



The People's Republic of China
Chongqing First Intermediate Court
Civil Judgment

Table of Content (added for reader’s convenience, not part of the judgment)

[Basic Information and Parties’ Arguments]	1
[Evidence]	10
I. Plaintiffs’ Joint Evidence and Defendants’ Joint Cross-Examination.....	10
II. Defendants’ Joint Evidence and Plaintiffs’ Joint Cross-Examination	13
[Fact Findings]	18
I. Information Concerning the Parties and Related Brands.....	18
II. Industrial Policies and Parties’ Commitments	19
III. Negotiations and Litigations between the Parties.....	21
(I) Negotiation Process of the 2018 OPPO Agreement.....	21
(II) Negotiations of the 2021 OPPO Agreement	28
1. Summary of Technical Negotiations	29
2. Summary of Licensing Condition Negotiations	29
(III) Litigation Status between the Parties Due to Disputes over the 2021 OPPO Agreement.....	30
IV. Agreements Related to the Calculation of Rates in This Case.....	31
(I) 2018 OPPO Agreement	31
(II) [REDACTED] Xiaomi Agreement and Other Relevant Agreements	33
1. [REDACTED] Xiaomi Agreement.....	33
[REDACTED OF (III)]	
(IV) License Agreement of [REDACTED] Payment Presented by Nokia.....	37
1. Nokia and [REDACTED]’s License Agreement	37
2. License Agreement between Nokia’s Agent of Licensing Business [REDACTED] and [REDACTED]	37
3. License Agreement between Nokia and [REDACTED].....	38
4. License Agreement between Nokia and [REDACTED].....	38
5. License Agreement between Nokia and [REDACTED].....	39
6. License Agreement between Nokia and [REDACTED].....	39
(V) Huawei Agreement and other related agreements	39
1. Huawei Agreement	39
2. Other [REDACTED] Agreements	41
V. The Parties’ Economic Expert Reports and Corresponding Rebuttals	43
(I) Regarding Rate Calculation Using the Top-Down Approach	44
1. Professor Gong Jiong’s Rate Calculation Using Top-Down Approach.....	44
2. Dr. Padilla and Associate Professor Tang Mingzhe’s Rebuttals Against Professor Gong Jiong’s FRAND Royalty Calculated Through Top-Down Approach.....	49
3. Professor Gong Jiong’s Response to the Rebuttals of Dr. Padilla and Associate Professor Tang Mingzhe	51
4. Dr. Padilla’s Further Response to Professor Gong Jiong’s Response.....	52
(II) Regarding Rate Calculation Using the Comparable License Approach	52
1. Professor Gong Jiong’s Rate Calculation Using the Comparable License Approach	

.....	53
2. Professor Gong Jiong’s Cross-Check by Unpacking Huawei Agreement.....	55
3. Associate Professor Tang Mingzhe’s Rate Calculation Using Comparable License Approach.....	56
4. Professor Gong Jiong’s Rebuttal to Associate Professor Tang Mingzhe’s Comparable License Approach Calculation.....	60
5. Associate Professor Tang Mingzhe’s Response to Professor Gong Jiong’s Rebuttal.....	61
VI. Other Relevant Facts Regarding the Rate Calculation Claimed by Each Party.....	63
(I) Facts about Rate Stacking and Industry Aggregate Rates.....	63
(II) Facts about 5G’s Patent Value and Industry Aggregate Rate Compared to 4G.....	64
(III) Relevant Facts about Regional Division and Rate Discounts.....	66
(IV) Relevant Facts Regarding the Dispute over Nokia’s Patent Strength.....	67
1. About the Number of Declarations.....	67
2. About the Number of Approved Contributions.....	69
3. About the True Essentiality Rate of Nokia’s Patents.....	70
4. About Patent Invalidation Declaration.....	71
(V) Relevant Facts about OPPO Mobile Phone Profits and Sales During the 2021 OPPO Agreement Period.....	72
(VI) Relevant Facts about Mobile Phone Prices to Be Used for Royalty Base.....	72
(VII) Relevant Facts Regarding Whether the Xiaomi Agreement is a Comparable Agreement.....	73
1. Facts about the Connection between Xiaomi and Nokia.....	73
2. Related Facts about the Industrial Model.....	74
3. Other Facts.....	75
(VIII) Relevant Facts about Whether the Huawei Agreement Can Be Used for Unpacking Calculation and Cross-Check.....	75
VII. Other Facts.....	76
[Reasoning].....	76
I. Regarding Whether Defendant Nokia Beijing Is an Eligible Defendant in This Case.....	78
II. Regarding Whether the Premise for this Court to Determine the Licensing Conditions for the Standard Essential Patents Involved in the Case Has Been Achieved.....	79
III. How to Determine the Specific Licensing Conditions in This Case.....	80
(I) Comparability Determination of Relevant License Agreements in This Case.....	82
1. The 2018 OPPO Agreement Is Comparable.....	82
2. [REDACTED] Xiaomi Agreement Is Comparable.....	83
3. [REDACTED] are not comparable.....	85
(II) Responses to Basic Questions of Rate Calculation.....	86
1. The Parties’ selection of statistical agencies and databases.....	86
2. Benchmark date for rate calculation.....	86
3. Regarding whether the agreement negotiation process needs to be taken into account when unpacking comparable agreements.....	87
4. Whether Net Present Values are to be considered when unpacking comparable	

agreements	88
5. Issues of Regional Division and Regional Discount	89
6. The Issue of Mobile Phone Royalty Base	91
IV. Unpacking and Calculating the 2018 OPPO Agreement to Determine the 4G Multi-Mode Mobile Phone Royalty Rate.....	91
1. One-Way Royalty of Nokia Patents in the Agreement.....	92
2. Determination of Expected Sales Volume of Licensed Products During the Agreement Period.....	92
3. Changes of Nokia’s 4G Multi-Mode Patent Strength.....	96
4. Unpacking and Calculation of 4G Multi-Mode Mobile Phone Regional Royalties and Percentage Royalty Rates under the 2021 OPPO Agreement	96
V. Determination of Royalty Rates for 5G Multi-Mode Mobile Phones	98
(I) Regarding the Plaintiff’s top-down approach	99
1. Determination of Global Aggregate Royalty Rates for Various Standards in the Mobile Phone Industry	99
2. Nokia’s Share of Patent Strength	102
3. Shares of Value Contribution of 2G through 5G Technologies in Mobile Phones	104
4. The 5G Multi-Mode Mobile Phone Regional Percentage Royalty Rates and Dollar Per-Unit Royalties Determined Using the Top-Down Approach	105
(II) Regarding Plaintiffs’ Calculation Using the Comparable License Approach in Conjunction with Some Conclusions from the Top-Down Approach.....	106
(III) Regarding the Defendants’ Unpacking and Calculation of [REDACTED] Xiaomi Agreement Using the Comparable License Approach	108
(IV) Regarding Plaintiffs’ Unpacking and Cross-Check of Huawei Agreement.....	111
VI. The 4G and 5G Multi-Mode Mobile Phone Percentage Royalty Rates and Per-Unit Royalty Finally Determined by This Court	112
[Decision]	113

The People's Republic of China

Chongqing First Intermediate Court

Civil Judgment

(2021) Yu 01 Min Chu No. 1232

[Basic Information and Parties' Arguments]

Plaintiff: OPPO Guangdong Mobile Communications Co., Ltd., domiciled at No.18 of Wusha Haibin Road, Chang'an Town, Dongguan City, Guangdong Province, Uniform Social Credit Code 914419007480321175.

Legal representative: Liu Bo, Executive Director and Manager.

Authorized Agent for Litigation: Wang Huan, Male, Employee of the Company.

Authorized Agent for Litigation: Hu Bin, Lawyer at Shanghai Fangda Law Firm.

Plaintiff: OPPO Guangdong Mobile Communications Co., Ltd. Shenzhen Branch, domiciled at Floor 7, Zhuoyuehouhai Financial Center, 126 Haide Third Road, Yuehai Community, Nanshan District, Shenzhen City, Guangdong Province. Uniform Social Credit Code 91440300MA5EW0BF6X.

Person in Charge: Liu Bo.

Authorized Agent for Litigation: Yu Yuanfang, Female, Employee of the Company.

Authorized Agent for Litigation: Liao Tingting, Lawyer at Shanghai Fangda Law Firm.

Plaintiff: OPPO (Chongqing) Smart Technology Co., Ltd., domiciled at No. 188 Yulong Avenue, Yufengshan Town, Yubei District, Chongqing City, Uniform Social Credit Code 91500112MA5U8B6N3X.

Legal Representative: Yin Wenguang, Executive Director and Manager.

Authorized Agent for Litigation: Sun Muran, Lawyer at Shanghai Fangda Law Firm.

Authorized Agent for Litigation: Pan Kaimai, Lawyer at Shanghai Fangda Law Firm.

Defendant: Nokia Corporation, domiciled at Karakaari 7 02610 Espoo, Finland.

Authorized Representative: Teemu Itala

Authorized Representative: Jeremy Vaquer

Authorized Agent for Litigation: Xu Jing, Lawyer at Beijing King & Wood Mallesons Law Firm.

Authorized Agent for Litigation: Tian Ziyi, Trainee Lawyer at Beijing King & Wood Mallesons Law Firm.

Defendant: Nokia Technologies Oy, domiciled at Karakaari 7 02610 Espoo, Finland.

Authorized Representative: Ingrid Viitanen, Vice President, General Counsel of Intellectual Property.

Authorized Representative: Jan Sandström, Chief Legal Officer

Authorized Agent for Litigation: Chen Xiao, Lawyer at Beijing Lawjay Partners.

Authorized Agent for Litigation: Zuo Yuguo, Lawyer at Beijing Lawjay Partners.

Defendant: Nokia Technologies (Beijing) Co., Ltd., domiciled at C302, Room 301, Floor 3, No. 1 Wangjing East Road, Chaoyang District, Beijing. Uniform Social Credit Code 91110105MA0033036H.

Legal representative: Gong Tiande, Chairman.

Authorized Agent for Litigation: Xu Jing, Lawyer at Beijing King & Wood Mallesons Law Firm.

Authorized Agent for Litigation: Zuo Yuguo, Lawyer at Beijing Lawjay Partners.

Regarding the SEP royalty dispute case between Plaintiffs OPPO Guangdong Mobile Communications Co., Ltd. (hereinafter referred to as “OPPO”), OPPO Guangdong Mobile Communications Co., Ltd. Shenzhen Branch (hereinafter referred to as “OPPO Shenzhen”), OPPO (Chongqing) Smart Technology Co., Ltd. (hereinafter referred to as “OPPO Smart”) and the Defendants Nokia Corporation , Nokia Technologies Oy, and Nokia Technologies (Beijing) Co., Ltd. (hereinafter referred to as “Nokia Beijing”), after this Court accepted the case on July 12, 2021, the three Defendants raised a jurisdictional objection to this Court, and this Court ruled to reject their jurisdictional objections in accordance with the law. The three Defendants were dissatisfied with the ruling and filed an appeal regarding jurisdiction. The Supreme People’s Court ruled to reject the appeal in accordance with the law, upheld the original ruling, and the trial of the case resumed. This Court applied foreign-related procedures to this case in accordance with the law and conducted non-public court sessions to hear the case as requested by the Parties concerned. Plaintiffs OPPO’s authorized litigation agents Wang Huan, Hu Bin, and Liao Tingting; OPPO Shenzhen’s authorized litigation agents Wang Huan, Yu Yuanfang, and Liao Tingting; OPPO Smart’s authorized litigation agents Sun Muran, Zhang Hao, and Pan Kaimai; Defendants Nokia’s authorized litigation agents Xu Jing, Deng Xingpei and Tian Ziyi; Nokia Technologies Qy’ authorized litigation agents Chen Xiao, Zuo Yuguo; Nokia Beijing’s authorized litigation agents Xu Jing and Zuo Yuguo, attended and participated in the litigation within their authorization periods. The hearing of the case has now been concluded.

The Plaintiffs OPPO, OPPO Shenzhen, and OPPO Smart filed a lawsuit with this Court, petitioning to: **1.** Request the Court to determine the FRAND-compliant licensing conditions over smart terminal products that Defendants shall grant to Plaintiffs, including but not limited to the global (inclusive-of China) licensing royalties rate, regarding all SEPs that **(a)** Plaintiffs are required to take license of, **(b)** are owned and licensable by Defendants, **(c)** comply with 2G, 3G, 4G, or 5G standards or technical specifications, and **(d)** are valid and truly essential; **2.** Request the Court to order Defendants to bear all litigation costs.

During the trial, Plaintiffs clarified their first request as follows:

1. Global licensing royalty rate. That is, the global licensing conditions that Defendants shall grant to Plaintiffs, including global licensing royalty rates. **2. Licensed standards and licensed patents.** The licensed standards are 5G, 4G, 3G and 2G standards, and the licensed patents are standard essential patents that comply with the 5G, 4G, 3G and 2G standards that are owned or licensable by the Defendant Nokia Corporation, Nokia Technologies Oy, and their affiliates. The terms “Plaintiffs are required to take license” and “valid and truly essential” stated in the first petitioned request emphasize the intended meaning of FRAND principle, but Plaintiffs do not request the Court to substantively or one-by-one examine and determine the validity and true essentiality of every SEP at issue. **3. Period of license.** The license period is 3 years, that is, [Redacted]. **4. Licensed products.** That is, smart terminal products of three brands, namely, OPPO, Realme and Oneplus.

Plaintiffs clearly claimed during the trial that the royalties involved in the case shall be calculated as follows:

Plaintiffs’ economic report used the top-down approach and the comparable license approach (using a portion of the calculated results of the top-down approach) to calculate respectively. A 3-Region division is adopted in the calculation (countries and regions with per capita GDP higher than USD 20,000.00 as Region 1; the mainland of China as Region 2, and other countries and regions as Region 3. *See Appendix 1 for the specific method of division.* A regional discount as 61.42% is applied to Region 2 and 3, [Redacted], and the results are:

1. The percentage royalty rate for 4G multi-mode mobile phones calculated using the comparable license approach in Region 1 is [REDACTED]; the dollar per-unit royalty in Region 1 is [REDACTED]; the percentage royalty rates for Region 2 and Region 3 is [REDACTED], and the dollar per-unit royalties for Region 2 and Region 3 is [REDACTED].
2. The percentage royalty rate for 5G multi-mode mobile phones calculated using the comparable license approach in Region 1 is [REDACTED]; the dollar per-unit royalty in Region 1 is [REDACTED]; and the percentage royalty rate for Region 2 and Region 3 is [REDACTED]; The dollar per-unit royalties for Region 2 and Region 3 is [REDACTED].
3. The percentage royalty rate for 5G multi-mode mobile phones calculated using the top-down approach in Region 1 is [REDACTED]; the dollar per-unit royalty in Region 1 is [REDACTED]; the percentage royalty rate for Region 2 and Region 3 is [REDACTED]; the dollar per-unit royalties for Region 2 and Region 3 is [REDACTED].

Plaintiffs believed that the results obtained by the two calculation approaches can cross-check, and ultimately argued for the percentage royalty rate and dollar per-unit royalty that are the middle value from the percentage royalty rate and dollar per-unit royalty calculated through comparable license approach, which is as follows:

1. The percentage royalty rate for 4G multi-mode mobiles phones in Region 1 is [REDACTED]; dollar per-unit royalty in Region 1 is [REDACTED]; percentage royalty rate for Region 2 and Region 3 is [REDACTED]; and dollar per-unit royalties in Region 2 and Region 3 is [REDACTED].

2. The percentage royalty rate for 5G multi-mode mobiles phones in Region 1 is [REDACTED]; dollar per-unit royalty in Region 1 is [REDACTED]; percentage royalty rate for Region 2 and 3 Region is [REDACTED]; and the dollar per-unit royalties in Region 2 and Region 3 is [REDACTED].

Facts and Reasons:

[to start with allegation of Plaintiff] Plaintiff OPPO is a global smart terminal manufacturer and mobile internet service provider established in 2004. Its corresponding products and services have long been in the leading position in the industry in China, and its business covers many overseas markets around the world. Plaintiff OPPO Shenzhen Branch is a branch of the Plaintiff OPPO. It is mainly responsible for the product research and development, testing, marketing and intellectual property related management of the Plaintiff OPPO. Plaintiff OPPO Smart is an R&D and manufacturing base that integrates R&D and production of smart terminals, smart hardware, software, cloud services and value-added services. It has now become the largest industrial park of the Plaintiffs next to Plaintiffs headquarters (hereinafter the three Plaintiffs are collectively referred to as “OPPO”). Defendant Nokia Corporation is a Finnish multinational company mainly engaged in the research and development and licensing of communications technology. Defendant Nokia Technologies Oy is a wholly-owned subsidiary of Defendant Nokia Corporation, and their registration addresses and addresses on official websites are exactly the same. Defendant Nokia Beijing is a wholly-owned subsidiary of Defendant Nokia Technologies Oy. The three companies are closely related affiliates (hereinafter Defendants 1, 2 and 3 are all referred to as “Nokia”).

This case involves wireless communication technology standards. 3GPP (3rd Generation Partnership Project), the third generation mobile communications standardization partnership plan, is an international standard-setting organization in the communications field. Entities like European Telecommunications Standards Institute (“ETSI”), etc. are its members. Both Defendant Nokia Corporation and Defendant Nokia Technologies Oy have submitted numerous IP declarations and license declarations to standard setting organizations including ETSI as patent holders, explicitly promising to accept and actively perform the obligation of licensing SEP under FRAND obligation.

In addition, Defendants had made two commitments to the Ministry of Commerce in two antitrust merger filings in 2014 and 2015 regarding concentration of undertakings, confirming that they would continue to fulfill their commitments to standard-setting organizations, and license their SEPs under FRAND terms that are in compliance with SSOs' IP policies, as well as confirming that they would not prevent the implementation of standards with FRAND commitments by enforcing injunctions on standard essential patents.

In 2018, Defendants Nokia Corporation and Nokia Technologies Oy reached a licensing agreement with Plaintiffs on SEPs related to wireless communications (hereinafter referred to as the "2018 OPPO Agreement"). Since 2020, Plaintiffs and Defendants had begun a new round of licensing negotiations involving SEPs related to wireless communication (hereinafter "2021 OPPO Agreement"). In addition to the two Defendants, Defendant Nokia Beijing has also been involved in the negotiation of the 2021 OPPO Agreement. It can be found that the three Defendants assigned their works and cooperated in the licensing operation process related to standard essential patents, forming a community with common rights and obligations.

[REDACTED], under the framework of FRAND principles, Plaintiffs actively negotiates in good faith with Defendants, hoping to reach an agreement on the 2021 OPPO Agreement as soon as possible. However, during the licensing negotiation process, Defendants did not show reciprocal respect for the Plaintiffs' good faith of actively promoting negotiation in advance, nor did they comply with their FRAND obligations. Defendants committed numerous behaviors that violate FRAND obligations and principle of good faith, such as making offers that are obviously excessively high and refusing to substantively promote technical negotiations. What's more serious is that Defendant [REDACTED] initiated litigations in foreign courts against Plaintiffs and their affiliates, and the patent infringement litigations against Plaintiffs were expanded to many countries around the world, with their number of cases filed reaching a few dozens, within several days.

