Company Name: Qualcomm
Company Ticker: QCOM US
Date: 2019-01-30
Event Description: Q1 2019 Earnings Call

Market Cap: 66,373.16
Current PX: 54.84
YTD Change($): -2.07
YTD Change(%): -3.637

Bloomberg Estimates - EPS
Current Quarter: 0.699
Current Year: 3.854
Bloomberg Estimates - Sales
Current Quarter: 4805.429
Current Year: 20488.222

# Q1 2019 Earnings Call

## Company Participants

- Mauricio Lopez-Hodoyan
- Steven M. Mollenkopf
- George S. Davis
- Cristiano R. Amon
- Alexander H. Rogers
- Donald J. Rosenberg

## Other Participants

- Chris Caso
- T. Michael Walkley
- Timothy Patrick Long
- Stacy Aaron Rasgon
- Matthew D. Ramsay
- James E. Faucette
- Ross Seymore
- Timothy Arcuri
- Blayne Curtis
- C. J. Muse
- Srini Pajjuri

## MANAGEMENT DISCUSSION SECTION

### Mauricio Lopez-Hodoyan

#### *GAAP and Non-GAAP Financial Measures*

During the call, we will use non-GAAP financial measures as defined in Regulation G and you can find the related reconciliations to GAAP on our website

### Steven M. Mollenkopf

#### *Q1 Highlights*

##### *Non-GAAP Earnings and Revenue*

- We are pleased to report a strong quarter, especially in light of the challenging headwinds impacting the entire industry
- Our fiscal first quarter results reflect continued execution by our team on the things within our control and influence
- Our Q1 non-GAAP earnings of $1.20 per share were $0.10 above the midpoint of our guidance range

- Revenue of $4.8B was in line with our guidance
- Several positive trends enabled us to absorb the impact of general market weakness
  - Notably, number one, QCT's strong roadmap and financial performance in the high end
  - Number two, QTL's second interim agreement with Huawei
  - And number three, lower than expected operating expenses, which includes the impact of our cost reduction initiatives

### *Snapdragon Platform*

- Our business prospects remain very healthy as 5G begins to ramp through the balance of this year and beyond
- Our Snapdragon platform continues to outperform industry benchmarks and is well positioned to successfully enable the low latency, high reliability and security requirements of 5G
  - We continue to extend this expertise with handset OEMs and adjacent industries of compute, IoT and auto

### *Wi-Fi Business*

- Our Wi-Fi business continues to gain share against longstanding incumbents in enterprise
- Reliable, intelligent and secure Wi-Fi will be an important part of future 5G networks and we've introduced innovative and differentiated solutions as the market transitions to Wi-Fi 6
- In parallel, we remain focused on resolving our Apple and regulatory disputes

### *Wireless Ecosystem*

- Before I turn the call over to George to cover our results in more detail, I want to provide an update on some important legal milestones and our ongoing efforts to defend the value of our intellectual property and drive shareholder value
- As most of you know, we are one of the main architects of the wireless ecosystem and our leading investments in R&D have positioned the company at the forefront of 2G, 3G, 4G, and now 5G leadership
  - We have one of the largest patent portfolios in the industry with more than 130,000 patents and pending patent applications worldwide
- And it is critical that we protect our IP and ensure that we are appropriately compensated for our inventions and investments

### *China and Germany*

- Through these various legal cases, we are working to ensure this happens
- Courts in China and Germany have found Apple to be infringing our patents, consistent with our prior messaging for the potential of multiple patent infringement rulings before the end of 2018
- We are pursuing enforcement of the injunctions awarded by these courts and believe the decisions will be upheld on appeal

  - These favorable rulings demonstrate Apple's infringement across a broad range of our patented technologies that are unrelated to modem chips but are widely used in smartphones
- We expect additional favorable patent infringement decisions in the coming months in the United States, China and Germany as more of our cases go to trial

### *Patent Litigation*

- In addition to our patent litigation, there are more legal milestones ahead including the trial involving Apple and its contract manufacturer starting in San Diego in April
- In a separate case in California state court, we filed to stop Apple's misuse and misappropriation of QUALCOMM's trade secrets
- We continue to believe that over the course of 2019 we will reach a resolution on the key outstanding issues in our disputes with Apple through settlement or litigation, and we are prepared for both outcomes

