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Resonant CEO: Company Will Capitalize On The Coming 5G Transformation In Mobile Handset Market



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"...The big reason to pay attention to Resonant today is the ongoing and continued validation of our business model, of our technology and ultimately the partnership with the largest RF filter manufacturer on the planet. All of these further solidify our position in the RF front-ends (RFFE) market."- George B. Holmes

CEOCFO: *Mr. Holmes, what is Resonant Inc. and how are you transforming the way RFFEs are designed and delivered?*

Mr. Holmes: Resonant is a public venture startup, a microcap company traded on the NASDAQ, under the symbol RESN. The company is an IP and software licensing business that is developing solutions for the RF front end, and in particular, the RF front end for mobile handsets. What is the RF front end? It is the part of the cellular phone that determines which radio signals are transmitted and received by your phone. It separates the different frequencies that allow your phone to communicate. It is delivering not only in cell phone service, but all the other radio-based services that your phone can utilize like GPS, Wi-Fi and near field communications. All of these are controlled by the RF front end.

CEOCFO: *What is wrong with the way these products are developed now?*

Mr. Holmes: Let me tell you a little bit about what we are doing to transform the way RF front ends are designed and developed. Historically, most of the major filter manufacturers design their RF filters through iteration. They do a design and then they iterate it. What iteration means is that they put a design into the fab, produce it and then test it and then they tweak it, then they produce it, then they test it. They go through this iterative process until they have a product that meets their fundamental requirements.

Unlike the majority of these companies, we design RF filters with software using finite element modeling of both acoustic and electromagnetic properties of the designs we are developing. We do those designs in software before we even produce the first design. What

does this mean? It means that we are more efficient, we are faster and, at the end of the day, we believe that we are lower cost than anybody else in the market. Therefore, our partners are able to bring solutions into the market very quickly at very low cost and very competitively.

CEOCFO: *What do you understand about technology that allows you to do this with software when others have not?*

Mr. Holmes: The real thing that separates us, and why we just happened to be at the right place at the right time with the right set of tools is this: if you look at the overall market, which is now \$12 billion growing to \$28 billion by 2025, it's not a really big market for the software tools companies. We think it's a very large market, but for them it's not. It is actually a very small market that they consider "nichey." Therefore, they have not pointed their resources toward solving this problem.

We started developing our tools as part of a previous company, Superconductor Technologies, and that piece was spun out of Superconductor Technologies into Resonant. We've taken these tools and commercialized them. We did that because we saw the need in this space where no one else was satisfying it. Could somebody else do it? Yes, someone else could do it, sure. However, from a timing perspective, we are 10-plus years into the development of this software today with hundreds of patents. We think we are way out in front.

CEOCFO: *Who is your target market? How are you reaching out?*

Mr. Holmes: Our target market today is cell phone handsets. Our sales path into the market is really twofold. We sell and license our designs to vertically integrated filter companies; companies that are already designing solutions for the handset, and that are already on the AVL (approved vendor list) of the major handset manufacturers. About half of our customers are made up of these types of companies. The other types of companies that we engage with are companies that are, what we call, "fabless."

In most cases fabless companies do not have their own engineering teams and they leverage our engineering teams and our Foundry Partner Program to design and develop products for them. These companies are typically already in the supply chain. They are doing other pieces of the RF front end, like for example, power amplifiers, reference designs, switches and other passive components. They are already engaged with handset manufacturers, they just do not have the filter offering. Therefore, we give them the ability to enter this segment of the market and do so very cost effectively.

CEOCFO: *Do potential customers understand what you are doing? Does it make sense to them or are they somewhat skeptical that you can do it with software?*

Mr. Holmes: We have 12 customers today and, most importantly, we have the largest company in this market, as a partner, all of whom understands what we do. We have over 80 devices that we have contracted with these 12 companies. Therefore, not only do they understand what we do, they have capitalized on what we do by commissioning multiple designs with us that they are working feverishly to get into the market.

CEOCFO: *Would you tell us a little bit about your agreement with Murata? Is that somewhat typical of what you are doing or what you would like to do?*

Mr. Holmes: The deal is a little bit broader in scope than many of our agreements. Most of our agreements are very straightforward. Customers come to us with a series of specifications, typically for filters that are much more difficult than they could design themselves. We, in turn, design the filter solution for them, either using their own foundry or a third-party foundry. Typically we get a small, up-front payment, for them to engage with us, then we get a per-unit royalty on the backend, typically in the 7% to 15% range.

