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<<Ruben Roy, Analyst, MKM Partners LLC>>

Okay, thank you all for joining us here and on our webcast. My name is Ruben Roy. I am the semiconductor analyst at MKM Partners. And I'm really pleased to have Cirrus Logic here with us today Thurman Case, CFO and Carl Albery VP of Marketing.

And Cirrus has been stocked up well for a while and they're doing a lot of interesting things in various markets having to do with audio. So to start maybe Thurman for folks on the webcast and here that might not know the story as well, maybe you can just do a brief overview of Cirrus Logic, where you came from and kind of the markets that you're targeting.

<<Thurman Case, Chief Financial Officer>>

Sure. So just in general Cirrus has been around for over three years or so. So it's not a brand new company but I would say our focus over the last 10 years really associated with Jason Rhode taking the CEO job has been focused on audio and mixed signal analog, digital audio technology.

We are an engineering company primarily, and so when I say that is we're totally outsourced, so we do not own any of our own manufacturing. And our main focus and our niche focus is as Carl gets into the products and the components that we develop, our product design cycles can be two, three, four years. And we are a niche company in the sense that we heavily invest in R&D being an innovative company and be on the cutting-edge of innovation is really our differentiating factor.

And is really what drives our ability to continually grow revenues and grow over the years. So other than that, I think a gist about the products would be better.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Sure, it is a good start and I guess we could start in with your largest market handsets and some of the innovations obviously low power is a very important specification for any component that lives in a battery operated handset. But I'm wondering you know over the years we've seen some of your customers, the content that you've been able to provide increase at those customers.

So maybe you could walk us through just some of the innovations that go into content increases in a smartphone. What's left to innovate on I guess would be a question? How are you going to continue to go up that path as a smartphone market and unit starts to mature a bit?

<<Carl Alberty, Vice President-Marketing>>

I think what you've seen in our product portfolio over the last frankly 10-years as this evolution from a foundation of really high performance, low power mixed signal capabilities, so capturing analog and voice signals, processing and then doing the playback through headphones, speakers, the earpiece receiver. So that is like a fundamental building block and what we've seen is the complexity of these devices as touch got introduced, as other use cases get introduced, the need for ultra low power voice processing emerged. The better part of seven years ago we've spent significant money investing in innovation around the voice experience within handsets. So layering on top of this kind of baseline of high performance mixed signal, which our biggest customers expect and demand and kind of – they want us to be on a treadmill of like every generation, like let's make it better and make it lower power.

And then with that lower power, you can layer on features. So having signal processing capability to layer on top of that for addressing things like noise cancellation, echo cancellation and the more sophisticated use cases coupled with the addition of multiple microphones for improving the voice experience or the audio experience has led to a significant increase in content for us.

So the complexity of our underlying mixed signal and the voice processing and the demand that our customers have with respect to that has driven content. We've also seen a significant uptick in the demand for louder speakers and better quality audio playback through speakers. And in particular over the last couple of years seen customers starting to move to having multiple speakers, which obviously is good for us in terms of the content.

And then new emerging applications, be that haptic for kind of mechanical button replacement, noise cancellation and digital headsets as the market transitions to fully digital cable headsets. So there's been a really big evolution around audio use cases but also voice and just the proliferation of speakers and just consumers getting a better experience out of their handset versus just the phone.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Yeah, what are the cadence that you would go on let's – I guess pinpoint down to a codec and maybe talk about, are there the processors that are proprietary to Cirrus is that one of the things that you guys can differentiate on. What is the cadence of bringing out a new codec to market?

<<Carl Alberty, Vice President-Marketing>>

Sure, yeah, I mean as Thurman mentioned at the start, I mean we could at any given time, we could be working on something that we know won't be in a production for several years. Because obviously the complexity of the product development cycle could be

upwards of a year to develop a product and then a customer takes another year to wrap a product around that.

And with advanced kind of technology especially in the analog and mixed signal realm as we push forward on new process nodes, like we've got to be planning and developing that technology several years ahead of when we actually want to deploy it on a product. So from a customer perspective it varies.

I mean we've – even within handsets I mean you've got customers who are perfectly fine working on something that they'll ship for two years. And we've got other customers who can't see beyond six months, right. That requires us to be pretty nimble and to have a pretty wide portfolio of products that can address that time to market necessity but also just the functional and costs kind of levels for the different facets of handsets.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Over the last couple of years and the Wolfson acquisition was a transformative acquisition giving Cirrus more exposure to the android market. And you've talked about sort of addressing the android market and maybe even the mid-tier Android market. How does that play into sort of your research budget? And how you think about I would imagine that there are a lot of customer specific issues that you have to worry about in that market, more fragmented in that type of thing. So how much focus is being put on expanding into those markets?

