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PRESENTATION

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Thanks very much for much for joining us. It's always fun to do a keynote middle of the day because I get -- we pay for food so we get the attention of everyone.

I'm pleased to host EVP and CFO of Qualcomm, Akash Palkhiwala. We have a long list of questions that we want to talk about. And what I like in Akash is that I can talk to him about technology. I can talk to him about the numbers. I can talk to him about the market. It's -- everything is open. So if you have any question like we did before, if you have any question, please just raise your hand. We have a microphone going around.

I do want to note that we put outside a note that we put -- we published on Qualcomm contribution of China -- exposure to China, breaking down the revenues. This is some -- one of the topics we're going to talk about, and it's a deep dive on the Chinese exposure.

QUESTIONS AND ANSWERS

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

So with no further ado, I'm going to start with a sensational question. And my sensation is about what's happening in your view to your share stock price? It's one of the most successful periods in the company's history. I've been covering you for many years.

But it's also -- the stock is at the cheapest level that I can remember. So in your view, what is the -- what are the most misunderstood points in the company's fundamentals that people need to focus on?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

That's great. Great place to start. So first of all, thanks for having me here. And that is definitely the best someone has said my last name at a conference. So I'm happy to start there.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Pure luck.

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

It's talent.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

I'm known for butchering names.

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

So okay. So generally, when you look at where we are at as a company, extremely, extremely happy with what's going on. Kind of if you step back and think about where the world is at and all the transformation that's happening, whether it's digital transformation of home of enterprise, everything trying to get connected to the cloud. We feel like we're in a very fortunate position. As everyone knows, the phone is the most cloud-connected device there is.

And so when any other device tries to connect to the cloud, it's going to need the same set of technologies you have in a phone. So you need some form of connectivity, whether it's WiFi or 5G. You need very low power processing because most of these devices are battery powered. And then finally, you need AI at the edge. And we just feel like we're in a very fortunate position because we can take all these technologies that we created for phones and think about the next 1 billion devices or 10 billion devices. Pick the number that you like that are going to get connected to the cloud, each one of those devices are going to need the same set of technologies that the phone uses.

And so that's kind of the overall pitch on where we are at as a company. You're seeing that show up in our financials, right? So when you look at our diversification plan, taking the phone technologies and bringing it to auto, taking the phone technologies and bringing it to IoT, just we are delivering outstanding numbers in all those areas.

And so kind of coming back to your question now, very happy with the way we're executing. And in my mind, that's the part we control. I think over time, people are going to see the opportunity in front of us and how the technology portfolio that we have, it's not just about 5G. We are the compute company in my mind when you think about these EDGE devices. And so all those technologies are going to bring to bear our leadership in terms of financial performance, and hopefully, that shows up in our stock.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

So I talk a lot with investors about your stock just because of the disconnect between the success and the share price performance. And there are 3 questions that come up. One question is about Apple, and we can analyze it right and left, and we have tools actually to quantify. And even with the worst performance of Apple, meaning if everything goes down to Apple, share price is still very attractive, only 2 points more. But there's 2 more points that we don't know how to quantify and maybe I can ask you about it.

The first one is how sustainable is your dominant position in China. Meaning, as 5G progresses, can you still sustain this dominant position in the high end of the market?

And the second point, and we'll address it one by one. The second point is how sustainable is your dominant position with Samsung? We have seen tremendous growth at Samsung. They replaced their own internal product. How long do you think you can sustain this position with Qualcomm -- with Samsung? So maybe you can address China and Samsung?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

And maybe I'll try to address both at the same time because I think the fundamental premise, if you step back and you look at what is our strategy in phones. We want to be the Android premium supplier for the top tiers of phones, the premium and the high tier. In those tiers it is really about technology leadership and being able to be the person who is supplying the chip that allows all these OEMs to keep up with Apple.

So if you think about the phones as they go from one generation to the other, there's a lot of tremendous amount of extra bandwidth that goes into the CPU, GPU, AI, camera, audio, video, security. Just more and more technology is being absorbed into these phones. And if you look at the OEM landscape, each OEM is trying to lead the innovations going into these tiers. This is also the tiers where most of the industry profit resides.

