

REFORMING AND SPECIFYING INTELLECTUAL PROPERTY RIGHTS POLICIES OF STANDARD-SETTING ORGANIZATIONS: TOWARDS FAIR AND EFFICIENT PATENT LICENSING AND DISPUTE RESOLUTION*

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Abstract

Standard-setting organizations (SSOs) rely on commitments to license on fair, reasonable, and non-discriminatory (FRAND) terms from standard-essential patent (SEP) holders to ensure access to standards and prevent potential anticompetitive conduct that unreasonably enforces SEPs against standard implementers. A substantial number of SEP disputes, however, have been raised unceasingly in recent years. In this Article's research, a statistical analysis of the SEP litigation cases in the United States from 2000 to 2014 shows that the SEP disputes are closely related to the FRAND licensing terms that are required in the intellectual property rights (IPR) policies of the SSOs in the information and communications technology (ICT) sector. In accordance with opinions to date from the U.S. Court of Appeals for the Federal Circuit, the U.S. International Trade Commission, the U.S. competition authorities, the European Commission, and the Court of Justice of the European Union, there is no per se rule that prohibits seeking injunctive relief against SEP infringement. Nonetheless, the criteria to decide whether to grant injunctive relief are different among various forums. In principle, injunctive relief should not be granted against a standard implementer who is

* This Article draws heavily on the first author's thesis for an LL.M. degree from National Chiao Tung University (Hsinchu, Taiwan), of which the second author is the lead advisor. Special thanks to three interviewees for their valuable opinions based on their ten to twenty years of experience in standard setting and patent license negotiations.

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willing to take license and is still negotiating in good faith with the SEP holder, so as to be aligned with the SEP holder's commitment to license on FRAND terms. With regard to FRAND royalties of SEPs, a fundamental principle emerging from several court decisions on SEP royalties in the United States is that a royalty award for an SEP should only be based on the value of the patented invention, not to include the value added from the standards.

Furthermore, through semi-structured interviews with standard-setting delegates and licensing negotiators from the ICT industry, this research finds that many existing IPR policies are too ambiguous to constrain potential anticompetitive conduct that enforces SEPs in an unreasonable way. In fact, in light of the results of the statistical survey, the case analysis, and the stakeholder interviews, it has become urgent and imperative to improve existing vague and ambiguous IPR policies. Concrete proposals for reforming IPR policies include: defining the standard essentiality clearly and using the accurate phrase "essential patent claim"; adding specific deadlines for SEP disclosure and declaration, legal effects of failing to disclose, and update obligations for material changes concerning SEPs; incorporating prerequisite conditions for seeking injunctive relief against SEP infringement; clarifying the FRAND obligation applicable to all offers of SEP royalties during licensing negotiations; identifying a series of steps or key factors for SEP royalty calculation under the FRAND obligation; and allowing reciprocal license to be a precondition for the commitment to license on FRAND terms. These proposals could substantially strengthen existing IPR policies, fix their ambiguities, and avoid potential disputes.

Finally, this research investigates fifteen representative SSOs, examining whether their IPR policies conform to the reforming proposals, by way of which the authors further elaborate on these proposals and provide substantial suggestions on how to amend the existing policies of the representative SSOs to avoid potential disputes. Based on the statistical and qualitative analysis and the specific reforming proposals, this Article concludes that it is imperative to reform existing IPR policies to facilitate fair and efficient SEP licensing and dispute resolution, and therefore to promote competition and to ultimately benefit consumers around the world.

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I. INTRODUCTION

Technology standards specify primary structures, essential technologies, and communication protocols of technology systems to ensure interoperability between various products made by different manufacturers.¹ Fierce market competition is generally expected because those products complying with the same standards from different vendors can substitute for each other. Consumers benefit greatly from keen competition on either price reduction or versatile features of products while standards level the playing field. In most cases, however, standard setting is collaborative research and development between competing companies for unified specifications of technology systems.² Collaborative conduct between competitors is generally regulated in most jurisdictions by antitrust or competition laws since such conduct might impose constraints on market competition.³ Standards, the deliverables of

1. For example, standard setting for mobile communication systems, such as GSM, W-CDMA/HSPA, and LTE systems, provides a guarantee of interoperation between varied mobile phones and base stations manufactured by different vendors.

2. Koren W. Wong-Ervin & Joshua D. Wright, *Intellectual Property and Standard Setting*, 17 FEDERALIST SOCIETY REV. 52, 53–54 (2016), <http://www.fed-soc.org/publications/detail/intellectual-property-and-standard-setting>.

3. For example, in the United States, the Federal Trade Commission (FTC) and the U.S. Department of Justice (DOJ) Antitrust Division enforce the federal antitrust laws such as the Sherman Act and the Clayton Act against collaborative conduct detrimental to free competition. *The Antitrust Laws*, FTC, <https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws/antitrust-laws> (last visited Jan. 28, 2017). In the European Union (EU), the European Commission (EC) enforces the competition rules contained in Articles 101 and 102 of the Treaty on the Functioning of the European Union (TFEU) against collaborative conduct detrimental to free competition. *Antitrust: Overview*, EUR. COMM'N, http://ec.europa.eu/competition/antitrust/overview_en.html (last visited Jan. 28, 2017).

collaborative standard-setting conduct between competitors, however, can encourage competition on standard-compliant products and facilitate economic development.⁴ Therefore, standard setting is generally allowed on condition that the matters of potential anticompetitive concern be handled appropriately.

Access to standards is perhaps the most critical issue for promoting competition because standards can really facilitate competition only when all standard implementers are able to access the standards and enter into the relevant product markets at the cost of reasonable royalties. Standards, which are generally selected out of technical proposals from standard-setting participants, unavoidably include some proprietary technologies covered by those proponents' patents.⁵ Patents grant their holders the exclusive rights to exclude others from utilizing the patented technologies, and the rights to receive monetary damages for patent infringement.⁶ Standard-essential patents (SEPs) are those that would inevitably be infringed by implementing the standards. Accordingly, the patent rights of SEPs are a potential means for SEP holders to exclude competitors from implementing standards and entering into related markets. Therefore, many standard-setting organizations (SSOs) formulate their intellectual property rights (IPR) policies to request their members, who participate in standard setting and hold patents that are potentially going to become SEPs, to pledge that they will agree to license their SEPs on fair, reasonable, and non-discriminatory (FRAND) terms.⁷

Nonetheless, access to standards is not yet well protected by existing IPR policies and FRAND terms. Some SEP holders who have committed to license their SEPs on FRAND terms have still attempted to seek injunctive relief against standard implementers right after or even before providing their royalty offers during SEP license negotiations.⁸ Some SEP holders' royalty offers during license negotiations turned out to be extremely high compared to those determined by the U.S. courts.⁹ In recent years, a considerable number of SEP disputes have been raised in various jurisdictions, where parties have argued over the exact definition of FRAND terms, whether injunctive relief should be granted against SEP infringement, how to calculate or evaluate FRAND royalties for SEP licensing, as well as the essentiality of SEPs.¹⁰

IPR policies of SSOs typically request standard-setting participants to disclose potential SEPs in the course of standard setting and declare whether they would like to license their SEPs on FRAND terms. In addition to technical considerations, the disclosed SEPs and the FRAND commitments from SEP holders are jointly considered by SSOs in the determination of

4. U.S. DEP'T OF JUSTICE & U.S. PATENT & TRADEMARK OFFICE, POLICY STATEMENT ON REMEDIES FOR STANDARDS-ESSENTIAL PATENTS SUBJECT TO VOLUNTARY F/RAND COMMITMENTS (Jan. 8, 2013) [hereinafter POLICY STATEMENT], <http://www.justice.gov/atr/public/guidelines/290994.pdf>.

5. RUDI BEKKERS ET AL., UNDERSTANDING PATENTS, COMPETITION AND STANDARDIZATION IN AN INTERCONNECTED WORLD 50 (2014), https://www.itu.int/en/ITU-T/Documents/Manual_Patents_Final_E.pdf.

6. *Id.* at 33, 37.

7. *Id.* at 58.

8. *Id.* at 50, 69.

9. NAT'L RESEARCH COUNCIL, PATENT CHALLENGES FOR STANDARD-SETTING IN THE GLOBAL ECONOMY 63 (Keith Maskus & Stephen A. Merrill eds., 2013).

10. *Id.* at 52.

standards.¹¹ SSOs intend to ensure accessibility of standards by the FRAND terms in IPR policies. However, most SSOs specify very few license terms with regard to the meaning of FRAND terms. Several likely reasons that SSOs avoid specifying license terms further are the fact that it goes beyond the competency and expertise of SSOs and their members, the difficulty of determining appropriate royalties at the standard-setting stage, potential antitrust concerns, conflicts of interest among SSO members, and so on.¹² The existing IPR policies and FRAND terms have been broadly criticized in literature for being too vague to specify clear obligations and restrictions on SEP holders.¹³ A joint view from the chief economists of the U.S. Department of Justice, Federal Trade Commission, and the Directorate-General for Competition of the European Commission has suggested that SSOs could help clarify FRAND terms in IPR policies to mitigate the hold-up problem, to reduce SEP disputes, and to facilitate innovation.¹⁴ Nevertheless, few SSOs have modified or clarified their IPR policies until now.

Some SEP holders aim to enforce SEPs by seeking injunctive relief or high royalties against standard implementers, while vague and ambiguous IPR policies fail to clarify what kinds of obligations and restrictions should be imposed on SEP holders.¹⁵ Seeking injunctive relief or unreasonably high royalties against standard implementers undermines competition in the relevant product markets.¹⁶ Such enforcement of SEPs has raised concerns relating to not only breach of contracts, but also anticompetitive conduct.¹⁷ SSOs ought to help ensure access to standards and prevent potential anticompetitive conduct by improving their IPR policies with clear and specific obligations and restrictions for both SEP holders and standard implementers. Any obligations or restrictions imposed on SEP holders or standard implementers are certainly highly important for all stakeholders of standards from a contract perspective; therefore, they should be addressed clearly in IPR policies.

This Article analyzes the underlying reasons for the SEP disputes by qualitative and comparative research methods, and proposes to reform and

11. *Id.* at 74.

12. David J. Teece & Edward F. Sherry, *Standards Setting and Antitrust*, 87 MINN. L. REV. 1913, 1955, 1958 (2003).

13. Kai-Uwe Kühn et al., *Standard Setting Organizations Can Help Solve the Standard Essential Patents Licensing Problem*, CPI ANTITRUST CHRON. (Mar. 2013), <https://www.competitionpolicyinternational.com/assets/Free/ScottMortonetalMar-13Special.pdf>.

14. *Id.*

15. NAT'L RESEARCH COUNCIL, *supra* note 9, at 69.

16. BEKKERS ET AL., *supra* note 5, at 47.

17. See, e.g., Greg Sivinski, *Patently Obvious: Why Seeking Injunctions on Standard-Essential Patents Subject to a FRAND Commitment Can Violate Section 2 of the Sherman Act*, CPI J. (Oct. 2013), <https://www.competitionpolicyinternational.com/patently-obvious-why-seeking-injunctions-on-standard-essential-patents-subject-to-a-frand-commitment-can-violate-section-2-of-the-herman-act/>; see also, e.g., Paul H. Saint-Antoine, *IP, Antitrust, and the Limits of First Amendment Immunity: Shouting "Injunction" in a Crowded Courthouse*, 27 ANTITRUST 41, 47 (2013) (suggesting that Section 5 of the FTC Act is a better option for imposing antitrust liability upon SEP holders for seeking injunctive relief). *But see, e.g.*, Douglas H. Ginsburg et al., *Enjoining Injunctions: The Case Against Antitrust Liability for Standard Essential Patent Holders Who Seek Injunctions*, ANTITRUST SOURCE, Oct. 2014, at 1 ("[A]ntitrust sanctions are not necessary . . . to avoid harm to consumers and . . . the application of antitrust law in this situation could . . . diminish the incentives for companies to innovate and for industries to adopt standards.").

specify IPR policies accordingly. Since ambiguous IPR policies have been discussed and argued in a substantial volume of literature and many litigation cases, this Article first presents a statistical analysis of a set of U.S. SEP litigation cases to observe the relationship between IPR policies and SEP disputes. After that, this Article analyzes the latest milestone cases in two significant jurisdictions, the United States and the European Union, to summarize rulings of the main forums and find common ground regarding SEP holders' rights to seek injunctive relief and reasonable royalties. These rulings, especially the common parts of them, could provide concrete guidance for specifying IPR policies. Furthermore, a qualitative analysis was conducted through semi-structured interviews with three industrial experts on SEP license negotiation and standard setting. Their opinions are referred to as suggestions from stakeholders for specifying IPR policies.

In light of the results of the statistical survey, the case study, and the stakeholder interviews, this Article proposes a set of amendments to IPR policies that include concrete and specified clauses for prerequisite conditions of injunctive relief and reasonable SEP royalties. Based on the proposed amendments, this research practically investigates the IPR policies of fifteen representative SSOs. A set of substantial suggestions is provided for these representative SSOs to improve their IPR policies. Several sophisticated clauses in the investigated IPR policies are adopted to elaborate the proposed amendments as well. It is urgent and imperative for SSOs to reform their IPR policies, and this Article proposes a set of IPR policy amendments for fair and efficient SEP licensing and dispute resolution.

The remaining Parts of the Article are organized as follows. Part II presents the results of a statistical analysis on SEP cases and illustrates the potential issues arising from IPR policies, especially the FRAND terms. Part III summarizes the rulings made in the two significant jurisdictions, the United States and the European Union, for seeking injunctive relief for SEP infringement. In addition, the determinations of FRAND royalties for SEPs in the U.S. courts are also summarized in this Part. Part IV presents the reforming proposals to strengthen existing IPR policies, fix their ambiguities, and avoid potential SEP disputes in light of the results of the statistical survey, the case analysis, and the stakeholder interviews. Part V illustrates the investigation of the IPR policies of fifteen representative SSOs and provides a set of substantial suggestions. Finally, in Part VI, this Article concludes that reforming and specifying IPR policies is urgent and imperative for SSOs in order to facilitate fair and efficient SEP licensing and dispute resolution.

II. IPR POLICIES AND SEP DISPUTES

Technology standards specify primary structures, essential technologies, and communication protocols of technology systems to ensure interoperability between various products made by different manufacturers.¹⁸ Stakeholders in

18. Jorge L. Contreras, *A Market Reliance Theory for FRAND Commitments and Other Patent Pledges*, 2015 UTAHL. REV. 479, 480 (2015).

an industry, including upstream and downstream multinationals and companies, have common incentives and interests to jointly establish standards and level the playing field. Companies adopting the same standard are able to compete with each other directly in the relevant product markets and take part in global value chains.¹⁹ Consumers benefit greatly from either price reduction or versatile features of products while standards level the playing field.

Standard-setting activities are generally conducted in consortia, standard developing organizations (SDOs), or standard-setting organizations (SSOs).²⁰ In some industries, *de facto* standards developed and specified in consortia are further approved as *de jure* standards in formal SSOs or SDOs.²¹ For discussion and convenience purposes, an SSO is referred to in this Article as the forum where standard setting is conducted. Competing companies in an SSO usually contribute their technical proposals for a standard based on their own proprietary technologies and innovative ideas for new issues present in the newly standardized system.²² Behind these technical proposals, there are, in general, plenty of associated patents and new provisional patent applications filed. After technical discussion, debate, and harmonization, SSO members make decisions and choose among these proposals or harmonized proposals as parts of the standard specification.²³ In other words, a set of patents is able to read on the technologies specified in the standard. Implementing commercial products in compliance with the standard would inevitably infringe those patents. Standard-essential patents are those patents that must be infringed while implementing standard-compliant products or services.²⁴

A. Standard Setting and IPR Policies

Standard setting is a collaboration between competing companies on research and development for the development of technical specifications of

19. *World Standards Day*, ISO, http://www.iso.org/iso/home/news_index/events/world-standards-day2014.html (last visited Jan. 28, 2017).

20. In general, SSOs and SDOs are more formal than consortia, and they may have authorities. However, they do not have unified definitions or meanings. See, e.g., Margaret Rouse, *Standards Organization*, TECHTARGET, <http://whatis.techtarget.com/definition/standards-organization> (last updated Feb. 2014).

21. For example, W-CDMA/HSPA and LTE standards are specified in the 3rd Generation Partnership Project (3GPP) and later adopted in the European Telecommunications Standards Institute (ETSI). See, e.g., *About 3GPP*, 3GPP: A GLOBAL INITIATIVE, <http://www.3gpp.org/about-3gpp> (last visited Jan. 28, 2017).

22. See, e.g., *Standard Setting: Past, Present and Future*, MAYER BROWN (June 23, 2011), <https://www.mayerbrown.com/pt/publications/detailprint.aspx?publication=1359>.

