

THE GLOBAL CONVERGENCE OF FRAND LICENSING PRACTICES: TOWARDS “INTEROPERABLE” LEGAL STANDARDS

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Interoperable technologies that derive value from global network effects necessitate consistent guidelines to regulate Fair, Reasonable, and Non-Discriminatory (FRAND) licensing practices for standard essential patents (SEPs) across international borders. A uniform, international standard for FRAND licensing would aid the development of interoperable platforms because it would: (1) provide predictability to patent licensees regarding the cost of acquiring essential intellectual property rights; and (2) decrease the risk and expense of patent litigation.¹ In recent years, courts and regulatory authorities in major jurisdictions have made progress towards such a uniform, international standard, converging in how they address FRAND-related cases.

A FRAND policy must solve three primary issues: hold-up, hold-out, and royalty pricing. Hold-up occurs when SEP holders prevent prospective licensees from using a patented technology by asserting their patents against these licensees, or by exercising their post-adoption leverage to demand excessive licensing fees. Hold-out occurs when SEP implementers do not obtain a license to use patented technology because they face no effective repercussions. Royalty pricing should be based on the SEP’s incremental value to the end product, and is best resolved by taking into account royalty stacking considerations.

This Note summarizes recent FRAND developments in the most important patent jurisdictions and explains how these developments address the three major issues discussed above. Part I provides a brief

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1. See Chris Neumeyer, *Managing Costs of Patent Litigation*, IPWATCHDOG (Feb. 5, 2013), <http://www.ipwatchdog.com/2013/02/05/managing-costs-of-patent-litigation/id=34808> [<https://perma.cc/7XST-JDST>] (citing an American Intellectual Property Law Association study, which calculated that “the cost of an average patent lawsuit, where \$1 million to \$25 million is at risk, is \$1.6 million through the end of discovery and \$2.8 million through final disposition”).

background on standard setting organizations (SSOs), SEPs, and FRAND licensing. Section II.A addresses the legal and policy bases for regulating FRAND licenses, using the *Rambus* case to highlight the importance of a functional FRAND licensing system. Section II.B explains the three key issues of patent hold-up, license hold-out, and royalty pricing in greater detail. Sections III.A and III.B provide analysis of international cases implicating FRAND using the hold-up/hold-out and royalty pricing frameworks. Section III.C discusses the nationalistic issue of governments favoring domestic companies in FRAND disputes. Section III.D discusses the Institute of Electrical and Electronic Engineers' (IEEE's) new FRAND policy. Part IV concludes with a summary of recent FRAND trends across international jurisdictions and predicts convergence in international FRAND licensing practices.

I. BACKGROUND

This Part provides a short introduction to the standards setting process and a brief analysis of the components of a FRAND license.

A. SSOs AND SEPs

Interoperability standards are essential for any technology to benefit from network effects that scale with the size of its user base.² These standards provide specific features that allow “two or more networks, systems, devices, applications or components to exchange information between them and to use the information so exchanged.”³ In fact, standard setting has evolved in parallel with the development of technology itself—from basic metric and time systems, to now-mundane drill bit and electric plug standards, to modern wireless networking and cellular communications features.⁴

Over the past two decades, most interoperability standards were collaboratively developed by private firms within voluntary associations

2. See generally Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424 (1985); CARL SHAPIRO & HAL R. VARIAN, INFORMATION RULES (1999).

3. EUROPEAN INFORMATION AND COMMUNICATIONS TECHNOLOGY INDUSTRY ASSOCIATION, EICTA Interoperability White Paper, at 2 (June 21, 2004).

4. See, e.g., Jorge L. Contreras, *Patents, Technical Standards and Standard-Setting Organizations: A Survey of the Empirical, Legal and Economics Literature*, in RESEARCH HANDBOOKS ON THE ECONOMICS OF INTELLECTUAL PROPERTY LAW—VOLUME 2: ANALYTICAL METHODS (forthcoming) (manuscript at 3).

known as SSOs.⁵ When an SSO adopts a standard that includes certain patented technology, the owner of that technology now owns an SEP, a patent that must be used if a market participant wants to implement the standard.⁶ Thus, in the absence of any regulation or guidance, individual SEP holders may theoretically assert substantial market power over other market participants in determining licensing rates.⁷ This power imbalance may deter the practical implementation of a standard, thus undermining industry efforts to achieve the network interoperability necessary for further product development.

B. FRAND LICENSING

Prior to setting any standards, SSOs often require their members to agree to license their SEPs under Fair, Reasonable, and Non-Discriminatory (FRAND) terms.⁸ In view of the recent boom and substantial value of the smartphone market, the value of a FRAND-encumbered SEP has been the subject of much debate.⁹ This Note first defines FRAND by addressing what “fair and reasonable” terms generally entail, then discusses the implications of “non-discriminatory” licensing.

1. *Fair and Reasonable*

In general, courts agree that a FRAND license should reward patent holders for their contributions to an end product by apportioning royalties based on the SEP’s incremental value to the patented technology.¹⁰

5. See Brad Biddle et al., *The Expanding Role and Importance of Standards in the Information and Communications Technology Industry*, 52 JURIMETRICS J. 177, 178 (2012).

6. See, e.g., Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, in INNOVATION POLICY AND THE ECONOMY 119, 136 (Adam B. Jaffe et al. eds., 2001).

7. See Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CALIF. L. REV. 1889, 1931 (2002) (noting that an SEP holder may gain “market power it would not otherwise have obtained” by misrepresenting its IP and thereby evading an SSO’s patent regulation policy).

8. See, e.g., Shapiro, *Navigating the Patent Thicket*, *supra* note 6, at 128. U.S. courts generally leave out the “fairness” factor, such that only Reasonable and Non-Discriminatory (“RAND”) conditions are required. See, e.g., *Apple v. Motorola*, 869 F. Supp. 2d 901, 912 (N.D. Ill. 2012) (noting that “the word ‘fair’ adds nothing to ‘reasonable’ and ‘nondiscriminatory’”).

9. See Thomas H. Chia, Note, *Fighting the Smartphone War with RAND-Encumbered Patents*, 27 BERKELEY TECH. L.J. 209, 215–19 (2012).

10. See, e.g., *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1226 (Fed. Cir. 2014) (“The essential requirement is that the ultimate reasonable royalty award must be based on the incremental value that the patented invention adds to the end product.”).

However, it is unclear what constitutes a “fair and reasonable” license.¹¹ To further complicate the matter, many interoperable technologies are covered by thousands of patents, which can lead to an accumulation of licensing fees known as “royalty stacking.”¹² A royalty rate that may have seemed reasonable on its own is not reasonable when a company developing a particular technology must pay several thousand separate royalties to account for all of the patents implicated by its technology. Stacking all of these royalties on top of each other can make a product too expensive to bring to market.¹³

The challenge of setting a “fair and reasonable” license term is therefore two-fold. First, one must appropriately apportion the particular patent, or the value of that patent relative to the value of the technology as a whole. Second, one must determine the proper royalty base in relation to the value of the entire portfolio. In recent years, this second factor has been the subject of much debate among scholars and practitioners. Some scholars and courts argue that royalty rates should be calculated based on the price of the end product implementing a particular patented feature to properly account for the SEP’s contribution to the synergistic development of the interoperable technology,¹⁴ while other courts have argued that the

11. Lemley, *supra* note 7, at 1906 (noting that “while IP owners at many SSOs were required to license their rights on reasonable and nondiscriminatory terms, it isn’t clear what those obligations mean in practice”).

12. See, e.g., Mark A. Lemley & Carl Shapiro, *A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents*, 28 BERKELEY TECH. L.J. 1135, 1149–50 (2013).

13. See, e.g., Erik Stasik, *Royalty Rates and Licensing Strategies for Essential Patents on LTE (4G) Telecommunication Standards*, 2010 LES NOUVELLES 114, 114–15, 117 (estimating the aggregate royalty burden for the 3G GSM standard at 10% to 40% of the end product price, and that of the 4G LTE standard to be 14.8% of the end product price); Ann Armstrong, Joseph J. Mueller & Timothy D. Syrett, *The Smartphone Royalty Stack: Surveying Royalty Demands for the Components Within Modern Smartphones 2* (May 29, 2014) (working paper), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2443848 [<https://perma.cc/87CG-U7K9>] (estimating the aggregate patent royalty, in the absence of cross-licensing and royalty-reducing measures, for a hypothetical \$400 smart phone to be 30% of the end product price).

14. See J. Gregory Sidak, *The Proper Royalty Base for Patent Damages*, 10 J. COMPETITION L. & ECON. 989, 990 (2014); Commonwealth Sci. & Indus. Research Org. v. Cisco Sys., Inc., No. 6:11-CV-343, 2014 WL 3805817, at *14 (E.D. Tex. July 23, 2014) [hereinafter *CSIRO*], *vacated*, 809 F.3d 1295 (Fed. Cir. 2015) (holding that “a reasonable royalty based on hypothetical negotiations between CSIRO and Cisco would have resulted in a flat rate assessed per infringing end product unit sold with an increasing discount based on total volume of products sold”).

licensing fee should be calculated based on the smallest saleable patent practicing unit (SSPPU) to account for royalty stacking considerations.¹⁵

2. *Non-Discriminatory*

Most courts, regulatory authorities, and scholars agree that an SEP holder should be obligated to license its patent to all willing parties when it makes a FRAND commitment.¹⁶ The “non-discriminatory” requirement is important because—due to the patent exhaustion doctrine—once an SEP holder licenses its patents to a licensee upstream in the supply chain, it may no longer seek royalty fees from a downstream manufacturer.¹⁷ Although the SEP holder may be inclined to seek higher licensing fees by selectively licensing to downstream manufacturers of more expensive products, a “non-discriminatory” license prohibits it from refusing to license to upstream licensees that produce cheaper components.

II. KEY ISSUES IN FRAND LICENSING

FRAND licensing practices involve a variety of legal, policy, and practical considerations. This Part first addresses the legal and policy considerations, using the *Rambus* case to illustrate the significance of FRAND licensing for SEPs. It then introduces the practical implications of hold-up, hold-out, and royalty pricing, which creates the framework for further analysis in Part III.

15. See Contreras, *Survey*, *supra* note 4, at 23 (noting that “courts have increasingly sought to apportion end product revenue into smaller units”); see also *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d at 1127. The concept of the “smallest salable practicing unit was first introduced in *Cornell Univ. v. Hewlett-Packard Co.*, where the district court rejected Cornell’s royalty calculations based on the server, because it “encompass[ed] a product with significant non-infringing components,” and instead determined that “[t]he logical and readily available [royalty base] was the smallest salable infringing unit with close relation to the claimed invention—namely the processor itself.” 609 F. Supp. 2d 279, 287–88 (N.D.N.Y. 2009). The processor was part of the “CPU bricks,” which were “incorporated into a cell board, and that cell board [wa]s finally inserted into [Hewlett-Packard’s] server.” *Id.* at 283.

16. See, e.g., *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1031 (9th Cir. 2015) (“Under [FRAND] agreements, an SEP holder cannot refuse a license to a manufacturer who commits to paying the RAND rate.”).

17. See Contreras, *Survey*, *supra* note 4, at 23–24.

A. LEGAL AND POLICY CONSIDERATIONS

Entities must consider a variety of legal and policy considerations when dealing with SEPs. The *Rambus* cases illustrate potential effects of these considerations.

1. *The Importance of FRAND Licensing in the SEP Context*

On a fundamental level, the policy goals that inform SEP licensing are no different than for other patents.¹⁸ Patent law aims to encourage technological development by rewarding inventors, while also protecting the public domain by ensuring access to patented technologies.¹⁹ Therefore, the scope of the patents granted to patent holders must be sufficient to reward them for their innovative contributions, but not so great as to allow the patent holders to preempt an entire technological field, deterring follow-up inventions that use the patented features.

