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► **To cite this version:**

Matthieu Dhenne. Calculation of FRAND Royalties: An Overview of Practices Around the World. European Intellectual Property Review, 2019, 12, pp.754-764. halshs-02970430

HAL Id: halshs-02970430

<https://shs.hal.science/halshs-02970430v1>

Submitted on 8 Nov 2020

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Calculation of FRAND Royalties: An Overview of Practices Around the World

Matthieu Dhenne*

☞ Abuse of dominant position; Apportionment; Comparative law; Fair reasonable and non-discriminatory terms; Patents; Royalties

FRAND royalties have their origin in standard essential patents (i.e. SEP), declared as such by their holders to standardisation organisations. The antagonism between patent and standard is obvious: on the one hand the patent is a recognition of the right to exclude for the owner of an invention; on the other hand the standard is devoted to the adoption by all, and therefore is the enemy of any exclusivity.¹ Only a commitment by the patentee to grant equitable, reasonable and non-discriminatory licences, called FRAND (i.e. fair, reasonable and non-discriminatory), appeared able to fight against the abuse of exclusions² and, eventually, to overcome the antagonism between patent and standard.³ Above all, it is a question of avoiding the situation where the standards can, contrary to their objective, generate patent thickets⁴ blocking potential new entrants.

As the title of the present study indicates, we will tackle in these pages the *terra incognita* at the centre of the concerns: the calculation of the FRAND royalties. It is first and foremost necessary to specify the precise contours of our topic. First, as FRAND standards and licences are stateless, our study will also be part of an international framework.⁵ Secondly, since rate calculation approaches are further underpinned by economic concepts, our analysis will necessarily be tinged, in places, with economic analysis of the law.⁶

A royalty can essentially take two forms: in the form of an ab initio settlement of a fixed royalty, whether it is cash with a fixed sum (so-called “up-front”), or a lump

sum, and under the form of royalties, that is to say with variable royalties which will be proportional to the exploitation of the invention.⁷ We will only address here the question of the calculation of the royalties. The calculation of a royalty proportional to the exploitation of the invention implies applying a rate to a base. Thus, we will see how to fix the royalty rate and the royalty base.

Royalty rate

The rate is expressed as a percentage to apply to a base. In the case of FRAND royalties, some methodologies are recommended to fix the rate, especially since some practices should be excluded by this fixing.

Methodologies to fix the rate

Several methods of calculation have been developed in the case law around the world. Often combined, these methods are essentially the following: (1) the hypothetical negotiations approach; (2) the comparable approach; (3) the top-down approach; (4) the incremental value approach; and (5) the bottom-up approach.

The hypothetical negotiations approach

In the US, the *Georgia Pacific* case provides the general framework for setting the royalty rate.⁸ In that case, it was held that the royalty rate should correspond to what the parties would have concluded in the event of “hypothetical negotiations” between them, assuming that they were indeed willing to negotiate a licence. The 15 factors of assessment that came into play during these negotiations were then identified by the judge. In *Microsoft v Motorola*, Judge Robart adapted the 15 *Georgia Pacific* factors to setting the FRAND royalty rate⁹:

- **Factor 1:**
Royalties collected by the patentee for FRAND licences for the same patent.
- **Factor 2:**
The royalties paid by the licensee for the exploitation of comparable patents.

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¹ See H. Ullrich, “FRAND Access to Open Standards and the Patent Exclusivity: Restating the Principles”, *Max Planck Institute for Innovation and Competition Research Paper Series No.17-04* (2017). See also B. Galopin, “Comment concilier propriété intellectuelle et normalisation?” [2012] *Propr. industr.*, alerte 47.

² L. Leblond, *Pratiques anticoncurrentielles et brevets: Étude en faveur de la promotion européenne de l'innovation* (Bruylant, 2014), n° 468.

³ Each standardisation organisation proposes its own F/RAND commitment. See, for instance, art.6.1, Annex 6 of ETSI (i.e. European Telecommunication Standards Institute) Guidelines: “When an ESSENTIAL IPR relating to a particular STANDARD or TECHNICAL SPECIFICATION is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give within three months an irrevocable undertaking in writing that it is prepared to grant irrevocable licences on fair, reasonable and non-discriminatory (“FRAND”) terms and conditions.”

⁴ C. Shapiro, “Navigating The Patent Thicket: Cross-Licences, Patent Pools, and Standard Settings” in A.B. Jaffe, J. Lerner and S. Stern (eds), *Innovation Policy and the Economy* (Cambridge, MA: MIT Press, 2001), Vol.1, p.119.

⁵ It should be noted that the judge will fix, *in concreto*, whether its power is limited to the national part of a licence (see: District Court The Hague, 14 October 2011: *Samsung v Apple*, <http://eplaw.org/nl-samsung-v-apple-frand-2/> [Accessed 3 October]) or the judge could fix a rate for the portfolio at an international level (LG Düsseldorf, *St Lawrence v Vodafone*, case No.4a O 73/14, and *Unwired Planet v Huawei* [2017] EWHC 3083 (Pat), [2018] Bus. L.R. 896.

⁶ See, for this approach, R.A. Posner, *Economic Analysis of the Law*, 8th edn (New York: Wolters Kluwer/Law & Business, Aspen Casebook Series, 2011), passim and pp.39 and following.

⁷ See notably F.X. Testu and S. Hill, “Le prix de la licence de brevet dans les hautes technologies: l'exemple des biotechnologies” [2008] *JCP E*. 1269.

⁸ *Georgia-Pacific Corp v United States Plywood Corp*, 318 F. Supp. 1116, 1119–1120 (S.D.N.Y. 1970), mod. & aff'd, 446 F. 2d 295 (2d Cir. 1971), cert. denied, 404 U.S. 870 (1971). See also *Unisplay SA v American Electronic Sign Co Inc*, 69 F. 3d 512, 517 (CAFC 1995).

⁹ *Microsoft v Motorola*, 2013 WL 2111217 (W.D. Wash. 2013), aff'd, 696 F. 3d 872 (9th Cir. 2015).

- **Factor 3:**
The nature and scope of the licence.
 - **Factor 4:**
The value of the patent, the importance of its contribution to the standard compared to the other patents participating in it.
 - **Factor 5:**
The duration of the licence (which necessarily coincides with that of the patent).
 - **Factor 6:**
The profitability of the product, its commercial success and its current popularity, taking into account only the value of the patented technique and not the value associated with the incorporation of this technique into the standard.
 - **Factor 7:**
The usefulness and advantages of the patented technique compared to the alternatives that could have been selected during the period preceding the adoption of the standard.
 - **Factor 8:**
The nature of the patented invention, its importance in the licensed product and its contribution to the users of the product.
 - **Factor 9:**
The extent and value of the use of the patent by its owner.
 - **Factor 10:**
The usual profit share for the activities of licensing essential patents in the company concerned or in comparable companies.
 - **Factor 11:**
The share of profit attributable to the invention, excluding any consideration of non-patented elements, manufacturing costs, commercial risks, significant features or improvements added by the licensee or the value of incorporation from the patent to the standard.
 - **Factor 12:**
The expert testimony.
 - **Factor 13:**
The amount to which the patentee and the licensee would have come had they reasonably and voluntarily sought an agreement.
 - **Factor 14:**
The public interest.
 - **Factor 15:**
The risk of royalty stacking and therefore the other licenses necessary for the implementation of the standard.
- Judge Robart considered that such hypothetical negotiations took place before the invention became part of the standard. Subsequently, in *Innovatio*, Judge Holderman decided that the date to be chosen was rather the one at which the 802.11 standard had been adopted, and therefore about the time when the manufacturers had begun to manufacture the product in accordance with the standard. According to Judge Holderman, Judge Robart's approach can be summed up in three stages¹⁰:
- First, a court should examine the importance of the patent portfolio for the standard, taking into account both the proportion of all essential patents in the portfolio as well as the technical contribution of the patent portfolio as a whole to the standard.
 - Secondly, a court should consider the importance of the entire patent portfolio in relation to allegedly infringing products.
 - Thirdly, a court should examine other licenses for comparable patents, using its findings on the importance of the portfolio for the standard and the alleged alleged infringer's products to determine whether a license or set of licenses that are comparable.
- After many District Court decisions based on *Georgia Pacific* factors, the CAFC found, in *Ericsson v D-Link*, that there was no list of factors similar to that used in *Georgia Pacific* that is systematically applicable to all cases involving FRAND commitments. If a court decides to follow this type of approach, it will be up to the Judge to instruct the jury only on the factors relevant to the case.¹¹ The comparability of licenses is apparent from the factors enumerated in *Georgia Pacific* (factors 1 and 2).