So our whole pitch is that we're going to be the arms dealer for the Android ecosystem to be able to take our top tier chips, the premium and the high tier chips and be able to compete with the ecosystem of devices that's coming from Apple. And so if you're a Chinese OEM, if you are Samsung, the primary objective that each of these OEMs have is to increase and grow share at these tiers. And our chip allows them to do that. So we come from a place of technology leadership, and we think that is why it's sustainable.

A related topic on this kind of our position at both of these OEMs is pricing. And it kind of comes back to this technology ramp we are on in phones. As I said, each of these areas of technology that we -- I mentioned, CPU, GPU, AI, audio, video, security, each one, there's so much additional technology being added to it. Some of -- one of the issues that we run into is people get focused on 5G. And of course, it's a very big driver of our performance. But when you look at our leading tier chip, 5G is just one of the course we have in there. We are much more of a computing company in the premium high tier than we are a communication company. And that conversation sometimes gets lost in the conversation on Qualcomm because we are so strong on 5G.

And so as we look forward from an IP perspective, we know a lot more technology is going to go into our next 3 generations of chips. We're already working on all 3 of them. And we're already talking to our customers on each one of them. So we have a very good sense of what's coming up in terms of what's going in the chip in terms of capability. And as a result, the increase in content opportunity in front of us.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. So another topic of discussion is always supply chain. And can you discuss the supply constraints? Can you give us a little bit layer or some light at the end of the tunnel? Or is -- what's your outlook for supply constraints?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes. So honestly, there's not much that's changed in the way we have talked about supply constraints. We're probably one of the companies who started talking about the constraints much before anyone else. Since we are so close to our customers, we're so close to the end customer as well through various initiatives that we have in place. We have a good sense of what's going on in the industry. And so that has allowed us to react quickly.

So when supply constraints happen, we put in place a very aggressive plan to do multi-sourcing, to work with our suppliers, to increase capacity, and that has allowed us to radically improve our performance in terms of supply over the last couple of years. It's shown up in our financial performance as well.

As we go forward, we've said 2 things. One is second half of the year, we expect demand and supply to reconcile to a large extent. And we always thought it would be a combination of 2 things. It would be a combination of supply improving and demand declining a bit. And those 2 were required to get to equilibrium. And so really no change to our view there. We're seeing both of those things happen.

The China situation obviously very unfortunate what's going on there, but it has impacted demand to an extent as we've talked about it. And that helps us get into supply equilibrium sooner.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. By the way, do you have -- do you think that -- this is a little bit philosophical, but do you think that in the future, the industry will be able to mitigate such events so we don't have this kind of issue? Meaning are you pushing for more fab sites? Are you pushing for diversification of manufacturers for you, et cetera? What can you do now to the -- now, but what can you do over the next few years such that in the future, we're not running to the same situation?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes. So I mean if you generally look at all of our peers and us, we're probably, I'd say, for sure, we're the most diversified chip company in terms of the suppliers. We obviously use Samsung and TSMC both at the leading nodes, and that gives us some geography diversification.

If you look at the lagging nodes, we are using GlobalFoundries and Samsung, TSMC, still SMIC, So -- UMC. We have a lot of breadth in terms of suppliers, which allows us to react quickly when we get into a situation like this.

From a geography perspective, a lot of our chips are manufactured in the U.S. So we're maybe diversified more from a geography perspective than several of our competitors who are very concentrated in China. For us, Korea, obviously, given Samsung is a large supplier is also a factor.

So we feel pretty good where we stand relative to the industry. But having said that, kind of when you step back and look at the concentration the overall industry has, we're certainly working with our suppliers, with the U.S. government, with other areas to expand the diversification in the industry overall.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

So I want to maybe drill down and talk about QCT and basically start with the question that the handset business is accounted for about 66% of QCT revenues. It grew almost 60% year-over-year.

What's the outlook? What's the outlook for the rest of the year? What's the outlook going forward? These are -- are these sustainable growth rates basically?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Fundamentally, not much has changed versus the goals we laid out at Investor Day. We're certainly happy that we've grown faster on the handset side than we had forecasted. I mean growth in share at Samsung is a big contributor. We've talked about how Huawei going away has been a beneficial factor for us as well. But outside of that, there's kind of 2 key things that are happening in the industry that has also helped us, and those are sustainable as you look going forward.

