PATENT VALUATION IN CHINA SEP CASES

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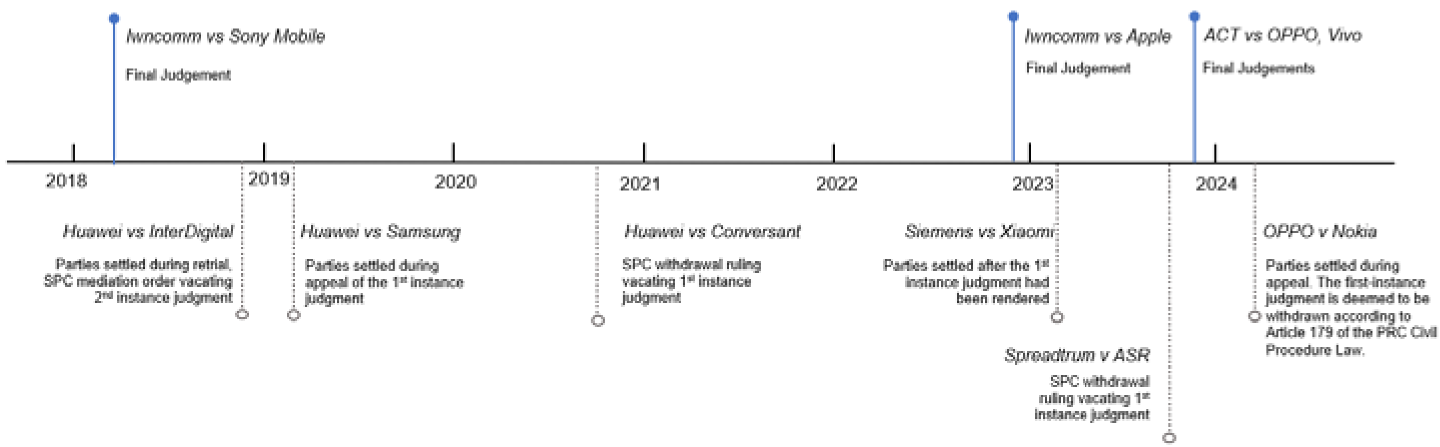
A decade has passed since the Guangdong High Court upheld the first Chinese telecom standard essential patents judgment in 2013. Since then, a number of landmark judgments were handed down by Chinese courts which involve a determination of the value of SEP holders' patent assets. These judgments provide rich material for anyone who wants to understand the Chinese approach to the valuation of SEPs in the telecom industry. This article reviews the circumstances under which Chinese courts would be prepared to set a rate, and unpack the detailed valuation methodologies used.

A decade has passed since the Guangdong High Court upheld the first Chinese telecom standard essential patents judgment in *Huawei v. InterDigital* in 2013.[2] Since then, a number of landmark judgments were handed down by Chinese courts which involve a determination of the value of SEP holders' patent assets, such as *Iwncomm v. Sony Mobile,*[3] *Huawei v. Samsung,*[4] *Huawei v. Conversant,*[5] *Siemens v. Xiaomi,*[6] *ACT v. OPPO,*[7] *ACT v. Vivo,*[8] *Iwncomm v. Apple,*[9] *Spreadtrum v. ASR,*[10] and *OPPO v. Nokia.*[11]

Not all judgments are published officially[12] and some are vacated[13] (see the chart below), but the Supreme People's Court has published the full final judgments of *ACT v. OPPO, Vivo,* and *Iwncomm v. Apple.* These judgments provide rich material for anyone who wants to understand the Chinese approach to the valuation of SEPs in the telecom industry. This article provides a broad review of these judgments and to prompt further discussions.



I. UNDER WHAT CIRCUMSTANCES WOULD THE CHINESE COURTS ASSESS SEP VALUE IN LITIGATIONS?

Chinese courts have accepted a claim seeking a determination of SEP royalty fee in dispute. Implementers and patentees can therefore seek judicial rate setting in China proactively once certain criteria are fulfilled. The trend can be traced back to the first Chinese rate setting case in *Huawei v. InterDigital* but is really affirmed by a series of jurisdictional rulings granted in favour of OPPO against patentees including Sisvel,

2 First instance case no.: (2011) Shen Zhong Fa Zhi Min Chu Zi No.857/(2011)深中法知民初字第857号, Second instance case no.: (2013) Yue Gao Fa Min San Zhong Zi No.305/(2013)粤高法民三终字第305号; SPC retrial application case no.: (2014) Min Shen Zi No.677/(2014)民申字第677号.