The comparable approach

The comparable approach compares the royalty rate of the licence at issue with the previous comparable licence rates while taking into account contextual differences. In

¹⁰ *In re Innovatio IP Ventures*, 2013 WL 5593609 (N.D. Ill. 2013).

¹¹ *Ericsson v D-Link*, 773 F. 3d 1201, 1232, 1235 (CAFC 2014).

fact, it will be relying on the comparison with licences for the same patent, otherwise licences for similar patents or similar standards. In *Ericsson v D-Link*, the CAFC acknowledged that juries could hear testimony regarding other licences for the final product.¹² This position was reaffirmed in *CSIRO v Cisco Systems*.¹³

Can a rate charged by a patent pool¹⁴ be used as a comparable? This was admitted in the *Microsoft* case.¹⁵ Although it is generally accepted that patent pools tend to generate lower rates than those resulting from a bilateral negotiation, Judge Robart nevertheless considered that the rates offered by these pools (in this case, MPEG AVC / H.264 and 802.11) had served as good indicators for determining the FRAND royalty rate. In *Innovatio*, Judge Holderman concluded that the licence proposed by the *Via Licensing* patent pool did not constitute an appropriate comparable licence, contrasted with Robart's finding that that Motorola's patents were not significant for the 802.11 standard, while *Innovatio*'s patent portfolio was of moderate to moderate-high importance same standard.¹⁶ Judge Holderman identified many additional problems with the use of this pool's rate as comparable, including the fact that the pool was not a success (the pool of only 5 licensors, 35 patents and 11 licensees), that it did not include high-value patents, that it did not distinguish between pool patents on the basis of technical merit, but gave the same royalty to all patents in the pool, and that he did not consider the importance of patents for end products.¹⁷ Holderman J added that since the *Via Licensing* patent pool did not allocate royalties among SEP holders on the basis of relative merit, right holders with valuable patents would not contribute to the pool, but rather seek to grant licences on a case-by-case basis. As a result, the pool rates could be significantly impaired as a result of these items.

In *Realtek v LSI*, Judge Whyte relied on comparable patent licenses included in the 802.11 standard at issue. Several comparability criteria have been identified¹⁸:

- the patents included in the licence;
- the date of the licence;
- any limitation on the use of the licensed technology;
- whether the licence was part of an agreement resulting from litigation or arbitration;

- if the rate constituted a flat royalty or a variable rate royalty;
- expert testimony.

In general terms, some contextual factors may be considered when comparing¹⁹:

- similarities and differences between the patents in question (which covers the nature and application of the patented technique, its development phase, its commercial success, its strength compared to an alternative technique as well as its economic life);
- the comparability of the markets on which licences have been granted (sales, profits and prices of the products in question may, for example, be taken into account, in particular via a business plan or a sales projection for the future²⁰);
- the method of calculating the royalty;
- the terms and conditions of the licences compared, an exclusive licence will for example require a higher royalty, similarly the duration of the license may also affect the royalty;
- special circumstances which could have influenced the reference royalties, for example if the sales of the product incorporating the patented technique increase the sales of other products, the licensee is likely to accept a lower royalty.

Although a direct comparison of the true value of the licence in a market can be directly obtained from the comparison,²¹ it is still suspect because of the economic and scientific risks that vary greatly from one licence to another.²² This method is therefore permissible only if there are precise factual elements allowing the association of the previous licence royalty rates with the particular case.²³ A previous licence can form the basis for calculating a reasonable royalty rate only if it is proven to be sufficiently comparable.²⁴ Therefore, the method of comparison used should not be speculative.²⁵

In Asia, in *Huawei v InterDigital* concerning *InterDigital 2G, 3G and 4G essential patent royalties*, the Shenzhen People's Court ruled that such royalties should

¹² *Ericsson v D-Link*, 773 F. 3d 1201, 1232 (CAFC 2014).

¹³ *Commonwealth Scientific and Industrial Research Organization (CSIRO) v Cisco Sys. Inc.*, 809 F. 3d 1295, 1302 (CAF, 2015), cert. denied, 136 S. Ct 2530 (2016).

¹⁴ Patent pools are agreements by which patentees pool technology-related patents in order to propose a common license for that patent. See WIPO, *Patent Pools and Antitrust – A Comparative Analysis* (March 2014). See R.P. Merges, "Institutions of Intellectual Property Transactions: The Case of Patent Pools" in R. Dreyfuss et al. (eds), *Expanding the Boundaries of Intellectual Property* Oxford: Oxford University Press, 2001), p.123; and Y. Ménière, "Le rôle économique des 'pools' de brevets," *Le Jaune & le rouge* (2012), n° 672. Concerning the role of pools in standards, see J. Temple Lang, "Patent Pools and Agreements On Standards" (2011) 36 E.L. Rev. 887.

¹⁵ *Microsoft v Motorola*, WL 2111217 (W.D. Wash. 2013), aff'd, 696 F. 3d 872 (9th Cir. 2015). See also *SK Hynix Inc v Rambus Inc*, 2013 WL 1915865 (N.D. Cal. 2013).

¹⁶ *In re Innovatio IP Ventures*, 921 F. Supp. 2d 903 (2013).

¹⁷ *In re Innovatio IP Ventures*, 921 F. Supp. 2d 903 (2013).

¹⁸ *Realtek Semiconductor Corp v LSI Corp*, 946 F. Supp. 2d 998 (N.D. Cal. 2013).

¹⁹ T. Heberden, "Intellectual Property Valuation and Royalty Determination" in A. Liberman, P. Chrocziel and R. Levine (eds), *International Licensing and Technology Transfer: Practice and the Law* (Alphen aan den Rijn: Wolters Kluwer Law & Business, 2011).

²⁰ *Interactive Pictures Corp v Infinite Pictures Inc*, 274 F. 3d 1371, 1384–85 (CAFC 2001).

²¹ *Lucent Technologies Inc v Gateway Inc*, 580 F. 3d 1301, 1329–30 (CAFC 2009).

²² *Integra Lifescience I Ltd v Merck KGaA*, 331 F. 3d 860, 870 (CAFC 2003).