However, SEPs differ from other patents in that a significant part of their value is derived from an industry-wide agreement to adopt the patented technology as part of the interoperable standard.²⁰ These standards are often developed as a collective effort by various industry members and adopted only after SEP holders commit to a FRAND license.²¹ Once the industry adopts the standard, non-SEP holders will often operate under the assumption that the SEP is available for license and invest significant resources to incorporate the patented technology into their own products.²² It would therefore be unreasonable to give an SEP holder the right to exclude its competitors from entering the relevant technological area altogether, as typically provided by a patent.

Further, even if an SEP holder honors its commitment to license its SEP patents, it may still exercise an unjustifiable amount of leverage in post-adoption negotiations.²³ An SEP holder could essentially monopolize

18. See generally Jorge L. Contreras & Richard L. Gilbert, *A Unified Framework for RAND and Other Reasonable Royalties*, 30 BERKELEY TECH. L.J. 1451 (2015).

19. See U.S. DEP'T OF JUSTICE & U.S. PATENT & TRADEMARK OFFICE, POLICY STATEMENT ON REMEDIES FOR STANDARD-ESSENTIAL PATENTS SUBJECT TO VOLUNTARY F/RAND COMMITMENTS 1 (2013) [hereinafter USDOJ & USPTO].

20. See Contreras, *Survey*, *supra* note 4, at 9 (citing a 2008 study "suggesting that the fact that a technology becomes standardized itself increases the value of the underlying patents").

21. See Jorge L. Contreras, *A Brief History of FRAND: Analyzing Current Debates in Standard Setting and Antitrust Through a Historical Lens*, 80 ANTITRUST L.J. 39, 42 (2015).

22. See *id.*

23. See, e.g., Joseph Farrell, John Hayes, Carl Shapiro & Theresa Sullivan, *Standard Setting, Patents, and Hold-Up*, 74 ANTITRUST L.J. 603, 648 (2007) (discussing the issue

an entire area of technological development by demanding unreasonably high royalties. In such a scenario, a non-SEP holder will be faced with the choice of either accepting excessive licensing fees or withdrawing from the technological area altogether, perhaps after spending millions of dollars developing products that implement the agreed-upon SEP feature.²⁴ Many SSOs have therefore adopted FRAND policies to prevent SEP holders from exercising this type of unjustified post-adoption leverage.²⁵

2. *The Rambus Cases*

The *Rambus* cases offer a good example of how an SEP holder, in the absence of a FRAND commitment, can take advantage of industry implementation and exercise its post-adoption leverage. Rambus was initially committed to join the Joint Electron Device Engineering Council (JEDEC), an SSO developing dynamic random access memory (DRAM) standards.²⁶ Before JEDEC approved one of its standards covered by Rambus's SEPs, however, Rambus withdrew from JEDEC and thus evaded its obligation to commit to the SSO's patent policy.²⁷ Rambus offered to license its SEPs to several memory chip manufacturers, but while some agreed to its royalty demands, others did not and instead elected to sue.²⁸ Although Rambus's failure to disclose its pending patent

of ex-post market power, where "the patent can command high royalties based on hold-up even though the technology is not inherently superior"); Richard J. Gilbert, *Deal or No Deal? Licensing Negotiations in Standard-Setting Organizations*, 77 ANTITRUST L.J. 855, 855 (2011) (discussing patent owners' ex-post market power in negotiations following standard adoption).

24. See Daniel G. Swanson & William J. Baumol, *Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L.J. 1, 18–21 (2005); Colleen V. Chien, *Holding Up and Holding Out*, 21 MICH. TELECOMM. & TECH. L.J. 1, 14–15 (2014).

25. NAT'L RESEARCH COUNCIL, PATENT CHALLENGES FOR STANDARD-SETTING IN THE GLOBAL ECONOMY 4 (Keith Maskus & Stephen A. Merrill eds., 2013) (noting that most SSOs set their patent policies "to ensure that all essential patent claims are reasonably known to the participants and are available for licensing under a FRAND or a similar framework minimizing the potential for *ex post* hold-up and royalty stacking").

26. *Rambus Inc. v. FTC*, 522 F.3d 456, 460 (D.C. Cir. 2008); see also Michael A. Carrier, *The Rambus Certiorari Petition: Causation, Competition, and Standard-Setting Organizations*, PATENTLYO (Jan. 15, 2009), <http://patentlyo.com/patent/2009/01/the-rambus-cert.html> [https://perma.cc/8KY2-B32N]; Esther H. Lim & Lei Mei, *Standards and Patents: Lessons from the Rambus Cases*, FINNEGAN: MANAGING INTELLECTUAL PROPERTY, CHINESE EDITION (June 13, 2008), <http://www.finnegan.com/resources/articles/articlesdetail.aspx?news=d8d0a1b3-dbc7-440d-af05-0378b4ce81fa> [https://perma.cc/BA8Q-2ZVM].

27. *Rambus v. FTC*, 522 F.3d at 460.

28. *Id.* at 460–61.

applications led to fraud and antitrust claims, the Federal Circuit reversed a district court's finding that Rambus had committed fraud²⁹ and the D.C. Circuit reversed the FTC's holding that Rambus had violated antitrust laws.³⁰

The *Rambus* cases illustrate the importance of establishing clear and predictable guidelines for FRAND licensing, and potential repercussions in the absence thereof. JEDEC's failure to adopt a FRAND policy that required Rambus to (1) commit to license its SEPs under FRAND terms and (2) disclose all of its patents and applications related to DRAM technology allowed Rambus to bring suit against implementers of its SEP technology and use its SEPs as significant leverage in subsequent settlements. Samsung, for example, settled with Rambus in a deal worth up to \$900 million.³¹ Micron Technology entered into a licensing agreement to pay Rambus a total of \$280 million.³² All of this litigation was also costly for Rambus, which has subsequently lost several antitrust suits and spent an estimated \$300 million in legal fees since its formation in 1990.³³

B. PRACTICAL IMPLICATIONS

FRAND licensing also has practical implications for businesses that develop SEP-encumbered products. This Section introduces these implications, specifically the issues of "hold-up," "hold-out," and "royalty pricing." Part III then explains how courts have addressed these issues.

29. *Rambus Inc. v. Infineon Techs. AG*, 318 F.3d 1081, 1102–05 (Fed. Cir. 2003) (reversing the district court's finding of fraud because: (1) JEDEC's patent policy had "a staggering lack of defining details;" (2) substantial evidence did not support that Rambus breached its duty under JEDEC's policy; and (3) "Rambus withdrew from JEDEC before formal consideration of the DDR-SDRAM standard").

30. *Rambus v. FTC*, 522 F.3d at 466 (reversing the FTC's decision because the FTC had failed to establish that JEDEC would not have "standardized Rambus's technologies even if Rambus had disclosed its intellectual property") (emphasis in original).

31. Don Clark & Jung-Ah Lee, *Samsung Agrees to Pay Rambus \$900 Million in Chip Settlement*, WALL ST. J. (Jan. 18, 2010) (noting that Samsung paid Rambus \$200 million upfront, followed by \$25 million quarterly payments for five years, with an agreement to buy \$200 million worth of newly issued Rambus stock), <http://www.wsj.com/articles/SB10001424052748703837004575013554246385886> [<https://perma.cc/6ZLS-YCGG>].

32. Don Clark, *Micron, Rambus End Long-Running Legal Battles*, WALL ST. J. (Dec. 10, 2013), <http://www.wsj.com/articles/SB10001424052702304744304579249030450777094> [<https://perma.cc/V9KL-H8VR>]; Jim Handy, *Rambus vs. Micron: Who Really Won?*, FORBES (Dec. 13, 2013), <http://www.forbes.com/sites/jimhandy/2013/12/13/rambus-vs-micron-who-really-won/> [<https://perma.cc/MC7K-Z6HZ>].

33. See, e.g., Dan Levine & Noel Randewich, *Rambus Loses Antitrust Lawsuit, Shares Plunge*, REUTERS (Nov. 16, 2011), <http://www.reuters.com/article/2011/11/17/us-rambus-micron-verdict-idUSTRE7AF1XL20111117> [<https://perma.cc/NRR5-PM3>].

1. *Hold-Up*

SSOs often require their members to offer to license and disclose their patents under FRAND terms to prevent an SEP holder from “holding up” the patented technology in ex-post licensing negotiations.³⁴ In post-*Rambus* cases, courts have almost universally enforced a FRAND commitment between an SSO and an SEP owner as a legally binding agreement.³⁵ This trend implies that SEP owners who enter into a FRAND commitment cannot exercise the level of control over their SEPs that a patent holder may normally expect.³⁶

However, in the absence of clear guidelines on what is a “fair and reasonable” license, individual SEP owners may still retain substantial leverage to negotiate excessive royalty rates once the standard incorporating the SEP is widely adopted.³⁷ SEP implementers may then face the difficult choice of either agreeing to the SEP holder’s unreasonable requests or leaving a particular technological area altogether. SEP owners can thereby create an effective “hold-up,” impeding technological and business development because it is too expensive for others to secure the licenses necessary to operate in that technological space.³⁸

2. *Hold-Out*

FRAND licenses should sufficiently curtail an SEP holder’s right to exclude and limit its post-adoption negotiation leverage, but they should also protect the SEP owner from patent infringers who are unwilling to

34. See NAT’L RESEARCH COUNCIL, *supra* note 25, at 4; see also Thomas F. Cotter, *The Comparative Law and Economics of Standard-Essential Patents and FRAND Royalties*, 22 TEX. INTELL. PROP. L.J. 311, 311–12 (2014).

35. See, e.g., *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1231 (Fed. Cir. 2014); *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1033 (9th Cir. 2015) (citing *Microsoft Corp. v. Motorola, Inc.*, No. 11 C 9308, 2013 WL 2111217, at *2 (W.D. Wash. Oct. 3, 2013)).

36. *But see* Contreras & Gilbert, *supra* note 18, at 1451 (suggesting that “reasonable royalty analysis should be conducted in essentially the same manner for all patents, whether or not they are encumbered by RAND commitments”).

37. See Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 2010 (2007) (noting that “[t]he leverage comes from the ability of a patent owner to capture value that has nothing to do with its invention. It results from the inability of the accused infringer to separate the infringing component from the noninfringing ones after the fact.”).

38. *Id.* at 1993 (“[T]he threat of an injunction can enable a patent holder to negotiate royalties far in excess of the patent holder’s true economic contribution. Such royalty overcharges act as a tax on new products incorporating the patented technology, thereby impeding rather than promoting innovation.”).

negotiate a FRAND license.³⁹ If an SEP holder is presumptively denied injunctive relief due to its FRAND commitment, it lacks a remedy sufficient to enforce its rights because damage awards are often capped at the FRAND royalty determined at the time of infringement.⁴⁰ Opportunistic implementers may therefore decide to “hold-out” from licensing negotiations, knowing that the maximum penalty is merely what it should have paid for the license in the first place.⁴¹ Regulatory authorities have recognized the problems created by these “hold-out” or “reverse hold-up” situations,⁴² and courts have generally upheld an SEP holder’s ability to seek injunctive relief.⁴³

3. Royalty Pricing

Courts have generally provided that a FRAND rate should be based on the incremental value of the patented feature, but uncertainty remains in how to properly apportion an SEP’s value in relation to the value of the entire SEP-enabled technology.⁴⁴

Further, a particular technology may implicate hundreds of patents, which may lead to “royalty stacking” issues.⁴⁵ For example, a 2011 study conducted by patent aggregator RPX estimated that there are more than

39. See Chien, *supra* note 24, at 21–24.

40. *Id.*; see also Contreras, *Survey, supra* note 4, at 13.

41. Chien, *supra* note 24, at 21–24; see also Contreras, *Survey, supra* note 4, at 13.

42. See, e.g., USDOJ & USPTO, *supra* note 19, at 4; FTC, THE EVOLVING IP MARKETPLACE 229 (2011) (recognizing that “[t]he availability of an injunction is important to such patentees, who rely on the threat to deter infringement, encourage ex ante licensing, and prevent infringer hold-out”).

