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QCOM.OQ - Qualcomm Inc at Morgan Stanley Technology, Media, and Telecom Conference (Virtual)

EVENT DATE/TIME: MARCH 10, 2022 / 8:05PM GMT

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PRESENTATION

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Great. Welcome back, everybody. I'm Joe Moore from Morgan Stanley semiconductor team. Very honored to have with us today, Cristiano Amon, the CEO of Qualcomm. Cristiano, thanks for joining us.

I wonder if you could just start out with a general overview. Actually, there's safe harbor, right? Do you guys want to read the safe harbor?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

It's -- we're good. You know we have a safe harbor.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Yes, okay. Perfect.

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Details on our website.

QUESTIONS AND ANSWERS

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

There you go. Sorry, it just struck me that I was supposed to prompt that. Can you just talk about the general strategy? You just had an Analyst Day. You talked about, I don't know if it's diversification because I think you're pretty excited about your core business, but you're also excited about adding new growth drivers of that business. Can you just talk generally to the strategy that you guys are pursuing?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

No, absolutely. Look, I have said many times, I'll repeat here. It's one of the biggest opportunities we have in the history of our company since the very beginning. It is important to look at how the company is being completely transformed by some of the opportunities that we have in front of us. And I'll kind of describe and I did talk about that in the -- when we had a New York Analyst Day last year. And now we use this very simple way to describe it.

I think we all look of the cloud economy right now. We'll look the opportunity you have within the cloud. Look at the growth of the cloud, 35% year-over-year in CapEx. I'm sure many of you will argue maybe the -- this addressable market of the cloud computing is unlimited. How far does it grow? But if you believe in that growth, you need to believe in the -- all of those billions of devices that are going to be connected to the cloud,

100% of the time, they require connectivity, they will require processing, artificial intelligence, and that's what the company is going to do. It's about moving away from one end market that we have and an opportunity for many different end markets. And I think that's been seen in the diversification of the company.

And when we look at this, what we call the connected intelligent edge, we do see an expansion of addressable market for a company like Qualcomm of 7x. And you don't see that fast of an expansion for a large cap that often. And when you look at just our results we have had over the past few quarters, it's showing that, that's real. The strategy is working, and it's been providing incredible growth opportunities for the company.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Yes. I took over coverage in early 2020, so this is easy. Everything has been great ever since. For me, I didn't have to deal with any of the legal issues that came before. So it's been great. But it has been a really terrific run from the standpoint of revenue and earnings.

And I guess the big message from the Analyst Day to me was that, that diversification is really leveraging off of the core R&D of the company. This is not -- we're trying to do something dramatically different. This is these things that we've developed the smartphone business have applications in all these other markets.

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Yes. Maybe I want to -- I'll make a point of this because I think maybe that's one thing that is very unique to Qualcomm. And I'm going to do my best, Joe, to describe a very complex situation in a simple way. When we look at many of our peers, especially when you look at the broader market opportunity, for example, this is broader IoT, which is very, very big. You have a lot of development of a portfolio of products, almost like a catalog type business that you develop a bunch of different products for those categories.

The Qualcomm approach is very different. And I think it has a lot to do with our DNA, has been a company very focused on innovation. We took individual technologies, whether it's connectivity. It doesn't matter if it's cellular, Wi-Fi, Bluetooth, we look of CPUs, GPUs, NPUs or artificial intelligence, image signal processor, our digital signal processor or video engines. And we develop a road map based on not what a particular segment needs. But what is the best thing we can do from a technology standpoint on that particular vector of innovation? Can we fundamentally change camera? Can we fundamentally change each one of the modem technologies? And as a result, we actually have in a company, what we call one technology road map.

With all of this IP that gets created, and it's really focused on evolving individual technologies, we have built a machine that can build SoCs. We're one of the few companies that figured out how do we scale the ASIC and the SoC business with a combination of that IP. And with that, many of the IP they get developed for mobile end up getting repurposed into automotive, the compute and IoT. And it's showing that our R&D engine scales. That's why every single one of the new growth business we have for Qualcomm has been accretive to margins because it just provides additional scale to this -- into our R&D engine. And I think that's in the -- in one of the key pillars of the strategy.

One pillar of the strategy is we have this huge opportunity of those billions of smart connected devices. We have a number of different trends that are pointing to a technology. The other part of the strategy is we're going to do this leveraging our one technology road map. And if you look at the company results and even the operating margin trajectory of QCT, which is the semiconductor segment, you can see that, that's working.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Yes, definitely. So maybe if we could dig into some of the businesses. We could start with Internet of Things, $6.5 billion business in our model, up 30% this year after 70% growth last year. You talked about 3 buckets of revenue, edge networking, consumer and industrial. Maybe you could start with edge networking and talk to us about the health of the Wi-Fi business? Any new growth drivers you see there?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Yes, it's very good. And we saw this business first getting -- as the pandemic hit, we saw there was this huge demand for upgrading broadband at home. That was a significant growth factor. That was one.

