Jennifer Milici, D.C. Bar No. 987096
Geoffrey M. Green, D.C. Bar No. 428392
Mark J. Woodward, D.C. Bar. No. 479537
J. Alexander Ansaldo, Va. Bar No. 75870
Dana F. Abrahamsen, D.C. Bar No. 357934
Joseph R. Baker, D.C. Bar No. 490802
Wesley G. Carson, D.C. Bar No. 1009899
Kent E. Cox, Ill. Bar No. 6188944
Rajesh S. James, N.Y. Bar No. 4209367
Philip J. Kehl, D.C. Bar No. 1010284
Federal Trade Commission
600 Pennsylvania Avenue, N.W.
Washington, D.C. 20580
(202) 326-3695; (202) 326-3496 (fax)
jmilici@ftc.gov; ggreen@ftc.gov; mwoodward@ftc.gov; jansaldo@ftc.gov; *dabrahamsen@ftc.gov; jbaker1@ftc.gov; wcarson@ftc.gov; kcox@ftc.gov; rjames@ftc.gov; pkehl@ftc.gov*

Lin W. Kahn, Cal. Bar No. 261387
Federal Trade Commission
901 Market Street, Suite 570
San Francisco, CA 94103
(415) 848-5115; (415) 848-5184 (fax)
lkahn@ftc.gov

Attorneys for Plaintiff Federal Trade Commission

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

FEDERAL TRADE COMMISSION,

Plaintiff,

v.

QUALCOMM INCORPORATED, a Delaware corporation,

Defendant.

Case No. 5:17-cv-00220-LHK

FEDERAL TRADE COMMISSION'S COMPLAINT FOR EQUITABLE RELIEF

REDACTED VERSION OF DOCUMENT SEALED PER COURT ORDER

Plaintiff, the Federal Trade Commission, by its designated attorneys, petitions this Court, pursuant to Section 13(b) of the Federal Trade Commission Act ("FTC Act"), 15 U.S.C. § 53(b), for a permanent injunction against defendant Qualcomm Incorporated to undo and prevent its unfair methods of competition in or affecting commerce in violation of Section 5(a) of the Federal Trade Commission Act, 15 U.S.C. § 45(a).

I. NATURE OF THE CASE

1. This enforcement action challenges Qualcomm's unlawful maintenance of a monopoly in baseband processors, semiconductor devices that enable cellular communications in cell phones and other products. Qualcomm has engaged in exclusionary conduct that taxes its competitors' baseband processor sales, reduces competitors' ability and incentive to innovate, and raises prices paid by consumers for cell phones and tablets.

2. Qualcomm is both a dominant supplier of baseband processors and a licensor of patents that Qualcomm has declared essential to widely adopted cellular standards. Cell phones and tablets sold by Qualcomm's customers must comply with these standards, even when they incorporate baseband processors supplied by Qualcomm's competitors. Qualcomm has committed to standard-setting organizations to license standard-essential patents to all applicants on fair, reasonable, and non-discriminatory ("FRAND") terms.

3. Qualcomm has excluded competitors and harmed competition through a set of interrelated policies and practices:

a. Qualcomm withholds its baseband processors unless a customer accepts a license to standard-essential patents on terms preferred by Qualcomm, including elevated royalties that the customer must pay when using competitors' processors ("no license-no chips").

b. In some instances, Qualcomm has offered customers incentive payments (often tied to their purchase of Qualcomm's processors) to induce those customers to accept Qualcomm's preferred license terms.

c. Qualcomm has consistently refused to license its cellular standard-essential patents to its competitors, in violation of Qualcomm's FRAND commitments.

d. Qualcomm entered into exclusive dealing arrangements with Apple Inc., a particularly important cell phone manufacturer.

4. Qualcomm's "no license-no chips" policy dramatically increases customers' costs of challenging Qualcomm's preferred license terms before a court or other neutral arbiter—including on the basis that those terms are non-FRAND—or to negotiate royalties in the shadow of such a challenge. This leaves Qualcomm's customers in a markedly different position than they would be in a typical patent licensing negotiation. As a result, Qualcomm's customers have accepted elevated royalties and other license terms that do not reflect an assessment of terms that a court or other neutral arbiter would determine to be fair and reasonable.

5. Qualcomm's use of incentive payments helps Qualcomm "close the gap" with customers that resist license terms that they regard as unreasonable.

6. Qualcomm's refusal to license its competitors bolsters its ability to maintain elevated royalties and other unreasonable license terms. Qualcomm's competitors, unlike its customers, do not depend on Qualcomm for baseband processor supply, and would be better positioned than customers to negotiate licenses on FRAND terms.

7. By using its monopoly power to obtain elevated royalties that apply to baseband processors supplied by its competitors, Qualcomm in effect collects a "tax" on cell phone manufacturers when they use non-Qualcomm processors. This tax weakens Qualcomm's competitors, including by reducing demand for their processors, and serves to maintain Qualcomm's monopoly in baseband processor markets.

8. When Apple sought relief from Qualcomm's excessive royalty burden, Qualcomm conditioned partial relief on Apple's exclusive use of Qualcomm baseband processors from 2011 to 2016. Qualcomm's exclusive supply arrangement with Apple denied

other baseband processor suppliers the benefits of working with a particularly important cell phone manufacturer and hampered their development into effective competitors.

9. Qualcomm's conduct has harmed competition and the competitive process. At a time when cellular technologies are expanding to new and varied applications, Qualcomm's practices threaten further consumer harm in an industry in which competition and innovation are vitally important.

II. JURISDICTIONAL STATEMENT

A. Jurisdiction

10. This Court has subject matter jurisdiction over this action pursuant to Sections 5(a) and 13(b) of the FTC Act, 15 U.S.C. §§ 45(a) and 53(b), and 28 U.S.C. §§ 1331, 1337(a), and 1345. This is a civil action arising under Acts of Congress protecting trade and commerce against restraints and monopolies, and is brought by an agency of the United States authorized by an Act of Congress to bring this action.

11. This Court has personal jurisdiction over Qualcomm because Qualcomm has the requisite constitutional contacts with the United States of America.

12. Qualcomm's general business practices, and the unfair methods of competition alleged herein, are activities in or affecting "commerce" within the meaning of Section 4 of the FTC Act, 15 U.S.C. § 44.

