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Reflection on the Anti-monopoly Regulation in Addressing the Abuse of Standard Essential Patents

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Abstract: ***At present, the discussion and treatment of the abuse of standard essential patents in the theoretical and practical circles of our country mostly focus on the regulation of anti-monopoly law. But not all the abuse of standard necessary patent can be regulated by anti-monopoly law, and the application of anti-monopoly law also has shortcomings in legal function and legal effect. It is mainly reflected in the lack of attention to the hostage takers who need the most relief, the lack of solution to the core issue of dispute how to calculate reasonable fees, the restriction of prohibitions is too strict, which is easy to lead to reverse hijacking and huge fines, which are easy to inhibit innovation and transformation and may be passed on to consumers. Therefore, we should actively explore other ways to solve this problem. While affirms the important role of anti-monopoly law in regulating the abuse of standard essential patents, it should also be aware of the superiority of patent law as an internal restriction, give full play to the important position of standard essential patent formulation organization in resolving disputes, further improve the relevant provisions on information disclosure, and actively explore the establishment of a credit regulation system for the abuse of standard essential patents. In order to solve the problem fundamentally.***

Keywords: Standards-essential patent abuse, Antitrust law, Patent law, Information disclosure and Credit regulation.

1. Introduction

Standard-essential Patent (Sep) refers to the essential and irreplaceable Patent contained in the technical standard, that is, the Patent that has to be used in order to implement the technical standard [1]. With the close relationship between patent and technology, the compulsory standard and patent exclusivity are inherited by the standard essential patentee, and the commercial value of standard essential patent is also increasing, mastering a standard of essential patents often gives the right holder a head start in the relevant market transactions. The "Third-class enterprise to do products, second-class enterprise to do brand, first-class enterprise to do standard" is a vivid portrayal of its. At the same time, it is precisely because of the important status of standard essential patent in commercial transactions that the interests of multi-party parties often conflict with each other, and the phenomenon of abuse of rights also arises as a result. In recent years, in recent years, the number of related disputes has been increasing rather than decreasing. The abuse of standard essential patent right is a kind of abuse of intellectual property right. Although it has its own characteristics, it belongs to the same kind of abuse of private right as the abuse of intellectual property right.

It is generally believed that it originates from the principle of prohibition of abuse of rights in civil law. Nevertheless, standard essential patent is a kind of private right, at present, scholars regulate the abuse of standard essential patent from the angle of anti-monopoly law, it has a certain "Monopoly" attribute, and the standard essential patent is an essential factor that can not be bypassed in the production of related products, which further strengthens the "Monopoly" attribute of the standard essential patent, so much so that a considerable number of scholars believe that each standard in the standard of essential patents can be directly regarded as a relevant technology market [2]. The "Lock-in effect" of technical standard realizes the irreplaceable nature of necessary patent, and technical standard realizes the de facto monopoly by the protection of patent right [3]. In addition, in judicial practice, in a number of typical cases, such as the "Qualcomm case" and the "Huawei v. IDC case", the relevant departments also dealt with them in accordance with the anti-monopoly law, as a result, the abuse of standard essential patents has become an antitrust issue [4]. However, does the abuse of standard essential patents necessarily constitute the abuse of market dominance as stipulated in the anti-monopoly law? Can direct application of the anti-monopoly Law to regulate the abuse of the standard essential patents be fundamentally resolved or prevented? Finally, compared with the anti-monopoly law, whether there are other more appropriate legal norms or mechanisms to regulate the abuse of standard essential patents. Based on the above questions, this article will start with the types of abuse of standard essential patents, and then analyze the limitations of the direct application of anti-monopoly law in such cases, to explore whether there is a better way to solve the problem outside the anti-monopoly law.

2. A Typology of Standard-essential Patent Abuses

The abuse of standard essential patentee is mainly embodied in two aspects: entity and procedure, including patent ambush and patent hijacking, and procedure, abuse prohibition. In addition, the opposite side of the standard necessary patentee is also prone to abuse of rights, mainly manifested as reverse jacking.

Patent ambush, which mainly occurs in the process of standard-making. In the course of participating in the development and setting of the standard, the members of the institution participating in the standard-setting deliberately conceal the fact that the patented technology is included in the standard, and evade the obligation of information disclosure, as a result, companies that had previously applied the patented technology were included in the category of patents necessary to infringe the standard. In such a case, the standard essential patentee would be guilty of abuse if it acted in any of the following ways: first, deliberately to remain silent or to conceal the patent in question; second, to disseminate false

information about the absence of the patent; and third, failure to license the patented technology as required by the FRAND clause. Such abuses can be damaging because they reduce competition in the process of setting patent standards [5].

