Voluntary Codes and Standards

When Standards Collide with Intellectual Property: Standard Setting Organizations, Technology, and *Microsoft v. Motorola*

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In the summer of 2010, Motorola Inc. ("Motorola") was in turmoil. After a flurry of successes in 2004, when it launched its Razr mobile phone, Motorola was most recently reeling from a $4.3 billion loss to the company between 2006 and 2009. It was looking forward to spinning off its faltering mobile phone and cable equipment divisions into a second publicly owned company called Motorola Mobility ("MM"), which would operate separately from the more traditionally stable public safety division. Although MM had an uncertain future, parent Motorola would leave MM with a solid and valuable legacy: Due to Motorola's decades-old tradition of research and development in all realms of technology, MM would inherit a patent portfolio of over 17,000 active patents after the split.[1]

Motorola's biggest competitors in 2010 were Apple and Samsung. But while those competitors were debuting devices that incorporated increasingly innovative technology, Motorola's devices did not even incorporate many of the company's own patented inventions. Motorola executive, Sanjay Jha, brought in to run the mobile phone and cable equipment division before the split, lamented soon after he started in 2008 that he "was told that Motorola actually developed and patented a lot of the stuff the company's phones didn't have. The company was the first with a QWERTY keypad, with color screens, with 3G and touch."[2] Motorola's value rested not in its products; it was wrapped up in its patents. Since most technology companies manufacture and sell products that incorporate a wide variety of innovations—some invented by their own teams and some that are proprietary to their competitors—Motorola had actually enabled the success of its competitors' products. However, although Motorola did not use all of its innovations to sell products, its deep and varied patent portfolio nonetheless offered the company a unique opportunity to monetize its valuable inventions. Motorola could strike licensing deals with its competitors, and one way was through its membership in standards setting organizations.

What is a standard setting organization? New technology devices must often combine inventions from several companies, if not several industries. For the sake of the consumer, these companies must coordinate such that various components of a system will be sure to work together, a concept known as "interoperability."[3] As a simple example, a lamp would not be useful if its plug did not fit into the electrical outlets in a house. But when the plug makers coordinate with the electrical outlet makers, the lamp makers and the public can rest assured that lamps will light.

This coordination between industries and technologies occurs on the national, regional, or even international level through bodies known as standard setting organizations (SSOs) or standard

[1] Ted C. Fishman, What Happened to Motorola?, *Chicago Magazine*, August 25, 2014, at http://www.chicagomag.com/Chicago-Magazine/September-2014/What-Happened-to-Motorola/.
[2] *Id*.
[3] Standard setting organizations are sometimes also concerned with setting safety standards. This case study will focus, however, on interoperability standards in the technology sector.

developing organizations (SDOs). Depending on the industry and the purpose of the organization, SSOs may include as members (i) companies with an economic interest in the relevant technology, (ii) representatives from academia and technology experts, (iii) representatives from governments around the world, or (iv) a combination of all three. Depending on purpose and industry, the SSOs may be private independent entities creating purely industry-based standards, or they may be governmental or quasi-governmental organizations with a mandate to give guidance to laws or regulations.

For example, at one end of the range, the World Wide Web Consortium ("W3C")[4] is an independent, unincorporated organization whose international membership consists of a mix of entities (corporate, governmental or educational) united by their interest in Web technologies.[5] The W3C has promulgated well-known standards that have become the industry norm for internet websites, like HTML. Meanwhile, at the other end of the range, the International Telecommunication Union (the "ITU")[6] is a treaty-based permanent agency of the United Nations, whose membership is mostly composed of government representatives (Member States), although non-governmental entities, academia, and companies can also hold direct membership.[7] The ITU promulgates standards that guide access to communications networks, for example radio spectrum. And the European Telecommunications Standards Institute (ETSI)[8] is a regional SSO set up as an independent nonprofit, but nonetheless granted special status from the European Union to draft harmonized standards.[9] ETSI's standards have implemented 3G and 4G and now are starting 5G mobile communications, as well as machine to machine communications. No matter the structure or the membership, what SSOs have in common is that they provide a forum for stakeholders to apportion resources and make technologies work smoothly across territorial and technological divides.

SSOs are especially prominent in industries where interoperability is paramount and innovations are incremental and build on other inventions, such as in the cell phone and video game industries. Relevant players in a particular industry join the SSO as members and are subject to the specific SSO's guiding documents and bylaws. Companies may become members of several SSOs at one time, depending on the uses for their technology. For example, in 2010, Motorola was a member of many different SSOs, including W3C, ITU, and ETSI.

What is a standard? When there are various ways to implement a technology, the SSO as an organization may choose one option as the dominant "standard" in an effort to coordinate interoperability. All members of the SSO then agree to have their products incorporate this chosen technology, or to interoperate with this chosen technology in mind. Choosing one technology as the standard is accomplished by the "working groups" within the SSO, which are small committees composed of members of the larger SSO. The working groups theoretically consider as many alternative technologies as are presented to them, review test results, and following deliberation

[4] http://www.w3.org.
[5] http://www.w3.org/Consortium/membership-faq#who.
[6] https://www.itu.int/en/Pages/default.aspx
[7] https://www.itu.int/en/join/Pages/default.aspx
[8] http://www.etsi.org
[9] Although a harmonized standard is not a law, if a company complies with a harmonized standard, it may claim a "presumption of conformity" with EU directives. http://www.etsi.org/about/what-we-are/role-in-europe

and consensus-building, report out a recommendation to the larger SSO. Once the SSO votes on the recommendation, that recommended technology is adopted into the standard.[10]

Standards can describe both "mandatory" and "optional" implementations. Mandatory implementations are often introduced with words like "*shall*" or "*must*" and optional implementations are introduced with words like "*may*" or "*recommended*," as in the ETSI example above. In other words, a mandatory implementation is technology that must be practiced in order to comply with the standard, while not all products complying with the standard must incorporate an optional implementation. A patent claim is "essential" to the standard if its subject matter is necessary to implement *either* a mandatory or an optional portion of the standard. However, if the subject matter of the patent claim is merely necessary to implement enabling technology—that is, technology that may be necessary to make a product that complies with the standard, but is not explicitly called out by the standard—then it is not "essential" to the standard. For example, in the ETSI standard, patents that format the electronic signature such that it can be read by the recipient program are essential; however, patents that set forth the enabling word processing program on which the documents to be signed are created are not essential.

Because members become obligated to disclose patents and potentially license them depending on whether or not their technology is essential, the definitions of the various terms are usually set out specifically in the bylaws of the SSO, and they can vary slightly from organization to organization.[11]

Are standards enforceable? Standards generally do not carry the force of law, unless they are adopted into a regulation by a governing body. However, sometimes standards are drafted to support legislative or regulatory mandates, as is the case with some ETSI standards. In addition, even though a standard may not have the force of law, once it becomes the de facto implementation of the technology, it becomes difficult for a company not to comply with the standard. Because the vast majority of products in the market will follow the standard, any product that does not has less value and becomes obsolete.

How do standards interplay with intellectual property concerns? When an SSO incorporates a technology into its standard, the SSO grants a sort of a monopoly to the company that owns that technology. While competitors with alternative technologies could continue to create products, the products with alternative technologies will over time interact increasingly less well with other products in the industry, because all those other products in the industry will comply with the standard. So, in effect, there becomes only one acceptable technological implementation.

To complicate matters further, often the technology that is adopted into the standard is patented. When other companies want to create products that comply with the standard, not only must they use this technology, but they must also obtain a license to do so, lest they infringe a patent. The patent owner therefore has tremendous potential power to "hold up" the market by demanding very high license fees, with the threat of suing any company that does not pay for a

[10] An example of very simple standard, describing how to associate an electronic signature to accompany data, can be found at http://www.etsi.org/deliver/etsi_ts/102900_102999/102918/01.01.01_60/ts_102918v010101p.pdf.
[11] See http://standards.ieee.org/develop/policies/bylaws/sect6-7.html for definitions relevant to IEEE.

license. Since there can be hundreds if not thousands of "standard essential patents" (SEPs) involved in a single standard, the entire system of technological innovation could grind to a halt if there were not a cooperative solution.

The SSO has an important role in solving this problem. Most SSOs have governing documents that require their members to do two things. First, members must disclose if they have a patent over technology that is adopted into the standard. And second, once members have disclosed that they own a patent, if their technology is adopted into the standard, they must agree to license it under so-called "FRAND" terms, which stands for "fair, reasonable and non-discriminatory."[12] So in order to ensure that the market can continue to function, the SSOs ensure that owners of intellectual property waive their government-granted rights to exclude others from practicing their technology in return for a guaranteed license fee from guaranteed customers.[13]

SSOs generally do not define the terms that might be FRAND, for fear that setting pricing as a coordinated effort among competitors might run afoul of antitrust laws. They rely on licensors and licensees to negotiate the FRAND rates themselves.