Defendant's conducts clearly demonstrated that Defendants believed that the Parties could no longer reach an agreement on the license conditions through negotiation. In this circumstance, Plaintiffs are entitled to ask the court for a judicial ruling on the license conditions. In this case, Plaintiffs and Defendants were negotiating over the Defendants' SEPs worldwide. Therefore, the court's judicial decision on global rates will not be beyond the scope of the dispute between Plaintiffs and Defendants, which is consistent with the intended meaning of the FRAND principle and will also help improve judicial efficiency.

In summary, it is requested that the Court supports all of the Plaintiffs' request petition in accordance with the law. [*end of the allegation of Plaintiff*]

[*to start with allegation of Defendants*] Defendants Nokia Corporation, Defendant Nokia Technologies Oy., and Defendant Nokia Beijing Co., Ltd. jointly argued that: **1.** Oneplus and Realme brand holders are not parties to this case, and the Court should dismiss the Plaintiffs' request petition related to the Oneplus and Realme brands; **2.** Nokia Beijing is not the declarant or patentee of the relevant SEPs. Despite that the company's legal representative Gong Tiande attended some 2021 OPPO agreement negotiation meetings and appeared on some negotiation email reply lists, he only played a non-leading role when coordinating and assisting negotiations. Therefore, Defendant Nokia Beijing is not an eligible Defendant in this case; **3.** The licensing conditions ruled by the court are suggestive rather than mandatory, and the Court cannot rule on the global rate in this case without the unanimous consent of all Parties; **4.** Plaintiffs are not willing licensees and do not meet the requirements of sufficient and good faith negotiation between the parties. Therefore, this case does not meet the primary premise for the parties to request the court to determine the FRAND license conditions; **5.** If the percentage royalty rate needs to be determined, the comparable license approach is the best methodology, and there are flaws in the top-down approach. And the rate determined by the court should be based on a specific benchmark date; **6.** Plaintiffs' economic analysis and calculation suffers material errors, including, citing relevant data and analysis that cannot be verified, arguing for regional discount that is not applicable to this case, arguing for 4G and 5G industrial aggregate rates that are not reasonable, and the number of declared patents incapable of proving Defendants' share of patent strength.

Plaintiffs' specific calculation methodology is also unreasonable, and the calculation results deliberately lowered the royalty. Therefore, the rate calculated by Plaintiffs' economic analysis shall not be adopted; 7. The license agreements signed between Huawei and OPPO (hereinafter referred to as the "Huawei Agreements") [REDACTED], which was used by the Plaintiffs for cross-check, cannot be a reference for determining the licensing conditions in this case; 8. Both Parties confirmed that the 2018 OPPO Agreement is a comparable agreement, and Defendants argued that the [REDACTED] Xiaomi Agreement is the most comparable agreement among the available agreements in this case, and Plaintiffs' challenge to the comparability of such agreement is not established; 9. The resulting calculated range of royalty through Defendants' comparable license approach calculation shall be the reasonable range of the royalty in this case; 10. Assuming that the Court decides to adopt the billing method based on actual sales data in its calculation, then Defendants' [REDACTED] submitted can be a reference.

During the trial, Defendants argued that the comparable license approach should be applied in determining the royalty involved. As for specific calculation, Defendants argued for a 2-region division of the mainland of China and the rest of the world, with a [REDACTED] regional discount for the mainland of China; assuming the license period is 3 years; and the payment is made through three installments, and the results are as follows:

For 4G multi-mode mobile phones in the mainland of China, the dollar per-unit royalty is at least [REDACTED] dollar per unit (DPU) to [REDACTED] DPU. For other regions, the DPU royalty is at least [REDACTED] to [REDACTED]. For 5G multi-mode mobile phones in the mainland of China, the DPU royalty is at least [REDACTED], and for other countries and regions, the DPU royalty is at least [REDACTED]. The lump sum royalty for OPPO brand only shall be at least [REDACTED] to [REDACTED] hundred million dollars; for OPPO+ brands (i.e. OPPO, Oneplus and Realme), the lump sum royalty for the three brands is at least [REDACTED] to [REDACTED] hundred million dollars.

Defendants also argued that, even if [REDACTED], Defendants' conclusion would still not be materially impacted. The specific calculation results after taking them into consideration would be: 4G multi-mode mobile phone DPU royalty would not be changed considering the adjustment, 5G multi-mode mobile phone DPU royalty is at least [REDACTED] in the mainland of China, and [REDACTED] for other countries and regions. The lump sum royalty for OPPO brand shall be at least [REDACTED] to [REDACTED] hundred million dollars; for OPPO+ brands (i.e. OPPO, Oneplus and Realme), the lump sum royalty for the three brands is at least [REDACTED] to [REDACTED] hundred million dollars. [*end of the allegation of Defendant*]

[Evidence]

The Parties submitted evidence in accordance with the law concerning the request petition (*see attachments 2 and 3 for the specific evidence lists of both Parties*), and this Court organized the Parties to exchange and cross-examine the evidence. This Court summarizes the evidence and cross-examination opinions of both Parties as follows:

I. Plaintiffs' Joint Evidence and Defendants' Joint Cross-Examination

The three Plaintiffs jointly presented five groups of evidence, a total of 108 pieces of evidence, mainly used to prove the following matters:

1. Basic information on the Plaintiffs' registration, production and operations, etc.
2. The three Defendants are affiliates. Based on the statements and commitments made by Defendants to ETSI and other organizations, Defendants have fair, reasonable and non-discriminatory FRAND obligations regarding licensing SEPs.
3. Defendant Nokia Beijing actually participated in the negotiation of the 2021 OPPO agreement. During the negotiation process of the 2021 OPPO agreement, Defendants insisted on offers of unfair royalties and wrong royalty calculation methodology, and held a passive attitude, etc. Defendants also filed patent litigations against Plaintiffs worldwide. Defendants' conducts demonstrated that they have not complied with FRAND obligation or principle of good faith.

4. Plaintiffs alleged facts related to the SEP license at issue, including: (1) There is an objective existence of royalty stacking issue. (2) Relevant major enterprises in the industry and existing judicial precedent cases have determined that the industry aggregate rate for 4G standard essential patents is 6%-8%; (3) Compared with 4G technology, 5G technology has limited value, and its industry aggregate rate should not be higher than 4G industry aggregate rate. (4) The intergenerational value share of each standard and the regional discount argued by Plaintiffs in this case are reasonably supported by precedent cases and Defendants' shares of patents deployed in different regions; (5) From the specific situation of Defendants' 2G-5G patent strength shown in the analysis report data from the relevant databases, it can be found that Plaintiffs' argument of Defendants' patent strength has factual basis. (6) During the 2021 OPPO agreement period, the margin percentage of profit and shipment volume of OPPO mobile phones have actually dropped significantly. (7) The statement issued by Canalys can indicate that it is a neutral third-party data institute. (8) The royalty at issue should be calculated based on the net selling price rather than the retail price. The net selling price is the device-only price after deducting packaging costs, insurance and transportation costs, taxes, patent licensing fees, etc. (9) The 2018 OPPO agreement is a comparable agreement in this case. The economic analysis report issued by Plaintiffs' economic expert used the top-down approach and the comparable license approach to calculate the reasonable royalty rate respectively, and also cross-checked by unpacking the Huawei agreement. (10) The OnePlus and Realme brands' right holders are affiliates of the Plaintiffs and have been authorized. These two brands' license should be included in the scope of the ruling in this case. (11) Qualcomm's licensing model is special and not comparable. (12) The shipment volume of 5G mobile phones in 2022 does not significantly exceed that of 4G mobile phones. (13) According to the opinions of the Plaintiffs' economic experts, Defendants' unpacking of the 2018 OPPO Agreement and the Xiaomi Agreement has serious flaws, and the royalty calculation methodology and rebuttal against Plaintiffs' calculation methodologies argued therein shall not be adopted.

5. Based on factors such as Xiaomi's own views, the investment behavior of Xiaomi and Nokia, the differences between Xiaomi's products and sales areas and those of the Plaintiffs', and the background of [REDACTED] Xiaomi's agreement, the licensing agreement between Xiaomi and Defendants is obviously not comparable to this case.

Defendants recognized the authenticity, legality and relevance of evidence 1, 4-8, 10-12, 19, 30, 33-37, 52, 53, 98, 99 and 103, but did not recognize their purpose of proof. Defendants recognized the authenticity and legality of evidence 13 and 14, but argued that the relevance is weak and did not recognize the purpose of proof; Defendants recognized the authenticity and legality of evidence 2, 3, 9, 15-18, 20-29, 31, 32, 38-41, 43, 45-51, 54, 58-97, 100-102, 104-108, but did not recognize their relevance or purpose of proof; Defendants recognized evidence 55's legality and relevance, but did not recognize its authenticity or purpose of proof; Defendants recognized the authenticity of evidence 42, 44, 56 and 57, but did not recognize their legality, relevance or purpose of proof.

The main joint cross-examination opinions of the Defendants are: **1.** Plaintiffs lack the factual prerequisite to request the court to adjudicate the global licensing conditions of the standard essential patent involved in the case. **2.** Defendant Nokia Beijing is not a patentee or declarant of the patents involved in the case. The legal representative of the company, Gong Tiande, only played an assisting role in the negotiation process. Therefore, the existing evidence cannot prove that Nokia Beijing is an eligible defendant in this case. **3.** Despite Nokia's FRAND obligations under the policies and related commitments, the FRAND obligations do not require the right holder to grant a FRAND license to a non-willing implementer. **4.** Defendants were forced to file litigations after exhausting all means. This is a normal enforcement of patent rights and a remedy after the negotiation failed, and does not violate FRAND obligations. **5.** The contents of the emails exchanged between the Parties regarding negotiations cannot prove that Defendants violated FRAND obligations, but instead prove that Plaintiffs violated FRAND principles.

6. There is no industry consensus reached on 4G industrial aggregate rate, and the royalty stacking theory does not represent the current general knowledge or authoritative opinions. Ericsson and Nokia’s preliminary predictions of their 4G patent strength do not involve statements or calculations of the industry’s aggregate rate. 7. Plaintiffs’ evidence does not show that the value of 5G patents during the licensing period involved is limited. Instead, it can be seen that 5G technology has high value and good development prospects. 8. Plaintiffs’ basis for relevant regional division and rate discount cannot be directly applied to this case. 9. There are many flaws in the relevant databases’ data cited by Plaintiffs. The processing methods by Plaintiffs and Canalys are abnormal, and the number of patent declarations cannot reflect Defendants’ patent strength, nor to reflect the technical contributions to technical standards of various generations. 10. Plaintiffs chose the lump sum royalty structure, and should thusly bear the profit risk caused by market fluctuation during the agreement period. 11. The corresponding brands’ sales statistics are incomplete and unscientific. 12. Plaintiffs’ evidence cannot prove that the terms of net selling price used in the relevant agreements have the same meaning as the term claimed by the Plaintiffs. 13. There are serious problems with the specific calculations in the Plaintiffs’ economic report, the calculation results should not be adopted, and there are also major flaws in the Plaintiffs’ unpacking of the Huawei agreement, and the analysis results are unreliable. 14. Oneplus and Realme are independent brands, and the Court should reject this part of the relief. 15. Plaintiffs’ rebuttal responding to Defendants’ arguments are incorrect and have no appropriate economic basis, and cannot be supported by correctly analyzed data. 16. Defendants and Xiaomi’s investment behavior, Xiaomi’s unilateral views, Xiaomi products’ sales areas and conditions, as well as market changes regarding Huawei cannot affect the comparability of the [REDACTED] Xiaomi Agreement.

II. Defendants’ Joint Evidence and Plaintiffs’ Joint Cross-Examination

The three Defendants jointly presented three groups of evidence, 158 pieces in total. Combined with some of the Plaintiffs’ evidence, they are mainly used to prove the following matters:

1. Defendants complied with FRAND obligations in licensing, and the implementer also has FRAND obligations. During the license negotiation process, Plaintiffs unreasonably rejected Defendants' FRAND cross-licensing offer, insisted on an excessively low counter-offer, and delayed negotiations, seriously violating the FRAND principle and the principle of good faith. Plaintiffs also filed a large number of lawsuits to force Defendants to accept their unreasonable counter-offer. Plaintiffs are not willing implementers.

2. There are serious errors in the rate calculation methodology provided by Plaintiffs, and the royalty they requested the Court to adopt clearly deviates from the FRAND range and should not be supported. This mainly includes: (1) According to the opinions of the Defendants' economic experts, Plaintiffs' method of calculating royalty has serious flaws and the calculation results are inaccurate; (2) Royalty stacking is a false proposition without empirical evidence. No consensus on 4G industrial aggregate royalty rate has been reached in the industry, and even if an industrial aggregate royalty rate for 5G is to be set, it should be higher than that of 4G; (3) According to reports from authoritative agencies and media, as well as the Plaintiffs' own publicity, it can be seen that 5G significantly improves the performance of smart terminal products and consumer experience. 5G patents are of high value; (4) The regional discount calculation method claimed by Plaintiffs is wrong and only applies to specific licensors, and cannot be directly applied to this case; (5) The patent strength of a licensor should be evaluated from multiple dimensions, and the number of declarations cannot be used as the sole evaluation standard. Nokia's patent portfolio has strong comprehensive strength and is generally recognized by the industry; (6) During the agreement period at issue, the upward trend of the Chinese mobile phone market was obvious, and the prospects for OPPO's smart terminal products were promising; (7) The definitions of net selling price in relevant foreign judgments negotiation were the results of negotiations between the parties. There is no substantial difference between the average selling price claimed by Defendants and the net selling price claimed by the Plaintiffs; (8) The 2018 OPPO Agreement is based on [REDACTED]; (9) According to the Plaintiffs' standard for incomparability of agreements, as OPPO and Huawei's subsidiaries have joint investment activities, the Huawei agreement is also incomparable, and the Huawei Agreement cannot fully show the entire transaction, the unpacking and calculation based thereon have no referential significance.

(10) The Moqiu report cited by Plaintiffs is not neutral, and the credibility of the Canals data information is low; (11) Plaintiffs deliberately added litigation authorization evidence from Oneplus and Realme for the purpose of forum shopping.

3. Defendants' offer complies with the FRAND principle. If licensing conditions need to be determined, it should be within the range of Defendants' offer. The reasons mainly include: (1) The specific situation of Defendants' economic report; (2) The agreed situations shown in the contents of [REDACTED] Xiaomi agreement and other relevant agreements; (3) The situations of [REDACTED] specific agreement; (4) Defendants and Xiaomi are not affiliated, and terms such as [REDACTED] in the corresponding license agreement do not affect the comparability of the [REDACTED] Xiaomi agreement, or the correctness of Defendants' unpacking and calculation results thereunder. Plaintiffs' relevant questionings are not established; (5) The comparable license approach is a better way than top-down approach. Moreover, Net Present Value, weighting, and borrowing costs are basic concepts in the field of finance. [REDACTED].

Plaintiffs recognized the authenticity, legality and relevance of evidence 1, 2, 33, 34, 36, 37, 45-51, 58, 63, 68-73, 115, 121, 139, 140, 144-146, 157, 158, but did not recognize their purpose of proof; Plaintiffs recognized the authenticity and legality of evidence 3-14, 16-32, 35, 38-40, 52-57, 59-62, 64-66, 74-114, 116-120, 122, 123, 125-134, 136-138, 141-143, 148 and 150-154, but did not recognize their relevance or purpose of proof; Plaintiffs recognized the authenticity and legality of evidence 15 and 67, but did not recognize the authenticity of contents, relevance or purpose of proof; Plaintiffs recognized the legality of evidence 155, but did not recognize its relevance or purpose of proof. Plaintiffs did not recognize the authenticity, legality, relevance or purpose of proof regarding evidence 41-44, 124, 135, 147, 149 and 156, due to partial redaction over the contents of evidence, failure to provide original copy and inconsistency of data, etc. .

Plaintiffs' joint cross-examination opinions are mainly: **1.** The existing evidence cannot prove Defendants licensing activities comply with the FRAND principle. The contents of the negotiation emails show that Defendant's behavior seriously violated FRAND obligations and the principle of good faith. **2.** This case is not a patent infringement dispute, and whether the Parties violated their obligation to negotiate in good faith is not a prerequisite for the trial of this case. **3.** Plaintiffs' filing of lawsuit is a legitimate act to safeguard their own rights and interests. **4.** Defendants' challenge against Plaintiffs' royalty calculation method is not reasonable. For details, see the corresponding rebuttals of Plaintiffs' economic experts responding to Defendants arguments. **5.** Royalty stacking is an objectively existing issue. Both the top-down and comparable license approaches are the main approaches for determining royalty, and it cannot be concluded that one is superior or inferior to the other. The Qualcomm agreement is special and Qualcomm's statement should not be used as a reference; Ericsson believes that 4G industry aggregate rate is actually 6%-8%; Huawei's views on 5G should be taken seriously by the industry. **6.** At this stage, 5G does not bring substantial value improvement to smartphone products compared to 4G. **7.** Relevant judgments and patent pool standards cited by Plaintiffs can be used as important references in support of its arguments of regional division and regional discount; due to injunctions and other reasons, Plaintiff sold products at low prices in some Region 1 countries. **8.** According to the report analysis presented by Plaintiffs, the true essentiality rate of SEPs declared by Defendants is [REDACTED] industry average. Based hereon, Plaintiffs' argument of using declaration number (number of patents including patent applications) to represent Defendants' share of patent strength is reasonable and objective. Under the circumstances that Plaintiffs had collected data at their best, averaging such data is a fair and equitable calculation method. **9.** The relevant statistics proposed by Defendants are only some of the quarterly data statistics, which are one-sided and have no reference significance for future situations. **10.** Costs including taxes, transportation fees, packaging costs, license fees are to be deducted from the net selling price claimed by Plaintiffs, which is totally different from the retail selling price claimed by Defendants.

11. About the 2018 OPPO Agreement, [REDACTED]. **12.** The existing evidence does not prove that there is a shareholding relationship between Plaintiffs and Huawei, and other agreements between Plaintiffs and Huawei and the agreement between Huawei and Qualcomm are not related to the Huawei agreement. **13.** The Moqiu and Canals reports are neutral, and Defendants' corresponding questioning have no basis. **14.** Due to the affiliate relationship between Xiaomi and Defendants, and the differences between Plaintiffs and Xiaomi, the relevant Xiaomi agreement cannot be a comparable agreement in this case, and there is no evidence to support Defendants' understanding and specific unpacking of the terms of the relevant agreements. **15.** [REDACTED], the relevant agreements are not comparable. **16.** [REDACTED].

For the evidence that both Parties have no objection to the authenticity as stated above, this Court confirms their authenticity. Among the evidence that the Parties disputed as to their authenticity, this Court holds that, for the evidence that the Parties denied the authenticity simply because it was inconsistent with the data shown in other databases, as the relevant evidence was formed at different times, it is normal for the same company to come up with different statistical results due to differences from expected and actual sales, and this Court thusly accepts such evidence. For other evidence whose authenticity is denied due to redaction (concealment), the authenticity of the corresponding evidence can be upheld if the relevant concealed contents are not related to the case. This Court will comprehensively elaborate in the reasoning part of the judgment concerning photocopied evidence and the Parties' objections regarding relevance and purpose of proof of evidence involved in this case.

