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Judicial determination of FRAND royalties in the ICT sector: should courts determine FRAND royalties and, if so, how? Principles, methods and challenges

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Judicial determination of FRAND royalties in the ICT sector: should courts determine FRAND royalties and, if so, how? Principles, methods and challenges

Rita García-Bennett

Summary

Connectivity plays a key role in today's economy and increasingly so as the Internet of Things (*IoT*) develops. Standards, as enablers of connectivity, are central to this development. The fifth generation technology standard for cellular networks (*5G*) is pushing new industries to consider access to standards, including the licensing of standard-essential patents (*SEPs*), which are patents that need to be accessed for a product to comply with a standard. A predictable and efficient licensing environment is therefore key for companies' strategies worldwide, particularly so for small and medium-sized enterprises (*SMEs*) who may not be familiar with *SEP* licensing practices.

To ensure accessibility to standards, some standard setting organizations require *SEP* holders to commit to license on fair, reasonable and non-discriminatory (*FRAND*) terms. These terms are subject to different interpretation, which gives rise to legal uncertainty and increased litigation. And whilst court decisions have helped clarify the meaning of these terms, judicial *FRAND* determination has been rare in Europe, where courts tend to shy away from determining *FRAND* royalties.

This paper discusses the principles taken into account and the methods generally applied by the courts to determine *FRAND* royalties. It advocates for more guidance on valuation methods, including from governmental agencies and the judiciary, and argues that judicial *FRAND* royalty determinations can benefit the licensing system, albeit methods and access to data, including regarding *SEP* essentiality, need improvement.

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1. Introduction

1.1 The Importance of an Efficient and Predictable SEP Licensing Regime as IoT Develops

Standards play a key role in today's economy. Among other things, they enable products designed and manufactured by different parties to operate or interface with each other, creating economies of scope¹ and value for consumers, as well as helping to spread new technologies. Technology standards are necessary to facilitate mobile wireless communication. The value of connectivity nowadays is huge and will play an even greater role in the future as the Internet of Things (IoT) develops further. The information and communications technology (ICT) which makes this connectivity possible is, therefore, a key issue for competitiveness and security, and a priority for many governments worldwide.

In its 2017 Communication,² the European Commission (the *Commission*) highlighted the importance of interoperability, enabled by standards, to optimise the revenue that digitalisation can bring to the European economy.³ It considered standardisation crucial for the ICT sector and the development of IoT, particularly with regard to the implementation of 5G. Given its relevance in any sector where connectivity matters, 5G, which allows large volumes of data to transfer with minimum lag, is pushing new industries and companies to consider SEPs for the first time, making 5G SEP licensing a fundamental issue. This makes '*the achievement of a balanced SEP licensing system a vital aim of the European Union*'.⁴ In this spirit, in July 2018, the Commission set up an expert working group on licensing and valuation of SEPs to facilitate exchange of experience and good practice, provide economic, legal and technical expertise, and assist the Commission in monitoring SEP licensing markets to inform any policy measures.⁵

1.2 The Role of the Courts

Whilst creating efficiencies, standards can result in complex intellectual property (IP) and competition law issues when the technology contributing to the standard is protected by a patent. In those cases, implementers will need access to some patents in order for their product to comply with the technical standard. These so-called standard-essential patents (SEPs) can result in a market control rather than the technology control intended to be granted by the patent. For example, SEP holders can enforce their patents to stop implementers from marketing their product or force implementers to enter into licences

¹ Ove Granstrand, *Evolving Properties of Intellectual Capitalism, Patents and Innovations for Growth and Welfare* (2018 Elgar) 331.

² Communication from the Commission of 29 November 2017 to the European Parliament, the Council and the European Economic and Social Committee setting out the EU approach to Standard Essential Patents, COM (2017) 712 final.

³ Commission Communication (n 2) 1.

⁴ Luke McDonagh and Enrico Bonadio, 'Standard Essential Patents and the Internet of Things' (2019) 6 <[https://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_IDA\(2019\)608854](https://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_IDA(2019)608854)> accessed 26 April 2020. This is also referred to in the Commission's Action Plan on Intellectual Property published on 25 November 2020. https://ec.europa.eu/commission/presscorner/detail/en/QANDA_20_2188 accessed 2 December 2020.

⁵ New Group of Experts on SEP <<https://ec.europa.eu/jrc/en/science-update/new-standard-essential-patents-sep-experts-group>>.

at rates that are excessive. This ‘hold up’ can have anti-competitive effects. Consequently, the exclusivity granted by SEPs needs to be calibrated to ensure that standards are broadly accessible and, therefore, successful. One way of doing this is for standard setting organizations (SSOs), the organizations responsible for setting, developing and maintaining standards, to require SEP holders, as the European Telecommunications Standard Institute (ETSI) and the Institute of Electrical and Electronic Engineers (IEEE) do, to provide an undertaking to license on fair, reasonable and non-discriminatory (FRAND) terms or, as referred to in the United States (US), RAND terms, when the SEP holder notifies ETSI or IEEE that the patent is standard-essential. Accessibility is therefore a key requirement from a competition law perspective when dealing with SEPs. This should not, however, underpin ‘hold out’ situations, that is, deliberate delays in negotiations by implementers to force terms below FRAND on SEP holders. As stressed by the Court of Justice of the European Union (CJEU) in its *Huawei v. ZTE* decision,⁶ the rights of SEP holders need to be taken into account to ensure a balance between maintaining free competition and protecting the rights of SEP holders by providing effective judicial protection.⁷

