



Akoustis Technologies, Inc.

First Quarter Fiscal 2021 Business Update Conference 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 the queue. A replay of the call will be available on the Investor Relations section of the Akoustis website.

Thomas Sepenzis

Thank you, Operator, and good morning to everyone on the call. Welcome to Akoustis' First Quarter Fiscal 2021 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

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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, product orders, and milestones for the current and future fiscal quarters, 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 obligation 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 measure is presented in our earnings call highlight release, available in the Investors section of akoustis.com.

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

Jeffrey Shealy

Thank you, Tom, and welcome, everyone, to our 2021 First Fiscal Quarter Business Update Call.

We had a strong start to our fiscal 2021 year as we entered production in two high volume commercial markets, including Wi-Fi 6 and 5G small cell networking equipment. In Wi-Fi, we ramped production with a Tier 1 consumer focus brand that is currently stocking shelves with a tri-band multiuser MIMO CPE router ahead of the holiday season. We started volume shipments with our Tier 1 5G small cell network infrastructure customer, which we expect to continue ramping moving forward with multiple XBAW filter design wins.

We achieved all of our strategic milestones for the September quarter, and delivered on unexpected fronts that I will discuss during the conference call today. In fiscal Q1, we beat our revenue guidance of up 50% quarter-over-quarter based upon our initial ramp in Wi-Fi and 5G small cell shipments.

Today, I am pleased to announce we expect our fiscal Q2 revenue to be up at least 50% sequentially. This means for the first time we expect to achieve approximately \$1 million in quarterly revenue from our chip business. The growth is being driven by strength across our Wi-Fi, network infrastructure, and mobile business segments. Overall, our optimistic outlook is grounded with execution across multiple markets, which should contribute to our revenue ramp providing Akoustis with the opportunity for significant top and bottom line growth for years to come.

Before I talk about each of our market segments, I would like to spend a moment discussing the ongoing impact 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 worksite isolation from outside visitors. Overall, we continue to experience the incredible flexibility afforded by our in-house manufacturing model in the current environment, as it allows us to continue to develop and ship our product 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 consistent with 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 additional impact of the pandemic, particularly on our customers regarding their respective supply chains and product launches. As we discussed on the last conference call, Wi-Fi 6 has experienced the greatest disruption earlier in calendar 2020. As OEMs continue to build existing designs.

Looking forward, we see future designs with both Wi-Fi 6 and Wi-Fi 6E where we are well positioned with our product portfolio. The defense market is also showing some signs that programs are being delayed, but this should not impact our expectations for calendar 2021, as growth in our high volume commercial markets should more than compensate for any delays in the defense business.

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: Wi-Fi, 5G network infrastructure, 5G mobile devices and finally, our other market segment. In addition, Ken will provide an overview of our financial results along with forward revenue guidance. Finally, I will highlight our expectations and milestones beyond the December quarter.

Now I would like to move on to our business performance by market segment, beginning with Wi-Fi.

The September quarter was our strongest quarter to date in Wi-Fi as it marked the initial production ramp by our first Wi-Fi 6 tri-band multiuser MIMO customer. This customer is a high-profile Tier 1 consumer focused brand that is currently shipping finished product into the retail channel for holiday sales and marks the first commercial Wi-Fi product with multiple XBAW filters on board.

Initial feedback from the customer has been extremely positive, and discussions are already underway with increased unit expectations for next year. We have met all delivery expectations for our 5.2 and 5.6 gigahertz filters, and I'm personally very proud of our design and operations teams that have successfully managed this first significant commercial production ramp.

We are now tracking multiple active engagements with OEMs, ODMs, SOC makers, and channel partners and Wi-Fi 6. 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 despite the current impact of the global pandemic.

As we have discussed previously, the FCC announced in late April the approval of 5.9 to 7.1 gigahertz for Wi-Fi 6E unlicensed use, which is the largest spectrum addition since the FCC allocated unlicensed spectrum for Wi-Fi in 1989. This next generation of Wi-Fi is expected to use the existing 5.1 to 5.8 gigahertz unlicensed bands, which we refer to as the 5.5 band along with the newly allocated 5.9 to 7.1 gigahertz bands, which we refer to as the 6.5 band to deliver higher data rates for Wi-Fi 6E.

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 patented XBAW technology. We have been aggressively developing wide bandwidth piezoelectric materials, device models and RF filter designs and have filed new key patent application surrounding Wi-Fi 6E RF filters.