23. *Id.*

24. See, e.g., EUR. TELECOMM. STANDARDS INST., ETSI INTELLECTUAL PROPERTY RIGHTS POLICY 41 (Apr. 20, 2016) [hereinafter ETSI IPR POLICY], <http://www.etsi.org/images/files/ipr/etsi-ipr-policy.pdf> (“‘Essential’ . . . means that it is not possible on technical (but not commercial) grounds, taking into account normal technical practice and the state of the art generally available at the time of standardization, to make, sell, lease, otherwise dispose of, repair, use or operate equipment or methods which comply with a standard without infringing that IPR.”); see also, e.g., INST. ELEC. & ELECS. ENG’RS, IEEE-SA STANDARDS BOARD BYLAWS 15 (Dec. 2016) [hereinafter IEEE-SA BYLAWS], http://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf (“‘Essential Patent Claim’ shall mean any Patent Claim the practice of which was necessary to implement either a mandatory or optional portion of a normative clause of the IEEE Standard when, at the time of the IEEE Standard’s approval, there was no commercially and technically feasible non-infringing alternative implementation method for such mandatory or optional portion of the normative clause.”).

industrial technologies.²⁵ In most jurisdictions, antitrust or competition laws regulate and restrict collaborative conduct that would impose constraints on market competition.²⁶ Standards, however, can facilitate cost reduction and encourage competition because standards guarantee compatibility and interoperability, which allow consumers to choose among products manufactured by different companies.²⁷ Moreover, standards can help small and medium companies enter large product markets because they can save the cost of research and development for those technologies specified in standards.²⁸ These companies can simply adopt standards at the cost of reasonable royalties and focus their resources on enhancement of product features. Because of these competition-promoting benefits, safe harbors under competition laws are created to address collaborative research, development, and standardization.

For example, the U.S. Standard Development Organization Advancement Act has provided protection for standard-setting activities in SSOs from antitrust prosecution.²⁹ The requirement for the protection is to use standard-setting procedures that can ensure openness, balance of interests, due process, and so on.³⁰ In the European Union, the Horizontal Cooperation Guidelines provide guidance on how standard-setting activities can be immune from anticompetitive prosecution.³¹ The requirements for the immunity include unrestricted participation, transparent adoption procedures, no obligation to comply with the standard, and access to the standard on FRAND terms.³²

After a standard is agreed to and finalized in an SSO, proponents—those companies that submit technical proposals to the SSO—are most likely the SEP holders for the standard.³³ Patent holders typically have rights to seek

25. BEKKERS ET AL., *supra* note 5, at 12.

26. *See supra* note 3.

27. *See, e.g.*, *Microsoft Corp. v. Motorola, Inc.*, 696 F.3d 872, 876 (9th Cir. 2012).

28. *See World Standards Day, supra* note 19 (explaining how companies can interact in standardization).

29. 15 U.S.C. § 4302 (2012) (“In any action under the antitrust laws, or under any State law similar to the antitrust laws, the conduct of . . . a standards development organization while engaged in a standards development activity shall not be deemed illegal per se; such conduct shall be judged on the basis of its reasonableness”); *see also, e.g.*, BJÖRN LUNDQVIST, *STANDARDIZATION UNDER EU COMPETITION RULES AND US ANTITRUST LAWS: THE RISE AND LIMITS OF SELF-REGULATION* 149–53 (2014) (discussing the Standard Development Organization Advancement Act’s amendment to the National Cooperative Research and Production Act, which extended antitrust law protection to specified activities of certain SSOs).

30. 15 U.S.C. § 4301(a)(8) (2012) (“The term ‘standards development organization’ means a domestic or international organization that plans, develops, establishes, or coordinates voluntary consensus standards using procedures that incorporate the attributes of openness, balance of interests, due process, an appeals process, and consensus in a manner consistent with the Office of Management and Budget Circular Number A-119, as revised February 10, 1998.”). Before the amendment addressing standard-setting activities explicitly, the National Cooperative Research and Production Act (NCRPA) could provide the protection for joint collaboration or standard development activities, as well.

31. Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Co-Operation Agreements, 2011 O.J. (C 11) [hereinafter *Horizontal Cooperation Guidelines*], <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52011XC0114%2804%29>.

32. *See id.* ¶ 280 (“Where participation in standard-setting is unrestricted and the procedure for adopting the standard in question is transparent, standardization agreements which contain no obligation to comply with the standard and provide access to the standard on fair, reasonable and non-discriminatory terms will normally not restrict competition within the meaning of Article 101(1).”).

33. NAT’L RESEARCH COUNCIL, *supra* note 9, at 52.

injunctive relief or monetary damages as remedies for patent infringement.³⁴ However, injunctive relief against SEP infringement would be able to directly block others from competition in the markets of standard-compliant products.³⁵ Another potential anticompetitive conduct for SEP holders is to impose higher monetary damages for SEP infringement on others to increase their costs and thereby distort competition in the relevant markets.³⁶ In other words, the exclusive rights of SEPs are a potential threat to the openness or accessibility of standards.

Therefore, many SSOs formulate their IPR policies to require their members—standard-setting participants and the most likely SEP holders—to provide irrevocable commitments to license SEPs on FRAND terms.³⁷ IPR policies are used to impose certain obligations and restrictions on SEP holders and standard implementers to ensure access to standards.³⁸ However, some SEP holders have attempted to seek injunctive relief against standard implementers right after or even before providing their royalty offers during SEP license negotiations.³⁹ Some SEP holders' royalty offers during license negotiations were extremely high compared to those determined by the U.S. courts.⁴⁰ It seems that access to standards has not yet been guaranteed by existing IPR policies, especially the FRAND terms therein. In order to investigate potential causes of SEP disputes, this research systematically collects and analyzes SEP litigation cases in the United States as a starting point.

B. Statistical Analysis of SEP Disputes

In the statistical analysis, this Article's research analyzes the SEP cases in the U.S. federal and state courts from 2000 to 2014 because the United States is a representative and favored jurisdiction for most patent holders and the period of fifteen years should be long enough to observe an entire development cycle of SEP disputes related to a standard.⁴¹ There were a total of one hundred and twenty court cases found by searching with the keyword "essential patent" in the Westlaw database. After merging cases from the same dispute and removing non-SEP cases, there were forty-six disputes surveyed

34. *Id.* at 68.

35. *Id.* at 57.

36. *Id.* at 56.

37. See Horizontal Cooperation Guidelines, *supra* note 31, ¶ 285 ("In order to ensure effective access to the standard, the IPR policy would need to require participants wishing to have their IPR included in the standard to provide an irrevocable commitment in writing to offer to license their essential IPR to all third parties on fair, reasonable and non-discriminatory terms . . .").

38. *Id.*

39. NAT'L RESEARCH COUNCIL, *supra* note 9, at 68.

40. *Id.* at 62.

41. In the method of statistical analysis, the population of SEP disputes should include all SEP cases around the world because many standards are international and SEP disputes could be raised in many jurisdictions. To our best knowledge, SEP disputes have been raised in the United States, European Union, Germany, the Netherlands, Italy, France, the United Kingdom, Japan, South Korea, China, and India. The United States is no doubt one of the most representative and favored jurisdictions for patent holders because of its market scale, well-established patent system, protection of innovations, and so on. Therefore, we used the United States SEP cases as the sample for the statistical analysis.

and coded in their entirety for the statistical analysis. Table 1 illustrates these forty-six disputes, which are represented by the most recently decided cases if there were any appeals and decisions.⁴² The items for coding are summarized from literature and are gradually refined to reflect potential causes of these SEP disputes in a more accurate way.

Table 1. Disputes on SEPs in the Statistical Analysis⁴³

No	Year	Case Name	Tech. Area	P	E	D	F	K	R	I
1	2014	Ericsson, Inc. v. D-Link Systems, Inc., 2014 WL 6804864 (C.A.Fed. (Tex.))	WiFi	1	0	0	1	0	1	0
2	2014	ChriMar Systems, Inc v. Cisco Systems, Inc., 2014 WL 5477666 (N.D.Cal.)	LAN	1	0	1	1	0	0	0
3	2014	Realtek Semiconductor Corp. v. LSI Corp., 2014 WL 4365114 (N.D.Cal.)	WiFi	1	0	0	1	1	1	1
4	2014	Golden Bridge Technology v. Apple Inc., 2014 WL 4057187 (N.D.Cal.)	Cellular	1	0	0	1	0	1	0
5	2014	InterDigital Communications, Inc. v. ZTE Corp., 2014 WL 2206218 (D.Del.)	Cellular	1	0	0	1	1	1	0
6	2014	Microsoft Corp. v. Motorola, Inc. (I), 564 Fed.Appx. 586 (2014)	WiFi; Video coding	1	0	0	1	1	1	1
7	2014	Apple Inc. v. Motorola, Inc., 757 F.3d 1286 (2014)	Cellular; WiFi	1	0	0	1	1	0	1
8	2014	GPNE Corp. v. Apple, Inc., 2014 WL 1494247 (N.D.Cal.)	Cellular	1	1	0	0	0	1	0
9	2013	In re Innovatio IP Ventures, LLC Patent Litigation, 2013 WL 5593609 (N.D.Ill.)	WiFi	1	0	0	1	1	1	0
10	2013	JVC Kenwood Corp. v. Arcsoft, Inc., 966 F.Supp.2d 1003 (2013)	Optical Disc	0	0	0	0	0	0	0
11	2013	Koninklijke Philips N.V. v. Cinram Intern., Inc., 2013 WL 2301955 (S.D.N.Y.)	Optical Disc	0	0	0	0	0	0	0
12	2013	MPEG LA, L.L.C. v. Dell Global B.V., 2013 WL 812489 (Del.Ch.)	Video coding	0	0	0	0	0	0	0
13	2013	VoiceAge Corp. v. RealNetworks, Inc., 926 F.Supp.2d 524 (2013)	Voice coding	0	0	0	0	0	0	0
14	2013	Apple Inc. v. Samsung Electronics Co. Ltd., 920 F.Supp.2d 1116 (2013)	Cellular	1	0	1	1	1	1	0
15	2012	Multimedia Patent Trust v. Apple Inc., 2012 WL 6863471 (S.D.Cal.)	Video coding	1	0	1	1	1	0	0
16	2012	TruePosition, Inc. v. LM Ericsson Telephone Co., 2012 WL 3584626 (E.D.Pa.)	Cellular	0	0	0	0	0	0	0
17	2012	Barnes & Noble, Inc. v. LSI Corp., 849 F.Supp.2d 925 (2012)	Cellular; WiFi	1	0	1	1	1	0	1
18	2012	MedioStream, Inc. v. MPEG LA, L.L.C., 2012 WL 216287 (N.D.Cal.)	Video coding	0	0	0	0	0	0	0
19	2011	Motorola Mobility, Inc. v. Microsoft Corp.(II), 2011 WL 5834923 (N.D.Cal.)	SD card	1	0	0	1	1	0	1
20	2011	Samsung Electronics Co., Ltd. v. Panasonic Corp., 2011 WL 9529403 (N.D.Cal.)	SD card	0	0	0	0	0	0	0
21	2011	MPEG LA, LLC v. Audiovox Electronics Corp., 933 N.Y.S.2d 815 (2011)	Video coding	0	0	0	0	0	0	0
22	2011	Nokia Corp. v. Apple Inc., 2011 WL 2160904 (D.Del.)	Cellular	1	0	0	1	0	0	0
23	2010	Nero AG v. MPEG LA, L.L.C., 2010 WL 4878835 (C.D.Cal.)	Video coding	1	0	0	1	0	0	0
24	2010	Princo Corp. v. International Trade Com'n, 616 F.3d 1318 (2010)	Optical Disc	0	0	0	0	0	0	0
25	2010	Vizio, Inc. v. Funai Elec. Co. Ltd., 2010 WL 7762624 (C.D.Cal.)	Television	1	0	0	1	0	0	0
26	2009	Broadcom Corp. v. Qualcomm Inc., 2009 WL 650576 (S.D.Cal.)	Cellular; Video coding	1	0	0	1	0	0	0
27	2009	Meyer v. Qualcomm Inc., 2009 WL 539902 (S.D.Cal.)	Cellular	1	0	0	1	1	0	0
28	2009	Valikhani v. Qualcomm Inc., 2009 WL 539915 (S.D.Cal.)	Cellular	1	0	0	1	1	0	0
29	2009	Zoran Corp. v. DTS, Inc., 2009 WL 160238 (N.D.Cal.)	Optical Disc	1	0	0	1	1	0	0
30	2009	Lite-ON IT Corp. v. Toshiba Corp., 2009 WL 89063 (C.D.Cal.)	Optical Disc	0	0	0	0	0	0	0
31	2008	Research In Motion Ltd. v. Motorola, Inc., 644 F.Supp.2d 788 (2008)	Cellular; WiFi	1	0	0	1	1	0	0
32	2008	Qualcomm Incorporated v. Broadcom Corp., 548 F.3d 1004 (2008)	Video coding	1	0	1	0	1	0	0
33	2008	Rembrandt Technologies, L.P. v. Harris Corp., 2008 WL 4824066 (Del.Super.)	HDTV	1	0	0	1	0	1	0
34	2008	Valikhani v. Qualcomm Inc., 2008 WL 3914456 (S.D.Cal.)	Cellular	1	0	0	1	1	0	0
35	2007	Lucent Technologies, Inc. v. Gateway, Inc., 2007 WL 2900484 (S.D.Cal.)	Video coding	0	0	0	0	0	0	0
36	2007	Multimedia Patent Trust v. Microsoft Corp., 525 F.Supp.2d 1200 (2007)	Video coding	0	0	0	0	0	0	0
37	2007	Ericsson Inc. v. Samsung Electronics Co., Ltd., 2007 WL 1202728 (E.D.Tex.)	Cellular	1	0	0	1	1	0	0
38	2007	Matsushita Elec. Indus. Co., Ltd. v. CMC Magnetics Corp., 2007 WL 219779 (N.D.Cal.)	Optical Disc	0	0	0	0	0	0	0
39	2007	SanDisk Corp. v. Audio MPEG, Inc., 2007 WL 30598 (N.D.Cal.)	Audio coding	0	0	0	0	0	0	0
40	2006	Nokia Corp. v. Qualcomm, Inc., 2006 WL 2521328 (D.Del.)	Cellular	1	0	0	1	0	0	0
41	2006	Hynix Semiconductor Inc. v. Rambus Inc., 441 F.Supp.2d 1066 (2006)	DRAM	1	0	1	0	1	0	0
42	2006	Globespanvirata, Inc. v. Texas Instrument, Inc., 2006 WL 543155 (D.N.J.)	ADSL	0	0	0	0	0	0	0
43	2006	Wuxi Multimedia, Ltd. v. Koninklijke Philips Electronics, N.V., 2006 WL 6667002 (S.D.Cal.)	Optical Disc	0	0	0	0	0	0	0
44	2004	Matsushita Elec. Indus. Co., Ltd. v. Cinram Intern., Inc., 299 F.Supp.2d 348 (2004)	Optical Disc	0	0	0	0	0	0	0
45	2003	AT & T Corp. v. Microsoft Corp., 290 F.Supp.2d 409 (2003)	Audio coding	0	0	0	0	0	0	0
46	2001	ESS Technology, Inc. v. PC-Tel, Inc., 2001 WL 1891713 (N.D.Cal.)	Modem	1	0	0	1	1	1	0

42. In Table 1, each dispute is represented by its latest court decision. Each dispute might include one or more cases and all contents of those cases belonging to the same dispute are considered and analyzed in the statistical analysis.

43. In this table, *P* means IPR policy, *E* means essentiality, *D* means disclosure obligation, *F* means FRAND terms, *K* means breach of contract, *R* means royalty, *I* means injunctive relief, “0” means that no concern was raised, and “1” means that there was concern raised.

In the technology analysis, four main technology areas of SEP disputes were identified: (a) cellular communications, (b) audio and video coding, (c) optical discs, and (d) Wi-Fi networks. Figure 1 illustrates these main technical areas with their respective percentages. Comprising the largest group, 30% of disputes were in relation to cellular communications, such as Global System for Mobile Communications (GSM), Wideband Code Division Multiple Access (W-CDMA), and High Speed Packet Access (HSPA) mobile communication systems. Next, 24% of disputes concerned audio and video coding, such as MPEG-2 and H.264 coding. Optical discs were also involved in 17% of disputes. These disputes involved the CD standards in early years, the DVD standards later, and then the Blu-ray standards. For the final group, 14% of disputes related to Wi-Fi networks. The remaining 15% of disputes involved other technologies. These forty-six disputes are predominantly from the information and communications technology (ICT) industry. One possible reason for this is that the ICT industry needs plenty of standards to facilitate information exchange and interoperation in communications. After numerous standards were commercialized successfully, widespread adoption of those standards brought extremely high profits and raised SEP disputes between major competitors.⁴⁴

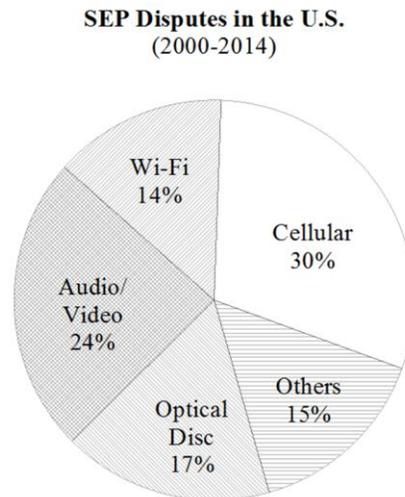


Figure 1. Technological Areas of SEP Disputes with Respective Percentages

44. NAT'L RESEARCH COUNCIL, *supra* note 9, at 25–27.

Figure 2 presents cumulative statistics of the technical areas for each year based on the dates of filing. The disputes regarding cellular communications standards arose during two periods: from 2005 to 2006 and from 2008 to 2013. One possible reason for the former period of disputes may lie in the success of W-CDMA/HSPA standards and fierce competition in relevant markets. The later period was supposed to be driven by the explosive growth of smartphones and was part of the so-called smartphone patent wars.⁴⁵ The disputes in audio and video coding standards were normally distributed in these years. Likewise, the disputes in optical disc standards were normally distributed while the contents of disputes had changed from CD, to DVD, to Blu-ray standards. The disputes in Wi-Fi network standards arose mainly between 2010 and 2012.