Patent hijacking, mainly refers to the standard essential patent hijacking, mainly manifested in abuse of prohibitions, standard essential patentee unreasonable patent licensing fees or refusal to license, etc.. Patent hijacking is the most common and frequent abuse of standard essential patents. The reason of patent hijack is the conflict of interest between patent and standard, which belongs to breach of contract and abuse of right [6]. Patent hijacking or the threat of patent hijacking will increase the cost of licensing patents and hinder innovation, while increasing the uncertainty of other market participants, including other patentees. Such abuse not only threatens the legitimate interests of patent users, but also causes serious harm to patent holders, thus endangering the development of innovation and the overall interests of consumers. In the case of Microsoft v. Motorola, Microsoft sued in anger over the extortion of high royalties from Motorola. Huawei has also filed a lawsuit against IDC over its high licensing fees.

The procedural abuses are mainly the threat of injunctions. If the licensee and user of the patent are willing to accept the terms of the Frand and pay the licence fee, the standard essential patentee can not apply or threaten to apply the injunction to obtain higher benefits and more favourable terms. In general, users of patents that apply a standardized patent to the production of a product have eliminated inappropriate prohibitions or the threat of exclusion orders. In the United States, the use of exclusionary injunctions is generally not allowed unless the infringer's FRAND defense is not supported [7]. Only licensees who do not intend to enforce FRAND obligations may be subject to injunctions or exclusion orders, which are strictly prohibited for applicants in general who do intend to enforce FRAND obligations. Some scholars believe that if the negotiations between Frand and the two sides fail, the patent holder can not apply for the license of the injunction in the federal court or the Exclusion Order of the International Chamber of Commerce, the scope for protecting standard essential patents is very limited.

A reverse hijacking, also known as a FRAND hijacking, in which the standard enforcer continues to use the patent without the patentee's permission and, when the necessary patentee requests negotiation, argues that the licensing conditions can not be agreed upon, by refusing to negotiate and delaying the license, they reduce the royalty rate. Reverse hijacking is a kind of patent infringement in essence, but its relief method has its particularity, its injunction relief is strict to the general patent infringement, and the calculation of damages is more complicated, it is generally considered that it can not be higher than the royalty rate stipulated by FRAND [8]. This situation will cause the patentee to have no choice but to spend a lot of manpower and material resources to take the patent user who is suspected of infringing the patent to court, which will cost a lot of time and energy, in the end, only Frand's royalties can be obtained. It was precisely because they saw the worst result of these patent users, that is, to pay royalties that they should have paid earlier, that a large number of patent users followed suit, resulting in damage to the interests of standard patentees, as a result, many patentees have to give up joining the ranks of patent standards, thus hindering scientific innovation and development, and ultimately affecting the interests of consumers and the sustained and stable development of the economy as a whole.

3. An Analysis of the Limitations of the Application of Anti-monopoly Law to the Regulation of the Standards Necessary for Patent Abuse

3.1 Limitations in the Scope of Application

In practice, the abuse of standard essential patents is very complicated. The anti-monopoly Law can regulate most of the abuse, but not all the abuse, direct application of the anti-monopoly Law has obvious limitations:

1) Not all the abuse of standard essential patent behavior can be regulated by anti-monopoly law

In current judicial practice, article 19 of the anti-monopoly law is usually used to regulate the abuse of standard essential patent on the ground that it constitutes the abuse of market dominant position. But for standard essential patents, there is no necessary connection between the licensing market for each standard essential patent technology and the relevant commodity market, each standard essential patent holder does not necessarily have a dominant market position because of the existence of a standard essential patent. Whether it meets the constitutive requirements of “Anti-monopoly law” to abuse the dominant position of the market needs to be analyzed with specific cases. The anti-monopoly law enforcement agency should apply the general rules of the anti-monopoly law when determining whether the standard necessary patent holder has a dominant market position. On this basis, anti-monopoly law enforcement agencies should also combine the characteristics of technical standards and the characteristics of standard essential patents to judge, pay attention to the development of standard essential patents and related technology and its impact, different types of technical standards should be treated differently, and competition within and between standards systems should also be analysed, taking into account the ability of ISO to control the necessary patent holders for the standards [9]. The definition of the relevant market in the case study is complicated, which leads to the difficulty in the analysis of whether it is an abuse of market dominance. In addition, the patent right has the attribute of private right after all, if this kind of case directly applies “Anti-monopoly Law” under the intervention of public power, it may not be able to fundamentally solve the problem of abuse, this would cause some damage to the patentee, consumers and market competition.

Secondly, different countries and regions have different attitudes towards the nature of unfair high price behavior. Not all countries use anti-monopoly laws to regulate unfair high prices, attitudes can be divided into “Intervention theory” and “Non-intervention theory”. And in the “Intervention theory” of the countries and regions, which often hold a more cautious and relaxed attitude, generally only applicable to specific situations [10]. In our country, “Huawei v. IDC case” and “Qualcomm case” both hold that the patent holder's unfair

