FRAND LICENSING IN THEORY AND IN PRACTICE: PROPOSAL FOR A COMMON FRAMEWORK

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I. INTRODUCTION

Recent United States ("U.S.") decisions on damages for patent infringement, the evolving European jurisprudence in the aftermath of the *Huawei v. ZTE* judgment by the Court of Justice of the European Union (CJEU) as well as prominent patent litigation and antitrust cases in China, India, Korea and Japan have considerably clarified the meaning of a patent holder's commitment to offer licenses on fair, reasonable and non-discriminatory (FRAND) terms. A comparative review of the international case law on disputes involving standard-essential patents (SEPs) reveals two significant trends: a convergence regarding the theoretical definition of FRAND, on one hand, and diverging approaches to the implementation of its core principles in specific cases, on the other – mainly reflected in the U.S. case law as opposed to the European one. Clearly, the controversy and legal uncertainty around FRAND emerge from the fact that the widely accepted principles of FRAND do not provide sufficient guidance to courts to determine royalty rates for specific products and

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SEPs.

The above lies at the heart of a forthcoming study commissioned by the Joint Research Centre of the European Commission.[4] The study addresses how FRAND licensing terms have been determined in theory and practice in multiple jurisdictions worldwide. In the study, we review the evolving case law on FRAND from both a legal and economic perspective, and perform a comparative legal analysis while testing the economic soundness of the concepts and methodologies applied by courts and antitrust authorities in the specific cases. Bearing in mind the idiosyncrasies of SEP litigation in the respective national legal systems, we achieve a comprehensive overview of SEP licensing terms and carve out a common framework for the definition of FRAND based on the findings we have distilled from a case study analysis and literature review.

The following considerations reflect some of the central outcomes of our research in a considerably consolidated manner.

II. FRAND IS A POTENTIALLY LARGE RANGE

Despite scholarly disagreement, courts have quite consistently referred to the same theoretical concepts in order to define the characteristics of a FRAND rate. As a general rule, a FRAND rate must reflect the value of a patented feature for a standard-compliant product. Specifically, the judicial analysis of FRAND refers to three different concepts of value: first, the *ex-ante* value of the patented feature, i.e. a value determined before the implementer is irreversibly committed to a standard including the feature; second, the feature's incremental value over the next-best alternative that was available at the time the standard was set; and third, the feature's stand-alone or intrinsic value, i.e. the value resulting only from its technological superiority, and not from its adoption as part of the standard. It is important to understand that these different concepts are not just variations of the same value, but refer to different benchmarks of the value of a patent. In our study, we show that these different concepts can be combined to form a consistent analytical framework for FRAND. Nevertheless, this framework does not and cannot define a single FRAND rate for a specific product and SEP.

Especially in the U.S. context, the *ex-ante* value of the patented feature is often determined by analyzing the amount the patent holder and implementer would have agreed upon in a hypothetical *ex-ante* negotiation. The concept of the hypothetical *ex-ante* negotiation is a very useful analytical tool, able to accommodate the different concepts of value relevant for the FRAND determination. The outcome of a hypothetical negotiation falls within a potentially large bargaining range. This is the range of acceptable agreements, i.e. the rates that would make both sides better off than not having an agreement at all.

The other cornerstones of the FRAND analysis are the patented feature's incremental value over the next-best alternative, and its intrinsic value excluding any value resulting from standardization. These values define the upper and lower boundaries of the bargaining range.

[4] To be published under: http://is.jrc.ec.europa.eu/pages/ISG/EURIPIDIS/EURIPIDIS.index.html.

