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THE “NO LICENSE, NO CHIPS” POLICY: WHEN A REFUSAL TO DEAL BECOMES REASONABLE

Sheng Tong

ABSTRACT

In recent years, the conditional licensing activities of patent holders have come under attack as a tool to create or maintain illegal monopolies. Courts however have generally accepted that a patent holder may grant a conditional license to others. In the context of essential patents that must be used to comply with industry standards, the question becomes whether the licensing practices restrict or harm competition. This article explores the difficulties in identifying and remedying conditional licensing that amounts to anticompetitive refusal to deal. To adjust the licensing behavior of the standard essential patent holders, this article suggests the need to consider antitrust expansion that would limit on patent rights.

I. INTRODUCTION

Consider the following hypothetical scenario: as a computer manufacturer, you decide to expand your business into the smartphone market. Your plan to launch a “Wphone” cell phone includes to outsource the mobile processor, a necessary component of a cellular equipment. The telecommunications industry requires all mobile processors to adopt a standardized patented technology exclusively owned by “Dualcomm,” which also makes standard-compliant mobile processors. You have two potential sources for the mobile processor—Dualcomm and Dualcomm’s licensees, which are also Dualcomm’s rivals. During your initial negotiation with Dualcomm for its supply of patent-covered processors, Dualcomm insists a 50% royalty based on the sales price of each phone sold. You could not afford the royalties. You then approach Dualcomm’s rivals who obtain a license from Dualcomm, and you realize that they are not allowed to deal with you unless you are an existing licensee of Dualcomm and you agree to pay a 50% royalty directly to Dualcomm. Would you reconsider your plan to enter the smartphone market?

A comparable situation happens with Qualcomm's "no license, no chips" licensing practices. As the largest global cellular modem chip supplier, Qualcomm supplies mobile chips, the technology of which is critical in connecting mobile devices to cellular networks, by licensing its patented chip technology to device original equipment manufacturers (OEMs, i.e., the chipmakers' customers who purchase chips for use in devices) in exchange for "disproportionately high" patent licensing fees.¹ Meanwhile, Qualcomm forces its rival chipmakers to sell chips only to the OEMs whose products use Qualcomm's patented technology.² This "no license, no chips" policy successfully becomes the new norm in the semiconductor and allied industries.³ However, this policy is notorious in driving excessive licensing fees and discouraging competition.⁴

Qualcomm's practices triggered the Federal Trade Commission (FTC) scrutiny, and the FTC concluded that the "no license no chips" policy violated antitrust law.⁵ The United States Court of Appeals for the Ninth Circuit disagreed with the FTC.⁶ The Ninth Circuit took a narrow view of competitive harm and focused on effect of the contracts between Qualcomm and its rivals, despite the fact that Qualcomm's licensing practices left its downstream OEMs without meaningful access to alternative sources of modem chips.⁷ Further, the court treated the Standard Essential Patent (SEP),⁸ a unique form of patent that is necessary to implement a standardized technology, the same as a non-SEP under antitrust law, even though Qualcomm's cellular SEPs dominated the cell phone modem industry not through market competition.⁹ Finally, the Ninth Circuit suggested that

1. See *FTC v. Qualcomm Inc.*, 969 F.3d 974, 982–86 (9th Cir. 2020); see also *FTC v. Qualcomm Inc.*, 411 F. Supp. 3d 658 (N.D. Cal. 2019).

2. See *Qualcomm*, 969 F.3d at 995.

3. *Id.* at 984 n5.

4. See *Qualcomm*, 411 F. Supp. 3d at 675–76.

5. See *Qualcomm*, 969 F.3d at 986–87.

6. See *id.*

7. See *id.*

8. More discussion in the background section; *id.* at 982–83, "cellular SEPs are patents on technologies that international standard-setting organizations (SSOs) choose to include in technical standards practiced by each new generation of cellular technology. SSOs are global collaborations of industry participants that establish technical specifications to ensure that products from different manufacturers are compatible with each other. Cellular SEPs are necessary to practice a particular cellular standard. Because SEP holders could prevent industry participants from implementing a standard by selectively refusing to license, SSOs require patent holders to commit to license their SEPs on fair, reasonable, and nondiscriminatory (FRAND) terms before their patents are incorporated into standards" (internal quotation marks omitted).

9. See *Qualcomm*, 969 F.3d at 982–86, 1002–05.

Qualcomm’s rivals and downstream customers could seek remedy, if any, on grounds other than antitrust law.¹⁰

Given Qualcomm’s dominant position in the cellular baseband chipset market and its possession of wireless broadband related SEPs, harmonization of antitrust and patent law is necessary. Both principles influence how firms compete. A significant question is whether those in a higher level of the supply chain, such as a SEP holder which is also a component vendor, should be allowed to leverage its dominant role by gaming the patent system to impede competition. This article will argue that Qualcomm’s “no license, no chips” policy violates antitrust law, and that patent law should be tailored to SEPs. As the mobile broadband is poised to take a leap forward, the Ninth Circuit’s decision in favor of Qualcomm could lock out potential chipmakers in the fifth generation (5G) mobile chipset market and drive up the prices of 5G devices. This is particularly true in a world where the current 5G mobile network devices are backward compatible with earlier-generation technology, to which Qualcomm’s patents remain in force.¹¹

This article begins with an introduction to the natures of Standard Essential Patent (SEPs) and standard-setting organizations (SSOs). Without this background, no sensible discussion of antitrust in relation to the patent system is possible. The article then turns to a discussion of the Ninth Circuit’s opinion on *FTC v. Qualcomm* and advances four claims. Specifically, first, the court should have treated the two sets of licensing policies that separately deal with implementers—rivals and consumers original equipment manufacturers (OEMs)—as a single scheme.¹² While each policy targets a different class of stakeholders in the supply chain, both policies harm competition by imposing unreasonable duties on implementers and keeping out rivals in the market. Had the court recognized the anti-competitive effects, it should have ruled differently. Second, Qualcomm leveraged its monopoly power to gain a competitive advantage in downstream market, through improperly incorporating royalties into the sales price of chips to offset costs.¹³ A separate scenario analysis also reaches the

10. See *id.*

11. See *Qualcomm*, 411 F. Supp. 3d at 687–90, 784 (noting that Qualcomm holds a strong monopoly position in the global market for CDMA modem chips and that not all Qualcomm’s patents have expired).

12. See Gregory J. Werden & Luke M. Froeb, *Why Patent Hold-Up Does Not Violate Antitrust Law*, 27 TEX. INTELL. PROP. L. J. 1, 2 (2019) (“[I]mplementers manufacture or sell standard-compliant components or [end product] devices.”).

13. Although the practice that Qualcomm conditioned on a license with a percentage of sales royalty might constitute patent misuse—a doctrine precludes a patent holder from imposing an-

same conclusion. Third, the implied license doctrine and the exhaustion doctrine would prevent Qualcomm from collecting royalties from licensed OEMs.¹⁴ Fourth, a SEP holder's conduct should be subject to more restrictions because a SEP is not a natural monopoly but rather a legal monopoly that inherently adds market value to the patent.

To solve the problem that a SEP holder likely exploit its market power to harm competition, the article proposes solutions from a perspective on the antitrust and intellectual property interface. Antitrust law could address competitive issues in two ways. First, an SEP holder should be subject to an antitrust duty to provide rivals with exhaustive licenses of SEPs, without a right to demand royalties from downstream customers. Second, a royalty arrangement for SEPs in the form of a fixed fee would be less likely to harm competition. The article further advocates for a patent system that takes into account implementers' exclusive reliance on a patent holder's discretion to license SEP. Two examples may serve to illustrate the point. As a remedy for SEP infringement, awarding a reasonable royalty instead of granting injunctive relief to a SEP holder may give a potential implementer more incentive and bargaining power to negotiate with the patent holder. Another example is to employ a compulsory licensing system with pre-set statutory royalty rates. Finally, the article concludes with a brief summary and suggestions for future research.

II. BACKGROUND

Qualcomm leads the world in producing modem chips that allow cell phones to connect to wireless networks.¹⁵ Qualcomm's modem chip embodies patents as part of the standards for modern wireless broadband systems.¹⁶ In 2017, the FTC sued Qualcomm for illegally maintaining monopoly power in the baseband chip market through the "no license, no chips" policy, under which Qualcomm would not sell baseband modem chips to cell phone makers unless they agreed to pay disproportionately high patent royalties.¹⁷ In May 2019, the District Court for the Northern District of California found that Qualcomm's "no license, no chip" policy violated both Sections 1 and

ticompetitive conditions in a license that would allow the patent holder to exceed the scope of the patent, a discussion of which is beyond the scope of this article.

14. *Id.* at 984, "the initial authorized [or licensed] sale of a patented item terminates all patent rights to that item (citing *Quanta Comput., Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 625 (2008))."

15. See *Qualcomm*, 411 F. Supp. 3d at 674-77; *Qualcomm*, 969 F.3d at 983-84.

16. See *Qualcomm*, 411 F. Supp. 3d at 671-72.

17. See *id.* at 669.

2 of the Sherman Antitrust Act,¹⁸ and ordered Qualcomm to license its SEPs under the patent exhaustive principle to rival chip suppliers.¹⁹ Qualcomm appealed.²⁰ In August 2020, the Ninth Circuit Court of Appeals reversed the district court’s decision, holding that Qualcomm’s “no license, no chips” policy did not violate antitrust law, although it could potentially lead to contract or tort liability.²¹

Standard-essential patents (SEPs) and standard-setting organizations (SSOs)

To understand this case, an introduction to cellular industry standards is necessary. SEPs are patents essential to a standard for a product or technology approved and accepted by standard-setting organizations (SSOs).²² SSOs are industry organizations composed of members who voluntarily choose to participate and serve as a platform for certain industries, including the wireless telecommunications, the Internet, and many electronics industries, to collaborate and develop standards for all participants’ products and technologies.²³ The use of standards adopted by SSOs typically becomes mandatory for producers of standard-compliant products.²⁴ Often, SSOs do not set industrial standards by themselves but instead rely heavily on government agencies and industrial companies to bring forward advanced technologies.²⁵ Standards set by SSOs differ from those set by the

18. See *Refusals to deal as violations of the Federal Antitrust Laws* (15 U.S.C. §§ 1, 2, 13), 41 A.L.R. Fed. 175. (Section 1 of the Sherman Antitrust Act states that “Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal.” In other words, if a contract unreasonably restrains trade or commerce because of its prejudiced public interest by unduly restricting competition or unduly obstructing the course of trade, a court could find a violation of Section 1. Section 2 of the Act forbids monopolizing or attempting to monopolize, providing that “Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony.”).

19. See *Qualcomm*, 969 F.3d at 986–97.

20. See *id.*

21. *Qualcomm*, 969 F.3d at 1003–05.

22. See Marc Rysman & Timothy Simcoe, *Patents and the Performance of Voluntary Standard-Setting Organizations*, 54 MANAGEMENT SCIENCE 1920, 1920–1934 (2008); Committee on Intellectual Property Managements in Standard-Setting Processes, Patent Challenges for Standard-Setting in the Global Economy Lessons from Information and Communications Technology 15 (Keith Maskus et al. eds., 2013) (“Standards are technical specifications that aid the development of certain beneficial features of products and services.”).

23. See *id.*; *Apple Inc. v. Qualcomm Inc.*, No. 3:17-cv-00108-GPC-MDD, 2017 U.S. Dist. LEXIS 145835, at *6 (S.D. Cal. 2017).

24. Soumya P. Patra & KD Raju, *Application of Standard Essential Patents in Automotive Industry: An Analytical Perspective*, J. WORLD INTELLECT. PROP., DOI: 10.1111/jwip.12174.

