

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C.

In the Matter of

**CERTAIN MOBILE ELECTRONIC  
DEVICES AND RADIO FREQUENCY  
AND PROCESSING COMPONENTS  
THEREOF**

Investigation No. 337-TA- \_\_\_\_\_

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

**Complainant**

Qualcomm Incorporated  
5775 Morehouse Drive  
San Diego, CA 92121  
Tel. (858) 587-1121

*Counsel for Complainant Qualcomm  
Incorporated*

S. Alex Lasher  
QUINN EMANUEL URQUHART & SULLIVAN,  
LLP  
777 6th Street NW, 11th Floor  
Washington, DC 20001  
Tel.: (202) 538-8000

David A. Nelson  
Stephen Swedlow  
QUINN EMANUEL URQUHART & SULLIVAN,  
LLP  
500 West Madison St., Suite 2450  
Chicago, Illinois 60661  
Tel.: (312) 705-7400

Steven Cherny

**Proposed Respondent**

Apple Inc.  
1 Infinite Loop  
Cupertino, CA 95014  
Tel. (408) 996-1010

Richard W. Erwine  
Alexander Rudis  
Patrick Curran  
QUINN EMANUEL URQUHART & SULLIVAN,  
LLP  
51 Madison Avenue, 22nd Floor  
New York, NY 10010  
Tel.: (212) 849-7000

Sean S. Pak  
QUINN EMANUEL URQUHART & SULLIVAN,  
LLP  
50 California Street, 22nd Floor  
San Francisco, CA 94111  
Tel.: (415) 875-6600

Tom M. Schaumberg  
Deanna Tanner Okun  
Beau Jackson  
ADDUCI, MASTRIANI & SCHAUMBERG,  
L.L.P.  
1133 Connecticut Avenue, N.W., 12th Floor  
Washington, DC 20036  
Tel.: (202) 467-6300

Evan R. Chesler  
Keith R. Hummel  
Richard J. Stark  
Gary A. Bornstein  
J. Wesley Earnhardt  
Yonatan Even  
Vanessa A. Lavelly  
CRAVATH, SWAINE & MOORE LLP  
Worldwide Plaza, 825 Eighth Avenue  
New York, NY 10019  
Tel.: (212) 474-1000

Richard S. Zembek  
Eric B. Hall  
Daniel S. Leventhal  
Talbot R. Hansum  
NORTON ROSE FULBRIGHT US LLP  
Fulbright Tower  
1301 McKinney, Suite 5100  
Houston, TX 77010  
Tel.: (713) 651-5151

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## EXHIBIT LIST

Exhibits	Description
1	Certified Copy of U.S. Patent No. 9,154,356
2	Assignment Records for U.S. Patent No. 9,154,356
3	Certified Copy of U.S. Patent No. 9,473,336
4	Assignment Records for U.S. Patent No. 9,473,336
5	Certified Copy of U.S. Patent No. 8,063,674
6	Assignment Records for U.S. Patent No. 8,063,674
7	Certified Copy of U.S. Patent No. 7,693,002
8	Assignment Records for U.S. Patent No. 7,693,002
9	Certified Copy of U.S. Patent No. 9,552,633
10	Assignment Records for U.S. Patent No. 9,552,633
11	List of Foreign Counterparts
12C	Confidential List of Licensees to One or More of the Asserted Patents
13C	Confidential Representative Infringement Claim Charts for the '356 Patent
14C	Confidential Representative Infringement Claim Charts for the '336 Patent
15C	Confidential Representative Infringement Claim Charts for the '674 Patent
16C	Confidential Representative Infringement Claim Charts for the '002 Patent
17	Representative Infringement Claim Charts for the '633 Patent
18C	Confidential Declaration of Tim Durkin Regarding Economic Domestic Industry
19C	Confidential Representative Domestic Industry Claim Charts for the '356 Patent
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24	October 2016 Earnings Call
25	Importation Declaration
26	Apple 2017 10K

**PHYSICAL EXHIBIT LIST**

Exhibits	Description
P1	Apple iPhone 7
P2	Apple iPhone 8
P3	Apple iPhone 7 Plus

### **APPENDIX LIST**

<b>Appendices</b>	<b>Description</b>
A	Certified Prosecution History of U.S. Patent No. 9,154,356
B	Patents and Applicable Pages of Technical References Mentioned in the Prosecution History of U.S. Patent No. 9,154,356
C	Certified Prosecution History of U.S. Patent No. 9,473,336
D	Patents and Applicable Pages of Technical References Mentioned in the Prosecution History of U.S. Patent No. 9,473,336
E	Certified Prosecution History of U.S. Patent No. 8,063,674
F	Patents and Applicable Pages of Technical References Mentioned in the Prosecution History of U.S. Patent No. 8,063,674
G	Certified Prosecution History of U.S. Patent No. 7,693,002
H	Patents and Applicable Pages of Technical References Mentioned in the Prosecution History of U.S. Patent No. 7,693,002
I	Certified Prosecution History of U.S. Patent No. 9,552,633
J	Patents and Applicable Pages of Technical References Mentioned in the Prosecution History of U.S. Patent No. 9,552,633

## I. INTRODUCTION

1. Complainant Qualcomm Incorporated (“Qualcomm” or “Complainant”) respectfully files this complaint under Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, based on Proposed Respondent Apple Inc.’s (“Apple” or “Respondent”) unlawful importation into the United States, sale for importation into the United States, and/or sale within the United States after importation of certain mobile electronic devices, including mobile phones.

2. This complaint is directed to Apple’s imported mobile electronic devices that do not incorporate a Qualcomm brand baseband processor modem,<sup>1</sup> including mobile phones that infringe one or more of claims 1, 7, 8, 10, 11, 17, and 18 of U.S. Patent No. 9,154,356 (“the ’356 patent”), and/or claim 4 of U.S. Patent No. 9,473,336 (“the ’336 patent”), and/or claims 1, 5-8, 12, 16-18, 21, and 22 of U.S. Patent No. 8,063,674 (“the ’674 patent”), and/or claims 1, 2, 3, 4, 7, 8, 9, 11, 17, 20, 21, 22, 23, 31, 32, 33, and 36 of U.S. Patent No. 7,693,002 (“the ’002 patent”), and/or claims 1-3, 10-12, 18, and 22-24 of U.S. Patent No. 9,552,633 (“the ’633 patent”) (collectively, the “Asserted Patents”), either literally or under the doctrine of equivalents.

3. The only products at issue in this complaint are Apple’s mobile electronic devices that do not incorporate a Qualcomm brand baseband processor modem (“Accused Devices”). Apple’s mobile electronic devices that do incorporate a Qualcomm brand baseband processor modem are not the subject of this complaint, and Complainant will not seek enforcement of any ITC remedial order that issues as a result of this Investigation against products that contain a Qualcomm brand baseband processor modem.

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<sup>1</sup> Qualcomm brand baseband processor modems are designed, sold, and distributed by Qualcomm and its affiliates.