43. See, e.g., *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1331–32 (Fed. Cir. 2014) (holding that the district court erred in applying a per se rule to deny injunctions for SEPs and, instead, providing that the *eBay* framework is appropriate for FRAND committed patents); *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1045 (9th Cir. 2015) (reaffirming the district court’s jury instructions that “seeking injunctive relief was not a per se violation of the RAND commitment”).

44. See *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1226 (Fed. Cir. 2014) (providing various methods for apportioning the value of patented and unpatented features in a product: (1) “by careful selection of a royalty base to reflect the value added by the patent feature,” (2) “by adjustment of the royalty rate so as to discount the value of a product’s non-patented features,” and (3) “by a combination thereof”); see also Lemley & Shapiro, *A Simple Approach, supra* note 12, at 1149 (noting that “the hypothetical negotiation needs to reflect and account for reasonable royalties for standard-essential patents held by others” that read on the same product).

45. See *In re Innovatio IP Ventures, LLC*, No. 11 C 9308, 2013 WL 5593609, at *10 (N.D. Ill. Oct. 3, 2013); *Ericsson v. D-Link Sys.*, 773 F.3d at 1209.

250,000 patents relating to the average smartphone.⁴⁶ So even if a royalty rate for a single SEP may appear reasonable on its own, licensees may end up paying for hundreds if not thousands of licenses to operate the standard. Further, SEP holders may shift this royalty burden to consumers, which may drive up the end product price to an untenable level.⁴⁷ The issue of royalty stacking has led to a debate on how to calculate the royalty base to properly address the contributions of individual patents to a particular end product.⁴⁸

This debate is informed by two competing considerations.⁴⁹ On one hand is the issue of “over taxation:” a large royalty fee based on the price of the end product may over-burden the licensee and, ultimately, the end consumer. On the other hand is the issue of “under reward:” a small royalty fee based on the SSPPU may not properly reflect the technological contribution of an SEP and thereby under reward the SEP holder for its contribution to the value of the end product. As such, FRAND licensing requirements have created new considerations that directly affect high-level business decision-making in technology development.

III. INTERNATIONAL TRENDS IN FRAND LICENSING

Courts and regulatory authorities in countries that have substantial high technology industries have all had to address legal issues relating to FRAND licenses because of the global market for interoperable technologies. This Part first summarizes the landmark cases that highlight how these jurisdictions have dealt with (1) hold-up and hold-out and (2) royalty pricing issues. It then explains secondary considerations impacting international approaches to FRAND, such as economic protectionism and SSO policies, and how these concerns may affect present and future FRAND regulation.

46. RPX CORPORATION, FORM S-1 REGISTRATION STATEMENT 59, http://www.sec.gov/Archives/edgar/data/1509432/000119312511240287/ds1.htm#toc226103_11 [<https://perma.cc/24SS-TRAH>].

47. See Lemley & Shapiro, *Patent Holdup*, *supra* note 37, at 2013–15 (noting that “higher running royalties will raise the downstream firm’s marginal cost, which will raise its cost and thus reduce its level of output”).

48. See, e.g., J. Gregory Sidak, *supra* note 14; *CSIRO*, *supra* note 14; *Ericsson v. D-Link Sys.*, 773 F.3d at 1226.

49. See FTC, *THE EVOLVING IP MARKETPLACE*, *supra* note 42, at 144–48 (discussing the “detrimental effects on innovation and competition” from “[p]atent damages that either under or overcompensate patentees for infringement”).

A. INTERNATIONAL APPROACHES TO HOLD-UP AND HOLD-OUT ISSUES

Most jurisdictions are converging in how they strike the delicate balance between incentivizing potential SEP owners to innovate and preventing SEP holders from gaining excessive leverage in post-adoption negotiations. First, courts have generally upheld the validity of FRAND commitments as legal agreements, and some even impose monetary damages or sanctions against SEP holders who refuse to license under FRAND terms to willing implementers. Second, most courts have maintained the availability of injunctive relief as a limited remedy, specifically against unwilling licensees from holding out on obtaining licenses under FRAND terms.

1. *United States*

In the United States, courts have prevented hold-up by treating an SEP holder's commitment to an SSO to license its SEPs under FRAND terms as a legally binding contract.⁵⁰ Further, courts have held that a FRAND commitment follows an SEP and is not severable even upon a transfer of ownership.⁵¹

Since a FRAND commitment is a legally enforceable contract, an SEP holder's violation of its FRAND obligation is a breach of contract that may result in damages for the SEP implementer. *Microsoft Corp. v. Motorola, Inc.* ("*Microsoft*"), discussed below, is an example of this approach, where an SEP owner's violation of its FRAND obligation was treated as a breach of contract.⁵²

50. *See, e.g., Apple Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 911–12 (N.D. Ill. 2012) (“[T]he patentee (Motorola) has committed to licensing to anyone on [FRAND] . . . terms, as required by the standards-setting organizations as a condition of the patented technology’s being deemed essential to compliance with the standard.”); *Ericsson, Inc. v. D-Link Systems, Inc.*, No. 6:10-CV-473, 2013 WL 4046225, at *23 (E.D. Tex. Aug. 6, 2013), *aff’d in part, vacated in part, rev’d in part*, *Ericsson, Inc. v. D-Link Systems, Inc.*, 773 F.3d 1201 (Fed. Cir. 2014) (“As an IEEE member, Ericsson has an obligation to license its standard-essential patents on reasonable and non-discriminatory terms.”).

51. *See, e.g., In re Innovatio IP Ventures, LLC Patent Litigation*, No. 11 C 9308, 2013 WL 5593609, at *4 (N.D. Ill. Oct. 3, 2013) (holding that the IEEE’s FRAND “commitments are now binding on Innovatio, and that they can be enforced by the Defendants” because the undisputed “letters of Innovatio’s predecessors in interest to the IEEE constitute binding contractual commitments to the IEEE and its members”).

52. *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024 (9th Cir. 2015).

a) *Microsoft v. Motorola*

In October 2010, Microsoft brought suit against Motorola for breach of contract after Motorola refused to offer Microsoft licenses to its smartphone patents in accordance with its RAND obligations to the IEEE and the International Telecommunication Union (“ITU”).⁵³ Microsoft later amended its complaint, bringing a separate breach of contract claim against Motorola for filing a patent infringement suit seeking an injunction against Microsoft in Germany.⁵⁴ The district court held that Motorola’s RAND commitment created binding contracts enforceable by Microsoft, as a third-party beneficiary of the contract.⁵⁵ At trial, the jury found Motorola liable for breach of contract, awarding \$14.52 million to Microsoft.⁵⁶

On appeal, the Ninth Circuit upheld the jury’s award of damages under the substantial evidence standard of review because Motorola’s actions showed that it violated its duty of good faith and fair dealing.⁵⁷ In September 2015, the Ninth Circuit refused an en banc hearing to reconsider its decision, rendering its decision final.⁵⁸

The Ninth Circuit’s *Microsoft* decision has two significant implications, both of which work to reduce an SEP’s owner’s ability to engage in hold-up: (1) an SEP holder’s FRAND obligations are enforceable by affected third parties as a binding contract; and (2) an implementer-defendant may file a breach of contract counterclaim against an SEP holder who holds up its SEPs and be awarded substantial damages. An SEP owner may therefore be deterred from aggressively asserting its FRAND-committed patents by seeking either excessive royalties or injunctive relief. The Ninth Circuit, however, was careful to note that the jury in *Microsoft* was “instructed that seeking injunctive relief

53. *Microsoft Corp. v. Motorola, Inc.*, 854 F. Supp. 2d 993, 999–1001 (W.D. Wash. 2012).

54. *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d at 1033.

55. *Microsoft Corp. v. Motorola, Inc.*, 854 F. Supp. 2d at 999 (“[T]hrough Motorola’s letters to both the IEEE and ITU, Motorola has entered into binding contractual commitments to license its essential patents on RAND terms . . . Microsoft, as a member of both the IEEE and the ITU, is a third-party beneficiary of Motorola’s commitments to the IEEE and ITU.”).

56. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 6000017, at *2 (W.D. Wash. Nov. 12, 2013), *aff’d*, 795 F.3d 1024 (9th Cir. 2015).

57. *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d at 1045–47.

58. Matthew Bultman, *Full 9th Circ. Won’t Review \$14M Microsoft FRAND Ruling*, LAW360 (Sept. 15, 2015), <http://www.law360.com/articles/703017/full-9th-circ-won-t-review-14m-microsoft-frand-ruling> [<https://perma.cc/P247-XUKR>].

was not a per se violation of the RAND commitment”⁵⁹ The court’s refusal to provide a default rule barring FRAND-committed SEP holders from seeking injunctive relief against patent infringers supports a policy to discourage opportunistic implementers from holding out of obtaining FRAND licenses.

b) *Apple v. Motorola*

Indeed, the Federal Circuit in *Apple Inc. v. Motorola, Inc.* (“*Apple*”) rejected a similar per se rule, instead finding that, even in the FRAND context, the availability of injunctive relief should be determined using the four-factor test provided by the Supreme Court in *eBay v. MercExchange*.⁶⁰ The Federal Circuit’s *Apple* decision is significant because it meaningfully deters uncooperative licensees from opportunistically holding out on obtaining FRAND licenses from SEP holders.

Further, the *Microsoft* and *Apple* decisions illustrate how U.S. courts handle the challenges of balancing SEP holders’ and implementers’ rights in addressing the hold-up and hold-out issues. On one hand, once a patent holder commits its SEP to FRAND licensing, it is prohibited from holding up the patented technology, risking liability for breach of contract claims if it demands unreasonable licensing fees or seeks injunctive relief.⁶¹ On the other hand, these decisions deter implementers from holding out from licensing negotiations because injunctions may still be available under the *eBay* test.⁶²

2. *Europe*

FRAND issues in Europe are largely governed by anti-competition law, unlike in the United States, where they are governed by contract law.⁶³ Although injunctions are commonly granted upon a finding of

59. *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d at 1045.

60. *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1331 (Fed. Cir. 2014) (“To the extent that the district court applied a *per se* rule that injunctions are unavailable for SEPs, it erred.”); *see also* *eBay, Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 389 (2006) (“The test [for a permanent injunction] requires a plaintiff to demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law are inadequate to compensate for that injury; (3) that considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.”).

61. *See, e.g.*, *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 6000017, at *2 (W.D. Wash. Nov. 12, 2013), *aff’d*, 795 F.3d 1024 (9th Cir. 2015).

62. *See* *Apple Inc. v. Motorola, Inc.*, 757 F.3d at 1331.

63. *See, e.g.*, Bénédicte Moulin & Arun Roy, *Standard Essential Patents, FRAND Commitments and Anti-competition Rules—Lessons from the Front Line in the Smartphones*

patent infringement in certain European countries, such as Germany,⁶⁴ European courts and the European Commission (EC) have asserted that an SEP holder may be abusing its dominant market position by seeking an injunction under certain conditions. Injunctive relief for SEP infringement is therefore only available in Europe in limited circumstances. However, SEP holders are free to contract with potential licensees upon mutual agreement, or bring an infringement suit to let the courts decide what constitutes a FRAND royalty rate. This Section begins by discussing the German *Orange-Book-Standard* case, followed by the EC's *Motorola* and *Apple* decisions, and then the Court of Justice of the European Union's (CJEU's) recent *Huawei* ruling. It also discusses how the holdings have shifted SEP holders' and SEP implementers' respective burdens in FRAND-related infringement actions.

a) The German *Orange-Book-Standard* Decision

Germany's Federal Court of Justice's (FCJ's) *Orange-Book-Standard* decision laid the groundwork for subsequent FRAND-related cases in Europe,⁶⁵ but was later partially overruled by the recent *Huawei* ruling.⁶⁶ In *Orange-Book-Standard*, Philips sued multiple recordable compact disc (CD-R) manufacturers for allegedly infringing its SEPs.⁶⁷ Philips sought an injunction—commonly granted by the German courts upon a finding of infringement—in addition to monetary damages.⁶⁸ One defendant

War, D. YOUNG & CO. (June 4, 2014), <http://www.dyoung.com/article-anticompetition-0614> [<https://perma.cc/MP6U-5C8R>].