<<Carl Alberty, Vice President-Marketing>>

Frankly a good bit, I mean we view it more as like the customers who are buying that mid-tier kind of priced handset, they deserve the same kind of features that you get on a flagship device. So you can't necessarily afford that all at the same time or to the precise degree you get it in a flagship component.

But things like louder speakers, better voice quality, and noise cancellation, and just voice interaction, with your device, like consumers should get that, right? And it might start in a flagship component. And so the research part of our budget, relative to how do we address the mid-tier is around optimizing the use case and the cost structure to be able to be supported in a mid-tier priced handset.

And we see a ton of traction, I mean the China market in particular is a big opportunity and it's driven by kind of flagship features but at mid-tier price points. And frankly speaking, we've been like so focused on our top customers. But that's really driven our R&D budget and for good reason there is massive opportunity, it has driven a lot of growth for us which is exciting. But the products and technologies and support infrastructure for the rest of the market is a bit unique.

And so it's just been over the last 12-months or so that we've started rolling out products that are purpose built for mid-tier devices. So we're seeing a lot of good design activity

and a lot of traction kind of pulling features down into the mid-tier that were once reserved just for the kind flagship cycle.

<<Ruben Roy, Analyst, MKM Partners LLC>>

So when you say purpose built, to me that sounds like the margin structure, can be kept at corporate average if not better.

<<Thurman Case, Chief Financial Officer>>

All of our margins with the exception, there can be an exception on some particular product lines where margins would be a little lower. But whenever we cost down our margins are maintained at the corporate level. And again we have to do that in order to be able to fund our R&D, our margins have to be and our operating profit needs to be at a certain level for us to continue to be on the cutting-edge and fund our innovation.

<<Carl Alberty, Vice President-Marketing>>

And it's not even with the customers, it's not, hey, just give me this audio thing that works right. I want this particular feature or use case enabled in this tier and the architecture of the product is maybe different, it requires a different kind of solution from us. And for sure there's economic pressure within that segment. But it's nice because the customers aren't just, okay, this seems to be good enough, it's actually I want this feature and this capability.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Right. Okay, maybe we can switch over to, you mentioned digital headsets and noise cancellation and there's a lot of work going on there sort of early days for Cirrus. But maybe you can just us catch-up to, how you are looking at the market and how you expect sort of that part of the market to help Cirrus from a top line perspective?

<<Carl Alberty, Vice President-Marketing>>

Yeah, I mean we're super excited, I mean we've been shipping solutions in digital headsets and adapters for over a year now, and we think the market like the traction around customer is wanting to deploy digital headsets, just continues to grow every day. And so we view it as I guess its a billion unit plus market in terms of that total installed base of analog headsets and with the emergence of digital connectivity with USB Type-C connectors in the Android ecosystem. It's a blank canvas for us in terms of being able to enable active electronics and a headset that can enable use cases, you would never have been able to do without a battery which for a smartphone OEM like having a battery and the headset as a complete non-starter from our perspective.

So for us it's about kind of helping transition that billion unit analog headset market into something where you can have tangible voice and audio quality kind of metrics that are

enabled by the digital connection. And so what that requires from our product perspective it is like a portfolio of solutions to address kind of the basic high performance digital headset function all the way up to and including the continuously adapted ANC solutions, which are obviously more expensive. But really representative of transformative kind of experience for the consumers that was once reserved for a \$300 to \$400 headphones.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Right, here's another instance where you have probably even more of a fragmented less sophisticated set of designers, if you will, obviously of these products. And so that's created some new challenges for Cirrus, maybe you talk about that and where you are and sort of addressing some of those challenges?

<<Carl Alberty, Vice President-Marketing>>

Yeah, I mean for sure. I mean the guys who build headphones of a billion unit market don't have experience building electronics and dealing with complex hardware and software and the acoustic challenges of having multiple microphones in a given form factor.

So I mean for that reason I think the market has moved a little bit slower than we would have hoped, it's like this really fantastic technology where you have to build the product, right. And so we've spent a ton of time investing in the infrastructure, the tool, the test, the production and like so much more than just a chip, right. I mean it's so much more than that and require the significant investment in terms of just how you build the product.