The second one, it's a mistake to think that, that was just a onetime thing. The second one we're seeing right now as we're all getting back to work, and it's good to see a lot of people here in person, as we go back, the enterprise is now upgrading its broadband system. But there's more things that are actually happening.

I want to maybe highlight, we've been the #1 in retail on access point, Wi-Fi access point. #1 in enterprise. We were the #1 in the transition to Wi-Fi 6, which is now represent a majority of our shipments in the United States. Wi-Fi 6E, last MWC, we just sample our Wi-Fi 7, and customers are already building boards with Wi-Fi 7. So we have been driving the Wi-Fi road map, but we see other trends that are being very helpful and continue to drive growth in the business.

Retail and even the carrier gateway, so you now work from home or you work from home a portion of the time. So the requirements for the home is changing, and it has to be like the enterprise. So there is now a significant upgrade on how we think about access point, enterprise quality and performance of Wi-Fi for the home because now it's an extension of the enterprise.

But then we see other cycles of innovation when we're bringing a lot of processing capability to those. The access point and networking is becoming an IoT hub. Everything that gets connected to the access point, data comes in and out. So we have building what is called service-aware Wi-Fi. And then you have -- we can talk about that for a long time, even capabilities such as separating enterprise data from consumer data.

A little bit incipient, but one trend that we think it's a possibility that eventually you're going to see upsell opportunity when even enterprise will be willing to pay for some of the dedicated bandwidth for some of their employees. But all of these is driving growth in Wi-Fi technology, Wi-Fi 6, 6E, 7. Access points are becoming more premium with more silicon, especially of processing. And I think we see a road map of services, so very happy about that. That's the main driver of networking.

But in the networking segment, I want to highlight 3 more things. That's how we -- those are what we put in the IoT networking segment. Wi-Fi is a big driver. There's another one. Wireless fiber. One of the fastest, I think, 5G growth that we've seen, especially from initial velocity is 5G fixed wireless broadband, and it's really happening everywhere. We have over 40 designs. It's the first technology -- the first time, they actually have a wireless technology that could augment fiber. It is not only rural. If you look at companies like Verizon Wireless and T-mo in the United States, they talk about their growth in the home broadband using 5G technology. We see that in Europe. We see that in Asia. And so that's driving growth as well, both across sub-6 and millimeter wave.

One thing we announced at MWC just last week, we put an artificial intelligence processor and created an RF-sensing capability is into our 5G fixed wireless access for broadband, so they can sense its environment, it can optimize the beamforming of 5G and do self-install. That's been very popular. We have a large number of designs now on this platform, and that's another growth factor.

The other one is what's happening infrastructure, both 5G going to the enterprise in addition to Wi-Fi with private networks as well as the network transition to Open RAN and vRAN and then Open RAN. Early days of Open RAN, but all of these is going to be part of all of the different things that we have built for this IoT networking segment.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

That's an impressive set of growth drivers. Maybe shifting to the consumer side. If we could start with some of the virtual reality solutions that you guys have introduced, obviously, a lot of enthusiasm for metaverse these days. Can you kind of sort out where that's going to happen? And where Snapdragon is like...

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Look, well, I'm very personally, very passionate and confident about this. And I think we have passed the hype of the metaverse. It's already material. We did -- if you look at just the Oculus Quest in fiscal '21 was in excess of 10 million units. That's a large quantity for any metric. And what we see right now, we're just at the beginning.

A couple of data points related to that. We invested in virtual reality, augmented reality, mixed reality, which a combination of both before the metaverse was popular. We have now a decade of investment. I remember being in conferences and people say, "Why are you spending time with this technology?" But the reality is we knew that you needed to get to a lot of the fundamental technologies on the silicon. As a result of that, for all the commercial devices that exist today, which is about almost 50 devices of -- that you can use for virtual reality or AR and MR, all uses Snapdragon XR, no exceptions.

Now I believe we're still in the very beginning of this because, of course, you have a relationship with Meta and that is one that has scale. We have been partnering with the Microsoft HoloLens. We see there's a huge opportunity for enterprise. And recently, we just announced actually at CES, a custom chip we're doing for Microsoft for augmented reality as they're going to scale.

Last week, we announced that our partnership with ByteDance, the parent company of TikTok, who is launching a device. And the China ecosystem is just starting for VR and AR. So we're excited about this. We're very well positioned as we have the capability to build those devices. As we all target to build a device that end up going to look like that, you need to have very efficiency in processing and you have to fit a 5G radio in those areas. So I think that's right into the Qualcomm DNA. And that's actually the reason we invest in technology.

And I think it's going to be eventually its biggest phones. And I want to end this topic on the XR. I don't have my phone with me, but I'm going to maybe be able to describe this and you get the point. Something as simple as communication, right? So we used to talk on the phone like this. Then when we built 4G and put a computer in the palm of your hands, we started to communicate to each other like this. With pandemic, we hold the phone in front of our face and we're communicating like this. It is not far-fetched for you to think about the ability to render somebody in front of your eyes on augmented reality, immersive glasses, you get window on the other side, and this could even change how we think about basic communications.