high price behavior is an abuse of market dominance, but this is also a full consideration of its particularity. In the case of Huawei v. IDC, the Court held that IDC's offer for Huawei was hundreds of times the amount it had licensed to companies like Samsung and Apple, and that the exorbitant patent licensing fees it had charged were not justified. In addition, in the course of the negotiations, IDC filed lawsuits and applied for injunctions with the United States International Trade Commission and the Court of Delaware, with the aim of forcing Huawei to accept its unfairly high prices and other unreasonable demands, which further reinforced the unreasonableness and unfairness of overpricing [11]. In the “Qualcomm Case”, the National Development and Reform Commission also based on the bad behavior and serious influence of Qualcomm, combined various factors to determine that it constitutes abuse of market dominance, not just because of its unreasonable high price behavior, it can be said that the unreasonable high price behavior is just an external behavior. It should be noted that in future judicial and law enforcement activities, the final conclusions of these two cases should not be directly applied to other cases of high licensing fees for essential patents. As a basic right of market subject, autonomous pricing right should be respected and recognized in the licensing market of standard essential patents. In practice, it is not necessary for anti-monopoly departments to intervene in all cases of patent hijacking leading to unfair high prices. On the one hand, it should be judged whether it is a special case that should be considered as an abuse of market dominant position by strictly demonstrating the characteristics of the act of abuse of rights and whether it has an impact on market competition and consumer interests. On the other hand, it is not appropriate to consider an abuse of market dominant position as a high-price act with minor circumstances and no serious impact on the market competitive environment, so as to prevent the excessive interference of anti-monopoly law enforcement from affecting the innovation and development of the technology market [12].

2) There is no regulatory path for patent ambush

The behavior of patent ambush is mainly embodied in that the patentee violates the obligation of information disclosure in the process of standard-making. In the process of standard-making, patentees often make false disclosure of patent information in order to make their patent technology stand out from the numerous patent technologies, this may result in information asymmetry between the patentee upstream, the standards organization and the downstream user, and may result in the patentable technology covered by the standard not being the optimal technology, it could also lead downstream users to choose standards that are not in their best interest. A large part of the disputes in the field of standard essential patents are caused by the imperfect information disclosure, and the perfect patent information disclosure system can make the patentee and standard implementer in the position of information equivalence, can effectively reduce the occurrence of disputes.

At present, our country's laws and regulations on disclosure of standard essential patent information, only in the departmental regulations issued by the Standardization administration of China and the state intellectual property rights in 2013, “Administrative regulations of national standards concerning patents (provisional)” (hereinafter referred to as “Administrative Regulations”) , it is difficult to guide the disclosure of patent information effectively in the process of standard-making. The anti-monopoly law does not regulate the way of this kind of behavior, which can easily lead to the abuse of standard essential patents, but I think it is more logical to bring it into the framework of patent law [13]. Although there are some contradictions between the standard and the patent, the standard essential patent is one of the patent types, there is no doubt that the disclosure requirements of standard essential patents should be brought into the scope of regulation of patent law. The patent law stipulates in detail the boundary of the exercise of the patent right, the protection of the patent right and the regulation of the abuse of the patent right. The standard essential patent is brought into the patent law as a special patent type, and the existing standard essential patent provisions are integrated and perfected to form a more comprehensive protection of the standard essential patent. This approach to the existing patent law, the overall structure of the patent law will not be broken, for the Basic patent issues do not have to repeat the provisions. If the standard essential patent is included in the Civil Code Contract Series or the anti-monopoly law, it will destroy its overall structure and appear a little abrupt. If in the standard essential patent dispute involves the contract or the monopoly question, refers to “The civil code contract compilation” and “The anti-monopoly Law” May. The patent law has many advantages over the civil code contract series and the anti-monopoly Law, so it is most appropriate to stipulate the requirements of patent information disclosure in the patent law.

3.2 The Limitation in the Function of Applicable Law

1) Insufficient attention to abductees

The purpose of our anti-monopoly law is to prevent and stop monopoly, protect fair market competition, improve the efficiency of economic operation, and protect the interests of consumers and the public. The anti-monopoly law protects competition, not competitors [14]. However, the first person to bear the loss caused by the abuse of standard essential patent right is the standard implementer who has been hijacked. In the face of the hijacking by the patentee, one of the choices of the executor is to obtain the right to use and continue the production by paying a high license fee and accepting other unreasonable conditions, but this will lead to the implementation of the standards of production costs significantly increased, the profits are severely compressed, and even lead to unprofitable business activities. If the implementer wants to transfer this cost by raising the price of the commodity, it will lead to the loss of market competitiveness of its products and the shift of consumers to alternative products. To be sure, implementers have the option of forgoing standard adoption and finding or developing alternatives. However, given the non-fungible nature of the standard essential patent, choosing the latter would not only result in a waste of significant upfront investment costs, but also in a high risk that the product would not be compatible with other complementary products because it does not meet prevailing standards, indirectly driving it out of the market is a fatal blow to the implementers. Therefore, the most direct and main victim of patent hijacking is the standard implementer.

The goal of legal regulation should be to protect the legal rights and interests of the implementer and make up for the losses of the parties. Whereas obviously “Anti-monopoly law” pays more attention to the maintenance of market competition order, but can not resort to anti-monopoly law means for the relief of hijacked. For example, in the standard essential patent dispute between Huawei and IDC, IDC's abuse of market dominance was found and punished in the case of “Huawei v. IDC abuse of market dominance”, however, the determination of the standard essential patent license fee rate involved in the case was resolved in another civil lawsuit, “Huawei v. IDC standard essential patent license fee dispute”.

