

FRAND Royalty Base: Will Chinese Courts More Likely Accept the Component Approach?

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I. Introduction

On June 17, 2022, Huawei announced it had entered into a patent licensing agreement with Nordic Semiconductor, whereby it would grant its Low Power Wide Area (“LPWA”) cellular Internet of Things (“IoT”) Standard Essential Patents (“SEPs”) to the latter under a component-level license.¹ Later on September 13, 2022, Chinese Automotive Technology & Research Center and the China Academy of Information and Communications Technology jointly issued the *Guidelines of Standard Essential Patent License for Automotive Industry (2022 Edition)*, proposing to engage the product unit that makes actual contributions as the calculation basis of SEP royalty. The two events turned up the heat on the ongoing industry debate regarding the component-based calculation of FRAND (Fair, Reasonable, Non-discretionary) royalties.

Advocates for component-based calculation argue that the current end product composition is becoming more complex, leading to the accumulation of patents. If royalties are still based on the pricing of the end product, SEP holders will obtain benefits beyond the inventive value of the patented technology itself, which goes against the underlying principles of FRAND. Therefore, royalties should be based on the value of the component containing the patented technology. Typically, as the Fair Standard Alliance (“FSA”) states in its core principles for FRAND licensing, “a FRAND royalty should reflect the value of the invention. In most cases that means that it should be based on the smallest device that implements those patents”² On the contrary, advocates for end-product-based calculation argue that in the traditional communications industry, royalty

is based on the selling price of mobile terminals containing SEP technologies. Therefore, the component-level calculation can hardly reflect the full contribution of the patented technology to the products.

At present, Chinese courts have accepted a number of cases related to SEP royalties but have not ruled on the determination of the royalty base yet. It is not difficult to foresee that those who implement the SEP will more actively claim the component-based calculation approach in the trials. This article aims at analyzing Chinese courts’ possible attitude toward the component-based calculation approach. Based on an analysis of the discussion on component-based calculation in international judicial practice, and China’s reality, this article speculates that Chinese courts may be more likely to accept the component approach in FRAND royalty cases.

II. International Judicial Practice of Component-Based Calculation

A. The United States: SSPPU Doctrine

The prevailing discussion on using component value as the royalty base in US SEP cases mainly revolves around the principle of Smallest Salable Patent Practicing Unit (“SSPPU”). As its name suggests, this principle refers to calculating the value of a patent based on the value of the smallest salable unit that implements the patented technology. Although this principle originates from a patent infringement damages case, its purpose is also to calculate the “reasonable royalty” of a patent, and thus worth examining for the calculation of FRAND royalties.

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¹ <https://www.iam-media.com/article/huawei-nordic-semiconductor-iot-sep-licence-deal>.

² <http://fair-standards.org/wp-content/uploads/2016/08/FSA-POSITION-PAPER-June2016.pdf>.

(1) The Genesis of the SSPPU Doctrine

In accordance with Section 284 of the U.S. Patent Act³, infringement damages shall be sufficient to make up for the loss of the patentee, and shall not be less than a reasonable royalty for the use made of the invention by the infringer. In judicial practice, the meaning of the term “reasonable” is two-fold: on the one hand, the SEP holder shall be fully compensated; on the other hand, the SEP holder shall not get more than the value of the patented technology. The SSPPU doctrine embodies the balance between the two interests. This doctrine first appeared in the *Cornell Univ. v. Hewlett-Packard Co.*⁴ case in 2009. The patent at issue is entitled “Instruction Issuing Mechanism for Processors With Multiple Functional Units”, which is a method for issuing multiple and out-of-order computer processor instructions to enhance the throughput of processors with multiple functional units. As suggested in its title, there are many layers of constituent units between the component covered by the patent and the server (the relevant product). Therefore, the Court of Appeals for the Federal Circuit held that the logical and feasible option for calculating a reasonable royalty was the smallest salable infringing unit closely associated with the claimed invention, that is, the processor itself.

