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Determining the FRAND Rate:
U.S. Perspectives on *Huawei v.*
InterDigital

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I. INTRODUCTION

Standards have become part of our life in this world of rapid technological progress. Antitrust policy makers and practitioners have long realized the important benefits standards bring to social welfare: higher product quality and lower costs for manufacturers that result from the widespread adoption of advanced technologies and the benefits from network externalities and scale economies. However, in recent years, developments in technology licensing involving standard essential patents (“SEPs”) have drawn many into heated discussions as to whether owners of SEPs who, as members of the relevant standard-setting organization, promised to license their SEPs on fair, reasonable, and non-discriminatory (“FRAND” or “RAND”) terms may have abused the market power they possess simply by virtue of their technologies being included in the standard, and whether the rates they seek are inconsistent with their FRAND obligations.

Antitrust enforcement agencies in the United States and in the European Union have shown great concern over licensing practices of SEP owners with FRAND obligations. A general consensus seems to have emerged that SEP owners should be limited by their FRAND commitments, and that seeking injunctions against willing licensees may be considered an antitrust violation.² In several cases, putative licensees have requested that a court determine the FRAND rate and assess whether the SEP owner behaved inconsistently with its FRAND obligations.

As the world economy has become increasingly integrated, and intellectual property rights are more strongly enforced in jurisdictions around the world, global technology licensing has become more common. Inevitably, disputes regarding royalty rates and other terms in patent licensing are rising quickly. Although the United States and the European Union remain the major jurisdictions where licensing disputes are adjudicated, other jurisdictions are emerging as new potential forums for parties to consider strategically. For example, the patent war between Apple and Samsung has reached the courts in South Korea,³ and the Competition Commission of

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² See Jonathan Kanter, *What a Difference a Year Makes: An Emerging Consensus on the Treatment of Standard Essential Patents*, 10(2) CPI ANTITRUST CHRON. (October, 2013).

³ See *South Korea Court Says Samsung, Apple Infringed Each Other's Patents* (August 24, 2012), available at <http://online.wsj.com/news/articles/SB10000872396390444812704577608242792921450?mg=reno64-wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10000872396390444812704577608242792921450.html>.

India is investigating Ericsson for allegedly charging Indian companies high royalty rates that violated the company's FRAND commitments.⁴

But perhaps the most significant emerging jurisdiction for SEP and FRAND disputes is China. On February 4, 2013, the Shenzhen Intermediate People's Court in Guangdong province in China issued a decision that determined a FRAND rate for InterDigital's SEPs in *Huawei v. InterDigital*, several months before a U.S. court ruled on FRAND rates for the first time in *Microsoft v. Motorola*.⁵

II. SEP AND FRAND IN CHINA

FRAND increasingly has been the focus of attention in China in recent years, for at least three reasons:

First, China's further integration into the world economy has led to an increasing need for Chinese companies to license patents, both in China and outside China, from multinational companies. This is particularly true in the area of computers and wireless communications. Chinese companies such as Lenovo and Huawei have become significant suppliers of computers and mobile devices, where the products inevitably utilize technologies specified in established standards that are covered by patents.

Second, China has been promoting the development of an innovation-based economy. To achieve this goal, the Chinese government has issued policies that encourage the development of indigenous patents and industry standards.⁶ As part of this process, the Chinese government is well aware of the potential abuse of SEPs. For example, China has recently promulgated the Regulation on the Administration of National Standards Involving Patents. According to this regulation, both full disclosure and a FRAND commitment on the included patents from standard-setting participants are required prior to the issuance of a standard.⁷

Third, after more than five years of enforcement of China's Anti-Monopoly Law ("AML"), both antitrust enforcement agencies and courts in China have become more confident in pursuing more difficult antitrust issues such as violation of FRAND obligations. The Ministry of Commerce ("MOFCOM"), China's antitrust agency in charge of merger review, has reviewed hundreds of merger filings, including some that involved significant patent issues, and some of its conditional approvals have included remedies involving divestiture or licensing of patents.⁸

⁴ See *India Widens Ericsson Royalties Probe* (January 20, 2014), available at <http://online.wsj.com/news/articles/SB10001424052702304027204579332063867181726>.

⁵ *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823, 2013 WL 2111217 (W.D. Wash. Apr. 25, 2013) (Robart, J.).

