

Company Participants

- Anand Srinivasan, Senior Semiconductor and Hardware Analyst
- Jennifer Rie, Senior Litigation - Antitrust
- Matt Larson, Technology Litigation

Presentation

Anand Srinivasan {BIO 16652971 <GO>}

Good morning and welcome to the Bloomberg Intelligence webinar on the Qualcomm-Apple regulator litigation drama. My name is Anand Srinivasan and I am a Senior Semiconductor and Hardware Analyst for Bloomberg Intelligence.

On the webinar today with me are Jen Rie, our Senior Antitrust Analyst and Matt Larson, our Intellectual Property Analyst. Also with me to answer questions is Fixed Income Analyst, Y.C. Koh.

Before we get into the presentation, a few housekeeping notes; today's presentation will be recorded and be available for playback. At the bottom of the slide window, you will notice that you can adjust the volume and maximize your screen. Feel free to ask a question by submitting one to the right of the slides. We would address Q&A at the conclusion of the presentation. A copy of the slides will be available for download post the presentation via email.

So let's just quickly touch on the Qualcomm primary. Most of our research, excuse me, all of our research is available on the Bloomberg terminal by typing in BI go. Specific company related work can be accessed by typing in the name of the ticker, the equity and then BICO go.

So obviously with Qualcomm, the near-term business trends are overshadowed by the antitrust and regulatory action in US, Europe and Asia. The licensing issue particularly is under intense scrutiny, both from a business model perspective as well as on royalty rates. And right now where it stands with the China specific handset makers is 80% royalty compliance and they're shooting towards the 100% compliance over the course of the next several quarters.

Legal issues however are distracting from these industry trends could affect both the chipset sales as well as the royalties. Separately Apple, Samsung and Huawei are all trying to insource as much semiconductors as possible. And it's also losing share to both MediaTek and Intel. The whole point of the NXP transaction was to diversify away from handset-related sales. So auto sales where NXP is heavy was intended to be -- to support that trend. Apple and Samsung combined to make up roughly about 40% of Qualcomm sales, if we include the Huawei, contract manufacturer, and they were trying to offset that through auto content and shipment growth.

If you look at the specifics of the Apple litigation as well as the regulatory agency litigation, number one, the key point is, this is going to take years. Both from the Apple perspective, the Apple-Qualcomm litigation perspective, as well as the regulatory agency focus, it's not going to be resolved anytime soon. There might be a lot of rhetoric from both sides, but it's important to have a long view on this. The key risk on the Apple litigation is that it's not specifically the potential loss of licensing fees just from apple, but the precedent said it would set across all of the other device makers who pay Qualcomm royalties. That particular scenario is the highest risk scenario, and that would substantially pressure Qualcomm. Apple, Intel, the IEEE, and everybody else in the industry are skeptical of Qualcomm's device based royalties, which is the crux of its model.

On the antitrust side, the pressures on Qualcomm persist across three continents. It's been subject to fines. So if you look at the global antitrust situation, there are three specific categories that you can break it down under. The US lawsuits, which encompasses both the FTC as well as private class action, you have the pending non-US investigations in Korea, in EU and possibly Taiwan, you have the NXPI deal merger review the US side has been cleared, and the FTC lawsuit would have impeded here, you have pending EU clearance and you have pending China clearance.

So, this is the grand list of items that we want to discuss today. And having established sort of the context around the stuff we want to discuss today, I want to turn to Jen Rie for a second, and we've gotten this question a thousand times, which is what if any given our litigation reviews across different regulators, does any of this break the NXPI deal.

Jennifer Rie {BIO 18267478 <GO>}

Well, thank you Anand. Well, what we've seen already is that in the US it didn't, because they announced clearance below expiration of the US HSR waiting period, as of 11:59 last night. So that's really good news. It means the FTC's pending lawsuit against Qualcomm didn't really interfere with their assessment of any overlaps between Qualcomm and NXPI, and that they felt -- nothing was problematic there and they were able to clear it even without an in-depth investigation, so that's good news.

Now, on the European side, I would expect it to be similar to the US. These regulators -- it's actually not uncommon for regulators to be investigating a company on one set of conduct, at the same time evaluating a merger that that company has pending with another entity. And they're supposed to keep these independent, they're different issues, they're different analysis and they are good at it. They do keep these things independent. Now, it doesn't mean that the EU couldn't consider the Qualcomm conduct that they're looking at in their investigation as they're by their quite possibly crash remedies in an NXPI deal, but in general, I don't see the EU's investigation of Qualcomm conduct affecting -- ultimately affecting their blocking the deal or affecting the outcome of that deal.

