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Akoustis Technologies, Inc.

Fourth Quarter and Full Year Fiscal 2020 Business Update Conference Call

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CORPORATE PARTICIPANTS

Thomas Sepenzis, *Vice President, Corporate Development & Director, Investor Relations*

Jeffrey Shealy, *Founder, President, Chief Executive Officer & Director*

Kenneth Boller, *Interim Chief Financial Officer*

David Aichele, *Executive Vice President, Business Development*

CONFERENCE CALL PARTICIPANTS

Rick Schafer, *Oppenheimer*

Anthony Stoss, *Craig-Hallum*

Harsh Kumar, *Piper Sandler & Co.*

Suji Desilva, *ROTH Capital Partners*

PRESENTATION

Operator

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

As a reminder, this 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 telephone keypad to be placed into the queue. A replay of the call will be available on the Investor Relations section of the Akoustis website.

I'll now turn the floor over to Mr. Tom Sepenzis, Vice President of Investor Relations, for Akoustis Technologies. Please go ahead, sir.

Thomas Sepenzis

Thank you, Operator, and good morning to everyone on the call. Welcome to Akoustis' Fourth Quarter and Full Year 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 the 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 measure 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 Fourth Fiscal Quarter and Full Year Business Update Call.

Last week, we announced the introduction of our new 6.5 GHz WiFi 6E XBAW filter, which, when paired with our existing 5.5 GHz filter introduced in June, creates the industry's first and only tandem ultra-wideband BAW filter solution for WiFi 6E. This morning, I am happy to begin our call by announcing that we have already received our first order for our new tandem BAW filter solution for WiFi 6E. These two XBAW filter solutions cover both unlicensed WiFi 6E bands between 5.1 and 7.1 GHz with superior coexistence performance compared to alternative filter technologies.

WiFi 6E is the next revolution in WiFi technology with two key bands, specifically 665 MHz of spectrum centered around 5.5 GHz and 1.2 GHz of spectrum centered around 6.5 GHz. This new spectrum was allotted by the FCC in late April of this year. We have shipped early samples of our new 5.5 GHz filter to multiple SoC and OEMs and have already received positive feedback. Our 6.5 GHz filter solution is expected to sample this quarter. Interest in our WiFi 6E filters has recently grown dramatically as our solution offers superior coexistence capability compared to any alternative WiFi 6E filter solution we have seen in the market, without compromising adjacent channel integrity. This will allow OEMs to deliver CPE devices that can utilize the entire spectrum offering increased bandwidth and improved performance. By having the industry's only 5.5 and 6.5 GHz tandem BAW-based filter solution, we expect that WiFi 6E will become one of our primary revenue growth drivers moving forward.

Now, moving on to FY20 Accomplishments. As the June quarter marked the end of our fiscal year, I would like to take a moment to discuss the accomplishments Akoustis has made over the past 12 months.

In June of 2019, we were shipping only one commercial filter, a 3.8 GHz XBAW filter for phased array defense systems. At that time, we had also completed development of our first 5.2 GHz WiFi filter for trimode multi-user MIMO CPE routers and other devices. Since that time, we have locked the design of 12 additional XBAW filters, including our 5.6 GHz filter for WiFi 6, two band n77 and one band n79 filter for 5G small cell base stations, a CBRS filter for 5G base stations in the U.S., five additional S-band filters for the civilian and defense market and our first drone filter. Additionally, we introduced our first wafer

level package, or WLP, demonstrator, which has positioned us to qualify WLP-based XBAW filter solutions by the end of 2020. All told, this equates to roughly one new filter design completed every month over the past year, which now positions us to pursue design wins across all our primary target markets.

For those of you who have been following Akoustis for some time, you will hopefully recall several years ago that I spoke about our plan to develop innovative RF filters for new and emerging markets versus mature applications. I referred to this as "skating where the puck is going". To put that into context, our business thesis was always to be the first, or early, to our primary end markets with advanced micro BAW filter solutions that address applications in the high frequency spectrum, from 3 GHz to approximately 7 GHz. Such applications include worldwide 5G deployment, both in 5G network infrastructure as well as the 5G mobile segments, tri-band WiFi routers in both WiFi 6 and WiFi 6E, automotive, defense and drones.

As of today, and excluding our two new WiFi 6E filters introduced over the last three months, we have 14 high frequency BAW filters that are design-locked and commercially available, and of those 14, six are the only commercial BAW filters available anywhere in the world today that cover a specific frequency and/or filter application, with four being in 5G network infrastructure, one in defense and one addressing the drone market.