What legal and business problems arise from standard essential patent licensing? Although the process seems to be set up to remove obstacles that would prevent market players from delivering products to consumers, the way that the system plays out in reality is not so smooth. Problems stem from both the disclosure obligations and the idea of licensing under terms that are FRAND.

Disclosure obligations are outlined in the guidance documents (usually the bylaws) of the SSO, in language that is often less than clear and which can vary widely from SSO to SSO. For example, some SSOs only require members to disclose issued patents, but not necessarily patent applications. Because patent applications can and often do mature into patents, the working group in such an SSO may be at risk of adopting a technology into the standard without knowing that its decision would implicate proprietary technology. This risk is greater knowing that standards often operate far in advance of technological rollout, so it is quite likely that working groups are considering technology for which a patent has just been filed.

Another issue is that bylaws are often vague as to the proper timeframe within which a member with proprietary technology must disclose. Ideally disclosure should happen as the working groups are considering technologies. If disclosure is not required to occur until after the standard has already been adopted, working groups can go through the standard setting process with less than full information. In addition, the disclosure requirement often only applies to technology that is "essential" to the standard, but deciding whether a technology is essential to the standard can be difficult and, more importantly, is left to the discretion of the patent owner. Since

[12] SSOs and courts alternately refer to this requirement as either "FRAND" or "RAND," although the two terms refer to the same concept. More typically, professionals in the United States use the term "RAND," but in an age of international standards and international companies, the terminological distinction is not a strong one.

[13] Enforcing the provisions of an SSO's governing documents is a delicate issue, particularly because many SSOs are private entities made up of nongovernmental actors. As a business reality, SSO members need to maintain a good reputation in the SSO, since the other SSO members are their customers, vendors, competitors and colleagues. But it is true that many SSOs do not describe repercussions from noncompliance in their governing documents, and the documents only have the force of contract, not law.

the obligation to license on FRAND terms only applies to patents that have been declared, and since FRAND terms may net less money than bilateral licensing, there is an incentive for a patent owner to under-disclose. Moreover, as many bylaws do not have automatic oversight and enforcement mechanisms, SSOs must rely on their members to act reasonably and ethically. Finally, only SSO members are technically under an obligation to disclose and license on FRAND terms. Should a working group adopt a patented technology into the standard that belongs to a nonmember, that nonmember is not subject to the same potential obligations.[14]

Besides issues surrounding disclosure, problems also stem from the FRAND requirement itself. Although helpful in theory, in practice it is very hard to determine the meaning of "fair and reasonable."[15] The parties stand far apart because the patent owner has an incentive to maximize profit resulting from its monopoly, and the potential licensees have an incentive to keep license fees as low as possible, particularly because they are likely paying for many licenses from many patent-holders. However, what is different about the license negotiation in the standards context is that the parties do not have the option to walk away if the license terms are not agreeable to both parties. This potentially skews the bargaining power. When the stakes are high, as they might be in a market for a product that enjoys great commercial success, the negotiations can devolve into battles in court.

Motorola's standard essential patents. Motorola is a member of both the International Telecommunication Union ("ITU") and the Institute of Electrical and Electronics Engineers ("IEEE"), two SSOs that set standards that are used in many electronic devices. Each SSO has guidelines about how members should respond when they suggest that the SSO incorporate their proprietary technology into the standard.

Both the ITU's Common Patent Policy and the IEEE's bylaws set out expectations about how to disclose essential IP, what is considered essential IP, and the need to license essential intellectual property that is incorporated into a standard. In summary, each SSO asks that parties participating in the standard setting work (i) disclose any patent or patent application known to them (whether or not theirs) over technology that is potentially required to practice the standard being adopted, and (ii) file a form that assures the SSO that should any patented technology belonging to them become part of the standard, the applicant will negotiate a license with all interested parties for fair and reasonable terms. The relevant form for the ITU is called the Patent Statement and Licensing Declaration Form,[16] and the relevant form for the IEEE is called the Letter of Assurance for Essential Patent Claims.[17]

Each SSO also disclaims all responsibility for helping parties to negotiate the terms of the licenses, and also for judging whether licensing terms are fair and reasonable. However, the IEEE (but not the ITU) does offer factors for parties to consider when calculating a reasonable license

[14] There also remains a question whether SSO member patent owners are under an obligation to license on FRAND terms to nonmembers of the SSO, but that is outside of the scope of this case study.

[15] Although the "non-discriminatory" prong of the test has also been an issue, especially in really recent cases, this case study will focus on the "fair and reasonable" requirement.

[16] A blank version of the ITU's Patent Statement and Licensing Declaration Form can be found online at https://www.itu.int/dms_pub/itu-t/oth/04/04/T04040000020004PDFE.pdf and also in Exhibit 2.

[17] A blank version of the IEEE Letter of Assurance for Essential Patent Claims can be found online at https://development.standards.ieee.org/myproject/Public//mytools/mob/loa.pdf, and also in Exhibit 3.

rate. And the IEEE bylaws specifically address the topic of injunctive relief; they ask participants to agree that the reasonable rates that they would receive from licensing the standard essential technology will be sufficient to compensate them for use of their IP, and that filing the form through which they promise to license the IP precludes them from seeking protective orders to enforce their rights. Relevant portions of the ITU's Common Patent Policy and the IEEE bylaws are attached as Exhibit 1.

In 2010, Motorola's portfolio of patents included several patents related to methods of compressing a kind of video called interlaced video. Video compression is the ability to shrink often large video data files into smaller packages to enable the files to be manipulated or sent over the internet more quickly and easily. The ITU developed standard H.264, which covers advanced video coding technology. As a member of the ITU, Motorola had to decide whether to disclose its patents as essential to the standard.

Since disclosure carries with it contractual obligations to license the patents, which may run counter to the business goals of a company, a decision about whether or not to disclose is not always an easy one. This is why sometimes a company may choose not to become a member of an SSO at all, reserving the opportunity to license bilaterally with all companies that need to implement the standard.[18] Of course, in some especially smaller companies, the decision to join an SSO may be made by the engineering department, without consultation with the legal and sales departments, and the company may be locked into its obligations to disclose and license. But in an ideal situation, the company would be careful and deliberate about disclosure.

The reason that the disclosure decision is so fraught with implications for a firm is that even though over-disclosure may tie up patents unnecessarily, under-disclosure may also have repercussions. If the SSO discovers a relevant patent and deems it essential, that patent may be either left out of or dropped from the standard if the company had not disclosed it. In addition, if a member neglects to disclose a patent, it might open itself up to an allegation of breach of the SSO contract or an allegation that it operated without good faith and fair dealing.

Ultimately, Motorola decided to timely disclose its portfolio of patents relevant to H.264 and filled out the ITU's requisite Patent Statement and Licensing Declaration Form, declaring its willingness to negotiate licenses on fair and reasonable terms and conditions. Motorola owned 16 of 360 U.S. patents disclosed by owners as "essential" to practice the H.264 standard. In terms of the importance of the patents to the H.264 standard, although in Motorola's judgment its patents were required to practice the standard, the patents covered technology that allowed users to compress a less advanced kind of video used more widely a few years ago. Other disclosed patents in the standard owned by other companies permitted compression of a more progressive and much more prevalent type of video.

In 2010, Motorola also had a portfolio of patents that it decided to disclose as essential to complying with the IEEE 802.11 wireless local area network standard. This standard controls "Wi-Fi" transmission of information over radio frequencies. There are many thousands of patents declared essential in the 802.11 standard, which was originally adopted in 1997 and has been

[18] Some SSOs, like IEEE, endeavor to uncover even nonmember IP that will be included in a standard, but this is not always the case.

updated many times since. Motorola declared 24 patents of its patents as essential to the 802.11 standard, 11 of which were potentially used by Microsoft's Xbox product. Motorola's patents controlled a small part of the standard, but some of the patented technologies were used by Microsoft's XBox gaming system to provide its wireless functionality. Motorola filled out an IEEE Letter of Assurance for Essential Patent Claims for the 24 patents it disclosed as essential under the 802.11 standard.

Microsoft's products and use of Motorola's patents. In its 10-K Annual Report filed in July of 2010, the Microsoft Corporation ("Microsoft") reported record revenue of $62.48 billion for the fiscal year ending June 30, 2010. This was a 7% increase in revenue over fiscal year 2009. Chief Financial Officer Peter Klein attributed Microsoft's strong earnings to "the breadth of [the company's] offerings and [its] continued product momentum."[19] Part of that product momentum stemmed from the Microsoft Windows 7 operating system, which had at that time sold more than 175 million licenses. Although third-party companies generally manufactured the computers and other devices onto which the Windows operating system was preloaded, Microsoft also licensed the operating system to individuals directly. The system retailed for $129.99, but it was also often sold alongside extended warranties and other service options, which brought the retail price to $199.99. Among dozens of other functionalities, Windows employed video compression technology, which was governed by the ITU standard H.264.

