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14 HUAWEI DEVICE USA, INC., and
HUAWEI TECHNOLOGIES USA, INC.
15

16 UNITED STATES DISTRICT COURT
17 NORTHERN DISTRICT OF CALIFORNIA

18 HUAWEI TECHNOLOGIES CO., LTD.,
19 HUAWEI DEVICE USA, INC., and
HUAWEI TECHNOLOGIES USA, INC.,

20 Plaintiffs,

21 vs.

22 SAMSUNG ELECTRONICS CO., LTD.,
23 SAMSUNG ELECTRONICS AMERICA,
24 INC., and SAMSUNG RESEARCH
AMERICA,

25 Defendants.

Case No.

PLAINTIFF'S COMPLAINT FOR
[REDACTED] AND
PATENT INFRINGEMENT

DEMAND FOR JURY TRIAL

26
27 **LODGED UNDER SEAL**

1 Huawei Technologies Co., Ltd. (“Huawei”), Huawei Device USA, Inc. (“Huawei Device”),
2 and Huawei Technologies USA, Inc. (“Huawei Tech. USA”) (collectively, “Plaintiffs”) allege as
3 follows against Samsung Electronics Co., Ltd. (“Samsung”), Samsung Electronics America, Inc.
4 (“SEA”), and Samsung Research America (“SRA”) (collectively, “Defendants”):

5 **NATURE OF THE ACTION**

6 1. [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
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25 [REDACTED]

26 2. In addition, because Defendants have persisted in importing, selling, and offering for
27 sale a substantial volume of standard-compliant products that use Huawei’s SEP technology
28 without a license, Huawei also brings claims for patent infringement under 35 U.S.C. § 271, *et seq.*

THE PARTIES

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2 3. Plaintiff Huawei is a Chinese company with its principal place of business in
3 Bantian, Longgang District, Shenzhen, People’s Republic of China. Huawei is involved in the
4 design, manufacture, and sale of mobile devices, including smartphones that operate on cellular
5 networks. Huawei’s subsidiaries in the United States include Huawei Device and Huawei Tech.
6 USA.

7 4. Plaintiff Huawei Device is a Texas corporation with its principal place of business in
8 Plano, Texas. Huawei Device distributes, markets, and sells mobile devices, including smartphones
9 that operate on cellular networks in the United States. Huawei Device operates in the United States
10 through various facilities, including offices at 10180 Telesis Ct., San Diego, California, and 2330
11 Central Expressway, Santa Clara, California (depicted below) where Huawei Device employees
12 conduct research and development (“R&D”) activities. The R&D teams focus on antenna/radio
13 frequency, power conservation, product testing, compatibility testing, and Android interoperability.



23
24 5. Plaintiff Huawei Tech. USA is a Texas corporation with its principal place of
25 business in Plano, Texas. Huawei Tech. USA distributes, markets, and sells mobile
26 telecommunications infrastructure equipment to carriers in the United States.

27 6. Defendant Samsung is a Korean company with its principal place of business in
28 Suwon, South Korea. Samsung is comprised of three business divisions, including (1) Consumer

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1 Electronics (“CE”); (2) Information Technology & Mobile Communications (“IM”); and (3) Device
2 Solutions (“DS”). The IM division is responsible for the design, manufacture, and sale of mobile
3 devices, including smartphones that operate on cellular networks in the United States. According to
4 Samsung, it “is one of the largest manufacturers of wireless communications devices in the world
5 and has long focused on the United States as a critical market for its products.”¹

6 7. On information and belief, Samsung operates its IM business division in the United
7 States through a variety of wholly-owned subsidiaries, including defendants SEA and SRA.

8 8. On information and belief, defendant SEA is a New York corporation with its
9 principal place of business in Ridgefield Park, New Jersey, and it is a direct or indirect wholly-
10 owned subsidiary of Samsung. On information and belief, within Samsung’s IM business division,
11 SEA operates an office in Mountain View, California, located at 665 Clyde Avenue, as depicted
12 below. On information and belief, within the IM business division, SEA imports into the United
13 States, and distributes, markets, and sells mobile devices in the United States, including
14 smartphones that operate on cellular networks in the United States.



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27 ¹ See *In the Matter of Certain Wireless Communications Equipment and Articles Therein*, USITC
28 Inv. No. 337-TA-866, Complaint at ¶ 9 (Dec. 21, 2012).

1 9. On information and belief, defendant SRA is a California corporation with its
2 principal place of business in Mountain View, California, and is a direct or indirect wholly-owned
3 subsidiary of Samsung. SRA is located at 665 Clyde Avenue in Mountain View, California,
4 depicted above. On information and belief, within Samsung’s IM business division, SRA operates
5 a variety of laboratories, including the Mobile Platform and Solutions Lab and the Advanced
6 Processor Lab, both located at Mountain View, California, at 665 Clyde Avenue. On information
7 and belief, SRA’s Mobile Platform and Solutions Lab develops “power, usability, and performance
8 solutions” for “the family of Samsung Android smartphones and tablet devices,” including devices
9 that operate on cellular networks in the United States.² On information and belief, SRA’s
10 Advanced Processor Lab “focuses on the exploration and design of low energy circuits” and “the
11 R&D of processor and system-level design solutions for traditional and emerging mobile computing
12 applications,” including for smartphones that operate on cellular networks in the United States.³

13 10. Defendants SEA and SRA regularly appear before the United States Federal
14 Communications Commission (“FCC”) in Washington, DC, on issues involving
15 telecommunications standards. For example, in 2015 and 2016, SEA and SRA submitted
16 comments to the FCC in GN Docket No. 14-177, regarding the provision of 5G mobile services in
17 spectrum bands above 24GHz.⁴

18 **JURISDICTION, VENUE, AND INTRADISTRICT ASSIGNMENT**

19 11. This is a civil action for [REDACTED]
20 [REDACTED] and patent infringement under the patent laws of the United
21 States, 35 U.S.C. § 101, *et seq.* This Court has jurisdiction over this action pursuant to 28 U.S.C.
22 §§ 1331, 1332, 1338(a), and 1367.

23 12. [REDACTED]
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25 ² “Mobile Platform and Solutions,” <http://www.sra.samsung.com/research/mobile-platform-and-solutions> (last visited May 19, 2016).

26 ³ “Advanced Processor,” <http://www.sra.samsung.com/research/advanced-processor> (last visited May 19, 2016).

27 ⁴ *See In the Matter of Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, GN Dkt.
28 No. 14-177, *Reply Comments of Samsung Electronics America, Inc., and Samsung Research America* (Feb. 18, 2015 and Feb. 26, 2016).

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12 14. This Court has subject matter jurisdiction over the patent infringement claims under
13 28 U.S.C. §§ 1331 and 1338(a). The patents-at-issue in this action are U.S. Patent Nos. 8,369,278
14 (“the ’278 patent”); 8,416,892 (“the ’892 patent”); 8,483,166 (“the ’166 patent”); 8,812,848 (“the
15 ’848 patent”); 8,644,239 (“the ’239 patent”); 8,885,587 (“the ’587 patent”); 8,885,583 (“the ’583
16 patent”); 8,639,246 (“the ’246 patent”); 8,412,197 (“the ’197 patent”); 8,996,003 (“the ’003
17 patent”); and 8,724,613 (“the ’613 patent”) (collectively, “Asserted Patents”).

18 15. This Court has personal jurisdiction over Defendants Samsung, SEA, and SRA for at
19 least the following reasons: (1) Samsung’s wholly-owned subsidiary SRA is a California
20 corporation with its principal place of business in California; (2) Samsung’s wholly-owned
21 subsidiary SEA maintains offices in California; (3) Samsung, SEA and SRA have designated an
22 agent for service of process in California;⁵ and (4) Samsung, SEA and SRA regularly do business or
23 solicit business, engage in other persistent courses of conduct, and/or derive substantial revenue
24 from products and/or services provided to individuals in California.

25 16. Venue is proper in the Northern District of California under 28 U.S.C. §§ 1391(b)-
26 (c) and 1400(b) for at least the following reasons: (1) Samsung’s wholly-owned subsidiary SRA is

27 ⁵ SEA’s and SRA’s designated agents for service of process are located at 818 West Seventh Street,
28 Ste. 930, Los Angeles CA 90017.

1 headquartered in this District; (2) Samsung's wholly-owned subsidiary SEA maintains an office in
2 this District; and (3) Samsung, SEA, and SRA regularly do business or solicit business, engage in
3 other persistent courses of conduct, and/or derive substantial revenue from products and/or services
4 provided to individuals in this District. Pursuant to Local Rule 3-2(c), Intellectual Property Actions
5 are assigned on a district-wide basis.

6 **FACTUAL BACKGROUND**

7 **A. Huawei's Innovation and Patented Technology**

8 17. Founded in 1987 in Shenzhen, China, Huawei has become a Fortune 500 company
9 and a global leader in the telecommunications industry. Huawei operates in more than 170
10 countries across the world, providing information and communications technology solutions to over
11 one-third of the world's population. Huawei and its affiliates develop, manufacture, and sell a
12 diverse range of products, including cellular network infrastructure equipment, mobile phones and
13 tablets, home internet and media devices, and data and cloud storage devices. Huawei is one of the
14 world's two largest manufacturers of cellular network infrastructure equipment, and ranked among
15 the top three mobile device vendors worldwide in 2015.