(2) Application in SEP Disputes

This principle was also applied by courts in some SEP cases following the *Cornell* case. In *In re Innovatio IP Ventures*⁵, the court held that “where small elements of multi-component products are accused of infringement, calculating a royalty on the entire product carries a considerable risk that the patentee will be improperly compensated for non-infringing components of that product.” Since the SEP

holder failed to provide a reasonable method for apportioning the price of the end product to the value of Innovatio’s patented feature, the court determined that the calculation of royalties should be based on the SSPPU, i.e., the Wi-Fi chip. Following the same line of reasoning, the court in *GPNE Corp. v. Apple* also determined that the baseband processor shall be used as the royalty base.⁶

(3) Future Application: As a Substantive Principle or Evidentiary Principle?

In the *Ericsson* ruling in 2014, the Court of Appeals for the Federal Circuit seemed to change its opinion.⁷ It held that the SSPPU doctrine was applied due to the jury’s possible lack of expertise in royalty calculations. However, in the *CSIRO* ruling in 2015, the court made it clear that the SSPPU doctrine was applied based on two considerations.⁸ First, calculating royalties based on the entire product carries a considerable risk that the patentee will be improperly compensated for non-infringing components of that product; and second, care must be taken to avoid misleading the jury by placing undue emphasis on the value of the entire product. In other words, instead of simply defining the SSPPU doctrine as a tool for avoiding misleading the jury, the court did acknowledge its substantive value for avoiding improperly compensating the patentee for non-infringing components of the product. The court adopted the hypothetical negotiation approach,⁹ an alternative to the apportion approach discussed in this article, without showing any preference between the two apportionment bases, i.e., the SSPPU or EMVR doctrine.

In fact, for cases where only the apportion approach is applicable, the SSPPU doctrine provides a feasible method for calculating a reasonable royalty. For example, in *Mondis*

³ Section 284 of the U.S. Patent Act provides that: “[u]pon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court

⁴ Refer to *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 2

⁵ Refer to *In re Innovatio IP Ventures, LLC*, 2013 U.S. Dist. LEXIS 144061, 2013 WL 5593609

⁶ Refer to *GPNE Corp. v. Apple, Inc.*, 2014 U.S. Dist. LEXIS 53234, 2014 WL 1494247

⁷ Refer to *Ericsson, Inc. v. D-Link Sys.*, 773 F.3d 1201, 2014 U.S. App. LEXIS 22778, 113 U.S.P.Q.2D (BNA) 1001

⁸ Refer to *Commonwealth Sci. & Indus. Research Organisation v. Cisco Sys.*, 809 F.3d 1295, 2015 U.S. App. LEXIS 20942, 117 U.S.P.Q.2D (BNA) 1527

⁹ Instead of trying to determine a number by calculating, this approach attempts to ascertain the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began.

*Tech. v. LG Elecs.*¹⁰ In 2019, the court held that, unlike *Cisco*, this case did not involve any agreement evidence which may justify the claim that damages were limited to the incremental value of the patent at issue. As such, “*the hypothetical negotiation cannot apply*”. Moreover, since the SEP holder did not prove that consumers’ demands for the end product were due to the patented feature, the royalty should be calculated by apportioning the value of the end product to the value of the patented feature.

B. European Courts: Component Approach

European courts’ attitudes towards the component-based calculation of FRAND royalties are best displayed in the series of cases pitting *Nokia v. Daimler*, in which Nokia filed lawsuits against Daimler with the Regional Court of Mannheim, Regional Court of Munich, and Regional Court of Düsseldorf alleging infringement on several patents since the parties had failed to reach a consensus on SEP licensing. The courts have taken different stances toward whether the calculation of royalties based on the component price i.e., the value of Telematics Control Units (“TCU”) in this context, conforms to the FRAND principle.