4. Exemplary models of Apple's mobile electronic devices at issue in this complaint include the Apple iPhone 7, Apple iPhone 7 Plus, Apple iPhone 8, Apple iPhone 8 Plus, and Apple iPhone X that do not incorporate a Qualcomm brand baseband processor modem.<sup>2</sup>

5. The following table provides a summary of the asserted claims of the Asserted Patents (independent claims in bold):

Patent No.	Asserted Claims
9,154,356	1, 7, 8, 10, 11, <b>17</b> , 18
9,473,336	<b>4</b>
8,063,674	1, 5, 6, 7, <b>8</b> , 12, 16, <b>17</b> , 18, 21, 22
7,693,002	1, 2, 3, 4, 7, 8, 9, <b>11</b> , <b>17</b> , 20, <b>21</b> , 22, <b>23</b> , <b>31</b> , 32, 33, 36
9,552,633	1, 2, 3, <b>10</b> , 11, 12, <b>18</b> , <b>22</b> , 23, 24

6. Qualcomm, based in San Diego, California, is a global semiconductor and telecommunications company that designs and markets wireless telecommunications products and services. It is the largest domestic provider of telecommunications chipsets and software. Since its founding in 1985, Qualcomm has invested billions of dollars in the United States researching and developing innovations that have enabled wireless telecommunications and countless mobile technologies. These market-changing innovations have allowed Qualcomm to grow into one of the largest technology companies in the United States, where it now employs over 18,000 people, more than two-thirds of whom are engineers.

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<sup>2</sup> The identification of a specific model or type of mobile electronic 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.

7. Qualcomm helped pioneer advances at the heart of cellular connectivity, enabling not only Apple's mobile electronic devices, but also the entire smartphone revolution. Qualcomm's patented technologies allow Apple's mobile electronic devices to send and receive vast amounts of data at lightning speed. Qualcomm also invented critical technologies improving functions throughout every modern cellular device. Indeed, Qualcomm's inventions make mobile electronic devices desirable to consumers in their daily lives.

8. Apple rose to dominance relying heavily on Qualcomm's technology that enables numerous important features on the iPhone, including providing better battery life. Further, the iPhone's value to customers is driven by its Qualcomm-enabled ability to connect with and transfer data over networks at rapid speeds. Apple CEO Tim Cook has confirmed on multiple occasions the heavy dependence of the iPhone on high-speed cellular connectivity for its success. (Ex. 24, April/October 2016 statements ("There are enormous investments going on in 4G, and we couldn't be more excited about that because it really takes a great network working with iPhones to produce that great experience for people.").)

9. Apple's unlicensed and unauthorized use of Qualcomm's technology—including the technology disclosed in the Asserted Patents—to import and sell mobile electronic devices in the United States constitutes an unfair act within the meaning of Section 337.

10. 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 Apple.

11. A domestic industry as required by 19 U.S.C. § 1337(a)(2) and (3) exists in the United States relating to articles protected by Qualcomm's Asserted Patents. Qualcomm's domestic industry includes significant investments in plant and equipment, significant

employment of labor and capital, and substantial investments in the exploitation of the inventions claimed in Qualcomm's Asserted Patents, including through engineering, research, and development.

12. Qualcomm seeks as relief a permanent limited exclusion order under 19 U.S.C. § 1337(d) barring from entry into the United States infringing Accused Devices, or Accused Devices that are manufactured abroad, sold for importation into the United States, and/or sold in the United States after importation by or on behalf of Apple.

13. Qualcomm further seeks a permanent cease and desist order under 19 U.S.C. § 1337(f) prohibiting Apple from importing, admitting or withdrawing from a foreign trade zone, marketing, advertising, demonstrating, testing, warehousing inventory of, distributing, offering for sale, selling, licensing, programming, packaging, repackaging, bundling, updating, soliciting U.S. agents or distributors for, or aiding and abetting other entities in the importation, sale for importation, sale after importation, transfer, or distribution of its infringing Accused Devices.

14. Qualcomm further seeks the imposition of a bond upon importation of Accused Devices that infringe one or more claims of the Asserted Patents, during the 60-day Presidential review period pursuant to 19 U.S.C. § 1337(j).

## **II. PARTIES**

### **A. Qualcomm Incorporated**

15. Qualcomm Incorporated is a publicly-traded corporation organized and existing under the laws of the State of Delaware, with its principal place of business located at 5775 Morehouse Drive, San Diego, California 92121.

16. Qualcomm was founded in 1985 when seven industry visionaries came together to discuss the idea of providing quality wireless communications. For more than 30 years,

Qualcomm has been in the business of researching, designing, developing, and selling innovative semiconductor and cellular technologies and products for the telecommunications and mobile industries.

17. Today, Qualcomm is one of the largest technology, semiconductor, and telecommunications companies in the United States, where it has over 18,000 employees, 68 percent of whom are engineers, and occupies more than 92 buildings (totaling over 6.5 million sq. ft.) in seventeen states and the District of Columbia. The vast majority of Qualcomm's research and development occurs in the United States.

18. At the core of Qualcomm's business is its industry-leading research and development focused on enabling cellular systems and products. Since its founding, Qualcomm has invested tens of billions of dollars in research and development related to cellular, wireless communications, and mobile processor technology. Qualcomm's massive research and development investments have produced numerous innovations. Because of this ongoing investment, Qualcomm continues to drive the development and commercialization of successive generations of mobile technology and is one of a handful of companies leading the development of the next-generation 5G standard.

19. From its inception, Qualcomm has specialized in innovations to improve digital, wireless communications systems. Qualcomm is an innovator at both the software level (*e.g.*, industry-leading software that runs on a variety of different mobile devices) and at the hardware level (*e.g.*, innovative chips that enable cutting-edge performance and features in mobile devices). As a result of its unparalleled commitment to research and development, Qualcomm has a diverse patent portfolio.

20. Qualcomm now holds over 19,860 U.S. patents, including the Asserted Patents in this investigation.

21. Qualcomm's patent portfolio includes patents that are "essential" to cellular standards, patents that are "essential" to other standards, and patents that are not essential to any industry standard but reflect valuable non-standardized technologies.

22. A standard-essential patent ("SEP") is a patent that is technically necessary to practice a feature of an industry standard. A non-standard-essential patent ("NSEP") is not technically necessary to practice any feature of an industry standard, but an NSEP may cover an invention that provides important functionality and value to cellular devices or systems and may be highly desired by consumers, cellular device manufacturers, suppliers, or network operators.

23. As a result of its decades-long commitment to cellular and other mobile R&D, Qualcomm owns tens of thousands of SEPs and NSEPs worldwide.

24. All five Asserted Patents are NSEPs covering Qualcomm's proprietary technology and are not necessary to practice any feature of an industry standard.

25. Cellular communications pose multiple engineering challenges for cellular systems and mobile devices, such as the Apple iPhone. The speed and volume of cellular communications are constrained by the radio spectrum over which voice and data travel, as well as by performance requirements such as voice quality, call drop rate, average data rate, maximum data rate, battery life, and coverage. Additionally, cellular networks are expensive to deploy and operate. Thus, communication systems and methodologies face the fundamental challenge of allowing mobile devices and network equipment to share the capacity of any given portion of the radio spectrum while still meeting performance requirements.

26. Cellular technologies must also address further challenges regarding mobile devices and how they interact with the network. The software and hardware that power mobile electronic devices must make the most efficient use of the scarce spectrum available while working within the size and power constraints of the devices, which need to be small, lightweight, and efficient. The usefulness of any cellular device depends on these enabling technologies, which are the technologies that Qualcomm has spent 30 years developing.