13. Qualcomm is, and at all times relevant herein has been, a corporation, as "corporation" is defined in Section 4 of the FTC Act, 15 U.S.C. § 44.

B. Venue

14. Venue in the Northern District of California is proper under 15 U.S.C. § 22; Section 13(b) of the FTC Act, 15 U.S.C. § 53(b); and 28 U.S.C. §§ 1391(b), (c) and (d). Qualcomm is found, resides, transacts business, and has agents in this state and district, and a substantial portion of the affected commerce described herein has been carried out in this state and district.

C. Intradistrict Assignment

15. Assignment to the San Jose Division is proper. This action arises in Santa Clara County because a substantial part of the events giving rise to these claims occurred in Santa Clara County. Qualcomm has offices in Santa Clara and San Jose. Third parties that have information relevant to this action, including leading cell phone manufacturers (also known as "original equipment manufacturers" or "OEMs") and Qualcomm competitors, also have offices in Santa Clara County.

III. THE PARTIES

16. Plaintiff, the Federal Trade Commission, is an administrative agency of the United States government, established, organized, and existing pursuant to the FTC Act, 15 U.S.C. §§ 41 *et seq.*, with its principal offices at 600 Pennsylvania Avenue, N.W., Washington, D.C. The Commission is vested with authority and responsibility for enforcing, *inter alia*, Section 5 of the FTC Act, 15 U.S.C. § 45, and is authorized under Section 13(b) of the FTC Act, 15 U.S.C. § 53(b), to initiate court proceedings to enjoin violations of any law the FTC enforces.

17. Defendant Qualcomm is a publicly traded, for-profit company, incorporated in Delaware and with its principal place of business located in San Diego, California. Qualcomm's principal businesses are the development, design, and sale of baseband processors and other semiconductor devices used in cell phones and other mobile consumer products (collectively, "handsets"), and the licensing of intellectual property related to cellular technology. Qualcomm sells cellular baseband processors through a business unit called "Qualcomm CDMA Technologies" or "QCT." Qualcomm licenses its intellectual property rights through a business unit called "Qualcomm Technology Licensing" or "QTL." In the fiscal year ending in September 2016, Qualcomm reported that QCT had over $15.4 billion in revenues and earnings before taxes of $1.8 billion; and that QTL had over $7.6 billion in revenues and earnings before taxes of $6.5 billion.

IV. INDUSTRY BACKGROUND

A. Cellular Technology

18. Cellular communications depend on widely distributed networks implementing standardized protocols. Network operators such as Verizon, AT&T, T-Mobile, and Sprint make substantial investments to build networks that comply with these standardized protocols.

19. Since the introduction of commercial cellular handsets, there have been four "generations" of cellular communication standards.

a. First-generation ("1G") standards, introduced in the 1980s, support analog transmission of voice calls.

b. Second-generation ("2G") standards, first deployed in the early 1990s, support digital transmission of voice calls. The leading 2G standards families are the Global System for Mobile communications ("GSM") and second-generation Code Division Multiple Access ("2G-CDMA"). In the United States, AT&T and T-Mobile operate legacy GSM networks, while Verizon and Sprint operate legacy 2G-CDMA networks.

c. Third-generation ("3G") standards, first deployed in the late 1990s and early 2000s, support higher data-transmission speeds. The leading 3G standards families are the Universal Mobile Telecommunications System ("UMTS") and third-generation CDMA ("3G-CDMA"). UMTS allowed GSM-network operators to transition economically to a 3G standard. 3G-CDMA did the same for 2G-CDMA-network operators.

d. Fourth-generation ("4G") standards, first deployed in late 2009 and the early 2010s, support substantially higher data-transmission speeds than 3G standards can support. The leading 4G standard is Long-Term Evolution ("LTE"). Most major network operators worldwide have deployed LTE.

B. Baseband Processors

20. Baseband processors are semiconductor devices (sometimes referred to as "chips," "chipsets," or "modems") within handsets. Baseband processors allow handsets to communicate with an operator's cellular network by performing functions such as signal generation, modulation, and encoding.

21. To communicate with an operator's network, a handset must contain a baseband processor that complies with cellular communications standards that the network supports. A handset containing a baseband processor that complies only with UMTS standards cannot communicate with a 3G-CDMA network.

22. Baseband processors that comply with more than one standard are known as "multi-mode" processors. A handset that contains a multi-mode baseband processor is capable of communicating with networks that deploy more than one standard or with multiple networks deploying different standards.

23. To be used on a network deploying LTE, a handset must ordinarily contain a multi-mode baseband processor that complies with both LTE and older 2G and 3G standards, for two reasons. First, LTE network infrastructure generally supports data, rather than voice, traffic. Therefore, to transmit voice calls, a baseband processor must comply with 2G and 3G standards. Second, because the process of upgrading and replacing network infrastructure takes years, a baseband processor must comply with 2G and 3G standards to communicate with the network in areas where the operator has not yet replaced or upgraded infrastructure equipment.

24. Thus, to be sold for use on a given carrier's network, a multi-mode processor must comply with the legacy 2G and 3G standards deployed by that network. A handset that contains a baseband processor that complies with GSM, UMTS, and LTE standards, but not CDMA standards, for example, cannot be sold for use on a CDMA network such as Verizon's.

C. Cellular Handsets

25. In the late 2000s, smartphones that provide advanced computing capability began to emerge as alternatives to simple feature phones with voice and text-messaging capability. The launch of Apple's iPhone in 2007 marked an important point in this transition, as did the release by HTC of the first phone using Google's Android operating system in 2008.

26. Smartphones include many features in addition to the cellular connectivity and associated voice and text capabilities provided by early feature phones. Smartphones offer cameras, high-resolution touch-screen displays, powerful applications and graphics processors, and enhanced memory and storage, among other features. Many consumers today use their smartphone as their principal camera, for example. Smartphones typically offer consumers connectivity over both cellular networks, such as 4G-LTE or 3G-CDMA, and WiFi networks.

27. Over time, competition among OEMs has developed across several handset tiers, including premium (sometimes further divided into "premium" and "high"), mid, and low tiers. Premium-tier smartphones, including flagship brands like Apple's iPhone and Samsung's Galaxy-S line, typically include advanced features and technologies.