25. See Roger G Brooks, *SSO Rules, Standardization, and SEP Licensing: Economic Questions from the Trenches*, 9 J. COMPETITION LAW ECON 859-78 (2013); Damien Geradin & Miguel

markets.²⁶ Conferring a SEP on one firm by a SSO deprives the competitors of the SEP holder the ability to establish their own standards that otherwise would have been chosen in the market.²⁷ The SEP holder may exploit market power it acquires and could hurt competition.²⁸ To prevent market power abuse, SSOs generally require a SEP holder to license to their competitors on terms that are fair, reasonable, and non-discriminatory (FRAND).²⁹

Cellular SSOs incorporate certain SEPs in wireless access technology standards to ensure the compatibility of products and product components developed by all industrial participants, such as modem chip suppliers (such as Qualcomm and MediaTek), handset original equipment manufacturers (OEMs such as Apple and Samsung), and carriers (such as AT&T, Verizon, and T-Mobile).³⁰ The cellular standards evolve over generations, including the second-generation (2G), followed by the third-generation (3G), the fourth-generation (4G), and the fifth-generation (5G) standards.³¹

Qualcomm is an vendor of intellectual property and a major manufacturer of baseband processors—the modem chip that enables devices to connect to a cellular network.³² Two of its main revenue segments are Qualcomm CDMA Technologies, which is responsible for selling the company's products and services, and Qualcomm Technology Licensing, which is the company's technology licensing division.³³ Qualcomm obtains from SSOs approval of SEPs on modem chips technologies that must be used in cell phones and other electronic devices using cellular networks.³⁴ Qualcomm's cellular SEPs are necessary to the practice of the 3G code division multiple access (CDMA) standards and the 4G long-term evolution (LTE) standards.³⁵ Qualcomm also dominates the new 5G baseband market with

Rato, *Can Standard-Setting Lead to Exploitative Abuse? A Dissonant View on Patent Hold-up, Royalty Stacking and the Meaning of FRAND*, 3 EUR. COMPET. J. 101 (2007).

26. See Committee on Intellectual Property Management in Standard-Setting Processes, Patent Challenges for Standard-Setting in the Global Economy Lessons from Information and Communications Technology 55 (Keith Maskus et al. eds., 2013).

27. See Committee on Intellectual Property Management in Standard-Setting Processes, Patent Challenges for Standard-Setting in the Global Economy Lessons from Information and Communications Technology 16 (Keith Maskus et al. eds., 2013).

28. See *id.*

29. See *Qualcomm*, 411 F. Supp. 3d at 671–72.

30. See *id.* at 669–70.

31. See *id.*

32. See *id.*; Qualcomm, <http://qualcomm.com/company/about> (last visited Feb. 10, 2021).

33. See *Qualcomm*, 411 F. Supp. 3d at 669–70.

34. See *id.*

35. See *Qualcomm*, 411 F. Supp. 3d at 802, 816–18; *In re Qualcomm Antitrust Litig.*, 2018 U.S. Dist. LEXIS 148523, at *16-17 (N.D. Cal. Aug. 29, 2018) (The CDMA standard, a cellular com-

more than fifty percent share.³⁶ In the United States, four major cellular carriers (AT&T, Sprint, T-Mobile, and Verizon) mainly, if not exclusively, use 3G CDMA and 4G LTE technology for cellular services.³⁷ In other words, if a cellular OEM seeks to sell mobile phones in the United States, it must purchase cellular modems directly from either Qualcomm or Qualcomm’s competitors whose modems incorporate Qualcomm’s SEP technologies.³⁸

Qualcomm’s licensing policies toward implementers—OEMs and rivals

Qualcomm has a dominant market position in the global market for CDMA modem chips, where its market shares have been over seventy-five percent since 2016.³⁹ Similarly, Qualcomm holds a strong market position in the supply of LTE modem chips with a global market share of approximately sixty-five percent since 2014.⁴⁰ Its “no license, no chips” licensing practices enable Qualcomm to maintain its dominance in the cellular modem industry, even with the presence of other leading companies—Intel and MediaTek.⁴¹

Qualcomm’s licensing policies provide two groups of implementers with various terms, based on the implementer’s position in the supply chain.⁴² One policy is for downstream customers (i.e., the device original equipment manufacturers (OEMs)) and known as the “no license,

munication technology developed by Qualcomm, is one of the major cellular communication standards of the 2G and 3G technologies. The leading 2G standards include the 2G-CDMA and the Global System for Mobile Communications standard (“GSM”). In the United States, AT&T and T-Mobile operated on GSM cellular networks, while Verizon and Sprint operated on 2G-CDMA networks. In the 3G era, carriers using GSM upgraded to the Universal Mobile Telecommunications System (“UMTS”) standards, while the other carriers migrated to 3G-CDMA standards. In late 2009, the 4G cellular communications standards were introduced. The leading 4G standard is Long-Term Evolution (“LTE”). Most major network operators worldwide have deployed LTE networks).

36. *Strategy Analytics: 5G Drives 20 Percent Growth in Cellular Basebands in Q2 2020*, Strategy Analytics (Sep. 30, 2020), <https://news.strategyanalytics.com/press-releases/press-release-details/2020/Strategy-Analytics-5G-Drives-20-Percent-Growth-in-Cellular-Basebands-in-Q2-2020/default.aspx> (stating that “Qualcomm Maintains Lead despite Intense 5G Competition . . . The company continued its 5G baseband momentum in Q2 2020 and captured just over 50 percent volume share in the highly competitive 5G baseband market.”).

37. See *Qualcomm*, 411 F. Supp. 3d at 670.

38. There are other 3G technologies adopted by cellular carriers in countries other than the United States. For example, in China, Time Division-Synchronous CDMA (TD-SCDMA), a technology based on the GSM communication standard, is the main national standard of 3G mobile telecommunication. See *Qualcomm*, 411 F. Supp. 3d at 742.

39. See *Qualcomm*, 411 F. Supp. 3d at 685–89.

40. See *id.*

41. See *Qualcomm*, 411 F. Supp. 3d at 685–89.

42. See *id.* at 672–76.

no chips” policy and the other is toward rival chip manufacturers and referred to as the “no license, no problem” policy.⁴³ With respect to the device OEMs such as Apple and Nokia, Qualcomm requires them to execute a licensing agreement before agreeing to supply any cellular modem chips, regardless whether the OEMs want to produce any modem chips.⁴⁴ The agreement further imposes a duty on OEMs to pay royalties for all cell phones that the OEM ships, even for those that use chips made by Qualcomm’s rivals.⁴⁵ On the other hand, Qualcomm treats rival chipmakers such as Intel, MediaTek, and Samsung differently from OEMs.⁴⁶ Qualcomm declines to expressly grant rivals a license, but instead lures them into Application Specific Integrated Circuit (ASIC) agreements, under which rivals can produce SEP-covered chips without a license if they agree to sell to only licensed OEMs.⁴⁷ As such, Qualcomm may collect patent licensing fees in the form of royalties on any cell phone using Qualcomm’s cellular modem SEPs.⁴⁸

In the telecommunications industry, a royalty as a form of the licensing fee is typically based on a percentage of sales of products embodying the patented technology.⁴⁹ Qualcomm made more money from royalties on cell phones, whose prices ranged from a few hundred to more than a thousand dollars, than they would have from royalties attached only to modem chips.⁵⁰ It is unusual to require a purchaser of a patent-practicing unit (such as a mobile chip) to pay royalties; rather, royalties are typically negotiated and paid by producers of the patent-practicing unit.⁵¹ Qualcomm broadened the meaning

43. *See id.*

44. *See id.* at 698–745.

45. *See id.*

46. *See id.*

47. *See id.* at 795 (Qualcomm also refuses to license its rivals but enters ASIC Agreements with rivals. The ASIC agreements restrict the rivals to sell modems to only Qualcomm licensees. The ASIC Agreements further require rivals to report to Qualcomm quantities of modem chips sold. Thus, Qualcomm controls and monitors to whom its rivals sell modem chips.); *see also*, *Subscriber Unit License Agreement*, U.S. Securities and Exchange Commission, FTC, <https://www.sec.gov/Archives/edgar/data/1092492/000119312504140764/dex103.htm> (last visited Oct 26, 2020) (“CDMA ASICs means Qualcomm’s mobile station modem (MSM) CDMA application specific integrated circuit, and any revision, generation, modifications or integration to or of the MSM, purchased by licensees from Qualcomm.”).

48. *See generally Qualcomm*, 411 F. Supp. 3d; *Qualcomm*, 969 F.3d.

49. *See Qualcomm*, 411 F. Supp. 3d at 691–773.

50. *Id.*; this leads to a debate on whether royalties of a patented technology should be based on the component or the downstream device products that incorporate the component; on the controversy of royalty base in Qualcomm’s licensing practices, *see infra* Section III.B.

51. *See* Mark A. Lemley et al., *Amicus Brief of Law and Economics Scholars Supporting the Federal Trade Commission in FTC v. Qualcomm*, 19 AMICUS CASE 19-16122 (2019); Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 (2006).

of “royalty” to include any cost of SEP-covered chips, such as research and development (R&D) expenses.⁵² As a result, Qualcomm has managed to mitigate partial operating expenses.⁵³

How the patent exhaustion doctrine has shaped Qualcomm’s licensing practices to control downstream activity

Historically, Qualcomm licensed its patent portfolio to its rivals under “non-exhaustive” licenses.⁵⁴ Those licenses provided that Qualcomm’s rights of SEPs were not exhausted upon its rivals’ sale of patent-covered chipsets to purchasers.⁵⁵

However, the Supreme Court in *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617 (2008), rejected the non-exhaustive arrangement, noting that, under the doctrine of patent exhaustion, once the patent holder or its authorized licensee initially sells a patent-covered product all patent rights to that item are exhausted.⁵⁶ In *Quanta*, LG Electronics (LG) owned computer technology patents and licensed several patents to Intel.⁵⁷ The licensing contract obligated Intel to give its customers written notice that the so-called “non-exhaustive” license did not extend to a product combining an Intel product with a non-Intel product.⁵⁸ *Quanta*, as Intel’s customer, purchased products covered by LG’s patents and combined Intel products with non-Intel components.⁵⁹ LG sued *Quanta* for patent infringement.⁶⁰ The Court found that the “non-exhaustive” license cannot override the patent exhaustion doctrine, under which a patent holder extinguishes its patent rights after the first sale of the patented product.⁶¹

A few years after *Quanta*, in *Impression Prods. v. Lexmark Int’l, Inc.*, 137 S. Ct. 1523, 1525 (2017), the Court reaffirmed the patent exhaustion doctrine, under which, once a patent owner has sold a patented product for the first time “whether on its own or through a licensee,” that product is no longer within the patentee’s patent right such that the purchaser, with the rights and benefits that come along

52. *See id.*

53. *See supra* note 25.

54. *Qualcomm*, 969 F.3d at 984 n7 (9th Cir. 2020).

55. *Id.*

56. *See Quanta Comput., Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 630 (2008); *see also* 35 U.S.C. § 154(a) (stating that the Patent Act grants a patent holder a right to exclude others from making, using, offering for sale, or selling patentees’ inventions.).

57. *Quanta Comput.*, 553 U.S. at 617–20.

58. *Id.*

59. *Id.*

60. *Id.*

61. *Id.* at 638.

with ownership, can use, sell, or license it.⁶² The *Lexmark* court further held that, when a contractual obligation is imposed on the purchaser in subsequent sales, the patent owner's patent right nevertheless exhausts.⁶³ In *Lexmark*, the patentee imposed an express no-resale obligation on the buyer of the patent-covered products to resell the used products only to the patentee.⁶⁴ The Court found the accused patent infringer, who violated the no-resale restriction by purchasing the used products, modifying, and reselling the modified products, had no obligation to follow the license agreement because the patent right had been exhausted in the first sale.⁶⁵

However, the *Lexmark* court distinguished patent exhaustion based on a sale from patent exhaustion based on a license because a license does not pass title to a product.⁶⁶ When a patentee licenses a manufacturer who complies with the post-sale restrictions in the license agreement sells a product," the sale is authorized by the patentee and subject to exhaustion.⁶⁷ On contrary, if the licensee manufacturer breaches the license such as by "knowingly mak[ing] sales outside the scope of its license," no authorized sale occurs and that unauthorized sale does not trigger exhaustion.⁶⁸ Under *Quanta* when a licensee who enters a licensing agreement with the patentee produces and sells a patented product, the patentee's rights exhausts; the patentee cannot enforce the no-resale restrictions on the downstream buyers regarding how they may use the patented product.⁶⁹ The *Lexmark* decision provides with a patentee a viable way to restrict the non-licensee purchasers' rights in subsequent resales *via* contract.⁷⁰

Qualcomm was aware of the potential applicability of patent exhaustion, under which a license to rivals would exhaust its patent rights such that it could not assert any claim for patent infringement against the downstream purchaser OEMs.⁷¹ Attempting to circumvent patent exhaustion, Qualcomm created the "no license, no chips" policy as an alternative solution. Qualcomm artfully turned the facially "exhaustive licenses" into licenses that are non-exhaustive in nature, through the "ASIC Agreements" with rival chipmakers like Intel to

62. *Impression Prods. v. Lexmark Int'l, Inc.*, 137 S. Ct. 1523, 1525 (2017).

