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Resonant Inc  
Form 10-Q  
November 13, 2018  
UNITED STATES

SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

FORM 10-Q

Quarterly Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the quarterly period ended September 30, 2018

or

Transition Report Pursuant Section 13 or 15(d) of the Securities Exchange Act of 1934

For the transition period from \_\_\_\_\_ to \_\_\_\_\_.

Commission file number 001-36467

RESONANT INC.

(Exact name of registrant as specified in its charter)

Delaware 45-4320930

(State or other jurisdiction of (I.R.S. Employer  
incorporation or organization) Identification No.)

175 Cremona Drive, Suite 200  
Goleta, California 93117

(Address of principal executive offices, zip code)

(805) 308-9803

(Registrant's telephone number, including area code)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes  No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act:

Large accelerated filer  Accelerated filer

Non-accelerated filer  Smaller reporting company

Emerging growth company

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If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes  No

As of November 9, 2018, the issuer had 27,090,893 shares of common stock issued and outstanding.

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RESONANT INC.

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## PART I: FINANCIAL INFORMATION

## Item 1. Financial Statements

## RESONANT INC.

Condensed Consolidated Balance Sheets  
(Unaudited)

	December 31, 2017	September 30, 2018
<b>ASSETS</b>		
<b>CURRENT ASSETS</b>		
Cash and cash equivalents	\$ 19,524,000	\$ 17,470,000
Accounts receivable	50,000	52,000
Prepaid expenses and other current assets	536,000	397,000
Restricted cash	100,000	—
Investments held-to-maturity	—	8,884,000
<b>TOTAL CURRENT ASSETS</b>	<b>20,210,000</b>	<b>26,803,000</b>
<b>PROPERTY AND EQUIPMENT</b>		
Property and equipment	3,212,000	3,473,000
Less: Accumulated depreciation and amortization	(1,858,000 )	(1,693,000 )
<b>PROPERTY AND EQUIPMENT, NET</b>	<b>1,354,000</b>	<b>1,780,000</b>
<b>NONCURRENT ASSETS</b>		
Intangible assets, net	1,353,000	1,343,000
Restricted cash	—	211,000
Goodwill	824,000	819,000
Deferred income taxes	—	21,000
Other assets	19,000	69,000
<b>TOTAL NONCURRENT ASSETS</b>	<b>2,196,000</b>	<b>2,463,000</b>
<b>TOTAL ASSETS</b>	<b>\$23,760,000</b>	<b>\$31,046,000</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
<b>CURRENT LIABILITIES</b>		
Accounts payable	\$ 708,000	\$ 698,000
Accrued expenses	314,000	419,000
Accrued salaries and payroll related expenses	1,936,000	1,361,000
Deferred revenue	143,000	187,000
<b>TOTAL CURRENT LIABILITIES</b>	<b>3,101,000</b>	<b>2,665,000</b>
<b>LONG-TERM LIABILITIES</b>		
Deferred rent	10,000	57,000
Deferred income taxes	1,000	—
<b>TOTAL LIABILITIES</b>	<b>3,112,000</b>	<b>2,722,000</b>
Commitments and contingencies (Note 9)	0	0
<b>STOCKHOLDERS' EQUITY</b>		
Common stock, \$0.001 par value, 47,000,000 authorized and 19,511,276 outstanding as of December 31, 2017, and 27,040,714 outstanding as of September 30, 2018	20,000	27,000

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Preferred stock, \$0.001 par value, 3,000,000 authorized and none outstanding as of December 31, 2017 and September 30, 2018	—	—
Additional paid-in capital	88,447,000	114,000,000
Accumulated other comprehensive loss	(7,000 )	(12,000 )
Accumulated deficit	(67,812,000 )	(85,691,000 )
TOTAL STOCKHOLDERS' EQUITY	20,648,000	28,324,000
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$23,760,000	\$31,046,000

See Accompanying Notes to Condensed Consolidated Financial Statements

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RESONANT INC.  
Condensed Consolidated Statements of Comprehensive Loss  
(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2018	2017	2018
REVENUES	\$ 106,000	\$ 115,000	\$ 482,000	\$ 396,000
OPERATING EXPENSES				
Research and development	2,336,000	3,584,000	6,956,000	10,185,000
General and administrative	1,978,000	3,002,000	6,939,000	8,500,000
TOTAL OPERATING EXPENSES	4,314,000	6,586,000	13,895,000	18,685,000
NET OPERATING LOSS	(4,208,000 )	(6,471,000 )	(13,413,000 )	(18,289,000 )
OTHER INCOME, NET				
Interest and investment income	14,000	177,000	39,000	323,000
Other income (expense)	(6,000 )	8,000	(7,000 )	4,000
TOTAL OTHER INCOME, NET	8,000	185,000	32,000	327,000
LOSS BEFORE INCOME TAXES	(4,200,000 )	(6,286,000 )	(13,381,000 )	(17,962,000 )
Benefit from income taxes	(16,000 )	(11,000 )	(40,000 )	(19,000 )
NET LOSS	\$(4,184,000)	\$(6,275,000)	\$(13,341,000)	\$(17,943,000)
Foreign currency translation adjustment, net of tax	(17,000 )	10,000	46,000	(5,000 )
COMPREHENSIVE LOSS	\$(4,201,000)	\$(6,265,000)	\$(13,295,000)	\$(17,948,000)
NET LOSS PER SHARE - BASIC AND DILUTED	\$ (0.28 )	\$ (0.23 )	\$ (0.94 )	\$ (0.73 )
Weighted average shares outstanding — basic and diluted	14,757,688	27,006,046	14,233,774	24,645,658

See Accompanying Notes to Condensed Consolidated Financial Statements

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## RESONANT INC.

## Condensed Consolidated Statements of Stockholders' Equity

For the Nine Months Ended September 30, 2018

(Unaudited)

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance, January 1, 2018	19,511,276	\$20,000	\$88,447,000	\$(67,812,000)	\$ (7,000 )	\$20,648,000
Cumulative effect due to adoption of new accounting standard, net of tax	—	—	—	64,000	—	64,000
Vesting of restricted stock units	621,263	—	—	—	—	—
Stock-based compensation	—	—	4,096,000	—	—	4,096,000
Sales of common stock, net of offering costs	6,571,428	7,000	21,183,000	—	—	21,190,000
Exercise of warrants	89,142	—	260,000	—	—	260,000
Common stock issued in exchange for warrants	242,913	—	—	—	—	—
Exercise of stock options	4,692	—	14,000	—	—	14,000
Net loss	—	—	—	(17,943,000 )	—	(17,943,000 )
Foreign currency translation adjustment, net of tax	—	—	—	—	(5,000 )	(5,000 )
Balance, September 30, 2018	27,040,714	\$27,000	\$114,000,000	\$(85,691,000)	\$ (12,000 )	\$28,324,000

See Accompanying Notes to Condensed Consolidated Financial Statements

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## RESONANT INC.

Condensed Consolidated Statements of Cash Flows  
(Unaudited)

	Nine months ended September 30,	
	2017	2018
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>		
Net Loss	\$(13,341,000)	\$(17,943,000)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	554,000	600,000
Deferred tax benefit	(40,000)	(41,000)
Stock-based compensation	2,024,000	3,958,000
Non-cash loss on disposal of assets	—	8,000
Non-cash investment income	—	(63,000)
Non-cash patent write-off	—	87,000
Changes in assets and liabilities:		
Accounts receivable	(9,000)	(2,000)
Prepaid expenses and other current assets	(112,000)	206,000
Other assets	(3,000)	(50,000)
Accounts payable	113,000	88,000
Accrued expenses	86,000	(82,000)
Accrued salaries and payroll related expenses	159,000	(437,000)
Deferred revenue	(67,000)	46,000
Deferred rent	(12,000)	47,000
Net cash used in operating activities	(10,648,000)	(13,578,000)
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>		
Proceeds from sale of fixed assets	—	16,000
Purchases of property and equipment	(494,000)	(865,000)
Expenditures for patents and domain names	(244,000)	(157,000)
Redemption of investments held-to-maturity	4,747,000	39,590,000
Purchase of investments held-to-maturity	—	(48,411,000)
Net cash provided by (used in) investing activities	4,009,000	(9,827,000)
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>		
Net proceeds from the sale of common stock from private placement offering	15,025,000	—
Net proceeds from the sale of common stock from underwritten public offering	—	21,190,000
Proceeds from exercise of stock options	54,000	14,000
Proceeds from exercise of warrants	—	260,000
Net cash provided by financing activities	15,079,000	21,464,000
Effects of exchange rates on cash, cash equivalents and restricted cash	6,000	(2,000)
<b>NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS</b>	<b>8,446,000</b>	<b>(1,943,000)</b>
<b>CASH, CASH EQUIVALENTS AND RESTRICTED CASH — Beginning of period</b>	<b>5,184,000</b>	<b>19,624,000</b>
<b>CASH, CASH EQUIVALENTS AND RESTRICTED CASH — End of period</b>	<b>\$ 13,630,000</b>	<b>\$ 17,681,000</b>
<b>SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION</b>		
Taxes Paid	\$ 1,000	\$ 3,000
<b>SUPPLEMENTAL DISCLOSURE OF NON-CASH ACTIVITIES</b>		



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Issuance of common stock in settlement of liability	\$272,000	\$1,004,000
Stock options issued in settlement of liability	\$580,000	\$—
Property and equipment included in accounts payable	\$30,000	\$124,000
Property and equipment included in accrued liabilities	\$—	\$282,000
Patents included in accounts payable	\$33,000	\$32,000

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The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the Condensed Consolidated Balance Sheets to the total of the same such amounts shown above:

	September 30,	
	2017	2018
Cash and cash equivalents	\$ 13,530,000	\$ 17,470,000
Restricted cash	100,000	211,000
Total cash, cash equivalents and restricted cash	\$ 13,630,000	\$ 17,681,000

See Accompanying Notes to Condensed Consolidated Financial Statements

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RESONANT INC.