Through a separate business division, Microsoft had branched out into video gaming consoles around the turn of the century. Microsoft introduced Xbox video consoles in November, 2001. By mid-2006, after introducing the Xbox 360 the year before, Microsoft had sold over 24 million units,[20] and its Electronics and Gaming division accounted for a substantial amount of the overall company's revenue. All Xbox consoles, like the Windows product, employed video compression technology covered under the H.264 standard.

In June, 2010, Microsoft announced an updated version of the Xbox 360 that incorporated a few never-before-seen upgrades: besides being slimmer, it offered better sound quality, additional USB ports, connectivity for a new interactive technology it called "Kinect," and a "Wi-Fi" capability, which was covered under the IEEE 802.11 standard. Although the price of the upgraded version of the Xbox360 did not go up over the prior version, the "Wi-Fi" capability enabled Microsoft's new Kinect technology, and the Kinect add-on was sold for an additional fee. Microsoft's enhanced Xbox 360 was thus sold at the launch price of $299.99 per console without the proprietary Kinect technology and $399.99 with Kinect.

Motorola offers Microsoft a license to its standard essential patents (SEPs). Separately, in October, 2010, Microsoft had sued Motorola for infringement of unrelated smartphone patents owned by Microsoft. As to the SEPs covered by the two companies' more recent interactions, it was not disputed by either party that Microsoft had incorporated the H.264 video compression standard into both its Xbox console and its Windows operating system and the 802.11 Wi-Fi

[19] Microsoft Corp (MSFT) SEC Filing 10-K Annual report for the fiscal year ending Wednesday, June 30, 2010. Summary statement.

[20] *See* Microsoft Corporation, Gamers Catch Their Breath as Xbox 360 and Xbox Live Reinvent Next-Generation Gaming (May 9, 2006), https://news.microsoft.com/2006/05/09/gamers-catch-their-breath-as-xbox-360-and-xbox-live-reinvent-next-generation-gaming/.

standard into its Xbox consoles. Consequently, the companies began a series of discussions around a potential cross license, whereby Motorola would license the smartphone patents at issue to settle Microsoft's lawsuit, and Microsoft would receive a license to the Motorola standard essential 802.11 and H.264 patents.

During those negotiations, later that same month, Motorola sent Microsoft two letters: one offering Microsoft a license to Motorola's patent portfolio (containing all 16 patents) relevant to the H.264 ITU standard; and one offering Microsoft a license to its patent portfolio (containing all 11 patents) relevant to the 802.11 IEEE standard. In each letter, Motorola offered to license its standard essential patents in exchange for (i) a cross license to all Microsoft patents contained in the standard, plus (ii) a 2.25% per unit royalty payment, which was to be calculated off of the net selling price of Microsoft's end products, not on components. In other words, as an opening offer, Motorola asked Microsoft to pay a per-unit royalty of 2.25% of the net selling price of the Xbox consoles and computers (laptop, desktop, tablet, etc.) that incorporated either the H.264 or 802.11 standard essential patents. Motorola explained in the letters that this offer was in compliance with its SSO obligations to license its essential patents on fair, reasonable and non-discriminatory terms.

Microsoft promptly filed suit in the federal district court in Seattle against Motorola in November, 2010 for breach of contract and promissory estoppel, claiming that the license terms in Motorola's offer letters were not fair, reasonable and non-discriminatory. Motorola then counter-sued Microsoft for patent infringement in the U.S., and soon thereafter also in Germany (over two of the H.264 standard essential patents). As part of each suit, Motorola asked for a preliminary injunction. In the case of the German action, an injunction would have prevented Microsoft from shipping its infringing products through Germany and from importing Microsoft's Xbox products into the United States. The German suit was designed to shut down Microsoft's ability to manufacture its products, since their major distribution center for both Windows and Xbox products was located in Germany. Microsoft subsequently amended its complaint in the U.S. district court litigation to add Motorola's requests for injunctive relief to the claim of breach of the covenant of good faith and fair dealing. In its amended complaint, Microsoft asked for damages equal to the amount of money it cost to relocate its distribution facilities from Germany to the Netherlands, and for attorney's fees to defend against the injunctions.

The federal district court consolidated the patent infringement and contract cases.[21] It then stayed the consideration of the patent infringement claims until it had decided the breach of contract claims. Since the disposition of the contract case would have bearing on the amount of damages due to Motorola under any claim of patent infringement, the court reasoned it should decide the contractual questions first. [22]

Was there a contract formed between Motorola and the SSO, such that Motorola could be liable for breach? At the heart of the contract case was the question of what were fair, reasonable and non-discriminatory terms, given the facts of the case. But before the district court could proceed to addressing that question, the court first had to decide whether there could have been a breach of contract at all. Had Motorola been party to a contract? Similarly, could Microsoft claim breach as a third-party beneficiary through its membership in the SSO?

[21] 2011 WL 11480223 (W.D. Wash. June 1, 2011).
[22] 2012 WL 11896339 (W.D. Wash. July 16, 2012).

The governing documents of the ITU, the "code of practice" which contains among many other things, the Common Patent Policy setting out members' obligations around patent disclosure, could arguably be an enforceable contract between Motorola and the ITU. However, the ITU does not make members sign any membership agreements upon joining, and the terms of the code of practice are so vague in parts that they may not set out obligations clearly enough to be enforceable. For example, parties are on their honor to disclose the patents they deem essential to the standard, since the ITU does no independent verification of which patents are essential, and the ITU does not search patents. Once a party discloses essential patents, the ITU does not determine or negotiate licensing terms between that party and would-be licensees. If a party neglects to disclose an essential patent, they impose no fine or other punishment, other than that potentially the ITU may prevent the technology of a non-complying member from being adopted into a standard or may strike the technology from the standard if it has already been incorporated. As a result, a party's obligations might not be clearly stated, and it may be hard to say on the basis of the governing documents either that Motorola was party to a contract or that Microsoft was a third-party beneficiary. Motorola did, however, sign the Patent Statement and Licensing Declaration Form.

In contrast, the IEEE does make members sign a membership agreement, which obligates members to abide by the set of bylaws that mention obligations a party has to uphold regarding disclosing patents. Similar to the ITU, even though the IEEE offers some proposed factors to consider when calculating a reasonable royalty, it will not adjudicate licensing terms between that party and would-be licensees. There is likewise no stated fine or other punishment for neglecting to disclose an essential patent. Motorola also signed a Letter of Assurance for Essential Patent Claims for the IEEE.

How could the court decide if Motorola's proposed license terms were fair, reasonable and non-discriminatory? Assuming there had been a contract in place to breach, the district court then needed to decide whether Motorola had breached its terms. The court decided it would calculate in a bench trial a range of acceptable royalty rates and one specific licensing rate that it would consider FRAND. It would then allow a jury to compare the court's FRAND rate and range to the rate offered by Motorola in its offers, to evaluate if Motorola had breached its contractual obligation to license on FRAND terms.

However, determining a FRAND royalty rate and range for the Motorola patents was no easy task. The patent valuation could depend on a variety of factors, and the parties offered wildly different suggestions for how it should be done. Microsoft favored a so-called "incremental value test," where it asked the court to place a value on Motorola's patented technology over viable technological alternatives. Microsoft reasoned that they should only have had to pay for a license if and to the extent that the underlying technology was more valuable to them than licensing a viable alternative. Motorola countered that the proper valuation test involved trying to replicate the bilateral negotiation that the parties would have had at the time the infringement began (when the technology was incorporated into the standard), taking into account many factors affecting the patent value.

Since a FRAND rate had never before been determined by a district court, the court looked to outside guidance. The court considered using a Federal Circuit-approved 15-factor test first

proposed in an S.D.N.Y. case called *Georgia-Pacific v. United States Plywood Corp*,[23] that had been used for decades to determine the reasonable royalty for damages purposes in patent infringement cases. Although the factors were designed for use in patent instead of contract cases, and were designed for when the licensor and licensee were independent players as opposed to members of a standards setting organization, the court believed the factors could be adapted to a FRAND context.

The *Georgia-Pacific* factors helped to calculate the royalty rate that two parties would have agreed upon had they conducted a hypothetical bilateral negotiation at the time the alleged infringement began. The factors include weighing such information as whether and for how much the patents had been licensed before, whether the licensed patents would help the licensee or licensor sell other products, and the value and popularity of the product that incorporated the patented technology. Although not all of the factors were relevant, and several of them needed to be adapted to suit the FRAND context, they still provided a starting point to calculate a royalty. (For the court-modified version of the *Georgia-Pacific* factors, see Exhibit 4.)