63. *Id.*

64. *Id.* at 1523.

65. *Impression Prods.*, 137 S. Ct. at 1525.

66. *Id.* at 1534.

67. *Id.* at 1535.

68. *Id.* at 1534-35 (validating the field of use restrictions in a patent license in *General Talking Pictures v. Western Elec.*, 305 U.S. 124 (1938)).

69. *Quanta Comput., Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 630 (2008).

70. *Impression Prods.*, 137 S. Ct. at 1525, 1538.

71. *See Qualcomm*, 411 F. Supp.3d at 698.

restrict resale of products that embodied its SEPs, coupled with the licensing agreements with OEMs to collect downstream royalties.⁷²

An overview of FTC v. Qualcomm Inc.

In 2019 the FTC sued Qualcomm for violating both Sections 1 and 2 of the Sherman Act and Section 5 of the FTC Act.⁷³ Section 1 of the Sherman Antitrust Act prohibits agreements in restraint of trade.⁷⁴ Acts such as price fixing, refusals to deal, bid rigging are “*per se*” unreasonable restraint of trade.⁷⁵ The parties involved might be competitors or customers, or both.⁷⁶ Section 2 of the Sherman Act forbids monopolizing or attempting to monopolize.⁷⁷ Violations of sections 1 and 2 of the Sherman Act are likely within the unfair trade practice prohibitions of the Federal Trade Commission Act.⁷⁸ The district court granted partial summary judgment for the FTC.⁷⁹ The FTC prevailed in the subsequent bench trial.⁸⁰

On appeal, the Ninth Circuit reversed the lower court’s decision, finding that Qualcomm’s licensing policies were neutral and that Qualcomm’s practices were hypercompetitive rather than anticompetitive.⁸¹ Specifically, the Ninth Circuit found that, first, Qualcomm treated all rival chipmakers in the same way by offering them similar ASIC agreements, which imposed no anticompetitive surcharges.⁸² The court concluded that an unwillingness to license was a contract issue for which the rivals may seek remedies for FRAND violations, while biases toward all rivals did not constitute an antitrust violation.⁸³

Moreover, the Ninth Circuit concluded that the contractual arrangement between Qualcomm and the OEMs was beyond the scope of antitrust law,⁸⁴ citing *Verizon Communs., Inc. v. Law Offices of Curtis v. Trinko, LLP*, where an alleged breach of the duty of a local

72. See *Qualcomm*, 411 F. Supp. 3d 658, 697–98.

73. See *id.*

74. See *supra* note 18.

75. See *id.*

76. See *id.*

77. Antitrust law does not exclude the patent rights as a monopoly to stop others using the claimed patent, but prohibits a patent holder from engaging in activities that could have prohibited certain conduct of a competitor. See, Michael A. Carrier, *Unraveling the Patent-antitrust Paradox*, 150 UNIV. PA. LAW REV. 761, 761–854 (2002).

78. 15 U.S.C. § 45(a); *FTC v. Cement Inst.*, 333 U.S. 683, 694 (1948).

79. *Qualcomm*, 411 F. Supp. at 659.

80. *Id.*

81. See *FTC v. Qualcomm Inc.*, 969 F.3d 974, 1003–05 (9th Cir. 2020).

82. See *id.*

83. See *id.* at 1005.

84. See *id.*

exchange carrier under the Telecommunications Act was not a violation of Section 2 of the Sherman Act. In *Trinko*, Verizon allegedly failed to assist its rival AT&T in discouraging the local customers from becoming or retaining customers of its rival.⁸⁵ Plaintiff asserted that the refusal to assist violated Verizon's obligation to share network with competitors under the Telecommunications Act of 1996 and thus constituted anticompetitive conduct under Section 2 of the Sherman Act.⁸⁶ The *Trinko* court disagreed, noting that the Sherman Act "does not restrict the right of [a] trader or manufacturer engaged in an entirely private business freely to exercise his own independent discretion as to the parties with whom he will deal."⁸⁷ The monopoly power possessed by Verizon is an important element of the free-market system.⁸⁸ A monopolist's mere unwillingness to deal with rivals is not subject to the Sherman Act, absent circumstances where the refusal suggests an anticompetitive intent of the monopolist.⁸⁹ In part relying on *Trinko*, the Ninth Circuit similarly found that Qualcomm's unwillingness to license SEPs to rivals was not anticompetitive conduct because it was a monopolist's legitimate discretion in the free market.⁹⁰ Finally, the Ninth Circuit did not comment on the fairness of the contract or possible violation of FRAND terms, but noted that breach of FRAND obligations lies in contract or tort law, not antitrust law.⁹¹

As a practical matter, the Ninth Circuit's narrow interpretation of antitrust obligations in *Qualcomm* represents a significant victory for

85. *Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2004) (*Trinko*). *Trinko* was a class action on behalf of customers of AT&T in its capacity as a local exchange carrier competing with Verizon, the incumbent monopoly local service provider. An AT&T customer received online service owned by Verizon, which AT&T paid a fee to use. The customer sued Verizon for discriminating AT&T customers by providing inferior network service compared with its own customers under Section 2 of the Sherman Act. The Court found that Verizon properly practiced monopoly because Verizon's monopoly comes "from growth or development as a consequence of a superior product" instead of from "the willful acquisition or maintenance of that [monopoly] power" and that Verizon has no duty to share its network with competitors. Possession or exercise of monopoly power is not illegal *per se*, absent a showing of anticompetitive conduct.

86. *See id.*

87. *See id.*; *see also United States v. Colgate & Co.*, 250 U.S. 300, 307 (1919).

88. *See Trinko*, 540 U.S. at 402-407.

89. *See id.*; A monopolist's refusal to assist rivals is not *per se* violation of the Sherman Act. For example, conducts that entail a sacrifice of short-term profits in order to maintain long-term monopoly could be exclusionary and potentially unlawful under antitrust law. *See also Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 608, 610-11 (1985) (noting that Ski Co.'s conduct in terminating of a voluntary deal is at or near the outer boundary of Section 2 of Sherman Act liability because "Ski Co. was not motivated by efficiency concerns and that it was willing to sacrifice short-run benefits and consumer goodwill in exchange for a perceived long-run impact on its smaller rival.").

90. *FTC v. Qualcomm Inc.*, 969 F.3d 974, 1003-05 (9th Cir. 2020).

91. *Id.* at 982.

the SEP holders because it would render upstream manufacturers immune from antitrust suits for a wide range of anticompetitive practices. First, a SEP holder, which also sells products incorporating the SEP, has no duty under antitrust law to license patents to competing product suppliers; second, a breach of FRAND obligations is not an antitrust issue; third, offering to deal at excessive royalties charged by a SEP holder is not an antitrust issue neither; fourth, a SEP holder can refuse to supply standard-compliant products using technologies covered by its SEPs to potential downstream customers who are unwilling to take a license of the SEPs.⁹² In other words, whether a SEP holder's refusal to deal with its rivals is "FRAND" and how a SEP holder treats its customers are beyond the reach of antitrust law, even when the SEP holder acts both as an holder of standard essential patents and as a supplier of the patented technologies.

Case law development after FTC v. Qualcomm, Inc.

Shortly after the Ninth Circuit's opinion in *Qualcomm*, case law has illustrated the impact of the decision of *Qualcomm* on upstream suppliers in the high-tech industry who seek to control the downstream market via the use of market dominance. In *Epic Games v. Apple Inc.*, the court applied *Qualcomm* with regard to the relationship between an upstream supplier and a downstream consumer and denied Epic Games' request for a preliminary injunction against Apple.⁹³ The preliminary injunction would have forced Apple to reinstate Fortnite (a popular online game developed by Epic Games) to Apple's App Store.⁹⁴ Apple's App Store ecosystem, "facilitat[ing] over half a trillion dollars" in 2019, is a digital platform that allows third-party software developers, subject to Apple's approval, to provide software to iPhone or iPad users.⁹⁵ The App Store collected from software developers thirty percent of sales revenue as surcharge fees.⁹⁶ When Epic Games introduced a direct payment system in the game Fortnite in violation of the developer terms of use imposed by Apple, Apple

92. *See id.*

93. *Epic Games v. Apple Inc.*, No. 4:20-cv-05640-YGR, 2020 U.S. Dist. LEXIS 188668, at *64-65 (N.D. Cal. 2020).

94. *Id.*

95. *See Apple's App Store ecosystem facilitated over half a trillion dollars in commerce in 2019*, APPLE, <https://nr.apple.com/d2C3U314m2> (last visited Nov. 26, 2020); *Apple Inc. v. Pepper*, 139 S. Ct. 1514, 1519 (2019). In August 2021, Apple announced changes to the App Store, including allowing third-party developers "to share purchase options with users outside of their iOS app." *See Apple, US developers agree to App Store updates that will support businesses and maintain a great experience for users*, Press Release, Aug. 26, 2021, available at <https://www.apple.com/newsroom/2021/08/apple-us-developers-agree-to-app-store-updates/> —

96. *Apple Inc. v. Pepper*, 139 S. Ct. 1514, 1519 (2019).

removed Fortnite from App Store and the dispute arises.⁹⁷ Epic Games asserted that Apple abused monopoly power through anti-competitive acts such as imposing technical and contractual restrictions on its system, in drawing an analogy to a scenario where “a consumer buying the QuickBooks [from Best Buy must] pay Best Buy” each time when using the software.⁹⁸

Following *Qualcomm*, the court concluded that Apple’s contractual restrictions did not “cause antitrust injury” because the App Store payment system was an inseparable part of Apple’s digit marketplace, a mere “method of business.”⁹⁹ In other words, in a high-tech business Apple has the right to require its customers, including a software developer Epic Games,¹⁰⁰ to agree to terms of use. Thus, a requirement to perform contractual obligations is the result of Apple’s monopoly power, not a tool that Apple uses to obtain or maintain the monopoly.¹⁰¹ The court also found the restrictions were contractual in nature, the use of which did not involve unfair competition.¹⁰²

Philips N. Am. LLC v. Summit Imaging Inc. again illustrates the impact on the Ninth Circuit’s narrow interpretation of the reach of antitrust law in *Qualcomm*: antitrust law does not impose a general duty on a monopolist to deal with rivals unless the monopolist unilaterally terminates a voluntary and profitable course of dealing.¹⁰³ Summit Imaging (Summit), a medical device repair company, was sued by Philips after Summit’s repair methods hacked Philips ultrasound systems and made copies of modified Philips ultrasound system.¹⁰⁴ Summit countered that Philips had an antitrust duty to deal but refused to give Summit and other competitors access to its diagnostic software, and that the refusal to deal violated Section 2 of the Sherman Act.¹⁰⁵ In *Qualcomm*, when the rivals could use Qualcomm’s SEPs upon agreeing to sell only to licensed OEMs, Qualcomm did not terminate a voluntary and profitable course of dealing.¹⁰⁶ The *Summit* court found that Summit failed to establish that Philips unilaterally termi-

97. *Epic Games*, 2020 U.S. Dist. LEXIS at *57–58.

98. *Id.* at *40–41 n.22.

99. *Id.* at *40.

100. *Id.* at *64–65.

101. See Sections 1 & 2 of the Sherman Act.

102. See *Epic Games*, 2020 U.S. Dist. LEXIS., at *46–48.

103. See *Philips N. Am., LLC v. Summit Imaging Inc.*, No. C19-1745JLR, 2020 WL 6741966, at *6 (W.D. Wash. 2020).

104. *Id.* at *1–2.