[Fact Findings]

After trial, this Court makes the following fact findings:

I. Information Concerning the Parties and Related Brands

Founded on April 11, 2003, OPPO is a global smart terminal manufacturer and mobile internet service provider. Its corresponding products and services have long been industry leaders in China, and its business covers many overseas markets around the world.

OPPO Shenzhen Branch is a branch under OPPO. It was established on November 27, 2017. It mainly engages in the development of mobile communication terminal equipment software and hardware and related supporting services, including technical development services for mobile phones and peripheral products and accessories. OPPO confirmed that OPPO Shenzhen Branch is responsible for OPPO's product research and development, testing, marketing and intellectual property related management work.

OPPO Smart is a limited liability company wholly owned by OPPO. It was established on November 8, 2016. It engages in the production and sales of mobile phones, mobile phone accessories, communication terminal smart devices, including the technology development and sales of mobile phones and peripheral accessories. News reports show that the company is an R&D and manufacturing base that integrates R&D and production of smart terminals, smart hardware, software, cloud services and value-added services. It has become an extremely important production base and logistics center for OPPO and the largest single manufacturer headquarter of OPPO in the country.

OPPO, OPPO Shenzhen Branch and OPPO Smart jointly develop, produce and sell smart terminal products such as OPPO brand mobile phones. Reports in March 2021 show that OPPO filed 1,801 PCT applications in 2020, ranking 8th globally; as of early March 2021, OPPO's global patent applications exceeded 60,000, and the number of global issued patents exceeded 26,000; OPPO has completed the application of a total of more than 3,600 families of 5G patents globally, and declared more than 1,400 families of 5G standard patents at ETSI.

Nokia Corporation, founded in Finland, is a global provider of mobile and fixed network solutions that integrates hardware, software and services, as well as licensing of intellectual property including patents, technologies and the Nokia brand. Nokia Technologies Oy is a wholly-owned subsidiary of Nokia Corporation. Their registered addresses and addresses on their official websites are exactly the same. Nokia Corporation and Nokia Technologies Oy jointly conduct R&D, declare to standard setting organizations including ETSI, and license SEPs in the field of wireless communications that they own or licensable as well as negotiating corresponding patent licenses.

Nokia Beijing is a wholly-owned subsidiary of Nokia Technologies Oy, and its legal representative is Gong Tiande. Gong Tiande has participated in the negotiations between OPPO and Nokia on the 2021 OPPO agreement, and some relevant negotiation emails were CC'ed to Gong Tiande.

Shenzhen Oneplus Science and Technology Co., Ltd. and Realme Chongqing Mobile Communications Co., Ltd. hold the Oneplus and Realme smart terminal product brands respectively. The parent company of these two companies and OPPO are all Guangdong Oujia Holdings Co., Ltd. In the 2021 OPPO agreement negotiations, OPPO and Nokia actually included the Oneplus and Realme brands into the scope of licensing negotiations. In this lawsuit, Shenzhen OnePlus Science and Technology Co., Ltd. and Realme Chongqing Mobile Communications Co., Ltd. also issued authorization letters and supplementary authorization letters respectively, confirming that OPPO was authorized to negotiate the license involved, as well as authorizing OPPO to independently file relevant litigations based on disputes in licensing negotiations.

II. Industrial Policies and Parties' Commitments

3GPP, the third generation mobile communications standardization partnership plan, is an international standard-setting organization in the communications field. 3GPP includes multiple communication standard-setting organizations, such as the ETSI in Europe, China Communications Standards Association (“CCSA”) in China, etc.

These organizations are all “organizational partners” of 3GPP. As a member of 3GPP, ETSI is a leading standardization organization in the field of information communication technology, setting wireless communication standard specifications including 2G GSM, 3G UMTS, 4G LTE and 5G NR, etc. The communication industry standards approved by the Ministry of Industry and Information Technology of China incorporate the technical contents of relevant international standards as China’s industrial standards and recommended standards by citing 3GPP international standards.

In the process of developing relevant standards and protocols, standards-setting organizations will encourage members to submit standard-related patent information. However, organizations such as ETSI will not examine whether the patents declared by each member are truly essential SEPs. Relevant standard organizations have also set relevant obligations for SEP holders. For example, ETSI’s intellectual property policy clearly states that SEP holders have FRAND obligations for licensing SEPs.

Nokia joined and made commitments to ETSI that it accepted and would actively fulfill its obligation to grant SEPs licenses in accordance with FRAND obligations. Nokia’s official website also has its explanations on FRAND licensing principles. In addition, Nokia made two commitments to the Ministry of Commerce of China in two antitrust merger filings for concentration of undertakings in 2014 and 2015, confirming that it would continue to fulfill the commitments to standard-setting organizations, and license the SEPs under FRAND terms that are in compliance with SSOs’ IP policies, as well as confirming that it will, on the basis of reciprocity, not prevent the implementation of standards with FRAND commitments by enforcing injunctions on standard essential patents.

In the first-instance judgment of Huawei Technologies Co., Ltd. v. Samsung (China) Investment Co., Ltd. and others (Case No. (2016) Yue 03 Min Chu No. 840), which is about a patent infringement case, the Shenzhen Intermediate People's Court of Guangdong Province determined that an implementer should also comply with the principle of good faith in conducting negotiation for the licensing of SEP portfolio.

III. Negotiations and Litigations between the Parties

The Parties presented evidence about the negotiations of the 2018 OPPO Agreement and the 2021 OPPO Agreement, as well as evidence about the litigation status between the Parties. These evidence not only shows the negotiation process and situations thereunder in detail, but also they are intended to prove that the opposing Parties had not complied with the FRAND principle and principle of good faith during the licensing negotiation of the 2021 OPPO agreement.

(I) Negotiation Process of the 2018 OPPO Agreement

Regarding the conclusion of the 2018 OPPO agreement, the Parties presented corresponding negotiation emails. The negotiation process stated therein is as follows:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(II) Negotiations of the 2021 OPPO Agreement

The Parties began to negotiate since [REDACTED] regarding reaching the 2021 OPPO agreement, and the negotiations had not reach a result till after the trial of this case started. The negotiations between the Parties mainly involve licensing condition negotiations and technical negotiations. According to the contents of the negotiation emails and the statements of Parties, the summary of the negotiations between the Parties is as follows:

1. Summary of Technical Negotiations

[REDACTED]

2. Summary of Licensing Condition Negotiations

Based on the Parties negotiation emails and statements, the Parties had also held several rounds of negotiations regarding licensing conditions, from [REDACTED], there have been at least [REDACTED] offers and counteroffers between the Parties, including Nokia's [REDACTED] offers and OPPO's [REDACTED] counter-offers, [REDACTED].

Summarizing the Parties' negotiation status of the 2021 OPPO agreement, [REDACTED]

(III) Litigation Status between the Parties Due to Disputes over the 2021 OPPO Agreement

According to the evidence in this case, in July 2021, Defendants filed patent infringement litigations, one after another, against Plaintiffs in multiple jurisdictions worldwide.

As of June 2022, Defendants had filed patent infringement lawsuits against Plaintiffs in 11 countries, including Germany, the United Kingdom, Spain, France, China, India, Indonesia, the Netherlands, Finland, Sweden and Russia, including SEPs and non-SEPs. Defendants later withdrew the lawsuit in Russia.

In the aforementioned cases, the Mannheim Regional Court in Germany granted Defendants the injunctions against Plaintiffs on non-SEPs and SEPs in June and July of 2022 respectively. On August 5, 2022, the Munich Regional Court in Germany ruled on two independent cases in the patent dispute between Defendants and Plaintiffs, and granted Defendants' two SEP injunctions against Plaintiffs.

After Defendants' filing of global lawsuits against Plaintiffs, Plaintiffs filed multiple patent infringement lawsuits, one after another, against Defendants and/or their affiliates in courts in Beijing, Zhengzhou, Guangzhou and other places, as well as in Germany.

In addition, Plaintiffs filed 22 patent invalidation requests against the Defendants' cellular SEPs in China. The invalidation results are: 4 patents were maintained as valid, 7 patents were partially valid, 3 invalidity requests were closed due to Plaintiffs' voluntary withdrawal, and 8 patents were wholly invalidated. For one of the patents declared wholly invalid, after administrative litigation, the Beijing Intellectual Property Court ruled to vacate the invalidation decision and required the China National Intellectual Property Administration to make a new decision.

IV. Agreements Related to the Calculation of Rates in This Case

(I) 2018 OPPO Agreement

[REDACTED], Nokia Corporation, Nokia Technologies Oy and OPPO signed a Strategic Cooperation Agreement. The agreement stipulates that both parties will cross-license SEPs under 2G, 3G and 4G standards, and the terms of the license is [REDACTED], from [REDACTED].

The amount of the agreement is that OPPO pays Nokia [REDACTED] hundred million dollars. Other major terms in this agreement is summarized as follows:

[REDACTED]

[REDACTED]

(II) [REDACTED] Xiaomi Agreement and Other Relevant Agreements

1. [REDACTED] Xiaomi Agreement

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(IV) License Agreement of [REDACTED] Payment Presented by Nokia

1. Nokia and [REDACTED]'s License Agreement

[REDACTED]

2. License Agreement between Nokia's Agent of Licensing Business [REDACTED] and [REDACTED]

[REDACTED]

3. License Agreement between Nokia and [REDACTED]

[REDACTED]

4. License Agreement between Nokia and [REDACTED]

[REDACTED]

5. License Agreement between Nokia and [REDACTED]

[REDACTED]

6. License Agreement between Nokia and [REDACTED]

[REDACTED]

(V) Huawei Agreement and other related agreements

1. Huawei Agreement

[REDACTED], Huawei Technologies Co., Ltd. (referred to in the agreement as “Huawei”) and OPPO signed a Patent License Agreement, [REDACTED]

[REDACTED]

[REDACTED]

2. Other [REDACTED] Agreements

[REDACTED], Huawei Technology Co., Ltd. (“Huawei” in the agreement) and OPPO signed [REDACTED] and [REDACTED].

(1) [REDACTED]

[REDACTED]

[REDACTED]

(2) [REDACTED]

[REDACTED]

[REDACTED]

V. The Parties' Economic Expert Reports and Corresponding Rebuttals

Regarding the calculation of the royalty in this case, the Parties engaged economic experts to issue corresponding economic analysis reports and rebuttal opinions, as well as appearing before this Court as expert testimony.

The economics expert engaged by Plaintiffs is Professor Gong Jiong, who is a professor and doctoral supervisor in the Economics Department of the University of International Business and Economics. The economic experts engaged by Defendants are Dr. Jorge Padilla and Associate Professor Tang Mingzhe. Dr. Padilla is the Regional Director for Europe, the Middle East and Africa at Compass Lexecon, an economic analysis company. Associate Professor Tang Mingzhe is an associate professor at the School of Economics, Shandong University.

The data, theoretical articles, judicial precedents, etc., cited in the report opinions issued by the above-mentioned economic experts are presented in the form of footnotes, and some key materials are used as evidence in this case as support. The Parties also provided evidence, including relevant economic papers and articles not cited in the footnotes, regarding their economic opinions and rebuttals.

Opinions of the Parties, concerning each Party's specific calculation methods used and the rebuttals to the opposing Party's calculation methods, have been expressed through the Parties' economic expert reports and experts opinions. The contents of the economic reports submitted by both Parties, as well as the rebuttals, are as follows:

(I) Regarding Rate Calculation Using the Top-Down Approach

1. Professor Gong Jiong's Rate Calculation Using Top-Down Approach

Professor Gong Jiong pointed out that, an international consensus has substantially been reached on the industry aggregate rate for the 4G standard. However, there are currently few judicial cases to discuss or determine the industry aggregate rate for the 5G standard. Therefore, Professor Gong Jiong adopted the Hedonic price regression model that is common in economics to estimate the 5G industrial aggregate rate. After concluding the 5G standard industry aggregate rate, Professor Gong Jiong then used the top-down approach to further conclude the reasonable range of 5G royalty that Defendants could charge the plaintiff.

To start with, the 5G standard industry aggregate rate was calculated.

Firstly, Professor Gong Jiong used the Hedonic price regression model method to calculate the percentage of price increment that consumers are willing to pay more for 5G phones than 4G phones under controlling variables including product functions, performance, quality, brands and appearances, *i.e.*, 5G coefficient. Specifically, the controlled variables considered by Professor Gong Jiong include: [REDACTED]

[REDACTED] In the calculation, regressive analysis on Hedonic price regression model was performed using [REDACTED] phone sales data sample, [REDACTED]. Based on the above considerations, Professor Gong Jiong used Hedonic price regression model formula [REDACTED] to evaluate and estimate 5G coefficient β_1 for the period from 5G phones entered the market to Quarter t. [REDACTED]

Professor Gong Jiong used the exponential function to fit the 5G coefficient β_1 's variance trend over time, in order to forecast the dynamic changes of 5G coefficients in the next 3-5 years. [REDACTED].

Professor Gong Jiong pointed out that, such exponential function model fits the actual data relatively well, and R^2 reaches 87.62% after adjustments.

Furthermore, Professor Gong Jiong used exponential function model in Formula (B) to predict over the period after 2021 Q4, and finally evaluated that the 5G coefficients' average values are respectively [REDACTED].

Secondly, Professor Gong Jiong calculated the average selling price ratio between 4G mobile phones and 5G mobile phones in the next 3-5 years based on the exponential function, [REDACTED], the calculation result is [REDACTED]. Professor Gong Jiong also pointed out that, such model's R^2 reaches 98.14% and 96.79%, respectively, for 4G and 5G mobile phone's quarterly variance of average selling prices after adjustments, showing a good fitting of such model with reality data. [REDACTED]

Thirdly, based on the current public statements of some of the patent holders around the world on the aggregate rate of the 4G standard industry (6%-8%) and the results of the 5G coefficient, Professor Gong Jiong further calculated the aggregate rate of the 5G standard industry according to the following formula:

5G standard industry aggregate rate = (4G standard industry aggregate rate + 5G coefficient) × average selling price ratio between 4G mobile phones and 5G mobile phones

In the end, the calculation result of the 5G standard industry aggregate rate is 4.341%-5.273%. [REDACTED]

Professor Gong Jiong believed that, a China Academy of Information and Communications Technology report pointed out that the aggregate rate of the 5G industry should not be higher than the existing aggregate rate of the 4G industry. There are also empirical studies proving that, in the industry, 5G communication standard has relatively limited appeal to consumers...

...the contribution of 5G technology to the value of smartphones is not significantly improved compared to 4G technology. The above calculation results and these research conclusions can collaborate with each other.

Moreover, Professor Gong Jiong combined the declaration data counted by the Concur IP report, Beijing Moqiu Technology Co., Ltd. report, IPLytics report and Clarivate Analytics report, and summarily concluded that Nokia's shares in 2G, 3G, 4G and 5G SEP strengths are [REDACTED] respectively.

Moreover, based on the value share ratios of 4G, 3G and 2G standards for 4G multi-mode mobile phones determined in UP v. Huawei and Huawei v. Conversant, which are 7:2:1 and 8:1:1 respectively, as well as considering that 5G technology has not brought much value improvement to smartphones compared to 4G technology, Professor Gong Jiong concluded that the value share of 5G technical standard in 5G multi-mode mobile phones should not exceed a half (50%), and adopted a value share ratio of 50:40:5:5 for 5G, 4G, 3G and 2G standards in 5G multi-mode mobile phones.

Finally, Professor Gong Jiong calculated the FRAND royalty per unit for Nokia's 5G standard essential patents. The specific calculation process includes: (1) Based on the above calculation results and the following formula: Nokia 5G multi-mode mobile phone percentage royalty rate = 5G aggregate royalty rate × Nokia's share of patent strength in 5G × value share of 5G in 5G MM + 4G aggregate royalty rate × Nokia's share of patent strength in 4G × value share of 4G in 5G MM + 3G aggregate royalty rate × Nokia's share of patent strength in 3G × value share of 3G in 5G MM + 2G aggregate royalty rate × Nokia's share of patent strength in 2G × value share of 2G in 5GMM. And the calculation resulted in a 5G multi-mode mobile phone percentage royalty rate of [REDACTED].

(2) Calculating the net selling price of OPPO's 5G multi-mode mobile phones during the agreement period. Professor Gong Jiong took into consideration OPPO's [REDACTED] report [REDACTED], deducting non-phone factors such as packaging material costs and transportation and insurance costs etc., as well as estimated patent royalty to be paid, [REDACTED], and considered the price decline trend of 5G mobile phones in the agreement period, [REDACTED]. **(3)** Calculating the DPU royalty range of 5G multi-mode mobile phones [REDACTED]. **(4)** Adjusting the royalty based on discount factors in different market regions around the globe. According to current legal practices and industrial practices, taking into account the differences in the patent deployment of patent holders in various regions in the global market, the income levels of different countries or regions, consumer affordability, difference in the levels of patent protection etc., discount adjustments were made concerning royalty for different regions. Mainly based on that HEVC Advance patent pool divides a first region and a second region when collecting royalty, combined with the latest available per capita GDP data of various countries and regions disclosed by the International Monetary Fund and the World Bank, a regional division is adopted that, countries and regions with 20,000 USD or higher per capita GDP are Region 1; the mainland of China is Region 2; and the rest of the countries and regions are Region 3. For Region 2 and 3's discount compared to Region 1, Professor Gong Jiong comprehensively considered the following factors: In *UP v. Huawei*, the foreign court ruled that, for Unwired Planet's 3G and 4G Chinese rate, a 50% discount should be applied to the UK rate; in the antitrust investigation against Qualcomm, the National Development and Reform Commission ruled that Qualcomm should use 65% of the net selling price of mobile phones in China as the royalty billing base for its Chinese 3G and 4G standard essential patents, equivalent to imposing a 65% discount rate on the Chinese rate;

In *TCL v. Ericsson*, the foreign judgment determined that if Ericsson's licensing rate in the United States is used as a benchmark, the discount rates for 3G and 4G patents in other regions except the United States and Europe are 74.8% and 69.8% respectively; in *Huawei v. Coversant*, the judgment found that the discount rates of 3G and 4G standards in China are 43.44% and 65.48% respectively. Professor Gong Jiong averaged the above discount rates, and the average value is 61.42%. The professor also presented that Nokia's share of issued patent families in the United States, Europe, and China stated in the *Global 5G Patent Activity Report* released by CAICT in April 2022 also supports the rationality of the aforementioned discount rate. Based on such regional division and discount rate, it is calculated that the per-unit percentage royalty rate range for 5G multi-mode mobile phones in Region 2 and 3 is [REDACTED], and the dollar per-unit royalty (DPU) range is [REDACTED].

Professor Gong Jiong pointed out that the results calculated by the above-mentioned top-down approach can be cross-checked with the results calculated from the comparable license approach, supporting the reasonableness of the two calculation results.

2. Dr. Padilla and Associate Professor Tang Mingzhe's Rebuttals Against Professor Gong Jiong's FRAND Royalty Calculated Through Top-Down Approach

(1) Dr. Padilla's Rebuttal to Professor Gong Jiong

The rebuttal opinion argued that Professor Gong Jiong made mistakes when applying the top-down approach to calculate the royalty rate, which resulted in a significant downward deviation in the final calculated rate, making the analysis results unreliable. The main rebuttals are as follows:

Firstly, an incorrect Hedonic price regression model was used to calculate the incremental value of 5G technology, resulting in incorrect calculation results. This mainly includes that the professor did not weight the data used for estimating price increment, and the sales volume of 5G smartphones observable from the corresponding data of the first forecast quarter was limited, resulting in an abnormally low estimated 5G price increment.