2) The exact amount of the reasonable price could not be determined

The main purpose of abuse of standard essential patent is to obtain unreasonable license fee. Although our country “Anti-monopoly law” forbids this kind of behavior explicitly, but regarding the standard essential patent so-called fair reasonable license fee does not have the unified measurement standard, in the current law, the basis for calculating the “Unreasonable” high price of patent license fee in relevant cases has not been clearly defined. As mentioned earlier, the anti-monopoly law focuses more on “Preventing and stopping monopolistic behavior, protecting fair competition in the market, improving the efficiency of economic operation, and protecting the interests of consumers and the public.” This is reflected in practice, neither the active intervention of anti-monopoly administration nor the private action of anti-monopoly directly involves the calculation of patent license fee, but focuses on the impact of patent holder's license on market competition.

In the United States, there is no written regulation of high licensing fees for standard essential patents, but it does not support the use of anti-monopoly Law to intervene in the issue of licensing fees. The United States advocates respecting the free competition of the market and protecting the enthusiasm of scientific research innovation and participation in competition. In their view, the anti-monopoly law as a representative of public power will interfere with the environment of free competition in the market, so in such cases will try to avoid the use of anti-monopoly law. In Microsoft v. Motorola, for example, the plaintiffs, Microsoft, argued that Motorola's high-priced licensing rates during the patent licensing process violated its FRAND commitments when it joined the standardization organization. In the process of analysis, the court did not apply the anti-monopoly law, but the comprehensive analysis and application of contract law, patent law and procedural law, and in the process of analysis, it focused on the consideration of social public interests, finally, a referential patent pool is used as the basis for calculating two standard essential patent license fees to determine the final FRAND license rate [15]. In the end, the court-determined patent license fee was substantially reduced, with Motorola's reasonable license fee range of 0.9-19.5 cents in the IEEE 802.11 standard, the annual total was less than the 1/2,000 that Motorola had asked Microsoft for before the ruling. The analysis of the case in the process of trial and judgment may provide us with some solutions to the disputes arising from the standard essential patent license fee in the future.

3.3 In the Application of Legal Effects on the Right to Excessive Deterrence

1) Restrictions on the application of the ban are too strict, easy to lead to reverse hijacking

The restriction of anti-monopoly Law on standard essential patent is not only the prohibition of breaching Frand's excessive charge, but also the restriction on the patentee's right to seek injunction. As pointed out in the policy statement on necessary patent remedies based on the Frand Commitment Standard, issued jointly by the U.S. Department of Justice and the Patent and Trademark Office in January 2013, the standard necessary patentees with FRAND commitments to seek relief from injunctions or exclusions is in some cases incompatible with the public interest and should therefore be restricted. In July 2015, the Court of Justice of the European Union brought forward the case of Huawei v. ZTE, which was brought before the Düsseldorf District Court of Germany, only if the requisite patentee seeks an injunction from the court in order to satisfy certain specific criteria does it not constitute an abuse of a dominant market position under Article 102 of the EU Operation Regulation. The antimonopoly guide on the abuse of Intellectual Property Rights (consultation draft) also considers that the use of injunction remedies by the patentee as a necessary criterion for the possession of a dominant market position may have the effect of excluding or restricting competition, the exercise of their injunction rights should therefore be restrained.

The main aim of the anti-monopoly law to restrict the injunction relief right of the standard essential patent holder is to protect the competition and the interests of consumers. However, the restriction of anti-monopoly law is not necessary and has a series of negative effects. The excessive restriction of the anti-monopoly Law on the patentee's rights may cause the imbalance of market power between the patentee and the implementer again. The restriction of injunction relief right to standard essential patentee not only prevents the abuse of right, but also increases the risk of standard implementer taking “Patent Holdout” action: standard essential patentee may violate the Frand principle in the negotiation process by claiming patentee, preventing the right holder from applying for an injunction, thereby increasing its bargaining power to achieve the goal of reducing or waiving patent fees or delaying negotiations. Such reverse hijacking is undoubtedly an erosion of the legitimate and legitimate rights of the obligee. No matter it is patent hijack or reverse hijack, it runs counter to the original intention of patent system and standardization [16].