27. A substantial portion of Qualcomm's research and development activities also have been directed to its cutting-edge integrated circuit chipsets, which combine multiple technologies, including advanced multimode modems, application processors, and graphics engines, as well as the tools to connect these diverse technologies, for use in consumer products such as smartphones, tablets, and other electronic devices. In addition to 3G and 4G LTE technologies, Qualcomm's chipsets support other wireless and wired connectivity and positional technologies, including Bluetooth, Ethernet, GPS, and GLONASS. Qualcomm's technology has also evolved into some of the most advanced systems-on-chips integrating multiple technologies, including graphics engines, application processors, and multimode modems, onto a single semiconductor chip.

28. Qualcomm also conducts research, development, and testing through its use of Mobile Test Platforms ("MTPs"), which are manufactured in the United States at Qualcomm's facilities and incorporate Qualcomm's modems, processors, and other chipsets, along with third-party chips into a physical device used for testing and analysis. For example, Qualcomm works with base station partners to verify the operation and performance of the MTPs. Qualcomm sells these MTPs to its customers and shares schematics and test results with potential and existing customers based on this MTP analysis.

**B. Apple Inc.**

29. Apple Inc. is a California corporation with a principal place of business at 1 Infinite Loop, Cupertino, California, 95014.

30. Apple is a dominant seller in both the global and domestic markets for mobile electronic devices. While Apple's mobile electronic devices are ubiquitous today, Apple had nothing to do with creating the technology that forms the backbone of the cellular industry.

31. On information and belief, Apple designs, develops, tests, imports into the United States, offers for sale, sells for importation into the United States, and sells in the United States after importation infringing mobile electronic devices, including devices sold under the tradenames Apple iPhone 7, Apple iPhone 7 Plus, Apple iPhone 8, Apple iPhone 8 Plus, and Apple iPhone X.

32. Apple does not have a license from Qualcomm to the Asserted Patents.

**III. THE TECHNOLOGIES AND PRODUCTS AT ISSUE**

**A. Products At Issue**

33. Pursuant to Commission Rule 210.12(a)(12), the Accused Devices include, without limitation, certain mobile electronic devices that do not include a Qualcomm brand baseband processor modem, including devices sold under the tradenames Apple iPhone 7, Apple iPhone 7 Plus, Apple iPhone 8, Apple iPhone 8 Plus, and Apple iPhone X, that infringe one or more claims of the Asserted Patents.

**B. Background Of The Technology**

34. The technologies at issue in this investigation are an innovative collection of technologies for power management and performance enhancements in mobile electronic devices. These technologies relate to various aspects and features of mobile devices, including the design, structure, and operation of products with enhanced carrier aggregation functionality,

power-efficient radio frequency (RF) signal reception, power-efficient processor and memory architectures, and image processing.

35. Qualcomm has been at the forefront of advancing wireless communications and mobile device technologies, including the development and commercialization of each successive generation of cellular technology from second-generation (2G) technologies through the upcoming fifth-generation (5G) technologies. Each new generation of cellular technology has depended on countless inventions from a small number of innovators around the world, none more significant than Qualcomm.

36. The first commercial cell phone networks were deployed in 1983. These first generation (1G) networks relied on analog technology, which was fundamentally limited and prohibitively expensive. Call quality was poor, and signals often crossed into neighboring frequencies, causing interference and dropped calls.

37. By the mid-to-late 1980s, a digital technology called Time Division Multiple Access ("TDMA") had been developed. TDMA digitized and compressed callers' voices, divided a given frequency channel into time slices, and then sent "packets" of compressed data associated with multiple conversations in rotation in that same frequency, thus enabling multiple users and conversations to share the same frequency. By the late 1980s, the European Union determined that its wireless networks would use a TDMA standard known as the Global System for Mobile communications ("GSM").

38. In 1989, Qualcomm publicly announced its groundbreaking Code Division Multiple Access ("CDMA") technology. CDMA offered far better call clarity than TDMA and promised to accommodate roughly ten times as many calls on a single network compared to an analog system. Instead of transmitting data in time slots, CDMA allows a large number of users

to communicate at the same time, sharing the same frequency channel. Data associated with different conversations (or data transmissions) are distinguished from one another through the use of codes. Individual calls are encoded, transmitted, identified, and then decoded and reassembled on the receiving end. By the mid-1990s, CDMA technology had been widely accepted.

39. Based in large part on Qualcomm's innovations, the mobile industry was thriving by the late 1990s. As the industry grew, it began working on a 3G solution that could provide improved data transmission, reliability and network efficiency. Ultimately, all new 3G variations that achieved commercial importance were fundamentally based on Qualcomm's CDMA method.

40. Led by Qualcomm's efforts, 3G technology became significantly more advanced in its later years with the releases of major enhancements to Wideband Code Division Multiple Access ("WCDMA") technology. This led to the adoption of "3.5G" and "3.75G" standards, which significantly increased data speeds and were critical to the smartphone revolution.

41. Qualcomm also began researching 4G technologies years before those technologies were standardized, and a decade before their significant commercial rollout. As various industry players worked on 4G technologies, Qualcomm made fundamental contributions such as the application of Orthogonal Frequency Division Multiplexing ("OFDM"). OFDM became the basis for the 4G standards broadly known as Long-Term Evolution ("LTE"). This innovation once again expanded network space and vastly boosted data rates.

42. It was the development of 3G and 4G technologies—enabled in large part by Qualcomm—that allowed smartphones to send and receive vast amounts of data at lightning

speed and propelled smartphones (including the iPhone) to become the fastest-selling consumer electronics devices in history. Qualcomm continues to be a leading contributor to LTE.

43. Qualcomm also expends considerable effort and resources toward the research and development of various customized integrated circuits known as Application Specific Integrated Circuits (“ASICs”) for use in mobile electronic devices. Qualcomm’s core chip products for mobile electronic devices are: (1) Baseband Modem chips, which process received voice and data information and prepare the same for transmission; (2) Radio Frequency (“RF”) chips, which transmit and receive radio signals using multiple frequencies; (3) Power Management chips, which optimize power consumption across mobile electronic devices; (4) applications processors, which act as the central processing unit of the mobile electronic devices; and (5) chipsets that include a combination of the above products as well as other hardware elements to support the functionality of mobile electronic devices.

44. As a longstanding worldwide leader in mobile technology innovation, Qualcomm profoundly understands the pressing need of mobile devices capable of high performance computing, effective signal transmission, and powerful image processing, all while using minimal power. Today, Qualcomm’s massive investments in enhanced carrier aggregation, power-efficient radio frequency (RF) signal reception, power-efficient processor and memory architectures, power management circuitry, image processing, LTE technology, and chip product development have facilitated the development of enhanced power consumption in mobile products, better carrier aggregation, 4G in wireless communications, and the proliferation of suppliers offering LTE chipsets. Indeed, Qualcomm was the first to make LTE chips available to device makers and continues to offer the best quality modem and LTE chips with enhanced capabilities. Qualcomm has driven and continues to drive the development

of mobile technologies and modems to not only benefit consumers, but to also drive consumer demand for new mobile electronic devices.

45. The Asserted Patents reflect Qualcomm's dedication and investment in research and development relating to wireless technology and mobile devices. As mobile electronic devices have become more powerful with greater functionality, device manufacturers have faced numerous problems with power consumption, routing complexity, signal interference, processor performance and efficiency, and image processing, among others. The technologies of the Asserted Patents solve many of these problems by enhancing the performance of mobile electronic devices in a power-efficient manner through advanced carrier aggregation, power-efficient radio frequency (RF) signal reception, carrier signal grouping and amplification, power-efficient processor and memory architectures, and advanced image processing using depth mapping.