16 18. Huawei is also a leader in research, innovation, and the development of
17 telecommunications technology and standards. Huawei devotes significant resources to R&D and
18 maintains multiple R&D centers around the world, including in the United States through Huawei
19 Device and other affiliates. About 45% of Huawei's global workforce—over 79,000 employees in
20 2015—work in R&D. Huawei's R&D expenditures totaled over \$9.18 billion USD in 2015,
21 accounting for 15.1% of its annual revenue. Much of Huawei's and Huawei Device's R&D
22 activities are devoted to improving cellular network technology and mobile devices.

23 19. As a result of its investments in innovation and contributions to the industry, Huawei
24 and its affiliates have developed a substantial patent portfolio comprising over 50,300 issued
25 patents across the world. In 2015, Huawei and its affiliates obtained 1,268 patents issued by the
26 U.S. Patent & Trademark Office, the 23rd most of any company. The same year, Huawei obtained
27 503 issued patents from the European Patent Office, the 9th most of any company. For the past two
28 years, Huawei and its affiliates have filed the most international (PCT) patent applications of any

1 company in the world. In total, Huawei and its affiliates hold over 12,000 issued patents and
2 pending applications in the United States.

3 20. As detailed in Counts III-XIII below, Defendants have used and continue to use
4 Huawei's patented technology without license.

5 **B. Cellular Standards and the FRAND Commitment**

6 21. Many of Huawei's patents, including the Asserted Patents, cover various aspects of
7 industry standards developed by 3GPP through a collaborative process in which ETSI and other
8 international standard-setting organizations ("SSOs") collaborate to create and improve global
9 standards for the telecommunications industry. 3GPP operates as an umbrella SSO that produces
10 and maintains the UMTS and LTE cellular standards (also known as "3GPP standards"), which
11 generally cover the "third" and "fourth" generations of wireless telecommunications technology
12 ("3G" and "4G", respectively). LTE technology, which evolved from UMTS, aims to increase
13 capacity and speed. In particular, the LTE standard represents the latest advances in wireless
14 telecommunications technology and is credited with many technical innovations that have greatly
15 enhanced user experience, including a dramatic increase in data throughput and system performance
16 compared to UMTS technology. LTE mobile devices and infrastructure equipment are commonly
17 "multi-mode," i.e., backwards compatible with older technologies.

18 22. Cellular standards enable interoperability, i.e., the ability of devices and equipment
19 made by different manufacturers to communicate and work together in a cellular network. In order
20 for mobile devices and telecommunications infrastructure equipment to be commercially viable in
21 the United States and most of the world, it is essential that such devices and equipment comply with
22 3GPP standards.

23 23. 3GPP maintains and approves standards through a collaborative process in which its
24 members submit technical proposals for establishing or improving aspects of a standard. These
25 proposals are evaluated, refined, tested, and ultimately approved or rejected by technical
26 committees of 3GPP. The resulting 3GPP technical specifications are incorporated by ETSI and
27 other SSOs into relevant standards.

28 24. Once a particular technology is incorporated into a standard, manufacturers of

1 telecommunications devices and equipment must integrate the technology into their products to
2 comply with the standard. Because it is common for SSO members to own patents covering the
3 technology they contribute to standards, organizations like ETSI have created policies that seek to
4 ensure those patents will be available for manufacturers to license on FRAND terms and conditions.
5 For example, ETSI's IPR Policy requires members to disclose patents they believe are or may
6 become "essential" to complying with a standard and declare whether they are prepared to grant
7 irrevocable licenses on FRAND terms and conditions.

8 25. ETSI's IPR Policy defines "essential" as follows:

9 "ESSENTIAL" as applied to IPR [intellectual property right] means that it is not
10 possible on technical (but not commercial) grounds, taking into account normal
11 technical practice and the state of the art generally available at the time of
12 standardization, to make, sell, lease, otherwise dispose of, repair, use or operate
13 EQUIPMENT or METHODS which comply with a STANDARD without infringing
14 that IPR. For the avoidance of doubt in exceptional cases where a STANDARD can
15 only be implemented by technical solutions, all of which are infringements of IPRs,
16 all such IPRs shall be considered ESSENTIAL.

17 Exhibit 1 at 42, § 15(6).

18 26. ETSI members who disclose their SEPs are thus invited to declare whether they are
19 ready to license them, upon request, to implementers of the 3GPP standards on FRAND terms and
20 conditions. The declaration forms ETSI members may use to disclose SEPs state:

21 To the extent that the IPR(s) disclosed in the attached *IPR Information Statement*
22 *Annex* are or become, and remain ESSENTIAL in respect of the ETSI Work Item,
23 STANDARD and/or TECHNICAL SPECIFICATION identified in the attached *IPR*
24 *Information Statement Annex*, the Declarant and/or its AFFILIATES are (1) prepared
25 to grant irrevocable licenses under this/these IPR(s) on terms and conditions which
26 are in accordance with Clause 6.1 of the ETSI IPR Policy; and (2) will comply with
27 Clause 6.1 of the ETSI IPR Policy.

28 *E.g., id.* at 45. Many other SSOs require similar commitments from members who disclose patents
that are or may become essential to practicing relevant standards.

29 27. The ETSI IPR Policy permits ETSI members, as licensors, to condition the grant of
FRAND licenses on prospective licensees' agreement to reciprocate, i.e., to be willing to license
their own SEPs on what would be FRAND terms and conditions for those SEPs. Because the value
of portfolios may differ, reciprocity does not necessarily require identical or similar royalty rates for
two SEP portfolios involved in a cross-license.

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1 28. The construction, validity, and performance of ETSI declarations are governed by
2 the laws of France. Such declarations create binding contractual commitments with ETSI as to
3 which other ETSI members and implementers of the 3GPP standards are third-party beneficiaries.

4 29. ETSI members who make a FRAND commitment may not refuse to enter into
5 negotiations with any person requesting a patent license or refuse to enter into a license on terms
6 and conditions that are fair, reasonable, and non-discriminatory. The FRAND requirement is
7 intended to ensure that SEP owners receive appropriate compensation for their intellectual property
8 rights while preventing attempts to extract from implementers more favorable license terms than
9 SEP owners would have obtained had their patents not been declared essential.

10 30. Under French law, an ETSI member that has made a FRAND commitment also has a
11 duty to negotiate in good faith to try to reach an agreement for a license.

12 31. If an ETSI member who declares SEPs refuses to commit to be prepared to grant
13 licenses on FRAND terms and conditions, ETSI may suspend work on relevant parts of the standard
14 or redesign the standard to render the patents non-essential.

15 32. Huawei and its affiliates are members of over 300 SSOs and have forged many
16 industry alliances to promote the development of information and communications technology. In
17 2015, Huawei and its affiliates submitted more than 5,400 technical proposals to various standards
18 organizations, with the total number exceeding 43,000. Huawei and its affiliates have been active
19 participating members of ETSI since 1999 and have made thousands of contributions to 3GPP
20 standards, particularly the latest LTE standard. Indeed, Huawei has been rising as a leader in terms
21 of approved contributions to the 3GPP standards. Since 2013, Huawei has had more contributions
22 to 3GPP's LTE standard-setting efforts approved than any other company in the world.

23 33. Huawei, on its behalf and on behalf of its affiliates, has disclosed to ETSI over 1,200
24 patent families that are or may become essential to practicing one or more 3GPP standards, ranking
25 Huawei among the top SEP holders in the world. [REDACTED]

26 [REDACTED] Huawei, on its behalf and on behalf of its affiliates, has committed to
27 license, and has licensed to multiple companies, its standard-essential patents and those of its
28 affiliates ("Huawei's SEP portfolio") on FRAND terms and conditions according to ETSI's IPR

1 Policy. Huawei's undertaking to license its SEP portfolio on FRAND terms and conditions is
2 subject to the condition that those who seek licenses agree to reciprocate.

3 34. Huawei's SEP portfolio, particularly as it relates to the latest LTE standard, is
4 among the strongest and most valuable in the industry. [REDACTED]

5 [REDACTED]

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[REDACTED]

E. Defendants' Sales of 3GPP Standard-Compliant Products [REDACTED]

49. [REDACTED]

[REDACTED] Samsung and its affiliates have earned billions of dollars by selling UMTS and LTE-compliant products that use Huawei's technology. Those sales have propelled Samsung to be a market leader in the smartphone and tablet markets. In its 2014 Annual Report, Samsung stated that it "continued to rank No. 1 in the world across all mobile and smartphone markets" with a 24.7% global smartphone market share.⁶

50. For example, Defendants use, sell, offer to sell, and import numerous smartphones compatible with the LTE standard, as well as tablets and related devices, in(to) the Northern District of California and throughout the United States without a license from Huawei. Samsung's official website accessible in the Northern District of California and throughout the United States lists over 100 "Cell Phones" that are "Enabled for 4G LTE" as of May 19, 2016.⁷ Defendants'

⁶ 2014 Samsung Electronics Annual Report, available at http://www.samsung.com/common/aboutsamsung/download/companyreports/2014_E.pdf (last visited May 19, 2016).

⁷ "Cell Phones – Samsung US," <http://www.samsung.com/us/mobile/cell-phones/all-products> (search criteria: "Enabled for 4G LTE") (last visited May 19, 2016).

1 LTE-enabled products are designed to operate on U.S. cellular networks with LTE capabilities.
2 Defendants market LTE-capability as a key feature of their products.