28. Premium smartphones have become increasingly important for OEMs. Premium smartphones tend to have higher prices and margins than lower-tier products and are important for branding.

29. The United States, where average selling prices for handsets are significantly higher than the global average, is a particularly important market for a number of leading OEMs.

30. Among cellular standards, LTE functionality is particularly important for modern smartphones, as consumers increasingly use smartphones to transmit large volumes of data. Cellular data traffic has grown exponentially in recent years, while the volume of cellular voice traffic has remained nearly flat.

D. Qualcomm's Dominance in Baseband Processor Supply

31. Qualcomm has long been the leading supplier of baseband processors worldwide. Qualcomm has been particularly dominant in the supply of two types of baseband processors: (i) baseband processors that comply with CDMA standards; and (ii) premium baseband processors, which comply with advanced LTE standards.

CDMA Processors

32. A number of major carriers worldwide have deployed CDMA networks, including Verizon and Sprint in the United States. For most leading OEMs, leaving CDMA-compatible handsets out of their product lines has not been a realistic option. To manufacture and sell handsets that operate on these networks, OEMs have therefore had to use baseband processors that comply with CDMA standards ("CDMA processors").

33. Qualcomm has long been the dominant supplier of CDMA processors. Each year from at least 2006 through September 2015 (the end of Qualcomm's fiscal year), Qualcomm's worldwide share of CDMA baseband processor sales exceeded 80%.

34. Qualcomm has faced limited competition for the supply of CDMA processors. For most of the past ten years, the only supplier of CDMA processors other than Qualcomm has been Via Technologies, a Taiwan-based semiconductor company. Via's CDMA processor sales have focused on processors used in lower-tier handsets. This is in part because Via has not offered multi-mode processors that combine CDMA functionality with UMTS or LTE functionality. In 2015, Intel Corporation acquired Via's CDMA business. Intel has not yet commercialized a baseband processor product that integrates Via's CDMA technology with Intel's own multi-mode processor technologies.

35. MediaTek Inc., another Taiwan-based semiconductor company, licensed technology from Via in late 2013, and began to offer CDMA processors in 2015. MediaTek has not offered multi-mode CDMA processors suitable for use in flagship handsets, however, and its sales of CDMA processors have been small.

36. Qualcomm recognizes its dominant position in CDMA processor sales. [redacted]

37. OEMs have had limited practical alternatives to Qualcomm for the supply of CDMA processors. Qualcomm has used its dominant position to obtain onerous and anticompetitive supply and licensing terms from OEMs.

Premium LTE Processors

38. Most major network operators worldwide have deployed LTE networks, including U.S. operators Verizon, AT&T, T-Mobile, and Sprint.

39. Since the introduction of the first LTE networks around 2010, LTE functionality has continually advanced, and the relevant standard-setting organizations have released a series of updated standards. Advances have included progressively faster data speeds to allow for data-intensive uses. For example, an early LTE release, Category 1, supported download speeds of 10 megabits per second (Mbps); a later LTE release, Category 6, supported download speeds of 300 Mbps; and a more recent LTE release, Category 12, supports download speeds of 600 Mbps.

40. As LTE technology has progressed, baseband processor manufacturers have had to add features to keep up. Today, baseband processors that comply with advanced LTE standards support advanced data download and upload speeds; advanced carrier aggregation and multiple-input multiple-output ("MIMO") capabilities; and advanced power-saving features, among other functions.

41. OEMs typically require baseband processors with advanced LTE functionality for premium-tier handsets. For an OEM designing and manufacturing a premium-tier handset, a baseband processor that only supports earlier LTE features is not a reasonable substitute for a baseband processor that supports advanced LTE standards and features.

42. Competition among manufacturers of LTE baseband processors thus occurs in tiers, including premium (sometimes further divided into "premium" and "high"), mid, and low tiers. A premium LTE baseband processor supports advanced LTE functionality—the "latest features," in the words of a senior Qualcomm executive.

43. Qualcomm recognizes that handsets and baseband processors compete in various tiers. Qualcomm's 2016 annual report, for example, refers to both "premium-tier smartphones" and Qualcomm's "premium-tier integrated circuit products." In internal reporting, Qualcomm tracks its share of baseband processor sales by handset tier, including sales of baseband processors for use in premium-tier handsets.

44. Qualcomm has consistently been the dominant supplier of premium LTE processors. From at least 2012 through September 2015, Qualcomm's annual worldwide share of premium LTE baseband processor sales exceeded 80%.

45. Qualcomm has faced limited competition for the supply of premium LTE processors. Other manufacturers have offered baseband processors that support LTE functionality, but have offered only limited competition to Qualcomm in premium offerings. MediaTek, for instance, has lagged behind Qualcomm in LTE baseband processor sales, and has not supplied premium LTE processors for flagship handsets. Intel has had even more limited LTE baseband processor sales and achieved modest success in premium LTE baseband processor supply only recently, when it began to supply a portion of Apple's baseband processor requirements for the iPhone 7. Samsung and Huawei have recently self-supplied some premium LTE baseband processors for Samsung and Huawei handsets, respectively, but this has not provided Qualcomm with meaningful competition in the merchant market.

46. Qualcomm recognizes its dominant position in premium LTE processor sales. In a 2011 internal e-mail exchange about a leading OEM's requirements for premium LTE processors, a Qualcomm executive asked: [redacted] Another Qualcomm executive responded, [redacted] Discussing another leading OEM's premium

LTE processor requirements, a senior Qualcomm executive stated, in a 2012 internal e-mail, [redacted]

47. OEMs have had limited practical alternatives to Qualcomm for the supply of premium LTE processors. Qualcomm has used its dominant position to obtain onerous and anticompetitive supply and licensing terms from OEMs.

V. QUALCOMM'S FRAND-ENCUMBERED CELLULAR STANDARD-ESSENTIAL PATENTS

48. Standard-setting organizations ("SSOs") adopt cellular communications standards, including CDMA and LTE standards. Through SSOs, industry participants that may otherwise compete with each other collaborate on evaluating and selecting technologies for standardization. These collaborations can provide important benefits by resolving interoperability problems.