In this case they took an investment in Resonant and in exchange for that investment they got a 30-month time-to-market exclusive of our latest technology, designed specifically for 5G filters in the mobile market. That is one component of the agreement with them. The other component is the device design component, where we are, under the terms of the commercial agreement, developing four bands for them for a total of \$9 million dollars in pre-paid royalties payable over the development period. What is a pre-paid royalty? It is payment in advance and there is no requirement for them to ever have to ship a product and we get paid anyway. It is a little bit different agreement; we gave them a better royalty rate based on expected volumes, because they were willing to pay in advance. We have already received our first payment of \$2 million.

CEOCFO: *How has 2019 been a breakout year for Resonant? Why now?*

Mr. Holmes: The real thing that has changed and set the mark for us, is the fact that we have been able to execute and deliver on a couple of very major milestones; the first of which was the demonstration of our 5G resonator technology at Mobile World Congress, which happened in February. Shortly thereafter, we set a goal for ourselves to have, under contract, a major tier 1 customer for that new resonator technology, and we did that by midsummer. Not only did we do that, we did it with the largest manufacturer of filters, which we think is very, very significant.

This tier 1 company has 38% share in filters, 35% share in duplexers and 77% share in FEMIDs (front-end modules with integrated duplexers). Current estimates show they will grow by more than 50% this year in modules overall and should end the year with approximately 25% share in total module sales; they are the dominant player in the RF filter front end market. To have them as a partner and to have them validate our latest technology with, not only an investment, but also a commercial agreement for core devices, we think is very, very significant. The fact that we did it in a record time, doing a deal with a large Japanese conglomerate and doing it in less than six months, we thought felt pretty remarkable.

Couple that with the fact that our third quarter 2019 royalty unit volumes are greater than our entire first half 2019 unit volumes I think is a significant step in us migrating to mass adoption of the designs that we have completed. Therefore, we are really on a path right now to accelerate royalty unit volumes, royalty dollars and ultimately capitalizing on the partnerships we have with our current and our new customers.

CEOCFO: *What surprised you in getting to where you are today with Resonant?*

Mr. Holmes: I would say the biggest surprise is the complexity in the go-to-market model of being a royalty-based business. I do not think the investment community really understands royalty businesses. They see and all want to aspire to invest in the Arm's of the world. However, they do not really realize that those companies took 10 years - in some cases 15 years - to get to scale. It takes a very long time to build a royalty business, because there is no predictability in when the end customer is actually going to take the product you designed to market. That is a very, very complex thing and I do not think the market truly understands the complexities associated with it.

Unfortunately, I think the market is a little impatient. They forget how long it takes for semiconductor companies to come out of the ground and actually get to cash flow and break even. I think we have made some tremendous moves and successes over the last three years as we have been building this business. I have seen some early success with some early tear downs of tier 1 phones that had our technology clearly present in them. I think we will see that continue. My hope is that as we continue to commercialize this business, we will ultimately see the success that we hope for all of our shareholders as we continue to build value in the business.

CEOCFO: *You presented at a number of conferences fairly recently. How do you get people to pay attention? What have you learned from successive conferences?*

Mr. Holmes: That is a great question. We are fairly prolific on the conference schedule front, mainly because we have made it a focal point of our IR activity to expand our institutional investor base. We have been successful in doing that, but we still have a large percentage of retail investors, that we are continuing to convert to the larger institutional long-term holders. That is a process that does not happen overnight. We thought it would happen faster, so frankly, one of the key learnings is that you have got to keep your head down. You have got to keep working, you have got to keep executing and you have got to keep telling the story and making sure that people understand it. We constantly strive to simplify the story, to make it easier for investors to understand. However, I think the real thing that we have learned is that it is just like any process that you go through to attract, whether it be new customers or new investors; it takes time.

CEOCFO: *What is ahead for next year?*

Mr. Holmes: What is ahead for Resonant in the coming year is the expansion of our software footprint. That is probably the next big milestone; when we announce that we have now eliminated the requirement for any third-party tools to be used with our software platform. I think we will see that happen in the first half of next year. I think that will be a very significant event, because it will further increase the speed of our development and design capability.

Then there is the expansion of our current and existing customer's capabilities and taking them into the market in a much more aggressive way; I think we will see that happening in the first half of next year as

well. We will start seeing some major milestones get met as we start marching through this customer adoption standpoint. The continued execution and delivery of our products into the market is really what we have to look forward to.

CEOCFO: *Why pay attention to Resonant now?*

Mr. Holmes: I think the big reason to pay attention to Resonant today is the ongoing and continued validation of our business model and of our technology. Ultimately the partnership with the largest RF filter manufacturer on the planet, further solidifies our position in the RF front-ends (RFFE) market. I think that we are in a very good position to capitalize on the coming technological transformation in the mobile handset business in 5G. We are out at the front in that area and I think the recently announced relationship with a tier 1 manufacturer is going to be at the forefront of that. I really think that for investors, both new and existing investors, this is going to really create additional value for all of them as we continue to execute and deliver against our mission.