The incremental value is determined by comparing the standard including the patented feature with the best possible standard that could have been set without using the patented feature. The intrinsic value is determined by considering the best possible use of the patented feature outside of the standard.[5]

Specifically, the implementer would not have agreed to pay more for the license than the value that the patented feature adds to his profits derived from sales of the standard-compliant product. If the rate exceeds this value, the implementer would prefer using a standard excluding the patented feature.[6] The incremental value that the patented feature adds to the product – in particular compared to the next best alternative standard that could have been developed without the patented feature – is thus an upper bound of the bargaining range. On the other end, the patent owner would not have accepted an agreement that leaves him with less profit than he could have achieved by refusing to license. Because the inclusion of the patent into the standard is conditioned on the patent owner's commitment to license, the patent owner's alternative to the agreement is to refuse to make its patent available for inclusion into the standard. The SEP owner would thus refuse a royalty rate whereby it receives less than the stand-alone commercial value of the patent, i.e. the value of the patented feature if it is not part of the standard. The intrinsic, stand-alone value of the patent thus defines the lower bound of the bargaining range.

III. DETERMINATION OF A FRAND RATE IS CHALLENGING AND OFTEN ERROR-PRONE

Whereas the overarching principles of FRAND (*ex-ante* negotiation benchmark, incremental value, intrinsic value of the patented feature, incentive compatibility, account for royalty stacking and concerns of patent hold-up) have been widely acknowledged across various jurisdictions, the application of the FRAND principles in court practice for the calculation of royalty rates has proven highly challenging. The difficulties are summarized below.

First, the determination of a FRAND rate involves a complex analysis of counterfactual outcomes. For instance, it is necessary to consider the next-best alternative standard that the relevant Standard Setting Organization ("SSO") could have set without using the patented feature. In *re Innovatio,*[7] the court had to determine what price implementers would have had to pay to access the proprietary technology included in the hypothetical alternative standard. While the court recognized that competition between different patented features would drive

[5] In earlier case law and literature, the concepts of intrinsic and incremental value were often misleadingly conflated. These address, however, two different values. A patented feature can add significant value to a standard and the products that implement it. At the same time, the same feature may be of little or no use outside of the standard, so that the value of the feature is fully or to a large extent determined by the feature's inclusion into the standard. This is a common scenario, especially in the case of functionalities developed specifically for a particular standard. Subsequently, the wedge between the stand-alone value of the patented feature and the incremental value that it adds to standard-compliant products tends to be a large one. This large wedge defines the bargaining range of a hypothetical negotiation, i.e. the range of acceptable royalty rates, which make both patent owner and implementer better off than in the absence of an agreement.

[6] In order to shield the implementer from hold-up, it must be assumed that this standard exists and provides the same compatibility benefits.

[7] *In re Innovatio IP Ventures, LLC* , 921 F. Supp. 2d 903 (N.D. Ill. 2013).

down this cost, it refused to follow the highly simplifying model of perfect competition, which drives down the prices of equivalent features to zero. It is clear that this analysis of a hypothetical price competition between patented features requires assumptions regarding the nature of the competitive process. The economic literature abounds with examples in which equally plausible assumptions regarding the competitive process lead to very different equilibrium outcomes.

Second, available empirical data provide only limited and partial information on the FRAND range. Courts use mainly two sources of empirical data to implement FRAND: product prices and the prices of comparable licenses. On the one hand, product prices, including the prices of end products and the prices of product components, may reveal information on the value added by the patented feature to the product or its components. Specifically, they may provide information on the contribution of the patented feature to the implementer's profits, determining the upper bound of the FRAND range. However, the prices of standard-compliant products (end products or components) provide no information on the other side of the FRAND range, which is determined by the patent holder's outside options and the cost of developing the patented feature. On the other hand, comparable licenses may signal an agreement that was acceptable to similarly situated parties, revealing one draw from the range of reasonable licenses: the negotiating parties found this to be an acceptable agreement, but there may have been many other potentially acceptable agreements. In short, neither product prices nor comparable licenses can reveal the entire FRAND range. In *Microsoft v Motorola,*[8] the court explicitly recognized the difficulty to infer the lower bound of the FRAND range from the available empirical information.