Understanding how courts approach SEP valuation will be fundamental for organizations and individuals when deciding, for example, whether to start proceedings, negotiate a licence, purchase patent portfolios, raise funding or even patent a certain technology. IP valuation by the courts will be an important reference for bilateral licensing negotiations and generally for parties confirming the value of IP. There is, however, not much statutory or judicial guidance in Europe on what constitutes FRAND royalties. Whilst the landmark CJEU decision in *Huawei v. ZTE*⁸ provides a helpful framework within which both SEP holders and implementers must negotiate (albeit interpreted by national courts with different degrees of flexibility), it does not explain how FRAND is to be determined. Unlike US courts, European courts have generally avoided setting FRAND royalty rates. One notable exception is the 2017 *Unwired Planet v. Huawei* English High Court decision,⁹ in which Birss J, the judge hearing the case, calculated the FRAND royalties for a global licence, taking a dynamic and pragmatic approach, not only developing the jurisprudence in this area but also encouraging cross-jurisdictional dialogue.

This paper briefly discusses the key principles generally taken into account and the methods applied by the courts when they determine FRAND royalties. It highlights some challenges courts face and potential improvements.

⁶ Case 170/13 *Huawei Technologies v. ZTE* EU:C:2015:477.

⁷ *Huawei v. ZTE* (n 6) [42].

⁸ *Huawei v. ZTE* (n 6).

⁹ *Unwired Planet International Ltd. v. Huawei Techs. Co.* [2017] EWHC 711 (Pat).

2. Principles and Methods generally applied by the courts

2.1 Principles Taken into Account by the Courts

Courts generally take into account a number of principles when they determine royalties for FRAND encumbered SEPs.

(i) Hold up and Hold out

The importance of preventing 'hold up' has been emphasized by the courts in most FRAND decisions.¹⁰ There is, however, some debate as to the strength of the hold up issue and the effectiveness of the FRAND commitment as a solution. In *re Innovatio*,¹¹ Judge Holderman noted that, when determining a RAND royalty, courts should take into account the risks of hold up and royalty stacking because the aim of a RAND commitment is to prevent these risks. Theoretical hold up arguments, however, will not be sufficient, as specified by the Federal Circuit in *Ericsson v. D-Link*,¹² where implementers were required to provide factual evidence to support any hold up claims.¹³

There has been increased awareness of hold out behaviour in recent years. In *Unwired Planet v. Huawei*, Birss J considers both hold up and hold out possible and relevant to the analysis.¹⁴ ETSI's IPR Policy¹⁵ includes as an objective the need to balance the rights of the patent holders to be rewarded for their inventions and the need of standardisation for use by the public in telecommunication. Moreover, in September 2020 the US' Department of Justice, Antitrust Division (DOJ) felt the need to send a letter to IEEE¹⁶ stressing the need to consider hold out as well as hold up in any revised policy.

(ii) Royalty Stacking

Courts also take into account the need to minimise royalty stacking.¹⁷ Smartphones comprise many different technologies, some of which are patented. Some academics argue that, because standard-compliant smartphones use potentially thousands of SEPs which are owned by many different SEP holders and each SEP holder will set their rate independently, each of those royalties will be 'stacked' on top of each other resulting in higher cost for manufacturers and consumers, and less innovation.¹⁸ This concern was raised by the Commission in its 2017 Communication, where it noted that '*parties should*

¹⁰ Norman Siebrasse and Thomas Cotter, 'Judicially Determined FRAND Royalties' in Jorge L. Contreras *The Cambridge Handbook of Technical Standardization Law* (Cambridge University Press 2018) 369.

¹¹ In *re Innovatio IP Ventures*, LLC Patent Litigation, MDL No. 2303, 2013 WL 5593609 (N.D. Ill. 3 October 2013) (J Holderman).

¹² *Ericsson v. D-Link*, 773 F.3d 1201 (Fed. Cir. 2014).

¹³ Anne Layne-Farrar and Koren Wong-Ervin, 'Methodologies for Calculating FRAND Damages: An Economic and Comparative Analysis of the Case Law from China, the European Union, India, and the United States (July 24, 2017) 5. *Jindal Global Law School Law Review*, Fall 2017; George Mason Law & Economics Research Paper No. 17-28 <<https://ssrn.com/abstract=2985073>> accessed 15 June 2020.

¹⁴ *Unwired* (n 9) [92, 95, 96].

¹⁵ ETSI Intellectual Property Rights Policy <<https://www.etsi.org/intellectual-property-rights>> accessed 12 June 2020, clauses 3.1 and 3.2.