46. For example, Qualcomm developed various techniques and hardware designs to efficiently receive RF signals. In particular, Apple has touted the capability of its newest mobile electronic devices to support "carrier aggregation" technology. This means that a mobile device can receive portions of a single input on multiple carriers at the same time to increase the bandwidth of a user.<sup>3</sup> Qualcomm pioneered and patented technologies that allow carrier aggregation to be utilized with less wasted power, such as the solution set forth in the '356 patent, and with less routing complexity and signal interference, such as the solution set forth in the '336 patent.

47. As yet another example, Qualcomm's '674 and '002 patents provide innovative designs for a computing device's processor and memory that lower the device's power

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<sup>3</sup> The term "carriers" refers to the frequency bands for transmitting data. Individual carriers that are aggregated for use by a single user are often called "component carriers."

consumption and improve performance. The '674 patent relates to a design of a power-on-control (POC) component of a processor that dynamically controls current capacity, resulting in a power-efficient architecture for detecting power on/off states. The '002 patent discloses an efficient memory array design that reduces delay and clock power consumption and thereby also saves power and increases speed. Both allow devices to be more efficient, resulting in increased battery life for the device.

48. As a final example, Qualcomm's '633 patent discloses a solution for enhancing a particular portion of an image on a mobile device by using depth information computed from two views of the same scene. In doing so, the '633 patent enabled mobile device cameras to achieve the "bokeh" effect, a popular image enhancement effect that emphasizes portions of a scene and gives a 3D effect to the image – an advanced effect that normally requires bulky and expensive full-featured cameras and/or powerful lenses.

#### **IV. THE ASSERTED PATENTS AND NON-TECHNICAL DESCRIPTIONS OF THE INVENTIONS<sup>4</sup>**

##### **A. The '356 Patent**

##### **1. Identification and Ownership of the '356 Patent**

49. Qualcomm owns by assignment<sup>5</sup> the right, title, and interest in United States Patent No. 9,154,356, titled "Low Noise Amplifiers for Carrier Aggregation," which issued on October 6, 2015 and named Aleksandar Miodrag Tasic and Anosh Bomi Davierwalla as co-

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<sup>4</sup> All non-technical descriptions of the patents herein are presented to give a general background of those patents. These statements are not intended to be used nor should they be used for purposes of patent claim construction. Qualcomm presents these statements subject to and without waiver of its right to argue that claim terms should be construed in a particular way under claim interpretation jurisprudence and the relevant evidence.

<sup>5</sup> Assignment records for the Asserted Patents are attached hereto as Exs. 2, 4, 6, 8, and 10. Certified copies of the same have been ordered and will be provided as soon as possible.

inventors. The '356 patent issued from U.S. Patent Application Serial No. 13/590,423, filed on August 21, 2012.

50. A certified copy of the '356 patent is attached as Exhibit 1. A copy of the assignment from the named inventors to Qualcomm is attached as Exhibit 2. A certified copy of the prosecution history of the '356 patent is included as Appendix A. Copies of each patent and applicable pages of each technical reference mentioned in the prosecution history of the '356 patent are included as Appendix B.

## **2. Foreign Counterparts to the '356 Patent**

51. Exhibit 11 lists each foreign patent and each pending foreign patent application (not already issued as a patent), and each foreign patent application that has been denied, abandoned or withdrawn, corresponding to the '356 patent, with an indication of the prosecution status of each such patent application. No other foreign patents or patent applications corresponding to the '356 patent have been filed, abandoned, withdrawn, or rejected.

## **3. Non-Technical Description of the '356 Patent**

52. The '356 patent relates generally to RF transceivers using low noise amplifiers (LNAs) to support carrier aggregation. The '356 patent discloses a multi-stage LNA circuit topology, where each amplifier stage can be independently controlled to receive and amplify a common input RF signal and provide an output RF signal to a separate load circuit. The topology flexibly supports multiple I/Q mixer/downconverter loads for a corresponding number of component carriers at different frequencies. As a result of the invention of the '356 patent, mobile devices can more efficiently deploy carrier aggregation technology and have longer battery life.

## **B. The '336 Patent**

### **1. Identification and Ownership of the '336 Patent**

53. Qualcomm owns by assignment the right, title, and interest in United States Patent No. 9,473,336, titled "Radio Frequency (RF) Front End Having Multiple Low Noise Amplifier Modules," which issued on October 18, 2016 and named Dongling Pan, Aleksandar Miodrag Tasic, Rajagopalan Rangarajan, Lai Kan Leung, Chiewcharn Narathong, and Yiwu Tang as co-inventors. The '336 patent issued from U.S. Patent Application Serial No. 14/671,939, filed on March 27, 2015.

54. A certified copy of the '336 patent is attached as Exhibit 3. A copy of the assignment from the named inventors to Qualcomm is attached as Exhibit 4. A certified copy of the prosecution history of the '336 patent is included as Appendix C. Copies of each patent and applicable pages of each technical reference mentioned in the prosecution history of the '336 patent are included as Appendix D.

### **2. Foreign Counterparts to the '336 Patent**

55. Exhibit 11 lists each foreign patent and each pending foreign patent application (not already issued as a patent), and each foreign patent application that has been denied, abandoned or withdrawn, corresponding to the '336 patent, with an indication of the prosecution status of each such patent application. No other foreign patents or patent applications corresponding to the '336 patent have been filed, abandoned, withdrawn, or rejected.

### **3. Non-Technical Description of the '336 Patent**

56. The '336 patent relates generally to RF transceivers for use with carrier aggregation technology. With the advent of carrier aggregation technology, RF transceivers in mobile devices must be designed to handle an increasing number of different frequencies in

multiple communication bands. In many cases, receivers include multiple signal paths, which must be subject to stringent isolation requirements to prevent signal interference, which can make recovering information from a signal difficult or impossible. The '336 patent discloses a receiver design that includes two-stage amplification, where received carrier signals are grouped into carrier groups by a first amplifier stage that includes multiple low noise amplifiers ("LNAs") to amplify received carrier signals and a routing module to route a respective portion of the amplified carrier signals to one of multiple output terminals. The first amplifier stage then provides the amplified outputs to second stage amplifiers that amplify the first stage carrier groups to generate second stage output signals. Without the invention of the '336 patent, RF transceivers would not be able to address issues of interference without increasing the routing complexity of the design, which increases cost and can impact performance.

### **C. The '674 Patent**

#### **1. Identification and Ownership of the '674 Patent**

57. Qualcomm owns by assignment the right, title, and interest in United States Patent No. 8,063,674, titled "Multiple Supply-Voltage Power-Up/Down Detectors," which issued on November 22, 2011 and named Chang Ki Kwon and Vivek Mohan as co-inventors. The '674 patent issued from U.S. Patent Application Serial No. 12/365,559, filed on February 4, 2009.

58. A certified copy of the '674 patent is attached as Exhibit 5. A copy of the assignment from the named inventors to Qualcomm is attached as Exhibit 6. A certified copy of the prosecution history of the '674 patent is included as Appendix E. Copies of each patent and applicable pages of each technical reference mentioned in the prosecution history of the '674 patent are included as Appendix F.

## **2. Foreign Counterparts to the '674 Patent**

59. Exhibit 11 lists each foreign patent and each pending foreign patent application (not already issued as a patent), and each foreign patent application that has been denied, abandoned or withdrawn, corresponding to the '674 patent, with an indication of the prosecution status of each such patent application. No other foreign patents or patent applications corresponding to the '674 patent have been filed, abandoned, withdrawn, or rejected.