49. Standardization can also present competitive risks. Standard-setting participants often hold patents covering technologies that are incorporated into a standard. Once a standard incorporating proprietary technology is adopted, the potential exists for opportunistic patent holders to insist on patent licensing terms that capture not just the value of the underlying technology, but also the value of standardization itself. To address this "hold-up" risk, SSOs often require patent holders to disclose their patents and commit to license standard-essential patents ("SEPs") on fair, reasonable, and non-discriminatory ("FRAND") terms. Absent such requirements, a patent holder might be able to parlay the standardization of its technology into a monopoly in standard-compliant products.

50. By making a FRAND commitment, a patent holder accepts the benefits of participating in standards development and of seeking incorporation of its patented technologies into a standard, but agrees in exchange not to exercise any market power resulting from its patents' incorporation into that standard.

51. Most SSOs neither prescribe FRAND license terms nor offer a centralized dispute-resolution mechanism in the event that a patent holder and standard implementer cannot agree on such terms. Instead, most SSOs rely on the outcome of bilateral negotiations between the parties, with resort to remedies available from courts in the event of disagreement. Bilateral negotiations conducted in the shadow of a judicial determination of FRAND terms are therefore essential to the efficacy of the FRAND commitment.

52. SSOs that adopt cellular telecommunications standards include the European Telecommunication Standards Institute ("ETSI"), the Telecommunications Industry Association ("TIA"), and the Alliance for Telecommunications Industry Solutions ("ATIS"). In some instances, telecommunications standards have been developed through partnerships among SSOs. For example, the Third Generation Partnership Project ("3GPP") focuses on the evolution of GSM, UMTS, and LTE technology, and the Third Generation Partnership Project 2 ("3GPP2") focuses on the development of CDMA technology.

53. ETSI, TIA, and ATIS require each party that participates in the standards-development process to commit to license its SEPs to firms that implement the standard on FRAND terms.

54. Qualcomm has participated in cellular standard setting processes through ETSI, TIA, and ATIS, and has participated in 3GPP and 3GPP2. Qualcomm was a leading developer and proponent of 2G-CDMA standards and held a correspondingly high share of all patents declared essential to 2G-CDMA standards.

55. Qualcomm also participated in 3G-standard setting, though its share of all patents declared essential to 3G-UMTS and 3G-CDMA standards is smaller than its share of 2G-CDMA SEPs.

56. Qualcomm initially advocated a 4G standard known as Ultra-Mobile Broadband, but its advocacy was unsuccessful. Qualcomm later supported LTE standards, which other industry participants had initially proposed. Qualcomm's share of patents declared essential to

LTE standards is much lower than its share of CDMA SEPs, and is roughly equal to the shares of other industry participants. One study of declared LTE SEPs found that Qualcomm had a 13% share of "highly novel" essential LTE patents, compared to 19% for Nokia and 12% for each of Ericsson and Samsung.

57. Qualcomm has committed to ETSI, TIA, ATIS, and other SSOs that it will license its cellular SEPs covering 2G, 3G, and 4G technologies on FRAND terms.

58. Qualcomm has licensed its cellular SEPs to many OEMs. Qualcomm has historically offered licenses to OEMs at a base royalty rate of about 5% of the net selling price of a handset. This rate is significantly higher than those of other licensors of cellular SEPs.

59. Qualcomm refuses to license FRAND-encumbered cellular SEPs to competing suppliers of baseband processors, despite its FRAND commitments.

60. Among SEP holders, Qualcomm garners an outsized share of licensing revenues paid by OEMs. OEMs pay Qualcomm far more in royalties than they pay other SEP licensors, even those with comparable portfolios of cellular SEPs. [redacted]

VI. QUALCOMM USES ITS DOMINANT POSITION IN BASEBAND PROCESSORS TO PRECLUDE OEMS FROM CHALLENGING ITS PREFERRED LICENSE TERMS

61. Qualcomm conditions OEMs' access to its baseband processors on OEMs' acceptance of a license to Qualcomm's cellular SEPs on Qualcomm's preferred terms ("no license-no chips")—including the payment of substantial royalties to Qualcomm on sales of handsets using a baseband processor purchased from Qualcomm's competitors.

62. Qualcomm's baseband processor supply agreements with OEMs implement its "no license-no chips" policy. [redacted]

[redacted]

63. As alleged below, Qualcomm's "no license-no chips" policy is exclusionary. The policy skews Qualcomm's license negotiations with OEMs toward outcomes that raise the all-in prices that OEMs must pay on both Qualcomm baseband processors and those supplied by Qualcomm's competitors. These higher all-in prices reduce demand for competitors' processors and raise handset prices paid by consumers.

A. Qualcomm's "No License-No Chips" Policy Is Anomalous Among Component Suppliers

64. Qualcomm's "no license-no chips" policy sets Qualcomm apart from other suppliers of semiconductor and cellular-equipment components.

65. Other component suppliers rely on component sales, rather than separate patent licenses, to convey to their OEM customers the intellectual property rights that those customers need in order to use or resell the components they have purchased.

66. When a supplier sells a component, such as a baseband processor, to an OEM, that sale, under the doctrine of patent exhaustion, ordinarily terminates any right of the supplier under patent law to control any further use or sale of the component.

67. Thus, when one of Qualcomm's competitors sells a baseband processor to an OEM, the OEM can use or resell the processor without obtaining a separate patent license from the competitor—just as a consumer buying a smartphone does not have to obtain a separate patent license from the seller of the smartphone.

68. More generally, OEMs purchase components from hundreds of suppliers. Among these suppliers, Qualcomm is unique in requiring an OEM, as a condition of sale, to secure a separate patent license requiring royalty payments for handsets that use a competitor's components.

B. Qualcomm's "No License-No Chips" Policy Is Anomalous Among SEP Licensors

69. Qualcomm's "no license-no chips" policy also sets Qualcomm apart from other licensors of SEPs.

70. Ordinarily, if a SEP holder and a potential licensee can neither agree on license terms nor agree to submit those terms to binding arbitration, the SEP holder initiates a patent-infringement suit in which a court resolves issues of patent validity and infringement and, if the court deems a patent valid and infringed, determines and awards reasonable royalties. In some instances, a potential licensee may seek a declaratory judgment addressing the same issues.