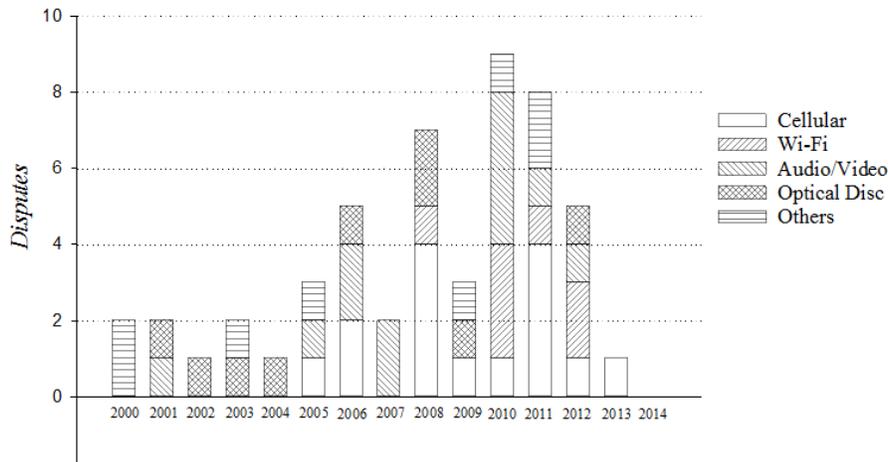


Figure 2. Cumulative Statistics of the Technological Areas

Figure 3 illustrates that over half of the SEP disputes (twenty-eight out of forty-six) involved IPR policies. Among them, twenty-five disputes involved SEP licensors or licensees raising concerns over FRAND terms. Six disputes focused on disclosure duty. Only one dispute was in respect to essentiality. Viewed from another perspective, among these IPR policy disputes, breach of contract was asserted in nineteen disputes. Royalty fees were argued in ten disputes while injunctive relief was sought in five disputes.

45. Sascha Segan, *Infographic: Smartphone Patent Wars Explained*, PCMag.COM (Jan. 19, 2012, 2:46 PM), <http://www.pcmag.com/article2/0,2817,2399098,00.asp>.

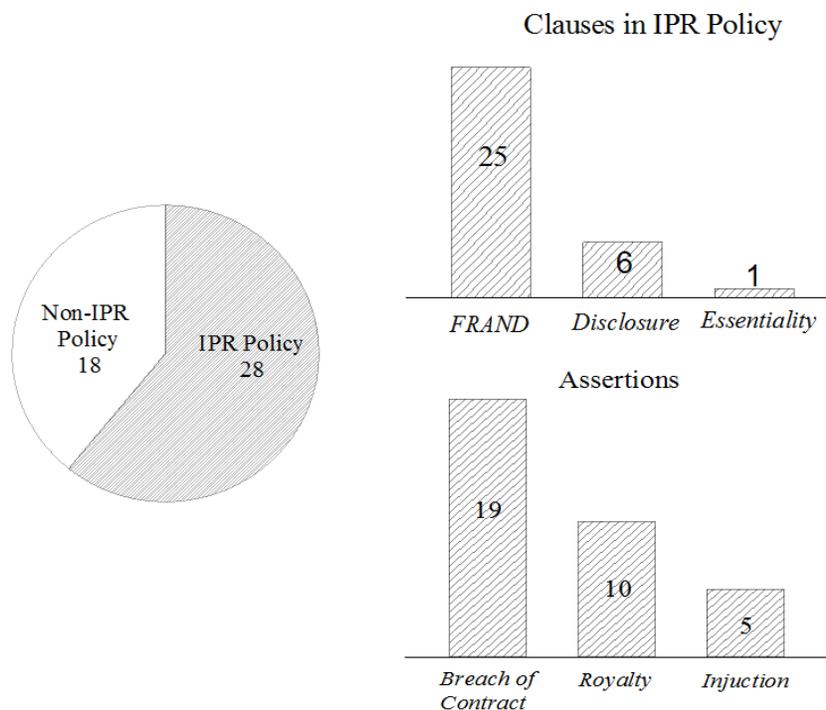


Figure 3. Disputes in IPR Policies and Arguments

C. *Misaligned Interpretations on FRAND Commitments*

In most SEP disputes, SEP holders have committed to license on FRAND terms when they joined SSOs or when they declared those alleged SEPs to SSOs.⁴⁶ It seems that all standard-setting companies agree with the same SSOs' IPR policies when they apply for SSO memberships, and then join and become involved in the development of standards.⁴⁷ However, some plaintiffs and defendants in the SEP disputes later have extremely different understandings and interpretations on the same agreed IPR policies when the standards are commercialized successfully after several years.⁴⁸

An SEP holder's voluntary commitment to license on FRAND terms has two important implications for SEP enforcement. First, the SEP holder is willing to license his SEPs to standard implementers rather than exclude others

46. NAT'L RESEARCH COUNCIL, *supra* note 9, at 64, 101.

47. *Id.* at 52, 56.

48. *Id.* at 49, 57.

from practicing his patented inventions.⁴⁹ One of the most critical issues of SEP disputes is whether an SEP holder's exclusive right to seek injunctive relief against patent infringement should be restricted due to his commitment to license on FRAND terms.⁵⁰ In 2011, for example, Motorola filed an action in Germany seeking an injunction against Microsoft's infringement of its Wi-Fi and H.264 video coding SEPs after Microsoft failed to agree to Motorola's initial license offers.⁵¹ In the same year, Samsung sought injunctions against Apple in multiple jurisdictions around the world by asserting infringement of W-CDMA SEPs.⁵² In 2012, LSI sought a limited exclusion order and permanent cease and desist orders against Realtek at the U.S. International Trade Commission (USITC) by asserting infringement of its Wi-Fi SEPs even without any prior attempt to negotiate for licensing.⁵³ All of these SEP holders had committed to license their SEPs on FRAND terms when they participated in standard setting or when they declared the SEPs to SSOs.⁵⁴ However, they still attempted to seek injunctive relief against the standard implementers.⁵⁵ The SEP holders believed that they still had rights to seek injunctive relief even after they committed to license on FRAND terms, while the standard implementers believed that the FRAND commitments had guaranteed them access to those standards.⁵⁶ Standard stakeholders obviously have different understanding and interpretations of the FRAND commitments' impacts on the right to seek injunctive relief for SEP infringement. In fact, most existing IPR policies address few details about the impacts of FRAND commitments on SEP holders' rights to seek injunctive relief for SEP infringement.⁵⁷

Second, the SEP holder will ask reasonable royalties for licensing his SEPs on FRAND terms.⁵⁸ However, how to evaluate whether an SEP royalty meets the FRAND terms is rarely clarified in existing IPR policies. Before Motorola sought an injunction against Microsoft in 2011, Motorola offered 2.25% of the prices of end products for both its SEP portfolios of Wi-Fi and H.264 video coding standards, respectively.⁵⁹ There seemed to be no explanation on how the charge of 2.25% of the product prices was calculated and obtained. Moreover, another concern about SEP royalties is whether the

49. *Id.* at 49, 52.

50. *Id.* at 68.

51. Motorola pursued an injunction against Microsoft on the basis of its Wi-Fi and video coding SEPs before a German court, and the injunction was granted in 2011. David Long, *Ninth Circuit Affirms Judge Robart's RAND Decision (Microsoft v. Motorola)*, ESSENTIAL PAT. BLOG (July 31, 2015), <http://www.essentialpatentblog.com/2015/07/ninth-circuit-affirms-judge-robarts-rand-decision-microsoft-v-motorola/>.

52. In 2011, Samsung sued Apple on the ground of infringing SEPs of the UMTS system and sought injunctive relief before at least German, Italian, Dutch, United Kingdom, and French courts. Chris Hewitt, *Apple and Samsung's Domestic Battle Goes Global*, WAKE FOREST J. BUS. & INTELL. PROP. L. (Nov. 10, 2011), <http://ipjournal.law.wfu.edu/2011/11/apple-and-samsungs-domestic-battle-goes-global/>.

53. Certain Audiovisual Components & Prods. Containing the Same, Inv. No. 337-TA-837, Comm'n Op. (Mar. 26, 2014) (Final).

54. See, e.g., NAT'L RESEARCH COUNCIL, *supra* note 9, at 4-5.

55. *Id.*

56. *Id.* at 95.

57. *Id.* at 111-12.

58. *Id.* at 62.

59. *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1032 (9th Cir. 2015).

2.25% of the product prices would cause royalty stacking.⁶⁰ Another court estimated that there were around three thousand Wi-Fi SEPs.⁶¹ Royalty stacking would occur if the royalties of Motorola's initial offers were referred to calculate proportionally the total royalties for the three thousand Wi-Fi SEPs.⁶² Wi-Fi connection and H.264 video decoding capabilities were merely parts of functions of Microsoft's end products.⁶³ Motorola's initial royalty offers had turned out to be extremely high compared to that determined by the U.S. court.⁶⁴ The two parties—the SEP holder and the standard implementer—obviously had hugely misaligned interpretations on the FRAND commitments' impacts on reasonable royalties for SEP licensing. However, none of these concerns about FRAND royalties are addressed in most existing IPR policies.

III. FRAND COMMITMENTS AND THEIR IMPACTS ON INFRINGEMENT REMEDIES FOR SEPS

In many jurisdictions, patent holders can seek two kinds of infringement remedies: injunctive relief and monetary damages.⁶⁵ Injunctive relief is an equitable remedy to prevent ensuing infringement.⁶⁶ A governing authority grants a patentee the right to exclude others from making, using, offering for sale, or selling the invention in exchange for the disclosure of the invention.⁶⁷ Monetary damages are alternative remedies to compensate for the infringement of the patent.⁶⁸ When a patentee has committed to license on FRAND terms to ensure that standard implementers can practice his SEPs, how should the two infringement remedies be restricted (if at all)? Before talking about the impacts on the two remedies, the meaning of the commitment to license on FRAND terms should be clarified.

A. *The Meaning of FRAND Commitments*

There has been an ongoing debate on the meaning of the commitment to license on FRAND terms. Some scholars and commentators have attempted to define the meaning or establish some criteria to test for whether FRAND terms

60. See, e.g., Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 1993–94 (2007).

61. See *In re Innovatio IP Ventures, LLC Patent Litig.*, 886 F. Supp. 2d 888 (N.D. Ill. 2012) (estimating the number of standard essential patents related to Wi-Fi technology).

62. See Long, *supra* note 51 (describing the royalty stacking calculation).

63. *Id.*

64. *Id.*

65. See, e.g., 35 U.S.C. § 154(a)(1) (2012) (“Every patent shall contain a short title of the invention and a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States . . .”); see also, e.g., *id.* § 284 (“Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.”).

66. See, e.g., *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 390–92 (2006) (describing the function of injunctive relief in patent law).

67. See, e.g., 35 U.S.C. § 154(a)(1) (2012) (describing a patent owner's right to exclude).

68. See, e.g., *id.* § 284 (setting forth damages that are recoverable for patent infringement).

are met.⁶⁹ In a substantial volume of literature, interpretations and principles established for FRAND terms are built from economic perspectives and for the purposes of standard setting.⁷⁰ Roger Brooks and Damien Geradin interpret the FRAND terms by reference to the amendment history of the European Telecommunications Standards Institute's IPR Policy.⁷¹ They believe that the FRAND commitment is a voluntary contract and should be interpreted as a contract to make SEPs available for industrial members while making sure that SEP patentees reap adequate and fair rewards.⁷²

Another debate is whether the FRAND commitment should be enforceable. A contract-based theory is the dominant view justifying the FRAND commitment.⁷³ An SEP holder's commitment to license is the consideration in exchange for an SSO's permission to participate in standard setting.⁷⁴ Many SSOs utilize such an instrument to ensure that SEPs can be practiced by standard implementers, and thereby ensure access to standards under anticompetition scrutiny.⁷⁵ However, current clauses of FRAND terms in existing IPR policies are merely a few sentences that do not address definite terms for SEP licensing, which might raise concern about their enforcement.⁷⁶ Several contract approaches have been developed based on different theories in order to enforce the FRAND commitment, such as a modified promissory estoppel approach based on a market reliance theory and an open price contract in the Uniform Commercial Code.⁷⁷ In the U.S. cases, the courts have concluded that the FRAND commitment is a contract between an SEP holder and an SSO, and the standard implementers can enforce the contract as third-party beneficiaries.⁷⁸

Given that the FRAND commitment may be enforced to practice SEPs, there has been considerable debate on whether injunctive relief against SEP infringement should be restricted.⁷⁹

69. See, e.g., Dennis W. Carlton & Allan L. Shampine, *An Economic Interpretation of FRAND*, 9 J. COMPETITION L. & ECON. 531 (2013).

70. *Id.*; J. Gregory Sidak, *The Meaning of FRAND, Part I: Royalties*, 9 J. COMPETITION L. & ECON. 931 (2013); NAT'L RESEARCH COUNCIL, *supra* note 9, at 52–69; Richard J. Gilbert, *Deal or No Deal? Licensing Negotiations in Standard-Setting Organizations*, 77 ANTITRUST L.J. 855 (2011); Douglas Lichtman, *Understanding the RAND Commitment*, 47 HOUS. L. REV. 1023, 1033 (2010).

71. Roger G. Brooks & Damien Geradin, *Interpreting and Enforcing the Voluntary FRAND Commitment*, INT. J. IT STANDARDS & STANDARDIZATION RES. 1, 6–9 (2011), https://www.cravath.com/files/uploads/documents/publications/3285864_1.pdf.

72. *Id.*

73. Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889, 1910–11 (2002).

74. *Id.*

75. *Id.*

76. *Id.*

77. See, e.g., Contreras, *supra* note 18 (describing FRAND licensing schemes in the context of contract law); see also, e.g., Layne S. Keele, *Holding Standards for RANDsome: A Remedial Perspective on RAND Licensing Commitments*, 2015 KAN. L. REV. 187 (2015) (discussing contract law remedies).

78. *In re Innovatio IP Ventures, LLC Patent Litig.*, No. 11-C-9308, 2013 WL 5593609 (N.D. Ill. Oct. 3, 2013); *Microsoft Corp. v. Motorola, Inc.*, 963 F. Supp. 2d 1176, 1181 (W.D. Wash. 2013).

79. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR., 2013 WL 5373179, at *9 (W.D. Wash. Sept. 24, 2013).

B. Impacts on Injunctive Relief

In most jurisdictions, a patentee can seek injunctive relief against a patent infringer. In the United States, for example, a patentee is allowed to seek injunctive relief in two forums: the U.S. district courts and the U.S. International Trade Commission.⁸⁰ The USITC can grant an exclusion order promptly to prohibit the importation of the infringing articles, while a federal district court has the discretion to grant an injunction to exclude others from making, using, offering for sale, selling, or importing the infringing articles.⁸¹

1. Rulings of the U.S. District Courts

The right to exclude others is a fundamental right rooted in patent law.⁸² In 2006, the U.S. Supreme Court in *eBay Inc. v. MercExchange, L.L.C.* concluded that a court should apply the well-established four-factor test to determine whether to grant a permanent injunction after a finding of infringement.⁸³ The test considers whether (1) the plaintiff has suffered an irreparable injury, (2) remedies at law, such as monetary damages, are inadequate to compensate for that injury, (3) considering the balance of hardships between the plaintiff and the defendant, a remedy in equity is warranted, and (4) the public interest would be disserved.⁸⁴ Whether an SEP holder's FRAND commitment influences the decision to grant injunctive relief has sparked an ongoing debate between stakeholders, authorities, and different jurisdictions.

In 2012, Judge Richard Posner (sitting by designation at the district court) in *Apple Inc. v. Motorola, Inc.* seemed to create a per se rule against injunctive relief while he found monetary damages were possible and adequate for SEP infringement.⁸⁵ Nokia and other SEP holders argued that the *eBay* case does not prohibit injunctive relief and that only a willing potential licensee could be protected from injunctive relief.⁸⁶ In 2014, the Federal Circuit, hearing the case on appeal, overturned Judge Posner's decision and held that there is no per se rule prohibiting injunctive relief against SEP infringement, and that the FRAND commitment should also be analyzed by using the four-factor test.⁸⁷ The Federal Circuit found that there was insufficient evidence to show that

80. See, e.g., Helen H. Ji, *District Courts Versus the USITC: Considering Exclusionary Relief for F/RAND-Encumbered Standard-Essential Patents*, 21 MICH. TELECOMM. & TECH. L. REV. 169, 171 (2014) (discussing the availability and pursuit of injunctions against infringers in different forums).

81. *Id.*

82. Adam Mossoff, *Exclusion and Exclusive Use in Patent Law*, 22 HARV. J.L. & TECH. 1, 7 (2009).

83. *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 390–92 (2006).

84. *Id.*

85. See *Apple Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 914, 918 (N.D. Ill. 2012) (“A compulsory license with ongoing royalty is likely to be a superior remedy in a case like this [involving FRAND-encumbered SEPs]. . . . Motorola committed to license [the patent] to anyone willing to pay a FRAND royalty and thus implicitly acknowledged that a royalty is adequate compensation for a license to use that patent.”).