Also, I think many of you, as you start to go back to work, you're probably realizing what we are all realizing. If everybody's on Zooms, on Teams, you have an experience that is kind of easy equal for everybody. If everybody is in the conference room, everybody has a good experience. But the people on the screen, communicating with other people in the conference room, the connection between the physical and digital space is not very good. Just in that alone, we see a lot of development of enterprise applications for collaboration. So excited about that, and I think it will be a very big growth factor for the company.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Great. Sticking with consumer, maybe we could talk a little bit about NUVIA, which was your acquisition in the sort of PC-centric processor space. Can you talk about the value proposition that NUVIA is going to offer to customers? And where do you see that business going?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Yes. So maybe I'll talk about the broader context and I'll come back to the NUVIA team and what they're doing in Qualcomm. So the broader context, and it's -- we have been working over the years, we knew it will be a long journey, especially to move the ecosystem with Microsoft to be a Windows on Snapdragon for PCs. I continue to be very optimistic about the market.

And I think I will say that we build even more confidence just looking of some of the developments you see coming from Apple. It's very clear right now that when you think about the future of mobility computing, you'll see that the benefits of a mobile SoC architecture to bring to that device and the opportunity to actually take the performance leadership. And that's not only talking about just CPU, I'll get to the NUVIA question, but our CPU is about how do you put your GPU, how you do your artificial intelligence.

So we believe in this convergence of mobile and PC. And there are 3 things that I think gave us a -- basically a tailwind. Number one, the pandemic. The work from anywhere kind of define a different type of PC for the future of work. And it's easy to understand that when you have to be in the office or you have to be at home.

If you have a workstation, you're not going to carry that with you, so you need to do cloud-based computing, on-demand computing. You need a high-speed connectivity, low latency, and that's what 5G does. You need a very capable camera because #1 use case on a PC now is communications. That's the #1 use case. It became a communication device.

As you think about those collaboration tools, you need camera, you need the uplink, you need mobility, you need battery life. The other things are happening. CIOs are saying, some of my employees are everywhere. I want the data to move to the cloud, let's say, Microsoft OneDrive. And therefore, you need to have the bandwidth to collaborate with documents in the cloud. So all of this is driving a new PC. That's the first tailwind.

The second tailwind is we've been working with Microsoft to move to ARM, and I think Apple just took the whole conversation to the next level of the ecosystem. You see all Microsoft now applications native on ARM. You see Adobe with applications native on ARM. Given the performance that you see from the Apple devices, you see a lot of game developers building on ARM. So that's exciting opportunity to accelerating the ecosystem.

Number 3 is a tailwind of Windows 11, which now has basically equalize Windows on ARM or x86, you can run any application 32-bit, 64-bit. It has all of the enterprise applications and then has an Android app store, which has, I think, a great example of the convergence of mobile and PC. When you look at those things, in our IoT consumer, we have an opportunity with PCs.

Just point an example to you. At last week at MWC, we announced, together with Lenovo, the very first ThinkPad running on Snapdragon. It's our third-generation Snapdragon 8cx. It's a ThinkPad designed for the enterprise, 28 hours of battery life with 5G on. So -- and it's being designed for what is going to be the future of the work from anywhere workforce.

Great opportunity for us. Now I'm going to put NUVIA within the context. We feel very confident about our ability to be driving the technology road map to a leadership position in all those areas of processing, as I described it to you before when I described the one technology road map. And clearly, we need to have a leading CPU. And not only it's going to be used for this PC opportunity, but also we're going to take it to automotive. We're going to take it to mobile.

We obviously were partial, but we believe the NUVIA team is the best CPU team in the industry. That's the team that designed the M CPU within Apple. We're very happy they're part of Qualcomm. The NUVIA team is developing our next-generation Qualcomm CPUs. We're going to sample in '23, our next-generation PC Snapdragon with a NUVIA CPU. We're going for the performance segment. And we're going to take that to auto. We're going to take that to mobile, and we're going to take that to the broader IoT segment.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Great. Exciting stuff. So you also have a very diverse business within industrial IoT with retail, utilities, asset tracking types of use cases. How do you think about that business from a growth perspective? And how do you leverage your mobile expertise into that business?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Look, it's a great question. What I like about the business is very diversified. In the industrial IoT, we have about 13,000 customers right now. I probably -- that's a higher number right now. Well, that's the latest disclosure we made. And it's very diversified. It's across a number of different verticals.

I would argue that we're just scratching the surface of the opportunity. I understand that we probably need to find a way to help investors model that, but it's growing at a very good rate. Just look at our IoT segment, last quarter, 42% year-over-year. We're very happy with what we see how the rest of the year unfolds.