Secondly, Kennedy transformation was not performed on the calculation results. At the same time, there were a large number of 4G mobile phone sales in the selected sample, and 5G had not yet entered the market during the corresponding time period. The above errors caused a downward deviation in the estimated 5G price increment.

Thirdly, the more commonly used IDC data was not used, and the Canalis data it used was opaque, and Nokia is unable to know the reasons of choosing or not choosing among whatever controlled variables when Professor Gong Jiong conducts the method, nor being able to know the definition of variables. All these make it difficult to assess the reliability of the conclusions.

Fourthly, the forecast model established for the average selling price of 4G and 5G smartphones is arbitrary, and the forecast results it produced are also inconsistent with the third-party forecast information from Strategy Analytics. At the same time, it is incorrect to use the value increment from the Hedonic price regression model to calculate the aggregate royalty rate.

(2) Associate Professor Tang Mingzhe's Rebuttal to Professor Gong Jiong

First of all, her opinion believed that, for at least the next 3 to 5 years after [REDACTED], smartphones would be the most important terminal equipment for the application of 5G technology. Compared with 4G, the 5G communication technology obviously brings higher value to mobile phones. Secondly, from an economic point of view, the “top-down approach” has inherent flaws in methodology that are difficult to overcome, while the “comparable license approach” is a better and more suitable evaluation method for this case. Finally, Professor Gong Jiong's economic analysis based on the “comparable license approach” deviated in many places from the common basis of “negotiation through free market” relied by the comparable license approach.

These made the unpacking result not credible and not able to meet FRAND principles.

3. Professor Gong Jiong's Response to the Rebuttals of Dr. Padilla and Associate Professor Tang Mingzhe

Professor Gong Jiong responded that:

Firstly, whether weighting should be used in the Hedonic price regression model and what indicators should be used as weights are both academic issues that are inconclusive. In the practice of economic analysis, there are a large number of literatures that use Hedonic price regression models without weighting their regressions. Dr. Padilla conducted a sales-weighted regression based on IDC data. The resulting estimated 5G coefficient from such regression were contrary to the facts and might have serious omitted variable bias, which does not have reference value.

Secondly, regarding Dr. Padilla's questions about the Hedonic price regression model data sample and regression method, the use of Canalys data, the time period of the sample used, and whether to perform Kennedy transformation etc., they would not have a substantial impact on the calculation results. They are all Dr. Padilla's subjective conjecture. Canalys is an authoritative third-party independent data statistics and analysis organization widely used in the industry, and its data is used by many important market players in the communications field. Dr. Padilla's questioning about the Canalys database cannot be established.

Thirdly, Professor Gong Jiong's forecast of the 5G coefficient is objective and reasonable, the adjusted R^2 , as a commonly recognized measurement model and an index for data fitting degree, confirms the degree of fitting between the forecast model and the data. The forecast of the average selling prices of 4G mobile phones and 5G mobile phones based on the exponential function model is fully objective and reasonable, and the SA mobile phone price forecast provided by Dr. Padilla is not comparable to Professor Gong Jiong's model forecast, so it does not have reference value.

Fourthly, the 4G industry aggregate rate of 6%-8% has been recognized in multiple judicial decisions. The 5G standard industry aggregate rate calculated in the report is also the 5G standard industry aggregate rate applicable to developed countries. Therefore, the calculated 5G standard industry aggregate rate and regional rates are fully reasonable.

Fifthly, Professor Gong Jiong did not deny the value brought by 5G communication technology, but emphasized that the revolutionary and breakthrough contributions brought by 5G communication technology mainly took place in broader application fields besides smartphones. This view is not only supported by a large amount of factual evidence, but also consistent with the empirical calculation results of Professor Gong Jiong. In addition, the issue of SEP royalty stacking not only has a sufficient literature base, but also has been confirmed by industrial licensing practices and court rulings. The top-down approach can solve this problem.

4. Dr. Padilla's Further Response to Professor Gong Jiong's Response

In response to Professor Gong Jiong's rebuttal, Dr. Padilla issued another rebuttal, believing that it is incorrect and misleading that Professor Gong Jiong stated in the opinion that the downward trend in 5G price increment is consistent with the downward trend in the average selling price of 5G smartphones; unweighted hedonic price regression analysis is correct; and the upward adjusted R^2 can verify the forecast model, etc. Professor Gong Jiong did not provide the Canalys data set used in his analysis, so his report is not reliable. If Professor Gong Jiong's method were to be conducted through using IDC data, completely different results would be obtained.

(II) Regarding Rate Calculation Using the Comparable License Approach

1. Professor Gong Jiong's Rate Calculation Using the Comparable License Approach

Professor Gong Jiong believed that the 2018 OPPO agreement complied with the FRAND principle and is a comparable agreement in this case. The 2018 OPPO agreement was unpacked to deduce the reasonable range of 4G and 5G royalties that Nokia can charge OPPO during the new license agreement period.

By unpacking the 2018 OPPO agreement, the 4G multi-mode mobile phone DPU royalties and percentage royalty rates for each region under the agreement can be concluded.

[REDACTED]

[REDACTED]

Subsequently, based on the regional division and regional discount adopted in the top-down approach, and assuming that the above-mentioned DPU royalty for 4G multi-mode mobile phone is the royalty for Region 2 and 3 (assuming that the sales areas of the licensed products are concentrated in Region 2 and 3, which is a conservative calculation methodology that favors Nokia). It was further calculated that the DPU royalties for Region 1 and Regions 2 and 3 are [REDACTED] and [REDACTED], and the percentage royalty rates are [REDACTED] and [REDACTED].

Secondly, based on the change in Nokia's patent strength between 2018 and 2021, the royalty rates for 4G multi-mode mobile phones in each region during the 2021 licensing agreement period were further inferred. Specifically, Professor Gong Jiong comprehensively considered the Concur IP and Moqiu reports and calculated that the change ratio of Nokia patent strength concerning 4G multi-mode mobile phone is [REDACTED]. Assuming that the aggregate rates of the 4G/3G/2G standard industries between 2018 and 2021 remained unchanged, it was inferred that the percentage royalty rates for Nokia 4G multi-mode mobile phones during the 2021 OPPO agreement is [REDACTED] (Region 1) and [REDACTED] (Regions 2 and 3).

Thirdly, assuming that the 5G standard contributes half of the value in 5G multi-mode mobile phones, and the other half of the value is the 4G multi-mode value, by using the 5G standard industry aggregate rate calculated through the Hedonic price regression model, the 5G single-mode percentage royalty rate ranges in each region during the 2021 OPPO agreement period were calculated, which is [REDACTED] for Region 1. Then, taking 4G multi-mode's percentage royalty rate in each region into consideration, it was calculated that the percentage royalty rate range for 5G multi-mode mobile phones in Region 1 is [REDACTED]; and the percentage royalty rate range for Region 2 and 3 is [REDACTED].

Based on [REDACTED] mentioned in OPPO's [REDACTED] report, to deduct non-phone per se factors like packaging material costs and transportation and insurance costs, as well as estimated patent royalties payable, [REDACTED]. Considering the price decline trend of 5G mobile phones in the future agreement period, [REDACTED] dollars to [REDACTED] dollars was decided as the net selling price. The DPU royalty range for 5G multi-mode mobile phones in Region 1 is further calculated as [REDACTED]; for Region 2 and Region 3, the DPU royalty range is [REDACTED].

Fourthly, considering [REDACTED] mentioned in OPPO's [REDACTED] report, deducting non-phone per se factors like packaging material costs and transportation and insurance costs, as well as estimated patent royalties payable, [REDACTED]. Considering the price decline trend of 4G mobile phones in the future agreement period, [REDACTED] dollars to [REDACTED] dollars was decided as the net selling price. The DPU royalty ranges for 4G multi-mode mobile phones in each region are [REDACTED].

2. Professor Gong Jiong's Cross-Check by Unpacking Huawei Agreement

Based on the Huawei agreement, Professor Gong Jiong calculated that the non-regional-division mixed DPU royalty that Nokia can charge OPPO for 5G multi-mode mobile phones is [REDACTED] dollars. The Professor believed that this result is within the calculated ranges of Professor Gong Jiong's two calculation approaches and can be a reference for cross-check of the two calculation approaches' results.

3. Associate Professor Tang Mingzhe's Rate Calculation Using Comparable License Approach

Associate Professor Tang Mingzhe argued that the comparable license approach is the best approach to be used in this case. For lump-sum royalty agreements, Associate Professor Tang Mingzhe calculated the reasonable 5G royalty range that Nokia can charge OPPO based on 2018 OPPO agreement and Xioami agreements (including [REDACTED] Xiaomi agreement and [REDACTED] Xiaomi agreement). Moreover, the Associate Professor also unpacked and analyzed [REDACTED]. The major calculation process is as follows:

Firstly, Associate Professor Tang Mingzhe believed that, for unpacking using the comparable license approach, the unpacked royalty from unpacking lump-sum royalty agreements and the unpacked on-actual-sale running royalty are not directly comparable. Moreover, the time benchmark for risk assessment of unpacking must be the Parties' recognition of the agreement's value when signing the agreement, which means that reasonable Net Present Value rate shall be applied so as to discount all payments and relevant sales etc. to the signature date and to reflect the time value and risk of funds.

Moreover, unpacking the 2018 OPPO agreement to get 4G multi-mode one-way DPU royalty of Nokia's patent portfolio. Firstly, according to 2018 OPPO agreement, [REDACTED] provides that the total sale shall be [REDACTED] units for [REDACTED] years. Associate Professor Tang Mingzhe applied Net Present Value on both net royalty and expected sales [REDACTED], and concluded the present value of the net payment balance is [REDACTED] dollars [REDACTED], the present volumes of expected sales is [REDACTED] units [REDACTED], and calculated the [REDACTED] dollars [REDACTED] for 4G multi-mode mobile phones' DPU royalty.

Taking into consideration Nokia's [REDACTED] discount for China provided to OPPO, as well as the sales weights in China and other countries and regions of relevant OPPO+4G multi-mode products provided by IDC (China [REDACTED], other countries and regions [REDACTED]), according to formula: Global DPU royalty = Weight of China × DPU royalty in China + Weight of other countries and regions × DPU royalty in other countries and regions; DPU royalty in China = DPU royalty in other countries and regions × [REDACTED], it was concluded that 4G multi-mode DPU royalty in China is [REDACTED] dollars/unit (discounted) or [REDACTED] dollars/unit (without discount), 4G multi-mode DPU royalty in other countries and regions is [REDACTED] dollars/unit (discounted) or [REDACTED] dollars/unit (without discount).

Next, unpacking [REDACTED] Xiaomi agreement and [REDACTED] Xiaomi agreement, and Nokia patent portfolio's 5G multi-mode one-way DPU royalty is concluded. The detailed unpacking steps are as follows:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

4. Professor Gong Jiong's Rebuttal to Associate Professor Tang Mingzhe's Comparable License Approach Calculation

Regarding the views in the report of Associate Professor Tang Mingzhe, Professor Gong Jiong rebutted: Firstly, there is no absolute advantage or disadvantage between the top-down approach and the comparable license approach. Analysis should be based on the actual case circumstances. Both approaches can be used in this case and can be cross-checked. Secondly, Associate Professor Tang Mingzhe mistakenly used [REDACTED] when unpacking the 2018 OPPO Agreement. Thirdly, although Associate Professor Tang Mingzhe emphasized that the unpacking should be based on the consensus of both parties, the Parties did not consider Net Present Value issue during 2018 OPPO agreement negotiation, so the Net Present Value rate is a subjective view imposed by Associate Professor Tang Mingzhe based on the relevant knowledge she had acquired afterwards. Fourthly, Associate Professor Tang Mingzhe's so-called "regional discount" is actually a calculation methodology used by Professor Gong Jiong to cross-check the results of the comparable license approach and the top-down approach. In fact, Professor Gong Jiong's unpacking result of the 2018 OPPO agreement was produced by independent calculation, and no regional discount was used in the calculation process.

Fifthly, Associate Professor Tang Mingzhe's comparable license approach has serious flaws, totally ignoring the [REDACTED] explicitly provided in [REDACTED] Xiaomi agreement.

5. Associate Professor Tang Mingzhe's Response to Professor Gong Jiong's Rebuttal

In response to Professor Gong Jiong's point of view, Associate Professor Tang Mingzhe responded that for the agreement period and beyond, Professor Gong Jiong ignored the important fact that mobile phones are the most important terminal equipment for the application of 5G communication technology; Professor Gong Jiong failed to fully show that the problem of royalty stacking is real; the 4G standard industry aggregate rate of 6%-8% is not an industry consensus, and has not been recognized by court rulings for many times. The Associate Professor also emphasized that Net Present Value is the basis for correct value analysis in economics, and argued for Net Present Value's reliability regarding unpacking 2018 OPPO agreement. Associate Professor Tang Mingzhe also emphasized that the Xiaomi Agreements and [REDACTED] can be used as comparable agreements in this case.

Finally, regarding the unpacking process of the Xiaomi agreements, Associate Professor Tang Mingzhe emphasized that her estimate of Xiaomi's sales is reasonable, and it is reasonable to use [REDACTED] and [REDACTED] data regarding Xiaomi [REDACTED].

[REDACTED]

[REDACTED]

VI. Other Relevant Facts Regarding the Rate Calculation Claimed by Each Party

(I) Facts about Rate Stacking and Industry Aggregate Rates

The Parties cited a series of papers and news reports to prove the existence of royalty stacking.

Regarding the industry aggregate rate, (1) (2018) Su 01 Min Chu No. 232, 233, and 234 Civil Judgment determined that the industry aggregate rate for 4G standard essential patents is 6%-8%; (2) News reports show that, in 2009, Ericsson advocated that the maximum aggregate royalty level for mobile phones of the LTE standard be 6%-8%; in 2008, Nokia released a statement believing that it would hold 20% to 30% of all LTE standard SEP intellectual property, and predicting that LTE single-mode rate is 1.5% of end user devices' per unit selling price;

(3) Qualcomm released a statement in 2008, believing that there should be no upper limit on royalty; (4) The judgment of a foreign court on the FRAND royalty dispute between TCL and Ericsson stated that “Ericsson believed that the market would eventually push the royalty to a level of 6%-8%, and Ericsson believed at the time (and believes the same now), a single-digit percentage is a reasonable royalty rate. The above situation prompted the court to believe that before the adoption of the 4G standard, Ericsson believed that the total aggregate royalty rate for the 4G standard would be at least about 6%, but certainly not higher than 10%”; (5) A foreign court has inferred in UP v. Huawei case judgment that Huawei’s claim concerning 4G industry aggregate rate was not 8%, but higher, but “Huawei rejected the aforementioned disputed opinion, they argued a top-down approach with a T value of 8%”.

(II) Facts about 5G’s Patent Value and Industry Aggregate Rate Compared to 4G

Both Parties cited a series of social survey reports, market research reports, news reports, and website contents, which mainly showed the following content: **(1)** Regarding the value and contribution of 4G and 5G technologies to the mobile phone industry. For example, the *5G Application Innovation and Development White Paper* and *The Latest Development Trend of SEPs for 5G+ Industry (2021)* released by the China Academy of Information and Communications Technology in 2021 show that “4G business model innovation changes the industrial structure of mobile internet...The most profound experience that people have comes from 4G. 4G not only brings high-speed wireless connections, but also greatly promotes the development of the mobile internet industry. Mobile phone terminal manufacturers, system equipment manufacturers, telecom operators and internet companies have established a prosperous mobile internet ecosystem around 4G”, “Distinguished from 4G, which applies more to consumer side internet connection, 5G technical innovation brings a huge leap to internet performance, and will be closely integrated with the new generation digital technology, and promote the consumer side internet connection into industrial side internet connection, accordingly expanding the boundary of industrial ecology.”

“5G has been commercially available for two years, and China’s 5G applications have grown from 1 to 10. 5G applications continuously go deeper and applied more, and carry out application practices in various fields such as industry, medical care, and ports. It has now entered a critical period of large-scale development”, “Global 5G networks continue to spread, and industry terminals have become a new blue ocean for market development”, “Generally speaking, global 5G applications are in their infancy overall. Small-scale applications have been implemented in the fields of industrial internet, medical and health care, smart transportation and cities, public safety and emergency response, but large-scale and replicable applications still need time”, “It is not proper that the aggregate rate of the 5G industry is higher than 4G aggregate royalty rate”. **(2)** Regarding consumers’ choice and experience of 5G mobile phones. For example, relevant 5G mobile phone consumer experience reports from 2020 to 2021 show that “5G mobile phones are gradually becoming the mainstream of the market”, “The most decisive factor in the increase in market penetration of 5G mobile phones is that major manufacturers turn to the 5G track when launching new products, causing consumers to passively accept 5G mobile phone products when buying new phones”, “Over 70% of non-5G mobile phone users believe that the public currently has no demand to buy 5G mobile phones, and the lack of obvious advantages has become the biggest obstacle to the popularization of 5G mobile phones”, “There is a lack of revolutionary application products for personal consumers in the current 5G era, 4G networks can still fulfill the users’ basic needs and 5G’s advantages can hardly be shown, there is thusly a bottleneck for its popularization”, “In the first half of 2021, 70% of users passively replace their phones with 5G mobile phones”. **(3)** About the innovation and application of 5G technology. For example, many other reports and news reports, including the reports of China Academy of Information and Communications Technology, show that: compared with 4G, 5G has higher transmission speed, lower latency, higher reliability, massive network capacity and other properties, and can be used in a variety of innovative communication scenarios; 5G has been performing its enabling effects in multiple vertical areas, such as industry, medical care, education and transportation, etc., forming various typical application scenarios with commercial value, and covering 40 of the 97 major categories of national economy;

China's 5G construction is developing rapidly, and the sales of 5G smartphones are increasing year by year. **(4)** OPPO's official website also introduces and promotes 5G technology and 5G mobile phones. **(5)** Multiple news reports and reports show that in 2022, the shipment volume of 5G mobile phones did not significantly exceed that of 4G mobile phones. Among them, updated data released by Counterpoint Partners shows that by 2022 Q2, global 5G shipments exceeded 4G for the first time; OPPO's statistics from the Digitimes report show that 5G mobile phone shipments accounted for 51.96% in 2022; OPPO statistics from Gartner report show that 5G mobile phone shipments account for 50.9% in 2022.

(III) Relevant Facts about Regional Division and Rate Discounts

The content of the judgment issued by a foreign court in UP v. Huawei shows that, that court determined that the value share of the 4G/3G/2G standards in 4G multi-mode mobile phones is 70:20:10, and for rate in China, a 50% discount shall be applied to the benchmark rate; the HEVC patent pool involves video standard essential patents, which actually divides the regions when setting royalty rate standards, and applies corresponding discounts according to the regions, of which a 50% discount is applicable to the region of China; the National Development and Reform Commission (NDRC) penalized Qualcomm for abusing its market dominance and ordered it to stop illegal activities and imposed a fine. At the same time, Qualcomm cooperated with the investigation and proposed rectification measures, including that for mobile phones sold to be used in China, the base for collecting patent royalty is 65% of the devices' net distribution prices, which met the decision and rectification requirements of NDRC; A relevant report released by IPLytics in 2022 shows that for the 5G patent families declared by Nokia, the distribution of its patent families in China, the United States, and Europe are respectively [REDACTED];...

