



Qualcomm Incorporated
5775 Morehouse Drive
San Diego, CA 92121
www.qualcomm.com

December 21, 2018

Federal Trade Commission
Office of the Secretary
600 Pennsylvania Avenue, NW
Suite CC-5610 (Annex C)
Washington, DC 20580

Re: Comments of Qualcomm, Inc. Concerning Hearings on Innovation and Intellectual Property Policy, Project P181201, Docket No. FTC-2018-0055

Dear Commissioners:

Qualcomm Incorporated (“Qualcomm”) respectfully submits these comments in connection with Federal Trade Commission’s (“FTC”) public hearing on “Innovation and Public Policy,” held from October 23 to October 24, 2018. Qualcomm thanks the FTC for holding these hearings to examine whether broad-based changes in the economy, evolving business practices, new technologies, or international developments might require adjustments to competition and consumer protection law, enforcement priorities, and policy for the 21st Century.

Qualcomm is a research and development (“R&D”) and a product development company that is uniquely positioned in its experience on these issues as a leading developer of wireless communications technology, both as an inventor and an implementer of intellectual property (“IP”) intensive technologies.

From its founding in 1985, Qualcomm has always aimed to invent technologies that enable wireless communications by optimizing the use of the fundamental scarce resource—radio frequency spectrum—to transmit voice and data digitally. For over 30 years Qualcomm has been a leading developer of wireless communications technology, well known for its application of the code division multiple access (“CDMA”) technology, which served as the foundation for the widely successful and ubiquitous “3G” cellular networks that first enabled digital voice calls and text messages, mobile broadband, and other applications on mobile devices. Qualcomm also led the design and development of “4G” cellular technology, based on new technology and algorithms, relying upon orthogonal frequency division multiple access (“OFDMA”). Today, Qualcomm is leading the way in the design and development of 5G technologies and standards—the most ambitious project of the mobile industry so far—connecting billions of small devices wirelessly and enabling enhanced mobile broadband, mission critical services required for automotive, robotics, and healthcare industries to transmit critical information as fast and as reliably and securely as possible, and a massive internet of things that will allow wearables, smart cities, and smart homes to proliferate. Since its inception, Qualcomm has spent over \$53 billion on R&D, and reinvests over 20 percent of its annual revenue in R&D.



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Qualcomm is also the leading “fabless” semiconductor company in the world, shipping over 800 million wireless chipsets annually. While early in its history Qualcomm participated in all aspects of the cellular industry value chain including chipsets, mobile devices, infrastructure, and network operation, over the years Qualcomm made strategic moves to divest its non-core businesses and focus on its key strengths of research and development of core wireless technology. This approach has allowed Qualcomm to continue to grow and evolve into the leading mobile communications technology R&D company and chipset supplier.

In light of its position as a leading mobile wireless innovator, Qualcomm hopes that these comments in response to the questions raised during the FTC’s hearings will assist the Commission in its consideration of the future of innovation and competition policy in the United States.

I. Is there a role for the government in advancing or supporting innovation?

Qualcomm offers its perspective on this question as a leader in all generations of wireless communications technology—including ongoing development of 5G.

The great leap forward in wireless technology that 5G represents cannot occur in a vacuum. Transformative innovations on a global scale are risky and require substantial commitment of time and resources. These investments also depend on support in law and public policy to encourage and facilitate the invention and commercialization process. In particular, intellectual property and antitrust law and policy play critical roles in the R&D and commercialization process. Government policies in these areas are essential to maintaining U.S. leadership in the development of 5G technology.

In 2018 Paul Romer won the Nobel Prize in Economics for demonstrating the important role government policy plays in fostering innovation. Romer showed that intellectual property rights, especially patent rights incentivize and motivate discovery and invention, even in the information economy. According to Romer, the leapfrogging process in the high-technology economy, motivated by future monopoly profits enabled by intellectual property rights, significantly increases productivity and economic value.¹

¹ See Romer, Paul. Interview by Joel Kurtzman. *Strategy + Business*, 20 Nov. 2001, <https://www.strategy-business.com/article/9472?gko=715e4>.



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Romer has also highlighted the differences between the “classical” and “knowledge economy,” indicating that these differences necessitate different policy responses.² In the classical economy, the goal of competition is to produce existing goods at lower prices, and government intervention may be needed to reduce monopoly power. The high-technology knowledge economy, however, is more dynamic, with new discoveries constantly made. Under these circumstances, competition allows “creative destruction,” a process through which a sequence of temporary “monopolies” in the form of intellectual property are naturally superseded by new inventions that result in new and better products and services. Romer argues that this creative destruction process encourages competitions more successfully in the knowledge economy than active government intervention.³

The race to 5G is an example of the knowledge economy that Romer describes. Fundamentally, the race to 5G is about the design development of the foundational enabling technology—an advanced wireless communication system that optimizes the use of the fundamental scarce physical resource in the world, radio frequency spectrum, to transmit and receive voice and data. “5G” itself consists of thousands of inventions that solve complex scientific issues related to network capacity, coding, security, and reliability. The investment in these inventions is made years before any potential commercialization can begin. A number of investments fail, because different types of technical solutions compete with each other, and also because some technologies, even if adopted successfully as standards, never achieve the anticipated success in the marketplace.