And what we like about that is what Qualcomm can do is very unique because what our approach and we talk about lighthouse customers. So I will pick about an example of what we're doing with Walmart and retail. It's because of our basket of technologies is so diverse, from communications to every type of computing, low power, you can see us we've been working towards electronic shelf label, retail cameras that are smart, intelligent, have artificial intelligence, are pointing to retail, know what products are coming out, when products needs to get replaced. Same camera technology, go to self-checkout systems. And you can see how that model will scale across every different types of retails.

Handhelds, one thing that is changing in traditional retail as a result of e-commerce. Now traditional retail, you can order and somebody will go pick the products, put it in a bag and deliver it to your house. So handheld with indoor navigation for that. So there's a lot of opportunities.

You shift to a different segment, for example, energy, smart grid. At MWC, last week, we announced a partnership with Gridspertise. It's a subsidiary of Enel, one of the largest Italian private utility company. 5G connected meters, we're talking about solutions that are basically deployed, imposed and can determine if a pole is leaning -- all connected to the cloud, digital twin in the substation, 5G-connected enterprise, power distribution boxes.

So you keep going. You go to the partnership we announced with Bosch Rexroth, 5G-connected automation systems and robotics. And so we're very excited about that. It's diverse. I will actually confess that our growth is being paced by our ability to execute on all these opportunities. But we're happy that our strategy to have lighthouse customers that will scale within the different segments is working. And like I said, I think we're just scratching the surface on that opportunity.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Great. So a lot of enthusiasm for all the IoT growth drivers. Moving over to automotive. That business grew about 50% for you last year. Can you talk about Qualcomm's offerings in automotive? And how you plan to leverage in the future some of the recent things, the acquisition of a driver and the elements that you're trying to...

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Look, a great question. A lot has happened for Qualcomm automotive in a very short period of time. This is a business that we knew -- and I'll give a little bit of the context, Joe. We knew that automotive will be an opportunity for Qualcomm. Just because when you think about reusable mobile technology, that's a mobile device. And we knew that, that industry was undergoing an incredible amount of transformation. I'd like to tell the story how this whole thing started for me when we're thinking about, okay, we need to connect the car to the cloud. That was the first point.

And then the second point is, if users are driving the cars looking at their phones, there's something that needs to be upgraded in the overall digital cockpit experience. But then we took a very unique approach, and I think that separates Qualcomm from any one of our peers in the automotive space, and explains why Qualcomm got such a fast growth in a very short period of time. We're now working with 26 global brands.

We look at what it made some of the car companies successful. And for them, it was all about platform. They have -- they will build a drivetrain and they will say this drive train, 4-, 6-, 8-cylinder, now EV and they're going to take that across all the different tiers of cars. They will provide a unibody and at that scale across different brands, across different cars, same thing with chassis. So we said, "Why don't we create a digital chassis, multi-tier, multi-generation?" Because then it solves a real problem for a company that has to invest a significant amount of R&D and digital transformation for the same cars that they excel and it creates a different revenue model.

So that's the Qualcomm offering. We said, "Instead of providing a component for a car, respond to an RFP and let's bid for that component, let's stay back. And let's create a digital platform that the core company can build the car around the platform, and that's going to be scaled to a premium car to an entry-level car." We took the same approach, the mindset of phones and taking that multi-generation. And that's the Qualcomm offer today. It includes the ability to connect the car to the cloud. It creates -- it has as a service platform. We are going to launch some of the services now with General Motors, especially soft SKU and ability to upgrade the capabilities or even sell upgrades to the car directly to consumers.

He has the entire digital cockpit experience from dashboard to infotainment, rear-seat entertainment, smart mirrors, heads-up display and it has ADAS and autonomy. And that's for the Veoneer assets, which the one we're buying, which is the Arriver asset, comes into play. We had established a partnership with them even before we made the acquisition. That's why we're already working with them. And the Arriver assets provides a computer vision stack on some of the Qualcomm SoC for ADAS.

And they go side by side what the drive policy software from Qualcomm, which is part of our own R&D with drive cars in San Diego for the past several years. And it's resonating well with the automakers, especially on ADAS and autonomy. And I really like that because I look at the market cap of some of the incumbents in this area, and I say, well, that's a great opportunity for Qualcomm expansion market cap. So we focus -- we're very focused, like what I told my team is, which was the first company that selected the incumbent? And it was BMW. And then everybody follows, so we focus on BMW. We won the BMW design for ADAS and the digital chassis.

The second one, ADAS design win. It was -- we announced a digital chassis with Renault. We have the GM partnership as well, both Super Cruise and Ultra Cruise running on our platform. And stay tuned, I don't want to make more announcements today, but stay tuned, there's a lot more coming. So -- it's working. It was a good strategy. I think it's adding value to the car companies, and we expect that to be a business that continues to grow.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Great. And then finally, before we get to phones, about halfway through the presentation, we -- before I get to the phone piece, which is interesting...