71. These suits, when litigated to judgment, have resulted in royalties well below those that SEP holders offered prior to litigation. In one leading case, a SEP holder demanded royalties of between $6 and $8 per gaming console. The district court ultimately determined that the FRAND rate for the SEPs was $0.04 per console. (*Microsoft Corp. v. Motorola, Inc.*, No. C10-1823, 2013 WL 2111217, at *99–101 (W.D. Wash. Apr. 25, 2013).) In another case, a SEP holder demanded royalties that exceeded the selling price of the standard-compliant products. The district court ultimately determined that the cumulative FRAND royalty for the patents at issue was 0.19% of the selling price. (*Realtek Semiconductor Corp. v. LSI Corp.*, No. C-12-3451, 2014 WL 2738226, at *6 (N.D. Cal. June 16, 2014).)

72. A potential licensee's ability to secure a FRAND determination from a court affects SEP-license negotiations. If the potential licensee's costs of going to court are low relative to the value of the royalties and other terms that the parties are negotiating, both parties to the negotiation know that the potential licensee, if offered unreasonable terms, can choose to decline the offer and go to court to seek better terms.

73. Thus, the parties' expectations about the probable outcome of litigation determine the negotiated terms. In this sense, bargaining over royalties and other licensing terms occurs "in the shadow of the law."

74. Negotiated royalties will approximate judicially determined reasonable royalties, however, only if the costs to the prospective licensee of challenging the licensor's royalty demands are low relative to the royalties demanded.

75. As the costs to the potential licensee of going to court rise, this becomes a less attractive option, and thus provides less protection to the potential licensee against unreasonable royalty demands.

C. Qualcomm's "No License-No Chips" Policy Denies OEMs the Opportunity to Challenge Qualcomm's License Terms in Court or to Negotiate Royalties Against the Backdrop of a Potential Challenge

76. Many OEMs regard Qualcomm's royalties as non-FRAND, and absent Qualcomm's "no license-no chips" policy, OEMs would have the ability and incentive to challenge Qualcomm's royalty demands in court.

77. Before a court, OEMs could challenge Qualcomm's royalty demands on several grounds, including by citing evidence that:

a. Qualcomm's royalties are disproportionately high relative to the value contributed by its patented inventions, and often are several times higher than the royalties of other SEP licensors that have made similar technical contributions;

b. Qualcomm has continued to calculate royalties as a percentage of a handset's price, even though handsets today offer a number of features—including cameras, high-resolution touch-screen displays, powerful applications and graphics processors—other than cellular connectivity;

c. Qualcomm's standard royalty rate has not fallen, even though many of Qualcomm's patents related to CDMA technology have expired; and

d. Qualcomm has required OEMs to grant Qualcomm cross-licenses (in some cases, to both SEPs and non-SEPs), often with pass-through rights to other OEMs,

and has failed to adjust its royalty rate to account for the value of OEMs' cross-licensed patents.

78. Qualcomm's "no license-no chips" policy effectively denies OEMs the opportunity to challenge Qualcomm's royalty demands on these and other grounds by dramatically increasing OEMs' costs of going to court.

79. As a result of Qualcomm's policy, the costs that an OEM must incur to challenge Qualcomm's royalties are not simply attorney's fees and other litigation costs, but also include loss of access to Qualcomm's baseband processors.

80. Loss of access to Qualcomm's processors imposes substantial costs on OEMs. Given the dominant position that Qualcomm has had in the supply of CDMA and premium LTE processors, an OEM unable to purchase such processors from Qualcomm would be severely hampered in efforts to design and sell critically important premium-tier phones and phones for use on CDMA networks.

81. Qualcomm has also used its dominant position to negotiate supply terms that leave OEMs vulnerable to a supply disruption in the event of a license dispute. Once an OEM begins testing a handset with a Qualcomm baseband processor, the OEM is effectively "locked in" to that processor, and remains so over the commercial life of the handset.

82. Absent Qualcomm's dominance in CDMA and premium LTE baseband processors, an OEM could protect itself against a supply disruption either (i) by substituting non-Qualcomm processors in new handset designs or (ii) by using the prospect of substitution to negotiate supply terms with Qualcomm that protect the OEM from such a disruption. Qualcomm has used its dominance, however, to obtain [redacted]

83. These supply terms leave an OEM vulnerable to supply disruptions with serious consequences for its business. To avoid these consequences, OEMs have acceded to royalties

and other licensing terms that Qualcomm demanded even when they believed those terms to be non-FRAND.

D. Qualcomm's "No License-No Chips" Policy Compels OEMs to Accept Qualcomm's Preferred License Terms

84. Qualcomm's "no license-no chips" policy has significantly influenced the course of license negotiations with a number of OEMs over the last decade.

85. [redacted]

86. To maintain access to Qualcomm's baseband processors, OEMs have accepted royalty and other license terms that they would not otherwise accept. Specifically, as a result of Qualcomm's "no license-no chips" policy, the royalties that OEMs pay Qualcomm on handsets using non-Qualcomm baseband processors do not reflect OEMs' assessments of patent royalties that a court or neutral arbiter would deem reasonable, including in light of Qualcomm's FRAND commitments. Instead, the royalties that OEMs pay also reflect Qualcomm's dominant position in baseband processors, and include an added increment that OEMs pay Qualcomm to avoid disruption of processor supply.

E. Qualcomm's "No License-No Chips" Policy Has Harmed Competition

87. The incremental royalty that OEMs pay to Qualcomm operates as a "tax" that raises OEMs' costs of using baseband processors supplied by Qualcomm's competitors, reduces demand for competitors' processors, and reduces the ability and incentive of competitors to invest and innovate. The tax thereby maintains Qualcomm's monopoly power and raises handset prices paid by consumers.

88. When evaluating handset designs, OEMs consider the all-in cost of a baseband processor, consisting of both (i) the nominal price of the processor; and (ii) any patent royalties that the OEM must pay to use that processor in a handset.

89. Qualcomm's tax, by raising the latter cost component, increases the all-in cost to an OEM of using a competitor's baseband processor, and thus weakens the competitive constraint on Qualcomm's own all-in baseband processor price.

90. By raising OEMs' all-in costs of using competitors' baseband processors, the tax diminishes OEMs' demand for those processors and reduces competitors' sales and margins.

91. A supplier of CDMA and premium LTE baseband processors must ship substantial volumes of processors and earn significant margins on those shipments to sustain the research and development required to maintain a viable business. Reduced sales and margins resulting from Qualcomm's tax diminish competitors' abilities and incentives to invest and innovate.

