3</sup> Not advertised as "HD" in the Google Play Store.

<sup>&</sup>lt;sup>4</sup> Separate tablet version not available in Google Play Store.

Google Play availability from search of Google Play Store as of November 30, 2012.

Top Free Apps based on all-time download rankings from Apple App Store (viewed November 30, 2012).

Exhibit 19
iPhone Apps Recommended by PCMag

			Available from
Rank	App Name		Google Play?
1.	Bing		Y
2.	Dashlane		Y
3.	Evernote		Y
4.	Facebook		Y
5.	Find My iPhone1		Y
6.	Flipboard		Y
7.	Onavo		Y
8.	Snapseed		N
9.	WebMD		Y
10.	Yelp		Y
		Total Available	9
		Percent Available from Google Play	90%

#### Notes & Sources:

<sup>&</sup>lt;sup>1</sup> Comparable "Find My Phone" App available for Android phones. From http://www.pcmag.com/article2/0,2817,2400521,00.asp (viewed November 26, 2012). Google Play availability confirmed by search of Google Play Store as of November 30, 2012.

Exhibit 20
Disaster Information Apps Recommended By HHS

		Available from		
	Apps Available for iPhone	Google Play?	Mobile Web?	
1	WISER	Y	Y	
2	REMM	Y	Y	
3	PubMed	Y	Y	
4	LactMed	Y	Y	
5	BioAgent Facts	N	N	
6	Clinicians' Biosecurity Resource	N	N	
7	PFA Mobile	N	N	
8	PTSD Coach	Y	N	
9	mTBI Pocket Guide	Y	N	
10	First Aid by American Red Cross	Y	N	
11	Pocket First Aid & CPR	Y	N	
12	Hands-Only CPR	Y	N	
13	Med Field Ops	Y	N	
14	ReUnite	N	N	
15	MyMedList	N	N	
16	Health Hotlines	N	N	
17	FEMA	Y	Y	
18	Earthquake - American Red Cross	Y	N	
19	Hurricane by American Red Cross	Y	N	
20	American Red Cross: Shelter View	N	N	
21	Disaster Alert	Y	N	
22	Outbreaks Near Me	Y	N	
23	FluView	N	N	
24	LibraryFloods	N	N	
25	ERS: Emergency Response and Salvage	N	N	
	Total Available	15	5	
	Percent Available from Google Play/Mobile Web?	6004	2004	

Percent Available from Google Play/Mobile Web? 60% 20%
Percent Available from Google Play or Mobile Web? 60%

		Available from		
	Apps Not Available for iPhone	Google Play?	Mobile Web?	
1	MedlinePlus	N	Y	
2	TOXNET	N	Y	
3	CDC <sup>1</sup>	Y	Y	
4	EPA	N	Y	
5	SOS	Y	N	
6	National Hurricane Center	N	Y	
7	National Weather Service	N	Y	
	Total Available	2	6	
	Percent Available from Google Play/Mobile Web?	29%	86%	

Percent Available from Google Play/Mobile Web? 29% 86%
Percent Available from Google Play or Mobile Web? 100%

#### Notes & Sources:

From http://sis nlm nih gov/dimrc/disasterapps html (viewed November 26, 2012) Google Play availability confirmed by search of Google Play Store as of November 30, 2012

<sup>&</sup>lt;sup>1</sup> Available for iPad

# EXHIBIT C

### UNITED STATES INTERNATIONAL TRADE COMMISSION WASHINGTON, DC

In the Matter of

CERTAIN ELECTRONIC DEVICES, INCLUDING WIRELESS COMMUNICATION DEVICES, PORTABLE MUSIC AND DATA PROCESSING DEVICES, AND TABLET COMPUTERS

**Investigation No. 337-TA-794** 

#### LIMITED EXCLUSION ORDER

The Commission has determined that there is a violation of Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the unlawful importation, sale for importation, or sale in the United States after importation by Respondent Apple Inc. ("Apple") of certain electronic devices, including wireless communication devices, portable music and data processing devices, and tablet computers that infringe claims [75, 76, 82, 83, and 84 of U.S. Patent No. 7,706,348, claims 9-16 of U.S. Patent No. 7,486,644, claims 5, 9, 10, and 13, of U.S. Patent No. 6,771,980, or claims 1-5 of U.S. Patent No. 7,450,114]. Having reviewed the record in this investigation, including the written submissions of the parties, the Commission has made a determination on the issues of remedy, the public interest, and bonding. The Commission has determined that the appropriate form of relief is a limited exclusion order prohibiting the unlicensed entry of infringing electronic devices, including wireless communication devices, portable music and data processing devices, and tablet computers that are manufactured abroad by or on behalf of, or imported by or on behalf of Respondent Apple Inc. or any of its affiliated companies, parents, subsidiaries, agents, licensees, or other related business entities, or their successors or assigns.

The Commission has determined that the public interest factors enumerated in 19 U.S.C. §§ 1337(d) and (f) do not preclude the issuance of a limited exclusion order.