In previous conference calls, I spoke about our plan to make significant capital investments in our New York fab to increase manufacturing capacity by 500% to have the capability to produce hundreds of millions of XBAW filters per year. To that end, over the past year we spent approximately $10 million on manufacturing cap ex, whereby we added multiple advanced pieces of equipment enabling the design and manufacture of our RF filters. We expect to continue making investments over the next 12 months and remain on track to grow our filter unit capacity to hundreds of millions of units by this time next year.

Through our product development and capital investments, we are currently ramping our first 5G small cell and WiFi 6 multi-user MIMO CPE design wins. In the second half of calendar 2020, we expect to ramp at least two additional design wins in 5G small cell network infrastructure and one or two additional design wins for WiFi 6 CPE. Overall, Fiscal 2020 was a transformational year for Akoustis, as we made great strides in transitioning from an R&D-focused company to a commercial manufacturer of high-performance RF filter products.

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 continues with several precautionary steps, including selective remote work authorization and work site isolation from outside visitors. Overall, we have experienced incredible flexibility from our in-house manufacturing model in the current environment, as it allows us to continue to develop and ship our products with minimal delays. To this day, Akoustis has continued to operate with all key personnel as an essential business in both New York and North Carolina during the pandemic and we continue to accelerate product development along our strategic roadmap. We greatly appreciate our employees and value 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 onto our business performance by market segment. We have organized today's call to give you both a progress report and/or target milestones on each of our four main filter market segments, those being 5G network infrastructure, both WiFi 6 and WiFi 6E, defense, and finally 5G mobile handsets. In addition, Ken will provide an overview of our financial results, along with forward

revenue guidance, and finally I will highlight our expectations and milestones beyond the September quarter.

Beginning with 5G network infrastructure, wide bandwidth, high-power handling capability, 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 GHz, where 5G is being deployed worldwide, ideally positions Akoustis to be an early leader in high-performance BAW filters for the expanding 5G network. As of today, we have two tier-1 customers and we have recently engaged with more than four additional OEMs with respect to our high frequency XBAW filter solutions for 5G network infrastructure.

Our first network infrastructure customer is focused on global 5G infrastructure across multiple sub-6 GHz frequency bands, and the second is focused on multiple new radio bands for 5G small cell deployment globally, including an initial focus on the Asia market.

With respect to our first tier-1 5G network customer, we were chosen to develop micro acoustic XBAW filters, given our ability to provide an ultra-small form factor solution while satisfying challenging RF specifications, including demanding high-power handling performance. One of our important milestones for the June quarter was to deliver a locked design to our customer under an existing purchase order. I am pleased to report that we delivered high power RF filter solutions in June against a mutually agreed upon specification. As a result, the customer approved payment under the purchase order. However, as the customer has been designing their system in parallel with our development, they also updated their filter specifications. This resulted in the need for an additional design spin through our fab and we expect to deliver final packaged filter products to the customer by November. In parallel, we are currently negotiating a commercial agreement with the same customer and we believe that we remain on track for product launch next year.

Moving on to our second network infrastructure customer, we announced our first volume commercial order for 5G small cell filter applications at the beginning of the March quarter. We began to ship against this order at the end of the March quarter and continued to ship against this volume PO in the June quarter, and expect to complete this initial order in the September quarter. This led to our first 5G network infrastructure design win, which we announced in early April. Our customer is expected to enter production with this first design in the current quarter, and we expect volumes to ramp over the next 12 to 24 months. Additionally, in the June quarter we received a second design win for another band n77 small cell filter solution, which we expect to ramp into production in the second half of the current calendar year, in support of the accelerated deployment of 5G network in the Asia market.

In late July, the FCC began the auction of the Priority Access License portion of the Citizens Broadband Radio Service, or CBRS, spectrum for the U.S. market. The CBRS bands operate between 3.55 and 3.7 GHz and will provide cellular carriers new and additional sub-6 GHz spectrum and can be a key enabler for making 5G deployments possible by providing last-mile data service and improving coverage of individual unlicensed networks. The good news for Akoustis is that this utilization of the 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. While the FCC auction ended up being over a year late, it now finally paves the way for local, regional and national carriers to begin deploying CBRS base stations and networks, opening a new market outside of Asia for sub-6 GHz 5G deployment.

