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Resonant's XBAR Achieves Technological Breakthrough; Industry's First Successfully Manufactured XBAR 5G Filter for Non-Mobile, on Standard SAW Process

Next-Generation 5G Filters for Non-Mobile Applications Showcase Ability to Maximize Data Speed by Minimizing Signal Loss and Interference, All on a Simple, Cost Effective SAW Process

GOLETA, Calif., Aug. 18, 2020 (GLOBE NEWSWIRE) -- Resonant Inc. (NASDAQ: RESN), a leader in transforming the way radio frequency, or RF, front-ends are being designed and delivered for mobile handset and wireless devices, has announced that its patented 5G XBAR® filters, for non-mobile applications have been successfully manufactured by two different foundry partners using a standard surface acoustic wave (SAW) front end process.

Resonant's unique ability to manufacture a complex 5G filter on a SAW front end process was made possible by the company's EDA multi-physics (software) platform, Infinite Synthesized Networks® (ISN®).

Both partners manufactured Resonant's XBAR filter, which was designed for the non-mobile n79 5G band, which pertains to applications such as infrastructure, WiFi CPE and automotive, among others. To date, six separate foundries have now successfully manufactured Resonant's XBAR filters. Resonant's XBAR filters have previously been manufactured on a MEMs process line, as utilized by Resonant's industry-leading partner Teledyne. The collaboration with Teledyne continues as we expand the capabilities of the non-mobile XBAR technology.

According to Yole Development, the processes that SAW foundries utilize are widely recognized as the cheapest, easiest, fastest and highest volume production method available for acoustic filters in today's growing \$15 billion filter market. The simplicity of the SAW manufacturing process generally experiences higher yields, cheaper material costs, less manufacturing steps, and therefore, reduced time-to-market than required by the bulk acoustic wave (BAW) filter manufacturing process, whether industry standard polycrystalline or new single-crystalline structures.

"This technological breakthrough—which for the first time demonstrates the production of high-performance 5G filters on a standard, off the shelf SAW front end process—fundamentally validates Resonant's ability to produce filters faster, better and cheaper," said George B. Holmes, Chairman and Chief Executive Officer of Resonant. "Our ISN software platform has allowed us to crack the code of complex filter technology, while using only proven, high-volume manufacturing processes—as opposed to traditional BAW foundry processes which are more complex and expensive than SAW processes."

Resonant believes that XBAR is the only available RF filter technology today that can innately or natively meet the complex requirements for bandwidth and performance demanded by 5G applications. In addition, this breakthrough showcases that Resonant's high performance, high frequency, and wide bandwidth XBAR technology can, for the first time ever, be produced on a basic, commercial-off-the-shelf (COTS) SAW process.

Holmes, continued: "We expect this milestone to pave the way towards high-volume commercialization of our patented XBAR filter technology for non-mobile applications, while driving continued innovation and creating unmatched, high-performance filter designs to meet the unique demands of true 5G."

The n79 band XBAR filters manufactured demonstrate minimum insertion loss of <1 dB, 600 MHz bandwidth from 4400–5000 MHz (>12% fractional bandwidth) bandwidth, and high rejection, resulting in superior full bandwidth performance, maximizing data speed by minimizing signal loss and interference, an additional benefit being longer battery life.

The partners that manufactured the n79 band XBAR filters were both part of the Resonant Foundry Program, and the results closely mirrored the simulations performed in Resonant's proprietary ISN software platform.

About Resonant Inc.

Resonant (NASDAQ: RESN) is transforming the market for RF front-ends (RFFE) by disrupting the RFFE supply chain through the delivery of solutions that leverage our Infinite Synthesized Network (ISN) software tools platform, capitalize on the breadth of our IP portfolio, and are delivered through our services offerings. In a market that is critically constrained by limited designers, tools and capacity, Resonant addresses these critical problems by providing customers with ever increasing design efficiency, reduced time to market and lower unit costs. Customers leverage Resonant's disruptive capabilities to design cutting edge filters and modules, while capitalizing on the added stability of a diverse supply chain through Resonant's fabless ecosystem-the first of its kind. Working with Resonant, customers enhance the connectivity of current mobile devices, while preparing for the demands of emerging 5G applications.

To learn more about Resonant, view the series of videos published on its website that explain Resonant's technologies and market positioning:

- [Resonant Corporate Video](#)
- [ISN and XBAR: Speeding the Transition to 5G](#)
- [Infinite Synthesized Networks, ISN Explained](#)
- [What is an RF Filter?](#)
- [RF Filter Innovation](#)
- [Transforming the Mobile Filter Supply Chain](#)

For more information, please visit www.resonant.com.

Resonant uses its website (<https://www.resonant.com>) and LinkedIn page (<https://www.linkedin.com/company/resonant-inc-/>) as channels of distribution of information about its products, its planned financial and other announcements, its attendance at upcoming investor and industry conferences, and other matters. Such information may be deemed material information, and Resonant may use these channels to comply with its

disclosure obligations under Regulation FD. Therefore, investors should monitor the company's website and its social media accounts in addition to following the company's press releases, SEC filings, public conference calls, and webcasts.

About Resonant's ISN® Technology

Resonant can create designs for difficult bands, modules and other complex RF Front End requirements that we believe have the potential to be manufactured for less cost and less time than traditional approaches. ISN is a suite of proprietary mathematical methods, software design tools and network synthesis techniques that enable us to explore a much larger set of possible design solutions that regularly incorporate our proprietary technology. We then quickly deliver design simulations to our customers, which they manufacture or have manufactured by one of our foundry partners. These improved solutions still use Surface Acoustic Wave (SAW) or Temperature Compensated Surface Acoustic Wave (TC-SAW) manufacturing methods and perform as well as those using higher cost manufacturing methods such as Bulk Acoustic Wave (BAW). Resonant's method delivers excellent predictability, enabling achievement of the desired product performance in roughly half as many turns through the fab. In addition, because Resonant's models are fundamental, integration with its foundry and fab customers is seamless because its models speak the "fab language" of basic material properties and dimensions.

Resonant Safe Harbor / Forward-Looking Statements

This press release contains forward-looking statements, which include the following subjects, among others: the capabilities of our filter designs and software tools, the benefits of the SAW manufacturing process, and the target applications for our XBAR technology. Forward-looking statements are made as of the date of this document and are inherently subject to risks and uncertainties which could cause actual results to differ materially from those in the forward-looking statements, including, without limitation, the following: our limited operating history; our ability to complete designs that meet customer specifications; the ability of our customers (or their manufacturers) to fabricate our designs in commercial quantities; our customers' ability to sell products incorporating our designs to their OEM customers; changes in our expenditures and other uses of cash; the ability of our designs to significantly lower costs compared to other designs and solutions; the risk that the intense competition and rapid technological change in our industry renders our designs less useful or obsolete; our ability to find, recruit and retain the highly skilled personnel required for our design process in sufficient numbers to support our growth; our ability to manage growth; and general market, economic and business conditions. Additional factors that could cause actual results to differ materially from those anticipated by our forward-looking statements are under the captions "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our most recent Annual Report (Form 10-K) or Quarterly Report (Form 10-Q) filed with the Securities and Exchange Commission. Forward-looking statements are made as of the date of this release, and we expressly disclaim any obligation or undertaking to update forward-looking statements.

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Source: Resonant Inc.