



Akoustis Technologies, Inc.

Third Quarter 2020 Investor Update Call

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C O R P O R A T E P A R T I C I P A N T S

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P R E S E N T A T I O N

Operator

Good day, ladies and gentlemen, and welcome to the Akoustis Technologies Business Update Conference Call.

As a reminder, this conference call is being recorded. At the conclusion of the Company presentation, Akoustis management will take questions. To ask a question, please press star, one on your keypad to be placed into queue. A replay of the call will be available on the Investor Relations section of the Akoustis website.

I will now turn the conference over to your host, Tom Sepenzis, Director of Investor Relations. Thank you. You may begin.

Thomas Sepenzis

Thank you, Operator, and good morning to everyone on the call. Welcome to Akoustis Third Quarter Fiscal 2020 Business Update Conference Call. We are joined today by our Founder and CEO, Jeff Shealy, Interim CFO, Ken Boller, and EVP of Business Development, Dave Aichele.

Before we begin, please note that today's presentation includes forward-looking statements about our business outlook. All statements other than statements of historical facts included during this conference call, including statements regarding our strategies, operations, costs, plans and objectives, including the timing and prospect of product development and customer orders, our expectations regarding achieving design wins from current and future customers, the possibility of entering into collaborative or partnering relationships, potential impacts of the COVID-19 pandemic and guidance regarding expected revenue for the current fiscal quarter are forward-looking statements. Such forward-looking statements are predictions based on the Company's expectations as of today and are subject to numerous risks and uncertainties. The Company and our management team assume no obligations to update any forward-looking statements made on today's call. Our SEC filings mention important factors that could cause actual results to differ materially. Please refer to our latest Form 10-K and Form 10-Q filed with the SEC to get a better understanding of those risks and uncertainties.

In addition, our presentation today will also refer to certain non-GAAP financial measures. A reconciliation of these measures to the most directly comparable GAAP measures is presented in our earnings call highlight release available in the Investors section of akoustis.com.

I would now like to turn the call over to Jeff Shealy, Founder and CEO of Akoustis.

Jeffrey Shealy

Thank you, Tom, and welcome, everyone, to our 2020 third fiscal quarter business update call.

I am happy to report that this morning, we announced our first major Tri-Band WiFi design win for our 5.2 and 5.6 gigahertz coexistence filters with a Tier 1 OEM. This is the second design win the Company has been awarded in the last 30 days, including the 5G small cell network infrastructure filter announced in early April. The WiFi design win announced this morning consists of two RF filter products in the customer's CPE design with multiple RF filters utilized per system, supporting up to 4x4 multiuser MIMO.

Today's announcement marks another enormous milestone in commercial validation by a Tier 1 WiFi OEM for Akoustis' patented XBAW RF filter technology. In addition to this first design win in WiFi, our sales funnel remains active with multiple potential customers, including a second WiFi design win that we expect by the end of the September quarter. We are gearing up our supply chain for production ramp for both 5 gigahertz WiFi filters to supply multiple filters per CPE device. With first production deliveries expected late in the June quarter, we plan to continue ramping commercial production for this customer during the September quarter.

Now we progressed into the June quarter with our first two design wins in both 5G small cell network infrastructure and WiFi CPE, expanding our commercial production beyond the defense market, purely a testament to the extent of how far we have progressed in our integrated device manufacturing or IDM business model, leveraging our patented XBAW filter technology. To put the Company's commercialization progress into context, we now have 12 completed and design locked RF filters in our product catalog. This represents a six-fold increase in commercial XBAW products over the last year.

I'm also pleased to report that we have achieved every milestone we previously shared with investors for the March 2020 calendar quarter. We have organized today's call to give you both a progress report and target milestones on each of our five main filter market segments, those being 5G network infrastructure, both WiFi 6 and WiFi 6E, unmanned aircraft systems or drones, defense and 5G mobile handsets. In addition, Ken will provide an update on our financial results. And finally, I will highlight our expectations and milestones beyond the March quarter.

Before I talk about each of our market segments, I would like to spend a moment discussing the impact that the COVID-19 pandemic has had on our business and touch on what we expect over the coming months. As a result of the pandemic, Akoustis has taken several precautionary measures, including remote work authorization, work site isolation from outside visitors, an expanded shift operation in our manufacturing facility in Canandaigua, New York.

The two shift structure has improved our wafer cycle times, although this has been offset somewhat by overseas assembly and test, or OSAT, supplier delays. Our IDM model has offered Akoustis incredible flexibility in the current environment and has allowed us to continue to develop and ship our products with minimal delays thus far. To be clear, Akoustis has continued to operate with all key personnel as an essential business in both New York and North Carolina, during this pandemic crisis, and we have used the opportunity to accelerate product development along our strategic roadmap. We greatly value our employees and appreciate their flexibility and discipline staying safe during this challenging time.

Looking ahead, it is difficult to know the impact of the pandemic, particularly on our customers regarding their respective supply chains and product launches.

Now I would like to move on to our business performance by market segment, beginning with 5G infrastructure.