During the September quarter, we successfully introduced the first BAW based 6.5 Wi-Fi 6E filter. This followed our tandem 5.5 gigahertz filter, which we introduced during the June quarter. We have achieved robust sampling of these filters with multiple OEMs, ODMs and SOC vendors. We expect to design lock and start qualification of these new XBAW filters by the end of the current calendar year.

These two Wi-Fi 6E filters are standard products that will be available to all customers as catalog parts. We received our first order for our 5.5 and 6.5 gigahertz tandem solution during the September quarter from a Tier 1 enterprise class OEM and expect production to begin by mid calendar 2021.

In addition to the standard Wi-Fi 6E 5.5 and 6.5 gigahertz XBAW filters, some OEMs are requesting custom solutions. During the September quarter, we signed a strategic purchase agreement for multiple

Wi-Fi 6E filters, with a Tier 1 enterprise class Wi-Fi OEM, which is expected to go into production in calendar 2021.

In the September quarter, we shipped multiple custom Wi-Fi 6E filters to this customer, and look to deliver additional samples in the coming months in our new wafer level packages, which deliver the form factor required for the mobile market, including 5G smartphones. Whereas activity in Wi-Fi 6 remain strong, the interest and demand for Wi-Fi 6E filter solutions is robust, as many OEMs and ODMs have quickly shifted new CPE product designs to address Wi-Fi 6E. In addition, we strongly believe there will be a need for BAW microfilter solutions for Wi-Fi 6E and mobile handsets. As I just mentioned, we're about to ship our first WLP solution sample that we expect will satisfy what should be a very sizeable opportunity.

In summary, we believe the revolution into Wi-Fi 6E will drive significant unit and revenue growth for Akoustis beginning in the first half of calendar 2021. Next, I would now like to discuss our opportunities in 5G network infrastructure.

Wide bandwidth, high power handling, low insertion loss and high out of band rejection are the core product performance features for 5G network infrastructure. Akoustis is ideally positioned to grow its market share in the segment, given our small form factor solution in our growing portfolio of RF filters above 3 gigahertz where 5G is being deployed worldwide. We are currently designing and/or shipping filters in three main segments of the 5G infrastructure markets, including small cell base stations, macro base stations, and citizens broadband radio service or CBRS equipment.

In the 5G small cell market, we shipped an initial volume order with our Tier 1 customer with a band n77 filter in the September quarter. We also announced our third 5G small cell design win with this customer and shipped a fourth filter that we expect will go into production in early calendar 2021. In the September quarter, we were also pleased to announce that we had received a design win from a second 5G small cell customer that is expected to start ramping in early calendar 2021, and we are actively engaged with four additional potential small cell customers including two Tier 1 equipment providers.

In our last update, we spoke about our other existing Tier 1 5G network equipment customer and the plan to deliver this customer a spec compliant high power filter by the end of November with the intent to go into production by the middle of calendar 2021. We are currently tracking towards the execution of this goal.

In late July, the FCC began the auction of the priority access license or PAL portion of the Citizens Broadband Radio Service spectrum for the US market. The CBRS band operate between 3.5 and 3.7 gigahertz and will provide cellular carriers and other major communications companies new and additional sub 6 gigahertz spectrum, which can be a key enabler for making 5G deployments possible by providing last mile data service and improving coverage of individual unlicensed networks.

Verizon, Dish Network, Comcast, and Charter were the early winners, spending approximately \$3.7 billion of the total \$4.6 billion for PALs in the recent auction. We believe 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, which falls squarely into our sweet spot, producing and delivering high quality, high frequency BAW filters.

To our knowledge, Akoustis continues to be the only supplier providing BAW filters for this application, and we are receiving increased interest given the performance and size of our CBRS filter solution. As we announced this past March, we have design locked our first CBRS XBAW filter and have sampled it to greater than 10 SOC and CBRS equipment makers, up from the three customers we announced in the March quarter. In addition, we completed orders to a distributor to support promotion, and customer engagement for the 3.6 gigahertz BAW filter.

Furthermore, last week, we announced that we had received our first design wins from a CBRS network infrastructure OEM for 3.6 gigahertz XBAW RF filter solution, which are expected to ramp into production in the second half of calendar 2021. The order is from a customer that received and tested the filters when they were originally introduced over a year ago, and are now ready to produce new CPE and network equipment as operators are looking to build out their networks now that the auctions have been held and spectrum is now available. The customer intends to use our XBAW filters for CPE products and for inclusion in network infrastructure equipment.

