ALSTON&BIRD LLP

The Atlantic Building
950 F Street, NW
Washington, DC 20004-1404

202-239-3300
Fax: 202-654-4842
www.alston.com

Adam D. Swain | Direct Dial: 202-239-3622 | Email: adam.swain@alston.com

December 22, 2016

VIA HAND DELIVERY

The Honorable Lisa R. Barton
Secretary
U.S. International Trade Commission
500 E Street, S.W., Room 112
Washington, DC 20436

Re: *Certain Electronic Devices, Including Mobile Phones, Tablet Computers, and Components Thereof, 337-TA-_____*

Dear Secretary Barton:

Enclosed for filing please find documents in support of a request by Complainant Nokia Technologies Oy ("Nokia" or "Complainant") that the U.S. International Trade Commission institute an investigation pursuant to Section 337 of the Tariff Act of 1930, as amended, concerning certain mobile phones, tablet computers, and components. A separate letter requesting confidential treatment of exhibits 18-22, 29-59, 61-67, 72-80, and 107-112 is included with this filing. There is no confidential business information contained in the complaint itself. Nokia's submission includes the following documents:

- One (1) original and eight (8) true paper copies of the Complaint, pursuant to Commission Rule 210.8(a)(1)(i).

- One (1) electronic copy of the non-confidential exhibits to the Complaint, pursuant to Commission Rules 210.8(a)(1)(i) and 210.12(a)(9), including:

    - One (1) electronic certified copy each of U.S. Patent No. 7,415,247, U.S. Patent No. 9,270,301, U.S. Patent No. 6,393,260, U.S. Patent No. 8,036,619, U.S. Patent No. 6,826,391, U.S. Patent No. 6,480,700, U.S. Patent No. 9,473,602, and U.S. Patent No. 7,653,366 as Exhibits 1-8 to the Verified Complaint, respectively, pursuant to Commission Rule 210.12(a)(9)(i); and

- One (1) electronic certified copy of the assignment records for each of the 247, 301, 260, 619, 391, 700, 602[1], and 366 patents as Exhibits 9-16 to the Verified Complaint, respectively, pursuant to Commission Rule 210.12(a)(9)(ii).

- One (1) electronic copy of the confidential exhibits to the Verified Complaint, pursuant to Commission Rule and 210.8(a)(1)(ii).

- One (1) additional copy each — four (4) additional copies total — of the Complaint and accompanying electronic copies of the non-confidential exhibits, for service upon Apple Inc., pursuant to Commission Rule 210.8(a)(1)(iii); and four (4) additional copies of the confidential exhibits for service upon Proposed Respondent's counsel after they have subscribed to the Protective Order.

- One (1) electronic certified copy each of the 247, 301, 260, 619, 391, 700, 602, and 366 Patents as Exhibits 1-8 to the Verified Complaint.

- Physical exhibits consisting of mobile phone and a tablet of the imported articles that are the subject of the complaint, as Exhibits 1 to 7 the Complaint, pursuant to Commission Rule 210.12(b), which will be subsequently provided to the Commission in a matter of days.

- Certified copies of the prosecution histories of the 247, 301, 260, 619, 391, 700, 602, and 366 Patents as Appendices 1-8 to the Complaint.

- Three (3) additional electronic copies each of the prosecution histories of the 247, 301, 260, 619, 391, 700, 602, and 366 Patents as Appendices 1-8 to the Complaint, pursuant to Commission Rule 210.12(c)(1).

- Four (4) electronic copies each of each patent and applicable pages of each technical reference mentioned in the prosecution histories of the 247, 301, 260, 619, 391, 700, 602, and 366 Patents as Appendices 9-16 to the Complaint, pursuant to Commission Rule 210.12(c)(2).

- A letter and certification requesting confidential treatment for the information contained in Confidential Exhibits 18-22, 29-59, 61-67, 72-80, and 107-112 to the Complaint, pursuant to Commission Rules 201.6(b) and 210.5(d).

- A Statement on the Public Interest regarding the remedial orders sought by Diebold in the Complaint, pursuant to Commission Rule 210.8(b).

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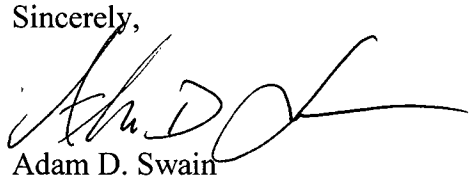
[1] A certified copy of the assignment for the parent patent of the 602 patent is being filed; a certified copy of the assignment of the 602 patent has been requested and will be filed once received.

Thank you for your attention to this matter. Please contact me with any questions pertaining to this submission.

Sincerely,



Adam D. Swain

Counsel for Complainant Nokia Technologies Oy

Enclosures

ALSTON&BIRD LLP
The Atlantic Building
950 F Street, NW
Washington, DC 20004-1404

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December 22, 2016

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Office of the Secretary
Lisa R. Barton
Secretary to the Commission
U.S. International Trade Commission
500 E. Street, S.W., Room 317
Washington, DC 20436

Re: *Certain Electronic Devices, Including Mobile Phones, Tablet Computers, and Components Thereof, 337-TA-_____*

REQUEST FOR CONFIDENTIAL TREATMENT

Dear Secretary Barton:

Pursuant to Commission Rule 201.6, Complainant Nokia Technologies Oy ("Nokia") hereby respectfully requests confidential treatment of certain confidential business information contained in Confidential Exhibits 18-22, 29-59, 61-67, 72-80, and 107-112 to Nokia's Complaint, filed herewith.

The information for which confidential treatment is sought consists of proprietary commercial secrets, specifically:

- Proprietary technical information regarding the domestic products (Confidential Exhibits 29-59, 61-67, 72-80, and 107-112.)

- Proprietary information regarding Nokia's licensees and others with rights to the one or more of the Asserted Patents (Confidential Exhibits 18-22).

The business information described herein qualifies as confidential business information because substantially-identical information is not available to the public and its disclosure would likely impair the Commission's ability to obtain information necessary to perform its statutory functions as well as cause substantial harm to the competitive position of the organizations from which the information is not available to the public is attached hereto.

Thank you for your attention to this matter. Please contact me with any questions pertaining to this submission.

Sincerely,

Adam D. Swain

Enclosures (certification)

CERTIFICATION

I, Adam D. Swain, attorney for Complainant Nokia Technologies Oy ("Nokia"), declare:

1. I am duly authorized by Nokia to execute this certification.
2. I have reviewed Confidential Exhibits 18-22, 29-59, 61-67, 72-80, and 107-112 to Nokia's Complaint, for which confidential treatment has been requested.
3. To the best of my knowledge, information and belief, founded after reasonable inquiry, substantially-identical information is not available to the public.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 22nd day of December, 2016, in Washington, DC.

Adam D. Swain

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

In the Matter of **Certain Electronic Devices, Including Mobile Phones, Tablet Computers and Components Thereof**	**Inv. No. 337-TA-____**

COMPLAINANT'S PUBLIC INTEREST STATEMENT

Complainant Nokia Technologies Oy ("Nokia") submits this public interest statement, as required by 19 C.F.R. § 210.8(b).

I. THE REQUESTED REMEDY WILL NOT HARM THE PUBLIC INTEREST

The Accused Products in this matter, as defined in the accompanying complaint, are the types that are before the U.S. International Trade Commission ("ITC") on a regular basis and have been the subject of multiple ITC remedial orders. Here, the requested remedy is directed only at specific smartphones, tablets, and components thereof sold for importation into the United States, imported into the United States, and/or sold after importation into the United States by or on behalf of Apple. Thus, the sole relevant public interest inquiry is whether the exclusion of this discrete set of articles necessitates the rare denial or tailoring of Section 337 relief based on the statutory public interest factors. Here, no such action is justified.

The ITC has made clear that the public interest rests in the protection of intellectual property rights ("IPR").[1] That protection is to be denied only in limited situations where the harm

[1] *See Certain Baseband Processor Chips & Chipsets, Transmitter & Receiver (Radio) Chips, Power Control Chips, & Prods. Containing Same, Including Cellular Tel. Handsets (Baseband Processor)*, Inv. No. 337-TA-543, Comm'n Op., at 136-37 (June 19, 2007) (noting "the strong

to the public interest is particularly grave.[2] The exclusion of the Accused Products does not implicate the exceptional national security or public health issues upon which the ITC has precluded relief in the past, nor does it implicate any economic effect warranting denial of relief based on the public interest.

II. SPECIFIC PUBLIC INTEREST INQUIRIES

A. Use of Accused Products in the United States

The infringing articles in this matter are smartphones and tablet computers. They are manufactured abroad and are sold to consumers through channels that service the U.S. consumer electronics market. Nokia is not aware of any feature of Apple's infringing products so unique and necessary to the U.S. market to require the denial of Section 337 remedial measures based on the public interest, and all of the accused features are available on products not subject to this investigation.

B. Accused Products Pose No Public Health, Safety, or Welfare Concerns

The Accused Products do not invoke any public health, safety, or welfare concerns. The devices at issue in this investigation are ubiquitous consumer items. While they may be useful and entertaining, the Accused Products cannot be deemed essential to any public health, safety, or welfare considerations.

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public interest in enforcing intellectual property rights"); *Certain Elec. Connectors & Prods. Containing Same*, Inv. No. 337-TA-374, USITC Pub. 2981, Comm'n Op. at 19 (July 1996).

[2] *See Baseband Processors*, Inv. No. 337-TA-543, Comm'n Op., at 153 ("[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 [IPR].").

C. Like Articles Are Available From Nokia's Licensees and Other Third Parties to Satisfy Demand for Excluded Accused Products

Nokia has agreements with Samsung, Microsoft and HTC under which these companies could supply products in the United States that could replace the infringing Apple products. While Apple currently has roughly 42.3% of the U.S. smartphone market, the remaining major players, including licensees Samsung and Microsoft, collectively have over 50% share of the U.S. smartphone market.[3] These parties could quickly ramp up production to replace the Accused Products if they are excluded and Apple continues to use Nokia's innovations without authorization.

Likewise, Samsung, Microsoft, and HTC manufacture and sell in the U.S. market a variety of tablet computers that could easily make up the Apple's minority 37.6% U.S. market share of tablet computers.[4] Moreover, additional major players such as Amazon, LG, Dell, ASUS, and Lenovo can also fill Apple's minority market share. These players continually compete for market share, and substantial shifts in market share can occur in a short period of time. Because the smartphone and tablet computer markets are intensively competitive in the United States, issuance of the requested remedy will not result in any shortage of smartphones or tablets in the United States.[5]

In addition, the Accused Products are made overseas, along with most (if not all) other like products.[6] Accordingly, the requested remedy will not harm any competitive production in

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[3] *See* https://www.comscore.com/Products/Audience-Analytics/MobiLens-Plus

[4] *See* http://www.idc.com/getdoc.jsp?containerId=US41724716

[5] *See Certain Agric. Tractors Under 50 Power Take-off Horsepower,* USITC Pub. 3026, Inv. No. 337-TA-380, Comm'n Op., at 34 (Mar. 1997) (concluding that orders at issue had limited economic impact on public interest due to considerable competition from other available goods).

[6] *See* Apple 2015 Annual Report, at 6 (stating that essentially all of Apple's products are manufactured by its outsourcing partners, primarily located in Asia).

the United States. As the ITC has explained, the consideration of the production of like or directly competitive articles does not weigh against issuance of a remedy when: (i) there is a variety of other similar products available domestically; and (ii) most of the types of products at issue are manufactured in foreign countries.[7]

D. The Remedy Has No Relevant Public Interest Impact on U.S. Consumers

As discussed above, even after the requested remedy is issued, consumers may purchase smartphones and tablets from numerous sources and at price points similar to that of the infringing articles. While the requested remedy could potentially reduce consumer choice, the Commission has determined that such reduction is not a sufficient basis for denying relief.[8] Likewise, any increase in prices that consumers might experience is not sufficient to justify denying a remedy.[9] Accordingly, the issuance of such relief will have no relevant public interest impact on U.S. consumers.