Accordingly, the Commission hereby ORDERS that:

- 1. Electronic devices, including wireless communication devices, portable music and data processing devices, and tablet computers covered by claims [75, 76, 82, 83, and 84 of U.S. Patent No. 7,706,348, claims 9-16 of U.S. Patent No. 7,486,644, claims 5, 9, 10, and 13, of U.S. Patent No. 6,771,980, or claims 1-5 of U.S. Patent No. 7,450,114] that are manufactured abroad by or on behalf of, or imported by or on behalf of, Respondent or any of its affiliated companies, parents, subsidiaries, agents, licensees, or other related business entities, or their successors or assigns are excluded from entry for consumption into the United States, entry for consumption from a foreign trade zone, or withdrawal from a warehouse for consumption, for the remaining term of the patent[s], except under license of the patent's owner or as provided by law.
- 2. Notwithstanding paragraph 1 of this Order, the aforesaid products are entitled to entry for consumption into the United States, entry for consumption from a foreign trade zone, or withdrawal from a warehouse for consumption, under bond in the amount of 4.25 percent of the entered value of imported wireless communication devices, portable music and data processing devices, or computers, or component thereof from the day after this Order is received by the United States Trade Representative as delegated by the President, 70 Fed. Reg. 43251 (July 21, 2005), until such time as the United States Trade Representative notifies the Commission that this action is approved or disapproved but, in any event, not later than sixty (60) days after the date of receipt of this action.
- 3. At the discretion of U.S. Customs and Border Protection ("CBP") and pursuant to procedures it establishes, persons seeking to import electronic devices, including wireless

communication devices, portable music and data processing devices, and tablet computers that are potentially subject to this Order may be required to certify that they are familiar with the terms of this Order, that they have made appropriate inquiry, and thereupon state that, to the best of their knowledge and belief, the products being imported are not excluded from entry under paragraph 1 of this Order. At its discretion, CBP may require persons who have provided the certification described in this paragraph to furnish such records or analyses as are necessary to substantiate the certification.

- 4. In accordance with 19 U.S.C. § 1337(l), the provisions of this Order shall not apply to electronic devices, including wireless communication devices, portable music and data processing devices, and tablet computers that are imported by and for the use of the United States, or imported for, and to be used for, the United States with the authorization or consent of the Government.
- 5. The Commission may modify this Order in accordance with the procedure developed in Section 210.76 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.76).
- 6. The Secretary shall serve copies of this Order upon each party of record in this investigation and upon the Department of Health and Human Services, the Department of Justice, the Federal Trade Commission, and the Bureau of Customs and Border Protection.
  - 7. Notice of this Order shall be published in the *Federal Register*.

By Order of the Commission.

### UNITED STATES INTERNATIONAL TRADE COMMISSION WASHINGTON, DC

In the Matter of

CERTAIN ELECTRONIC DEVICES, INCLUDING WIRELESS COMMUNICATION DEVICES, PORTABLE MUSIC AND DATA PROCESSING DEVICES, AND TABLET COMPUTERS

**Investigation No. 337-TA-794** 

#### **CEASE AND DESIST ORDER**

IT IS HEREBY ORDERED THAT Apple Inc. ("Apple") of 1 Infinite Loop, Cupertino, California, 95014, cease and desist from conducting any of the following activities in the United States: importing, selling, using, marketing, advertising, servicing, repairing, replacing, distributing, offering for sale, transferring (except for exportation), and soliciting U.S. agents or distributors for electronic devices, including wireless communication devices, portable music and data processing devices, and tablet computers that infringe claims [75, 76, 82, 83, and 84 of U.S. Patent No. 7,706,348, claims 9-16 of U.S. Patent No. 7,486,644, claims 5, 9, 10, and 13, of U.S. Patent No. 6,771,980, or claims 1-5 of U.S. Patent No. 7,450,114] in violation of Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337.

I.

#### **Definitions**

As used in this Order:

- (A) "Commission" shall mean the United States International Trade Commission.
- (B) "Complainants" shall mean Samsung Electronics Co., Ltd., 416 Maetan-3dong, Yeongtong-gu, Suwon-City, Gyeonggi-do, Korea 443-742 and Samsung Telecommunications America, LLC, 1301 East Lookout Drive, Richardson, Texas 75082.
- (C) "Respondent" shall mean Apple Inc. ("Apple"), 1 Infinite Loop, Cupertino, California, 95014.
- (D) "Person" shall mean an individual, or any non-governmental partnership, firm, association, corporation, or other legal or business entity other than Respondent or its majority owned or controlled subsidiaries, successors, or assigns.
- (E) "United States" shall mean the fifty States, the District of Columbia, and Puerto Rico.
- (F) "Import" and "importation" shall refer to importation for entry for consumption under the Customs laws of the United States.
- (G) "Covered Products" shall mean electronic devices, including wireless communication devices, portable music and data processing devices, and tablet computers that infringe claims [75, 76, 82, 83, and 84 of U.S. Patent No. 7,706,348, claims 9-16 of U.S. Patent No. 7,486,644, claims 5, 9, 10, and 13, of U.S. Patent No. 6,771,980, or claims 1-5 of U.S. Patent No. 7,450,114].

#### II.

#### **Applicability**

The provisions of this Cease and Desist Order shall apply to Respondent and to any of its principals, stockholders, officers, directors, employees, agents, licensees, distributors, controlled (whether by stock ownership or otherwise) and majority-owned business entities, successors, and assigns, and to each of them, insofar as they are engaged in conduct prohibited by Section III, infra, for, with, or otherwise on behalf of Respondent.