Notes to Condensed Consolidated Financial Statements

NOTE 1—ORGANIZATION AND DESCRIPTION OF BUSINESS

Overview

Resonant Inc. is a late-stage development company located in Goleta, California. We were incorporated in Delaware in January 2012 as a wholly owned subsidiary of Superconductor Technologies Inc., or STI. Resonant LLC, a limited liability company, was formed in California in May 2012. We changed our form of ownership from a limited liability company to a corporation in an exchange transaction in June 2013, when we commenced business. We are the successor of Resonant LLC. We completed our initial public offering, or IPO, on May 29, 2014. On July 6, 2016 we acquired all of the issued and outstanding capital stock of GVR Trade S.A, or GVR. GVR is a wholly owned subsidiary of Resonant Inc.

We have created an innovative software, intellectual property, or IP, and services platform that has the ability to increase designer efficiency, reduce the time to market and lower unit costs in the designs of filters for radio frequency, or RF, front-ends for the mobile device industry. The RF front-end, or RFFE, is the circuitry in a mobile device responsible for analog signal processing and is located between the device's antenna and its digital circuitry. The software platform we are developing is based on fundamentally new technology that we call Infinite Synthesized Networks®, or ISN®, to configure and connect resonators, the building blocks of RF filters. Filters are a critical component of the RF front-end used to select desired radio frequency signals and reject unwanted signals. Our ISN® platform allows us to develop unique, custom designs that address the increasing complexity of the RFFE due to carrier aggregation (the combining of multiple frequencies into a single data stream to increase throughput through higher data rates), or CA, by both reducing the size of the filter and improving performance. Our goal is to utilize our ISN® platform to support our customers in reducing their time to develop complex filter and module designs, to access new classes of filter designs, and to do it more cost effectively. Additionally, our ISN® platform has allowed us to expand our customer focus beyond just filter manufacturers by enabling a new class of customer - fabless filter manufacturers. These companies do not have their own internal filter fabrication facility, or Fab, and typically already would be supplying other products in the RFFE to the OEMs and as a result do not require a protracted, new vendor, qualification process in order to supply parts. It is through our existing customer relationships that we are able to facilitate these third-party Fab relationships, that leverage our ISN® tools to deliver cutting edge filter designs to these fabless filter customers. In the second quarter of 2018 Resonant deployed the first ever module of the company's ISN tool for evaluation, PMTx™, designed to significantly improve design and fabrication turn times.

We are commercializing our technology through the creation of filter designs that address the problems in the high growth RFFE industry created by the growing number of frequency bands in mobile devices. The worldwide adoption of Long Term Evolution, or LTE, as the global standard, and the use of mobile devices to access the Internet, has resulted in massive proliferation of frequency bands which, when combined with CA for higher data rates and multiple input multiple output, or MIMO, has resulted in an ever-increasing number and complexity of filters in the RFFE. We have developed and continue to expand a series of single-band designs for frequency bands presently dominated by larger and more expensive bulk acoustic wave, or BAW, filters. We are also developing multiplexer filter designs for two or more bands to address the CA requirements of our customers. We are using our ISN® platform to efficiently integrate these designs into RF modules for our module customers. Finally, we are developing unique filter designs, enabled by ISN®, to replace multiple filters and associated componentry for many bands, with higher performance. Currently, we are leveraging ISN® to develop these designs targeted for either the Surface Acoustic Wave (SAW) or Temperature Compensated, Surface Acoustic Wave (TC-SAW) manufacturing processes. In 2018 we further extended ISN for BAW designs. This has resulted in the invention of a unique resonator structure, XBAR™, which exhibits performance parameters suitable for 5G applications - high frequency operation, large bandwidth and high power reliability. In order to succeed, we must convince RFFE suppliers that our filter designs can significantly reduce the size and cost of their products.

We believe licensing our designs is the most direct and effective means of validating our ISN<sup>®</sup> platform and related IP libraries to address this rapidly growing market. Our target customers make part or all of the RFFE. We intend to retain ownership of our designs, and we expect to be compensated through license fees and royalties based on sales of RFFE filters that incorporate our designs. In addition, we charge our licensees a nominal upfront fee for allocation of design resources to their project.

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Capital Resources and Liquidity

We are using the net proceeds from the sales of our common stock for product development to commercialize our technology, research and development, the development of our patent strategy and expansion of our patent portfolio, as well as for working capital and other general corporate purposes. Our costs include employee salaries and benefits, compensation paid to consultants, capital costs for research and other equipment, costs associated with development activities including travel and administration, legal expenses, sales and marketing costs, general and administrative expenses, and other costs associated with a late-stage development, publicly-traded technology company. However, this is highly dependent on the nature of our development efforts and our success in commercialization. We continue to add employees to support the development of our ISN<sup>®</sup> platform, applications and system test, research and development, as well as general and administrative functions, to support our efforts. Additionally, we continue to incur consulting expenses related to technology development and other efforts as well as legal and related expenses to protect our intellectual property.

The amounts that we actually spend for any specific purpose may vary significantly and will depend on a number of factors including, but not limited to, our expected cash resources, the pace of progress of our commercialization and development efforts, actual needs with respect to product testing, research and development, market conditions, and changes in or revisions to our marketing strategies. In addition, we may invest in complementary products, technologies or businesses.

We have earned minimal revenues since inception, and our operations have been funded with initial capital contributions and proceeds from the sale of equity securities and debt. At December 31, 2017 and September 30, 2018, we had incurred accumulated losses of \$67.8 million and \$85.7 million, respectively. The losses are primarily the result of research and development costs associated with commercializing our technology, combined with start-up, financing and public company costs. We expect to continue to incur substantial costs for commercialization of our technology on a continuous basis because our business model involves developing and licensing custom filter designs.

Our condensed consolidated financial statements account for the continuation of our business as a going concern. We are subject to the risks and uncertainties associated with a new business. Our principal sources of liquidity as of September 30, 2018 consist of existing cash and cash equivalents of \$17.5 million and \$8.9 million in investments. In the nine months ended September 30, 2018, we used approximately \$14.6 million in cash and investments. Due to these conditions, substantial doubt exists as to our ability to continue as a going concern. After evaluation of these conditions, we believe our current resources, in the absence of material revenues, will provide sufficient funding for planned operations into the second half of 2019. If necessary, we will seek to raise additional capital from the sale of equity securities or the incurrence of indebtedness to allow us to continue operations. There can be no assurance that additional financing will be available to us on acceptable terms, or at all. Additionally, if we issue additional equity securities to raise funds, whether to existing investors or others, the ownership percentage of our existing stockholders would be reduced. New investors may demand rights, preferences or privileges senior to those of existing holders of common stock. Additionally, we may be limited as to the amount of funds we can raise pursuant to Securities and Exchange Commission, or SEC, rules and the continued listing requirements of NASDAQ. If we cannot raise needed funds, we might be forced to make substantial reductions in our operating expenses, which could adversely affect our ability to implement our business plan and ultimately our viability as a company. These consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or amounts and classification of liabilities that might result from this uncertainty.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation and Use of Estimates—The accompanying condensed consolidated financial statements at September 30, 2018 and for the three and nine months ended September 30, 2017 and 2018 are unaudited, but include all adjustments, consisting of normal recurring entries, that management believes to be necessary for a fair

presentation of the periods presented. Prior period figures have been reclassified, wherever necessary, to conform to current presentation. Interim results are not necessarily indicative of results for a full year. Balance sheet amounts as of December 31, 2017 have been derived from our audited consolidated financial statements as of that date.

The condensed consolidated financial statements included herein have been prepared by us pursuant to the rules and regulations of the SEC. Certain information and footnote disclosures normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States of America, or U.S. GAAP, have been condensed or omitted pursuant to such rules and regulations. The financial statements should be read in conjunction with our audited consolidated financial statements contained in our Annual Report on Form 10-K for the year ended December 31, 2017. Our operating results will fluctuate for the foreseeable future. Therefore, period-to-period comparisons should not be relied upon as predictive of the results in future periods.

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The accompanying financial statements have been prepared in accordance with accounting principles generally accepted in the United States, or U.S. GAAP. In the opinion of management, all adjustments (consisting of normal accruals) considered for a fair presentation have been included. Significant estimates made in preparing these financial statements include (a) assumptions to calculate the fair values of financial instruments, warrants and equity instruments and other liabilities and the deferred tax asset valuation allowance and (b) the useful lives for depreciable and amortizable assets. Actual results could differ from those estimates. In the opinion of management, all adjustments, including normal recurring accruals considered necessary for a fair presentation, have been included.

**Consolidation**—The accompanying financial statements include the accounts of the Company and its wholly-owned subsidiary, GVR Trade, S.A. All significant intercompany balances and transactions have been eliminated.

**Cash and Cash Equivalents**—We consider all liquid instruments purchased with a maturity of three months or less to be cash equivalents.