Due to the underlying complexities in the technologies that enable wireless communications, the wireless industry is highly R&D intensive. In this risky market, only a handful of companies serve as the R&D arm of the industry.⁴ Hundreds of companies are involved in the design and development of 5G standards, among the 800 or so companies that are participating in the 5G standards process, only a few contribute their technology to the development of this foundational layer that the rest of the industry will build products upon.

It is therefore imperative that the U.S. government to adopt policies that promote strong intellectual property protections that incentivize costly research and development and facilitate investment in the fundamental technologies of the future.

II. What is the importance of intellectual property—all forms—in advancing, protecting, and supporting innovation? Does it differ because of industry-specific or other market-based factors, or because of the form of intellectual property?

² *Id.*

³ *Id.*

⁴ See Julio Bezerra, et al., “The Mobile Revolution: How Mobile Technologies Drive a Trillion Dollar Impact”, *Boston Consulting Group* (January 15, 2015), available at <https://www.bcg.com/en-us/publications/2015/telecommunications-technology-industries-the-mobile-revolution.aspx>.



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Intellectual property rights are a critical tool for inventors and firms to commercialize their inventions. IP rights give to their owners the legally enforceable power to prevent others from making, using, selling, or importing an invention and to set the terms on which protected inventions can be used.⁵ By ensuring that inventors own their ideas, intellectual property rights provide a financial reward for inventors who engage in resource-intensive R&D.⁶

Intellectual property systems generally exist to create long-term incentives for inventors and entrepreneurs to invest in all sorts of innovations. In return for disclosing their invention, brand, or creative work to the public, inventors and creators receive a temporary right to exclude others from making, using, or selling that work. However, intellectual property systems can only “promote the progress of science and the useful arts”⁷ if government policy permits robust enforcement of intellectual property rights. IP rights create a level playing field for all inventors and creators, but the system only works if the rights holder can rely on government institutions to protect their intellectual property.

In high-technology industries, patents are the preferred form of intellectual property protection. The goal of the patent system is to stimulate innovation and disclose *knowledge* of new technologies, which in turn encourages follow-on innovation and discovery that can lead to the birth of new, competitive industries and broader economic growth.

Patents play a key role in the development of technology standards in the Information and Communication Technology (“ICT”) sector, which has experienced tremendous growth over the past few decades. Collaborative standards development in the ICT sector has an unprecedented record of breakthrough technological achievements, including the widely successful cellular connectivity standards (3G, 4G/LTE, and 5G) and Wi-Fi. At the core of the standard development process and its remarkable record of success, is technology sharing and licensing of standard-essential patents (“SEPs”)—patents that are essential for the implementation of the standard. Qualcomm as well as other standard developers have been engaged in SEP licensing for ICT standards for several years. Licensing revenues for developers of the technologies incorporated into the standards encourage companies to contribute their best technologies to standards, rather than reserving them as proprietary technologies.

Qualcomm seeks patent protections for each of its new technologies and shares its these inventions through licensing to ensure broad access to the foundational technology at the core of wireless communications. Qualcomm licenses to companies around the world to design, manufacture, and sell products based on its industry-leading technology. This cycle of R&D and licensing allows the entire wireless industry to grow stronger as Qualcomm’s licensees encourage more users to join in the wireless

⁵ See Braga, Carlos A. Primo, Carsten Fink, and Claudia Paz Sepulveda. *Intellectual property rights and economic development*. The World Bank, 2000.

⁶ See Barnett, Jonathan M. "Three quasi-fallacies in the conventional understanding of intellectual property." *JL Econ. & Pol'y* 12 (2016): 1.

⁷ U.S. Const. art. I, § 8, cl. 8.



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revolution. Qualcomm holds over 130,000 patents on its technologies, and its patent portfolio is the most widely and extensively licensed in the wireless industry with over 300 licensees. Revenue from Qualcomm's licensing business is invested back into R&D to continue the cycle of innovation.

As with *previous generations of ICT standards*, strong patent rights are critical to encouraging the development of new subsequent standards, such as 5G, that will enable a variety of new technologies (*e.g.*, IoT, artificial intelligence, machine learning) and ecosystems across a number of industries. In order to create the technologies that make up the technology standards of tomorrow, Qualcomm and few other companies commit to risky and expensive, upfront investments in core R&D. Qualcomm's R&D takes place over many years with no guarantee that its solutions for technical problems that it is working on will be adopted by the marketplace. A strong patent enforcement regime that helps at protecting and monetizing innovations incentivizes Qualcomm and other innovators to make risky investments in future technologies. Strong patent rights create incentives for more intensive R&D toward the development of the new generation of standards. Strong patent protection positively influences participation in standards-development organizations ("SDOs"), as they allow Qualcomm and other SEP owners to recoup their extensive R&D expenditure and the high costs of participating in the standardization process.