⁶ See, for example, *State Council Notice on the Issuance of the Plan to Foster Indigenous Innovation Capability During the Twelfth Five Year Plan*, available at http://www.gov.cn/zwgg/2013-05/29/content_2414100.htm.

⁷ The State Standardization Administration and the State Intellectual Property Office's Public Notice on the Promulgation of the Provisional Regulation on the Administration of National Standards Involving Patents (December 19, 2013), available at http://www.sipo.gov.cn/zcfg/flfg/zl/bmgfxwj/201401/t20140103_894910.html.

⁸ For a comprehensive summary of MOFCOM merger decisions, see Fei Deng & Cunzhen Huang, *A Five Year Review of Merger Enforcement in China*, 13(1) ANTITRUST SOURCE (October 2013). For a discussion of the role of IPR in MOFCOM's merger decisions, see Jing He, Su Sun, & Angela Zhang, *The Role of IPRs in China's Antitrust Merger Review*, INT'L ANTITRUST BULL. (March, 2012).

Most recently, there have been news reports about Chinese mobile device makers' efforts to lobby MOFCOM for antitrust intervention on Microsoft's acquisition of Nokia's mobile phone assets and related patent portfolio.⁹ The concerns expressed in these news reports primarily focus on the merging parties' ability post-merger to raise royalty rates in licensing their wireless patents, including both SEPs and non-SEPs.

China's other two antitrust enforcement agencies have also increased their efforts in the intellectual property area. The State Administration for Industry and Commerce ("SAIC") has been drafting guidelines/regulations on antimonopoly enforcement in the intellectual property area, and the National Development and Reform Commission ("NDRC") has recently started investigations against InterDigital¹⁰ and Qualcomm¹¹ on their royalty rates and licensing practices involving SEPs.

Although China's antitrust enforcement agencies have become active in SEP and FRAND issues, not much detail of their investigations has been revealed so far. Indeed, it is the judiciary that has shed the most light on how such issues may be treated in China—through the adjudication of the licensing disputes between InterDigital and Huawei.

III. A BRIEF HISTORY OF *HUAWEI V. INTERDIGITAL*

Huawei and InterDigital had negotiated on the terms for Huawei to license InterDigital's wireless communications patents both through emails and in-person meetings in Shenzhen, China, but could not reach an agreement. Subsequently, InterDigital filed lawsuits on July 26, 2011 at both the U.S. International Trade Commission ("ITC") and a U.S. district court against Huawei, among other companies, for allegedly infringing seven of its U.S. patents related to 3G technologies.¹²

Faced with InterDigital's litigation pressure in the United States, Huawei sued InterDigital on December 6, 2011 at the Shenzhen Intermediate People's Court in Guangdong province in China.¹³ In one complaint, Huawei claimed that InterDigital abused its dominant position in licensing SEPs in the 3G wireless communications standard by imposing tying, discriminatory conditions, and other unreasonable conditions, as well as by initiating sudden lawsuits against Huawei in the United States. Huawei alleged that, in essence, such abusive acts were equivalent to a refusal to deal, and had harmed Huawei's operations and lessened competition in the market. Huawei sought injunctions against the alleged abusive conduct and damages of RMB 20 million (approximately \$3.2 million). Separately, in the other complaint, Huawei alleged that InterDigital violated its FRAND commitments and asked the court to determine the appropriate FRAND rate.

⁹ See <http://finance.sina.com.cn/chanjing/gsnews/20131220/231417705213.shtml>.

¹⁰ See <http://www.reuters.com/article/2013/12/16/interdigital-china-idUSL3N0JV10020131216>.

¹¹ See <http://www.bloomberg.com/news/2013-11-25/qualcomm-says-china-agency-started-anti-monopoly-law-probe.html>.

¹² InterDigital 2012 10-K, *available at* <http://www.sec.gov/Archives/edgar/data/1405495/000140549513000010/idcc-20121231x10k.htm#sB8CBDEB8939B47C8E810BD0438747BFA>, pp. 32-33.

¹³ Huawei also filed a complaint with the European Commission on May 23, 2012. See InterDigital 2012 10-K, p. 74.