Akoustis is currently working with two Tier 1 network infrastructure customers. The first is focused on global 5G infrastructure across multiple sub-6 gigahertz frequency bands. The second is focused on multiple new radio bands for 5G small cell deployment globally, including an initial focus on the Asian market. We announced our first volume commercial order for 5G small cell network infrastructure filter applications from our second customer at the beginning of the March quarter. We began to ship against this order at the end of the March quarter and expect to ship the remainder in the June quarter. This led to our first 5G network infrastructure design win, which we announced in early April. We currently expect to receive a follow-on order from this customer in the June quarter and to ramp commercial production in the second half of calendar 2020.

We have also recently expanded our XBAW filter product portfolio for the growing small cell market with two new RF filters for 5G new radio frequency bands.

These first two products have been completed and are ready to support preproduction shipments, and we expect to announce sampling of a third key RF filter to an existing small cell customer in the coming weeks. In 5G networking, wide bandwidth, high power handling, low insertion loss and high out-of-band rejection are critical product performance features. Such high-performance delivered in a small form factor solution as well as our existing RF filter portfolio above 3 gigahertz, where 5G is being deployed worldwide, ideally positions Akoustis to be an early leader in high-performance BAW filters for the rapidly expanding 5G network.

As of today, we have two Tier 1 customers, and we have recently engaged a third Tier 1 company with respect to our high-frequency XBAW filter solutions for 5G network infrastructure. With respect to our first Tier 1 5G network customer, we continue our engineering engagement without delay. However, in-person discussions have been delayed due to the pandemic. Akoustis was chosen to develop micro acoustic XBAW filters for this customer, given our ability to provide an ultra-small form factor solution while satisfying challenging RF specifications while delivering high-power handling performance. We shipped XBAW filters against an open development order in the March quarter and continue to progress towards locking our production design. We still expect these filters to ramp into production in the second half of calendar 2020. This customer continues to evolve its platform, and we continue to be closely aligned with performance characteristics that can enable their 5G architecture.

At the end of January, we also completed the design of our Citizens Broadband Radio Service, or CBRS XBAW filter. Later this summer, the FCC is expected to begin auctioning new CBRS spectrum known as Priority Access Licenses, or PALs, that operate between 3.55 and 3.7 gigahertz. The CBRS bands will provide cellular carriers new and additional sub-6 gigahertz spectrum and can be a key enabler for making 5G deployment possible by providing last-mile data service and improving coverage of individual unlicensed networks. The good news for Akoustis is that the utilization of CBRS bands within the 5G network will likely require a significant amount of high-frequency filters to deal with a multitude of coexistence issues.

To our knowledge, Akoustis continues to be the only supplier providing BAW filters for this application, and we are receiving positive feedback on the performance and size of our CBRS filter solution. Given the current lack of micro filter solutions that can target this high-frequency spectrum, CBRS represents another new first-to-market greenfield RF BAW filter opportunity for Akoustis. Last December, we sampled filters to three potential CBRS customers and expect that number to double over the course of calendar 2020.

In conclusion, the number of opportunities we are seeing in 5G network infrastructure has expanded over the past year, and we expect many carriers to continue deploying sub-6 gigahertz networks in calendar 2020 and beyond. We believe that the 5G network infrastructure filtering needs play right into our sweet spot and that our current 5G infrastructure customers will deliver Akoustis significant revenue growth opportunity moving forward.

I would now like to discuss our opportunities in our growing WiFi business. Today, Akoustis continues to have the first and only tandem 5 gigahertz WiFi Baw micro coexistence filter solution. Specifically, we now offer both a 5.2 and 5.6 gigahertz micro filter solution for the current Tri-Band WiFi CPE market, which we expect will grow into a high-volume market with the goal of delivering significant revenue growth. As I mentioned at the beginning of this call, we announced our first design win with our coexistence solution for Tri-Band WiFi CPE devices with a Tier 1 customer this morning. Barring further and unexpected impact of coronavirus, we expect this customer to ramp production in the second half of this year, and are excited to see our market-leading products in WiFi enter volume production.

We are now shipping preproduction filters and tracking multiple active engagements with OEMs, ODMs, including Tier 1 enterprise-class WiFi OEMs, two reference design partners/SoC makers, two distribution partners and one channel partner. Our team has done an excellent job filling our sales funnel, and we are now in the advanced stages of the sales cycle with several customers where we expect additional design wins over the coming months.

As some of you may know, the FCC announced in late April, the approval of 5.925 to 7.125 gigahertz for unlicensed use which is the largest spectrum addition since the FCC allocated unlicensed spectrum for WiFi in 1989. The next-generation of WiFi that is expected to use these new frequency bands is called WiFi 6E. This approval will create another significant new band or a combination of bands over the next several years, and Akoustis plans to be ready. According to a marketing leader for the WiFi Alliance, an industry backed group that oversees the implementation of WiFi, the WiFi 6E spectrum allocation is "the most monumental decision around WiFi spectrum in its history and increases the available unlicensed spectrum by nearly 4x". In advance of the April FCC approval, Akoustis has been developing filters to support the emerging WiFi 6E market. We have been active in developing wide bandwidth piezoelectric materials, device models, RF filter designs and have filed key patents surrounding our approach to WiFi 6E RF filters. We have stated that one of our milestones for the first half of the year is to introduce our first WiFi 6E filter, and we remain on track to deliver a significant update later this quarter.

Moving on to the defense segment. The transition to high-volume packaging in our defense products in early calendar 2019 led to the successful ramp of our 3.8 gigahertz filter for the defense market last year.