Innovation and superior technology standards in the ICT industry are to be promoted and incentivized, patents should enjoy a rather strong protection. In today's industrial countries, technology standards enhance economic and business growth, lower transaction costs, promote intra-industry international trade, reduce prices of products based on the standard, lower barriers to entry, and generate gains in productivity and efficiency.⁸ The consensus-based and meritocratic nature of the collaborative standardization process has led to the development of superior and cutting-edge technologies. Empirical evidence suggests that collaborative standards provide a fair platform for small entities to participate in and contribute to the standards development process.⁹ Such participation and contribution is important for economic and technological growth.¹⁰

ICT standards have transformed the world, enabling telecommunications revolution that first allowed wireless calls from bulky, expensive mobile phones, to produce the light-weight devices of today that cannot only make voice calls, but access the Internet and run countless other applications and services.

⁸ See Kindleberger, Charles P. "Standards as public, collective and private goods." *Kyklos* 36.3 (1983): 377-396.; Swann, Peter, Paul Temple, and Mark Shurmer. "Standards and trade performance: the UK experience." *The Economic Journal* (1996): 1297-1313.; Spulber, Daniel F. "Standard setting organisations and standard essential patents: voting and markets." *The Economic Journal* (2016); Tsilikas, Haris, Collaborative Standardization and Disruptive Innovation: The Case of Wireless Telecommunication Standards (May 17, 2016). Max Planck Institute for Innovation & Competition Research Paper No. 16-06, available at <https://ssrn.com/abstract=2783372>.

⁹ See Gupta, Kirti, "The Role of SMEs and Startups in Standards Development" (July 12, 2017), available at <https://ssrn.com/abstract=3001513>.

¹⁰ See *id.* at 1-2 (*citing* Regulation (EU) No. 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European Standardisation, at recital 20), available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:316:0012:0033:EN:PDF>



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Today, wireless devices such as cellphones and tablets are ubiquitous, with billions of subscribers worldwide. While data requirements for consumers soar, so will the billions of interconnected devices that will make a reality the Internet of Things (“IoT”), including machine-to-machine applications, connected vehicles, smart transportation systems, smart cities, smart homes, virtual reality devices, and health care. Fulfilling this dramatic increase in the consumer demand requires the ongoing development and deployment of next generation standards that can power the future of wireless communications.

The innovation and interoperability enabled by standards benefit both markets and consumers. Technology standards add value to products by increasing product demand, reducing costs, and increasing competition within the standard.¹¹ They allow companies on the downstream market to benefit from economies of scale, specialization and rapid growth of international markets. The process lowers barriers to entry in both the upstream market for technology and the downstream markets for standard compliant products, resulting in stronger, more competitive, and more innovative industries. Consumers, in turn, reap significant gains in terms of lower prices, access to higher quality products, and increased product choices. In fact, consumers consumer demand plays a crucial role in the development of technology standards, as consumer expectations incentivize companies to increase their R&D investment and develop better-performing standards.

III. How does modern economic analysis and empirical literature view the relationship between intellectual property and innovation, and the role of government in advancing and supporting innovation? Are there differences that depend on the type of intellectual property, and the protections offered for that intellectual property?

Over the past decade, there has been a growing interest among policymakers, academics, and businesses in understanding the economic and social impact of IP rights. The growth of the knowledge and innovation economy has placed IP rights in the spotlight and highlighted the need to clearly assess how IP policy interfaces with development in different socio-economic contexts.¹²

In one of the most comprehensive studies of IP systems, Josh Lerner showed that across 60 countries and over 150 years of data, countries that have strong IP protections tend to be significantly wealthier in terms of both total GDP and income-per-capita. Several other studies have replicated and extended this study to show that increased IP protection results in increased economic growth and development in a variety of national environments and time-periods.¹³ The strength of this relationship has

¹¹ See David J. Teece, Peter Grindley, Edward Sherry, & Keith Mallinson, “Maintaining Ecosystem Innovation by Rewarding Technology Developers: FRAND, Ex Ante Rates and Inherent Value”, Tusher Initiative for the Management of Intellectual Capital: Working Paper 21, available at <https://businessinnovation.berkeley.edu/intellectual-capital/working-papers/>.

¹² See “The Economics of Intellectual Property Rights, Suggestions for Further Research in Developing Countries and Countries with Economies in Transition.” World Intellectual Property Organization, 2009.