3 First instance case no.: (2015) Jing Zhi Min Chu Zi No.1194 /(2015)京知民初字第1194号, second instance case no.: (2017) Jing Min Zhong No.454/(2017)京民终454号.

4 First instance case nos.: (2016) Yue 03 Min Chu No.816, 840/(2016)粤03民初816号, 840号.

5 First instance case nos. (2018) Su 01 Min Chu 232, 233 and 234/(2018) Su 01 Min Chu No.232, 233, 234.

6 First instance case no: (2018) Hu 73 Min Chu No.869/(2018)沪73民初869号.

7 First instance case nos.: (2018) Su 01 Min Chu Nos. 3350, 3354, 3355, 3356, 3358, 3364/(2018)苏01民初3350、3354、3355、3356、3358、3364号; second instance case nos.: (2022) Zui Gao Fa Zhi Min Zhong No. 907, 910, 911, 916, 917, 918/(2022)最高法知民终907、910、911、916、917、918号.

8 First instance case nos.: (2018) Su 01 Min Chu Nos. 3348, 3357, 3359, 3361, 3363, 3365/(2018)苏01民初3348、3357、3359、3361、3363、3365号; second instance case nos.: (2022) Zui Gao Fa Zhi Min Zhong Nos 908, 909, 912, 913, 914, 915/(2022)最高法知民终908、909、912、913、914、915号.

9 First instance case no.: (2016) Shan Min Chu No.10/(2016) 陕民初10号; second instance case no.: (2022) Zui Gao Fa Zhi Min Zhong No.817/(2022) 最高法知民终817号.

10 First instance case no.: (2021) Hu 73 Zhi Min Chu No.194/(2021)沪73知民初194; second instance case no.: (2022) Zui Gao Fa Zhi Min Zhong No.2040.

11 First instance case no.: (2021) Yu 01 Min Chu No. 1232/(2021)渝01民初1232号; The judgment was published by IP Economy (a Chinese IP social media) unofficially and is now vacated.

12 The legal media company IP Economy nonetheless publish these judgments on their wechat.

13 *Oppo v. Nokia; Huawei v. InterDigital* are settled by mediation orders and therefore the judgments are deemed vacated.

InterDigital, Sharp, and Nokia in recent years. The underlying legal basis in support of such claim is evolving over time, but is leaning towards a theory of breach of pre-contractual obligation. The legal tool is also available to patentees. It was reported that in *ZTE v. Tinno*,[14] the patentee proactively asks the Chinese court to set the global rate for its cellular SEP portfolio.

There are also cases where a plaintiff gets to a rate determination by filing a patent infringement or declaration of non-infringement action, such as *Huawei v. Samsung, Huawei v. Conversant, Iwncomm v. Apple, Iwncomm v. Sony Mobile, and Spreadtrum v. ASR.* The SEP valuation exercise could be prompted by a Chinese court's consideration on the injunctive relief which necessitates an assessment of the FRAND behaviour of the parties. Whether or not a party has acted FRAND-ly can be a question of whether they completed the negotiation steps in good faith as well as whether the offer or counter-offer are outrageously high or low. The issue could also come up during the determination of damages. A patent infringement case asserting a single Chinese patent may trigger a portfolio valuation of a patentees' worldwide assets if the plaintiff uses the portfolio valuation as an interim step to calculate the value of the asserted singular Chinese patent.

The issue above arose in *Iwncomm v. Apple*, where the Shan'xi High Court (the 1st instance court) directly applied Iwncomm's portfolio rate in comparable licence agreements as Iwncomm's per patent damages in the subject case. In the 2nd instance, Apple argued that the Shanxi High Court was wrong because Iwncomm's portfolio contains 51 patents and patent applications, not just the one WAPI patent asserted by Iwncomm. The Supreme People's Court ("SPC") agreed with Apple that Iwncomm does not have sufficient ground to directly apply the portfolio rate as the basis for damage calculation of one patent in the subject case. However, the SPC did not amend the rate determined by the Shan'xi High Court on the basis that the total damage amount awarded by the first instance court is not obviously unfair. The SPC noted that the asserted patent is the first patent listed in the list of patents annexed to the (earlier) patent licence agreement between the parties. It is also an SEP. Therefore, that patent should be the key or core technical solution of the 51 patent assets in Iwncomm's portfolio, and should have a higher weight amongst the portfolio (though not the whole of the value). The SPC also considered the fact that Apple did not obtain a licence nor pay for the other 50 patent assets during the alleged period of infringement, and overall speaking the sales numbers used by the first instance court in assessing damages are probably lower than actual. These factors render the overall sum reasonable.