After InterDigital's failed attempt to change the venue out of Shenzhen,¹⁴ where Huawei's headquarters are located, the Shenzhen Intermediate People's Court issued two decisions on February 4, 2013 in both proceedings. The full text of the decisions is not yet publicly available. However, the three judges who decided the case published an article providing an overall description of some relevant issues and the reasoning behind their decisions.¹⁵

The Shenzhen court sided with Huawei, and determined that InterDigital violated its FRAND commitments and abused its market power in its licensing practices. The court ordered InterDigital to cease the alleged excessive pricing and alleged improper bundling of InterDigital's Chinese essential and non-essential patents, and to pay Huawei RMB 20 million in damages. The court also ruled that the royalties to be paid by Huawei for InterDigital's 2G, 3G, and 4G essential Chinese patents should not exceed 0.019 percent of the actual sales price of each Huawei product.¹⁶ Soon after the Shenzhen court's decision, InterDigital appealed, but the Guangdong High People's Court affirmed the Shenzhen court's decisions on October 28, 2013.

On the U.S. side, InterDigital filed another round of complaints on January 2, 2013 at both the ITC and U.S. district court against Samsung, Nokia, Huawei, and ZTE, for allegedly infringing seven of its U.S. patents related to 3G and 4G technologies.¹⁷ On June 28, 2013, the ITC's Administrative Law Judge ("ALJ") issued a finding that InterDigital's asserted patents were not infringed and thus Huawei (and Nokia and ZTE) did not violate Section 337. On December 19, 2013, the ITC affirmed the ALJ's finding.¹⁸

On January 2, 2014, InterDigital and Huawei reached a settlement agreement, ending their global patent litigation and pledging to resolve their disputes through arbitration.¹⁹

IV. METHODOLOGIES OF FRAND RATE DETERMINATION APPLIED TO *HUAWEI V. INTERDIGITAL*

The China part of the *Huawei v. InterDigital* litigation touches upon a wide range of important issues in both antitrust and intellectual property law, including market definition in technology licensing involving SEPs and patent infringement assertions by non-practicing entities ("NPEs").²⁰ Perhaps the most interesting issue covered in this case is the determination of the FRAND rate, which we will focus on in the discussions below.

¹⁴ [2012] Yue Gao Fa Li Min Zhong Zi No. 160, available at <http://www.gdcourts.gov.cn/gdcourt/front/front!content.action?lmdm=LM41&gjid=20121010090340884597>.

¹⁵ Ye Ruosi, Zhu Jianjun, & Chen Wenquan, *Determination of Whether Abuse of Dominance by Standard Essential Patent Owners Constitutes Monopoly: Comments on the Antitrust Lawsuit Huawei v. InterDigital*, Electronic Intellectual Property Rights No. 3 (2013) (hereinafter, "Ye 2013").

¹⁶ InterDigital 2012 10-K, p. 75.

¹⁷ InterDigital 2012 10-K, p. 21.

¹⁸ See http://www.usitc.gov/secretary/fed_reg_notices/337/337_800_notice12192013sgl.pdf.

¹⁹ Huawei also agreed to end its antitrust complaints. See <http://www.worldipreview.com/news/interdigital-settles-with-huawei>.

²⁰ For a general discussion of important issues covered in *Huawei v. InterDigital*, see Michael Han & Kexin Li, *Huawei v. InterDigital: China at the Crossroads of Antitrust and Intellectual Property, Competition and Innovation*, 11(2) CPI ANTITRUST CHRON. (November 28, 2013).

A. General Framework for FRAND Rate Determination

The legal standard for determining a “reasonable royalty” in U.S. case law is framed by the fifteen Georgia-Pacific Factors articulated in a district court decision on a patent infringement case in 1970.²¹ The first two U.S. cases in which courts determined FRAND rates—*Microsoft v. Motorola*²² and *In re Innovatio*²³—both considered the Georgia-Pacific factors. But, these two cases also focused on three additional key considerations that arise in a FRAND context. First, the FRAND rate should not include the hold-up value that is a result simply of the patents being included in a standard. Second, the FRAND rate should avoid royalty stacking because cumulative royalty payment to all SEP holders can quickly become excessive and suppress adoption of the standard. Third, the FRAND rate for SEPs should be set high enough to provide incentives for the patent owners to participate in the standard-setting process.