¹³ Lerner, Josh. "150 years of patent protection." *American Economic Review* 92.2 (2002): 221-225.

varied across studies depending on the countries studied, their stage of development and the degree to which they export/import innovation, but the overwhelming empirical evidence shows that increased IP protection leads to economic growth.¹⁴

The economic literature has tried to investigate how IP protection influences economic growth. In general, there are at least five different channels through which IP (especially patents) affects economic activity: i) increase in R&D expenditure through stronger incentives;¹⁵ ii) increase in international trade and exports;¹⁶ iii) increase in foreign direct investment (“FDI”);¹⁷ iv) increase in venture capital (“VC”) funding to startups;¹⁸ and (v) increase in technology transfer and technology spillovers.¹⁹

In addition, there are several studies that demonstrate the positive effects of patents on the standardization process. A recently published study empirically demonstrated the positive role of the patent system for the functioning of standard development.²⁰ In particular, a company’s patenting intensity will generally increase its participation ICT-related SDOs. The study notes that policies increasing the value of patents have a positive effect on engagement in collaborative technology development. Other studies have shown that inclusion of a patented technology into a technology standard increases on follow-on innovation related to the standard.²¹

There has been some debate among academics and policymakers concerning whether antitrust law and policy should treat SEPs differently from other patent rights.²² SEPs confer the same rights over an

¹⁴ See Thompson, Mark A., and Francis W. Rushing. “An empirical analysis of the impact of patent protection on economic growth,” *Journal of Economic Development* 21.2 (1996): 61-79.

¹⁵ See Arora, Ashish, Marco Ceccagnoli, and Wesley M. Cohen. “R&D and the patent premium.” *International journal of industrial organization* 26.5 (2008): 1153-1179; Allred, Brent B., and Walter G. Park. “The influence of patent protection on firm innovation investment in manufacturing industries.” *Journal of International Management* 13.2 (2007): 91-109; Park, Walter G., and Juan Carlos Ginarte. “Intellectual property rights and economic growth.” *Contemporary Economic Policy* 15.3 (1997): 51-61.

¹⁶ See Ivus, Olena. “Do stronger patent rights raise high-tech exports to the developing world?” *Journal of International Economics* 81.1 (2010): 38-47; Park, Walter G., and Douglas C. Lippoldt. “Technology transfer and the economic implications of the strengthening of intellectual property rights in developing countries,” (2008).

¹⁷ See Smarzynska, Beata. “The composition of foreign direct investment and protection of intellectual property rights: Evidence from transition economies”. The World Bank, 2002.

¹⁸ See, e.g., Farre-Mensa, Joan, Deepak Hegde, and Alexander Ljungqvist. “*The bright side of patents.*” No. w21959. National Bureau of Economic Research, 2016; Hsu, David H., and Rosemarie H. Ziedonis. “Patents as quality signals for entrepreneurial ventures.” *Academy of Management Proceedings*. Vol. 2008. No. 1. Briarcliff Manor, NY 10510: Academy of Management, 2008.

¹⁹ See Fisman, Raymond, Lee G. Branstetter, and C. Fritz Foley. “Do stronger intellectual property rights increase international technology transfer? Empirical evidence from US firm-level panel data”. The World Bank, 2004.

²⁰ See Baron, Justus and Li, Qian Cher and Nasirov, Shukhrat. “Joining Standards Organizations: The Role of R&D Expenditures, Patents, and Product-Market Position” (November 19, 2018), available at <https://ssrn.com/abstract=>

²¹ See Baron, Justus. The Causal Effect of Essential Patents on Follow-on Innovation Related to Technology Standards. (2016), available at <https://www.cemfi.es/ftp/pdf/papers/wshop/Baron%20Effect%20of%20SEPs.pdf>

²² See Werden, Gregory J. and Froeb, Luke M., “Why Patent Hold-Up Does Not Violate Antitrust Law” (September 4, 2018), available at <https://ssrn.com/abstract=3244425>.



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invention as any other patent but are included in the standard only if the patent owner agrees to license that patent to implementers on fair, reasonable, and nondiscriminatory (“FRAND”) terms. The contractual FRAND obligation ensures that SEP owners are fairly compensated for the use of their invention, while ensuring that implementers and consumers have access to foundational standardized technology on a reasonable basis.

In recent years, antitrust enforcement authorities around the world have increasingly asserted jurisdiction over patent licensing transactions involving SEPs, using antitrust law to force patent owners to renegotiate their license agreements. This alarming trend risks chilling high-cost and high-risk investment in foundational technologies, such as 5G and future generations of wireless communications. As former FTC Chair Maureen Ohlhausen has noted, these sorts of overbroad enforcement actions “threaten [...] to upset the balance between patent holders’ rights and consumers’ access to technology,” and “blurs the lines between competition law and industry regulation.”²³