#### III.

#### **Conduct Prohibited**

The following conduct of Respondent in the United States is prohibited by this Order. For the remaining term[s] of [U.S. Patent No. 7,706,348, U.S. Patent No. 7,486,644, U.S. Patent No. 6,771,980, and U.S. Patent No. 7,450,114], Respondent shall not:

- (A) import or sell for importation into the United States Covered Products;
- (B) use, market, distribute, offer for sale, sell, or otherwise transfer (except for exportation), in the United States imported Covered Products;
  - (C) advertise imported Covered Products in the United States;
  - (D) solicit U.S. agents, resellers, or distributors for imported Covered Products;
  - (E) service, repair, or replace Covered Products in the United States, or
- (F) aid or abet other entities in the importation, sale for importation, sale after importation, transfer (except for exportation), or distribution of Covered Products.

#### IV.

#### **Conduct Permitted**

Notwithstanding any other provision of this Order, specific conduct otherwise prohibited by the terms of this Order shall be permitted if, in a written instrument, the owner of [U.S. Patent No. 7,706,348, U.S. Patent No. 7,486,644, U.S. Patent No. 6,771,980, and U.S. Patent No. 7,450,114] licenses or authorizes such specific conduct, or such specific conduct is related to the importation or sale of Covered Products by or for the United States.

#### V.

#### Reporting

For purposes of this reporting requirement, the reporting periods shall commence on January 1 of each year and shall end on the subsequent December 31. However, the first report required under this section shall cover the period from the date of issuance of this Order through December 31, 2013. This reporting requirement shall continue in force until such time as Respondent will have truthfully reported, in two consecutive timely filed reports, that it has no inventory of Covered Products in the United States. Within thirty (30) days of the last day of each reporting period, Respondent shall report to the Commission the quantity and value of Covered Products that Respondent has imported or sold in the United States after importation during the reporting period and the quantity and value of reported Covered Products that remain in inventory in the United States at the end of the reporting period. A Respondent filing written submissions must file the original document with the Office of the Secretary. A Respondent desiring to submit a document to the Commission in confidence must file the original and a

public version of the original with the Office of the Secretary and serve a copy of the confidential version on Complainants' counsel.<sup>1</sup>

Any failure to make the required report or the filing of any false or inaccurate report shall constitute a violation of this Order, and the submission of a false or inaccurate report may be referred to the U.S. Department of Justice as a possible criminal violation of 18 U.S.C. § 1001.

#### VI.

#### **Record-Keeping and Inspection**

- (A) For the purpose of securing compliance with this Order, Respondent shall retain any and all records relating to the sale, offer for sale, marketing, or distribution in the United States of Covered Products, made and received in the usual and ordinary course of business, whether in detail or in summary form, for a period of three (3) years from the close of the reporting year to which they pertain.
- (B) For the purpose of determining or securing compliance with this Order and for no other purpose, and subject to any privilege recognized by the federal courts of the United States, duly authorized representatives of the Commission, upon reasonable written notice by the Commission or its staff, shall be permitted access and the right to inspect and copy in Respondent's principal offices during office hours, and in the presence of counsel or other representatives if Respondent so chooses, all books, ledgers, accounts, correspondence, memoranda, and other records and documents, both in detail and in summary form, as are required to be retained by subparagraph VI(A) of this Order.

Complainants must file a letter with the Secretary identifying the attorney to receive the reports. The designated attorney must be on the protective order entered in the investigation.

#### VII.

#### Service of Cease and Desist Order

Respondent is ordered and directed to:

- (A) Serve, within fifteen (15) days after the effective date of this Order, a copy of this Order upon each of its respective officers, directors, managing agents, agents, and employees who have any responsibility for the importation, marketing, distribution, or sale of imported Covered Products in the United States;
- (B) Serve, within fifteen (15) days after the succession of any persons referred to in subparagraph VII(A) of this Order, a copy of the Order upon each successor; and
- (C) Maintain such records as will show the name, title, and address of each person upon whom this Order has been served, as described in subparagraphs VII(A) and VII(B) of this Order, together with the date upon which service was made.

The obligations set forth in subparagraphs VII(B) and VII(C) shall remain in effect until the date of expiration of [U.S. Patent No. 7,706,348, U.S. Patent No. 7,486,644, U.S. Patent No. 6,771,980, and U.S. Patent No. 7,450,114].

#### VIII.

#### Confidentiality

Any request for confidential treatment of information obtained by the Commission pursuant to Sections V and VI of this Order should be in accordance with Rule 201.6 of the Commission's Rules of Practice and Procedure, 19 C.F.R. § 201.6. For all reports for which confidential treatment is sought, Respondent must provide a public version of such report with confidential information redacted.

#### IX.

#### **Enforcement**

Violation of this Order may result in any of the actions specified in Rule 210.75 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.75), including an action for civil penalties in accordance with Section 337(f) of the Tariff Act of 1930 (19 U.S.C. § 1337(f)), and any other action as the Commission may deem appropriate. In determining whether Respondent is in violation of this Order, the Commission may infer facts adverse to Respondent if Respondent fails to provide adequate or timely information.

#### X.

#### **Modification**

The Commission may amend this Order on its own motion or in accordance with the procedure described in Rule 210.76 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.76).