64. MASSIMO STERPI & THIERRY CALAME, *PATENT LITIGATION: JURISDICTION COMPARISONS* 147 (2d. ed. 2011).

65. Bundesgerichtshof [BGH] [Federal Court of Justice] May 6, 2009 (Docket No. KZR 39/06) (hereinafter FCJ *Orange-Book* Decision), *translated in* IPEG BLOG, <http://www.ipeg.com/blog/wp-content/uploads/EN-Translation-BGH-Orange-Book-Standard-eng.pdf> [<https://perma.cc/LW9B-28KM>]; *see also* Kelley Dryer, *A RANdom Glimpse Abroad: German Patent Courts and the "Orange Book" Defense*, ESSENTIAL PATENT BLOG (Jan. 28, 2013), <http://www.essentialpatentblog.com/2013/01/a-random-glimpse-abroad-german-patent-courts-and-the-orange-book-defense> [<https://perma.cc/V986-KTRR>].

66. *See* Axel Gutermuth, *EU High Court Sets Important SEP Precedent*, LAW360 (July 31, 2015) (noting that following the *Huawei* decision, "the approach set out by Germany's highest civil court . . . in the 2009 Orange Book judgment, which allows greater scope for the SEP holder to seek an injunction, can no longer be applied in FRAND cases"), <http://www.law360.com/articles/685548/eu-high-court-sets-important-sep-precedent> [<https://perma.cc/Y2FM-X4YJ>].

67. *See* FCJ *Orange-Book* Decision, *supra* note 65. The CD-R format specifications were provided in the Orange Book, hence the namesake for the case.

68. *See* Dryer, *supra* note 65.

argued that Philips had abused its dominant market position by seeking an injunction based on its SEPs.⁶⁹

In its decision, the FCJ found that if a company with a dominant market position (1) conducts discriminatory licensing practices or (2) inequitably refuses a license offer, the very act of seeking an injunction based on its SEP may constitute an abuse of its dominant market power.⁷⁰ However, a defendant seeking to invoke this defense must establish that (1) it made an unconditional offer for a FRAND license and (2) it actually paid reasonable royalties to the plaintiff, or to an escrow account, to establish consideration for the unconditional offer.⁷¹

The FCJ affirmed a lower court's decision that Philips did not abuse its dominant market position in seeking an injunction because the defendants who sought to invoke the abuse of dominant market position defense had not paid the royalties owed to Philips.⁷² The decision was initially viewed as a victory for potential defendants, but some have questioned the practicality of the defense because of its difficult requirements.⁷³

b) The European Commission's *Motorola* and *Apple* Decisions

In April 2014, the European Commission (EC) issued two important decisions.⁷⁴ One, *Motorola v. Apple* ("*Motorola*"), made it easier for an SEP implementer to raise an anti-competition defense against injunction actions.⁷⁵ In its accompanying press release, the EC further asserted that

69. See FCJ Orange-Book Decision, *supra* note 65, at 11.

70. *Id.* at 12.

71. *Id.* at 13–14.

72. *Id.* at 19.

73. See Dietrich Kamlah & Verena Bertram, *FRAND Defence Put on Trial Before European Court of Justice*, TAYLORWESSING (Oct. 2013), http://united-kingdom.taylorwessing.com/download/article_frand_defense.html [<https://perma.cc/KX2V-T25F>] (“[The *Orange-Book-Standard*] decision was initially seen as a breakthrough for defendants. However, since then hardly any FRAND defences raised in later cases have actually succeeded, due to the extraordinarily high practical requirements defined by the FCJ.”).

74. Commission Decision No. AT.39985, 2014 O.J. (C 344/06) [hereinafter EC *Motorola* Decision]; Commission Decision No. AT.39939, 2014 O.J. (C 350/08) [hereinafter EC *Samsung* Decision].

75. EC *Motorola* Decision, *supra* note 74, at 2 (“*Motorola*’s [seeking and enforcing an injunction against Apple] constitutes an abuse as of Apple’s second licensing offer as its conduct was capable of having . . . [anti-competitive effects]” by (1) temporarily banning online sales of Apple’s SEP-encompassing products in Germany, (2) including licensing terms that are disadvantageous to Apple in a settlement agreement, and (3) negatively impacting standard-setting); see also European Commission Press Release IP/14/189, Antitrust: Commission Finds that *Motorola* Mobility Infringed EU Competition Rules by Misusing Standard Essential Patents (Apr. 29, 2014),

SEP implementers may challenge the validity of the asserted SEPs and ascertain non-infringement of SEPs.⁷⁶ The other, *Samsung v. Apple* (“*Samsung*”), enforced an SEP holder’s FRAND commitment⁷⁷ and provided a “safe harbor” to protect willing licensees from injunctions.⁷⁸

In a follow-up FAQ memo, the EC addressed the apparent conflict between its two decisions and the *Orange-Book-Standard* decision, stating that the FCJ’s ruling “did not specifically relate to SEPs and is therefore not directly applicable to the cases on which the Commission decided.”⁷⁹ Nonetheless, these EC decisions removed the implementers’ obligation to raise an affirmative defense in response to an injunctive action, shifting the burden to the SEP holder to fulfill its commitment to license its patents under FRAND terms.⁸⁰ Further, the rulings work in favor of the SEP implementer and help to prevent hold-up situations by allowing the implementer to raise invalidity challenges and non-infringement defenses,⁸¹ as well as providing a “safe harbor” for willing licensees.⁸²

http://europa.eu/rapid/press-release_IP-14-489_en.htm [<https://perma.cc/4NBL-ERHX>] [hereinafter EC Motorola Press Release] (“[Motorola’s] seeking and enforcement of an injunction against Apple constitute[d] an abuse of its dominant position prohibited by EU antitrust rules,” because “it had committed to license on FRAND terms and where Apple had agreed to take a licence and be bound by a determination of the FRAND royalties by the relevant German court.”).

76. EC Motorola Press Release, *supra* note 75 (noting that it is anticompetitive for Motorola to “insist[], under the threat of the enforcement of an injunction, that Apple give up its rights to challenge the validity or infringement by Apple’s mobile devices of Motorola SEPs”).

77. EC Samsung Decision, *supra* note 74, at 2.

78. EC Samsung Decision, *supra* note 74, at 3 (noting that Samsung’s “commitments therefore provide for a ‘safe-harbour’ available to all potential licensees of Samsung’s Mobile SEPs that submit to the Licensing Framework provided for by the commitments”); *see also* European Commission Press Release IP/14/490, Antitrust: Commission Accepts Legally Binding Commitments by Samsung Electronics on Standard Essential Patent Injunctions (Apr. 29, 2014), http://europa.eu/rapid/press-release_IP-14-490_en.htm [<https://perma.cc/GD63-M8N7>].

79. European Commission Press Release MEMO/14/322, Antitrust Decisions on Standard Essential Patents (SEPs)—Motorola Mobility and Samsung Electronics—Frequently Asked Questions 3 [hereinafter FAQ Memo] (Apr. 29, 2014), http://europa.eu/rapid/press-release_MEMO-14-322_en.pdf [<https://perma.cc/9CCE-DLRQ>].

80. *Id.* at 2 (clarifying that “in the specific circumstances where the holder of a SEP has given a commitment to license on FRAND terms and where the company against which an injunction is sought is willing to enter into a FRAND licence agreement, the seeking of an injunction on the basis of SEPs can constitute an abuse of a dominant position”).

81. *Id.* at 3 (confirming that “[p]otential licensees of SEPs should remain free to challenge the validity, essentiality or infringement of SEPs”).

c) *Huawei v. ZTE*

In its *Huawei* decision, the CJEU offered a middle ground between the pro-patentee *Orange-Book-Standard* holding and the pro-implementer EC decisions.⁸³ In 2009, Huawei agreed to grant licenses to third parties for its SEP related to the ETSI's "Long Term Evolution" (LTE) standard and entered licensing negotiations with ZTE, but the parties were unable to reach an agreement.⁸⁴ Huawei then brought suit against ZTE for infringing its SEPs, seeking injunctive relief, a rendering of accounts, product recalls, and monetary damages.⁸⁵

In its decision, the CJEU laid out the specific circumstances in which an SEP holder may bring an infringement action seeking injunctive relief without abusing its dominant position.⁸⁶ First, the SEP holder must give notice to the alleged infringer prior to initiating a legal action.⁸⁷ Second, the SEP holder must present a specific, written offer for a license on FRAND terms, specifying the royalty and its calculation methods, after the alleged infringer has expressed its willingness to enter into a licensing agreement on FRAND terms.⁸⁸ The SEP holder may then initiate an action to seek injunctive relief if the alleged infringer continues to practice the SEP without diligently responding to the SEP holder's offer.⁸⁹

3. *China*

A Chinese court and relevant regulatory authority recently issued two decisions regarding FRAND licensing practices under China's Anti-Monopoly Law (AML) and contract law doctrines.⁹⁰ Both decisions found

82. *Id.* at 2 (stating that "[the] decisions provide a 'safe harbour' for willing licensees who want to avoid the risk of being the subject of an injunction on the basis of SEPs [if the licensees] are willing to have FRAND terms determined by a court or arbitrators (if agreed between the parties) and to be bound by such a determination").

83. Opinion, Case C-170/13, *Huawei Techs. Co. Ltd. v ZTE Corp.*, 2014 E.C.R. 2391, <http://curia.europa.eu/juris/liste.jsf?num=C-170/13> [<https://perma.cc/9TAH-82G2>].

84. *See id.* ¶ 5; *see also EU Regulator Rules on Huawei v ZTE and the Abuse of a Dominant Position in SEP Rights*, OUT-LAW.COM, <http://www.out-law.com/en/articles/2015/july/eu-regulator-rules-on-huawei-v-zte-and-the-abuse-of-a-dominant-position-in-sep-rights> [<https://perma.cc/Z9HV-GWCF>] (last visited Mar. 9, 2016).

85. Case C-170/13, *Huawei Techs. Co. Ltd.*, *supra* note 83, at ¶ 27 (judgment).

86. *Id.* ¶ 71.

87. *Id.*

88. *Id.*

89. *Id.*

90. *See* Michael Han & Kexin Li, *Huawei v. InterDigital: China at the Crossroads of Antitrust and Intellectual Property, Competition and Innovation*, COMPETITION POLICY INTERNATIONAL (Nov. 28, 2013), <https://www.competitionpolicyinternational.com/assets/Uploads/AsiaNovember3.pdf> [<https://perma.cc/3WMT-SJFD>]; Lewis Ho,

that SEP holders abused their dominant market positions by holding up patented technologies and were therefore liable for substantial penalties.⁹¹

a) *Huawei v. InterDigital*

In July 2011, InterDigital sued Huawei in the U.S. International Trade Commission and in U.S. District Court for patent infringement.⁹² In response, Huawei filed two complaints before the Shenzhen Intermediate People's Court, alleging that InterDigital had abused its dominant market position under China's AML and had failed to negotiate a FRAND license for its SEPs related to 3G wireless communication devices.⁹³

The Shenzhen court held in favor of Huawei on both counts.⁹⁴ Specifically, the court found that InterDigital had abused its dominant market position and thus violated China's AML by bundling and seeking discriminatory and unreasonably high royalty rates for its Chinese SEPs and non-SEPs, and by seeking an injunction in the U.S.⁹⁵ The court further ruled that InterDigital failed to comply with its FRAND commitments because it sought an injunction against Huawei, it requested a significantly higher royalty rate from Huawei than those paid by Apple and Samsung for the same SEPs, and it insisted that Huawei cross-license all of its patents globally on a royalty-free basis.⁹⁶ The court ordered InterDigital to pay Huawei CNY 20 million (approximately USD 3.2 million) in damages.⁹⁷ InterDigital appealed both cases, but the Guangdong High Court of China affirmed most of the Shenzhen court's rulings and its damage award.⁹⁸

Qualcomm Transforms SEP-Licensing Landscape in China, LAW360 (Apr. 8, 2015), <http://www.law360.com/articles/638183/qualcomm-transforms-sep-licensing-landscape-in-china> [<https://perma.cc/FR2K-3794>].