3 51. Huawei is informed and believes, and thereon alleges, that Defendants’ devices
4 designed to operate on LTE networks and which are compliant with all mandatory LTE standards
5 include, but are not limited to, the following models: Samsung Galaxy S II, S III, S4, S5, S5 mini,
6 S6, S6 edge, S6 edge+, S7, S7 edge, Core Prime, Grand Prime; Samsung Galaxy Note, Note II,
7 Note 3, Note 4, Note 5 and Note Edge; and Samsung Galaxy Tab 2, Tab 3, Tab 4, Tab 7, Tab 8,
8 Tab A, Tab E, Tab S and Tab S2 (hereinafter, “the Accused Products”).

9 52. As detailed further below, Defendants’ Accused Products use technology protected
10 by Huawei’s Asserted Patents.

11 **CLAIMS FOR RELIEF**

12 **FIRST CAUSE OF ACTION**

13 [REDACTED]

14 [REDACTED]

15 [REDACTED]

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SECOND CAUSE OF ACTION

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THIRD CAUSE OF ACTION

(Infringement of U.S. Patent No. 8,369,278)

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2
3 69. Plaintiffs reallege and incorporate by reference the allegations set forth in the
4 foregoing paragraphs.

5 70. On February 5, 2013, the United States Patent and Trademark Office duly and
6 legally issued the '278 patent, entitled "Method and Apparatus for Sending Control Signaling."
7 Huawei has owned the '278 patent since it was issued. A true and correct copy of the '278 patent is
8 attached hereto as Exhibit 4.

9 71. The '278 patent improves the downlink receiving rate of mobile devices and
10 enhances system downlink capacity, by reducing the amount of information needed to transmit two
11 necessary parameters (redundancy version and payload size) between a base station and the mobile
12 device.

13 72. The use of mandatory portions of the LTE standard infringes the '278 patent. For
14 example, the LTE standard 3GPP TS 36.213 (including v8.3.0, and all subsequent releases and
15 versions) requires use of control signaling comprising a 5-bit "modulation and coding scheme and
16 redundancy version" field, which indicates transport block size (payload size) when such field is in
17 the range 0 to 28, and which indicates redundancy version when such field is in the range 29 to 31,
18 for example, as specified in the 3GPP TS 36.213 v8.5.0 standard Table 8.6.1-1. Furthermore, the
19 LTE standard requires that the mobile device send a packet according to the received control
20 signaling to the base station, as shown, for example, in the 3GPP TS 36.213 v8.5.0 standard,
21 Section 8.6 and the 3GPP TS 36.212 standard (including v2.0.0, and all subsequent releases and
22 versions), *e.g.*, v8.8.0, Section 5.3.

23 73. On information and belief, Defendants' Accused Products use the mandatory
24 portions of the LTE standard covered by the '278 patent, and, therefore, infringe the '278 patent.
25 For example, the claims of the '278 patent, including but not limited to claims 1 and 7, read on the
26 LTE standard as shown on Exhibit 5 attached hereto.

27 74. On information and belief, Defendants have directly infringed and continue to
28 directly infringe at least claim 7 of the '278 patent pursuant to 35 U.S.C. § 271(a), literally or under

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1 the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United States
2 the Accused Products, on or after the issuance date of the patent.

3 75. On or about July 19, 2013, Huawei notified Samsung that Defendants infringed the
4 '278 patent by providing a list of patents essential to practicing the LTE standards including the
5 '278 patent, and an infringement claim chart for the patent.

6 76. On information and belief, Defendants also induce infringement of at least claims 1
7 and 7 of the '278 patent. Defendants' Accused Products as sold are specifically configured to
8 infringe Huawei's '278 patent as described above. Defendants actively instruct their customers on
9 how to use their products, including through product manuals and advertising. When used as
10 instructed, Defendants' customers use their products to practice the methods and use the apparatus
11 of the '278 patent. Defendants' customers thereby directly infringe, either literally or under the
12 doctrine of equivalents, the '278 patent. For example, the Accused Products practice the '278
13 patent when an end user uses his or her device in an ordinary manner, such as to browse the web, to
14 utilize applications that transmit or receive data over the network, to transmit uplink data (photos,
15 documents, etc.), or to receive downlink data (movies, pictures, etc.). The Samsung Galaxy S7
16 User Manual, for instance, instructs users how to access and browse the internet, send and receive
17 email, share and back up documents and photos, view and upload videos, send and receive
18 messages, and otherwise engage in activities that require transmission or receipt of data over the
19 network. *See, e.g.*, Exhibit 6 at 34-41, 48, 55-64. Defendants knew of the '278 patent and knew or
20 should have known that their products infringed the '278 patent during their ordinary and intended
21 use no later than July 19, 2013.

22 77. Defendants' infringement of the '278 patent has been and continues to be willful,
23 and Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

24 [REDACTED]
25 [REDACTED]
26 [REDACTED]
27 [REDACTED]
28 [REDACTED]

1 [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]

6 [REDACTED] while selling billions of dollars of infringing products, falls well
7 below the standards of conduct expected of a reasonable company in the industry and renders this
8 case exceptional under 35 U.S.C. § 285.

9 78. By their actions, Defendants have injured Huawei and are liable to Huawei for
10 infringement of the '278 patent pursuant to 35 U.S.C. § 271.

11 **FOURTH CAUSE OF ACTION**
12 **(Infringement of U.S. Patent No. 8,416,892)**

13 79. Plaintiffs reallege and incorporate by reference the allegations set forth in the
14 foregoing paragraphs.

15 80. On April 9, 2013, the United States Patent and Trademark Office duly and legally
16 issued the '892 patent, entitled "Method and Apparatus of Transmitting a Random Access
17 Preamble." Huawei has owned the '892 patent since it was issued. A true and correct copy of the
18 '892 patent is attached hereto as Exhibit 7.

19 81. A mobile device must synchronize itself with an LTE network to transmit data to the
20 network and to avoid interfering with data transmitted by other mobile devices. The '892 patent
21 discloses an improved synchronization process that involves transmitting "random access
22 preambles" with desirable properties. Mobile devices also use these random access preambles for
23 other important purposes, such as requesting uplink transmission resources.

24 82. The use of mandatory portions of the LTE standard infringe the '892 patent. For
25 example, the LTE standard 3GPP TS 36.213 (including v1.2.0, and all subsequent releases and
26 versions) requires that a mobile device select and transmit a random access preamble from a defined
27 set. *See, e.g.*, 3GPP TS 36.213 v8.5.0, Section 6 ("Random access procedure"). For example, the
28 LTE standard 3GPP 36.211 (including v8.1.1, and all subsequent releases and versions) explains

REDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED

1 that the set of random access preambles is the same as that specified in claims 1 and 10 of the '892
2 patent. *See, e.g.*, 3GPP TS 36.211 v8.5.0, Section 5.7.2 & Table 5.7.2-2. Indeed, Table 5.7.2-2 of
3 the 3GPP TS 36.211 v8.5.0 standard requires creating the preambles in the same manner and using
4 the exact same set of cyclic shift increments as claimed in the '892 patent: 0, 13, 15, 18, 22, 26, 32,
5 38, 46, 59, 76, 93, 119, 167, 279, and 419.

6 83. On information and belief, Defendants' Accused Products use the mandatory
7 portions of the LTE standard covered by the '892 patent, and, therefore, infringe the '892 patent.
8 For example, the claims of the '892 patent, including but not limited to claims 1 and 10, read on the
9 LTE standard as shown on Exhibit 8 attached hereto.

10 84. On information and belief, Defendants have directly infringed and continue to
11 directly infringe at least claim 10 of the '892 patent pursuant to 35 U.S.C. § 271(a), literally or
12 under the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United
13 States the Accused Products, on or after the issuance date of the patent.

14 85. On or about July 19, 2013, Huawei notified Samsung that Defendants infringed the
15 '892 patent by providing a list of patents essential to practicing the LTE standards including the
16 '892 patent, and an infringement claim chart for the patent.

17 86. On information and belief, Defendants also induce infringement of at least claims 1
18 and 10 of the '892 patent. Defendants' Accused Products as sold are specifically configured to
19 infringe Huawei's '892 patent as described above. Defendants actively instruct their customers on
20 how to use their products, including through product manuals and advertising. When used as
21 instructed, Defendants' customers use its products to practice the methods and use the apparatus of
22 the '892 patent. Defendants' customers thereby directly infringe, either literally or under the
23 doctrine of equivalents, the '892 patent. For example, the Accused Products practice the '892
24 patent when an end user uses his or her device in an ordinary manner, including *inter alia* (a) when
25 a user turns on the device, (b) when the device is in an idle state and a user makes a voice call,
26 receives an incoming call, or triggers a data service, and (c) when a user moves from one cell
27 coverage to another while using a voice or data service. The Samsung Galaxy S7 User Manual, for
28 instance, instructs users how to turn on the mobile device, make and answer calls, and use data

1 services. *See, e.g.*, Exhibit 6 at 2, 7, 24-41, 48, 55-64. Defendants knew of the '892 patent and
2 knew or should have known that their products infringed the '892 patent during their ordinary and
3 intended use no later than July 19, 2013.

4 87. Defendants' infringement of the '892 patent has been and continues to be willful,
5 and Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]

16 [REDACTED] while selling billions of dollars of infringing products, falls well
17 below the standards of conduct expected of a reasonable company in the industry and renders this
18 case exceptional under 35 U.S.C. § 285.

19 88. By their actions, Defendants have injured Huawei and are liable to Huawei for
20 infringement of the '892 patent pursuant to 35 U.S.C. § 271.

21 **FIFTH CAUSE OF ACTION**

22 **(Infringement of U.S. Patent No. 8,483,166)**

23 89. Plaintiffs reallege and incorporate by reference the allegations set forth in the
24 foregoing paragraphs.