**Concentration of Credit Risk**—We maintain bank accounts at one U.S. financial institution. The U.S. bank accounts are insured by the Federal Deposit Insurance Corporation (FDIC) for up to \$250,000 per account owner. GVR Trade S.A., our wholly owned Swiss-based subsidiary maintains checking accounts at one major national financial institution. Additionally, we maintain a checking account with a very minimal balance at one bank in South Korea, which is used to fund payroll and rent in South Korea. Management believes we are not exposed to significant credit risk due to the financial position of the depository institutions in which our deposits are held.

**Restricted Cash**—Restricted cash at December 31, 2017 consisted of a \$100,000 certificate of deposit with a financial institution, which served as collateral for our corporate credit cards. During the nine months ended September 30, 2018 we terminated the corporate credit card program for which the certificate of deposit was held and thus the restriction was lifted. As of September 30, 2018 our restricted cash balance consists of a \$211,000 pledged mutual fund account which is held as collateral against a letter of credit issued in May 2018 in connection with the lease of our corporate headquarters. Effective January 1, 2018, we adopted ASU 2016-18, Statement of Cash Flows (Topic 230): Restricted Cash, which requires that the statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Consequently, restricted cash is included in the beginning and ending cash balances on the statement of cash flows. See also Note 9- Commitments and Contingencies, for further details.

**Investments**—**Securities held-to-maturity:** Management determines the appropriate classification of securities at the time of purchase and reevaluates such designation as of each balance sheet date. Investment/debt securities are classified as held-to-maturity when we have the positive intent and ability to hold the securities to maturity. Held-to-maturity securities are stated at amortized cost, adjusted for amortization of premiums and accretion of discounts to maturity computed under the effective interest method. Such amortization is included in investment income. Interest on securities classified as held-to-maturity is included in interest and investment income.

When the fair value of an investment instrument classified as held-to-maturity is less than its amortized cost, management assesses whether or not: (i) we have the intent to sell the instrument or (ii) it is more likely than not that we will be required to sell the instrument before its anticipated recovery. If either of these conditions is met, we must recognize an other-than-temporary impairment for the difference between the instrument's amortized cost basis and its fair value, and include such amounts in net securities gains (losses).

For investment instruments that do not meet the above criteria and are not expected to be recovered at the amortized cost basis, the instrument is considered other-than-temporarily impaired. For these instruments, we separate the total impairment into the credit loss component and the amount of the loss related to other factors. In order to determine the amount of the credit loss, we calculate the recovery value by performing a discounted cash flow analysis based on the

current cash flows and future cash flows management expects to recover. The discount rate is the effective interest rate implicit in the underlying instrument. The amount of the total other-than-temporary impairment related to credit loss is recognized in earnings and is included in net securities gains (losses). The amount of the total other-than-temporary impairment related to other factors is recognized in other comprehensive income. For investment instruments that have other-than-temporary impairment recognized through earnings, if through subsequent evaluation there is a significant increase in the cash flow expected, the difference between the amortized cost basis and the cash flows expected to be collected is accreted as interest income.

During 2017, we invested in commercial papers and certificates of deposit that were classified as held-to-maturity. Additionally, we maintained money market fund balances that were classified as cash and cash equivalents. As of September 30, 2017, all of the investments had matured and there were no investments classified as held-to-maturity. We



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recorded investment income of \$14,000 and \$39,000 for the three and nine months ended September 30, 2017, respectively, associated with the investments.

During 2018, we invested in U.S. Treasury bills, commercial papers and a certificate of deposit that were classified as investments held-to-maturity. Additionally, we maintained money market fund balances that were classified as cash and cash equivalents. As of September 30, 2018, the amortized cost value and fair value are \$8.9 million with zero unrealized gain or loss. U.S. Treasury bills totaling \$25.0 million matured in April 2018 and certain commercial papers totaling \$14.7 million matured during the nine months ended September 30, 2018. Remaining commercial papers totaling \$8.8 million mature in January 2019, and the certificate of deposit for \$100,000 matures in January 2019. We have not recognized an other-than-temporary impairment gain or loss or a comprehensive gain or loss-to-date. We recorded interest and investment income of \$177,000 and \$323,000 for the three and nine months ended September 30, 2018, respectively, associated with our cash and investment accounts.

**Fair Value of Financial Instruments**—We measure certain financial assets and liabilities at fair value based on the exit price notion, or price that would be received for an asset or paid to transfer a liability, in an orderly transaction between the market participants at the measurement date. The carrying amounts of our financial instruments, including cash equivalents, restricted cash, investments held-to-maturity, accounts payable, and accrued liabilities, approximate fair value due to their short maturities.

**Accounts Receivable**—Trade accounts receivable are stated net of allowances for doubtful accounts. Management estimates the allowance for doubtful accounts based on review and analysis of specific customer balances that may not be collectible, customer payment history and any other customer-specific information that may impact ability to collect the receivable. Accounts are considered for write-off when they become past due and when it is determined that the probability of collection is remote. There was no allowance for doubtful accounts at December 31, 2017 and September 30, 2018.

**Property and Equipment**—Property and equipment consists of leasehold improvements associated with our corporate offices, software purchased during the normal course of business, equipment and office furniture and fixtures, all of which are recorded at cost. Depreciation and amortization is recorded using the straight-line method over the respective useful lives of the assets ranging from three to six years. Leasehold improvements are amortized over the shorter of lease term or useful life. Long-lived assets are reviewed for impairment whenever events or circumstances indicate that the carrying amount of these assets may not be recoverable.

**Intangible Assets, net** —Intangible assets are recorded at cost and amortized over the useful life. In the case of business combinations, intangible assets are recorded at fair value. At December 31, 2017 and September 30, 2018, intangible assets, net, includes patents and a domain name and other intangible assets purchased as part of our acquisition of GVR, including customer relationships, technology and a trademark. Intangible assets are reviewed for impairment whenever events or circumstances indicate that the carrying amount of these assets may not be recoverable. In certain cases, patents may expire or are abandoned as we no longer plan to pursue them. In such cases we write off the capitalized patent costs as patent abandonment costs which are included in research and development expenses. During the three and nine months ended September 30, 2018, we wrote off \$39,000 and \$87,000, respectively, related to expired and abandoned patents.

**Goodwill**—At December 31, 2017 and September 30, 2018, goodwill represents the difference between the price paid to acquire GVR and the fair value of the assets acquired, net of assumed liabilities. We review goodwill for impairment annually and whenever events or circumstances indicate that the carrying amount of these assets may not be recoverable.

**Revenue Recognition**—As of January 1, 2018, we recognize revenue in accordance with the Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or ASC, Topic 606, Revenue from Contracts with Customers.

Revenue is recognized upon the transfer of control of promised goods or services to the customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. Revenue consists primarily of fees received in connection with filter design projects with customers. Our performance obligation is to design a licensable filter in accordance with customer specifications. The license of the completed design is considered part of this performance obligation as the design and licensing of the filter are highly interdependent. We recognize revenue over the course of the design development phase as our customers are able to benefit from our design services as they are provided, primarily by marketing the in-process design to their customers. We recognize revenue from our design services based on efforts expended to date. At the end of each reporting period, we reassess our measure of progress and adjust revenue when appropriate.

In most cases, our design services are performed over a period of six to twelve months. Contracts generally include upfront non-refundable fees, intended to support our initial engineering product development efforts, as well as milestone

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payments based upon the successful completion of certain deliverables. Milestone payments represent variable consideration, and we use the "most likely amount" approach to determine the amount we ultimately expect to receive. At contract inception, we assess the likelihood of achieving milestones to estimate the total consideration we believe we will receive for our services. Our design service contracts also include a functional license over the completed design, which enables our customer to use our design in products marketed to their customers. We also earn royalties for each product shipped by our customer that incorporates one of our designs. Royalty fees are recorded upon shipment by our customer, and payment is generally due within 30 days.

We record the expenses related to these projects in the periods incurred and they are generally included in research and development expense.

During the three months ended September 30, 2017 and September 30, 2018, we recorded revenue of \$106,000 and \$115,000, respectively. During the nine months ended September 30, 2017 and September 30, 2018, we recorded revenue of \$482,000 and \$396,000, respectively. As of September 30, 2018, we have recorded \$187,000 in deferred revenue. See Note 3- Revenue Recognition, for further details.

**Research and Development**—Costs and expenses that can be clearly identified as research and development are charged to expense as incurred in accordance with ASC Topic 730-10, Research and Development.

**Operating Leases**—We lease office space and research facilities under operating leases. Certain lease agreements contain free or escalating rent payment provisions. We recognize rent expense under such leases on a straight-line basis over the term of the lease. Lease renewal periods are considered on a lease-by-lease basis in determining the lease term.

**Stock-Based Compensation**—We account for employee stock options in accordance with ASC Topic 718, Compensation-Stock Compensation. For stock options issued to employees and directors we use the Black-Scholes option valuation model for estimating fair value at the date of grant. For stock options issued for services rendered by non-employees, we recognize compensation expense in accordance with the requirements of ASC Topic 505-50, Equity, or ASC 505-50, as amended. Non-employee option grants that do not vest immediately upon grant are recorded as an expense over the vesting period. At the end of each financial reporting period prior to performance, the value of these options, as calculated using the Black-Scholes option valuation model, is determined, and compensation expense recognized or recovered during the period is adjusted accordingly. Since the fair market value of options granted to non-employees is subject to change in the future, the amount of the future compensation expense is subject to adjustment until the common stock options or warrants are fully vested.