To turn the factors into an actionable process to calculate the royalty rate, the court would use the factors to take two steps. First, it would determine the value of Motorola's patents. To do that, it would consider the *Georgia-Pacific* factors that could help to accurately measure (i) the value of the Motorola patents to the standard and (ii) the value of the patents to Microsoft as implemented in its products. The patents would deserve a higher royalty rate if they were critical rather than incidental to the standard. However, even if they were critical to the standard, if they involved an optional rather than a mandatory part of the standard, and Microsoft's products did not implement that option, Microsoft should still not have to pay a high fee, if pay at all. Then, once the court had determined the overall value of the patents and the value of the patents to Microsoft, the court would consult comparable licensing arrangements concerning H-264 and 802.11 SEPs to find out what the industry was willing to pay for the use of such patents. The court then would be able to come up with a dollar amount that would be fair, reasonable and non-discriminatory.

The court wanted a framework that would avoid two phenomena it deemed detrimental to the public policy interests in setting standards: "holdup" and "stacking." Motorola could potentially "hold up" the industry due to its patent rights if it refused to license except on exorbitant terms. In order to avoid that situation, the court aimed to calculate FRAND terms based on a hypothetical negotiation timed *before* the patents were adopted into the standard. That way, the license terms were based on the value of the patents, rather than the value conferred by their adoption into the standard. Motorola could also engage in "stacking" if it calculated its license offer without considering all the other SEPs that Microsoft would have to license, and the relative value of Motorola's patents to Microsoft. Although any one license fee might be a small percentage of a licensee's profit, with the possibility of several dozen or even several hundred license fees, without considering the cumulative effect, licensing might absorb all of the licensee's profit. In order to avoid that situation, the court thought it was critical both to give weight to the relative value of the Motorola patents and also to consult comparative licensing schemes. In that way, the court could appropriately apportion the license fee in relation to all the other fees potentially owed by Microsoft.

[23] Georgia Pacific Corp. v. United States Plywood Corp., 318 F. Supp. 1116 (S.D.N.Y. 1970).

Deciding the "value" of the Motorola patents to Microsoft. Motorola and Microsoft submitted hundreds of exhibits and offered testimony from 18 expert witnesses who gave evidence to support several of the *Georgia-Pacific* factors to help evaluate (i) the value of the Motorola patents to the 802.11 and H.264 standards, and (ii) the value of the standards and the technology covered by the Motorola patents to the Microsoft products. The information that was available to the court is summarized below:

H.264 (Video Compression) Standard

Number of patents in the H.264 standard overall	At least 2500 patents; 360 from the U.S.[24]
Number of Motorola patents in the H.264 standard	16 U.S. Patents, with foreign counterparts
Description of technology covered by the Motorola patents in the H.264 standard	14 of the 16 Motorola patents are directed toward compressing and decompressing interlaced video, a type of content that is "increasingly rare in today's world."[25] However, technology around interlaced video is still important. "If one wishes to take advantage of any technique allowed [by different levels of standard implementation] one must use decoders that have interlaced coding functionality, regardless of whether that functionality is ever used." [26] 2 of the 16 patents might have an application to "progressive" video, the more common formatting.
Importance to the Standard	All 16 patents are directed to a core feature. All have at least 1 claim in the standard, and most have contributed significantly to parts of the standard that improve efficiency.
Expiry date for the Motorola patents	2 of the 16 patents are set to expire within three years of the October, 2010 license offer.
Alternatives	The Motorola patents break down into 6 families of related patents. For 2 of the families, there were no reasonable alternatives at the time the patents were incorporated into the standard. For 2 of the families, there were alternatives, but nothing better than the patented technology. For 1 family, there was a good alternative, but Motorola's technology still provided something unique and useful. For 1 family there were clear alternatives available.
Limitations of the patents	Although there are 16 patents, there are really only 6 inventions, since in several cases, several patents share the same specification. In addition, the claims covering 1 of the 6 inventions cover hardware only, so the invention's value to the Microsoft Windows software operating system could be limited.
Use of interlaced video in Microsoft's products	Microsoft supports H.264 interlaced video in Windows and in Xbox (although not Xbox Live). Major content providers do not often use interlaced video.

[24] Exhibit 1544, and Orchard Testimony Tr. At 110-113. Case at *26.
[25] Orchard Testimony Tr. At 102-104, Case at *22.
[26] Exhibit 574 at 1, Case at *26.

Importance of Motorola's patents for Microsoft Windows operating system	Because of limitations of patent claims, some patents may not apply to software. Video playing is small part of the Windows functionality. Interlaced video playing is only one type of Windows' video playing functionality. Motorola patents cover only one aspect of interlaced video playing. Interlaced video can still play without Motorola's patented functionality, but it will play 5-8% slower. Only 2 of the 16 patents do not involve interlaced video, and of the 2, only 1 is used in Microsoft products.
Price of Microsoft's Windows operating system	Retails for $129.99, but it is also often sold alongside extended warranties and other service options, which brings the retail price to $199.99.
Importance of Motorola's patents to XBox	Current Xbox use focuses on single-player games, which do not use videos. But users are starting to engage a web browser through the Xbox to find videos, which is Microsoft's future business model for the Xbox. However, most video encountered this way is progressive, rather than interlaced. The Motorola patents are not the most inventive patents in interlaced coding, but they are useful. In addition, the Xbox decoder used to manipulate the video is software-based only, so does not use hardware. Only 2 of the patents do not involve interlaced video, and of the 2, only 1 is used in Microsoft products.
Price of Xbox system	$299.99 per console without the proprietary Kinect technology and $399.99 with Kinect.

802.11 (Wi-Fi) Standard

Number of patents in the 802.11 standard overall	380 patents and patent applications are claimed as essential. However, the number of actual essential patents is greater, because many companies have executed "blanket" LOAs, not mentioning specific patents, but agreeing to license all incorporated SEPs.
Number of Motorola patents in the 802.11 standard	24 U.S. Patents, with foreign counterparts (although Motorola only claims Microsoft uses 11 patents)
Description of the technology covered in the 802.11 standard	The 802.11 standard allows products to run wireless local area networking to allow access to the internet.
Expiry date for the Motorola patents	At least 5 of the 11 Motorola patents will expire within 3 years of the licensing letters.
Importance of the Motorola patents to the 802.11 standard	Motorola does not offer specific evidence as to whether any claims of specific patents are essential to the 802.11 standard, and whether the functionality they cover concerns core features. The Court has to assume that the patents have very little importance to the standard.
Alternatives	Neither party offers specific evidence on whether there are or are not viable alternatives available for most of the patented technology, except that there are alternatives for the technology covered by 3 of the 802.11 patents that deal with encryption technology.

Importance of Motorola's patents for Xbox	The parties sharply disagree over whether Microsoft's Xbox incorporates the Motorola technology when it employs the 802.11 standard. 3 of the patents ('547, '449, and '359) relate only to versions of the 802.11 standard that are becoming less relevant, although the technology is still important. 3 other patents cover an encryption method that the Xbox seldom uses, but when it does encrypt using that method, the Xbox employs the Motorola 802.11 SEP technology.

Using comparable licenses. After the district court considered the above information to value the Motorola patents relative to the standard and to Microsoft's products, it turned to consider comparable licensing schemes provided by both parties to decide an actual FRAND licensing rate and range. Such comparable licensing schemes were relevant especially to *Georgia-Pacific* factors 1 (license fees previously paid for the same patents), 12 (customary fees paid in the industry), and 15 (mimicking the bilateral negotiation the parties would have had at the time of the infringement).

Motorola had offered prior licensing deals over the same patents in the same field. The first such license, with VTech Communications, Inc., was part of a broader settlement agreement between VTech and Motorola over accused infringement of cell phone patents. The second license, with Research in Motion (RIM), was a cross license to settle a patent dispute that included the patent portfolios in question as well as patents other than standard essential patents, including cell phone patents. The last three license agreements, all between Symbol Technologies and third parties, similarly settled allegations of patent infringement.

In 2010, there were also several patent pools set up to cross license patents essential to the H.264 and 802.11 standards. A patent pool is a collection of patent owners that agree to cross license patents to each other for a membership fee, which fee is then distributed equally back to the participants based on the number of patents the participants contribute to the pool. Patent pool license fees tend to be lower than rates decided separately through bilateral negotiation. This may be justified for at least three reasons. First, patent pools not only reward owners with the fee, but also give them value through low cost license access to other patents in the field.[27] Second, the patents in a pool may not necessarily be as strong as patents separately licensed, since the structure of patent pools reward members that contribute more but not necessarily better patents to the pool.[28] Finally, if patent pool members are vertically integrated players, they may have an incentive to keep costs down to drive sales of downstream products.[29] Bilateral negotiations over more valuable patents may be deservedly higher. However, patent pools do operate to group-license patents others might use, as in the SEP situation. Two such patent pools the court considered relevant for the H.264 and 802.11 standards were (i) the VIA Licensing 802.11 pool (which never achieved wide participation), and (ii) the MPEG LA H.264 patent pool.