25 90. On July 9, 2013, the United States Patent and Trademark Office duly and legally
26 issued the '166 patent, entitled "Method and Apparatus for Accessing Legacy Networks through
27 Temporary ID of Evolved Network." Huawei has owned the '166 patent since it was issued. A
28 true and correct copy of the '166 patent is attached hereto as Exhibit 9.

REDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED

1 91. The '166 patent discloses a way for mobile devices to transition from an evolved
2 (e.g., LTE) network to a legacy (e.g., 2G or 3G) network. The patented solution involves adding
3 certain information to part of an access message to a legacy network, so that the mobile device can
4 obtain services efficiently from the legacy network after the mobile device moves from the evolved
5 network to the legacy network.

6 92. The use of mandatory portions of the LTE standard infringes the '166 patent. For
7 example, the LTE standard 3GPP TS 23.401 (including v1.4.1 and all subsequent releases and
8 versions) describes tracking area update and routing area update procedures, including transitions
9 from an E-UTRAN (e.g., LTE) network to a GERAN/UTRAN (e.g., 2G or 3G) network. *See, e.g.,*
10 3GPP TS 23.401 v8.4.0. The procedures include use of a Globally Unique Temporary Identity
11 (GUTI). For example, the LTE standard 3GPP TS 23.003 (including v8.2.0 and all subsequent
12 releases and versions) specifies that the GUTI contain Mobility Management Entity (MME)
13 information for identifying the MME such as an MME Code. *See, e.g.,* 3GPP TS 23.003 v8.3.0,
14 Sections 2.8.2. For example, a mobile device moving from an E-UTRAN (e.g., LTE) network to a
15 GERAN/UTRAN (e.g., 2G or 3G) network sends an Initial Direct Transfer (IDT) message. An
16 IDT message contains an Intra Domain NAS Node Selector (IDNNS) field. *See, e.g.,* 3GPP TS
17 25.331 (including v.8.10.0 and all subsequent releases and versions), v8.10.0, Sections 8.1.8, 10.2
18 and 10.3. The standard further requires that the IDNNS field contains a routing parameter to where
19 the MME Code from the GUTI has been mapped. *See, e.g.,* 3GPP TS 25.331 v8.10.0, Sections
20 8.1.8, 10.2, and 10.3.

21 93. On information and belief, Defendants' Accused Products use the mandatory
22 portions of the LTE standard covered by the '166 patent, and, therefore, infringe the '166 patent.
23 For example, the claims of the '166 patent, including but not limited to claims 1 and 12, read on the
24 LTE standard as shown on Exhibit 10 attached hereto.

25 94. On information and belief, Defendants have directly infringed and continue to
26 directly infringe at least claim 12 of the '166 patent pursuant to 35 U.S.C. § 271(a), literally or
27 under the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United
28 States the Accused Products, on or after the issuance date of the patent.

REDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED

1 95. On or about December 31, 2015, Huawei notified Samsung that Defendants infringe
2 the '166 patent by providing a list of patents essential to practicing the LTE standards including the
3 '166 patent, and an infringement claim chart for the patent.

4 96. On information and belief, Defendants also induce infringement of at least claims 1
5 and 12 of the '166 patent. Defendants' Accused Products as sold are specifically configured to
6 infringe Huawei's '166 patent as described above. Defendants actively instruct their customers on
7 how to use their products, including through product manuals and advertising. When used as
8 instructed, Defendants' customers use their products to practice the methods and use the apparatus
9 of the '166 patent. Defendants' customers thereby directly infringe, either literally or under the
10 doctrine of equivalents, the '166 patent. For example, the Accused Products practice the '166
11 patent when an end user uses his or her mobile device in an ordinary manner, including when a user
12 served by an LTE network in the U.S. makes or receives a voice call in a 2G or 3G circuit switched
13 cell, or when a user moves from an LTE coverage area into a 2G or 3G coverage area in an idle
14 state. The Samsung Galaxy S7 User Manual, for instance, instructs users how to make and answer
15 voice calls, and describes how the device indicates to users when the device is connected to a LTE
16 wireless network. *See, e.g.*, Exhibit 6 at 14, 27-28. The Samsung website also advertises that the
17 Galaxy S7 smartphone, for instance, operates on both 3G and LTE networks.⁸ Defendants knew of
18 the '166 patent and knew or should have known that their products infringed the '166 patent during
19 their ordinary and intended use no later than December 31, 2015.

20 97. Defendants' infringement of the '166 patent has been and continues to be willful,
21 and Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

22 [REDACTED]
23 [REDACTED]
24 [REDACTED]
25 [REDACTED]
26 [REDACTED]

27 ⁸ *See* "Samsung Galaxy S7 edge," [http://www.samsung.com/us/mobile/cell-phones/SM-](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT)
28 [G935AZDAATT](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT) (last visited May 19, 2016).

1 [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED] while selling billions of dollars of infringing products, falls well
7 below the standards of conduct expected of a reasonable company in the industry and renders this
8 case exceptional under 35 U.S.C. § 285.

9 98. By their actions, Defendants have injured Huawei and are liable to Huawei for
10 infringement of the '166 patent pursuant to 35 U.S.C. § 271.

11 **SIXTH CAUSE OF ACTION**

12 **(Infringement of U.S. Patent No. 8,812,848)**

13 99. Plaintiffs reallege and incorporate by reference the allegations set forth in the
14 foregoing paragraphs.

15 100. On August 19, 2014, the United States Patent and Trademark Office duly and legally
16 issued the '848 patent, entitled "Method, System and Device for Negotiating Security Capability
17 When Terminal Moves." Huawei has owned the '848 patent since it was issued. A true and correct
18 copy of the '848 patent is attached hereto as Exhibit 11.

19 101. The '848 patent discloses a way for a mobile device to efficiently negotiate non-
20 access stratum (NAS) security with an LTE network when it moves in idle state from a 2G or 3G
21 network to the LTE network, which helps ensure secure interaction and communication between the
22 mobile device and the LTE network.

23 102. The mandatory portions of the LTE standard infringe the '848 patent. For example,
24 the LTE standard 3GPP TS 33.401 (including v8.2.0, and all subsequent releases and versions)
25 describes security interworking between LTE and non-LTE networks. According to the
26 standard's requirements, when a mobile device moves in idle mode from a non-LTE to an LTE
27 network, the mobile device sends a Tracking Area Update (TAU) request to the LTE network that
28 includes the mobile device's security capabilities. *See, e.g.*, 3GPP TS 33.401 v8.2.0, Sections 3.1,

1 7.2.4.1, and 9.1.2. The mobile device then receives from the LTE network a message containing a
2 non-access stratum (NAS) security algorithm selected by the LTE network. *See, e.g.*, 3GPP TS
3 33.401 v8.2.0, Section 7.2.4.4. For example, the LTE standard specifies that the mobile device then
4 generates a root key (“K_{ASME}”) from an authentication vector-related key (“CK and IK”) available
5 at the mobile device, and generates a NAS protection key (“NAS key”) for communicating with the
6 LTE network from the root key according to the NAS security algorithm. *See, e.g.*, 3GPP TS
7 33.401 v8.2.0, Sections 7.2.1, 7.2.4.4, 9.1.2, A.7, and A.11.

8 103. On information and belief, Defendants’ Accused Products use the mandatory
9 portions of the LTE standard covered by the ’848 patent, and, therefore, infringe the ’848 patent.
10 For example, the claims of the ’848 patent, including but not limited to claims 1 and 9, read on the
11 LTE standard as shown on Exhibit 12 attached hereto.

12 104. On information and belief, Defendants have directly infringed and continue to
13 directly infringe at least claim 1 of the ’848 patent pursuant to 35 U.S.C. § 271(a), literally or under
14 the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United States
15 the Accused Products, on or after the issuance date of the patent.

16 105. On or about December 31, 2015, Huawei notified Samsung that Defendants infringe
17 the ’848 patent by providing a list of patents essential to practicing the LTE standards including the
18 ’848 patent, and an infringement claim chart for the patent.

19 106. On information and belief, Defendants also induce infringement of at least claims 1
20 and 9 of the ’848 patent. Defendants’ Accused Products as sold are specifically configured to
21 infringe Huawei’s ’848 patent as described above. Defendants actively instruct their customers on
22 how to use their products, including through product manuals and advertising. When used as
23 instructed, Defendants’ customers use their products to practice the methods and use the apparatus
24 of the ’848 patent. Defendants’ customers thereby directly infringe, either literally or under the
25 doctrine of equivalents, the ’848 patent. For example, the Accused Products use the ’848 patent
26 when an end user uses his or her mobile device in an ordinary manner, including when the mobile
27 device is in an idle state and the end user moves from a 2G or 3G coverage area to an LTE coverage
28 area. The Samsung Galaxy S7 User Manual, for instance, describes how the mobile device

1 indicates to users when the mobile device is connected to a LTE wireless network. *See, e.g.,*
2 Exhibit 6 at 14. The Samsung website also advertises that the Galaxy S7 smartphone, for instance,
3 operates on both 3G and LTE networks.⁹ Defendants knew of the '848 patent and knew or should
4 have known that their products infringed the '848 patent during their ordinary and intended use no
5 later than December 31, 2015.

6 107. Defendants' infringement of the '848 patent has been and continues to be willful,
7 and Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED] while selling billions of dollars of infringing products, falls well
19 below the standards of conduct expected of a reasonable company in the industry and renders this
20 case exceptional under 35 U.S.C. § 285.