## **3. Non-Technical Description of the '674 Patent**

60. The '674 patent relates generally to an improved power up / power down detector for computing devices with integrated circuits requiring multiple voltages. The power on / power off control (POC network) of a device is a component of a processor that communicates to input/output (I/O) circuits whether core devices are on or off, which is desirable in order to have I/O circuits operate effectively. The '674 patent describes an improved design for a POC network architecture that uses power up / down detectors to detect the on/off state of the core devices on the POC network, processing circuitry to generate signals depending on their power state, and feedback circuits to adjust electrical current capacity in the POC network in order to reduce the leakage of that current while improving the speed with which the system detects the on/off state of the core devices. The invention of the '674 patent thereby improves the performance of the POC network and processor while also reducing power consumption and improving the battery life of the computing device.

### **D. The '002 Patent**

#### **1. Identification and Ownership of the '002 Patent**

61. Qualcomm owns by assignment the right, title, and interest in United States Patent No. 7,693,002, titled "Dynamic Word Line Drivers and Decoders for Memory Arrays,"

which issued on April 6, 2010 and named Jentsung Lin as the sole inventor. The '002 patent issued from U.S. Patent Application Serial No. 11/548,132, filed on October 10, 2006.

62. A certified copy of the '002 patent is attached as Exhibit 7. A copy of the assignment from the named inventors to Qualcomm is attached as Exhibit 8. A certified copy of the prosecution history of the '002 patent is included as Appendix G. Copies of each patent and applicable pages of each technical reference mentioned in the prosecution history of the '002 patent are included as Appendix H.

## **2. Foreign Counterparts to the '002 Patent**

63. Exhibit 11 lists each foreign patent and each pending foreign patent application (not already issued as a patent), and each foreign patent application that has been denied, abandoned or withdrawn, corresponding to the '002 patent, with an indication of the prosecution status of each such patent application. No other foreign patents or patent applications corresponding to the '002 patent have been filed, abandoned, withdrawn, or rejected.

## **3. Non-Technical Description of the '002 Patent**

64. The '002 patent relates generally to an improved memory array design that saves power. Specifically, the '002 patent discloses improved designs for wordline drivers, which are components connected to memory arrays. The design allows for the selective application of clock signals to activate groups of wordline drivers, which reduces the power consumption due to generating clock signals relative to previous designs. As a result of the invention of the '002 patent, computing devices can operate with lower power consumption and higher speed, which in turn prolongs the battery life and efficiency of those devices.

## **E. The '633 Patent**

### **1. Identification and Ownership of the '633 Patent**

65. Qualcomm owns by assignment the right, title, and interest in United States Patent No. 9,552,633, titled "Depth Aware Enhancement for Stereo Video," which issued on January 24, 2017 and named Shilpi Sahu and Mainak Biswas as co-inventors. The '633 patent issued from U.S. Patent Application Serial No. 14/201,261, filed on March 7, 2014.

66. A certified copy of the '633 patent is attached as Exhibit 11. A copy of the assignment from the named inventors to Qualcomm is attached as Exhibit 12. A certified copy of the prosecution history of the '633 patent is included as Appendix I. Copies of each patent and applicable pages of each technical-reference mentioned in the prosecution history of the '633 patent are included as Appendix J.

### **2. Foreign Counterparts to the '633 Patent**

67. Exhibit 11 lists each foreign patent and each pending foreign patent application (not already issued as a patent), and each foreign patent application that has been denied, abandoned or withdrawn, corresponding to the '633 patent, with an indication of the prosecution status of each such patent application. No other foreign patents or patent applications corresponding to the '633 patent have been filed, abandoned, withdrawn, or rejected.

### **3. Non-Technical Description of the '633 Patent**

68. The '633 patent relates generally to depth-based image enhancement, and specifically the use of depth computed from multiple images. The '633 patent discloses using two images to generate a depth map and enhance a portion of the scene. As a result of the invention of the '633 patent, mobile device cameras are now able to perform a high quality simulation of the "bokeh effect," a popular artistic photography effects that emphasizes a

portion of the scene, giving a 3D effect to the photograph without the use of bulky and expensive high-end cameras and lenses.

**F. Licensees to the Asserted Patents**

69. Confidential Exhibit 12 is a list of licensees that includes within that list all licenses to one or more of the Asserted Patents. Explaining further, Qualcomm has a license agreement with Pegatron Corp. (“Pegatron”). The ‘002 and ‘674 patents are included within the patents licensed under the Pegatron license agreement. Pegatron is not paying royalties owed under its license agreement with Qualcomm because, on information and belief, Apple has instructed Pegatron to withhold those royalties.

**V. APPLE’S INFRINGEMENT OF THE ASSERTED PATENTS**

70. As discussed herein, Apple’s Accused Devices are certain mobile electronic devices that do not incorporate a Qualcomm brand baseband processor modem, including mobile phones and tablet computers, 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. The Accused Devices include, but are not limited to, mobile electronic devices sold under the tradenames Apple iPhone 7, Apple iPhone 7 Plus, Apple iPhone 8, Apple iPhone 8 Plus, and Apple iPhone X. Apple is not licensed to any of the Asserted Patents.

**A. Infringement of the ’356 Patent**

71. Apple infringes, literally and/or under the doctrine of equivalents, at least claims 1, 7, 8, 10, 11, 17, and 18 of the ’356 patent. Apple infringes at least these claims by importing, selling for importation, and/or selling after importation into the United States certain of the Accused Devices, including at least the Apple iPhone 7, Apple iPhone 7 Plus, and on information and belief, the Apple iPhone 8, Apple iPhone 8 Plus, and Apple iPhone X (the

“Accused ’356 Devices”). The Accused ’356 Devices satisfy all claim limitations of claims 1, 7, 8, 10, and 11 at the time of importation into the United States.

72. On information and belief, Apple also knowingly induces and/or contributes to the infringement of at least claims 17 and 18 of the ’356 patent by others. On information and belief, Apple has had knowledge of the ’356 patent, and its infringement of the ’356 patent, since at least November 29, 2017, when Qualcomm filed a parallel action in the Southern District of California. On information and belief, Apple tests, demonstrates, or otherwise operates the Accused ’356 Devices in the United States, thereby performing the claimed methods and directly infringing any asserted claims of the ’356 patent requiring such operation. Similarly, Apple’s customers and the end users of the Accused ’356 Devices test and/or operate the Accused ’356 Devices in the United States in accordance with Apple’s instructions 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.

73. Apple also contributes to infringement of the ’356 patent by selling for importation into the United States, importing into the United States, and/or selling within the United States after importation the Accused ’356 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 invention described in the ’356 patent. These mobile electronic devices are known by Apple to be especially made or especially adapted for use in the infringement of the ’356 patent. Apple also contributes to the infringement of the ’356 patent by selling for importation into the United States, importing into the United States, and/or selling within the United States after importation components, such as the chipsets or software containing the infringing functionality, of the Accused ’356 Devices, which are not suitable for substantial

non-infringing use and which embody a material part of the invention described in the '356 patent. These mobile devices are known by Apple to be especially made or especially adapted for use in the infringement of the '356 patent. Specifically, on information and belief, Apple sells the Accused '356 Devices to resellers, retailers, and end users with knowledge that the devices are used for infringement. End users of those mobile electronic devices directly infringe the '356 patent.