Respectfully submitted,

John D. Haynes
Patrick J. Flinn
Wesley C. Achey
David S. Frist
ALSTON & BIRD LLP
One Atlantic Center
1201 West Peachtree Street
Suite 4900
Atlanta, GA 30309
Telephone: (404) 881-7000

[7] *See Certain Digital Televisions & Certain Prods. Containing Same & Methods of Using Same*, Inv. No. 337-TA-617, Comm'n Op. at 15 (Apr. 23, 2009).

[8] *Certain Personal Data and Mobile Communications Devices and Related Software,* Inv. No. 337-TA-710, Comm'n Op. at 69 (December 29, 2011).

[9] *Digital Televisions*, Inv. 337-TA-617, Comm'n Op. at 16.

Facsimile: (404) 881-7777

Jamie D. Underwood
Adam D. Swain
ALSTON & BIRD LLP
The Atlantic Building
950 F Street, NW
Washington, DC 20004
Telephone: (202) 239-3300
Facsimile: (202) 239-3333
Email: adam.swain@alston.com

Theodore Stevenson, III
McKool Smith, P.C.
300 Crescent Court, Suite 1500
Dallas, Texas 75201
Telephone:(214) 978-4000
Facsimile: (214) 978-4044

Kevin L. Burgess
kburgess@mckoolsmith.com
McKool Smith, P.C.
300 W. Sixth Street, Suite 1700
Austin, Texas 78701
Telephone:(512) 692-8700
Facsimile: (512) 692-8744

Counsel for Complainant Nokia Technologies Oy

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

In the Matter of **Certain Electronic Devices, Including Mobile Phones, Tablet Computers, and Components Thereof**	**Investigation No. 337-TA-_____**

COMPLAINT UNDER SECTION 337 OF THE TARIFF ACT OF 1930, AS AMENDED

Complainant:

Nokia Technologies Oy
Karaportti 3
FIN-02610
Espoo, Finland
Telephone: 358 (0) 7180-08000

Proposed Respondent:

Apple Inc., a/k/a Apple Computer, Inc.
1 Infinite Loop
Cupertino, CA 95014
Telephone: (408) 996-1010

Counsel for Complainant:

Jamie D. Underwood
Adam D. Swain
ALSTON & BIRD LLP
950 F Street NW
Washington, DC 20004
Telephone: (202) 239-3622
Facsimile: (202) 654-4842

Patrick J. Flinn
John D. Haynes
Wesley C. Achey
David S. Frist
ALSTON & BIRD LLP
One Atlantic Center
1201 West Peachtree Street
Suite 4900
Atlanta, GA 30309-3424
Telephone: (404) 881-7000
Facsimile: (404) 881-7777

Theodore Stevenson, III
Nicholas Mathews

McKool Smith, P.C.
300 Crescent Court, Suite 1500
Dallas, Texas 75201
Telephone: (214) 978-4000
Facsimile: (214) 978-4044

Kevin L. Burgess
McKool Smith, P.C.
300 W. Sixth Street, Suite 1700
Austin, Texas 78701
Telephone: (512) 692-8700
Facsimile: (512) 692-8744

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LIST OF EXHIBITS

Exhibit No.	Description
1	Certified Copy of U.S. Patent No. 7,415,247
2	Certified Copy of U.S. Patent No. 9,270,301
3	Certified Copy of U.S. Patent No. 8,036,619
4	Certified Copy of U.S. Patent No. 6,393,260
5	Certified Copy of U.S. Patent No. 6,826,391
6	Certified Copy of U.S. Patent No. 6,480,700
7	Certified Copy of U.S. Patent No. 9,473,602
8	Certified Copy of U.S. Patent No. 7,653,366
9	Certified Copy of Assignment for U.S. Patent No. 7,415,247
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APPENDICES

App.	Description
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15.	Copies of All References Cited in Prosecution History of U.S. Patent No. 7,653,366
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LIST OF PHYSICAL EXHIBITS

Exhibit No.	Description
1	Physical sample of a domestic article protected by the Asserted Patents: Samsung Galaxy S7
2	Physical sample of a domestic article protected by the Asserted Patents: Samsung Galaxy Tab A
3	Physical sample of a domestic article protected by the Asserted Patents: Microsoft Surface Pro 4
4	Physical sample of an imported article that is subject to the complaint: Apple iPhone 7
5	Physical sample of an imported article that is subject to the complaint: Apple iPhone SE
6	Physical sample of an imported article that is subject to the complaint: Apple iPad Mini 4
7	Physical sample of an imported article that is subject to the complaint: Apple iPad Pro

I. INTRODUCTION

1. Nokia Technologies Oy ("Nokia" or "Complainant") files this complaint pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 ("Section 337"), based on the unlawful importation into the United States, the sale for importation into the United States, and/or the sale within the United States after importation of certain portable electronic communication devices, including mobile phones, tablet computers, and components thereof.

2. The proposed Respondent is Apple Inc. ("Respondent" or "Apple").

3. The complaint is directed to Respondent's imported portable electronic communication devices, including mobile phones, tablet computers, and components thereof that infringe one or more of claims 18, 19, 21, and 23 of U.S. Patent No. 7,415,247 ("the '247 Patent"), and/or claims 1-11, 13-41, and 43-122 of U.S. Patent No. 9,270,301 ("the '301 Patent"), and/or claims 6, 8, 10, and 11 of U.S. Patent No. 6,393,260 ("the '260 Patent"), and/or claims 1, 3-7, 9-12, 18-21, 23-24, 31, 37-38, 46-51, 53-54, 58-61, 68-74, 76-80, and 82-83 of U.S. Patent No. 8,036,619 ("the '619 Patent"), and/or claims 1-14, 16-21, and 23-24 of U.S. Patent No. 6,826,391 ("the '391 Patent"), and/or claims 1-6, 10, and 16 of U.S. Patent No. 6,480,700 ("the '700 Patent"), and/or claims 1, 6-15, 17-18, 22, and 27-36 of U.S. Patent No. 9,473,602 ("the '602 Patent), and/or claims 1-2, 4-7, 11-14, 17-21, and 23 of U.S. Patent No. 7,653,366 ("the '366 Patent") (collectively, the "Asserted Patents"). Such products include at least the Apple iPhone 7, Apple iPhone 7 Plus, Apple iPhone 6s, Apple iPhone 6s Plus, Apple iPhone 6, Apple iPhone 6 Plus, Apple iPhone SE, Apple iPad Mini 2, Apple iPad Mini 2 (LTE), Apple iPad Mini 4, Apple iPad Mini 4 (LTE), Apple iPad Air, Apple iPad Air (LTE), Apple iPad Air 2, Apple iPad Air 2 (LTE),

Apple iPad Pro, and Apple iPad Pro (LTE) (collectively, the "Accused Devices").[1] The following table provides a summary of which Accused Devices infringe which of the claims of the Asserted Patents:

U.S. Patent No.	Asserted Claims	Accused Devices
7,415,247	Claims 18, 19, 21, 23	Apple iPhone 6 Apple iPhone 6 Plus Apple iPhone 6s Apple iPhone 6s Plus Apple iPhone SE Apple iPhone 7 Apple iPhone 7 Plus Apple iPad Air 2 (LTE) Apple iPad Mini 4 (LTE) Apple iPad Pro (LTE)
9,270,301	Claims 1-11, 13-41, 43-122	Apple iPhone 6 Apple iPhone 6 Plus Apple iPhone 6s Apple iPhone 6s Plus Apple iPhone SE Apple iPhone 7 Apple iPhone 7 Plus Apple iPad Air 2 (LTE) Apple iPad Mini 4 (LTE) Apple iPad Pro (LTE)
8,036,619	Claims 1, 3-7, 9-12, 18-21, 23-24, 31, 37-38, 46-51, 53-54, 58-61, 68-74, 76-80, 82-83	Apple iPhone 6s Apple iPhone 6s Plus Apple iPhone 7 Apple iPhone 7 Plus Apple iPad Pro (LTE)
6,393,260	Claims 6, 8, 10, 11	Apple iPhone 6 Apple iPhone 6 Plus Apple iPhone 6s Apple iPhone 6s Plus Apple iPhone SE Apple iPhone 7

[1] The identification of a specific model or type of portable electronic communication device is not intended to limit the scope of the investigation. Discovery may reveal that additional Apple products infringe the asserted patent claims and/or that additional claims are infringed, and any remedy should extend to all infringing electronic devices.

U.S. Patent No.	Asserted Claims	Accused Devices
		Apple iPhone 7 Plus Apple iPad Air 2 (LTE) Apple iPad Mini 4 (LTE) Apple iPad Pro (LTE)
6,826,391	Claims 1-14, 16-21, 23-24	Apple iPhone 6 Apple iPhone 6 Plus Apple iPhone 6s Apple iPhone 6s Plus Apple iPhone SE Apple iPhone 7 Apple iPhone 7 Plus Apple iPad Air (LTE) Apple iPad Air 2 (LTE) Apple iPad Mini 2 (LTE) Apple iPad Mini 3 (LTE) Apple iPad Mini 4 (LTE) Apple iPad Pro (LTE)
6,480,700	Claims 1-6, 10, 16	Apple iPhone 6 Apple iPhone 6 Plus Apple iPhone 6s Apple iPhone 6s Plus Apple iPhone SE Apple iPhone 7 Apple iPhone 7 Plus Apple iPad Mini 4 (LTE) Apple iPad Pro (LTE) Apple iPad Air 2 (LTE)
9,473,602	Claims 1, 6-15, 17-18, 22, 27-36	Apple iPhone 6 Apple iPhone 6 Plus Apple iPhone 6s Apple iPhone 6s Plus Apple iPhone SE Apple iPhone 7 Apple iPhone 7 Plus Apple iPad Air (LTE) Apple iPad Air Apple iPad Air 2 (LTE) Apple iPad Air 2 Apple iPad Mini 2 (LTE) Apple iPad Mini 2 Apple iPad Mini 4 (LTE) Apple iPad Mini 4

U.S. Patent No.	Asserted Claims	Accused Devices
		Apple iPad Pro (LTE) Apple iPad Pro
7,653,366	Claims 1-2, 4-7, 11-14, 17-21, 23	Apple iPhone 6 Apple iPhone 6 Plus Apple iPhone 6s Apple iPhone 6s Plus Apple iPhone SE Apple iPhone 7 Apple iPhone 7 Plus Apple iPad Mini 4 (LTE) Apple iPad Pro (LTE) Apple iPad Air 2 (LTE)

4. On information and belief, the Accused Devices are manufactured and/or sold for importation into the United States, imported into the United States, and/or sold after importation into the United States by or on behalf of Respondent.

5. An industry as required by 19 U.S.C. §§ 1337(a)(2) and (3) exists in the United States relating to articles protected by the Asserted Patents.

6. Nokia seeks as relief a permanent exclusion order prohibiting entry into the United States of Respondent's infringing portable electronic communication devices, including mobile phones and tablet computers. Nokia also requests that such an exclusion order prohibit Respondent from importing into the United States components of the accused portable electronic communication devices, such as the chipsets or software containing the infringing functionality, so as to prevent Respondent from circumventing any exclusion order directed to its portable electronic communication devices. Such components include, but are not limited to, the Qualcomm WTR1625L chip, Qualcomm WTR3925 chip, Qualcomm WTR4905 chip, Qualcomm WCN3660 chip, Intel PMB5750 chip, Skyworks SKY70841 power amplifier, Skyworks SKY77812 power amplifier, Skyworks SKY78100-20 power amplifier, Avago ACPM-8020

power amplifier, Avago AFEM-8050 power amplifier, Avago AFEM-8055 power amplifier, Avago AFEM-8060 power amplifier, Avago AFEM-8065 power amplifier, Avago AFEM-9040 power amplifier, Qualcomm QFE1100 envelope tracker, and Qualcomm QFE3100 envelope tracker.