### *FTC*

- Yesterday, we concluded our arguments in the case with the FTC in the Northern District of California
- As stated before, we believe that the FTC's case is based on a flawed antitrust theory and that it failed to meet its burden of proof for its claims
- You can access a transcript of our closing arguments and the related slide presentation on our website at qualcomm.com/news

### *Agreements with Apple*

- Over the course of the trial, we made a strong showing that our licensing practices are consistent with industry norms, have not harmed competition and in fact, the industry is thriving
- We have earned or maintained our leadership in the mobile wireless industry with superior foresight, investment and execution, driving superior technology solutions compared with our competitors, and we have never interrupted commercial shipments of modem chips to any customer in order to obtain unfair licensing rates
- Moreover, the evidence presented at trial proved that our agreements with Apple, which expired over two years ago, were run-of-the-mill incentive agreements that were actually demanded by Apple in order to win its business
- The trial reinforced the important role we play in the mobile industry
  - This is especially critical now as we enter the early innings of 5G, the first mobile generation that is truly shaping industrial policy
- In summary, we are hopeful that the law and fact-based analysis will prevail in our FTC proceedings
- In parallel, we continue to look for an opportunity to reach a negotiated settlement with the FTC

### *Snapdragon Tech Summit*

- Let me now spend some time providing you an update on how we are driving the transition to 5G
- We are extremely pleased with the growing 5G momentum around the world

- In December, we hosted our annual Snapdragon Tech Summit and were joined by leading 5G ecosystem partners, infrastructure vendors as well as device manufacturers
  - This level of representation from the mobile ecosystem is a testament to our broad industry commitment to 5G, our solutions and our leadership position

### *5G Service*

- At the summit, we announced our new Snapdragon 855 mobile platform, the world's first commercial platform supporting multi-gigabit 5G, and demonstrated end-to-end 5G consumer experiences with real demos over live millimeter-wave 5G networks and devices
- We also announced that the Snapdragon 855 is gaining significant momentum with over 100 design wins in development
  - Since the summit, 5G service has begun to roll out in Korea and the United States and as 2019 progresses, we anticipate continued 5G network launches in the United States, Europe, Japan, Australia and China
- We are working with more than 20 operators toward commercial rollouts starting this year, and we expect to be the 5G modem supplier of choice for the majority of the first wave of 5G devices
- In addition to commercial 5G service, device manufacturers are also ramping production of consumer 5G devices

### *CES*

- At CES, we announced 30-plus commercial 5G mobile design wins based on our 5G chipsets
- The majority of these designs are smartphones from global OEMs featuring the Snapdragon 855 mobile platform and the Snapdragon X50 5G modem family, which are expected to launch in H1 2019
- Notably, nearly all of the devices related to these 5G design wins use our RF front-end solutions, and we expect these design wins to have a meaningful positive impact to our RF front-end product line
- Consistent with the past 3G and 4G transitions, as 5G launches in 2019 across multiple geographies, we expect the carriers to play an active role in driving the transition to 5G devices

### *Infotainment Solutions*

- Turning to our adjacent opportunities, in automotive, we announced our third-generation Snapdragon automotive cockpit platforms which provide a multi-tier scalable architecture across tiers to expand the addressable market for our infotainment solutions
- Importantly, to an automotive manufacturer, a scalable architecture delivers a consistent experience across budget to mid-tier to premium car lines
- We also launched the custom-built Snapdragon 8cx compute platform, which represents the largest generational performance increase ever for a Snapdragon product
  - We look forward to growing this category with Microsoft, and expect more announcements throughout the year

### *Summary*

In summary, in a challenging market, QCT is continuing to execute consistent with our expectations at the beginning of the year, and we are looking forward to our upcoming product launches

Finally, I want to thank our employees for their hard work and focused execution

- We continue to make great progress on our important strategic objectives

We are driving the transition to 5G, and we are leveraging our core technologies to expand our reach into many exciting new industries