2) Large fines tend to stifle innovation and transformation and can be passed on to consumers

As for the patentees who violate Frand's commitments and abuse standard essential patents, as noted by the famous U.S. Judge Ginsburg, although the high licensing fees of the patentees evade Frand's price constraints, this action may harm consumers, but it does not harm the competitive process [17]. Relatively speaking, the biggest harm to consumers is the state of market competition is damaged, market power is legally held in the hands of some monopolists. As a result,

courts will distinguish between a simple breach of pricing commitments and an illegal exercise of monopoly power, rather than simply viewing it as an abuse of a dominant market position. That is to say, the violation of Frand commitment and the violation of market competition are two different concepts. In addition, the direct application of anti-monopoly law sanctions against the abuse of standard essential patents in violation of FRAND commitments not only fails to protect the interests of consumers, but also may harm the interests of consumers. First, the application of the anti-monopoly Law to regulate the conduct of standard-essential patentees, and the imposition of large fines on them, may reduce their incentive to re-participate in standard-setting organizations to make relevant FRAND commitments. If the penalized standard-essential patent holder withdraws his standard-essential patent, withdraws from the corresponding standardization organization, and there is no other appropriate remedy for the prior implementer, it is highly likely that the former implementer will turn out to be an infringing user. In addition, the previous excessive fine is also likely to reduce the patentee's trust in injunction relief, or even can not use injunction relief, in the long run, will inevitably reduce the value of its patents, and ultimately reduce its incentive to innovate. Over time, not conducive to the popularization of standards, new technology and new product updates, consumers can not be timely access to the latest market products. Thus, far from protecting the interests of the public in competition and innovation, the range of practices resulting from huge antitrust fines has the potential to reduce the benefits of innovation and patent standardization.

4. Exploration of Other Regulatory Paths

4.1 Improve the Patent Law and Related Regulations

As for the standard essential patent right, the restriction on the exercise of patent right is an internal restriction. The internal restriction based on patent law should be the first place to solve the problem of abuse of standard necessary patent rights.

First, as a special form of patent right, the boundary of the exercise of the right should be regulated by the most closely related patent law, which is more in line with the basic requirements of the intellectual property law. Only by clarifying the property right through the law according to the basic value orientation of the intellectual property system design, can the goal of the system design be realized. Specifically, patent law, which grants property rights to the patentee necessary for a standard, we should guide the exercise of the right with the value orientation of a right standard, evaluate the appropriate behavior positively and evaluate the abuse negatively [18]. When the perpetrator's abuse will lead to a clear and strict legal liability, it will give up its abuse for the value of interests, which will greatly reduce the occurrence of abuse from the source.

Secondly, as a private law, patent law has obvious advantages compared with other public law regulation means in regulating the exercise of patent rights. First, from the perspective of legal function, patent law can not only promote the voluntary formation of consensual behavior between civil subjects, but also when disputes arise, in the event of a dispute, the patent law can better compensate the losses of the parties and guide the parties to further reach the agreement. Second, from the perspective of legal effect, compared with the anti-monopoly law, the patent law belongs to the adjustment of private law. Its legal effect is not as severe as that of the anti-monopoly law, and it is not easy to cause the effect of excessive deterrence, it can also avoid the risk of abuse of public power of anti-monopoly law enforcement agencies, and avoid confusing industrial policy orientation with legal evaluation. Third, from the parties' relief costs, anti-monopoly litigation usually costs a lot of money, the cycle is longer, often in a weak position of the direct stakeholders will give up the lawsuit. In contrast, the patent abuse as a civil tort defense basis, the standard technology implementer of the lower burden of proof requirements, there is no need to prove the definition of the relevant market, the position of the obligee in the market and the effect on the market competition, so the abuse of the obligee's right can be prevented more effectively.

Thirdly, regulating the abuse of rights from the perspective of restriction of rights is in line with the current situation of our country. As a developing country, there is still a big gap between our scientific and technological level and that of the developed countries. Although some activities are not regulated by the anti-monopoly law or do not have enough influence on the market competition to trigger the anti-monopoly regulation, these abuses are enough to make the enterprises concerned suffer unspeakably. It can promote the development and technological progress of domestic enterprises to regulate such abuse effectively through patent law and protect the legitimate interests of related enterprises. More importantly, when there is a conflict between intellectual property rights, which are primarily property rights, and the right to life and health, if advanced technologies in developed countries relating to pharmaceuticals can not be implemented domestically, it will threaten the social public interest (public health, public health, etc.) , which becomes an important factor for most developing countries to stipulate compulsory patent licensing from the perspective of right restriction [19].

4.2 Introducing Pre-arbitration Mechanism into SEP Litigation

The core problem of patent dispute of abusing standard is to calculate an accurate license fee, but it is difficult to get an accurate figure by all means in practice. Therefore, the best way to resolve the SEP dispute is to set up a transparent, open and efficient arbitration mechanism, and to provide a negotiation opportunity and platform for both parties in the arbitration process. Zhu Jianjun, the Chief Judge of the Shenzhen Intermediate People's Court, has pointed out that both parties to a patent license want to maximize their own interests, and patent holders want high licensing fees to increase their income, licensees want to pay as little as possible to reduce their own costs. In the case of conflicting interests, a negotiation mechanism based on Frand principle is urgently needed to ease deadlock between the patent holder and the executor [20]. Therefore, in the case of abuse of standard essential patent, the introduction of pre-arbitration procedure can save both parties' time cost and litigation cost, as well as judicial resources to a certain extent.

