



ITC Decision Could Be Costly for Consumers

Consumers are at risk of paying higher prices for smartphones because of a potential shortage that could hit the market, if the International Trade Commission (ITC) decides to block the importation of some popular devices. This ConsumerGram will explore how an importation ban of certain Apple smartphones will affect competition, increase market concentration and lead to higher retail prices. We estimate consumer welfare would decrease by \$9.9 billion, if the ITC imposes an importation ban.

A Patent Dispute and the ITC

Qualcomm claims that certain features and functions used in Apple's smartphones with Intel chips infringe on several of its non-essential patents, an allegation that Apple denies. With over 250,000 active patents relating to smartphones and tablets, the value of any one patent to the final product can be small, so disputes can arise.¹ For that reason, patent disputes are often resolved by the parties getting together and settling them, usually by negotiating terms and price.

When the parties can't agree on a price or if disputes arise as to whether there is infringement, the issue can be settled in court. However, parties generally think of court as a

¹ Daniel O'Connor, "One in Six Active Patents Pertain to Smartphone," Project Disco, October 17, 2012 at <http://www.project-disco.org/intellectual-property/one-in-six-active-u-s-patents-pertain-to-the-smartphone/#.VmWjjzZdE2w>.

last resort for resolving a patent dispute, because litigation is both an expensive and inefficient means of determining prices.

Sometimes, a party can file a complaint for patent infringement with the International Trade Commission (ITC). The ITC is the same federal commission that investigates foreign companies for dumping subsidized products in the U.S. Parties resort to the ITC far less frequently than to district courts because it offers only a single remedy: it can only exclude foreign goods from entering the United States or being sold in the United States. Even more significant is that this is a “one size fits all” remedy: no matter how valuable or trivial a patent is to a product, the ITC will bar the entire product from the U.S. market, if it finds infringement.

Qualcomm’s decision to seek relief before the ITC is particularly unusual here for two reasons. First, it has selectively asserted patents that are not central to the iPhone’s innovation or demand, yet it seeks to exclude them entirely from the U.S. market based on these patents. Second, Qualcomm has only targeted certain Apple iPhones – those that contain Intel (rather than Qualcomm) Chipsets, despite the fact that Qualcomm’s infringement assertions appear to apply equally to iPhones that contain Qualcomm chipsets.² Therefore, if the ITC finds a patent violation, it could impose an exclusion order that would effectively block the importation of a significant number of Apple iPhones, unless the ITC finds that such an exclusion order is not in the public interest.³

Qualcomm’s choice to file this dispute in the ITC provides no leeway between two polar outcomes. On the one hand, if the ITC finds that Apple has not infringed on any Qualcomm patent, it would dismiss the complaint. Alternatively, if the ITC finds an infringement, it could immediately block the offending devices from importation. The latter option would lead to adverse consequences that would affect the immediate availability of smartphones, as well as what consumers pay for them, and have a dramatic impact on consumer welfare.

² Ted Greenwald and Tripp Mickle, “Qualcomm Steps Up Fight Against Apple,” *Wall Street Journal*, July 6, 2017.

³ Under Section 337 of the Tariff Act of 1930, as stated at http://usitc.gov/intellectual_property.htm.

Background: Qualcomm's Pattern of Anticompetitive Behavior

Qualcomm's potentially anticompetitive behavior has sparked allegations and condemnations from antitrust and competitive regulators around the world. One of the many components in smartphones and other cellular devices is a baseband processor chipset that enables these devices to connect to a standardized wireless telecommunications network. While Qualcomm has amassed a near monopoly in the baseband processor chipset market, the cellular patents essential to the technology standard are required to be licensed under fair, reasonable and nondiscriminatory terms (FRAND). However antitrust regulators and electronics manufacturers argue that Qualcomm has attempted to protect and abuse its monopoly by shutting out its competitors and overcharging smartphone and tablet manufacturers through sky-high royalty rates, violating their obligations under FRAND.