¹⁶ Letter from Makan Delrahim, Assistant Attorney General, to Sophia A. Muirhead, General Counsel IEEE dated 10 September 2020, updating its 2015 Business Review Letter, 8, 9. <<https://www.justice.gov/atr/page/file/1315291/download>> accessed 13 September 2020.

¹⁷ Siebrasse and Cotter (n 10) 369.

consider a reasonable aggregate rate for the standard, assessing the overall added value of the technology'.¹⁹

Whether or not royalty stacking occurs in practice has been the subject of much academic debate. Recent studies have shown that the argument that patent licensing fee rates are excessive in mobile technologies is exaggerated and lacks empirical support, with actual payments being much smaller.²⁰ On the other side of the debate, Scott Morton and Shapiro warned in 2016 that royalty stacking was a threat to the development of IoT.²¹ This is relevant in the context of judicial SEP valuation because, as Galetovic notes, claims that the royalty stack is in the order of 20 to 40 per cent of the average mobile phone cost are 'substantially off and should not be used to inform judicial decisions'.²² The Federal Circuit required in *CSIRO v. Cisco*²³ that parties alleging royalty stacking provide evidence in support and not rely on theoretical arguments.²⁴

(iii) Proportionality

A reasonable royalty should be proportionate to the value of the standard to the user and the importance of the technology both to the standard and the user.²⁵ Courts apply this principle by determining the importance of the particular SEP to the standard, which can have substantial impact on the rate.²⁶ This is a difficult exercise because courts need to determine the overall value that a standard contributes to a product and then calculate the share of that value that is contributed by the SEP in question. This principle was applied by the Japanese Intellectual Property High Court (JIPHC) in *Apple v. Samsung*,²⁷ in which the court first determined the value of the standard²⁸ (in this case, the UMTS mobile cellular standard) in the infringing products (the iPhone 4 and the iPad 2 Wi-Fi+3G) and then the value that the patent contributed to the standard.²⁹

¹⁸ Alexander Galetovic, Stephen Haber and Lew Zaretski, 'An estimate of the average cumulative royalty yield in the world mobile phone industry: Theory, measurements and results' (2018) <<https://www.sciencedirect.com/science/article/pii/S0308596117302240?via%3Dihub>> accessed 8 July 2020, 264.

¹⁹ Commission Communication (n 2) 7.

²⁰ Keith Mallinson, 'Cumulative mobile SEP royalty payments. No more than around 5% of mobile handset revenues' (IP Finance 2015) <<http://www.ip.finance/2015/08/cumulative-mobile-sep-royalty-payments.html>> accessed 7 July. Alexander Galetovic and Kirti Gupta, 'The case of the missing royalty stacking in the world mobile wireless industry' (Industrial and Corporate Change, Volume 29, Issue 3, June 2020) 46 <<https://doi-org.ezproxy.ip.mpg.de/8443/10.1093/icc/dtz074>> accessed 7 July 2020.

²¹ Galetovic and Gupta (n 20), referring to Fiona Scott Morton and Carl Shapiro, 'Patent Assertions: Are We Any Closer to Aligning Reward to Contribution?' (Innovation Policy and the Economy 16 (2016): 89-133) <<https://www.journals.uchicago.edu/doi/10.1086/684987>> accessed 17 July 2020.

²² Galetovic, Haber and Zaretski (n 18) 273.

²³ *CSIRO v. Cisco Systems, Inc.*, 809 F.3d 1295 (Fed. Cir. Dec. 3, 2015).

²⁴ Layne-Farrar and Wong-Ervin (n 13) 4.

²⁵ Siebrasse and Cotter (n 10) 368.

²⁶ Siebrasse and Cotter (n 10) 371.

²⁷ *Apple v. Samsung*, Japanese IP High Court, Decision of 16 May 2014, Case No. 2013 (Ne) 10043, on appeal from the judgment of Tokyo District Court, 28 February 2013, Case No. 20111 [Wa] 38969

²⁸ This is the value of the product with the standard less the value of the product without the standard, which was easy to calculate in this case because Apple sold the same product with and without cellular functionality. Siebrasse and Cotter (n 10), 384.

²⁹ Siebrasse and Cotter (n 10), 384.

(iv) Reflecting the Value of Standardisation: Ex Ante vs Ex Post Approach

An *ex ante* approach, generally applied by courts in the US,³⁰ requires a FRAND royalty to reflect the value of the technology before the approval of the standard, as opposed to allowing such value to reflect the inclusion of the technology in the standard. This approach was applied in *CSIRO v. Cisco*,³¹ where the Federal Circuit held that the first instance judge had made a mistake by reflecting commercial success of products made under the patent on the basis that some of that success could be due to the technology forming part of the standard. The Commission also favoured an *ex ante* approach in its 2017 Communication, although it left the door open for alternative approaches where the technology is developed for the standard and has limited market value outside of it.³² In contrast, in *Unwired Planet v. Huawei*, Birss J found that appropriating some of the value associated with the technology being included in the standard was not in conflict with FRAND.³³ Indeed, some authors argue that allowing SEP holders to reflect part of the value attributable to network effects might be desirable in certain circumstances to maintain an incentive for SEP holders to invent and participate in the standard.