105. *Id.*

106. *Qualcomm*, 969 F.3d at 1005.

nated the dealing where Philips never allowed Summit to access the Philip’s software.¹⁰⁷

III. ANALYSIS

Qualcomm’s licensing strategy plays a key part in the interface between patent rights and antitrust protections. The analysis section will discuss Qualcomm’s practices by looking through the lens of antitrust law and patent law.¹⁰⁸ Antitrust and intellectual property go hand in hand, especially given the dependence of growth on innovation.¹⁰⁹ From an antitrust perspective, this section analyzes whether the Ninth Circuit should treat Qualcomm’s rivals and downstream customers differently in connection with the licensing analysis, whether Qualcomm’s “no license, no chips” policy restricted Qualcomm’s rivals from engaging in free-market competition, and whether Qualcomm was entitled to licensing fees from OEMs for products that incorporate chips supplied by Qualcomm’s rivals. This part argues that the separate licensing strategy toward rivals and consumers, if taken together, is anticompetitive. On the other hand, Qualcomm’s licensing practices as an effort to unlawfully extend the scope of patent monopoly do not align with the patent system’s purpose of promoting competition.¹¹⁰ The OEMs and the rivals could assert that the implied

107. *Summit*, at *6.

108. In *Motion Picture Patents Co. v. Universal Film Manufacturing Co.*, 243 U.S. 502, 514 (1917), the Court rejected the argument that “since the patentee may withhold his patent altogether from public use he must logically and necessarily be permitted to impose any conditions which he choose upon any use which he may allow of it,” because “the defect in this thinking springs from the substituting of inference and argument for the language of the statute and from failure to distinguish between the rights which are given to the inventor by the patent law and which he may assert against all the world through an infringement proceeding, and rights which he may create for himself by private contract which, however, are subject to the rules of general as distinguished from those of the patent law.”

109. See, e.g., *Intergraph Corp. v. Intel Corp.*, 195 F.3d 1346, 1362 (Fed. Cir. 1999) (stating that “[t]he patent and antitrust laws are complementary, the patent system serving to encourage invention and the bringing of new products to market by adjusting investment-based risk, and the antitrust laws serving to foster industrial competition.”); Christine A. Verney, *Promoting Innovation Through Patent and Antitrust Law and Policy*, May 26, 2010, <https://www.justice.gov/atr/speech/promoting-innovation-through-patent-and-antitrust-law-and-policy> (“Both [patent law and antitrust law] promote dynamic efficiency: that is, a system of property rights and market rules that create appropriate incentives for invention, innovation, and risk taking—delivering the greatest returns for society not just for today, but tomorrow as well.”); *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004) (stating that the opportunity to acquire monopoly power and charge monopoly prices is “[what] induces risk taking that produces innovation and economic growth.”).

110. Daniel F. Spulber, *How Patents Provide the Foundation of the Market for Inventions*, at 2 https://www.law.northwestern.edu/research-faculty/clbe/events/roundtable/documents/Spulber_Patents_and_the_Market_for_Inventions.pdf (describing one advantage of patents as “stimulating competition” and summarizing criticism of the patent system).

license exhausts Qualcomm's patent rights. As a result, the OEMs would no longer need to pay royalties on behalf of Qualcomm's rivals.

The anticompetitive effects of the "no license, no chips" policy in its totality

The Sherman Antitrust Act that is designed to promote consumer welfare in terms of price, quality, choice, and innovation through a free, competitive market where the economic resources are allocated to the best uses.¹¹¹ Conduct of a single firm under the Sherman Act is unlawful only when it threatens actual monopolization; mere restraint of trade may not be an antitrust violation because it is common in the free market for a vigorous competitor to engage in restraint of trade to attract unsatisfied customers from an inefficient rival.¹¹² Only unreasonable restraint of trade can trigger liability under the Sherman Act.¹¹³

Section 1 of the Sherman Act prohibits contracts, combinations, and conspiracies in restraint of trade, such as horizontal restraint agreements—the agreements among the competitors at the same level of market structure.¹¹⁴ These agreements generally serve no purpose other than to stifle competition.¹¹⁵ Following this rationale, the Ninth Circuit found that collecting royalties based on sales of chips was purely a contractual obligation because Qualcomm and OEMs were not competitors.¹¹⁶

Furthermore, in Section 1 of the Sherman Act, the use of the phrase "every contract" rather than "a series of contracts" suggests that a contract should be individually assessed and judged.¹¹⁷ Consequently,

111. See Federal Trade Commission, Guide to Antitrust Laws, <https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws>

112. See, e.g., Section 1 of the Sherman Act prohibits unreasonable restraint of trade. 15 U.S.C. § 1 (2012). However, simple refusal to deal without showing of unreasonable restraint of trade does not the Sherman Act; *United States v. Colgate & Co.*, 250 U.S. 300 (1919).

113. See *supra* note 18. The reasonableness inquiry focuses on the market power and market structure to assess the combination's actual effect.

114. § 30:5. Relevant antitrust legislation—The Sherman Act—Section 1, Baldwin's Oh. Prac. Tort L. § 30:5 (2d ed.)

115. See *id.*

116. See *FTC v. Qualcomm Inc.*, 969 F.3d 974, 995–97 (9th Cir. 2020).

117. The Sherman Act focuses on an isolated contract in combination of other means other than contract. Some state statutes take a different approach. For example, the Connecticut Code states that "Every contract, *combination*, or conspiracy in restraint of any part of trade or commerce is unlawful." Particularly, it provides that "An initial contract might not violate the antitrust laws at the time of its formation but arguably could become violative of those same laws when one of the contracting parties later gains unlawful dominance and control over a market as a result of a series of contracts or acquisitions." (emphasis added). See *supra* note 18 (Section 1 of the Sherman Act states that "Every contract, combination in the form of trust or otherwise, or

the Ninth Circuit separately considered Qualcomm's licensing policies, namely one agreement with the OEMs and the other one with rivals. The court found that the contract with the OEMs did not present an antitrust issue for the reason stated earlier, and that the contracts with the competitors did not violate antitrust law because all competitors received the same treatment.¹¹⁸

It is questionable for the Ninth Circuit to read each contract in isolation. Qualcomm's agreement with OEMs and the agreement with rivals not just exemplify Qualcomm's licensing activities, they also illustrate a wider phenomenon, which is an intent to reduce competition in order to maintain monopoly. As such, the court missed the key issue that the analysis of Qualcomm's licensing practices should be based on whether the totality of the licensing policy, in combining and treating a series of contracts as a whole, discourages competition.¹¹⁹ The court's approach invites market participants, such as an upstream supplier, to formulate separate anti-competitive agreements with respect to component manufacturers and end-device manufacturers, which is against the fundamental purpose of antitrust law to encourage vigorous competition.¹²⁰ To evaluate the overall impact of Qualcomm's licensing activities, one must view relevant contracts as a whole rather than separately.¹²¹ Thus, a proper inquiry should be whether one contract's restrictions on party A's behavior can materially impact party B who is bounded by another contract, although party A and party B are not directly bounded by the same or a similar contract. A broader reasonableness test to determine whether a series of contracts violate antitrust law should be employed: whether those

conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal."); CT Gen Stat § 35-26 (2015).

118. See *Qualcomm*, 969 F.3d at 995-97, 1005.

119. Elizabeth I. Winston, *Sowing the Seeds of Protection*, 2014 WIS. L. REV. 445 (2014), 131 ("[A]ll licenses must be examined carefully because one legitimate purpose behind a license does not mean that the license's primary purpose is legitimate.").

120. See Jonathan B. Baker, *Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation*, 74 ANTITRUST LAW J. 575 (2007); Keith N. Hylton & Fei Deng, *Antitrust Around the World: An Empirical Analysis of the Scope of Competition Laws and Their Effects*, 74 ANTITRUST LAW J. 271 (2007): 271-341.

121. Many cases involve multiply contracts between the licensors and licensees. But historically no court had directly considered the licensing to rivals and downstream OEMs before *Qualcomm*. See Roy Weinstein & John D. Culbertson, *How US Antitrust Can Be on Target: The Brand-Name Prescription Drug Litigation*, 4 INT. J. ECON. BUS. 257, 257-264 (1997) (For example, drug manufacturers of brand-name pharmaceuticals employed a pricing scheme based on a series of agreements that the manufacturers provided a discount to hospitals, HMOs, and several other entities, except retail pharmacies).

contracts “unreasonably” restrain trade.¹²² It is not uncommon for courts to find antitrust violation under a cumulative assessment of a series of contracts but might refuse to find a violation if each contract is separately assessed.¹²³

Moreover, the court should have given proper attention to the likelihood of consumer harm and the anticompetitive intent, considering the indispensable nature of SEPs, upon which Qualcomm relied to acquire or maintain dominance.¹²⁴ Access to Qualcomm’s cellular communications SEPs is essential for implementers to function.¹²⁵ Cellular communications SEPs are granted by SSOs in order to reduce the cost associated with the standardization process from unnecessary competition among different suppliers and to meet interoperability needs.¹²⁶ Ideally, standardization can increase competition because interoperability could increase the number of sellers of standard-compliant products.¹²⁷ SEP holders can benefit from standardization in ways ranging from increased sales volume to additional profits from royalties based on the price of downstream end-user products.¹²⁸

In light of the prospect of supracompetitive returns, the FTC presumes that SEP holders would abuse their unilateral monopoly

122. See Baddia J. Rashid, *Antitrust Aspects of Exclusive Dealing Arrangements*, 40 GEO. L. J. 241, 253 (1951).

123. Christopher R. Leslie, *Antitrust Law as Public Interest Law*, 2 UC IRVINE L. REV. 885 (2012) (Vendor A may negotiate with consumer A for a higher milk price in region A and vendor B may negotiate with consumer B for a lower milk price in another region. Consequently, the milk in the market may relocate to the lower price region.); *Med. Ctr. at Elizabeth Place, LLC v. Atrium Health Sys.*, 922 F.3d 713 (6th Cir. 2019) (the defendant allegedly engaged in a conspiracy scheme to unreasonably restrain trade through a series of contracts such as non-compete agreements and agreements with physicians and payors to boycott the plaintiff, a competing hospital).

124. See *United States v. Microsoft Corp.*, 253 F.3d 34, 65 (D.C. Cir. 2001) (*en banc*) (concluding that “Microsoft’s conduct, through something other than competition on the merits, has the effect of significantly reducing usage of rivals’ products and hence protecting its own operating system monopoly, it is anticompetitive”); *Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451, 483 (1992) (“[Section 2] [l]iability turns on, then, on whether ‘valid business reasons’ can explain Kodak’s actions.”).

125. See, e.g., *FTC v. Qualcomm*, 411 F. Supp. 3d 658, 708, 713 (N.D. Cal. 2019).

126. See Alexander Galetovic, Stephen Haber & Ross Levine, *An Empirical Examination of Patent Holdup*, 11 COMPETITION LAW ECON. 549, 549-78 (2015); Josh Lerner & Jean Tirole, *Standard-Essential Patents*, 123 J. POLIT. ECON. 547-86 (2015).

127. Standardization “increases competition by lowering barriers to entry and adds value to manufacturers’ products by encouraging production by other manufacturers of devices compatible with them.” *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1030 (9th Cir. 2015).

128. *Apple, Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 913 (N.D. Ill. 2012), *modified on other grounds*, 757 F.3d 1286 (Fed. Cir. 2014) (making the following observation that “once a patent becomes essential to a standard, the patentee’s bargaining power surges because a prospective licensee has no alternative to licensing the patent; he is at the patentee’s mercy.”)

power in engaging in patent hold-up to seek excessive royalty rates.¹²⁹ The FTC's presumption is correct. SEPs confer a monopoly on Qualcomm in the modem chip industry.¹³⁰ By collecting excessive royalties on chips that a downstream OEM otherwise thought would be more competitive for and compatible with the OEM's devices, Qualcomm significantly restricted competitor chipmakers' abilities to participate in the wireless telecommunications business.¹³¹ With respect to the downstream activities, the excessive royalties are likely to discourage entry among OEMs that would produce the standardized end-user products,¹³² and thus result in a reduction in competition in the downstream market. Qualcomm's conduct also likely would harm consumer welfare, if the high royalties were passed on in the form of high retail prices. Accordingly, Qualcomm's licensing practices as a whole would impede competition, which in turn would discourage innovation and undermine the standard-setting process.¹³³

Apart from an anticompetitive intent, Qualcomm's conditional refusal to supply SEPs does not make economic sense. There may be one drawback of the "no license, no chips" policy, though. OEMs could become Qualcomm's rivals manufacturing modem chips for sale to other OEMs. Theoretically, the risk that OEMs become rivals would threaten Qualcomm's dominance in the modem chip market, but practically it would not. If Apple and Samsung make their own cellular modem chips, they might not want to sell chips to each other because they are direct competitors.¹³⁴ Despite the low level of risk, Qualcomm chose to avoid this risk at the outset. One example is that Qualcomm prevented Samsung from becoming a rival by refusing to license the Project Dragonfly modem chip venture.¹³⁵ A competition threat to OEMs does not necessarily amount to anticompetitive activity. After all, a firm should be free to choose business partners because that would lead to a greater welfare gain.¹³⁶ However, a

129. See Damien Geradin & Miguel Rato, *Can Standard-setting Lead to Exploitative Abuse? A Dissonant View on Patent Hold-up, Royalty Stacking and the Meaning of FRAND*, 3 EUR. COMPET. J., 101-61 (2007); Carl Shapiro, *Injunctions, hold-up, and patent royalties*, 12 AM. L. ECON. REV. 280, 280-318 (2010).