Anand Srinivasan {BIO 16652971 <GO>}

So, what is the outcome, a potential outcome on the EU side as a result of the conduct, and just give us a brief sense of what could happen there from a potential path perspective?

Jennifer Rie {BIO 18267478 <GO>}

Sure. So, the EU has been investigating actually for quite a long time now Qualcomm. And their investigation is a little bit different than what we've seen from other regulators. It's not about the way they license their patents that are considered standard essential patents, and whether they're not doing it in a fair reasonable way. What the EU is looking at is whether or not certain rebates and exclusive yielding deals and pricing that could be below cost, they are alleging it's below cost is pushing out competitors, and in particular, they're concerned about one competitor Icera.

And what they were saying is that that what Qualcomm was doing was offering such large rebates of low -- ultimately low cost, once you factor in the rebates to buy exclusively chipsets from Qualcomm and not from a competitor, and that's basically pushing Icera out of the market, and that could ultimately hurt the market and hurt consumers in the long run. So it's different than the ICP outcome. I think it's likely as fine as it's going to be levy here.

We saw in a really similar matter against Intel, we saw a fine that was levied of \$1 billion, which at that time was the biggest EU fine for unilateral monopolistic non-cartel type conduct. And if you look at -- if we flip one page on in the deck, if you look at -- my colleague in Europe, Aitor Ortiz, put together a really nice comparison chart here showing in some ways, the way the Intel fine was calculated and comparing it to Qualcomm.

And so what you see is that the global revenues that the Intel fine was based on were \$30 billion at the time and the Qualcomm revenues are estimated at \$21 billion that the fine would ultimately be based on. You had five plus years of conduct in Intel, but four years in Qualcomm, which suggests a lower fine. So all in all, I see a fine is being under \$1 billion, right, because you've got a lesser period of time and lesser revenues than you had in Intel fine. But I do think a fine is likely. There have been two statements of objections that the EU does seem pretty dug in with the conduct.

Having said that, you were right, Anand, about looking at the long-term here, because Qualcomm does tend to fight these things, they have a lot of success when they fight antitrust actions. They are likely to fight this and keep fighting, and this could continue to drag on.

Anand Srinivasan {BIO 16652971 <GO>}

So nothing, no resolution in the near term, so from a timeline perspective, we shouldn't look at any of the regulatory actions from US, China or Taiwan, Korea, as being an impediment to the closure of the NXPI deal?

Jennifer Rie {BIO 18267478 <GO>}

Absolutely not. That's right. I expect that deal will likely get cleared and within the timelines that all kind of set out, they said by the end of 2017 and they do need to formalize their filings in China and EU still to get those time clock started, but they still have plenty of time and it passed one big hurdle yesterday by getting US clearance and I think that it's likely they will be able to get through that and it won't be affected by these other regulatory reviews.

Anand Srinivasan {BIO 16652971 <GO>}

Yeah. And as a point, we have 16% of shares tendered as of yesterday, down from 17% when they last disclosed it, but as Jen pointed out, the time clock hasn't even started for Europe or China. So we've got a long ways to go before deal closure, and ahead of which regulatory clearance is required.

Matt Larson, our Intellectual Property Analyst, let's talk Apple. Can you give us a context of the Qualcomm-Apple case? Before we could dive into the details there, what are SEPs, what is industry standard practice, and why does everybody have a problem with Qualcomm's royalty (inaudible) and why is it different from standard industry practice?

Matt Larson {BIO 19014506 <GO>}

Yeah, sure. Thanks, Anand. That's a bunch of questions in one, so we'll parse it out a little bit. It all essentially boil down to, if you think about Qualcomm, it's having two components: there is the chip sales and the patent licensing more or less. We're focused on the patent licensing here. And a large portion of Qualcomm's patent licensing revenue are driven by a so-called standard essential patents. Kind of as a quick primer on standard essential patents or SEPs, these are patents that cover technology incorporated into industry interoperability standards.

So these are standards that are -- that industry groups get together, representatives from involved companies sit down and they kind of all agree to what tech is going to be in, either fixes to current generations of technology or in future generations. So, these are groups like the 3rd Generation Partnership Project, the 3GPP, SC, the IEEE, these are all groups where people get together and promulgate standards. And as part of the standard setting process, the companies offer their own technology, which gets incorporated into the tech that everybody is going to use, some of that technology is covered by patents.