(v) Incentive to Invent and Incentive to Participate

This principle holds that a reasonable royalty for a SEP should provide an incentive to the SEP holder to participate in the standard. Both Judge Robart in *Microsoft v. Motorola*³⁴ and Judge Holderman in *re Innovatio*³⁵ noted that RAND royalties need to be set sufficiently high to ensure that innovators are incentivised to invent and contribute their inventions to the standard.³⁶ This principle was also highlighted by the Commission in its 2017 Communication.³⁷

(vi) Non-Discrimination

Non-Discrimination is a limb of the FRAND undertaking and its meaning has been the subject of debate, with most courts agreeing that it requires the SEP holder to treat 'similar situated' licensees in a similar manner³⁸ rather than requiring that all licensees pay identical rates on identical terms.³⁹ In *Sisvel v Haier*,⁴⁰ the German Federal Court of Justice (FCJ) clarified that the obligation imposed by the non-discrimination limb of FRAND does not equate to a 'most-favoured licensee' provision. Courts, however, have

³⁰ Contreras J, 'Global Rate Setting: A Solution for Standards-Essential Patents?' 94 Washington Law Review. 701 (2019) 722 <<https://digitalcommons.law.uw.edu/wlr/vol94/iss2/5>> accessed 2 September 2020.

³¹ *CSIRO v Cisco* (n 23).

³² Commission Communication (n 2) 7

³³ Siebrasse and Cotter (n 10) 372. *Unwired* (n 9) [97].

³⁴ *Microsoft v. Motorola, Inc.* 696 F.3d 872 (9th Circ. 2012) (J Robart).

³⁵ *Re Innovatio* n (11).

³⁶ Chrysoula Pentheroudakis and Justus Baron, 'Licensing Terms of Standard Essential Patents. A Comprehensive Analysis of Cases' (JRC Science for Policy Report. EUR 28302 EN; doi: 10.2791/32230, 2017) 110 <<https://publications.jrc.ec.europa.eu/repository/bitstream/JRC104068/jrc104068%20online.pdf>> accessed 12 July 2020.

³⁷ Commission Communication (n 2) 7.

³⁸ Contreras (n 30) 722. Commission Communication (n2) 8.

³⁹ *Unwired* (n 9) [497].

⁴⁰ *Sisvel v Haier*, Case No. KZR 36/17.

disagreed on whether other requirements are also necessary. For example, in *Unwired Planet v. Huawei*, Birss J observed that different treatment to similarly situated licensees which is objectively justified can be FRAND compliant.

(vii) Licence to All vs Access to All

There is also an ongoing debate as to whether there is a duty, resulting from the application of the non-discriminatory limb of FRAND, for the SEP holder to license all entities who want to obtain a licence, regardless of their place in the supply chain. This is known as the 'licence to all' approach. This is relevant for FRAND royalty determination because licensing at different levels will have an impact on the royalty. The Commission did not clarify its position on this point in its 2017 Communication,⁴¹ although in a first draft it had controversially advocated for a 'licence to all' approach, which was removed in the final version.⁴² A 'licence to all' approach is recommended by the Ministry of Economy, Trade and Industry of Japan (METI) in its April 2020 Guide to Fair Value Calculation of Standard Essential Patents for Multi-Component Products⁴³ (the *METI Guide*). In the US, component licensing was raised in the *FTC v. Qualcomm* decision,⁴⁴ where the Ninth Circuit reversed Judge Lucy Koh's 2019 decision that Qualcomm's refusal to license competitors was unlawfully anticompetitive. The Federal Circuit held that Qualcomm's policy to license at original equipment manufacturer level was not an anticompetitive violation of antitrust law and vacated Judge Koh's worldwide injunction. The debate is particularly topical in Germany in the automobile industry. The recent *Nokia v. Daimler*⁴⁵ proceedings, which concerned component-level licensing and resulted in the grant of an injunction by the Mannheim Court to Nokia, prompted a letter from the German Federal Cartel Office to the Court asking it to suspend proceedings and submit the question to the CJEU.⁴⁶ Whilst the Mannheim Court did not do this, on 26 November 2020 the Düsseldorf Regional Court submitted the question to the CJEU in parallel proceedings.⁴⁷

⁴¹ Commission Communication (n 2).

⁴² This resulted in fierce debate and warnings that it could impact the development of 5G. Paul Lugard P and Sohra Askaryar, 'The European Commission's Draft Communication on Standard Essential Patents: A Useful Roadmap or a Dark Alley?' (October 2017) 3. <https://www.americanbar.org/content/dam/aba/publications/antitrust_law/at315000_newsletter_201710.authcheckdam.pdf> accessed 6 September 2020.

⁴³ The Ministry of Economy, Trade and Industry of Japan's Guide to Fair Value Calculation of Standard Essential Patents for Multi-Component Products dated 21 April 2020 <https://www.meti.go.jp/policy/mono_info_service/mono/smart_mono/sep/200421sep_fairvalue_hp_eng.pdf accessed 15 November 2020>, 2.