As we announced in March of this year, we have a design lock our first CBRS XBAW filter and have sampled it to eight CBRS equipment makers, up from the three customers we announced last quarter. While the timing of design wins and customer ramps is difficult to predict, we do expect that CBRS will deliver significant revenue growth in calendar 2021.

In conclusion, the number of opportunities we are seeing in 5G network infrastructure has expanded significantly over the past year and we expect many carriers to continue deploying sub-6 GHz 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. Akoustis was the first company to commercially offer a tandem 5.2 and 5.6 GHz WiFi BAW micro coexistence filter solution for the current tri-band WiFi 6 CPE market, which we expect will grow into a high-volume market and deliver significant revenue growth for Akoustis.

We announced our first design win for our coexistence solution for tri-band WiFi multi-user MIMO CPE devices with a tier-1 customer during the June quarter, marking our entry into our second high-volume commercial market after 5G network infrastructure. We began to ramp at the very end of the June quarter with this customer and we continue to ramp in the current quarter.

We are now shipping production WiFi 6 filters and tracking multiple active engagements with OEMs, ODMs, SoC makers, distributors and channel partners. 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 5.9 to 7.1 GHz for WiFi 6E unlicensed use, which is the largest spectrum addition since the FCC allocated unlicensed spectrum for WiFi in 1989. This next generation of WiFi is expected to use the existing 5.1 to 5.8 GHz unlicensed bands, which we refer to as the 5.5 band, along with new allocated 5.9 to 7.1 GHz bands, which we refer to as the 6.5 band, to deliver higher data rates.

In anticipation of the next generation WiFi standard, which promises to deliver higher data rates, we invested in the development of the industry's first tandem ultra-wideband 5.5 and 6.5 GHz BAW-based coexistence filter solution covering the two WiFi 6E bands within the 5.1 to 7.1 GHz unlicensed spectrum. The engineering challenges in delivering these new filters include high frequency operation, ultra-wide bandwidth and high adjacent band rejection, leveraging key performance features of our XBAW filter technology. 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.

In early June, we announced delivery of the first samples of our new 5.5 GHz XBAW filter, the industry's first high performance micro-filter for the emerging WiFi 6E unlicensed bands that covers 665 MHz of spectrum between 5.1 and 5.8 GHz, and, as we announced last week, we have introduced the world's first tandem ultra-wideband micro-filter BAW-based solution for WiFi 6E coexistence that covers the full 1.2 GHz of spectrum from 5.9 to 7.1 GHz.

In our press release this morning, we announced we have received our first order from a tier-1 enterprise OEM for both tandem WiFi 6E filters and we are driving as quickly as we can to deliver qualifiable, production-ready 5.5 and 6.5 GHz WiFi 6E filters by the end of calendar 2020. We expect commercial production and revenue growth to start by mid-calendar 2021.

In our discussions with OEMs, ODMs and SoC vendors while developing these two filters, interest and demand has been growing dramatically. Some OEMs are choosing to develop custom solutions for WiFi 6E. As a result, during the June quarter, we announced a development agreement and purchase order for custom WiFi 6E filters from a tier-1 OEM for multiple filters in the 5 and 6 GHz spectrum.

Whereas activity in WiFi 6 remains strong, the interest and demand for WiFi 6E filter solutions is intense, as many OEMs and ODMs have quickly shifted new product design to address WiFi 6E, and as of today Akoustis is the only company in the world that has a BAW-based tandem 5.5 and 6.5 GHz micro filter solution for WiFi 6E which covers the entire 5.1 to 7.1 GHz unlicensed WiFi spectrum. In addition, we strongly believe there will be a need for BAW micro-filter solutions for WiFi 6E in mobile handsets, and we are already well into development for filters and modules to satisfy what should be a very sizeable opportunity. In summary, we believe the next evolution into WiFi 6E will drive significant unit and revenue growth for Akoustis beginning in the first half of calendar 2021.

Finally, in the handset market, we successfully delivered two 5G filters to our first customer in the December quarter. The customer is currently evaluating our filters for use in future 5G platforms. In the June quarter, we continued our engagement with this customer for evaluation in future mobile RF modules. The dialogue remains active and engineering engagement 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 select 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 for 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.

Beyond customer-driven activity previously described, we have a dedicated engineering resources focused on dramatic package-size reductions; specifically, the development of advanced WLP and WLCSP solutions to address the next generation of 5G mobile products. Working with a 100% North American supply chain, Akoustis has been developing a WLCSP process with the capacity needed to support the high volumes associated with the mobile device market. WLCSP technology development has been steadily progressing through calendar 2020, with pre-production parts expected to be available in early calendar 2021. We are also actively developing flip chip wafer level die solutions. Flip chip provides a low-cost WLP technology supporting improved performance and smaller footprint integration. We expect this solution to be fully qualified by the end of the current year.