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

There's a lot to talk about it, beyond phones.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Yes, exactly. We talk about the RF business a little bit. You've grown that from a pretty small base in 4G to a $4 billion-plus business with a large footprint in module RF. Can you talk about your modem plus RF approach and what the growth drivers are for that business?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Yes. Look, we are now the #1 in wireless RF front-end. I think despite the skepticism that we face in entering this space and understandable, we needed to get a lot of new capabilities and core competencies and there was a market that has already 4 well-established players. We took an approach that is a typical Qualcomm approach, and it goes back to the technology conversation we had at the beginning of this conversation, which is -- can we take a system-level approach and develop a better platform? And set the benchmark performance, knowing that especially when we get to 5G -- 5G is about managing spectrum and adding a lot of complexity and how you manage performance, especially on difficult spectrum environments?

Look, the C-band is great, but it's in the 3 gigahertz categories, not like 700 megahertz or -- and millimeter wave, there's nothing special about millimeter wave. It's just the only spectrum that is available in large quantities. And we took that approach and we, of course, made an acquisition of filters and the rest, switches, we acquired. The rest we developed organically with developer leadership, PA, envelope tracker, tuner, switches in all filters from low, mid and high. We developed technologies to become the performance -- I remember people telling me, nobody can compete with FBAR. I think now with our ultraBAW and ultraSAW, we had exceeded FBAR now. Every single Snapdragon Gen 1, every single one of the latest Snapdragon is shipping with Qualcomm, ultraSAW and ultraBAW. It becomes a new benchmark of performance.

So we took that approach. We took the scale of Qualcomm that we test our modems and RF all over the world with every carrier, every different corner. That's why it's not that easy to build cellular modems. And we provide a solution that performs better, is pretested to our consumers. And as a result, it was adding a lot of value to them. We grew very fast.

What are we doing next? We continue to be a success story. The absolute majority of our Snapdragon designs has front-end attached. We expanded that to Wi-Fi. We started to attach RF front-end in to Wi-Fi. And we're taking that to our growth business, so automotive. The absolute majority of automotive designs include RF. We're going to taking that to IoT, especially when both cellular and Wi-Fi, and I think will continue to be a growth story for Qualcomm.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Okay. Great. So maybe we just pivot to talk about the SoC handset business. Maybe starting with just the supply environment that you've been dealing with. We've had demand outstripping supply for a while, particularly on the SoC side. There are questions about pockets of inventory starting to pop up in China, things like that. Can you just talk generally to what you're seeing in the business?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Yes. Look, we -- for our business, and we continue to see very high growth, we just look at what happened in the last quarter performance of our handset business. By the way, I want to say this. I know I get a lot of feedback from investors that, look, it's how excited they are with our growth business beyond handsets, the automotive and IoT. That's a new growth opportunity, but there's nothing wrong with our handsets business. It's still growing, and I like the fact it's still growing.

And what we see right now is the result of this changing strategy. Our strategy is now very focused. We're focused on premium and high-tier Android devices. That's our mobile strategy, and it starts and ends there. And we did establish Snapdragon as synonymous of flagship Android. And we're a little bit -- in the premium tier, you're a little bit -- it's a smaller number of units, but it has the higher value of the wallet of the market. That's why I think our revenue -- I don't know if this last -- I think last fiscal year, was 40% higher than our nearest competitor. And I think that's a little bit less impacted by the fluctuations you see, especially on the lower tiers of units.

We continue to see growth. We're very happy on how the year is going to unfold, all consistent with our projections. We see 2 very important of growth. And I think now that the Galaxy S22 already launched, I can talk about it. If you just look at where we are right now with Samsung, at I've been saying for more than a year, that we saw because of our execution and how Snapdragon was performing, that we were in an upward trajectory on Samsung's share. Right now, if you just look at the G S22, I have everything but Europe. And we're now probably north of 70% share. We used to have in the order of 40% to 50%, which is great.

Vivo, OPPO, Xiaomi, Honor, all their flagships in the high tier is on Qualcomm. And that strategy is working. Of course, the other driver is there was a shift in the landscape as a result of what happened to HiSilicon, and we've been very happy with how that has been driving a lot of growth, especially our customers that traditionally were not premium tier customers. Like the China customer, Vivo, OPPO, Xiaomi, Honor and now they're very focused on the premium tier. But that's, in essence, how we think about the mobile core business, and we're happy strategies working well.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Great. Yes. I know you've sized that as kind of a $10 billion opportunity around China with the evolution of the HiSilicon situation. I guess you have a lot of people rushing into the breach that HiSilicon left behind. Is there a risk that we kind of overbuild as we move into that?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

No, because to start with, we never had all the chips we wanted. So it -- so we kind of -- it self-corrected. It was a self-corrected mechanism. We knew that especially in 2021, demand was very, very high. but demand far exceeded supply. And I think there was a self-regulated mechanism.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Great. And you mentioned the success of high tier. I mean the price points of a higher end Snapdragon chip have been pretty healthy, and you see a lot of demand in those upper tiers. I guess do you see a limit to that? Do you see -- is there an elasticity that takes place when you start to get to these higher price points?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

It's a good question. I think a lot of theories, I will say, at least over the past couple of years about what will happen with handset ASPs and in silicon ASPs. I think there's been a lot of those line in the sands that have been crossed already. However, I do think we have a mature market right now in smartphones. It's easy to see what is -- what's the premium tier? The premium tier is about performance leadership. He has a little bit less -- volume is less impacted at the tier by the ASP. High tier is a little bit different. You have a balance.