We account for restricted stock units issued to employees at fair value, based on the market price of our stock on the date of grant, net of estimated forfeitures. Compensation expense is recognized for the portion of the award that is ultimately expected to vest over the period during which the recipient renders the required services to the Company generally using the straight-line single option method. The fair value of non-employee restricted stock units awarded are remeasured as the awards vest, and the resulting increase or decrease in fair value, if any, is recognized as an increase or decrease to compensation expense in the period the related services are rendered.

In the case of award modifications, we account for the modification in accordance with ASU No. 2017-09, Compensation-Stock Compensation (Topic 718): Scope of Modification Accounting, whereby we recognize the effect of the modification in the period the award is modified.

Stock-based compensation expense is included in research and development expenses and general and administrative expenses.

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Earnings Per Share, or EPS—EPS is computed in accordance with ASC Topic 260, Earnings per Share, and is calculated using the weighted average number of common shares outstanding during each period. Diluted EPS assumes the conversion, exercise or issuance of all potential common stock equivalents unless the effect is to reduce a loss or increase the income per share. Potential common shares consist of the incremental common shares issuable upon the exercise of stock options (using the treasury stock method), the exercise of warrants (using the if-converted method) and the vesting of restricted stock unit awards.

The following table presents the number of shares excluded from the calculation of diluted net loss per share attributable to common stockholders for the periods below:

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	Nine Months Ended September 30,	
	2017	2018
Common stock warrants	6,202,147	3,385,100
Common stock options	908,560	1,234,967
Non-vested restricted stock unit awards	1,401,693	2,071,299
Total shares excluded from net loss per share attributable to common stockholders	8,512,400	6,691,366

**Income Taxes**—We account for income taxes in accordance with ASC Topic 740, Income Taxes, or ASC 740, which requires the recognition of deferred tax assets and liabilities for the future consequences of events that have been recognized in our condensed consolidated financial statements or tax returns. The measurement of the deferred items is based on enacted tax laws. In the event the future consequences of differences between financial reporting bases and the tax bases of our assets and liabilities result in a deferred tax asset, ASC 740 requires an evaluation of the probability of being able to realize the future benefits indicated by such asset. A valuation allowance related to a deferred tax asset is recorded when it is more likely than not that some portion or the entire deferred tax asset will not be realized. As part of the process of preparing our consolidated financial statements, we are required to estimate our income tax expense in each of the jurisdictions in which we operate. We also assess temporary differences resulting from differing treatment of items for tax and accounting differences. We record a valuation allowance to reduce the deferred tax assets to the amount of future tax benefit that is more likely than not to be realized. For the period when we were organized as a limited liability company, we were treated as a partnership for federal and state income tax purposes under the entity classification domestic default rules. As of December 31, 2017 and September 30, 2018, no liability for unrecognized tax benefits was required to be reported. We recognize interest and penalties related to income tax matters in income taxes, and there were none for the three and nine months ended September 30, 2017 and 2018.

We have filed, or are in the process of filing, tax returns that are subject to audit by the respective tax authorities. Although the ultimate outcome would be unknown, we believe that any adjustments that may result from tax return audits are not likely to have a material, adverse effect on our consolidated results of operations, financial position or cash flows.

**Foreign Currency Translation**—The Swiss Franc has been determined to be the functional currency for the net assets of our Swiss-based subsidiary. We translate the assets and liabilities to U.S. dollars at each reporting period using exchange rates in effect at the balance sheet date and record the effects of the foreign currency translation in accumulated other comprehensive loss in shareholders' equity. We translate the income and expenses to U.S. dollars at each reporting period using the average exchange rate in effect for the period and record the effects of the foreign currency translation as other comprehensive loss in the consolidated statements of comprehensive loss. Gains and losses resulting from foreign currency transactions are included in net loss in the consolidated statements of comprehensive loss.

**Recent Accounting Pronouncements**

**Leases**—In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842), a comprehensive new leases standard that amends various aspects of existing accounting guidance for leases. It will require recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing arrangements. The main difference between previous U.S. GAAP and the amended standard is the recognition of lease assets and lease liabilities by lessees on the balance sheet for those leases classified as operating leases under previous U.S. GAAP. The accounting applied by a lessor is largely unchanged from that applied under previous U.S. GAAP. As a result, we will have to recognize a liability to make lease payments (the lease liability) and a right-of-use asset representing our right to use the underlying asset for the lease term on the balance sheet. In July 2018, the FASB issued ASU 2018-10,

Codification Improvements to Topic 842, Leases, which provides clarity to certain narrow aspects of the new standard and ASU 2018-11, Leases (Topic 842): Targeted Improvements, which provides an optional transition method for adopting the new leases guidance that eliminates comparative period reporting under the new guidance in the year of adoption. . The guidance is effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted. We plan to adopt the standard, as well as the practical expedients included therein, as of January 1, 2019. We have reviewed our leases and other agreements in order to determine the effects of the new guidance on our consolidated financial statements. We have determined that we have two facility leases that meet the criteria for recognition of lease assets and lease liabilities on the balance sheet under the new guidance. We are not party to any leases for which we are the lessor. We believe the adoption will cause us to recognize a significant right-of-use asset as well as the related lease liability in our consolidated financial statements. Intangibles-Goodwill and Other—In January 2017, the FASB issued ASU No. 2017-04, Intangibles-Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment, which simplifies the accounting for goodwill impairments by eliminating step 2 from the goodwill impairment test. The amended guidance will become effective for us commencing in the first quarter of

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fiscal 2019. We plan to adopt the standard as of January 1, 2019 and we do not believe there will be any material impact to our consolidated financial statements.

Compensation-Stock Compensation—In June 2018, the FASB issued ASU No. 2018-07, Compensation-Stock Compensation (Topic 718): Improvements to Non-employee Share-Based Payment Accounting, which intends to align the accounting of share-based payment awards issued to employees and non-employees. This update will be effective for annual periods, and interim periods within those annual periods, beginning after December 15, 2018. Early adoption is permitted. We plan to adopt the standard as of January 1, 2019 and we do not believe there will be any material impact to our consolidated financial statements as we have very few share-based payment arrangements with non-employees.

## NOTE 3—REVENUE RECOGNITION

On January 1, 2018, we adopted ASC Topic 606, Revenue from Contracts with Customers, and all of the related amendments and applied it to all contracts using the modified retrospective method. We recognized the cumulative effect of the initial adoption as an adjustment to the opening balance of retained earnings. Comparative financial information has not been restated and continues to be reported under the accounting standards in effect for those periods.

The adoption of the guidance resulted in a change in the accounting for milestone payments. Previously, we recognized revenue upon the achievement of a milestone. Under ASC Topic 606, milestone payments are treated as variable consideration and included in the transaction price for our design services. The cumulative effect of the changes made to our condensed consolidated balance sheet as of January 1, 2018 for the adoption of the new standard was as follows:

BALANCE SHEET	Balance at December 31, 2017	Adjustments Due to ASC 606	Balance at January 1, 2018
<b>ASSETS</b>			
Prepaid expenses and other current assets	\$536,000	\$ 67,000	\$603,000
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>			
Deferred Revenue, current	\$143,000	\$ 3,000	\$146,000
Retained Earnings	\$(67,812,000)	\$ 64,000	\$(67,748,000)

The following table summarizes the impact of the adoption on our Condensed Consolidated Balance Sheet and Condensed Consolidated Statement of Comprehensive Loss as of and for the periods ended September 30, 2018:

	September 30, 2018		
	As Reported	Balances Without Adoption of ASC 606	Effect of Change Increase/(Decrease)
<b>BALANCE SHEET</b>			
<b>ASSETS</b>			
Prepaid expenses and other current assets	\$397,000	\$394,000	\$ 3,000
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>			
Deferred revenue, current	\$187,000	\$160,000	\$ 27,000
Accumulated deficit	\$(85,691,000)	\$(85,667,000)	\$ (24,000 )





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	Three Months Ended September 30, 2018		
		Activity	
	As Reported	Without Adoption of ASC 606	Effect of Change Increase/(Decrease)
<b>STATEMENT OF COMPREHENSIVE LOSS</b>			
Revenue	\$ 115,000	\$ 155,000	\$ (40,000 )
Net loss	\$(6,275,000)	\$(6,235,000)	\$ 40,000
	Nine Months Ended September 30, 2018		
		Activity	
	As Reported	Without Adoption of ASC 606	Effect of Change Increase/(Decrease)
<b>STATEMENT OF COMPREHENSIVE LOSS</b>			
Revenue	\$ 396,000	\$ 484,000	\$ (88,000 )
Net loss	\$(17,943,000)	\$(17,855,000)	\$ 88,000

Our contracts with customers primarily relate to the design of filters for radio frequency, or RF, front-ends for the mobile device industry. Design service contracts generally include a modest upfront payment for the design services and a license over the completed design. We retain ownership of our designs, and therefore are also compensated for our design services through royalties based on sales of RFFE filters that incorporate our designs. We currently do not manufacture or sell any physical products or operate as a contract design company developing designs for a fee. Except for the royalty fees that are recognized as revenue upon use of one of our designs, we recognize revenue related to our design services over the estimated design completion time, on a straight-line basis, as the services are performed. The design development period varies significantly, from 9 to 36 months, depending upon the difficulty of the design.