I would now like to discuss our efforts in the mobile device market.

The mobile handset market is our largest potential BAW filter market opportunity by both unit volume and revenue. Our XBAW filters have already been evaluated by several select top Tier 1 and Tier 2 mobile handset OEMs, and we're seeing increased interest in using our XBAW filters in the mobile device market. As we have discussed before, entering the Tier 1 handset market in the near term would require a partner. 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 one or more Tier 2 handset OEMs without a partner.

I am happy to announce this morning that we have received our first order from a new customer for XBAW filters for 5G Mobile RF front end solutions. We are jointly developing coexistence RF filters for integration into our customers RF modules, which are expected to enable ramp in second half of calendar 2021. From our early discussions with this customer, we see the opportunity to supply multiple filters in multiple bands for 5G and Wi-Fi RF modules. As our customer supplies numerous device OEMs, this represents a one-to-many sales opportunity for Akoustis in the 5G mobile market.

Beyond customer driven activity, we have dedicated engineering resources focused on dramatic package size reductions, specifically the development of advanced wafer level packaging, or WLP, and wafer level chip scale packaging, or WLCSP solutions, to address next generation of 5G mobile products.

Working within 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 throughout calendar 2020 with pre-production parts expected to be available in early calendar 2021. We are also actively developing flip chip wafer level dye solutions, which provide a low cost WLP technology supporting improved performance in smaller footprint integration. We remain on track to deliver qualified packages by the end of the current calendar year.

Finally, in our other markets segment, I was pleased to announce last Tuesday that we have been awarded a new multi-year R&D contract from the Defense Advanced Research Projects Agency, or DARPA, to further develop Akoustis' technology through the development of a Piezo MEMS process design kit, or PDK, for the Company's proprietary and patented XBAW process. The directive phase two or DP2 program will be dedicated to developing a general purpose PDK that will enable BAW and other similar MEM structures to be designed and fabricated using the Company's state of the art XBAW process. The proposed Piezo MEMS PDK will encompass all aspects of the process ranging from materials properties, process rules, per stack dimensions, process control monitoring, design rule checking, and example device models.

Upon successful completion of the DP2 program, DARPA has an option to fund a phase three program. This option supports multiple new customer engagements, leveraging the new PDK to create devices and circuits, including RF filters, using the Company's XBAW process. We expect this will greatly expand the opportunities for XBAW moving forward as other designers will be able to develop new products utilizing

our novel piezoelectric materials and substrates outside of the current devices, which could lead to new opportunities in adjacent markets.

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

Kenneth Boller

Thank you, Jeff.

For the first quarter, ended September 30, the Company reported revenue of \$636,000, which was an increase of 74% as compared to the previous quarter, and represented a 118% increase in our core filter product revenue.

On a GAAP basis, operating loss was \$10.3 million for the September quarter, mainly driven by labor costs of \$6.3 million, depreciation of \$1 million, and other operational costs totaling \$3 million. As a result, GAAP net loss per share was \$0.31. On a non-GAAP basis, operating loss was \$8.3 million and non-GAAP net loss per share was \$0.23.

Cap ex spend for Q1 was \$2.3 million, compared to \$3.4 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 Q1 was \$7.9 million, compared to \$4.9 million in the prior quarter. The increase of \$3 million is primarily due to certain fiscal year-end payments, not expected to repeat in the second quarter and increases in spend related to our capacity expansion.

The Company exited the September quarter with \$37.3 million of cash and cash equivalents, versus \$44.4 million at the end of Q4. The decrease in cash from operating activities and cap ex spend was partially offset by the mindful management of our balance sheet utilizing the at-the-market financing instrument. During the September quarter, we added \$3.1 million net cash to the balance sheet through the utilization of this instrument. After all fees, an average sale price of approximately \$8.08.

While there is still some uncertainty regarding timing of customer production ramps related to COVID-19, our visibility is improving given the rollout of 5G and new Wi-Fi platforms. We are fully booked with backlog in house to guide revenue up at least 50% sequentially in the December quarter, and for the first time, we expect to achieve more than \$1 million in quarterly revenue from our chip business.

I will now turn the call back over to Jeff to discuss our future milestones.

Jeffrey Shealy

Thank you, Ken.