But there is a trend that we see today, which is silicon content is increasing. And especially, I think the need for more processing, the nature of processing in phone is changing. One of the fastest growth areas for us in Snapdragon 800 exactly AI processing. It's really inference processing is our NPU. GPU continues to grow because mainstream gaming is coming to mobile. So those things are going to continue to drive healthy ASPs. And I feel we are focused in the part of the market that we can have the share of wallet we want. And we're not focused on chasing every single unit. And I think that makes us feel pretty good about where we are in terms of ASP trajectory and operating margin of the business.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Okay. Great. So you've talked about the oversupply -- sorry, the tightness of supply being resolved kind of second half of this year. Can you talk about where in supply chain, if any, you're seeing that improvement? It seems like it's still relatively tight for SoC supply?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Look, I still have more demand than supply. And that's across all businesses. It's not a single business that I'll say, look, we see a balance. We're doing better. We're doing much better as we said into '22 than we were in '21. A lot of the actions we put in place are now coming to fruition. We launched a bunch of new products. They're all dual source. Our entire road map is now multisource. We're probably the only company that could, in record time, I'm talking about like less than half a year, multisource or premium tier only leading node across TSMC and Samsung, both for LPX and for FinFET TSMC. I think that if anything speaks to, I think, the quality of the Qualcomm engineering team.

And because of their multi-sourcing capabilities, we have a little bit more flexibility. We're also seeing capacity plans that we put in place. If you look carefully in all of our filings, you'll see that we had indicated past quarters prepayments. And with that, with secure capacity. And I think we're leveraging our scale. So we're doing better than some of the other companies.

So I expect that second half 2022, it is a much better picture, I think, for us on supply. Having said that, demand, especially from the growth business, they're not showing any signs of a slowdown, and I still have more demand than chips today.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Okay. Great. So your long-term guidance from the Analyst Day, you talked about double-digit growth for the next 3 years, and that assumed a material decline at Apple late next year. I don't know how much you can say about that particular customer, but if that's going to -- if that magnitude of decline is going to happen, they need to get carrier-qualified fairly imminently. And I think there's -- they don't have that in every region at least. So can you just talk anything you can do to help us with that Apple dynamic?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Oh, happy to. Look, I'm happy to talk about it. I've been very open, very transparent about this. It was the right thing to do for business. I think what we did in our New York Analyst Day, when we look at our mobile strategy, when you look at our mobile strategy, our mobile -- and I just outlined that to you, that is premium and high-tier Android. And that's where we're very focused on.

By the way, I had provided kind of a metric before, but you can do the math. When we sell a Snapdragon 800 to a flagship Android, if you look at the revenue and earnings of that chip versus selling a modem, we're talking about ranging -- depending on the chip, depending on the customer, it could range from 4x to 5x or 6x. So it's a much better business. That's our mobile strategy, and that's where we're focused on right now.

We wanted to remove the Apple uncertainty of Qualcomm. If anything, I think there was obfuscating investors and preventing investors from actually see what is happening with this company. And actually, we have, for example, growth in automotive and IoT that is actually bigger than the opportunity we would have with Apple. And I wanted to remove that overhang from the company. So we basically made the following assumption: in 2023, next year, we have less than 20%. I'm assuming you have some legacy devices, single digit going forward. We'll move past that, and we're focused on our mobile strategy on flagship, high-tier Android and then automotive and IoT.

Now the question that you ask is true, which means the way we normally work is the chip that we make it commercially available and stable in that year before a product launches with our modem, so I'm assuming that they will be ready with their solution. If they're not, they know where to find us. But I think we're very focused on what's going to drive long-term value for Qualcomm. And I've been laser-focused on long-term customers and customers have been growing with us over many, many years.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Okay. Great. Maybe if we could talk on -- talk briefly on the royalty business, the QTL side of your business. Again, since I got here, this has been easy. You've sort of got everyone signed up for 5G for multiple years. I know there was...

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

There's nothing easy.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

There was some drama that happened before that. And it did in the absolute level of your royalties actually are a little lower than they were a few years ago. Can you just talk about the long-term outlook for that business?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Look, that important business of Qualcomm will always be part of Qualcomm. It's a very stable business. I think it's very clear what Qualcomm is as a company is just look at the opportunity to talk about the 7x expansion of addressable market. It's the semiconductor business is the growth engine of the company now and into the future. And the licensing business, a big component of the value of the company. It generates earnings

and it's very stable. Everyone is licensed. It's probably the most stable times we had of the business. As a result of the trying times, we had the business validated pretty much every jurisdiction with Japan, in Korea, in Europe, in the United States.