Other Judgments and Assumptions - We apply the practical expedients available in ASC 606 to not disclose information about 1) remaining performance obligations that have original expected durations of one year or less and 2) variable consideration that is a sales-based or usage-based royalty.

Royalty Revenue- Upon completion of design services, our customers retain a license over the completed design. The license will typically last for a minimum of two years, and in many cases for the life of the design. Royalties are sales-based, and we recognize royalty revenue upon shipment, by our customer, of products that include our licensed design. In some cases, we will receive a reduced royalty amount due to value add, or other taxes, associated with the royalty. Taxes related to royalties are netted against revenues.

Contract Assets - Contract assets, other than accounts receivable, consist of unbilled revenue and generally arise when revenue is recognized on a contract whose transaction price includes an estimate of variable consideration from milestone payments. We do not have material amounts of contract assets as we have relatively few contracts, only modest design service fees and a small number of contracts containing milestone payments. Contract asset balances are included in Prepaid expenses and other current assets in our Condensed Consolidated Balance Sheet.

Contract Liabilities - Our contract liabilities consist of customer deposits and deferred revenue. We classify contract liabilities as current or noncurrent based on the timing of when we expect to recognize revenue. Generally, our contract liabilities are expected to be recognized in one year or less. Customer deposits and deferred revenue are separately stated in our Condensed Consolidated Balance Sheet.



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Summary of changes in contract assets and liabilities for the period from January 1, 2018 to September 30, 2018:

Contract asset	
Contract asset, January 1, 2018	\$67,000
Contract assets at beginning of year transferred to accounts receivable	(43,000 )
Reversal of contract assets due to changes in transaction price	(24,000 )
Contract assets recorded on contracts during the period	3,000
Contract asset, September 30, 2018	\$3,000
Contract liability	
Contract liability, January 1, 2018	\$146,000
Recognition of revenue included in beginning of year contract liability	(92,000 )
Contract liability, net of revenue recognized on contracts during the period	132,000
Foreign currency translation	1,000
Contract liability, September 30, 2018	\$187,000

The following table presents our disaggregated revenue by region and source:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2018	2017	2018
Revenue by geographic region:				
United States	\$89,000	\$96,000	\$415,000	\$338,000
Switzerland	17,000	19,000	67,000	58,000
Total revenue	\$106,000	\$115,000	\$482,000	\$396,000
Revenue by source:				
Design services	\$99,000	\$85,000	\$465,000	\$276,000
Royalties	7,000	30,000	17,000	120,000
Total revenue	\$106,000	\$115,000	\$482,000	\$396,000

## NOTE 4—WARRANTS

From time to time, we have issued warrants to purchase shares of common stock. These warrants have been issued in connection with the financing transactions and consulting services. Our warrants are subject to standard anti-dilution provisions applicable to shares of our common stock.

## Bridge Warrants

In January and March 2013, as an inducement to make bridge loans to the company, our founders received warrants to purchase a total of 124,998 units of Resonant LLC (the form of the Company at that time) at an exercise price of \$0.40 per unit for a period of five years. We refer to these warrants as Bridge Warrants. On June 17, 2013, in connection with our acquisition of all of the outstanding membership interests of Resonant LLC in an exchange transaction, the founders exchanged their Bridge Warrants to purchase an aggregate of 124,998 Class B units of Resonant LLC for Bridge Warrants to purchase an aggregate of 249,999 shares of our common stock at an exercise

price of \$0.20 per share. All other terms of the Bridge Warrants remained the same. In January 2018, we entered into an agreement with our founders to exchange all of the warrants for an amount of shares that would equal the number of shares they would have received if exercised under a cashless exercise. The effect of exchanging the warrants for shares of our common stock was considered a modification of the award which required us to record expense for the excess of the fair value of the common stock issued over the fair value of the exchanged

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warrants. On the date of the exchange the fair value of the warrants was determined to be \$1.6 million and the fair value of the shares of common stock issued were \$1.6 million. There was a difference in fair value of \$2,000 which was recorded to general and administrative expenses during the nine months ended September 30, 2018. No expense was recorded in the three months ended September 30, 2018.

Private Placement Warrants - February 2017

In February 2017, we issued warrants to purchase 1,626,898 shares of our common stock at an exercise price of \$8.25 in connection with our private placement sale of 1,626,898 shares of common stock. The warrants are exercisable for a period commencing 6 months and ending 30 months after the closing of the financing. We refer to these warrants as Private Placement Warrants - February 2017. We estimated the fair value of the Private Placement Warrants at \$2,084,000 using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of \$4.91 per share, time to maturity of 3 years, volatility of 60%, zero expected dividend rate and risk-free rate of 1.50%. The allocation of the fair value of these warrants was included in additional paid-in capital on the consolidated balance sheet.

On December 19, 2017, we entered into a Warrant Exercise Agreement with the holder of Private Placement Warrants - February 2017 to induce the exercise of the 1,626,898 warrants in full. Pursuant to the agreement, the warrant holder exercised in full the warrant and purchased 1,626,898 shares of our common stock at an exercise price of \$8.25 per share, for an aggregate exercise price of approximately \$13.4 million and we paid the warrant holder an inducement fee of approximately \$6.7 million, which resulted in net proceeds to us of \$6.7 million. The inducement offer included in the Warrant Exercise Agreement was considered a modification to the warrant upon acceptance by the warrant holder. Upon modification of the warrant we were required to remeasure the warrant. We estimated the fair value of the Private Placement Warrants - February 2017 immediately prior to modification at \$4.1 million using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of \$8.18 per share, time to maturity of 1.67 years, volatility of 60%, zero expected dividend rate and risk-free rate of 1.78%. We estimated the fair value of the Private Placement Warrants - February 2017 upon modification at \$6.7 million using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of \$8.18 per share, time to maturity of 1 day, volatility of 10%, zero expected dividend rate and risk-free rate of 1.25%. The change in fair value was \$4.1 million, and when combined with the cash inducement of \$6.7 million, resulted in \$2.6 million of expense, which was recorded as warrant inducement expense during the year ended December 31, 2017.

Private Placement Warrants - September 2017

In September and October 2017, we issued warrants to purchase an aggregate of 1,976,919 shares of our common stock at an exercise price of \$4.85 in connection with our private placement sale of 1,976,919 shares of common stock. The sale was completed in two tranches with the first tranche, which closed on September 28, 2017, including 1,745,581 warrants, and the second tranche, which closed on October 2, 2017, including 231,338 warrants. The warrants are exercisable for a period commencing 6 months and ending 36 months after the closing of the financing. Collectively, we refer to these warrants as Private Placement Warrants - September 2017. We estimated the total fair value of the Private Placement Warrants - September 2017 at \$3.6 million using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of \$4.49 for the first tranche and \$4.69 per share for the second tranche, time to maturity of 3 years, volatility of 60%, zero expected dividend rate and risk free rates of 1.59% for the first tranche and 1.63% for the second tranche. The allocation of the fair value of these warrants was included in additional paid-in capital on the consolidated balance sheet.

Placement Agent Warrants - 2017

In addition to the Private Placement Warrants - September 2017 issued in connection with our private placement sale of 1,976,919 shares of our common stock, we also issued to the placement agent, warrants to purchase a total of 98,846 shares of our common stock at an exercise price of \$4.85 per share. Upon closing of the first tranche on September 28, 2017, we issued 87,279 warrants, and upon closing the second tranche, we issued 11,567 warrants. The warrants are exercisable for a period commencing 6 months and ending 36 months after the closing of the financing. Collectively, we refer to these warrants as Placement Agent Warrants - 2017. We estimated the fair value of the Placement Agent Warrants - 2017 at \$174,000 using the Black-Scholes option valuation model with the following assumptions: market prices of the stock of \$4.49 per share for the first tranche and \$4.69 per share for the second tranche, time to maturity of 3 years, volatility of 60%, zero expected dividend rate and risk free rates of 1.59% for the first tranche and 1.63% for the second tranche. The allocation of the fair value of these warrants was included in additional paid-in capital on the consolidated balance sheet.

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A roll-forward of warrant share activity from January 1, 2017 to September 30, 2017 is shown in the following table:

	Issued and Outstanding Warrants as of January 1, 2017	Warrants Issued	Warrants Exercised/ Expired	Issued and Outstanding Warrants as of September 30, 2017
Bridge Warrants	249,999	—	—	249,999
Consulting Warrants	98,000	—	(41,889 )	(1)56,111
Financing Warrants	78,186	—	—	78,186
Underwriting Warrants	310,500	—	—	310,500
IR Consulting Warrants	48,000	—	(42,000 )	(2)6,000
Private Placement Warrants - 2016	1,995,124	—	(89,281 )	(3)1,905,843
Underwriting Warrants- Public Offering 2016	135,750	—	—	135,750
Private Placement Warrants - February 2017	—	1,626,898	—	1,626,898
Private Placement Warrants - September 2017	—	1,832,860	—	1,832,860
	2,915,559	3,459,758	(173,170 )	6,202,147

(1) During the nine months ended September 30, 2017, there were 41,889 common stock warrants that were exercised through cashless exercises which resulted in 41,800 shares being issued.

(2) During the nine months ended September 30, 2017, 42,000 warrants expired.

(3) During the nine months ended September 30, 2017, there were 89,281 common stock warrants that were exercised through cashless exercises which resulted in 37,031 shares being issued.