(1) Regional Court of Mannheim and Regional Court of Munich: Component Approach Cannot Sufficiently Reflect the Patent Value

The Regional Court of Mannheim made a ruling in August 2020, holding that Nokia’s SEP royalties shall not be based on the TCU value. The court indicated that the implementation of a patent creates an opportunity for the end product to reap economic benefits. The patent holder must, in principle, “be given a share” in the “economic benefits of the technology to the saleable end product at the final stage of the

value chain.” Therefore, the Regional Court of Mannheim held that the selling price of the TCU could not sufficiently reflect the value of Nokia’s SEP contained in the end products manufactured by Daimler. It then dismissed Daimler’s argument of component approach.¹¹

In September 2020, the Regional Court of Munich cited the opinion of the Regional Court of Mannheim and held that Daimler’s counteroffer based on the component price did not conform to the FRAND principle as well, reasoning that “the average purchase price of TCUs chosen by the defendant as a reference value does not adequately reflect the benefit of using the invention in the vehicle as the saleable end product.”¹²

(2) Regional Court Düsseldorf: Opinions of the Regional Court of Mannheim and the Regional Court of Munich Are Not Accepted

In contrast, the Regional Court of Düsseldorf did not rule directly on the disputes. It suspended the proceedings and referred the cases to the Court of Justice of the European Union. In the statement made by the Regional Court of Düsseldorf on the issue, the court did not offer a specific analysis on whether the component approach could reflect the patent value, but opposed the opinions of the Regional Court of Mannheim and the Regional Court of Munich in general.¹³ It can be speculated that the Regional Court of Düsseldorf may hold a different attitude against its sister courts on the issue of component approach.

(3) Future Application: Opinions to Be Unified

Unfortunately, before the Court of Justice of the European Union issued a unified reply on this issue, Nokia and Daimler reached a settlement agreement in June 2021. This leaves the

¹⁰ Refer to *Mondis Tech. Ltd v. LG Elecs., Inc.*, 407 F. Supp. 3d 482.

¹¹ *Nokia v Daimler*, Regional Court of Mannheim, Case No. 2 O 34/19, <https://caselaw.4ipcouncil.com/german-court-decisions/lg-mannheim/nokia-v-daimler>.

¹² *Nokia v Daimler*, Regional Court of Munich, 21 O 3891/19, <https://www.gesetze-bayern.de/Content/Document/Y-300-Z-GRURRS-B-2020-N-54658?hl=true>.

¹³ The Regional Court of Düsseldorf held that to judge whether the standard implementer was willing to accept the FRAND licensing, it should first judge whether the offer made by the SEP holder was FRAND. Therefore, the panel did not follow the opinions of the Regional Court of Mannheim and the Regional Court of Munich. Namely, when examining the patent infringer’s will to conclude a licensing agreement on FRAND terms, the counteroffer and, in particular, the royalty offered therein must also be taken into account. Refer to *Nokia v Daimler*, Regional Court Düsseldorf, 4c O 17/19, https://www.katheraugenstein.com/wp-content/uploads/2021/02/2020-11-26-LG-Duesseldorf-4c-O-17_19_EN.pdf.

discussions on using the component cost as the royalty base stuck between the regional courts' opposing opinions. However, it is reported that the EU will seek to reform the SEP system to reduce legal disputes between automakers and technology companies affected by the dispute between Nokia and Daimler. On February 14, 2022, the EU also released the latest developments in SEPs and solicited public comments from all stakeholders around the world. Taking this into consideration, the European courts may manifest a more unified opinion toward the royalty base calculation in the future.

C. Royalty Base Has Not Been Finalized and Is Still Being Explored

Although the U.S. and European courts have both supported and opposed the component-based calculation of FRAND royalty in different cases, they do not negate the validity of the approach *per se*. The real rationale behind these decisions is whether the calculation method can reasonably reflect the value of the patented technology in a specific case.