However, these considerations do not confer certainty: the sequential order of a patent list can vary or ranked just in chronological orders, and not getting paid for other patents from Apple does not mean that Iwncomm's rights to seek royalties separately based on other WAPI patents are vitiated. Nevertheless, the lesson learnt is that it could be helpful for a patentee to emphasize the technical importance of a particular patent with litigation value. The downside is that the patent might be subject to invalidation attacks earlier. On the contrary, one can also argue if an asserted patent does not appear in the shortlist during technical negotiations, it shows that the value might not be as high. The SPC also rationalized its confirmation of the high per patent rate with other arguments, which we will unpack later.

II. WHICH METHODOLOGIES HAVE BEEN ADOPTED BY CHINESE COURTS IN SEP VALUATIONS?

Chinese courts are receptive to both top-down approach and comparable licence approach in evaluating SEPs. The path a Chinese court will take in valuing SEPs is fact- and evidence-sensitive and largely depends on how a party presents its valuation case. The judgments in which the Chinese courts adopted the comparable licence approach include *Huawei v. InterDigital, Inwcomm v. Apple, Iwncomm v. Sony Mobile, ACT v. OPPO, ACT v. Vivo*; the judgments in which the Chinese courts adopted the top-down approach include *Huawei v. Conversant, Huawei v. Samsung*; the judgment in which the Chinese courts adopted both the comparable licence approach and the top down approach includes *OPPO v. Nokia.*

A. Comparable Licence Approach

In *ACT v. OPPO*, the SPC said the advantage of the comparable licence approach is that *"The prominent advantage of the comparable licence approach lies in its ability to reflect market pricing. In a market with fair competition, the final royalty rate under a patent licensing agreement is usually the result of commercial negotiation reached by both parties through genuine negotiation and voluntary consultation, so the royalty rate determined through negotiation is generally relatively objective, fair, and reasonable in reflecting the market value of the licensed patented technology at the time of [contract] execution."*

The comparable licence approach often starts with the identification of one or more comparable licence agreements that are capable of providing insight into the market value of the SEP portfolio at issue in a particular case. The SPC listed the criteria on the selection of comparable licences in the *ACT v. OPPO, VIVO* case as follows:

14 First instance case no.: (2021) Yue 03 Min Chu No.6820. The parties settled before a judgment is rendered.

- The circumstances under which the licence is negotiated (e.g. whether there were relevant litigations, threat of injunctions between the parties during the licence negotiations).
- Similarity of the licensing parties, including the licensor and licensee (e.g. industry position of the licensor and the licensee, the sales volumes of the licensee, business model, and relationships between the licensor/ licensee etc.)
- The similarity of the licensed patents (e.g. whether it is the same or a subset of the patents in dispute, or whether the licensed assets are of the same of similar quantities or qualities as the litigated patents).
- The similarity of the licence terms, such as the licence scope, the licence period, the payment method, etc.

The nationality of the licensee is considered as a factor (whether the licensee is a well-known Chinese telecom company with similar sales as OPPO/Vivo). This limits the comparable licences from a handful of agreements signed between ACT and seven companies to just one or two. The highlighted licence ended up determining the per unit rate in the ruling (Company B Licence 1) because it is a China only license and the licensee is also a comparable Chinese company. The same six patents are licensed. Moreover, the license was concluded when there was no litigation pending.

The SPC's decision to disregard other licence agreements signed by ACT with worldwide top handset vendors is controversial. Chinese companies are leading the chart on global handset sales. They are in competition with worldwide players as well as each other. Limited the comparability to companies with the same nationality might make it very difficult to identify a suitable comparable. Nevertheless, it is noted that the SPC made a holistic assessment of the above comparability factors in its selection of the best comparable licence and did not single out any one factor on an absolute basis to deny the comparability of a licence agreement. This leaves room for adjustment in other cases in the future.