A roll-forward of warrant share activity from January 1, 2018 to September 30, 2018 is shown in the following table:

	Issued and Outstanding Warrants as of January 1, 2018	Warrants Issued	Warrants Exercised/ Expired	Issued and Outstanding Warrants as of September 30, 2018
Bridge Warrants	249,999	—	(249,999 )	(1)—
Consulting Warrants	12,223	—	(5,556 )	(2)6,667
Financing Warrants	62,530	—	—	62,530
Underwriting Warrants	310,500	—	—	310,500
IR Consulting Warrants	6,000	—	(6,000 )	(3)—
Private Placement Warrants - 2016	891,063	—	(73,000 )	(4)818,063
Underwriting Warrants - Public Offering 2016	122,175	—	—	122,175
Private Placement Warrants - September 2017	1,976,919	—	(10,600 )	(5)1,966,319
Placement Agent Warrants	98,846	—	—	98,846
	3,730,255	—	(345,155 )	3,385,100

During the nine months ended September 30, 2018, there were 249,999 warrants that were exchanged for 242,913 (1) shares of common stock in an exchange transaction where the warrant holders exchanged the warrants for the same number of shares they would have been entitled to in a cashless exercise.

(2) During the nine months ended September 30, 2018, there were 5,556 warrants that were exercised through a cashless exercise which netted 5,542 shares of common stock being issued.

- (3) During the nine months ended September 30, 2018, 6,000 warrants expired.
- (4) During the nine months ended September 30, 2018, there were 73,000 warrants exercised for cash.
- (5) During the nine months ended September 30, 2018, there were 10,600 warrants exercised for cash.



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NOTE 5—STOCKHOLDERS' EQUITY

Common Stock

Pursuant to our amended and restated certificate of incorporation, we are authorized to issue 47,000,000 shares of common stock. Holders of our common stock are entitled to dividends as and when declared by the Board of Directors, subject to rights and holders of all classes of stock outstanding having priority rights to dividends. There have been no dividends declared to date. Each share of common stock is entitled to one vote.

On March 27, 2018, we completed the sale of 5,714,286 shares of common stock at a price of \$3.50 per share in an underwritten public offering. Gross proceeds were \$20.0 million with net proceeds of \$18.4 million after deducting underwriter fees and offering expenses. The shares were issued pursuant to a shelf registration statement that we filed with the SEC, which became effective in May 2016. On April 6, 2018, following exercise by the underwriter of its overallotment option, we sold an additional 857,142 shares at a price of \$3.50, resulting in gross proceeds of \$3.0 million and net proceeds of \$2.8 million after deducting underwriter fees and offering expenses.

Preferred Stock

Pursuant to our amended and restated certificate of incorporation, we are authorized to issue 3,000,000 shares of preferred stock. The Board of Directors has the authority, without action by our stockholders, to designate and issue shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. To-date, no preferred shares have been issued.

NOTE 6— STOCK-BASED COMPENSATION

2014 Omnibus Incentive Plan

In January 2014, our board of directors approved the 2014 Omnibus Incentive Plan and amended and restated the plan in March 2014. Our stockholders approved the Amended and Restated 2014 Omnibus Incentive Plan, or the 2014 Plan, in March 2014. Our 2014 Plan initially permitted for the issuance of equity-based instruments covering up to a total of 1,400,000 shares of common stock. In June 2016, our board of directors and stockholders approved an increase of 1,300,000 shares and in June 2017 approved an additional increase of 3,250,000 shares of common stock bringing the total shares allowed under the plan to 5,950,000.

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## Option Valuation

We have computed the fair value of options granted to employees and non-employees using the Black-Scholes option valuation model. The compensation costs of non-employee arrangements are subject to re-measurement at each reporting period over the vesting terms as earned. Option forfeitures are estimated at the time of valuation and reduce expense ratably over the vesting period. This estimate will be adjusted periodically based on the extent to which actual option forfeitures differ, or are expected to differ, from the previous estimate, when it is material. The expected term used for options issued to non-employees is the contractual life and the expected term used for options issued to employees is the estimated period of time that options granted are expected to be outstanding. We have estimated the expected life of our employee stock options using the “simplified” method, whereby, the expected life equals the arithmetic average of the vesting term and the original contractual term of the option due to our lack of sufficient historical data. For non-employees we use an estimated expected life of the remaining term of the stock option grant, which is initially ten years. Since our stock has not been publicly traded for a sufficiently long period of time, we are utilizing an expected volatility figure based on a review of the historical volatilities, over a period of time, equivalent to the expected life of the instrument being valued, of similarly positioned public companies within our industry. The risk-free interest rate was determined from the implied yields from U.S. Treasury zero-coupon bonds with a remaining term consistent with the expected term of the instrument being valued.

## Stock Options to Employees and Non-Employees

During the three and nine months ended September 30, 2017, we granted incentive stock options for the purchase of 131,500 and 299,880 shares, respectively, of our common stock to our employees. The stock options have an exercise price range of \$4.36 per share to \$4.68 per share with a term of 10 years. Of the options granted in 2017, 125,880 options vested upon grant, 91,500 vested nine days after grant and the remaining 82,500 stock options vest quarterly over sixteen quarters. The options granted had an aggregate grant date fair value of \$356,000 and \$802,000 for the three and nine months ended September 30, 2017, respectively, utilizing the Black-Scholes option valuation model.

During the three and nine months ended September 30, 2018, we granted incentive stock options for the purchase of 110,000 and 227,500 shares, respectively, of our common stock to our employees. The stock options have an exercise price range of \$4.12 per share to \$5.96 per share with a term of 10 years. The stock options vest quarterly over sixteen quarters. The options granted had an aggregate grant date fair value of \$345,000 and \$738,000, for the three and nine months ended September 30, 2018, respectively, utilizing the Black-Scholes option valuation model.

We estimated the fair value of stock options awarded during the nine months ended September 30, 2017 and 2018 using the Black-Scholes option valuation model. The fair values of stock options granted for the periods were estimated using the following assumptions:

	Stock Option Grants Awarded During the Nine Months Ended September 30, 2017	Stock Option Grants Awarded During the Nine Months Ended September 30, 2018
Stock Price	\$4.36 to \$4.68	\$4.12 to \$5.96
Dividend Yield	0.00%	0.00%
Expected Volatility	60%	70%
Risk-free interest rate	1.95% - 2.14%	2.50% - 2.98%
Expected Life	7 years	7 years

Stock-based compensation expense related to stock options for employees was \$100,000 and \$125,000 for the three months ended September 30, 2017 and 2018, respectively, and was \$332,000 and \$347,000 for the nine months ended September 30, 2017 and 2018, respectively, exclusive of options issued in connection with our incentive programs

which are discussed below. For all employee stock options, we estimate forfeitures at the time of grant, and revise those estimates in subsequent periods if actual forfeitures differ from our estimates. We use historical data to estimate pre-vesting option forfeitures and record stock-based compensation expense only for those awards that are expected to vest. To the extent that actual forfeitures differ from our estimates, the difference is recorded as a cumulative adjustment in the period the estimates were revised. During the three and nine months ended September 30, 2017 and 2018, we applied a forfeiture rate of six percent, which is reflected in our stock-based compensation expense related to stock options.

In January 2017, we modified certain stock options previously granted to a former executive. The modification was made in connection with the executive's termination. The modification included accelerated vesting of stock options to purchase 8,752 shares of common stock as well as an extension of the exercise period for all vested shares, including stock

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options to purchase 17,504 shares of common stock. As a result of the modification, additional stock compensation expense of \$19,000 was recognized for the nine months ended September 30, 2017. There was no expense related to the modification during the nine months ended September 30, 2018.

For stock options paid in consideration of services rendered by non-employees, we recognize compensation expense in accordance with the requirements of ASC 505-50. Non-employee stock option grants that do not vest immediately upon grant are recorded as an expense over the vesting period. At the end of each financial reporting period prior to performance, the value of these stock options, as calculated using the Black-Scholes option valuation model, is determined, and compensation expense recognized or recovered during the period is adjusted accordingly. Since the fair market value of stock options granted to non-employees is subject to change in the future, the amount of the future compensation expense is subject to adjustment until the common stock options are fully vested. Stock-based compensation expense related to stock options for consultants was \$2,000 for the three months ended September 30, 2017 and was a reduction of expense of \$2,000 for the three months ended September 30, 2018. Stock-based compensation expense related to stock options for consultants was \$7,000 and \$6,000 for the nine months ended September 30, 2017 and 2018, respectively, exclusive of options issued in connection with our incentive programs which are discussed below.