The author believes that the Lemley-Shapiro arbitration mechanism proposed by foreign scholars in recent years, which can be called "Baseball-style" arbitration mechanism, has a strong reference significance for us to solve this problem [21]. The details are as follows: When the patentee of a standard becomes a member of a standardization organization, if the issue of license fee of standard essential patent is disputed with bona fide standard implementer (that is, the subject who has not avoided paying patent license fee) , the final reasonable license fee can not be determined. Instead of going to court, the licensing parties automatically enter the arbitration process, the standard-essential patentee and the patentee shall then submit to the arbitral tribunal, respectively, a proposal for the licensing rate, which has been analysed and calculated by themselves, and which shall conform to the principles of fairness, reasonableness and non-discrimination, and it would have to include a specific amount of licensing fees. The arbitral tribunal will only need to ultimately choose the one of the two options submitted by the parties that best approximates the principle of fair, reasonable and non-discriminatory licensing rates. The advantage of this arbitration mechanism is that, compared with the current thinking of anti-monopoly regulation, the arbitration institution does not have to analyze and affirm the relevant market and the dominant position of the market like the judicial organ or the anti-monopoly law enforcement agency, there is no need to judge the validity and infringement of a patent, just choose between two license rate schemes. In current judicial practice, both patent licensors want to maximize their own interests through patent licensing fees, and patentees want high licensing fees to increase their own income, licensees want to pay as little as possible to reduce their costs. "Baseball-style" arbitration mechanism to understand the psychological insight of both sides, and the rate proposed by both sides to make the corresponding FRAND requirements. In essence, both the standard-essential patentee and the patentee know that if the price of the license fee they have given does not take into account the interests of both parties, but only from the perspective of their own interests, then the arbitrator will choose the fair rate of the other party after comparing the two license rate schemes, and he will not be able to win the arbitration. Therefore, the licensor and the licensor both wanted the Arbitration Commission to adopt their own rate scheme in order to win the arbitration. Under the temptation of this idea, the rates submitted by both parties will be most likely to be fair, reasonable and non-discriminatory, and the final bid will be close to the true FRAND license rate. In essence, regardless of which party the arbitrator ultimately chooses, the pricing scheme will be close to the ideal FRAND rate and will maximize the public interest. Moreover, prohibiting the patentee from applying for injunction relief in the course of arbitration can also prevent the occurrence of the "Hijacking" of the patent, and can guarantee the patent implementer to the greatest extent to implement the standard necessary patent smoothly, ensure the popularization of standardization.

4.3 Improve Disclosure Rules

As mentioned earlier, a large part of the current disputes in the area of standard essential patents are due to incomplete disclosure, the perfect patent information disclosure system can make the patentee and the standard implementer in the information equivalent position, and can effectively reduce the occurrence of disputes. At present, the most important thing to improve the relevant provisions of information disclosure is to improve the relevant areas of legislative work.

Although there are some contradictions between the standard and the patent, the standard essential patent is one of the patent types, there is no doubt that the disclosure requirements of standard essential patents should be brought into the scope of regulation of patent law. The patent law stipulates in detail the boundary of the exercise of the patent right, the protection of the patent right and the regulation of the abuse of the patent right. The standard essential patent is brought into the patent law as a special patent type, and the existing standard essential patent provisions are integrated and perfected to form a more comprehensive protection of the standard essential patent. This approach to the existing patent law, the overall structure of the patent law will not be broken, for the Basic patent issues do not have to repeat the provisions. If the standard essential patent is included in the Civil Code Contract Series or the anti-monopoly law, it will destroy the whole structure and appear a little abrupt. If in the standard essential patent dispute involves the contract or the monopoly question, refers to "The civil code contract compilation" and "The anti-monopoly Law" May. The patent law has many advantages over the civil code contract series and the anti-monopoly Law, so it is most appropriate to stipulate the requirements of patent information disclosure in the patent law.

In particular, we should start from the following aspects: 1) the choice of the disclosure principle to use the principle of encouraging prior disclosure. In the process of technology standardization, there is always a dispute on whether to adopt the principle of encouraging or compulsory prior disclosure of patent information. If our country carries on the strict restriction to the information disclosure, it will be disadvantageous for our country enterprise to participate in the international competition. Therefore, our country in the face of such a severe external environment, should be in line with international practices, the use of the principle of encouraging prior disclosure. 2) the subjects of patent information disclosure can be classified into three categories: organizations and individuals participating in the formulation of standards, organizations and individuals not participating in the formulation of standards, and the national technical committee for professional standardization or the focal units. It is recognized by academic circles that organizations and individuals participating in the formulation of standards have the obligation to disclose patent information, these subjects of disclosure include standard proposers, patentees involved in standard-setting, and standard-setting personnel. It is reasonable to have a disclosure obligation. Organizations and individuals not involved in standard-setting are not aware of the standard-setting process and may not know at all that their patented technology is included in the standard, which would be somewhat onerous if they were subject to a disclosure obligation, therefore, they are encouraged to disclose their patented technology when they know it is included in the standard. 3) there are nine stages in the development and revision of the selection criteria of disclosure time. Different stages have different mission objectives, and different subjects can apply different disclosure time. The proponent of