⁴⁴ *FTC v. Qualcomm Inc.*, Case No. 19-16122, ECF No. 255-1 (9th Cir. Aug. 11, 2020).

⁴⁵ *Nokia v. Daimler*, LG Mannheim, 2 O 34/19.

⁴⁶ Bonadio E and McDonagh L, 'The Mannheim Regional Court refuses CJEU reference in *Nokia v. Daimler* – time for the Commission to investigate?' (Kluwer Patent Blog, 31 August 2020) <<http://patentblog.kluweriplaw.com/2020/08/31/the-mannheim-regional-court-refuses-cjeu-reference-in-nokia-v-daimler-time-for-the-commission-to-investigate/>> accessed 6 September 2020.

⁴⁷ Mathieu Klos, 'Regional Court Düsseldorf refers *Nokia v Daimler* questions to CJEU'. (Juve Patent, 26 November 2020) <<https://www.juve-patent.com/news-and-stories/cases/breaking-regional-court-dusseldorf-refers-nokia-vs-daimler-questions-to-cjeu/>> accessed 5 December 2020.

2.2 Methods Applied by the Courts to Determine FRAND Royalties

When determining FRAND royalties, courts around the world apply different methodologies, which, whilst not wholly aligned, are often based on comparable licences and/or a top-down approach.

(i) Comparable Licences

Courts often rely on comparable licences as evidence of what parties would have agreed to in a hypothetical negotiation.⁴⁸ This follows a market approach⁴⁹ and is rooted on price theory,⁵⁰ which holds that the value of a good is observed in the market through the consumer's willingness to pay and the actual buying choices that they make. Courts seem to agree that an established royalty is the best indication of a reasonable royalty because you do not have to guess what the parties would hypothetically agree.⁵¹ In *Microsoft v. Motorola*,⁵² Judge Robart relied mostly on comparables to determine the royalty rate. This was also the case in *Unwired Planet v. Huawei* and in *HTC v. Ericsson*.⁵³ What triggers debate, however, is what constitutes a comparable licence,⁵⁴ what happens when adequate comparables are not available and the adjustments required to reflect any differences. Moreover, courts may want to verify that licensing rates in bilateral agreements which are put forward as comparables do not reflect a market dominant position, hold out or hold up so as to ensure that valuation errors are not repeated.⁵⁵

(ii) Top Down Approach

The top down approach starts from a determination of the aggregate royalty that should be earned by all SEPs in a standard and then apportions the share of the relevant SEP or SEP portfolio based on some algorithm, such as patent counts. It was applied in part in *Microsoft v. Motorola*, through factor nine of the Georgia-Pacific factors,⁵⁶ in *re Innovatio*, *TCL v. Ericsson* (albeit in a modified version), *Apple v. Samsung* and, as a cross-check in *Unwired Planet v. Huawei*.⁵⁷ This approach is recommended by the Japanese METI in its METI Guide.⁵⁸ The benefit of the top down approach is that it avoids royalty

⁴⁸ Weston Anson, *IP Valuation for the Future: Trends, Techniques and Case Studies* (ABA Publishing 2018) 5.

⁴⁹ The cost, income and market approach are the three basic quantitative approaches to IP valuation. The market approach estimates how the market would value the intangible by comparing the IP with similar or identical IP for which there is monetary information. It can focus on direct market value (past transactions entered into for the particular IP) and/or comparable transactions (similar transactions entered into for similar IP). Porter and Rakiec (n 12) [3.03 3(a)].

⁵⁰ Galetovic A and Haber S, 'SEP Royalties: What Theory of Value and Distribution Should Courts Apply' (September 4, 2019) 4. <<https://ssrn.com/abstract=3447641> or <http://dx.doi.org/10.2139/ssrn.3447641>> accessed 16 June 2020.

⁵¹ Gregory Sidak, 'The Meaning of FRAND, Part I: Royalties' (Journal of Competition Law & Economics 2013) Volume 9, Issue 4, 931-1055, 97, referring to the Federal Circuit in *Ericsson v. D-Link* (n 12), 41. *Unwired* (n 9) [170-172].

⁵² *Microsoft v. Motorola* (n 34).

⁵³ *HTC Corp. v. Telefonaktiebolaget Ericsson*, Case No. 6:18-CV-00243-JRG (E.D. Tex. 2019) 11.

⁵⁴ See Layne-Farrar and Wong-Ervin (n 13) 20-22 for a comparative case-based discussion on what constitutes a comparable licence.

⁵⁵ Roya Gafele and Jan Schmitz J, 'Economic Perspectives on FRAND' (Journal of European Competition Law & Practice, 2020) 8 <<http://doi.org/10.1093/jeclap/lpz073>> accessed 16 June 2020.

⁵⁶ Layne-Farrar and Wong-Ervin (n 13) 24.