## George S. Davis

### *Q1 Highlights*

#### *Revenue*

- We were pleased to report solid results in our fiscal first quarter
- Our revenues were $4.8B in Q1, in line with our prior guidance, and non-GAAP EPS of $1.20 was $0.05 above the high end of our guidance range
- Importantly, our Q1 results include a new interim agreement with Huawei which contributed $150mm of revenue in the quarter
- As discussed last quarter, our Q1 guidance had not included any contribution from Huawei because the final payment under the previous interim agreement was recognized in retained earnings pursuant to our adoption of ASC 606 in Q1

#### *EBT Margin*

- QCT delivered revenues of $3.7B and an EBT margin of 16% for the quarter, above our prior guidance range of 13% to 15%
- The operating margin reflects improvements in gross margins and lower operating expenses driven by our continued focus on driving operating efficiencies
- MSM chip shipments of 186mm units came in modestly above the midpoint of our guidance range

#### *Huawei Interim Agreement*

- QTL generated revenues of $1B in the quarter, including $150mm from the successful negotiation of the Huawei interim agreement
- This new agreement was signed in our first fiscal quarter and runs through the third fiscal quarter of 2019
- Under the agreement, we will receive $150mm for each of those three quarters
- Relative to our previous expectations, which had excluded any revenue from the interim agreement, licensing revenues were lower by $150mm to $200mm in the quarter
- Given the headwinds facing the market broadly, we have reduced our global 3G/4G device forecast for the CY2018 to the low end of our previous guidance range, consistent with lower royalty units in the December quarter

### *Emerging Region and China*

- Emerging regions and China were responsible for the largest shortfall in units relative to expectations, although the lower levels of demand appear to be fairly widespread
- The weaker global unit market accounted for the majority of the revenue impact in the quarter, along with some mix effects

### *OpEx Efficiency*

- Against this backdrop, we continued to demonstrate disciplined execution on our cost reduction plan
- Non-GAAP combined R&D and SG&A expenses were $1.56B, down 15% sequentially and well below the low end of the guidance range
- Maintaining our focus on OpEx efficiency remains a top priority, and we are on track to deliver against our $1B cost reduction plan excluding excess litigation

### *Non-GAAP Tax Rate*

- Expenses in Q1 also benefited from lower than expected litigation spend due to timing and the effects of a weaker stock market on revaluation of deferred compensation obligation
- As a reminder, there is a corresponding offset on the deferred compensation liabilities in our investment income, so there is no net EPS benefit
- Our non-GAAP tax rate for the quarter was a benefit of 40%
  - This is in line with the benefit we included in our guidance for the quarter

### *Share Repurchasing*

- To date, we have executed on $22.2B in share repurchases of the $30B authorization we announced last July
- This includes $5.1B through a Dutch auction and $16B under our ongoing ASR programs executed in the fall of last year
- As of today, January 30, the ASRs are approaching 40% completion and the average repurchase price to date is approximately $61
- As a reminder, the ASRs settle at the average trading price less the discount over the life of the agreements
- The ASR agreements are scheduled to end in early September 2019

## *Outlook*

### *Revenue and Non-GAAP EPS*

- Let’s now turn to our financial outlook for the second fiscal quarter of 2019
- We estimate fiscal second quarter revenues to be in the range of $4.4B to $5.2B and non-GAAP EPS to be approximately $0.65 to $0.75
- We expect QTL revenues to be in the range of $1B to $1.1B including the $150mm under the interim agreement

- We expect the market factors that we saw in Q1 to persist with continued softness in the handset market and weaker overall mix of devices

- We expect fiscal second quarter QTL EBT margin to be approximately 54% to 58%

### *QCT*

- In QCT, we estimate approximately 150mm to 170mm MSM chip shipments for the fiscal second quarter, down sequentially as a result of typical volume seasonality, market weakness particularly in the low and mid-tiers, timing of OEM product launches and overall competitive dynamics

- Lower MSM units at mid and low tiers is offset by favorable product mix due to seasonality in broader adoption of our newly launched Snapdragon 800 chipset