First is the mix shift of devices in the industry is generally going up, and this has shown up in our QTL results. What happens is every time and especially at the lower tiers in emerging markets, when someone buys a new phone, they typically end up buying higher-tier devices than they had currently. And the reason for this is through COVID, the phone, if that was even possible, became an even more important device to individuals than it was pre-COVID. And that's especially true in emerging markets. And you're seeing that show up in the mix of devices, the mix of chips we sell that helps our ASP.

The second thing that's happening is just an increased number of capabilities that are being integrated into the handset. If you look at the pricing of handsets that's coming out, the capability of the handsets in terms of graphics performance, in terms of gaming performance, AI activities that happen now in the phone rather than going back to the cloud, those vectors are very significant and we see that to be sustained going forward.

So we're pretty optimistic that this is an industry that in a flat unit market is actually demanding more silicon, demanding more capabilities, and that's a good sign for us.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. You mentioned Huawei market share gain. Can you measure it? Do you really -- do you think that Huawei share losses helped you to gain share in the market in China?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes, for sure. I mean if you just generally look at what happened to Huawei share, if -- and you break out the premium tier and all the other tiers, Huawei was very strong in premium and high tiers. Most of the high-tier share went to the Chinese OEMs. The premium tier share was split between Apple and the Chinese OEMs. So these are OEMs that we already had design wins with. We had very significant presence in. And so as they gain share, as they gain this volume, we were able to benefit from it.

Of course, both us and MediaTeks are the benefit. I mean those OEMs generally use both of us as chip suppliers, us mostly at the premium high tier. We are stronger there. We participate in the mid/low tiers, but MediaTek has higher volume there. And as the volume moved over, both of us benefited from it.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Is MediaTek -- what do you think about MediaTek as a risk factor for the market share of Qualcomm?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Well, if you look back at history, if you -- and you look at the premium high tiers, which is again where a lot of the profit pool of the industry is centered, we have done extremely well, and we've held our position. MediaTek has done well at the lower tiers, and they're a strong competitor. If you look at how both of us have performed over the last couple of years, we've both done extremely well. It's shown up in our financial performance. It's shown up in their financial performance. So we feel like it's -- the industry is in good place, and then there's opportunity for both of us.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

But do you think that 5G is any different from previous generations? The reason why I'm asking is you're obviously great when if technology first hits the market. You have first mover advantage, 18 to 24 months. But when technologies mature, the smaller companies catch up. And the question is -- and what we're trying to understand is what's the risk? Quantifying the risk to your position in China when the technology doesn't have this big boost, the beginners boost, but rather stabilizes. And then how much of a risk is MediaTek to you?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes. So I'll highlight 2 things. First is unlike previous generations where MediaTek was a couple of years behind us. If you look at 5G, especially in China where 5G is very significant portion of the volume greater than 75%. MediaTek pretty much came into the market at the same time as us. So this is not a question where they were time shifted like we had in previous generations. So that's one. So we've already been competing.

The second factor is what I said earlier. The conversation gets lost in the 5G conversation but it's only a portion of the chip. At this point, there is so much else happening in the chip that 5G is a small driver in the chip. If you look at China, last 2 generations of chips have already been 5G in premium high tiers. And then we've been competing with them and we've been doing great.

So I think the 5G portion kind of -- talking just about 5G misses the point on what else is required to be successful.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Yes. So another very big portion of our successful portion of your QCT revenues is IoT and revenues accounted for, give or take, 20%, 18% of revenues and they increased 61% year-over-year. So very successful operations in IoT.

Can you break it down? What is IoT? What does it mean? Are there any subtrends with it? What's your position? Just take us through the journey of IoT?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes. So I think if you kind of step back, and this is where we started this conversation. If you step back, our value proposition in IoT is very different than kind of the traditional IoT players. The traditional IoT players was more about MCU and enabling some processing in EDGE devices. When you look forward, if you believe in the theory of everything is going to get connected to the cloud and what all the large companies' market caps are based on, that requires a very different chip at the EDGE, that requires a chip very similar to phones at the EDGE. A chip that can do AI, that has connectivity, 5G, WiFi and low power processing. That's us. So it's very different than the MCU market that we are pursuing within IoT.