The decision can be contrasted with the very early case of *Huawei v. InterDigital,* where Huawei used lump sum payments made by Apple and Samsung (global licences) as comparable licenses and converted the lump sum payments into the percentage rate to calculate the royalty rate for InterDigital's Chinese portfolio to be licensed to Huawei. As the InterDigital - Samsung licence was concluded after settlement of litigation, the Guangdong High Court adopted the Apple licence as comparable licence and ruled that the royalty rate for Huawei shall be 0.019 percent. The Court held that *"the license agreement between IDC and Apple was reached via equal and voluntarily negotiations, and therefore the Apple licence rate has a higher reference value."* The said licence agreements could have been excluded under the *ACT v. OPPO, Vivo* criteria because Apple and Samsung were not Chinese companies and the agreements were for a global licence rather than limited to China. However in both cases, the lowest rate ends up to be the comparable.

A negative light is also shred on agreements reached only after litigation which might not be correct in all circumstances: sometimes the litigation costs form a significant part of the consideration paid, sometimes the litigation is the last resort that a patentee can rely on without compromising its portfolio value to an unwilling licensee.

In *Iwncomm v. Apple*, the Shan'xi High Court (1st instance) and the SPC (2nd instance) did not comment on the comparability of the licence agreements submitted by Iwncomm. The courts relied on the rate of RMB * /unit (number redacted in the judgment) specified in the licence agreements submitted by Iwncomm as the basis for determining the royalty rate payable by Apple to Iwncomm. According to the judgment, Iwncomm submitted seven agreements, all of which specified an initial licence fee of RMB 80,000 and a royalty rate of RMB */unit. Apple requested Iwncomm to produce six additional licence agreements that Iwncomm had signed with larger size companies, but Iwncomm refused to disclose them to Apple, claiming trade secret concerns, and only agreed to produce additional agreements to the Shan'xi High Court for review. The Shan'xi High Court reviewed dozen(s) of Iwncomm's licence agreements (including some of agreements requested by Apple) and found that the per unit rate in Iwncomm's licence agreements for terminal products was consistently RMB */unit, which was the same as Iwncomm's offer to Apple. Because Apple did not cross-examine the comparable license agreements it requested, the Shan'xi High Court did not accept the requested agreements as evidence.

B. Top-down Approach

The top-down approach derives a FRAND royalty rate for a given SEP holder subject to a fixed cap on the total royalty rate that all SEP holders can charge for a given standard. This is to avoid the so-called royalty stacking problem, but whether this is a theoretical concern or a real problem remains to be debated. The top-down approach is based on a bold assumption that a suitable top can adequately incentivise the patentees and at the same time guarantee access to the technology. It also assumes that the "top" can be fairly divided amongst the patentees according to the size and quality of their portfolio. While this approach excels in simplicity it falls short in accuracies. This leads to a proliferation of patent ranking reports which offer valuable insights but varies significantly in the results and the counting methods. The top-down approach is also more prone to state intervention which makes FRAND increasingly a policy question rather than a market question.

Applying the top-down approach requires the determination of two important factors, namely the industry aggregate royalty rate ("ARR") of a given standard, which determines the size of a pie that the universe of SEP holders can FRANDly monetise through SEP licensing (which is often referred to as the "denominator"), and the SEP holder's patent share, which determines how much of the pie a given SEP holder is entitled to claim royalties on (which is often referred to as the "numerator"). In *OPPO v. Nokia*, it is reported that the Chongqing Court determined a global 5G single mode ARR to be between 4.341-5.273 percent based on a hedonic regression model built up by OPPO's economic expert. In *Huawei v. Samsung*, the Shenzhen Intermediate Court adopted Huawei's top-down analysis to cross check on Huawei's offers, it found that ARR for 3G was 5 percent and the ARR for 4G would be 6-8 percent by the same economic expert. In *Huawei v. Conversant*, the Nanjing Intermediate Court adopted the rates asserted in Huawei's economic expert's expert report, i.e. 5 percent for 2G, 5 percent for 3G, 6-8 percent for 4G. The details of the underlying hedonic regression model are however not published. It is difficult to understand why the top for 5G end up assessed as lower than 4G, when the judgment acknowledges the additional values and functionalities that 5G brings over 4G.