And so, as part of participating in these groups, companies agree to license their patents to other participants and people who use those interoperability standards on so-called FRAND terms. FRAND is an acronym for fair reasonable and non-

discriminatory. It basically means that everybody agrees to license patents on what is effectively roughly the same relatively low rate, the idea is we want to promote the use of the standards and at the same time we want to compensate people who've done the R&D in order to build out the standard.

So circling back round to the dispute and where Qualcomm sits, Qualcomm is very actively engaged in the standard setting, particularly the dispute with Apple focusing on the 3G/UMTS standard that uses WCDMA, it focuses on 4G LTE. And it also serves as a little bit of a preview for what's going to go on as 5G is developed, and as 5G starts to get rolled out in various countries over the next three to four years. And everybody is focused on this FRAND rate issue, what is fair, reasonable and non-discriminatory? What is the appropriate rate? What is the appropriate royalty base? So it's not just the percentage but maybe the percentage on which you apply the royalty to a handset. Is it the asking price? Is it some percentage of the asking price? Parties can differ on the way that that's done.

And some companies move more to a little bit of a flat fee arrangement, companies like Ericsson recently announced their preliminary rates for 5G. And so you have this dispute where any deal that one company does on FRAND terms starts to affect how everybody else licenses their patents on FRAND terms. So it's kind of a high-level overview, that is the SEP background on what this dispute is arising out of.

Qualcomm's issues are a little bit different than your standard patent license or if you think about an Ericsson or Huawei or tech pure plays that do primarily R&D and focus patents on those, there is not as much of a combination with the chipset business. So, companies like Samsung certainly have a chipset business, but they're also involved in handsets, and so their motivations for protecting margins and balancing that with how they license their SEPs are slightly different than Qualcomm whose chip licensing and SEP -- whose chip sales and licensing as SEPs goes hand-in-hand.

There is also a distinction in the way that Qualcomm and Apple have licensed in the past. Qualcomm currently licensed its patents to OEMs to the companies that put together the iPhone, whereas Apple in the past has entered a much of direct licensing agreements, most recently with Ericsson, directly with InterDigital who is previously licensed through Pegatron.

And so, Apple is kind of on the chair of doing direct licensing agreements to try to get better deals on its SEPs, and so that dispute boiled over and now we have the lawsuit between Apple and Qualcomm directly.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. It's important to note, for those of us who have covered Qualcomm extensively in the past, we've seen these before, but one of the things that we have to remember that very often this is actually decided by a bunch of lawyers trying to interpret the potential technical specs of a particular design to see who has a right of way if you may and therefore eligible for enforcing royalty. So roughly right now,

Qualcomm's royalty rate on a weighted average handset basis on the devices it licenses is about 2.3%. It's important to note that the difference between Qualcomm and others, and that Qualcomm -- Qualcomm's royalty fees are based with cap prices of course, but based on the price of the device, rather than the price of the chip within that device that performs the function. And this is a part of a major sort of an acrimonious issue for most of the industry participants.

It's also important to note that Apple is not currently a licensee of Qualcomm, Hon Hai is, and it has a general contract manufacture and they pass on those charges to Apple. Hon Hai also makes other handsets besides the iPhone, and because Hon Hai is the one paying Qualcomm the royalties, it pays it only based on the price that itself via iPhone to Apple, which is roughly about 45% of the handset ASP to the retail customer assuming that Apple has roughly about 55% gross margin.

So one can interpret this as just another licensing drama, but Matt Larson, coming back to this, why does this one -- why is this one so special? There was this cooperation agreement, perhaps we can go into -- is this -- isn't this just another grand licensing dispute in drag [ph].

Matt Larson {BIO 19014506 <GO>}

I think that's -- I think that's a great way, great way of visualizing. It is my view of this dispute between Apple and Qualcomm in a lawsuit is -- at its core is a patent licensing litigation. There are antitrust concerns that are unique to Qualcomm, you think about the international investigations and various findings out of Korea, out of Taiwan, there are pending investigations in Japan, there was the NDRC settlements that set rates and royalty basis for phone makers in China.