91. See Han & Li, *supra* note 90; Ho, *supra* note 90.

92. David Goldstein et al., *Chinese Court Publishes Decisions Finding that InterDigital Violated AML Through Discriminatory Pricing, Sets FRAND Rate for Licensing InterDigital's SEPs Under Chinese Standards*, ORRICK ANTITRUSTWATCH BLOG (June 6, 2014), <http://blogs.orrick.com/antitrust/2014/06/06/chinese-court-publishes-decisions-finding-that-interdigital-violated-aml-through-discriminatory-pricing-sets-frand-rate-for-licensing-interdigitals-seps-under-chinese-standards> [<https://perma.cc/G689-T5DF>].

93. See Han & Li, *supra* note 90, at 2.

94. *Id.* at 2–3.

95. *Id.*

96. *Id.* at 3.

97. *Id.*

98. *Id.*

b) NDRC's Sanctions against Qualcomm

In February 2015, China's National Development and Reform Commission (NDRC) issued an administrative sanction against Qualcomm for violating China's AML by abusing its dominant market position in both its SEP licensing business and its supply of baseband chipsets.⁹⁹ The NDRC therefore imposed a penalty of \$975 million against Qualcomm, corresponding to 8% of its \$12.3 billion revenue in China in 2013.¹⁰⁰ Further, the NDRC ordered Qualcomm to: (1) clearly set out the SEPs to be licensed; (2) cease demanding that licensees cross-license their non-SEPs, or cross-license their SEPs without paying fair licensing fees; and (3) stop basing royalty rates on the full wholesale price of mobile devices.¹⁰¹ Qualcomm subsequently declined to pursue further legal proceedings to contest the NDRC's findings.¹⁰²

Considering together the *Huawei* decision and the NDRC's sanctioning of Qualcomm, SEP holders in China may not hold up patented technology by demanding excessive royalty rates or other unreasonable licensing conditions in exchange for a patent license. However, it is not yet clear whether SEP holders may seek injunctive relief in FRAND-related cases to prevent hold-out situations.¹⁰³

4. India

India is home to the world's second-largest telecommunications market,¹⁰⁴ but its courts and regulatory authorities have only recently started addressing FRAND licensing practices for SEPs.¹⁰⁵

99. See Kat Greene, *Qualcomm Pays \$975M Fine to End China Antitrust Probe*, LAW360 (Feb. 9, 2015), <http://www.law360.com/articles/619642/qualcomm-pays-975m-fine-to-end-china-antitrust-probe> [https://perma.cc/E4QP-WF94]; Ho, *supra* note 90.

100. Ho, *supra* note 90.

101. *Id.*

102. See David Long, *Qualcomm Reaches Agreement with Chinese Government on Standard Essential Patent Investigation*, ESSENTIAL PATENT BLOG (Feb. 10, 2015), <http://www.essentialpatentblog.com/2015/02/qualcomm-reaches-agreement-with-chinese-government-on-standard-essential-patent-investigation> [https://perma.cc/S8BS-G7RX].

103. Although the Guangdong Higher People's Court in *Huawei* held that "by seeking injunctive relief in the US against Huawei, a willing licensee, with respect to its F/RAND-encumbered SEPs InterDigital violated its F/RAND commitments and that this conduct thereby constituted an abuse," the court did not comment more generally on the availability of injunctions against uncooperative licensees. See Han & Li, *supra* note 90.

104. *Indian Telecommunication Industry Analysis*, INDIA BRAND EQUITY FOUNDATION (Oct. 2014), <http://www.ibef.org/industry/indian-telecommunications-industry-analysis-presentation> [https://perma.cc/Y6QF-V3HJ].

In 2013, Micromax and Intex brought separate antitrust complaints at the Competition Commission of India (CCI) against Ericsson for its licensing practices relating to 2G and 3G mobile communication technologies.¹⁰⁶ In both cases, the CCI held that Ericsson abused its dominant market position by demanding “excessive” and “discriminatory” royalty rates.¹⁰⁷ Similar to the U.S. courts, the CCI explicitly stated that “FRAND licences are primarily intended to prevent Patent Hold-Up and Royalty Stacking,” and noted that patent hold-up “can subvert the competitive process of choosing among technologies and undermine the integrity of standard-setting activities.”¹⁰⁸ Therefore, under India’s antitrust laws, SEP holders may not hold up patented technologies by demanding excessive and discriminatory royalty rates.

At the same time, Ericsson filed two patent infringement suits against Micromax and Intex in the Delhi High Court, seeking damages and a permanent injunction in both cases.¹⁰⁹ In the *Micromax* case, the court permitted Ericsson officials to inspect Micromax’s imported devices for infringement with the aid of customs officials.¹¹⁰ In the *Intex* case, the court issued an interim injunction against Intex that enjoined it from manufacturing, selling, or importing products that may infringe Ericsson’s SEPs during the pendency of the suit.¹¹¹ The court’s orders in *Micromax*

105. See J. Gregory Sidak, *FRAND in India: The Delhi High Court’s Emerging Jurisprudence on Royalties for Standard-Essential Patents*, 10 J. INTEL. PROP. L. & PRAC. 609, 609 (2015).

106. *Micromax Informatics Ltd. v. Telefonaktiebolaget LM Ericsson*, Case No. 50/2013, Competition Comm’n of India (Nov. 12, 2013), http://cci.gov.in/sites/default/files/502013_0.pdf [<https://perma.cc/6V4D-KDV4>] [hereinafter CCI *Micromax*]; *Intex Techs. (India) Ltd. V. Telefonaktiebolaget LM Ericsson*, Case No. 76/2013, Competition Comm’n of India (Jan. 16, 2014), http://cci.gov.in/sites/default/files/762013_0.pdf [<https://perma.cc/H2J9-RERW>] [hereinafter CCI *Intex*].

107. CCI *Micromax*, *supra* note 106, at 7–8; CCI *Intex*, *supra* note 106, at 7; see also Sidak, *supra* note 105, at 610–11.

108. CCI *Micromax*, *supra* note 106, at 6; see also Sidak, *supra* note 105, at 610.

109. *Telefonaktiebolaget LM Ericsson v. Mercury Elecs. & Another*, Interim Application 3825/2013 in Civil Suit (Original Side) No. 442/2013, High Ct. of Delhi (Nov. 12, 2014), <http://lobis.nic.in/dhcdhc/GSS/judgement/17-11-2014/GSS12112014S4422013.pdf> [<https://perma.cc/D3H5-C72L>] [hereinafter HCD *Micromax*]; *Telefonaktiebolaget LM Ericsson v. Intex Techs. (India) Ltd.*, Interim Application 6735/2014 in Civil Suit (Original Side) No. 1045/2014, High Ct. of Delhi (Mar. 13, 2015), <http://lobis.nic.in/dhcdhc/SID/judgement/28-03-2014/SID24032014LPA2552014.pdf> [<https://perma.cc/8A5R-4UBG>] [hereinafter HCD *Intex*].

110. HCD *Micromax*, *supra* note 109, at 4.

111. HCD *Intex*, *supra* note 109, at 256; see also Sidak, *supra* note 105, at 612; Kartik Chawla, *Ericsson v. Intex, Part 1—SEPs, Injunctions, and Gathering Clouds for Software Patenting?*, SPICYIP (Mar. 22, 2015), [http://spicyip.com/2015/03/ericsson-v-intex-part-](http://spicyip.com/2015/03/ericsson-v-intex-part-1)

may indicate that the Indian authorities are willing to grant permanent injunctions upon a finding of patent infringement, effectively deterring implementers from holding out of licensing negotiations.

5. *South Korea*

South Korea's Federal Trade Commission (KFTC) has also recently issued a FRAND decision that has the impact of preventing SEP holders from holding out their patented technologies. In 2015, the KFTC internally determined that Qualcomm abused its dominant position and violated its FRAND commitments by "charg[ing] handset makers royalties based on a percentage of the price of their handsets."¹¹² Qualcomm plans to challenge the KFTC's allegations.¹¹³ Significantly, the KFTC and the EC are now cooperating in their antitrust investigations of Qualcomm and in assessing the appropriate penalties.¹¹⁴

6. *Summary*

Several key lessons emerge from this analysis: (1) SEP holders must fulfill their FRAND commitments by offering licenses to any willing licensee (i.e., no hold-ups); and (2) SEP implementers must also be willing to negotiate in good faith (i.e., no hold-outs). Further, uncooperative implementers may face the risk of an injunction in the U.S. and Europe. As Judge Davis of the Eastern District of Texas noted in *Ericsson v. D-Link*, "[F]RAND licensing also includes an obligation to negotiate in good faith. This obligation is a two-way street."¹¹⁵ Table 1 provides a summary of the key takeaways on hold-out and hold-up issues.

1-seps-and-injunctions-and-a-new-era-of-software-patenting.html [https://perma.cc/FGM4-XUL6].

112. Don Clark, *Qualcomm Says South Korea Recommends Fine for Alleged Antitrust Violations*, WALL ST. J. (Nov. 18, 2015), <http://www.wsj.com/articles/qualcomm-says-south-korea-recommends-fine-for-alleged-antitrust-violations-1447820172> [https://perma.cc/LZX4-GZGM]; see also Cho Mu-Hyun, *Qualcomm Facing Penalty from South Korean Antitrust Regulator*, ZDNET (May 5, 2015), <http://www.zdnet.com/article/qualcomm-facing-penalty-from-south-korean-antitrust-regulator/> [https://perma.cc/8UP4-GF98].

113. See Clark, *supra* note 112.

114. See Cho Mu-Hyun, *South Korea, EU to Cooperate on Qualcomm Investigations*, ZDNET (May 6, 2015), <http://www.zdnet.com/article/south-korea-eu-to-cooperate-on-qualcomm-investigations/> [https://perma.cc/Y289-HFZH].

115. *Ericsson, Inc. v. D-Link Sys., Inc.*, No. 6:10-CV-473, 2013 WL 4046225, at *25 (E.D. Tex. Aug. 6, 2013).

Table 1: International Hold-up and Hold-out Cases

Country	Governing Law	Damages/ Sanctions Available?	Injunctions Available?
United States	Contract Law	Yes (<i>Microsoft v. Motorola</i>)	Availability based on <i>eBay</i> test (<i>Apple v. Motorola</i>)
Europe	Anti-Competition	Yes (<i>Huawei v. ZTE</i>)	Available under specific conditions (<i>Huawei v. ZTE</i>)
China	Anti-Monopoly	Yes (<i>Huawei v. IDC</i> ; Qualcomm Sanction)	Unclear
India	Antitrust	Unclear	Interim injunctions available (<i>Ericsson v. Intex</i>)
Korea	Antitrust	To be determined (<i>See Qualcomm Sanction</i>)	Unclear

B. INTERNATIONAL APPROACHES TO FRAND ROYALTY RATE

The FRAND royalty rate for an SEP depends on two factors: (1) the apportionment of the SEP's value; and (2) the royalty base.¹¹⁶ Although it is impossible to precisely measure an SEP's relative contribution to a patented technology, some courts have determined the appropriate apportionment by analyzing the total number of patents covering a particular technology and the relative significance of the SEP in that technology.¹¹⁷ Some dispute remains, however, as to whether a FRAND royalty should be calculated based on the end product incorporating the patented feature or the SSPPU.¹¹⁸

116. See Contreras, *supra* note 18, at 23 (explaining that royalty base, or “the amount to which the royalty rate is applied,” and apportionment are critical variables in calculating the FRAND royalty rate).