Assistant Attorney General Makan Delrahim has similarly expressed concern that “enforcers have strayed too far in the direction of accommodating the concerns of technology implementers who participate in standard setting bodies, and perhaps risk undermining incentives for IP creators, who are entitled to an appropriate reward for developing break-through technologies.”²⁴ Antitrust enforcement upsets the settled expectations of a patent owner and implementer, because the threat of antitrust damages forces a patent owner to accept royalties significantly lower than would be contractually negotiated between the inventor and an implementer. By decreasing expected royalties, antitrust enforcement artificially depresses the royalty rates for patent owners, effectively reducing their incentive to invest in innovative technology in the first place.²⁵

Given the importance of standards to economic and technological, antitrust law and policy must ensure a pro-competitive, pro-innovation balance between the intellectual property rights of SEP owners and the important goal of ensuring a competitive economy that benefits consumers. Any approach to antitrust enforcement must be grounded in sound law and economics principles, to ensure that implementers can access essential technologies and that SEP holders receive adequate compensation for their inventions.

The empirical evidence and academic literature have clear implications for policy-makers and government. They must protect the economic advantages that come from patent rights and thereby strengthen the American economy. To maintain U.S. leadership, the policy and regulatory climate must keep pace with innovation. Government officials at all levels should work with industry participants to craft

²³ See Ohlhausen, Maureen, “The Elusive Role of Competition in the Standard-Setting Antitrust Debate” 20 *Stan. Tech. L. Rev.* 93, 97 (2017).

²⁴ See Delrahim, Makan, “Remarks at USC Gould School of Law’s Center for Transnational Law and Business Conference,” Nov. 10, 2017, available at <https://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-usc-gould-school-laws-center>.

²⁵ See Werden and Froeb, *supra* note 22.



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policies, which will facilitate the rapid and efficient evolution of revolutionary technologies such as 5G. The only thing that can hinder long-term U.S. leadership is short sighted policy proposals that harm patent rights and dissuade investment. Predictable regulatory policies that provide innovators and investors with certainty and predictability are essential to ensuring a pro-innovation environment that incentivizes the challenging, risky, and expensive R&D necessary to maintain U.S. technological leadership on the global stage.

IV. How can the FTC use its enforcement and policy authority to advance innovation? What factors should the FTC consider in attempting to achieve this objective?

The FTC has a critical role in encouraging innovation efforts and refraining from interfering with or otherwise disrupting market forces that incentivize investment in risky and costly R&D that is necessary for certain types of innovation such as the 5G technology. Just as patent rights themselves promote innovation, regulatory regimes are also critical to incentivizing innovative activity in the U.S. and around the world. Evidence-based competition policy ensures that companies and inventors that contribute to the development of technologies compete vigorously with one another to ensure that the best outcome is achieved.²⁶

Unfortunately in recent years antitrust enforcement authorities around the world have departed from sound economic principles to bring cases against patent holders for routine patent licensing activity, effectively attempting to regulate royalty rates for technologies.²⁷ Increasingly interventionist antitrust policy departs from historic norms of market-driven antitrust enforcement based on empirical evidence and legal precedent, and threatens to harm consumer welfare by discouraging innovation and competition.²⁸ Antitrust laws are not designed to promote particular outcomes, but to prevent anticompetitive practices that interfere with competitive market processes. The FTC, like any other regulator, should be careful to avoid selecting “winners” and “losers” in the innovation ecosystem. Legislation and policy-making must rely on objective evidence and be targeted to specific behavior that has been empirically demonstrated to be anti-competitive.

²⁶ See Lipsky, Tad and Wright, Joshua D. and Ginsburg, Douglas H. and Yun, John M., The Federal Trade Commission’s Hearings on Competition and Consumer Protection in the 21st Century, Innovation and Intellectual Property Policy, Comment of the Global Antitrust Institute, Antonin Scalia Law School, George Mason University (October 23, 2018). George Mason Law & Economics Research Paper No. 18-40, available at <https://ssrn.com/abstract=3272402>.

²⁷ See Manne, Geoffrey A., and Joshua D. Wright. "Innovation and the Limits of Antitrust." *Journal of Competition Law and Economics* 6.1 (2010): 153-202.

²⁸ See Lipsky, Tad and Wright, Joshua D. and Ginsburg, Douglas H. and Yun, John M., The United States Federal Trade Commission Hearings on Competition and Consumer Protection in the 21st Century, Hearing on Concentration and Competitiveness in the U.S. Economy, Comment of the Global Antitrust Institute, Antonin Scalia Law School, George Mason University (September 13, 2018). George Mason Law & Economics Research Paper No. 18-25 (citing Michael D. Whinston, Lectures on Antitrust Economics 1 (2006)), available at <https://ssrn.com/abstract=3245866>



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Balanced, evidence-based antitrust law and policy are critical to U.S. leadership in global innovation. Reducing or eliminating incentives to innovate through overbroad antitrust enforcement will significantly impact the ability of U.S. companies to compete with technology companies overseas, many of whom are aggressively supported by their domestic governments. Flagging U.S. leadership in core technologies like 5G would not only diminish U.S. economic security but would significantly harm our national security.