[27] Stan Lewis, *Valuing FRAND-Obligated Patents: An Emerging Consensus*, IP Law360, November 27, 2013, at https://www.law360.com/articles/487354/valuing-frand-obligated-patents-an-emerging-consensus.
[28] *Id.*
[29] Anne Layne-Farrar, Methodologies for calculating FRAND Damages: Part 2, IP LCaw360, October 9, 2014, at http://www.law360.com/articles/584909/print?section=competition.

Microsoft also offered comparable rates from two other sources: (i) the license that one of its third-party chip component vendors, Marvell Semiconductor, Inc., had negotiated to gain 802.11 capability from ARM Holdings, an English software design company; and (ii) a patent licensing valuation model from a consulting company called InteCap that had analyzed Motorola's 802.11 SEP patent portfolio in 2003 to offer counsel to maximize its monetization. Information related to all of these agreements is summarized below.

Comparable Motorola Licenses	*Terms*
VTech	Motorola settled a lawsuit with VTech for infringement of cellphone patents by granting a license to all cellphone patents in suit plus all Motorola 802.11 and H.264 SEPs for $12 million plus 2.25% royalties on sales of any product that implemented the standards. However, VTech had not paid much to date under the 2.25% royalty, and it is hard to separate out what of the $12 million/2.25% royalty fee was payment for settling the lawsuit and what was payment for the SEP license.
Research In Motion	RIM and Motorola entered into a broad cross-license that included 802.11 and H.264 SEPs as well as non SEPs from Motorola's very strong wireless cellphone patent portfolio. It is difficult to ascertain the value of the license for the SEPs, given that the cross license was for SEPs as well as non-SEPs. Also, Motorola had before licensed its SEPs for free when parties had taken a license to other patent portfolios. And finally, the agreement was to settle long-standing litigation, so had value beyond the license, and evidence suggested that the real value in the agreement was not the SEPs.
Symbol Technologies I	Symbol received a jury award of a 6% royalty on the counterparty's product sales price in exchange for a license to two 802.11 SEPs. However, it was not clear that the jury knew there was a FRAND limitation on the amount, this was a litigation instead of a negotiation, and the patents at issue were not the same patents Motorola now claimed against Microsoft.
Symbol Technologies II	Symbol licensed three 802.11 SEPs to a counterparty for a set amount. However, the license was the result of a settlement, the patents were different from the ones currently at issue, and the licensing fee was far below the fee Motorola was asking for here, especially because it was subject to a cap.
Symbol Technologies III	Symbol licensed three 802.11 SEP patents to a counterparty. However, only one of the three patents is in the list of patents now offered for license to Microsoft. In addition, the total licensing fee is less than what Motorola asked for here.

Comparable Microsoft Licenses	*Terms*
MPEG LA H.264 Patent Pool	Adding Motorola's patents, as well as 89 other patents belonging to nonmember companies, to the MPEG LA H.264 Patent Pool, and applying current pricing, Microsoft would pay Motorola a license fee of $.00185 for every H.264 compliant Microsoft unit sold. Motorola's patents comprise 3.642% of the total number of patents in the MPEG LA H.264 pool. Further, to address the issue of stacking, the Pool had discussed what could be an appropriate total license fee to charge a licensee to license all H.264 patents in the standard. They decided to cap the rate at a total licensing fee of $1.50 per unit. Microsoft is already a member of the MPEG LA H.264 Patent Pool. Microsoft receives licensing royalties that equal about half the amount it pays in fees, so Microsoft clearly derives other value from being in the pool beyond the licensing fees.
Via Licensing 802.11 Pool	The Via Licensing 802.11 Pool distributes royalties to member companies based on the number of patents they contribute, weighted by home country. Adding Motorola's and Microsoft's essential patents to the pool, and weighting them with the U.S. multiplier, Motorola's patents would constitute 10.19% of the total Via Licensing 802.11 pool. Microsoft sold 14,263,000 units that were 802.11 standard compliant in 2011. Microsoft would have paid the Via Licensing 802.11 Pool $2,852,600 in fees, so Motorola would have received $290,679.94 in fees, or about $.02038 per unit.
Marvell Semiconductor, Inc.	Marvell pays ARM a 1% royalty fee of the end price of its chips. However, this is off of the price of a component, not a finished product, and also 1% is the fee for both a patent license to the 802.11 standard patents and some design work.
InteCap	Estimated that Motorola should receive .1% of sales price of products that, like the Xbox, are embedded with 802.11 functionality. However, InteCap may have overestimated the value of the Motorola portfolio by a factor of 25.

Where Did This Leave Motorola? Motorola was blindsided and felt much aggrieved by Microsoft's lawsuit. In the first instance, Motorola was convinced that Microsoft did not even have a cause of action to bring a suit for breach of contract. Exactly what contract had been breached? And what terms? Would not Microsoft have had to have been a party to a contract with Motorola to sue for breach? Motorola had not entered into any contract with Microsoft. In addition, what exactly were Microsoft's damages stemming from the supposed breach? As far as Motorola was

concerned, Microsoft had been using Motorola's proprietary technology for free. Motorola was the party that was accruing proper damages, for patent infringement.

As to the subject matter of the contract, it was not disputed that Microsoft relied on the 802.11 standard for its Xbox products and on the H.264 standards for its Windows and Xbox products. Nor was it disputed that Motorola's patents were incorporated into those standards. Microsoft was clearly using Motorola's patents without a license. Motorola had, as promised, offered a license to Microsoft on terms that it believed were FRAND. The terms aligned with the terms of several comparable licenses it had entered with other parties over the same or similar patents under similar terms. If the goal was to make the licensing "non-discriminatory," Motorola could not understand why the new offer's terms were not acceptable, since their terms were so similar to the license terms with the other parties. In addition, Motorola had intended the terms to be the starting point of negotiation. Even if the terms of the opening offer had possibly been too high to be "fair and reasonable," through negotiation the terms would have become FRAND. The FRAND requirement should apply to the resulting licensing terms, not necessarily the opening offer. How could there already be a breach?

As to its request for a preliminary injunction, Motorola saw no other viable option. Microsoft had already admitted that it used Motorola's patented technology by incorporating the 802.11 and H.264 standards into its products. By refusing even to engage in licensing discussions, and then by filing this lawsuit, Microsoft had shown that it would continue unapologetically to infringe Motorola's patents unless a court stepped in to pause the shipment of Microsoft's goods.

Motorola felt confident in its position. Surely just because Motorola's patents had been adopted into the standards of the ITU and the IEEE, this did not mean that Motorola should have to give up all rights to control the unauthorized use of its patents. After all, it was the engineers on Motorola's payroll who had invented the technology from which Microsoft—and the rest of the industry—was benefitting, and if it was not valuable technology, it would not have been adopted into the standard. If Motorola, and the rest of the innovative companies contributing technology to the standard were not rewarded for their patents, what would be the incentive to continue to invent? Especially given the importance of its patent portfolio to Motorola at this critical time, when it had no products on the horizon that could compete with Microsoft and increasingly everyone else as well, Motorola put all its faith in the court.

* * *

What should the court decide? Was there a contract that was breached? If so, what licensing rate would be fair, reasonable, and non-discriminatory? If Microsoft and Motorola cannot agree on licensing terms, should the court impose an injunction prohibiting Microsoft's use of Motorola's patented technology?

Exhibit 1
Relevant Excerpts from the ITU Common Patent Policy and the IEEE Bylaws

1) ITU

The ITU's code of practice has a "Common Patent Policy," which states the following as to the obligations of disclosure: "any party participating in the work of ITU…should, from the outset, draw the attention of the Director… to any known patent or to any known pending patent application, either their own or of other organizations."[30]

Further, once a technology is incorporated into an ITU standard, if a member has not previously executed a blanket license to all its SEPs under a "General Patent Statement and Licensing Declaration," it must "provide a written statement to be filed at [the ITU offices] using the appropriate 'Patent Statement and Licensing Declaration' form" [Exhibit 2] that states that it will either (i) "negotiate licences free of charge with other parties on a non-discriminatory basis on reasonable terms and conditions" or (ii) "negotiate licences with other parties on a non-discriminatory basis on reasonable terms and conditions."[31] If the owner is not willing to grant a license, "the [standard] shall not include provisions depending on the patent."[32]

In other words, members must not only disclose their proprietary technology that is incorporated into a standard, but once incorporated, they must promise to license their patents for either no charge or for a reasonable royalty, or else risk having their technology dropped from the standard. Notably, the ITU refuses to get involved with setting the terms of the licensing, stating: "Such negotiations are left to the parties concerned and are performed outside ITU-T/ITU-R/ISO/IEC."[33]

2) IEEE

IEEE's Standards Board Bylaws, Section 6 entitled "Patents," sets out the disclosure requirement as follows:[34] "In order for IEEE's patent policy to function efficiently, individuals participating in the standards development process: (a) shall inform the IEEE (or cause the IEEE to be informed) of the holder of any potential Essential Patent Claims of which they are personally aware and that are not already the subject of an Accepted Letter of Assurance, that are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents; and (b) should inform the IEEE (or cause the IEEE to be informed) of any other holders of potential Essential Patent Claims that are not already the subject of an Accepted Letter of Assurance."[35]

For purposes of the bylaws, "essential patent claims" are defined as "any Patent Claim [of an issued patent or an application] the practice of which was necessary to implement either a

[30] Common Patent Policy for ITU-T/ITU-R/ISO/IEC, at http://www.itu.int/en/ITU-T/ipr/Pages/policy.aspx.
[31] *Id.*
[32] *Id.*
[33] *Id.*
[34] http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#essential-patent-claim.
[35] *Id*.

mandatory or optional portion of a normative clause of the IEEE Standard when, at the time of the IEEE Standard's approval, there was no commercially and technically feasible non-infringing alternative implementation method for such mandatory or optional portion of the normative clause."[36] Essential patent claims do not include enabling technology.