²³ *Apple Inc v Motorola Inc*, 757 F. 3d 1286 (CAFC 2014).

²⁴ *Lucent Technologies. v Gateway*, 580 F. 3d 1301, 1329–30 (CAFC 2009).

²⁵ *ePlus Inc v Lawson Software Inc*, 764 F. Supp. 2d 807, 813 (E.D. Va. 2011).

not exceed 0.019 per cent of the actual selling price of the product. Although the judgment is not available to the public, the three judges who ruled on this case wrote an article in which they indicate their motives and that can be inferred that they have based on comparable licences.²⁶ This decision was upheld on appeal by the Guangdong People's High Court.²⁷

In Europe, the German courts have also emphasised the importance of the comparables method as an indicator of the terms of the licence offered. In *Saint Lawrence Communication v Vodafone*, the Düsseldorf Landgericht held the comparison with six other licences concluded with mobile telecommunication companies. Furthermore, the court was not convinced by the comparison with the lower practical rate by a pool.²⁸ In *Sisvel v ZTE*, however, the same court required the SEP holder to provide all signed patent licence agreements in respect of the patents in suit or the patent portfolio at issue, in order to constitute an appropriate basis for a comparison and to evaluate the "non-discriminatory" element of the FRAND requirement.²⁹ On the contrary, in the case of *NTT v HTC*, the Landgericht Mannheim took into account the rate charged by a pool, considering it to be a useful indicator.³⁰

In the United Kingdom, in *Unwired Planet v Huawei*, in 2017, Judge Birss also relied on the comparable approach.³¹ Faced with the diversity of comparable licences, likely to cover more SEP, or even non-SEP, the British judge used a kind of counting of patents. For example, if another SEP holder asks for 5 per cent but has contributed twice as much SEP, this suggests a rate of 2.5 per cent for the case. Judge Birss proposes to perform the comparison in the following steps:

- identification of comparable licenses held by the owner of the SEP in question or by a third party;
- identification of the SEP of the said owner whose licences could be compared;
- to evaluate the value of the relevant SEP portfolio (V) in relation to the portfolio of comparable licences identified on the basis of patent counting, that is, the royalty should be proportional to the number of SEPs;
- set the reference rate of the SEP portfolio to which the identified comparable licences belong (R) by defeating the compared licences, by looking at the terms to which

they have been concluded and in particular whether they include lump sums of departure or cross-licences;

- calculate the FRAND rate with the formula $R \times V$;
- cross these results with the top-down approach.

The top-down approach

The top-down approach is based on the overall charge for royalties, summing up all royalties due to SEP holders for a given standard, before dividing that amount by the number of licensees. In *Unwired Planet*, Judge Birss used the top-down approach, in order to cross the results of the latter with those of the comparable method. It was thus determined that *Unwired Planet's* benchmark rate was 0.062 per cent, and that the said company held 0.70 per cent of the relevant SEP, which meant that the overall charge for royalties would be 8.8 per cent (0.062/0.70). It was concluded that the rate used was reasonable because it corresponded to the reference rate from the comparable approach.³²

Similarly, in *TCL v Ericsson*, Judge Selna chose the top-down approach while also using that of comparables to cross their results.³³ The case concerned the sale of cellular handsets by *TCL*. Ericsson is one of the largest holders of SEP for 2G, 3G and 4G wireless telecommunications standards. In 2007, *TCL* obtained a seven-year licence for Ericsson's 2G patents. In 2011, the parties began to negotiate a licence for 3G-related SEP. In 2013, these negotiations were extended to 4G. However, no agreement was reached on the terms of the last two licences and, during the negotiations, Ericsson sued *TCL* for infringing its patents in six countries other than the US. In March 2014, prior to the expiry of the 2G licence, *TCL* commenced a lawsuit in California to have Ericsson breach its obligation to license it on FRAND terms. The court issued its decision in November 2017, which was published in December 2017, after being purged of the confidential information it contained.

The top-down approach consists of two steps: determining the total number of SEPs covering each standard (the denominator) and then determining the share of Ericsson in these SEPs (the numerator). Regarding the first step, the UK and Japanese courts, which had applied the top-down approach in FRAND cases, had based their overall rates on public statements made by SEP holders and other market participants. Judge Selna also adopted this approach, citing various public statements and press

²⁶ F. Deng and S. Sun, "Determining the FRAND Rate: U.S. Perspective on Huawei v. InterDigital" (2014) 2 C.I.I. Antitrust Chron. See also *Huawei v InterDigital*, Guangdong High Court (Yue Gaofa Minsan Zhougzi Nos 305 and 306 (28 October 2013)); D.D. Sokol and W. Zheng, "FRAND in China" (2014) 22 Texas Intell. Prop. L.J. 71.

²⁷ *Huawei v InterDigital*, Guangdong High Court (Yue Gaofa Minsan Zhougzi Nos 305 and 306, (28 October 2013).

²⁸ *St Lawrence Communication v Vodafone*, LG Düsseldorf (31 March 2016), 4a O 73/14.

²⁹ *Sisvel v ZTE*, LG Düsseldorf (13 July 2017), 4a O 154/15.

³⁰ *NTT v HTC* LG Mannheim (29 January 2016), 7 O 66/15.

³¹ *Unwired Planet v Huawei* (2017) EWHC 711 (Pat); [2019] 4 C.M.L.R. 7.

³² *Unwired Planet v Huawei* (2017) EWHC 711 (Pat); [2019] 4 C.M.L.R. 7.

³³ *TCL Communications v Ericsson*, Memorandum of Findings of fact and Conclusions of Law (C.D. Cal., 21 December 2017, SACV 14-341 JVS (DFMx) and CV 15-2370 JVS (DFMx)). See J.L. Contreras, "TCL v. Ericsson: The First Major U.S. Top-Down FRAND Royalty Decision, Patently-O (27 December 2017), *University of Utah College of Law Research Paper* No.245 SSRN, <https://ssrn.com/abstract=3100976> [Accessed 7 October 2019]; R. Vary, "The Prodigal Licensee" (2018) 40 E.I.P.R. 691.

releases from Ericsson supporting a 5 per cent overall royalty on 2G and 3G standards and a rate of between 6 and 10 per cent on the 4G standard. Regarding the second step, according to the court, it was appropriate to start from the number of SEPs declared to ETSI and then to adjust it downwards, taking into account a possible over-declaration of essentiality on the basis of the experts' calculations from TCL. In addition, SEPs for optional parts of the standard were also not to be taken into consideration. It should be noted that the expired SEPs were not removed from the total charge because these titles, like the unexpired SEP, continued to represent a value for the standard. Finally, it was held that the royalty rate in this case was different from one country to another, because the rules of patentability could be more or less favorable from one country to another, thus affecting the level of royalties.