## Stock Option Award Activity

The following is a summary of our stock option activity during the nine months ended September 30, 2018:

	Number of Options	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Life In Years
Outstanding, January 1, 2018	1,082,490	\$ 4.87	\$ 3.00	8.38
Granted	227,500	4.77	3.24	9.31
Exercised	(4,692 )	2.91	1.75	—
Canceled / Forfeited	(70,331 )	4.73	2.89	—
Outstanding, September 30, 2018	1,234,967	\$ 4.86	\$ 3.06	7.95

	Number of Options	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Life In Years
Exercisable, January 1, 2018	704,303	\$ 5.08	\$ 3.17	8.15
Vested	114,591	4.76	2.90	7.54
Exercised	(4,692 )	2.91	1.75	—
Canceled / Forfeited	(17,057 )	4.72	2.84	—
Exercisable, September 30, 2018	797,145	\$ 5.05	\$ 3.15	7.43

The following table presents information related to stock options outstanding and exercisable at September 30, 2018:

Options Outstanding	Options Exercisable		
	Outstanding	Weighted Average Remaining Life In Years	Exercisable Number of Options
Exercise Price	Number of Options		
\$1.93 – \$2.00	146,183	7.34	90,323

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\$3.83 – \$4.92	646,984	8.63	370,907
\$5.01 – \$6.00	281,500	6.04	207,455
\$6.18 – \$7.20	70,000	6.15	53,753
\$7.54 – \$7.80	67,800	6.32	54,540
\$8.06 – \$12.98	22,500	6.30	20,167
	1,234,967	7.43	797,145

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As of September 30, 2018, there was \$1.2 million of unrecognized compensation expense related to unvested employee stock options, which is expected to be recognized over a weighted-average period of approximately 3.0 years. The aggregate intrinsic values of outstanding stock options and vested stock options as of September 30, 2018 were \$308,000 and \$190,000, respectively, which represent options whose exercise price was less than the closing fair market value of our common stock on September 30, 2018 of \$4.06 per share.

## Restricted Stock Units Activity

We account for restricted stock units issued to employees at fair value, based on the market price of our stock on the date of grant, net of estimated forfeitures. The fair value of non-employee restricted stock units awarded are remeasured as the awards vest, and the resulting increase in fair value, if any, is recognized as expense in the period the related services are rendered. During the three months ended September 30, 2017 and 2018 we recorded \$564,000 and \$1.2 million, respectively, of stock-based compensation related to the restricted stock unit shares that had been issued to-date. During the nine months ended September 30, 2017 and 2018 we recorded \$1.7 million and \$3.3 million, respectively, of stock-based compensation related to the restricted stock unit shares that had been issued to-date.

In January 2017, we modified certain restricted stock units previously granted to a former executive. The modification was made in connection with the executive's termination. The modification included accelerated vesting of 8,815 units which resulted in additional stock compensation expense of \$36,000 for the nine months ended September 30, 2017. There was no expense related to the modification during the three and nine months ended September 30, 2018.

A summary of restricted stock unit activity for the nine months ended September 30, 2018 is as follows:

	Number of Restricted Share Units	Weighted- Average Grant-Date Fair Value Per Share
Outstanding at January 1, 2018	1,476,858	\$ 4.96
Granted	1,379,905	4.81
Vested	(621,263 )	4.93
Forfeited	(164,201 )	5.16
Outstanding at September 30, 2018	2,071,299	\$ 4.85

As of September 30, 2018, there was \$6.9 million of unrecognized compensation expense related to unvested restricted stock unit agreements which is expected to be recognized over a weighted-average period of approximately 2.3 years. For restricted stock unit awards subject to graded vesting, we recognize compensation cost on a straight-line basis over the service period for the entire award.

## Market-based Awards

In August 2016, we granted 250,000 market-based restricted stock units to an executive. The restricted stock units are subject to market-based vesting requirements, measured quarterly, based on the average of (a) the average high daily trading price of our common stock for each trading day during the last month of the applicable calendar quarter and (b) the average low daily trading price of our common stock for each trading day during the last month of the applicable calendar quarter, each as reported by The Nasdaq Stock Market, LLC. The restricted stock units are eligible to be earned on a quarterly basis based on a linear interpolation of the applicable share price, or in the case of a liquidation event, on the day of (or in connection with) such liquidation event based on the applicable transaction price. Once earned, the restricted stock units vest 50% on the date such restricted stock units become earned and 50% on September 30, 2019. We recognize compensation expense for restricted stock units with market conditions using a

graded vesting model, based on the probability of the performance condition being met, net of estimated pre-vesting forfeitures. The share price on the date of issuance was \$5.06 per share. For each of the three months ended September 30, 2017 and 2018, we recognized \$6,000 of stock compensation expense in connection with this award. For the nine months ended September 30, 2017 and 2018, we recognized \$19,000 and \$18,000, respectively, of stock compensation expense in connection with this award, which is included in general and administrative expenses. The unamortized expense related to this award is \$24,000 and is expected to be recognized over 1.0 year.

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Incentive Bonus Awards

We provide eligible employees, including executives, the opportunity to earn bonus awards upon achievement of predetermined performance goals and objectives. The purpose is to reward attainment of company goals and/or individual performance objectives, with award opportunities expressed as a percentage of base salary. Bonuses can be measured and paid quarterly and/or annually, and are paid in cash, equity or a combination of cash and equity, in the discretion of our compensation committee.

2017 Incentive Bonus Program

During 2017, our employees and executives participated in the 2017 Incentive Bonus Program. The program provided for the award of quarterly and annual bonuses to our employees and executive officers if certain performance goals, based on company-wide billings, expenses and certain other individual non-monetary targets, were attained in quarterly and annual performance periods during our 2017 fiscal year. The awards contained a combination of service conditions and performance conditions based on the achievement of specified performance thresholds. The awards were based on each individual's annual salary multiplied by a bonus multiplier percentage which had been determined by our compensation committee. The plan also allowed for additional discretionary awards to non-executive employees up to 10% of the total base salaries of non-executive employees. Additionally, the annual bonus, as it related to executive employees, was subject to the achievement of certain stock price thresholds for the 10 trading days ending on the last trading day of 2017. The bonuses were to be paid in the form of cash, stock options, restricted stock, or a combination thereof. The number of shares underlying equity awards granted to each employee were determined based on the performance bonus amount to be paid in equity, based in part by utilizing the stock price on the grant date. We recognized compensation expense for the total amount of the bonuses earned during the period earned. For the three and nine months ended September 30, 2017, we recorded \$193,000 and \$943,000 of expense related to the 2017 incentive bonus plan as the performance conditions were achieved. Of the expense recorded for the three months ended September 30, 2017, \$153,000 is included in research and development expenses and \$40,000 is included in general and administrative expenses. Of the expense recorded for the nine months ended September 30, 2017, \$584,000 is included in research and development expenses and \$359,000 is included in general and administrative expenses. There was no expense for the period ended September 30, 2018 in connection with this program.

2017 Non-executive Bonus Program

Effective July 1, 2017, our non-executive employees participated in the 2017 Non-executive Bonus Program. The program provided for the award of up to 300,000 restricted stock units to be awarded to non-executive employees and consultants based upon the achievement of certain performance conditions before the end of the year. Vesting of the restricted stock units were subject to continued service over the vesting period. Based on the achievement of performance conditions, 180,528 restricted stock units were granted on January 25, 2018 at an aggregate grant date fair value of \$1.1 million. The awards vest in four tranches with 25% of the shares vesting on each April 1, 2018, 2019, 2020 and 2021. For the three and nine months ended September 30, 2018, we recorded \$77,000 and \$242,000 of stock compensation expense, respectively, related to the 2017 Non-executive Bonus Program. Additionally, upon grant we released the accrual of \$436,000 which had been recorded as of December 31, 2017 related to performance under this program. Of the expense recorded for the three months ended September 30, 2018, \$62,000 and \$15,000 is included in research and development expenses and general and administrative expenses, respectively. Of the expense recorded for the nine months ended September 30, 2018, \$195,000 and \$47,000 is included in research and development expenses and general and administrative expenses, respectively. There was no expense recorded for the three and nine months ended September 30, 2017 as the achievement of the performance conditions were not probable.



## 2018 Incentive Bonus Program

During 2018, our employees and executives, exclusive of the CEO, are participating in the 2018 Incentive Bonus Program. The program provides for the award of quarterly and annual bonuses to our employees and executive officers if certain performance goals, based on company-wide billings, expenses and certain other individual non-monetary targets, are attained in quarterly and annual performance periods during our 2018 fiscal year. The awards contain a combination of service conditions and performance conditions based on the achievement of specified performance thresholds. The awards are based on each individual's annual salary multiplied by a bonus multiplier percentage which has been determined by our compensation committee. The plan also allows for additional discretionary awards to non-executive employees up to 10% of the total base salaries of non-executive employees. The bonuses will be paid in the form of cash, stock options, restricted stock, or a combination thereof. The number of shares underlying equity awards granted to each employee will be determined based on the performance bonus amount to be paid in equity, divided by our closing stock price on the grant date. We recognized

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compensation expense for the total amount of the bonuses earned during the period earned. For the three and nine months ended September 30, 2018, we recorded a total of \$408,000 and \$1.2 million, respectively, of expense related to the 2018 incentive bonus plan as the performance conditions were either achieved or in the case of the annual awards, are expected to be achieved. Included in the expense for 2018 was \$919,000 related to quarterly awards and \$292,000 related to the annual awards. The quarterly awards for the first and second quarters were issued in the form of restricted stock units in May 2018 and August 2018, respectively, and were vested in full during the month of grant. The quarterly award for the third quarter will be issued in the form of restricted stock units to be granted and vested in November 2018. We record an accrual for the annual component of the bonus program as the annual award will not be issued until after the year has ended. Of the expense recorded for the three months ended September 30, 2018, \$269,000 is included in research and development expenses and \$139,000 is included in general and administrative expenses. Of the expense recorded for the nine months ended September 30, 2018, \$770,000 is included in research and development expenses and \$441,000 is included in general and administrative expenses. There was no expense for the period ended September 30, 2017 in connection with this program as the program was not in place at that time. As of September 30, 2018, there was \$608,000 included in accrued salaries and payroll related expenses related to the 2018 Incentive Bonus Program.