130. See *FTC v. Qualcomm*, 411 F. Supp. 3d 658, 687-91, 693-95 (N.D. Cal. 2019).

131. See *Qualcomm*, 411 F. Supp. 3d at 689, 695.

132. See *id.* at 698-744.

133. See *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 U.S. Dist. LEXIS 60233 (W.D. Wash. Apr. 25, 2013); *Tcl Communs. Tech. Holdings v. Telefonaktienbolaget Lm*, No. SACV 14-0341 JVS (DFMx), 2015 U.S. Dist. LEXIS 199170 (C.D. Cal. Nov. 6, 2015).

134. See *FTC v. Qualcomm Inc.*, 411 F. Supp. 3d 658, 746-52 (N.D. Cal. 2019).

135. See *id.*

136. See Jay Dratler, Jr. & Stephen M. McJohn, *Licensing of Intellectual Property* § 5.02 (2021).

different conclusion could be reached absent business justification to explain Qualcomm's licensing practices.¹³⁷

This is not the first time for Qualcomm to abuse its dominance in the modem chip market where downstream customers unsuccessfully withstand the abuse of market power. For example, Apple settled with Qualcomm in 2019 after suing Qualcomm for its unreasonably high royalty.¹³⁸ The settlement was a result of limited choices: Apple relied solely on Qualcomm's 5G technology, after another supplier Intel announced its decision to leave the 5G cellular modem business.¹³⁹ Without rivals, a SEP owner, such as Qualcomm, dominates the market and charges whatever it wishes while its customers have no choices but to pay.

In light of the unequal bargaining power and consumer harm, antitrust laws and policies can play a role in regulating SEPs and enforcing FRAND commitments. Unfortunately, the Ninth Circuit, by considering each type of contract among various parties—Qualcomm, OEMs, and rivals—in a vacuum, left a legacy of a narrow application of antitrust law. In addition to the unreasonably high price charged to the OEMs based on the first part of the “no license, no chips” policy, the second part of the policy allows the SEP owners to defray partial manufacturing costs with the surcharge fees, which is against antitrust law, as discussed in the following subsection.

*Use of monopoly power to gain a competitive advantage on prices:
improper cost-shifting and price discrimination*

Qualcomm's exercise of dominance in the modem chip market to gain a competitive advantage on prices violates Section 2 of the Sherman Act.¹⁴⁰ Qualcomm's case shows a monopolist pricing a product which could preserve a premium price without losing profits, given its pricing leverage over its rivals. The unreasonably high royalty payments through licensing lead to a competitive advantage for Qualcomm in two ways. The first is undercutting rivals on chip prices. Taking advantage of its dual roles as a dominant chipmaker and a SEP

137. See *infra* Section II.B.

138. Lauly Li et al., *Apple and Qualcomm Settle Dispute, Paving Way for 5G iPhone*, NIKKEI ASIA (April 17, 2019), <https://asia.nikkei.com/Spotlight/5G-networks/Apple-and-Qualcomm-settle-dispute-paving-way-for-5G-iPhone>.

139. See *id.*

140. Section 2 of the Sherman Act criminalizes “[e]very person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce.” 15 U.S.C. §2 (2012). In *United States v. Griffith*, 334 U.S. 100, 107 (1948), the court noted that the use of monopoly power to gain a competitive advantage is unlawful.

holder, Qualcomm charges a lower price on chips while demanding a higher royalty from OEMs.¹⁴¹ In doing so, Qualcomm allows a significant portion of costs rather than R&D expenses¹⁴² to shift to royalties and thus offsets manufacturing costs.¹⁴³ In other words, Qualcomm essentially could make its downstream purchasers of modem chips pay the full production cost, such that Qualcomm may sell chips at a price of zero without losing profits.¹⁴⁴ Without the same ability to recoup losses, no rival would have a fair opportunity to compete against Qualcomm. Had the district court’s ruling been upheld that Qualcomm must license directly to its rivals,¹⁴⁵ Qualcomm might not have a competitive advantage on prices, without which equally efficient rivals would not be forced to sell below their average variable costs.¹⁴⁶

Second, from a monopoly position, Qualcomm has been able to reap additional profits. Because Qualcomm’s chips incorporate SEPs, Qualcomm gains higher sales volume resulted from the interoperability of standardized products. Qualcomm also gains benefits beyond royalties attributable to the patented technology.¹⁴⁷ Even if Qualcomm may not be able to increase its profits by offering a premium price of chips, Qualcomm’s leveraging behavior thwarts competition in the upstream market by raising entry barriers. The following scenario analysis will reach the same conclusion that Qualcomm

141. Imagine that the Qualcomm is two separate entities. One is the manufacturer, and the other is the SEP holder. Then two entities could be found in violation of antitrust law under conspiracy because (1) the SEP holder does not treat all the rivals the same, and (2) collectively they discriminate other rivals. See 15 U.S.C. § 2.

142. R&D expense is one of the main factors in determining the fairness of royalty rates. Another key factor is the market power of the technology. Siding with Qualcomm, the court here agreed the latter was a more dominant factor.

143. Product costs are “all expenses required to manufacture the product.” It is composed of “direct materials, direct labor, and manufacturing overhead.” Mitchell Franklin et al., *Principles of Accounting, Volume 2: Managerial Accounting*, available at <https://openstax.org/books/principles-managerial-accounting/pages/2-key-terms>

144. See John M. Newman, *Antitrust in Zero-Price Markets: Foundations*, 164 U. PA. L. Rev. 149 (2015).

145. See *FTC v. Qualcomm Inc.*, 411 F. Supp. 3d 658, 821–23 (N.D. Cal. 2019).

146. Average variable costs are the costs that change with the level of output. Mitchell Franklin et al., *Principles of Accounting, Volume 2: Managerial Accounting*, available at <https://openstax.org/books/principles-managerial-accounting/pages/2-key-terms>

147. Downstream OEMs complained that Qualcomm received royalty revenue on the added value to which it did not contribute. For example, “during 2004 license negotiations LGE argued that Qualcomm should deduct the cost of camera modules and mobile television from the royalty base because those features are independent of Qualcomm’s modem chips SEPs.” Another OEM Huawei similarly alleged that “Qualcomm ties its high 3G royalty rates to 4G products.” See *Qualcomm*, 411 F. Supp. 3d at 701, 713.

manipulates prices in a way to exclude rivals and forestall the threat of further competition.

The starting point of scenario analysis is the pricing structure of the “no license, no chips” policy. Qualcomm is both a SEP holder and a modem chip supplier. It not only licenses SEPs, but also sells SEP-covered chips.¹⁴⁸ In the licensing agreements with the OEMs, Qualcomm combines R&D costs and patent licensing fees into one “misleading” term—royalty.¹⁴⁹ Because a licensing agreement is a promise not to sue when the licensee uses the patented technology in its product,¹⁵⁰ it follows that a downstream customer who buys a patent-covered product pays a patent licensing fee.

Qualcomm presents two buying situations. The first situation occurs when an OEM enters into a licensing agreement with Qualcomm to buy modem chips from Qualcomm.¹⁵¹ The licensed OEM pays Qualcomm the royalties and the sales price of chips.¹⁵² The second situation occurs when Qualcomm allows rival chipmakers to use its patented technology for free without an express license, on the condition that the rivals would sell chips only to the licensed OEMs that sign a separate license agreement with Qualcomm.¹⁵³ The licensed OEMs who buy chips from Qualcomm’s rivals are charged for royalties separately from the sales price paid to Qualcomm’s rivals.¹⁵⁴ Consequently, the licensing fee (i.e., royalty) is shifted to the OEMs, who pay on behalf of Qualcomm’s rivals. The pricing strategy employed by Qualcomm was to avoid potential antitrust violations. It succeeded as the Ninth Circuit found that antitrust law only governs the contracts involving competition with rivals¹⁵⁵

148. See *Qualcomm*, 411 F. Supp. 3d at 669–71.

149. See Jay Dratler, Jr. & Stephen M. McJohn, Licensing of Intellectual Property § 5.02 (2021).

150. See *infra* note 177.

151. See *Qualcomm*, 411 F. Supp. 3d at 697–98.

152. See, e.g., *Qualcomm*, 411 F. Supp. 3d at 677–79 (discussing Qualcomm’s anticompetitive tactics against OEMs, including cutting off OEMs’ chip supply, threatening OEMs’ chip supply, withholding sample chips, delaying software and threatening to require the return of software, withholding technical support, and refusing to share patent claim charts or patent lists. For example, when an OEM shipped devices that contained chips made by Qualcomm’s rival, the OEM must pay the rival chipmaker its prices and Qualcomm its royalties on those devices such that the rival chipmaker could not reduce its chip prices except to discounting its royalty revenues.).

153. See *Qualcomm*, 411 F. Supp. 3d at 744–51.

154. See *Qualcomm*, 411 F. Supp. 3d at 753–54.

155. See *FTC v. Qualcomm Inc.*, 969 F.3d 974, 1002–03 (9th Cir. 2020).

TABLE 1. PRICING A SEP-COVERED MOBILE CHIP USED IN A CELL PHONE IN FOUR SCENARIOS (IN \$)¹⁵⁶

Chip cost	"No license, no chips" license (license only to OEMs)		Free market (license only to rivals)		"Non-exhaustive" license (license to both OEMs and rivals)		Patent pledge (no royalty)	
	Qualcomm	Rival	Qualcomm	Rival	Qualcomm	Rival	Qualcomm	Rival
Manufacturing cost	40	37	40	37	40	37	40	37
Sales price	22	45	52	50	22	50	52	45
Royalty	30	30	0	5	30	35	0	0
Final cost to downstream purchasers	52	75	52	50	52	80	52	45

The scenario analysis compares purchasing chips from Qualcomm with purchasing chips from Qualcomm's rival(s) (the latter situation is typical in patent licensing yet subject to the antitrust regime) in four scenarios. Table 1 illustrates pricing structures under four market conditions, including (i) the "no license, no chips" policy (Qualcomm's current licensing strategy), (ii) the free-market situation where Qualcomm licenses only to rivals in exchange for royalties such that an OEM is free to choose its supplier of chips from Qualcomm or its rivals, (iii) the "non-exhaustive" license (an unviable situation due to the patent exhaustion doctrine after *Quanta*¹⁵⁷), and (iv) the patent pledge (i.e., no royalty at all).

i. The "no license, no chips" policy: Qualcomm offsets unit manufacturing costs (\$40) by shifting partial costs (\$20) to downstream OEMs through royalties. Qualcomm thus is able to sell a chip for \$22. A rival, although having a lower manufacturing costs (\$37), has to price its chip at \$45 in order to maintain a minimum profit (\$8 per chip). Due to price differences, an OEM would choose to purchase chips from Qualcomm.

ii. The free-market situation: Qualcomm licenses only to its rivals without imposing restrictions that prevent rivals from freely selling chips to OEMs. With the same manufacturing costs as in the "no license, no chips" scenario, a rival can supply its chip at a price lower (\$2 less) than Qualcomm's. However, the rival could barely compete with Qualcomm because the reduction of manufacturing costs would be offset by the licensing fees (i.e., royalties) paid to Qualcomm.

156. Assuming that R&D costs per chip = \$2/piece, royalty rate = 10% of the sales price, unit cost of a cell phone = \$300, Qualcomm's target profit = \$10 per chip, Qualcomm's rival's target profit = \$8 per chip.

157. See *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617 (2008).

Other possible means for a rival to survive in the market include providing higher product quality, offering better after-sale service, and creating greater brand value, if not charging a lower sales price.