#### XI.

#### **Bonding**

The conduct prohibited by Section III of this Order may be continued during the sixty (60) day period in which this Order is under review by the United States Trade Representative as delegated by the President, 70 Fed. Reg. 43251 (July 21, 2005), subject to Respondent posting a 4.25 percent bond. This bond provision does not apply to conduct that is otherwise permitted by Section IV of this Order. Covered Products imported on or after the date of issuance of this order are subject to the entry bond as set forth in the limited exclusion order issued by the Commission, and are not subject to this bond provision.

The bond is to be posted in accordance with the procedure established by the Commission for the posting of bonds by Complainants in connection with the issuance of temporary exclusion orders. *See* Commission Rule 210.68, 19 C.F.R. § 210.68. The bond and any accompanying documentation is to be provided to and approved by the Commission prior to the commencement of conduct which is otherwise prohibited by Section III of this Order.

The bond is to be forfeited to Complainants in the event that the United States Trade

Representative approves, or does not disapprove within the review period, this Order, unless the

U.S. Court of Appeals for the Federal Circuit, in an final judgment, reverses any Commission

final determination and order as to Respondent on appeal, or unless Respondent exports the

products subject to this bond or destroy them and provide certification to that effect satisfactory

to the Commission.

The bond is to be released in the event the United States Trade Representative disapproves this Order and no subsequent order is issued by the Commission and approved, or not disapproved, by the United States Trade Representative, upon service on Respondent of an order issued by the Commission based upon application therefore made by Respondent to the Commission.

By Order of the Commission.

# **EXHIBIT D**

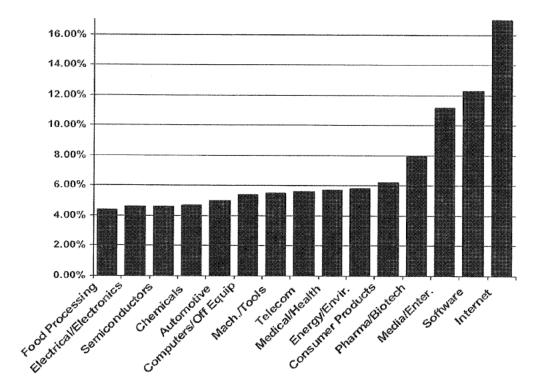


## LICENSING ECONOMICS REVIEW THE ROYALTY RATE JOURNAL OF INTELLECTUAL PROPERTY

No. 2011-6

December 2011

Avg. Royalty Rate - 2011



#### Industries

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### TRANSACTIONS AND AGREEMENTS IN THE NEWS

POZEN and CPPIB Credit Investments. On November 23, 2011, POZEN Inc. entered into a Purchase and Sale Agreement with CPPIB Credit Investments Inc. (CII), pursuant to which POZEN sold, and CII purchased, POZEN's right to receive future royalty payments arising from

U.S. sales of MT 400, including Treximet®. MT 400 is POZEN's proprietary combination of sumatriptan and naproxen sodium, the first multiple mechanism triptan therapy for the treatment of migraine.

For the sale, POZEN received a purchase price of \$75 million and will receive a **20%** interest in any royalties received by CII relating to the period commencing on April 1, 2018.

Treximet® İS formulated with POZEN's patented technology of combining a triptan with a nonanti-inflammatory steroidal GlaxoSmithKline's (NSAID) and (GSK) RT Technology™. This migraine medication contains sumatriptan, a 5-HT1 receptor agonist that mediates vasoconstriction of the human basilar artery and vasculature of human duramater, which correlates with the relief of migraine headache. It also contains naproxen, an NSAID that inhibits the synthesis of inflammatory mediators. Therefore, sumatriptan and naproxen contribute to the relief of migraine through pharmacologically different mechanisms of action.

In connection with the agreement, POZEN granted CII a first priority security interest in the purchased assets as defined in the agreement. In the event of a default by POZEN under the agreement, CII would be entitled to enforce its security interest in the purchased assets. Since CII is acquiring the royalty entitlement and proceeds, if any, from POZEN's outstanding patent litigation concerning Treximet®, CII will assume financial responsibility for such litigation. The agreement also contains other repre-



sentations, warranties, covenants and indemnification obligations that are customary for a transaction of this nature.

In June 2003, POZEN entered into an agreement with GlaxoSmithKline (GSK) for the development and commercialization of proprietary combinations of a triptan and a long-acting NSAID. Treximet® was approved by the FDA in April 2008 for the acute treatment of migraine attacks, with or without aura, in adults. GSK markets the drug in the U.S., and POZEN receives a royalty based on its net sales. That royalty rate increased to 18 percent on Jan. 1, 2010.

In April of 2011, POZEN announced that a federal court had ordered Par Pharmaceuticals Inc. not to make, use, sell or import a generic drug that competes with Treximet. The order was entered on the patent infringement lawsuit between POZEN and four drug companies: Par, Alphapharm Pty Ltd., Teva Pharmaceuticals USA Inc. and Dr. Reddy's Laboratories Inc.