Finally, after concluding that Ericsson's offers were not FRAND, Judge Selna decided to calculate the appropriate FRAND royalty rates for Ericsson's SEP portfolios for 2G, 3G and 4G. He first analysed the range of rates for both top-down and comparable approaches by noting that the two approaches acted as reasonable means of control for each other, and then reduced this range by eliminating lowest and highest rates while selecting the FRAND rate between the remaining rates. Specifically, in the case of 4G, the court dismissed the two highest and the last two results, and concluded that the remaining rates were largely concomitant and selected a rate of 0.45 per cent for the US. Then the Ericsson rate for the rest of the world was adjusted downward, resulting in a FRAND rate of 0.314 per cent. For 3G, the rates of the top-down approach proved to be much lower than the prices derived from comparable licences, which did not prevent the judge from adopting the first with a FRAND rate of 0.30 per cent for the US. It then adjusted downward the Ericsson rates in Europe (0.264 per cent) and the rest of the world (0.224 per cent). For 2G, the judge indicated that he could not rely on comparable licences, so he adopted the results of the comparable method with a rate of 0.16 per cent for the US, 0.12 per cent for Europe, and 0.09 per cent for the rest of the world.

In general, the top-down approach has the advantage, not negligible, of relying on all the patents necessary for the implementation of the standard. It seems to us illusory to think that we can evaluate a FRAND rate in isolation, even though the FRAND commitment is linked to a standard as a whole, and not just to an individual patent. Moreover, this commitment finds its reason to be in the will to avoid the standards becoming patent thickets, where the patentees would be ready, in ambush, to ransom

any new entrant on a market. So we tend, with the top-down approach, to avoid, more generally, royalty stacking and patent hold-ups. Caution is still in order. First, these two phenomena stand out because of the difficulty of their qualification. It remains to apprehend them in an abstract way, with all the approximation that entails. Secondly, the collection of all royalty rates, which precedes their addition, can be particularly tricky.³⁴ Most often the rates will not be disclosed. The judges do not find then obliged to rely on public communications of the patentee, if they exist. Nothing will prevent the holder from invoking a trade secret in order to maintain the confidentiality of agreements concluded with third parties. Finally, the top-down approach is concluded, in principle, with a simple count of patents, independent of their value therefore, which favors harmful practices, especially since this approach does not hold more than the comparable of the impact of the royalties on the margin ultimately achieved by the licensee, like the incremental value method.

The incremental value approach

Although the Federal Circuit did not explicitly address it, the FTC refers to it when it recommends determining the FRAND royalty value using this incremental value approach.³⁵ According to the latter, the amount of the royalties must correspond to the additional value provided by the patented technique in relation to the maximum amount that a licensee would be willing to pay for the optimal alternative solution.³⁶

In *Microsoft*, Judge Robart partially rejected an approach on the ground that it lacked real-world applicability.³⁷ He argued that multilateral ex ante negotiations could not be conducted with many standardisation organisations at the same time. Nevertheless, he conceded at the same time that this incremental value was partly taken into consideration with the *Georgia Pacific* factor 9, which takes into account the utility and advantages of the patent over existing devices or older devices.³⁸

In *Innovatio*, Judge Holderman limited the number of alternative technologies available to the options discussed within the standardisation organisation, considering that a technology not even mentioned in the standard-related deliberations could not be considered as a serious competitor in terms of integration with this standard. Judge Holderman thus held that there was no alternative to *Innovatio* patents in this case, which provided all the functionality required by 802.11.³⁹ At the end, the bottom-up approach, which also takes the margin of the licensee into account, would perhaps be easier to implement.

³⁴ See V. Kathuri and J.C. Lai, "Royalty Rates and Non-Disclosure Agreements in SEP Licensing Implications for Competition Law" (2018) 40 E.I.P.R. 357.

³⁵ US Federal Trade Commission, "The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition" (March 2011), pp.21 and 22, <https://www.ftc.gov/sites/default/files/documents/reports/evolving-ip-marketplace-aligning-patent-notice-and-remedies-competition-report-federal-trade/110307patentreport.pdf> [Accessed 7 October 2019].

³⁶ A.-L. Farrar, "Moving beyond simple examples: Assessing the incremental value rule within standards" (2014) 36 *International Journal of Industrial Organization* 57.

³⁷ *Microsoft v Motorola*, 2013 WL 2111217, 13 (W.D. Wash. 2013).

³⁸ *Microsoft v Motorola*, 2013 WL 2111217, 19 (W.D. Wash. 2013).

³⁹ *In re Innovatio IP Ventures*, 2013 WL 5593609, 37 (N.D. Ill. 2013).

The bottom-up approach

The bottom-up method, or proportional contribution approach, starts with the price of the final product. The purpose is to determine the cost associated with the implementation of reasonable alternatives to the patent at issue that could have been included in the standard and then divide the cost by the total number of counterfeits in order to set the maximum royalty per product.

This approach is generally put forward by the manufacturers and has been proposed by the defendant in *Innovatio*.⁴⁰ In that case, the approach involved taking into account the value of alternatives, but appeared approximate because there was no precise alternative. Judge Holdermann therefore found that the approach was correct from an economic point of view while preferring the top-down approach.

The Delhi High Court also relied on the comparable method, but admitted that the net selling price of the products constituted the royalty base.⁴¹ The Japanese and Chinese courts also rendered decisions in which they respectively retain the total amount of counterfeit sales⁴² and 0.019 per cent of the sale price of the final product.⁴³

Not all of these methodologies of calculation are mutually exclusive and may even be complementary but at the end of the day they should all be able to exclude abuses like patent hold-up and royalty stacking.

Practices to exclude by fixing the rate

The setting of a FRAND royalty rate implies, first of all, the exclusion of abusive practices likely to result in excessive royalties, such as patent hold-up and royalty stacking.

The patent hold-up

Initially, the term “patent hold-up” meant the change in bargaining power occurring to the detriment of the licensee when the licensing negotiations took place ex post, even though the licensee had already incurred irreversible costs in the activity related to the exploitation of the patent in question.⁴⁴ Subsequently, the concept was

also used to describe the misuse of market power conferred on the patentee by the essential character of a standard.⁴⁵

A first interpretation of the notion appeared in several famous cases,⁴⁶ “patent ambush”⁴⁷ cases such as *Dell v FTC* in 1996 and *Rambus v FTC* in 2005 in the US, where the owners of SEP were accused of deliberately concealing patents during the standardisation process, in order to ultimately claim royalties for products that conform to the resulting standards. In other words, it is a question of waiting for a standard to be adopted before declaring patents as essential and then to charge royalties to participants “locked” in the standard (“patent lock-in”⁴⁸). The risk of patent hold-up was taken into account by Judge Robart in the *Microsoft* case.⁴⁹ However, in its *Ericsson v D-Link* decision, the CAFC found that this rule regarding royalty stacking was as valid for the notion of patent hold-up, which must also be established on specific facts rather than general assumptions.⁵⁰ It is then necessary to demonstrate that patentees use their SEPs to claim higher royalties from companies applying the standard.

The patent hold-up can be manifested by the threat of preliminary injunctions requests. The judgment of the CJEU in *Huawei Technologies* on 16 July 2015 provides a framework for apprehending this phenomenon in Europe.⁵¹ In the present case, *Huawei Technologies* relied on a SEP against *ZTE Deutschland*, which marketed products implementing the LTE (i.e. “Long Term Evolution”) standard, related to 3G and 4G, and which included the essential patent in question, without paying royalties. *Huawei* therefore brought an action for infringement before the Landgericht Düsseldorf. The latter questioned the Court of Justice as to whether the introduction of such an action constituted an abuse of a dominant position. The judgment first of all teaches us that the introduction of an action for infringement does not, per se, constitute an abuse of a dominant position, but that the context in which it is introduced can characterise such an abuse. The court then lists the conditions under which an action may degenerate into an abuse. In doing so, it issues a sort of “code of good conduct” for the negotiating parties. Regarding the

⁴⁰ *In re Innovatio IP Ventures*, 2013 WL 5593609 (N.D. Ill. 2013).