... *The Global 5G Patent Activity Report* released by the CAICT shows that Nokia's patent families issued by the USPTO accounted for 10.3%, the patent families issued by the EPO accounted for 13.2%, and the patent families issued by the China's CNIPA accounted for 6.8%. According to OPPO statistics on the data from patent list provided by Nokia when [REDACTED] during the negotiation process of the 2021 OPPO agreement, the US patent families are [REDACTED] and the Chinese patent families are [REDACTED]; As to what Nokia alleged during the jurisdictional challenge stage of this case, regarding 4G and 5G SEPs, among the patent families that have at least one issued patent, the number of patent families that have at least one issued US patent is [REDACTED], and the number of patent families that have at least one issued Chinese patent is [REDACTED].

Nokia stated at trial that it had communicated with [REDACTED], and it started to offer special licensing conditions to mobile phone manufacturers in the mainland of China since [REDACTED] regarding [REDACTED] cellular mobile end user devices. That is, the royalty base used for Nokia's collection of [REDACTED] SEP royalty regarding mobile phones that are manufactured, sold and only for use in the mainland of China is [REDACTED] of the royalty base for phones sold outside the mainland of China. Nokia also showed pictures of online sales pages, in an attempt to prove that the sales prices of some OPPO phones in OPPO-alleged Region 3 countries are higher than that of Region 1. OPPO argued that pricing fluctuations in different regions during a specific period was caused by special reasons like lawsuit injunctions and discounts, etc.

(IV) Relevant Facts Regarding the Dispute over Nokia's Patent Strength

1. About the Number of Declarations

Clarivate Analytics is a global professional information service provider. The content of *Demystifying the 5G Standard Essential Patent Landscape: Phrase 3* released by Clarivate Analytics shows that, based on SEPs declared to ETSI during March 1, 2016 to December 31, 2021, the number of Nokia's declared patent families is 2994, among a total number of 46322.

Nokia's 5G patent strength accounts for approximately 6.46%, and Huawei's share in the number of declared patent families is about 14.17%.

The *Global 5G Patent Activity Report (2022)* released by the Intellectual Property and Innovation Development Center of the CAICT shows that, by counting and analyzing 5G patents declared by different members to ETSI within a duration of the time when the declaration being made from January 1, 2017 to December 31, 2021, Nokia's share of valid patent families worldwide is 7.6%, and Huawei's share of valid patent families worldwide is 14.0%.

Beijing Moqiu Technology Co., Ltd. (including Moqiu Technology and Moqiu Intellectual Property Agency) is a high-value patent cultivation and operation software and service organization. According to its publicity statement, the company has participated in the data provision for multiple famous domestic patent litigations, licenses and transactions. Its *In-Depth Analysis Report of 4G/5G SEPs in 2021 (January 2022 Version)* shows that, as of July 31, 2021, the number of 4G SEPs that Nokia declared to ETSI accounted for 7% of all 4G SEPs, and its share of 5G SEP strength was also 7%.

According to *Who Is Leading the 5G Patent Race in November 2021* released by IPLytics in November 2021, as of September 30, 2021, Nokia's 5G patent families declared to ETSI (including issued patents and patent applications) accounted for 8.34% of all declared 5G patent families; in addition, the *2022 5G Patent Benchmark Report* released by IPLytics in September 2022 shows that as of July 1, 2022...

...the 5G SEP families of Europe, the United States or China, which are declared by Nokia to ETSI, accounted for [REDACTED] of the 5G SEP families declared by all rights holders; *Who Is Leading the 5G Patent Race* published by IPLytics shows that, starting from 2020, the actual share of 5G SEPs declared by Nokia to ETSI [REDACTED].

According to its introduction, Questel is a world-leading intellectual property database service provider headquartered in Paris, France. In 2019, Questel acquired the intellectual property service company Concur IP. Concur IP's database information on "Patent Census of ETSI Data" shows the respective shares of Nokia's 2G-4G SEPs in global 2G-4G SEPs as of [REDACTED], as well as the shares of 2G-4G SEPs which are still valid after the year of 2022. Among them, as of [REDACTED], the 4G multi-mode SEPs owned by Nokia accounts for a share of [REDACTED], and after the year of 2022, the shares of Nokia's 2G-4G SEPs which are still valid and the shares of Nokia's 4G multi-mode SEPs, are [REDACTED] respectively.

2. About the Number of Approved Contributions

The judgment of (2016) Yue 03 Min Chu No. 840 issued by the Shenzhen Intermediate People's Court of Guangdong Province shows that the number of approved contributions, the number of declarations, and research reports on patent samples' assessment of essentiality, etc., are all important measures to evaluate the SEP strength of each member.

Reports and articles such as the *Research Report on Global 5G Standard Essential Patents and Standard Contributions* released by the China Academy of Information and Communications Technology and other institutes show that, among the 5G contributions counted in most reports, Nokia's share of approved contributions ranked third.

A report released by ABI Research in 2016 shows that among all industry participants in the setting of LTE standard, Nokia ranked first in the number of contributions, ranked second in the number of approved contributions, ranked first in the number of technical work project leaders, and ranked second in the number of chairs in relevant work groups.

3. About the True Essentiality Rate of Nokia's Patents

GreyB and Amplified released reports showing that as of November 26, 2019, Nokia's 5G core standard essential patent families accounted for 14.6%; PA Consulting released a report showing that as of [REDACTED], Nokia's 5G true essential patent families accounted for [REDACTED]; IPLytics released a report in 2021 showing that as of February 1, 2021, Nokia's 5G issued and valid patent families accounted for 13.23%. For the share of valid 5G patents issued by EPO and USPTO, a calculation based on the essentiality rate of 1000 mapping patents shows that Nokia's share of 5G patents is 11.44%.

On January 6, 2010, Fairfield International Resources analyzed patent data declared as essential for 3GPP Release 8, showing that as of June 30, 2009, Nokia's 4G true essential patent families accounted for 54.3%; On January 6, 2009, Fairfield International Resources released a report showing that Nokia's 3G true essential patent families accounted for 26.1%; On December 31, 2007, Fairfield International Resources released a report showing that Nokia's 2G true essential patent families accounted for 42.4%;...

... [REDACTED], PA Consulting published a report showing that the percentage of Nokia's true essential FDD patents is [REDACTED]; [REDACTED], PA Consulting published a report showing that the percentage of Nokia's true essential LTE patents is [REDACTED]; [REDACTED], PA Consulting published a report showing that the percentage of Nokia's true essential patents of LTE-advanced version is [REDACTED].

Questel conducted an analysis and reported on the true essentiality of the 5G standard essential patents declared by each right holder to ETSI as of [REDACTED]. According to the analysis results, the true essential rate of the standard essential patents declared by Nokia is [REDACTED], [REDACTED] the industry average [REDACTED].

4. About Patent Invalidation Declaration

From September 2011 to October 2022, the invalidation status of Chinese patents of Nokia and its affiliated companies is as follows: a total of 45 Chinese patents [requested to be invalidated], of which 18 patents are wholly invalid, 17 patents are partially invalid, and 10 patents are maintained valid.

The Parties also cited the invalidation status of Chinese patents between Huawei and Samsung, OPPO and Sharp, Xiaomi and OPPO and Sisvel. Among the 22 invalidation request decisions between Huawei and Samsung, besides 8 non-standard essential patents, 9 patents were maintained valid (including partially valid); OPPO and Sharp filed 24 patent invalidation applications, 8 of which were maintained valid (including partially valid); Xiaomi, OPPO and Sisvel applied for 8 patent invalidations, and 4 of them were maintained valid (including partially valid).

In the series of cases between Nokia and Daimler, Daimler filed 6 patent invalidation applications with the European Patent Office, 5 of which were valid or partially valid, and 1 was declared invalid.

OPPO argued that, for patents that have been declared partially invalid, their core claims have been invalidated, and the value of the patents has actually been greatly reduced. Therefore, it is more reasonable to classify partial invalidation into invalidation when counting. Nokia argued that the current decisions of invalidity declarations will be further reviewed through judicial appeal process and are still not the final results.

(V) Relevant Facts about OPPO Mobile Phone Profits and Sales During the 2021 OPPO Agreement Period

Canalys reports, IDC reports and public news reports provided by OPPO show that OPPO mobile phones account for a small share of profit in the global mobile phone market. OPPO mobile phone shipments dropped by about 22% in Q2 of the year of 2022 and the year of 2022, as compared to the same period in the previous year. News reports provided by Nokia show that, in 2021 Q2, OPPO mobile phone sales increased, as compared to the same period in the previous year; OPPO executives believed that OPPO had room for growth in 2022; there is an upward trend in the Chinese mobile phone market in 2023 Q2.

Regarding the neutrality of Canalys, [REDACTED]. Canalys immediately issued a written statement, [REDACTED], and emphasized that Canalys is a neutral and third-party data institute, [REDACTED].

(VI) Relevant Facts about Mobile Phone Prices to Be Used for Royalty Base

According to the judgments issued by foreign courts in the cases of UP v. Huawei and the FRAND royalty dispute between TCL and Ericsson, the royalties therein were calculated based on the net selling price.

The net selling price is the device-only price after deducting normal transaction discounts, packaging costs, insurance and transportation costs, taxes and duties, etc.

Nokia also used net selling price as royalty base when signing license agreements with Wavecom and SONIM, and there are corresponding definitions for net selling price in the relevant agreements.

[REDACTED]. Canalys database counted the sales and corresponding statistical data of OPPO, Oneplus, and Realme brand smartphones from 2021 to 2022 Q3.

The Strategy Analytics report cited by Nokia stated, [REDACTED]. Nokia believed accordingly that the average selling price it argued is substantially the same as the net selling price argued by OPPO. But OPPO believed that the two are totally different, the net selling price argued by OPPO would at least deduct costs such as packaging material costs, insurance and transportation costs and taxes, but the average selling prices argued by Defendants does not have the aforementioned expenses or costs deducted.

(VII) Relevant Facts Regarding Whether the [REDACTED] Xiaomi Agreement is a Comparable Agreement

1. Facts about the Connection between Xiaomi and Nokia

The Nokia Growth Fund was established by Nokia Corporation. Nokia Growth Fund has private equity funds Nokia Growth Fund II and Nokia Growth Fund IV.

On August 24, 2017, Nokia Growth Fund II subscribed for 495,830 F-1 series preference shares issued by Xiaomi Group, with a shareholding percentage of 0.0237%. After the completion of the global offering, the percentage further dropped to 0.0222%, and the shareholding period is until [REDACTED].

On September 26, 2018, Nokia Growth Fund IV led the C+ round of financing of Chunmi Technology, and Xiaomi Group was an angel investor in Chunmi Technology. Chunmi Technology joined the Xiaomi ecological chain in 2014. In 2019, there were more than 400 cooperative companies in Xiaomi's ecological chain.

Nokia Growth Fund and Xiaomi have both invested in the "Yuedong Circle" APP, a product of Shenzhen Yuedong Tianxia Technology Co., Ltd. After the investment in March 2017, Nokia (Beijing) Technology Co., Ltd. and Tianjin Jinmi Investment Partnership (Limited Partnership) obtained approximately 4.78% and 0.96% of the equity of the invested company. Then, Tianjin Jinmi Investment Partnership (Limited Partnership) transferred its equity to Tianjin Jinxing Venture Capital Co., Ltd., and the two sold corresponding shares on December 21, 2021 and December 9, 2022 respectively.

2. Related Facts about the Industrial Model

Xiaomi mainly operates an online sales model, while OPPO mainly operates an offline dealer plus physical store model. Nokia also provided evidence to demonstrate that OPPO has close ties with its dealers, and there is little substantial difference in the sales models of the two companies. Xiaomi Group's annual reports for 2018, 2019, 2020 and 2021 show that in addition to smartphones, Xiaomi Group's products also include the Internet of Things (IoT), consumer goods and internet services, etc. Reports show that in 2020 and 2021, Xiaomi's sales in Europe accounted for 14% and 20% respectively.

Regarding the production and sales of the companies' products in various countries, both Xiaomi and OPPO have business models similar to [REDACTED].

Tech Insights' *Revenue Share: Global Smartphone Revenue, ASP and Profit by Manufacturer and Price, Q4 2022* report shows that, [REDACTED]

3. Other Facts

Huawei's mobile phone business declined sharply around 2020. The market shares of other domestic mobile phone manufacturers including Xiaomi all increased to a certain degree. There were also news report predicting that Xiaomi might be the major beneficiary.

Relevant reports and entities' official websites show that, OPPO sold its first model of mobile phone in 2008, and Xiaomi sold its first model of mobile phone in 2011. [REDACTED]

(VIII) Relevant Facts about Whether the Huawei Agreement Can Be Used for Unpacking Calculation and Cross-Check

In 2021, OPPO and Huawei's subsidiary Hubble Technology Venture Capital Co., Ltd. respectively invested in Ruishi Chuangxin (Shenzhen) Technology Co., Ltd., holding 7.0644% and 6.7976% of the shares respectively; in the same year, the two companies also invested in Weijie Chuangxin (Tianjin) Electronic Technology Co., Ltd., holding 3.39% and 3.57% of the shares respectively. Xiaomi also invested in the company. Nokia argued that according to OPPO's understanding of association transactions, the above facts is more capable of proving that the Huawei agreement is an association agreement.

It is made clear in the three SEP infringement cases filed by OPPO against Nokia in Germany, that [REDACTED]. Therefore, the Huawei agreement alone cannot reflect the total situation of the whole transaction and the actual license conditions reached upon.

VII. Other Facts

During the process of this case, this Court, with the consent of both Parties, communicated the mediation matter over the phone for multiple times, and the Parties were arranged to come to the Court for several confidential mediations. However, the mediation failed due to the huge difference between the licensing offers and counter offers respectively provided by the Parties.

[Reasoning part]

This Court holds that since Defendant Nokia Corporation and Defendant Nokia Technologies Oy are both legal entities registered in the Republic of Finland, the civil relationship involved in this case is a foreign-related civil relationship and accordingly this Case should be tried according to the foreign-related litigation procedures. The dispute brought by Plaintiffs to this Court is a standard essential patent royalty dispute. It is a new type of intellectual property dispute with both contract and tort characteristics. The Parties have not agreed on the applicable law. However, the licensing subject matter of this case involves a number of Chinese patents, and, as the implementer required for the license, Plaintiffs' registration place, major production, R&D and manufacturing base, the manufacturing conduct that implements the SEPs, the expected place where the patent license agreement will be signed, the place where the patent license is actually negotiated, the place where the protection is requested, and the place where the Court sits, are all located within the territory of the People's Republic of China.

According to the provisions of Articles 41, 49, and 50 of the Law of the People's Republic of China on the Application of Laws in Foreign-Related Civil Relations, regardless of whether it is an intellectual property contract dispute or a tort dispute, this case shall be governed by the law of the People's Republic of China.

Defendants submitted a "Civil Counterclaim Complaint" to this Court during the trial, arguing that the Court should consolidate the following requests petitioned by the Defendant into this case: 1. To adjudge that OPPO, OPPO Shenzhen Branch, and OPPO Smart breached the obligation of good faith negotiation during the SEP licensing negotiation and thus they are not willing implementers to accept license; 2. To order OPPO, OPPO Shenzhen, and OPPO Smart to compensate a loss of 50 million RMB caused by [REDACTED]. Main facts and reasons argued by the Defendants: 1. OPPO is not a willing implementer to accept license; 2. OPPO [REDACTED] should bear the legal liabilities such as pay damages.

In this regard, this Court believes that the lawsuit filed by Plaintiffs is based on the legal relationship where the Parties failed to reach an agreement through negotiation and thus it is necessary to request the Court to adjudicate the conditions of license. Defendants' requests are based on the legal relationship that OPPO allegedly violated its obligation to negotiate in good faith and its alleged liability for monetary compensation, and thus the essence of such requests is a tort cause of action seeking compensatory relief. The requests petitioned by the Defendants, as compared to those by the Plaintiffs, relate to a different legal relationships or legal facts, and there is no causal relationship between the Parties' requests. Therefore, Defendants' requests lack any connection with the subject matter of this case. In summary, Defendants' requests do not constitute counterclaims in the legal sense. Moreover, Defendants' requests for a consolidated trial when the litigation in this case has been ongoing for nearly two years is not conducive to the efficient resolution of the disputes in this case. Therefore, this Court will not deal with the Defendants' above requests in this case.

As for Defendants' argument that the dispute in this case should not be accepted nor to be judicially adjudicated without the consent of the opposing Parties who participated in the cross-licensing negotiation, this Court believes that this argument has been already resolved in the jurisdictional objection ruling of this case. This Court will not hereby repeat the specific reasons thereunder. This Court does not adopt Defendants' above argument in accordance with the law.

In this case, the Parties made FRAND commitments to ETSI and other international standardization organizations, and Plaintiffs requested for a determination of patent licensing conditions that are in compliance with FRAND principles. Neither Party disputed these facts. The Court in this case will determine the licensing conditions according to the principles of fairness, reasonableness, non-discrimination, as well as the principle of good faith. Based on the evidence and cross-examination of both Parties and the arguments of the Parties, this Court summarizes that the main points of dispute in this case are: (1) Whether Defendant Nokia Beijing is an eligible defendant in this case; (2) Whether the prerequisite for this Court to determine the licensing conditions for the SEPs involved in the case has been met; (3) How to determine the specific licensing conditions in this case. Among them, under the third points of dispute, how to determine the royalty (royalty rate) for 4G and 5G multi-mode mobile phones is the most important dispute in this case. This Court will discuss respectively as follows.

I. Regarding Whether Defendant Nokia Beijing Is an Eligible Defendant in This Case

Current evidence shows that the applicants and rights holders of the standard essential patents involved in the case, as well as the declarants who made commitments to relevant standardization organizations, are Defendants Nokia Corporation and Nokia Technologies Oy, and Defendant Nokia Beijing is a wholly-owned subsidiary of the Defendant Nokia Corporation. Plaintiffs cited negotiation emails and other evidence to prove that Gong Tiande, the legal representative of Defendant Nokia Beijing, participated in the patent licensing negotiations at issue, and Defendants did not dispute hereto. Despite that Defendants argued that Gong Tiande's behavior of participating in the negotiations did not represent the company's behavior, there was no evidence to support the argument, and the corresponding subject matter of negotiation was about the company's patent licensing business.

Therefore, this Court, taking the aforementioned facts into consideration, finds that Defendant Nokia Beijing actually participated in the patent licensing negotiation at issue. The three Defendants are affiliated companies and worked together for SEP application, declaration and outward license, etc., enjoy common rights and interests, and are all eligible defendants to this case.