7. Nokia also requests permanent cease and desist orders prohibiting Respondent from importing, admitting or withdrawing from a foreign trade zone, marketing, advertising, demonstrating, warehousing inventory of, distributing, offering for sale, selling, licensing, repairing, programming, packaging, repackaging, bundling, updating, soliciting U.S. agents or distributors for, or aiding or abetting other entities in the importation, sale for importation, sale after importation, transfer, or distribution of its infringing portable electronic communication devices, including mobile phones and tablet computers, and components thereof.

II. COMPLAINANT AND LICENSEES

A. Nokia Technologies Oy

8. Complainant Nokia Technologies Oy is a foreign corporation organized under the laws of Finland, located at Karaportti 3, FIN-02610, Espoo, Finland.

9. Nokia Technologies Oy is a wholly-owned subsidiary of Nokia Corporation ("Nokia Corp.") and is the sole owner by assignment of all right, title, and interest in and to each of the Asserted Patents. *See* Exs. 9-16. Prior to the assignment to Nokia Technologies Oy, Nokia Corp. was the sole owner of all right, title, and interest in and to each Asserted Patent. *See* Exs. 9-16.

10. Nokia Corp. is a Finnish company that is a leading innovator in the telecommunications industry. Nokia Corp. pioneered the early evolution of mobile communications. Beginning in the early 1980's, Nokia Corp. introduced the first car phone and

portable phone to operate on the Nordic Mobile Telephone ("NMT") network, which was the first international cellular network. Nokia Corp. also provided base stations and switches for NMT networks. Then, in 1987, Nokia Corp. launched the first handheld mobile phone for NMT networks – known as the "Mobira Cityman."

11. Nokia Corp. was also one of the key developers of Global System for Mobile communications ("GSM") technology, which was adopted in 1987 as the European standard for digital mobile technology. Nokia Corp. delivered its first GSM network to the Finnish company Radiolinja in 1989 and launched its first digital handheld GSM phone – the Nokia 1011 – in 1992. Throughout the 1990s, Nokia Corp.'s core business was manufacturing mobile phones and telecommunications systems.

12. Nokia Corp.'s innovations have continued throughout the wireless era to the smartphones of the present day, bringing several "firsts" in the industry. For example, in 1996, Nokia Corp. introduced the Nokia 9000 Communicator, which was the first all-in-one phone, fax, calendar, email, and Internet device in a hand-portable size. The Nokia 8110i, introduced in 1997, was the first mobile phone with a dynamic menu supporting Smart Messaging. Just two years later, Nokia Corp. introduced the Nokia 7110, the first mobile phone compliant with Wireless Application Protocol 1.1, which provided access to mobile Internet services, such as banking, email, and news, and was the first phone with predictive text input.

13. The new century brought even further Nokia advances. In 2002, Nokia Corp. launched its third generation ("3G") phone – the Nokia 6650. That same year, Nokia Corp. also unveiled the Nokia 7650, a phone with a built-in camera, and the Nokia 3650, Nokia's video capture phone. The following year, Nokia Corp. rolled out its 5140, the first Push-to-Talk GSM handset. In 2006, Nokia Corp. introduced the N95, which was the first such device with built-in

Global Positioning System ("GPS") technology, and, in 2008, Nokia Corp. released the E71, the world's slimmest smartphone. In 2010, Nokia Corp. pioneered the N8, the first smartphone with built-in 720P High Definition video and a 12 megapixel camera.

14. In February of 2011, Nokia Corp. announced it would release a new line of smartphones that use the Microsoft Windows Phone operating system, designed to offer enhanced hardware optimization, software customization, and language support. Nokia Corp. continued to build upon its Windows Phone product line through 2014, with additional releases in the United States including the Lumia 635, Lumia 735, Lumia 830, Lumia 920, Lumia 925, Lumia 928, Lumia 930, Lumia 1020, Lumia 1320, and Lumia 1520.

15. Nokia Technologies Oy develops and licenses innovations that are powering the next revolution in computing and mobility: the "programmable world" where intelligent connections bring millions of everyday objects online.

16. Nokia Corp., together with its wholly-owned subsidiaries, has cumulatively invested over EUR 60 billion in research and development relating to mobile communications, and as a result of this commitment, currently owns more than 10,000 patent families.

17. Following the sale of its Devices and Services business unit, as described below, Nokia Corp. continues to invest heavily in research and development, as well as licensing and expansion of its industry-leading patent portfolio.

B. Microsoft Corp. and Microsoft Mobile Oy

18. Up until 2014, Nokia's Devices and Services group developed and sold many mobile devices for the U.S. market. On April 25, 2014, Nokia Corp. sold substantially all of its Devices and Services business to a subsidiary of Microsoft Corporation ("Microsoft") and granted Microsoft a non-exclusive license to a large part of Nokia Corp.'s patent portfolio, including the

Asserted Patents. *See* Ex. 19. As part of that transaction, Nokia Inc. (now Microsoft Mobility Inc.), which was a fully-owned subsidiary of Nokia Corp., became a fully-owned subsidiary of Microsoft Mobile Oy, a newly created, fully-owned subsidiary of Microsoft. *See* Ex. 20. Since then, Microsoft has stepped in the shoes of Nokia's mobile phone business by continuing to design, develop, ready-for-market, and support mobile phones in the United States using many of the same employees and other resources formerly of Nokia's Devices and Services group.

19. To do so, Microsoft has made significant domestic investments in plant, equipment, labor, and capital, as well as substantial domestic investments in engineering and R&D to develop, ready-for-market, and support Microsoft mobile phones in the United States that practice one or more of the Asserted Patents, including the Lumia 530, Lumia 550, Lumia 630, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 830, Lumia 950, and Lumia 950 XL. Microsoft has also continued to support the Lumia products released by Nokia prior to the closing of the transaction in the U.S. market. Further details of these domestic investments are provided in Section X.B *infra*.

20. Microsoft has a non-exclusive license to practice each of the Asserted Patents. *See* Ex. 19.

21. Microsoft continues to sell a variety of other products that practice the Asserted Patents, including Surface devices and Lumia devices.

C. Samsung Electronics Co., Ltd.

22. On June 18, 2010, Nokia Corp. and Samsung Electronics Co., Ltd. ("Samsung") entered into an agreement that granted Samsung a non-exclusive license to certain Nokia patents. In 2016, Nokia and Samsung elected to extend the term of the 2010 license, and on July 12, 2016, Nokia Corp. and Nokia Technologies Oy entered into an agreement with Samsung in which

Samsung was granted a non-exclusive license to a large part of Nokia Corp.'s patent portfolio, including the Asserted Patents. *See* Exs. 21 and 22.

23. Samsung has made significant domestic investments in plant, equipment, labor, and capital, as well as substantial domestic investments in engineering and R&D to develop, ready-for-market, and support mobile phones, tablets, and other devices in the United States that practice one or more of the Asserted Patents, including the Samsung Galaxy Alpha, Samsung Galaxy Core Prime, Samsung Galaxy Go Prime, Samsung Galaxy Grand Prime, Samsung Galaxy J1, Samsung Galaxy J3, Samsung Galaxy Luna, Samsung Galaxy Note 4, Samsung Galaxy Note 5, Samsung Galaxy Note 7, Samsung Galaxy Note Edge, Samsung Galaxy Prevail, Samsung Galaxy S5, Samsung Galaxy S5 Active, Samsung Galaxy S6, Samsung Galaxy S6 Edge, Samsung Galaxy S6 Edge Plus, Samsung Galaxy S7, Samsung Galaxy S7 Active, Samsung Galaxy S7 Edge, Samsung Galaxy Tab 4, Samsung Galaxy Tab A, Samsung Galaxy Tab E, and Samsung Galaxy Tab S2. Further details of these domestic investments are provided in Section X.B *infra*.

III. PROPOSED RESPONDENT

A. Apple Inc.

24. On information and belief, proposed Respondent Apple is a corporation organized under the laws of the State of California with its principal place of business at 1 Infinite Loop, Cupertino, CA 95014. *See* Ex. 24, Apple's 2016 Form 10-K. On information and belief, Apple, among other things, is engaged in the design, development, manufacture, importation into the United States, and sale after importation into the United States of mobile phones and tablet computers, including the Accused Devices.

25. Apple is in the business of importing into the United States and selling after importation into the United States the Accused Devices, including mobile phones and tablet

computers. Apple sells the Accused Devices within the United States by various means, including via online and retail stores and through telecommunication service providers. Further, on information and belief, Apple performs several services to support the importation into the United States and sale after importation into the United States of the Accused Devices, including marketing of the Accused Devices, providing online interactive tutorials for the Accused Devices, distributing user manuals for the Accused Devices, providing in-person demonstrations for the Accused Devices, and offering after-sale technical support for the Accused Devices.

IV. THE TECHNOLOGY AND ACCUSED DEVICES AT ISSUE

26. The Asserted Patents are a reflection of the breadth of Nokia's extensive dedication and investment in technology. Since the introduction of Nokia's first car phone in 1981, Nokia has endeavored to make the world's best mobile phones and enhance the user's experience with diverse and advanced functionality. Whether through designing more reliable mobile phones that drop fewer calls, pioneering the first smartphones that synchronize seamlessly with computers, or developing some of the first mobile phones with built-in GPS, Nokia took great strides to stay ahead of its competition. Nokia's innovations have been applied in many electronic devices other than mobile phones, such as mobile tablets, portable music players, and computers.

27. Mobile phones have advanced significantly since the car phones and briefcase phones of the 1980s. Today's mobile phones not only place phone calls, they are also GPS devices, internet browsers, electronic mail devices, electronic book readers, social networking platforms, and so much more. Smartphones not only have many functions, they also have many different processes for connecting to networks and sending information over those networks, depending on the type of information that is being sent or received. For example, smartphones have Wi-Fi, GPS, and Bluetooth capabilities for connecting to wireless devices and sending and receiving

applications, software upgrades, email, text messages, voice information, and other data, in addition to their cellular capabilities.

28. In order for a mobile phone to enjoy compatibility with different network carriers in the United States and abroad, it must possess the necessary hardware to handle the varying systems, but must do so in a user-friendly and compact device. The '247 Patent and the '301 Patent offer, for example, technology for mobile phone compatibility across distinct and differing signal systems and for varying frequency ranges using fewer hardware elements.[2]

29. Today's mobile phones are typically configured to operate with a multitude of different cellular systems. This allows access to more systems, for example, when a device is roaming, because different geographical locations may support one type of cellular system but not another. A problem with including all this functionality, however, is that it often increases the complexity and/or power consumption of the device, resulting in shorter battery life. While consumers expect their mobile phones to operate seamlessly throughout different parts of the country (or world), they also want their phones to have long battery life. In order to maximize the life of a given battery, it is important to incorporate power saving techniques into the mobile phone. Nokia's '619 Patent relates to a voltage controlled oscillator ("VCO") arrangement that increases the efficiency of the wireless device and uses less power than traditional VCOs, thereby increasing battery life.

30. Further, today's multi-standard and multi-band wireless infrastructure requires cellphone hardware to be designed with built-in flexibility and superb performance. Modern

[2] All non-technical descriptions of the inventions herein are presented to give a general background of those inventions. Such statements are not intended to be used, nor should they be used, for purposes of patent claim interpretation. Complainant presents these statements subject to, and without waiver of, their right to argue that claim terms should be construed in a particular way, as contemplated by claim interpretation jurisprudence and the relevant evidence.

frequency-conversion technology provides a versatile solution for high-frequency radio receiver designs and offers a cost benefit and potential performance advantage over traditional receiver solutions. One of the main disadvantages of frequency-conversion technology, however, is the spurious signals that are generated in the frequency-conversion process, which degrade performance. The '260 Patent provides, for example, a receiver for attenuating such spurious signals in radio transceivers that use frequency-conversion technology.