We have received additional new orders and expect our customers to utilize the filter in multiple new designs over the coming quarters. Since the successful delivery of our 3.8 gigahertz filter, our customer awarded Akoustis with a follow-on order to develop five additional S-Band filters for new phased array radar systems. Each of these five new filters operate within the 2 to 4 gigahertz spectrum. Our team did an outstanding job, and as we announced in early January, where we delivered all five of the new S-Band filters on time and in under six months. We still expect to enter production with our customer with these new S-Band filters in the second half of calendar 2020. During the March quarter, we shipped a repeat order of our existing 3.8 gigahertz filter product to our customer for use in a phased array radar program.

In February, we announced that we had expanded our end markets with a development order from a Tier 1 defense company for XBAW filters targeting the unmanned aircraft systems, or UAS market. Akoustis was asked to develop and deliver samples of this drone filter for control in non-payload communication links. While this XBAW filter was originally expected to be developed and sampled by the end of the September quarter, we were pleased to announce last week that we were able to deliver samples to the customer in under three months, a testament to our improved modeling capability and our XBAW manufacturing efficiency.

Finally, in the handset market, we secured our first 5G mobile customer engagement in June of 2019, with a Tier 1 customer who contracted us to develop an XBAW filter in the sub-6 gigahertz frequency band for 5G mobile handsets. We delivered our first 5G mobile filter sample to the customer in just two months, and given the performance of that filter, our customer responded in the September 2019 quarter with a new order to develop two additional 5G filters in the ultra-high band frequency spectrum. We successfully delivered the two additional 5G filters to the customer in the December quarter. That customer is currently evaluating our filters for use in future 5G platforms. In the March quarter, we continued our engagement with this customer for evaluation in future mobile RF modules. The dialogue remains active and engineering activity continues today.

The mobile handset market is our largest potential BAW filter market opportunity by both unit volume and revenue. It is worth noting that our XBAW filters have already been evaluated by several top Tier 1 and Tier 2 mobile handset OEMs. But, as I have stated previously, many times, Akoustis does not intend to enter the Tier 1 handset market without a partner, at least in the foreseeable future. However, we believe with the ongoing 500% capacity expansion of our New York fab, that we will have the wherewithal to enter the handset market servicing a Tier 2 handset OEM without a partner.

We recently had another very important achievement as we completed our first wafer level packaging, or WLP demonstrator, and in the December 2019, shipped WLP samples to a multibillion-dollar Tier 1 mobile device OEM. This initial demonstrator leverages Akoustis' existing 5.2 gigahertz WiFi filter technology that is approximately 260x smaller than existing dielectric resonator filters used primarily in infrastructure applications. Once development is completed and qualified, this new package will enable us to deliver filters with the form factor required for mobile wireless devices giving the company the opportunity to compete in several large markets, including mobile 5G handsets, tablets and laptops amongst other devices. Our WLP packaging technology is currently in qualification, and we expect to complete qualification for production in late 2020.

Now, I would like to turn the call over to Ken to go through select financial highlights.

Kenneth Boller

Thank you, Jeff. For the third quarter ended March 31, the Company reported revenue of \$363,000, which was down from previous guidance due to a supply chain delay related to the COVID-19 virus, a program delay due to COVID-19 impact on a customer's factory, and an intentional R&D program delay caused by fab prioritization on a new 5G customer program.

On a GAAP basis, operating loss was \$8.2 million for the March quarter, mainly driven by labor costs of \$5.4 million, depreciation of \$0.8 million and other operational costs totaling \$2 million. As a result, GAAP net loss per share was \$0.21. On a non-GAAP basis, operating loss was \$6.4 million and non-GAAP net loss per share was \$0.18.

Cap ex spend for Q3 was \$2.2 million compared to \$2.6 million in the prior quarter, mostly related to the targeted 500% capacity expansion in our New York fab. Cash used in operating activities in Q3 was \$4.4 million compared to \$6.2 million in Q2. The improvement of \$1.8 million is primarily due to the collection of accounts receivable in the current quarter and the payment of one-time GAAP expenses in the prior quarter. The Company exited the March quarter with \$39.7 million of cash.

We previously provided guidance on our quarterly calls. Given industry supply chain challenges related to the pandemic, we believe it is prudent to refrain from providing guidance at this time.

I will now turn the call back over to Jeff to discuss our forward outlook.

Jeffrey Shealy

Thank you, Ken.

I hope everyone appreciates our inability to provide guidance given the ongoing pandemic. However, I want to reiterate that we have orders in hand for 5.2 and 5.6 gigahertz WiFi filters to begin early production ramp later this quarter, supporting the design win we announced earlier this morning. Furthermore, we expect to ramp production in the second half of calendar year 2020 in both 5G network infrastructure and defense. We continue to have success achieving our target milestones across each of our market segments.

I will begin with our new target milestones for 5G network infrastructure. Our target milestones for the June quarter include receiving our second volume order for small cell base station filters for 5G network infrastructure. As we announced in early April, we have received our first design win from this customer for a band n77 filter and target a second design win for small cell base stations by the end of the September quarter.

Finally, we expect to deliver a design locked XBAW filter to our first Tier 1 infrastructure customer by the end of the June quarter to support a volume ramp in the second half of calendar 2020.

In our WiFi business, we expect to ship initial volumes of our 5.2 and 5.6 gigahertz filters late in the June quarter against our first design win announced this morning.