Third, even if there is reliable and conclusive information on the FRAND range, there is no commonly accepted methodology to single out a unique rate from this potentially very large range. For the purpose of theoretical research, economists often find it plausible (or at least convenient) to assume that the parties of an agreement equally split the surplus created by the agreement. According to this concept, the so-called Nash bargaining, the FRAND rate would be defined as the midpoint of the bargaining range of the hypothetical negotiation. In *VirnetX v. Cisco Systems*,[9] the Federal Circuit was however very clear that choosing the middle of the range is not an acceptable approximation unless parties can demonstrate that the assumptions underpinning the Nash bargaining are valid for the particular case at hand. In its earlier decision in *Uniloc v. Microsoft*,[10] the Federal Circuit had already vacated a similar simplifying rule, which asked to allocate 25 percent of the surplus created by the implementer's use of the patented feature to patent holders. Unfortunately, economics does not hold a commonly accepted alternative to Nash bargaining. Indeed, each rate within the bargaining range is an equilibrium outcome, i.e. a plausible outcome of the hypothetical negotiation.

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[8] *Microsoft Corp. v. Motorola, Inc.*, 854 F. Supp. 2d 993 (W.D. Wash. 2012); see the relevant order of Findings of Fact and Conclusions of Law by Judge James L. Robart, April 25, 2013, No. 10-cv-1823 (W.D. Wash.).

[9] *VirnetX, Inc.v. Cisco Systems, Inc.*, 767 F.3d 1308 (Fed. Cir. 2014).

[10] *Uniloc USA, Inc. and Uniloc Singapore Private Limited v. Microsoft Corp*., 632 F. 3d 1295 (Fed. Cir. 2011).

IV. DIVERGENT APPROACHES IN THE IMPLEMENTATION OF FRAND

A. U.S. Approach – Emphasis on Royalty Rates

In light of the above-mentioned difficulties, it becomes increasingly clear that, despite an emerging consistent approach to the definition of FRAND, this definition does not often provide sufficient guidance for the determination of actual royalty rates in specific disputes. The U.S. courts have therefore developed additional methodologies and evidentiary rules for the determination of single FRAND rates. In particular, the outcome of FRAND disputes in the U.S. has been significantly determined by rules restricting both the choice of the royalty base and the selection criteria for comparable licenses. Rules or concepts such as the Entire Market Value Rule ("EMVR") or the Smallest Saleable Patent Practicing Unit ("SSPPU") have neither been specifically developed for FRAND cases nor do they have a clear link to the theoretical analysis of FRAND. The application of such restrictive evidentiary rules in the context of FRAND litigation is used to limit the number of accepted criteria for the determination of a FRAND rate, thereby significantly shrinking the FRAND range and – with it – the scope for disagreement on a rate. Our research, however, demonstrates that their application may be at odds with an economically consistent implementation of FRAND.

In particular, the concept of SSPPU commonly excludes references to end product prices in the determination of a royalty rate. Furthermore, references to comparable licenses are often excluded if these licenses were negotiated in the settlement of a legal dispute or under the threat of a prohibitive order. The judicially defined rates are therefore generally based on (1) the prices of infringing components, and (2) comparable licenses that were negotiated without a threat of prohibitive order. Both types of data are questionable indicators of the value of the patented feature.

Component prices can be a good indicator of the value of an end product maker's willingness to pay for a patent license; but only if the component is sold with significant market power. A component supplier with market power is able to extract from the end product maker a part of the surplus generated by using the patented technology. The rent extracted by the component maker is thus proportional to the contribution of the patented feature to the profit of the end product maker, which determines his willingness to pay to legally access the patented feature. If this condition is not met, and the component is manufactured by an unlicensed supplier in a competitive industry, the price of the component reflects the cost of producing the physical component, not the value of the patented feature that it implements (e.g. the price of a wireless communication chip reflects the cost of silicon instead of the value of a patented wireless technology).

Equally, comparable licenses can be a good indicator of a patented feature's value if they provide information on a standard user's willingness to pay to access the patented feature. However, a practice that excludes licenses negotiated under an implicit or explicit threat of prohibitive order undermines the usefulness of comparable licenses. The willingness to pay of an implementer who is already using the technology and faces no risk of a prohibitive order that would stop him from doing so does not reflect this implementer's valuation for the use of the technology. Rather, it reflects the implementer's belief about the infringement damages he may be obliged to pay. The implementer's willingness to pay in a licensing negotiation is thus determined by the expected amount of damages awarded by courts. Since these damages are themselves conditioned on the prevailing prices of licenses, there is a strict circularity, and comparable licenses lose their capacity to provide useful information about the value of the technology.