The lawsuit focuses primarily on U.S. Patent No. 6,586,458, one of three patents challenged by the defendants in the case. The Court concluded that POZEN "is likely to succeed against Defendants' invalidity claims" concerning the '458 patent and that it "does not find that Defendants' arguments raise a substantial question regarding the enforceability of the '458 patent." The four companies filed applications with the U.S. Food and Drug Administration to market sumatriptan and naproxen sodium products, which POZEN contends infringe

on three of its patents covering Treximet®. Subsequently Teva was dismissed without prejudice from the lawsuit.

Boston Scientific and Abbott. Boston Scientific Inc. has recently received U.S. approval to launch its latest drug-coated stent for patients with clogged arteries, a move that is expected to be financially beneficial for the medical-device maker. The Promus Element stent was approved by the FDA for patients with coronary-artery disease, which causes the dangerous buildup of plaque in the arteries leading to the heart.

Stents are mesh-metal tubes used to prop open arteries after they have been cleared of fatty plaque deposits. Stents are threaded into the artery on the tip of a catheter and then squeezed into place using an inflatable balloon. The device's drug coating is designed to prevent scar tissue from growing over the stent and reclogging the artery.

The company said it will begin marketing the stent in the U.S. immediately. The device replaces the older Promus stent, which is Boston Scientific's version of Abbott Laboratories' Xience stent.

Boston Scientific pays a 40 percent royalty to competitor Abbott Laboratories on all sales of the stents. All revenue from the new stent will go to Boston Scientific.

The company said it expects Promus Element to add an annual \$200 million to its gross margins after 2012. Promus Element was approved in

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Europe in October 2009, and Boston Scientific reported \$110 million in sales for the last quarter. Approval is expected in Japan by mid-2012.

Researchers at a conference for cardiology specialists raised questions about deformation problems with Boston Scientifics' Element, Omega and Ion stents. Element and Omega are approved in Europe, while Ion is available in the U.S. At the conference Physicians presented several medical cases where the stents failed to hold their shape, increasing the risk of heart attack for patients.

Analysts say that Boston Scientific will face additional challenges converting doctors from the older Promus to its new stent. The new stent will also be competing against Medtronic Inc.'s next-generation Resolute stent, expected to launch spring 2012.

ViroPharma and Genzyme. Viro-Pharma Incorporated recently announced the modernization of labeling for Vancocin® (vancomycin hydrochloride, USP) Capsules made effective through the U.S. Food and Drug Administration's approval of a supplemental new drug application (sNDA). The company is also in an ongoing citizen petition and litigation with the FDA regarding Vancocin®. Through the sNDA approval, the Vancocin® label for the first time will include clinical safety and efficacy data for Vancocin® in treating currently circulating strains of Clostridium difficile, including the BI/NAP1 strain.

The Vancocin® label now includes important safety and efficacy data from 260 patients with C. difficile associated diarrhea (CDAD) treated with Vancocin® in two pivotal studies of Genzyme Corporation's investigational drug, tolevamer. The Vancocin® arm of the trials provides important information to help ensure appropriate use of Vancocin®.

ViroPharma purchased exclusive rights to the two studies from Genzyme for which it will pay Genzyme royalties of 10 percent, 10 percent and 16 percent on net sales of Vancocin® respectively for the three-year period following the approval of the sNDA.

As a result of the sNDA approval, ViroPharma reports that Vancocin® meets the requirements for, and thus has, three years of exclusivity. This means that generic vancomycin capsules will not be approved during this period. Under FDA's regulations, labeling changes based on new clinical investigations that are essential to approval of the sNDA and to which the applicant has exclusive rights may be granted three years of exclusivity. Generic drug labeling cannot include information protected by such three-year exclusivity.

A generic may seek approval by omitting labeling protected by three-year exclusivity. However, if such omissions render the generic drug less safe or effective, it cannot be approved until the three-year exclusivity expires.

The modernized label approved by the FDA contains important new information for prescribers and patients, including:

- \* Clinical safety and efficacy data of Vancocin® capsules, including efficacy data for the more lethal, epidemic BI/NAP1 strain;
- \* An instruction to monitor renal function in all patients;
- \* An instruction that elderly patients should not be prematurely discontinued from treatment, or switched to other therapies; and
- \* A specific dosing regimen for CDAD.

ViroPharma reports that attempting to omit Vancocin® labeling changes protected by exclusivity would render generic versions of Vancocin® less safe and effective. Ultimately, the de-

cision on a grant of three-year exclusivity reside with the FDA.

ViroPharma has two suits pending against FDA regarding Vancocin®. A Freedom of Information Act (FOIA) suit seeking the administrative record of FDA's development of in vitro dissolution as a bioequivalence method for generic vancomycin capsules is currently pending decision in federal district court. ViroPharma also filed an Administrative Procedure Act (APA) suit alleging that FDA's in vitro bioequivalence method for generic vancomycin capsules is flawed under the APA.

Oral arguments on the district court's procedural dismissal of this suit are currently scheduled for January 13, 2012 before the United States Court of Appeals for the District of Columbia Circuit.

University of Minnesota. The University of Minnesota recently announced a new program that simplifies contracts for industry-sponsored research. The program offers exclusive rights to the resulting inventions for an initial fee.

The University hopes that by exchanging its previous methods to the establishment of upfront terms will increase the University's effectiveness in commercialization of research. The new terms put aside the negotiations over royalties that could be years off. Under the new model, businesses would pay a 1 percent royalty on annual sales, only after they exceed \$20 million.