92. [redacted] Thus, even a modest reduction in Qualcomm's royalties would have a substantial impact on competitors' margins and abilities and incentives to invest and innovate.

93. Qualcomm's "no license-no chips" policy thereby entrenches Qualcomm's monopoly power in the sale of CDMA and premium LTE baseband processors. The policy also reduces competitors' abilities to invest and innovate in next-generation technologies.

94. By using its baseband processor dominance to tax its competitors, Qualcomm has also limited competitors' ability to discipline the all-in prices that Qualcomm charges for baseband processors. If Qualcomm used its dominance solely to raise the nominal prices of its own processors, those price increases would spur OEMs to seek substitutes and would attract entry and competitive pricing from baseband processor competitors. By contrast, imposing a tax—which OEMs must pay regardless of whether they use baseband processors supplied by

Qualcomm or a Qualcomm competitor—enables Qualcomm to raise the all-in prices of processors without spurring substitution or attracting entry.

95. OEMs likely pass some portion of these higher prices on to consumers in the form of higher handset prices or reduced handset features.

F. Qualcomm Recognizes That Its "No License-No Chips" Policy Distorts OEM Negotiations

96. Qualcomm executives recognize that its "no license-no chips" policy requires OEMs to accept higher royalties than OEMs would otherwise accept.

97. [redacted]

98. [redacted]

99. Separately, in 2015, Qualcomm engaged in an intensive, high-level review of whether to divide Qualcomm's chip and licensing divisions into separate companies, as activist investors wanted.

100. [redacted]

[redacted]

101. In December 2015, Qualcomm's board decided not to break up the company.

G. Qualcomm Has Paid Certain OEMs to Accept Its Preferred Patent License Terms

102. On some occasions, Qualcomm has induced certain OEMs to accept its preferred license terms using both the "stick" of threatened supply disruption and the "carrot" of funds conditioned on the OEM's acceptance of Qualcomm's preferred terms.

103. [redacted]

104. Conditioning such funds on OEMs' acceptance of license terms has helped Qualcomm "close the gap" with OEMs that resist license terms that they regard as unfair, and to maintain high royalties on handsets that use competitors' baseband processors.

105. [redacted]

106. [redacted]

VII. QUALCOMM REFUSES TO LICENSE FRAND-ENCUMBERED SEPS TO ITS COMPETITORS

107. The intellectual property rights policies of relevant SSOs do not restrict who is eligible to receive a FRAND license from a holder of a FRAND-encumbered patent. For

instance, the ETSI intellectual property rights ("IPR") policy requires standard-setting participants to commit to provide "irrevocable licenses on fair, reasonable and non-discriminatory ('FRAND') terms and conditions." The TIA policy requires any SEP holder that wishes to monetize its essential patents to commit to license SEPs "to all applicants under terms and conditions that are reasonable and non-discriminatory . . . to the extent necessary for the practice of . . . the Standard." The ATIS policy requires SEP holders to license SEPs "under reasonable terms and conditions that are demonstrably free of any unfair discrimination" to "applicants desiring to utilize the license for the purpose of implementing the standard."

108. Qualcomm's FRAND commitments require it to license its competitors to make and sell baseband processors using Qualcomm's SEPs.

109. Qualcomm itself recognizes that FRAND commitments are designed to ensure open access to standardized technologies. It argued in a past litigation filing that FRAND commitments "ensure[] that all industry participants will be able to develop, manufacture and sell products compliant with the relevant standard without incurring the risk that patent holders will be able to shut down those operations."

110. Similarly, in its 2016 annual report, Qualcomm stated: "The mobile communications industry generally recognizes that a company seeking to develop, manufacture and/or sell products that use CDMA- and/or LTE-based standards will require a patent license from us."

111. Qualcomm has also insisted on cross-licenses to its licensees' SEPs, for the benefit of Qualcomm's baseband processor business and the customers of that business.

112. In breach of its FRAND commitments, at odds with its recognition that other industry participants "will require" a license to its FRAND-encumbered SEPs, and in tension with its practice of securing patent licenses for the benefit of its own customers, Qualcomm has consistently refused to license its SEPs to competing suppliers of baseband processors. Several of Qualcomm's former and current competitors, including Intel, MediaTek, and Samsung, have

sought SEP licenses from Qualcomm. In each instance, Qualcomm refused to grant a SEP license.

113. A license to Qualcomm's cellular SEPs would provide substantial benefits to other baseband processor suppliers and to their customers. Because Qualcomm refuses to license FRAND-encumbered SEPs to its competitors, these competitors cannot offer OEMs baseband processors that convey the rights to Qualcomm's cellular SEPs.

114. Qualcomm's ability to tax its competitors' sales via patent license terms with OEMs would be limited if it licensed cellular SEPs to its competitors. Qualcomm's competitors, unlike its OEM customers, do not depend on Qualcomm for baseband processor supply. As a result, Qualcomm could not use a threatened disruption of baseband processor supply to skew SEP-license negotiations with its competitors, and the royalties that would emerge from those negotiations would reflect the royalties that a court would deem reasonable.

115. Qualcomm's refusal to license competing manufacturers of baseband processors, in contravention of its FRAND commitments, contributes to its ability to tax its competitors' sales and maintain its monopoly.

VIII. QUALCOMM EXTRACTED BASEBAND PROCESSOR EXCLUSIVITY FROM APPLE IN EXCHANGE FOR PARTIAL ROYALTY RELIEF

116. Like other OEMs, Apple's leverage in negotiations with Qualcomm has been constrained by Apple's need for access to a supply of Qualcomm's CDMA and premium LTE baseband processors.

117. Unlike other OEMs, however, Apple is not a direct Qualcomm licensee. Instead, Apple employs contract manufacturers that are licensed by Qualcomm, and the contract manufacturers pass on the costs of the Qualcomm royalties they pay to Apple.

118. Despite these differences, Apple, like other OEMs, regards Qualcomm's license terms, including the effective royalties charged by Qualcomm under its licenses with Apple's contract manufacturers, as inconsistent with Qualcomm's FRAND commitments.