86. Brief for Nokia Corp. & Nokia, Inc. as Amici Curiae in Support of Reversal and in Support of Neither Party, *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286 (Fed. Cir. 2014) (Nos. 12-1548, 12-1549), 2013 WL 2152594.

87. *Apple Inc.*, 757 F.3d at 1332.

monetary damages were inadequate to compensate for SEP infringement; therefore, the denial of injunctive relief was upheld.⁸⁸ Furthermore, the Federal Circuit stated that “a patentee subject to FRAND commitments may have difficulty establishing irreparable harm,” and that “an injunction may be justified where an infringer unilaterally refuses a FRAND royalty or unreasonably delays negotiations to the same effect.”⁸⁹

2. *Rulings of the U.S. International Trade Commission*

In 2013, the USITC in *Certain Electronic Devices* rejected a per se rule prohibiting an exclusion order against SEP infringement mainly because the authority of Section 337 “makes no distinction between patents that have or have not been declared to be essential to a standard.”⁹⁰ Apple failed to offer “any statutory construction that demonstrates that the Commission *per se* cannot investigate violations of section 337 based on infringement of a declared-essential patent.”⁹¹ After finding the violation of Section 337 based on infringement of Samsung’s SEP in the W-CDMA standard, the USITC issued a limited exclusion order and a cease and desist order against Apple.⁹²

The USITC must direct the infringing articles to be excluded from entry into the United States after considering the effect of the exclusion on four public interest factors, including “(1) the public health and welfare; (2) competitive conditions in the U.S. economy; (3) the production of competitive articles in the U.S.; and (4) U.S. consumers.”⁹³ “When the circumstances of a particular investigation require, the [USITC] has denied an exclusionary remedy or has tailored its relief in light of the statutory public interest factors.”⁹⁴ It is remarkable that the public interest factors set forth here are not public policies that the USITC seeks to promote.⁹⁵ Instead, they are statutory criteria for the exemptions from exclusion orders after finding a violation of Section 337.⁹⁶ The statute has enumerated them explicitly as the four public interest factors.⁹⁷ The USITC does not need to consider arguments that are not

88. *Id.* at 1331–32.

89. *Id.*

90. *Certain Elec. Devices, Including Wireless Commc’n Devices, Portable Music & Data Processing Devices, & Tablet Computs.*, Inv. No. 337-TA-794, Comm’n Op., at 46 (July 5, 2013) (Final) [hereinafter *Certain Elec. Devices*].

91. *Id.*

92. *Id.* at 105–07.

93. *Certain Elec. Digital Media Devices & Components Thereof*, Inv. No. 337-TA-796, Comm’n Op., 2013 WL 10734395, at *75 (Sept. 6, 2013) (citing 19 U.S.C. § 1337(d)(1), (f)(1) (2012)).

94. *Id.* (citing *Certain Pers. Data & Mobile Commc’n Devices & Related Software*, Inv. No. 337-TA-710, USITC Pub. No. 4331, Comm’n Op., at 83 (June 2012) (delaying the effective date of an exclusion order based on competitive conditions in the U.S. economy); *Certain Baseband Processor Chips & Chipsets, Transmitter and Receiver (Radio) Chips, Power Control Chips, & Prods. Containing Same, Including Cellular Tel. Handsets*, Inv. No. 337-TA-543, USITC Pub. No. 4258, Comm’n Op., at 148–54 (Oct. 2011) (grandfathering certain existent mobile telephone models from the scope of the exclusion order)).

95. *See* *Certain Elec. Devices*, *supra* note 90, at 108 n.21 (“Commissioner Aranoff believes that most of the arguments put forward by the parties and public commenters with regard to the public interest factors in this investigation are in fact policy arguments that are better directed to the President.”).

96. 19 U.S.C. § 1337(d)(1), (f)(1) (2012).

97. *Id.*

premised on the statutory public interest factors.⁹⁸ Rather, the President of the United States may consider policy reasons in determining whether to disapprove the USITC's determination.⁹⁹

Among the four statutory public interest factors, the USITC found that there was no argument about two of the factors: the public health and welfare, and the production of competitive articles in the United States.¹⁰⁰ Regarding competitive conditions in the U.S. economy and the effect on U.S. consumers, the USITC found that the issuance of exclusion orders will not harm the competitive conditions or the consumers in the United States to such a degree that relief should be denied, since the barred Apple products were two low-end models.¹⁰¹ A variety of smartphones and tablets, including Apple's other models, would still be available for U.S. consumers, and Apple and others were no doubt able to meet the consumer demand currently met by the barred products.¹⁰² Accordingly, the USITC concluded that the effect of the exclusion order would not be unduly adverse to the four public interest considerations enumerated in Section 337.¹⁰³ In the final determination, the USITC issued the limited exclusion order barring entry of Apple articles that infringed Samsung's FRAND-encumbered SEP.¹⁰⁴

However, the U.S. Trade Representative (USTR) disagreed, and the President of the United States did not approve the Final Determination for the policy reasons and made the exclusion order unenforceable.¹⁰⁵ The USTR believed that the Administration's policy is to promote innovation and economic progress, and that standard setting plays an increasingly important role in the U.S. economy.¹⁰⁶ "Licensing SEPs on FRAND terms is an important element of the Administration's policy . . . and reflects the positive linkages between patent rights and standard setting."¹⁰⁷ Accordingly, considering the effect on competitive conditions in the U.S. economy and on U.S. consumers, the USTR decided to disapprove the USITC's determination and believed that the SEP holder could continue to pursue its rights through the courts.¹⁰⁸ Furthermore, the USTR urged the USITC in any future cases involving FRAND-encumbered SEPs to investigate all related issues of public interest determinations thoroughly through its whole proceedings.¹⁰⁹

98. See *Certain Elec. Devices*, *supra* note 90, at 108 n.21; see also *Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331, 1360 (stating that it was not erroneous for the Commission to decline to treat existence of an ongoing PTO reexamination proceeding as a consideration weighing against relief because "such proceeding is not explicitly listed as a public interest factor in Section 337").

99. *Certain Elec. Devices*, *supra* note 90, at 108 n.21; 19 U.S.C. § 1337(j)(2) (2012).

100. *Certain Elec. Devices*, *supra* note 90, at 109.

101. *Id.* at 111.

102. *Id.* at 110.

103. *Id.* at 114.

104. *Id.* at 119.

105. Letter from Michael B.G. Froman, U.S. Ambassador, to Hon. Irving A. Williamson, Chairman, USITC (Aug. 3, 2013), https://www.ustr.gov/sites/default/files/08032013%20Letter_1.PDF.

106. *Id.* at 2.

107. *Id.* at 3.

108. *Id.* at 3–4.

109. *Id.* at 3.

3. *Opinions of the U.S. Competition Authorities*

Several federal agencies have expressed their views on FRAND-encumbered SEPs. During the investigation of the above-mentioned *Certain Electronic Devices* case, the Antitrust Division of the U.S. Department of Justice (DOJ) and the U.S. Patent and Trademark Office (USPTO) jointly issued a policy statement.¹¹⁰ In it, they expressed substantial concerns about the potential harm to competition and consumers caused by either an SEP holder's hold-up by seeking injunctive relief or a standard implementer's reverse hold-up by constructive refusal to negotiate a FRAND license or refusal to pay the determined FRAND royalty.¹¹¹ The two agencies underscored that an exclusion order issued against SEP infringement may block standard implementation and reduce a stakeholder's incentive to participate in standard setting.¹¹² However, the DOJ and USPTO clarified that an exclusion order may still be appropriate in some circumstances, such as where a standard implementer is unable to or refuses to take a FRAND license, or is acting outside the scope of the SEP holder's FRAND commitment.¹¹³

In 2013, the Federal Trade Commission (FTC), a federal agency with both consumer protection and competition jurisdiction, in *In the Matter of Motorola and Google*, addressed the DOJ and USPTO's concerns about whether an antitrust violation occurs when a patentee of a FRAND-encumbered SEP seeks injunctive relief.¹¹⁴ The FTC stated that such conduct may violate Section 5 of the FTC Act as an unfair method of competition.¹¹⁵ Google agreed not to seek injunctive relief against a willing licensee, either in a federal court or at the USITC, to block the use of any FRAND-encumbered SEPs.¹¹⁶ Nonetheless, Google may still seek injunctive relief in these circumstances: (1) a potential licensee is outside the U.S. jurisdiction; (2) a potential licensee has explicitly expressed his unwillingness to take a license; (3) a potential licensee refuses to obey the determination of SEP royalties or terms by a competent court; and (4) a potential licensee does not agree to a reciprocity request on FRAND terms from Google.¹¹⁷

4. *Opinions of the European Commission*

The European Commission has issued the Horizontal Cooperation Guidelines on how the Treaty on the Functioning of the European Union's (TFEU) competition rules apply to collaborative standard setting between

110. See POLICY STATEMENT, *supra* note 4 (setting forth the USPTO and DOJ's perspective on "hold-up" resulting from stalled or obstructed FRAND negotiations).

111. *Id.*

112. *Id.* at 5.

113. *Id.* at 7–8.

114. *In re Motorola Mobility LLC & Google, Inc.*, No. 121-0120, 2013 WL 124100 (F.T.C. Jan. 3, 2013).

115. *Id.* at *1, *4–5.

116. *Id.* at *10–11.

117. *Id.* at *11.

competitors.¹¹⁸ In the Google/Motorola Mobility merger decision, the European Commission raised substantial concerns on a significant number of Motorola Mobility's SEPs in cellular communication standards.¹¹⁹ It also worried that the threat of injunctive relief against a good faith potential SEP licensee, a standard implementer, may cause anticompetitive effects on a standard's product markets.¹²⁰

In a competition decision, the European Commission concluded that Motorola seeking injunctive relief against infringement of a FRAND-encumbered SEP by a willing licensee, Apple, constituted abuse of a dominant position.¹²¹ The European Commission considered that a patentee, including an SEP holder, has the right to seek and enforce injunctive relief against a patent infringer.¹²² However, a voluntary commitment to license on FRAND terms is an SEP holder's recognition that his SEPs will be licensed in return for royalties on FRAND terms.¹²³ Accordingly, the European Commission recognized there were specific obligations in relation to the SEP under the TFEU's competition rules because of Motorola's commitment to license the SEP on FRAND terms and the standard-setting process of the General Packet Radio Service (GPRS) system.¹²⁴ Nonetheless, an SEP holder should still be entitled to seek injunctive relief against an unwilling licensee.¹²⁵ In the case, Apple was not an unwilling licensee, since Apple had agreed to pay royalties if a competent court set them.¹²⁶ In addition, it was underscored that there is a strong public interest in challenging the validity and infringement by a patent licensee and the right should not be restricted in an SEP license agreement.¹²⁷

In another competition case, Samsung sought injunctive relief in multiple jurisdictions in Europe against a willing licensee (Apple), alleging infringements of several FRAND-encumbered SEPs of the Universal Mobile Telecommunications System (UMTS).¹²⁸ In the settlement, Samsung agreed not to seek injunctive relief in Europe for infringement of Samsung's FRAND-encumbered SEPs for five years against a willing potential licensee who agrees to negotiate under a licensing framework.¹²⁹ The SEP negotiation framework sets forth the negotiation for up to twelve months.¹³⁰ If the two parties cannot achieve an agreement, they can seek a third party, a court, or an arbitrator to

118. Horizontal Cooperation Guidelines, *supra* note 31; Consolidated Version of the Treaty on the Functioning of the European Union arts. 101 & 102, Oct. 26, 2012, 2012 O.J. (C 326) 88–89.

119. Case COMP/M.6381, Google/Motorola Mobility, Comm'n Decision ¶ 7 (Feb. 13, 2012).

120. *Id.*

121. Case AT.39985, Motorola—Enforcement of GPRS Standard Essential Patents, Comm'n Decision ¶ 496 (Apr. 29, 2014).

122. *Id.* ¶ 492.

123. *Id.*

124. *Id.* ¶ 493.

125. *Id.* ¶ 495.

126. *Id.*

127. *Id.* ¶ 491.

128. Case COMP/C-3/39.939, Samsung Electronics Enforcement of UMTS Standard Essential Patents, Commitments Offered to the European Comm'n, at 1 (Sept. 27, 2013).

129. *Id.*

130. *Id.* at 2.

determine a FRAND royalty for SEP licensing.¹³¹ It was also noted that a patent licensee's right to challenge the validity, essentiality, or infringement of the SEPs may not be restricted by any of these commitments.¹³²

5. *Rulings of the Court of Justice of the European Union*

Huawei asserted infringement of an SEP in the Long Term Evolution (LTE) standard in the Düsseldorf Regional Court in Germany and sought both injunctive relief and monetary damages.¹³³ The SEP in LTE was subject to the FRAND commitment to the European Telecommunications Standards Institute (ETSI). The ETSI IPR Policy requires standard-setting companies to disclose their potential SEPs in a timely manner and commit to license on FRAND terms.¹³⁴ The German court stayed its proceedings and referred specific competition issues to the Court of Justice of the European Union (CJEU).¹³⁵ The CJEU clarified that, in exceptional circumstances, seeking injunctive relief on the basis of patent rights may constitute abusive conduct under Article 102 TFEU.¹³⁶ The CJEU pointed out two distinguishing features of an SEP from other patents. First, an SEP holder may preclude other competitors from manufacturing standard-compliant products.¹³⁷ Second, the patent obtained SEP status only in return for the patentee's irrevocable commitment to license on FRAND terms.¹³⁸ In special circumstances, a refusal to license the FRAND-encumbered SEP may constitute abusive conduct under Article 102 TFEU.¹³⁹

After balancing an SEP holder's exclusive rights and the need to obtain a patent license prior to using an SEP, the CJEU ruled that an SEP holder's commitment to license on FRAND terms justifies imposing upon the SEP holder an obligation to comply with specific requirements before taking any actions seeking injunctive relief against infringement of a FRAND-encumbered SEP.¹⁴⁰ The first requirement is to "alert the alleged infringer of the infringement complained about by designating that SEP and specifying the way in which it has been infringed."¹⁴¹ The second requirement is that the SEP holder should present "a specific, written offer for a license on FRAND terms" specifying the amount and the calculation of the royalty.¹⁴² The third

131. *Id.*

132. *Id.* at 3.

133. Case C-170/13, Huawei Techs. Co. v. ZTE Corp., Request for a Preliminary Ruling from the Landgericht Düsseldorf (Germany) (Apr. 5, 2013), <http://curia.europa.eu/juris/document/document.jsf?text=&docid=139489&doclang=en>.

134. See ETSI IPR POLICY, *supra* note 24 (setting forth ETSI's disclosure policies for standard-setting companies).

135. Case C-170/13, Huawei Techs. Co. v. ZTE Corp., Judgement of the Court (July 16, 2015) (CJEU's preliminary ruling), <http://curia.europa.eu/juris/document/document.jsf?docid=165911&doclang=en>.

136. *Id.* ¶ 47.

137. *Id.* ¶¶ 49–50.

138. *Id.* ¶ 51.

139. *Id.* ¶ 53.

140. *Id.* ¶ 59.

141. *Id.* ¶ 61.

142. *Id.* ¶ 63.

requirement is that only when a potential SEP licensee fails to either accept or respond “promptly and in writing a specific counter-offer that corresponds to FRAND terms” “in good faith” with “no delaying tactics” may an SEP holder be eligible to seek injunctive relief.¹⁴³ The CJEU also noted that an SEP licensee should not be restricted from challenging the validity and the essentiality of SEPs.¹⁴⁴ The CJEU also clarified that “seeking the rendering of accounts in relation to past acts of use of that SEP or an award of damages in respect of those acts” is not an abuse of dominance, because these actions “do not have a direct impact on products complying with the standard . . . appearing or remaining on the market.”¹⁴⁵

6. *Common Ground on Seeking Injunctive Relief*

In the U.S. jurisdictions, the Federal Circuit has concluded that there is no per se rule prohibiting injunctive relief against infringement of FRAND-encumbered SEPs.¹⁴⁶ Likewise, the USITC has rejected a per se rule prohibiting an exclusion order against SEP infringement.¹⁴⁷ The holdings in both the European Commission and the CJEU decisions imply that there is no per se rule that prohibits injunctive relief against SEP infringement in the European Union. In sum, there is no per se rule that prohibits seeking injunctive relief against SEP infringement in both the U.S. and the EU jurisdictions.

As regards the requirements for the issuance of injunctive relief, the U.S. Federal Circuit has concluded that the FRAND commitment should also be analyzed by the four-factor test.¹⁴⁸ The Federal Circuit believes that “[a] patentee subject to FRAND commitments may have difficulty establishing irreparable harm,” and that “an injunction may be justified where an infringer unilaterally refuses a FRAND royalty or unreasonably delays negotiations to the same effect.”¹⁴⁹ According to the disapproval of the USITC’s exclusion order, the USTR has urged the USITC to consider the four public interest factors thoroughly in any future cases involving FRAND-encumbered SEPs.¹⁵⁰

The requirements for the issuance of injunctive relief set by the European Commission and the CJEU are similar. In summary, an SEP holder and a potential SEP licensee should negotiate the FRAND royalties for SEP licensing in good faith for a certain period of time. Their offers and counteroffers should include specific royalty amounts and their calculation methods. In the case that no consensus can be reached after a proper period of time, they can ask courts or arbitrators to determine the FRAND royalties. Within such a negotiation process, seeking injunctive relief should not be allowed if the

143. *Id.* ¶¶ 65–66, 71.