So, Apple has a lot of leverage in this dispute, plus you have the way to frame Qualcomm's licensing as more or less strong arming people or providing a very strong incentive to buy Qualcomm chips rather than add on a Qualcomm royalty rate to whatever chips you buy from a third party. And so, Apple is kind of putting that whole issue into the lawsuit in effect to attempt to negotiate a better deal. I think the way -- the way that this all plays out and the way that the parties are -- have at least talked about resolving it for the last of couple years is in some kind of direct licensing agreement. But in order to get there, Apple is kind of dredging up a lot of the legal issues surrounding Qualcomm's business to use as leverage in a lawsuit. (Multiple Speakers)

Anand Srinivasan {BIO 16652971 <GO>}

To be frank, we did some -- (Multiple Speakers)

We did some back of the envelope Matt and we came up at in the low two's as a weighted average handset, royalty that Hon Hai pays Qualcomm. But what's -- is there any precedent with respect to rates, what's -- what is an acceptable royalty rate in such a sort of a scenario? Is zero the best rate that Apple is going forward? And any precedent here would be helpful.

Matt Larson {BIO 19014506 <GO>}

Yeah. There are a couple of decisions to take a look at. As Anand mentioned earlier, some of this is difficult, because a lot of these royalty rates are set in close door negotiations. They frequently don't see the light of day, but people in the IT community kind of know roughly what everyone -- what everyone is paying when you have a core of maybe five companies who are all negotiating with one another. They more or less know what the -- what the offers and pressure points are in the system.

There have been a few disputes that have boiled over to court decisions where we get kind of a rationale, where the court goes through at least how the lawyers view patent licensing. And there you're seeing rates certainly sub 3% of ASP. If you look at the NDRC settlement where Qualcomm's patent licensing practices on handsets in China are based on 65% of the net selling price and the rates there worth 5% for 3G, 3.5% for 4G.

Ericsson recently disclosed some of its asking rates in an ongoing lawsuit with TCL. TCL and Ericsson have been engaged in licensing discussion that boiled over to litigation over the past couple of years and recently went to trial asking the judge to set an appropriate FRAND rate for a global license from Ericsson to TCL.

And those are all again licenses for older generation technologies, 2G or kind of sub 1%, and then you get up to -- when you come into the 4G, 4G LTE licenses around, you're approaching 2% with the cap. It looks like a \$4 cap, kind of adjusting for there are now handsets that are more complicated and again as we move into 5G, they're going to be interconnected, interconnected cars, wireless devices are no longer limited to handsets and so the licensing practice is starting to recognize. You don't get 5% of a catalog that's Wi-Fi enabled router that's got some kind of cellular functionality. Its cap is based on the value of that functionality to the device. So there's a lot (Multiple Speakers).

Anand Srinivasan {BIO 16652971 <GO>}

Actually on that, you know on that specific ratio Qualcomm actually clarified that they do not charge royalties based on -- for automobiles is based on the value of the module that goes into that, that enables that specific function, but --

Matt Larson {BIO 19014506 <GO>}

Exactly, and that argument comes out and there is a line of cases that talks about what's the appropriate royalty base and there is this dispute between how that language is interpreted. There is language about the royalty. The appropriate royalty is the smallest salable unit. And so, Apple commonly interprets that, as well the smallest salable unit is the chips. So royalty should be based on the chip, whereas practice in FC and among most companies has been, you know, the royalty base is the handset, it's not the tiny chip, it's a larger value. So there's a little bit of that legal

theme that's playing out here, Apple is trying to minimize royalties and Qualcomm is obviously trying to get a larger piece of the pie to calculate compensation.

Anand Srinivasan {BIO 16652971 <GO>}

So, what happens now? What are our next steps? Can you lay out sort of a potential sequences or timeline roughly?

Matt Larson {BIO 19014506 <GO>}

Yeah, sure. So Apple filed its complaints and it looks like Qualcomm will file essentially a motion to dismiss challenging not necessarily the ultimate conclusion that comes out of a lawsuit, but this is just a preliminary motion to winnow down Apple's complaint. There's a lot of incendiary language, everything that you see in legal pleadings has to be taken with a grain of salt, because the lawyers are working hard to present the best case they possibly can, which may look a lot more damning than it actually is in reality.

So Qualcomm will file its response to Apple's complaints on April 10th. We'll likely see a lot of criticism. They'll try to poke holes in Apple's complaint. There will be briefing back and forth through the summer, and a date hasn't been set, but the judge will likely hear this preliminary disputes over the scope of what this case is about in August and we could see the case really starting kind of mid-3Q.