31. Typically, interference and multipath effects will degrade a wireless signal as it travels from a transmitter to an antenna. To improve quality of the received signal, a receiving device may employ one or more "space diversity" antennas. This involves using more than one receive antenna to receive signals. But employing space diversity in a mobile device poses at least two challenges. First, it requires more than one receive antenna, which takes up valuable space within the device. Second, cellular towers transmit and receive information at multiple radio frequencies, so today's mobile devices must be able to do the same. Nokia's '391 Patent solves at least these problems. In one embodiment, the '391 Patent is directed to an antenna system that has at least two antennas: one that can transmit signals and one that can receive signals. When the system is used for reception, the transmit antenna is tuned to a frequency range that is substantially equal to the receive antenna's frequency range. This allows both antennas to receive signals. Because the transmit antenna is used as a diversity antenna for reception, the system claimed in the '391 Patent obtains the benefit of improving wireless performance while also saving space.

32. One of the primary limitations constraining a cellular device is the duration of its battery life. A key component impacting battery life is the amount of power consumed by the various elements in the device during its operation. The '700 Patent provides for a method and

apparatus for reducing the power consumption of power amplifiers, which are utilized during cellular communications, thereby increasing battery life.

33. Mobile phones are designed to be as rich in features as possible, and include components to support, for example, camera functionality, display and user input, extended battery life, and multi-mode network connectivity. At the same time, a primary design goal is to minimize the mobile phone's "bulk," including the amount of space required for a consolidated arrangement of these components in the device. Nokia's '602 Patent provides, for example, a housing enclosure and architecture that minimizes the space or "thickness" required to house the critical components necessary to the functionality of the mobile phone.

34. One of the disadvantages of using a fixed power supply for the power amplifier of a mobile device is that the power supply provides more voltage than the power amplifier may actually need at any given moment. This excess voltage is dissipated as heat, which raises the temperature of the mobile device and decreases battery life. One technique for tracking and varying the power supply to match the needs of the power amplifier is to use a linear regulator. While a linear regulator can achieve the high bandwidth necessary to operate with modern cellular systems, a linear regulator is inefficient. Another technique is to use a switch mode regulator. While the efficiency of the switch mode regulator is very high, it cannot achieve the high bandwidth of the linear regulator. Nokia's '366 Patent relates to a hybrid power supply that provides higher power conversion efficiency than a purely linear voltage regulator-based power supply, while also providing a wider operational bandwidth than a purely switch mode-based power supply.

35. The Accused Devices are certain Apple portable electronic communication devices, including mobile phones, tablet computers, and components thereof that incorporate, without authorization, certain of Nokia's technologies as set forth and claimed in the Asserted Patents.

36. The Accused Devices fall into the categories of products that are generally known to consumers as mobile phones or smartphones and tablet computers or tablets.

V. THE ASSERTED PATENTS AND NON-TECHNICAL DESCRIPTION OF THE INVENTIONS[3]

A. Ownership of the Asserted Patents

37. Nokia owns by assignment the entire right, title, and interest in and to all of the Asserted Patents. Certified copies of the assignments for each of the Asserted Patents are attached as Exs. 9-16.[4]

B. U.S. Patent No. 7,415,247

38. The '247 Patent, entitled "Method and Arrangement for Transmitting and Receiving RF Signals Through Various Radio Interfaces of Communication Systems," issued on August 19, 2008 to inventors Risto Väisänen and Kim Kaltiokallio. The '247 Patent issued from U.S. Patent Application Serial No. 09/856,746, filed on November 25, 1999, and expires on or after November 25, 2019.

39. A certified copy of the '247 Patent is attached as Ex. 1.

40. A certified copy of the assignment for the '247 Patent is attached as Ex. 9.

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[3] *See supra* note 2.

[4] Nokia has requested certified copies of each patent, assignment, and prosecution history from the U.S. Patent and Trademark Office. To the extent the copies attached to this complaint are not certified, Nokia will provide certified copies as soon as they are available.

41. A certified copy of the prosecution history of the '247 Patent and copies of each reference cited in the '247 Patent and its prosecution history are included in Appendices 1 and 9, respectively.

42. The '247 Patent has twenty-three claims, ten of which are independent claims. Complainant is asserting claims 18, 19, 21, and 23.

43. Per 19 CFR 210.12, the following is a plain English description of the patented technology of the '247 Patent. In order for a mobile phone to enjoy compatibility with different network carriers within the United States and abroad, it must include the necessary hardware components to support the varying systems. As a result, and prior to the '247 Patent, there was a trade-off between broad support for network roaming from a complex design that included many more components, and a simpler, smaller, and more cost-effective design that lacked broad roaming support. The '247 Patent offers, for example, technology for supporting mobile phone compatibility across varying network systems using fewer components than were previously necessary. Prior to the '247 Patent, separate electrical components were needed to transmit at the varying frequencies associated with the different network systems. For example, different mixers, amplifiers, and frequency dividers were needed for each network system. The '247 Patent allows, for example, the consolidation of electrical components such that a common mixer, amplifier, and frequency divider is used for transmission of signals for different network systems. The total number of components needed in the phone is thereby reduced, making the phone simpler, smaller, and more cost effective.

C. U.S. Patent No. 9,270,301

44. The '301 Patent, entitled "Method and Arrangement for Transmitting and Receiving RF Signals Through Various Radio Interfaces of Communication Systems," issued on

February 23, 2016 to inventors Risto Väisänen and Kim Kaltiokallio. The '301 Patent issued from U.S. Application Serial No. 14/272,820, filed on May 8, 2014, and claims priority to U.S. Patent Application Serial No. 14/272,191, filed on May 7, 2014, U.S. Patent Application Serial No. 13/614,272, filed on September 13, 2012, U.S. Patent Application Serial No. 12/136,465, filed on June 10, 2008, and U.S. Patent Application Serial No. 09/856,746, filed on November 25, 1999. The '301 Patent is a continuation of the '247 Patent. The '301 Patent expires on or after November 25, 2019.

45. A certified copy of the '301 Patent is attached as Ex. 2.

46. A certified copy of the assignment for the '301 Patent is attached as Ex. 10.

47. A certified copy of the prosecution history of the '301 Patent and copies of each reference cited in the '301 Patent and its prosecution history are included in Appendices 2 and 10, respectively.

48. The '301 Patent has one hundred twenty-two claims, four of which are independent claims. Complainant is asserting claims 1-11, 13-41, and 43-122.

49. Per 19 CFR 210.12, the following is a plain English description of the patented technology of the '301 Patent. In order for a mobile phone to enjoy compatibility with different network carriers within the United States and abroad, it must include the necessary hardware components to support the varying systems. As a result, and prior to the '301 Patent, there was a trade-off between broad support for network roaming from a complex design that included many more components, and a simpler, smaller, and more cost-effective design that lacked broad roaming support. Similar to the '247 Patent as discussed above, the '301 Patent offers, for example, technology for supporting mobile phone compatibility across varying network systems using fewer components than were previously necessary. Prior to the '301 Patent, separate

electrical components were needed to transmit at the varying frequencies associated with the different network systems. For example, different mixers, amplifiers, and frequency dividers were needed for each network system. The '301 Patent allows, for example, the consolidation of electrical components such that a common mixer, amplifier, and frequency divider is used for transmission of signals for different network systems. The total number of components needed in the phone is thereby reduced, making the phone simpler, smaller, and more cost effective.

D. U.S. Patent No. 8,036,619

50. The '619 Patent, entitled "Oscillator Having Controllable Bias Modes and Power Consumption," issued on October 11, 2011 to inventors Jarmo Heinonen, Vesa Viitaniemi, Kai Leino, and Jyrki Koljonen. The '619 Patent issued from U.S. Patent Application Serial No. 11/595,007, filed on November 8, 2006, and expires on or after September 26, 2021.

51. A certified copy of the '619 Patent is attached as Ex. 3.

52. A certified copy of the assignment for the '619 Patent is attached as Ex. 11.

53. A certified copy of the prosecution history of the '619 Patent and copies of each reference cited in the '619 Patent and its prosecution history are included in Appendices 3 and 11, respectively.

54. The '619 Patent has eighty-three claims, eleven of which are independent claims. Complainant is asserting claims 1, 3-7, 9-12, 18-21, 23-24, 31, 37-38, 46-51, 53-54, 58-61, 68-74, 76-80, and 82-83.

55. Per 19 CFR 210.12, the following is a plain English description of the patented technology of the '619 Patent. Today's mobile phones are typically configured to operate with a multitude of different cellular systems. This facilitates roaming because different geographical locations may support one type of cellular system but not another. A problem with including such

functionality, however, is that it often increases the complexity and/or power consumption of the device, resulting in shorter battery life. While consumers expect their mobile phones to operate seamlessly throughout different parts of the country (or world), they also want their phones to have long battery life. Nokia's '619 Patent discloses, for example, a voltage controlled oscillator ("VCO") arrangement that increases the efficiency of the wireless device and uses less power than traditional VCOs, thereby increasing battery life. The '619 Patent discloses, for example, an oscillator arrangement in which the voltage supplied to the oscillator can be controlled in response to which cellular system the phone is using. Adjusting the voltage to the oscillator can in the right circumstances increase efficiency and result in less power consumption, and thus more battery life.

E. U.S. Patent No. 6,393,260

56. The '260 Patent, entitled "Method for Attenuating Spurious Signals and Receiver," issued on May 21, 2002 to inventors Simo Murtojärvi, Antti Rauhala, and Harri Kimppa. The '260 Patent issued from U.S. Patent Application Serial No. 09/292,301, filed on April 15, 1999, and expires on or after April 15, 2019.

57. A certified copy of the '260 Patent is attached as Ex. 4.

58. A certified copy of the assignment for the '260 Patent is attached as Ex. 12.

59. A certified copy of the prosecution history of the '260 Patent and copies of each reference cited in the '260 Patent and its prosecution history are included in Appendices 4 and 12, respectively.

60. The '260 Patent has eleven claims, two of which are independent claims. Complainant is asserting claims 6, 8, 10, and 11.

61. Per 19 CFR 210.12, the following is a plain English description of the patented technology of the '260 Patent. Modern cellphones must be able to receive transmitted signals at

various frequencies and therefore must contain advanced frequency-conversion technology. One of the disadvantages of frequency-conversion technology, however, is that the process generates unwanted signals due to, for example, mismatches in circuitry components. This degrades performance because the unwanted signals interfere with the actual signal. The '260 Patent discloses, for example, a novel receiver for significantly reducing such unwanted signals in radio transceivers that use frequency-conversion technology. This improves both efficiency and performance. The '260 Patent discloses, for example, a novel receiver for significantly reducing unwanted signals by applying adjustment voltages and/or currents to circuitry components to eliminate, for example, potential mismatches between those components. This reduces interference and in turn improves both efficiency and performance.

F. U.S. Patent No. 6,826,391

62. The '391 Patent, entitled "Transmission and Reception Antenna System for Space Diversity Reception," issued on November 30, 2004 to inventors Marko Leinonen and Tomi Kangasvieri. The '391 Patent issued from U.S. Patent Application Serial No. 10/100,275, filed on March 15, 2002, and expires on or after May 29, 2023.

63. A certified copy of the '391 Patent is attached as Ex. 5.

64. A certified copy of the assignment for the '391 Patent is attached as Ex. 13.

65. A certified copy of the prosecution history of the '391 Patent and copies of each reference cited in the '391 Patent and its prosecution history are included in Appendices 5 and 13, respectively.

66. The '391 Patent has twenty-four claims, five of which are independent claims. Complainant is asserting claims 1-14, 16-21, and 23-24.

67. Per 19 CFR 210.12, the following is a plain English description related to the '391 Patent. The effects of signal fading in radio communications can, in the right circumstances, be reduced by the simultaneous use of two or more physically separate antennas using a technique sometimes referred to as "space diversity." Employing space diversity by using an extra receive antenna can, however, take up valuable space. Nokia's '391 Patent discloses, for example, using a transmit antenna as a receiving, space diversity antenna by tuning a transmitting antenna to different frequencies depending on whether the phone is being used for transmission or reception.