144. *Id.* ¶ 69.

145. *Id.* ¶¶ 72, 74.

146. *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1332 (Fed. Cir. 2014).

147. *Certain Elec. Devices*, *supra* note 90, at 46.

148. *Apple Inc.*, 757 F.3d at 1331–32.

149. *Id.*

150. *See* Letter from Michael B.G. Froman, *supra* note 105.

potential licensee behaves in good faith.

Accordingly, the criteria to decide whether to grant injunctive relief are different among various forums. Considering the SEP holder's commitment to license on FRAND terms, injunctive relief, in principle, should not be granted against a standard implementer who is willing to take a license and is still negotiating in good faith with the SEP holder.

C. FRAND Royalties

The reasonable royalty calculation itself has long been a complicated issue and a widely debated topic.¹⁵¹ This research focuses mainly on the impact of the FRAND commitment on reasonable royalties. In the U.S. jurisdictions, several FRAND royalties for SEP licensing have been decided by using the hypothetical negotiation with appropriate *Georgia-Pacific* factors.¹⁵² In *Microsoft v. Motorola*, Motorola initially offered 2.25% of end product prices as royalties for its IEEE 802.11 and H.264 SEP portfolios, respectively.¹⁵³ Judge Robart selected several relevant factors out of the fifteen *Georgia-Pacific* factors and decided that the royalty for Motorola's IEEE 802.11 SEP portfolio should be 3.471 cents per unit for Xbox products or 0.8 cents per unit for other products, which was markedly lower than Motorola's initial offer.¹⁵⁴ The royalty for Motorola's H.264 SEP portfolio was determined as 0.555 cents per unit for all products, which is similarly considerably lower than Motorola's initial offer.¹⁵⁵

Similar situations of unexpectedly low royalties have occurred in other cases. In *In re Innovatio IP Ventures, LLC Patent Litigation*, Judge Holderman held that the royalties for Innovatio's IEEE 802.11 SEP portfolio were 9.56 cents per Wi-Fi chip.¹⁵⁶ In *Realtek Semiconductor Corp. v. LSI Corp.*, the jury verdict before Judge Whyte determined the royalty rate for LSI's IEEE 802.11 SEP portfolio at 0.19% of the total sales prices of Realtek's Wi-Fi chips.¹⁵⁷ In *Ericsson, Inc. v. D-Link Systems, Inc.*, the jury verdict before Judge Davis determined the royalties for Ericsson's IEEE 802.11n SEP portfolio to be fifteen cents per Wi-Fi chip.¹⁵⁸ These determined FRAND royalties for SEPs were also considerably lower than expected amounts.¹⁵⁹ One of the potential causes is the proliferation of SEPs in these standards and that SEP royalty calculation has to take into account the proportion of assessed SEPs to all the

151. See generally Zelin Yang, *Damaging Royalties: An Overview of Reasonable Royalty Damages*, 29 BERKELEY TECH. L.J. 647 (2014) (providing an overview of calculating reasonable royalty damages).

152. See *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970) (describing relevant factors in infringement case to determine reasonable amount of royalty for patent license stated).

153. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 2111217, at *2 (W.D. Wash. Apr. 25, 2013), *aff'd*, 795 F.3d 1024 (9th Cir. 2015).

154. *Id.* at *4.

155. *Id.* at *85.

156. *In re Innovatio IP Ventures, LLC Patent Litig.*, No. 11-C-9308, 2013 WL 5593609, at *45 (N.D. Ill. Oct. 3, 2013).

157. *Realtek Semiconductor Corp. v. LSI Corp.*, 946 F. Supp. 2d 998 (N.D. Cal. 2013).

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

159. *Id.*

SEPs of the same standard.¹⁶⁰ For example, there are around three thousand Wi-Fi SEPs.¹⁶¹ Such a large number of SEPs would proportionally reduce the apportionment of royalty for an assessed SEP portfolio.¹⁶² This observation also emphasizes the importance of SEP disclosure and declaration and the demand for their accuracies.

These decisions of reasonable royalties share several common principles. First, “damages awards for SEPs must be premised on methodologies that attempt to capture the asserted patent’s value resulting not from the value added by the standard’s widespread adoption, but only from the technology’s superiority.”¹⁶³ “In other words, a royalty award for a SEP must be apportioned to the value of the patented invention (or at least to the approximate value thereof), not the value of the standard as a whole.”¹⁶⁴ The Federal Circuit emphasized that damages for patent infringement “must reflect the value attributable to the infringing features of the product, and no more.”¹⁶⁵ Therefore, not all fifteen of the *Georgia-Pacific* factors should be applicable to the calculation of reasonable royalties for FRAND-encumbered SEPs. For example, the *Georgia-Pacific* factors 4 and 5 are not applicable to the royalty calculation for SEPs because of the SEP holder’s commitment to license on FRAND terms.¹⁶⁶ In addition, the *Georgia-Pacific* factors 8, 9, and 10 should be adjusted for royalties of FRAND-encumbered SEPs.¹⁶⁷ However, the Federal Circuit held that there is no need to have a modified version of *Georgia-Pacific* factors for FRAND-encumbered SEPs.¹⁶⁸ The royalty calculation for FRAND-encumbered SEPs should consider the facts of the two parties and select suitable *Georgia-Pacific* factors accordingly.

Furthermore, “[t]his principle—apportionment—is ‘the governing rule’ ‘where multi-component products are involved.’”¹⁶⁹ The rule of

160. *In re Innovatio*, 2013 WL 5593609, at *6.

161. *Id.* at *41.

162. *Id.*

163. *Commonwealth Sci. & Indus. Research Org. v. Cisco Sys., Inc.*, 809 F.3d 1295, 1301 (Fed. Cir. 2015) (quoting *Ericsson, Inc. v. D-Link Sys., Inc.* 773 F.3d 1201, 1233 (Fed. Cir. 2014)); *see also* 35 U.S.C. § 284 (2012) (setting forth appropriate damages awards).

164. *Ericsson*, 773 F.3d at 1233.

165. *Id.* at 1226.

166. *Id.* at 1230 (“[F]actor 4 is ‘[t]he licensor’s established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly.’ . . . [F]actor 5 [is] ‘[t]he commercial relationship between the licensor and licensee’ . . .”). These two factors should not be applicable due to the SEP holder’s commitment to license on FRAND terms. *Id.*

167. *Id.* at 1231 (“[F]actor 8 accounts for an invention’s ‘current popularity,’ which is likely inflated because a standard requires the use of the technology. Factor 9—‘utility and advantages of the patented invention over the old modes or devices’—is also skewed for SEPs because the technology is used because it is essential, not necessarily because it is an improvement over the prior art. Factor 10, moreover, considers the commercial embodiment of the licensor, which is also irrelevant as the standard requires the use of the technology.” (citation omitted)).

168. *Id.* (“To be clear, we do not hold that there is a modified version of the *Georgia-Pacific* factors that should be used for all RAND-encumbered patents. . . . We believe it is unwise to create a new set of *Georgia-Pacific*-like factors for all cases involving RAND-encumbered patents.”).

169. *Commonwealth Sci. & Indus. Research Org. v. Cisco Sys., Inc.*, 809 F.3d 1295, 1301 (Fed. Cir. 2015) (quoting *Ericsson*, 773 F.3d at 1226).

apportionment applies to all patents, including SEPs and non-SEPs.¹⁷⁰ The smallest saleable patent practicing unit (SSPPU) is one of the tools that can help determine the incremental value of the patent contributing to a multi-component product.¹⁷¹ Nonetheless, other tools—for example, referring to comparable licenses—are still feasible in case they can carry out the apportionment properly.¹⁷²

These determinations of FRAND royalties provide certain guidance for SEP holders and potential SEP licensees in their negotiations. In existing IPR policies, most SSOs provide no guidance for FRAND royalties because they intend to let SEP holders and standard implementers negotiate SEP royalties according to their own specific conditions and circumstances.¹⁷³ SSOs should consider providing a series of steps or key factors for FRAND royalties, not the exact SEP royalties yet, in IPR policies. Those steps or factors can be used as a reference for SEP holders and standard implementers to negotiate SEP royalties according to their own specific conditions and circumstances.

IV. REFORMING IPR POLICIES: A PROPOSAL

Careful observation and qualitative analysis on the SEP disputes reveal that standard stakeholders, SEP holders, and standard implementers had extremely different interpretations on the FRAND commitments in terms of seeking injunctive relief and reasonable royalties.¹⁷⁴ In addition, existing IPR policies involved in SEP disputes, in fact, address very few details about the impacts of FRAND commitments on SEP holders' rights to seek injunctive relief and reasonable royalties.¹⁷⁵ In order to figure out the exact underlying reasons behind these SEP disputes, the research involved semi-structured interviews with standard-setting delegates and SEP licensing negotiators from the ICT sector, the main industry of the SEP disputes identified in the statistical analysis.

A. *Qualitative Research by Semi-Structured Interviews*

A semi-structured face-to-face interview method was employed in this research. Three interviewees were invited from smartphone and wireless chip vendors. They each have around ten to twenty years of experience in global standard setting or license negotiation for patents, including SEPs. The interviews were scheduled and held in the last two weeks of December 2014.

170. *Id.*

171. *Id.* at 1302–03.

172. *See id.* (“That principle is inapplicable here, however, as the district court did not apportion from a royalty base at all. Instead, the district court began with the parties’ negotiations. . . . [T]his starting point for the district court’s analysis already built in apportionment.”).

173. *See, e.g.,* Deborah L. Feinstein et al., *Economists’ Roundtable on Hot Patent-Related Antitrust Issues*, 27 *ANTITRUST* 10, 16 (2013) (explaining it is a current debate whether SSOs should be more active in determining a FRAND royalty for SEPs).

174. For an overview of some of the competing interpretations, see J. Gregory Sidak, *The Meaning of FRAND, Part II: Injunctions*, 11 *J. COMPETITION L. & ECON.* 201, 205 (2015).

175. *See infra* Section V.B.

The interview questionnaire was designed to survey interviewees' industrial opinions on SEP disputes and potential dispute resolutions by reference to the questions of the Public Consultation on Patents and Standards held by the European Commission in 2014.¹⁷⁶ The questions in the interview consisted of eight sections. The first section of questions was intended to investigate the fields of standardization involving SEPs. The second section of questions asked interviewees to identify which elements of SSO rules and practices are working well and which elements, on the other hand, can be improved. The third section of questions focused on patent transparency. The fourth section of questions was designed to assess opinions of patent transfer. More open-ended research problems were presented in the fifth section of questions, where interviewees were asked whether and how a patent pool could be helpful for SEP licensing. The sixth section of questions was dedicated to clarifying interviewees' views and definitions of FRAND terms. The seventh section of questions investigated any other alternative solutions to SEP disputes. The eighth section of questions asked how to restrict seeking injunctive relief against infringement of FRAND-encumbered SEPs. All the interviews have been recorded and made into interview transcripts.¹⁷⁷ In the following qualitative analysis, interviewees' opinions were jointly considered with the above-mentioned administrative and judicial opinions from the competition authorities and courts. Table 2 summarizes the three interviewees' opinions on the main questions of the semi-structured interview.

176. *Public Consultation on Patents and Standards: A Modern Framework for Standardization Involving Intellectual Property Rights*, EUR. COMM'N (Oct. 14, 2014), http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=7833.

177. The interviews with three interviewees A, B, and C were held for 1 hour 22 minutes, 1 hour 33 minutes, and 1 hour 4 minutes, respectively, and the transcripts in total have more than 58,000 words in Chinese. Interviewee A was from a company holding about one hundred SEPs. Interviewee B was from a company probably holding no SEPs. Interviewee C was from another company holding several hundred SEPs. The company announced plans to assign its SEPs for licensing in these two years.

Table 2. Summary of Interviewees' Opinions

	Interviewee A	Interviewee B	Interviewee C
1. Technologies of Standards	Cellular; Wi-Fi; Video/Audio Coding; Others.	Wi-Fi; Ethernet; DVI; HDMI; PCI Express; USB.	Cellular; Wi-Fi; Video/Audio coding; Others.
2. SSO Rules	Works well: Declaration of SEPs; To be improved: Verification of the essentiality of SEPs.	Works well: temporary no idea; To be improved: more and clear rules should be added to the patent policies.	All SSOs' rules have their respective pros and cons.
3. Patent Transparency	Not enough; A lot of efforts required to clarify necessary SEP information for licensing.	Non-transparent at all; Hard to verify the essentiality and avoid double licensing.	The requirement to be transparent is clear, but the rule is not obeyed frequently in practices.
4. Patent Transfer	FRAND obligations should be applicable to the transferees.	FRAND obligations should be applicable to the transferees.	The precedents might have specified that FRAND obligations should be applicable to the transferees.
5. Patent Pools	Not always helpful for taking licenses.	Might be helpful, but transparency is more important.	It depends on how the patent pools work.
6. Definition of the FRAND Terms	Ambiguous definitions; Hard to verify due to the NDAs; Should be imposed throughout the whole negotiation processes.	Hard to define the FRAND terms; Rates are different in respective cases; A reference of royalty calculation might be helpful; Should be imposed throughout the whole negotiation process.	Hard to define the FRAND terms; Should be defined on a case-by-case basis; Should consider the entire markets of the standards.
7. Alternative Solutions	Arbitration, but still want to keep the rights to litigate.	Arbitration with competent knowledge of the industry.	Mediation might be helpful if it is considered as a pre-step of litigation.
8. Restriction to Injunctions	Should be restricted properly.	Injunctions are improper remedies; Damages should be awarded for SEPs instead.	The precedents might have specified that injunctive relief is improper in many cases.

In regard to the right to seek injunctive relief against SEP infringement, two interviewees, both working for SEP licensees, responded that it is improper for an SEP holder who has committed to license his SEPs on FRAND terms to seek injunctive relief against SEP infringement.¹⁷⁸ As regards FRAND royalties, the two interviewees' responses indicated that they look forward to the introduction of a calculation mechanism or determination

178. Interview with Interviewee A in Taipei, Taiwan (Dec. 24, 2014) [hereinafter Interview A] (Interviewee A was from a company holding about one hundred SEPs, and the company needed to take licenses of SEPs for its products.); Interview with Interviewee B in Hsinchu, Taiwan (Dec. 27, 2014) [hereinafter Interview B] (Interviewee B was from a company probably holding no SEPs, and the company needed to take licenses of SEPs for its products.).

by a neutral third party for FRAND royalties.¹⁷⁹ These interview opinions reveal that there is seemingly nothing addressed in existing IPR policies in relation to the further details about the FRAND commitments' impacts on either the SEP holder's right to seek injunctive relief for SEP infringement or reasonable royalties for SEP licensing. Careful investigation into the IPR policies involved in the SEP disputes shows that, except for the request to agree to grant a license under FRAND terms, SSOs stipulate very few details about the FRAND commitment.¹⁸⁰ The existing clauses of FRAND terms, without any details about impacts on the right to seek injunctive relief or reasonable royalties, are considered to be vague and ambiguous. According to the results of the statistical analysis, the stakeholder interviews, and the investigation of the relevant clauses of the disputed IPR policies, it seems reasonable to conclude that the existing IPR policies are vague and ambiguous in terms of infringement remedies of SEPs.

B. A Proposal to Reform IPR Policies

Several approaches to resolving SEP disputes are available, including court actions, arbitration, mediation, patent pools, IPR policy reform, and so on. Among these approaches, IPR policy reform is a proactive approach to resolving potential SEP disputes or at least mitigating them at an early stage. SSOs formulate their IPR policies to ensure access to standards while they conduct standard-setting collaboration between competitors and have to seek immunity from antitrust prosecution.¹⁸¹ IPR policies generally impose certain obligations and restrictions on SEP holders and standard implementers to ensure access to standards and prevent unreasonable SEP enforcement against standard implementers. When existing IPR policies are found to be ambiguous and have led to a series of SEP disputes, SSOs should take responsibility and reform their IPR policies with clear and specified clauses. A joint view from three chief economists also suggests that SSOs could help clarify FRAND terms in IPR policies to mitigate the hold-up problem, to reduce SEP disputes, and to facilitate innovation.¹⁸² In early 2015, for example, the Institute of Electrical and Electronics Engineers (IEEE) reformed its patent policy in the IEEE-SA Standards Board Bylaws incorporating clear restrictions on SEP holders' rights to seek injunctive relief and guidance for FRAND royalties because IEEE standards had been involved in a substantial number of SEP disputes.¹⁸³

Moreover, IPR policy reform is an approach that is potentially able to provide a unified solution over multiple jurisdictions while the standards are adopted and implemented internationally. In the above case analysis on the

179. Interview A, *supra* note 178; Interview B, *supra* note 178.

180. The investigation results illustrated in Table 3(b), *infra* Section V.B, could provide certain support for such an observation.

181. Sivinski, *supra* note 17, at 3.

182. Kühn et al., *supra* note 13.

183. IEEE-SA BYLAWS, *supra* note 24, at 16. IEEE Standards have been involved in at least nine out of forty-six disputes according to the statistical analysis of this work.