⁴¹ Delhi High Court (12 March 2013), *Telefonaktiebolaget LM Ericsson v Micromax Informatics Ltd and Mercury Electronics Ltd*; Delhi High Court (8 December 2014), *Telefonaktiebolaget LM Ericsson v Xiaomi Technology*; Delhi High Court (13 March 2015), *Telefonaktiebolaget LM Ericsson v Intex Techs (India) Ltd*. V.J.G. Sidak, “FRAND in India: The Delhi High Court’s emerging jurisprudence on royalties for standard-essential patents” (2015) 10 J.I.P.L.P. 609.

⁴² Japanese IP High Court, *Apple v Samsung* (16 May 2014), case no 2013[Ne] 10043.

⁴³ Guangdong High Court, *Huawei v InterDigital* (28 October 2013), Yue Gaofa Minsan Zhouzhi Nos 305 and 306.

⁴⁴ S. Scotchmer, “Standing on the Shoulders of Giants: Cumulative Research and the Patent Law” (1991) 5 J.E.P. 29.

⁴⁵ C. Shapiro, “Navigating The Patent Thicket” in A.B. Jaffe, J. Lerner and S. Stern (eds), *Cross-Licences, Patent Pools, and Standard Settings, Innovation Policy and the Economy* (Cambridge, MA: MIT Press, 2001), Vol.1, p.119; M. Lemley and C. Shapiro, “Patent Holdup and Royalty Stacking” (2007) 85 Texas L. Rev. 1991, 2008 and following.

⁴⁶ V.J. Farrell et al., “Standard-setting, Patents and Hold-up” (2007) 74 *Antitrust Law Journal* 603.

⁴⁷ European Commission, “Antitrust: Commission confirms sending a Statement of Objections to Rambus”, MEMO/07/330 (23 August 2007). See B.D. Abramson, “The Patent Ambush: Misuse or Caveat Emptor?” (2011) 51 *IDEA* 71.

⁴⁸ *Broadcom v Qualcomm*, 501 F. 3d 297, 300 (CAFC 2007).

⁴⁹ *Microsoft v Motorola*, 2013 WL 2111217 (W.D. Wash. 2013), aff’d, 696 F. 3d 872 (9th Cir. 2015).

⁵⁰ *Ericsson v D-Link*, 773 F. 3d 1201, 1232 (CAFC 2014).

⁵¹ *Huawei Technologies* (C-170/13) EU:C:2015:477; [2015] Bus. L.R. 1261. See D. Bosco, “‘Patent war’: les conditions de la qualification d’abus de position dominante sont précisées” [2015] *Contrats conc. consom.*, comm.13; Ch. Caron, “Un cocktail explosif: abus de position dominante, action en contrefaçon, brevet essentiel à une norme et licence FRAND” [2015] *Comm. com. électr.*, comm. 65; L. Idot, “Brevet essentiel et licences à des conditions FRAND” [2015] *Europe*, comm. 374; A. Latil, “Contrefaçon de brevets essentiels à une norme: les conditions de l’abus de dominante précisées” [2015] *JCP E* 1454; J. Passa, “Action en contrefaçon concomitante à la négociation d’une licence FRAND sur un brevet essentiel à une norme: condition de l’abus de position dominante” [2015] *Prop. industr.*, étude 20; J.-Ch. Roda, “Brevets essentiels et abus de position dominante: la Cour de justice fixe les règles” [2015] *D.* 1482.

patentee, he must alert the alleged counterfeiter and specify the alleged infringement before taking action; then, when the alleged infringer has expressed his willingness to conclude a licence under terms FRAND, the patentee must propose a specific written offer setting out the method of calculating the royalties. Regarding the potential licensee, it is his responsibility to respond diligently to this offer, in accordance with commercial practice, presenting a specific counter-offer corresponding to FRAND terms, if necessary, while providing an appropriate guarantee. If at the end of this negotiation no agreement is found, the patentee can ask, *inter alia*, for provisional measures. Thus, the framework proposed by the Court of Justice limits the scope of the patent right arising from a SEP in order to prevent its holder from abusing its prerogatives, in particular by threatening actions to claim higher royalty (patent hold-up). The decision of the CJEU aims at the same time that no more delaying tactics will be tolerated.

Several national courts have taken into account this scheme of negotiations, while clarifying it. Thus, in the *Sisvel v Haier* case in 2017, the Oberlandesgericht Düsseldorf stated that the patentee's notification must include minimal information: the patent number and the allegedly infringing facts. Neither "claim chart" nor legal and technical explanations are imposed.⁵² Other German decisions have come to specify the expected behaviour of the patentee. In particular, it was held that the patentee has an obligation to provide information regarding the calculation of royalties, in particular with regard to licences concluded with third parties for the same patents,⁵³ and that the patentee's offer must include the method of calculation of the royalties.⁵⁴ In France, the Paris High Court (Tribunal de grande instance de Paris) have maintained that only a decision on the merits could pronounce on the terms FRAND of a licence.⁵⁵ In addition, the Marseille Commercial Court found that the letter indicating to third parties that any product covered by the LTE standard required a FRAND licence was in accordance with the *Huawei Technologies* case law.⁵⁶ The British judge considered that the scheme proposed by the Court of Justice described only a simple "safe harbour" of behaviour that could serve as a simple benchmark for assessing abuses.⁵⁷

Regarding the non-disclosure agreements (so-called NDAs), in *Sisvel v Haier* the Düsseldorf Oberlandesgericht also stated that the holder of a SEP was required to produce comparable licence agreements,

although they are covered by an NDA.⁵⁸ In *Unwired Planet v Huawei*, the same court held that the plaintiff's refusal to produce a NDA could lead to the presumption of discriminatory practices, while the refusal of the alleged infringer could lead to the view that it was not a voluntary licensee. It was held that the following terms were reasonably likely to be covered by a NDA: (1) limit disclosure to only four employees of the defendant (to be explicitly named); (2) require confidentiality obligations to survive termination; (3) impose a contractual penalty of €1 million; and (4) provide for limited exceptions to confidentiality obligations, exceptions that the defendant must demonstrate.⁵⁹ It should be noted, however, that the French judges seem less inclined to break such confidentiality, since they consider that it can only follow the finding of infringement.⁶⁰

The French judges also seem inclined to break the confidentiality, but following the strict rules of the new art.L.153-1 of the Commerce Code resulting from the Act of 30 July 2018 on the protection of trade secrets. In the *Conversant* case,⁶¹ following an interim order issued in October 2018, the Paris Court of Appeal decided to apply the Law of 30 July 2018 and more particularly art.L.153-1 of the Commerce Code.⁶² Access to certain documents (including licence agreements) was thus restricted to the parties' lawyers and to certain designated persons having signed confidentiality agreements (in particular interpreters and economists). Two versions of the written submissions were also filed, namely a complete and private reference to confidential information relating to the various licence agreements at issue. Finally, the hearing took place over three days. During part of the first day, access to the courtroom was limited to the parties' lawyers as well as some representatives of the parties. This session was devoted to the most sensitive parts (notably the *Nokia-Qualcomm* agreement). On the second day, the determination of the FRAND rate was discussed. Again, access to the courtroom was limited to the above-mentioned individuals, as well as a number of designated experts, for part of the day—when comparable licensing agreements were disclosed. On the third day, the validity, essentiality and counterfeit of the patents were discussed, without any access restriction this time. Thus, the confidentiality was preserved and, in addition, the parties were likely to debate comparable with all the necessary elements. We can only welcome this new procedure, especially as it is certainly one of the only

⁵² OLG Düsseldorf, *Sisvel v Haier*, case no I-15 U 66/15 (30 March 2017).