the standard, as the first subject to the standard, may be required to disclose information prior to the drafting stage after being informed of the proposal. The national technical committee for professional standardization or its focal units, as well as the patentees involved in the formulation of standards, may be required to disclose information at the latest before the end of the drafting stage. For organizations and individuals not involved in standard-setting because they are not aware of standard-setting, the time disclosure requirements for them could be appropriately relaxed to the consultation stage. 4) choice of scope of disclosure most international standards organizations, for reasons of their own interest, often require only the disclosure of patent information in their intellectual property policies, the disclosure requirements of patent licensing conditions are ignored. Despite the requirement of FRAND commitment, standards organizations do not set reference standards for what is "Fair, reasonable and non-discriminatory", Frand principle has been in the status of being shelved, therefore, the scope of information disclosure can be extended to the disclosure of patent licensing conditions. The disclosure of the highest patent license rate in the process of information disclosure is a fundamental way to reduce the standard necessary patent disputes. To extend the scope of information disclosure to the disclosure of patent licensing conditions, requiring the patentee to disclose the highest license fee rate, thus leaving room for negotiations between the patentee and the standard implementer, it can also provide a basis for judicial review, whether to promote the settlement of disputes or to avoid disputes can play an extremely important role. 5) choice of legal consequences the organization of international standards provides little clarity on the punitive consequences of the obligation of unlawful disclosure. In view of the internal and external environment of our country, at present, our country should not make strict regulations on the legal consequences of violating the obligation of disclosure, should try our best to keep in line with the international practice, and should not make strict regulations, the standard enforcer should only be allowed to claim mitigation or exemption of liability on the ground of non-disclosure of patent information as a defense of infringement, leave the judge's discretion as to the extent of the mitigation and whether or not to waive liability.

4.4 Leverage the Professional Advantages of Standard-setting Organizations in SEP Abuse Regulation

Standard-setting organizations can not completely stay out of the standard necessary patent disputes, and they should do something about it. Furthermore, the discussion of the role of standard-setting organizations in the settlement of essential patent disputes can not be separated from the self-orientation and main function of standard-setting organizations [22], that is, to formulate advanced standards and promote their implementation. Some scholars compare the current disclosure and licensing policies of various standard-setting organizations and sum up their common deficiencies. In other words, the current disclosure and licensing policies of the standards-setting organizations are vague, their actual binding nature is limited, and the implementation of relevant patent policies is not supervised and liability norms are absent, this often leads to a lack of rules. To be sure, the neutrality of a standard-setting organization requires that it should not get too involved in the conflict of interest between the patentee and the standard implementer. In reality, the vast majority of standard-setting organizations tend to place their functions within the scope of standard-setting and promotion (although there have been breakthroughs, such as the latest IEE patent policy attempt to provide a FRAND license fee scheme), both claim not to interfere in commercial negotiations and licensing disputes between patentees and standard enforcers. Although there is a need for a standard-setting organization to remain neutral, this need should be limited to the interests of the patentee and the standard implementer. The neutrality requirement of a standard-setting organization does not negate the fundamental position that it should take. This basic position is linked to its own positioning and main function, which is to develop advanced standards and promote their implementation. Therefore, there is no reason for standard-setting organizations to stay out of anything that hinders the formulation, promotion and implementation of advanced technical standards. Based on this, standard-setting organizations should be based on their own basic position, in the standard of necessary patent disputes to play a role. In the regulation of anti-monopoly Law on the abuse of standard essential patent, standard-setting organizations can play a role through their own professional advantages. In practice, a standard contains thousands of essential patents, and each essential patent contributes differently to the standard and the implementer's product. Faced with the complexity of the standard-essential patents, the judiciary and law enforcement agencies are not omnipotent, it is inevitable that there is nothing they can do. At this point, the standard-setting organization can base itself on its basic position of developing advanced standards and promoting their implementation, by providing professional advice or appearing as an expert witness, in this way, they can bring their expertise to bear in regulating the abuse of standard essential patents. In other words, standard-setting organizations can assist the judiciary and law enforcement agencies in adjudicating relevant disputes in three ways: first, to provide judicial and law enforcement agencies with relevant information on their patent disclosure policies, licensing policies and essential information on standard patents as important references for clarifying facts and handling disputes, at this point the standard-setting organizations are in a relatively neutral position; secondly, the standard-setting organizations may be able to submit their professional opinions, the Amicus Curiae system in the and the United States provides an expert analysis of the effectiveness of FRAND commitments and the contribution of necessary patents to the standards and to the products of those enforcing them, at this point, the standard-setting organization will often express its basic position; third, in judicial decisions, the standard-setting organization may also send relevant experts or staff members to appear in court to give professional opinions and directly participate in the trial, to explain the relevant professional issues in person for the judge's reference and adoption.