G. U.S. Patent No. 6,480,700

68. The '700 Patent, entitled "Apparatus, and Associated Method, for Operating a Communication Device at Reduced Level of Current Consumption," issued on November 12, 2002 to inventors John Groe and Tom Kenney. The '700 Patent issued from U.S. Patent Application Serial No. 09/518,515, filed on March 3, 2000, and expires on or after March 3, 2020.

69. A certified copy of the '700 Patent is attached as Ex. 6.

70. A certified copy of the assignment for the '700 Patent is attached as Ex. 14.

71. A certified copy of the prosecution history of the '700 Patent and copies of each reference cited in the '700 Patent and its prosecution history are included in Appendices 6 and 14, respectively.

72. The '700 Patent has twenty claims, two of which are independent claims. Complainant is asserting claim 1-6, 10, and 16.

73. Per 19 CFR 210.12, the following is a plain English description of the patented technology of the '700 Patent. One of the primary considerations in designing a mobile device is the duration of its battery life. Power amplifiers, which are used for transmitting signals between a mobile device and a wireless network, are one of the key components that consume power in a

mobile device. Nokia's '700 Patent discloses, for example, a versatile two-stage power amplifier arrangement that is operable in two different modes, each of which is optimized for, among other things, different power levels. This novel arrangement reduces power consumption in today's mobile devices, thereby increasing battery life.

H. U.S. Patent No. 9,473,602

74. The '602 Patent, entitled "Portable Electronic Device," issued on October 18, 2016 to inventor Claus Jorgensen. The '602 Patent issued from U.S. Patent Application Serial No. 14/612,712 filed on February 3, 2015 and expires on or after March 29, 2026.

75. A certified copy of the '602 Patent is attached as Ex. 7.

76. A certified copy of the assignment for the '602 Patent is attached as Ex. 15.

77. A certified copy of the prosecution history of the '602 Patent and copies of each reference cited in the '602 Patent and its prosecution history are included in Appendices 8 and 16, respectively.

78. The '602 Patent has thirty-six claims, three of which are independent claims. Complainant is asserting claims 1, 6-15, 17-18, 22, and 27-36.

79. Per 19 CFR 210.12, the following is a plain English description of the patented technology of the '602 Patent. Mobile phones are designed to include as many features as possible, including components to support, for example, camera functionality, display and user input, extended battery life, and multi-mode network connectivity. But these components come at the expense of, for example, increased phone size. Nokia's '602 Patent discloses, for example, a housing enclosure and architecture that, for example, minimize the space or "thickness" required to house the critical components necessary to the functionality of the mobile phone. The '602 Patent discloses, for example, a novel housing structure and design configuration for mobile

phones which minimize the amount of space or thickness required to house the necessary components of a mobile phone. In one embodiment, for example, the disclosed housing structure and arrangement comprise a cut-out in the rear of the housing in which a camera is located, and a user input section which is accessible from the front and which is located above and adjacent to an engine section and a battery.

I. U.S. Patent No. 7,653,366

80. The '366 Patent, entitled "Hybrid Switched Mode/Linear Power Amplifier Power Supply For Use in Polar Transmitter," issued on January 26, 2010 to inventor Vlad Gabriel Grigore. The '366 Patent issued from U.S. Patent Application Serial No. 11/399,118, filed on April 5, 2006, and expires on or after August 23, 2025.

81. A certified copy of the '366 Patent is attached as Ex. 8.

82. A certified copy of the assignment for the '366 Patent is attached as Ex. 16.

83. A certified copy of the prosecution history of the '366 Patent and copies of each reference cited in the '366 Patent and its prosecution history are included in Appendices 7 and 15, respectively.

84. The '366 Patent has twenty-four claims, two of which are independent claims. Complainant is asserting claims 1-2, 4-7, 11-14, 17-21, and 23.

85. Per 19 CFR 210.12, the following is a plain English description related to the '366 Patent. One of the disadvantages of using a fixed power supply for the power amplifier of a mobile device is that the power supply provides more voltage than the power amplifier may actually need at any given moment. This excess voltage can have various disadvantages. For example, this excess voltage may be dissipated as heat, which can raise the temperature of the mobile device and can decrease battery life. One technique for tracking and varying the power supply to match the

needs of the power amplifier can involve, in the right circumstances, use of a linear regulator. While a linear regulator can, in the right circumstances, achieve the high speeds necessary to operate with modern cellular systems, a linear regulator may be inaccurate and inefficient. Another technique is, for example, to use a switch mode regulator. While the accuracy and efficiency of the switch mode regulator can be high, it may not achieve the high speeds of the linear regulator and still maintain needed efficiency. As such, linear and switch mode regulators may have a different set of benefits and constraints. Nokia's '366 Patent discloses, for example, a hybrid system that provides higher accuracy and efficiency than, for example, a purely linear voltage regulator-based power supply, while also providing, for example, higher speeds than a purely switch mode-based power supply. The '366 Patent discloses, for example, an apparatus that includes a switch mode part and a linear part that, for example, can track the required output to the amplifier and then supply the appropriate power level. The disclosed apparatus examples provide superior performance.

J. Foreign Counterparts of the Asserted Patents

86. A list of each foreign patent, each foreign patent application, and each foreign application that has been denied, abandoned, or withdrawn corresponding to the Asserted Patents, with an indication of the prosecution status of each such foreign patent application, is attached as Ex. 17. Nokia is aware of no other foreign patent, foreign patent application, or foreign application that has been denied, abandoned, or withdrawn corresponding to the Asserted Patents.

K. Licensees Under the Asserted Patents

87. Licensees to one or more of the Asserted Patents are identified in Confidential Ex. 18.

88. As noted above, Microsoft has a non-exclusive license to the Asserted Patents. *See* Confidential Ex. 19.

89. As noted above, Samsung has a non-exclusive license to the Asserted Patents. *See* Confidential Exs. 21 and 22.

VI. APPLE'S INFRINGEMENT OF THE ASSERTED PATENTS

90. As discussed in detail below, Apple's Accused Devices are certain portable electronic communication devices, including mobile phones, tablet computers, and components thereof, which infringe the Asserted Patents and are manufactured abroad by or for Apple, sold for importation into the United States, and imported into the United States by or for Apple, and/or sold within the United States after importation by or for Apple. Information regarding representative Accused Devices discussed below can be found in Exhibits 107-117.

91. Apple directly infringes, contributes to the infringement of, and/or induces the infringement of at least claims 18, 19, 21, and 23 of the '247 Patent with respect to at least the following portable electronic communication devices: all variants of the iPhone 7, iPhone 7 Plus, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone SE, iPad Pro (LTE), iPad Air 2 (LTE), and iPad Mini 4 (LTE) (collectively, the "'247 Patent Accused Devices").

92. An exemplary claim chart showing infringement of independent claims 18, 21 and 23 of the '247 Patent by the iPhone SE containing the Qualcomm WTR1625L chip is attached as Exhibit 46.

93. An exemplary claim chart showing infringement of independent claims 18, 21 and 23 of the '247 Patent by the iPhone 7 containing the Qualcomm WTR3925 chip is attached as Exhibit 47.

94. An exemplary claim chart showing infringement of independent claims 18, 21 and 23 of the '247 Patent by the iPhone 7 containing the Qualcomm WTR4905 chip is attached as Exhibit 48.

95. Apple directly infringes, contributes to the infringement of, and/or induces the infringement of claims 1-11, 13-41, and 43-122 of the '301 Patent with respect to at least the following portable electronic communication devices: all variants of the iPhone 7, iPhone 7 Plus, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone SE, iPad Pro (LTE), iPad Air 2 (LTE), and iPad Mini 4 (LTE) (collectively, the "'301 Patent Accused Devices").

96. An exemplary claim chart showing infringement of independent claims 1, 2, 70, and 71 of the '301 Patent by the iPhone SE containing the Qualcomm WTR1625L chip is attached as Exhibit 49.

97. An exemplary claim chart showing infringement of independent claims 1, 2, 70, and 71 of the '301 Patent by the iPhone 7 containing the Qualcomm WTR3925 chip is attached as Exhibit 50.

98. An exemplary claim chart showing infringement of independent claims 1, 2, 70, and 71 of the '301 Patent by the iPhone 7 containing the Qualcomm WTR4905 chip is attached as Exhibit 51.

99. Apple directly infringes, contributes to the infringement of, and/or induces the infringement of at least claims 1, 3-7, 9-12, 18-21, 23-24, 31, 37-38, 46-51, 53-54, 58-61, 68-74, 76-80, and 82-83 of the '619 Patent with respect to at least the following portable electronic communication devices: all variants of the iPhone 7, iPhone 7 Plus, iPhone 6s, iPhone 6s Plus, and iPad Pro (LTE) (collectively, the "'619 Patent Accused Devices").

100. An exemplary claim chart showing infringement of independent claims 1, 7, 18, 20, 31, 46, 60, and 79 of the '619 Patent by the iPhone 7 containing the Qualcomm WTR3925 chip is attached as Exhibit 52.

101. An exemplary claim chart showing infringement of independent claims 1, 7, 18, 20, 31, 46, 60, and 79 of the '619 Patent by the iPhone 7 containing the Qualcomm WTR4905 chip is attached as Exhibit 53.

102. Apple directly infringes, contributes to the infringement of, and/or induces the infringement of at least claims 6, 8, 10, and 11 of the '260 Patent with respect to at least the following portable electronic communication devices: all variants of the iPhone 7, iPhone 7 Plus, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone SE, iPad Pro (LTE), iPad Air 2 (LTE), and iPad Mini 4 (LTE) (collectively, the "'260 Patent Accused Devices").

103. An exemplary claim chart showing infringement of independent claim 6 of the '260 Patent by the iPhone SE containing the Qualcomm WTR1625L chip is attached as Exhibit 54.

104. An exemplary claim chart showing infringement of independent claim 6 of the '260 Patent by the iPhone 7 containing the Qualcomm WTR3925 chip is attached as Exhibit 55.

105. Apple directly infringes, contributes to the infringement of, and/or induces the infringement of at least claims 1-14, 16-21, and 23-24 of the '391 Patent with respect to at least the following portable electronic communication devices: all variants of the iPhone 7, iPhone 7 Plus, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone SE, iPad Pro (LTE), iPad Air 2 (LTE), iPad Air (LTE), iPad Mini 4 (LTE), iPad Mini 3 (LTE), and iPad Mini 2 (LTE) (collectively, the "'391 Patent Accused Devices").

106. An exemplary claim chart showing infringement of independent claims 1, 8, 11, 19, and 23 of the '391 Patent by the iPhone 6s is attached as Exhibit 56.

107. An exemplary claim chart showing infringement of independent claims 1, 8, 11, 19, and 23 of the '391 Patent by the iPhone 7 is attached as Exhibit 57.

108. Apple directly infringes, contributes to the infringement of, and/or induces the infringement of at least claims 1-6, 10, and 16 of the '700 Patent with respect to at least the following LTE-capable portable electronic communication devices: all variants of the iPhone 7, iPhone 7 Plus, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone SE, iPad Air 2 (LTE), iPad Pro (LTE), and iPad Mini 4 (LTE) (collectively, the "'700 Patent Accused Devices"). The '700 Patent Accused Devices include LTE-capable power amplifiers, including at least the Skyworks SKY78041, SKY77812, and SKY78100-20, and the Avago ACPM-8020, AFEM-8050, AFEM-8055, AFEM-8060, AFEM-8065, and AFEM-9040.

109. An exemplary claim chart showing infringement of independent claims 1 and 16 of the '700 Patent by the iPhone 6s containing the Skyworks SKY77812 power amplifier is attached as Exhibit 58.