Once essential patent claims are discovered, the IEEE will request that the patent holder or applicant fill out a Letter of Assurance for Essential Patent Claims ("LOA") (Exhibit 3).[37] This LOA needs to be filled out "as soon as reasonably feasible in the standards development process" and in any event "prior to the Standards Board's approval of the standard." The LOA requires the holder or applicant to state either (i) that they have performed a reasonable and good faith inquiry, and that they are not aware that they own any patent claims that are or might become essential; (ii) that they will not enforce their rights in any essential patent claims; or (iii) that they will license their essential patent claims to all comers, worldwide, without compensation or under reasonable rates.[38]

Reasonable rates are defined as "appropriate compensation to the patent holder for the practice of an Essential Patent Claim excluding the value, if any, resulting from the inclusion of that Essential Patent Claim's technology in the IEEE Standard. In addition, determination of such Reasonable Rates should include, but need not be limited to, the consideration of:

- The value that the functionality of the claimed invention or inventive feature within the Essential Patent Claim contributes to the value of the relevant functionality of the smallest saleable Compliant Implementation that practices the Essential Patent Claim.
- The value that the Essential Patent Claim contributes to the smallest saleable Compliant Implementation that practices that claim, in light of the value contributed by all Essential Patent Claims for the same IEEE Standard practiced in that Compliant Implementation.
- Existing licenses covering use of the Essential Patent Claim, where such licenses were not obtained under the explicit or implicit threat of a Prohibitive Order, and where the circumstances and resulting licenses are otherwise sufficiently comparable to the circumstances of the contemplated license."[39]

In addition, the bylaws of the IEEE address the concept of injunctive relief, stating that:

> An Accepted LOA that contains such a statement signifies that reasonable terms and conditions, including without compensation or under Reasonable Rates, are sufficient compensation for a license to use those Essential Patent Claims and precludes seeking, or seeking to enforce, a Prohibitive Order except as provided in this policy.[40]

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[36] *Id*.
[37] https://development.standards.ieee.org/myproject/Public//mytools/mob/loa.pdf
[38] IEEE's Standards Board Bylaws, Section 6, *supra*, note 34.
[39] *Id*.
[40] *Id*.

The bylaws also state, later in section 6, that:

> The Submitter of an Accepted LOA who has committed to make available a license for one or more Essential Patent Claims agrees that it shall neither seek nor seek to enforce a Prohibitive Order based on such Essential Patent Claim(s) in a jurisdiction unless the implementer fails to participate in, or to comply with the outcome of, an adjudication, including an affirming first-level appellate review, if sought by any party within applicable deadlines, in that jurisdiction by one or more courts that have the authority to: determine Reasonable Rates and other reasonable terms and conditions; adjudicate patent validity, enforceability, essentiality, and infringement; award monetary damages; and resolve any defenses and counterclaims.[41]

The IEEE specifically disclaims liability for establishing or evaluating the licensing terms for essential patent claims, stating that it "is not responsible for":

> 1. Identifying Essential Patent Claims for which a license may be required;
> 2. Determining the validity, essentiality, or interpretation of Patent Claims;
> 3. Determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or non-discriminatory; or,
> 4. Determining whether an implementation is a Compliant Implementation.[42]

[41] *Id*.
[42] *Id*.

Exhibit 2
ITU Patent Statement and Licensing Declaration

PATENT STATEMENT AND LICENSING DECLARATION FORM FOR
ITU-T OR ITU-R RECOMMENDATION | ISO OR IEC DELIVERABLE

Patent Statement and Licensing Declaration
for ITU-T or ITU-R Recommendation | ISO or IEC Deliverable

This declaration does not represent an actual grant of a license

Please return to the relevant organization(s) as instructed below per document type:

Director
Telecommunication
Standardization Bureau
International Telecommunication
Union
Place des Nations
CH-1211 Geneva 20,
Switzerland
Fax: +41 22 730 5853
Email: tsbdir@itu.int

Director
Radiocommunication Bureau
International Telecommunication
Union
Place des Nations
CH-1211 Geneva 20,
Switzerland
Fax: +41 22 730 5785
Email: brmail@itu.int

Secretary-General
International Organization for
Standardization
8 Chemin de Blandonnet
CP 401
1214 Vernier, Geneva
Switzerland
Fax: +41 22 733 3430
Email:
patent.statements@iso.org

General Secretary
International Electrotechnical
Commission
3 rue de Varembé
CH-1211 Geneva 20
Switzerland
Fax: +41 22 919 0300
Email:
inmail@iec.ch

Patent Holder:
Legal Name _____

Contact for license application:
Name &
Department _____
Address _____
_____
Tel. _____
Fax _____
E-mail _____
URL (optional) _____

Document type:

☐ **ITU-T Rec. (*)** ☐ **ITU-R Rec. (*)** ☐ **ISO Deliverable (*)** ☐ **IEC Deliverable (*)**
(please return the form to the relevant Organization)

☐ **Common text or twin text (ITU-T Rec. | ISO/IEC Deliverable (*))** (for common text or twin text, please return the form to each of the three Organizations: ITU-T, ISO, IEC)

☐ **ISO/IEC Deliverable (*)** (for ISO/IEC Deliverables, please return the form to both ISO and IEC)

(*)Number _____
(*)Title _____

DECLARATION PAGE 1

Licensing declaration:
The Patent Holder believes that it holds granted and/or pending applications for Patents, the use of which would be required to implement the above document and hereby declares, in accordance with the Common Patent Policy for ITU-T/ITU-R/ISO/IEC, that (check one box only):

☐ 1. The Patent Holder is prepared to grant a Free of Charge license to an unrestricted number of applicants on a worldwide, non-discriminatory basis and under other reasonable terms and conditions to make, use, and sell implementations of the above document.
Negotiations are left to the parties concerned and are performed outside the ITU-T, ITU-R, ISO or IEC.

Also mark here __ if the Patent Holder's willingness to license is conditioned on Reciprocity for the above document.

Also mark here __ if the Patent Holder reserves the right to license on reasonable terms and conditions (but not Free of Charge) to applicants who are only willing to license their Patent, whose use would be required to implement the above document, on reasonable terms and conditions (but not Free of Charge).

☐ 2. The Patent Holder is prepared to grant a license to an unrestricted number of applicants on a worldwide, non-discriminatory basis and on reasonable terms and conditions to make, use and sell implementations of the above document.
Negotiations are left to the parties concerned and are performed outside the ITU-T, ITU-R, ISO, or IEC.

Also mark here __ if the Patent Holder's willingness to license is conditioned on Reciprocity for the above document.

☐ 3. The Patent Holder is unwilling to grant licenses in accordance with provisions of either 1 or 2 above.
In this case, the following information must be provided to ITU, and is strongly desired by ISO and IEC, as part of this declaration:

- granted patent number or patent application number (if pending);
- an indication of which portions of the above document are affected;
- a description of the Patents covering the above document.

Free of Charge: The words "Free of Charge" do not mean that the Patent Holder is waiving all of its rights with respect to the Patent. Rather, "Free of Charge" refers to the issue of monetary compensation; *i.e.*, that the Patent Holder will not seek any monetary compensation as part of the licensing arrangement (whether such compensation is called a royalty, a one-time licensing fee, etc.). However, while the Patent Holder in this situation is committing to not charging any monetary amount, the Patent Holder is still entitled to require that the implementer of the same above document sign a license agreement that contains other reasonable terms and conditions such as those relating to governing law, field of use, warranties, etc.

Reciprocity: The word "Reciprocity" means that the Patent Holder shall only be required to license any prospective licensee if such prospective licensee will commit to license its Patent(s) for implementation of the same above document Free of Charge or under reasonable terms and conditions.

