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Resonant Inc. Strengthens IP Portfolio with the Issuance of the First XBAR®-Related Patents

GOLETA, Calif., April 20, 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, today announced the first patents awarded by the U.S. Patent and Trademark Office (USPTO) for its ground-breaking XBAR® technology designed for 5G and WiFi. Resonant's patent portfolio now numbers over 200 patents filed or issued, more than 50 of which are specifically focused on 5G.

Resonant has filed numerous patent applications with respect to its XBAR® technology, both domestically and abroad. Resonant was awarded US Patent No. 10,491,192, titled: Transversely-excited film bulk acoustic resonator and US Patent No. 10,601,392, titled: Solidly-mounted transversely-excited film bulk acoustic resonator. Resonant also received an indication from the US Patent & Trademark Office that a third US Patent, titled Transversely-excited film bulk acoustic resonators for high power applications, will issue before the end of April. These are the first issued patents that protect the company's novel resonator structure, which is optimized for the wide bandwidths, high frequencies, high powers and low loss required for 5G. Realizing these new requirements is critical for the success of 5G and the enhanced user experience promised by this next generation wireless technology.

"In the transition from 3G to 4G, when new spectrum was allocated, this changed the necessary filter performance, and hence the required filter structure. What resulted was new 4G filter structures, Film Bulk Acoustic Resonators (FBAR) and Solidly Mounted Resonators (SMR). In the same way, 5G has a new spectrum allocation which is much wider bandwidth (100's of megahertz rather than 10's of megahertz) in order to realize the high data-rates demanded by today's users and 5G applications," stated George B. Holmes, Chairman and CEO of Resonant. "This requires a new filter structure, our XBAR, which was designed and optimized specifically to meet the exacting standards of 5G and WiFi and allow for the co-existence of these technologies as more users operate in this high frequency spectrum. The accuracy of Resonant's Infinite Synthesized Networks (ISN®) design platform allowed our design team to explore different structures and focus on the optimum for this application."

Building on the initial success and performance breakthroughs of its XBAR technology, Resonant recently demonstrated expanded performance for XBAR for RF filters that can manage the co-existence of 5G and Wi-Fi 6 and 6E networks, protecting each from co-interference and the resulting degradation in network performance. Co-existence of 5G and Wi-Fi is an emerging and significant challenge to real-world deployments. According to Navian Inc., 5 GHz band for Wi-Fi which is essential for smartphones sits between the 4.5 GHz and 6-7 GHz bands. If these frequencies are to be fully utilized, each bandwidth would

need a steep filter. Also with n77 and n79, high-performance filter would be needed at the same time, since band gap of 200 MHz is too narrow to be utilized fully.

Resonant documented the performance of the XBAR resonators in a recently posted whitepaper titled: [High Frequency Resonator is Foundation for High-Throughput 5G Services – And Much More](#).

For more information on XBAR and Resonant in general, please visit the company-hosted [5G Technology Update Webinar](#), held on February 27, 2020 on the Events page of Resonant's website.

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 half the cost and developed in half the time of 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.

Safe Harbor / Forward-Looking Statements

This press release contains forward-looking statements, which include the following subjects, among others: the status of filter designs under development, the capabilities of our filter designs and software tools, the timing and amount of future revenues, and our views on future financial performance and market share. 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.