110. An exemplary claim chart showing infringement of independent claims 1 and 16 of the '700 Patent by the iPhone 6 containing the Avago ACPM-8020 power amplifier is attached as Exhibit 59.

111. Apple directly infringes, contributes to the infringement of, and/or induces the infringement of at least claims 1, 6-15, 17-18, 22, and 27-36 of the '602 Patent with respect to at least the following portable electronic communication devices: all variants of the iPhone 7, iPhone 7 Plus, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone SE, iPad Air, iPad Air (LTE), iPad Air 2 (LTE), iPad Air 2, iPad Mini 2 (LTE), iPad Mini 2, iPad Mini 4 (LTE), iPad Mini 4, iPad Pro (LTE), and iPad Pro (collectively, the "'602 Patent Accused Devices").

112. An exemplary claim chart showing infringement of independent claims 1, 15, and 22 of the '602 Patent by the iPhone 7 is attached as Exhibit 60.

113. An exemplary claim chart showing infringement of independent claims 1, 15, and 22 of the '602 Patent by the iPhone 6s is attached as Exhibit 61.

114. Apple directly infringes, contributes to the infringement of, and/or induces the infringement of at least claims 1-2, 4-7, 11-14, 17-21, and 23 of the '366 Patent with respect to at least the following portable electronic communication devices: all variants of the iPhone 7, iPhone 7 Plus, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone SE, iPad Mini 4 (LTE), iPad Air 2 (LTE), and iPad Pro (LTE) (collectively, the "'366 Patent Accused Devices"). The '366 Patent Accused Devices include envelope tracking chips, including at least the Qualcomm QFE1100, Qualcomm QFE3100, and the Qorvo 81003M.

115. An exemplary claim chart showing infringement of independent claim 1 of the '366 Patent by the iPhone 6s containing the Qualcomm QFE1100 envelope tracking chip is attached as Exhibit 62.

A. Direct Infringement

116. Apple directly infringes the Asserted Patents through its design, manufacture, sale for importation, importation, sale after importation, and/or use after importation of the Accused Devices.

117. On information and belief, Apple sells for importation into the United States the Accused Devices.

118. On information and belief, Apple imports into the United States the Accused Devices.

119. Apple, directly and through authorized agents, sells and offers for sale the Accused Devices after importation within the United States to end users.

120. On information and belief, Apple sells and offers for sale the Accused Devices after importation to wireless system operators, distributors, independent retailers, and other resellers in the United States.

121. On information and belief, Apple tests, demonstrates, or otherwise operates the Accused Devices in the United States, thereby performing the claimed methods and directly infringing any asserted claims of the Asserted Patents requiring such operation. Similarly, Apple's customers and the end users of the Accused Devices test and/or operate the Accused Devices in the United States, in accordance with Apple's instruction contained in, for example, its user manuals, thereby also performing the claimed methods and directly infringing the asserted claims of the Asserted Patents requiring such operation.

B. Contributory Infringement

122. Apple also contributes to infringement of the Asserted Patents by selling for importation into the United States, importing into the United States, and/or selling within the United States after importation the Accused Devices and the non-staple constituent parts of those devices, which are not suitable for substantial non-infringing use and which embody a material part of the inventions described in the Asserted Patents. These devices are known by Apple to be especially made or especially adapted for use in the infringement of the Asserted Patents.

123. Apple also contributes to the infringement of the Asserted Patents by selling for importation into the United States, importing into the United States, and/or or selling within the United States after importation components, such as the chipsets or software containing the infringing functionality, of the Accused Devices, which are not suitable for substantial non-

infringing use and which embody a material part of the inventions described in the Asserted Patents. These devices are known by Apple to be especially made or especially adapted for use in the infringement of the Asserted Patents.

124. Specifically, Apple sells the Accused Devices to resellers, retailers, and end users with knowledge that the devices are used for infringement. End users of those portable electronic communication devices directly infringe the Asserted Patents.

125. Apple has had knowledge and notice of several of the Asserted Patents and its end users' infringement thereof, including the '247 and '260 Patents, since at least March 3, 2015, when Nokia sent a letter to Apple concerning such allegations. In addition, on December 21, 2016, Nokia provided Apple with notice of all of the Asserted Patents and its infringement thereof. Apple has also had knowledge and notice of the Asserted Patents and its infringement as of the date of the filing of this complaint.

C. Induced Infringement

126. Apple has also induced, and continues to induce, infringement of several of the Asserted Patents by encouraging and facilitating others to perform acts known by Apple to infringe the Asserted Patents with the specific intent that those performing the acts infringe the Asserted Patents.

127. Upon information and belief, Apple did so with knowledge of several of the Asserted Patents. *See* paragraph 125. Upon information and belief, Apple had actual notice of the '247 Patent and '260 Patent no later than March 3, 2015, when Nokia: (i) provided Apple with a list of patents that included the '247 and '260 Patents; and (ii) described how Apple's Accused Devices infringed those patents.

128. On December 21, 2016, Nokia also provided Apple with notice and a description regarding how Apple specifically encouraged its customers and/or end users of the Accused Devices to infringe each of the Asserted Patents.

129. Apple, upon information and belief, among other things, advertises the Accused Devices, publishes datasheets, website material, and promotional literature describing the operation of those devices, creates and/or distributes user manuals for the Accused Devices, and offers support and technical assistance to its customers designed to induce those customers to perform the specific acts of direct infringement. On information and belief, these materials instruct and encourage users to use the Accused Devices in a manner that infringes the asserted claims.

130. Apple's customers and the end users of the Accused Devices test and/or operate the Accused Devices in accordance with Apple's instruction, thereby directly infringing the asserted claims.

131. In addition, at the very least, Apple is on notice of these allegations and the Asserted Patents as of the filing of this complaint.

VII. SPECIFIC INSTANCES OF UNFAIR IMPORTATION AND SALE

132. Apple sells for importation into the United States, imports into the United States, and/or sells after importation into the United States the Accused Devices. Examples of Accused Devices were purchased from a retailer located in the United States. *See* Ex. 27. Specifically, an Apple iPhone 7 was purchased on October 20, 2016, and an Apple iPad Mini 4 and iPad Pro were purchased on October 18, 2016 from Apple at www.apple.com. *See* Ex. 27.

133. The Accused Devices are manufactured abroad, sold for importation into the United States, imported into the United States, and/or sold after importation into the United States by Apple and/or its authorized agents. *See* Ex. 24.

134. Upon information and belief, substantially all of the Accused Devices in the United States are manufactured by Apple's outsourcing partners, which are located primarily in Asia, and sold for importation. *See* Ex. 24.

135. Exhibit 27 contains photographs of the Apple iPhone 7 mobile phone, the Apple iPad Mini 4 tablet and the Apple iPad Pro tablet purchased from retailers in the United States. The photographs show, *inter alia*, that these mobile phones and tablets themselves, as well as their packaging, indicate that they were "Assembled in China."

VIII. HARMONIZED TARIFF SCHEDULE NUMBERS

136. On information and belief, the Accused Devices have been imported into the United States under at least the following Harmonized Tariff Schedule numbers: 8517.12.0050, 8517.62.0050, 8517.70.0000, 8471.30.0100, 8471.49.0000, and 8471.50.0150. These numbers are exemplary, and Nokia will provide updated Harmonized Tariff Schedule numbers as they are discovered throughout the course of the investigation.

IX. RELATED LITIGATION

137. Concurrent with the instant litigation, Nokia filed a complaint in the U.S. District Court for the Eastern District of Texas alleging infringement of the Asserted Patents against Apple.

138. Aside from the above-mentioned parallel district court matter, Nokia has not litigated the Asserted Patents against Apple before any other court or agency.

139. Nokia, however, has litigated the '247 and '260 Patents against other parties in prior litigation. Specifically, Nokia previously asserted the '247 and '260 Patents against HTC Corporation, HTC America, Inc., and Excedea, Inc. (collectively "HTC") before the ITC in *Certain Electronic Devices, Including Mobile Phones, Tablet Computers, and Components Thereof*, Inv. No. 337-TA-847, and before the U.S. District Court for the District of Delaware in

Nokia Corp. et al v. HTC Corp. et al, 1:12-cv-549 (LPS). In the 847 investigation, ALJ Pender issued a final initial determination holding that HTC phones with certain Qualcomm chips infringed the '247 and '260 Patents, and that the asserted claims were not invalid. Both the ITC investigation and the corresponding district court matter were terminated based on a settlement agreement in February 2014 and March 2014, respectively.

X. DOMESTIC INDUSTRY

140. An industry as required by Section 337(a)(2) and as defined by Section 337(a)(3) exists in the United States. Complainant, as well as licensees to the Asserted Patents, have made significant investments in plants and equipment, employed significant labor and capital, and made substantial investments in engineering, research, and development related to products and services that embody the Asserted Patents.

A. Devices that Practice the Asserted Patents

141. As stated above, for purposes of this complaint, Nokia submits that various Samsung Galaxy, Microsoft Surface, and Microsoft Lumia devices practice the Asserted Patents ("Domestic Industry Devices"). The following table provides a summary of the Domestic Industry Devices that practice each of the Asserted Patents:

U.S. Patent No.	Domestic Industry Devices
7,415,247	Galaxy Alpha, Galaxy Core Prime, Galaxy Go Prime, Galaxy Grand Prime, Galaxy J1, Galaxy J3, Galaxy Luna, Galaxy Note 4, Galaxy Note 5, Galaxy Note 7, Galaxy Note Edge, Galaxy Prevail, Galaxy S5, Galaxy S5 Active, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab 4, Galaxy Tab A, Galaxy Tab E Lumia 550, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 735, Lumia 830, Lumia 950, Lumia 950 XL

9,270,301	Galaxy Alpha, Galaxy Core Prime, Galaxy Go Prime, Galaxy Grand Prime, Galaxy J1, Galaxy J3, Galaxy Luna, Galaxy Note 4, Galaxy Note 5, Galaxy Note 7, Galaxy Note Edge, Galaxy Prevail, Galaxy S5, Galaxy S5 Active, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab 4, Galaxy Tab A, Galaxy Tab E Lumia 550, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 735, Lumia 830, Lumia 950, Lumia 950 XL
8,036,619	Galaxy Core Prime, Galaxy Go Prime, Galaxy Grand Prime, Galaxy J3, Galaxy Luna, Galaxy Note 5, Galaxy Note 7, Galaxy Prevail, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab A, Galaxy Tab E Lumia 550, Lumia 950, Lumia 950 XL
6,393,260	Galaxy Alpha, Galaxy J1, Galaxy J3, Galaxy Note 4, Galaxy Note 5, Galaxy Note 7, Galaxy Note Edge, Galaxy S5, Galaxy S5 Active, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab 4, Galaxy Tab A, Galaxy Tab E Lumia 520, Lumia 521, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 735, Lumia 810, Lumia 820, Lumia 830, Lumia 920, Lumia 925, Lumia 928, Lumia 950, Lumia 950 XL, Lumia 1020, Lumia 1320, Lumia 1520
6,826,391	Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Edge, Galaxy Note 7
6,480,700	Galaxy Note 5, Galaxy Note 7, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab 4 Lumia 950, Lumia 950 XL
9,473,602	Galaxy Tab 4, Galaxy Tab A, Galaxy Tab E, Galaxy Tab S2 Microsoft Surface 3 LTE, Microsoft Surface Pro 4 Lumia 920, Lumia 950, Lumia 950 XL
7,653,366	Galaxy Note 5, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab 4

	Lumia 950, Lumia 950 XL

142. Information regarding each representative Galaxy, Surface, and Lumia device, including teardown reports, chip photographs, and specifications, is included in Exhibits 63 to 71.