⁵⁷ *Microsoft v. Motorola* (n 34), *re Innovatio* (n 11), *TCL v. Ericsson* (n 21), *Apple v. Samsung* (n 27), *Unwired* (n 9), as reported by Gafele and Schmitz (n 55) 10.

⁵⁸ METI Guide to Fair Value Calculation of Standard Essential Patents for Multi-Component Products (n 43) 3.

stacking by starting the analysis from the overall value of the standard and then apportioning it between SEP holders in proportion to the value of the patent. For example, one would work out the total royalty rate for all SEPs on a mobile phone and then divide this between patent owners according to their share. Both steps, however, are difficult to determine. Courts have used different methods to apportion value, including contribution to the standard and forward citations. Galetovic and Haber have criticised the top-down approach for using arbitrary techniques to determine both the aggregate royalty and the share of the SEP, and for not being consistent with economic principles. They believe that patent hold up and royalty stacking theories are flawed because they are not supported by empirical evidence and that courts should not follow top down methods when determining SEP royalties and should rely instead on comparables.⁵⁹ They do not explain, however, what methodology courts should follow when comparables are not available.

(iii) Royalty Base Determination: EMVR and SSPPU

A reasonable royalty can be calculated as a percentage of a royalty base. There are two main approaches to the determination of a royalty base: the entire market value rule (EMVR) and the smallest saleable patent-practising unit (SSPPU), which may result in very different royalties. The EMVR involves the determination of the royalty based on the price of the end product which implements the patented feature,⁶⁰ for example, a smartphone. Whilst disfavoured by the Federal Circuit for patents in general,⁶¹ some authors argue that courts should follow the EMVR for SEPs to mirror the practice in the industry.⁶² The SSPPU involves the determination of the royalty by multiplying the royalty rate by the price of the smallest component of the downstream product that implements the patent sold as a stand-alone item,⁶³ for example, a chip. Gautier and Petit⁶⁴ argue that the use of SSPPU is a costly exercise in the case of portfolio licensing, can make monitoring the FRAND requirements more challenging when dealing with an integrated firm⁶⁵ and licensing at the component level ignores network effects, which arise when technologies interact.

When updating its policy in 2014, IEEE suggested that its participants adopt the SSPPU so that the sale price of a component will be the appropriate valuation base⁶⁶ to avoid excessive royalties. ETSI did not follow and in *HTC v. Ericsson*,⁶⁷ Judge Gilstrap rejected

⁵⁹ Galetovic and Haber (n 50) 2, 32.

⁶⁰ Sidak (n 51) 48.

⁶¹ Anson (n 48) 30.

⁶² Sidak (n 51) 49, referring to Nokia, who advocated for reversing the approach taken by the Federal Circuit for SEP royalty determination. Axel Gautier and Nicolas Petit, 2019. '[The Smallest Saleable Patent Practicing Unit And Component Licensing: Why \\$1 Is Not \\$1](#)' (*Journal of Competition Law and Economics*, Oxford University Press, vol. 15(1) 696.

⁶³ Contreras (n 30).

⁶⁴ Gautier and Petit (n 62) 696.

⁶⁵ Because it can lead to different royalty bases and make comparison of royalty rates more difficult.

⁶⁶ Gautier and Petit (n 62) 670.

⁶⁷ Jane Mutimear and Richard Vary 'International FRAND: the last 18 months and what lies ahead' (2019) 7 <<https://iclg.com/practice-areas/patents-laws-and-regulations/1-international-frand-the-last-18-months-and-what-lies-ahead>> accessed 15 June 2020, 2, referring to *HTC v. Ericsson* (n 53).

the argument put forward by HTC that the ETSI Guide on Intellectual Property Rights required the rate to be paid to Ericsson to be based on the price of the SSPPU. Moreover, in the recent *FTC v. Qualcomm* decision,⁶⁸ the Ninth Circuit disagreed with the analysis of the District Court observing that ‘*No court has held that the SSPPU concept is a per se rule for “reasonable royalty” calculations*’ noting that the Federal Circuit sees nothing wrong in using the EMVR. In its September 2020 letter to IEEE,⁶⁹ the DOJ clarified that, whilst it may have stressed the benefits of the SSPPU approach in a previous 2015 letter, it did not advocate for a particular approach, referring to the aforementioned *FTC v. Qualcomm* decision and noting that ‘*parties should be given flexibility to fashion licences that reward and encourage innovation*’. Already in 2016, Petit had warned against SSOs mandating the use of SSPPU in SEP intensive sectors, which he believed would drive patent owners to ‘*stop contributing their best technologies into standardisation*’ and was ‘*likely to reduce investment in socially beneficial activities*’.⁷⁰ Siebrasse and Cotter also support the use of the EMVR and refer to the decision of the JIPHC in *Apple v. Samsung*.⁷¹ The EMVR was also preferred by the Mannheim Court in *Nokia v. Daimler*.⁷²

3. Key Challenges and Potential Improvements

3.1 Key Challenges: Lack of Access to Data, SEP Overdeclaration and Global Rates

Determining FRAND royalties is a very complex exercise and courts face many challenges when doing so. IP valuation experts are sometimes critical of courts’ royalty determinations because they view their methods as removed from mainstream economic approaches. However, methods based on comparables, which appear to be the preferred and most reasonable starting point, follow a market approach which is rooted on price theory.⁷³ The main barrier to the general adoption of this method is the lack of access to data on comparable transactions. This data is not simply the agreed royalty but also the specific circumstances of the negotiation and elements that influenced the agreement, including firm size, patent strength, industry and geographical scope. Market participants seem to have little incentive to provide this data and this problem is exacerbated for new standards, such as 5G, and for technology being licensed for the first time. Alternative methodologies therefore need to be explored.