74. Attached as Confidential Exhibit 13 are representative claim charts for the Accused '356 Devices showing infringement of the '356 patent by exemplary Accused '356 Devices.

**B. Infringement of the '336 Patent**

75. Apple infringes, literally and/or under the doctrine of equivalents, at least claim 4 of the '336 patent. Apple infringes at least claim 4 by importing, selling for importation, and/or selling after importation into the United States certain of the Accused Devices, including at least the Apple iPhone 8, Apple iPhone 8 Plus, and on information and belief, the Apple iPhone X (the "Accused '336 Devices"). The Accused '336 Devices satisfy all claim limitations of claim 4 at the time of importation into the United States.

76. Attached as Confidential Exhibit 14 are representative claim charts for the Accused '336 Devices showing infringement of the '356 patent by exemplary Accused '336 Devices.

**C. Infringement of the '674 Patent**

77. Apple infringes, literally and/or under the doctrine of equivalents, at least claims 1, 5-8, 12, 16-18, 21, and 22 of the '674 patent. Apple infringes at least these claims by importing, selling for importation, and/or selling after importation into the United States certain of the Accused Devices, including at least the Apple iPhone 7 and Apple iPhone 7 Plus (the

“Accused ’674 Devices”). The Accused ’674 Devices satisfy all claim limitations of claims 1, 5-7, 17, 18, 21, and 22 at the time of importation into the United States.

78. On information and belief, Apple also knowingly induces and/or contributes to the infringement of at least claims 8, 12, and 16 of the ’674 patent by others. On information and belief, Apple has had knowledge of the ’674 patent, and its infringement of the ’674 patent, since at least November 29, 2017, when Qualcomm filed a parallel action in the Southern District of California. On information and belief, Apple tests, demonstrates, or otherwise operates the Accused ’674 Devices in the United States, thereby performing the claimed methods and directly infringing any asserted claims of the ’674 patent requiring such operation. Similarly, Apple’s customers and the end users of the Accused ’674 Devices test and/or operate the Accused ’674 Devices in the United States in accordance with Apple’s instructions 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.

79. Apple also contributes to infringement of the ’674 patent by selling for importation into the United States, importing into the United States, and/or selling within the United States after importation the Accused ’674 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 invention described in the ’674 patent. These mobile electronic devices are known by Apple to be especially made or especially adapted for use in the infringement of the ’674 patent. Apple also contributes to the infringement of the ’674 patent by selling for importation into the United States, importing into the United States, and/or selling within the United States after importation components, such as the chipsets or software containing the infringing functionality, of the Accused ’674 Devices, which are not suitable for substantial

non-infringing use and which embody a material part of the invention described in the '674 patent. These mobile devices are known by Apple to be especially made or especially adapted for use in the infringement of the '674 patent. Specifically, on information and belief, Apple sells the Accused '674 Devices to resellers, retailers, and end users with knowledge that the devices are used for infringement. End users of those mobile electronic devices directly infringe the '674 patent.

80. Attached as Confidential Exhibit 15 are representative claim charts for the Accused '674 Devices showing infringement of the '674 patent by exemplary Accused '674 Devices.

**D. Infringement of the '002 Patent**

81. Apple infringes, literally and/or under the doctrine of equivalents, at least claims 1-4, 7-9, 11, 17, 20-23, 31-33, and 36 of the '002 patent. Apple infringes at least these claims by importing, selling for importation, and/or selling after importation into the United States certain of the Accused Devices, including at least the Apple iPhone 7 and Apple iPhone 7 Plus (the Accused "'002 Devices"). The Accused '002 Devices satisfy all claim limitations of claims 1-4, 11, 17, 20-23, 31-33, and 36 at the time of importation into the United States.

82. On information and belief, Apple also knowingly induces and/or contributes to the infringement of at least claims 7-9 of the '002 patent by others. On information and belief, Apple has had knowledge of the '002 patent, and its infringement of the '002 patent, since at least November 29, 2017, when Qualcomm filed a parallel action in the Southern District of California. On information and belief, Apple tests, demonstrates, or otherwise operates the Accused '002 Devices in the United States, thereby performing the claimed methods and directly infringing any asserted claims of the '002 patent requiring such operation. Similarly, Apple's customers and the end users of the Accused '002 Devices test and/or operate the

Accused '002 Devices in the United States in accordance with Apple's instructions 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.

83. Apple also contributes to infringement of the '002 patent by selling for importation into the United States, importing into the United States, and/or selling within the United States after importation the Accused '002 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 invention described in the '002 patent. These mobile electronic devices are known by Apple to be especially made or especially adapted for use in the infringement of the '002 patent. Apple also contributes to the infringement of the '002 patent by selling for importation into the United States, importing into the United States, and/or selling within the United States after importation components, such as the chipsets or software containing the infringing functionality, of the Accused '002 Devices, which are not suitable for substantial non-infringing use and which embody a material part of the invention described in the '002 patent. These mobile devices are known by Apple to be especially made or especially adapted for use in the infringement of the '002 patent. Specifically, on information and belief, Apple sells the Accused '002 Devices to resellers, retailers, and end users with knowledge that the devices are used for infringement. End users of those mobile electronic devices directly infringe the '002 patent.

84. Attached as Confidential Exhibit 16 are representative claim charts for the Accused '002 Devices showing infringement of the '002 patent by exemplary Accused '002 Devices.

**E. Infringement of the '633 Patent**

85. Apple infringes, literally and/or under the doctrine of equivalents, at least claims 1-3, 10-12, 18, and 22-24 of the '633 patent. Apple infringes at least these claims by importing, selling for importation, and/or selling after importation into the United States certain of the Accused Devices, including at least the Apple iPhone 7 Plus, Apple iPhone 8 Plus, and Apple iPhone X (the "Accused '633 Devices"). These Accused '633 Devices satisfy all claim limitations of claims 10-12, 18, and 22-24 at the time of importation into the United States.

86. On information and belief, Apple also knowingly induces and/or contributes to the infringement of at least claims 1-3 of the '633 patent by others. On information and belief, Apple has had knowledge of the '633 patent, and its infringement of the '633 patent, since at least November 29, 2017, when Qualcomm filed a parallel action in the Southern District of California. On information and belief, Apple tests, demonstrates, or otherwise operates the Accused '633 Devices in the United States, thereby performing the claimed methods and directly infringing any asserted claims of the '633 patent requiring such operation. Similarly, Apple's customers and the end users of the Accused '633 Devices test and/or operate the Accused '633 Devices in the United States in accordance with Apple's instructions 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.

87. Apple also contributes to infringement of the '633 patent by selling for importation into the United States, importing into the United States, and/or selling within the United States after importation the Accused '633 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 invention described in the '633 patent. These mobile electronic devices are known by Apple to be especially made or especially adapted for use in the infringement of the

'633 patent. Apple also contributes to the infringement of the '633 patent by selling for importation into the United States, importing into the United States, and/or selling within the United States after importation components, such as the chipsets or software containing the infringing functionality, of the Accused '633 Devices, which are not suitable for substantial non-infringing use and which embody a material part of the invention described in the '633 patent. These mobile devices are known by Apple to be especially made or especially adapted for use in the infringement of the '633 patent. Specifically, on information and belief, Apple sells the Accused '633 Devices to resellers, retailers, and end users with knowledge that the devices are used for infringement. End users of those mobile electronic devices directly infringe the '633 patent.