The purpose of calculating royalties based on either the end product or the component is to objectively reflect the technical value of the patent. In theory, royalties obtained through either method are the same. However, in practice, the royalty base may affect the calculation of royalties to some extent. For example, in *Cornell*, the court supported the implementer's opinion that the patent holder insisted on using the price of the end product as the royalty base to obtain a higher royalty.¹⁴ Meanwhile, in the *Nokia v. Daimler* case, the Regional Court of Mannheim supported the patentee's opinion that using the component price as the royalty base may deprive the patentee's right of obtaining the technical and economic benefits of the final salable product.¹⁵ However, Huawei's practice of granting cellular IoT SEPs license to Nordic Semiconductor at the component level at least shows that the market does not necessarily see the component-based approach as inherently against the FRAND principle. Therefore, the

choice between end product or component is not a black-and-white issue. Depending on the specific situation, both methods may be legitimate.

In this context, for Chinese courts that have not decided on the royalty base, their acceptance of the component-based method may be affected by multiple factors.

III. Options for Chinese Courts

A. Industry Considerations: the High Proportion of SEP Implementers, and the Needs of IoT Technology Development

The implementation of Intellectual Property Law and Anti-Monopoly Law is deeply affected by non-legal factors, such as industrial policy and national interests. In this regard, Chinese courts may be inclined to make a value judgment based on the national strategy in handling disputes over FRAND royalties, which may affect their acceptance of the component-based royalty calculation method.

On the one hand, the proportion of SEP implementers in China is high, and the consideration of national interests may cause Chinese courts to take sides in favoring certain SEP implementers. The data shows that there is a relatively small number of International Organization for Standardization SEPs and holders in China, compared with developed countries, which might suggest that China falls behind in R&D strength.¹⁶ Therefore, even though China is striving to transform into an "inventor", patent implementers will still be the majority in China in the foreseeable future.

On the other hand, the national strategy in favor of the development of emerging industries such as IoT may also affect the acceptance of the component-based calculation method. For the IoT industry, the patent value contribution theory applied in the traditional communications industry may no longer be sustainable.

To be specific, first, most of the current application scenarios for smart home appliances are focused on the remote control of

¹⁴ Same as [4].

¹⁵ Same as [10].

¹⁶ <https://www.163.com/dy/article/GNDE6R540511UF20.html>.

home appliances, while the basic attributes of these appliances have not fundamentally changed. In the vast majority of home appliance categories, the additional wireless module does not directly bring a higher premium to the product. That is, the value brought by wireless modules to smart home appliances lies more in the value of the wireless communication function itself, rather than the final value of smart home appliances.¹⁷ In this scenario, an excessive royalty rate will be more likely following the end product method.

Second, an industry-recognized model for the licensing of SEPs in IoT products has not yet been formed, and thus the hypothetical negotiation approach can hardly be carried out in the IoT market. Furthermore, unlike mobile phones, most IP licensing practices for IoT products take place in the industrial chain on a component basis. Industry reports also show that, in the field of IoT, if licenses are granted at the component level, the transaction cost of licensing will be reduced by 99%.¹⁸

In fact, as the example mentioned at the beginning, the recently issued industrial guideline, the Guidelines of Standard Essential Patent License for Automotive Industry, has explicitly proposes to “[f]or the SEP royalty basis, the basis should be set as the product unit that actually contributes to the Automotive Product by SEP technology, excluding other product units that are not related to the SEP technology.” Therefore, considering the high proportion of SEP implementers and the need for IoT technology development, it is foreseeable that China’s judiciary will tend to

accept the component-based royalty calculation method.

B. Principle Of Compensation for Patent Infringement: Compensatory Principle

The basic principle of compensation for patent infringement in China is similar to that of the US. That is, the SEP holder shall not be compensated beyond the added value of its patented technology. Chinese law also adopts the compensatory principle.¹⁹ For multi-component products, the Chinese judiciary is also aware of the proportion of the value of the infringing components in the final product.²⁰

In practice, Chinese courts have indeed applied the SSPPU doctrine in patent infringement cases. For example, the Supreme People’s Court adjudicated a case concerning the infringement of an invention patent between Double Medical Technology Inc. and Synthes GmbH in November 2021. In determining damages, the Court ruled that “due to the salability of intramedullary nail, spiral blade, tail nail each, this court applies the selling price of the smallest salable unit that falls within the protection scope of the patent in question as the royalty base, without considering the selling price of other components.”²¹ Although the court did not discuss the specific meaning of the “smallest salable unit”, it can be inferred that the court is open to this imported legal concept.