Now going to your question, if you take the IoT market that we have, first of all, super happy with the growth. We're very happy that it is borrowing technology from mobile. It's not something that we have to go chase, go acquire new kinds of technologies, it's something that we already have in our portfolio and where we can bring it to bear.

We -- when we talk about it, we split it into 3 parts. First is consumer IoT, and these are devices that on the inside are very much a phone. They have a different form factor outside. And what I mean by that is tablets, wearables, hearables, and in the future, PCs and XR devices. And these are all devices that are very much similar to phones in terms of capabilities that are needed. We're doing -- we've been doing extremely well. We've benefited from the digital transformation that's happening.

But also what we've benefited from and the 2 areas I'm excited about as we look forward, could be significant upside opportunities to Qualcomm stock is first one is XR. If you believe in the Metaverse version, and you can pick how big your view of Metaverse is. You can say it's going to be 50 million devices, 100 million devices, 1 billion devices, pick a number you like. Each one of those numbers, because of where we are at and we have pretty much all the designs that are in the market using our chip. Each one of those are very material upsides to us. So one of the ways, in my mind, to play the Metaverse trend is our stock on the chip side. So that's one I'm excited about.

The second one that I'm excited about is the opportunity for the transition in the PC, right? That has happened on the Mac side already. You've seen what Apple has done getting the M1, now the M1 -- M2 chip into Macs. The PC industry as it goes through the same transition, and connects every PC to the cloud does more cloud computing rather than device. Connectivity becomes more important. Audio/video capabilities become more important. And those are all things that Qualcomm is very good at. So we're excited about that transition coming up with the PC industry, not factored into our financial forecast, that would be upside if that happens. That's consumer IoT.

The second is EDGE networking IoT, and this is -- there are 2 kind of key businesses there for us. First is 5G as a broadband technology into homes. So I'm sure you've all seen Verizon and T-Mobile ads during Super Bowl talking about this 5G box you can buy to get Internet access into homes. But when you go really beyond developed markets and emerging markets, 5G will be one of the key broadband technologies into homes. So there's this tremendous opportunity to take the technologies we already have created for phones, put it into different kind of devices and use it to offer Internet broadband into homes with 5G. So very excited about that. Highly incremental market for us.

The second market is WiFi access points in enterprises and homes. We're the leader in the market. And really, what's happening in homes is we went from 1 to 3 to 6 pack access points into homes to improve the coverage. The same is now happening in enterprises because as people are going back to their offices, distributed seating arrangements, not having a fixed location. When all that happens, the key change that happens from a networking perspective is you move from the wireline network to the wireless network. The WiFi networks actually becomes the most important network in the office. And that's an opportunity for us because we're seeing this wave of transformation coming up.

And then finally, the last part of our IoT and which I think is by far the largest opportunity for us is industrial. As you think about retail, utilities, health care, transportation, all these industries going through transformation and connecting everything to the cloud, our chip has a role to play. And so we're very, very excited about that because I almost think of that as the market is unlimited and the challenge for us is getting the channel and the access to that market rather than the technology that's required.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

So this segment, IoT grew 61%, as I mentioned. What's this growth? What does it reflect? Is it end devices that are growing? Is the IoT already growing to the point that you're growing 61%? Or is there anything else that can explain the growth in the meantime? I'm asking it to understand if IoT is here and now or it's more of a future opportunity? But if it's a future opportunity, then how come you're growing so much?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes. And I think it's both. It's here and now, but it's really a 10-year future opportunity because there is a lot, lot more to do. Let me pick maybe a couple of examples to make it tangible.

The first is retail. So when you walk into a store, you will see a lot of retail associates holding a handheld and walking around the store. It's a great example of something that looks completely like a phone, does everything that a phone does, our chip goes from a phone into that device. Very tremendous opportunity for us. You walk into a restaurant, all the checkout devices that the employees bring to your table now, that uses our chip. One of the key use cases in retail is, as an example, electronic price labels. Price labels today in retail in this day and age are still fixed and it's not tied to demand and supply at that particular moment. If the price labels change to electronic price labels, you could make price changes and have tremendous value based on demand and supply.