As I mentioned earlier, we remain in active discussions with multiple other potential customers for our 5 gigahertz tandem solution for Tri-Band, multiuser MIMO CPE applications, and we expect to announce a second design win by the end of the September quarter. Additionally, in the June quarter, we expect to deliver our first WiFi 6E filter samples based upon our XBAW RF filter technology.

We believe that we can build upon design wins and volume shipments in WiFi 6, and become one of the first companies to deliver WiFi 6E micro filters to the market.

Moving now to our defense business. We shipped five new S-Band filters in the 2 to 4 gigahertz spectrum to our customer as announced in January. Our customer is currently evaluating the filters, and we expect that it will go into production in the current calendar year. Furthermore, we are currently bidding a new program, which requires multiple new XBAW RF filters. As stated earlier, we developed and shipped our

first drone filter to our customer in April. We expect to receive feedback from this customer over the next few months, and I am pleased that we were able to deliver the initial samples in under three months. We were originally targeting initial samples by the end of the September quarter. We are a bit ahead of schedule on delivery to this customer.

Finally, in the 5G mobile market, we continue to march toward entry into our largest market opportunity by both unit volume and revenue. We will continue to refine our new WLP filter solution as well as work towards a partnership that could help us enter the Tier 1 handset market. We continue engineering engagements with our existing customer for their 5G filtering needs.

In conclusion, we are working diligently to achieve each of our stated objectives, and we will continue to update you on our execution against these objectives each quarter going forward.

The team at Akoustis has done a tremendous job over the past year, and I'm pleased to reiterate that we have 12 design locked XBAW RF filters as of today, a six fold increase in the past 12 months. This growing product catalog puts us in great position to achieve revenue growth in the second half of calendar 2020 and beyond, and we look forward to expanding this portfolio and discussing our progress during future updates. As we discussed in our previous conference call, in order to support our current engagements and emerging sales opportunities, we continue investing to increase manufacturing capacity by 500% to produce hundreds of millions of XBAW filters per year.

Beyond our current expansion, the Company will be positioned to scale our current New York wafer fab to produce up to 5 billion XBAW filters per year when fully equipped by working with a Tier 1 partner or through longer-term organic growth.

I would like to thank those who have joined us on this call. We continue to build our Company on four solid pillars, including strong management and technical staff; strong intellectual property, which currently includes 31 issued and licensed patents and 61 patents pending; large and growing markets with limited historical competition in the high-band and ultra-high band spectrum; and our qualified wafer manufacturing operation, which is expanding to address high-growth opportunities in our target end markets. We are successfully penetrating the WiFi market with our first design win in hand with the world's first tandem 5.2 and 5.6 gigahertz ultra-high band BAW filter solution. Additionally, our 5G engagements with global leaders in both network infrastructure and mobile handset markets have led to our first design win in small cell base stations, providing Akoustis with technology validation from a Tier 1 OEM and strong growth opportunities in high-performance coexistence BAW RF filters.

Finally, I am ever thankful to our employees for their hard work and dedication during this ongoing pandemic as our team has kept the momentum going on our R&D which has led to these first two design wins. I also wish to thank our shareholders who continue to support the Company.

With that, I would like to open the call for questions from the investment community. Operator, please go ahead with the first question.

Operator

As a reminder, if you would like to ask a question, please press star, one on your telephone keypad. Please limit to one question and one follow-up question then reenter the queue for any additional question.

Your first question comes from the line of Anthony Stoss with Craig-Hallum. Please proceed with your question.

Anthony Stoss

Good morning guys, and congrats on the WiFi design lockdown win announced this morning.

Jeff, can you maybe, related to that design win, talk about how many Akoustis filters you think will be in each device as they start to launch? Then maybe just share with us any update, you feel on content overall on the WiFi side.

Then for Ken, I'm just curious your thoughts on kind of OpEx going forward or the timing of your potential breakeven if that timing has changed? Then I have a couple of follow-ups after that.

Jeffrey Shealy

Hi good morning Tony, I appreciate the comments. Let's see, in terms of number of devices, I think what we said in the release that the consumer unit that were designed into is supporting up to 4x4 multiuser MIMO. That would indicate that our filters are supporting up to four transmit received. That would equate to four filters. So there's one filter per transmit received.

In terms of overall content, there's approximately \$1.80 of content per router, and then I think you had some—you had a couple of questions for Ken. I'll let him answer those.

Kenneth Boller

Morning Tony. Just to follow up on our operating cash flow burn rate. I think if you look at our year-to-date average, when we factor out some onetime items, our run rate average is about \$5.2 million, anywhere from \$5.2 to \$5.5 million, and I'd expect that to continue throughout the next few quarters, with the exception of our anticipated build in the inventory to meet our future revenue demand. You'll see an uptick to getting there as well, spend ahead of the revenue.

As far as cash flow positive, still the same guidance we've been giving prior. Depending on the product mix, we intend to be operating cash flow breakeven in the \$11 million to \$15 million of revenue per quarter.

Anthony Stoss

Okay. Then Jeff, as a follow-up, regarding your MIMO 5G infrastructure potential customer. You talked about the ramp in the second half of the year at one point and then also on the call, mentioned kind of late 2020. Do you think that's being more affected by either a slowness due to COVID or just the timing related to this potential customer's own product? Any thoughts you can share on the size of that ramp later this year would be helpful.