Overall, we expect to see revenue from all of our target end market segments in the December quarter. Our Company continues to strive to achieve our targeted milestones across each of our market segments. The targeted milestones for the December quarter, which can be found in our November 2020 investor presentation on our website, include delivery of a design locked 5.5 and 6.5 gigahertz Wi-Fi 6E XBAW filters by the end of the year, and continued ramp with our Wi-Fi 6 customer for multi-user MIMO devices.

We expect one to two new design wins in Wi-Fi 6 using our existing XBAW coexistence filter solutions. We expect to commence a production ramp with our Tier 1 small cell network infrastructure customer with multiple filters. We expect to deliver a design locked filter for our first Tier 1 5G network infrastructure customer, and we expect to receive an XBAW filter order for CBRS from a major SOC vendor.

In addition, we expect to introduce a qualified wafer level package solution for the mobile device market, and we expect to complete a design for a new 5G XBAW filter for our new RF front end mobile customer. Finally, we expect to kick off the first phase of the DARPA program.

In conclusion, we continue to work diligently to achieve each of our stated objectives. We will continue to update you on our execution against these objectives going forward. Our team at Akoustis has done a tremendous job over the past year, and I am pleased to reiterate that we have 15 design locked XBAW RF filters as of today, which is more than a seven fold increase in the past 12 months. This growing product catalog puts us in a great position to ramp revenue in the December quarter, as reflected in our guidance, and we look forward to expanding our filter catalog.

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. 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.

I would like to thank those who have joined us on the call today. We continue to build our Company around strong management and technical staff, strong intellectual property, which currently includes 33 issued and licensed patents, and 73 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.

Next, I would like to highlight the addition of Mike McGuire, former Grant Thornton CEO, to our Board of Directors. Mike brings a wealth of operational and transaction experience to the Board and we are fortunate to have him join the team at Akoustis.

We are successfully penetrating the Wi-Fi market with our first design win with the world's first tandem 5.2 and 5.6 gigahertz ultra-high band BAW filter solution which will be in a consumer product, for sale, on the shelves for the holiday season.

We are shipping Wi-Fi 6E filter solutions to multiple OEMs, ODMS and SOC makers, and already have a strategic purchase agreement in this next generation networking standard. Additionally, our 5G engagements with global leaders in both network infrastructure and mobile handset markets have led to four design wins and small cell base stations with two customers, and now we are experiencing early success in CBRS and 5G Mobile RF front end modules, providing Akoustis with technology validation from multiple OEMs and strong growth opportunities in high performance, coexistence BAW 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 multiple design wins across Wi-Fi, 5G network infrastructure and the defense market. We are also seeing increased activity in the mobile market driven by our new and expanding wafer level packaging capabilities. 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. We'll now be conducting a question-and-answer session. We ask you to please ask one question and one follow up then returned to the queue. If you'd like to be placed in the question queue, 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. Once again, that is star, one to be placed in the question queue, and we do ask that you ask one question and one follow up then return to the queue.

Our first question today is coming from Anthony Stoss from Craig Hallum. Your line is now live.

Anthony Stoss

Good morning, guys. Jeff, I'm curious if you can shed a little bit more light on this morning's press release with the RF module maker, which frequencies that they're targeting and perhaps you can size that opportunity for us? Thanks for the update on the 5G massive MIMO new spec. Can you also share any updated thoughts on when volume production might begin with that same customer? Thanks.

Jeffrey Shealy

Hey, Tony, good morning. I'm going to have Dave kick off first comments here on the announcement this morning, and then I'll follow up and also touch on the massive MIMO opportunity.

David Aichele

Good morning, Tony, it's Dave Aichele. Appreciate the question, opportunity to share a little bit more about the news that we announced this morning. This is what the leading RF front-end module manufacturer, and there are opportunities—multiple opportunities, as we commented, with this customer.

The main focus right now is with a Wi-Fi coexist with 5G cellular and the frequency coverage that we can support with this customer is going to be from 2 gigahertz up to 7 gigahertz, so we're not disclosing exact frequencies right now. The plan is that it will work with both Wi-Fi and also the 5G spectrum. The potential on this is supporting both the China market with what I call the Tier 2, Tier 1.5 customers, along with the potential—with the Tier 1 as well. We're going to work with them closely on developing a solution that can be integrated into their module, meeting the form factor and obviously the target specs.