So that's been a unique kind of learning experience for us, I mean it's very different to have a demo of a technology versus being able to build it in huge volume, right which the industry is just not used to. So it's encouraging to see like that making progress but, yes, it definitely moves slower than we would have desired in terms of having that technology ready to be deployed and customers kind of wanting it and then just the reality of how do you like build the infrastructure of the manufacturing product.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Is your microphone technology relevant sort of to the near-term opportunity in digital headsets or longer term, how do you think about that?

<<Carl Alberty, Vice President-Marketing>>

I mean, we for sure think about the microphone component of the signal chain as kind of a long-term strategic impact. We ship microphones today, we have some really neat compelling technology relative to really compact monolithic size-sensitive microphones, which frankly are great for headsets. But we kind of take the long view of like how do we

like as a supplier for everything in the signal chain, which is really a luxury like how do you abstract a little bit and look at the microphone, the codec.

And from a customer's perspective, what's the best way to architect that. What is the right way to instantiate bits of technology in either place such that you're delivering the right thing to the customer. So we for sure see that as a longer term kind of revenue driver as we've started to architect solutions that are kind of purpose built, kind of have the sum be bigger than the parts individually.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Before I open it up to the floor maybe we could just switch over to voice biometrics, voice recognition, it's been an area that you guys have been quite excited about in recent times and you've recently taped out your first chip. It seems like there's quite a bit of buzz around this space lately, a lot of other chip companies that I follow, started to talk about these types of products even Intel launched in SDK for Amazon's Alexa a couple of weeks ago. So maybe you could just walk us through how you're viewing the opportunity, what the initial feedback has been from some of the customers that have gotten the chance to look at the chip and how you think that market plays out?

<<Carl Alberty, Vice President-Marketing>>

Yes, I mean the feedback in some cases have been stunned silence, jaw on the floor like wow, that actually really works, I mean that for us I mean our vision like we're not setting out to replace touch as an interface but we think there's so much augmentation opportunity for use cases in a handset. You're not going to be able to touch it. So having your voice as the primary interface in that case, we think makes a ton of sense. And you mentioned Amazon and Alexa. I mean that whole ecosystem of products that might not even have displays. I mean including headsets, including things within the home. I mean like voice could be the primary interface.

And that is directly in our kind of line of sight in terms of what we're really good at which is ultra-low, power-low latency signal processing. The voice biometric piece for sure we view as a high impact strategic kind of investment where it's not just about the machine to human interface, it's about with a high degree of security and accuracy being able to detect whether it's me talking or you or Thurman and having that be as secure as a fingerprint just from a biometric capability perspective and varying degrees of an instantiation relative to how you trade off accuracy versus kind of security.

So we're super excited about what that represents in the markets we service today but also the emerging kind of, hate to use the phrase but I would see and kind of smart home and even cars I mean like that that voice interface will be what people come to rely on in the future how the consumer products will work.

<<Ruben Roy, Analyst, MKM Partners LLC>>

When I think about security, typically their standards associated with those types of applications and functionality, can you – are there standards being put in place for voice authentication, are you working with the standards?

<<Thurman Case, Chief Financial Officer>>

Yeah, there's definitely conversations happening I mean nothing kind of industry-wide in terms of a standard or an accepted way to test measure and we kind of benchmark voice as a biometric kind of authentication. But we are involved in that conversation and kind of trying to drive that forward just to make that more ubiquitous kind of understood technology, so its not there yet but it's for sure kind of in sight.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Okay. Do you think that's something that's necessary though to kind of move the authentication part of it?

<<Thurman Case, Chief Financial Officer>>

Sure, yeah, we looked at it.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Okay, it'll take some time perhaps?

<<Thurman Case, Chief Financial Officer>>

Right.

<<Ruben Roy, Analyst, MKM Partners LLC>>

But in the meantime as you said I mean voice as an interface is to starting to show up in a lot of the areas...

<<Thurman Case, Chief Financial Officer>>

For sure, the standardization is not necessarily a gate to deployment. But as a broad kind of – as a broad industry wide acceptance kind of thing I mean it's for sure necessary.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Okay. If there are any questions out there?

Q&A

<Q>: Just elaborating on these questions about where you are going kind of tied back to your financials, can you reiterate the – meaning that probably a little how much Apple kind of – how much more content is in the pan and the AirPods versus the HomePods coming like you're talking kind of pretty detailed level but bringing that to a product level, you kind of tie in what are your financials like ASPs, just kind of help me think about those drivers, where the secular trends are intersecting with your financials is really the question.