To take these considerations into account, these two U.S. decisions provided a general methodology for determining FRAND rates in a hypothetical bilateral negotiation before the technologies covered by the plaintiff’s patent portfolio were included in the standard. The two decisions also provided a roadmap for calculating FRAND rates: first, consider how important the patent portfolio is to the standard; second, consider how important the patent portfolio is to the alleged infringer’s products; and third, consider potentially “comparable” licenses as a benchmark for the FRAND rate.

It appears that InterDigital’s FRAND obligation quoted by the Shenzhen court originated from its FRAND obligation under the European Telecommunications Standardisation Institute (“ETSI”), not under a Chinese standard-setting association. Also, it is not clear how many of the InterDigital patents offered to be licensed to Huawei are essential to the 2G, 3G, and 4G standards, and how important these patents are to Huawei’s relevant products. This typically would require a comprehensive technical analysis. Nevertheless, we focus our analysis below on how the FRAND rate could have been determined using the methodologies that have been developed in the United States.

B. Determining FRAND Royalty Rates Using Comparable Licenses

The Shenzhen Intermediate People’s Court ruled that the InterDigital offers did not comply with FRAND, and that the royalties to be paid by Huawei for InterDigital’s 2G, 3G, and 4G essential Chinese patents should not exceed 0.019 percent of the actual sales price of each Huawei product, without explanation as to how it arrived at this calculation.²⁴ However, the three judges who ruled on this case wrote an article that provided more details on their reasoning, though the article did not touch on how the FRAND rate was calculated.²⁵ The judges’ article states that:

when comparing the terms of the offers that the defendant made to the plaintiff with the terms of the licenses that the defendant signed with Samsung, Apple, and

²¹ *Georgia-Pacific Corp. v. US Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970).

²² *Microsoft v. Motorola* involves the 802.11 WiFi standard and the H.264 video coding standard.

²³ *In re Innovatio IP Ventures, LLC, Patent Litigation*, No. 1:11-cv-09308 (N.D. Ill. Sept. 27, 2013) (Holderman, J.). This case involves 802.11 WiFi standard.

²⁴ InterDigital 2012 10-K, p. 43.

²⁵ Ye 2013, *supra* note 15.

others, regardless of using the standard of one-time lump sum payment or per unit royalty rate, the rates stated in the offers are much higher than those in the licenses to Samsung, Apple, and others. The defendant not only demanded high royalty rates, but also forced the plaintiff to license all of its patents back for free, bringing extra benefits to the defendant. These indicate that the defendant's pricing was too high and discriminatory. Investigation shows that both the quality and the quantity of the patents owned by the plaintiff are much higher than those of the patents owned by the defendant. In other words, the market and technological value of the plaintiff's patents is much higher than that of the defendant's. In the mobile communications area, cross-licensing between owners of essential patents is not anti-competitive. But because the defendant does not manufacture any goods and the defendant's business model is licensing only, the defendant is enabled to receive extra benefits, which further exacerbates the high royalty rates in the defendant's offers. These indicate that the defendant has violated its FRAND commitment.²⁶

One may infer from the statement above that the court used InterDigital's licenses with Samsung, Apple, and others as comparable licenses to determine whether the royalty rates InterDigital offered to Huawei were discriminatory, and possibly also to calculate the appropriate FRAND royalty rate that should be charged to Huawei, which was determined to be no more than 0.019 percent.

One article commenting on the royalty rate determination in this case provided more information based on the redacted version of the unpublished decision, which the authors had access to:

To determine the reasonableness of the finding of discrimination, the court examined publicly available information, including information on InterDigital's licensing revenues, to estimate the fees that InterDigital charged or proposed to charge Apple, Samsung and others. The court needed to reverse engineer these numbers because InterDigital refused to disclose them, fearing that they would be provided to non-parties to the case. The court then compared those estimates to the fees that InterDigital had demanded from Huawei and found the latter to be much higher. Based on the court's calculations, the rates InterDigital demanded from Huawei are close to one-hundred times the rates it charged Apple and ten times the rates it charged Samsung.²⁷

According to InterDigital's 2012 10-K, InterDigital and Samsung entered into a patent license agreement in 2009, granting Samsung "a non-exclusive, worldwide, fixed-fee royalty-bearing license covering the sale of single-mode terminal units and infrastructure designed to operate in accordance with TDMA-based 2G standards that became paid-up in 2010 and a nonexclusive, worldwide, fixed-fee royalty-bearing license covering the sale of terminal units and infrastructure designed to operate in accordance with 3G standards through 2012."²⁸ Samsung paid InterDigital \$400 million in four equal installments over an 18-month period, and the license ended all litigation and arbitration proceedings then ongoing between the parties.²⁹ The

²⁶ See Ye 2013, *supra* note 15 at 51.