In a manufacturing environment, if you think about a camera that is taking pictures of a process in the manufacturing line. And every time there's a defect, the camera can run AI of the image and make a decision on whether there's a defect and someone needs to be alerted or not. I mean it's just unlimited the amount of examples you can come up with.

And the premise, again, behind all of this is it's all getting connected to the cloud. And the reason why our chip matters is because you're going from a disconnected device that had an MCU, that did computing to a connected AI-based device, and that's the opportunity for us.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. Another part that is growing is in within QCTs RF front-end. It's about 12% of revenues, and it grew 28% last quarter. Can you discuss the outlook, meaning, the attach rate customers? What do you -- what kind of -- there are other players doing RF. What is the innovation that you bring to the market? What's the stickiness to customers? And how do you expect it to grow? Yes.

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

So when you look at our RF portfolio, last 3 years, we've been extremely focused on having best-in-class for every component in our portfolio. And I'm very happy that we're now at the point where any component that you pick in our portfolio and power amplifiers were kind of the biggest challenge. We are now at a place where every component is either competitive or better than anyone else in the industry. And so we can compete at a component level.

The second, and this is the big advantage of Qualcomm, is we can now compete at the system level because we design RF front-end and the 5G modem together. We don't design them separately. So if you think about a company that only has RF front-end, they cannot do that. If you think about a company that only has the modem, they cannot do that either. So this is a fundamental, sustainable advantage that Qualcomm has as you go forward.

Also, our focus so far within RF front end has mostly been on the phone side. That's obviously the largest market. We wanted to establish ourselves. We've done that now. We have the opportunity to take everything we've created for phones and apply to every car that is connected to the cloud, applied to every device and IoT that will get connected to the cloud. So the opportunity is to use 5G as a way to get into RF front-end sockets outside the phone.

And then finally, Wi-Fi, we are the largest Wi-Fi chip company, the baseband company in the world. We don't use our own RF front-end yet. That's a tremendous opportunity for us going forward. And with Wi-Fi 7, we're introducing our own RF front-end components.

So -- we're very excited about what's in front of us on the RF front end side just because we feel like going forward and making a longer-term statement here. RF front-end will be designed with the modem, and we have that unique advantage.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. The third leg of QCT is the automotive, and you grew 41% -- it's small, but 4% of revenues, but you grew 41% in automotive. And the question is, will it ever be a big enough market? Great to talk about it, but only 80 million cars are being sold in the U.S. a year or 160 globally versus 2.5 billion handsets or more. So what's in it for you? How important is the automotive opportunity to your growth and what's your outlook?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes. So I think it's going to be a very, very large market. This is a market that is going and everyone knows this well through 2 major transformations. First is electrification of cars. And the second is ADAS on the journey to autonomous. And what this means is that cars become very high-performance computing platforms on wheels. And so the car is getting transformed, the amount of silicon that's going to be needed, and I think I heard NXP recently quote a number north of $1,000 per car as silicon content that's available. Just amount of silicon content when you multiply it by the 100 million cars you quoted, that is a very large number. And so we feel like we are in the prime position to be the chip supplier for the car of tomorrow. There's an inflection point happening in the industry, and we're intersecting that inflection point with our portfolio.

We have 3 kind of -- if you think about our strategy, like phones, we don't have a component strategy. We're coming in with what we're calling the digital chassis. And so you have the physical chassis in the car, the digital chassis sits on top of it. And we have the following chipsets that go into it.

First is the connectivity platform. 5G, WiFi, Bluetooth, GPS, position location, we'll have all of that. The second is transforming the experience inside the car. So the infotainment center and the dashboard. How those work is completely being transformed. And we have the ability to take, say, our premium tier phone chip and apply it to those screens and improve the kind of the performance metric in the car with our chip.