Jeffrey Shealy

Okay. With regard to the customer that you're mentioning, we've—we have an internal objective or milestone that we've shared that with investors. We believe for this design cycle, our product needs to be completed and locked by mid-year. We've been focused on that milestone. We're working very diligently to hit that milestone. We're tracking to that milestone at this point.

In terms of the customer and sales, I'll actually bring Dave in, I'll let him comment on the dynamics of a customer's launch and how we fit into that.

David Aichele

Good morning Tony. There has been some, I think, impact, obviously, with COVID-19 with the customer on some of their development, material supply chain and also some of their engineering efforts, shutdowns that they had to work through. But, I think overall, the line of sight and the visibility to the program is still in line with the guidance that we've given. We're working closely with their engineering team because you are looking at a little bit of an architectural change with BAW filter technology versus traditional incumbent cavity-type filters. We're working through that. Yes, everything is progressing well, good technical exchange between the two teams and feedback that they're providing on the evaluation of the samples that we're shipping that were mentioned in the March quarter. Everything is looking positive to the guidance that we've given. Obviously, we'll be able to give a better, I think, line-of-sight visibility update in the June quarter update.

Jeffrey Shealy

Tony, I'll add—this is Jeff. I'll add to that. I think we mentioned in the prepared comments that—and Dave touched on the engineering engagement, has been running strong. Some of the business engagement face-to-face that was planned was delayed given travel restrictions. But I'd say the technical exchange, there were actually some samples that were shipped to the customer during the quarter, those shipped as planned. The engineering dialogue back and forth has remained strong. I do want to remind our listeners that we have a country manager that is on the ground with that—that can interface with that customer. We feel like the dialogue is strong and is ongoing. I'll just add that color to support Dave's comments.

Anthony Stoss

Thanks guys. I'll jump back in the queue.

Jeffrey Shealy

Thank you Tony.

Operator

Your next question comes from the line of Harsh Kumar with Piper Sandler. Please proceed with your question.

Harsh Kumar

Hey guys. I hope everybody in the Akoustis family is safe and sound. I had two. Let me start off with the first one. With this COVID situation, there's been a lot of pressure, people to work from home, school at home. Have you guys seen any positive movement on part of your customers? In other words, I'm trying to find the right words, like have they pressured you to pick up the pace? Or, are you seeing some kind of incentives from them to sort of get things faster to the market? Then I have a follow-up.

Jeffrey Shealy

Hey good morning Harsh, I hope you're staying safe and appreciate the question.

Just in terms of customer activity, we've seen—we certainly have seen this epidemic wave as it's hit multiple countries and cycled through. What we've done is, I mentioned in the prepared comments, how we've taken what we believe is a responsible approach to this social distancing, but we've got to balance that with making—continuing to make progress. In terms of the progress that—as you phrased, pick up

the pace, I would characterize that in the area of 5G. Prior to this epidemic, we had multiple opportunities that we were working on. I would almost characterize with the pace at which 5G is launching, there's been significant opportunities that we've been able to get specifications for. We actually took the opportunity with a responsible workforce approach in both our engineering lab and in the factory to catch up on some designs and actually get some new product out for 5G. I would characterize that specifically in the small cell area. We mentioned the design win for the—first design win.

I think we were fairly bullish on being able to deliver a second design win in small cell in the September quarter. If you look at kind of the machinery at Akoustis during this epidemic, it has been running strong in engineering as well as in the factory. We have not gone down hard during this epidemic. We have allowed nonessential workers to work from home, but the majority of our workforce through additions of shifts as well as separation policy and individual responsibility have been able to continue progress on our R&D roadmap and actually deliver some pretty exciting 5G products and samples to customers during this period.

Harsh Kumar

Okay, thank for that color Jeff. And my follow-up, who—in terms of competition, I guess, in the WiFi space, which is kind of imminent looks like for you guys, and also the defense space, who do you actually see? Is there anybody that you actually see at this point in your form factors, the micro filters? Or, still you're the only one at this point?

Jeffrey Shealy

Yes. So for the—in terms of bulk acoustic wave, I would characterize in the WiFi, very limited competition in BAW. We believe we were first in the market and remain first to market in the products that we're pursuing, having those ready for production and supporting the customers' ramp that we're currently experiencing. Very limited competition in these micro filter BAW filters in the WiFi space. Interesting enough for the—for the small cell market and what I'll call the higher power infrastructure market for 5G where BAW can be applied, we actually have—we've not seen any competitive parts in BAW filters in those markets.

The customer specifications that have come about, and there's additional bandwidth requirements as well as high-frequency requirements, and we feel that we've geared our technology to operate under those conditions. You have to develop actually unique materials to be able to address those applications. The fact that—I think this has been where we've seen and we've been harping on this IDM model where we design and manufacture. One thing that has happened during this pandemic is we have not relied on external supply chains to conduct our R&D and produce our filters. That's been a huge advantage and being able to design these novel piezoelectric materials to address these high-frequency, wide-bandwidth products has been a complete testament to the advantage of our business model.

Harsh Kumar

Thanks. Thank you guys. I'll get back in the queue.

Jeffrey Shealy

Thank you Harsh.

Operator

Your next question comes from the line of Rick Schafer with Oppenheimer. Please proceed with your question.