²⁷ D. Daniel Sokol & Wentong Zheng, *FRAND in China*, working paper, Oct. 3, 2013, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2335664.

²⁸ InterDigital 2012 10-K, p. 11.

²⁹ *Id.*

3G portion of the license expired at the end of 2012, and Samsung was included as another defendant, together with Huawei, Nokia, and ZTE, in both the ITC action and the district court action filed by InterDigital on January 2, 2013.³⁰

As for the InterDigital-Apple license, according to an InterDigital SEC filing the license was signed on September 6, 2007, and was “a worldwide, non-transferable, non-exclusive, fixed-fee royalty-bearing ... seven-year license agreement, effective June 29, 2007.” The agreement specified that “InterDigital granted a license to Apple under InterDigital's patent portfolio covering the current iPhone (TM) and certain future mobile phones, if any.”³¹ It appears that Apple paid a one-time payment of \$20 million at the beginning, and an on-going quarterly \$2 million fee for the next seven years.³² It is not clear what standards the license agreement covers—whether all or part of 2G, 3G, or 4G standards are covered under this license agreement.

InterDigital describes itself as “a leading designer and developer of technology solutions and intellectual property for the wireless industry...[that] monetize[s] those solutions and intellectual property through a combination of licensing, sales and other revenue opportunities.”³³ As of December 31, 2012, InterDigital claimed to have over 19,000 patents and patent applications related to wireless communications.³⁴ InterDigital further claimed that some of its patents were “essential to cellular and other wireless standards, including the 2G, 3G, 4G and the IEEE 802 suite of standards.”³⁵ In addition to Samsung and Apple, InterDigital appears to have license agreements with companies such as u-blox AG,³⁶ Cinterion Wireless Modules GmbH,³⁷ Sierra Wireless,³⁸ Acer, Pantech, Wistron,³⁹ BlackBerry, Quanta Computers, and Sony, each covering 2G, 3G, and 4G wireless technologies.⁴⁰ It likely has license agreements with other companies as well.

Using comparable licenses to calculate the appropriate royalty rate in patent infringement litigation is not a novelty. In the United States, the first and second Georgia-Pacific factors specify that “[t]he royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty,” and “[t]he rates paid by the licensee for the use of other patents comparable to the patent in suit” are relevant to a reasonable royalty calculation,⁴¹

³⁰ InterDigital 2012 10-K, pp. 15, 21, and 22.

³¹ InterDigital Form 8-K, September 07, 2007, “Item 8.01. Other Events,” *available at* <http://ir.interdigital.com/secfiling.cfm?filingID=1157523-07-9039&CIK=1405495>.

³² InterDigital Form 8-K, September 07, 2007, “InterDigital Updates Financial Guidance for Third Quarter 2007,” *available at* <http://ir.interdigital.com/secfiling.cfm?filingID=1157523-07-9044&CIK=1405495>.

³³ InterDigital 2012 10-K, p. 3.

³⁴ *Id.*

³⁵ *Id.*

³⁶ U-box AG is a fabless semiconductor provider of embedded position and wireless communications solutions for the consumer, industrial, and automotive markets, headquartered in Switzerland.

³⁷ Cinterion is a supplier of cellular M2M communication modules headquartered in Munich, Germany.

³⁸ Sierra Wireless is a supplier of hardware, software, and connected services for mobile lifestyles and M2M communications based in Richmond, Canada.

³⁹ Wistron is an original design manufacturer in the laptop market based in Taiwan.

⁴⁰ InterDigital 2012 10-K, pp. 9-10.

⁴¹ *Georgia-Pacific Corp. v. US. Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970).

and these factors have been widely used by the U.S. courts in determining reasonable royalty rates in patent infringement cases.