These evidentiary rules can thus enhance clarity to a certain degree, in the sense that they can increase the predictability of the outcome of litigation. This, however, comes at a significant cost. First, systematically applying evidentiary rules that are orthogonal to the well-founded theoretical principles of FRAND leads to royalty awards that are decoupled from the value of the technology, and fail to provide appropriate economic incentives to the parties. Second, by developing specific methodologies for calculating narrowly defined FRAND royalties, courts risk crowding out other means of settling dispute. It is unclear why an implementer would be willing to voluntarily enter into a licensing agreement on FRAND terms if the failure to do so can only result in a court order to pay the very same FRAND royalty rates.

B. European Approach – Evaluation of Conduct

By contrast, courts in European and other jurisdictions have refrained from adopting the methodological view of their U.S. counterparts, leaving the actual determination of FRAND rates to the parties. Instead, they have taken on a different approach to the implementation of FRAND by examining the conduct of the parties during the bilateral negotiations and in the light of the specific FRAND commitments.

In 2015, the CJEU in *Huawei v. ZTE*[11] provided significant guidance to licensing parties and the courts regarding the meaning of FRAND in the context of preliminary injunctions. The national courts, predominantly the German courts in Düsseldorf, Mannheim and Karlsruhe, have followed through and tied the grant of injunctive relief to the conditions specified in the CJEU's proposed framework.[12] According to this interpretation, the FRAND obligation imposes certain limitations on the availability of injunctive relief against a willing licensee. Courts must thus determine on a case-by-case basis whether the conduct of the parties in the bilateral negotiation is conducive to the conclusion of an agreement. If this is the case, there is no need for courts to participate in the determination of a royalty rate; otherwise, courts may grant injunctive relief in order to bring an unwilling licensee back to the negotiation table.

Instead of developing tools that allow courts to specify royalty rates, the European case law opts for a set of conditions that assess the FRAND-compliance of the licensing

[11] CJEU, Case C-170/13. Decision of July 16, 2015, *Huawei v. ZTE.*

[12] Mannheim District Court, 2 O 103/14, Decision of March 10, 2015 - *St Lawrence Communication v. Deutsche Telekom*; Karlsruhe Court of Appeal, 6 U 44/15, April 23, 2015 - *St Lawrence Communication v. Deutsche Telekom;* Mannheim District Court, November 27, 2015, case nos. 2 O 106/14, 2 O 107/14, 2 O 108/14, *St Lawrence Communication v. Deutsche Telekom*; Düsseldorf District Court, Decisions of November 3, 2015 – 4a O 144/14 und 4a O 93/14 - *Sisvel v. Haier;* Düsseldorf Court of Appeal, Decisions of January 13, 2016 – 15 U 65/15 und 15 U 66/15 – *Sisvel v. Haier*; Mannheim District Court, January 29, 2016, 7 O 66/15 - *NTT DoCoMo v. HTC*; Düsseldorf District Court, March 31, 2016, 4a O 73/14 - *St. Lawrence Communication v. Vodafone;* Düsseldorf Court of Appeal, May 9, 2016, I-15 U35/16, 15 U35/16 – *St Lawrence Communication v. Vodafone*; Karlsruhe Court of Appeal, May 31, 2016, 6 U 55/16.

parties during the conduct of negotiations. In particular, courts evaluate whether an SEP owner made a specific, written offer for a royalty rate, whether the alleged infringer's counteroffer took place in a timely manner, or whether an implementer who refused a patent holder's licensing offer demonstrated that he would readily enter into an acceptable licensing agreement (e.g. by paying accruing royalties into escrow), etc. Courts in Korea and Japan follow a similar approach.[13]

The converging practice to tie the grant of an injunctive relief to the conduct of both parties places emphasis on the good faith negotiations toward an actual result over the initial offer. Admittedly, the willingness of the parties and the conditions under which bilateral negotiations take place are subject to an evolving body of case law and it remains to be seen whether a unified framework will ultimately emerge. Nevertheless, this approach is flexible enough to allow for a wide span of licensing terms that pass the FRAND test, so that courts may shift focus more towards the FRAND-compliance of the parties' conduct during the negotiations rather than the actual outcome. In this respect, the fact that the implementation of FRAND does not lead to a unique royalty rate does not mean that it is void of legal content. On the contrary: the said approach recognizes that the idea of FRAND as a range also accommodates different interpretations regarding its economic function, allowing the parties to determine and substantiate the respectively proposed rates based on , objective criteria.