When it comes to alternatives, the top-down approach seems to be the preferred option. Whilst it avoids royalty stacking, a problem which, according to recent studies⁷⁴ is exaggerated, it has been criticized for not being consistent with economic principles and using arbitrary data and techniques. One of the key issues that affects the reliability of the apportionment exercise in a top-down approach, and is also relevant to any portfolio

⁶⁸ *FTC v. Qualcomm* (n 44) 43.

⁶⁹ DOJ Letter (n 16) 7, 8.

⁷⁰ Nicolas Petit, ‘The Smallest Salable Patent-Practicing Unit (‘SSPPU’) Experiment, General Purpose Technologies and the Coase Theorem (February 18, 2016) 8. <<https://ssrn.com/abstract=2734245> or <http://dx.doi.org/10.2139/ssrn.2734245>> accessed 1 August 2020, 8.

⁷¹ Siebrasse and Cotter (n 10) 384. *Apple v. Samsung* (n 27).

⁷² *Nokia v. Daimler* (n 45).

⁷³ See (n 49-50).

⁷⁴ By Galetovic, Gupta and Mallinson. See (n 20).

strength adjustment in a comparables analysis, is SEP overdeclaration, a consequence of the current SSO self-declaration system. Whilst there is a lot of debate on many issues surrounding FRAND determination, parties and courts seem to agree on the prevalence of overdeclaration. So much so, that serious evaluation exercises will include, as was the case in *Unwired Planet v. Huawei*, an essentiality review step to filter out truly essential patents. This is not a simple exercise and requires legal and technical skills,⁷⁵ as well as time.⁷⁶ Moreover, the patent counting methodology adopted in SEP licensing by parties and courts can make this overdeclaration problem worse because it incentivises parties to declare patents as essential.

3.2 Potential Improvements

Whilst in its 2017 Communication the Commission did not take a clear position on most valuation principles, it did, however, note that the quality and availability of information available in SSOs needed to be improved. The Commission was critical, in particular, of the lack of scrutiny regarding essentiality declarations, which prompted the launch by the Joint Research Centre of the European Commission (JRC) and the European Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) of a Pilot Study for Essentiality Assessment of Standard Essential Patents. The project report was published in November 2020⁷⁷ and recommends that policy makers implement a system for essentiality assessments with the active involvement of the European Patent Office and other national patent offices and in collaboration with similar institutions in other countries/regions, patent holders, implementers, patent pools, SSOs and other stakeholders. The report identifies 3 preferred scenarios: systematic review of all patents disclosed to SSOs, assessment at the request of the patent holder and a combination of the preceding two, and highlights the need to take into account the situation of SMEs to ensure that they can easily determine the relevant SEPs for their specific products and, if they are SEP holders, that there are no obstacles for them to participate in the system. It also recommends that Artificial Intelligence (AI) based approaches are explored to support essentiality assessments.⁷⁸

Similar initiatives have been launched outside the EU. Notably, by the Japanese Patent Office in 2018, with the introduction of the 'Hantei' (Advisory Opinion) system,⁷⁹ which aims to assist parties in licensing negotiations by providing a non-binding expert opinion on essentiality.

⁷⁵ *Unwired* (n 9) [346].

⁷⁶ Richard Vary, 'Dissecting TCL v. Ericsson - what went wrong?' (IAM September/October 2018) 9-14. <<https://www.twobirds.com/en/news/articles/2019/global/dissecting-tcl-v-ericsson-what-went-wrong>> accessed 12 July 2020, 9.

⁷⁷ Rudi Bekkers et al., *Pilot Study for Essentiality Assessment of Standard Essential Patents*, Nikolaus Thumm (ed.), EUR 30111 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-16667-2, doi:10.2760/68906, JRC119894. <<https://ec.europa.eu/jrc/en/publication/pilot-study-essentiality-assessment-standard-essential-patents>> accessed 22 November 2020.

⁷⁸ Pilot Study for Essentiality Assessment of SEPs (n 77) 19, 20.

⁷⁹ Manual of "Hantei" (Advisory Opinion) for Essentiality Check (March 2018, revised June 2019), Japan Patent Office, <https://www.jpo.go.jp/e/system/trial_appeal/document/hantei_hyojun/manual-of-hantei.pdf> accessed 6 September 2020.