II. Regarding whether the Prerequisite for this Court to Determine the Licensing Conditions for the Standard Essential Patents Involved in the Case has been Met

Defendants argued that because Plaintiffs did not negotiate in good faith and were not willing implementers, thus in this case, the prerequisite for a court to adjudicate is not met, which requires the parties have had full negotiations in good faith. In this regard, this Court believes that, according to Section 3, Article 24 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 (II) which stipulates that, "The conditions of implementation license in section 2 of this Article, shall be determined by patent holders and alleged infringer through negotiation, if a consensus still cannot be reached after full negotiations, then the people's court can be requested to make a determination. When determining the aforementioned conditions of implementation license, the People's Court shall, in accordance with the fair, reasonable and non-discrimination principle, comprehensively consider factors such as the innovative degree of the patent and its role in the standard, the technical field of the standard, the nature of the standard, the implementation scope of the standard and relevant licensing conditions, etc." It can be seen that the prerequisite for the People's Court to determine the licensing conditions for standard essential patents at the requests of the party (parties) should be met upon the fact that the two parties still cannot reach an agreement after full negotiations, rather than whether the negotiation behaviors of the parties comply with the FRAND principle or whether the parties negotiate in good faith. Therefore, Defendants' argument lacks legal basis and this Court will not adopt it in accordance with the law.

In this case, the two Parties had started negotiations of renewing the agreement since as early as [REDACTED], and the negotiation period had lasted for several years till the trial of this case, during which tens of rounds of commercial negotiations and technical negotiations had taken place.

As for the negotiation process, the length and style of the negotiations between the Parties have been consistent with the characteristics of the transaction and general market practice, and certain progress has been made, including basically specifying the licensing period, licensed products and scope of license, etc., which terms are easier to be agreed upon. Although the Parties arranged themselves and went through many rounds of negotiations, and even during the trial stage of this case, this Court arranged multiple mediation negotiations between the Parties who still remain far apart on license price which is at the heart of the disputes. At the same time, Defendants filed lawsuits against Plaintiffs in a number of countries around the world for infringement of the patents at issue in [REDACTED] while Plaintiffs countered by filing multiple patent lawsuits or patent invalidation proceedings. From the perspective of negotiation period and where things stand, or from the litigation behaviors around the globe by the Parties, it can be seen that, the Parties had fully negotiated over the conditions of the implementation license of the patents at issue, but failed to reach a consensus through market negotiations. Under this situation, the court has the authority to determine the license conditions for the SEPs at issue and helps to untangle the negotiation deadlock between the Parties in accordance with the law.

III. How to Determine the Specific Licensing Conditions in this Case

In this case, Plaintiffs set forth the licensing conditions requested to be determined. Specifically, the licensing scope requested is worldwide, including global licensing royalties; the licensed standards are 5G, 4G, 3G and 2G; the licensed patents are standard essential patents that comply with 5G, 4G, 3G and 2G standards that Plaintiffs requires to obtain license for implementation and that are owned or licensable by Defendants and their affiliates; the license period is 3 years, that is, [REDACTED]. The licensed products are smart terminal products under three brands: OPPO, Realme, and Oneplus.

Regarding the specific licensing conditions requested by Plaintiffs, it has been determined in the jurisdictional challenge ruling of the case that the scope of license is the licensing conditions worldwide. In addition, the Parties did not dispute about the licensed standards, licensed patents, and licensing period, which are requested by Plaintiffs to be determined, and they are substantially consistent with the scope of the Parties' negotiation. The Court hereby affirms them.

Regarding the licensed products, Defendants argued that the brands of Realme and Oneplus are not owned by Plaintiffs and should not fall in the scope of licensing conditions determined by the Court. Plaintiffs argued that the two brands are already within the scope of the 2018 OPPO agreement between the Parties, and are also part of the current renewal negotiations. At the same time, the brands' holding companies and Plaintiffs are affiliated companies and corresponding authorization documentations have been issued, so they should be included in the scope of licensing conditions determined by the Court. In this regard, this Court believes that based on the existing license agreement in this case cited by the Parties, it can be seen that for SEP licensing, it is a common business practice in the industry for the implementer and licensor to put the products made or patents held by affiliated companies into the scope of negotiations and licenses. The OPPO, Realme and Oneplus brands that Plaintiffs request to be put into the scope of licensed products are actually [REDACTED]. Putting such three brands into the licensed products as contemplated in this case is in line with common business practice and the negotiation scope of the Parties. This Court decides that the licensed products put in the licensing conditions are the three brands, namely, OPPO, Realme, Oneplus. This Court does not adopt the arguments by Defendants in accordance with the law.

After determining the above licensing conditions, then the determination of the royalty rates is at the heart of the dispute. Since Plaintiffs had halted production of 2G and 3G multi-mode mobile phones before when the agreement under dispute should start, the royalties to be determined in this case are only 4G multi-mode mobile phone royalty rate and 5G multi-mode mobile phone royalty rate.

(I) Determining the Comparability of Relevant License Agreements in this Case

In this case, taking the Parties' arguments into consideration, the issue of comparability needs to be addressed with regard to the 2018 OPPO agreement, [REDACTED] Xiaomi agreement and [REDACTED]. In addition, Plaintiffs also cross-checked through simple unpacking of the Huawei agreement, but make it clear that they do not argue that the Huawei agreement is a comparable agreement in this case.

This Court believes that when evaluating whether a licensing agreement is comparable, factors like the parties of the licensing transaction, the connection between the licensed subject matters, the transaction subject matters covered by the royalty, and the true expression of intention of both parties to the licensing negotiation, should be comprehensively considered. Based on this evaluation principle, this Court determines that the 2018 OPPO Agreement and the [REDACTED] Xiaomi Agreement are both comparable agreements in this case, and [REDACTED] is not comparable. The specific reasoning is as follows:

1. The 2018 OPPO Agreement Is Comparable

Regarding the 2018 OPPO agreement, both parties of the licensing transaction are also the Parties of this case. The 2021 OPPO agreement should be a renewal agreement of it. All the licensed patents under the 2018 OPPO agreement (except for the expired or lost patent rights) should remain to be covered by the negotiated agreement in this case. In addition, the two agreements share the same scope of license (worldwide), licensed products and licensing period, etc., differing only in licensed dates and those patents in the license [REDACTED]. During the trial, the Parties both agreed that the 2018 OPPO agreement is a comparable agreement in this case. Therefore, this Court decides that the 2018 OPPO agreement is comparable after comprehensively considering the closely connected factors between the 2018 OPPO agreement and 2021 OPPO agreement.

2. [REDACTED] Xiaomi Agreement Is Comparable

This Court has conducted a comprehensive review of the [REDACTED] Xiaomi Agreement based on the existing evidence and decides that the [REDACTED] Xiaomi Agreement is a comparable agreement in this case. More specifically:

Firstly, Xiaomi is a competitor of mobile phone manufacture and sales, which is similarly situated with OPPO. In terms of the nature of company, Xiaomi and OPPO are both Chinese mobile phone manufacturers. They are mainly implementers of standard essential patents in the field of mobile communications. Both manufacturers sell mobile communications products in major markets around the world; in terms of global market share and shipments, in recent years, the overall mobile phone shipments of the two companies have been pretty close, and they rank among the top 10 or even top 5 by global mobile phone shipment. The two companies, as the leading enterprises in the mobile phone industry, are substantially similarly situated with regard to the manufacture and sale of mobile phones.

Secondly, the contents of [REDACTED] Xiaomi agreement are similar to the negotiated contents of 2021 OPPO agreement. The two agreements each cover patent scope as [REDACTED]; way of license as [REDACTED]; the licensed products as [REDACTED]; the geographic scopes as [REDACTED]; the payment arrangements of royalties as [REDACTED]; and the licensed periods as [REDACTED]. From such contents of license, the two agreements share many similarities, and are pretty comparable.

Thirdly, the [REDACTED] Xiaomi agreement was reached through arm's length negotiations between the two parties. The contents of the agreement demonstrate the true expression of intention by the parties. Moreover, [REDACTED] Xiaomi agreement was signed on [REDACTED], [REDACTED]. In the absence of contrary evidence proving that substantial market situations have changed during the interval between the two agreements, the market situations of the two agreements should be pretty similar.

Fourthly, Plaintiffs' other objections over [REDACTED] Xiaomi agreement's comparability does not hold water.

- (1) Plaintiffs' argument is unwarranted alleging that Xiaomi and Nokia's equity investment or joint investment relationship renders the agreement not comparable.

In this case, Plaintiffs alleged that the association relationship between the two companies exists in the equity investment of Nokia's Growth Fund in Xiaomi Group, and the joint investment of Nokia Growth Fund and Xiaomi in Chunmi Technology. In this regard, this Court believes that the invested party by Nokia Growth Fund is not the signing party of [REDACTED] Xiaomi Agreement; its purchase of Xiaomi Group preference shares was earlier than the signing time of [REDACTED] Xiaomi Agreement, and the share's sale time was also much earlier than [REDACTED] Xiaomi Agreement; the highest shareholding percentage of Nokia Growth Fund is only 0.0237%, which is a very small portion. Based on the above facts, it is difficult to say that such long-chain investment and minimal shareholding can lead to an association relationship due to the shareholding, which would impact on the signing of the [REDACTED] Xiaomi Agreement. Likewise, Nokia Growth Fund and Xiaomi's respective investments in Chunmi Technology are of the aforementioned nature. Therefore, the two facts alleged by Plaintiffs cannot render the [REDACTED] Xiaomi Agreement incomparable.

- (2) The changes in Huawei's market share in the mobile phone production and sales market cannot have a significant impact on the comparability of the [REDACTED] Xiaomi Agreement.

Both Parties acknowledged that Huawei, as the leading company in the global mobile phone market, has experienced a sharp decline in its global mobile phone market share around the signing of the two agreements. This fact should become the market background that all mobile phone production and sales companies may consider when signing the relevant license agreements. There is no evidence showing that the market gap left would be scooped up by only one company, let alone concluding that the market situations, which would be considered by each of the implementing parties under the two agreements when signing the agreements, have differed substantially to the extent that the implementers would pay the licensors the royalties that enormously deviates from the value of the licensed patents and accordingly rendering the two agreements incomparable.

- (3) The differences in the companies' sales systems and operating practice should not affect the determination of comparability of the agreements.

This Court believes that even if there are significant differences in sales systems and business practice between the two companies, they would only affect the companies' operating efficiencies and lead to differences in the companies' operating costs. When it comes to the products, there may be an impact on product costs and sales volume. This will not have a significant impact on the evaluation of the value of the licensed patents and cannot therefore affect the comparability of the agreements.

- (4) Plaintiffs argued that [REDACTED] Xiaomi agreement also involves [REDACTED], and there are differences in the sales regions worldwide and proportions of the sales etc., this Court believes that the factors should be taken into account when unpacking the agreements, but not key factors for evaluating comparability.

For the aforementioned reasons, this Court finds that [REDACTED] Xiaomi agreement is a comparable agreement in this case.

3. [REDACTED] are not comparable

In this case, [REDACTED] are all [REDACTED] license agreements. In this case, no matter it is the previous 2018 OPPO agreement between the two Parties or the 2021 OPPO agreement negotiated by the two Parties, [REDACTED]. In addition, [REDACTED] there are huge differences with OPPO in terms of company sizes and product sales areas, etc., not to mention the huge gap in negotiation and bargaining powers. In the case, Defendants also makes it clear that under [REDACTED] circumstances, they would not recommend this Court to adopt [REDACTED]. In summary, this Court finds [REDACTED] are not comparable agreements in this case.

(II) Responses to Basic Questions of Rate Calculation

In this case, the rate calculation approaches chosen by the Parties are the comparable license approach and the top-down approach. The Parties have disputes over issues such as the selection of database in the opposing Party's calculation methodologies, the base of calculating the price for mobile phone, and regional discounts. This Court hereby responds to some basic common questions in the calculation approaches of this case.

1. The Parties' selection of statistical agencies and databases

In their calculation processes, both Parties chose to use statistical data sets or report information released by the same or different companies as data-based evidence. Defendants argued that some of Plaintiffs' data information sources are not authoritative or neutral, and therefore not credible. In this regard, this Court believes that there is currently no evidence showing that there is a commonly recognized most authoritative organization for data statistics and information release in the mobile communications industry. The reality is that there are many third-party statistical agencies in the market that collect, compile and statistically analyze industrial data information. Defendants argued that Plaintiffs' statistics agencies are not authoritative, but failed to actually provide any evidence in support of their argument. Defendants also questioned the neutrality of Plaintiffs' data and statistics agency, but its questioning about Moqiu is only directed at Moqiu's behaviors which seem to be promotion of its business performance, Canalys [REDACTED]. None of Defendants' questioning have sufficient basis. Therefore, this Court finds that Defendants' arguments questioning the neutrality and authority of Plaintiffs' data source is not supported by facts, and this Court does not accept it.

2. Benchmark date for rate calculation

Defendants argued that, only the available information before [REDACTED] can be qualified for use as data information sources for rate calculation in this case.

In this regard, this Court believes that, the issue to be determined in this case is the patent royalty for the agreement period [REDACTED] between the two Parties. In fact, much of the basic data information relied on by both Parties in this case for rate calculations is from industrial or enterprises' monthly, quarterly and annual periodic statistical information reports published by data information collection and compilation companies. It is difficult for the specific statistical period involved in the corresponding evidence can be accurately fit with the so-called benchmark date. At the same time, royalty rate negotiations often extend beyond the expiration date of the previous agreement, and it is difficult to be able to actually renew the previous agreement exactly on the expiration date of the previous agreement. In fact, despite that Defendants argued as such, multiple sets of evidence involving data and information presented by Defendants were formed later than [REDACTED] and were not available before the so-called benchmark date argued by Defendants. Therefore, this Court does not adopt this argument by Defendants.

3. Regarding whether the agreement negotiation process needs to be taken into account when unpacking comparable agreements.

Defendants argued that since the terms are clear and definite, the unpacking in this case can be done with the terms of relevant comparable agreements alone. Plaintiffs argued that, the unpacking of comparable agreements in this case needs to take the process of the negotiation into account, so as to ensure that the unpacked data matches the true consensus of the parties to the agreements. In this regard, this Court believes that in the process of calculating license conditions using the comparable license approach, bringing back the license conditions of the comparable agreements that conform to the true intentions of both parties is the most critical and basic step. If the parties have considered commercial factors or other factors, rendering the comparable license agreements' terms alone unable to be fully unpacked, or making the results of unpacking upon terms not consistent with the true licensing conditions negotiated by the parties, then it is necessary to take the negotiation process and background by the parties into consideration, based on common sense in commercial negotiations, when unpacking the contents of the agreement, so that the true licensing conditions of the parties to the agreement can be brought back to the fullest extent. For example, the 2018 OPPO agreement does not have a specific discount clause, but in practice, the Parties both acknowledged that there was specific discount according to the negotiation process of the agreement, and they both took the discount into consideration when conducting their respective unpacking.

In [REDACTED] Xiaomi agreement, there are actually [REDACTED], and the contents of negotiation over terms can be brought back through taking the actual negotiation situation into account.

4. Whether Net Present Values are to be considered when unpacking comparable agreements

Defendants have considered and actually adopted Net Present Values when calculating rates and raising rebuttals in this case. This Court believes that, whether Net Present Values were fully considered in the parties' negotiations and agreements is the logical prerequisite for determining whether to consider Net Present Value when unpacking an agreement. If Net Present Values are applied to all values and the resulting different Net Present Values discount rates are applied to different values while disregarding the true consensus of the parties in the unpacking, then the problems will arise that discount rates cannot be quantified, that there is no evidence supporting the applied Net Present Values discount rates, finally leading to more arbitrary calculation results. As stated in the technical appendix of Defendants' Associate Professor Tang Mingzhe's economic analysis report regarding discount rates, a [REDACTED] annual discount rate was applied to the calculation of the present value of net payment balance, [REDACTED]. Therefore, this Court holds that, in ordinary situations, it is necessary to be cautious and control the use of Net Present Value so as to reflect the true intention of the parties' agreement and reduce the arbitrariness in the calculation results as much as possible. Of course, if an agreement is a special long-term agreement, then the Net Present Values issue may need to be considered based on common sense.

Specific to this case, both the agreements to be unpacked and the agreement at issue are not long-term agreements. Taking into account the contents and negotiation process of the 2018 OPPO agreement, the parties to the agreement negotiated on lump sum payment, and after the lump sum had been determined, how the installment payment is arranged is not the focus of their negotiation anymore, and relevant negotiations and agreement contents cannot show that installment of payment arrangement would substantially impact the lump sum royalty. Therefore, Net Present Value shall not be applied to the unpacking of 2018 OPPO agreement in this case.

For [REDACTED] Xiaomi agreement, as Defendants did not present evidence regarding the negotiation process of the agreement, and it cannot be determined, based solely on the agreement, if the parties considered the issue of Net Present Value discount when reaching the license conditions. Therefore, this Court also holds that the Net Present Value should not be considered in the unpacking of [REDACTED] Xiaomi agreement either. In summary, this Court does not adopt Defendants' Net Present Value when calculating royalty rates in this case.

5. Issues of Regional Division and Regional Discount

In this case, the calculation results from both Parties are rates as per regions. The division and corresponding discounts proposed by the Parties differ. Plaintiffs provided a three-region-division: the basic rate is applicable to Region 1 (countries and regions with per capita GDP greater than or equal to 20,000 US dollars); a 61.42% discount based on the basic rate is awarded for Region 2 and 3 (the mainland of China and other countries and regions). Defendants adopted a two-region division. Region 1 (other countries and regions except the mainland of China) has no discount and a rate discount of [REDACTED] is applicable to Region 2 (the mainland of China).

This Court believes that, given the unbalanced deployment of the patent holder's patents to be licensed in global market regions as well as uneven economic development, there are significant differences in global regional markets. It is inevitable that the attributed value of the patents to be licensed may vary among various regions around the world. Therefore, it is necessary to divide the global market regions to a certain extent and determine relative discounts for the regions based on available evidence.

Specific to this case, firstly, the developed countries around the world and the mainland of China are the main regions to deploy the patents to be licensed of the patent holder in this case, and also the main sales areas of Plaintiffs. Considering that Plaintiffs and Defendants have both set the mainland of China as an independent region, it is necessary to use Plaintiffs' three-region-division approach, which also better reflect the impact of regional economy development on regional markets.

Secondly, based on the negotiations of relevant agreements in this case, the discount [REDACTED] in the mainland of China claimed by Defendants is objectively only the floor discount in the license negotiation, and it should not be applied to the regional discount in this case. Thirdly, considering the regional deployment of patents in this case, Nokia patents' regional deployment is relatively consistent with the regional discount claimed by Plaintiffs in this case. Specifically: Firstly, according to the *Global 5G Patent Activity Report* released by the China Academy of Information and Communications Technology, 10.3% of Nokia's patent families are issued by the USPTO, and 13.2% of patent families are issued by the EPO, while the proportion of patent families issued by the CNIPA of China is 6.8%. It can be seen that, its issued patent family in China is $6.8\% / 10.3\% = 66.02\%$ of those in the United States, and the percentage is even lower $6.8\% / 13.2\% = 51.52\%$ when compared to those in Europe; Secondly, based on OPPO's counting of the data of the patent list provided by Nokia during the negotiation process for the 2021 OPPO agreement, among which the US patent families are [REDACTED] and the Chinese patent families are [REDACTED]; Thirdly, based on the proportion of patents Nokia claimed during the jurisdictional objection stage of this case, for 4G and 5G standard essential patents, for which the patent family contains at least one issued patent, the number of patent families including issued US patents is [REDACTED], and the number of patent families including issued Chinese patents is [REDACTED]. The ratio of Chinese and US patent families is [REDACTED]. The above values basically match the rate discount claimed by Plaintiffs. Accordingly, based on the existing evidence, the specific regional division and regional discount claimed by Plaintiffs can better reflect the regional economic development status, the patent deployment of the Parties and other factors, as compared to those claimed by Defendant. This Court accepts Plaintiffs' corresponding arguments and determines the rate calculation in this case shall be divided into three categories of regions (the specific countries and regions are the same as those claimed by Plaintiffs, see Appendix 1). Among them, the non-discount base rate is applied to Region 1, and a 61.42% discount is applied to the base rate for Region 2 and 3.