For the calculation of a FRAND royalty rate in an SEP setting, these two factors would still apply, potentially with slight modifications. In *Microsoft v. Motorola*, Judge Robart proposed that the first factor should be modified in a FRAND setting to limit the consideration of royalties received by the patentee for the licensing of the patent in suit to royalties negotiated in situations comparable to a FRAND licensing negotiation.⁴² In *In re Innovatio*, Judge Holderman referenced Judge Robart's modified factors when evaluating the licenses that the parties proposed as comparable licenses.⁴³

Determining which licenses, if any, are appropriate comparables, and calculating the FRAND royalty rate using those comparable licenses are not easy exercises, however, as demonstrated by the courts' analyses of the proposed comparable licenses in *Microsoft v. Motorola* and *In re Innovatio*.

First, one has to evaluate the economic circumstances under which the proposed comparable licenses were negotiated, and whether those circumstances are sufficiently comparable to the economic circumstances in a RAND licensing negotiation. For example, in both *Microsoft v. Motorola* and *In re Innovatio*, a 2011 license agreement between Motorola and VTech Holding Ltd. ("VTech") was proposed by one of the parties as a potential comparable license, but was rejected by the judges in both cases.⁴⁴ The judges were concerned that Motorola and VTech entered into the license to settle litigation, and thus that the royalty rate was influenced by the desire to avoid litigation risk and expenses rather than reflecting an accurate market-determined rate for Motorola's patents. Moreover, the judges were also concerned that there was some possibility that the Motorola-VTech rate was engineered by Motorola to justify its position in the *Microsoft v. Motorola* litigation, and did not actually reflect a significant exchange of value between the parties.

Another set of licenses proposed in both *Microsoft v. Motorola* and *Innovatio* as potential comparables were two licenses entered into by Symbol Technologies, Inc. ("Symbol"), which was later acquired by Motorola. In one license agreement, the licensee was Proxim, Inc. ("Proxim") and in the other license the licensee was Terabeam, Inc. ("Terabeam").⁴⁵ In both cases, the two Symbol licenses were rejected as comparable licenses to the patents-in-suit because they may have reflected hold-up value. Both licenses were negotiated when the licensees were under the duress of litigation. In particular, prior to both license negotiations, Symbol had won a jury verdict of \$22.9 million against Proxim.⁴⁶ There is no evidence that the jury took into account Symbol's RAND obligation when determining the damage award.⁴⁷

⁴² *Microsoft v. Motorola*, pp. 35-36.

⁴³ *In re Innovatio*, p. 9.

⁴⁴ *Microsoft v. Motorola*, pp. 132-135; *In re Innovatio*, pp. 59-62.

⁴⁵ Terabeam acquired the assets of the Proxim, but did not assume the cross-license agreement between Proxim and Symbol.

⁴⁶ *Microsoft v. Motorola*, p. 142; *In re Innovatio* p. 64.

⁴⁷ *Microsoft v. Motorola*, p. 142; *In re Innovatio* p. 65.

The InterDigital-Samsung license, which the Shenzhen Intermediate People's Court might have used as a comparable license, “ended all litigation and arbitration proceedings then ongoing between the parties,” indicating that it was reached as a result of litigation settlement.⁴⁸ The other potential comparable license mentioned, the InterDigital-Apple license, does not appear to be an explicit settlement of litigation. However, it might not have been entered based on RAND considerations, considering that it was signed in 2007, two years before InterDigital joined ETSI. Thus, the InterDigital-Samsung and InterDigital-Apple licenses may not be suitable comparables for evaluating a FRAND rate for InterDigital’s SEPs.

Second, one has to consider whether there are other patents in addition to the patents-in-suit covered by the license and, if there are, apportion the royalty rate between the patents-in-suit and the other patents. Many license agreements cover a large portfolio of patents of which the patents-in-suit are only a small subset. For example, two other Symbol licenses, both with LXE, Inc. (“LXE”), were also proposed as comparable licenses by the plaintiff in *In re Innovatio*. However, the judge rejected these two licenses as comparable because the plaintiff failed to determine the portion of the royalties in these agreements that were attributable to the 802.11 patents as opposed to other patents.⁴⁹

The InterDigital-Samsung license covers the 2G and 3G patented technologies for a limited time frame, but not 4G. As for the InterDigital-Apple license, it is not clear from publicly available information what specific patents the license covers. From publicly available information regarding the China part of the *Huawei v. InterDigital* litigation, it appears that the court’s ruling on the 0.019 percent FRAND rate ceiling covers all of InterDigital’s 2G, 3G, and 4G essential Chinese patents that any Huawei product may have used and would be using. Thus, it appears that the patents covered by InterDigital’s licenses with Apple and Samsung may not be totally identical to what would be included in the license with Huawei.