The challenges against Qualcomm are numerous. Early this year, the U.S. Federal Trade Commission filed a complaint with the U.S. District Court in the Northern District of California, citing, among other issues, Qualcomm's refusal to license its competitors ("no license – no chips"), excessive royalties demands, and exclusivity deals that give rebates to manufacturers who refuse to buy chipsets from competitors.⁴ Late last year, Korea's antitrust regulator, the South Korean Fair Trade Commission (KFTC), fined Qualcomm \$865 million for licensing abuses.⁵ Before this, the Chinese antitrust regulator fined Qualcomm \$975 million and required them to lower their royalty fees.⁶ Just last month, the Taiwan Fair Trade Commission levied a \$774 million fine on Qualcomm for antitrust violations.⁷ In addition, competition authorities in Japan and Europe also appear to be taking a closer look at Qualcomm's business practices.⁸

⁴ Steven Titch, "FTC vs. Qualcomm: No License, No Chips," *Computerworld*, June 12, 2017; and Aaron Tilly, "Qualcomm Strong-Armed Apple into Buying Its Chips, US Gov Says," *Forbes*, January 17, 2017.

⁵ Corinne Reichert, "Qualcomm fined \$865m by South Korean Antitrust Regulator," *ZDNet*, December 28, 2016.

⁶ Don Clark, "Qualcomm to Pay \$975 Million Antitrust Fine to China," *Wall Street Journal*, February 10, 2015.

⁷ "Taiwan Fines Qualcomm \$774 for Antitrust Violations," *Reuters*, October 11, 2017, at <https://www.reuters.com/article/us-qualcomm-taiwan-fine/taiwan-fines-qualcomm-774-million-for-antitrust-violations-idUSKBN1CG1RF>.

⁸ Mike Freeman, "Qualcomm Asks Judge to Toss FTC's Antitrust Lawsuit," *San Diego Union Tribune*, April 4, 2017; "Qualcomm Faces Investigation by Taiwan's Fair Trade Commission," *Reuters*, December 8, 2015; and Tom Fairless and Don Clark, "EU Launches Antitrust Investigations into Qualcomm," *Wall Street Journal*, July 16, 2015.

Electronics manufactures are also taking aim at Qualcomm's questionable business practices. Samsung, Intel, the Computer & Communications Industry Association (CCIA), and the App Association have all filed statements before the ITC arguing that Qualcomm overcharges its customers.⁹ And, in January, Apple filed a \$1 billion lawsuit against Qualcomm, claiming that it engages in anticompetitive tactics, refuses to pay rebates, and overcharges for use of its patents.¹⁰

Considering what appears to be a pattern of mounting evidence of anticompetitive practices, Qualcomm's ITC complaint of patent infringement may simply be a distractive ploy to further its market power or a retaliatory reaction against a series of allegations, lawsuits and regulatory investigations into its irregular licensing practices. Indeed, some analysts recognized that Apple was likely moving away from Qualcomm's baseband processor chipsets and therefore targeting only those devices that use its competitor's devices is a not-so-subtle attempt by Qualcomm to force Apple back to using its products.¹¹

Blocking Smartphone Imports Will Create a Significant Shortage

Qualcomm's ITC complaint seeks to block imports of certain Apple devices – iPhone 7s with Intel Chips – and sales of those devices already in the country. Not surprisingly, Qualcomm only singles out blocking those devices that use its competitor's baseband chipsets.

⁹ For various public interest statements, see: "In the Matter of Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof," Intel, Docket No. 3235, filed with the United States International Trade Commission, July 20, 2017; "In the Matter of Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof," Computer & Communications Industry Association, Docket No. 3235, filed with the United States International Trade Commission, July 12, 2017; and "In the Matter of Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof," App Association, Docket No. 3235, filed with the United States International Trade Commission, July 20, 2017.

¹⁰ "Apple Says Qualcomm Overcharged For Chips and It's Suing for \$1 Billion," *Reuters*, January 22, 2017.

¹¹ For example, market analysts estimate that Apple is likely to shift over 70% of its baseband chip orders to other suppliers by 2018. See Mitchel Broussard, "Intel Gaining Larger Foothold in iPhone LTE Chip Supply Chain as Apple Distances Itself from Qualcomm," *MacRumors*, June 1, 2017.

One criteria the ITC regulators will consider in determining whether to block Apple products from the U.S. market is whether such an action would have adverse effects on consumers. In its complaint, Qualcomm claims that blocking Apple devices would have no consumer impact. However, any time supply is reduced, prices go up. Even if substitutes eventually come onboard, these devices will have Qualcomm chips. In this way, the ban would preserve Qualcomm's monopoly and raise consumer prices. In addition, blocking smartphones products would reduce consumer choice.