Foreign dominance of 5G presents significant national security implications for the U.S. beyond standards-development for the base technology. Given the amount of data—essentially all wireless traffic—that flows through cellular base stations and other infrastructure, these components present ample opportunity for adversaries to create “backdoors” or to exploit known vulnerabilities to intercept private or sensitive data. Importantly, no U.S. companies today manufacture cellular base stations and most other wireless infrastructure, and European manufacturers are already in decline. Without U.S. leadership in the underlying 5G standards, foreign governments and businesses will have virtually unfettered control over all aspects of the 5G ecosystem. As companies from around the world develop the technology and standards for 5G mobile devices and networks, it is critical that the U.S. maintain its leadership in developing and managing this critical technology.

A balanced and circumspect antitrust regime plays a critical role in ensuring that U.S. companies can compete on the global stage. The United States has long relied upon principles of market-driven competition to drive economic and technological growth. By contrast, other countries commonly use their competition agencies to support their domestic industries, often by devaluing U.S. patents and disadvantage U.S. companies. As a result, foreign authorities have routinely sought to advantage their national champions by bringing competition investigations against U.S. competitors. Exercising antitrust enforcement powers as a tool of industrial policy actively and aggressively undermines U.S. patent rights by subjecting American companies to antitrust investigations that lack due process protections in an effort to transfer U.S. patented technology to their domestic companies, or to insulate their domestic companies from U.S.-based competition. These foreign antitrust investigations have targeted foreign life sciences companies, automobile companies, and technology companies.

Overbroad antitrust enforcement is bolstered by the debate surrounding the concept of “patent hold-up.” “Hold-up” refers to the concern that SEP owners may refuse to license their technology in an effort to extract higher royalties from users of their patents. Concern among academics and policymakers in the United States about hold-up continue to undermine efforts to prevent foreign enforcement authorities from unfairly targeting U.S. technology. However, the “hold-up” theory completely lacks empirical support.²⁹ In

²⁹ See Galetovic, Alexander, Stephen Haber, and Ross Levine. "An empirical examination of patent holdup." *Journal of Competition Law & Economics* 11.3 (2015): 549-578.; Sidak, J. Gregory. "The Antitrust Division's devaluation of standard-essential patents." *Geo. LJ Online* 104 (2015): 48. (“[M]ore than two dozen economists and

fact, SEP-intensive industries such as the mobile industry have actually seen a faster innovation rate and a faster drop in consumer prices than non-SEP-intensive industries.³⁰

In recent years, influential scholars, lawyers, economists, and government officials, have actually argued that the inverse of patent “hold-up” is a more significant threat to the innovation ecosystem. So-called patent “hold-out” (or “reverse patent hold-up”) also arises when implementers refuse to enter into licensing agreements *after* the inventors or patent owners have sunk their R&D costs. “Hold-out” is the other side of the patent hold-up coin: while “hold-up” leverages implementers’ costs of switching away from technologies codified in a standard, reverse “hold-up” leverages SEP holder’s limited (sometimes null) market opportunities to license standard essential technologies outside of the standard.³¹ It has been also argued that just as implementers invest before knowing what end-product demand will be, so too must innovators make large sunk investments without knowing whether an innovation will be commercially deployed.³² A recent industry survey empirically shows that “patent hold-out” is a significant phenomenon, which deserves as much attention from courts and policy-makers as the “patent hold-up” narrative.³³

Assistant Attorney General Delrahim has also highlighted the risk of “patent hold-out,” cautioned against one-sided IP right policy changes by SDOs and highlighted the need for balanced policies to incentivize innovation. In a recent speech, Delrahim expressed the view that “the collective hold-out problem is a more serious impediment to innovation” than “patent hold-up,” noting that these risks are asymmetric. More specifically:

[I]nnovators make an investment before they know whether that investment will ever pay off. If the implementers hold out, the innovator has no recourse, even if the innovation is successful. In contrast, the implementer has some buffer against the risk of hold-up because at least some of its investments occur after royalty rates for new technology could have been determined. Because this asymmetry exists, under-investment by the innovator should be of greater concern than under-investment by the implementer.³⁴

Assistant Attorney General Delrahim has expressed his hope that a diversity of views will be represented in SDOs’ patent policy committees and that IP policies are based on reasoned and unbiased

lawyers had disproved or disputed the numerous assumptions and predictions of the patent-holdup and royalty-stacking conjectures.”)

³⁰ See Galetovic, Haber & Levine, *supra* note 29.

³¹ See Geradin, Damien. “Reverse Hold-Ups: The (Often Ignored) Risks Faced by Innovators in Standardized Areas.” (November 12, 2010), available at <https://ssrn.com/abstract=1711744> ; Layne-Farrar, A. “The Economics of FRAND (2016).; Sokol, David. Antitrust Intellectual Property and High-Tech Handbook,” *Cambridge University Press*, Forthcoming.