(continued on Page 8)

### INDUSTRY ROYALTY RATE DATA SUMMARY

This annual analysis of royalty rates provides benchmarks for licensing rates covering 15 industries. Data for the analysis is provided by AUS Consultants, Inc. and is derived from the RoyaltySource® royalty rates database. RoyaltySource® now contains about 10,000 public and private licensing transactions from over 25 years of This data was used to tracking. analyze average royalty rates (based on a percent of sales) by industry.

Four thousand six hundred and thirty-six selected observations from 15 industries in the database were analyzed with the results presented in Table 1. There are fewer transactions in the summary than the total number of transactions in the database for several reasons.

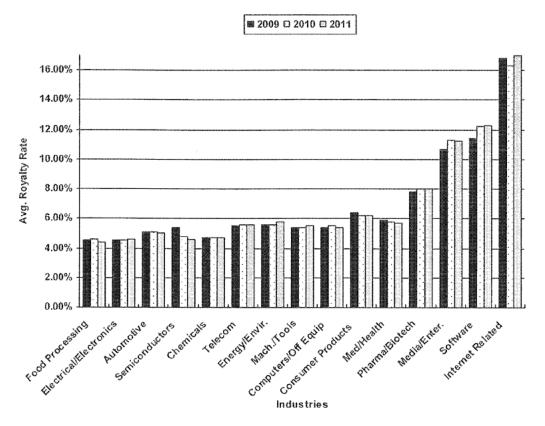
First, only technology licenses from public sources are included in the analysis -- and trademark license transactions are eliminated. Second, some transactions do not fit in the 15 industry groupings we have chosen to report. RoyaltySource® transactions cover more industries than the 15 reported. Other transactions are eliminated from the analysis because they have a royalty base of something other than some variation of sales.

Also worth noting is that every year transactions are moved from one category to another as additional information is obtained and the database is further refined.

Table 1: RoyaltySource® Transaction Analysis

Industry	Average	Median	Maximum	Minimum	Count
Chemicals	4.7%	4.4%	40.0%	0.1%	144
Internet	17.0%	15.4%	80.0%	0.3%	232
Telecom (excluding Media)	5.6%	4.5%	50.0%	0.3%	139
Consumer Goods, Retail & Leisure	6.2%	5.0%	30.0%	0.1%	230
Media & Entertainment	11.2%	6.3%	80.0%	0.1%	53
Food	4.4%	3.5%	30.0%	0.3%	78
Medical\Health Products	5.7%	4.5%	80.0%	0.0%	635
Pharmaceuticals & Biotechnology	8.0%	5.3%	90.0%	0.0%	1,772
Energy & Environment	5.8%	4.5%	75.0%	0.1%	358
Machines/Tools	5.5%	4.5%	25.0%	0.5%	119
Automotive	5.0%	4.3%	20.0%	0.5%	107
Electrical & Electronics	4.6%	4.0%	20.0%	0.5%	193
Semiconductors	4.6%	3.3%	30.0%	0.2%	124
Computers & Office Equipment	5.4%	4.0%	30.0%	0.2%	110
Software	12.3%	7.6%	77.0%	0.0%	342
Industry Summary	7.6%	5.0%			4,636

Figure 1: Average Royalty Rates by Industry (comparing database transactions for years 2009 - 2011)



The number of observations in the summary increased 6% as compared to 2010, with 251 transactions added in 2011. Medical/ Health Products and Pharmaceuticals/ Biotechnology combined account for over 50 percent of the total transactions analyzed and 55% of the transactions added in 2011.

Food is the category with the lowest average percentage royalty rate (4.4%). Internet-related transactions continued to exhibit the highest average royalty rate, at 17%. Pharmaceuticals and Biotechnology (the category with the largest number of transactions) remained unchanged when compared to 2010, with an average royalty rate of 8.0% of sales. The average royalty rate in Semiconductor-related transactions continued to decline from 4.8% in 2010 to 4.6% this year.

Figure 1 presents the 2011 data with a comparison to the last two years of royalty rate data. The average royalty rate for all the transactions was 7.6% of sales. This is slightly higher than the average in 2010 of 7.5%.

#### (continued from Page 5)

Although some large companies have set forth standard research contracts for the universities with which they work, this might be the first time a University has done so. The University hopes to make industry-sponsored funding a bigger piece of its research pie, especially since federal funding for research has leveled off nationally, and may continue to decrease.

A University representative indicated that the University has been too focused on potential royalties, clinging to intellectual property rights and the terms surrounding them and that the previous approach ignores the many other benefits of working with businesses. The University brought in \$769 million in sponsored research awards in fiscal year 2011, according to a recently released report. That compares with \$823 million in 2010 -- a high-water mark, thanks to federal stimulus funds that have since ended.

The University ranks eighth among public research universities in National Science Foundation spending but falls when it comes to business-backed research. The new model allows a for-profit entity to prepay 10 percent of the sponsored research agreement -- or \$15,000, whichever is greater -- for exclusive rights to the resulting inventions. That company handles all patenting costs, including attorneys' fees. In exchange, the University receives 1 percent in royalties only when net sales exceed \$20 million a year.