Smartphone Shortage and Market Breakdown Will Lead to Higher Prices

Along with Android-based smartphones, like Samsung, Apple is a leading national seller of smartphones, accounting for approximately 40% of the U.S. market share.¹² This means that a sizable importation ban will result in a significant national shortage of devices. We estimate that Apple sold approximately 90.4 million smartphones in the U.S. during the last four quarters.¹³ Of these imports, 81% or 73.4 million represent the newest model smartphones entering the U.S.¹⁴ Based on CCIA's estimate that 30% to 50% premanufactured smartphones with Qualcomm chips would be affected by an importation ban, we estimate the total market reduction of these newer models to be approximately 40% – or 29.3 million Apple smartphones that would be banned.¹⁵

If Qualcomm succeeds in obtaining an exclusion order, neither Qualcomm, Apple, nor third-parties can snap their fingers and seamlessly replace the sudden removal of smartphones

¹² See Philip Elmer-DeWitt, "About Apple's 40% Share of the U.S. Smartphone Market, *Fortune*, February 11, 2016 at <http://fortune.com/2016/02/11/apple-iphone-ios-share/>.

¹³ Apple's U.S. revenue was 42% of its worldwide revenue from the 4th quarter of 2016 to the 3rd quarter of 2017. During the same period, it sold 215.6 million smartphones worldwide or, by extrapolation, approximately 93.7 million in the U.S. See Apple Inc., various quarterly financial reports at <https://www.apple.com/newsroom/>. Based on this quantity and the 40% share, the total number of units sold in the U.S. can be estimated.

¹⁴ This represents a rough sales estimate of new models, based on iPhone 7 and iPhone 7 Plus sale during the three-month period ending July 1st. See, Don Reisinger, "Apple's iPhone 7 is Way More Popular than Older Models," *Fortune*, July 25, 2017.

¹⁵ "In the Matter of Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof," Computer & Communications Industry Association, Statement of Third Party, July 12, 2017, citing Mitchel Broussard, "Intel Gaining Larger Foothold in iPhone LTE Chip Supply Chain as Apple Distances Itself from Qualcomm, July 1, 2017, at <https://www.macrumors.com/2017/06/01/intel-iphone-lte-apple-qualcomm/>.

containing Intel chips from the market. Therefore, an importation ban of Apple products would create a sizable shortage in the market. Considering the long lead times necessary to design, produce and ship smartphone to the market, it will likely take six months or longer for manufacturers to utilize what excess capacity may be available in sufficient scale to makeup the shortage. Concurring, CCIA predicts:

In the event an exclusion order were to issue, 30-50% of the pre-manufactured stock would be unavailable, resulting in supply shortages as Apple attempted to manufacture enough Qualcomm-based devices to meet demand. Third parties are also manufacturing-constrained and may not be able to ramp up the necessary production in a commercially reasonable time.¹⁶

A secondary but perhaps even more significant and longer-term effect of a selective exclusion order is the elimination of Qualcomm's only competitor in the premium LTE baseband market. If Apple can no longer purchase premium LTE baseband processors from Intel, that would almost certainly cause Intel leave the market altogether.¹⁷

With no other actual or potential competitors capable of challenging Qualcomm's premium LTE baseband chipset monopoly in the foreseeable future, its monopoly power will likely remain in place for years. With the only remaining competition forced out of the market, Apple and other smartphone equipment manufacturers will have no choice but to again purchase premium LTE baseband processors exclusively from Qualcomm, which will force them to again acquiesce to whatever alleged anticompetitive contractual terms Qualcomm imposes, thus deepening their monopoly position.¹⁸ The looming threat of Qualcomm selectively asserting its patents to prevent emerging competitors from gaining a foothold in the market

¹⁶ CCIA Public Interest Statement, p. 3, at <http://www.ccianet.org/wp-content/uploads/2017/07/2017-07-20-Public-Interest-Comments-of-CCIA-in-Qualcomm-v.-Apple-ITC.pdf>.

¹⁷ Intel's public interest statement, p. 4.

¹⁸ CCIA's public interest statement notes that all other competitors were forced out of the market by Qualcomm, p. 4.

signals to all smartphone manufacturers to avoid market disruption or else face the consequences.

Viewed together, a potential ITC exclusion order pushing Intel out of the premium LTE market and the resulting shortage of smartphones would affect the price of Apple devices and all other competitive devices. This means that consumers would pay more for scarcer Apple products or pay more for substitutes, some with less features, or not buy smartphones at all.

