

# Resonant Releases White Paper Titled, “Radically Reducing the Cost and Size of Cellphone RF Filters to Fuel the Mobile Revolution”

SANTA BARBARA, Calif.-- Resonant Inc. (NASDAQ: RESN), a late-stage development company creating innovative filter designs for radio frequency front-ends (RFFEs) for the mobile device industry, released a white paper titled, “[\*Radically Reducing the Cost and Size of Cellphone RF Filters to Fuel the Mobile Revolution.\*](#)”

The white paper contains an industry overview and key duplexer performance parameters, and explains how Resonant’s Infinite Synthesized Networks™ (ISN) technology can be used to design Surface Acoustic Wave (SAW) filters that equal or exceed the performance of more expensive Bulk Acoustic Wave (BAW) designs while also reducing the size.

The demand for wireless capacity continues to grow, driven by increasing wireless data usage and the implementation of LTE (Long Term Evolution), and manufacturers of connected devices are already struggling to keep up with the proliferation of spectrum bands needed to carry this data. While available space on the circuit board continues to shrink, the need to provide users with access to a growing number of bands continues to increase. As a result, connected devices require more RF components, adding to costs and power demands. The proliferation of frequency bands and the desire to reduce the number of phone models (SKU’s) is putting enormous pressure on RF component and module manufacturers to reduce size and cost, while at the same time improve performance.

Using its patented ISN design techniques, Resonant has developed and manufactured a state-of-the-art Band 3 duplexer, known throughout the industry as a “hard or challenging band”. The key performance metrics for Resonant’s Band 3 duplexer, which are comparable to the competition’s best-in-class FBAR, include:

- Center Band Insertion loss less than 1dB
- Transmit Band Edge Insertion Loss less than 2.2dB
- Isolation better than 50dB
- High power capability. Transmit power up to +33dBm
- Total integrated package of less than 1mm

As a result of the success of this design, Resonant believes its ISN process and techniques will enable it to:

- Design one of the first tunable RF filter prototypes by the end of 2015.

- Create SAW filters with performance that is competitive with BAW filters while being easier to manufacture using current fabrication techniques and materials.
- Reduce the package size of new RF filters.
- Pave the way for filter designs to be used in carrier aggregation in the future.

To download a copy of Resonant's white paper and learn more about how the Company is radically reducing the cost and size of cellphone RF filters to fuel the mobile revolution, click [here](#).

Resonant Co-founder and Chief Technology Officer, Robert B. Hammond, PhD, stated, "This White Paper is the culmination of many years of technology development, first at Superconductor Technologies and now at Resonant. We are pleased to be able to provide qualitative and quantitative data supporting our claims that our ISN process and techniques enable us to create designs utilizing current fabrication techniques and materials, including designing SAW filters with performance comparable to BAW filters, while also improving manufacturing processes and continuing to achieve size improvements, all while maintaining performance.

"Our technology benefits do not stop here. While our key performance metrics for the Resonant Designed Band 3 Duplexer are compelling, we believe the power of ISN will drive a change in the industry beginning with the advent of our tunable filter, scheduled for prototype by the end of 2015," concluded Dr. Hammond.

### **About Resonant<sup>®</sup> Inc.**

Resonant is creating innovative filter designs for radio frequency, or RF, front-ends for the mobile device industry using a fundamentally new technology called Infinite Synthesized Networks<sup>®</sup>, or ISN<sup>®</sup>. The RF front-end is the circuitry in a mobile device responsible for analog signal processing and is located between the device's antenna and its digital baseband. Filters are a critical component of the RF front-end that select the desired radio frequency signals and rejects unwanted signals. For more information, visit [www.resonant.com](http://www.resonant.com).

### **Safe Harbor for Forward-Looking Statements**

This press release contains forward-looking statements. Forward looking statements include the following subjects, among others: the status of filter designs under development; the performance of Resonant's filter designs, including such performance relative to its competitor's products; and the impact of Resonant's filter designs and ISN technology on the mobile device industry. Forward-looking statements are made as of the date of this press release 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 dependence on a small number of customers; the ability of our designs to significantly lower costs as 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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IR Contacts:

Resonant

Ina McGuinness

1-805-308-9488

[IR@resonant.com](mailto:IR@resonant.com)

or

MZ North America

Matt Hayden

1-949-259-4986

[matt.hayden@mzgroup.us](mailto:matt.hayden@mzgroup.us)

Source: Resonant Inc.