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

Kenneth Boller

Thank you, Jeff.

For the fourth quarter ended June 30, the Company reported revenue of $365,000, which was flat as compared to the previous quarter, but represented a greater than 350% increase in our core filter product revenue.

On a GAAP basis, operating loss was $8.2 million for the June quarter, mainly driven by labor costs of $4.7 million, depreciation of $0.9 million, and other operational costs totaling $2.6 million. As a result, GAAP net loss per share was $0.28. On a non-GAAP basis, operating loss was $6.6 million and non-GAAP net loss per share was $0.19.

Cap ex spend for Q4 was $3.4 million, compared to $2.2 million in the prior quarter, mostly related to the targeted 500% capacity expansion in the Company's New York fab. Cash used in operating activities in Q4 was $4.9 million, compared to $4.4 million in Q3. The increase of $0.5 million is primarily due to the $0.6 million increase in other current assets.

The Company exited the June quarter with $44.4 million of cash and cash equivalents, versus $39.7 million at the end of Q3. The increase in cash resulted from mindful management of our balance sheet utilizing the at-the-market financing instrument during the ongoing pandemic. As a result, we added $10.8 million net of cash to the balance sheet, after all fees, at an average share price of approximately $8.02.

Last quarter, we did not provide guidance given industry supply chain challenges related to the pandemic. Uncertainty and timing of customer production ramps related to Covid-19 contribute to lower visibility to guide revenue. Despite such ongoing challenges, we are fully booked with backlog in-house to support revenue growth of at least 50% sequentially in the September quarter, driven by the commencement of production in the 5G small cell market and a continued ramp of our ultra-high frequency 5.2 and 5.6 GHz WiFi filters.

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

Jeffrey Shealy

Thank you, Ken.

Overall, we expect to see revenue from all our target end market segments in the September quarter. Our Company continues to strive to achieve our targeted milestones across each of our market segments.

Here are our new target milestones, beginning with 5G network infrastructure. Consistent with our earlier discussion related to our first tier-1 infrastructure customer, we expect to deliver a design-locked XBAW filter by November, which is a reset from last quarter given the customer's specification change in early summer.

For our second tier-1 infrastructure customer, we announced in early April that we received our first design win for a band n77 filter for small cell base stations and we received a second design win in the June quarter. We are currently shipping against the first design win and expect initial shipments for the second design win late in September quarter.

Now, moving on to our WiFi business. As Ken indicated, we are excited to announce the continued ramp in the September quarter with increasing shipments of our 5.2 and 5.6 GHz WiFi filters for our first consumer WiFi 6 CPE product, which we expect will be available both online and in retail stores by the end of the calendar year. This is clearly a major milestone for Akoustis.

In addition, we remain in active discussions with multiple other potential customers for our 5 GHz tandem WiFi 6 solution for tri-band, multi-user MIMO CPE applications, and we expect at least two additional design wins in WiFi 6 during the second half of the current calendar year.

Additionally, in the June quarter, we hit our target by delivering the first WiFi 6E micro filter solution with our 5.5 GHz XBAW filter. To complement the 5.5 GHz filter solution, we announced last week the introduction of the industry's first 6.5 GHz BAW-based filter solution addressing WiFi 6E coexistence challenges. With that announcement, Akoustis now has the first and only tandem BAW-based 5.5 and 6.5 GHz WiFi 6E solution. We expect to sample this tandem solution to multiple other OEMs, ODMs and SoC vendors in the September quarter, and moving forward with the goal of entering production with one or more customers in the first half of calendar 2021.

Moving now to our defense business, we see follow-on demand for our existing radar filter. In addition, we are currently bidding a new program which requires multiple new XBAW RF filters.19 Furthermore, we expect to announce a significant contract award from a major defense agency in the September quarter. We developed and shipped our first Drone filter to our customer in April, five months ahead of schedule. Our customer is evaluating the filter and we expect to transition into production in calendar 2021.

Finally, in the 5G mobile market, we continue to march toward entry into our largest market by unit volume and revenue. After delays related to the Covid-19 pandemic, we have been working with our current customer over the past several months to integrate our XBAW technology and we expect to receive feedback this quarter regarding the performance of our filters. In parallel, we continue to refine our new WLP, WLCSP and flip-chip packaging filter solutions, as well as work towards a partnership that could help us enter the tier-1 handset market.