Another challenge for courts is how to deal with FRAND determination for global portfolios without intruding on the jurisdiction of other courts, which can result in a ‘*race to the bottom*’ and forum shopping.⁸⁰ In *Unwired Planet v Huawei*, Birss J granted a UK injunction against Huawei until such time as it entered into a global licence, the terms of which he settled. His decision was appealed first to the Court of Appeal⁸¹ and then to the Supreme Court (UKSC). In a judgement handed down by Lord Hodge on 26 August 2020, the UKSC upheld Birss J decision.⁸² Contreras proposes the establishment of an international tribunal to determine FRAND on a worldwide basis.⁸³ Such tribunal, which would be either mandatory or optional for participants in a SSO and preferably hosted by a non-governmental international body, would be limited in its authority to the determination of worldwide FRAND royalty rates for all SEPs covering a given standard, including apportionment among SEP holders for that standard. Whilst not entirely prescriptive, Contreras suggests a top-down approach as the preferred valuation method, with apportionment based on patent counting.⁸⁴ Gafele has also suggested ‘*an international body, established through an international treaty*’ for the determination of global FRAND rates.⁸⁵ Interestingly, in its *Unwired Planet* decision, the UKSC also refers to an international tribunal as a potential solution for global FRAND royalty determination or, as an alternative, ‘*respected national IP courts or tribunals*’ to which this determination could be referred.⁸⁶

4. Conclusion

Standards, as enablers of connectivity, are fundamental to the ICT sector and the development of IoT. They play a key role in today’s economy, increasingly so as 5G pushes new companies to consider SEP licensing. A predictable and efficient SEP licensing environment is therefore essential for companies’ strategies worldwide, particularly for SMEs, who might be unfamiliar with SEP licensing. Whilst FRAND terms are designed to ensure accessibility to SEPs, different interpretation of their meaning has resulted in increased friction and litigation.

Despite this, European courts have to date avoided setting FRAND rates, with some notable exceptions. Yet judicial FRAND royalty determinations can be very valuable. They can inform future negotiations and licensing policies, develop the jurisprudence in this area and encourage cross-jurisdictional dialogue, improving the existing lack of transparency, which is one of the obstacles to the predictable and efficient SEP licensing environment. Courts should be entitled to consider the evidence from each side and come up with a different view, applying a different valuation method if necessary.⁸⁷

⁸⁰ Contreras (n 30) 724.

⁸¹ *Unwired Planet International Ltd & Anor v Huawei Techs. Co. Ltd & Anor* (Rev 1) [2018] EWCA Civ 2344.

⁸² [2020] UKSC 37. Whilst the valuation aspects were not appealed, Huawei appealed the decision on the remaining topics.

⁸³ Contreras (n 30) 738-743.

⁸⁴ Contreras (n 30) 750.

⁸⁵ Roya Gafele, ‘Global Licensing on FRAND Terms in Light of *Unwired Planet v. Huawei*’ (UCLA Journal of Law and Technology, Spring 2020, Volume 24, Issue 2) 19.

⁸⁶ *Unwired UKSC* (n 82) [90].

IP valuation is a complex endeavour and courts face many obstacles when determining FRAND royalties. Courts need to consider a number of principles, which are the subject of much academic debate and limited governmental clarification. When applying valuation methods, they may need to deal with a lack of data on comparable transactions, SEP overdeclaration and global portfolio issues. Notwithstanding, highlighting these issues is part of the solution. Birss J's FRAND determination in *Unwired Planet v Huawei*, despite some deficiencies, is an example of a dynamic and pragmatic approach which reflects commercial reality and helps develop the jurisprudence in this area. It would be particularly interesting to see how German courts, very seasoned in IP matters, would apply the existing guidance to determine FRAND royalties.

Improving the current system is part of the Commission's 2020 Action Plan on IP.⁸⁸ Further research is needed to improve existing and/or develop new methodologies for FRAND royalty determination as alternatives to comparables, as well as to improve access to data and essentiality checks. The JRC/DG GROW Pilot Study for Essentiality Assessment of Standard Essential Patents⁸⁹ is a step in the right direction and refers to the role AI can play in improving the system. A report from the Commission-appointed Expert Group on SEPs⁹⁰ would also be most welcome.

⁸⁷ As Birss J observed 'the court's jurisdiction is not restricted to the binary question of assessing a given set of terms but extends to deciding between rival proposals and coming to a conclusion different from either side's case on such a proposal'. *Unwired* (n 9) [169].

⁸⁸ Commission's 2020 Action Plan on IP (n 4), 3.

⁸⁹ See (n 77).

⁹⁰ Expert Group on SEPs (n 5). According to the minutes of the last meeting, in January 2020, a draft report was expected to be consolidated in Spring 2020 for a broader discussion with stakeholders later in 2020. A meeting scheduled for 30 April 2020 was cancelled due to the Coronavirus. Minutes of the 6th meeting of the Group of Experts on Licensing and Valuation of Standard Essential Patents (Expert Group on SEPs <<https://ec.europa.eu/transparency/regexpert/index?do=groupDetail.groupMeetingDoc&docid=38845>> accessed 5 September 2020.