4.5 Establishing a Credit Regulation System for the Abuse of Standards

1) The principle of a credit mechanism regulating the necessary abuse of patents for labeling

The abuse of standard essential patent has seriously affected

the normal operation of market order and destroyed the market environment of our country. The main body of the market needs to spend a lot of capital and energy to deal with the abuse of unreasonable demands and unnecessary litigation, seriously affecting the normal business activities. In the past, our country has adopted a long-term passive approach to deal with the abuse of patent rights necessary for such standards, leaving a large number of difficult problems to be solved by administrative law enforcement agencies and judicial organs in the form of case reviews, it has caused a lot of pressure on the division, some of the action of excessive litigation is a serious waste of judicial resources. Although the concept of a standard essential patent is clearly defined in the provisions on exclusion and restriction of competitive conduct on the prohibition of abuse of intellectual property issued by the State Administration of Market Supervision in 2020 and the guidelines on anti-monopoly in the field of intellectual property issued by the anti-monopoly Commission of the State Council in 2019. To some extent, it has also perfected the system of regulating the abuse of standard essential patent, but it is not enough to completely improve the abuse disorder by only regulating the abuse by “Anti-monopoly Law”.

The patent right belongs to the special property right, which is a kind of monopolistic management right given by law. The abuse of standard essential patent is essentially a malicious use of social resources, which seriously affects the normal and reasonable allocation of social resources. If social resources can not be relatively reasonable allocation, economic benefits will be significantly reduced, harm to public interests, hindering economic development. Only realizing the rational allocation of social resources, taking into account both fairness and efficiency, can we maximize the interests of all parties in society. The essence of credit regulation is to safeguard social public interests. Therefore, it is a fundamental measure to control the abuse of trademark right only by taking the abuse of standard essential patent as a breach of trust and putting it into the category of breach of trust restriction mechanism [23].

2) Establishing the credit regulation system of abuse of standard essential patent

Only through the establishment and perfection of Social Credit system can the abuse of standard essential patent be solved completely. The mechanism of Social Credit System to regulate trademark abuse is as follows:

First, regarding the abuse of patent right as a breach of trust, the relevant subjects can share or inquire the information within a certain range and time limit. The breach of trust should be divided into several levels, such as the degree of subjective malice, the degree of breach, the number of breach of trust and the degree of harmful consequences, etc., the act of breaking faith is classified into minor, general, serious and especially serious acts of breaking faith. The duration of information preservation and the scope of information sharing are different in different levels of dishonesty. For particularly serious breach of trust, the breach information shall be kept for a long period of time, and shall never be repaired, and shall be made public throughout the country; for serious breach of trust, the retention period of the breach information may be set at seven years, the public may inquire nationwide; for general breach of trust, the retention period of the breach of trust information may be set at three years, and public entities and personnel in the industry may inquire; for minor breach of trust, its information preservation period can be set to 1 year, the industry or the department staff can query within this period. For all kinds of breach of trust, the credit intermediary service organization can collect and provide the information to the subject in need during the validity period, it can also be used as an important basis for rating/scoring relevant subjects [24].

Second, during the period of keeping the credit information, the relevant parties (including the government and various market entities) learn about the parties' breach of trust through relevant channels, this is used to determine whether to engage in dealings/transactions with the subject of the patent necessary for the abuse of the standard and whether to attach more stringent conditions to the transaction. For example, a bank may not lend to an abusive entity, or require it to pay a higher interest rate when making a loan. The principle of credit restriction is equivalence and relevance. According to the nature and severity of breach of trust, the equivalence of credit punishment or restraint means taking appropriate disciplinary measures or restraint mechanism to ensure the equivalence of excessive punishment. The relevance of credit constraint means that according to the nature of breach of trust, it is restricted only in the relevant field. As far as government departments are concerned, different levels of breach of trust in abusing standard essential patent right should be punished or restrained differently. This manifests itself in the difference between the constraints imposed on a single domain or on multiple domains; the difference between the constraints imposed on some domains or on all domains simultaneously, if on multiple domains, and so on. It can be seen that, due to the diffusion mechanism of credit information, the subjects who abuse the standard necessary patent rights will no longer be punished only once by the law, but may be in a certain period of time, including the government departments concerned with the joint disciplinary action and the various market subjects of many times spontaneous disciplinary action. This would effectively solve the low-cost, high-return problem of the abuse of standard essential patents.

5. Conclusion

The related problems of abusing standard essential patent right are very complex, and it is necessary to regulate it by law. At present, the research on the abuse of the standard essential patent right in our country's academic circles relies excessively on the anti-monopoly law, however, we have not fully realized the limitation of the application of anti-monopoly law, the lack of legal function and the negative legal effect. At the same time, it neglects to investigate other regulation paths, which will be disadvantageous to solve the problem of abuse of standard essential patent.

The purpose of this article is not to deny the positive significance of anti-monopoly law regulating the abuse of essential patent rights, but to reflect on the mainstream view that anti-monopoly law can easily intervene in cases of abuse of essential patent rights, in order to clarify its basic position, to explore its reasonable application conditions and specific operating procedures, but also not for the standard necessary

patent abuse to get rid of the anti-monopoly law to find reasons, however, we hope that we can get rid of the fog formed by the anti-monopoly law, and inspire more scholars to explore a better way to regulate the abuse of standard essential patents.

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