Richard Schafer

Yes, thank guys. I guess my first question, really, I wanted to ask about maybe an update on your production capacity, sort of where it is today, where you expect it to be? Or, what you're on track for it to be, I guess, by the end of the year? And if you see any constraints today on meeting sort of that second half demand ramp that you're—and revenue funnel that we're talking about it here for the second half of this year?

Jeffrey Shealy

Hi good morning Rick, this is Jeff. Yes, so let me comment on the capacity expansion. For all of our—all the participants here and listeners, capacity is not something that you can just flick a switch and turn it on. It requires longer-range planning and longer-range commitment. For us, what this capacity expansion looks like, it's a two-year plan that we've been executing against. We'll call it a two-year project, if you will. We're about 60% of the way through the capacity expansion from a capital spend standpoint. We are monitoring lead times of products. Some of those have actually—excuse me, lead time of equipment to support the capacity expansion. Some of those lead times we've seen, they move around. Some of those have come down.

Certainly during this pandemic, one of the comments I made was being able to isolate our worksite from outside visitors as a precaution to our employees. That has—so we—certain equipment that may hit our dock may sit there until we open up the installation of—or we open up the worksite isolation rules. We're sort of balancing those things and actually doing, conducting planning around those sorts of exercises.

In terms of impact to our second half, we're on track. I mentioned in the prepared comments that we went to a two-shift structure. We're in the planning phases of making a second shift permanent, and also the—expanding the operation to support a second shift on a permanent basis, also looking at planning exercises for a third shift. We've got a couple of different knobs to expand capacity. The first one that's obvious to do is expand the work shift. The second is making sure we've got the right capital equipment in place to expand. Overall, no surprises too, we conduct long range planning, and we also run through strategic sessions with our Board on that long-range planning, and we stay committed to that too. We've been committed to this two year project, and we will continue to do so to support our business.

Richard Schafer

Thanks Jeff. So just to sum that up, I mean, you don't see any constraints on your growth in the back half of that? It sounds like you're on plan and on target for the capacity you plan to have for second half.

Jeffrey Shealy

We are—our plan is intact, and we're on target for supporting second half capacity.

Richard Schafer

Got it. Got it. Thanks a lot. Then my second question. It kind of goes around the strategic partnership. If you could provide any sense of timing, I know that's probably a tough question to answer. But, sort of where your head is on that strategic—those discussions around that strategic partnership, maybe what some of the major discussion points have been, the things you need to kind of work through to deliver a deal. I'm curious some of the things maybe that you're hoping to get from the strategic partnership?

Jeffrey Shealy

Okay. First and foremost, I'm going to make a couple of comments, and I'll ask Dave to jump in as he runs point on various customer engagements. First and foremost, we mentioned in the prepared comments that—well, first, you asked the question, what are we doing with a strategic partner? It is to focus on—it's a module based approach with a partner that makes other components and actually is the integrator of the module. The objective is to bring our filter technology into a module platform. That's the objective of why to do it.

In terms of what we said in the prepared comments is that, that module engagement was impacted by delays in some of the module assembly. We're working through that. We feel like we're past those initial delays, and I'll be happy to let Dave comment any other color he wants to add.

David Aichele

Yes, good morning Rick. What I was going to comment is exactly what Jeff said, is we've had some delays with the valuation of the technology we delivered, the last two designs in the December quarter. The intent was to do levels of integration so that they can evaluate the total solution in their packaging. That was delayed, and we're still maintaining a technical exchange between the two. I think it's—it really is get to a point that they've been able to fully evaluate the technology in their design and their application as well as continue to obviously do device engineering evaluation with us. Then as Jeff highlighted, obviously, see our ability to meet ramps. I think the work that we're doing right now with the ramp for both the small cell and also the WiFi has given us some credibility to share. Those are things that we're doing to align with the strategic, and again, we'll be able to give an update in the June quarter as to how that progress is going.

Operator

Your next question comes from the line of Cody Acree with Loop Capital. Please proceed with your question.

Cody Acree

Yes, thanks guys, and congrats on the progress. Jeff, I guess, any help with volumes expected during this—with this first WiFi customer?

Jeffrey Shealy

Hi. Good morning Cody. In terms of—I'll make the comment, and I'll ask Dave to jump in here as he's got—he's monitoring a longer-range view of this extremely close. But first, in terms of initial volumes that we've already seen have surpassed 1 million units in terms of orders, and those are just the initial volumes that—and preproduction exposure that we've gotten to this design win.

Dave, you want to add to that?

David Aichele

Yes. I—so yes, Jeff, you can call it preproduction, but basically, they're going through their, what they call P1, P2 builds and then moving into mass production. The good thing is we're getting exposure with a major ODM JDM that's located over in Asia who's a Tier 1 ODM JDM, and getting good visibility from them on orders, as Jeff highlighted, greater than a million pieces, and then also seeing forecast from the

customer all the way out to the end of December right now with weekly demand updates. This is a high-volume application.

As Jeff highlighted to earlier question, the capacity we've been looking at both from the wafer supply and also with the OSAT, the assembly houses that we partner with over in Asia, these are both high-volume, well-recognized partners that are able to meet this ramp as well. We're very well positioned. We've been working on this for a while. Obviously, we've highlighted that we expect additional design win to layer on top of this. We've got, obviously, planning tools in place to support that.