And as a note, these cases take a long time to resolve. If it were just a patent case, the average patent case takes about 2.5 years in this district in California. So you're looking for any potential resolution would be end of 2018 at the earliest that the parties are able to dispose of some of these issues before trial, but likely not until 2019, according to the court's schedule. Again that's absent any kind of out-of-court settlement if the parties are able to reach. But at this point it looks like they're fairly far apart in how they're viewing licensing agreements, and yet again noting that this agreement is going to have a huge impact on how the end of 4G and 5G licenses are structured.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. So don't hold your breath is your point. What about you Jen, across -- yeah, across antitrust, how long is it going to take and how much is it going to cost?

Jennifer Rie {BIO 18267478 <GO>}

Well, timing, as Matt just said, sometimes these antitrust lawsuits generally can take a very long time to resolve. We have our Federal Trade Commission lawsuit against Qualcomm, which is sort of related -- the issues are related to those in the Apple lawsuit that Matt just talked about. It's related to the way that Qualcomm has licensed its standard essential patents, and a 2007 agreement with Apple. That lawsuit has -- there is some controversy around that lawsuit right now in the timing, because it's an FTC lawsuit, and the commissioners vote to bring those suits and at

the time they voted, there were three commissioners, and it was a two to one vote, need to be a majority vote to bring a suit.

One has left and we have two commissioners left, and of the one -- one of the commissioners left was quite against opposed to bringing the suit. She actually came out and said that she had seen no robust economic evidence supporting the fact that Qualcomm's conduct had caused any kind of exclusion or any kind of harm to the market. So there is a lot of -- the speculation that with just two commissioners left and the one that is opposed to the suit is now the acting Chairperson, that the suit could get dropped.

Now, I recently last week was at an ABA Antitrust Conference and this was discussed a bit. And it seems that several of the speakers there, the experts there felt that that wouldn't happen, that the suit wouldn't get dropped because it would seem too political, and that these things have some momentum and once they get going they don't just get dropped, but they did suggest that because the FTC is prosecuting a suit that the Chairperson is not backing, that it could mean that they don't really actively prosecute it. It could mean that they kind of just lamely go through the emotions and this sort of states away and maybe ends up with some easy settlement, and so that means could be quicker than these sometimes are.

Now the private suits, which are copycats of that FTC suit which is very common, they'll take a lot longer. They are seeking monetary damages, the FTC is not looking for money, they were looking for a change in conduct. The private class action plaintiffs are buyers of mobile phones, handheld devices, tablets, they claim that they paid an inflated price because this higher licensing cost that OEMs was passed on to them. And they're looking for triple damages for anything that they overpaid since I believe 2013. So, that will drag on for a long time and I also suspect Qualcomm will fight that really hard, because especially with Commissioner Ohlhausen's statement that there was no harm to the market due to Qualcomm's conduct, these private plaintiffs also have to show harm to the market. To sustain an antitrust case, private plaintiffs have to not only show they were harmed, but they have to show that there was market harm. And if they can't show that there was market harm, they're done. So, I suspect Qualcomm will fight it, it'll drag out ultimately probably settle on for an amount that's unlikely to be particularly material.

Timing on EU, again, that's going to drag out. There could be some announcement about a sign in the next year sooner than later. But in terms of continuing to fight that and having a final resolution, that's way down the road. And the NXPI merger, like I said before, Qualcomm is estimated they'll be able to close that by the end of 2017. I think it's a really good estimate, especially if they get their filings in the EU and China formalized in the next month, and there seem to be some news, if that is imminent. I think they have a great chance of getting that close and meeting the deadline.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. So again to recap, just from an equity analyst perspective not being a lawyer by trade, 34 private cases consolidated hearing was a couple of days ago and the

decision on that will be in four weeks.

Jennifer Rie {BIO 18267478 <GO>}

Right now, let me just clarify, the hearing is about whether all those cases should be put into one big case. That's what the hearing is about in front of one judge, in one court, everybody gets put together. If that happens, that case starts all over again. They'll file a new complaint as a consolidated group of plaintiffs and that slows things down even more. That hearing took place March 30th.

The FTC suit -- and I don't mean to interrupt you, but I guess, I should have said this before, it's quite ahead of that, because in the FTC suit Qualcomm yesterday filed a motion to dismiss the suit. So, yesterday was a good day for them with that motion plus the US antitrust clearance and that briefing will continue through June, through mid-June and there will likely be an argument after that and some decision, so they could get a decision in that before the end of 2017.