With respect to the massive MIMO, and then Jeff can comment as well, we're making good traction with the customer. Confidence is high that we'll be able to deliver solution that is meeting the specs, and then it really is sitting down with them to align with insertion point and ramp. I think the guidance is the middle of the year. Once we deliver that solution to the customer, we'll be able to have more specifics that we can share with you on the next call.

Jeffrey Shealy

Okay, Tony, and I'm going to add to that just with the 5G mobile opportunity. Dave emphasized that was a coexistence filter. We're working with a module partner that lacks access to bulk acoustic wave technology, which is critical for coexistence, so that the bands that they're focused on are very difficult to address with competing filter technologies. We feel there's a good match in that we plug a keyhole.

I do like reminding people that relative to the number of module players that are out there, there are very few opportunities or options for suppliers of bulk acoustic waves.

Jumping over to the massive MIMO opportunity, I'll just augment a couple comments Dave made.

We've been working several channels of this. Number one is getting set up as a supplier with the with this customer. That's not a trivial step. Dave mentioned good traction in multiple fronts. I'd also like to touch on just the technical confidence that we have in the designs. We've been working multiple—it's a very difficult design, it pushes the power envelope. We're very comfortable on that power spec. These specs that we have to meet are—you're looking at greater than five pages of spec requirements, that you have to have to hit all of them.

I would characterize this latest spin is somewhat of a cleanup spin, and we've also been busy, as you can tell from the various areas we've been—we discussed in the prepared comments, in Wi-Fi and also in small cell. These wafers have been moving through the fab and we're certainly confident in that we're on track for delivery of final parts this quarter.

Those are my comments to add to Dave's.

Anthony Stoss

Okay, thanks, Jeff. One quick follow up related to wafer level packaging. How much do you need to spend on cap ex, I guess heading in or in 2021, to be prepared for volume production into the handset space? Are you far along or are any comments would be helpful? Thanks.

Jeffrey Shealy

Yes, so I think what we said in the prepared comments is we felt we could support one to two customers in a Tier 2 market with what we're already investing in terms of capacity. If we start looking at in the Tier 1, then you have to talk about a next phase of expansion. We would structure any agreement that would require higher capacity, we would structure that where we would have some assistance from a customer in terms of expansion capacity and/or commitment.

I think the answer, the customer we announced this morning, we believe we can service with the existing 500% capacity expansion. Ken may want to add to that.

Kenneth Boller

Just to add to what Jeff mentioned, we had about \$5 million to \$7 million of additional spend in the next seven months to enable us to achieve that data goal, the 500% capacity expansion in our New York fab, just to give a little flavor for what is left, reaching that goal.

Anthony Stoss

Great job, guys, thank you.

Jeffrey Shealy

Thank you, Tony.

David Aichele

Thanks, Tony.

Operator

Thank you. Our next question today is coming from Cody Acree from Loop Capital. Your line is now live.

Cody Acree

Hi, thanks for taking my questions. Just two quick ones. If you look out to next year, what, without giving guidance for the full year, can you just talk about what the mix is expected to look like? It may be as you enter the year versus how you expect to exit the year.

Jeffrey Shealy

Okay, maybe, let me talk about where we see strength in the business right now and I always like referencing these sorts of discussions with where we are not only with the product portfolio, but where we are in the sales funnel. We try to put some significance or add significant confidence in the Wi-Fi 6 business, so we feel we've got a solution there. We've got a good channel to market, we've got multiple customers advanced in the sales funnel. I think we mentioned even in the milestones, we expected to add one to two design wins by the end of the year. That's coming along pretty well.

In addition to the Wi-Fi 6 is Wi-Fi 6E. Here, I like commenting we were first in the Wi-Fi 6 market with a tandem filter solutions. We're also first in the Wi-Fi 6E market with a tandem filter solution. What is different is that the Wi-Fi 6E market is just very much in the early innings, it's just commencing. The difference for us is that we've been focused on getting reference designs on Wi-Fi 6E whereas those were already completed when we were entering the market in Wi-Fi 6.

We've successfully ramped in Wi-Fi 6 in the 5 gigahertz portfolio that we've announced, and we've been shipping that. We mentioned that the consumer unit's going to be—we expect to be fully available this quarter for the holiday season. That customer has given us a forecast for the next 12 months, which gives us confidence for our capacity planning, and certainly they see upside in that.