And then finally, ADAS. ADAS is just a tremendous growth opportunity for us. We started with the SoC, the chip side, and we're pursuing both the Vision platform and the drive policy platform. We acquired this asset called Arriver, which is the software platform for ADAS. So we're combining that with the chip. And so that expands our addressable market as well.

The advantage -- and this is the unique thing. I know there are other companies that will talk about ADAS. The unique thing about Qualcomm is we have a platform that goes across all of these things, the 3 platforms I talked about, the 3 set of chipsets, but we can also go from the lowest tier car to the highest tier car. And that just gives tremendous advantage. And I'll give you an example of Volkswagen, who recently decided to use us for ADAS across all their brands. So they'll use us for the lowest tier brands all the way up to Audi, Porsche and the reason why we are in a great position is we can give them 1 platform, 1 software line that can be used across all those cars. And that's going to be unique and differentiating for us as we look forward.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

The competition with NVIDIA in this space, is this either/or or can you live together?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

I mean in most of the sockets we're competing against Mobileye. We hear less about NVIDIA from our customers. We think we can go across all tiers. And so it's really, for us, it's our market to win.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. Okay. In the interest of time, I'm going to ask you about licensing because we do have some questions about licensing. I want to go back to the basics of licensing. Are 5G contracts separate from the 2G, 3G contracts. And the reason why I'm asking it is some investors are concerned that when the market migrates to 5G only, there's going to be another cycle of arguments and debates and lawsuits, et cetera. How well in your view, is your licensing position protected by the fact that we're still deploying 2G and 3G?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Wasn't ready for that question. So it shouldn't be a concern. Let me start there. I'll make 2 points. The second one is even more important than the first one. The first one is our licensing program covers all technologies. And all tiers of devices, whether it's a single-mode device or a multimode device. So you should not think of somehow the economics are different based on the technology that's in the device.

The second and the more important point, I think, is you should always -- when you think about devices, you're always going to have 3G, 4G in devices. Some devices will have 2G, some might pick between 2G and 3G. You're going to have 4G in every device for the foreseeable future, and then you're going to have 5G.

So when we think about devices going forward, we think of a multitude of technologies remaining in the device. But again, independent of that, our licensing agreements are broad. It covers single-mode multimode devices, and so we are in the same position independent of the technologies chosen on the device.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. Is there any risk or -- and I'm asking it in a non-assuming way, not in an assuming way. Is there any risk or concern that when Apple stops buying semiconductors from you because they have their own, it's also going to flow into a licensing dispute?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

I mean as you know, well, you've known us for a long period of time. Our licensing and chip agreements are different. I'll give you an example, our Chinese customers. They buy chipsets from MediaTek, and they pay us licensing fees independent. Samsung uses Exynos in certain devices, they pay us licensing fees regardless. So that's how the relationship with Apple works today, and that's how we expect it to work in the future.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. Talking about the market, what's your outlook, by the way, what's your view of the 5G market? How sensitive is demand, deployment, et cetera, to economic cycles? The world is getting crazy a little bit. What could it do to 5G demand?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes. So given how long we've been in this market, every year, we end up doing a correlation analysis of economic activity, economic performance with 5G, with phones, generally. And if you do this activity for any period -- analysis for any period over the last 20 years, you'll see the correlation.

R-squared is 0.5. And I don't have to tell anyone in this room what 0.5 correlation means, right? It's random at best. So there's actually no evidence that the two are tied together.

Having said that, I'll step back and, of course, be realistic about this topic. And then we've been very, I think, candid and direct in our view on the market. Even at Investor Day, we said we expect the market to be flat going forward, and that's how we are planning our financials.

Kind of if you take out the shorter-term COVID impact that we're seeing in China because of the shutdowns, that is how the market had played out. There are several people who are forecasting growth. We didn't forecast growth in the first place. So the adjustments that other folks made in their forecast didn't happen to us.

As we look forward, we are planning the company based on a flat handset market, improving mix within the handset market, which we have seen lots of evidence for, but really the growth being driven by 5G rapidly going outside handsets into all other devices.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. One of the things that impacts -- so we have the units and we have the price. That's the thing that impacts our royalty, assuming the royalty rate is kind of constant now. The price though is limited in many cases by the ceiling, but you disclosed it before, $400 ceiling.