Currently 95 percent of the dollars the University receives through technology commercialization are royalties from the worldwide sales of Ziagen, an AIDS drug. The University owns the patent on the drug. That patent runs out in a few years, meaning the University will lose tens of millions of dollars in revenue. The University reported commercialization income of over \$80 million for 2010. The University recently ranked 6th among research universities in annual licensing revenue.

Other universities are taking note of the Minnesota's change. The Pennsylvania State University also revamped its IP negotiating policies. In the past, the University owned the intellectual rights and controlled the use of technology from faculty research, even if that research was industry-sponsored. Now, negotiations about ownership will take place with consultation from the involved faculty. Previously the University insisted on intellectual property ownership and would not put a value on the license fee up front -- and if the company did not pay the fee the University decided on, it reserved the right to license it to anyone else -- including their competition. Along with contractual issues, companies were faced with a system that could be difficult to navigate.

Santarus. In December, Santarus, Inc. entered into a license agreement with Cowen Healthcare Royalty Partners (CHRP), L.P. and Shore Therapeutics, Inc. Under the license agreement, Shore granted Santarus exclusive rights to commercialize Fenoglide® (fenofibrate) prescription products in the U.S. Fenoglide is approved by the FDA as an adjunct to diet to reduce elevated low-density lipoprotein-cholesterol (LDL-C), total

cholesterol, triglycerides and apolipoprotein B (Apo B), and to increase high density lipoprotein-cholesterol (HDL-C) in adult patients with primary hyperlipidemia or mixed dyslipidemia. Fenoglide® is also indicated as an adjunctive therapy to diet for treatment of adult patients with hypertriglyceridemia

In partial consideration of the licenses and rights granted under agreement, Santarus will pay Shore an \$11 million upfront fee. In addition, Santarus will pay Shore tiered royalties on net sales of Fenoglide. The royalties are 5% on net sales of up to \$10 million (commencing in 2013), a 20% royalty on net sales between \$10 million and \$20 million, and a 25% royalty on net sales above \$20 million. Santarus will also be obligated to pay Shore onetime, success-based milestones contingent on sales achievement: \$2 million if calendar year net sales equal or exceed \$20 million and \$3 million if calendar year net sales equal or exceed \$30 million. Santarus also has exclusive rights to use the Fenoglide® trademark in the U.S.

Santarus is responsible for commercial, manufacturing and regulatory activities for Fenoglide®. In connection with the assumption of these responsibilities, Shore's existing agreements relating to the manufacture and supply of Fenoglide®, as well as existing inventory, have been assigned to Santarus. Shore will be financially responsible for returns of Fenoglide® sold or distributed prior to the effective date of the agreement, and for Fenoglide® rebates, chargeback claims and discount or savings card redemptions pursuant to agreements in effect prior to the effective date. Santarus will be

responsible for all other Fenoglide® returns, rebates, chargebacks and discount or savings card redemptions.

Santarus has agreed to use commercially reasonable efforts to commercialize Fenoglide® within the U.S. In addition, prior to the entry of any generic version of Fenoglide®, Santarus is required to provide certain minimum detailing efforts and sales and marketing expenditures.

During the term of the license agreement, Shore is not permitted to, directly or indirectly, develop, manufacture or commercialize any fenofibrate products for human use in the U.S., and CHRP is not permitted to, directly or indirectly, develop, manufacture or commercialize Fenoglide® for human use in the U.S.

Prior to the execution of this agreement, Shore entered into a settlement arrangement with Impax Laboratories, Inc. in connection with ongoing patent infringement litigation associated with Impax's abbreviated new drug application, or ANDA, for a generic version of Fenoglide®. The settlement terms grant Impax a sublicense to begin selling a generic version of Fenoglide® on October 1, 2015, or earlier under certain circumstances.

The settlement arrangement is subject to review by the U.S. Department of Justice and the Federal Trade Commission, as well as entry by the U.S. District Court for the District of Delaware of an order dismissing the litigation. Until such time that the litigation is dismissed, CHRP and Shore will continue to manage the litigation,

at their cost and expense. Following the dismissal of the lawsuit by the court, Santarus will assume Shore's obligations associated with the sublicense to Impax.

Coronado. Coronado Biosciences has signed a terms of agreement with Dr. Falk Pharma GmbH and OvaMed to collaborate in the development of CNDO-201 (Trichuris suis ova [TSO]) for Crohn's disease (CD). The parties have agreed to enter into a collaboration agreement under which Falk will grant Coronado exclusive rights and licenses.

This includes license to Falk's patent rights, preclinical data and clinical data from clinical trials of TSO in CD, including a Phase II trial, for use in North America, South America and Japan. Coronado expects to finalize the collaboration agreement in the first quarter of 2012.

Coronado will grant Dr. Falk Pharma exclusive rights and licenses to company data from planned clinical trials of TSO in CD for use in Europe. Coronado will pay Falk a total of EUR 5.0 million (\$6.5 million) during 2012 and a royalty of 1 per cent of net sales of TSO.

Coronado and Falk have each licensed TSO, a novel, orally-administered, natural immunomodulator that regulates T-cells and inflammatory cytokines, in their respective territories, from OvaMed, the manufacturer of the product. A steering committee comprised of Coronado, Dr. Falk Pharma and OvaMed representatives will oversee the development program, under which Coro-

nado and Falk will each be responsible for clinical testing on approximately 50 per cent of the total number of patients required for regulatory approval of TSO for CD in the US and Europe.