Patent: The word "Patent" means those claims contained in and identified by patents, utility models and other similar statutory rights based on inventions (including applications for any of these) solely to the extent that any such claims are essential to the implementation of the same above document. Essential patents are patents that would be required to implement a specific Recommendation | Deliverable.

Assignment/transfer of Patent rights: Licensing declarations made pursuant to Clause 2.1 or 2.2 of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC shall be interpreted as encumbrances that bind all successors-in-interest as to the transferred Patents. Recognizing that this interpretation may not apply in all jurisdictions, any Patent Holder who has submitted a licensing declaration according to the Common Patent Policy - be it selected as option 1 or 2 on the Patent Declaration form - who transfers ownership of a Patent that is subject to such licensing declaration shall include appropriate provisions in the relevant transfer documents to ensure that, as to such transferred Patent, the licensing declaration is binding on the transferee and that the transferee will similarly include appropriate provisions in the event of future transfers with the goal of binding all successors-in-interest.

Patent Information (desired but not required for options 1 and 2; required in ITU for option 3 (NOTE))

No.	Status [granted/ pending]	Country	Granted Patent Number or Application Number (if pending)	Title
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

☐ Check here if additional patent information is provided on additional pages.

NOTE: For option 3, the additional minimum information that shall also be provided is listed in the option 3 box above.

Signature (include on final page only):

Patent Holder _____

Name of authorized person _____

Title of authorized person _____

Signature _____

Place, Date _____

FORM: 26 June 2015

Exhibit 3
IEEE Letter of Assurance for Essential Patent Claims

LETTER OF ASSURANCE FOR ESSENTIAL PATENT CLAIMS

Please return via mail, e-mail (as a PDF), or fax:

PatCom Administrator, IEEE-SA Standards Board Patent Committee
Institute of Electrical and Electronics Engineers, Inc.
445 Hoes Lane
Piscataway, NJ 08854 USA
FAX (+1 732-875-0524) e-mail: patcom@ieee.org

No license is implied by submission of this Letter of Assurance

A. SUBMITTER:

Legal Name: ("Submitter")

B. SUBMITTER'S CONTACT INFORMATION:

Contact Name/Title:
Department:
Address:
Telephone: Fax: E-mail:
URL:

Note: The IEEE does not endorse the content, or confirm the accuracy or consistency of any contact information or web site listed above.

C. IEEE STANDARD OR PROJECT (e.g., AMENDMENT, CORRIGENDA, OR REVISION):

In accordance with Clause 6 of the *IEEE-SA Standards Board Bylaws* and Clause 6.3.5 of the *IEEE-SA Standards Board Operations Manual*, this licensing position is limited to the following:

Standard/Project Number:
Title:

D. SUBMITTER'S POSITION REGARDING LICENSING OF ESSENTIAL PATENT CLAIMS:

In accordance with Clause 6 of the *IEEE-SA Standards Board Bylaws*, the Submitter hereby declares the following ***(Check box 1 or box 2 below)***:

Note: Nothing in this Letter of Assurance shall be interpreted as giving rise to a duty to conduct a patent search. The IEEE takes no position with respect to the validity or essentiality of Patent Claims, determining whether an implementation is a Compliant Implementation or the reasonableness of rates, terms, and conditions provided in connection with submission of a Letter of Assurance, if any, or in any license agreements offered by the Submitter. To the extent there are inconsistencies between the Letter of Assurance Form and any sample licenses, material licensing terms, or not to exceed rates provided in connection with 1.a or 1.b below, the terms of Clause 6 of the IEEE-SA Standards Board Bylaws and this Letter of Assurance Form shall control.

☐ 1. The Submitter may own, control, or have the ability to license Patent Claims that might be or become Essential Patent Claims. With respect to such Essential Patent Claims, the Submitter's licensing position is as follows ***(must check a, b, c, or d and any applicable subordinate boxes):***

- ☐ a. The Submitter will make available a license for Essential Patent Claims without compensation to an unrestricted number of Applicants on a worldwide basis with other reasonable terms and conditions that are demonstrably free of unfair discrimination to make, have made, use, sell, offer to sell, or import any Compliant Implementation that practices the Essential Patent Claims for use in conforming with the IEEE Standard identified in part C.
  - ☐ (Optional) A sample of such a license (or material licensing terms) that is substantially similar to what the Submitter would offer is attached.
  - ☐ (Optional) Such a license will include a Reciprocal Licensing requirement.

☐ b. The Submitter will make available a license for Essential Patent Claims under Reasonable Rates to an unrestricted number of Applicants on a worldwide basis with other reasonable terms and conditions that are demonstrably free of unfair discrimination to make, have made, use, sell, offer to sell, or import any Compliant Implementation that practices the Essential Patent Claims for use in conforming with the IEEE Standard identified in part C.

☐ (Optional) These reasonable rates will not exceed _____ (e.g., percent of unit price, flat fee, per unit).

☐ (Optional) A sample of such a license (or material licensing terms) that is substantially similar to what the Submitter would offer is attached.

☐ (Optional) Such a license will include a Reciprocal Licensing requirement.

☐ c. The Submitter without conditions will not enforce any present or future Essential Patent Claims against any person or entity making, having made, using, selling, offering to sell, or importing any Compliant Implementation that practices the Essential Patent Claims for use in conforming with the IEEE Standard identified in part C.

☐ d. The Submitter is unwilling or unable to grant licenses according to the provisions of either a or b above or to agree that it will not enforce its Essential Patent Claims as described in c above.

☐ 2. After a Reasonable and Good Faith Inquiry, the Submitter is not aware of any Patent Claims that the Submitter may own, control, or have the ability to license that might be or become Essential Patent Claims.

E. SCOPE OF ASSURANCE:

Note: The Submitter must complete this section if box 1 in part D above is checked.

The Submitter may, but is not required to, identify one or more of its Patent Claims that it believes might be or become Essential Patent Claims. ***(Submitter must check box 1 or box 2 below)***

☐ 1. When checked, this Letter of Assurance only applies to the Patent Claims identified below that are or become Essential Patent Claims. (If no Patent Claim is identified below, then this Letter of Assurance applies to all Essential Patent Claims supported by the disclosure in the patent or patent applications listed below.)

Patent/Application/Docket Number: _____
Description/Title (optional): _____

Claim (optional): _____

Patent/Application/Docket Number: _____
Description/Title (optional): _____

Claim (optional): _____

Patent/Application/Docket Number: _____
Description/Title (optional): _____

Claim (optional): _____

For additional patents, use additional pages as necessary.

☐ 2. When checked, this Letter of Assurance is a Blanket Letter of Assurance. As such, all Essential Patent Claims that the Submitter may currently or in the future have the ability to license shall be available under the terms as indicated in part D.1; however, a Blanket Assurance shall not supersede any pre-existing or simultaneously submitted specific assurance identifying potential Essential Patent Claims.

F. APPLICATION TO AFFILIATES:

With respect to any Essential Patent Claims that an Affiliate has the ability to license, the Submitter agrees that (i) the licensing positions described in parts C and D apply to any Essential Patent Claims within the scope of the assurance described in part E; and (ii) the terms of this assurance are binding on each such Affiliate; provided, however, that such representations and commitments shall not apply to Affiliates identified below:

Organization's Name	Organization's Name
Address	Address
Contact person	Contact person

Affiliates may not be excluded if the Reciprocal Licensing box is checked in part D.1.a or D.1.b.
For additional Affiliates, use additional pages as necessary.

G. SIGNATURE:

By signing this Letter of Assurance, you represent that you have the authority to bind the Submitter and all Affiliates (other than those Affiliates permissibly excluded above) to the representations and commitments provided in this LOA and acknowledge that users and implementers of the IEEE Standard identified in part C are relying or will rely upon and may seek enforcement of the terms of this LOA. The Submitter and all Affiliates (other than those Affiliates permissibly excluded above) agree not to sell or otherwise transfer any rights in any Essential Patent Claims that they hold, control, or have the ability to license with the intent of circumventing or negating any of the representations and commitments made in this LOA.

The Submitter agrees (a) to provide notice of an Accepted Letter of Assurance either through a Statement of Encumbrance or by binding its assignee or transferee to the terms of such Letter of Assurance; and (b) to require its assignee or transferee to (i) agree to similarly provide such notice and (ii) to bind its assignees or transferees to agree to provide such notice as described in (a) and (b).

If D.1.a or D.1.b is checked, the Submitter shall not condition a license on the Applicant's agreeing (a) to grant a license to any of the Applicant's Patent Claims that are not Essential Patent Claims for the IEEE Standard identified in part C, or (b) to take a license for any of the Submitter's Patent Claims that are not Essential Patent Claims for the IEEE Standard identified in part C.