It's going to be—next year will be a heavy dose of Wi-Fi 6. We're adding Wi-Fi 6E to that. We've announced catalog-based solutions in Wi-Fi 6E, as well as their custom based solutions that are, call it derivatives of those standard products, which we're comfortably addressing.

We see Wi-Fi 6 and Wi-Fi 6E as a very comfortable portion of the mix, and next year, we've mentioned four design wins in small cell 5G infrastructure. That market was projected to have very high growth and slowed down a bit in the second half of this calendar year. We're expecting small cell infrastructure to grow rapidly for next year. We feel the product portfolio is finished in that segment. Whereas Dave mentioned, we expect to be entering negotiations with this first 5G infrastructure customer, and that has the opportunity of kicking in the second half of next year.

I think what we mentioned this morning is we've added a second customer, so we have two active customers in mobile. The second customer has a ramp plan scheduled for second half of next year. I would say, all in with—when you factor in where we are in a sales funnel with where we are in the product portfolio phase, I could see a scenario where we're very well diversified amongst those three markets, a third, a third and a third, depending on how design wins goes, how product launches go. But in terms of absolute number, we started giving forecast on a quarter by quarter basis, and we've done so this morning.

Just to reiterate what we said is we're going to be up 50% in the December quarter, minimum of 50% from what we hit in the September quarter. That's what next year looks like. See if Dave wants to add any color to how you see next year.

David Aichele

Yes, I think Jeff gave a good description. Just a little bit more color, the WiFi 6 the activity levels is good. But it is one that we're working more directly with the ODMs and the OEMs, instead of being on a reference design, whereas the activity on the Wi-Fi 6E is pretty intense. There's a lot of activity there, so we're working both with the chipset vendors and the ODMs and the OEMs concurrently.

The mix in the revenue is going to be higher with Wi-Fi in the first quarter and second quarter of next year. The small cell will continue to ramp and as Jeff highlighted, we did see a slowdown. The China market, if you've seen any of the reports recently, started looking at investing more into the small cell architecture, particularly for urban settings. We expect that volume to continue to drive and as we get into the massive MIMO, that will be appreciable as it gets into the second half. Then obviously, the mobile ramp is really the second half. I think that's a good description of a third, a third, a third by the end of next year.

Cody Acree

Great. Thank you, guys, appreciate that. Lastly, could you maybe talk about, maybe Dave, what you're seeing, as far as ASP trends? are some of these early design wins being earned at significant discounts to what you're expecting longer term? If you can just talk about what your thoughts are for next year.

David Aichele

Yes, on the Wi-Fi side, the Wi-Fi 6, we still get a premium versus some of the VR (phon) type technology out there, but the premium is not as high as what we can get on the Wi-Fi 6E, mainly because the technology is pretty competitive with the VR at Wi-Fi 6. We are getting a premium, but we have to be competitive to continue to win the design slots and ramps.

The good news is for us—and also making sure that we price it appropriately in the market—the Wi-Fi 6E is we're enabling solutions architectures with the OEMs that you cannot get with the incumbent VR technology out there, mainly in that they lose the first 160-megahertz channel in the 6 gigahertz band. That's a penalty that the OEMs and the chipset providers do not want to pay.

We can get a premium that's above, obviously, the premium we get in the Wi-Fi 6. I think we'll continue to ramp both Wi-Fi 6 and Wi-Fi 6E and improve on our margins as we get into the Wi-Fi 6E, which will also be a larger percentage of the market for tri-band solutions as the networks get deployed.

Then small cell, we're very well positioned there, we get a premium based on the technology. It's a micro Akoustis filter that competes against traditional ceramic, that you can't get to the size and to the closest performance. Also, the price point there is higher than what we see in Wi-Fi and also into mobile, and it's utilizing the same technology. This is favorable from a margin standpoint as well.

Jeffrey Shealy

Yes, and Cody, I'll just add, just as a reminder, what it is we're building. Ours is a six-inch silicon substrate based approach, and I think what we're seeing now that we've successfully ramped, the other key piece to that in terms of just our cost structure is just yield. We are building and shipping now into the millions of pieces with extremely high yield. We're very comfortable with the yields that we're getting that allow us to ship in that volume. There's always a lot of work when you're talking about optimizing yield and maximizing yield. We've got a tremendous team here that's focused on that.

Again, these are very high precision filters in these frequencies, so they're not trivial to produce. We've got teams that are keeping these yields very high. From being comfortable to play in all of the markets that we've mentioned this morning, it's extremely important that not only that we're on a silicon platform,

but that we're getting high yield. I just wanted to add that to what Dave said, because that's a big enabler for us to compete in all of these markets.