117. See, e.g., *In re Innovatio IP Ventures, LLC Patent Lit.*, No. 11 C 9308, 2013 WL 5593609, at *37–43 (N.D. Ill. Oct. 3, 2013).

118. See, e.g., Sidak, *supra* note 14, at 609, 616 (explaining that some courts in India have used SSPPU while others have not and discussing the economic implications of both methods); *CSIRO*, *supra* note 14, at *5; *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d at 1227. For further explanation of a SSPPU-based royalty calculation, see *VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1327 (Fed. Cir. 2014) (noting that “the smallest salable unit approach was intended to produce a royalty base much more closely tied to the claimed invention than the entire market value of the accused products,” but “the fundamental concern about skewing the damages horizon—of using a base that

This Section provides an overview of how various important jurisdictions for patent owners have addressed the royalty pricing issue, followed by a general discussion containing guidance for practitioners calculating FRAND royalties.

1. *United States*

In the United States, FRAND rates are generally calculated based on the SSPPU, where a royalty based on the value of an end product is appropriate only if the patented feature substantially creates the product's overall value. U.S. courts have long held that patent damages should be calculated by apportioning the value of the patented feature.¹¹⁹ In *LaserDynamics, Inc. v. Quanta Computer, Inc.*, the Federal Circuit applied this standard to multi-component optical disc drives and held that “it is generally required that royalties be based not on the entire product, but instead on the [SSPPU].”¹²⁰ The court further provided that “[t]he entire market value rule is a narrow exception to this general rule” and a damages calculation based on the entire product is warranted only “[i]f it can be shown that the patented feature drives the demand for an entire multi-component product.”¹²¹ Following *LaserDynamics*, many courts have applied the SSPPU as the royalty base in calculating the royalty rate for multi-component technological products.¹²²

a) *In re Innovatio IP Ventures*

In 2013, Innovatio IP Ventures sued numerous commercial users of wireless internet technology for allegedly infringing its patents relating to

misleadingly suggests an inappropriate range—does not disappear simply because the smallest salable unit is used”); *see also* Cornell, *supra* note 16.

119. *See* Garretson v. Clark, 111 U.S. 120, 120–21 (1884) (holding that patent damages should be calculated by “separat[ing] or apportion[ing] the defendant’s profits and the patentee’s damages between the patented feature and the unpatented features,” and “profits and damages are to be calculated on the whole machine [only if] the entire value of the whole machine, as a marketable article, is properly and legally attributable to the patented feature”).

120. *LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 67 (Fed. Cir. 2012) (citing *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 283, 287–88 (N.D.N.Y. 2009)) (noting that “calculating a royalty on the entire product carries a considerable risk that the patentee will be improperly compensated for non-infringing components of that product”).

121. *Id.*

122. *See, e.g.*, *Wi-Lan Inc. v. Alcatel-Lucent USA Inc.*, No. 6:13-CV-252, 2013 WL 10404065, at *3–4 (E.D. Tex. June 28, 2013); *GPNE Corp. v. Apple, Inc.*, No. 12-CV-02885-LHK, 2014 WL 1494247, at *11 (N.D. Cal. Apr. 16, 2014).

the IEEE's 802.11 wireless standard.¹²³ The prior owners of Innovatio's patents had contractually agreed with IEEE to "license any patents that were essential to the operation of the 802.11 wireless standard on [RAND] terms," so the district court determined Innovatio's recovery based on a RAND licensing fee.¹²⁴ Citing *LaserDynamics*, the court rejected Innovatio's contention that the royalty fee should be calculated based on the end product and held that royalties must instead be calculated on the SSPPU, which were Wi-Fi chips.¹²⁵ The district court adopted a "top down" approach for calculating royalties using the average profits from the sales of each Wi-Fi chip and accounting for the relative significance of Innovatio's patents among the total number of 802.11 SEPs, arriving at a RAND rate of 9.56 cents per Wi-Fi chip.¹²⁶

b) *Ericsson v. D-Link*

Similarly, in *Ericsson*, the Federal Circuit reversed and remanded a district court's FRAND assessment based on the price of an end product.¹²⁷ In 2010, Ericsson sued D-Link Systems—and seven other major electronics and computer manufacturers—for infringing Ericsson's SEPs relating to the IEEE's 802.11(n) wireless standard.¹²⁸ The jury found the defendants liable for infringement and awarded Ericsson \$10 million in damages, based on a royalty rate of \$0.15 per end product.¹²⁹

On appeal, the Federal Circuit assessed the appropriate damages and noted that "the ultimate reasonable royalty award must be based on the incremental value that the patented invention adds to the end product."¹³⁰ In finding that the SEP only added value to a sub-component of the end product, the court held that "a more realistic starting point for the royalty calculations" is often "the smallest salable unit and, at times, even less,"

123. *In re Innovatio IP Ventures, LLC Patent Litig.*, No. 11 C 9308, 2013 WL 5593609, at *1 (N.D. Ill. Oct. 3, 2013).

124. *Id.* at *2–3.

125. *Id.* at *13.

126. *Id.* at *37–43.

127. *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1225 (Fed. Cir. 2014).

128. *Ericsson, Inc. v. D-Link Systems, Inc.*, No. 610-CV-473, 2013 WL 4046225, at *3–8 (E.D. Tex. Aug. 6, 2013); *see also* Jason Rantanen, *Ericsson v D-Link: Standards, Patents, and Damages*, PATENTLY-O, (Dec. 4, 2014), <http://patentlyo.com/patent/2014/12/ericsson-standards-damages.html> [<https://perma.cc/CCE5-PCDL>].

129. *Ericsson, Inc.*, 2013 WL 4046225, at *1–2, *21–23.

130. *Ericsson, Inc.*, 773 F.3d at 1226.

and remanded the case to the district court for a FRAND determination.¹³¹

c) *Microsoft v. Motorola*

In its recent *Microsoft* opinion, however, the Ninth Circuit affirmed a district court's decision to calculate FRAND royalties based on the price of the end product.¹³² The district court addressed royalty stacking concerns by apportioning the SEPs for significantly less than Motorola's initial demand.¹³³

The district court determined the reasonable royalty rate using a modified version of the *Georgia-Pacific* factors.¹³⁴ Specifically, the court noted that parties negotiating proper FRAND terms must, "with respect to stacking concerns[,] . . . consider the overall licensing landscape in existence vis-à-vis the standard and the implementer's products."¹³⁵ In a subsequent bench trial, the court determined that the RAND royalty for Motorola's H.264 portfolio was .555 cents per end-product unit and the rate for Motorola's 802.11 portfolio was 3.71 cents per unit.¹³⁶ On appeal, the Ninth Circuit upheld the district court's RAND determination because the district court "properly applied the hypothetical agreement approach."¹³⁷

The Microsoft decision cuts to the crux of the royalty pricing issue because a FRAND royalty is ultimately the product of both the apportionment and the royalty base. The SSPPU approach may appear to be preferable because it directly addresses royalty stacking concerns. However, even if the royalty rate is calculated based on the end product, so long as the apportionment percentage is sufficiently low, the cumulative

131. *Id.* at 1227 (again noting that if the overall value of the end product is "properly and legally attributable to the patented feature," an appropriately apportioned royalty award "may be calculated by reference to [the entire market value of the multi-component product]").

132. *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d at 1033, 1056–57.

133. *Id.* at 1032–33 (noting that the district court determined the proper RAND rate to be \$0.00555 per end product for Motorola's H.264 portfolio and \$0.0371 per end product for Motorola's 802.11 portfolio, which are both substantially lower than Motorola's initial demand of 2.25% of the price of the end product incorporating the patents).

134. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 2111217 at *3 (W.D. Wash. Apr. 25, 2013) (citing *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970)).

135. *Id.* at 20.

136. *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d at 1033–34.

137. *Id.* at 1042.

licensing fees are unlikely to stack to a level at which it becomes a significant burden for product development.

For example, a cellular handset worth \$500 may contain a \$10 Wi-Fi chip. It makes no economic difference whether the court determines that the FRAND rate for an SEP is 0.001% of the handset or 0.05% of the chip because both are equal to \$0.005.

2. *Europe*

European courts and the EC have not provided specific guidance on what constitutes a “reasonable” royalty rate. They have, however, instituted certain mechanisms with the aim of encouraging potential licensees and licensors to enter into negotiations regarding FRAND licensing terms.

In *Orange-Book-Standard*, for example, the German court’s decision had the effect of incentivizing SEP implementers to initiate negotiations for FRAND licenses, in order to minimize the risk of an injunction and damages arising for parties “who [are] not ready to enter into a license agreement on [FRAND] terms.”¹³⁸

In contrast, the EC’s *Motorola* and *Samsung* decisions provided a “safe harbor” rule to alleviate the implementer’s burden by substituting the royalty payment requirement with a third-party determination agreement.¹³⁹ That said, implementers nonetheless must be willing to enter FRAND negotiations to qualify for “safe harbor” protection.¹⁴⁰ Although the EC explicitly refused to provide FRAND guideline rates because it found courts and arbitrators better suited to determine contract terms,¹⁴¹ the EC did offer to provide further guidance on its interpretation of EU competition law relating to FRAND practices.¹⁴²

In *Huawei*, the CJEU explicitly declined to provide the “specific terms of a FRAND licence,” but instead sought to determine “the framework within which the licensing of an SEP on FRAND terms is to be

138. FCJ Orange-Book Decision, *supra* note 65.

139. See *FAQ Memo*, *supra* note 79, at 2 (“The *Motorola* decision provides a ‘safe harbour’ for standard implementers who are willing to take a licence on FRAND terms.”).

140. *Id.* (“[I]f [SEP implementers] want to be safe from injunctions based on SEPs by the patent holder, they can demonstrate that they are a willing licensee by agreeing that a court or a mutually agreed arbitrator adjudicates the FRAND terms.”).

141. *Id.* at 3 (“The Commission believes that courts and arbitrators are well-placed to set FRAND rates in cases of disputes.”).

142. *Id.* (“To the extent [courts] deem necessary, national courts may seek guidance from the Commission on the interpretation of EU competition law.”).

negotiated.”¹⁴³ On top of providing a negotiation framework for licensing SEPs,¹⁴⁴ the CJEU further stated “where no agreement is reached on the details of the FRAND terms . . . the parties may, by common agreement, request that the amount of the royalty be determined by an independent third party.”¹⁴⁵

3. *China*

In *Huawei*, the Guangdong High Court affirmed the lower court’s FRAND determination: 0.019% of the end product.¹⁴⁶ The court did not provide any explicit reasoning for its holding,¹⁴⁷ but its relatively low apportionment is sufficient to address any royalty stacking concerns that may arise from its end-product-based calculations. In its subsequent Qualcomm decision, however, the NDRC sanctioned Qualcomm in part for basing its SEP licensing fees on the full price of the end product.¹⁴⁸ This may signify a shift towards a FRAND rate calculated based on the price of the SSPPU in China.

4. *India*

The CCI and the Delhi High Court are currently split on whether to apply the price of the end product or the SSPPU as the royalty base. In *Ericsson v. Micromax*, the CCI noted that Ericsson’s practice of calculating royalties as a percentage of the price of a downstream product was “excessive” and “discriminatory,” and instead favored a calculation based on the SSPPU.¹⁴⁹

143. Opinion, Case C-170/13, *Huawei Techs. Co. Ltd. v ZTE Corp.*, 2014 E.C.R. 2391, <http://curia.europa.eu/juris/liste.jsf?num=C-170/13> [<https://perma.cc/7XBG-22WH>], ¶ 40.