Welfare Losses from an Importation Ban

Removing mobile devices from the market reduces consumer choice and has been shown to reduce consumer welfare.¹⁹ Similarly, the decrease in consumer welfare from an exclusion order can be estimated based on the resulting increase in prices and repression in quantity demanded – both determinants of the price elasticity of demand for smartphones. For illustration, we assume a price elasticity of demand for smartphones to be -1.12.²⁰ Weighting iOS and android phone prices, the average price of higher-end smartphones is approximately \$405.²¹

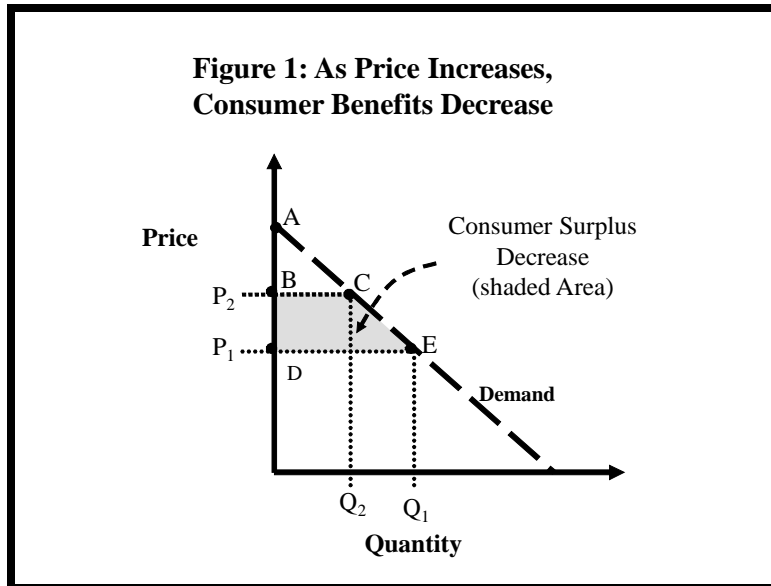
The consumer welfare change resulting from the importation ban is depicted below in Figure 1. As noted earlier, the decrease from the initial quantity (Q_1 to Q_2) will result in 29.3 million fewer Apple smartphones. With the initial price (P_1) of \$405, the shortage will result in a \$47 average price increase per unit sold. As a result of lower quantities and higher prices, total consumer welfare would decrease by approximately \$9.9 billion, or an area equal to the trapezoid BCED (labeled *consumer surplus decrease*). While this assumes a shortage lasting one year, the sheer size of the welfare losses demonstrates that even a shortage lasting just a few

¹⁹ Ying Fan and Chenyu Yang, "Competition, Product Proliferation and Welfare: A Study of the U.S. Smartphone Market," May 27, 2017, abstract available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2506423.

²⁰ This estimate comes from Thomas W. Hazlett and Roberto E. Munoz, "A Welfare Analysis of Spectrum Allocation Policies," *The Rand Journal of Economics*, Vol. 40:1, Autumn 2009, pp. 424-454.

²¹ Apple devices average \$691, while Android devices, such as Samsung and Pixel, average \$215. Given Apple's share of 40%, and the weighted average of a device is \$405. See Philip Elmer-DeWitt, "The Apple iOS and Android Price Gap Just Gets Wider," *Fortune*, February 15, 2016, <http://fortune.com/2016/02/15/apple-android-asps/>.

months would produce significant harm to consumers. Moreover, while this figure depicts losses from disruption in the smartphone market, the ramifications of an exclusion order will produce additional losses not estimated here, because of indirect and induced benefits enabled by smartphones by way of various online and video services, applications, software and public safety.



Conclusion

The ITC's remedies differ dramatically from a federal district court. While other courts can potentially tailor any remedy to fit the violation, the ITC cannot. If the ITC finds Apple has infringed on any of Qualcomm's patents, no matter how negligible, it has only one choice to make – block the importation into the U.S. of Apple smartphones with Intel chips. Such an action will indisputably create a significant and adverse impact on consumer welfare by strengthening Qualcomm's monopoly as the exclusive supplier of premium chipsets, which is contrary to the public interest.

Based on this analysis, an ITC exclusion order blocking the importation of certain Apple iPhones would translate into fewer choices and higher prices for consumers. Anyone concerned with consumer welfare should hope such an outcome is avoided.