V. TOWARD A COMMON FRAMEWORK: IMPLEMENTING FRAND THROUGH BILATERAL NEGOTIATIONS

To sum up, our study reveals a growing consensus on the theoretical concepts that underpin the various FRAND licensing terms. Nevertheless, these concepts define a potentially large range of rates, and the practical implementation of the theoretical framework for FRAND is significantly constrained by the available empirical information. In light of these difficulties, we have observed two diverging approaches in the resolution of FRAND disputes by courts. In an attempt to fill in the gap between the royalty requests of SEP holders and the willingness to pay of potential licensees, the U.S. courts have responded by a number of additional rules, which narrowly circumscribe acceptable criteria for determining a single FRAND rate in the context of litigation. However, as discussed above, these rules fail to implement the theoretical principles of FRAND. By contrast, the European case law presents a promising alternative route by focusing on the conduct of the negotiating parties, thereby strengthening bilateral negotiations as the principal forum for determining royalty rates. Avoiding the manifold methodological problems of determining specific royalty rates, the European judges recognize that FRAND is a potentially large range that encompasses multiple FRAND-compliant rates, and sanction specific forms of conduct during negotiation.

In spite of the diverging approaches, our comprehensive review of the evolving case law reveals the importance of a clear definition of the theoretical concepts that delimit the

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[13] Seoul Central District Court, August 24, 2012, Case no. 2011 GaHap 39552, *Samsung Electronics Co., Ltd. v. Apple Korea Ltd*; *Apple v. Samsung*, IP High Court, Decision of May 16, 2014, Case No. 2013[Ne] 10043. This is an appeal case from a district court (Judgment of Tokyo District Court, February 28, 2013 [Case No. 2011 [Wa] 38969].

boundaries of a FRAND range. The U.S. courts have contributed to a clearer articulation of the theoretical meaning of the FRAND range through the analysis of a hypothetical *ex-ante* negotiation. Our analysis shows that the construct of a hypothetical *ex-ante* negotiation allows the integration of the various theoretical concepts defining FRAND. This is equally relevant for the European courts, which have focused on the conduct of the negotiating parties through the concept of "willingness." In this *ex-post* context, the European judge may still need a definition of the FRAND range to consider whether an SEP holder insisting on a specific royalty rate is complying with his obligation to offer licenses on FRAND terms, or whether an SEP holder is entitled to injunctive relief against a licensee refusing to pay more than a specific amount.

However, the implementation of the FRAND range in practice should not aim at the calculation of a single royalty – an effort that is proven to be at odds with economic considerations and the diversity of established legal traditions across the various jurisdictions. Against this background, the European approach, which ties the FRAND compliance to the conduct of the negotiating parties, is more likely to result in economically efficient royalty rates: it encourages parties to do their due diligence, and to negotiate licenses as early as possible by avoiding delaying tactics and opportunism. More clarity on FRAND is needed. Articulating a common set of criteria and guidelines for the practice – anchored in a clear definition of FRAND - has the potential to facilitate private negotiations and mitigate the need to seek a third-party determination of a FRAND rate. To that end, policy guidance pertaining to the various aspects of FRAND should focus on identifying behavior and rates that clearly fall outside the FRAND scope (i.e. define what is not FRAND), rather than supporting economic guideposts and evidentiary rules that isolate a single rate. As a range, FRAND has been able to accommodate various business models while facilitating worldwide access to standard-compliant products and services for millions of consumers and households. In this sense, FRAND is not "broken" or should be "fixed", but reflects the current market diversity and dynamics within an enlarged circle of stakeholders.