### *R&D and SG&A Expenses*

- We expect this mix shift to drive significantly higher revenue per MSM in the fiscal second quarter

- We expect QCT EBT margins to between 13% and 15%

- We anticipate fiscal second quarter non-GAAP combined R&D and SG&A expenses to increase by 6% to 8% sequentially due to higher litigation spend and the impact of the calendar reset of normal employee tax costs

- Non-GAAP combined R&D and SG&A sequential growth is also being impacted by the expected absence of the revaluation adjustment for our deferred compensation liabilities, which benefited OpEx in Q1

  - We remain on track to deliver $1B in cost savings from our $7.4B baseline

### *Savings and Non-GAAP Interest Expense*

- At present, we have achieved approximately $850mm of savings toward our $1B target

- However, due to excess litigation, we are tracking somewhat above the $6.4B run rate

- Nevertheless, we are on track to deliver the $1B in operating savings and expect additional savings post licensing resolution as litigation costs come down

- Non-GAAP interest expense, net of investment and other income in the fiscal second quarter is expected to be approximately $100mm, which is in line with our prior guidance and is a reasonable estimate for each of the remaining quarters in FY2019

### *Non-GAAP Annual Effective Tax Rate*

- Turning to FY2019, we expect our non-GAAP annual effective tax rate in FY2019 to be approximately 0% and reflects both the run rate impacts of tax reform and the fiscal first quarter impacts of our tax restructuring

- Excluding Q1 benefit, we estimate a non-GAAP tax rate of approximately 12% for the rest of FY2019

- We now expect CY2018 3G/4G device estimates to be at the low-end of our prior guidance range

- For CY2019, we are revising the device forecast to be in the range of 1.85B to 1.95B units, which at the midpoint is a reduction of 50mm units from our prior forecast

  - This reduction is entirely attributable to handset market softness

- We expect handset shipments to be up 1% y-over-y with non-handset devices driving overall unit growth up 5% at the midpoint of guidance
- Despite this, we anticipate improving conditions for our chip business in H2 as a result of new product launches, including devices with 5G chipsets and growth in our adjacent businesses

# QUESTION AND ANSWER SECTION

**<Q - Chris Caso>**: Just with regard to the MSM business and the guidance you provided, looked like that had been running down about 20% year-on-year in December. I think your guidance reflects it down 15% in March. Recognizing that that includes a rather large design loss, what would you characterize the continuing business? What would that be running on a year-on-year basis as perhaps a better indicator of the underlying business?

**<A - George S. Davis>**: This is George. Hey, Chris, you're correct in citing that the real difference y-over-y in Q1 was driven by the thin modem business share change at Apple. We're actually seeing strong positioning in our products really everywhere else, and if we are seeing any weakness in the guide, it's really in low tier units, which is partially seasonal and also just I think a reflection of the economy in China.

**<A - Cristiano R. Amon>**: This is Cristiano. I can add one thing. As George said, we see that on the low end of the units, but we continue to see a favorable product mix towards the higher feature smartphones, and we expect that trend to continue, especially important as we look at the launch of 5G technology in towards the later part of 2019 and 2020.

**<Q - T. Michael Walkley>**: I'm going to follow on to Cristiano's comments there at the end. Can you just update us about how we should think about revenue per MSM trends? Clearly a stronger mix implied in your guidance, but can you talk maybe about the RF attach rate and what this could do to the calculation of revenue per MSM? Or maybe just talk about the RF opportunity and how much your RF business could grow as 5G takes off over the next couple years. Thank you.

**<A - George S. Davis>**: Hey, Mike, it's George. Maybe I'll cover off on the revenue per MSM. What we're seeing is, even with the softness in the marketplace, our premium tier devices continue to be strong and growing both y-over-y and quarterly, which is really a testament to the new products. We're also seeing continued strength in the high and mid tier overall. So revenue per MSM in what is normally seasonally challenging second quarter is going to be quite healthy as your back of the envelope calculation is correct. It should be a very strong revenue per MSM quarter for us.