Third, one also has to consider whether there are other terms covered by the proposed comparable license, such as grant-backs, cross-licenses, and patent transfers. These terms would not be present in the FRAND license, and thus an otherwise comparable license with such terms may not provide a reliable benchmark for the FRAND rate. For example, in *Microsoft v. Motorola*, one of the reasons that the judge rejected the Motorola-RIM license as a comparable license was that it was a “fairly broad cross-license,” making it difficult to apportion the value of the patents-in-suit from the other licensed properties.⁵⁰

In *Huawei v. InterDigital*, it is unclear whether the InterDigital-Samsung license and InterDigital-Apple license have such terms. According to the judges’ article, InterDigital asked for a license-back of Huawei’s entire patent portfolio.⁵¹ The judges determined that the fact that InterDigital did not make products, yet asked for such a license-back, exacerbated InterDigital’s FRAND violation. However, cross-licensing by itself is common in bilateral licensing

⁴⁸ InterDigital 2012 10-K, p. 17.

⁴⁹ *In re Innovatio* p. 66.

⁵⁰ *Microsoft v. Motorola*, p. 137.

⁵¹ Ye 2013 *supra* note 15 at 47.

negotiations. According to a 2011 interview of Huawei's general counsel, cross-licensing is an important part of Huawei's licensing agreements.⁵²

Fourth, one needs to compare whether the proposed comparable license includes the same patented technology, and whether the technology is of similar significance to the licensee. For example, in *In re Innovatio*, one of the reasons that the Qualcomm-Netgear license was rejected by the court as a comparable license was that this license involved the 802.16 and 802.20 standards, rather than the 802.11 standard, which was the standard for which the patents-in-suit were allegedly essential. Although the 802.16 and 802.20 standards are part of the "4G standards" for cellular connections, and they, like 802.11, are "wireless air interface standards," no evidence was presented regarding the economic comparability of 802.11 networks and 802.16/20 networks, and thus the court determined that "in the hypothetical RAND negotiation, the parties would not rely on the Qualcomm-Netgear license agreement to assist in ascertaining an appropriate RAND royalty rate for the patents-in-suit."⁵³

In *Huawei v. InterDigital*, as noted above, both the InterDigital-Samsung license and the InterDigital-Apple license may be different from the license InterDigital proposed to Huawei in terms of their coverage of the 2G, 3G, and 4G standards. Even within a given generation of cellular standards, there are different specific standards. For example, 2G standards include GSM and CDMA, and 3G standards include WCDMA, CDMA2000, and TD-SCDMA.⁵⁴ These specific standards have been adopted in different countries. Depending on where the end products are made for and shipped to, different specific standards may be relevant. Depending on the specific SEPs and their importance in the relevant specific standards, InterDigital's licenses with Samsung and Apple may or may not be comparable to the license proposed to Huawei, and the FRAND rates may be different across these different licenses. In cases where a license does not align exactly, it is necessary, if possible, to make the economically appropriate adjustments to derive a comparable rate.

Fifth, for a license to be a valid comparable, the licensee should be comparable to the company seeking the FRAND license in terms of the products it sells and its use of the patented technology. For example, if the InterDigital-Samsung license and InterDigital-Apple license were to be used as comparables, Samsung's and Apple's relevant products and how these products benefit from InterDigital's patent portfolio would have to be shown to be sufficiently similar to Huawei's relevant products and its use of InterDigital patents under the proposed license. If they were not sufficiently similar, appropriate adjustments would need to be made in order to utilize these licenses as comparables.

⁵² See <http://it.sohu.com/20110409/n280195071.shtml>. According to this interview report, Huawei's general counsel also indicated that Huawei paid \$220 million licensing fee in 2010 (besides cross-licensing offers) to achieve \$28 billion sales. The implied average royalty rate based on Huawei's end product sales was close to 0.8 percent (not taking into account of the monetary value of the cross-licensing terms). However, such an average rate would presumably include licensing rates not under FRAND obligations, and would presumably not have included any royalty payment that InterDigital demanded.

⁵³ *In re Innovatio* p. 68.

⁵⁴ Ye 2013, *supra* note 15.