There has been resolution of -- in our case with the FTC. And we feel optimistic that, that will continue to be a stable business. We'll generate great cash flow for the company. And growth, we've been very conservative about that. We do believe, as a company, the 5G is going to go everywhere and there's opportunity for that business to grow with 5G. But I think right now, the message is we're focused on stability and then focus on the growth of the company within the semiconductor segment.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Great. That's helpful. And then, I guess, I'll just ask the question because it comes up a lot. If you do lose baseband market share with someone like an Apple, any impact on your royalty business?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

I think we -- those are separate. We're licensed with Apple, the licensing contract. It's -- has also an opportunity to -- there's an option for us to be a bit extended. Very early to say. We can't really speculate about it. But remember, we feel pretty good about not only the validation of the model across every jurisdiction that matters for us, that matters for them. And I think the value of our patent portfolio has been tested, and we feel good about it.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Okay. Great. So just a couple of more financial earnings questions. Capital allocation, healthy rate of buybacks recently in excess of just antidilution. Should investors expect share buybacks to be the focus versus M&A? And any update on the -- I guess you just raised the dividend. Any update on the dividend?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Yes. Look, so let me start with the stuff that is easiest to talk about. I think we just announced yesterday, a 10% increase in dividend. We also talk about going forward as the business grow. I think we provide a framework how dividend will continue to grow for the company. We are doing antidilutive buyback. This is a company that has done opportunistic buyback.

I will argue that one of the biggest return on investment was our $30 billion buyback that we did back then. But also, we -- why are we going to continue to look at opportunistic buyback? We have a lot of opportunities of growth ahead of us in other segment as we talked about before. So we also wanted to have the ability to execute on M&A.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

So on that M&A point, I mean, you've done some things, you've done NUVIA. We talked about the Arriver, which is the ultimate result of the Veoneer. You've also, in the past, before you were CEO, looked at big transactions like NXP, which didn't go through. How do you think about M&A as a strategy going forward?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Very simple. At this point, we -- when we look at the growth ahead of Qualcomm, we have a lot of opportunities that we're executing on. And we've been very focused on those opportunities. And I'm saying focused accepting that we have a lot of opportunities. Just the conversation we just had on auto, IoT consumer, IoT networking, IoT industrial in addition to mobile.

We're not looking for transformative M&A in the company. We don't think we need transformative M&A. But we are looking into M&A that accelerate our path, especially in the growth engines outside mobile. And that's the framework, I think, for M&A going forward. And it's all going to be focused about accelerating the pace of growth in the new growth vectors.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Okay. Great. So I'll ask one more question, and then we'll open it up to the audience. Just bigger picture, do you think there's some element that investors are missing about the Qualcomm story? We've talked about a lot of different growth drivers. Is there some fundamental misperception in the...

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Oh, absolutely. Absolutely. And maybe I'll just be a bit provocative when I say it. I think there are 4 things that not all investors are getting, 4. And I'll start from the very top, and I go down. Number one, mistake to think of Qualcomm as a comms company. I know our name is quality communications, I know that. I know everybody look at Qualcomm, they see 5G. They don't even see Wi-Fi, even though we're #1 in Wi-Fi retail and enterprise, #1 Wi-Fi in mobile. They don't see Wi-Fi. They see cellular, 5G.

And it's a mistake to think that Qualcomm is only a comms company. We're always going to have comms. But our growth in processor is significant. We're different. We're different than AMD. We're different than NVIDIA. We're different than Intel. But just a conversation, we have about how looking at what's happening, for example, with Macs and the opportunity with PC, tells about the type of processor we are. We shipped way more processors than modem.

So Qualcomm, it's a connected, more than anything, it's a connected low-power, high-performance processor company. And it's not about the CPU, it's not about the GPU, it's about the CPU, the GPU, the NPU, the DSP, the ISP, all of these in an SoC. So I think there's still some natural inclination to look at Qualcomm as comms and mobile, I think that's the very first one.

Second one, the diversification strategy is working. It's working. It's been reflected in the numbers. We had in excess of $10 billion. We look at the growth rates. And it's like you don't see some of those growth rates in large-cap companies. And it is accretive to market. So it is working. So while I think there's some that want to believe, I think it's already happening. And I think it's being reflected on a consecutive performance, I think, that we're seeing for Qualcomm.