119. Apple has negotiated with Qualcomm in an effort to reduce the royalty burden that Apple bears through its contract manufacturers. As a result of these negotiations, Apple entered into agreements with Qualcomm in 2007, 2011, and 2013.

120. Under a 2007 agreement, Qualcomm agreed to rebate to Apple royalties that Qualcomm received from Apple's contract manufacturers in excess of a specified per-handset cap. Qualcomm's payment obligations were conditioned upon, among other things, Apple not selling or licensing a handset implementing the WiMax standard, a prospective fourth-generation cellular standard championed by Intel and opposed by Qualcomm.

121. Qualcomm and Apple entered into additional agreements in 2011 and 2013. Under these agreements, Qualcomm provided Apple large lump sum payments that constituted partial relief from Qualcomm royalties. Qualcomm conditioned this relief on Apple's exclusive use of Qualcomm baseband processors in new iPhone and iPad models.

122. Under Qualcomm's 2011 agreement with Apple, Qualcomm agreed to make substantial incentive payments from 2011 through 2016, explicitly conditioned upon Apple using Qualcomm baseband processors exclusively in all new iPhone and iPad models. If, during this period, Apple launched a new handset with a non-Qualcomm baseband processor, it would forfeit all future payments and, depending on when a handset launched, could be required to refund past payments.

123. Qualcomm's 2013 agreements with Apple modified and extended the exclusivity arrangement set forth in the companies' 2011 agreement. Under the 2013 agreements, Qualcomm agreed to rebate to Apple royalties that Qualcomm collected from Apple's contract manufacturers in excess of modified per-handset caps. Qualcomm's obligation to make these rebate payments was subject to, among other terms, a new condition—that Apple neither initiate nor induce others to initiate litigation claiming that Qualcomm had failed to offer a license on FRAND terms. Qualcomm also agreed to make substantial incentive payments in 2013, 2014, 2015, and 2016, explicitly conditioned on Apple sourcing baseband processors for new iPad and

iPhone models exclusively from Qualcomm. If, during this period, Apple launched a new handset with a non-Qualcomm baseband processor, it would forfeit all future incentive payments and, depending on when a handset launched, could be required to refund past incentive payments.

124. In all, Qualcomm's 2011 and 2013 agreements with Apple provided for billions of dollars in conditional rebates from Qualcomm to Apple for baseband processor sales from 2011 to 2016. These conditional rebates effectively penalized Apple's use of any baseband processors supplied by Qualcomm's competitors.

125. Qualcomm's 2011 and 2013 agreements with Apple were, and were intended by Qualcomm to be, *de facto* exclusive deals that were as effective as express purchase requirements and that effectively foreclosed Qualcomm's competitors from gaining baseband processor business at Apple.

a. Apple had at all relevant times an interest in developing and working with additional suppliers of baseband processors.

b. The large penalties that Apple would face under its agreements with Qualcomm if it sourced baseband processors from another baseband supplier prevented Apple from using alternative suppliers during the effective exclusivity period under these agreements.

c. Although a price-cost test is not required to assess the competitive effects of Qualcomm's agreements with Apple, the penalties under these agreements are sufficiently large that, if they were attributed as discounts to the price of Qualcomm baseband processors reasonably contestable by a Qualcomm competitor, the resulting price of Qualcomm processors would be below Qualcomm's cost.

126. As a result of the exclusivity terms in its agreements with Qualcomm, Apple sourced baseband processors exclusively from Qualcomm for all new iPad and iPhone products that it launched over the five-year period from October 2011 until September 2016.

127. [redacted]

128. Qualcomm's exclusive deal with Apple excluded competition from other baseband processor suppliers and harmed competition.

129. Apple is a particularly important OEM from the perspective of a nascent baseband processor supplier and confers benefits on a nascent supplier that make the supplier a stronger contender for other OEMs' business.

a. Apple sells large volumes of premium handsets that require premium LTE baseband processors. These processors ordinarily command higher prices and margins than lower-tier baseband processors. Supplying Apple helps a nascent supplier to achieve a scale of business that confers research-and-development flexibility, among other things.

b. A nascent supplier learns directly from engagement with Apple's engineering teams and this engagement improves the supplier's baseband processor offerings.

c. A nascent supplier achieves technical validation by demonstrating its ability to meet Apple's demanding technical requirements.

d. A nascent supplier engaged by Apple can field-test its processors through global launches that require real-world work with network operators and infrastructure vendors.

e. A nascent supplier obtains a reputational halo effect from selling to Apple. This reputational boost may help a supplier win sales at other OEMs.

130. Qualcomm's exclusive agreements with Apple prevented Qualcomm's competitors from attaining these benefits during the term of the exclusivity period. These agreements also foreclosed a substantial share of the market for premium LTE baseband

processors. The agreements significantly impeded the development of other baseband processor suppliers into effective competitors to Qualcomm.

IX. QUALCOMM'S MONOPOLY AND MARKET POWER

131. Qualcomm has monopoly and market power with respect to CDMA baseband processors and premium LTE baseband processors. Direct evidence of this power includes evidence of Qualcomm's ability to use threatened loss of access to baseband processors to raise the all-in prices of baseband processors, prices that include both nominal processor prices and license fees.

132. Qualcomm's monopoly and market power is also established through circumstantial evidence, including dominant shares of relevant markets with substantial barriers to entry. The relevant markets for the purposes of assessing Qualcomm's monopoly and market power are no broader than the worldwide markets for (i) CDMA baseband processors; and (ii) premium LTE baseband processors. Baseband processors without CDMA functionality are not close enough substitutes to prevent Qualcomm from raising all-in prices for CDMA processors. Similarly, baseband processors without premium LTE functionality are not close enough substitutes to prevent Qualcomm from raising all-in prices for premium LTE processors.

133. Qualcomm has maintained dominant shares of the CDMA and premium LTE baseband processor markets. Each year from at least 2006 through September 2015, Qualcomm's worldwide share of CDMA baseband processor sales exceeded 80%. From at least 2012 through September 2015, Qualcomm's annual share of worldwide premium LTE baseband processor sales has also exceeded 80%.