6. The Issue of Mobile Phone Royalty Base

In this case, Plaintiffs claimed that the net selling price (NSP) of the mobile phones should be used as the base for calculating royalties, while Defendants proposed the retail price (average selling price, ASP) of the mobile phones as the base. At the same time, Defendants argued that there is actually no difference between the two defined bases. In this regard, this Court believes that, **first of all**, for NSP, at least the costs of packaging materials, insurance and transportation costs, taxes and other expenses should be deducted as claimed by Plaintiffs, while the retail price of the mobile phones claimed by Defendants does not need to deduct the above expenses, so the royalty bases claimed by both Parties are not the same; **Secondly**, if the retail price is used for calculating royalties, it will actually inappropriately put the value of the implementer's innovative contribution to the profits of mobile terminal products, such as other technologies, designs, brand added value, transportation efficiency, etc. into the process of determining the value of the standard itself, leading to overcompensation. **Thirdly**, in foreign judicial practices, net selling price have been applied; the license agreements signed between Nokia and others have also applied net selling price (Nokia and Wavecom, SONIM Technology); Nokia and OPPO also used net selling price in the negotiations for 2018 OPPO agreement for which OPPO had a clear definition and explanation while there is no evidence that Nokia objected thereto. In summary, in this case, the net selling price of the mobile phone claimed by Plaintiffs is used as the base for calculating royalty, and this Court does not affirm Defendants' argument.

IV. Unpacking the 2018 OPPO Agreement to Determine the 4G Multi-Mode Mobile Phone Royalty Rate

Regarding the determination of 4G multi-mode mobile phone royalty rates, both Parties used the 2018 OPPO agreement as a comparable agreement and unpacked it to calculate the corresponding rates. This Court unpacks the 2018 OPPO agreement using the established comparable license approach.

1. One-Way Royalty of Nokia Patents in the Agreement

According to the contents of the 2018 OPPO agreement, the total patent royalty to be received by Nokia during the agreement period is [REDACTED] US dollars (the net amount payable by OPPO). According to the contents of the negotiations between the two Parties, it can be seen that a discount of [REDACTED] US dollars was involved during the negotiation process, and both Parties also admitted in court that the agreement actually involves a discount of [REDACTED] US dollars. Regarding such discount [REDACTED], it cannot be clearly determined from the content of the negotiation emails provided by the Parties at present. However, regardless of the nature of the discount, it will not affect the determination of the one-way royalty of Nokia patents. Therefore, this Court determines that in the 2018 OPPO agreement, the one-way royalty of Nokia patents = the net payment in the agreement [REDACTED] US dollars + discount [REDACTED] US dollars = [REDACTED] US dollars.

2. Determination of Expected Sales Volume of Licensed Products During the Agreement Period

As a key figure in unpacking calculation, Nokia argues to use [REDACTED] during the negotiation of the agreement as the expected sales volume for unpacking of the agreement. OPPO believes that, based on the negotiation history, [REDACTED], the expected sales volume actually adopted shall be the expected sales volume of licensed products for unpacking the agreement. Specifically, Nokia made it clear in [REDACTED] email that its calculated dollar per-unit royalty is [REDACTED] to [REDACTED] US dollars/unit, its licensing offer is [REDACTED] US dollars, and the offered license period is [REDACTED] years. OPPO believed that such [REDACTED] US dollars actually included a discount [REDACTED] dollars, so the expected sales volume is, [REDACTED] US dollars ÷ [REDACTED] US dollars/unit, to [REDACTED] US dollars ÷ [REDACTED] US dollars/unit. And the calculated results are then divided into a period of [REDACTED] years, and the final expected sales volume is approximately [REDACTED] units/year to [REDACTED] units/year.

This Court believes that the content of the 2018 OPPO Agreement does not clearly state the basis for calculating the net payment of [REDACTED] dollars. The vague stipulations of the relevant terms fail to fully reflect the true expression of intentions of both parties formed during the negotiations, and the terms cannot be interpreted solely according to their literal meaning. While the agreement [REDACTED]. Therefore, in this case, it cannot be inferred from the literal content of the agreement terms alone that the agreed royalty between the two Parties stems from [REDACTED]. It is necessary to take the Parties' negotiations into consideration to determine the corresponding expected sales volume.

Summarizing the price negotiations between the two Parties, the two Parties adopted a negotiation approach of total lump-sum royalty. (1) The emails show that the lump-sum royalty offer of [REDACTED] US dollars was proposed by Nokia; (2) Although OPPO also made a relevant counter-offer, while, due to Nokia's insistence, the offered royalty remained unchanged after a series of negotiations between the two Parties; (3) During the negotiation period, in addition to such offered royalty, the two Parties mainly provided offers and counter-offers regarding the license period and discounts about the OPPO patent grant-back value (including how to reflect the value of grant-back), etc. Each of the offers and counter-offers made by the Parties treated the discounts as parallel terms of the [REDACTED] royalty; (4) In the end, the two Parties reached an agreement on a net payment of [REDACTED] dollars.

From the above summary, it can be seen that the patent royalty [REDACTED] US dollars was proposed by Nokia, although OPPO provided [REDACTED] and based on it, in an attempt to ask Nokia to lower the royalty offer, Nokia did not make any concessions regarding its royalty offer during the negotiations.

Therefore, OPPO's negotiation tactic of lowering Nokia's royalty offer by providing relevant expected sales volume did not work. As Nokia had been insisting on its royalty offer, OPPO had only achieved progress mainly on the license period and discounts through the negotiations. In the end, both Parties recognized Nokia's royalty offer of [REDACTED] US dollars and reached an agreement on a net payment price of [REDACTED] US dollars after deducting a discount of [REDACTED] US dollars. Therefore, as Nokia's offer remained unchanged and was agreed by OPPO, the negotiation of discounts and license periods would not affect the logic of Nokia's offer. The expected sales volume unpacked from the agreement should be based on Nokia's offering logic. According to the negotiation process, Nokia made it clear for the only time in its email on the date of [REDACTED] that a calculation using its [REDACTED] dollars for reaching a dollar per-unit royalty of about [REDACTED] U.S. dollars, and the license period was [REDACTED] years. By calculating the above data, the expected sales volume adopted under that offer can be got.

Regarding specific calculations, first of all, the offer [REDACTED] USD in the email [REDACTED] should be the offer before deducting the [REDACTED] USD discount (i.e. one-way offer), not the royalty after deducting the [REDACTED] USD discount as what OPPO argued. The specific reasons are as follows: (1) Regardless of whether there was a discount and the amount of the discount, the one-way offer of [REDACTED] US dollars had not changed during the entire negotiation process; (2) The content of email [REDACTED] shows that, besides the [REDACTED] dollar royalty offer, there are contents of specific discount of [REDACTED] dollar separately and subsequently listed, accordingly, a literal interpretation that the [REDACTED] dollars shall include [REDACTED] discounts cannot be definitely reached based hereon; (3) In conjunction with the follow-up email, OPPO stated in the counter-offer in [REDACTED] email that [REDACTED],

It can be seen from the content of the statement that OPPO actually knew that the [REDACTED] dollars in the negotiations between the two Parties did not involve discounts, and it provided counter-offer by the same logic as well.

Secondly, given that the royalty proposed by Nokia in the email [REDACTED] is an exact number, and the dollar per-unit royalty range is [REDACTED] US dollars, and the middle value [REDACTED] US dollars is taken from that range, and the royalty is [REDACTED] US dollars, and then the license period is converted from [REDACTED] years to [REDACTED] years, that is, the expected sales volume in three years is [REDACTED] units.

Finally, regarding Nokia's arguments during the trial that there were conversion errors [REDACTED] in the data listed in the email, and its witness testimony made after the trial by the sender of the email [REDACTED] testifying of errors out of miscalculations. This Court believes that for major commercial negotiations, the Parties in the negotiations shall bear a high degree of attention to the important data presented in their negotiations. Regarding the disputed data in this case, Nokia did not provide any further explanation or evidence for the errors of conversion stated in court, and its opinions even contradict the witness testimony. [REDACTED]. Therefore, the Court finds that the above-mentioned arguments by Nokia not reasonable and credible, and shall not be affirmed in accordance with the law.

In summary, based on the negotiation process between the two Parties and the content of the agreement between the two Parties, this Court determines that the expected sales volume which should be used for unpacking the 2018 OPPO agreement is [REDACTED] units for [REDACTED] years, i.e. [REDACTED] units annually.

3. Changes of Nokia's 4G Multi-Mode Patent Strength

Because there is a [REDACTED] years interval between the signing time of the 2018 OPPO agreement and the 2021 OPPO agreement, regarding the unpacking of the two agreements with an interval of [REDACTED] years apart from another, this Court believes that the changes in the licensor's relevant patent strength need to be taken into consideration. Plaintiffs calculated the comparison between Nokia's declared patent strengths under the 2018 OPPO agreement period and that under the new agreement period, and calculated the comparative ratio [REDACTED] by considering the reports issued by Concur IP and Moqiu, This Court also affirms Plaintiffs' method of measuring changes in patent strength based on the share in the number of patent declarations (the specific reasons for affirming are the same as those discussed in Part V below regarding the share of Nokia's patent strength).

Defendants argue that data from the same database should be used when evaluating changes in Nokia's strength, and the data of Moqiu report should be thusly excluded. This Court believes that, it is relatively reasonable to use the average of data from multiple databases to eliminate errors in statistical data of a single database. At the same time, unless there is sufficient evidence to prove that data from the relevant database is obviously wrong, no database should be excluded solely because that the data should be from the same source. Therefore, in the absence of contrary evidence, this Court does not adopt Defendants' arguments of excluding Moqiu report.

In summary, this Court affirms Plaintiffs' consideration of changes in Nokia's patent strength when unpacking the agreements. The Court also affirms the ratio calculated by Plaintiffs and determines that the comparative ratio of Nokia's 4G multi-mode mobile phone patent strengths, between the 2018 OPPO agreement period and the 2021 OPPO agreement period, is [REDACTED].

4. Unpacking and Calculation of 4G Multi-Mode Mobile Phone Regional Royalties and Percentage Royalty Rates under the 2021 OPPO Agreement

1) Per-unit royalty for 4G multi-mode mobile phones under the 2018 OPPO agreement

Product average unit price: [REDACTED]

Nokia's one-way royalty under the agreement: [REDACTED] USD

Expected sales volume: [REDACTED] units for [REDACTED] years

The rack dollar per-unit royalty of 4G multi-mode mobile phones under the 2018 OPPO agreement = [REDACTED] USD ÷ [REDACTED] units ≈ [REDACTED] USD/unit.

Plaintiffs assume that the licensed products were all sold in Regions 2 and 3. This assumption is actually favoring Nokia and can be affirmed. The 4G multi-mode dollar per-unit royalty is thusly calculated:

Dollar per-unit royalty in Region 1 = [REDACTED] USD/unit ÷ 61.42% ≈ [REDACTED] USD/unit

Dollar per-unit royalty in Regions 2 and 3 = [REDACTED] USD /unit

4G multi-mode mobile phone percentage royalty rate in each region under the 2018 OPPO agreement:

Percentage royalty rate in Region 1 = [REDACTED] USD/unit ÷ [REDACTED] USD ≈ [REDACTED]

Percentage royalty rate in Regions 2 and 3 = [REDACTED] USD/unit ÷ [REDACTED] USD ≈ [REDACTED]

2) 4G multi-mode mobile phone percentage royalty rate under the 2021 OPPO agreement

Relative changes in Nokia's patent strength: [REDACTED]

4G multi-mode mobile phone regional percentage royalty rate:

Percentage royalty rate in Region 1 = [REDACTED] ≈ [REDACTED]

Percentage royalty rate in Regions 2 and 3 = [REDACTED] ≈ [REDACTED]

Net selling price of a single unit of 4G multi-mode mobile phones under the 2021 OPPO agreement: Plaintiffs adopted [REDACTED]. Considering the trend of price decrease in the future agreement period, the estimated net selling price range is from [REDACTED] USD to [REDACTED] USD. This Court believes the aforementioned as reasonable and affirms it.

The final calculated 4G multi-mode mobile phone regional percentage royalty rates and dollar per-unit royalty ranges are:

Percentage royalty rate in Region 1: [REDACTED]

Range of dollar per-unit royalty in Region 1: [REDACTED]

Percentage royalty rate in Regions 2 and 3: [REDACTED]

Range of dollar per-unit royalty in Regions 2 and 3: [REDACTED]

V. Determination of Royalty Rates for 5G Multi-Mode Mobile Phones

The two Parties adopted the comparable license approach and the top-down approach respectively for determining 5G multi-mode mobile phone percentage royalty rates. Defendants argued that the royalty stacking problem addressed by top-down approach does not exist, and therefore the top-down approach shall not be adopted where comparable agreements are available. In this regard, this Court believes that the existing evidence cited by both Parties shows that in theory, both the comparable license approach and the top-down approach have certain advantages and disadvantages. There is no settled conclusion concerning whether there is royalty stacking or which one of the two approaches is superior. From the perspective of judicial practice, both approaches are applied in domestic and foreign judicial cases. It can be seen that there is currently no sufficient evidence to prove the superiority of one over another, or a preference of one to another. Therefore, Defendants' arguments that the top-down approach should not be applied in this case is untenable and will not be affirmed by this Court.

Below, the Court will look at different calculation approaches and perform detailed calculation.

(I) Regarding the Plaintiff's top-down approach

Plaintiffs adopted a top-down approach, and its overall formula is: Nokia 5G multi-mode mobile phone percentage royalty rate = 5G standard global aggregate royalty rate × Nokia's share of patent strength in 5G standard × the value share of 5G standard in a 5G multi-mode mobile phone + 4G standard global aggregate royalty rate × Nokia's share of patent strength in 4G standard × the value share of 4G standard in a 5G multi-mode mobile phone + 3G standard global aggregate royalty rate × Nokia's share of patent strength in 3G standard × the value share of 3G standard in a 5G multi-mode mobile phone + 2G standard global aggregate royalty rate × Nokia's share of patent strength in 2G standard × the value share of 2G standard in a 5G multi-mode mobile phone. This methodology is consistent with the top-down calculation approach adopted in existing judicial practice. Defendants did not question the overall approach or provide evidence to refute it. Therefore, this Court adopts this approach.

1. Determination of Global Aggregate Royalty Rates for Various Standards in the Mobile Phone Industry

1) 2G-4G standard global aggregate royalty rate

The knowledge of relevant industries and the established judicial decisions can both be used as the basis for determining the aggregate royalty rates of standards. Regarding the global aggregate royalty rate of 5% for 2G and 3G respectively, and the global aggregate royalty rate of 6%-8% for 4G, the corresponding data has been affirmed by judicial decisions in domestic and foreign cases such as Huawei v. Conversant with Nanjing court of China. On the one hand, the relevant findings in these judgments can corroborate each other. On the other hand, the public statements, as well as the arguments in judgments, of major standard essential patent holders in the industry such as Ericsson, also represent the industry's understanding. At the same time, Nokia also released a statement claiming that it owned 20%-30% of LTE patents, and the percentage royalty rate it could charge is 1.5% of the price of a single mobile phone. According to its statement, it can be directly calculated that the aggregate royalty rate recognized by Nokia for the 4G is 5%-7.5%, which is very close to the range of 6% to 8%.

When Nokia released this statement, it still played the roles of patentee and standard implementer, so the statement can be an objective and neutral reference.

Accordingly, the global aggregate royalty rate for 2G-4G adopted by this Court: 5% for 2G, 5% for 3G, and 6%-8% for 4G.

2) 5G standard global aggregate royalty rate

There is currently no judicial decision determining the global aggregate royalty rate for the 5G standard worldwide. In this case, Plaintiffs used the hedonic price regression model commonly used in economics to estimate the contribution of the 5G communication standard to the price of mobile phones relative to the 4G communication standard, and then calculated the global aggregate royalty rate for the 5G standard.

Defendants questioned about Plaintiffs' specific calculation approach, including: the selection of the Canalys database; the selection of the periods of the sample sales data; the failure to perform a weighted average on sales volume for the data for estimating 5G price increase; the failure to use the Kennedy transformation; the problem of omitted variables; using wrong approach to predict future 5G price increase, etc.

In this regard, this Court believes that, first, regarding the issue of weighting, according to the rate calculation approach proposed by the Party, the variation of price of royalty rate is not applied among mobile phones of different models or different sales in the same market region. Therefore, based on that the regional fixed effects is controlled, whether to use quantity weighting has little impact on the results, and in addition, there are different economic theoretical understanding, without a conclusive consensus, on whether to perform weighting. Thus, this Court agrees with Professor Gong Jiong's relevant rebuttal opinion and finds that not to perform weighting on the data in corresponding Hedonic price regression model is reasonable.

Second, whether a Kennedy transformation is needed. This Court believes that, for the calculation of the hedonic price regression model in this case, the numerical impact caused by the Kennedy transformation is almost negligible. In fact, Professor Gong Jiong also conducted corresponding calculations, and the results did not favor Nokia. And Nokia did not conduct further calculations to refute this, so this Court finds that not using the Kennedy transformation is reasonable. Third, regarding the sample periods, this Court agrees with Professor Gong Jiong's argument that the Hedonic price regression model measures the relative value increase brought by 5G standard technology compared to 4G standard technology. So the corresponding first sample period incorporates the sample since the first quarter of 2017, so as to obtain sufficient observation samples of 4G mobile phones in the market as the sales mature, thereby to effectively estimate the relative value increase of 5G standard technology in mobile phones relative to 4G standard technology. Therefore, Professor Gong Jiong's selection of the sample periods in the Hedonic price regression model is reasonable. Fourth, regarding the omitted variables, granted, there may be omitted variables in any hedonic price regression model calculation, but Professor Gong Jiong had controlled many variables and used time fixed effects, manufacturer fixed effects, and country fixed effects to further reduce the estimation error caused by omitted variables. And Dr. Padilla's rebuttal does not have a real basis or a sufficient analysis and explanation regarding the omitted variables, but was only a conjecture. Based on this, this Court finds that Dr. Padilla's rebuttal is unreasonable. Fifth, regarding the selection of Canalys database, Professor Gong Jiong had fully explained that the Canalys database is a third-party database and is widely used in the industry. Therefore, Dr. Padilla's questioning on the Canalys database relying only on the ground that the IDC database is a commonly used database in the industry is untenable.