Cody Acree

Very good. Dave, maybe you can help with this. But are you—have you seen any impact or any, I guess, pick up of some of your design activity with your Wifi OEM engagements?

David Aichele

There's, yes. There's been a little bit of impact with, again, COVID-19, a lot of the programs have been pushed out maybe a month to two months, depends on which clients you're talking about and which area. They're all pretty much back on track now, at least actively be in design and support, and we're working closely with them.

The opportunity also with WiFi 6E that we touched on, that's significantly picked up in activity. We were actively engaged with the market before the announcement by the FCC to open up that frequency. But since that frequency has been now opened up, the activity level, both from the chipset vendors and also the OEMs and also the ODMs is picking up significantly. Yes, we're working hard to support right now the WiFi market, not only in the 5.2, 5.6, but also the WiFi 6E and then also the small cell. Those are the ones that are obviously pushing and trying to pull us into the market more aggressively.

Cody Acree

Thanks for that. Then lastly, with the WiFi 6E, that 2 to 4 gigahertz spectrum, how many filters do you expect to design to target that market? Not necessarily just customers but frequencies?

David Aichele

Well, so the—so the WiFi 6E, my perspective on WiFi 6E is that, with WiFi 6, we estimate about 25% of the market is shipping a Tri-Band solution. When you get to the WiFi 6E, you go into—we think a significant maybe doubling of that penetration of Tri-Band systems. It's really that extra spectrum that's increasing the data bandwidth by 5x. The number of MIMO systems that you're talking about. What we're focused on is covering the full 5 gigahertz, which is almost 600 megahertz of bandwidth from 5.17 to 5.835 and then covering the full 6 gigahertz, which is 5.925 to 7.125. You have to have that very tight coexist gap of 100 megahertz approximately. That is very hard to do with any other technology, particularly in the form factor we're talking about than other than a bulk acoustic way. The number of design opportunities and the number of programs are going to increase substantially over the next six months. We've got to get our products sampling, which is a major focus within the company right now.

Jeffrey Shealy

And Cody, this is Jeff. I just want to add to that, and Dave was—touched on it, is that what we're seeing at these—for WiFi 6E as—is, again, this concept of coexistence. You've got two pieces of spectrum, jammed right up against one another, and anytime you hear coexistence challenges, BAW filters are the highest performing technology that you can get around these frequencies. So we're very—that falls into

our favor, at least from a technology standpoint. As Dave said, we've certainly have had some advanced R&D ongoing in this WiFi 6E.

Cody Acree

Great. Thank you.

Operator

Your next question comes from Suji Desilva with Roth Capital. Please proceed with your question.

Suji Desilva

Good morning Jeff, Dave, Ken, nice job on the execution. It's a very challenging environment, impressive here. First question really on the WiFi customer that you're about to ramp. Can you characterize their ability to ship their product and their supply chain? If there's any risk of disruption there or not? Do you have any way to see into that?

Jeffrey Shealy

Good morning Suji. I'm going to let Dave pick that on.

David Aichele

Yes, hi Suji. We have not seen any impact with this particular customer and their assembly partner. Their assembly partner is actually in a region that's not been impacted, so outside of China because this development started in the—pretty much in the December-January timeframe and has just continued. Everything has been going well, and obviously, as we highlighted, we're working through the design phase into mass production and already have the visibility to ramp, and they're in place with all their other suppliers as well, have seen updates from the end customer that all the supply chain seems to be robust. They're working, obviously, with any of the ones that may have been flagged. But we're not one of those ones, and most likely the things are going forward positively with us.

Suji Desilva

Okay. Appreciate that. Then on WiFi 6E, it sounds like an exciting opportunity for you guys, given your product and your specs. But Dave, how would you characterize it perhaps the activity and interest in 6E versus when you initially kind of talked to WiFi customers. If you could calculate the pace of that, that would be helpful.

Jeffrey Shealy

I'll let Dave start, and maybe I'll add some comments.

David Aichele

Yes, the interesting thing, I think, is that we blazed a lot of the groundwork with the BAW filters with the 5.2, 5.6 and a majority of the customers that are engaged with 6E are well aware of us and well aware of the bulk acoustic wave technology and what it can do, and obviously, well aware of the competitive solutions out there. The energy level and the interest is very high. We've got very good credibility out in the market right now because of our ability to deliver solutions that nobody else has to the market. The confidence in us when we come to them with simulations and modeling and test data, it's no longer

kicking the tires with us who are you? What is it that you've got there? It's actually how quickly can we get a design going with you and get to market. This is something that you'll hear further announcements with us over the next six to nine months. But the activity level and the interest level is very high.

Jeffrey Shealy

Yes. And Suji, this is Jeff. I'll add to that. I know there's been some recent news announcements about spectrum licensing. What I want to emphasize to investors is that we didn't just get in the game when the announcements came out. We've been engaging with customers for at least the last nine months on specifications and requirements for 6E. Those have been integrated in our R&D road maps and have been actively staffed. I think we've mentioned—Dave mentioned, watch out for announcements. We put some comments in the prepared section of this call regarding 6E, and I would be looking for a significant update from us later this quarter.