143. At least the following Domestic Industry Devices practice the claims of the '247 Patent: all variants of the Galaxy Alpha, Galaxy Core Prime, Galaxy Go Prime, Galaxy Grand Prime, Galaxy J1, Galaxy J3, Galaxy Luna, Galaxy Note 4, Galaxy Note 5, Galaxy Note 7, Galaxy Note Edge, Galaxy Prevail, Galaxy S5, Galaxy S5 Active, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab 4, Galaxy Tab A, Galaxy Tab E, Lumia 550, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 735, Lumia 830, Lumia 950, and Lumia 950 XL (collectively, the "'247 Patent DI Devices").

144. Exhibit 29 contains an exemplary claim chart showing that the Galaxy S5 containing the Qualcomm WTR1625L chip practices at least claims 18, 21, and 23 of the '247 Patent. This claim chart is representative of at least the following '247 Patent DI Devices: Galaxy Alpha, Galaxy Note 4, Galaxy Note Edge, Galaxy S5, Galaxy S5 Active, Galaxy Tab 4, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 735, and Lumia 830, all of which contain the Qualcomm WTR1625L chip.

145. Exhibit 30 contains an exemplary claim chart showing that the Galaxy S7 Edge containing the Qualcomm WTR3925 chip practices at least claims 18, 21, and 23 of the '247 Patent. This claim chart is representative of at least the following '247 Patent DI Devices: Galaxy Note 5, Galaxy Note 7, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Lumia 950, and Lumia 950 XL, all of which contain the Qualcomm WTR3925 chip.

146. Exhibit 31 contains an exemplary claim chart showing that the Galaxy S7 Edge containing the Qualcomm WTR4905 chip practices at least claims 18, 21, and 23 of the '247 Patent. This claim chart is representative of at least the following '247 Patent DI Devices: Galaxy Core Prime, Galaxy Go Prime, Galaxy Grand Prime, Galaxy J1, Galaxy J3, Galaxy Luna, Galaxy Note 7, Galaxy Prevail, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab A, Galaxy Tab E, and Lumia 550, all of which contain the Qualcomm WTR4905 chip.

147. At least the following Domestic Industry Devices practice the claims of the '301 Patent: all variants of the Galaxy Alpha, Galaxy Core Prime, Galaxy Go Prime, Galaxy Grand Prime, Galaxy J1, Galaxy J3, Galaxy Luna, Galaxy Note 4, Galaxy Note 5, Galaxy Note 7, Galaxy Note Edge, Galaxy Prevail, Galaxy S5, Galaxy S5 Active, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab 4, Galaxy Tab A, Galaxy Tab E, Lumia 550, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 735, Lumia 830, Lumia 950, and Lumia 950 XL (collectively, the "'301 Patent DI Devices").

148. Exhibit 32 contains an exemplary claim chart showing that the Galaxy S5 containing the Qualcomm WTR1625L chip practices at least claims 1, 2, 70, and 71 of the '301 Patent. This claim chart is representative of at least the following '301 Patent DI Devices: Galaxy Alpha, Galaxy Note 4, Galaxy Note Edge, Galaxy S5, Galaxy S5 Active, Galaxy Tab 4, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 735, and Lumia 830, all of which contain the Qualcomm WTR1625L chip.

149. Exhibit 33 contains an exemplary claim chart showing that the Galaxy S7 Edge containing the Qualcomm WTR3925 chip practices at least claims 1, 2, 70, and 71 of the '301 Patent. This claim chart is representative of at least the following '301 Patent DI Devices: Galaxy Note 5, Galaxy Note 7, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7

Active, Galaxy S7 Edge, Lumia 950, and Lumia 950 XL, all of which contain the Qualcomm WTR3925 chip.

150. Exhibit 34 contains an exemplary claim chart showing that the Galaxy S7 Edge containing the Qualcomm WTR4905 chip practices at least claims 1, 2, 70, and 71 of the '301 Patent. This claim chart is representative of at least the following '301 Patent DI Devices: Galaxy Core Prime, Galaxy Go Prime, Galaxy Grand Prime, Galaxy J1, Galaxy J3, Galaxy Luna, Galaxy Note 7, Galaxy Prevail, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab A, Galaxy Tab E, and Lumia 550, all of which contain the Qualcomm WTR4905 chip.

151. At least the following Domestic Industry Devices practice the claims of the '619 Patent: all variants of the Galaxy Core Prime, Galaxy Go Prime, Galaxy Grand Prime, Galaxy J1, Galaxy J3, Galaxy Luna, Galaxy Note 5, Galaxy Note 7, Galaxy Prevail, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab A, Galaxy Tab E, Lumia 550, Lumia 950, and Lumia 950 XL (collectively, the "'619 Patent DI Devices").

152. Exhibit 35 contains an exemplary claim chart showing that the Galaxy S7 Edge containing the Qualcomm WTR3925 chip practices at least claims 1, 7, 18, 20, 31, 46, 60, and 79 of the '619 Patent. This claim chart is representative of at least the following '619 Patent DI Devices: Galaxy Note 5, Galaxy Note 7, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Lumia 950, and Lumia 950 XL, all of which contain the Qualcomm WTR3925 chip.

153. Exhibit 36 contains an exemplary claim chart showing that the Galaxy S7 Edge containing the Qualcomm WTR4905 chip practices at least claims 1, 7, 18, 20, 31, 46, 60, and 79 of the '619 Patent. This claim chart is representative of at least the following '619 Patent DI Devices: Galaxy Core Prime, Galaxy Go Prime, Galaxy Grand Prime, Galaxy J1, Galaxy J3,

Galaxy Luna, Galaxy Note 7, Galaxy Prevail, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab A, Galaxy Tab E, and Lumia 550, all of which contain the Qualcomm WTR4905 chip.

154. At least the following Domestic Industry Devices practice the claims of the '260 Patent: all variants of the Galaxy Alpha, Galaxy J1, Galaxy J3, Galaxy Note 4, Galaxy Note 5, Galaxy Note 7, Galaxy Note Edge, Galaxy S5, Galaxy S5 Active, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab 4, Galaxy Tab A, Galaxy Tab E, Lumia 1020, Lumia 1320, Lumia 1520, Lumia 520, Lumia 521, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 735, Lumia 810, Lumia 820, Lumia 830, Lumia 920, Lumia 925, Lumia 928, Lumia 950, and Lumia 950 XL (collectively, the "'260 Patent DI Devices").

155. Exhibit 37 contains an exemplary claim chart showing that the Galaxy S5 containing the Qualcomm WTR1625L chip practices at least claim 6 of the '260 Patent. This claim chart is representative of at least the following '260 Patent DI Devices: Galaxy Alpha, Galaxy Note 4, Galaxy Note Edge, Galaxy S5, Galaxy S5 Active, Galaxy Tab 4, Lumia 635, Lumia 640, Lumia 640 XL, Lumia 735, and Lumia 830, all of which contain the Qualcomm WTR1625L chip.

156. Exhibit 38 contains an exemplary claim chart showing that the Galaxy S7 Edge containing the Qualcomm WTR3925 chip practices at least claim 6 of the '260 Patent. This claim chart is representative of at least the following '260 Patent DI Devices: Galaxy Note 5, Galaxy Note 7, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Lumia 950, and Lumia 950 XL, all of which contain the Qualcomm WTR3925 chip.

157. Exhibit 39 contains an exemplary claim chart showing that the Galaxy Tab A containing the Qualcomm WCN3660 chip practices at least claim 6 of the '260 Patent. This claim chart is representative of at least the following '260 Patent DI Devices: Galaxy J1, Galaxy J3,

Galaxy Tab 4, Galaxy Tab A, Galaxy Tab E, Lumia 520, Lumia 521, Lumia 810, Lumia 820, Lumia 830, Lumia 920, Lumia 925, Lumia 928, Lumia 1020, Lumia 1320, Lumia 1520, all of which contain the Qualcomm WCN3660 chip.

158. At least the following Domestic Industry Devices practice the claims of the '391 Patent: all variants of the Samsung Galaxy S7, Samsung Galaxy S7 Edge, Samsung Galaxy Note 7, Samsung Galaxy S6, Samsung Galaxy S6 Edge, and Samsung Galaxy S6 Edge Plus (collectively, the "'391 Patent DI Devices").

159. Exhibit 40 contains an exemplary claim chart showing that the Galaxy S7 Edge practices at least claims 1, 8, 11, 19, and 23 of the '391 Patent. This claim chart is representative of the '391 Patent DI Devices.

160. At least the following LTE-capable Domestic Industry Devices practice the claims of the '700 Patent: all variants of the Samsung Galaxy Note 5, Galaxy Note 7, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab 4, Lumia 950, and Lumia 950 XL (collectively, the "'700 Patent DI Devices").

161. Exhibit 41 contains an exemplary claim chart showing that the Samsung Galaxy S6 Edge containing the Skyworks SKY78041 power amplifier practices at least claims 1 and 16 of the '700 Patent. This claim chart is representative of the '700 Patent DI Devices, all of which include LTE-capable power amplifiers, including but not limited to the Skyworks SKY78041, SKY77812, and SKY78100-20, Avago ACPM-8020, AFEM-8050, AFEM-8055, AFEM-8060, AFEM-8065, and AFEM-9040 power amplifiers.

162. Exhibit 42 contains an exemplary claim chart showing that the Samsung Galaxy S7 Edge containing the Avago AFEM-9040 power amplifier practices at least claims 1 and 16 of the '700 Patent. This claim chart is representative of the '700 Patent DI Devices, all of which include

LTE-capable power amplifiers, including but not limited to the Skyworks SKY78041, SKY77812, and SKY78100-20, Avago ACPM-8020, AFEM-8050, AFEM-8055, AFEM-8060, AFEM-8065, and AFEM-9040 power amplifiers.

163. At least the following Domestic Industry Devices practice the claims of the '602 Patent: all variants of the Microsoft Surface 3 LTE, Surface Pro 4, Lumia 920, Lumia 950, Lumia 950 XL, Samsung Galaxy Tab 4, Galaxy Tab A, Galaxy Tab E, and Galaxy Tab S2 (collectively, the "'602 Patent DI Devices").

164. Exhibit 43 contains an exemplary claim chart showing that the Microsoft Surface Pro 4 practices at least claim 1 of the '602 Patent.

165. Exhibit 44 contains an exemplary claim chart showing that the Samsung Galaxy Tab A practices at least claim 1 of the '602 Patent.

166. At least the following Domestic Industry Devices practice the claims of the '366 Patent: all variants of the Lumia 950, Lumia 950 XL, Samsung Galaxy Note 5, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge Plus, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, and Galaxy Tab 4 (collectively, the "'366 Patent DI Devices"). The '366 Patent DI Devices include envelope tracking chips, including at least the Qualcomm QFE1100, Qualcomm QFE3100, and the Qorvo 81003M.

167. Exhibit 45 contains an exemplary claim chart showing that the Samsung Galaxy S6 Edge Plus containing the Qualcomm QFE1100 envelope tracking chip practices at least claim 1 of the '366 Patent. This claim chart is representative of the '366 Patent DI Devices, all of which include envelope tracking chips, including but not limited to the Qualcomm QFE1100, Qualcomm QFE3100, and the Qorvo 81003M.

B. Domestic Investments in the United States Relating to Devices that Practice the Asserted Patents

168. Complainant's domestic industry is based on the investments in the development, readying-for-market, servicing, and support of the Domestic Industry Devices in the United States. These investments were made by Complainant and licensees Samsung, Microsoft, and Microsoft's subsidiary Nokia Inc. Many of the Microsoft Domestic Industry Devices, such as the Lumia 635, Lumia 735, Lumia 820, Lumia 830, Lumia 920, Lumia 925, Lumia 928, Lumia 1020, Lumia 1320, and Lumia 1520 were developed and/or supported by Nokia in the United States prior to the sale of the D&S group to Microsoft. Microsoft continued these investments in these and other Microsoft Domestic Industry Devices after the sale. For simplicity, investments by Microsoft and Nokia Inc. are collectively included and referred to below as investments by Microsoft.

169. These activities comprise a significant investment in plant and equipment, significant employment of labor or capital, and a substantial investment in the exploitation of the Asserted Patents through engineering and research and development.