88. Attached as Exhibit 17 are representative claim charts for the Accused '633 Devices showing infringement of the '633 patent by exemplary Accused '633 Devices.

## **VI. SPECIFIC INSTANCES OF UNFAIR IMPORTATION AND SALE**

89. 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. 25. Specifically, an Apple iPhone 7 was purchased on November 27, 2017 from Apple Georgetown, 1229 Wisconsin Ave., Washington, D.C. 20007. *Id.* This device is labeled as "Assembled in China." *See* Ex. 25; Ex. P1. An Apple iPhone 8 was also purchased on November 27, 2017 from Apple Georgetown, 1229 Wisconsin Ave., Washington, D.C. 20007. Ex. 25. This device is also labeled as being "Assembled in China." *See* Ex. 25; Ex. P2. Finally, an Apple iPhone 7 Plus was purchased on November 27, 2017 from Apple Georgetown, 1229 Wisconsin Ave., Washington, D.C. 20007. Ex. 25. This device is labeled as "Assembled in China." *See* Ex. 25; Ex. P3.

90. 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. 26.

## **VII. HARMONIZED TARIFF SCHEDULE NUMBERS**

91. The Accused Devices are classified under at least the following subheading of the Harmonized Tariff Schedule of the United States: 8517.12.00 (mobile phones); 8471.30.01, 8471.41.01, or 8471.49.00 (handheld computers). These classifications are exemplary in nature and not intended to restrict the scope of any exclusion order or other remedy ordered by the Commission.

## **VIII. RELATED LITIGATION**

92. On November 29, 2017, Qualcomm filed a complaint in the U.S. District Court for the Southern District of California alleging infringement of the Asserted Patents against Apple.

93. Aside from the above-mentioned parallel district court matter, Qualcomm has not previously litigated the Asserted Patents before any other court or agency.

94. Qualcomm and Apple are currently engaged in litigation that does not specifically address the Asserted Patents, including Case No. 17-CV-0108 GPC NLS pending in the U.S. District Court for the Southern District of California, Case No. 3:17-CV-01375-JAH-MDD pending in the U.S. District Court for the Southern District of California, and Investigation No. 337-TA-1065 pending at the U.S. International Trade Commission.

## **IX. THE DOMESTIC INDUSTRY RELATING TO THE ASSERTED PATENTS**

95. An industry as required by Section 337(a)(2) and defined by Section 337(a)(3) exists in the United States. Qualcomm has made significant investments in plant, equipment,

labor and capital, and made substantial investments in engineering and research and development related to products protected by the Asserted Patents.

96. As described below and in the accompanying declaration at Confidential Exhibit 21, Qualcomm researches, designs, and develops integrated circuit products in the United States (the “Domestic Industry Products”) that are protected by at least one claim of each of the Asserted Patents.

**A. Technical Prong**

97. The chart below sets forth exemplary Domestic Industry Products that are protected by least one claim of each of the Asserted Patents:

Patent No.	Domestic Industry Product and Components
'356 patent	WTR1625, WTR1625L, WTR1626L, WFR1620, WTR3925, WTR3120, WTR3605, WTR3915, WTR3900, WTR3925L, WTR5975
'336 patent	CDP9X55, MTP9X50, MTP9X55, MDM9650, MDM9655, WTR5975, QLN1030, QLN1031, QLN1020, QLN1021, QLN1035, QLN1036
'674 patent	WCN1312, WCN1314, RGR7640AU, RTR6285, RTR6236, RTR6237, RTR6280, RTR6285A, RTR8600, RTR8601, RTR8605, QTR8200, QTR8201, QTR8600, QTR8600L, QTR8601L, QTR8615, QTR8615L, SDR660, SDR661, SDR660G, WTR6955, SDR845, WFR1620, WGR7640, WTR1605, WTR1605L, WTR1608L, WTR1625, WTR1625L, WTR1626L, WTR2605, WTR2655, WTR2955, WTR2965, WTR3900, WTR3925, WTR3925L, WTR3915, WTR3905, WTR3605, WTR3950, WTR4205, WTR4305, WTR4605, WTR4905, WTR4900, WTR4904, WTR4905L, WTR5975
'002 patent	QDSP6 processors, including APQ8009, APQ8009W, APQ8016, APQ8016E, APQ8017, APQ8026, AP08028, APQ8037, APQ8039, APQ8053, APQ8056, APQ8060A, APQ8064, APQ8064AU, APQ8074, APQ8076, APQ8084, APQ8094, APQ8096, APQ8096AU, APQ8096SG, APQ8098; MDM8200A, MDM8207, MDM8215, MDM9206, MDM9207, MDM9215, MDM9225, MDM9225M, MDM9230, MDM9235M, MDM9240, MDM9250, MDM9307,

	MDM9310, MDM9320, MDM9340, MDM9607, MDM9615, MDM9615M, MDM9625, MDM9625M, MDM9628, MDM9630, MDM9635M, MDM9640, MDM9645, MDM9655, MSM8208, MSM8209, MSM8210, MSM8212, MSM8216, MSM8226, MSM8228, MSM8230, MSM8239, MSM8260A, MSM8610, MSM8612, MSM8626, MSM8909, MSM8909W, MSM8916, MSM8917, MSM8920, MSM8928, MSM8930, MSM8937, MSM8939, MSM8940, MSM8952, MSM8953, MSM8956, MSM8960, MSM8974, MSM8976, MSM8976SG, MSM8992, MSM8994, MSM8996, MSM8996AU, MSM8996SG, MSM8998, SDA660, SDM450, SDM630, SDM660, SDX20, SDX20M
'633 patent	MSM8217, MSM8617, MSM8917, APQ8017, MSM8920, MSM8937, APQ8037, MSM8940, SDM450, APQ8053, MSM8953, SDM630, SDA630, SDM660, SDM658, SDA660, SDA658, SDM670, SDA670, MSM8996, APQ8096, MSM8998, APQ8098, SDM845, SDA845, SDM850

98. Claim charts applying a representative claim of each Asserted Patent to a representative Domestic Industry Product are attached as Confidential Exhibits 19-23.<sup>6</sup>

99. Qualcomm also sells the Domestic Industry Products to its customers, who then incorporate them into devices (e.g., smartphones) that are sold in the United States. On information and belief, these devices may also practice one or more claims of the Asserted Patents.

#### **B. Economic Prong**

100. There is a domestic industry as defined under 19 U.S.C. § 1337(a)(3)(A), (B), and/or (C), comprising continuing significant investments made in the United States by Qualcomm in plant and equipment and employment of labor and capital, and continuing

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<sup>6</sup> The Domestic Industry Products are protected by additional claims of the Asserted Patents, and Qualcomm may establish the technical prong of the domestic industry requirement through claims other than those explicitly charted in Confidential Exhibits 19-23.

substantial investment in exploitation of the Asserted Patents. Specific, non-limiting examples of such investments are set forth below and in the Confidential Exhibit 18.

101. Qualcomm is a global leader in the development of integrated circuit technology and products. Qualcomm is one the United States' largest and most innovative technology companies, with over 18,000 employees in the United States, 68 percent of whom are engineers.

102. Qualcomm maintains its headquarters in San Diego, California. Qualcomm occupies 92 buildings in the United States totaling over 6.5 million sq. ft. of space. Qualcomm operates facilities in 17 U.S. states and the District of Columbia.