In the “no license, no chips” scenario, if a licensed OEM wishes to buy chips made by a Qualcomm’s rival, the OEM will pay for a combination of the sales price and royalty—a total price that could be fifty percent higher than if it had bought them from Qualcomm. When a cheaper mobile chip is also available in similar quality, the OEM would prefer to purchase chips from Qualcomm. In comparison with the free-market scenario, the royalty under the “no license, no chips” policy is much higher—at a rate disproportionately high relative to the value attributable by the patented technology, because the royalty rate is based on the total cost of the entire end product cell phone that also integrates components independent of the patented technology.¹⁵⁸ Given the price advantage at the present cost of the OEM, the “no license, no chips” scheme forces current rivals to exit the market while making entry less attractive to potential rivals.

iii. The “non-exhaustive” license: Qualcomm collects royalties from both rivals and OEMs. An OEM would prefer to purchase from Qualcomm due to the higher price of a rival’s chips. Under the patent exhaustion doctrine Qualcomm exhausts its patent rights when its rival sells the patented products to a licensed OEM. Consequently, Qualcomm would not be entitled to demand royalties on rivals’ chips. This scenario might not happen at all.

iv. The patent pledge: Qualcomm does not collect royalties from rivals while allowing them to use its SEPs. Rivals could reduce manufacturing costs and would be able to price relatively low. An OEM would probably prefer Qualcomm’s rivals’ chips over Qualcomm’s. This scenario may arise when Qualcomm allows unlicensed productions without restricting to whom the rivals may sell the chips, as opposed to the “no license, no chips” scenario where Qualcomm restricts the sales of chips to OEMs who have entered into licensing agreements with Qualcomm.¹⁵⁹ Under a patent pledge agreement, Qualcomm’s rivals may deal with unlicensed OEMs by asserting an implied license to shield otherwise infringing acts.¹⁶⁰ This would be an unfavorable scenario for Qualcomm.

The above scenario analysis shows the price advantages possessed by Qualcomm under the “no licenses, no chips” policy. The analysis further reflects the discriminatory aspect of the typical royalty base.

158. See *infra* notes 163–66.

159. See *FTC v. Qualcomm Inc.*, 969 F.3d 974, 996 (9th Cir. 2020).

160. See *infra* Section II.C.

The industry norm of wholesale price-based royalty discriminates against suppliers at the component level, because it invites SEP holders to discriminate against their competitors that produce standard-compliant components. The Ninth Circuit, in agreeing with the Federal Circuit, found “nothing inherently wrong with using the market value of the entire product.”¹⁶¹ However, the royalty base does make a difference. When Qualcomm did license to its rivals initially, it could collect only a royalty of \$0.30 at 3% per chip (i.e., a standard-compliant component) in 1999.¹⁶² When later Qualcomm switched to the “no license, no chips” licensing scheme, it could collect a royalty of \$10–40 at a 3–5% royalty percentage per mobile phone (i.e., a standard-compliant end product).¹⁶³

Apple complained that the “no license, no chips” policy did not make sense where when the same modem was used in various iPhones, the royalty varied significantly only because a more advanced data storage hardware was used.¹⁶⁴ Note that the price of a modem is around \$20–30.¹⁶⁵ With a royalty rate in an amount equal to the sales price of a chip, Qualcomm could offer its chips at \$0 but still make a profit. To an OEM, the sales price of a modem chip between \$20 and \$30 is not the entire amount due because the OEM has to pay the royalty on top of the sales price. The entire costs borne by an OEM would be at least \$30–70 per chip. A separately charged royalty could negatively affect an OEM’s purchase decisions. The results of Qualcomm’s percentage royalty model suggest that Qualcomm is able to offset its manufacturing costs by passing the cost on to the licensed OEMs in the form of royalties. As opposed to Qualcomm’s ability to mitigate manufacturing costs, rivals are unlikely to keep prices lower.

161. *Qualcomm*, 969 F.3d at 999.

162. *Qualcomm*, 411 F.3d at 754.

163. See Evan Niu, *Here’s How Much Apple Was Paying Qualcomm in Royalties*, MOTLEY FOOL (April 18, 2019), <https://www.fool.com/investing/2019/01/14/heres-how-much-apple-was-paying-qualcomm-in-royalt.aspx> (The licensee agreed to pay the licensor a royalty of five percent of the net selling price of products covered by the patent; contract manufacturers were paying Qualcomm 5% for every iPhone, translating into \$12 to \$20 per device); Ashraf Eassa, *How Much Does Qualcomm Charge for a Snapdragon?*, MOTLEY FOOL (April 23, 2014), <https://www.fool.com/investing/general/2014/04/23/how-much-does-qualcomm-charge-for-a-snapdragon.aspx>.

164. *Qualcomm*, 411 F.3d at 725 (each modem costs \$10–15 per unit for a low-end device and \$30–40 per unit for a high-end device.).

165. See Shara Tibken, *Qualcomm Didn’t Have All the License Negotiating Power, Exec Testifies*, CNET (Jan. 18, 2019), <https://www.cnet.com/news/qualcomm-didnt-have-all-the-license-negotiating-power-exec-testifies/> (“When Qualcomm first licensed its CDMA technology, it charged a 5 percent royalty on phones. . . . Gonell [SVP, Licensing Strategy & Legal Counsel at Qualcomm] said Friday that Qualcomm’s cap for a full portfolio license is \$20 per device and \$13 for only Qualcomm’s essential patents.”).

Without the price competitive advantage, rivals probably would not have a large customer base and demand for their chips. As such, Qualcomm's licensing activities of demanding royalties on rivals' chips place rivals at a significant disadvantage, creating barriers to entry and expansion.

Patent exhaustion and implied license

SEPs are subject to the patent-antitrust conflict.¹⁶⁶ On the one hand, patent law restricts competition in order to provide incentives to innovation.¹⁶⁷ On the other hand, antitrust law breaks up monopolies and bans certain anti-competitive practices to promote fair and free competition such that consumers could enjoy the benefits of robust competition.¹⁶⁸ Current patent law might confer antitrust immunity to patent holders who charge a license fee sufficient to recoup the manufacturing costs, for example.¹⁶⁹ When patent holders engage in activities that extend their patent rights beyond the scope of protection under the Patent Act, such conduct may trigger antitrust liability.¹⁷⁰

Qualcomm does not rely solely on patent law—a public right—to gain revenue stream from downstream activity. Instead, it strategically uses the ASIC agreements—private contracts—to limit access to SEPs embodied in its standard-compliant chips, from restriction on the buyers to whom the patented chips made by Qualcomm's rivals may be

166. The scope of patent rights was defined with reference to both patent and antitrust policies. See *FTC v. Actavis*, 133 S. Ct. 2223, 2227 (2013) (allowing the exercise of patent rights subject to antitrust scrutiny under the rule of reason analysis).

167. "Inventors desire sufficient control of their invention to prevent free riding and appropriate rewards for their time and efforts." Daryl Lim, *Living with Monsanto*, 2015 Mich. St. L. Rev. 559, 580 (2015).

168. See Gregory J. Werden & Luke M. Froeb, *Why Patent Hold-Up Does Not Violate Antitrust Law*, 27 TEX. INTELL. PROP. L. J. 1 (2019); see generally Jay Dratler, Jr. & Stephen M. McJohn, *Licensing of Intellectual Property* (2021).

169. 35 U.S.C. 154(a) providing that every patent shall contain a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering to sell, or selling the patented invention, which is not a right of the patent holder to make, use, offer to sell, or sell the patented invention; 35 U.S.C. § 271(d) stating that certain patent practices that not illegal absent, at minimum, market power.

170. Intellectual property law and antitrust law share the common purposes of promoting innovation and enhancing consumer welfare:

That patents don't presumptively confer market power;

That intellectual property licensing is generally pre-competitive; and

That a rule of reason analysis, which requires scrutinizing actual market effects and weighing procompetitive benefits against anticompetitive harm, is preferred.

Antitrust Guidelines for the Licensing of IP, FTC (1995); see also Roger B. Andewelt, *Analysis of Patent Pools Under the Antitrust Laws*, 53 ANTITRUST L. J. 611 (1984).

sold to obligation to report sales volume.¹⁷¹ This broad range of control under the contractual rights between Qualcomm and its licensed rivals gives Qualcomm an avenue for continued revenue for its intellectual property. However, the Ninth Circuit in deciding *Qualcomm* should have considered whether Qualcomm's patent rights unlawfully extend after its rivals sell chips to the downstream licensed OEMs. In fact, under the patent exhaustion doctrine, Qualcomm was not justified in collecting royalties from those licensed OEMs.

The ASIC agreement between Qualcomm and rival chipmakers is akin to a license, where the patent exhaustion doctrine can be invoked.¹⁷² The ASIC agreement is an implied license.¹⁷³ A reasonable inference that Qualcomm licensed to its rivals can be drawn under a Federal Circuit test.¹⁷⁴ The ASIC agreement, though claimed not as a licensing agreement, serves the same functions as a license—Qualcomm allowed pure chip suppliers like Intel to produce chips using Qualcomm's SEP technologies to meet the cellular standard re-

171. See *supra* note 47; similar to the wireless communications industry, other industries seek to restrict post-sales activities using contract law. Inventors of bio-engineered seeds like Monsanto contractually restrict the use of its biotechnology seeds. For example, at the time of sale, Monsanto's licensed seed producers typically execute a Technology Agreement with growers, which requires growers (1) "to use the seed containing Monsanto gene technologies for planting a commercial crop only in a single season"; (2) "to not supply any of this seed to any other person or entity for planting"; (3) "to not save any crop produced from this seed for replanting, or supply saved seed to anyone for replanting"; and (4) "to not use this seed or provide it to anyone for crop breeding, research, generation of herbicide registration data, or seed production." See, e.g., *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1344–45 (Fed. Cir. 2011).

172. See *LG Elecs., Inc. v. Bizcom Elecs., Inc.*, 453 F.3d 1364, 1369–70 (Fed. Cir. 2006) (The patent exhaustion doctrine applies only to an unconditional license or sale but does not apply to an expressly conditional sale or license. In the latter transactions, the licensing fees negotiated for could be low to reflect due to patent rights.); see also Jorge L. Contreras, "No License, No Problem"—Is Qualcomm's Ninth Circuit Antitrust Victory a Patent Exhaustion Defeat?, Patently-O (Sept. 1, 2020), <https://patentlyo.com/patent/2020/09/qualcomms-antitrust-exhaustion.html> (characterizing the ASIC Agreement between Qualcomm and rival chipmakers as a pseudo-licensing agreement).

173. An implied license may arise from the parties' conduct in the absence of a contractual license, if the parties behave as if a licensor does not interfere with the licensee's using and selling of the licensor's patented invention, despite the knowledge of the licensee's practices. *Landsberg v. Scrabble Crossword Game Players, Inc.*, 802 F.2d 1193, 1196 (9th Cir. 1986) (A promise to pay reasonable fee for the use of a protected material gave rise to an implied license.); *Endo Pharm. Inc. v. Amneal Pharm., LLC*, 224 F. Supp. 3d 368, 372 (D. Del. 2016).

174. *Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc.*, 103 F.3d 1571, 1578 (Fed. Cir. 1997) ("Factors in determining the existence of an implied license include that

- (1) a relationship existed between the parties,
- (2) within that relationship, the patentee granted to the accused infringer a right to use its inventions,
- (3) the patentee received valuable consideration for that grant of right,
- (4) the patentee denied that the accused infringer had an implied license, and
- (5) the patentee's statements and conduct created the impression that the patentee consented to the accused infringer making, using, or selling the patented inventions.").

quirements.¹⁷⁵ Qualcomm would not sue the rivals for patent infringement as long as the modem chips produced by the rivals sold to a licensed OEM.¹⁷⁶ A patent license is a covenant not to sue for infringement.¹⁷⁷ There was no indication that the agreement contained a “No Implied Rights” provision disclaiming grants of license or right by implication. Consequently, the ASIC Agreement created an impression that Qualcomm consented to the rivals’ making, using, or selling of the potentially infringing chips. Acquiescence similarly arises when a grantor who accepts royalty payments from a grantee. The grantee could justifiably conclude that the grantor consents to the grantee’s manufacturing activities.¹⁷⁸ It does not matter even if the royalty is zero, as is the case here. Therefore, an ASIC agreement is essentially an SEP licensing agreement with the rivals despite the agreement’s explicit denial of being labeled as an SEP license. And the rivals are implied licensees of Qualcomm’s SEPs.