21 108. By their actions, Defendants have injured Huawei and are liable to Huawei for
22 infringement of the '848 patent pursuant to 35 U.S.C. § 271.

23 **SEVENTH CAUSE OF ACTION**

24 **(Infringement of U.S. Patent No. 8,644,239)**

25 109. Plaintiffs reallege and incorporate by reference the allegations set forth in the
26

27 ⁹ *See* "Samsung Galaxy S7 edge," [http://www.samsung.com/us/mobile/cell-phones/SM-](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT)
28 [G935AZDAATT](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT) (last visited May 19, 2016).

1 foregoing paragraphs.

2 110. On February 4, 2014, the United States Patent and Trademark Office duly and
3 legally issued the '239 patent, entitled "Method and Apparatus for Allocating and Processing
4 Sequences in Communication System." Huawei has owned the '239 patent since it was issued. A
5 true and correct copy of the '239 patent is attached hereto as Exhibit 13.

6 111. The '239 discloses a way to allocate sequences that reduces interference in a
7 communications system.

8 112. The use of mandatory portions of the LTE standard infringes the '239 patent. For
9 example, the LTE standard 3GPP TS 36.211 (including v8.2.0, and all subsequent releases and
10 versions) requires processing reference signal sequences. *See, e.g.*, 3GPP TS 36.211 v8.5.0,
11 Sections 5.5.1, 5.5.1.1, and 5.6. The LTE standard requires that a mobile device use a "sequence-
12 group number u " of a sequence group allocated by the system. *See, e.g., id.* at Sections 5.5.1,
13 5.5.1.1 and 5.5.1.3. The LTE standard further requires that the mobile device select n sequences
14 from a candidate sequence collection, such as Zadoff-Chu sequences with a given length, to form
15 sequences in a sub-group i in a sequence group k , such as by selecting sequences from the sequence
16 group k corresponding to a given length of a Zadoff-Chu sequence. *See, e.g., id.* at Section 5.5.1,
17 5.5.1.1. The LTE standard also requires that n is a natural number, such as 1, i is a serial number of
18 the subgroup, such as m in the equation for M_{sc}^{RS} in the standard, k is a serial number of the
19 sequence group, such as that provided by the sequence group number $u+1$ in the standard, a value
20 of the basic sequence index r_i in the sub-group i in sequence k according to the formula in the '239
21 patent mathematically equals the value required by the standard, such as the value of q , N_i is a
22 length of a sequence in the candidate sequence collection, such as N_{ZC}^{RS} in the standard, and N_l is a
23 length of a reference sub-group sequence, such as 31 in the standard. *See, e.g., id.* at Sections 5.5.1
24 and 5.5.1.1. The LTE standard further requires the mobile device to generate corresponding
25 sequences according to the sequences in the formed sub-group, and communicate according to the
26 generated sequences, for example, by generating and communicating according to reference signal
27 sequences, on time frequency resources corresponding to the subgroup i according to mathematical
28 formulas in the standard. *See, e.g., id.* at Sections 5.1.2, 5.5, 5.5.1, 5.5.1.1, 5.6, and 5.5.2.1.1.

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1 113. On information and belief, Defendants' Accused Products use the mandatory
2 portions of the LTE standard covered by the '239 patent, and, therefore, infringe the '239 patent.
3 For example, the claims of the '239 patent, including but not limited to claims 6 and 17, read on the
4 LTE standard as shown on Exhibit 14 attached hereto.

5 114. On information and belief, Defendants have directly infringed and continue to
6 directly infringe at least claim 17 of the '239 patent pursuant to 35 U.S.C. § 271(a), literally or
7 under the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United
8 States the Accused Products, on or after the issuance date of the patent.

9 115. On or about December 31, 2015, Huawei notified Samsung that Defendants
10 infringed the '239 patent by providing a list of patents essential to practicing the LTE standards
11 including the '239 patent, and an infringement claim chart for the patent.

12 116. On information and belief, Defendants also induce infringement of at least claims 6
13 and 17 of the '239 patent. Defendants' Accused Products as sold are specifically configured to
14 infringe Huawei's '239 patent as described above. Defendants actively instruct their customers on
15 how to use their products, including through product manuals and advertising. When used as
16 instructed, Defendants' customers use their products to practice the methods and use the apparatus
17 of the '239 patent. Defendants' customers thereby directly infringe, either literally or under the
18 doctrine of equivalents, the '239 patent. For example, the Accused Products practice the '239
19 patent when an end user uses his or her device in an ordinary manner, such as when transmitting to
20 the network. The Samsung Galaxy S7 User Manual, for instance, instructs users how to access and
21 browse the internet, send and receive email, share and back up documents and photos, view and
22 upload videos, send and receive messages, and otherwise engage in activities that require
23 transmission of data over the network. *See, e.g.*, Exhibit 6 at 34-41, 48, 55-64. Defendants knew of
24 the '239 patent and knew or should have known that their products infringed the '239 patent during
25 their ordinary and intended use no later than December 31, 2015.

26 117. Defendants' infringement of the '239 patent has been and continues to be willful,
27 and Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

28 [REDACTED]

1 [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]

10 [REDACTED] while selling billions of dollars worth of infringing
11 products, falls well below the standards of conduct expected of a reasonable company in the
12 industry and renders this case exceptional under 35 U.S.C. § 285.

13 118. By their actions, Defendants have injured Huawei and are liable to Huawei for
14 infringement of the '239 patent pursuant to 35 U.S.C. § 271.

15 **EIGHTH CAUSE OF ACTION**
16 **(Infringement of U.S. Patent No. 8,885,587)**

17 119. Plaintiffs reallege and incorporate by reference the allegations set forth in the
18 foregoing paragraphs.

19 120. On November 11, 2014, the United States Patent and Trademark Office duly and
20 legally issued the '587 patent, entitled "Method, Base station, and User Equipment for Feeding
21 Back ACK/NACK Information for Carrier Aggregation." Huawei has owned the '587 patent since
22 it was issued. A true and correct copy of the '587 patent is attached hereto as Exhibit 15.

23 121. The '587 patent provides a way to provide acknowledgement information in an LTE-
24 Advanced system using carrier aggregation, that is backwards compatible with an LTE system.

25 122. The use of mandatory portions of the LTE standard infringes the '587 patent. For
26 example, the LTE standard 3GPP TS 36.213 (including v10.0.0, and all subsequent releases and
27 versions) requires feeding back Acknowledgement/Negative-acknowledgement (ACK/NACK)
28 information for carrier aggregation, such as for "more than one configured serving cell," using

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1 Hybrid Automatic Repeat Request (HARQ) feedback procedures. *See, e.g.*, 3GPP TS 36.213
2 v10.2.0, Sections 10.1.2.2 and 10.1.3.2. The LTE standard requires receiving downlink control
3 information (DCI) sent by a base station transmitted by a downlink component carrier, and feeding
4 back ACK/NACK information according to a command indicated by a common field preset in the
5 DCI, such as the Transmitter Power Control (TPC) field. *See, e.g., id.* at Sections 5.1.2.1, 10.1.2.2,
6 and 10.1.3.2. Further, the LTE standard requires that the common field is configured as one
7 command according to a type of a downlink component carrier transmitting the DCI, such as the
8 primary (system-linked) or secondary (non-system-linked) cell. *See, e.g., id.* at Sections 5.1.2.1,
9 10.1, 10.1.2.2.1, 10.1.2.2.2, 10.1.3.2.1, and 10.1.3.2.2; 3GPP TS 36.300 (including v10.0.0, and all
10 subsequent releases and versions), v10.3.0, Section 7.5. The LTE standard requires that the
11 common field in the DCI is configured to indicate a TPC command if the DCI is at least one piece
12 of DCI transmitted by a primary (system-linked) cell, and to indicate an ACK resource indication
13 (ARI) command, such as information used to determine a Physical Uplink Control Channel
14 (PUCCH) resource value, if the DCI is at least one piece of DCI transmitted by a secondary (non-
15 system-linked) cell. *See, e.g., id.*

16 123. On information and belief, Defendants' Accused Products use the mandatory
17 portions of the LTE standard covered by the '587 patent, and, therefore, infringe the '587 patent.
18 For example, the claims of the '587 patent, including but not limited to claims 3 and 9, read on the
19 LTE standard as shown on Exhibit 16 attached hereto.

20 124. On information and belief, Defendants have directly infringed and continue to
21 directly infringe at least claim 9 of the '587 patent pursuant to 35 U.S.C. § 271(a), literally or under
22 the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United States
23 the Accused Products, on or after the issuance date of the patent.

24 125. On or about December 31, 2015, Huawei notified Samsung that Defendants
25 infringed the '587 patent by providing a list of patents essential to practicing the LTE standards
26 including the '587 patent, and an infringement claim chart for the patent.

27 126. On information and belief, Defendants also induce infringement of at least claims 3
28 and 9 of the '587 patent. Defendants' Accused Products as sold are specifically configured to

REDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED

1 infringe Huawei’s ’587 patent as described above. Defendants actively instruct their customers on
2 how to use their products, including through product manuals and advertising. When used as
3 instructed, Defendants’ customers use their products to practice the methods and use the apparatus
4 of the ’587 patent. Defendants’ customers thereby directly infringe, either literally or under the
5 doctrine of equivalents, the ’587 patent. For example, the Accused Products practice the ’587
6 patent when an end user uses his or her device in an ordinary manner, such as receiving data from a
7 base station using carrier aggregation. The Samsung Galaxy S7 User Manual, for instance,
8 instructs users how to install a SIM card and power on the device, thereby allowing the device to
9 connect to and communicate with a cellular network. *See, e.g.*, Exhibit 6 at 2-4, 7, 14. Defendants
10 knew of the ’587 patent and knew or should have known that their products infringed the ’587
11 patent during their ordinary and intended use no later than December 31, 2015.