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 14 design-locked XBAW RF filters as of today, not including our recently announced breakthrough 5.5 and 6.5 GHz WiFi 6E coexistence filters, a sevenfold increase in the past 12 months. This growing product catalog puts us in great position to ramp revenue in the second half of calendar 2020 and beyond, and we look forward to expanding our growing filter portfolio and discussing our progress during future updates.

As we discussed in our previous conference call, 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. We continue to add key hires across our Sales, Design and Manufacturing teams. One example is the recent announcement of Colin Hunt as our new Head of Worldwide Sales during the June quarter. Beyond our current expansion project, the Company is positioned to scale, as our current New York wafer fab can ultimately 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 the call today. We continue to build our Company on four solid pillars, including: strong management and technical staff; strong intellectual property, which currently includes 33 issued and licensed patents and 71 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 with the world's first tandem 5.2 and 5.6 GHz ultra-high band BAW filter solution, and we expect you can acquire the product within the next three months. Additionally, our 5G engagements with global leaders in both network infrastructure and mobile handset markets have led to two design wins 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 forever grateful to our employees for their hard work, passion and dedication during this ongoing pandemic, as our team has kept the momentum going on our R&D, which has led to our first four design wins and a development agreement for WiFi 6E with a tier-1 enterprise OEM. 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

Thank you. As a reminder, ladies and gentlemen, if you'd like to ask a question, please press star, one on your telephone keypad. A confirmation tone will indicate your line is in the question queue. You may press star, two if you'd like to remove your question from the queue. For participants using speaker equipment, it may be necessary to pick up your handset before pressing the star key.

Our first question comes from the line of Rick Schafer with Oppenheimer. Please proceed with your question.

Rick Schafer

Hi. Thanks you guys for taking the question. Jeff, I'll just start with a COVID question at the beginning. I know you talked about how great the team's done in terms of on your side, on the production side. I'm curious on the design win cadence side, what impact you guys have seen from COVID, just from not being able to maybe directly interface with customers. Obviously, you guys just gave strong guidance for the September quarter, but what could it have been, or what impacts have you guys seen, I guess, on your design pipeline?

Jeffrey Shealy

Hey, Rick, good morning, Jeff here. I'll let Dave start with that and I'll wrap up with some comments on it.

David Aichele

Good morning, Rick. It's Dave. Yes, we've seen some impact, and it's been primarily a delay, I think, of one to two months in some of the programs, and a lot of it is the back and forth. Before, the OEMs worked with the ODMs more closely and they could actually be onsite, and now they can't be onsite, so you have delays of shipping back and forth when they're doing their design validations and locking down designs. We've seen that a little bit on the WiFi side, and also on the 5G network infrastructure, the 5G less impacted because the main OEMs that we've been working with have been in the Asia market, which has been up and running recently, but there were some delays earlier in the year, as well.

Jeffrey Shealy

Rick, this is Jeff. Just piggybacking on what Dave said. Supply chain, clearly, we're disrupted earlier in the year. We've been engaging with customers in a remote engagement, so that adds that dynamic to it. What I am happy to reiterate is that with the flexibility of our in-house manufacturing, we've not been disrupted in terms of being able to produce the chips. I hope that's evident by some of the R&D activities that we've brought forth to the market.

Rick Schafer

Thanks, and maybe I'll follow up on that, just in terms of your—you mentioned capacity expansion a couple times in your prepared remarks, and I know you said you'd be at the hundreds of millions target by roughly this time next year. Maybe you could talk about what the cap ex is going to be, you know, required to get you guys there.

Jeffrey Shealy

Yes. Let me let Ken jump in here.

Kenneth Boller

Good morning, Rick. As we've stated in the past, we're on the goal to get 5x capacity expansion, and on that goal, we have about $7 million to $9 million of additional cap ex spend yet to purchase over the next nine months to enable us to achieve that stated goal of the 500% capacity expansion of our New York fab.

Jeffrey Shealy

Rick, let me add to that, because I think it's an important point. Part of what we've been doing with this capacity expansion is to bring in higher throughput equipment. With higher throughput equipment, oftentimes the quality of—if it's producing materials, the quality of those materials is improved with manufacturing equipment, line accuracy improves, and we actually also see these investments manifesting themselves into improved performance, particularly in the quality factor of our technology. I just wanted to piggyback on Ken's comment with that.