**<A - Cristiano R. Amon>**: Mike, let me just answer your second part on the RF front end. We see right now our RF front end business excluding the impact of Apple, outside Apple, continuously growth, continue to see double digit growth rates in that business as we head in 2019. But most important, this trend of moving towards higher end devices, especially with the transition of 5G was one data point that we like. For the absolute majority of the 5G designs we have under recently announced 855 or the X50 modem, we have RF front end attached, and we're very pleased with that metric.

**<Q - Timothy Patrick Long>**: Thank you. If I could just ask a two-parter on China, first, on the chip business, I think there was some mention about macro and a challenging end markets. Would love your perspective on the market.

And also, George, I think you mentioned for the QCT, the MSM sequential down, competitive dynamics as one part of that. So should we take that to read more low-end competition or potential share loss in China?

And then on the flipside, if we could just get an update on the QTL business in China? Obviously, the Huawei deal is pending, but could you talk a little bit about compliance and just how the licensing deals are going with the rest of the longer tail of Chinese OEMs? Thank you.

**<A - George S. Davis>**: Yes, so just to answer your question on the competitive dynamics, we continue to see pressure at some of the lower-tier devices, and so, which we see down in Q2. Some of it is we believe based on share loss and some is based on just the size of the market which you would typically see pull back seasonally on that.

I would say China overall has been probably the – while it's been extremely good for QUALCOMM overall, if we look at 2018 compared to our expectations going into 2018, demand in China has been substantially lower than we would've estimated for total demand in China – not speaking to our share in this case – which has led us – is one of the factors that led us to put the estimates for CY2018 units down to the low end of our guidance range from last quarter.

I'll let – were you going to jump in, Cristiano?

**<A - Cristiano R. Amon>**: Yeah, I'm just going to add one thing. So Tim, on the chip business, I think there is, as George outlined, there's competitive dynamics on the low end, but a biggest factor, really seasonality of product launches. So, many of our customers probably have product launches in the coming quarter, and it's just the typical seasonality we've seen. Overall, China has been a good story for us. And again, the most important thing is the move towards the higher end devices.

**<Q - Timothy Patrick Long>**: Okay.

**<A - Alexander H. Rogers>**: And, Tim, this is Alex jumping in on the QTL question. The story with China also is good on the QTL side. Under our new 5G [ph] SET (26:43) licensing program, we now have over 35 new licensees or licensees signed up to the new agreements and amendments, and a good significant number of those are Chinese OEMs. So the licensing program is doing well in China, including with respect to compliance.

**<Q - Stacy Aaron Rasgon>**: I wanted to ask about the revisions to your market outlook. So you're taking your global units down I guess to the low end of your range, a few points vs. where you were. But your QTL revenues right now excluding the Huawei settlement are running $900mm, give or take. So that's more than 10% lower than your prior outlook, which was like $1B to $ 1.1B.

So how do I reconcile that I guess with your comments on where you're seeing the weakness in the market which sound to me more like a [ph] low end (27:41)? It seems to imply that the ASPs would have to be down a lot given the revenue you're booking seems to be down more than the unit revision. I guess, how do I think about the trends of units and ASPs playing out and what effect that's having on your QTL revenues right now?

**<A - George S. Davis>**: Yeah, really what you're seeing, Stacy, is the adjustment that comes from the change in reported units, which is consistent with what we're seeing in the numbers that we're now using to revise our guide.

I would also say in – you get some of the dynamics in our outlook that relate to how much in a given quarter is reflected by OEMs that are not paying on their licenses and reporting and those that are. And so one of the things that you'll see is we're actually, while we're seeing market conditions overall worsen, in Q2, when you adjust for the Huawei payment, we're seeing modest improvement in the underlying revenue for QTL, and that really reflects the fact of the mix of the parties in there.

**<Q - Stacy Aaron Rasgon>**: Are you seeing improvement? I mean, in Q2 of last year, ex the Huawei payment, you did like $965mm, and you're guiding ex the Huawei payment this time $900mm. It's still down pretty decently, isn't it?