The rivals’ sale to the licensed OEMs exhausted Qualcomm’s patent rights. An authorized sale triggers exhaustion.¹⁷⁹ Under the ASIC Agreement, Qualcomm authorized its “implied licensee” rivals to manufacture the patent-covered modem chips and sell to the OEMs who had entered into licensing agreements with Qualcomm. Since the licensee rivals sold chips to the licensed OEMs in compliance with the ASIC agreement, these sales were authorized by Qualcomm.¹⁸⁰ As a result, as in *Lexmark* where Lexmark’s patent rights in the cartridges were exhausted,¹⁸¹ Qualcomm’s patent rights in the chips exhausted.¹⁸² Therefore, Qualcomm no longer had a right to extract roy-

175. See *Qualcomm*, 969 F.3d at 984.

176. See *id.* at 996.

177. See *Imation Corp. v. Koninklijke Philips Elecs. N.V.*, 586 F.3d 980, 987-88 (Fed. Cir. 2009) (stating that “A patent license agreement is in essence nothing more than a promise by the licensor not to sue the licensee.”); *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 707 n.6 (Fed. Cir. 1992) (“[A] license is simply a promise not to sue for what would otherwise be patent infringement.”); *U.S. Philips Corp. v. ITC*, 424 F.3d 1179, 1189 (Fed. Cir. 2005) (“A nonexclusive patent license is simply a promise not to sue for infringement.”).

178. *AMP, Inc. v. United States*, 182 Ct. Cl. 86, 87 (1968).

179. *Impression Prods. v. Lexmark*, 137 S. Ct. 1523, 1535 (2017).

180. *Id.* at 1534–35 (“A patentee’s authority to limit licenses does not . . . mean that patentees can use licenses to impose post-sale restrictions on purchasers that are enforceable through the patent laws. So long as a licensee complies with the license when selling an item, the patentee has, in effect, authorized the sale. That licensee’s sale is treated for purposes of patent exhaustion, as if the patentee made the sale itself. The result: The sale exhausts the patentee’s rights in that item.”).

181. See *id.* at 1535; *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S.617 at (2008).

182. Jorge L. Contreras, “No License, No Problem”—Is Qualcomm’s Ninth Circuit Antitrust Victory a Patent Exhaustion Defeat?, *Patently-O* (Sept. 1, 2020), <https://patentlyo.com/patent/2020/09/qualcomms-antitrust-exhaustion.html> (“[A] smartphone manufacturer can’t infringe a SEP if it purchases a chipset from a licensed chip maker.”).

alties from the licensed OEMs—the downstream customers—for the SEP embodied chips produced by rivals.¹⁸³ The Ninth Circuit nevertheless believed that Qualcomm has a right to collect its rivals' licensing fees from the OEMs because the right to licensing fees shows Qualcomm's market dominance, a significant departure from the longstanding exhaustion precedent.¹⁸⁴

However, the patent exhaustion doctrine probably would not preclude Qualcomm from collecting some form of royalty from an unlicensed OEM to whom Qualcomm's rivals sell chips covered by Qualcomm's SEPs, because exhaustion does not apply.¹⁸⁵ The Supreme Court in *Lexmark* clarifies that exhaustion is not triggered where a patent licensee makes a sale outside the scope of the patent license.¹⁸⁶ An unauthorized sale of patented product occurs, if one of Qualcomm's rivals sells chips to an OEM with whom Qualcomm had not entered into a licensing agreement. The absence of an authorized sale would render exhaustion inapplicable.¹⁸⁷ Because the sale does not extinguish Qualcomm's patent rights, Qualcomm could bring suit for infringement against both the licensee rivals and the unlicensed OEMs.¹⁸⁸

IV. PROPOSED SOLUTION

SEPs can be characterized as a public good. These wireless communication patented technologies facilitate benefits of standardization, without which the communication technologies could not operate across multiple platforms and devices such that market failures can

183. *Id.*

184. See *Qualcomm*, 969 F.3d, at 1000.

185. "Through section 284, Congress sought to ensure that the patent owner would in fact receive full compensation for any damages he suffered as a result of the infringement. Damages is the amount of loss to a patentee. A patentee may seek or recover actual damages, usually, the amounts of profits actually lost, or if unable to prove actual damages, the patentee is entitled to a reasonable royalty." *SmithKline Diagnostics, Inc. v. Henela Labs. Corp.*, 926 F.2d 1161, 1164 (Fed. Cir. 1991).

186. *Impression Prods.*, 137 S. Ct. at 1535 (citing *General Talking Pictures v. Western Elec.*, 305 U.S. 124 (1938)).

187. See *Princo Corp. v. ITC*, 616 F.3d 1318, 1328 (Fed. Cir. 2010) ("That exhaustion doctrine does not apply, however, to a conditional sale or license, where it is more reasonable to infer that a negotiated price reflects only the value of the use rights conferred by the patentee.") (internal quotation marks omitted).

188. See *Impression Prods.*, 137 S. Ct. at 1527 (citing *General Talking Pictures v. Western Elec.*, 305 U.S. 124 (1938) and stating that "The licensee infringed the patentee's rights because it did not comply with the terms of its license, and the patentee could bring a patent suit against the purchaser only because the purchaser participated in the licensee's infringement.").

arise.¹⁸⁹ As illustrated in *Qualcomm*, the inevitable need to implement SEP technologies drives a tension between the interests of inventors, who seek economic returns on their R&D investments, and the interests of implementers of SEPs, who need access to SEPs on affordable terms. A licensing scheme with significant anticompetitive effects adversely affects the growth of public goods related to innovation. Thus, the licensing of SEPs, upon which implementers depend for their economic postures, should be given guidelines.

Approaching SEPs from the antitrust law's perspective

Driven by profits, Qualcomm's market control efforts in charging disproportionately high licensing fees are largely detached from the goal of the antitrust systems to strike a balance between private interests in profitability and public interest concerns. This imbalance erects competitive barriers for implementers, especially Qualcomm's rival chipmakers, to obtain necessity they need to compete in the market. Considering SEP holders' exclusive control over SEPs—unique and indispensable assets, there are two possible ways to solve the issue: (1) that Qualcomm must grant an exhaustive license to the rivals, as ordered by the district court, without a right to collect royalties from downstream manufacturer customers; and (2) that a SEP licensing agreement may propose fixed fees, as opposed to percentage royalty fees.

First, a SEP holder like Qualcomm should be subject to a duty under the antitrust law to provide its rivals with exhaustive licenses, which would entitle the SEP holder to collect royalties from only the rivals. The implementation of SEPs typically involves a multi-level supply chain. For example, Qualcomm's SEPs are implemented in a baseband chip (e.g. the modem chip here) for use in an end product like a cell phone. The patent holder may choose the level of supply chain at which it wants to give a license, whether at the component level or at the end product level. Because of the ability to capture royalties based on the value of the entire end product that consists of other components unrelated to the SEP, the patent holder is likely to grant a license to a downstream end device manufacturer instead of a component manufacturer.¹⁹⁰ However, it is the actual or potential ri-

189. See National Research Council, 2013, Patent Challenges for Standard-Setting in the Global Economy: Lessons from Information and Communications Technology. Washington, DC: The National Academies Press. <http://doi.org/10.17226/18510>. at 15 (describing problems in unregulated markets that lead to market failure).

190. See Josh Laudau, Judge Koh: Qualcomm's Licensing Practices Destroyed Competition, Harmed Consumers, <https://www.patentprogress.org/2019/05/22/judge-koh-qualcomms-licens->

vals who unavoidably need a license in order to enter the standard-compliant chip market. Without giving a license, the patent holder such as Qualcomm who is also a component manufacturer would have no viable competitors in the market of wireless communication technologies.

In the context of SEPs, imposing antitrust liability for a patent holder, whose constructive refusal to license patents to rivals restricts competition in markets, does not compel the patent holder to assist competitors, a duty outside the scope of antitrust law.¹⁹¹ In order to reduce competition, a firm in a dominant position does not need to entirely refuse to license patents to rivals. In fact, a conditional license that restricts rivals' ability to deal with only “qualified” downstream buyers, just as the ASIC Agreement between Qualcomm and rivals, makes entry in the mobile chip market less feasible. By controlling downstream distribution, Qualcomm limits its rivals' downstream demand. Without enough downstream buyers left with whom the rivals can do business, the current rivals will have to exit while potential rivals will not enter into the market. As such, Qualcomm's conditional refusal to deal with rivals significantly impair competition among component products.

This solution echoes copyright's merger doctrine that addresses the conflicts between intellectual property and freedom of speech. Under the merger doctrine, when there are only a limited number of ways to express an idea, copyright law will not protect the expression because it has merged with the idea.¹⁹² This doctrine promotes competition and access to information under the rationale that granting copyright protection will take away usefulness from the general public.¹⁹³ Similarly, here, in the market of a modem chip—a product incorporating SEPs, the OEMs have a limited number of vendors (i.e., the SEP holder and its rivals) to purchase standards-compliant modem chips from and the competing chipmakers have only one source of license of the SEP—the SEP holder who is also a chipmaker. When the OEMs and rivals, both as SEP holder's purchasers, decide to enter the SEP

ing-practices-destroyed-competition-harmed-consumers/ (noting that through exclusivity arrangements with OEMs like Apple Qualcomm “tr[ies] to ensure it would never have to face competition” and quoting Qualcomm's CEO “[T]here are significant strategic benefits as it is unlikely that there will be enough standalone modem volume to sustain a viable competitor without [Apple's] slot.”)

191. *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 298 (2004) (noting that “as a generally matter,” the antitrust laws impose no duty on a firm to deal with rivals).

192. See Pamela Samuelson, *Reconceptualizing Copyright's Merger Doctrine*, 63 J. COPY-RIGHT SOC'Y USA 417 (2016).

193. See *id.*

holder's dominated market, the downstream purchaser has extremely limited bargaining power because of its exclusive reliance on the dominator to "survive" in that market. Given the dominant position of an SEP holder, the conditional refusal to license, and the anticompetitive impact resulted from the refusal to deal, Qualcomm's licensing scheme against rivals harms competition. Thus, an appropriate remedy is to enjoin the use of unreasonable conditions, which can be achieved by making an exhaustive license available only to the rivals.

Second, if the royalty fee can be levied as a fixed fee, the final cost of the chip in a cell phone would be the same in both the "no license, no chips" policy scenario and the fair-market scenario. Table II illustrates the calculation by changing the royalty not as a fixed percentage (10%) of sale price but as a fixed price (\$10). If the royalty is paid by OEMs, Qualcomm's rivals can sell the product at a price cheaper than that in the fair-market scenario at the same per-unit royalty. Therefore, the final cost of a chip would be the same.

TABLE II. COMPARISON OF PRICES AND COSTS WHEN QUALCOMM LICENSES SEPs TO ONLY OEMS AND TO ONLY RIVALS UNDER A FIXED VALUE ROYALTY

Chip costs	No license no chips (License to only OEMs)		Fair market (License to only rivals)	
	Qualcomm	Rivals	Qualcomm	Rivals
Manufacturing costs	40	37	40	37
Sale price	42	45	52	55
Royalties	10	10	0	10
True cost	52	55	52	55

To eliminate discrimination against the rivals, licensors may structure the royalty payment for SEPs as a fixed fee, instead of percentage based.¹⁹⁴ The current industry norm of a percentage-of-sales royalty is unfavorable in an idealized free-market economy, where the market equilibrium price is determined by supply and demand.¹⁹⁵ The norm has been based on two false premises. The first is that the market price of a patented technology, despite being embodied in the same

194. See Jorge L. Contreras, "No License, No Problem"—Is Qualcomm's Ninth Circuit Antitrust Victory a Patent Exhaustion Defeat?, Patently-O (Sept. 1, 2020), <https://patentlyo.com/patent/2020/09/qualcomms-antitrust-exhaustion.html> (discussing the problem of level discrimination in a supply chain and noting that because of the industry norm of SEP royalty rates, SEP holders like Qualcomm "strongly prefer to license their SEPs to end device makers [i.e., the OEMs].").