Rick Schafer

Great, thanks a lot you guys.

Jeffrey Shealy

Thank you.

Operator

Thank you. Ladies and gentlemen, in the interest of time, we ask that everyone limit themselves to one question and one follow-up each.

Our next question comes from the line of Anthony Stoss with Craig Hallum Capital Group. Please proceed with your question.

Anthony Stoss

Good morning, guys. Jeff, I just wanted to follow up on your comment on the 5G infrastructure side. I'm not sure I heard you correctly that you have—or you do expect, potentially, two to three more additional customers coming online. Is that mainly for small cell, or is it a combination of small cell and MIMO? Then, also, I don't know if I missed this, I think you said several, but can you maybe further quantify the number of WiFi 6E customers you might be sampling to by the end of the year? Thanks.

Jeffrey Shealy

Hi. Good morning, Tony, good to talk to you. I'll let Dave jump in on the 5G infrastructure here.

David Aichele

Yes. Most of the work that we're doing right now is in the small cell, primarily the 5G small cell, and we've got more than five customers that we're engaged with right now, and it's primarily in the n77 and n79 bands. Obviously, we'll update next quarter as to traction on those stated design win goals, but we'll continue to increase that funnel. There's opportunity to expanding in other frequencies beyond what we're working on right now, as you see 5G getting deployed in other regions besides the Asia market.

Then, with regards to the WiFi 6E, there's a flurry of activity going on right now. There's a lot of activity in, obviously, North America, and that's pulling in a lot of the ODMs over in Asia, as well. So, the good thing is that, I guess, the groundwork and foundation that we did with WiFi 6 with the OEMs and ODMs is enabling us to have very smooth communications with the ODMs over in Asia, as well. I would say that our target is to really engage with all of the SoC vendors, the main top five, and sampling those in the coming quarter, and then also with the majority of the OEMs, we're seeing a lot of energy in retail being the first to market but the enterprise sectors and the carriers are trying to come in with products in the Q2 market timeframe. So, there's activity in all three areas.

Jeffrey Shealy

Tony, let me—

Anthony Stoss

(Inaudible)

Jeffrey Shealy

Oh, go ahead. Go ahead, Tony.

Anthony Stoss

I was just going to say, is there a particular frequency band that you're seeing most interest in, Dave or Jeff, and is there ultimately, you know, more extreme difficulty for your competitors to catch up as a result?

David Aichele

You mean with 5G infrastructure?

Anthony Stoss

No, more on the 6E side.

David Aichele

Well, the 6E side, it's really two filters and, as we stated, covering the full 5.5 band, so it's 665 MHz, and then you have the 6.5 band, which is 1190 MHz. The difficulty is, is you only have a transition gap of 100 MHz between those two bands. So, what we've seen, and why the interest level is so high with Akoustis right now, is that all the other technology out there clips about 160 MHz of that first—what they call uni-5 band, and our technology, at least with what we're going to be sampling, will not clip that band. Right now, anybody that is utilizing any of the other technology is not going to be able to utilize that first 160 MHz channel or the first 80 MHz channel, and that is something that every source provider wants and every MSO and carrier wants. So, this is something that we're in a very good position, once we get these solutions into the customers' hands.

Jeffrey Shealy

Yes, Tony, Jeff here. In addition—Dave talked about the 5.5 and 6.5, we'll probably call that kind of the standard bands, that Dave mentioned. There's also some custom solutions that go into those, where a

customer then takes those two bands and may partition those differently, so that sort of activity is ongoing.

To your other point, I wanted to just take a moment and—if you look at the 5.2 and 5.6, the bandwidth of those products are roughly 160 MHz and 365 MHz. As Dave mentioned, when you get to WiFi 6E, the bandwidth is dramatically increasing to 665 MHz and 1190 MHz, which, to your question, is it a challenging design for others to do, there's material science that has to be engineered to hit those significantly wider bandwidths.

Dave mentioned a transition gap as being another technical challenge. For those of you that have heard us chat about advantages of BAW, that is what we've always been saying, talking about coexistence. Whereas you have two bands that are sitting right adjacent to one another, in this case the—what Dave called a transition gap of 100 MHz, that's a definition of a coexistence challenge. In terms of technology challenges, number one, these are—these are high frequency, they are wide bandwidth, and they're true coexistence, which really fits into the sweet spot of a BAW technology.