Cody Acree

Thank you, appreciate it.

David Aichele

Thanks, Cody.

Operator

Thank you. The next question today is coming from Suji Desilva from Roth Capital. Your line is now live.

Suji Desilva

Good morning, Jeff, Ken, and Dave. Congrats on the progress here. Two quick questions, I think. First of all, just clarification on Wi-Fi. When you did tri-band initially, the 5.2 gigahertz filter went out before the 5.6 and then the tandem solutions went in. For 6E, with the 5.5 and the 6.5, will there be this phenomenon of one filter, then both? Or will it be tandem solutions right out of the gate?

David Aichele

Good morning, Suji. Right now, it's pretty much tandem. It maybe lags by about a week or weeks, but not what we saw with the 5.2 and the 5.6. Part of the reason there is obviously the progress we made in our models, and also the 5.6 was leading the charge for increasing the bandwidth, and we've just, with the success of that, have been able to leverage that with the 5.5 and 6.5, which are both very wide bandwidth as well.

We've been successful in delivering the tandem solutions to customers, we've received orders, as we've announced, and we've been able to ship. That activity is going to continue, because we're getting orders based on the, what we call, ES1 samples that we're shipping right now. With the final design lock that we're targeting at the end of this year, that activity level is going to increase.

Jeffrey Shealy

Yes, and Suji, hi, it's Jeff. I just would add to it. One key difference in Wi-Fi 6, as you mentioned, where we had staggered deployment of the two filters. In that particular instance, we were developing—we had to develop piezoelectric materials that could handle the wider bandwidth requirements for the 5.6. Those, we're starting in a situation with the 5.5 and 6.5 where we have the starting core materials to go off and do the designs. We've allocated our resources in the design area to focus on both. That means they can come out together and we don't have this staggered deployment, like what we had with Wi-Fi 6 and the 5.2 and the 5.6.

Suji Desilva

Okay, that's helpful clarification. Then on the manufacturing (phon) side, just curious with the ramp plans and the capacity adds, are you seeing any movement in equipment lead times? Or is that stable? Are you able to get the equipment as scheduled? Thanks.

Jeffrey Shealy

Yes, thank you. Thank you for that. I think for our growth plan, I think it's important to understand these moving pieces in the fab. We have several things ongoing. We now have commenced the second shift of operation that expands the capacity with the current equipment we have, but your question was towards lead times in capital equipment.

What we saw earlier in the pandemic, was we had ordered some equipment, and we were challenged with getting the right, I'll call it the factory installers, to come in and install the equipment. That was very early on in the pandemic, if you look at more recently, what we see is we've—staying within the regulations of New York State, we've got a good workaround on how to get that done.

To the equipment lead times, we're monitoring that very closely, and if I look at the full list of things that we're—that we have to have to scale, it can range anywhere from—we get ranges from anywhere from three months of lead time for certain pieces of equipment, and then the additional equipment can be up to 10 months to 12 months—can be quoted. We keep a running track of what that looks like, so we can—so we know what what's long lead and what we need to release, if we need to pull certain triggers on that capacity.

Suji Desilva

Thanks, Jeff.

Jeffrey Shealy

Thank you, Suji.

Operator

Thank you. The next question is coming from Rick Schafer from Oppenheimer. Your line is now live.

Rick Schafer

I'll add my congratulations to you guys. Hey, Jeff, my first question, maybe I'm reading between the lines too much here from some of your earlier comments, but are you shifting your stance at all regarding strategic partnership for Tier 1 mobile or entry into that market? I'm just curious, could you go at it alone? I'm thinking, if you did what that timeline might look like? I'm also thinking, if you did take that stance, could you partner directly with your one handset OEM, which I think you sort of alluded to earlier, and I don't mean to put words in your mouth, as sort of an NRE type model, something like that, where you could ramp it in partnership with your Tier 1 customer?

Jeffrey Shealy

Hey, Rick, good morning. Thanks for the question. I don't think we're—if you look at the prepared comments, I don't think we've done a shift in stance. What we have said all along is that we felt we could address the Tier 2 with the current capacity. But I think we reiterated in the comments this morning that we're going to seek a partnership.