With respect to the numerator, namely the SEP holder's patent share, there are a number of ways to calculate. In *Huawei v. Conversant*, Huawei submitted a tailor-made patent counting report by an expert who led a team from Concur IP to evaluate the number of truly essential patents for 2G, 3G, and 4G standards globally and in China as of 1 January 2017. The expert conducted his essentiality analysis based on the number of patent families filtered by "a patent family includes at least one granted and subsisting patent that has English and Chinese member(s)." The Nanjing Intermediate Court accepted the expert's approach in ascertaining the total number of Chinese true SEPs for 2G-4G. Combing the result therefrom with the Chinese ARRs for 2G-4G calculated by the expert (3.93-5.24 percent for 4G, 2.17 percent for both 3G and 2G), the Nanjing Intermediate Court calculated per patent single-mode FRAND rates for 2G-4G in China (0.0019-0.0026 percent (4G), 0.0018 percent (3G), and 0.0042 percent (2G)), which was then multiplied by the truly essential 2G-4G SEPs in Conversant's Chinese portfolio to arrive at the single mode portfolio rate of Conversant in China (0.0025 percent (4G), 0 (3G), and 0 (2G)). For multi-mode devices, Huawei considered the multi-mode weighting of 4G:3G:2G = 8:1:1, which was accepted by the Nanjing Intermediate Court to calculate a 4G multi-mode rate for Conversant of 0.0018 percent. Nonetheless, the multi-mode generation weighting leads to an odd result that a single mode rate could worth more than a multi-mode rate. This contradicts basic patent law principle where a product supporting more functionalities should pay more rather than less. It is also difficult to understand why the ARR for 5G multi-mode functionalities can be lower than the 4G multi-mode rates, when 5G multi-mode encompass 4G multi-mode and add one more technology.

In *Huawei v. Samsung*, Huawei submitted a number of patent essentiality reports to calculate the patent shares of Huawei and Samsung to show portfolio strength, which also included a tailor-made report produced by a professor using the same patent counting filter as he later applied in *Huawei v. Conversant*. It is unclear from the published judgment what statistics were relied upon by the Shenzhen Intermediate Court to calculate Huawei's patent shares in order to analysis whether or not its offers to Samsung were FRAND.

III. HOW DID CHINESE COURTS UNPACK COMPARABLE LICENCE AGREEMENTS AND REPACK TO THE DISPUTED SEPS LICENCE VALUE?

The process of unpacking only applies in SEP valuation cases where comparable licence agreements were involved. In litigation, usually one or more economic experts would be engaged to review and unpack a FRAND rate that is applicable to the litigation action, taking into account the similarities and differences between licence deals. The unpacking process can be straightforward or complicated depending on the structure and content of a licence agreement. Normally, a running royalty licence is easier to unpack (or does not even require unpacking) because the royalty rate for a given SEP portfolio is clearly put forward in the agreement. In *Iwncomm v. Apple*, Iwncomm provided a dozen or so comparable license agreements that directly set out the per-unit royalty rate of RMB * /unit for terminal products to Iwncomm's WAPI portfolio, which the court applied directly without any unpacking.

The unpacking is more complex for lump sum agreements because it requires, among other things, calculations of the expected sales volume/revenue covered by the lump sum payment in order to arrive at a running royalty rate. Also, each transaction has a unique set of terms and circumstances. It would not be fair to single out the so called "implied rate" and disregard the rest of the terms and transaction costs. In *ACT v. OPPO*, the SPC calculated a combined per unit rate of USD 0.008 for six of ACT's AMR-WB SEPs in China based on Company B Licence 1 (a licence for China). The expert report submitted by ACT estimatedthat the sales volume covered by the USD 6 million for Company B Licence 1 was 760,416,171 units, although it is unclear how ACT's expert arrived at this volume figure. Dividing the lump sum of USD 6 million by the total sales volume of 760,416,171 units results in a per unit rate of USD 0.008. In *Huawei v. InterDigital*, the Shenzhen Intermediate Court and the Guangdong High Court calculated the per unit rate implied by InterDigital's licence agreements with Apple and Samsung, and the courts held that the Apple licence had a higher reference value because the Samsung licence was concluded after the settlement of litigations. According to InterDigital's 2007 annual report, InterDigital entered into a 7 - year 2G and 3G global licence agreement with Apple under which Apple paid a lump sum royalty in the amount of USD 56 million. The Strategy Analytics ("SA") data provided by Huawei showed the total sales revenue of Apple from 2007 to 2011 was USD111.25 billion. SA data also estimated that the net sales revenue of Apple in 2012 would be USD 80.442 billion with a growth rate of 38 percent. Therefore, Huawei estimated that the total sales revenue of Apple from 2007 to 2014 was USD 300 billion. Based on the above Huawei calculated the percentage royalty rate that Apple shall pay InterDigital is 0.0187 percent, which was accepted by the Court as the basis to determine the royalty rate payable by Huawei to InterDigital.