If, as described in Clause 6 of the *IEEE-SA Standards Board Bylaws*, the Submitter becomes aware of additional Patent Claims not already covered by an Accepted Letter of Assurance that are owned, controlled, or licensable by the Submitter and that may be or become Essential Patent Claims with respect to the IEEE Standard identified in part C, the Submitter agrees to submit a Letter of Assurance stating its position regarding enforcement or licensing of such Patent Claims.

Print name of authorized person:

Title of authorized person:

Signature of authorized person: Date:

Address:

Phone: E-mail:

Note that this assurance applies, at a minimum, from the date of the standard's approval to the date of the standard's transfer to inactive status and is irrevocable upon acceptance by the IEEE-SA.

The IEEE-SA Patent Policy and the procedures used to execute that policy are documented in the IEEE-SA Standards Board Bylaws and the IEEE-SA Standards Board Operations Manual, available at http://standards.ieee.org/develop/policies/. The terms and definitions set forth in the IEEE-SA Patent Policy, IEEE-SA Standards Board Bylaws, and IEEE-SA Standards Board Operations Manual in effect as of the date of this Letter of Assurance are incorporated herein.

DEFINITIONS

The following terms, when capitalized, have the following meanings:

"Accepted Letter of Assurance" and *"Accepted LOA"* shall mean a Letter of Assurance that the IEEE-SA has determined is complete in all material respects and has been posted to the IEEE-SA web site.

"*Affiliate*" shall mean an entity that directly or indirectly, through one or more intermediaries, controls the Submitter or Applicant, is controlled by the Submitter or Applicant, or is under common control with the Submitter or Applicant. For the purposes of this definition, the term "control" and its derivatives, with respect to for-profit entities, means the legal, beneficial or equitable ownership, directly or indirectly, of more than fifty percent (50%) of the capital stock (or other ownership interest, if not a corporation) of an entity ordinarily having voting rights. "Control" and its derivatives, with respect to nonprofit entities, means the power to elect or appoint more than fifty percent (50%) of the Board of Directors of an entity.

"*Applicant*" shall mean any prospective licensee for Essential Patent Claims. "*Applicant*" shall include all of its Affiliates.

"*Blanket Letter of Assurance*" shall mean a Letter of Assurance that applies to all Essential Patent Claims for which a Submitter may currently or in the future (except as otherwise provided for in these Bylaws and in the *IEEE-SA Standards Board Operations Manual)* have the ability to license.

"*Compliant Implementation*" shall mean any product (e.g., component, sub-assembly, or end-product) or service that conforms to any mandatory or optional portion of a normative clause of an IEEE Standard.

"Enabling Technology" shall mean any technology that may be necessary to make or use any product or portion thereof that complies with the IEEE Standard but is neither explicitly required by nor expressly set forth in the IEEE Standard (e.g., semiconductor manufacturing technology, compiler technology, object-oriented technology, basic operating system technology, and the like).

"*Essential Patent Claim*" shall mean any Patent Claim the practice of which was necessary to implement either a mandatory or optional portion of a normative clause of the IEEE Standard when, at the time of the IEEE Standard's approval, there was no commercially and technically feasible non-infringing alternative implementation method for such mandatory or optional portion of the normative clause. An Essential Patent Claim does not include any Patent Claim that was essential only for Enabling Technology or any claim other than that set forth above even if contained in the same patent as the Essential Patent Claim.

"*Letter of Assurance*" and *"LOA"* shall mean a document, including any attachments, stating the Submitter's position regarding ownership, enforcement, or licensing of Essential Patent Claims for a specifically referenced IEEE Standard, submitted in a form acceptable to the IEEE-SA.

"*Patent Claim(s)"* shall mean one or more claims in issued patent(s) or pending patent application(s).

"*Prohibitive Order*" shall mean an interim or permanent injunction, exclusion order, or similar adjudicative directive that limits or prevents making, having made, using, selling, offering to sell, or importing a Compliant Implementation.

"*Reasonable and Good Faith Inquiry*" includes, but is not limited to, a Submitter using reasonable efforts to identify and contact those individuals who are from, employed by, or otherwise represent the Submitter and who are known to the Submitter to be current or past participants in the development process of the [Proposed] IEEE Standard identified in a Letter of Assurance, including, but not limited to, participation in a Sponsor Ballot or Working Group. If the Submitter did not or does not have any participants, then a Reasonable and Good Faith Inquiry may include, but is not limited to, the Submitter using reasonable efforts to contact individuals who are from, employed by, or represent the Submitter and who the Submitter believes are most likely to have knowledge about the technology covered by the [Proposed] IEEE Standard.

"*Reasonable Rate*" shall mean appropriate compensation to the patent holder for the practice of an Essential Patent Claim excluding the value, if any, resulting from the inclusion of that Essential Patent Claim's technology in the IEEE Standard. In addition, determination of such Reasonable Rates should include, but need not be limited to, the consideration of:

- The value that the functionality of the claimed invention or inventive feature within the Essential Patent Claim contributes to the value of the relevant functionality of the smallest saleable Compliant Implementation that practices the Essential Patent Claim.

- The value that the Essential Patent Claim contributes to the smallest saleable Compliant Implementation that practices that claim, in light of the value contributed by all Essential Patent Claims for the same IEEE Standard practiced in that Compliant Implementation.

- Existing licenses covering use of the Essential Patent Claim, where such licenses were not obtained under the explicit or implicit threat of a Prohibitive Order, and where the circumstances and resulting licenses are otherwise sufficiently comparable to the circumstances of the contemplated license.

"*Reciprocal Licensing*" shall mean that the Submitter of an LOA has conditioned its granting of a license for its Essential Patent Claims upon the Applicant's agreement to grant a license to the Submitter with Reasonable Rates and other reasonable licensing terms and conditions to the Applicant's Essential Patent Claims, if any, for the referenced IEEE Standard, including any amendments, corrigenda, editions, and revisions. If an LOA references an amendment or corrigendum, the scope of reciprocity includes the base IEEE Standard and its amendments, corrigenda, editions, and revisions.

"Statement of Encumbrance" shall mean a specific reference to an Accepted LOA or a general statement in the transfer or assignment agreement that the Patent Claim(s) being transferred or assigned are subject to any encumbrances that may exist as of the effective date of such agreement. An Accepted LOA is an encumbrance.

"*Submitter*" shall mean an individual or an organization that provides a completed Letter of Assurance. A Submitter may or may not hold Essential Patent Claims. "*Submitter*" shall include all of its Affiliates unless specifically and permissibly excluded.

Should any discrepancy exist between the definitions above and the definitions in the IEEE-SA Standards Board Bylaws clause 6.1, the definitions contained in the Bylaws shall control.

Exhibit 4
Georgia-Pacific Factors and Their Potential Application in Licensing Disputes Involving Standard Essential Patents

This exhibit contains the non-exhaustive factors to consider when deciding a proper royalty rate for damages purposes in a patent infringement case as outlined in *Georgia–Pacific Corp. v. United States Plywood Corp.*[43] Language in bold font and brackets represents proposed adaptations from the *Microsoft v. Motorola* court for how to apply the factors to an SEP scenario:[44]

1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty **[as long as the other license was negotiated under FRAND—or comparable—terms]**.

2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.

3. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.

4. The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly **[but not relevant in an SEP context]**.

5. The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter **[but not relevant in an SEP context]**.

6. The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales **[as long as the factor just considers the value of the patent, not the value that derives because the patent has been adopted into the standard, or the value of the standard apart from what the patent contributes to it]**.

7. The duration of the patent and the term of the license **[Probably of low relevance in the SEP context, since the duration of the license equals the duration of the patent]**.

8. The established profitability of the product made under the patent; its commercial success; and its current popularity **[as long as the factor just considers the value of the patent, not the value that derives because the patent has been adopted into the standard, or the value of the standard apart from what the patent contributes to it]**.

[43] 318 F. Supp. 1116 (S.D.N.Y. 1970); the factors are listed at 1120.
[44] See *Microsoft v. Motorola* at paragraph 100-113, pages 35-40.

9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results **[considering only alternative technologies that existed and could have been incorporated into the standard before it was implemented].**

10. The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention **[focusing on the contribution of the patent to the capabilities of the standard and also to the licensee and the licensee's product, being careful to not take into account the value that comes from being incorporated into the standard]**.

11. The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use **[focusing on the contribution of the patent to the capabilities of the standard and also to the licensee and the licensee's product, being careful to not take into account the value that comes from being incorporated into the standard]**.

12. The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions **[only take customary practices regarding licensing FRAND-committed patents into account]**.

13. The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer **[taking only the value of the patent, not the value of its incorporation into the standard into account]**.

14. The opinion testimony of qualified experts.

15. The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee— who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention— would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.[45] **[This hypothetical negotiation would take relative value of the patent to the licensee into account, so would thwart hold-up, and would be considered in the context of the other necessary licenses, so would thwart stacking.]**

[45] 318 F. Supp. at 1120.