⁵³ LG Düsseldorf, *St Lawrence v Vodafone*, case no 4a O 126/14 (31 March 2016).

⁵⁴ LG Düsseldorf, *Philips v Archos* (1 July 2016).

⁵⁵ TGI Paris, interim order, *Samsung Electronics v Apple*, RG no 11/58301 (8 December 2011).

⁵⁶ T. com. Marseilles, *Wiko v Sisvel*, RG no 2016F01637 (20 September 2016).

⁵⁷ *Unwired Planet v Huawei* (2017) EWHC 711 (Pat); [2019] 4 C.M.L.R. 7.

⁵⁸ OLG Düsseldorf, *Sisvel v Haier*, case no I-15 U 66/15 (30 March 2017).

⁵⁹ OLG Düsseldorf, *Unwired Planet v Huawei*, case no I-2 U 31/16 (14 December 2016 and 17 January 2017).

⁶⁰ TGI Paris, *Core Wireless Licensing v LG Electronics France*, RG no 14/14124 (17 April 2015), conf. CA Paris (17 January 2017), RG No.15/17037 (17 January 2017), conf. CA Paris, RG no 15/17037 (17 January 2017).

⁶¹ CA Paris, *Core Wireless Licensing v LG Electronics*, RG no 15/17037 (16 April 2019).

⁶² CA Paris, interim orders, *Conversant v LG*, RG no 15/17/037 (9 October 2018 and 26 January 2019).

positive aspects in the transposition of Directive 2016/943 on trade secrets carried out by the French legislator, otherwise with many gaps.⁶³

Finally, it should be noted that the ownership of an essential patent does not presume, by itself, the abuse of a dominant position, but that the latter must be demonstrated by the party invoking it.⁶⁴ This is what the Düsseldorf Landgericht rightly observed in *France Brevets v HTC*, while noting that the assumption that each SEP corresponds to a dominant position would be erroneous.⁶⁵ On the contrary, in some cases, the importance of the standard in the market may be low, either because there are other competing standards or because other functions included in the standard are of lesser importance to the market. In the *Huawei Technologies* case, the Court of Justice was not questioned about the possible presumption of abuse of dominance that would result from a SEP. This did not prevent Advocate General Wathelet from indicating that such a presumption did not exist.⁶⁶

In addition, the substantive requirements for the declaration of willingness to license do not appear to be high. In particular, no details regarding the royalty or other conditions of license are required.⁶⁷

The method proposed in *Huawei Technologies* has also inspired public authorities and courts in Asia. In Japan, the competition authority, the Japan Fair Trade Commission (JFTC) later adopted guidelines inspired by the method developed by the Court of Justice in *Huawei Technologies*.⁶⁸ The duty to bargain in good faith is also at the heart of the decision of the Korean court in Seoul in *Apple v Samsung*.⁶⁹ Similarly, in April 2018, the Guangdong People's High Court issued guidelines for essential patent trials in which it describes a similar methodology.⁷⁰ A similar position was held by the Beijing People's High Court in *anIWNCOMM v Sony China* case.⁷¹

In parallel with the patent hold-up issue, it is also important to avoid the multiplication of royalties linked to the same final product leading to a royalty stacking.

Royalty stacking

The concept of royalty stacking means that the multiplicity of patent rights affecting a standard creates a stack of royalties that is detrimental to the standard.⁷²

Should the risk of royalty stacking be systematically taken into account when fixing a FRAND rate? This question has been asked several times in US jurisdictions. Thus, in the *Microsoft* case, in 2013, Judge Robart set out the guiding principles of a method for assessing the FRAND nature of royalties.⁷³ It was decided that the risk of royalty stacking should be recognised and mitigated when determining the royalty rate. In this case, it was necessary to take into account all the licenses necessary to access the Wi-Fi standard in question—the 802.11 standard. Judge Robart concluded that there was a worrying risk of royalty stacking, because at least 92 SEP holders could charge similar royalties, ranging from 1.15 to 1.73 per cent of the price of the product, the cumulative amount of the royalties would have exceeded the price of the product, even though those royalties correspond to only one of its elements.

Similarly, in Germany, in *Sisvel v Haier*, the Oberlandesgericht Düsseldorf held that a FRAND licence offer must include, in particular: (1) an adjustment clause for the adjustment of royalty rates in both directions, if the patent portfolio increases or decreases (for instance, in the event of cancellation or expiry of patents); (2) an adjustment in case of exhaustion of the patent right; and (3) a clause dealing with the question of royalty stacking, which means the possible need for licences for other patents when a company wishes to market a product that meets the standard.⁷⁴ The Landgericht Düsseldorf also held in *Unwired Planet v LG* that a FRAND licence offer had to take into account the royalty stacking.⁷⁵

This abstract approach of royalty stacking has many shortcomings. First, it ignores the royalties actually charged and the royalties actually paid. Neither do we consider the value of the patents' portfolios, their business models or their licensing practices. But not all patents are equal; while some cover the core of a standard others represent only a marginal value; not to mention the differences between the licensors: it will not be the same for an EAP, on the one hand, or for a manufacturer whose patents support the activity or a structure focused on R & D, on the other. Last but not least, the types of licence agreements vary. In Judge Robart's scenario, where the royalties would cover the entire price of the final product, the model assumes that the licence is based on a percentage of the price of the final product. This scenario necessarily ignores others: that of a royalty consisting of

⁶³ See our articles "La loi no 2018-670 du 30 juillet 2018 relative à la protection du secret des affaires" [2018] D. 1817; and "Le décret no 2018-1126 du 11 décembre 2018 : l'heure du premier bilan pour la protection du secret des affaires en France" [2018] Propr. industr., étude 11.

⁶⁴ See also J. Passa, "Action en contrefaçon concomitante à la négociation d'une licence FRAND sur un brevet essentiel à une norme: condition de l'abus de position dominante" [2015] Propr. industr., étude 20.

⁶⁵ LG Düsseldorf, *France Brevets v HTC*, case no 4b O 140/13 (26 March 2015).

⁶⁶ Opinion of AG Wathelet delivered 20 November 2014, *Huawei Technologies v ZTE* (C-170/13) EU:C:2015:477; [2015] C.M.L.R. 14.

⁶⁷ LG Düsseldorf, *IP Ventures v Vodafone*, case no 4c O 81/17 (11 July 2018).

⁶⁸ T. Takigawa, "Standard-Essential Patents and the Japanese Competition Law in Comparison with China, the US and the EU" (2017) 62 *Antitrust Bulletin* 483.

⁶⁹ *Samsung Electronics Co Ltd v Apple Korea Ltd*, case no 2011 GaHap 39552, Seoul Central District (24 August 2012).

⁷⁰ A. Emch, "New SEP guidelines from Guangdong" (1 June 2018), *Kluwer Competition LawBlog*, <http://competitionlawblog.kluwercompetitionlaw.com/2018/06/01/new-sep-guidelines-guangdong/> [Accessed 8 October 2019].