Determining a licensee's sales volume can lead to disputes because the expected sales volumes or sales values are usually not specified in a lump sum agreement and the size of the sales volume/value has an impact on the unpacked rate. In *Iwncomm v. Apple*, the SPC considered the negotiation history between the parties to determine that the sales volume under the first licence agreement signed between Iwncomm and Apple: *"… as demonstrated by *[author's note: Apple]'s email to Xi'an * Telecom Co., Ltd [author's note: Iwncomm] dated 12 May 2010, which stated that 'the above price was carefully assessed based on our historical sales conditions', the US * company [author's note: Apple] apparently relied on its actual sales volume prior to signing to predict future sales and evaluate the annual licence fee prior to 2014. … The parties only mentioned one basis, i.e., the sales volume, and [the court] did not find that the parties had discussed any other basis for determining the price. Therefore, based on the principle of probability, the licence fee obtained by Xi'an * Telecom Co., Ltd.'s offer of RMB * /unit, multiplied by the sales volume expected by the parties and the growth rate, is closer to the true intentions of the parties at the time of negotiation."*

The point in time in determining a licensee's expected sales volume under a comparable licence agreement is also very important and controversial. Different approaches are adopted by the Chinese courts towards Apple's skyrocketing sales from around 2009 to 2012 and beyond when conducting SEP valuations in different cases. Case laws have developed in the ten years from *Huawei v. InterDigital to Iwncomm v. Apple.* In *Huawei v. InterDigital*, the InterDigital – Apple agreement was for a licence term of 7 years between 2007 and 2014, during which time Apple's sales skyrocketed. InterDigital argued that Apple's successful achievement is a special commercial case. The Shenzhen Intermediate Court rejected InterDigital's arguments and considered that *"Based on the relevant statistical data, the sales of Apple, Samsung, Nokia and Motorola always rank amongst the top. Therefore, InterDigital has certain expectation for Apple's sales and the so-called successful achievement."* The Shenzhen Intermediate Court then calculated the royalty rate based on Apple's actual sales volumes realized at the time of trial and arrived at a rate of 0.019 percent as the basis of InterDigital's rate for Huawei. As cases evolve, the SPC departed from this use of hindsight data in *Iwncomm v. Apple*. In *Iwncomm v. Apple*, Iwncomm signed a licence agreement with Apple which specified a lump sum applicable from 2010 to 2014, the SPC relied on Apple's statement in negotiation emails to calculate Apple's sales volume under the *Iwncomm v. Apple* agreement. The SPC held that *"Although the US company [author's note: Apple]* achieved great success in subsequent sales, according to the sales information at the time the parties signed the agreement in 2010, it is actually very difficult to accurately predict the sales performance of US *company [author's note: Apple] in future. Therefore, the sales volume predicted by the parties and the growth rate should not completely depart from the sales statistics of products [author's note: Apple] prior to signing or the general business patterns."* It can be reasonably assumed that if Apple's actual sales volume between 2010 and 2014 were to be relied upon in *Iwncomm v. Apple*, the rate unpacked from the Iwncomm - Apple Agreement would be much lower, which shows the importance of the point in time in determining a licensee's expected sales volume under a comparable licence agreement.

An unpacking exercise can be much more complicated than just determining a licensee's sales data at a given point in time. It is common that a SEP holder would agree on different licence deals with different implementers based upon different licensed standards, different products, different licence structure, different coverage of other valuable considerations, etc. The above differences are very common and normally do not preclude a licence agreement from being considered as a comparable. A proper unpacking should account for all these elements and isolate the royalty rate to apply to just the SEPs, licensed standards, licensed products, etc., in dispute in a particular case.

It is further noted that in the *ACT v. OPPO, Vivo, Huawei v. InterDigital, and OPPO v. Nokia* cases, the Chinese courts used simple division to derive the per unit rate without applying any present value discount, the latter is however more commonly used in cash flow analysis to account for the time value of money and the market risks.