**<A - George S. Davis>**: You're talking about Q2 in terms of an apples-to-apples comparison?

**<Q - Stacy Aaron Rasgon>**: Yeah, exactly. Yeah.

**<A - George S. Davis>**: Yeah, I think again, I would say the market, if I did an apples-to-apples comparison, I would say the market is down basically modestly compared to that quarter. Remember, we had that very low demand quarter out of China that we talked about, and I think that's the biggest factor. But we do see it down somewhat, but not as much as you might have expected because of dynamics in the – which was effectively Q3 last year.

**<Q - Matthew D. Ramsay>**: I guess a couple things. The first, just to follow on to Stacy's question, I guess a lot of the data that we're seeing just globally, not related to your QTL revenues, but just globally out of the smartphone market isn't great, and I guess Cristiano talked about launches in Q2 potentially that will help that. But an up 5% unit growth for the whole industry seems a bit aggressive, and maybe that embeds growth in auto and some other areas. So maybe you could talk a little bit about what you're seeing in the market that leads you to think the smartphone market's going to grow this year.

And then secondly, George, any additional thoughts? A lot of investors asking me about additional breakouts in QCT to reflect some of the adjacency businesses in the revenue vs. just one line. Any thoughts there would be helpful. Thank you.

**<A - George S. Davis>**: Yeah, this is George. I'm going to take the – I'll take a little bit on the device forecast. Just to be clear, the up 5% includes non-handsets as well and that's where you're getting the growth, the real growth y-over-y. We've said 1% growth in handsets over 2018, and 2018 was down 1% over 2017. We're still seeing in our forecast, we see continued softness. We expect the developed handset demand to be down. We think that's replacement rates, as people start to think about 5G devices coming into the marketplace. And then, you're not seeing as big an impact in 2019 from China as you saw in 2018, but you're also not seeing quite the growth in some of the other emerging markets in time, including India. So we see more modest growth out of the emerging markets in 2019. But overall, handsets puts you at about flat to 1%.

**<A - Cristiano R. Amon>**: This is Cristiano. I just want to add one important data point. So you have the overall market dynamic but then you have the chip business. One thing that we see happening, when we think of our China business and we see that accelerating is, many of our customers had expanded globally outside China domestic. Especially now from Southeast Asia, India and LatAm going to Europe, we've seen our customers starting business in UK, Germany, Spain, Italy, Portugal and France and that's an addition, and it's a good trend to the chip business. Thank you.

**<A - George S. Davis>**: And we'll look to have I think a more robust discussion on the adjacents as we get to an analyst meeting which we think is the right environment to go into that.

**<Q - James E. Faucette>**: I wanted to turn back to some of the comments that Steve made around licensing and asserting QUALCOMM's IP portfolio. You talked about China and primarily in the cases there. Can you just update us as to how you're feeling about the need to assert and eventually put in place IP licensing over non-essential IP for the Chinese OEMs, and does the case with Apple have any implications there as – this is my first question.

I guess kind of related to that, how are you thinking about, or specifically as it relates to Huawei in the interim payments they're making, can you give us an estimate of what QUALCOMM estimates you'd maybe do under really the previous licensing agreement, and help us understand what that delta might be? Thank you very much.

**<A - Donald J. Rosenberg>**: James, this is Don Rosenberg. I'll start. Alex may want to chime in. So with respect, good point about the value of our NEPs as well as our SEPs. They often seem to get lost in the discussion. You probably know that actually a majority of those 130,000 or so patents that Steve – and applications that Steve referred to earlier – are in fact NEPs.

Also, all the lawsuits we brought around the world against Apple involved NEPs, non-essential patents, and as Steve has indicated, we've been very successful so far and we've got a number of cases that are going to be rolling out over the course of this year. Almost every month, there's a significant milestone in terms of either hearings or final rulings, Germany and China and in the U.S. and the ITC and district courts here.

So the value of our overall portfolio is extraordinarily high, and it's certainly something we constantly think about when we look at our licensing program and one point that I think people often miss is that we started this licensing program, what, almost three decades ago, and there were no standard essential patents in our portfolio at the time because we weren't even in the standard, yet we were licensing that portfolio. We continued to license that portfolio essentially at the same terms as our patent portfolio grew with standard essential patents and non-standard essential patents into the numbers that Steve was talking about.