Anand Srinivasan {BIO 16652971 <GO>}

Got it, got it. And parallel process on the Apple complaint, Qualcomm's response date too on the Apple complaint is by as Matt Larson just mentioned April 10th, and August 2017 a preliminary hearing on that subject on whether the Apple case may proceed. The ruling on that might come mid to late 3Q. Late 2018 is when an early ruling is possible, but it could drag on well into 2019 on final ruling. And of course there's appeals after that and as Matt mentioned, on average, it takes about 2.5 years a trial and this one is more complicated. And on the antitrust litigations, again, 2019 and beyond as Jen has mentioned.

You know, we've been on for about 30 minutes or so. We want to pause there and take questions from the field here. And we'll pause a minute or so before we get to questions here.

The one question just in the meanwhile we're polling and accumulating the questions is, what happens if Apple doesn't pay in the meanwhile. An interesting side note to that is, because Hon Hai is the one with the license and not Apple, Hon Hai's business would be imperiled if it decides not to pay Apple as part of the -- pay Qualcomm, excuse me, royalties.

And then another question that is often asked is, if a royalty settlement is reached, we have slides on this, is if you look at the -- we've done some financial analysis as to whether if Apple alone benefited from the royalty rate to Qualcomm in and of itself Apple reducing royalty rate is a little bit of a hit to Qualcomm's fiscal year '18 earnings, but it is not material. But then, the precedent question that it sends is, won't everyone else wanted. And if you look at that, if it is substantial, if it is substantial and everybody else can and does partake of it, that's when you have a substantial hit to the royalty model at Qualcomm. And that's when earnings power really comes down in fiscal '18. That is a scenario that most people are worried about and justifiably so.

But they've done this in the past with the NDRC when royalty rates were reduced Qualcomm did in fact appeal or approach all of its customers saying, hey, this is the deal that we have struck with the NDRC. This is the deal that OEMs in China can benefit from, which you'll partake in this deal. And in most cases for non-Chinese handsets, whether the handsets are made in China or not, is not the question, whether the handsets go out of China, to be used out of China is the question. For those handsets, a higher royalty rate was applicable from Qualcomm.

So, for global handset OEMs it didn't make a whole lot of sense, for Chinese handset OEMs that were shipping a lot of product to the non-China regions that didn't make a lot of sense. So this was -- they were able to contain the fallout if you may and restricted it to Chinese handset makers that were making product predominantly for consumption in the China market alone. So, the court finding in favor of Qualcomm as I mentioned before, would be the disastrous scenario.

We have a couple of questions. What is the soonest the NXP deal could get done, could get approval in our opinion?

Jennifer Rie {BIO 18267478 <GO>}

I think the reason that's really hard to estimate is because the wildcard here is Chinese approval. And part of the reason for that is that in China, a deal like this, a tech deal not only goes through the Ministry of Commerce which approves the deal from an antitrust perspective, but it also has to go through one of their ministries that reviews technology issues and that ministry can be slow and the Ministry of Commerce is not allowed to clear it until they've heard from this technology group. And that has slowed down some of our past semiconductor deals.

I would say probably the soonest my guess and this is really a guess and this is based on how long it took for some other deals to get cleared. I'm guessing that the soonest could be about nine months from when they announced, and they announced late October 2016. And the reason I picked that number eight to nine months is because if you look at Western Digital SanDisk, if you look at Analog Devices Linear Technology, Intel Altera and the past semi deals in the last two years, the ones that didn't require divestitures, which is why I suspect it will happen here took between six and eight to nine months. NXP Freescale took longer, but that is because both for Europe and US they had to divest radio frequency businesses.

So I think possibly eight to nine months from let's say November 1st, 2016.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. And then I remember that Qualcomm has said that their expectation is --

Jennifer Rie {BIO 18267478 <GO>}

End of '17.

Anand Srinivasan {BIO 16652971 <GO>}

End of '17.

Jennifer Rie {BIO 18267478 <GO>}

Right.

Anand Srinivasan {BIO 16652971 <GO>}

End of calendar '17

Jennifer Rie {BIO 18267478 <GO>}

Right. Now, the question -- that now, I think end of calendar '17 is really safe if the question was when is the soonest. And so I'm saying May -- and also this depends on Qualcomm because time clocks for these regulators don't start until Qualcomm formally filed and we know they haven't formally filed in Europe, because once that happens, the European Union, the European Commission sets up a public docket and I look for that docket, it has not been set up yet.