144. For a detailed discussion of the negotiation framework, see Section III.A.2.c.

145. Judgment, Case C-170/13, *Huawei Techs. Co. Ltd. v ZTE Corp.*, 2014 E.C.R. 2391, <http://curia.europa.eu/juris/liste.jsf?num=C-170/13> [<https://perma.cc/7XBG-22WH>], ¶ 68.

146. See Han & Li, *supra* note 90, at 3.

147. Shylah R. Alfonso & Kevin A. Zeck, *Chinese Court Issues Landmark Decision Determining a FRAND Royalty Rate*, A.B.A. INTELL. PROP., Apr. 1–5, 2013, at 1, http://www.americanbar.org/content/dam/aba/publications/antitrust_law/at315000_tidbits_20130405.authcheckdam.pdf [<https://perma.cc/Z7DA-5B65>] (noting that “[t]he court did not explain how it arrived at the figure”).

148. See Ho, *supra* note 90.

149. CCI *Micromax*, *supra* note 106, at 7 (noting that the “increase in the royalty [by basing it on the end product rather than the SSPPU] for patent holder is without any contribution to the product of the licensee. Higher cost of a smartphone is due to various other softwares/technical facilities and applications provided by the manufacturer/licensee for which he had to pay royalties/charges to other patent holders/patent developers”); CCI *Intex*, *supra* note 106, at 7; see also Sidak, *supra* note 105, at 610, 616.

In contrast, the Delhi High Court ordered Micromax to pay FRAND royalties based on the percentages of the net selling prices of the devices incorporating its SEP technologies,¹⁵⁰ and relied on comparable licenses to determine the appropriate FRAND royalty rate.¹⁵¹ Further, the court set the royalty rate as 0.8% to 1.3% of the net selling price of the mobile device.¹⁵² Unlike the FRAND rates reached in the *Microsoft* opinion in the U.S., and the *Huawei* decision in China, this licensing fee represents a substantial percentage of the price of the end product and may later create royalty stacking issues due to the vast number of SEPs implicated in mobile devices.

5. Korea

Like in China, the KFTC found that Qualcomm violated antitrust laws by reportedly collecting royalty payments of around 5% of the sales price of smartphones that use its chips.¹⁵³ Citing the IEEE's new patent policy, the KFTC determined that "[FRAND] royalties should be calculated based on the price of the chipset, not the entire handset," but it remains uncertain whether the KFTC can force Qualcomm to change its licensing practices.¹⁵⁴

6. Summary

While the jurisdictions discussed above have not yet reached a consensus on whether FRAND royalty rates should be calculated based on the price of an end product or the SSPPU, most courts agree that a royalty rate is unreasonable if it leads to royalty stacking issues. SEP holders should therefore temper their expectations for FRAND royalties and value their SEPs accordingly.¹⁵⁵ Table 2 summarizes the key takeaways relating to royalty pricing issues.

150. HCD Micromax, *supra* note 109, at 1–3.

151. Sidak, *supra* note 105, at 612.

152. HCD Micromax, *supra* note 109, at 1–3.

153. *See* Cho, *supra* note 114.

154. *Id.*

155. For example, Google acquired Motorola Mobility's 24,500 patents and applications for a net \$9.6 billion and sought a royalty of 0.9% to 1.125% of sales of Apple's infringing devices. Judge Posner, however, characterized Motorola's damages claim as "going for broke" and dismissed the case with prejudice. *Apple, Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 913 (N.D. Ill. 2012).

Table 2. International Royalty Pricing Cases

Country	Jurisdiction	Decision/Case	Holding
United States	District Court (N.D. Ill.)	<i>In re Innovatio</i>	FRAND rate should be \$0.096 per SSPPU
	Federal Circuit	<i>Ericsson v. D-Link Sys.</i>	Rejected FRAND rate of \$0.15 per end product
	9th Circuit	<i>Microsoft v. Motorola</i>	Affirmed FRAND rate of \$0.00555 per end product for H.264 portfolio and \$0.0371 per end product for 802.11 portfolio
Europe	Federal Court of Justice of Germany	<i>Orange-Book-Standard</i>	Antitrust defense available only if implementer makes unconditional FRAND offer and pays royalty as consideration
	European Commission	<i>Motorola v. Apple; Samsung v. Apple</i>	Safe harbor for implementers if willing to negotiate and subject to FRAND determination by court or arbitrator
	CJEU	<i>Huawei v. ZTE</i>	Provide parties with negotiation framework
China	Guangdong High Court	<i>Huawei v. InterDigital</i>	Affirmed FRAND rate of 0.019% of end product
	NDRC	Qualcomm Sanction	Sanctioned Qualcomm for basing royalty on full price of end product
India	CCI	<i>Ericsson Cases</i>	FRAND rate should be based on SSPPU
	Delhi High Court	<i>Ericsson Cases</i>	FRAND rate should be based on end product and rely on comparable licenses
South Korea	KFTC	Qualcomm Sanction	Sanctioned Qualcomm for basing royalties on end product rather than SSPPU

C. NATIONALIST AND PROTECTIONIST CONCERNS

Patent policies can create barriers to entry into technological markets in particular countries.¹⁵⁶ International jurisdictions may therefore take into account the economic impact of particular FRAND policy choices on

156. Kirti Gupta, *The Patent Policy Debate in the High-Tech World*, 9 J. COMPETITION L. & ECON. 827, 829–30 (2013).

their domestic technology companies. These incentives lead to outcomes that appear to be motivated by nationalist or protectionist concerns.

1. *United States*

In litigation between technology titans Apple and Samsung, for example, the White House appeared to give preferential treatment to California-based Apple over the Korean firm Samsung. In June 2013, the ITC ruled that Apple's iPhone products infringed on Samsung's patents and issued a limited exclusion order banning Apple from importing and selling its devices in the U.S.¹⁵⁷ President Obama's administration then vetoed the ITC's ruling based on its "effect on competitive conditions in the U.S. economy and the effect on U.S. consumers."¹⁵⁸ This was the first time an administration had vetoed an ITC importation ban ruling since 1987.¹⁵⁹ But the ITC's exclusion order may have raised legitimate antitrust concerns by providing SEP holders with "undue leverage' through the threat of exclusion orders," so the White House's veto may not have been primarily motivated by protectionist impulses.¹⁶⁰

However, when Samsung made a similar request to veto the ITC's import ban on its smartphones based on infringement of Apple's patents,¹⁶¹ the White House refused.¹⁶² A key distinction between the two

157. See Linda Chiem, *ITC Bans US Sales of iPhones that Infringe Samsung Patent*, LAW360 (June 4, 2013), <http://www.law360.com/articles/444848/itc-bans-us-sales-of-iphones-that-infringe-samsung-patent> [<https://perma.cc/JPE5-5KUF>].

158. See U.S. TRADE REPRESENTATIVE, EXEC. OFFICE OF THE PRESIDENT, LETTER VETOING ITC-794 EXCLUSION ORDER (Aug. 3, 2013), https://ustr.gov/sites/default/files/08032013%20Letter_1.PDF [<https://perma.cc/XNR8-MF32>]; see also Connie Guglielmo, *President Obama Vetoes ITC Ban on iPhone, iPads; Apple Happy, Samsung Not*, FORBES (Aug. 3, 2013), <http://www.forbes.com/sites/connieguglielmo/2013/08/03/president-obama-vetoes-itc-ban-on-iphone-ipads-apple-happy-samsung-not> [<https://perma.cc/U3TY-HPSA>]; Ryan Davis, *White House Vetoes ITC Ban on Apple iPhones, iPads*, LAW360 (Aug. 4, 2013), <http://www.law360.com/articles/462443/white-house-vetoes-itc-ban-on-apple-iphones-ipads> [<https://perma.cc/RPL3-JLLU>].

159. See Guglielmo, *supra* note 158; Davis, *supra* note 158.

160. Davis, *supra* note 158; see also Florian Mueller, *Obama Administration Vetoes ITC Import Ban of Older iPhones and iPads over Samsung Patent*, FOSS PATENT (Aug. 3, 2013), <http://www.fosspatents.com/2013/08/obama-administration-vetoes-itc-import.html> [<https://perma.cc/L7TW-BTVB>] ("[ITC exclusion order's] effects would have been so very anticompetitive and anti-innovative that this veto was unfortunately necessary.")

161. Ryan Davis, *Samsung Seeks White House Veto of ITC Smartphone Ban*, LAW360 (Sept. 27, 2013) <http://www.law360.com/articles/476333/samsung-seeks-white-house-veto-of-itc-smartphone-ban> [<https://perma.cc/Z3F7-U7VB>].

162. See Ryan Davis, *USTR Won't Veto ITC Ban on Some Samsung Smartphones*, LAW360 (Oct. 8, 2013) <http://www.law360.com/articles/478548/ustr-won-t-veto-itc-ban-on-some-samsung-smartphones> [<https://perma.cc/9UDS-E9LB>].

exclusion orders is that Apple's patents were not SEPs, and Apple therefore did not have any FRAND commitments.¹⁶³ Given the circumstances leading up to the ITC's exclusion orders, however, protectionism may have been a factor in the White House's decision to intervene in favor of Apple.

2. *China*

Chinese authorities have also made decisions that appear to be informed by a desire to protect China's own national technological institutions. In *Huawei v. InterDigital*, for example, the Guangdong High Court held that American company InterDigital had abused its dominant market position because of its SEP licensing practices with Chinese technological giant Huawei.¹⁶⁴ Similarly, the NDRC imposed a sanction on Qualcomm, the American mobile chip industry leader, for demanding substantial licensing fees and free cross-licenses from Chinese firms such as Huawei and ZTE.¹⁶⁵

When viewed in isolation, these two cases may not strongly imply protectionism, but they are in fact representative of a greater trend where Chinese authorities "[have] increasingly targeted American companies."¹⁶⁶

3. *South Korea*

Similar to the U.S. and China, South Korea's courts and authorities have also issued rulings that appear to be motivated by favoritism towards its domestic technology industry. In 2012, for example, Apple sued Samsung in Seoul Central District Court for patent infringement.¹⁶⁷ The court found that Apple infringed two of Samsung's patents, but Samsung also infringed one of Apple's patents.¹⁶⁸ Thus, the court ordered both parties to pay a relatively small amount in damages and banned both from selling infringing products.¹⁶⁹ However, Apple's patent was not standard essential and Samsung could therefore design around it, whereas the relevant

163. See Davis, *supra* note 161.

164. See Han & Li, *supra* note 90, at 2–3.

165. See Ho, *supra* note 90.

166. Jason Mick, *China Smacks Qualcomm with Record \$975M USD Antitrust Fine*, DAILYTECH (Feb. 12, 2015), <http://www.dailytech.com/China+Smacks+Qualcomm+With+Record+975M+USD+Antitrust+Fine/article37153.htm#sthash.JbpTGoPZ.dpuf> [<https://perma.cc/CJ4C-8CX6>].

167. See Florian Mueller, *Apple-Samsung Ruling Suggests South Korea is a FRAND Rogue State*, FOSS PATENTS (Aug. 24, 2012), <http://www.fosspatents.com/2012/08/apple-samsung-ruling-suggests-south.html> [<https://perma.cc/H5X3-N7FF>].