Number three, and that one I'm going to spend some time on it because I hear that all the time. Personally, I think the comparison to what will happen to Qualcomm in 3G and 4G are incorrect. And I think there's a tendency of investors just to look at the track record of 3G and 4G compared to 5G. And I'm telling you, it's completely different. And I'm going to say categorically, we're not interested in commodity phone SoC. We're not interested in that. We're being very focused in the share wallet where we can drive our innovation road map. That's why our mobile strategy doesn't even include modems. Our mobile strategy is a Snapdragon SoC for premium and high. We're not chasing units. I know we retired the MSM metric, but almost like it doesn't matter because it's about the share of wallet. And we're focused in areas that we're going to be accretive to earnings, has a sustainable business, has the ability to keep the business over the long time and being consistent with the earnings trajectory of the company.

So I think investors still think about the 3G and 4G comparison. But -- and that's why I spent some time saying, my mobile strategy is very clear. There's a beginning, it has an end, and that's what we're doing, that's working. To the point that I think HiSilicon exit this space, our share with Samsung is increasing. I think when investors understand that even in a mobile market, which is -- doesn't have the same growth rate, I think we probably should get higher multiples on it. But we need to continue to execute and prove that story.

Here's the #4 thing that investors are not getting. While we have not made any heroic assumptions, where they make no heroic assumption about the growth rate, we do have a couple of things in our growth trajectory that could be very significant. One example of that is PCs on the Windows ecosystem really transition to an ARM-based architecture. If anything, by the sheer force of the ecosystem that has also been driven by Apple, that's a very big opportunity for Qualcomm. We have made various conservative assumptions because we know it's a new -- we're new entering into the space. We've been doing this for years, but this could be very big, especially if the entire ecosystem changes.

The metaverse could be very big, especially if you think about you have a pair of glasses that go along every phone as the entering step to be before several years later when glasses may be more capable, that could be an opportunity. And I said before, this digital transformation, the IoT industry, which is scratching the surface of the opportunity. And when you look at the hyperscalers, one of the things that is difficult for them when they look of their ambitions of digital transformation, there's a lot of friction in the system for you to connect the device, had a software in the device, integrate into somebody enterprise systems and get out the way to the cloud. And that's why you see us doing a lot of partnership direct with the hyperscalers because what makes -- what's unique about the Qualcomm processors, our strategy on the industrial IoT is not about a microcontroller that you connect to a Wi-Fi chip.

Now it's a high-performance processor. They can run an OS. It doesn't matter what is there, we can -- it's connected 100% of the time. If it's not connected, it's useless, and you can have the ability from the cloud straight gets access to the device and remove a lot of friction. So that could also be a big opportunity. So what we like about it is, I think, Qualcomm has been shown, I think, growth in our results with all those growth business. We've been conservative, and it's the right thing to do in the opportunities ahead. But the trends are very positive. And we don't need all of those trends to go in that direction. It just take one, and we have a significant upside to our model.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

That's very clear. Thank you very much for that. All right. So let's see if we have any questions from the audience, just raise your hand.

Unidentified Analyst

How do you break between low and mid-tier and high-tier phones? What's the breakpoint?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Yes. So on to what's actually happening from a consumer standpoint, it's easier to explain that way. So if you think, for example, I'll pick a customer, let's say, Xiaomi as an example, right? If you look at their latest Mi flagship, they use the latest Snapdragon 800, we call [a Gen 1]. But then the phone right below that, right below that, they use last year Snapdragon 800, which is Snapdragon 888. The phone right below that, which now I'm talking about the phone #3, they will have sometimes Snapdragon 1 year before, which is we call [N-2] or the Snapdragon 700 or in some cases, they will have a MediaTek high tier. So that's how the market actually works.

The first 2 is always the latest Snapdragon, last year Snapdragon. The tier right below, it could be in N-2 , Snapdragon 8, Snapdragon 8 is very powerful from a brand standpoint. It could be Snapdragon 700 or it could be a competitor phone. And then I think if you look at the tier right below we call mid-tier, right below, we call Snapdragon 600 and then Snapdragon 400 is below that. I think it's a competitive market between us and MediaTek into that space.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

If I could just follow on from that. If you go from $500 million-ish 5G phones last year to 700 plus this year to maybe $1 billion next year. We're getting 5G at some point is coming into that lower tier. Does that affect you guys? Does it change the opportunity for you guys?

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Look, 5G, it's a great question, Joe. 5G is going to go to every tier because just you need to look from an operator perspective and from an operator perspective is you have to convert the spectrum to 5G. You need to reduce the number of networks you operate. It has a direct impact on their OpEx in TCL.

So when we go from 4G to 5G, we have talked about a 50%, the 1.5 metric. When you look at the increased silicon content from 5G for us, the value of 5G modem as well as our front end, that remains true as we upgrade. So as 5G continues to grow, we'll see that 1.5 multiplier coming in.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Yes. You've materially outperformed that 1.5 multiply already. Fair point. Any more questions from the audience? Right, well then we'll stop it there. Cristiano, thank you so much.

Cristiano Renno Amon - *QUALCOMM Incorporated - President and Chief Executive Officer*

Well, thank you. Happy to be here. Thank you all for listening. Thank you.

Joseph Lawrence Moore - *Morgan Stanley, Research Division - Executive Director*

Thank you.