103. Qualcomm's worldwide R&D expenditures in fiscal 2017, 2016 and 2015 totaled approximately \$5.5 billion, \$5.2 billion and \$5.5 billion, respectively. Qualcomm continues to expand and enhance its products, services, and related intellectual property portfolios. These efforts have resulted in a leading intellectual property portfolio related to, among other things, wireless technology and integrated circuit products.

104. Qualcomm engages in a broad range of qualifying domestic industry activities in the United States directed to articles protected by the Asserted Patents described above. The Domestic Industry Products are all designed, developed, tested and supported by Qualcomm in the United States.

105. Qualcomm has made and continues to make significant investments in plant and equipment directed to the Domestic Industry Products in the United States. Those investments in plant and equipment are dedicated to research, design, development, engineering, product support, manufacturing support, testing, and various customer support activities focused on the Domestic Industry Products.

106. Qualcomm also has made and continues to make significant investments in labor and capital directed to the Domestic Industry Products in the United States. Those investments in labor and capital are dedicated to research, design, development, engineering, product support, manufacturing support, testing, and various customer support activities focused on the Domestic Industry Products.

107. Qualcomm further engages in exploitation of the Asserted Patents through its substantial domestic investments in research and development and engineering activities in the United States. These activities include, among other things, research and development and engineering and design tied to the claimed technology implemented in the Asserted Patents. These activities have occurred in the past and are ongoing with respect to prior and current versions of the Domestic Industry Products as well as future versions of Qualcomm products under development.

108. A significant and substantial portion of Qualcomm's technical activities takes place in the United States. Qualcomm's domestic investments and activities are significant and substantial both in absolute terms and relative to Qualcomm's overall operations. Qualcomm's domestic investments and activities are important to the Domestic Industry Products and represent significant added value. These investments are described in more detail in the Declaration of Tim Durkin, attached hereto as Confidential Exhibit 18.

#### **X. RELIEF REQUESTED**

109. Qualcomm respectfully requests that the Commission:

(a) Institute an investigation pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, with respect to Apple's violations of that section arising from the importation into the United States, sale for importation, and/or the sale within the United States after importation of mobile electronic devices that do not incorporate a

Qualcomm brand baseband processor modem and that infringe one or more claims of the Asserted Patents;

(b) Schedule and conduct a hearing pursuant to Section 337(c) for the purposes of (i) receiving evidence and hearing argument concerning whether there has been a violation of Section 337, and (ii) following the hearing, determining that there has been a violation of Section 337;

(c) Issue a permanent limited exclusion order directed to products manufactured by or on behalf of Apple, its subsidiaries, related companies, and agents pursuant to 19 U.S.C. § 1337(d) excluding entry into the United States of mobile electronic devices that do not incorporate a Qualcomm brand baseband processor modem and that infringe one or more claims of the Asserted Patents;

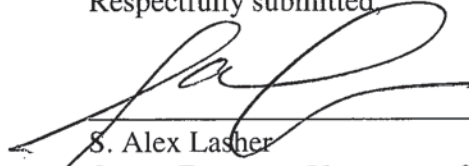
(d) Issue a permanent cease and desist order pursuant to 19 U.S.C. § 1337(f) prohibiting Apple, its domestic subsidiaries, related companies, and agents from engaging in the importation, sale for importation, marketing and/or advertising, distribution, offering for sale, sale, use after importation, sale after importation, and other transfer within the United States of mobile electronic devices that do not incorporate a Qualcomm brand baseband processor modem and that infringe one or more claims of the Asserted Patents;

(e) Impose a bond upon importation of mobile electronic devices that that do not incorporate a Qualcomm brand baseband processor modem and infringe one or more claims of the Asserted Patents, during the 60-day Presidential review period pursuant to 19 U.S.C. § 1337(j); and

(f) Issue such other and further relief as the Commission deems just and proper under the law, based on the facts determined by the investigation and the authority of the Commission.

Dated: November 30, 2017

Respectfully submitted,



S. Alex Lasher  
QUINN EMANUEL URQUHART & SULLIVAN, LLP  
777 6th Street NW, 11th Floor  
Washington, DC 20001  
Tel.: (202) 538-8000

David A. Nelson  
Stephen Swedlow  
QUINN EMANUEL URQUHART & SULLIVAN, LLP  
500 West Madison St., Suite 2450  
Chicago, Illinois 60661  
Tel.: (312) 705-7400

Steven Cherny  
Richard W. Erwine  
Alexander Rudis  
Patrick Curran  
QUINN EMANUEL URQUHART & SULLIVAN, LLP  
51 Madison Avenue, 22nd Floor  
New York, NY 10010  
Tel.: (212) 849-7000

Sean S. Pak  
QUINN EMANUEL URQUHART & SULLIVAN, LLP  
50 California Street, 22nd Floor  
San Francisco, CA 94111  
Tel.: (415) 875-6600

Tom M. Schaumberg  
Deanna Tanner Okun  
Beau Jackson  
ADDUCI, MASTRIANI & SCHAUMBERG, L.L.P.  
1133 Connecticut Avenue, N.W., 12th Floor

Washington, DC 20036  
Tel.: (202) 467-6300

Evan R. Chesler  
Keith R. Hummel  
Richard J. Stark  
Gary A. Bornstein  
J. Wesley Earnhardt  
Yonatan Even  
Vanessa A. Lavelly  
CRAVATH, SWAINE & MOORE LLP  
Worldwide Plaza, 825 Eighth Avenue  
New York, NY 10019  
Tel.: (212) 474-1000

Richard S. Zembek  
Eric B. Hall  
Daniel S. Leventhal  
Talbot R. Hansum  
NORTON ROSE FULBRIGHT US LLP  
Fulbright Tower  
1301 McKinney, Suite 5100  
Houston, TX 77010  
Tel.: (713) 651-5151

*Counsel for Complainant Qualcomm Incorporated*

UNITED STATES INTERNATIONAL TRADE COMMISSION  
WASHINGTON, D.C.

In the Matter of

CERTAIN MOBILE ELECTRONIC  
DEVICES AND RADIO FREQUENCY  
AND PROCESSING COMPONENTS  
THEREOF

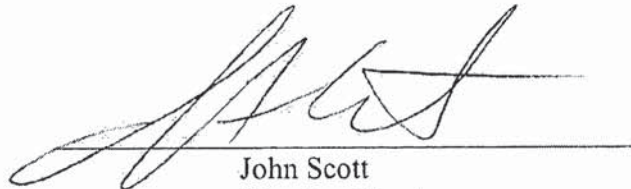
Investigation No. 337-TA- \_\_\_\_\_

VERIFICATION OF COMPLAINT

I, John Scott, am a Vice President for Qualcomm Incorporated ("Qualcomm") and am duly authorized by Qualcomm to execute this verification of the accompanying Complaint under Section 337 of the Tariff Act of 1930, as Amended, on behalf of Qualcomm. I have read the Complaint and am aware of its contents. To the best of my knowledge, information, and belief and based upon a reasonable inquiry under the circumstances, I hereby certify that:

1. The allegations contained in the Complaint are well grounded in fact and have evidentiary support, or are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery;
2. The claims and other legal contentions set forth in the Complaint are warranted by existing laws or by a good faith, non-frivolous argument for extension, modification, or reversal of existing law, or by the establishment of new law; and
3. The Complaint is not being filed for any improper purpose, such as to harass or to cause unnecessary delay or needless increase in the cost of litigation.

Dated: November 29, 2017



John Scott  
Vice President  
Qualcomm Incorporated