After unpacking a royalty rate from comparable licence agreements, in some cases implementers also request to adjust that rate to account for the changes in the patentee's portfolio strength between the time of the comparable licence agreement and the time of the putative licence agreement in dispute. Some economists also think it is correct to adjust the comparable rate based on sales coverages of different implementers in different countries and request regional discounts. This is also an issue that attracts debate.

IV. HOW DO QUALITY INDICATORS IMPACT ON THE FRAND VALUATION IN A SEP CASE?

In SEP valuation cases, Chinese courts have considered quality indicators to make a comprehensive assessment of an SEP holder's patent strength. In *Huawei v. Samsung*, the Shenzhen Intermediate Court assessed patent strength of the parties in evaluating whether the offers are

FRAND. The quality indicators adopted by the Court include the number of technical proposals being adopted into LTE standards; the essentiality of declared 3G/UMTS and 4G/LTE SEPs; and the invalidation status of the parties' SEPs-in-suits before the Shenzhen Intermediate Court. The Shenzhen Intermediate Court found that the above indicators could support Huawei's claim that Huawei's global SEPs strength is at the same level as Samsung and its SEPs strength in China is stronger than Samsung. The Shenzhen Intermediate Court rejected the patent forward citation analysis by Samsung's economic expert as a quality indicator because the court must comprehensively evaluate the strength of the parties' global portfolio, while the expert only relied on US patents to evaluate the strength of the parties' SEPs, which was not comprehensive or objective.

There are other quality indicators that may have an impact on the evaluation of the patent strength. One thing to note is that, despite the importance for a SEP holder to prove its patent strength through a multi-dimensional metrics, if the relevant evidence and materials are not quantifiable, there is a risk that a Chinese court may disregard the evidence in setting a FRAND rate. How to quantify the quality indicators is an area that requires further study and is largely case-specific.

V. DOES NEGOTIATION BEHAVIOR IMPACT ON THE FRAND VALUATION IN A SEP CASE?

The *Iwncomm v. Apple* case is a patent infringement case. It is worth noting that the Shan'xi Court used a 3x multiplier to the FRAND rate from comparable licenses in its assessment of damages. The award of triple royalty is linked to the implementer's fault in negotiation. Another reason is that the actual number of sales units of the infringing products cannot be accurately ascertained, but is likely to exceed the number used by the patentee in calculation. The ruling is consistent with the parallel judgment of *Iwncomm v. Sony Mobile*. In that case, damages were similarly awarded in the sum of 3x per unit royalty rate of RMB 1 for infringement of the same patent.

By contrast, the SPC rejected a request for 3x royalties in *ACT v. Oppo, Vivo*, the SPC found that ACT and OPPO were equally liable for the failure in negotiation. The SPC explained that "*In the case the actual damages suffered by ACT can be ascertained... the actual damages can be calculated [by late payment interests] and it is not necessary to go to the alternative basis of using a reasonable multiplier of patent licensing royalty fees.*" The SPC said OPPO's fault means it should bear 50 percent of the late payment interests added to the FRAND rate.

In the appeal judgment of *Iwncomm v. Apple*, the SPC upheld the finding that the implementer has obvious fault in negotiation. However, the SPC does not characterize the award as punitive damages but as a reasonable assessment of damages when the plaintiff's loss or the defendant's gain cannot be accurately ascertained. The SPC considered a number of factors in finding that the damages award is reasonable. The obvious fault of the implementer during negotiation and its refusal to disclose actual sales records is considered as the first factor. The second reason is that the sales units used in the damages assessment is likely to be far lower than the actual sales units by the implementers. In the damages assessment, model A is estimated to have sold 40 million units from 2015 to 2017, and model B is estimated to have sold 7 million units. According to the MIIT records, the corresponding numbers are more likely to be 69 million units and 22 million units. The number of computers is more likely to be 618,033 units. In view of the under-estimation, the multiplier is closer to 1.5. The SPC said that, therefore, the damages award is not too high.

From the case trend, the impact of negotiation fault on the calculation of royalty payment has reduced but not extinguished. The SPC judgments still left open the possibility of fault being an aggravating factor in some situations, such as when the patentee's loss in royalty payment cannot be accurately ascertained.

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