U.S. and EU judicial decisions, it seems that the two significant jurisdictions have achieved certain consensus on the FRAND commitment's impacts on the right to seek injunctive relief. Nonetheless, other jurisdictions still have their own discretion and might make completely different decisions. For example, the Tokyo district court in Japan denied Samsung's motion for a preliminary injunction and found that it cannot seek damages from Apple based on its finding of abuse of right or breach of good faith.¹⁸⁴ The decisions were, in fact, exactly the opposite of that decided in the counterpart case at the USITC, in which the exclusion order was granted.¹⁸⁵ Therefore, considering international standards and diverse jurisdictions, IPR policy reform is a potentially unified resolution to impose clear and specific obligations and restrictions on SEP holders and standard implementers in order to resolve SEP disputes and facilitate licensing negotiations.

Furthermore, it is necessary to specify material terms for standard stakeholders in IPR policies from a contract perspective. The existing vague and ambiguous IPR policies have raised substantial concerns about whether they are enforceable.¹⁸⁶ Obligations and restrictions imposed on SEP holders and standard implementers to ensure access to standards are no doubt material terms in the contracts between SEP holders and SSOs, i.e., the IPR policies. Therefore, it is imperative to reform IPR policies to specify clear obligations and restrictions imposed on SEP holders and standard implementers. In fact, other dispute resolution approaches, like court actions, arbitration, mediation, and patent pools, are all still available for the two parties while any SEP-related dispute arises under the reformed IPR policies.¹⁸⁷ Accordingly, this Article proposes that SSOs reform their IPR policies.

This Article suggests a set of reforming proposals mainly for three clauses of IPR policies in light of the results of the statistical survey, the case analysis, and the stakeholder interviews. These three clauses relate to: (1) standard essentiality; (2) disclosure and declaration obligations; and (3) FRAND terms. The identified potential issues and corresponding reforming proposals for the three clauses of IPR policies are discussed in the following Subsections.

C. *Defining Standard Essentiality*

The standard essentiality clause is dedicated to defining the meaning of SEPs, which identifies the scope of subject matters under the disclosure and

184. See, e.g., *Samsung Elec. Co. v. Apple Japan, Inc.*, Tōkyō Chihō Saibansho [Tokyo District Ct.] Feb. 28, 2013, (yo) no. 22027 (Japan); see also *Samsung Elec. Co. v. Apple Japan, Inc.*, Tōkyō Chihō Saibansho [Tokyo District Ct.] Feb. 28, 2013, (yo) no. 22098 (Japan); *Apple Inc. v. Samsung Japan Corp.*, Tōkyō Chihō Saibansho [Tokyo District Ct.] Feb. 28, 2013, (wa) no. 38969 (Japan).

185. See *Certain Elec. Devices*, *supra* note 90.

186. See, e.g., *In re Innovatio IP Ventures, LLC Patent Litig.*, No. 11-C-9308, 2013 WL 5593609 (N.D. Ill. Oct. 3, 2013); *Microsoft Corp. v. Motorola, Inc.*, 963 F. Supp. 2d 1176, 1181 (W.D. Wash. 2013); Brooks & Geradin, *supra* note 71; Lemley, *supra* note 73; Contreras, *supra* note 18; Keele, *supra* note 77.

187. See, e.g., 15 U.S.C. § 4302 (2012) ("In any action under the antitrust laws, or under any State law similar to the antitrust laws, the conduct of . . . a standards development organization while engaged in a standards development activity shall not be deemed illegal per se; such conduct shall be judged on the basis of its reasonableness . . .").

declaration obligations and the FRAND commitments.¹⁸⁸ The only issue on standard essentiality is whether the standard essentiality clause defines the SEPs accurately and clearly.¹⁸⁹ An SEP is a patent that would inevitably be infringed by implementation of a standard.¹⁹⁰ A sophisticated definition considering various practices of a patent would be terrific as long as it is accurate and clear. For example, ETSI's IPR Policy defines "essential" as an intellectual property right whereby "it is not possible on technical (but not commercial) grounds, taking into account normal technical practice and the state of the art generally available at the time of standardization, to make, sell, lease, otherwise dispose of, repair, use or operate equipment or methods which comply with a standard without infringing that IPR."¹⁹¹

In an SEP dispute, the first requirement to examine is whether the disputed patent is essential to the standard. For example, in one USITC investigation, the disputed patent was found to be infringed by the accused product, but not essential to the standard; therefore, there was no prevailing evidence or reason why an exclusion order should not be issued.¹⁹² To be clear, the case became a normal dispute on patent infringement after failure to prove its standard essentiality, and the defendant could not assert any defense of the FRAND commitment accordingly.¹⁹³ Therefore, the reforming proposal for the standard essentiality clause is that there should be an *accurate and clear definition of standard essentiality* for standard stakeholders.

D. Clarifying Disclosure and Declaration Obligations

Most IPR policies require proponents to disclose whether their technical proposals are covered by their or others' patents.¹⁹⁴ Such information is supposed to be considered jointly with the technical strength and advantages of the proposals while making decisions for standards.¹⁹⁵ However, almost all the IPR policies involved in the collected U.S. SEP disputes are lacking in clear deadlines for such disclosure obligations.¹⁹⁶ The first interviewee, working for an SEP licensee, believed that it is necessary to disclose a patent that is essential to a standard and that it is the obligation of the SEP holder to examine whether his patent is essential to the standard.¹⁹⁷ The second interviewee clarified that some bylaws of SSOs, such as the IEEE-SA Standards Board Bylaws and the ETSI IPR Policy, provide that it is necessary to disclose SEPs

188. Sidak, *supra* note 70, at 946.

189. 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, 1153 (2013) ("SSOs can and should limit disputes over what is an 'essential' patent by clearly defining that term.")

190. ETSI IPR POLICY, *supra* note 24.

191. *Id.* at 41.

192. Certain 3G Mobile Handsets & Components Thereof, Inv. No. 337-TA-613 (Apr. 27, 2015) (Remand) [hereinafter Certain 3G Mobile Handsets].

193. *Id.*

194. See, e.g., ETSI IPR POLICY, *supra* note 24, at 35.

195. *Id.*

196. The investigation results illustrated in Table 3(b), *infra* Section V.B, could provide certain support for such an observation.

197. Interview A, *supra* note 178.

in a timely manner.¹⁹⁸ However, such a timely disclosure obligation is hard to monitor during the standard-setting process. In the above-mentioned USITC case, for example, Apple asserted that the disputed SEP should be unenforceable because Samsung failed to disclose it to ETSI in a timely manner.¹⁹⁹ The ETSI IPR Policy requires an SEP holder to inform ETSI of his essential patents “in a timely fashion” once he becomes aware of their essentiality.²⁰⁰ Samsung, in fact, declared the disputed SEP to ETSI after several years.²⁰¹ The USITC did not rule the SEP unenforceable or impose any sanction since it was hard to recognize that Samsung’s disclosure after several years was not timely.²⁰²

The word “timely” in IPR policies is too vague and ambiguous to define a clear disclosure obligation. While technical proposals contain patented technologies, those proprietary technologies might be in one of four kinds of patent prosecution status, including (1) issued; (2) published, but not granted yet; (3) applied, but not published yet; and (4) provisional patent application. Potential SEP holders should disclose patent or publication numbers to SSOs while they propose the proprietary technologies belonging to the former two kinds of status for the decisions of standards. For the proprietary technologies still in the latter two kinds of status, proponents should at least disclose that their technical proposals are covered by patent applications. Therefore, the SEP disclosure will be feasible no matter which status of patent prosecution the proprietary technologies are in.

During standard setting, however, a standard is generally accomplished by achieving agreements step by step, not a whole system altogether. Standard-setting participants can identify patented technologies when the SEP disclosure contains patent or published numbers. In contrast, in case the SEP disclosure is only a notification of patent application, it might not be substantially helpful because, in the general practice of standard setting, technical proposals have been presumed to contain proponents’ proprietary technologies. Moreover, when all available technical proposals contain patented technologies in light of the SEP disclosure, such disclosure might not be helpful either for those standard-setting participants who are in favor of unpatented alternatives. In fact, most IPR policies have specified such disclosure obligations for potential SEPs during the standard-setting process.²⁰³ Accordingly, the most important thing, under the disclosure obligation clause, is to ask proponents to meet their SEP disclosure obligations when they submit technical proposals to SSOs. SSOs should make the disclosed SEP information available to all standard-setting participants before making any decisions for standards.

198. Interview B, *supra* note 178.

199. See Certain Elec. Devices, *supra* note 90, at 41 (explaining that the USITC rejected a per se rule prohibiting an exclusion order against SEP infringement mainly because the authority of Section 337 “makes no distinction between patents that have or have not been declared to be essential to a standard”).

200. ETSI IPR POLICY, *supra* note 24, at 35.

201. Certain 3G Mobile Handsets, *supra* note 192.

202. *Id.*

203. ETSI IPR POLICY, *supra* note 24, at 35.

Once a standard is accomplished and released, potential standard implementers might need to estimate and evaluate SEP license issues based on the disclosed and declared SEP databases. While a more complete set of SEPs could be disclosed and declared to SSOs as early as possible, standard implementers would be able to estimate potential SEP licenses more exactly before they start to get involved in the standard-compliant products or services. Therefore, this Article proposes to add an additional requirement in the disclosure and declaration obligations clause that *SEP holders shall disclose and declare their SEPs to SSOs by a clear, specific deadline*. For example, an SEP holder shall disclose and declare his SEP no later than six months after the later date between the date a standard is finalized and the date an SEP is issued by a patent office. The clear, specific deadline could be, for example, six months or even one year. Standard implementers would be able to estimate the total number of potential SEPs and potential cost of SEP royalties accordingly.

After the clear, specific deadline—the hard deadline—it is necessary to impose a certain penalty or legal effect for failure to disclose or declare for the purpose of making SEP holders carry out the SEP disclosure and declaration in practice. The first interviewee assumed that a higher obligation should be imposed on the SEP owner because it is a standardization activity involving the public interest; therefore, the legal effect for failure to disclose or declare could be an unenforceable SEP or royalty deduction.²⁰⁴ The second interviewee believed the intention of an SEP holder in his failure to disclose should be investigated first and the finding used to decide whether the enforcement of the SEP should be allowed.²⁰⁵ In the existing IPR policies, an SEP holder is obliged to disclose and declare his or others' SEPs to his best knowledge, without the duty to conduct a patent search.²⁰⁶ In *Qualcomm Inc. v. Broadcom Corp.*, the Federal Circuit ruled that the SEP would become unenforceable to the standard when the SEP holder intentionally breached its disclosure duty to the SSO.²⁰⁷ However, an SEP holder might fail to disclose without an intention to hide his SEPs, but instead due to limited resources to follow the latest development of standards and analyze his own patents. A serious legal effect of failure to disclose, such as becoming unenforceable to the standard or to the world, would force SEP holders to follow standards and analyze their own patents ceaselessly. In addition, it might cause a significant number of patents to be disclosed and declared with only minor possibilities that they are real SEPs. A significant number of declared patents with low accuracies of essentiality would reduce the efficiency of SEP license negotiation. Accordingly, it is necessary to balance between the force for SEP holders' disclosure and declaration and the prevention of inaccurate disclosure or

204. Interview A, *supra* note 178.

205. Interview B, *supra* note 178.

206. ETSI IPR POLICY, *supra* note 24, at 35.

207. *Qualcomm, Inc. v. Broadcom Corp.*, 548 F.3d 1004, 1027 (Fed. Cir. 2008) (“Based on the foregoing analysis, we agree with the district court that Qualcomm had a duty to disclose the asserted patents to the JVT [and] that it breached its disclosure duty Because the scope of the remedy of unenforceability as applying to the world was too broad, however, we vacate the unenforceability judgment and remand with instructions to narrow the scope of unenforceability to H.264-compliant products.”).

declaration. The Advanced Television Systems Committee's (ATSC) patent policy, for example, provides that any failure to disclose an essential patent to the ATSC will make the SEP be deemed to have been committed to license on FRAND terms.²⁰⁸ This seems to be an acceptable balance point between the force for disclosure and declaration and the prevention of inaccurate disclosure or declaration. It is also a balance between the protection of SEP holders' patent rights and the license demands of standard implementers.

Accordingly, this Article proposes to add the legal effect of failure to disclose or declare into IPR policies stipulating that *the legal effect of failure to disclose or declare an SEP to an SSO by the specific deadline is to make the SEP be deemed to have been committed to license on FRAND terms*. Some SEP holders who are willing to license on FRAND terms might underestimate the disclosure and declaration obligations and wonder whether there is any difference of practical consequence between declaration and no declaration, both resulting in FRAND commitments. It would be helpful to emphasize the importance of the obligations to disclose and declare SEPs in good faith, or even to warn that an unenforceable consequence may be imposed for intentional conduct of failure to disclose or declare.

The third potential issue regards the update obligation of SEP declaration. The first interviewee believed that after the disclosure to an SSO, there might be some changes to the rights of SEPs. For example, an SEP might be reexamined and found invalid. The declaration should be updated once there is any material change in the SEP status.²⁰⁹ The second interviewee also believed that the update obligation should be imposed on an SEP holder in order to maintain up-to-date declaration information of SEPs for a standard.²¹⁰ Since SEP holders are in the best positions to know the status of SEPs, it should be reasonable to impose an obligation to update any material change of SEP status on them. Accordingly, this Article proposes to incorporate the update obligation into existing IPR policies stipulating that *an SEP holder shall update the declaration once any material change occurs on the rights of the declared SEP* to make SEP declaratory information reliable and useful to potential standard implementers and SEP licensees.

E. Specifying FRAND Commitments

The first potential issue of FRAND commitments is whether an SEP holder's right to exclude others from practicing his SEP should be restricted due to his commitment to license on FRAND terms. The court decisions and holdings about the SEP holder's right to seeking injunctive relief have been discussed in depth in Part III, and they will be taken into consideration jointly with the following opinions and views. Two interviewees, both working for SEP licensees, responded that it is improper for an SEP holder who has

208. ADVANCED TELEVISION SYS. COMM., INC., PATENT POLICY (Jan. 31, 2002) [hereinafter ATSC PATENT POLICY], http://atsc.org/wp-content/uploads/2015/03/B-4-2007-12-13_PATENT_POLICY.pdf. More investigation results of IPR policies can be found in Section V.B., *infra*.

209. Interview A, *supra* note 178.

210. Interview B, *supra* note 178.

committed to license on FRAND terms to seek injunctive relief.²¹¹ SEP holders still have rights to seek monetary damages if they think that royalty amounts proposed by potential licensees (standard implementers) in negotiations are unreasonable or that standard implementers attempt to delay license negotiation tactically.²¹² The first interviewee believed that licensing SEPs with reasonable royalties, not seeking injunctive relief against standard implementers, is part of the spirit of standard setting.²¹³ It is unavoidable to infringe SEPs while a standard implementer makes standard-compliant products.²¹⁴ A standard implementer would be in a quite unequal position in license negotiations and might be forced to pay unreasonable royalties if injunctive relief is available for SEP holders without any restriction.²¹⁵

The second interviewee believed that reasonable royalties should be granted instead, and he raised concern about the possibility of market monopolization in standard-compliant products if injunctive relief is available for an SEP holder.²¹⁶

SSOs should consider formulating an explicit restriction on SEP owners' rights to seek injunctive relief. For example, the IEEE patent policy amendment in 2015 provides that no injunctive relief should be granted unless the standard implementer fails to comply with the outcome of royalty determination by a competent court.²¹⁷ Accordingly, this Article proposes to specify in IPR policies that *an SEP holder's right to seek injunctive relief should be restricted with certain criteria, such as not against a willing licensee or a potential licensee still negotiating in good faith.*²¹⁸ An SEP holder should still be allowed to seek injunctive relief against an unwilling SEP licensee who cannot pay or refuses to pay the FRAND royalties determined by a court or an arbitrator.²¹⁹ Considering that the exclusive right of patent is deeply rooted in patent laws, this Article suggests that such a clause restricting the right to seek injunctive relief should be specified without ambiguity in IPR policies.

Imposing conditions on an SEP holder's right to seek injunctive relief could mitigate patent hold-up, which occurs when an SEP holder requests a license far exceeding reasonable royalties by threatening to seek injunctive relief.²²⁰ Such prerequisite conditions are sourced from the SEP holder's voluntary commitment to grant licenses on FRAND terms.²²¹ From the

211. See *Apple Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 913–14, 918 (N.D. Ill. 2012) (“Motorola committed to license [the patent] to anyone willing to pay a FRAND royalty and thus implicitly acknowledged that a royalty is adequate compensation for a license to use that patent.”).

212. *Id.*

213. Interview A, *supra* note 178.

214. *Id.*

215. *Id.*

216. Interview B, *supra* note 178.

217. IEEE-SA BYLAWS, *supra* note 24, at 18.

218. *Id.*

219. *Id.*

220. See, e.g., Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151 (2009); Joseph Farrell et al., *Standard Setting, Patents, and Hold-Up*, 74 ANTITRUST L.J. 603 (2007); Lemley & Shapiro, *supra* note 60, at 1989 (explaining the conditions that lead to hold up and how to mitigate the process).