Sixth, in order to prove Professor Gong Jiong's calculation is incorrect, Dr. Padilla used data from other database to calculate. Regarding this, as Professor Gong Jiong said, the statistical standards used by both Parties for recordation are completely different and cannot be compared. Seventh, regarding the prediction of expected 5G coefficients and price ratios, Professor Gong Jiong used exponential functions to predict future 4G and 5G mobile phone prices to obtain corresponding price ratios. At the same time, he also used eleven 5G coefficient values from the launch of 5G mobile phones to 2021 Q4 to predict 5G coefficient changes in the next three to five years through the exponential function model. The fitting degree is good and the methodology is rigorous and reasonable. At the same time, in the absence of sufficient counter-evidence, this Court agrees with the view by Professor Gong Jiong. Simple visual differences are not a reason to exclude estimated values as outliers. Under the situation that the corresponding estimated values are true and valid, it shall not be excluded from consideration as outlier without any reason to the contrary.

To sum up, with no final conclusion in the field of economics about the applicability of relevant specific economic methodologies, the economic calculation approach in Plaintiffs' economic report is rigorous and reasonable, and the relevant issues questioned by Defendants have been reasonably explained. Based on the existing economic calculation methodology provided by the Parties, this Court affirms the calculation result of the three-year 5G standard industry aggregate rate calculated by Plaintiffs, 4.341%-5.273%.

2. Nokia's Share of Patent Strength

In this case, based on statistics collected from third-party companies, Plaintiffs calculated the strength of Nokia's 2G-5G patents based on the share of the number of Nokia's patent declarations to the number of all standard essential patent declarations. The comprehensive average shares of Nokia's 2G, 3G, 4G, and 5G standard essential patents are [REDACTED] respectively. Plaintiffs also submitted Questel's report regarding the true essentiality of 5G SEPs declared by the patentees to ETSI until [REDACTED]. According to the report, the true essential rate of standard essential patents declared by Nokia is [REDACTED], which is [REDACTED] the industry average [REDACTED].

However, Plaintiffs did not provide the underlying data of the report. Defendants argued that Nokia's patent strength should be comprehensively determined based on the number of issued patents, the number of approved contributions, and the true essential rate of patents, etc.

This Court holds that, **first of all**, the scope of the patents to be licensed in the Parties' licensing negotiations actually included all patent applications and issued patents declared by Defendants, rather than the issued patents only. Moreover, the patent list provided by Defendants to the Plaintiffs during the negotiations was also based on all declared standard essential patents, including patent applications and issued patents. Evaluating Nokia's share of patent strength based on the share of patent declarations is more in line with the actual negotiations between the Parties. **Second**, given the lengthy patent application period, many declared 5G patents may be in the application process during the licensing negotiation, but there is the possibility of being granted during the agreement period. Therefore, when evaluating the share of patent strength, it is obviously more reasonable to take the patents applications into consideration. **Third**, using the number of declarations to evaluate strength means that all standard essential patents are considered to be of the same quality, which is feasible in large sample situations (such as the sample size of the number of Nokia 2G-5G patent declarations and the number of declarations by all patentees in this case). Of course, if there is sufficient evidence to prove that the quality of Nokia's declared standard essential patents is significantly higher or lower than the industry average quality of declared standard essential patents, or there are important basic patents that need separate evaluation and consideration, there is room for adjustment. In this case, while Defendants questioned the share of patent strength proposed by Plaintiffs and proposed to examine the share of patent strength from multiple perspectives such as the number of standard contributions, the number of approved contributions, the number of people in charge of technical work projects, and the number of chairs of relevant working groups, etc. But such proposal cannot be used to directly analyze the share of patent strength qualitatively and quantitatively.

While Defendants do not claim and provide sufficient evidence to conduct an effective patent quality technical analysis of the standard essential patents declared by Nokia. The multiple reports on the share of Nokia's true essential patent families cited by Defendants have many problems such as too early to be used; the sampled numbers shown are relatively small and the reasonableness of the data is doubtful; and the specific technical analysis process and conclusions had not been disclosed and verified, etc. That is, Defendants did not provide sufficient evidence to prove that the quality of its patents are significantly higher than the industry average quality and did not provide specific values for adjustment. **Fourth**, the dispute between the two Parties involves the patent invalidations between Nokia and other companies (including whether partial invalidation seriously affects the value of the patent, etc.). This Court cannot evaluate such based on the existing evidence, and therefore, this Court does not adopt the approach of trying to prove Nokia's patent strength based on the invalidation proceedings of the patents in concern.

In summary, based on the above factors and the existing evidence, this Court adopts the Plaintiffs' analysis method and statistical calculation of using patent declaration share to determine the share of Nokia's 2G-5G patent strength, and determines that the share of Nokia's 2G patent strength is [REDACTED]; the share of 3G patent strength is [REDACTED]; the share of 4G patent strength is [REDACTED]; the share of 5G patent strength is [REDACTED].

3. Shares of Value Contribution of 2G through 5G Technologies in Mobile Phones

Since multi-mode mobile phones adopt wireless communication technologies of multiple generations, it is necessary to consider the value contribution share of each generation of the technology when calculating the percentage royalty rate for 5G multi-mode mobile phones. In this case, Plaintiffs claimed that based on the discussions in precedent judgments and the specific determination of the shares of value contributions by 2G-4G technology thereunder, and taking into account the limited value brought by 5G technology at the current stage, from the perspective of a conservative estimate, the weight ratio of 5G -2G technology's value contribution is 50: 40: 5: 5.

The Court believes that, as for the shares of value contribution of 2G-4G technology, in *Huawei v. Conversant* by Nanjing court of China, the judicial decision took into account technology developments and other factors, and finally determined a ratio of 8:1:1.

This Court agrees with the relevant precedent judgments and believes that the ratio of 4G, 3G and 2G in this case should be 8:1:1, which is in line with the current technological status and reasonable.

Regarding the share of value contribution of 5G technology, Plaintiffs argued that based on the current situation, 5G technology has not brought much value increase to smartphones compared to 4G technology, and the value 5G brings to consumers is also very limited. Defendants argued that the value of 5G technology is higher than that of 4G technology, but did not give a corresponding comment on value share. In this regard, this Court believes that the evidence cited by the Parties comprehensively demonstrates 4G and 5G technology and their development, which can basically show that 5G technology has further expanded the industrial application fields of communication technology. However, the current evidence fails to show that, when only looking at the smartphone industry, the current contribution of 5G technology is significantly higher than that of 4G technology. Especially considering that the agreement period at issue to be decided by this Court is still in the early stage of applying 5G technology into smartphones, the value contribution of 5G technology compared to 4G technology should not be overestimated. Therefore, Plaintiffs' current understanding that 5G technology takes up half of the entire value is relatively reasonable and should be adopted.

In summary, this Court finally determined that the value contribution ratio of 5G, 4G, 3G and 2G technologies in this case should be 50: 40: 5: 5, respectively.

4. The 5G Multi-Mode Mobile Phone Regional Percentage Royalty Rates and Dollar Per-Unit Royalties Determined Using the Top-Down Approach

Putting the above values adopted by this Court into the basic formula of the top-down approach, and using the top-down approach to determine the three-year 5G multi-mode mobile phone benchmark percentage royalty rate range (Region 1) [REDACTED].

Regarding the net selling price of 5G multi-mode mobile phones during the agreement period: Plaintiffs adopted [REDACTED]. Considering the price decrease trend in the expected agreement period, [REDACTED] to [REDACTED] US dollars are used as the estimated net selling price range of OPPO 5G mobile phones. This Court believes that this value range is reasonable and adopts it.

The final calculated 5G multi-mode mobile phone regional percentage royalty rate ranges and the corresponding dollar per-unit royalty ranges are:

Percentage royalty rate range in Region 1: [REDACTED];

Dollar per-unit royalty range in Region 1: [REDACTED];

Percentage royalty rate range in Regions 2 and 3: [REDACTED];

Dollar per-unit royalty range in Region 2 and 3: [REDACTED]

(II) Regarding Plaintiffs' Calculation Using the Comparable License Approach in Conjunction with Some Conclusions from the Top-Down Approach

Plaintiffs adopted the calculation methodology as (1) Plaintiffs unpacked the 2018 OPPO agreement and calculated the regional percentage royalty rates for 4G multi-mode mobile phones under the 2021 OPPO agreement; and (2) determined the ratio of the value contribution by 5G technology and the value contribution by 4G multi-mode technology (*i.e.*, 2G-4G total technical value contribution) in the 5G multi-mode mobile phone based on the value contribution share of 5G technology, which ratio is 50: 50; (3) calculated the 5G standard industry aggregate rate by using the Hedonic price regression model, and got the net selling price of 5G multi-mode mobile phones during the agreement period ; (4) putting the above values into the following formula to calculate the 5G multi-mode mobile phone regional percentage royalty rates and corresponding dollar per-unit royalties. The specific formula is:

5G multi-mode mobile phone percentage royalty rate during the agreement period = 5G single-mode percentage royalty rate × 5G technology value share + 4G multi-mode percentage royalty rate × 4G multi-mode technology value share

Defendants argued that Plaintiffs' above calculation approach was a mixture of the comparable license approach and the top-down approach. In this regard, this Court believes that the key to whether the calculation and results argued by the Parties can be adopted by this Court still lies in whether its calculation logic and choice of corresponding key data are reasonable and whether the corresponding calculation process is reliable. Therefore, regardless of whether there is a so-called mixture of the two approaches, Defendants' argument cannot fundamentally rule out related calculation methodology.

As the Court has adopted the value contribution shares of 2G-5G technologies and determined the 5G standard industry aggregate royalty rate, the Plaintiffs' approach is reasonable and Defendants did not raise any rebuttals on the calculation methodology, this Court adopts this calculation methodology and the overall formula.

1. 4G multi-mode mobile phone regional percentage royalty rate under the 2021 OPPO agreement:

Percentage royalty rate in Region 1: [REDACTED]

Percentage royalty rate in Region 2 and 3: [REDACTED]

2. The value share of 5G technology and the value share of 4G multi-mode technology are 50%: 50%.

3. 5G single-mode percentage royalty rate = the share of Nokia's 5G patent strength during the agreement period × 5G standard industry aggregate royalty rate, in which the share of Nokia's 5G patent strength is [REDACTED], and the aggregate royalty rate of the 5G standard industry is 4.341% - 5.273%.

5G single-mode percentage royalty rate = (4.341% to 5.273%) × [REDACTED] ≈ [REDACTED]

4. The per-unit net selling price of 5G multi-mode mobile phones: as discussed above, it is [REDACTED] to [REDACTED].

In summary, this approach is used to calculate the 5G multi-mode regional percentage royalty rate ranges and dollar per-unit royalty ranges under the 2021 OPPO agreement.

Percentage royalty rate range in Region 1: [REDACTED]

Dollar per-unit royalty range in Region 1: [REDACTED].

Percentage royalty rate range in Region 3: [REDACTED]

Dollar per-unit royalty range in Region 2 and 3: [REDACTED].

(III) Regarding the Defendants' Unpacking and Calculation of [REDACTED] Xiaomi Agreement Using the Comparable License Approach

Defendants argued that [REDACTED] Xiaomi agreement should be unpacked and calculated using the comparable license approach so as to conclude the percentage royalty rate at issue. The overall framework of its unpacking and calculation is: [REDACTED]

Regarding Defendants' comparable license approach mentioned above, this Court holds that:

First of all, as in the above, this Court has sufficiently discussed and reached the following conclusions: the Net Present Value rate should not be applied in this case when unpacking the comparable agreement involved; the three-region division and corresponding regional discount claimed by Plaintiffs should be applied in this case; the net selling price claimed by Plaintiffs should be applied in this case as royalty base; changes in the licensor's patent strength should be taken into account when unpacking the agreements with an interval of [REDACTED] years, etc. Defendants' calculations are problematic because they are inconsistent with the above-mentioned conclusions by this Court, and thus will inevitably lead to huge errors in the calculation results.

[REDACTED]

[REDACTED]

This Court finds that, the Parties of the case did not touch upon [REDACTED] when negotiating the 2021 OPPO agreement, and had not reached an agreement on [REDACTED]. And no matter [REDACTED].

Regarding [REDACTED] confirmation, Associate Professor Tang Mingzhe provided specific unpacking calculation in her response to Professor Gong Jiong.

[REDACTED]. In the absence of detailed evidence regarding the parties' negotiation process, this Court cannot find that the Parties have taken [REDACTED] into consideration when negotiating on such terms according to the understanding on the literal expression of relevant agreement terms. Therefore, this Court cannot adopt [REDACTED] argued by Defendants.

In summary, Defendants' understanding of the term [REDACTED], as well as their unpacking and calculation approach, lacks factual basis and is not adopted by this Court.

As an overall view of Defendants' unpacking and calculation of Xiaomi-related agreements using comparable license approach, the contents of the terms are relatively cursory, and lack the relevant contexts [REDACTED] etc., which are important for reaching the agreements and unpacking. The terms' form of expression obviously has not fully demonstrate the overall consensus between the parties to the agreements, and effective unpacking cannot be performed based solely on the terms of agreements. It is necessary to consider the parties' negotiation process as assistance to get the bottom of the corresponding consensus of the Parties.

The missing [REDACTED] in Xiaomi-related agreements in this case involves key data for further unpacking comparable agreement. Unlike the tolerable assumptions or errors in the calculation methodology or establishing facts through evidence, these key data are the basis for the parties to reach an agreement and are not completely unavailable. In this regard, Defendants should have possession of relevant evidence such as situations of negotiations and could have provided such evidence to this Court but failed to do so. During the specific unpacking, they completely ignored the negotiations between the two parties, and adopted many unreasonable assumptions. At the same time, Defendants also inferred *ex post* key data such as [REDACTED] from industrial reports. Defendants' such approach of concluding data makes this Court impossible to confirm the authenticity and reasonableness of the concluded data, which is used for analyzing and unpacking comparable agreement, and thus this Court will not adopt it.

In summary, since Defendants' specific unpacking and calculation based on comparable license approach lacks reasonable basis and cannot be comprehensively adjusted, in this case, this Court, in accordance with the law, does not adopt Defendants' royalty calculation methodology by unpacking and calculating through the [REDACTED] Xiaomi Agreements as comparable agreement, nor adopts its corresponding calculated results.

(IV) Regarding Plaintiffs' Unpacking and Cross-Check of Huawei Agreement

In this case, Plaintiffs also performed unpacking on the Huawei agreement for cross-check. In this regard, this Court believes that the evidence currently submitted by Plaintiffs shows that in addition to the Huawei agreement, [REDACTED], the Parties have also signed [REDACTED] and [REDACTED]. [REDACTED].

[REDACTED]. Therefore, based on the existing evidence, this Court believes that it is inappropriate to use Plaintiffs' unpacking results of the Huawei agreement to conduct cross-check.

VI. The 4G and 5G Multi-Mode Mobile Phone Percentage Royalty Rates and Per-Unit Royalty Finally Determined by This Court

1. In this case, this Court calculates and concludes the 4G multi-mode mobile phone percentage royalty rates and dollar per-unit royalty ranges based on the comparable license approach:

Region 1: [REDACTED]; [REDACTED]

Region 2 and 3: [REDACTED]; [REDACTED]

The Court determines the dollar per-unit royalty within the ranges, as follows:

Dollar per-unit royalty in Region 1: US\$ 0.777 /unit;

Dollar per-unit royalty in Region 2 and 3: US\$ 0.477 /unit.

2. In this case, this Court adopts and calculates the 5G multi-mode mobile phone percentage royalty rate ranges and the dollar per-unit royalty range based on the following two approaches:

1) The calculation result of Plaintiffs' top-down approach:

Region 1: [REDACTED]; [REDACTED]

Region 2 and 3: [REDACTED]; [REDACTED]

2) The calculation result of Plaintiffs' comparable license approach:

Region 1: [REDACTED]; [REDACTED]

Region 2 and 3: [REDACTED]; [REDACTED]

Both approaches are reasonable, the numerical range differences are not substantial and there are overlaps, so they can cross-check well. In view of the fact that the calculation result ultimately claimed by Plaintiffs was calculated using the comparable license approach, and such calculation result is more favorable to Defendants, this Court adopts such calculation result from the comparable license approach calculation proposed by Plaintiffs, for the 5G multi-mode mobile phone percentage royalty rate ranges and dollar per-unit royalty ranges.

This Court finally determines, with certain discretion, the percentage royalty rates and dollar per-unit royalties for the 5G multi-mode mobile phone as per the region are:

Region 1: [REDACTED]; 1.151 USD/unit

Region 2 and 3: [REDACTED]; 0.707 USD/unit

[Decision]

In summary, according to Articles 5, 6, and 7 of the Civil Code of the People's Republic of China; Paragraph 3, Article 24 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 (2); Article 41, 49, and 50 of the Law of the People's Republic of China on the Application of Laws in Foreign-Related Civil Relations; Paragraph 1, Article 67, and Article 145 of the Civil Procedure Law of the People's Republic of China, after discussion and decision by the Judicial Committee of this Court, the judgment is as follows:

I. Regarding the SEP license involved between Plaintiffs OPPO Guangdong Mobile Communications Co., Ltd., OPPO Guangdong Mobile Communications Co., Ltd. Shenzhen Branch, OPPO (Chongqing) Smart Technology Co., Ltd. and Defendants Nokia Corporation, Nokia Technologies Oy, and Nokia Technologies (Beijing) Co., Ltd., the conditions of such license are determined as follows:

1. The licensed patents and related brand products are those standard essential patents (1) owned by Nokia Corporation, Nokia Technologies Oy, Nokia Technologies (Beijing) Co., Ltd. and their affiliates or licensable by them; (2) OPPO Guangdong Mobile Communications Co., Ltd., OPPO Guangdong Mobile Communications Co., Ltd Shenzhen Branch, and OPPO (Chongqing) Smart Technology Co., Ltd. are required to take the patent license of which, to implement the standards for the smart end device products of three brands, namely, OPPO, Realme and Oneplus; and (3) that are complying with 5G, 4G, 3G and 2G standards;

2. The license period is 3 years, that is [REDACTED];

3. Percentage royalty rates and dollar per-unit royalty (*See Appendix 1 for the details of regional divisions*):

4G multi-mode mobile phone regional percentage royalty rates and regional dollar per-unit royalties:

The percentage royalty rate in Region 1 is [REDACTED], and the dollar per-unit royalty in Region 1 is 0.777 US dollars/unit; the percentage royalty rate in Region 2 is [REDACTED], and the dollar per-unit royalty in Region 2 is 0.477 US dollars/unit; the percentage royalty rate in Region 3 is [REDACTED], and the dollar per-unit royalty in Region 3 is 0.477 US dollars/unit.

5G multi-mode mobile phone regional percentage royalty rates and regional dollar per-unit royalties:

The percentage royalty rate in Region 1 is [REDACTED], and the dollar per-unit royalty in Region 1 is 1.151 US dollars/unit; the percentage royalty rate in Region 2 is [REDACTED], and the dollar per-unit royalty in Region 2 is 0.707 US dollars/unit; the percentage royalty rate in Region 3 is [REDACTED], and the dollar per-unit royalty in Region 3 is 0.707 US dollars/unit;

II. Dismiss the other requests sought by Plaintiffs OPPO Guangdong Mobile Communications Co., Ltd., OPPO Guangdong Mobile Communications Co., Ltd. Shenzhen Branch, and OPPO (Chongqing) Smart Technology Co., Ltd.

The court fee of 1,000 yuan shall be jointly borne by Defendants Nokia Corporation, Nokia Technologies Oy, and Nokia Technology (Beijing) Co., Ltd.

[Rest of the Judgment Omitted]

[END]