Anand Srinivasan {BIO 16652971 <GO>}

Got it.

Jennifer Rie {BIO 18267478 <GO>}

So, that hasn't happened. It's possible they have formally filed in China, although I sort of doubt it. I think if they had, they would have said something publicly about it.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. Thank you. When will we start seeing whether other Qualcomm licensees will start to challenge the royalty agreements? What is the timeline for any royalty schemes changing for Qualcomm and meet these law suits? I want to get Matt Larson in, but before we do that, remember that Qualcomm has individual contracts with individual timeframes or terms of licensing agreements and royalty payments with individual companies. So, for Samsung it has a deal, for Apple -- for Hon Hai it has a deal, for Vivo, for Oppo, for Lenovo, it has separate deals and these all span different terms. So, unless somebody decides to default on their contract, it's unlikely that those royalty schemes would change unless there has been a material impact from a litigation perspective.

And then, Matt Larson, have you seen this before where there is an interim change as a result of a regulatory review or -- I mean some litigation from another OEM?

Matt Larson {BIO 19014506 <GO>}

Yeah, yeah. We've definitely seen that. Let me answer in two parts. Kind of piggybacking off of on response for when do people start to renegotiate their rates. Licenses typically last anywhere from three to seven years. So, thinking about individual licenses, three to seven years with the skew to a three to five year term is typically when these things start to expire. And so for individual licensees, you can -- if it's not explicitly stated, you can guestimate that -- that that's about when these things come up and you're really negotiating rates probably two years before these things expire.

And so, licensees were in the midst of renegotiating rates or at least contemplating how to think about 5G or starting to have these discussions already and the elephant in the room is going to be this Apple litigation. Those agreements aren't typically penned or don't take effect until after the prior agreement has expired. And as we've seen in a number of different cases, sometimes there's litigation if the parties can't agree and an agreements ends, then lawsuits are filed and the parties run to their most favorable jurisdiction in order to try to get a favorable patent ruling.

We've seen this with Ericsson cases, we've seen it with Nokia, we're starting to see a couple cases filed against BLU, both the BlackBerry and LG approaching BLU as because of increased sales, trying to put pressure on in different jurisdictions. So that's -- that's a little bit of a soft answer, but kind of the answer is, based on individual licenses, maybe three to five years after the license was signed. And generally with Apple, people will use that -- use this ongoing litigation as a negotiating point, but the other shoe drops when there is some kind of determination or when the parties have exited the litigation.

So, that's really when you have your strongest precedent when you have either a settlement announced or you have a judicial decision that judge issues something that you can point to and say, look, here's the legal precedent for how to license this body of intellectual property. And like I said, I think that, at the very earliest is the end of 2018 but likely sometime in 2019 when you see a -- the judge put pen to paper and come out with something that people can use in negotiations.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. It is interesting that Matt bought timing up in this and that -- why is Apple doing this now potentially in some of its other actions against imagination as well. If you look far ahead into 5G potential 2020, 2021 and you back drive from certain amount of R&D required, integration required, testing required and you come back to this current timeline that -- and Apple has always been actions rather than words so far as wanting to make its own chips.

You can see a runway where it wants to take in more and more in-sourcing, the move from Qualcomm, partially to Intel demonstrates that, so this could all be prep ahead of the 5G window. So in the 5G timing 2020, 2021, it could be very, very interesting. So, that's another data point that you might want to consider. When --

So can you please -- here's another question. Can you please clarify whether Qualcomm is more negotiating power with OEMs who are making handsets to be shipped out of China or those that build are sold within China? So if you look at the NDRC deal, there was a two-part sort of royalty structure. One is made in China, consumed by China -- by Chinese vendors and then made in China, consumed elsewhere.

So you could do an a la carte menu of Chinese -- Chinese-based technology or Chinese-based -- technology needed for in-country in China, plus technology needed for other regions of the world, add those two royalty together and come out with a certain block based on volume shipments. And then parallel, you could say, okay, this is a global handset licensing structure independent of region and you see which one is lower and you would pick one based on volumes.

Insofar as Qualcomm's negotiating power, I mean to a great degree in math you can chime in if -- as well, into a great degree, it's based on volume, complexity, ASPs, end market and how viscerally you want to adopt Qualcomm and not do any business with any other vendor. Would that be point of thought or do you have any to add there Matt?