If you look to address a Tier 1 market—if you look to address a Tier 1 market, it's a step function in wafer requirements. We think that the way you have to enter that market, you really need a partner to help resource that expansion in capacity. We're going to continue to maintain that.

We did emphasize that the new customer is a second customer, and we haven't said much about what's going on with the first customer purposely. Our stance has not changed there. What I do want to do is comment that we have access direct to the Tier 1 OEM market, and we've actually received technology validation from several customers. Certainly, our customers have taken samples from us through their channel into the account. We continue to sample our technology out to OEMs, as well as RF module partners, and we're going to continue doing so.

The Tier 1 market, I think, from a capacity standpoint and an investment standpoint would be too risky for us to change position on that to ramp up capacity and a build-it-and-they'll-come. I think we've got some extremely other attractive markets that we're currently ramping in, and we're going to organically grow capacity. That's our current strategy is to ramp capacity as needed. We meet monthly with our operations team, evaluating sales, looking at a minimum of 12 months and typically one to two years. We look at capacity planning, and also evaluate lead times just to make sure we're in a position to expand accordingly.

Rick Schafer

Got it. Thanks for that clarification and color, Jeff. Maybe a second question, also maybe a broad one. You've been winning a lot of small cell, so I'm curious what you think that says about the setup in 5G small cell? In particular, it just seems like a more bullish setup versus 4G, where I think small cell disappointed some original expectation. I don't know if you can talk about why that changes or why that is changing and 5G and maybe as part of your answer, Jeff, I'd be curious if you can comment on the kind of dollar context you're seeing in all these small cell wins for Akoustis so far. Thanks.

Jeffrey Shealy

Let me start, David, I'll hand this one back and forth with commentary, but I'm going to start. First thing I think to notice, just over the last year, what we've seen is a fairly dynamic market. We've started with specs that were fairly narrowband, and quickly evolved as a system—the systems evolved. Keep in mind, in the China market, there's more than one carrier and you've got equipment manufacturers that are trying to adapt their equipment to work with more than one carrier. As you bolt on another carrier, you can be bolting on additional spectrum requirements to the filter.

I would characterize the last 12 months as a period of specification definition and as well as demonstrator for various carriers.

I think what's been key from our end and through this pandemic is that we've reacted very fast to that as the specs have changed, and that's positioned us to be in some of the early reference designs that were shipped to various carriers in Asia, and some of the initial equipment that was deployed for demonstration purposes.

We think from—you mentioned bullish, I think we're pretty bullish on our end, we've got the right portfolio. Again, this is in these higher frequency bands where we've got our act together to design and manufacture. We think we've appropriately followed the developments in that market, aligned well with the right people and positioned ourselves for a significant growth next year in that market.

I want to have Dave comment.

David Aichele

Yes, morning, Rick. There's a couple of comments that I'll make. I've lived through the small cell growth expectations falling flat in previous years, and what's different, I think, this year is a couple things. Right

now, with—if I look at China's specifically, you take the mobile network operators out there, they've actually got it written into their white papers and their rollouts, and you're looking at 5G and the spectrum is moving up in frequency. Also, with massive MIMO, it's a new architecture that's fairly expensive, comparable to a small cell architecture. It's a blend, and if you look at the China ministry, the network operators are going to allocate more funds to do the small cell rollout, and it's more of a densification strategy.

We've gotten pretty good visibility on forecasts for next year, and we are bullish because of what we've been seeing there. I also think that you'll see in other sectors around the world, even in the U.S., as you look at the U.S., there's some restrictions on how you can deploy the networks that are being relieved by municipalities and so forth. Deploying a small cell is not as cumbersome as it was in the past. There's things here that are making it easier for that market to grow. We're, I think, pretty well positioned from a technology standpoint, and we'll just continue to launch product to sell those spectrum opportunities that we see in the 5G.

Rick Schafer

Great, thanks for all the color. Good luck.

Jeffrey Shealy

Thanks, Rick.

Operator

Thank you. We've reached the end of our question-and-answer session. I'd like to turn the floor back over to Management for any further closing comments.

Jeffrey Shealy

Okay, I wanted to end the call by saying I want to thank everybody for their time today. We look forward to speaking with you during our next update call to discuss current quarter execution against the milestones that we discussed this morning, as well as the future expectations that we set. I want to wish everybody a safe and healthy holiday and talk soon. Thanks so much.

Operator

Thank you. That does conclude today's teleconference. You may disconnect your line at this time and have a wonderful day. We thank you for your participation today.