<A – Thurman Case>: Just in general and then Carl can talk about the actual products. I mean we don't really get into our actual ASPs with any of our customers but essentially we – our products can have a cadence to them where if it's a first generation as a product, you'll have higher ASPs and then the second generation if it's a same product, you'll definitely see the ASP erosion, we've always said that it's probably in general comparable to about a 10%, which is corporate average I mean it can differ with different products.

So how that ties in with our financials is obviously the volumes, last year we had a huge step up in content. And we've talked pretty openly about that I mean we added. There was a dongle and a headset that was added so there was a couple of codecs in there. We talked about those types of codecs being in general without quoting an ASP around \$1. So you saw that plus an added amplifier and amplifiers in general are in the \$0.50 range. So as those things change over time, we always can add content through not only just additional components but through expansion of our functionality that we provide and the value that we add to the customer. So that can vary from year-to-year.

<Q>: Okay.

<A – Thurman Case>: You like to add anything?

<A – Carl Alberty>: Yeah, I think what Thurman's kind of walking through is indicative of what I started with, in terms of the complexity of the underlying product based on the requirements in use cases within a handset. So obviously the audio and the voice processing has driven more substantial need for the codec to do low power DSP. And then as you start introducing stereo speakers and button replacement, you have additional amplifiers, and then the transition to digital headsets, as Thurman mentioned, represents...

<Q>: [Question Inaudible]

<A – Carl Alberty>: We don't generally, publicly comment on where we're in or not in. Yes. I mean, you can find teardowns. But in general like the transition to digital headset represents a great opportunity for us whether it's wired or wireless. There's a customer expectation that you will enable a host of voice related kind of capabilities within the product regardless of whether it's wired or wireless. I mean, the bulk of that market today is obviously wired. And with the emergence of digital connectivity like USB-C, you can put active electronics on the headset without a battery, which for our customers is brilliant, right, because it opens up this whole platform of innovation opportunity within

the headset itself, which was something traditionally reserved for really expensive headsets.

<Q – Ruben Roy>: That's being specifically into anyone headset I'd say though that anecdotally the user experience seems to have been much better on some of these digital headsets that have been coming out lately.

<A – Carl Alberty>: Yes.

<Q – Ruben Roy>: And I think that would be a little bit of a tailwind as other providers of these devices start to think, gosh, this is actually happening, and there aren't people like them.

<A – Carl Alberty>: Yes.

<Q – Ruben Roy>: They're not losing them or whatever.

<A – Carl Alberty>: Yes.

<Q – Ruben Roy>: And so it seems like – it just seems like there's a potential tailwind coming because of that. And to your point, as we get more USB-C in the Android market, potentially that that is actually the tailwind as well.

<A – Carl Alberty>: Yes. We believe – we definitely believe that. I mean, it's super exciting. Just, I mean, the notion of having that digital connectivity to do these types of products just wasn't there, and for sure it wasn't there with the robust connector in the Android ecosystem. So that's, I mean, for us it's like a dream come true because I mean you can start to enable all these cool things that you just never could do in a mainstream product before. And that again spans from just really high fidelity audio experience with kind of basic audio processing all the way up to the ANC solutions. So we've got a purpose build products for the different kind of tears within that segment. I mean, yes, we're starting to roll those products out now which is exciting. So, yes, the tailwinds with the more recent product, I think it's just a tip of the iceberg.

<Q – Ruben Roy>: Yes.

<A – Carl Alberty>: As it relates to voices and interface, and noise cancellation, and just other experiences, that's for sure an exciting time.

<Q – Ruben Roy>: So I guess to follow-up on Joe's question to surround, how to think about the model? So obviously there has been some consistency to how you're dealing with some your customers and content increases, price reductions and that type of thing. But at the same time right now you guys are working on some growth markets and some of these markets like voice biometrics side, I think are more software intense, and so you're having to focus resources on that type of thing.

So how much of visibility do you have, Thurman, into – I don't know, at 12- to 18-month period where content could shift and demand could shift and at the same time you need to invest. Is your operating profit model something that you guys think about in that short of a timeframe and try to adhere to or do you kind of –?

<A – Thurman Case>: Well, absolutely. For us our number one metric in terms of how we measure the company is operating profit. So, and we've talked about maintaining operating profit in those mid-20 range is where we need to be in order for our business model to work because that allows us to generate a profit return value to shareholders, but also continuously invest in R&D.