134. Entry into the markets for CDMA and premium LTE baseband processors is difficult, costly, and time-consuming. Barriers to entry include the need to make substantial, costly, and time-consuming investments in technology research and development; the need to develop ongoing customer relationships with leading OEMs; and certification requirements imposed by network operators. Qualcomm's conduct—including (i) the effective tax that

Qualcomm imposes on the baseband processor sales of competitors and potential competitors, and (ii) Qualcomm's refusal to license to its competitors FRAND-encumbered patents essential to CDMA and LTE standards—is another significant barrier to entry.

135. The relevant geographic market is worldwide. There are no material geographic barriers to competition for baseband processor sales.

X. HARM TO COMPETITION CAUSED BY QUALCOMM'S PRACTICES

136. Qualcomm's anticompetitive practices have excluded competitors, increased consumer prices, and suppressed innovation.

137. Qualcomm's anticompetitive conduct has relaxed the constraints that competitors' entry and expansion would otherwise impose on all-in prices in baseband processor markets.

138. By raising OEMs' all-in costs of using competitors' baseband processors, Qualcomm's conduct has also diminished OEMs' demand for those processors, reduced competitors' sales and margins, and diminished competitors' ability and incentive to invest and innovate.

139. Developments in the cellular baseband processor industry reflect the natural consequences of Qualcomm's conduct. Several former competitors of Qualcomm have sold off or shuttered their baseband processor businesses, unable to achieve the sales volumes and margins needed to sustain a viable business. While Intel and MediaTek have remained in the business, these firms have felt significant pressures, including on baseband processor margins.

140. If Qualcomm's remaining competitors were to exit the business as a result of Qualcomm's anticompetitive conduct, this would have a significant adverse impact on competition in baseband processor markets and on innovation.

141. Competition often drives firms to innovate in next-generation technologies and products. Competing firms often approach research and development efforts differently, increasing the likelihood of successful innovation.

142. Enhanced innovation in mobile technologies would offer substantial consumer benefits, especially as these technologies expand to new applications, including extending mobile connectivity to consumer appliances, vehicles, buildings, and other products (the "Internet of Things"). By suppressing innovation, Qualcomm's anticompetitive practices threaten these benefits.

143. Qualcomm is entitled to compensation when others practice its patented inventions. The prospect of fair compensation induces risk taking that produces innovation and economic growth. Qualcomm's anticompetitive conduct, however, skews its patent licensing negotiations toward outcomes that reflect not only the value of its patents, but also its monopoly power in baseband processors. Absent Qualcomm's unlawful conduct, Qualcomm's patent licenses would include fair, reasonable, and non-discriminatory terms, and would not include elevated royalties that tax Qualcomm's competitors. Absent Qualcomm's unlawful conduct, Qualcomm could obtain fair compensation for its intellectual property, while its competitors could compete based on the merits of their respective offerings.

144. Qualcomm's practices have harmed competition and consumers both within the markets for CDMA and premium LTE baseband processors and in other baseband processor markets in which OEMs pay Qualcomm inflated royalties. These include markets for UMTS-compliant baseband processors and lower-tier LTE baseband processors.

145. Qualcomm's practices are not reasonably necessary to accomplish any significant procompetitive benefits. The anticompetitive harm from those practices outweighs any procompetitive benefits, and Qualcomm could reasonably achieve any procompetitive goals through less restrictive alternatives.

XI. VIOLATION OF THE FTC ACT

146. The FTC re-alleges and incorporates by reference the allegations in all of the paragraphs above.

147. Qualcomm's course of conduct—including (i) conditioning the supply of baseband processors on licenses to FRAND-encumbered patents on Qualcomm's preferred terms; (ii) paying OEMs to accept license terms that impose added costs on OEMs' use of non-Qualcomm baseband processors; (iii) refusing to license FRAND-encumbered patents to baseband processor competitors; and (iv) exclusive dealing with Apple—is anticompetitive and constitutes an unfair method of competition, in violation of Section 5(a) of the FTC Act, 15 U.S.C. § 45(a).

a. Qualcomm has monopolized markets for both CDMA baseband processors and premium LTE baseband processors. At all times relevant to this complaint, Qualcomm has had monopoly power with respect to CDMA baseband processors and premium LTE baseband processors. Qualcomm has maintained its monopoly power through its course of anticompetitive conduct.

b. Qualcomm's license agreements with OEMs, together with terms of its supply and strategic/market-development agreements linked to those license agreements, result from an exercise of Qualcomm's monopoly and market power and are unreasonable restraints of trade.

c. Qualcomm's practices, regardless of whether they constitute monopolization or unreasonable restraints of trade, harm competition and the competitive process and therefore constitute unfair methods of competition in violation of Section 5(a) of the FTC Act.

XII. THE COURT'S POWER TO GRANT RELIEF

148. Section 13(b) of the FTC Act, 15 U.S.C. § 53(b), empowers this Court to issue a permanent injunction against violations of the FTC Act and, in the exercise of its equitable jurisdiction, to order ancillary equitable relief to remedy the injury caused by Qualcomm's violations.

XIII. PRAYER FOR RELIEF

WHEREFORE, the FTC requests that this Court, as authorized by Section 13(b) of the FTC Act, 15 U.S.C. § 53(b) and 15 U.S.C. § 26, and pursuant to its own equitable powers, enter final judgment against Qualcomm, declaring, ordering, and adjudging:

1. That Qualcomm's course of conduct violates Section 5(a) of the FTC Act, 15 U.S.C. § 45(a);

2. That Qualcomm is permanently enjoined from engaging in its unlawful conduct;

3. That Qualcomm is permanently enjoined from engaging in similar and related conduct in the future; and

4. That the Court grant such other equitable relief as the Court finds necessary to redress and prevent recurrence of Qualcomm's violations of Section 5(a) of the FTC Act, 15 U.S.C. § 45(a), as alleged herein.

Dated: January 17, 2017

Respectfully submitted,

GEOFFREY M. GREEN
Assistant Director

MARK J. WOODWARD
Deputy Assistant Director

J. ALEXANDER ANSALDO
DANA F. ABRAHAMSEN
JOSEPH R. BAKER
WESLEY G. CARSON
KENT E. COX
RAJESH S. JAMES
LIN W. KAHN
PHILIP J. KEHL
JENNIFER MILICI
Attorneys

Bureau of Competition

Attorneys for Plaintiff Federal Trade Commission

Of counsel:

DEBORAH FEINSTEIN
Director
Bureau of Competition

DAVID C. SHONKA
Acting General Counsel