221. Cotter, *supra* note 220, at 1155.

perspective of competition regulation, these prerequisite conditions are used to ensure that the standards remain open and accessible to standard implementers, and therefore can be justified.²²² Opponents, including a substantial number of SEP holders, argue that such a restriction on the patent right to seek injunctive relief might cause reverse hold-up, a.k.a. hold-out, by standard implementers.²²³ Reverse hold-up occurs when standard implementers practice SEPs and do not pay for them, rather arguing that, for example, the patent is invalid, non-infringed, non-essential, or that the SEP holder's royalty offers were not fair or reasonable.²²⁴ Another example of reverse hold-up is that heavy litigation costs of enforcing SEPs might drive some SEP holders, especially small companies, to settle with standard implementers for royalties below reasonable market value.²²⁵ However, if the right to seek injunctive relief is not imposed with any prerequisite condition from the FRAND commitment, SEP holders might utilize it to exclude competitors or ask for unreasonably high royalties. Then, patent hold-up by SEP enforcement could occur. As a result, investments and efforts of standard implementers will be wasted or profits will be taken by SEP holders. Nonetheless, on the other side of the spectrum, a per se rule that prohibits seeking injunctive relief will not be able to protect SEP holders' patent rights from the infringement of unwilling licensees. Rather than a per se rule that prohibits seeking injunctive relief for SEP infringement, which would possibly cause a serious wave of reverse hold-ups, such prerequisite conditions attempt to keep a balance between the protection of a patentee's rights and the accessibility of standards, which would promote competition and ultimately benefit consumers.²²⁶

The second potential issue of FRAND commitments is whether only the final agreement on royalties should be subject to FRAND terms. Both the first and second interviewees, working for SEP licensees, argued that starting from the initial offer, all offers and counteroffers ought to be subject to FRAND terms during the whole negotiation process.²²⁷ The negotiation of FRAND royalties might be prolonged if parties do not need to offer or counteroffer SEP royalties subject to the FRAND terms.²²⁸ However, the court in *Microsoft Corp. v. Motorola, Inc.* interpreted the existing FRAND terms clause and held that an initial offer does not have to be subject to FRAND terms so long as a FRAND license eventually issued.²²⁹ So far, the precedent on this issue is still quite limited. For the purpose of conducting negotiations in good faith and with efficiency, this Article argues that *starting from the initial offer, all offers*

222. *Id.* at 1168.

223. *See, e.g.*, Damien Geradin, *Reverse Hold-Ups: The (Often Ignored) Risks Faced by Innovators in Standardized Areas* (Paper Prepared for the Swedish Competition Authority on the Pros and Cons of Standard-Setting, 2010), <http://ssrn.com/abstract=1711744> (describing the risks of firms implementing standards involving intellectual property rights by manufacturing standard-compliant products).

224. *See, e.g.*, Certain Elec. Devices, *supra* note 90, at 63 (explaining the process of reverse holdup).

225. *See, e.g.*, John M. Golden, "Patent Trolls" and Patent Remedies, 85 TEX. L. REV. 2111, 2128, 2133 (2007) (discussing litigation costs as a driver for small companies to settle).

226. *Id.* at 2114 (discussing SEP holders' incentive to negotiate for royalty increases).

227. Interview A, *supra* note 178; Interview B, *supra* note 178.

228. *Id.*

229. *Microsoft Corp. v. Motorola, Inc.*, 864 F. Supp. 2d 1023, 1038 (W.D. Wash. 2012).

and counteroffers of SEP royalties throughout the whole negotiation process should be subject to FRAND terms.²³⁰ Imposing the FRAND obligation starting from the initial offer will prevent the parties from speculation by providing unreasonably high or low royalties in offers and counteroffers in the beginning of negotiations.²³¹ Both parties should provide all their offers and counteroffers subject to FRAND terms during the whole negotiation process, although these SEP royalties would be reviewed by a court only after either party takes a legal action.²³² The efficiency of SEP license negotiation could be improved accordingly. It should not be deemed as an additional obligation for two parties who are going to negotiate in good faith and target on achieving an agreement on FRAND terms. A practical approach to carrying out the FRAND obligation is to always provide offers or counteroffers of SEP royalties with detailed calculation steps and factors having reasonable grounds throughout the whole negotiation process.²³³ In case of cross-licensing, similar royalty evaluation for two parties' SEP portfolios is still necessary, and the FRAND obligation should still apply from the beginning of negotiations.²³⁴

The third potential issue of FRAND terms is how to calculate or evaluate FRAND royalties for SEP licensing. The first interviewee, working for an SEP licensee, expressed concern on the calculation of FRAND royalties and suggested that FRAND royalties for SEPs should be determined by a court or a neutral third party.²³⁵ The second interviewee believed that a calculation mechanism defined in the IPR policy would provide visualized and substantial guidance for the license negotiation and royalty determination.²³⁶ The circumstances surrounding two parties in license negotiations might be quite different among various cases. For example, SEP license negotiation may occur between competitors, between upstream and downstream manufacturers, or between a non-practicing entity (NPE) and a downstream manufacturer. SEP portfolios of two parties in license negotiations might vary greatly from case to case. Nonetheless, it is certainly helpful for efficiency of license negotiations to address how to calculate or evaluate FRAND royalties for SEP licensing in IPR policies. Several U.S. precedents have carried out the calculations of FRAND royalties even though the calculation methods and factors used might partly differ from each other.²³⁷ The common ground in the calculation methods and factors used in the precedents can be guidance for SSOs to formulate *a series of steps or key factors for SEP royalty calculation under the FRAND obligation*.²³⁸

A series of steps for SEP royalty calculation, for example, can comprise the steps to decide a royalty base and a royalty rate for a fundamental royalty

230. *Id.*

231. *See* Cotter, *supra* note 220 (discussing parties' incentives to speculate unreasonable royalties).

232. *Id.* (explaining how unreasonable royalties are addressed by costly litigation).

233. *See* Sidak, *supra* note 70, at 1045 (explaining the role of counteroffers in FRAND bargaining).

234. *Id.*

235. Interview A, *supra* note 178.

236. Interview B, *supra* note 178.

237. *Id.*

238. Golden, *supra* note 225, at 2124.

calculation.²³⁹ Additional factors based on the two parties' concerns as well as circumstances surrounding them could apply to adjust SEP royalty calculation further to satisfy the FRAND obligation.²⁴⁰ For example, the IEEE patent policy amendment in 2015 suggests that determination of reasonable royalties should include the consideration of the value of the SEP, the proportional value to all SEPs of the standard, apportionment of the smallest saleable compliant implementation that practices the SEP, and existing licenses.²⁴¹ Another alternative is to specify a royalty cap for SEPs when the proliferation of SEPs and royalty stacking are concerned. The Wireless Power Consortium (WPC), for example, clarifies that their members expect the aggregated royalty will not exceed 10% of the bill of materials cost of a standard-compliant component.²⁴² However, it should be noted that anticompetitive concerns might arise if there are specific royalties stated in IPR policies.

Specifying a series of steps or key factors in IPR policies for the SEP royalty calculation under the FRAND obligation provides a reference or guidance for both SEP licensors and licensees during license negotiation. It would be helpful for the efficiency of SEP licensing. Two parties engaged in license negotiation should remain free to discuss with each other and reach an agreement on SEP royalties or cross-licenses by their own devices. They should negotiate in good faith based on their own specific concerns and circumstances.

F. Reforming Proposals

In light of the results of the statistical survey, the case analysis, and stakeholder interviews, it has become urgent and imperative to reform and improve those vague and ambiguous IPR policies. Concrete proposals for reforming IPR policies are summarized as follows²⁴³:

- *Accurate and clear definition of standard essentiality.*
- *SEP holders shall disclose and declare their SEPs to SSOs by a clear, specific deadline.*
- *Legal effect of failure to disclose or declare an SEP to an SSO by the specific deadline is to make the SEP be deemed to have been committed to license on FRAND terms. (It would be helpful to emphasize the importance of the obligations to disclose and declare SEPs in good faith, or even to warn that an unenforceable consequence may be imposed for intentional conduct of failure to disclose or declare.)*

239. See Lemley & Shapiro, *supra* note 60, at 2044 (explaining the royalty calculation process).

240. *Id.* at 1966.

241. IEEE-SA BYLAWS, *supra* note 24, at 16 (listing factors to consider in the determination of a reasonable rate).

242. WIRELESS POWER CONSORTIUM, WIRELESS POWER CONSORTIUM CHARTER E-2 (Oct. 23, 2008), <http://www.wirelesspowerconsortium.com/downloads/wireless-power-consortium-agreement.html>. Additional investigation results of IPR policies can be found in Section V.B., *infra*.

243. See discussion *supra* Sections IV.B–IV.E.

- *An SEP holder shall update the declaration once any material change occurs on the rights of the declared SEP.*
- *An SEP holder's right to seek injunctive relief should be restricted with certain criteria, such as not against a willing licensee or a potential licensee still negotiating in good faith.*
- *All offers and counteroffers of SEP royalties throughout the whole negotiation process should be subject to FRAND terms.*
- *A series of steps or key factors for SEP royalty calculation under the FRAND obligation.*

Because of the collaborative standard-setting conduct, SSOs are obliged to ensure access to standards and prevent potential anticompetitive conduct that unreasonably enforces SEPs against standard implementers.²⁴⁴ SSOs intended to ensure access to standards by the introduction of FRAND commitments.²⁴⁵ However, the existing IPR policies and FRAND terms are too vague to clarify what kinds of obligations and restrictions should be imposed on SEP holders and standard implementers.²⁴⁶ After a substantial number of SEP disputes have been raised, SSOs ought to reform and consolidate their IPR policies with clear obligations and restrictions for both SEP holders and standard implementers. The set of reforming proposals in this Section provides a series of amendments to the existing IPR policies in light of the results of the statistical survey, the case analysis, and the stakeholder interviews. SSOs could take these reforming proposals into consideration and adjust them according to their own situations. However, conflicts of interest might always exist among standard-setting participants within an SSO while the SSO consists of competing companies and stakeholders.²⁴⁷ Competition authorities might have to intervene to prevent potential anticompetitive conduct by urging SSOs whose IPR policies are vague to reform them to include clear and specific obligations and restriction in relation to SEPs.

V. PRACTICAL INVESTIGATION OF IPR POLICIES: ANALYSIS AND COMPARISON WITH THE PROPOSALS

A. *Selection of Standard-Setting Organizations*

This Article's research practically investigates the existing IPR policies of a set of representative SSOs in terms of the reforming proposals, and provides a series of amendment suggestions to avoid potential disputes in the future. These representative SSOs are selected by considering their representativeness, involvement in SEP disputes, and new IPR policies. The first category is the

244. Joanna Tsai & Joshua D. Wright, *Standard Setting, Intellectual Property Rights, and the Role of Antitrust in Regulating Incomplete Contracts*, 80 ANTITRUST L.J. 157, 158 (2015).

245. EUR. COMM'N, FAIR, REASONABLE AND NON-DISCRIMINATORY (FRAND) LICENSING TERMS: RESEARCH ANALYSIS OF A CONTROVERSIAL CONCEPT (2015).

246. *Id.*

247. See Rudi Bekkers & Joel West, *The Limits to IPR Standardization Policies as Evidenced by Strategic Patenting in UMTS*, 33 TELECOMM. POL'Y 80, 93 (2009) ("ETSI has difficulty achieving consensus on more specific IPR policies across the broad range of ETSI member interests.").

representative SSOs that are selected from either worldwide SSOs or those having representative IPR policies. Rudi Bekkers and Andrew Updegrove's study of IPR policies of a representative group of SSOs provides a comprehensive guide to the selection for the representative category.²⁴⁸ The selected SSOs for the representative category include the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), International Telecommunication Union (ITU), Institute of Electrical and Electronics Engineers (IEEE), Internet Engineering Task Force (IETF), Organization for the Advancement of Structured Information Standards (OASIS), World Wide Web Consortium (W3C), and Near Field Communication (NFC) Forum. OASIS is selected because of its multi-track IPR policy. NFC Forum is selected to stand for a single technology SSO while the others are selected on the basis of their worldwide-adopted standards.²⁴⁹

The second category of SSOs is selected from those whose IPR policies have been involved in the SEP disputes discussed in the statistical analysis in Section II.B, which generally includes the SEP cases in the United States from 2000 to 2014. The selected SSOs for the disputed category include ITU, IEEE, the European Telecommunications Standards Institute (ETSI), Advanced Television Systems Committee (ATSC), Blu-ray Disc Association (BDA), Digital Versatile Disk (DVD) Forum, Joint Electron Device Engineering Council (JEDEC), and the SD Association (SDA), where the IEEE in the disputed category refers to its patent policy before the amendment in 2015. ITU and IEEE are duplicated in both representative and disputed categories, and will be categorized in the disputed category.

The third category of SSOs is selected from SSOs for emerging standards and SSOs with newly amended IPR policies. The WPC is setting standards for wireless charging technologies and its standards have recently been commercialized in products such as smartphones, furniture, and cars.²⁵⁰ The other SSO in the emerging category is IEEE because of its patent policy amendment in 2015.²⁵¹ The amended IEEE patent policy in 2015 is a remarkable reformed IPR policy, since it provides more specific stipulation related to the FRAND commitments.

B. Practical Investigation of IPR Policies

The IPR policies of these SSOs are investigated in terms of the reforming proposals. Table 3(a) shows the investigation results of the representative and emerging categories of SSOs while Table 3(b) illustrates the investigation results of the disputed SSOs. A general observation on the investigation results can be summarized as follows: Almost all SSOs have clear definitions for

248. RUDI BEKKERS & ANDREW S. UPDEGROVE, A STUDY OF IPR POLICIES AND PRACTICES OF A REPRESENTATIVE GROUP OF STANDARDS SETTING ORGANIZATIONS WORLDWIDE (Sept. 17, 2012), <http://ssrn.com/abstract=2333445>.

249. *Id.* at 19, 22.

250. *About the Wireless Power Consortium*, WIRELESS POWER CONSORTIUM, <https://www.wirelesspowerconsortium.com/about/> (last visited Jan. 29, 2017).

251. IEEE-SA BYLAWS, *supra* note 24.

standard essentiality. Several SSOs have addressed the disclosure and declaration obligations in some detail; however, the existing disclosure and declaration clauses are still vague. Around half of the SSOs examined provide few details in relation to the SEP disclosure and declaration obligations. In regards to the commitment to license on FRAND terms, almost no SSOs provide details about the meaning of FRAND terms, except in the newly amended IEEE patent policy.

Table 3(a). IPR Policies of Representative and Emerging SSOs²⁵²

	ISO	IEC	IETF	OASIS	W3C	NFC	WPC	IEEE (2015)
Clear definition of standard essentiality	C*	C*	C	C	C	C	C	C
Specific deadline for disclosure/declaration	-	-	V	-	V	*	-	C
Legal effect of failure to disclose/declare	-	-	V	-	-	*	-	-
Update for material change on SEP rights	-	-	C*	-	-	*	-	-
Restriction on seeking injunctive relief	-	-	-	-	-	-	-	C
FRAND obligation applies from the beginning	-	-	-	-	-	-	-	-
Calculation of FRAND royalties	-	-	-	-	-	-	*	C*

Table 3(b). IPR Policies of SSOs Involved in SEP Disputes

	ITU	IEEE	ETSI	ATSC	BDA	DVD	JEDEC	SDA
Clear definition of standard essentiality	C*	C	C	C	C	C	C	C
Specific deadline for disclosure/declaration	-	C	V	C	-	-	V*	C
Legal effect of failure to disclose/declare	-	-	-	C	-	-	C	C
Update for material change on SEP rights	-	-	-	-	-	-	-	-
Restriction on seeking injunctive relief	-	-	-	-	-	-	-	-
FRAND obligation applies from the beginning	-	-	-	-	-	-	-	-
Calculation of FRAND royalties	-	*	-	-	-	-	-	-

252. C means the existing clause is clear, V means the existing clause is vague, “-” means not available, and “*” means some comments provided in the following context.

In the investigation of the clear definition of standard essentiality, almost all SSOs have clear definitions in their IPR policies. Among them, however, certain room to improve may exist in the common patent policy of ITU-T/ITU-R/ISO/IEC, since it only provides quite a simple definition.²⁵³ A suggested elaboration is to define essential patents as patents that are technically unavoidable to be infringed for the implementation of a standard.²⁵⁴ Another observation of the investigation is that some SSOs use “essential patent claim” while the others use “essential patent.”²⁵⁵ *Essential patent claim* is a precise phrase for the purpose of license commitments on FRAND terms.²⁵⁶ Only those patent claims, not the whole patents, are technically unavoidable to be infringed for the implementation of a standard.²⁵⁷ Therefore, it is suggested to define essential patent claims, rather than essential patents, in IPR policies.