³² See Froeb, L & Shor, M. “Innovators, Implementers, and Two-sided Hold-up.” *The Antitrust Source*. 2015.

³³ See Heiden, Bowman, and Nicolas Petit. “Patent Trespass and the Royalty Gap: Exploring the Nature and Impact of Patent Holdout.” *Santa Clara High Tech. LJ* 34 (2017): 179.

³⁴ Delrahim Nov. 2017 Speech, *supra* note 24.



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decision making. For example, he told the audience at the Leadership conference in 2018 that SDOs should aim at policies that strike a balance between innovators and implementers:

But standard setting only works—and consumers only reap the benefits of innovative and interoperable products—when both patent holders and patent implementers have the incentives to participate in the process. To that end, I have encouraged standard setting organizations to think carefully about the patent policies they adopt, so that incentives are not skewed towards one group or the other.³⁵

V. What are emerging trends in patent quality and litigation issues? Should these trends influence the FTC’s enforcement and policy agenda?

Over the past ten years, the U.S. patent system has been transformed by new legislation, regulatory actions, and numerous decisions affecting nearly every area of patent doctrine. These disruptive legal changes have affected infringement remedies, licensing negotiations in the marketplace, and limited the types of inventions and discoveries are eligible for patent protection, resulting in a profound sense of uncertainty for most stakeholders. This state of uncertainty surrounding the American patent system is pushing investors and innovators to look outside of the U.S., thereby harming economic growth and technological advancement. Because innovators and investors are shifting their activities overseas, foreign countries are for the first time poised to bypass the U.S. as the forerunners of innovation.

Unfortunately, aggressive regulatory activity over the past decade has weakened patent rights and has called into question the value and enforceability of those rights. The empirical evidence is growing that the U.S. continues to take steps backwards in terms of the overall patent landscape. For example, according to the U.S. Chamber of Commerce Global Innovation Policy Center (GIPC), which annually releases indices that benchmark activity critical to innovation development surrounding different forms of IP, the U.S. leadership has become much less pronounced in patents.³⁶ *First*, there has been a continuous worsening of the U.S. patent system over the period 2014-2018 as measured by GIPC’s index.³⁷ During the same period, the patent system of other major countries has improved; these countries are France, Singapore, Russia, Japan, Brazil, China, India, Canada.³⁸ *Second*, the U.S. has fallen for the past two years in a row. In 2017 the U.S. ranked 10th worldwide in terms of offering patent protection to innovators. In 2018, the U.S. fell out of the top 10, tumbling to a tie for 12th with Italy. Countries ahead of the United States for patent protection are (in descending based on the GIPC index): Singapore, France, Germany, Ireland, Japan,

³⁵ Delrahim, Makan, “The Long Run: Maximizing Innovation Incentives Through Advocacy and Enforcement”. Leadership Conference on IP, Antitrust, and Innovation Policy, April 10, 2018. Keynote Address. <https://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-keynote-address-leadership-conference>.

³⁶ See <https://www.uschamber.com/press-release/us-chamber-releases-sixth-annual-international-ip-index>

³⁷ The U.S. patent index decreased from 96% (6.75 out of 7.0) to 91% (7.25 out of 8.0).

³⁸ For example, Singapore’s patent index increased from 93% (6.5 out of 7.0) to 97% (7.75 out of 8.0).



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Netherlands, South Korea, Spain, Sweden, Switzerland, and the United Kingdom. Given the aforementioned empirical results, it is obvious how extensive the resultant damage for the U.S. patent system is, with the eroded value of patents to have reached a point where the American innovators will inevitably question the need to seek patent protection for new inventions.

Regarding patent quality, the FTC's 2003 Report, which argues that low quality is "a significant competitive concern and can harm innovation,"³⁹ seemed to play into the troubling narrative that the patent system was broken and required significant reform.⁴⁰ While the FTC did not explicitly endorse this exact narrative, its conclusions and recommendations with respect to patent quality have been interpreted by some as an endorsement of these views.⁴¹ Furthermore, in 2015, Congress "repeatedly stated [that] its paramount goal" in having inter partes review ("IPR") before the Patent Trial and Appeal Board ("PTAB" or "the Board") was to "serve as a cheaper, faster alternative to be used instead of – rather than in addition to – litigation in district court."⁴² However, whether *litigated* patents—a tiny fraction of patents in force⁴³—are of "poor quality" says nothing about whether patent quality is a widespread problem across the entire population of patents.⁴⁴

Despite Congress's intent to provide a faster, cheaper *alternative* to district court litigation, PTAB proceedings actually *increase* litigation as a popular strategy for defendants in patent infringement litigation. Defendants can bring IPR proceedings to force patent holders to defend the same patents on the same grounds over and over, even if a federal court finds the patent valid and infringed. Previous empirical research shows that about 86.7% of IPR or Covered Business Method challenged patents are also being litigated in the federal courts.⁴⁵ Moreover, as of April 2017, PTAB had produced over 6,000 proceedings, with patent owner success rates hovering between a meager 30-40%. Because of these discouraging numbers, and because injunctive relief has become almost impossible to obtain for patent owners, that

³⁹ Federal Trade Commission. "To promote innovation: The proper balance of competition and patent law and policy." (2003) [hereinafter FTC 2003 IP report] [hereinafter FTC 2003 IP report] , available at www.ftc.gov/sites/default/files/documents/reports/promote-innovation-proper-balance-competition-and-patent-law-and-policy/innovationrpt.pdf.