Operator

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

Harsh Kumar

Hey, guys. First of all, congratulations on all the positive activity despite the headwinds from COVID. Jeff, I had a quick question for you. With this whole COVID economy world, you know, everybody working from home, learning from home, have you seen a—I would guess you would have seen a pickup in interest from particularly the CPE guys, the WiFi guys. Also, you should have seen, in my opinion, some level of kind of speediness on products, acceptance of your products. Is that an accurate statement?

Jeffrey Shealy

Dave will start and I'll jump in, as well.

David Aichele

Good morning, Harsh. Yes, the enterprise market, we have seen some impact to the enterprise market. There's not as much deployment, or there's been a little bit of a, I guess, reduction in that market segment, because, obviously, people are working more remote from home, but the small office, home office type market is definitely picking up. We've been seeing that in the forecast and the order activity, at least with our one customer, but also have been tracking that with other programs, as well, so we expect that trend to continue with this pandemic continuing to go on and we expect the WiFi 6E is going to accelerate because utilization of that extra bandwidth is increasing now to the capacity significantly over the current structure, and plus opening up the 7 GHz spectrum, it's not crowded up there, so there's better utilization. So, we believe that this trend will continue.

Jeffrey Shealy

Harsh, good morning. Just a couple of other points to share with you. We have seen, certainly, timing of new programs, in some cases, some deference to existing programs running longer just to get the product to the market. So, timing disruption in supply chain, in some cases, for establishing new programs, and also timing of release of product, of new product, certainly, for customers.

The other thing is we want to at least touch base on a dynamic that's going on between WiFi 6 and WiFi 6E, which is there's—we continue to see program activity in WiFi 6. There is, as we said in the prepared comments, pretty distinct activity, design activity in WiFi 6E. There's a lot of demand for even higher data rate solutions. So, you've got existing design going on in 5.2 and 5.6 for WiFi 6, and then new activity, and very active activity with WiFi 6E developments, and then you also have a few of the players that are also looking at both combining WiFi 6 and WiFi 6E in a single box. So, there's some dynamics that are going on, some that are market-driven, some that may be COVID-driven, but, nonetheless, what we're focused on is making sure we have the right product for both WiFi 6 and WiFi 6E to where we can address the market whichever way it accelerates near term.

Harsh Kumar

Hey, Jeff, thank you, and then for my follow-up, I wanted to ask about the other side. Your filters are way smaller compared to the other guys. I think you've said 20x smaller in many cases, particularly on the WiFi side. You've talked about the handset market, but what does it mean for the other markets that are going to connect; for example, the tablet market, the iPads, etc.? Then, on the handset side, you've got basically a duopoly today between Qualcomm (phon) and Broadcom, and how do your products compare? I know in the past you've mentioned that they compare favorably, but has there been a step-up still as you kind of chug along on your development, compared—your products compared to Broadcom and Qualcomm?

David Aichele

Harsh, I'll take that, and then Jeff can obviously add some more color. I think I'll take the second part of your question, in that we believe, with the results that we've been publishing and the solutions that we've been providing to some of the potential partners, that the technology competes very well against the incumbents. Again, a lot of our focus is in the frequency bands from 3 to 5 GHz for the cellular, but also, with all the work that we've been doing with the WiFi spectrum, unlicensed, both the 5 and 6 GHz, is going to play out, as well, as we look at WiFi 6E getting adopted, obviously, in the fixed market, but eventually transitioning to the mobile client market, and a lot of the work that we're doing in the resonator technology and also the material set to be able to do the wide bandwidth, there's not many companies out in the market that have that technology, that's available to the two incumbents that you mentioned.

Then, as far as the activity in the design, again, our focus is really on developing a small form factor with the WLP that can be used in, obviously, the fixed market, but very well suited for things like laptops, and also the other iPads, and so forth, and you may see some of those start to deploy with WiFi 6E in the near term, before maybe it even gets into the mobile client side. So, it's an exciting time for us and we're going to continue to focus on that.

Jeffrey Shealy

Yes, and just piling on those comments, what I've always said, Harsh, is that for a new entrant to come into the market, you need disruption in the market. Disruption, in this case, are transition from what historically was called high band, which is now kind of mid-band frequencies, to the ultra-high band. Here, we're talking about filter solutions up to 7 GHz. I think that would be surprising to many just a few years back, that someone would have products in these particular frequency bands. There are challenges with that. You have to scale with technology. You have to have a very high quality factor, or else it won't be competitive and it won't serve as good coexistence technology.