**<A - Alexander H. Rogers>**: This is Alex, James. Let me just respond to the first part of your question. I think Don is correct that we've demonstrated significant value in our non-essential patents. But I think again, you have to step back and take a look at what we've done over the last four years or so. We have really done a very good job of establishing an SEP-only portfolio licensing program both inside of China and now outside of China. But despite the fact that we continue to sign up significant numbers of SEP-only licensees, we still have a very good number, a very significant number of licensees that choose to keep portfolio-wide agreements. And so that's a very significant mix in the overall licensing program.

So I think that the overall program is heading in the right direction. We've got a few issues to deal with in terms of the Apple litigation, but right now, I think the focus is on successfully establishing the 5G program, which we have done over the course of the last 12 months. In terms of the Huawei interim agreement, that's a minimum non-refundable agreement. I don't know that I would get into the overall numbers in terms of what's at issue. I think we'll just leave it at that.

**<Q - Ross Seymore>**: I wanted to return to the QCT side for kind of a two-part question. First, last quarter when you guided, you cited not only the obvious issue sequentially with Apple but also China inventory burn. So I wanted to see what the update was on that. Is the weakness you're pointing to in MSMs in Q1 just demand or is there inventory burn? And if so, how much longer would that last?

And then the revenue per MSM side of the equation, obviously, a big pop up in your fiscal Q2 guide. How should we think about that continuing through the rest of the year? Does the 5G side obviously come in as a tailwind? And then how does China, in answer to the first part of the question, potentially weigh against that? Thank you.

**<A - George S. Davis>**: Hey, Ross. This is George. Again, I think we've definitely seen sell-through ahead of sell-in continue in China, so inventory continues to come down. Whether it reflects the new normal yet, we'll have to see, but that certainly was part of it. But again, the overwhelming y-over-y effect was just related to the one customer.

I think on revenue per MSM, as we start to see 5G pick up and additional premium tier devices increase, that's definitely going to be a tailwind for revenue per MSM. We haven't forecasted it out yet, but we think that will certainly be a tailwind for us, both not only at the end of this year but as we go, as we ramp 5G in 2021.

**<Q - Timothy Arcuri>**: There was a lot of testimony in the trial the past couple weeks that Apple wanted to buy your modem, but you would not sell it to them. That's for the current phones. But now Intel is talking about the XMM 8160, which is going to ship in the back half of this year. So obviously there's going to be a performance difference, but that's a 5G modem. So is that enough to get them to the table? Is the performance difference enough? And then I guess as a follow-on to that, what would the deadline be for them to settle and then be able to get your modem in their phone for the fall? Thanks.

**<A - Steven M. Mollenkopf>**: Tim, hey, this is Steve. I would say we feel very, very comfortable with where our roadmap is relative to the competitors. Doesn't mean there aren't a lot of competitors out there, but we feel like we have a very, very strong position across the board. I mean, if you look at feature set, you look at power, size, everything, we feel very strong about it.

In terms of when a person would need to make a decision, it's hard for me to say. Typically, you need to make decisions kind of in Q1 this year if you're going to impact products that are going into next year. That would be my typical aside, but I couldn't speak for other folks. Some OEMs, particularly the Asian OEMs, move a little bit more quickly, but that would be my general sense for what the timing is.

**<Q - Blayne Curtis>**: Actually, maybe just following on that in terms of the 5G landscape you mentioned that you have the majority of the early wins here. Just kind of curious, your visibility into next year and if you just comment on the landscape, how diverse the 5G landscape would be next year in shipping phone.

**<A - Cristiano R. Amon>**: Thank you. This is Cristiano. You know, it's one of the things we like about 5G, 5G it's not a static target, it's a moving target. There is multiple variations of 5G capabilities, and as soon as we launch, we continue to see that increasing from sub-6 to millimeter wave to new cores and carrier aggregation. And we have now basically line of sight to a number of devices that will be continuously being added to the market as we have most developed economies launching 5G in H2 2019. So we're very optimistic about how FY2020, how significant 5G will be for us.