C. Justification Basis: FRAND Principle

Under the FRAND principle, SEP holders are required to obtain due consideration and remuneration for their technical contributions. They can neither use the Lock-in Effect brought about by standardization to obtain unfair and unreasonable consideration and remuneration,

¹⁷ Refer to Beijing Intellectual Property Judicial Protection Association: *Research Report on Licensing Model of Wi-Fi Standard Essential Patents in Smart Home Appliances and IoT Industry*, Page 34.

¹⁸ Refer to Apple Inc. Response to European Commission Call for Evidence on Intellectual Property – New Framework for Standard-Essential Patents, <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13109-Intellectual-property-new-framework-for-standard-essential-patents/F3257505> en.

¹⁹ Dang Xiaolin: A Discussion on the Calculation Method of Damages for Patent Infringement in China, published in *Intellectual Property*, Issue 10 in 2017, Page 60.

²⁰ For example, Paragraph 16 of the *Interpretation of the Supreme People's Court on Several Issues concerning the Application of Law in the Trial of Patent Infringement Dispute Cases* provides that “the benefits obtained by the infringer due to infringement as determined by the people’s court in accordance with the provisions of Paragraph 1, Article 65 of the Patent Law shall be limited to those obtained by the infringer due to infringement upon the patent right... Where the products that infringe upon the invention patent and utility model patent are parts and components of another products, the people’s court shall reasonably determine the amount of compensation based on the value of the parts and components themselves and their roles in realizing the profits of the finished product.”

²¹ Refer to the Civil Judgment [(2021) Zui Gao Fa Zhi Min Zhong No. 148]

nor discriminate against a specific SEP implementer or product. As previously noted, the royalty calculation based on component value is proposed to prevent SEP holders from obtaining interests beyond the value of patented technology. Therefore, the proposition of royalty based on component value is also well-founded on the FRAND principle.

Previously, China's anti-monopoly law enforcement authority showed a tendency to deem royalty based on end product unreasonable in its punishment on Qualcomm.²² This article opines that, given the aforesaid openness, if the implementer can provide evidence that the implementation of the patents in its product is limited to a specific component, and that the cost of such component can be separately calculated or evaluated, Chinese courts are more likely to support using the component price as the FRAND royalty base based on the "reasonability" element in the FRAND principle. Of course, this will inevitably place an evidentiary burden on the SEP implementer.

IV. Conclusion

As global SEP disputes grow in intensity, the issue of FRAND royalty base calculation is expected to become one of the most pressing issues for competition between SEP holders and implementers in the future. Meanwhile, the industrial changes brought about by IoT and Industry 4.0, along with nascent industry practices, will make it more difficult for courts to determine royalty payments for devices with different forms and large market price differences. Whether using the component price as the royalty base can be interpreted as an essential requirement of FRAND will remain contentious. However, at least it should be acknowledged that the component approach and the end product approach jointly provide a feasible method for calculating an objective and reasonable royalty rate. As mentioned above, there has been an attempt to grant component-level licenses in the IoT industry. Therefore, in consideration of industrial policies, rules for compensation for patent infringement, and the FRAND principle, this article tends to believe Chinese courts are likely to accept the component approach to calculate the FRAND royalty.

²² The law enforcement authority believes that Qualcomm's wireless SEPs mainly involve wireless communication technology, rather than the casing, display screen, camera, microphone, speaker, cell, memory and operating system of the wireless communication terminal. For the SEP holders who are forced to accept a patent license package, it is unconscionable for Qualcomm to use the net selling price of the whole device beyond the coverage of its wireless SEPs as royalty base while adhering to higher royalty rate. Please refer to the Administrative Penalty Decision [Fa Gai Ban Jia Jian Chu Fa (2015) No. 1].