And so our visibility is pretty good, but technologists like Carl and the teams that are working on our products, it's not all driven by customer requests or things like that. So we're innovative and a lot of the things that we develop we develop with the anticipation of where we think these markets are going to go, and what products will be valuable. And then we go to the customers, and we also work closely with customers and they talk about what they are looking for, what they need, and those development activities are ongoing always. Some of them are shorter, some of them are longer.

But one of the things we've said, SG&A relatively flat, it will grow in terms of salary increases and bonuses can vary. But in R&D we'll continue to invest in that R&D appropriately in terms of making sure that we have enough products in the pipeline and our pipeline is fertile.

One of the things that Jason talks about and I think Carl would echo, this is – because we've both been at the company for a very long time, we've never seen the significant amount of opportunities in front of us that we see now in terms of we have multiple markets, some of these markets are in their very, very early stages of development, which means there are significant growth opportunities with customers and in the market overall. And for us then we have to ensure that we fund, where we fund the R&D activities that we think are going to take advantage of the market opportunities because we can't fund everything.

<Q – Ruben Roy>: Right. And I guess that's a great point or segue into sort of the balance sheet. And you guys had a big acquisition, a transformative acquisition of Wolfson. I mean, how important is that as part of your philosophy on use of cash right now? I mean, with these opportunities starting to present themselves is M&A. A way to more quickly address some of the opportunity.

<A – Thurman Case>: Well, M&A is always a high priority for us in terms of we've done over the last few years smaller tuck-ins. These are technology acquisitions that we feel augment or accelerate our product roadmaps. But that doesn't mean that we're not looking for another transformative type of acquisition. We would certainly be interested and we look for those, but they have to be actionable and they have to be reasonable. And in the market today valuations are high and a lot of things are going on, but that doesn't keep us

from putting M&A at the top of our list in terms of what we would use our cash for in terms of growing the company.

We still – we have – we paid down our debt, so we really have no debt on the balance sheet. And we'll still do share repurchases and things like that on an opportunistic basis as we see is appropriate. But M&A is at the forefront, but has to be the right type of acquisition. And we're not going to do it for pure scale; it has to be a technology and growth type of vision.

<Q – Ruben Roy>: Right.

<A – Thurman Case>: Yes.

<Q – Ruben Roy>: Any other questions in the final couple minutes? I guess the only other thing Carl that comes up from me, from investors is that in some cases, and this happens not just in the handset industry but in other industries, where OEMs are trying to – they're dealing with their own margin structure and trying to create value. And in some case there's been this move to take the technology and bring it M&A captive essentially. And so when you think about some of the things that your value at, I mean, is the audio piece is something that you think eventually can go captive in some of these large markets that you're addressing?

<A – Carl Alberty>: Well, I mean, certainly. Yes, certainly, that could happen, right. I mean, frankly we've been around for 30 years, we've got a hugely, broad portfolio of technology in IP. And frankly I think we're spending from an R&D perspective, I mean, we are purely focused on audio and voice. So I think our ability to skate faster than anybody else whether it's captive or not like, and being able to address the kind of emerging needs and kind of use case requirements for these handsets and all these other cool new products, I mean, that is fundamentally our advantage, right.

So, I mean, of course, it's a possibility that something could go captive, I mean, you can see that in certain parts of the market. But for what we do, we don't view that as a huge threat that keeps us up at night because we're focused on the innovation piece of it. And like there's plenty of problems to be solved and all sorts of new ones that are like barely identified yet in terms of voices and interface, and just these emerging applications. So like the market is ripe for continued innovation in our domain. So our view is just like that's where we need to focus on, things will happen, but all we need to do is focus on delivering value to customers and continuing to invest in R&D, and that should sort of sort-out.

<<Ruben Roy, Analyst, MKM Partners LLC>>

Right. Well, with that we're at the end of our time. I really thank you guys for coming. It's a great discussion and I love to actually be able to use the technology that I talk...

<<Thurman Case, Chief Financial Officer>>

Gladly.

<<Ruben Roy, Analyst, MKM Partners LLC>>

It's nice to have a chance to drill down into some of the higher level stuff. So thanks again.

<<Thurman Case, Chief Financial Officer>>

Thanks. We appreciate it.

<<Carl Alberty, Vice President-Marketing>>

Yes, we appreciate it.