195. See James D. Dana, Jr., *Equilibrium Price Dispersion under Demand Uncertainty: The Roles of Costly Capacity and Market Structure*, 30 RAND J. ECON. 632-660 (1999).

product, can vary depending factors such as to whom the patent holder licenses and the status of the licensee in the supply chain. The second is that a product's value extracted from a patented technology depends on the value of the product itself. Both assumptions are likely false. Consider, for example, that the same patented technology cannot boost demand for the same product merely by selecting a particular licensee. Alternatively, as Apple contended, an SEP holder like Qualcomm deserves only the value of the patented technology, but not the additional value of a cell phone with other components such as a more advanced data storage technology.¹⁹⁶ Thus, a fixed fee instead of a percentage-based royalty fee is more appropriate.

Resolving the dilemma of SEPs in the antitrust world from patent law's perspective

The “no license, no chips” policy looks like an issue of free market competition. A deeper look into the policy will reveal a conflict between SEPs selected by the SSOs and non-SEP patents that would have been selected by the market.

The Ninth Circuit considered SEPs being no different from any other patents from an antitrust perspective. As a result, enforcing fair, reasonable, and non-discriminatory (FRAND) agreements is a contract issue. This view ignores SEPs' considerable market power: SEPs selection criteria result in a lack of market competition as there could be no comparable substitutes to SEPs in the market.

SEPs are patents that are essential to the use of an industry standard granted by SSOs. The market power of an SEPs come from the standard-setting process that elevates a technology above the competition, as opposed to a non-SEP, whose market power is from the technology on its own. Thus, granting SEPs discourages competition among patents. For a non-SEP, the government is willing to grant exclusive rights to the holder on the belief that consumers still have meaningful choices in a free market. In other words, when a patent creates an exclusive right to exclude others from practicing the patent, such a right is not an economic monopoly where close substitutes likely exist.¹⁹⁷ However, SEP holders are monopolists in terms of both

196. *Qualcomm*, 411 F.3d at 725.

197. See Mark Schultz, *A Free Market Perspective on Intellectual Property Rights*, *American Enterprise Institute* (Feb. 24, 2014), <https://www.aei.org/technology-and-innovation/intellectual-property/free-market-perspective-intellectual-property-rights/> (“Intellectual property does not create an economic monopoly, because a monopoly exists only where there are no close substitutes and thus no competition.”); Craig Allen Nard, *The Law of Patents*, at 2 (3d ed. 2013) (“[A] patent provides its owner with a legal monopoly—a statutory right to exclude—it rarely allows for an economic monopoly.”).

intellectual property and economics. Any participant in the market, who intend to make or use standard-compliant products, must rely on the SEP holder's discretion to license. An SEP holder's monopoly in a market without substitutes leads to one problem for market competition: lack of access to SEPs. Intending to ensure reasonable access to SEPs, SSOs seek to alleviate the competition concerns by imposing FRAND licensing commitment on SEP holders.¹⁹⁸ FRAND commitment requires the SEP holder to license to their rivals in a fair, reasonable, and non-discriminatory way.¹⁹⁹ However, the existing FRAND commitments, just like antitrust law, does not stop an SEP holder from ignoring its rivals and collecting royalties from downstream consumers. The problem of inequality in bargaining power between the SEP holder and rivals or between the SEP holder and OEMs could not be fixed by FRAND commitments. To this end, when contract law alone cannot solve the problem of denying or delaying fair dealing of SEP licensing and when antitrust law may not be used to enforce FRAND commitments, the patent system should be tailored to reflect the dominant nature of the SEPs.²⁰⁰

Patent law could limit the rights of an SEP holder in two ways. The first way is to refuse SEP holders' requests for injunctions against infringement but instead to award a reasonable royalty.²⁰¹ This resolution allows the rivals of the SEP holder to go unpunished for freely selling SEPs-embodied products while creating an incentive for SEP holders to license their SEPs. As illustrated in *Qualcomm*, SEP holders tend to exclude competitors from the market and have done so. Awarding damages is preferable where an injunction would cause

198. F/RAND Licensing Commitment, Practical Law Glossary Item 8-557-1849

199. J. Harkrider, *REPs Not SEPs: A Reasonable and Non-Discriminatory Approach to Licensing Commitments*, 10 ANTITRUST CHRONICLE (2013), <https://www.competitionpolicyinternational.com/rep-s-not-sep-s-a-reasonable-and-non-discriminatory-approach-to-licensing-commitments/>.

200. See Elizabeth I. Winston, *Sowing the Seeds of Protection*, 2014 WIS. L. REV. 445, 446-47 (2014), (arguing that with respect to seed "a self-replicating chattel," the poor fit of the current intellectual property system without sufficient incentive for agricultural innovators fosters "a new framework of seed distribution [and propagation] . . . marrying together private contract law with the public intellectual property laws").

201. See R.N.A. Bekkers et al., *Patent Challenges for Standard-Setting in the Global Economy: Lessons from Information and Communications Technology*, 95 (2013), <http://doi.org/10.17226/18510> ("Court-ordered injunctions, which remove infringing products from a market, typically for a period of time, are a principal remedy for patent infringement. . . . Patent holders are typically granted the right to petition for injunctive relief."); but see *Microsoft Corp. V. Motorola Inc.*, 696 F.3d 872, 885 (9th Cir. 2012) ("[I]njunctive relief against infringement is arguably a remedy inconsistent with the [FRAND] licensing commitment.").

great public injury.²⁰² An injunction confers the SEP holders market power in addition to that gained by inclusion of their patents in a standard. Thus, an injunction would place at risk the incentives of implementers and the public interest of consumers. If an injunction is to halt infringement, the patent holder effectively holds up the entire market and eliminates competition. When an injunction threat leads to a settlement, the patent holder could pursue and receive overcompensation, which would shift to consumers in the form of higher prices or inferior products. To the contrary, an exclusive remedy in the form of a reasonable royalty would "force" the SEP holders to license at an objective royalty rate that the patent holder could have obtained in a competitive market.²⁰³ This solution is similar to the district court's approach in *Qualcomm*, where Judge Koh ordered Qualcomm to grant exhaustive licenses to rivals.

Further, the patent system may employ a compulsory licensing scheme just as the compulsory mechanical licenses in the music industry.²⁰⁴ Under a compulsory licensing scheme, the SEP holder must license its SEP to any licensees at a set statutory fee, if the SEP holder is unwilling to license the SEP at a fair price.

The compulsory license approach would translate reasonably well to the licensing of SEPs. In fact, some countries have employed strategies for the SEP holders to commit to a FRAND obligation with respect to royalty determination. For example, the Japan Patent Office released the "Guide to Licensing Negotiations Involving Standard Essential Patents," which summarizes methods to determine royalty rates.²⁰⁵ The guide explains common practices of calculating a reasonable and non-discriminatory royalty to satisfy FRAND obligations,

202. Tort law has a similar view about the appropriate remedy in nuisance cases. For example, in *Boomer v. Atlantic Cement Co.*, 257 N.E.2d 870 (1970), the court discusses the liability of a cement plant that allegedly caused nuisance by emitting dust, vibrations, and odors. The court refused to enjoin nuisance because the utility of the defendant's objectionable activities outweighs the harm caused. Instead, it ordered defendant the creator of the nuisance to compensate diminution of property value attributable to the defendant's objectionable acts. Essentially, the defendant was given a "license" to continue its nuisance on the condition of paying plaintiffs property owners a reasonable "license fee."

203. A judicially imposed compulsory license is a recognized remedy in patent infringement cases. See *Foster v. American Machine & Foundry Co.*, 492 F.2d 1317, 1324 (2d Cir. 1974) (reasoning that an injunction that "impose[s] irreparable hardship on the infringer . . . without any concomitant benefit to the patentee" would be inequitable.).

204. See 17 U.S.C. § 115: Compulsory license for making and distributing phonorecords; see also, D. S. Passman, *All You Need to Know about the Music Business*, 215–17 (2019).

205. See Louise C. Stoupe et al., *JPO Released Its Practical Guide to SEP Licensing Negotiations*, Morrison Foerster (June 15, 2018), <https://www.mofo.com/resources/insights/180615-jpo-sep-licensing-negotiations.html>.

such as the bottom-up approach and the top-down approach.²⁰⁶ The bottom-up approach calculates a reasonable royalty based on the SEP's technology and prices of comparable licenses.²⁰⁷ The bottom-up approach is similar to the court's suggestion in *Microsoft* that royalty should be calculated based on a SEP's value.²⁰⁸ By contrast, the top-down approach seeks to measure royalty from the SEP's impact on the market.²⁰⁹

The above two solutions have different focuses. One allows the holder's rivals who breach the licensing terms by dealing with non-licensee OEMs to go unpunished if the patent holder fails to employ reasonable licensing policy. The other requires the SEP holder to fairly license SEPs to its competitors at the outset. The difference is subtle yet important because of the difficulties of determining the reasonable royalty rate. Currently, the FRAND licensing strategy favors the latter solution. It leaves the SEP holder with power to bypass rivals who most times cannot challenge the SEP holder's discretion in determining to whom it will grant a license. When power imbalance is present due to a market failure, a legislative solution is superior to a judicial one because it would relieve courts from the burden of royalty rate calculation.

V. CONCLUSION AND OUTLOOK

Standard setting is typical in a variety of industries, including the wireless telecommunications industry. As the use of industry standards fosters interoperability and efficiency, the role of SEPs in the implementation of standard technologies will assume a more central place in the evolution of the law and policy. Likewise, the ways in which the SEP holders approach licensing of patents have more implications for the norms and practices. Because essential patents are indispensable, holders of patents may take advantage of their dominant position in the market to charge excessive royalties or impose other unfair conditions on those who have to implement the standard. The law and policy, such as the use of FRAND licensing commitments, should be in place to ensure a balance between fair competition and enhanced consumer welfare. Otherwise, the SEP holders would en-

206. *Id.*

207. See *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024 (9th Cir. 2015); *FRAND Royalties Will Impact the Cost of Your Next Smart Phone*, MICH. TECH. L. REV., <http://mttlr.org/2018/11/frand-royalties-will-impact-the-cost-of-your-next-smart-phone/> (last visited Nov. 27, 2020).

208. See, e.g., *Microsoft*, 795 F.3d at 1041.

209. See, e.g., *TCL Comm'n v. Ericsson, C.A. No. 14-CV-341* (C.D. Cal. December 21, 2017).

gage in anticompetitive practices that impede competition, as a result of the Ninth Circuit's approach in *Qualcomm*.

Although Qualcomm's "no license, no chips" licensing practices raise antitrust red flags, Qualcomm's strategic effort eventually inhabits competition by taking away bargaining rights from competitors. Qualcomm's licensing policy under antitrust law might be reasonable. On the one hand, an SEP holder is required to deal with its rivals reasonably and fairly because, as the holder of patents that are necessary components to mobile devices and network connectivity critical to daily lives, the holder is subject to antitrust law regulations and promises to license these unique patents on FRAND terms. On the other hand, an SEP holder need not fairly treat customers such as downstream manufacturers because neither antitrust law nor contract law requires the SEP holder to do so. The reasonableness of the licensing terms and conditions is at the sole discretion of the SEP holder. If the SEP holder requires and its customer agrees to pay royalties on products not sold by the SEP holder, the consumer probably has no recourse.

SEPs hardly have close substitutes in the market. For instance, the Qualcomm's 3G standards CDMA technology has its 3G competitor UMTS technology.²¹⁰ Comparatively, Qualcomm's 4G LTE technology has no competitors for major telecommunication suppliers.²¹¹ Since SEPs are not determined through free market competition, the SEP holders with monopoly power likely cause anticompetitive harm, especially when the holders seek an unreasonably higher royalty rate than they could have before the technical standard was adopted. To solve the problem of a patent holder's blocking the implementation of the standard, the standard-setting organizations could permit substitution by adopting more than one standard. Beyond the issue of generally indispensability of SEPs, a broader question is whether the government should adopt a compulsory licensing scheme and set statutory royalty rates? Yes. A separate SEP system that is different from the traditional patent system should be established to reduce the likelihood of abuse of market power. Further research might explore answers to questions such as the following: How to identify unwilling licenses? How to motivate licensing? And should FRAND commitments travel with a patent if the SEP is assigned to another owner?

210. See *FTC v. Qualcomm Inc.*, 411 F. Supp. 3d 658 (N.D. Cal. 2019).

211. See *id.*