Falk is currently conducting a doubleblind, randomized, placebocontrolled, multi-centre, Phase II trial in Europe evaluating the efficacy and safety of three different dosages of TSO in CD. This study is expected to enroll over 200 patients and results are anticipated in the second half of 2012.

#### Government and Litigation

Orthopedic Systems. A California orthopedics company must pay a surgeon more than \$2 million for not paying him royalties due on a seat he designed for patients in shoulder operations. The court ruled that Connecticut physician Allen Schlein is entitled to \$616,000 in damages for breach of contract, \$1.22 million for the profits that Orthopedic Systems Inc. made by selling the device that bore his name without paying him, and \$320,000 in attorneys' fees, the First District Court of Appeal in San Francisco ruled.

The surgeon was awarded the \$616,000 for the money he lost when the company terminated his royalties in 2005 but the company was not ordered to surrender its profits (these maybe added to the settlement). California law allows someone whose name is used on a product without authorization to recoup the seller's profits. The law is particularly for non-celebrities, who may find it difficult to

prove that their reputation or the value of their endorsement was harmed. Forfeiture of the company's profits helps to protect "the long-recognized right to control the commercial use, and thus protect the economic value of one's name," said Justice Jeffrey Reardon.

Schlein, an orthopedic surgeon, invented several medical products in the 1980s and marketed them through Orthopedic Systems. He was paid royalties. In 1992, the company agreed to manufacture and sell the "Schlein Shoulder Positioner," a cushioned, beach chair-style seat for patients undergoing arthroscopic shoulder surgery, and to pay Schlein 5 percent of the proceeds.

In 2005, however, the new owners of the company told Schlein the royalty agreement was not binding and had become "economically unfeasible." The company kept his name on the device for the next seven months, with sales of more than \$2 million, and then later changed the product's name.

After a trial in 2008, an Alameda County jury said Orthopedic Systems was bound by the terms of the 1992 contract with Schlein and owed him damages. The appeals court upheld the verdict, saying various changes to the product's name and design over the years had not affected Schlein's right to compensation.

M-Edge Accessories and Amazon. M-Edge Accessories recently filed a lawsuit against Amazon alleging the online retailer has been "sabotaging" their business. M-Edge Accessories

is also accusing Amazon of patent infringement, false advertising, creating unfair competition and hampering M-Edge's customer relations. Amazon reportedly used unethical business practices with M-Edge in order to secure a larger percentage of commissions. According to the lawsuit, Amazon "...extorted higher-than-negotiated commissions from the company, threatened to make M-Edge products less visible on Amazon's marketplace and made a competing Kindle case that infringed on M-Edge's patent."

M-Edge originally signed a deal with Amazon that would provide the Amazon with a 15% commission on all goods sold. Amazon allegedly came back two months later and demanded a larger 32% commission. When M-Edge declined, an executive told M-Edge that Amazon would "de-list," "play" with, or "bury" the accessory maker's products so that "no one will be able to find you." M-Edge eventually signed a new contract with Amazon, but it had to pay \$6.5 million in commissions in order to do so. Even still, Amazon allegedly left its products off of the "Amazon Approved Accessory Maker" list.

M-Edge currently attributes 90 percent of their business to Amazon sales and because of this they finally agreed to the terms and paid out the \$6.5 million in commission fees. However, after paying the huge price, M-Edge says Amazon started to infringe on their patents for Kindle cases with built-in lights by creating their own and selling them on their website. Also, Amazon apparently started to list M-Edge made cases as "unavailable" or not listing their

products at all and then leading customers to the Amazon created "copycat" cases.

Asentinel and MER Telemanagment et al. Asentinel, a technology-Communications Lifecycle Management company, recently announced that it has entered into a Telecom Expense Management (TEM) patent license agreement with MER Telemanagement Solutions Ltd. The Info Group, and MTS Integratrak. providing service under the AnchorPoint brand. Under the terms of the agreement, Asentinel granted a worldwide non-exclusive license to U.S. Patent Nos. 7,340,422 and 7,805,342 and related U.S. and foreign counterpart patent applications to the licensees.

The patents relate to systems and methods for providing telecom expense management that enable large corporate users to save millions of dollars on their telecommunications services. Asentinel had previously initiated a patent infringement lawsuit against the licensees, Veramark and Cass Information Systems, accusing the defendants of infringing the referenced patents.

The agreement with the licensees includes payment for past damages and an ongoing 4 percent royalty on future telecom expense management revenues. Additional terms of the agreement are confidential. Asentinel had earlier announced a licensing agreement with Veramark and another unnamed major player in the TEM industry.

#### LICENSING ECONOMICS REVIEW

The Royalty Rate Journal of Intellectual Property

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# In the Matter of Certain Electronic Devices, Including Wireless Communication Devices, Portable Music and Data Processing Devices, and Table Computers

Inv. No. 337-TA-794

#### **CERTIFICATE OF SERVICE**

I, Jon Tap, hereby certify that on this 3<sup>rd</sup> day of December, 2012, copies of the foregoing document were served upon the following parties as indicated:

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	<u>/s/ Jon Tap</u> Jon Tap

# In the Matter of Certain Electronic Devices, Including Wireless Communication Devices, Portable Music and Data Processing Devices, and Table Computers

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