⁷¹ T.J.L. Sherliker, "A look to the East: IP in China is a serious business" (2018) 40 E.I.P.R. 524.

⁷² Shapiro, "Navigating The Patent Thicket" in *Cross-Licences, Patent Pools, and Standard Settings, Innovation Policy and the Economy* (2001), p.119.

⁷³ *Microsoft v Motorola*, 2013 WL 211217 (W.D. Wash. 2013), aff'd, 696 F. 3d 872 (9th Cir. 2015).

⁷⁴ OLG Düsseldorf, *Sisvel v Haier*, case n° 1-15 U 66/15 (30 March 2017); LG Düsseldorf, *Sisvel v ZTE*, case n° 4a O 16/16 (13 July 2017); LG Düsseldorf, *IP Ventures v Vodafone*, case no 4c O 81/17 (11 July 2018).

⁷⁵ LG Düsseldorf, *Unwired Planet v LG*, case n° 4b O 157/14 (19 January 2016).

a fixed initial amount (so-called “up-front”), or that of a lump sum calculated differently, with a fixed price per unit for example.

In *Innovatio*, in 2013, Judge Holderman took a position similar to that of Judge Robart in respect of patents relating to the same 802.11 standard.⁷⁶ The approach adopted was nonetheless weighted thanks to the testimony of the patentee’s licensing expert, who stated that the royalty stack only became a concern if the pile created implied an overvaluation of the protected technology. It was concluded that if, on the contrary, the value of each invention was exactly evaluated, the stacking of royalties was not wrong, since it was derived from the value created with the combination of several inventions within a single product. In the same vein, the Landgericht Düsseldorf also held in the dispute between *Unwired Planet* and *Samsung* that royalty stacking was not unreasonable in itself since the overall burden of royalties remained FRAND.⁷⁷

The judgment of the CAFC in *Ericsson v D-Link* in 2014 also concerned the 802.11 standard.⁷⁸ However, the court held that a jury should not necessarily be informed of the potential danger of royalty stacking, unless there is evidence of its existence. Since the defendant was unable to provide such evidence, the District Court had correctly held that it was not necessary to instruct the jury of any royalty stacking. This position was subsequently confirmed and clarified in *CSIRO v Cisco*, in which the CAFC considered that abstract statements about royalty stacking and expert testimony about the value of the invention unrelated to the economic anchoring of the latter was insufficiently reliable.⁷⁹

Finally, Judge Selna’s decision in *TCL v Ericsson* in December 2017, regarding 2G, 3G and 4G wireless telecommunications standards, notes that the methodology for calculating royalties—the top-down approach—avoids royalty stacking.⁸⁰ The latter is therefore understood *in abstracto*, although this only stems indirectly from the top-down approach.

Should we insist on referring to royalty stacking, although the hypothesis remains questionable from a theoretical point of view⁸¹ and that, even if it is considered to be a reality, it would require an abstract approach that ignores the diversity of de facto situations? There is little doubt that the requirement of case-by-case evidence would reduce the scope of the concept to virtually nothing, since its demonstration requires knowing all royalty rates for a given standard. However, despite the

vagaries of the approach *in abstracto*, it would seem surprising to consider similarly diametrically opposed situations by assimilating for example the cases of a single licence of 1 per cent for a product of €100 and 100 licences of 1 per cent for this same product. No one would seriously argue that with the same rate in both situations we arrive at a reasonable amount with 100 licences instead of one.⁸² But, beyond this basic equation, the danger of stacking lies not so much in the royalties actually paid as in the potential risk of being sued in court for multiple infringement.⁸³ Moreover, the fact that one or some of the patent holders act does not detract from the very existence of stacking, the risk that it means and, ultimately, its harmful effects. The same goes for the patent hold-up.

The recommended methodologies, on the one hand, and the practices to be excluded, on the other hand, give us an idea of the elements to be taken into account in the calculation of a FRAND rate. Once the rate is fixed, it will be necessary to determine the royalty base to which it will apply.

Royalty base

The royalty base is the base on which the rate will be applied. The delimitation of the said base is generally done according to the apportionment rule, whose implementation creates two approaches: EMVR approaches (i.e. Entire Market Value Rule) and SSPPU (i.e. Smallest Saleable Patent Practicing Unit).

Definition of the apportionment rule

The royalty base is the subject of the licence. If there is no doubt that the latter covers the invention covered by the patent, it is nevertheless necessary to determine the sum generated by the exploitation of this invention per se. Thus, American judges have applied the apportionment rule whereby the patentee can claim a royalty proportional to the value of the contribution of his patent to the infringing article and which is not, at the same time, attributable to the counterfeiter’s own inventions.⁸⁴ In *Realtek v LSI*, Judge Whyte instructed the jury to adopt two rules of apportionment in a FRAND context: (1) to examine the importance of the two *LSI* patents for the standard as a whole, comparing the technical contribution of the two *LSI* patents to the technical contributions of other essential patents to the standard; (2) to consider the contribution of the standard as a whole to the market value

⁷⁶ *In re Innovatio IP Ventures*, 2013 WL 5593609 (N.D. Ill. 2013).

⁷⁷ LG Düsseldorf, *Unwired Planet v Samsung*, case n° 4b O 120/14 and 4b O 122/14 (19 January 2016).

⁷⁸ *Ericsson v D-Link*, 773 F. 3d 1201 (CAFC 2014). See R.H. Stern, “What Are Reasonable and Non-Discriminatory Terms for Licensing A Standard-Essential Patent?” (2015) 37 E.I.P.R. 549.

⁷⁹ *Commonwealth Scientific and Industrial Research Organization (CSIRO) v Cisco Sys. Inc.*, 809 F. 3d 1295, 1302 (CAFC 2015), cert. denied, 136 S. Ct 2530 (2016).

⁸⁰ *TCL Communications v Ericsson*: Memorandum of Findings of fact and Conclusions of Law (C.D. Cal., Dec. 21, 2017, SACV 14-341 JVS (DFMx) & CV 15-2370 JVS (DFMx)).

⁸¹ D. Geradin, A. Layne-Farrar and J. Padilla, “Royalty Stacking in High Tech Industries: Separating Myth from Reality”, *CEPR Discussion Paper No. DP6091* (2007); A. Galetovic and K. Gupta, “Royalty Stacking and Standard Essential Patents: Theory and Evidence from the World Mobile Wireless Industry”, *Hoover IP2 Working Paper Series No. 15012* (2017); A. Galetovic, S. Haber and L. Zaretski, “Is There An Anticommons Tragedy In The World Smartphone Industry?” (2018) 32 *Berkeley Technology Law Journal* 1527. However, see A. Armstrong, J. Mueller and T. Syrett, “The Smartphone Royalty Stack: Surveying Royalty Demands for the Components Within Modern Smartphones”, Working Paper (29 May 2014), SSRN, <https://ssrn.com/abstract=2443848> [Accessed 8 October 2019].

⁸² J.L. Contreras, “Standards, Royalty Stacking, and Collective Action” (2015) 3 *CPI Antitrust Chronicle* 1.

⁸³ Contreras, “Standards, Royalty Stacking, and Collective Action” (2015) 3 *CPI Antitrust Chronicle* 1.