12 127. Defendants’ infringement of the ’587 patent has been and continues to be willful,
13 and Defendants’ conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]
21 [REDACTED]
22 [REDACTED]
23 [REDACTED]

24 [REDACTED] while selling billions of dollars worth of infringing
25 products, falls well below the standards of conduct expected of a reasonable company in the
26 industry and renders this case exceptional under 35 U.S.C. § 285.

27 128. By their actions, Defendants have injured Huawei and are liable to Huawei for
28 infringement of the ’587 patent pursuant to 35 U.S.C. § 271.

NINTH CAUSE OF ACTION

(Infringement of U.S. Patent No. 8,885,583)

1
2
3 129. Plaintiffs reallege and incorporate by reference the allegations set forth in the
4 foregoing paragraphs.

5 130. On November 11, 2014, the United States Patent and Trademark Office duly and
6 legally issued the '583 patent, entitled "Conditional Uplink Timing Alignment in a Mobile Station
7 Device of a Radio Communication System." Huawei has owned the '583 patent since it was issued.
8 A true and correct copy of the '583 patent is attached hereto as Exhibit 17.

9 131. The '583 patent helps ensure that a mobile device remains properly synchronized
10 with a base station in a communication network. The '583 patent involves ignoring timing
11 deviation information when the mobile device is in an uplink synchronous state or when it has a
12 currently running timer to prevent the mobile device from executing timing alignment
13 unnecessarily.

14 132. The use of mandatory portions of the LTE standard infringes the '583 patent. For
15 example, the LTE standard 3GPP TS 36.300 (including v8.1.0 and all subsequent releases and
16 versions) requires mobile devices to transmit a random access preamble and receive from a base
17 station a random access response to the random access preamble. *See, e.g.*, 3GPP TS 36.300
18 v8.7.0, Section 10.1.5.1. The LTE standard further requires that the mobile device ignore timing
19 deviation information in the random access response, such as by "ignor[ing] the received Timing
20 Advance Command," if the mobile device is in uplink synchronous status and the timing deviation
21 information and the random access response includes the random access preamble whose preamble
22 identification (ID) was randomly selected by the mobile device. *See, e.g.*, 3GPP TS 36.300 v8.7.0,
23 Sections 10.1.5.1 and 10.1.2.7; 3GPP TS 36.321 (including v8.2.0, and all subsequent releases and
24 versions), v8.4.0, Section 5.2. The timing deviation information in the LTE standard does not
25 include a Null value or an indication to ignore the timing deviation information. *See, e.g.*, 3GPP TS
26 36.321 v8.4.0, Section 6.2.3; 3GPP TS 36.213 (including v8.4.0 and all subsequent releases and
27 versions), v8.5.0, Section 4.2.3. The LTE standard also requires performing uplink timing
28 alignment based on timing deviation information, such as by "apply[ing] the Timing Advance

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1 Command” and “start[ing] Time Alignment Timer,” in case that, in an uplink asynchronous status,
2 the random access response includes timing deviation information and includes a random access
3 preamble whose preamble identification (ID) was randomly selected by the mobile device. *See*,
4 *e.g.*, 3GPP TS 36.300 v8.7.0, Sections 10.1.5.1 and 10.1.2.7; 3GPP TS 36.321 v8.4.0, Section 5.2.

5 133. On information and belief, Defendants’ Accused Products use the mandatory
6 portions of the LTE standard covered by the ’583 patent, and, therefore, infringe the ’583 patent.
7 For example, the claims of the ’583 patent, including but not limited to claims 3 and 7, read on the
8 LTE standard as shown on Exhibit 18 attached hereto.

9 134. On information and belief, Defendants have directly infringed and continue to
10 directly infringe at least claim 3 of the ’583 patent pursuant to 35 U.S.C. § 271(a), literally or under
11 the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United States
12 the Accused Products, on or after the issuance date of the patent.

13 135. On or about December 31, 2015, Huawei notified Samsung that Defendants
14 infringed the ’583 family of patents by providing a list of patents essential to practicing the LTE
15 standards including patents in the ’583 family (such as U.S. Patent Nos. 9,094,909 and 8,089,921),
16 and infringement claim charts for those patents.

17 136. On information and belief, Defendants also induce infringement of at least claims 3
18 and 7 of the ’583 patent. Defendants’ Accused Products as sold are specifically configured to
19 infringe Huawei’s ’583 patent as described above. Defendants actively instruct their customers on
20 how to use their products, including through product manuals and advertising. When used as
21 instructed, Defendants’ customers use their products to practice the methods and use the apparatus
22 of the ’583 patent. Defendants’ customers thereby directly infringe, either literally or under the
23 doctrine of equivalents, the ’583 patent. For example, the Accused Products practice the ’583
24 patent when an end user uses his or her device in an ordinary manner, including *inter alia* (a) when
25 the user makes a call; and (b) when the user makes an uplink transmission such as uploading blogs,
26 and small messages, etc. The Samsung Galaxy S7 User Manual, for instance, instructs users how to
27 make calls, and use uplink data services. *See, e.g.*, Exhibit 6 at 2, 7, 24-41, 48, 55-64. Defendants
28 knew of patents in the ’583 patent family and knew or should have known that their products

1 infringed the '583 patent during their ordinary and intended use no later than December 31, 2015.

2 137. Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED] while selling
9 billions of dollars worth of infringing products, falls well below the standards of conduct expected
10 of a reasonable company in the industry and renders this case exceptional under 35 U.S.C. § 285.

11 138. By their actions, Defendants have injured Huawei and are liable to Huawei for
12 infringement of the '583 patent pursuant to 35 U.S.C. § 271.

13 **TENTH CAUSE OF ACTION**

14 **(Infringement of U.S. Patent No. 8,639,246)**

15 139. Plaintiffs reallege and incorporate by reference the allegations set forth in the
16 foregoing paragraphs.

17 140. On January 28, 2014, the United States Patent and Trademark Office duly and
18 legally issued the '246 patent, entitled "Method, Terminal, and System for Cell Reselection."
19 Huawei has owned the '246 patent since it was issued. A true and correct copy of the '246 patent is
20 attached hereto as Exhibit 19.

21 141. Reselecting a cell in a cellular network is an important process that happens, for
22 example, when a mobile device moves from one area to another or when a cell carrier needs to
23 perform load balancing. The '246 patent discloses a way to perform cell reselection when a mobile
24 device is in an LTE cell and then camps on a cell of a non-LTE system. The invention involves
25 basing cell reselection on a dedicated priority list from the LTE system before a valid time for the
26 dedicated priority list expires.

27 142. The use of mandatory portions of the LTE standard infringes the '246 patent. For
28 example, the standards 3GPP TS 36.304 (including v8.5.0, and all subsequent releases and

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1 versions) and 3GPP TS 36.331 (including v8.5.0, and all subsequent releases and versions) provide
2 a cell reselection process. The process includes, when a mobile device (terminal) is in a cell of an
3 LTE system, the mobile device receives a message, such as an *RRConnectionRelease* message,
4 that includes a dedicated priority list, from the LTE system, such as a *freqPriorityListX* that
5 “provides a cell reselection priority for each frequency, by means of separate lists for each RAT
6 [Radio Access Technology].” *See, e.g.*, 3GPP TS 36.304 v8.5.0, Section 5.2.4; 3GPP TS 36.331
7 v8.5.0, Section 6.2.2. The standard further requires that when the mobile device camps on a cell of
8 a non-LTE system, such as “upon cell (re)selection to UTRA,” the mobile device performs cell
9 reselection in accordance with the dedicated priority list before a valid time of the dedicated priority
10 list expires, such as by applying a “remaining validity time.” *See, e.g.*, 3GPP TS 25.304 (including
11 v8.5.0, and all subsequent releases and versions), v8.5.0, Section 5.2.6.1.4a; 3GPP TS 25.331
12 (including v8.6.0, and all subsequent releases and versions), v8.7.0, Section 13.1.

13 143. On information and belief, Defendants’ Accused Products use the mandatory
14 portions of the LTE standard covered by the ’246 patent, and, therefore, infringe the ’246 patent.
15 For example, the claims of the ’246 patent, including but not limited to claims 1 and 11, read on
16 the LTE standard as shown on Exhibit 20 attached hereto.

17 144. On information and belief, Defendants have directly infringed and continue to
18 directly infringe at least claim 11 of the ’246 patent pursuant to 35 U.S.C. § 271(a), literally or
19 under the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United
20 States the Accused Products, on or after the issuance date of the patent.

21 145. On or about December 31, 2015, Huawei notified Samsung that Defendants
22 infringed the ’246 patent by providing a list of patents essential to practicing the LTE standard
23 including the ’246 patent, and an infringement claim chart for the patent.