Suji Desilva

Okay. It's very helpful color there. Then lastly, on the mobile smartphone area. You talked about a potential capacity for Tier 2s. Are you engaged with any Tier 2s? Or, are there discussions in the mobile smartphone market? If so, how many? I'm guessing the geographies in Asia, if you are? Just any color there would be helpful as well. Thanks.

David Aichele

Yes, Suji, it's Dave. Yes, we are actively engaged with the Tier 2 market. Yes, you're correct, it's Asia. There's a handful of customers in the China market that have architectures that they can get access to some of the high-level integrations, maybe a little bit more discrete approach. Obviously, some of the troubled bands as the 5G network gets deployed, the—the network providers are putting white papers out and more I guess, critique on the handset providers and also the base stations to improve their coexist and improve their selectivity. There's requirements that are coming out that we're seeing in the 5G spectrum from that 3 to 5 gigahertz. That has interest in bulk acoustic wave filters for that coexist requirement.

What, as Jeff highlighted in the prepared remarks is we're working our qualification, our WLP. We have to get that to a point that we lock that down, just like we've done with our other products, and once we do that, then we can actively work a program with the customer. That goal is to get that started this year. Depending on the timing, you're either looking at potential models in the Tier 2 in 2021 or in 2022 to spend some timing.

Suji Desilva

Okay. Thanks guys.

Jeffrey Shealy

Thank you Suji.

Operator

Your next question comes from the line of Kevin Spellman with DVM Asset Management. Please proceed with your question.

Kevin Spellman

Morning. This is more of a technical question, and you guys kind of hit on it a little in your answers, but there's other companies out there that might design filters that would insinuate that there's a hard limit to the amount of bandwidth at any given frequency that a BAW filter can handle. Like they would say that you're hitting that at your 5, 6, maybe 6% of the frequency is the bandwidth you could do. But, I've seen some of your patents that would suggest you have a patent, you applied for a 5 gigahertz centered at 5.5, that would push that up towards 10%, 12%. Then in 6E, we'd have to do something on order of 18% of that frequency to get that bandwidth. My first question would be, can you do that? Is that possible? And, kind of the second part of that would be, do you need to? Is the market—is the market going to require that there be one filter for the entire n79 or one filter for the entire 6E? Or, will it be chopped up in depending on frequencies used?

Jeffrey Shealy

Okay. Well, good morning Kevin. Let me make a couple of comments, and I'll ask Dave from a market perspective to elaborate.

First question was, can we do it? The answer is in terms of material sets, so this ultimately boils down to some of the material science that goes into these—into the resonator. You have to develop these novel materials. We are using—we have an R&D as well as demonstrated filters at multiple nodes advanced from what's in our 5.6 gigahertz platform for WiFi. I think that's part of the benefit of this IDM model. Again, going back to that. We design our own materials, we produce our own materials, and then we put those materials into the manufacturing process to build these filters. Can we do it? I would answer the question. I think maybe a more appropriate question would be, are we doing it? The answer is, yes, we are doing it, and it is—and it starts with the material science. We've got some tremendous material scientists on staff that are working this problem and producing these materials.

In terms of do you need to do it? There are different ways of producing filters. But one of the technological means to produce these filters with these wide bandwidths is these advanced materials, and we are doing it. In terms of what the market is looking for, let me let Dave comment on that. Maybe I'll follow-up if there's anything else.

David Aichele

Morning Kevin. I'll focus on the WiFi 6E. The requirement is there, the customers and also the chipset vendors want solutions that will basically cover the full spectrum, that 5 gigahertz in the full spectrum of 6 gigahertz. I pushed on that last year, really understanding how hard of a limit it was, and pretty much it was the unanimous statement fact that we need to cover that full spectrum, and you need to be able to obviously not clipped, as they call it, which is cut off either at the pass band or the reject band. The advantage with—and you may say that there's been some question out in the market on the ability of bulk acoustic wave to handle the fractional bandwidth. That's something that Jeff commented on. We're well positioned to cover that, and you highlighted about some key patent filings.

We believe, based on the material science on covering the fractional bandwidth and then also in what they call the quality factor, which is the ability to have this type coexist is critical for this application. Right now, a majority of the technology that is looking at this market from a filter standpoint is not bulk acoustic wave, it's more of a conventional ceramic LTCC type approach, and they don't have the quality factor to be able to co-exist within that very tight gap between the 5 gigahertz and the 6 gigahertz.

This is something that we believe we're well positioned for all the work that we've done and also with the market opening up the spectrum. We believe that the CP market is going to be very strong for us. We also believe that this application could go into the mobile market at some point where they do look at a

Tri-Band architecture and tablets are in—in mobile phones, smartphone. This is, again, aligning well with the bulk acoustic wave technology.

Jeffrey Shealy

Kevin, finally, just in terms of going back to, can we do it? Are we doing it? We've got initial prototypes in the lab for 6E. As we said in the prepared comments, so we expect to have a pretty significant update on this particular market segment later in the quarter.

Kevin Spellman

Okay. All right. Thank you very much. Very helpful.

Jeffrey Shealy

Thank you Kevin.

Operator

Ladies and gentlemen, we have ran out of time for questions, and I would like to turn the call back to management for closing remarks.

Jeffrey Shealy

Okay. Thank you all for your time today. We look forward to speaking with you during our next update call to discuss the current quarter execution against our milestones and future expectations. Wish you all to stay safe, and have an excellent day. Thank you.