Sixth, if the comparable license includes a lump-sum payment, when turning it into a per unit royalty rate one should use the projected sales units at the time of license negotiation as the denominator, instead of the actual sales units. This is because one should recreate the negotiation as it happened, including the information known at that time. The lump sum payments specified in the InterDigital-Apple license, which was signed in 2007, would have been based on the parties' projections of Apple's iPhone sales as of 2007. It is quite likely that projections made at that time failed to anticipate the level of success that the iPhone actually achieved in later years.

C. Other Methods of Determining FRAND Royalty Rates

There are other methods for determining FRAND royalty rates than using comparable licenses. These methods can sometimes provide a better estimate of the appropriate FRAND royalty rate, especially in situations where existing licenses have important areas of incomparability.

One method is called the "top-down" approach, as proposed by the defendant's expert and adopted by the court in *In re Innovatio*.⁵⁵ This has three steps. First, the defendant's expert proposed that the court should start with the smallest salable unit that incorporates the patents-in-suit, which in *In re Innovatio* was found to be the Wi-Fi chip. Second, the maximum royalty burden for the entire set of SEPs, expressed as a percentage of the selling price of the smallest salable unit, should be determined. Finally, this total royalty burden should be apportioned between the patents-in-suit and all of the other SEPs.

The court agreed with this proposal and considered this approach of having several advantages, such as being consistent with the non-discriminatory principle of FRAND and avoiding the royalty stacking problem. In performing the "top-down" method, the court first determined the average selling price of a Wi-Fi chip over time, and then determined the percentage of that price that corresponded to the average operating profit of a chip maker, which is an upper bound for the maximum royalty burden. Next, the court determined the portion of the maximum royalty burden for all of 802.11 SEPs that should be attributed to the patents-in-suit. In *Huawei v. InterDigital*, it could have been possible to collect relevant data points, such as the number of 2G, 3G, and 4G standard-essential patents, to conduct a calculation using a similar "top-down" approach.

Another method for determining a FRAND royalty is called the "bottom-up" approach, which was also proposed by the defendant's expert in *In re Innovatio*. Such an approach attempts to uncover the true value of the patented technology by directly examining the technology at issue. In a hypothetical negotiation, a licensee would not pay more for the patents-in-suit than the incremental costs that would have resulted from using the next best alternative (where the incremental costs may include lost benefits if the alternative performs less well).

In practice, the "bottom-up" approach requires one to first determine the extra cost of implementing the next best alternative to the patents-in-suit that could have been adopted into the standard, and then divide that cost by the projected total number of infringing units. This value places an upper-bound amount on royalties for the patents-in-suit. Potential alternatives to

⁵⁵ *In re Innovatio pp. 22-23.*

the patents-in-suit would include, for example, alternative proposals that were actually presented by standard-setting organization members during the standard-setting process.

In *Innovatio*, the court found that there were no alternatives to the Innovatio patents that would provide all of their functionality with respect to the 802.11 standard. The court was also concerned that a "bottom-up" analysis was too complicated for courts to perform.⁵⁶ However, determining royalty rates based on an analysis of next best alternatives is commonly done in patent litigation outside of the FRAND context. In *Huawei v. InterDigital*, it might have been possible to find reasonable alternatives to the InterDigital patents-in-suit that could have been adopted into the standard, determine both the cost of implementing those alternatives and the total number of infringing units, and then calculating the FRAND royalty using the "bottom-up" approach.

V. CONCLUSION

In this article, we attempt to provide some U.S. perspectives to *Huawei v. InterDigital* based on the latest developments in FRAND rate determination for SEPs. Applying the methods discussed in this article typically requires the involvement of economic experts. In both *Microsoft v. Motorola* and *In re Innovatio*, testimonies provided by economics experts on both sides were carefully reviewed and evaluated by the judges, and played an important role in the final judgment.

In China, although economic experts have started to play a role in antitrust cases, they are still largely absent in intellectual property litigation. In order for the judges to implement a more rigorous and scientific calculation of royalty rates in FRAND settings and in other complex intellectual property infringement cases, the parties need to tender sufficient evidence and in-depth economic analyses. Given the globalization of intellectual property litigation and the importance of China in business activities and strategies, such a trend can be expected in the near future.

⁵⁶ *In re Innovatio* p. 72.