⁴⁰ See Wong-Ervin, Koren and Georgios Effraimidis. *Recommendations Following the FTC's October 2018 Hearings on IP and Innovation* (October 30, 2018). Competition Policy International, Forthcoming Fall 2018, available at <https://ssrn.com/abstract=3275862>.

⁴¹ *Id.*

⁴² *Intellectual Ventures II LLC v. JPMorgan Chase & Co.*, No. 14-1724 (Fed. Cir. Apr. 1, 2015), Judge Hughes dissent at 1380.

⁴³ See Khan, B. Zorina. "Trolls and other patent inventions: economic history and the patent controversy in the twenty-first century." *Geo. Mason L. Rev.* 21 (2013): 825.

⁴⁴ See, e.g., Priest, George L., and Benjamin Klein. "The selection of disputes for litigation." *The Journal of Legal Studies* 13.1 (1984): 1-55.

⁴⁵ See Vishnubhakat, Saurabh, Arti K. Rai, and Jay P. Kesan. "Strategic Decision Making in Dual PTAB and District Court Proceedings." *Berkeley Tech. LJ* 31 (2016): 45.



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critical investment in small and medium-sized companies and universities is rapidly declining.⁴⁶ Anne Layne-Farrar, after reviewing litigation and PTAB proceedings data, has concluded that while IPR proceedings at the PTAB typically cost less and are faster than the typical district court patent infringement case, outcome is neither “efficient” nor a “simplification” of the patent challenge process.⁴⁷ She goes on to note PTAB proceedings have largely failed to achieve the Congressional goal of having IPRs substitute for federal patent litigation.

We believe that the FTC should thoughtfully reexamine its role in issuing guidance and making policy recommendations to the courts and Congress regarding patent issues. For instance, the FTC could consider the relative expertise and comparative advantages of other government institutions such as the U.S. Patent and Trademark Office (“USPTO”) to make pronouncements on issues such as patent quality (a topic covered in the FTC’s 2003 IP Report⁴⁸) and patent remedies (a topic covered in the FTC’s 2011 IP Report⁴⁹).⁵⁰ As the FTC has appropriately noted, enforcement and policy decisions should avoid unduly interfering with, or otherwise disrupting, free market forces—particularly in a way that puts a thumb on the scale in private licensing negotiations between experienced and sophisticated industry players.⁵¹ Any antitrust interference in the patent system is likely to deter innovation-intensive companies from doing what they do best—creating new and ever more useful goods for consumers to enjoy.

VI. Conclusions

The technology sector has experienced rapid rates of innovation and consumer adoption under existing laws and policies governing intellectual property and licensing over the last 30 years. It is critical for U.S. policies to balance incentives to innovate with the importance of a pro-competitive marketplace that benefits consumers as well as enables U.S. leadership in global technological growth. Antitrust policies grounded in sound, evidence-based law and economics are essential to achieving that goal.

We appreciate the opportunity to express our views to the Commission on this important topic and look forward to engaging with the FTC in the coming months as it considers its future role in U.S. innovation policy.

⁴⁶ Madigan, Kevin. “An Ever-Weakening Patent System is Threatening the Future of American Innovation.” CPIP Blog. 28 April, 2017. Available at: <https://cpip.gmu.edu/2017/04/28/an-ever-weakening-patent-system-is-threatening-the-future-of-american-innovation/>

⁴⁷ See Layne-Farrar, Anne. *The Other Thirty Percent: An Economic Assessment of Duplication in PTAB Proceedings and Patent Infringement Litigation* (June 28, 2017), available at <https://ssrn.com/abstract=2994858>.

⁴⁸ FTC 2003 IP Report, *supra* note 39.

⁴⁹ Federal Trade Commission. “*The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition*.” (2011), available <https://www.ftc.gov/reports/evolving-ip-marketplace-aligning-patent-notice-remedies-competition>.

⁵⁰ See Wong-Ervin and Effraimidis, *supra* note 40.

⁵¹ *Id.*



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5775 Morehouse Drive
San Diego, CA 92121
www.qualcomm.com

Contact Information

Dr. Kirti Gupta, Vice President, Technology & Economic Strategy, kgupta@qualcomm.com