168. *Id.*

169. *Id.*

Samsung patent was an SEP.¹⁷⁰ This decision effectively gave Samsung substantial leverage in marketing mobile devices in Korea, allowing it to demand high royalty fees for its SEPs. One commentator described the ruling as “a declaration of a trade war.”¹⁷¹

In response, Apple filed an antitrust suit against Samsung for its licensing practices, but the KFTC again held in Samsung’s favor and rejected Apple’s complaint.¹⁷² Specifically, the KFTC noted that Samsung did not have “essential facility” type monopoly power due to the vast number of 3G wireless communication SEPs.¹⁷³ But the KFTC did not account for the fact that Samsung still had the ability to preempt Apple from entering the Korean market based on its SEPs.¹⁷⁴ In contrast, the KFTC determined that Qualcomm’s SEP licensing practices to Korean manufacturers were anticompetitive, even though the American firm never brought an injunctive action.¹⁷⁵

The Korean court’s decision against Apple and the KFTC’s conflicting decisions against Samsung and Qualcomm suggest that Korea’s FRAND policy may be informed by a desire to protect important players in Korea’s economy. This hypothesis finds further support when one considers the significant role that local mobile communications manufacturers played in Korea’s rapid economic development over the past decade.

D. RECENT DEVELOPMENTS IN SSO FRAND POLICIES

SSO participation in the regulation of FRAND licensing practices has recently become a controversial issue. While SSOs tended to avoid setting explicit FRAND policies in the past, the IEEE recently issued guidelines on FRAND licensing issues, and the patent community has met these guidelines with mixed reviews.

1. SSO FRAND Policies

Until recently, SSOs have historically declined to provide explicit rules for determining FRAND rates due to antitrust considerations.¹⁷⁶ SSO

170. *Id.*

171. *Id.*

172. See Florian Mueller, *Korea Fair Trade Commission Clears Samsung’s Use of Standard-Essential Patents Against Apple*, FOSS PATENTS (Feb. 26, 2014), <http://www.fosspatents.com/2014/02/korea-fair-trade-commission-clears.html> [<https://perma.cc/D3WU-E335>].

173. *Id.*

174. *Id.*

175. See Cho Mu-Hyun, *supra* note 114.

176. See, e.g., *Antitrust Risks in Standard-Setting Organizations*, PRAC. L. COMPANY ANTITRUST 1 (2013), http://www.weil.com/~media/files/pdfs/Practical_Law_Company

policies are binding agreements among potential competitors, so strict guidelines on FRAND licensing practices will likely result in the sort of fixed prices emblematic of anticompetitive behavior.¹⁷⁷ As a result, SSOs have avoided issuing specific restrictions for licensing SEPs.¹⁷⁸ However, the absence of FRAND restrictions may also result in antitrust concerns due to monopolistic patent hold-up.¹⁷⁹ An SSO patent policy with clear FRAND licensing rules could benefit relevant industry participants by eliminating much of the uncertainty surrounding licensing negotiations and minimizing FRAND-related disputes.¹⁸⁰ A successful FRAND policy set forth by an SSO would therefore maximize these certainty benefits while addressing the antitrust issues discussed above.

2. *The IEEE's New FRAND Policy*

The IEEE recently issued a new patent policy after it requested and received clearance from the U.S. Department of Justice's (USDOJ's) Antitrust Division.¹⁸¹ The groundwork for this request was laid in 2013, when the USDOJ, the FTC, and the EC Directorate-General for

_02_2_13Antitrust_Risks_in_Standard_Setting_Organiz.pdf [https://perma.cc/ZU3Y-XDPX].

177. See Lisa Kimmel, *Standards, Patent Policies, and Antitrust: A Critique of IEEE-II*, 29 ANTITRUST 18, 18 (2015) <https://www.crowell.com/files/Standards-Patent-Policies-and-Antitrust-A-Critique-of-IEEE-II.pdf> [https://perma.cc/7TEL-3SZA] (noting that “[SSO] patent policies are also agreements among competitors” and potential antitrust liability for SSOs).

178. *Id.* (pointing out that “[SSOs] usually leave it to [SEP] owners and implementers to determine royalty rates . . . through bilateral negotiations” and that the IEEE adopted its new policy only after mitigating its “antitrust risk” by receiving approval from the U.S. DOJ).

179. See, e.g., *American Antitrust Institute Calls on FTC, DOJ to Force Standard-Setting Organizations to Adopt More Stringent Patent Policies*, ESSENTIAL PATENT BLOG (May 31, 2013), <http://www.essentialpatentblog.com/2013/05/american-antitrust-institute-calls-on-ftc-doj-to-force-standard-setting-organizations-to-adopt-more-stringent-patent-policies> [https://perma.cc/CDJ2-GGN8] (providing that the American Antitrust Institute petitioned to the U.S. DOJ and FTC to enforce antitrust laws with respect to SSOs by: “(1) issu[ing] specific guidelines [for] SSO patent policies; and (2) hold[ing] SSOs liable for not adopting procedural safeguards to prevent patent hold-up behavior”).

180. Dennis Couch, *IEEE Amends Its Patent (FRAND) Policy*, PATENTLY-O (Feb. 9, 2015), <http://patentlyo.com/patent/2015/02/amends-patent-policy.html> [https://perma.cc/VT5G-DP9V] (noting that SSOs’ clarification of their patent policies “would eliminate much of the uncertainty and debate that currently characterizes disputes over FRAND compliance”).

181. IEEE, *IEEE Statement Regarding Updating of Its Standards-Related Patent Policy* (Feb. 8, 2015), https://www.ieee.org/about/news/2015/8_february_2015.html [https://perma.cc/T793-XGTR]; see also Couch, *supra* note 180.

Competition jointly issued an article advising SSOs to provide clear guidelines on their patent policies relating to FRAND issues.¹⁸²

The IEEE's new patent policy provides its members with specific FRAND licensing guidelines.¹⁸³ The key components of the policy are: (1) its members must non-discriminatorily offer their SEP licenses to all applicants requesting licenses; (2) IEEE members are expressly prohibited from seeking injunctions against potential licensees that are willing to negotiate for a license; (3) IEEE members may charge a reasonable royalty for the use of their SEPs based on the SSPPU of the relevant product; and (4) the IEEE may demand reciprocal licenses from its members that hold SEPs relevant to the standard.¹⁸⁴ The new policy therefore addresses hold-up, hold-out, and royalty pricing issues, while also preventing opportunistic non-disclosure à la *Rambus*.

While the IEEE's new policy provides clarity and predictability for participating members, it has received mixed reviews.¹⁸⁵ Even prior to its inception, a legal scholar questioned the assertion "that technology is being 'held up' or that consumers are being 'harmed' as a result of [existing] patents on technological standards."¹⁸⁶ Industry participants also opposed the new policy because it would "slash revenues for standards developers" and "refusal [to pay for a license] will become more commonplace if there are limited means to enforce patents."¹⁸⁷ Further, a practicing attorney noted that "even if the update does clarify the terms of a RAND agreement, clarity does not legitimize an anticompetitive process

182. U.S. DEP'T OF JUST., *Business Review Letter* (Feb. 2, 2015), http://www.justice.gov/sites/default/files/opa/press-releases/attachments/2015/02/02/ieee_business_review_letter.pdf [<https://perma.cc/WVJ7-QUGQ>].

183. IEEE, *IEEE-SA Standards Board Bylaws* (Feb. 8, 2015), <http://standards.ieee.org/develop/policies/bylaws/approved-changes.pdf> [<https://perma.cc/HF76-XQYK>]; see also Deepa Sundararaman, *Inside the IEEE's Important Changes to Patent Policy*, LAW360 (Apr. 3, 2015), <http://www.law360.com/articles/637457/inside-the-ieee-s-important-changes-to-patent-policy> [<https://perma.cc/6LT3-AE78>].

184. *Id.*

185. See, e.g., Mark Chandler, *Why We Support IEEE's Patent Policy*, EE TIMES (Apr. 3, 2015), http://www.eetimes.com/author.asp?section_id=36&doc_id=1326225 [<https://perma.cc/Q2KR-K4LC>]; Bill Merritt, *Why We Disagree with the IEEE's Patent Policy*, EE TIMES (Mar. 27, 2015), http://www.eetimes.com/author.asp?doc_id=1326144 [<https://perma.cc/4H7Y-ZFZK>]; David Long, *IEEE's Controversial Proposed Intellectual Property Rights ("IPR") Policy Amendments*, ESSENTIAL PATENT BLOG (Feb. 3, 2015), <http://www.essentialpatentblog.com/2015/02/ieee/> [<https://perma.cc/7VVU-2HVG>].

186. Brian Pomper, *DOJ Should Not Approve IEEE Patent Policy Weakening WiFi Patents*, IPWATCHDOG (Feb. 2, 2015), <http://www.ipwatchdog.com/2015/02/02/doj-ieee-policy-wifi-patents/id=54419> [<https://perma.cc/95UG-ATKK>].

187. Merritt, *supra* note 185.

under antitrust laws.”¹⁸⁸ In fact, since its adoption in February 2015, SEP owners have already “questioned their future participation in the standards-making process” and may simply refuse to join IEEE to avoid the restriction inherent in its FRAND guidelines.¹⁸⁹

The proper scope of SSO participation in FRAND licensing practices remains a controversial issue. A predictable set of rules offers implementers peace of mind and increases judicial efficiency, but may also deter industry participants from joining SSOs to collaboratively develop standards in the first place, because these rules may restrict the revenue industry participants can generate from their SEPs. In view of the mixed reception of the IEEE’s new policy, it remains to be seen whether other SSOs will follow suit.

IV. CONCLUSION

Interoperable technologies are developing globally and therefore benefit from an internationally uniform SEP licensing system. FRAND licensing practices prevent SEP holders from gaining excessive leverage in negotiating royalties and thereby holding up the development of these interoperable technologies that rely on network effects. However, SEP implementers must also express a willingness to negotiate for, and avoid holding out from, FRAND licenses to provide sufficient reward to SEP holders for their technological contributions. Ultimately, it is difficult to arrive at a one-size-fits-all method for deriving FRAND rates because not all SEPs are equally valuable. Nonetheless, provided that royalty rates are not prohibitively high, a universal FRAND licensing standard is beneficial because it offers predictability to investors and developers, promotes judicial efficiency, and reduces litigation costs.

In recent years, the jurisdictions most important for patent policy have each decided FRAND cases. These jurisdictions have mostly been converging in how they address hold-up, hold-out, and royalty pricing issues. First, courts and regulatory authorities across the globe have imposed breach of contract damages and antitrust sanctions against SEP holders for demanding excessive royalty fees and/or seeking injunctive relief for their patented technologies. Second, most countries have maintained the availability of injunctions against uncooperative licensees.

188. Kimmel, *supra* note 177, at 22.

189. Tony Dutra, *IEEE Policy on Standard-Essential Patents Sparks Debate*, BLOOMBERG BNA (Nov. 18, 2015), http://iplaw.bna.com/iprc/5007/split_display.adp?fedfid=79327870&vname=ptdbulallissues [<https://perma.cc/W4BP-WQEE>].

Third, even though there is no global consensus on the precise mechanism for calculating FRAND rates or whether to base these rates on the value of the end product or on the SSPPU, most jurisdictions have held that FRAND royalty rates must account for royalty stacking considerations.

Further, courts and regulatory authorities have been communicating and cooperating to achieve consistency in FRAND policies. For example, the European Commission has jointly issued an article with the U.S. DOJ and FTC to urge SSOs to provide specific FRAND guidelines,¹⁹⁰ and is now cooperating with the KFTC to decide on the appropriate penalty to impose on Qualcomm.¹⁹¹

In addition to the primary issues of hold-up, hold-out, and royalty pricing, those seeking to understand international FRAND practices should keep several secondary considerations in mind. To protect its own domestic industry, a specific jurisdiction may be inclined to adopt policies that favor domestic companies at the expense of foreign companies. U.S. and European regulatory authorities have also relaxed SSOs' potential antitrust liability, which led the IEEE to update its patent policy with specific FRAND regulations.¹⁹² While it remains uncertain whether other SSOs will follow the IEEE's lead, these guidelines may provide further clarity and predictability to future SEP developers.

190. See U.S. DEPT OF JUST., *supra* note 182.

191. See Cho, *supra* note 114.

192. See IEEE, *supra* note 181.