⁸⁴ B.J. Love, “Patentee Overcompensation and the Entire Market Value Rule” (2007) 60 *Stan. L. Rev.* 263.

of Realtek products using the standard.⁸⁵ Generally in practice, the apportionment rule took two forms: the EMVR approach and the SSPPU approach.

Application of the apportionment rule

With regard to apportionment, the most common practice in US case law has been to rely on the rule of entire market value. Over time, jurisdictions have progressively reduced the circumstances in which a patented feature could be tied to the total value of the product on the market. In addition, the CAFC has expressed a preference for a royalty base consisting of the price of the smallest salable unit of product-related patent approach.

The EMVR approach

The EMVR approach is based on the idea that a single patent may sometimes result in a request for an entire product. Over time, the CAFC has become increasingly critical of this approach, in order to reduce the risk of compensation for excessive and unfounded damages claims.

In *Lucent v Gateway*, Lucent accused the mobile versions of Microsoft Outlook, Money, and Windows, of which approximately 110 million were sold, for using the patented “date selection” feature.⁸⁶ Sales of these products were close to \$8 billion. Lucent thus applied a rate of 8 per cent on the sales revenue of the incriminated software and asked for \$561.9 million. The court rejected Lucent’s EMVR claim, citing insufficient evidence that the patented functionality was the basis—or even the substantial basis—of consumer demand for Microsoft’s products. According to the court, common sense suggests that no one would have bought the software because he could select a date in Outlook.

In *LaserDynamics v Quanta Computer*, the CAFC stated that the EMVR was allowed for the calculation of royalties only in strict circumstances.⁸⁷ It was observed that, in all cases, patentees could not claim to rely on EMVR for multi-component products without proving that the application was then entirely attributable to the patented feature. In this case, the court was facing a 2 per cent royalty application based on a whole laptop, while the patent only related to a method of identifying the type of optical disc inserted in the disc drive. This request was rejected on the grounds that *LaserDynamics* did not prove that the demand for laptops was related to the patented feature.

In India, the competition authority considered, in a series of decisions involving Ericsson’s Wi-Fi 2G and 3G standards, that a calculation of the royalty rate based

on the downstream product’s selling price was excessive and had no connection with the value of the SEP.⁸⁸ The issue of the royalty base has also been discussed by the National Development and Reform Commission of China (NDRC) as part of its antitrust investigation of *Qualcomm*. According to an unofficial translation of the NDRC’s decision, the NDRC found that it was

“unfair to use as a basis for calculating the royalty the net wholesale price of the entire device, which goes beyond the scope of the SEP, while insisting on a relatively high royalty rate at the same time ...”⁸⁹

While the EMVR allows the value of the final product to be assigned to the patented feature by choosing a smaller royalty base or by choosing a lower royalty rate, the SSPPU doctrine states that in many cases it is better to proceed with this apportionment from the price of the element of the product as small as possible.

The SSPPU approach

The SSPPU doctrine states that the apportionment should be based on the price of the smallest salable unit of the product that implements the patent. This doctrine would thus be especially effective against any risk of patent hold-up.⁹⁰

According to *Ericsson v D-Link*, where the total market value of a product is related to the patented feature, the royalty may be based on it, otherwise the base of the most realistic royalty remains the smallest salable unit.⁹¹ However, in the present case, the court did not apply this approach because the royalties were calculated on the basis of comparable licenses and not on the price of the products.

On the other hand, in *Cornell v Hewlett-Packard*, Judge Rader of the Federal Circuit excluded that the total value of HP’s servers and workstations could be used as a royalty basis.⁹² He decided that the processor was an appropriate royalty base because the counterfeit part was an important part of it. Thus, the processor represents the SSPPU, and the royalties could be calculated by multiplying the royalty rate of 0.8 per cent against the processor as the royalty base. The court applied this rate and reduced the jury’s award by one-third to approximately \$ 53.5 million.

Conclusion

In the end, there is no miracle *in abstracto* approach that authorises the calculation of FRAND royalties. This calculation implies, on the contrary, taking the context

⁸⁵ *Realtek Semiconductor Corp. v. LSI Corp.*, 946 F. Supp. 2d 998 (N.D. Cal. 2013).

⁸⁶ *Lucent Technologies Inc v Gateway Inc*, 580 F. 3d 1301, 1329–1330 (CAFC 2009).

⁸⁷ *LaserDynamics Inc v Quanta Computer USA Inc*, 694 F. 3d 51, 67 (CAFC 2012).

⁸⁸ Sidak, “FRAND in India” (2015) 10 J.I.P.L.P. 609.

⁸⁹ *Chinese National Development and Reform Commission (NDRC) v Qualcomm*, Decision of 10 February 2015.

⁹⁰ A.L. Farrar, “The Patent Damages Gap: An Economist’s Review of U.S. Statutory Patent Damages Apportionment Rules” (April 2017), SSRN, <https://ssrn.com/abstract=2911289> [Accessed 8 October 2019].

⁹¹ *Ericsson v D-Link*, 773 F. 3d 1201, 1232 (CAFC 2014); V.J.G. Sidak, “Apportionment, FRAND Royalties, and Comparable Licenses after *Ericsson v. D-Link*” [2016] U. Ill. L. Rev. 1809.

⁹² *Cornell University v Hewlett-Packard Co*, 609 F. Supp. 2d 279 (N.D.N.Y. 2009).

into account and forging an approach adapted to the case. Far from excluding one another, the elements highlighted by our study tend to complement each other. We should cross as much as possible the different methods of calculating rates while keeping in mind that the phenomenon of royalty stacking and patent hold-up should be avoided. Above all, it seems to us that it is also imperative to keep in mind that a FRAND rate is supposed ultimately to facilitate access to patents, because they are essential to a standard. This implies, on the one hand, emphasising the activity of the patentee (whether or not the operating entity) and, on the other hand, taking into account the quality of the patents in question and their contribution to the standard as well as to the final product.

In any event, there is little doubt that the drifts that may appear at the stage of calculating the royalties are certainly also the fruit of upstream defects at the level of standardisation bodies. While it is true that this question certainly goes beyond the strict framework of our study, it is equally true that we will not be able to dispense with extensive reflection on the subject in the future.⁹³ The obligation to settle disputes by arbitration,⁹⁴ the disclosure of rates to the organisations, an ex ante fixing of the royalty rate,⁹⁵ the control of the essentiality and value of the patents, appear as avenues to explore if we do not want standards to be reduced to pitfalls for innovators.

⁹³ F. Bourguet and A. Vivès-Albertini, "Normalisation et droits de propriété intellectuelle : la difficile cohabitation" (2012) 44 *Propriété intellectuelle* 298.

⁹⁴ M.A. Lemley and C. Shapiro, "A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents" (2013) 28 *Berkeley Tech. Law Journal* 1135.

⁹⁵ J.L. Contreras, "Rethinking RAND: SDO-Based Approaches to Patent Licensing Commitments", ITU Patent Roundtable (Geneva: 10 October 2012), *SSRN*, <https://ssrn.com/abstract=2159749> [Accessed 8 October 2019]; J.L. Contreras, "Fixed FRAND: A Pseudo-Patent Pool Approach to Standards-Based Patent Licensing" *Antitrust* (2013) 79 *Law Journal* 47; J.L. Contreras, "Aggregated Royalties for Top-Down FRAND Determinations: Revisiting 'Joint Negotiation'", *Utah Law Faculty Scholarship* (2017), p.65.