Where are we globally when it comes to the ceiling? Meaning how much of a factor -- I'm sure that in the U.S., most of the phones are hitting the ceiling. But what about the emerging markets? What about Europe? What about Latin America? Is the ceiling for the price, is it a factor when you think about your driver for growth in licensing or it's not a factor?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Well, it definitely becomes a factor at the mid/low tiers. And especially as those tiers transition to 5G, it will become a factor for QTL, right? Because what happens is when you add 5G, there's a little bit of a premium that goes into a device. And then also at those tiers independent of 5G because people want to consume more content, because the phone is becoming the primary TV watching device as an example, in most emerging markets. It is becoming the primary -- of course, the primary social media device. For students through COVID, it was the primary schooling device through emerging markets.

We're seeing these upgrade cycles that happen because of these reasons. And we don't see that changing. And so when that happens below the cap amount that you referred to, we do see the benefit of that show up in our licensing business.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Got it. Because you're also a CFO outside of being a technology expert, I want to ask you about the numbers. And the biggest opportunity and concern is operating margin. QCT operating margin specifically hit 35%. Historically, I've been covering the stock many years. I remember it half that level.

And the question is, what's the outlook for QCT margins, operating margin or EBIT margin? What are the puts and takes, meaning what could take it higher or lower? And how do you see it evolving over the next few years?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes. So I mean, we gave pretty explicit guidance at Investor Day on operating margins, and we said 30% or higher is our target. And we still think that's a good target for us to pursue.

If you step back and think about the premise of our diversification plan, the premise is take technologies in phones and apply it to these other markets. So -- IoT and auto is special. So when that happens, that's a leverage model from an OpEx perspective, and that helps our margin.

The other thing that's helping our margin is increasing in content and as a result, increasing in ASP in phones. You've seen that happen over the last couple of years. That's the reason why we are ahead of our targets. We do -- kind of on the negative side, we do expect that as kind of things normalize from a supply perspective, we'll see some pressure on the pricing side, and that's contemplated in our guidance as well. So those are the factors we think about as we go forward.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

But QCT revenue growth was tremendous. It would be very hard to replicate the same QCT revenue growth going forward. And with it came the margin leverage.

The question is when growth naturally slows down, do you have negative leverage? Or does it -- just by the fact you're not going to grow that much, does it mean negative contribution to operating margin or not?

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Yes. And again, I think that goes back to our long-term guidance, right? That was obviously contemplated in the guidance that we gave, and we're pretty comfortable with what we got it.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Okay. Great. We have 2 minutes left. Is there any questions from the audience? We covered it all. So I want to finish off with a high-level question, which is always the same question we're asking.

What's the outlook for 5G in North America? What's the outlook for 5G in Europe, the 2 biggest markets? Do you see -- if you look at your outlook today versus your outlook a year ago, is it better or worse? Same thing for Europe.

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

It's overall kind of at a global level -- It's been largely consistent with the way we laid out the forecast at Investor Day, I don't know, 1.5 years ago. We gave a 5-year forecast of how we think 5G adoption will happen. And if you look at the updates we've given since, it's playing out exactly in line with that.

So no fundamental change. I mean, at this point, any premium high-tier devices that is made anywhere in the world has 5G in it. Even if you go to find a high-tier 4G phone, it will be a 5G phone, right? So I think that transition has happened. And you're going to see that happen in mid, low tiers, especially as emerging markets like India, Indonesia start deploying 5G, you will see a rapid change into the mid/low tiers as well.

China, as I said, is north of 75%, 80% devices that are being sold are now 5G devices. So that transition has already happened as well. So we're pretty happy. I think there's a long way to go.

Last year, approximately 525 million out of whatever, 1.3 billion, 1.4 billion handsets were 5G. This year, our forecast is in the 750 million range and there is the remaining to go.

Tal Liani - *BofA Securities, Research Division - MD, Head of Technology Supersector & Senior Analyst*

Okay. Great. Thank you, Akash. Thank you so much.

Akash Palkhiwala - *QUALCOMM Incorporated - Chief Financial Officer*

Thank you. Thanks for having me here.