**<A - Steven M. Mollenkopf>**: This is Steve. I might add one other thing to that, which is don't – there are a number of different mode changes if you look at how the network will operate and the number of bands that you need to deal with between now and really the next 24 months. So, and I think if you're not involved in that at the beginning, you're going to have a very difficult time I think fielding a solution that is competitive at any given time if you show up too late. That's one of the advantages of being early and one of the reasons why we try to make sure that we're there.

The other aspect I think that we should also acknowledge is that I think there was a lot of concern early on with 5G is would the handsets be at the right size or would they be at a size that people would find attractive, particularly given all the RF complication that exists. And from what we have seen from early indications, that is not something to be worried about. They're very, very attractive IDs. So I think it's going to be really an important part of the industry.

The other aspect that I'd just make sure people remember about 5G is the economics to the operator. They really have an incentive to push this, and I think you're going to not only see that in the handsets, but you're going to see that in the people selling the devices, the channels that the salespeople will be incentivized to press 5G. And so we look forward to having that happen in the next year or so.

**<A - Cristiano R. Amon>**: And please stay tuned to this year Mobile World Congress. I think it will be very exciting in this area.

**<Q - C. J. Muse>**: I guess if I could squeeze two in. First one, as you think about non-handset growth driving the up 5%, could you share with us what the implied non-handset unit growth is and how we should think about the implications to both royalties and MSM ASPs?

And then just as a quick follow-up question to Stacy's question on QTL, I think you're guiding that up 3% at the midpoint. I'm a little surprised it's higher Q-on-Q given the FX headwinds and unit volumes out there. Are there any sort of catch-up payments or things like that we should be considering in there? Thank you.

**<A - George S. Davis>**: No, no real big anomalies in that respect. So it's really more the mix element that we talked about. In terms of non-handset growth, again, to get to 5% overall growth, you've got to see something like 27% growth in the non-handsets to get to that. That is largely driven by growth in IoT. Obviously, you still see growth in everything from automotive to compute, but it's really IoT and we're certainly seeing strong growth in industrial IoT in our own business there.

**<Q - Srini Pajjuri>**: Steve, I want to go back to your comment about the FTC litigation. You said you're still negotiating with FTC, and given that the closing arguments are done, do you think you have enough time to reach a potential settlement and then how are you feeling about it?

And then hypothetically, if the ruling were to go against you, what are some of the options that you have going forward? And then in the interim, do you anticipate any changes to your business model while, if you are appealing, there are any other options that you're exploring?

**<A - Steven M. Mollenkopf>**: Sure. Why don't I take the first part of that and then maybe ask Don to jump in on the second part. With respect to settlement talks with the FTC, as you might imagine, we have been engaged with them for some time. We continue to be engaged, and if we think that we can find a resolution, we would take that to try to remove this risk off the table. Not a statement on how we feel about our case, but as you might imagine, this is an important element and we continue to work it.

I think the judge gave some direction at the end of trial in terms of when she might rule, and I would just point you to that in terms of timing, but we have the ability to continue to work this and as you would expect, we are.

**<A - Donald J. Rosenberg>**: Yes. This is Don, Srini. With respect to the judge's comments at the end, she didn't actually say when she would rule, but she did indicate over the last couple of hearings that this is a complicated case and she'll probably take more time than she might otherwise.

We think we put on an extraordinarily strong case here, so we're not obviously going to comment or predict outcomes when a case is now before the judge for a ruling. But I can only tell you that we think that the government failed to prove what we thought was an ill-conceived theory. They still had a burden. We don't think they supported it with any convincing evidence at all. Indeed, I think we made the case, as this industry and these people know, you people on this call know, for a very competitive industry that we have facilitated over the years through our licensing program.

And so, we're hoping for obviously a victory here and that's what we're focused on, and we're not going to talk about possibilities until we face them. I would say this. The judge, as she's indicated, this is a complicated case, and based on what she's been asked and not asked by the FTC for in terms of a ruling, it's going to have to await a particular ruling if she were to go the other way, because there are multiple variations of what that ruling might be, and so we couldn't comment on the possibilities.