24 146. On information and belief, Defendants also induce infringement of at least claims 1
25 and 11 of the ’246 patent. Defendants’ Accused Products as sold are specifically configured to
26 infringe Huawei’s ’246 patent as described above. Defendants actively instruct their customers on
27 how to use their products, including through product manuals and advertising. When used as
28 instructed, Defendants’ customers use their products to practice the methods and use the apparatus

1 of the '246 patent. Defendants' customers thereby directly infringe, either literally or under the
2 doctrine of equivalents, the '246 patent. For example, the Accused Products practice the '246
3 patent when an end user is using his or her device on an LTE network in an ordinary manner, and
4 the device switches to a non-LTE network, for example, for load balancing purposes or because an
5 LTE network is unavailable, while the device is idle. The Samsung Galaxy S7 User Manual, for
6 instance, instructs users that the device works on LTE wireless networks. *See, e.g.*, Exhibit 6 at 14,
7 27-28. The Samsung website also advertises that the Galaxy S7 smartphone, for instance, operates
8 on both 3G and LTE networks.¹⁰ Defendants knew of the '246 patent and knew or should have
9 known that their products infringed the '246 patent during their ordinary and intended use no later
10 than December 31, 2015.

11 147. Defendants' infringement of the '246 patent has been and continues to be willful,
12 and Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]
21 [REDACTED]
22 [REDACTED]
23 [REDACTED] while selling billions of dollars worth of infringing
24 products, falls well below the standards of conduct expected of a reasonable company in the
25 industry and renders this case exceptional under 35 U.S.C. § 285.

26 148. By their actions, Defendants have injured Huawei and are liable to Huawei for

27 ¹⁰ *See* "Samsung Galaxy S7 edge," [http://www.samsung.com/us/mobile/cell-phones/SM-](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT)
28 [G935AZDAATT](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT) (last visited May 19, 2016).

1 infringement of the '246 patent pursuant to 35 U.S.C. § 271.

2 **ELEVENTH CAUSE OF ACTION**

3 **(Infringement of U.S. Patent No. 8,412,197)**

4 149. Plaintiffs reallege and incorporate by reference the allegations set forth in the
5 foregoing paragraphs.

6 150. On April 2, 2013, the United States Patent and Trademark Office duly and legally
7 issued the '197 patent, entitled "Method, Terminal, and System for Cell Reselection." Huawei has
8 owned the '197 patent since it was issued. A true and correct copy of the '197 patent is attached
9 hereto as Exhibit 21.

10 151. Reselecting a cell in a cellular network is an important process that happens, for
11 example, when a mobile device moves from one area to another or when a cell carrier needs to
12 perform load balancing. The '197 patent discloses a way to perform cell reselection when a mobile
13 device is in an LTE cell and then camps on a cell of a non-LTE system. The '197 patent involves
14 basing cell reselection on a dedicated priority list from the LTE system before a valid time for the
15 dedicated priority list expires.

16 152. The use of mandatory portions of the LTE standard infringes the '197 patent. For
17 example, the standards 3GPP TS 36.304 (including v8.5.0, and all subsequent releases and
18 versions) and 3GPP TS 36.331 (including v8.5.0, and all subsequent releases and versions) provide
19 a cell reselection process. The process includes a mobile device (terminal) obtaining from an LTE
20 system a dedicated priority list, such as a *freqPriorityListX* that "provides a cell reselection priority
21 for each frequency, by means of separate lists for each RAT [Radio Access Technology]," and a
22 valid time of the dedicated priority list, such as given by timer T320 in the LTE standard. *See, e.g.,*
23 3GPP TS 36.304 v8.5.0, Section 5.2.4; 3GPP TS 36.331 v8.5.0, Section 6.2.2. The standard further
24 requires the mobile device to perform cell reselection according to the dedicated priority list and the
25 valid time of the dedicated priority list, when the terminal camps on a cell of a non-LTE system,
26 such as "upon cell (re)selection to UTRA." *See, e.g.,* 3GPP TS 25.304 (including v8.5.0, and all
27 subsequent releases and versions), v8.5.0, Section 5.2.6.1.4a; 3GPP TS 25.331 (including v8.6.0,
28 and all subsequent releases and versions), v8.7.0, Section 13.1. The standard requires that when the

1 mobile device camps on a cell of the non-LTE system, such as UTRA, the mobile device performs
2 cell reselection according to the dedicated priority list before the valid time expires, such as by
3 “inherit[ing] the priorities provided by dedicated signalling and the remaining validity time” during
4 “inter-frequency and inter-RAT cell reselection.” *See, e.g., id.* Moreover, the standard requires that
5 when the mobile device camps on the cell of the non-LTE system, the dedicated priority list is
6 invalid after the valid time expires. *See, e.g.,* 3GPP TS 25.331 v8.7.0, Sections 13.1, 8.3.3.7, and
7 10.3.2.7.

8 153. On information and belief, Defendants’ Accused Products use the mandatory
9 portions of the LTE standard covered by the ’197 patent, and, therefore, infringe the ’197 patent.
10 For example, the claims of the ’197 patent, including but not limited to claims 1 and 7, read on the
11 LTE standard as shown on Exhibit 22 attached hereto.

12 154. On information and belief, Defendants have directly infringed and continue to
13 directly infringe at least claim 7 of the ’197 patent pursuant to 35 U.S.C. § 271(a), literally or under
14 the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United States
15 the Accused Products, on or after the issuance date of the patent.

16 155. On or about December 31, 2015, Huawei notified Samsung that Defendants
17 infringed the ’197 patent by providing a list of patents essential to practicing the LTE standard
18 including the ’197 patent, and an infringement claim chart for the patent.

19 156. On information and belief, Defendants also induce infringement of at least claims 1
20 and 7 of the ’197 patent. Defendants’ Accused Products as sold are specifically configured to
21 infringe Huawei’s ’197 patent as described above. Defendants actively instruct their customers on
22 how to use their products, including through product manuals and advertising. When used as
23 instructed, Defendants’ customers use their products to practice the methods and use the apparatus
24 of the ’197 patent. Defendants’ customers thereby directly infringe, either literally or under the
25 doctrine of equivalents, the ’197 patent. For example, the Accused Products practice the ’197
26 patent when an end user is using his or her device on an LTE network in an ordinary manner and
27 the device switches to a non-LTE network, for example, for load balancing purposes or because an
28 LTE network is unavailable, while the device is in idle mode. The Samsung Galaxy S7 User

1 Manual, for instance, instructs users that the device works on LTE wireless networks. *See, e.g.,*
2 Exhibit 6 at 14, 27-28. The Samsung website also advertises that the Galaxy S7 smartphone, for
3 instance, operates on both 3G and LTE networks.¹¹ Defendants knew of the '197 patent and knew
4 or should have known that their products infringed the '197 patent during their ordinary and
5 intended use no later than December 31, 2015.

6 157. Defendants' infringement of the '197 patent has been and continues to be willful,
7 and Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED] while selling billions of dollars worth of infringing
19 products, falls well below the standards of conduct expected of a reasonable company in the
20 industry and renders this case exceptional under 35 U.S.C. § 285.

21 158. By their actions, Defendants have injured Huawei and are liable to Huawei for
22 infringement of the '197 patent pursuant to 35 U.S.C. § 271.

23 **TWELFTH CAUSE OF ACTION**
24 **(Infringement of U.S. Patent No. 8,996,003)**

25 159. Plaintiffs reallege and incorporate by reference the allegations set forth in the
26 foregoing paragraphs.

27 ¹¹ *See* "Samsung Galaxy S7 edge," [http://www.samsung.com/us/mobile/cell-phones/SM-](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT)
28 [G935AZDAATT](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT) (last visited May 19, 2016).

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1 160. On March 31, 2015, the United States Patent and Trademark Office duly and legally
2 issued the '003 patent, entitled "Method, Terminal, and System for Cell Reselection." Huawei has
3 owned the '003 patent since it was issued. A true and correct copy of the '003 patent is attached
4 hereto as Exhibit 23.

5 161. Reselecting a cell in a cellular network is an important process that happens, for
6 example, when a mobile device moves from one area to another or when a cell carrier needs to
7 perform load balancing. The '003 patent discloses a way to perform cell reselection when a mobile
8 device is in an LTE cell and then camps on a cell of a non-LTE system. The '003 patent involves
9 basing cell reselection on a dedicated priority list from the LTE system before a valid time for the
10 dedicated priority list expires.

11 162. The use of mandatory portions of the LTE standard infringes the '003 patent. For
12 example, the standards 3GPP TS 36.304 (including v8.5.0, and all subsequent releases and
13 versions) and 3GPP TS 36.331 (including v8.5.0, and all subsequent releases and versions) provide
14 a cell reselection process. The process includes when a mobile device (terminal) is in a cell of an
15 LTE system, and the mobile device receives a message, such as an *RRConnectionRelease*
16 message, that includes a dedicated priority list, from the LTE system, such as a *freqPriorityListX*
17 that "provides a cell reselection priority for each frequency, by means of separate lists for each RAT
18 [Radio Access Technology]." *See, e.g.*, 3GPP TS 36.304 v8.5.0, Section 5.2.4; 3GPP TS 36.331
19 v8.5.0, Section 6.2.2. The standard further requires that when the mobile device camps on a cell of
20 a non-LTE system, such as "upon cell (re)selection to UTRA," the mobile device performs cell
21 reselection in accordance with the dedicated priority list before a valid time of the dedicated priority
22 list expires, such as by applying a "remaining validity time." *See, e.g.*, 3GPP TS 25.304 (including
23 v8.5.0, and all subsequent releases and versions), v8.5.0, Section 5.2.6.1.4a; 3GPP TS 25.331
24 (including v8.6.0, and all subsequent releases and versions), v8.7.0, Section 13.1.

25 163. On information and belief, Defendants' Accused Products use the mandatory
26 portions of the LTE standard covered by the '003 patent, and, therefore, infringe the '003 patent.
27 For example, the claims of the '003 patent, including but not limited to claims 1 and 15, read on the
28 LTE standard as shown on Exhibit 24 attached hereto.

REDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED

1 164. On information and belief, Defendants have directly infringed and continue to
2 directly infringe at least claims 1 and 15 of the '003 patent pursuant to 35 U.S.C. § 271(a), literally
3 or under the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the
4 United States the Accused Products, on or after the issuance date of the patent.

5 165. On or about December 31, 2015, Huawei notified Samsung that Defendants
6 infringed the '003 patent by providing a list of patents essential to practicing the LTE standard
7 including the '003 patent, and an infringement claim chart for the patent.

8 166. On information and belief, Defendants also induce infringement of at least claims 1
9 and 15 of the '003 patent. Defendants' Accused Products as sold are specifically configured to
10 infringe Huawei's '003 patent as described above. Defendants actively instruct their customers on
11 how to use their products, including through product manuals and advertising. When used as
12 instructed, Defendants' customers use the apparatus of the '003 patent. Defendants' customers
13 thereby directly infringe, either literally or under the doctrine of equivalents, the '003 patent. For
14 example, the Accused Products practice the '003 patent when an end user is using his or her device
15 on an LTE network in an ordinary manner and the device switches to a non-LTE network, for
16 example for load balancing purposes or because an LTE network is unavailable, while the device is
17 in idle mode. The Samsung Galaxy S7 User Manual, for instance, instructs users that the device
18 works on LTE wireless networks. *See, e.g.*, Exhibit 6 at 14, 27-28. The Samsung website also
19 advertises that the Galaxy S7 smartphone, for instance, operates on both 3G and LTE networks.¹²
20 Defendants knew of the '003 patent and knew or should have known that their products infringed
21 the '003 patent during their ordinary and intended use no later than December 31, 2015.

22 167. Defendants' infringement of the '003 patent has been and continues to be willful,
23 and Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

24 [REDACTED]
25 [REDACTED]
26 [REDACTED]
27 ¹² *See* "Samsung Galaxy S7 edge," [http://www.samsung.com/us/mobile/cell-phones/SM-](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT)
28 [G935AZDAATT](http://www.samsung.com/us/mobile/cell-phones/SM-G935AZDAATT) (last visited May 19, 2016).

1 [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]

8 [REDACTED] while selling billions of dollars worth of infringing
9 products, falls well below the standards of conduct expected of a reasonable company in the
10 industry and renders this case exceptional under 35 U.S.C. § 285.

11 168. By their actions, Defendants have injured Huawei and are liable to Huawei for
12 infringement of the '003 patent pursuant to 35 U.S.C. § 271.

13 **THIRTEENTH CAUSE OF ACTION**
14 **(Infringement of U.S. Patent No. 8,724,613)**

15 169. Plaintiffs reallege and incorporate by reference the allegations set forth in the
16 foregoing paragraphs.

17 170. On May 13, 2014, the United States Patent and Trademark Office duly and legally
18 issued the '613 patent, entitled "Method and Device for Service Time Division Multiplexing."
19 Huawei has owned the '613 patent since it was issued. A true and correct copy of the '613 patent is
20 attached hereto as Exhibit 25.

21 171. The '613 patent provides a way for a mobile device to know when to expect
22 transmission of various services from base stations, so that the mobile device can avoid wasting
23 power and improve efficiency.

24 172. The use of mandatory portions of the LTE standard infringes the '613 patent. For
25 example, the LTE standard 3GPP TS 36.331 (including v8.3.0, and all subsequent releases and
26 versions) provides a method for a mobile device to receive a service sent by a base station. The
27 method includes the service being sent in one or more subframes that are designated as specific
28 subframes, such as "MBSFN [multicast-broadcast single-frequency network] subframes." *See, e.g.,*

REDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED

1 3GPP TS 36.331 v8.4.0, Sections 5.2, 6.3 and 6.3.2. The LTE standard further requires that the
2 specific subframes are selected from one or more radio frames that are designated as specific radio
3 frames, such as selecting “MBSFN subframes” using “subframeAllocation.” *See, e.g., id.* In
4 addition, the LTE standard requires that the specific radio frames are selected from a time unit, such
5 as using “radioFrameAllocationPeriod” and “radioFrameAllocationOffset” information. *See, e.g.,*
6 *id.* Moreover, the LTE standard requires that the time unit comprises 2^M radio frames, where each
7 of the radio frames containing a number R of subframes that can be allocated to carry the service,
8 where R is a natural number, and M is a nonnegative integer, such as described in a
9 *RadioResourceConfigCommon* information element and frequency division duplex (FDD) and time
10 division duplex (TDD) mapping. *See, e.g., id.* The LTE standard requires that the mobile device
11 receive position information of the specific radio frames in the time unit, such as
12 “radioframeAllocationPeriod” information, and position information of the specific subframes in
13 the specific radio frame, such as “subframeAllocation” information, on a transport channel mapped
14 to a physical shared data channel, such as a downlink shared channel (DL-SCH) mapped to a
15 physical downlink shared channel (PDSCH). *See, e.g.,* 3GPP TS 36.331 v8.4.0, Sections 6.3, 6.3.2,
16 and 5.2; 3GPP TS 36.212 (including v1.0.0 and all subsequent releases and versions), v8.5.0,
17 Section 4.2; 3GPP TS 36.321 (including v1.1.0 and all subsequent releases and versions), v8.4.0,
18 Section 4.5.3.2. The LTE standard requires that the position information of the specific radio
19 frames in the time unit is represented by an interval between two specific radio frames in the time
20 unit, wherein the interval is 2^m , and $0 \leq m \leq M$, such as described in the “radioframeAllocationPeriod”
21 information. *See, e.g., id.*

22 173. On information and belief, Defendants’ Accused Products use the mandatory
23 portions of the LTE standard covered by the ’613 patent, and, therefore, infringe the ’613 patent.
24 For example, the claims of the ’613 patent, including but not limited to claims 1 and 5, read on the
25 LTE standard as shown on Exhibit 26 attached hereto.

26 174. On information and belief, Defendants have directly infringed and continue to
27 directly infringe at least claim 5 of the ’613 patent pursuant to 35 U.S.C. § 271(a), literally or under
28 the doctrine of equivalents, by using, selling, offering to sell, and importing in(to) the United States

1 the Accused Products, on or after the issuance date of the patent.

2 175. On or about December 31, 2015, Huawei notified Samsung that Defendants
3 infringed the '613 patent by providing a list of patents essential to practicing the LTE standards
4 including the '613 patent, and an infringement claim chart for the patent.

5 176. On information and belief, Defendants also induce infringement of at least claims 1
6 and 5 of the '613 patent. Defendants' Accused Products as sold are specifically configured to
7 infringe Huawei's '613 patent as described above. Defendants actively instruct their customers on
8 how to use their products, including through product manuals and advertising. When used as
9 instructed, Defendants' customers use their products to practice the methods and use the apparatus
10 of the '613 patent. Defendants' customers thereby directly infringe, either literally or under the
11 doctrine of equivalents, the '613 patent. For example, the Accused Products practice the '613
12 patent when an end user uses his or her device to receive content via LTE Multimedia Broadcast
13 Multicast Services (eMBMS), such as by watching sports broadcasts (e.g., the Super Bowl)
14 transmitted using eMBMS.¹³ Defendants knew of the '613 patent and knew or should have known
15 that their products infringed the '613 patent during their ordinary and intended use no later than
16 December 31, 2015.

17 177. Defendants' infringement of the '613 patent has been and continues to be willful,
18 and Defendants' conduct renders this case exceptional under 35 U.S.C. § 285. [REDACTED]

19 [REDACTED]
20 [REDACTED]
21 [REDACTED]
22 [REDACTED]
23 [REDACTED]
24 [REDACTED]
25 [REDACTED]
26 [REDACTED]

27 ¹³ "Smart eMBMS," [http://www.samsung.com/global/business/networks/smart-media-](http://www.samsung.com/global/business/networks/smart-media-networks/smart-media-networks/smart-embms)
28 [networks/smart-media-networks/smart-embms](http://www.samsung.com/global/business/networks/smart-media-networks/smart-embms) (last visited May 19, 2016).

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[REDACTED]
[REDACTED]
[REDACTED] while selling billions of dollars worth of infringing products, falls well below the standards of conduct expected of a reasonable company in the industry and renders this case exceptional under 35 U.S.C. § 285.

178. By their actions, Defendants have injured Huawei and are liable to Huawei for infringement of the '613 patent pursuant to 35 U.S.C. § 271.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs pray that this Court enter judgment against Defendants as follows:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

- G. Adjudge and decree that Defendants have infringed each of the Asserted Patents;
- H. Adjudge and decree that Defendants' infringement has been willful;
- I. Award damages adequate to compensate Huawei for the patent infringement that has occurred, together with interest and costs;
- J. Award an ongoing royalty for Defendants' post-verdict infringement, payable on

1 each product or service offered by Defendants that is found to infringe one or more of the patents
2 asserted herein, and on all future products and services that are not colorably different from those
3 found to infringe;

4 K. Award of all other damages permitted by 35 U.S.C. § 284, including increased
5 damages up to three times the amount of compensatory damages found;

6 L. Find that this is an exceptional case and award to Plaintiffs their costs and
7 reasonable attorneys' fees incurred in this action as provided by 35 U.S.C. § 285; and

8 M. Such other relief, including other monetary and equitable relief, as this Court deems
9 just and proper.

10 **DEMAND FOR JURY TRIAL**

11 Plaintiffs demand a jury trial on all claims and issues so triable.

12
13 Dated: May 24, 2016

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