Matt Larson {BIO 19014506 <GO>}

Yes, I've got another point to add just on the legal side too. I agree with what Anand said and layered over that as we're thinking about IP agreements. I think it's worth noting the IP enforcements -- the IP enforcement going on in China right now. China over the last couple years has built out specialized intellectual property courts. I'm kind of recognizing the reputation it had for not enforcing IP, particularly IP belonging to countries abroad. It set up a series of the specialized courts, the main one that we hear about is in Beijing and it's got an astronomical win rate for foreign plaintiffs trying to enforce IP in China.

So, you think about for -- and then some of the remedies that that court offers are blocking the export of goods that are infringing or not licensed from China to the outside world. And so, in terms of a legal case that gives Qualcomm who kind of goes to China with NDRC deal and hand a lot more leverage over both companies who are selling in China, because their products are -- if you win these legal cases or potentially block from sale, inventories are put on hold, and also it blocks the shipments of devices to the outside world.

So, in both cases, Qualcomm has a little bit of leverage because of this new legal trend that we've seen in the enforcement of intellectual property in China. So, kind of I'll add that to cover Anand's comments.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. Thanks. And we have another question as it does in the large number of Chinese licensees calculate on the value of the device, service, strong precedent of the Apple lawsuit. And the answer is, yes. And remember, that everybody there was

offered a China NDRC deal, but many of the handset makers they are making product not only for consumption in China but for consumption overseas. So, the NDRC doesn't necessarily have the purview to address that.

And then to some degree, and so sort of that limits things a little bit, number one. Number two, is also if you look at Apple for example, Apple and Samsung were explicitly from what I understand were offered the NDRC deal everybody was. And you also -- as a handset OEM, you wanted to limit the number of SKUs so that your supply chain and your logistics management doesn't run away from you.

So if you look at Apple SKUs, it still has the fewest number of SKUs of any large handset OEM on the block. If you look at Samsung for example, there's a lot more variety on the platform, lot more flavors, lot more diversity across price points. If you look at Apple, for example, it has expanded and the number of flavors in the ice cream shop if you may have expanded. But it is nowhere near the variety and the price point diversity that somebody like a Samsung offers.

Matt Larson {BIO 19014506 <GO>}

Anand, there is one other point that I'll note too, just in terms of the precedent and Chinese licensees. If you look at the timeline that Apple lays out and it's complaints in the Apple-Qualcomm litigation, that the timing of the NDRC settlement corresponds roughly with offers that Qualcomm made to Apple when attempting to negotiate a direct license in 2015 and we've done quite well. You can kind of look at, we've laid those out in parallel. And so there is some suggestion at least that Qualcomm approached Apple with the numbers there. My take is Apple is currently getting a better deal, so why take a step back. But that's going to factor fairly heavily into this dispute.

I think it's -- if you're Qualcomm you have to be feeling good that the NDRC, who at least is perceived to be a somewhat hostile review to outside forces and might have some protectionist interests approved a licensing regime that you're now trying to negotiate with Apple.

So I think that will certainly bare pretty heavily on the dispute with all licensing disputes, again after we get past this kind of initial stage at the end of the year. If the case moves on, you will see all kinds of companies being issued subpoenas which is course -- due course of business and we'll see licensing agreements from other companies bearing on what this should be happens [ph], I again will reference the TCL, Ericsson case that went to trial while in February and ended in March. They had licensing agreements from pretty much everybody in the industry, sort of the judge to compare and see where these FRAND rates are lining up.

So that's a long answer but short term yeah, I think that the Chinese licenses will bear pretty heavily in the dispute.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. Thank you, Matt. Again another seamless plug here for Bloomberg Intelligence. You can see the diversity of our research and the different kinds of people bring into the equation when looking at a situation like this. Matt Larson is an intellectual property attorney, Jen Rie is an Antitrust lawyer by training and by practice. So we have a phenomenal group of talent that we've been able to bring together to assess situations like this. All of this work, including the slides today can be found on the BI GO. We're happy to send you a copy of the slides.

But it is a curated version of research from Matthew, from Jen, and myself, Y.C. Koh, our Fixed Income Analyst. So it's from different angles and we've correlated and sort of cherry pick some of the slides to share today.

Looks like we are at the end of our presentation. Thank you all for joining. We're happy to e-mail you a copy of the slides or point you in the direction of any other research that you might need. And if you have any further questions, please feel free to e-mail us. Thank you for your time.

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