In the investigation of the specific deadline for disclosure and declaration, IETF’s disclosure deadline is vague because it provides that an SEP holder should disclose and declare to IETF “as soon as reasonably possible,” rather than within a specific deadline.²⁵⁸ Similarly, ETSI’s disclosure deadline is vague because it requires an SEP holder to inform ETSI of his SEPs “in a timely fashion.”²⁵⁹ Likewise, W3C has a vague deadline since it requests members to disclose “as soon as practically possible.”²⁶⁰ JEDEC also has a vague deadline for disclosure because of the wording “as early as reasonably possible.”²⁶¹ In contrast, IEEE, ATSC, and SDA have clear, specific deadlines for disclosure because they require an SEP holder to disclose SEPs by a specific procedural step or within a specific period.²⁶² Nevertheless, specifying a suitable legal effect of a failure to disclose and declare might alleviate the negative effect of the vague deadline. ATSC provides that any failure to disclose an SEP to ATSC will make the SEP be deemed to have been

253. *Common Patent Policy for ITU-T/ITU-R/ISO/IEC*, ITU, <http://www.itu.int/en/ITU-T/ipr/Pages/policy.aspx> (last visited Jan. 29, 2017). The common patent policy for ITU-T/ITU-R/ISO/IEC does not define essential patents. *Id.* In their patent statement and licensing declaration form, essential patents are simply defined as “patents that would be required to implement a specific [standard].” ITU, PATENT STATEMENT AND LICENSING DECLARATION FORM FOR ITU-T OR ITU-R RECOMMENDATION | ISO OR IEC DELIVERABLE (June 26, 2015), http://www.itu.int/dms_pub/itu-t/oth/04/04/T04040000020004PDF.pdf.

254. NAT’L RESEARCH COUNCIL, *supra* note 9, at 38.

255. While ETSI (“Essential IPR”), ITU (“Essential Patent”), and BDA (“Essential Patent”) make use of essential patent, IEEE (“Essential Patent Claim”), IETF (“a valid claim of a patent”), OASIS (“Essential Claim”), W3C (“Essential Claim”), NFC (“Necessary Claim”), ATSC (“Essential Claim”), JEDEC (Essential Patent Claims”), SDA (“Essential Patent Claim”), and WPC (“Necessary Claim”) use essential patent claim or the like to pinpoint a patent claim, not the whole patent.

256. IEEE-SA BYLAWS, *supra* note 24, at 14.

257. *Id.*

258. S. BRADNER, INTELLECTUAL PROPERTY RIGHTS IN IETF TECHNOLOGY (Mar. 2005) [hereinafter IETF IPR POLICY], <https://www.ietf.org/rfc/rfc3979.txt>.

259. ETSI IPR POLICY, *supra* note 24, at 35.

260. *W3C Patent Policy*, W3C (Feb. 5, 2004), <https://www.w3.org/Consortium/Patent-Policy-20040205/>.

261. JEDEC SOLID STATE TECH. ASS’N, JEDEC MANUAL OF ORGANIZATION AND PROCEDURE 25 (July 2015), <http://www.jedec.org/sites/default/files/JM21R.pdf>.

262. ATSC PATENT POLICY, *supra* note 208; *see also Intellectual Property Policy*, SD CARD ASS’N, <https://www.sdcard.org/join/pdf/ippolicy32909.pdf> (last visited Jan. 29, 2017); IEEE-SA BYLAWS, *supra* note 24, at 16 (outlining disclosure requirements).

committed to license on FRAND terms.²⁶³ In this case, a standard implementer at least can negotiate an SEP license with the SEP holder under the FRAND terms.

On the other hand, ISO, IEC, ITU, OASIS, NFC, WPC, BDA, and DVD do not address any details about the deadline of disclosure and declaration.²⁶⁴ These SSOs are suggested to add specific deadlines for SEP disclosure and declaration in their IPR policies. Among these SSOs, NFC requests that all members agree to the license without first making disclosure to NFC.²⁶⁵ A potential standard implementer would hardly be able to evaluate the potential cost of license for NFC SEPs while there is no information about the number of SEPs or about the SEP holders. Disclosure and declaration of SEPs should be an obligation for SSO members while they perform collaborative standard-setting conduct.

In the investigation of the legal effect of failure to disclose and declare, IETF identifies the effect as a violation of IETF process.²⁶⁶ A clear legal effect could be provided further to make an SEP holder clearly understand the consequence of failure to disclose his SEPs. In contrast, ATSC provides that *the effect of failure to disclose an SEP is to make the SEP be deemed to have been committed to license on FRAND terms.*²⁶⁷ Such a legal effect of failure to disclose provides a balance between the protection for the SEP holders' patent rights and the license demand of standard implementers. Accordingly, such legal effect of failure to disclose is incorporated into the reforming proposal. The remaining SSOs do not address any details about the legal effect of failure to disclose and declare.²⁶⁸ It is suggested that they add the legal effect of failure to disclose and declare in their IPR policies.

In the investigation of the update obligation for material change of SEP rights, IETF specifies that the update obligation for a declared patent application is upon request.²⁶⁹ This Article proposes that an SEP holder should have an obligation to update automatically any material change on SEP rights because he is in the best position to know the status of SEPs compared to the SSO.²⁷⁰ The other SSOs do not address anything regarding an update obligation.²⁷¹ It is suggested to add an update obligation for material change on SEP rights in IPR policies.

In the investigation of the restriction on seeking injunctive relief, the newly amended IEEE patent policy is the only one clarifying that the SEP holder's right to seek injunctive relief is subject to certain conditions under the FRAND obligation.²⁷² The remaining SSOs do not address anything regarding

263. ATSC PATENT POLICY, *supra* note 208, at 3.

264. BEKKERS & UPDEGROVE, *supra* note 248, at 48.

265. *Id.* at 55.

266. IETF IPR POLICY, *supra* note 258, at 12.

267. ATSC PATENT POLICY, *supra* note 208, at 3.

268. *See* BEKKERS & UPDEGROVE, *supra* note 248, at 51 (discussing various disclosure requirements).

269. IETF IPR POLICY, *supra* note 258, at 11.

270. *Id.*

271. *Id.*

272. IEEE-SA BYLAWS, *supra* note 24, at 18.

such a restriction to a patentee's important rights.²⁷³ Any restriction on a patentee's right is a critical issue and should be clarified in a contract related to patent rights. It is highly recommended to clarify the impact on a patentee's right to seek injunctive relief when an SEP holder commits to license on FRAND terms in all IPR policies.

In the investigation of the applying of FRAND terms starting from the initial offer, no SSOs clarify when their FRAND terms should start to apply.²⁷⁴ It is suggested to clarify for license efficiency that FRAND terms apply throughout the whole process of license negotiations.

In the investigation of the calculation of FRAND royalties, WPC clarifies that their members expect the aggregated royalty will not exceed 10% of the bill of materials cost of a standard-compliant component.²⁷⁵ Such a statement provides potential standard implementers a chance to estimate royalty costs of standard-compliant products. The IEEE patent policy encourages SEP holders at their own discretion to provide their assurance of not-to-exceed SEP royalties, a sample license agreement, or material licensing terms.²⁷⁶ This information would be helpful to potential standard implementers to evaluate the potential cost of SEP royalties. However, it seems that few SEP holders have disclosed such license terms or details. IEEE patent policy amendments in 2015 recommend several key factors in the calculation of FRAND royalties for SEPs, such as the value of the SEP contributed, the proportion to the value of all SEPs, and existing licenses covering the same SEP.²⁷⁷ These recommended key factors are helpful to clarify the value of SEPs and provide guidance for the calculation of FRAND royalties during license negotiations. The remaining SSOs do not provide any further explanation for how to evaluate reasonable royalties subject to the FRAND terms.²⁷⁸ It is highly suggested that all SSOs provide guidance for the calculation or evaluation of FRAND royalties in their IPR policies while they stipulate that the royalties should be FRAND.

IEEE's patent policy amendment in early 2015 echoes the proposed resolution—reforming IPR policies—in the course of this research.²⁷⁹ It is worthwhile to look into more details of IEEE's amendments to its patent policy.

273. *Id.*

274. *Id.*

275. WIRELESS POWER CONSORTIUM, *supra* note 242.

276. IEEE-SA BYLAWS, *supra* note 24, at 17.

277. *Id.* at 16.

278. *Id.*

279. Dennis Crouch, *IEEE Amends Its Patent (FRAND) Policy*, PATENTLY-O (Feb. 9, 2015), <http://patentlyo.com/patent/2015/02/amends-patent-policy.html>.

C. *An Example of Reforming IPR Policies: IEEE Patent Policy Amendment in 2015*

IEEE approved a set of amendments to its patent policy in early 2015.²⁸⁰ First of all, the amended patent policy clarifies the restriction on an SEP holder's right to seek injunctive relief against a willing licensee. An SEP holder is restricted from seeking injunctive relief for SEP infringement unless the standard implementer fails to pay reasonable royalties determined by a competent court.²⁸¹ Imposing such criteria for seeking injunctive relief could provide a standard implementer with some protection from an SEP holder's potential anticompetitive conduct. It would be helpful to make standard related markets with low barriers to entry. The proposals in this Article basically share the same spirit: to make standards open and accessible and to level the playing field. On the other side, however, it is important and worthwhile to study how to protect SEP holders' patent rights and how to motivate companies with capabilities and resources for innovative research to participate in standardization.

In regard to reasonable royalties for SEPs, the amended IEEE patent policy provides several recommendations for determining reasonable royalties. First, an appropriate compensation to the practice of an SEP should exclude the value resulting from the inclusion of the patent into the IEEE standard.²⁸² Second, a reasonable royalty should be determined, at least considering the value contributed from the SEP, its proportion to the value contributed from all SEPs of the IEEE standard, and existing licenses covering the SEP.²⁸³ It seems that IEEE believes that the reasonable royalty calculation should be based on the smallest saleable patent practicing unit (SSPPU), rather than the entire market value of a downstream product.²⁸⁴ These factors are important in royalty calculation and would be quite helpful for both SEP holders and standard implementers to calculate or evaluate royalties during license negotiations. Efficiency of license negotiation can be improved substantially when both SEP licensors and licensees have common consensus first on these key factors for reasonable royalty calculation.

In addition, the IEEE's new patent policy allows an SEP holder *to condition his FRAND commitment subject to reciprocal licensing of the SEPs for the same standard owned by the licensee.*²⁸⁵ It should be helpful for two SEP holders to achieve cross-licensing in a fair and efficient way. A reciprocal license can provide protection on patent rights for an SEP holder before his realistic agreement on the SEP licensing.²⁸⁶ IEEE also clarifies that two

280. *Id.*

281. IEEE-SA BYLAWS, *supra* note 24, at 18.

282. *Id.* at 16.

283. *Id.*

284. *Id.*

285. *Id.* at 17 ("On a Letter of Assurance, the Submitter may indicate a condition of Reciprocal Licensing. If an Applicant requires compensation under Reciprocal Licensing to its Essential Patent Claims, then a Submitter may require compensation for its Essential Patent Claims from that Applicant even if the Submitter has otherwise indicated that it would make licenses available without compensation.")

286. David Long, *FRAND Licensing, Chip Suppliers, and the Interplay of Patent Exhaustion / Defensive*

parties, the potential SEP licensee and licensor, can still seek arbitration for various issues on patent rights and licensing terms.²⁸⁷ These issues still remain free for the two parties to negotiate and decide by themselves, and are not prescribed by the patent policy.²⁸⁸

To sum up the whole investigation of IPR policies, three specific and effective clauses can be references for other SSOs, and are incorporated into the set of reforming proposals for IPR policies, including:

- *Using the accurate phrase “essential patent claim” rather than “essential patent.”*
- *Legal effect of failure to disclose or declare an SEP to an SSO by the specific deadline is to make the SEP be deemed to have been committed to license on FRAND terms.*
- *Reciprocal licensing of the SEPs for the same standard.*

The first phrase can be integrated into the proposal of defining clear and specific essentiality. The second proposal has been discussed together and incorporated into the reforming proposals in Part IV. The last one can be added into the set of reforming proposals.

VI. CONCLUSIONS

Many SSOs rely on commitments to license on FRAND terms from SEP holders to ensure access to standards and prevent potential anticompetitive conduct that unreasonably enforces SEPs against standard implementers.²⁸⁹ However, a substantial number of SEP disputes have been raised in recent years.²⁹⁰ In this Article’s research, a statistical analysis on the SEP litigation cases in the United States from 2000 to 2014 shows that the SEP disputes in the ICT sector are closely related to the FRAND licensing terms that are required in the SSOs’ IPR policies.

An SEP holder’s voluntary commitment to license on FRAND terms has two important implications for SEP enforcement. First, the SEP holder is willing to license his SEPs to standard implementers rather than exclude them from practicing his patented inventions. One of the most critical issues of SEP disputes is whether an SEP holder’s exclusive right to seek injunctive relief against patent infringement should be restricted due to his commitment to

Suspension Clauses, ESSENTIAL PATENT BLOG (Aug. 19, 2013), <http://www.essentialpatentblog.com/2013/08/frand-licensing-chip-suppliers-and-the-interplay-of-patent-exhaustion-defensive-suspension-clauses/>.

287. IEEE-SA BYLAWS, *supra* note 24, at 18 (“Nothing in this policy shall preclude a Submitter and an implementer from agreeing to arbitrate over patent validity, enforceability, essentiality, or infringement; Reasonable Rates or other reasonable licensing terms and conditions; compensation for unpaid past royalties or a future royalty rate; any defenses or counterclaims; reciprocal obligations; or any other issues that the parties choose to arbitrate.”).

288. *Id.* at 15.

289. Jeffrey I.D. Lewis, *What Is “FRAND” All About? The Licensing of Patents Essential to an Accepted Standard*, CARDOZO L. (June 11, 2014), <http://www.cardozo.yu.edu/sites/default/files/Lewis.WhatIsFrاندAllAbout.pdf>.

290. See Jonathan Putnam, *Latest Developments in FRAND and SEP Litigation*, in INTELLECTUAL ASSET MANAGEMENT YEARBOOK 2016: BUILDING IP VALUE IN THE 21ST CENTURY 207 (Joff Wild ed., 2016), <http://www.iam-media.com/Intelligence/IAM-Yearbook/2016> (summarizing cases from multiple countries).

license on FRAND terms. According to opinions to date from the U.S. Court of Appeals for the Federal Circuit, the U.S. International Trade Commission, the U.S. competition authorities, the European Commission, and the Court of Justice of the European Union, there is no per se rule that prohibits seeking injunctive relief against SEP infringement.²⁹¹ The criteria to decide whether to grant injunctive relief are different among various forums. In principle, injunctive relief should not be granted against a standard implementer who is willing to take the license and is still negotiating in good faith with the SEP holder, so as to be aligned with the SEP holder's commitment to license on FRAND terms.

Second, the SEP holder is committed to licensing his SEPs on FRAND terms, including collecting only reasonable royalties.²⁹² How to evaluate whether a specific SEP royalty meets the FRAND term requirement, however, is rarely clear in IPR policies. Observations on the behaviors of SEP holders and standard implementers in several disputes reveal that the two parties have hugely misaligned understandings of the FRAND terms. Several SEP royalty decisions from the courts in the United States adjudicated the FRAND royalties for SEPs at unexpectedly low rates.²⁹³ One of the potential reasons for that judicial tendency is the proliferation of SEPs in the ICT sector, and thus, SEP royalty assessment has to take into consideration the proportion of SEPs at issue to all SEPs covering the same standard.²⁹⁴ This also emphasizes the importance of SEP disclosure and its accuracy at the outset. A fundamental principle for the SEP royalty determinations in the United States is that a royalty award for an SEP may only be based on the value of the patented invention, not to include the value added from the standards.²⁹⁵

Furthermore, through semi-structured interviews with standard-setting delegates and licensing negotiators from the ICT industry, this research finds that many existing IPR policies are too ambiguous to constrain potential anticompetitive conduct that enforces SEPs in an unreasonable way. Actually, in light of the results of the statistical survey, the case analysis, and stakeholder interviews, it has become urgent and imperative to improve existing vague and ambiguous IPR policies. Concrete proposals for reforming IPR policies include: defining the standard essentiality clearly and using the accurate phrase "essential patent claim"; adding specific deadlines for SEP disclosure, legal effects of failure to disclose, and update obligations for material changes concerning SEPs; incorporating prerequisite conditions for seeking injunctive relief against SEP infringement; clarifying the FRAND obligation applicable to SEP royalties during licensing negotiations; identifying a series of steps or key factors for the SEP royalty calculation under the FRAND obligation; and allowing reciprocal license to be a precondition for the commitment to license

291. *Id.*

292. *Id.*

293. *Id.*

294. Gregory K. Leonard & Mario A. Lopez, *Determining RAND Royalty Rates for Standard-Essential Patents*, 29 ANTITRUST 86, 90 (2014), http://www.edgewortheconomics.com/files/documents/Determining_RAND_Royalty_Rates_for_Standard-Essential_Patents.pdf.

295. *Id.*

on FRAND terms. These reforming proposals could substantially strengthen existing IPR policies, fix their ambiguities, and avoid potential SEP disputes.

Finally, this research investigates fifteen representative SSOs, examining whether their IPR policies conform to the reforming proposals, by way of which the authors further elaborate on these proposals and provide substantial suggestions on how to amend the existing policies of the representative SSOs to avoid potential disputes. A general observation on the investigation results can be summarized as follows: Almost all SSOs have clear definitions for standard essentiality. Several SSOs have addressed the disclosure and declaration obligations in some detail. The existing disclosure and declaration clauses are nevertheless still vague. Around half of the SSOs examined provide only sparse details in relation to the SEP disclosure and declaration obligations. With regard to the commitment to license on FRAND terms, almost no SSOs provide details concerning the meaning of FRAND terms, except in the newly amended IEEE patent policy. Based on the aforementioned statistical and qualitative analysis and the specific reforming proposals, this Article concludes that it is imperative to reform existing IPR policies to facilitate fair and efficient SEP licensing and dispute resolution, and therefore to promote competition and to ultimately benefit consumers around the world.