The other big point, and I tried to make this a little bit with my comments earlier on the WiFi 6 transitioning to WiFi 6E, is the significantly wider bandwidths that are required in these filters, these require material science development in order to achieve these, and then you have to have a process technology, and in

our case it's our XBAW technology, which allows you to take these engineered materials and produce these significantly wider bandwidths. So, that's the sort of disruption that we thrive on.

In terms of chip size, you asked about competitiveness. We have a chip size that is extremely competitive in the market. It will fit in anything from a defense application all the way into a handset, so we're not limited at all. I would also comment, when we're talking about chips, is that our in-chip is a silicon chip, so that drives—that comes with it a cost point that is suitable for commercial markets across the board.

Then, piling on Dave's comments on the packaging, we have a technology which we continue to miniaturize. I think the numbers we previously quoted, we go from roughly a 23 times reduction of our DR filter to—with the standard package that we're using all the way down to 260 times smaller with a wafer-level package or chip-scale package. We've added some flip-chip technology, which we mentioned we're targeting to qualify by the end of the year.

All in, with the packaging approach, we can service a discreet market with a very small form factor, or we've got a plethora of packaged technologies that can be integrated in modules, and it's—I would say discussions on our end have been ongoing for some time in modules for mobile, and I would add to that potential integration into WiFi modules for full integrated solutions there.

Hopefully, that touches on what you wanted us to cover.

Operator

Thank you. Our next question comes from the line of Suji Desilva with ROTH Capital Partners. Please proceed with your question.

Suji Desilva

Good morning, Jeff, Ken and Dave. Congrats on the progress here. The September quarter guide, the 50% sequential, can you talk about the relative strength across infrastructure versus WiFi, whether both are contributing equally, so I understand the ramp progress?

Jeffrey Shealy

Let me touch on that. I don't want to break those down. I think what we've said is—we've mentioned that the design wins that we have, we did mention that we started ramping our 5.2 and 5.6 for WiFi 6 at the end of the June quarter, so that ramp has continued to—it's just continued from June all the way to current day. I would say the ramp in the infrastructure is really starting this quarter, so I would view it as we've had a steady ramp in WiFi throughout the quarter, and then, I believe we said we're ramping our first product in small cell.

Anything you want to add to that?

Kenneth Boller

I think you covered it, Jeff.

Jeffrey Shealy

The other thing I want to emphasize is, I think, for Akoustis, unlike quarters past where we had a drop in requirements to meet guidance, we were specific, and we want to make sure you caught it in the comments, that we're fully booked on our backlog to greater than 50%, so I just want to be clear on that.

Suji Desilva

Yes, I appreciate that color, Jeff, definitely helpful. Then, on the WiFi market, if I can understand this correctly, I know part of it's enterprise, but some of it's retail. Does getting some of the Asia ODMs included now potentially target more the Asia consumer retail market? Is that a certain number of quarters behind the U.S./Europe retail markets, or am I—I understand the bulk of the business will still come from kind of the Western markets for the next 12 months or so.

Jeffrey Shealy

Dave will take that one.

David Aichele

Good morning, Suji.

Suji Desilva

Good morning, Dave.

David Aichele

The activity on the WiFi 6E is driven by the North America markets. That's the only country right now that has authorized this spectrum, you know, up in the 6 GHz. Europe will probably come next, but that'll be in the next nine months or so, and then Asia, more than likely, won't be until the end of next year. The activity on WiFi 6E is North America with the ODMs involved, as well. A lot of the enterprise and retail guys have strong relationships and it's pretty well spread, from what we've seen, across a multiple of ODMs in Taiwan and China.

The WiFi 6E, as you can imagine, some of the priorities on designs in the U.S. shift into WiFi 6E. WiFi 6 is not as critical, but there has been an activity pickup in Europe, and also in Asia, that we've been going after, and as you highlighted, it is actually retail customers—or retail OEMs in the Asia market going after China and the other regions around there. The good thing is that we still see a good amount of activity in WiFi 6E with, obviously, the advent of—or WiFi 6, with the advent of 6E coming on.

Operator

Thank you. Ladies and gentlemen, this concludes our question-and-answer session. I'll turn the floor back to Mr. Shealy for any final comments.

Jeffrey Shealy

I want to take the opportunity to thank everyone for their time this morning. We look forward to speaking with your during our next update call to discuss current quarter execution, as well as progress on our milestones, as well as future expectations. Thank you very much.

Operator

Thank you. This concludes today's program, you may disconnect your lines. Thank you for your participation.