1. Microsoft

170. Nokia relies on Microsoft Surface and Lumia devices ("Microsoft Domestic Industry Devices") to establish domestic industry for many of the Asserted Patents. *See* paragraph 141.

171. The Microsoft Domestic Industry Devices practice at least one claim of each Asserted Patent. *See* paragraphs 143-167.

172. Upon information and belief, Microsoft's domestic investments in the Microsoft Domestic Industry Devices, particularly the Lumia series of phones, are the same in magnitude and kind that were successfully relied upon for the satisfaction of the economic prong in the 847 investigation. There, Nokia relied upon many millions of dollars of domestic investments in plant,

equipment, labor, capital and engineering allocated to the Lumia phone line to satisfy the economic prong under subsections A, B, and C. Microsoft purchased this business from Nokia and, upon information and belief, has made similar domestic investments to develop and support the Microsoft Domestic Industry Devices.

173. Microsoft has spent, and continues to spend, significant sums on domestic facilities and equipment related to the Microsoft Domestic Industry Devices. In fiscal year 2016, Microsoft expended $8.34 billion in "property and equipment." In fiscal years 2015 and 2014, Microsoft expended $5.94 billion and $5.48 billion, respectively, in property and equipment. *See* Exhibit 23, Microsoft 2016 10-K, at 55. Upon information and belief, this property and equipment is located primarily in the United States, as over 26 million of the 45.9 million square feet of facility space that Microsoft owns or leases is within the United States. *Id.* at 26.

174. For example, Microsoft has several facilities in the United States, including one in Redmond, Washington. As of June 30, 2016, Microsoft's domestic facilities included 16.4 million square feet of owned space and an additional 9.7 million square feet of leased space for a total of 26.1 million square feet of domestic facility space. *See* Exhibit 23, Microsoft 2016 10-K, at 26. Upon information and belief, Microsoft employees at these sites perform a variety of tasks related to the Microsoft Domestic Industry Devices, including development, service, and product support. *See* Exhibit 23.

175. Microsoft has invested significant sums on domestic labor and capital related to the Microsoft Domestic Industry Devices. For example, upon information and belief, Microsoft has many employees in the United States who work on various activities related to the Microsoft Domestic Industry Devices. Details on these employees can be found in Exhibit 23, at 16.

176. Microsoft has also expended a significant amount of capital in various activities related to the Microsoft Domestic Industry Devices in the United States. Details on these capital expenditures can be found in Exhibit 23.

177. Microsoft has made, and continues to make, substantial investments in engineering and research and development activities in the Microsoft Domestic Industry Devices. *See* Exhibit 23. In each of the last three fiscal years, 2016, 2015, and 2014, Microsoft has invested $11.9 billion, $12.0 billion, and $11.3 billion, respectively, in research and development. *See* Exhibit 23, Microsoft 2016 10-K, at 38.

178. Microsoft's revenue from its phone division amounted to over five percent ($14.1B of $265.7B) of Microsoft's global revenue from FY 2014 through FY 2016. The above investments are, upon information and belief, roughly attributable to Microsoft phones, including the Lumia models in the Microsoft Domestic Industry Devices, by this percentage. The Microsoft Surface comprised another 3.8% ($9.9B of $265.7B) of Microsoft's revenue from FY 2014 through FY 2016. This indicates, upon information and belief, that the above investments can be roughly attributable to the Microsoft Surface products by this percentage.[5]

179. Microsoft is expected to provide additional bases and supporting information under this Section.

2. Samsung

180. Nokia further relies on Samsung devices ("Samsung Domestic Industry Devices") to establish domestic industry. *See* paragraph 141.

[5] The allocations provided in this paragraph are rough estimates and are expected to be revised once discovery is obtained.

181. The Samsung Domestic Industry Devices practice at least one claim of each Asserted Patent. *See* paragraphs 143 – 167.

182. Complainant's domestic industry based on the investments of Samsung is comprised of the development, readying-for-market, testing, deployment, and support of the Samsung Domestic Industry Devices in the United States.

183. Samsung has spent, and continues to spend, significant sums on domestic facilities and equipment related to its mobile devices, including, upon information and belief, the Samsung Domestic Industry Devices. In the first half of calendar year 2016, Samsung expended $7.39 billion in "property, plant and equipment." *See, e.g.*, Exhibit 25, Samsung 2016 Interim Consolidated Financial Statement, at 12. In each of calendar years 2015 and 2014, Samsung expended $22.8 billion and $19.4 billion, respectively, in property, plant, and equipment. *See also* Exhibit 26, Samsung 2015 Consolidated Financial Statement, at 12.

184. For example, Samsung has several facilities in the United States, including, for example, in Ridgefield Park, New Jersey, San Jose, California, and Austin, Texas.

185. Samsung has also invested a significant amount of money in equipment used to develop, ready-for-market, test, deploy, and support its mobile devices, including, upon information and belief, the Samsung Domestic Industry Devices. *See, e.g.*, Exhibit 25, at 3.

186. Samsung has spent, and continues to spend, significant sums on domestic labor and capital related to the Samsung Domestic Industry Devices.

187. For example, Samsung has many employees in the United States who work on various activities related to its mobile devices, including, upon information and belief, the Samsung Domestic Industry Devices. Details on the location of Samsung employees can be found in Exhibit 25.

188. Upon information and belief, Samsung engineers and other personnel located in the United States are engaged in the planning, development, commercialization, and support for Samsung's Domestic Industry Devices. Samsung has made substantial investments in its research and development program, including investments in its research facility in San Jose, California, and its mobile network operations offices in Bridgewater, New Jersey, Atlanta, Georgia, Overland Park, Kansas, and Bellevue, Washington.

189. Samsung further employs substantial engineering staff and the necessary equipment to support such staff. Samsung invests in U.S.-based personnel who provide product planning, research and development, and engineering to help design products that will work in the United States market. Additionally, Samsung invests in U.S.-based personnel who provide product packaging, testing, compliance, quality control, and technical education to create market ready products.

190. Further, Samsung invests in U.S.-based personnel who provide technical support, service, warranty, and repair to Samsung customers in the United States who have purchased Samsung's mobile communication devices, including, upon information and belief, the Samsung Domestic Industry Devices.

191. In the first half of calendar year 2016, Samsung expended over $8.1 billion on "wages and salary." *See, e.g.*, Exhibit 25, at 38. In calendar years 2015 and 2014, Samsung expended $15.5 billion and $14.9 billion, respectively, on wages and salary. *See, e.g.*, Exhibit 26, at 66.

192. Samsung has also expended a significant amount of capital in various activities related to its mobile devices, including the Samsung Domestic Industry Devices, in the United States. *See, e.g.*, Exhibit 25, at 38; s*ee also* Exhibit 26, at 66.

193. Samsung has made, and continues to make, substantial investments in engineering and research and development activities in its mobile devices, including, upon information and belief, the Samsung Domestic Industry Devices. *See* Exhibit 25.

194. The economic prong requirement has been satisfied through Samsung's domestic investments in its mobile devices in the United States in several past investigations. *See, e.g.*, Inv. No. 337-TA-794. The Samsung Domestic Industry Devices in this investigation for all asserted patents are primarily the Galaxy series of mobile phones and tablets, which are Samsung's most popular line of mobile devices. Accordingly, upon information and belief, Samsung's domestic investments described above should be primarily focused on the Samsung Domestic Industry Devices.

195. About half of Samsung's global revenue is derived from its IM division, which is the division related to Samsung's mobile phones and tablets, including the Samsung Domestic Industry Devices. *See* Ex. 25 at p. 50; *see also* Ex. 26 at p. 83. Moreover, about one third of Samsung's global revenue is derived from sales and services in the United States. *See* Ex. 25 at p. 51; *see also* Ex. 26 at p. 84. Thus, about one-sixth of Samsung's global revenue could be attributed to sales of Samsung phones and tablets in the United States. The above discussed global Samsung expenses can be roughly allocated to the Samsung Domestic Industry Devices based on this factor.[6]

196. Samsung is expected to provide additional bases and supporting information under this Section.

[6] The allocations provided in this paragraph are rough estimates and are expected to be revised once discovery is obtained.

XI. REQUEST FOR RELIEF

197. Complainant requests that the U.S. International Trade Commission:

a. Institute an immediate investigation, pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, with respect to violations of Section 337 based upon the sale for importation into the United States, the importation into the United States, and/or the sale within the United States after importation of Respondent's portable electronic communication devices, including mobile phones and tablet computers, and components thereof that infringe one or more claims of the Asserted Patents;

b. Determine that there has been a violation of Section 337 by Respondent;

c. Issue a permanent exclusion order, pursuant to 19 U.S.C. § 1337(d), prohibiting entry into the United States of all of Respondent's portable electronic communication devices, including mobile phones and tablet computers, and components thereof that infringe one or more claims of the Asserted Patents;

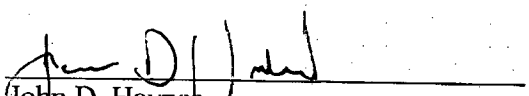
d. Issue permanent cease and desist orders, pursuant to 19 U.S.C. § 1337(f), prohibiting Respondent, or its parents, subsidiaries, or other affiliates, from importing, admitting or withdrawing from a foreign trade zone, marketing, advertising, demonstrating, warehousing inventory of, distributing, offering for sale, selling, licensing, repairing, programming, updating, soliciting U.S. agents or distributors for, or aiding or abetting other entities in the importation, sale for importation, sale after importation, transfer, or distribution of Respondent's portable electronic communication devices,

including mobile phones and tablet computers, and components thereof that infringe one or more claims of the Asserted Patents; and

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

Dated: December 22, 2016

Respectfully submitted,



John D. Haynes
Patrick J. Flinn
Wesley C. Achey
David S. Frist
ALSTON & BIRD LLP
One Atlantic Center
1201 West Peachtree Street
Suite 4900
Atlanta, GA 30309
Telephone: (404) 881-7000
Facsimile: (404) 881-7777
Email: john.haynes@alston.com
Email: patrick.flinn@alston.com
Email: wes.achey@alston.com
Email: david.frist@alston.com

Jamie D. Underwood
Adam D. Swain
ALSTON & BIRD LLP
The Atlantic Building
950 F Street, NW
Washington, DC 20004
Telephone: (202) 239-3300
Facsimile: (202) 239-3333
Email: adam.swain@alston.com

Theodore Stevenson, III
tstevenson@mckoolsmith.com
Nicholas Mathews
nmathews@mckoolsmith.com
McKool Smith, P.C.
300 Crescent Court, Suite 1500
Dallas, Texas 75201
Telephone: (214) 978-4000
Facsimile: (214) 978-4044

Kevin L. Burgess
kburgess@mckoolsmith.com
McKool Smith, P.C.
300 W. Sixth Street, Suite 1700
Austin, Texas 78701
Telephone: (512) 692-8700
Facsimile: (512) 692-8744

Counsel for Complainant
Nokia Technologies Oy

VERIFICATION OF COMPLAINT

I, Robert Gray, declare under penalty of perjury under the laws of the United States of America, and in accordance with 19 C.F.R. §§ 210.4 and 210.12(a) the following is true and correct:

1. I am a Director of Patent Licensing of Nokia Technologies Oy and I am duly authorized to verify this complaint on behalf of complainants;

2. I have read the complaint and am aware of its contents;

3. The complaint is not being presented for any improper purpose, such as to harass or to cause unnecessary delay or needless increase in the cost of the investigation or related proceeding;

4. To the best of my knowledge, information and belief founded upon reasonable inquiry, the claims and legal contentions of this complaint are warranted by existing law or a nonfrivolous argument for the extension, modification, or reversal of existing law or the establishment of new law; and

5. To the best of my knowledge, information and belief founded upon reasonable inquiry, the allegations and other factual contentions in the complaint have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.

Executed on December 21, 2016.

Signature

Print Name: Robert Gray