## 2018 CEO Incentive Bonus Program

During 2018, our CEO is participating in the 2018 CEO Incentive Bonus Program. The program provides for the award of an annual bonus to our CEO if certain performance goals, based on company-wide billings and expenses are attained in the annual performance period during our 2018 fiscal year. Additionally, the annual bonus is subject to the achievement of certain stock price thresholds for the 10 trading days ending on December 19, 2018. We recognize compensation expense for the total amount of the bonus earned during the period earned. For the three months and nine months ended September 30, 2018, we recorded compensation expense of \$14,000 and \$42,000, respectively, as certain of the achievements of the performance conditions were considered probable. The expense was included in general and administrative expenses. As of September 30, 2018, there was \$42,000 included in accrued salaries and payroll related expenses related to the 2018 CEO Incentive Bonus Program.

Total equity-based compensation costs recorded in the condensed consolidated statements of operations is allocated as follows:

	Three Months Ended September 30, 2017	Three Months Ended September 30, 2018	Nine Months Ended September 30, 2017	Nine Months Ended September 30, 2018
Research and development				
Employees	\$ 304,000	\$ 672,000	\$ 839,000	\$ 1,975,000
Non-employees	20,000	14,000	61,000	58,000
Total research and development	324,000	686,000	900,000	2,033,000
General and administrative				
Employees and directors	314,000	337,000	998,000	1,471,000
Non-employees	28,000	345,000	126,000	454,000
Total general and administrative	342,000	682,000	1,124,000	1,925,000
Total equity-based compensation	\$ 666,000	\$ 1,368,000	\$ 2,024,000	\$ 3,958,000

## NOTE 7—INCOME TAXES

Income tax for the three months ended September 30, 2017 and 2018 was a benefit of \$16,000 and \$11,000, respectively. Income tax for the nine months ended September 30, 2017 and 2018 was a benefit of \$40,000 and \$19,000, respectively. The effective tax rate for the three months ended September 30, 2017 and 2018 and nine months ended September 30, 2017 and 2018 differed from the statutory rate primarily due to the valuation allowance recorded against the Company's deferred tax assets.

NOTE 8—RELATED PARTY TRANSACTIONS

In August 2016, we entered into a consulting agreement with a member of our board of directors. Under the agreement, the board member would provide engineering design and fabrication advisory services for an hourly rate, with total payments not to exceed \$120,000 during any twelve-month period. During the nine months ended September 30, 2017, we incurred expenses

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of \$26,000 in connection with the consulting agreement. The agreement was terminated effective April 1, 2017. There was no expense for the three and nine months ended September 30, 2018.

NOTE 9— COMMITMENTS AND CONTINGENCIES

**Commitments**—In October 2013, we signed a lease for office space for our corporate headquarters and moved in during the first quarter of 2014. The lease, as amended, had an expiration of July 31, 2018. In May 2018, we entered into an agreement with the landlord to extend the lease for one month, through August 2018 with no change to the amount of rent or other payments due under the lease. Subsequently, we negotiated with the landlord for an extension through September 2018 when we moved to our new location. In May 2018, we signed a lease for our current corporate headquarters. The lease provides for an initial space of 16,682 square feet (the "initial" premises) beginning in September 2018 and an additional 10,355 square feet (the "expansion" premises) beginning January 2019. The lease term is 72 months and expires on August 31, 2024. The agreement allows for one option to renew for an additional five years. Base rent on the initial premises is abated for September and October of 2018 and is \$19,500 per month from November 1, 2018 to July 31, 2019. Base rent on the initial premises increases to \$25,774 per month as of August 1, 2019 and then escalates by 3% on each anniversary date thereafter. Base rent on the expansion premises is \$7,767 per month from January 1, 2019 through June 30, 2019 with an increase to \$15,533 for the month of July 2019 and an increase to \$15,998 per month effective August 1, 2019 with 3% escalations on each anniversary date thereafter. We are also required to pay our proportionate share of operating expenses and utilities which are estimated to initially be \$11,177 per month for the 2018 period utilizing only the initial premises. Our share of operating expenses and utilities will increase once we occupy the expansion premises and will likely fluctuate in the future. Per the terms of the lease we are also required to maintain as a security deposit \$50,000 in cash and a letter of credit in favor of the lessor. The initial amount of the letter of credit is \$200,000 with a step-down of \$50,000 at each anniversary date if there have been no monetary defaults. The letter of credit is secured by a pledge in favor of the issuing bank of a \$211,000 mutual fund account which is classified as restricted cash on our balance sheet as of September 30, 2018.

In November 2013, we signed a lease for our satellite development office in Burlingame, CA. The lease had a two-year term, and rental costs of approximately \$4,000 per month. In May 2015, we renewed the lease for a one year period expiring November 30, 2016 with rental costs of \$5,000 per month. Effective December 16, 2016, we signed a new lease of 5,248 square feet of office space within the same building in Burlingame, California commencing February 2017. The lease has a five year term, and rental costs of approximately \$17,000 per month.

Rent expense related to our facilities and equipment for the three months ended September 30, 2017 and 2018 was \$127,000 and \$200,000, respectively, and for the nine months ended September 30, 2017 and 2018 was \$339,000 and \$484,000, respectively.

**Legal Proceedings**—We are occasionally involved in legal proceedings and other matters arising from the normal course of business.

On September 24, 2015, a purported shareholder derivative action was filed in the United States District Court for the Central District of California. The plaintiff alleged that certain of our officers and directors breached their fiduciary duties to us, violated federal securities laws and exposed us to possible financial liability.

On August 15, 2018, the court granted final approval of a settlement which fully resolved plaintiffs' claims and provided for a release of all claims asserted in the derivative action, bringing the litigation to a close.

We are not party to any other legal proceedings. We may, from time to time, be party to litigation and subject to claims incident to the ordinary course of business. As our growth continues, we may become party to an increasing number of litigation matters and claims. The outcome of litigation and claims cannot be predicted with certainty, and the resolution of any future matters could materially affect our future financial position, results of operations or cash

flows.

Legal fees and other costs associated with legal proceedings are expensed as incurred. We assess, in conjunction with our legal counsel, the need to record a liability for litigation and contingencies. Litigation accruals are recorded when and if it is determined that a loss related matter is both probable and reasonably estimable. Material loss contingencies that are reasonably possible of occurrence, if any, are subject to disclosure. We evaluate developments in legal proceedings and other matters on a quarterly basis. As of September 30, 2017 and 2018, there was no litigation or contingency with at least a reasonable possibility of a material loss. No losses have been recorded during the three and nine months ended September 30, 2017 and 2018, respectively, with respect to litigation or loss contingencies.

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Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. The words "believe," "may," "will," "potentially," "estimate," "continue," "anticipate," "intend," "could," "would," "project," "plan," "expect" and similar expressions convey uncertainty of future events or outcomes are intended to identify forward-looking statements. These forward-looking statements speak only as of the date of this Form 10-Q and are subject to uncertainties, assumptions and business and economic risks. As such, our actual results could differ materially from those set forth in the forward-looking statements as a result of the factors referenced in the subsection "Risk Factors" set forth in Part II, Item 1A of this Report and Part I, Item 1A of our Annual Report, and similar discussions in our other reports filed with the Securities and Exchange Commission. You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in our forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances described in the forward-looking statements will be achieved or occur. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this Form 10-Q to conform these statements to actual results or to changes in our expectations, except as required by law.

The following discussion should be read in conjunction with our unaudited condensed consolidated financial statements and notes thereto appearing elsewhere in this Quarterly Report on Form 10-Q with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect.

Overview

Resonant is a late-stage development company that has created an innovative software, intellectual property, or IP, and services platform that has the ability to increase designer efficiency, reduce the time to market and lower unit costs in the designs of filters for radio frequency, or RF, front-ends for the mobile device industry. The RF front-end, or RFFE, is the circuitry in a mobile device responsible for analog signal processing and is located between the device's antenna and its digital circuitry. The software platform we are developing is based on fundamentally new technology that we call Infinite Synthesized Networks®, or ISN®, to configure and connect resonators, the building blocks of RF filters. Filters are a critical component of the RF front-end used to select desired radio frequency signals and reject unwanted signals. Our ISN® platform allows us to develop unique, custom designs that address the increasing complexity of the RFFE due to carrier aggregation (the combining of multiple frequencies into a single data stream to increase throughput through higher data rates), or CA, by both reducing the size of the filter and improving performance. Our goal is to utilize our ISN® platform to support our customers in reducing their time to develop complex filter and module designs, to access new classes of filter designs, and to do it more cost effectively. In the second quarter of 2018 Resonant deployed the first ever module of the company's ISN tool for evaluation, PMT<sup>XTM</sup>, designed to significantly improve design and fabrication turn times.

We are commercializing our technology through the creation of filter designs that address the problems in the high growth RFFE industry created by the growing number of frequency bands in mobile devices. The worldwide adoption of Long Term Evolution, or LTE, as the global standard, and the use of mobile devices to access the Internet, has resulted in massive proliferation of frequency bands which, when combined with CA for higher data rates and multiple input multiple output, or MIMO, has resulted in an ever-increasing number and complexity of filters in the RFFE. We have developed and continue to expand a series of single-band designs for frequency bands presently dominated by larger and more expensive bulk acoustic wave, or BAW, filters. We are also developing multiplexer filter designs for two or more bands to address the CA requirements of our customers. We are using our ISN® platform to efficiently integrate these designs into RF modules for our module customers. Finally, we are developing unique filter designs, enabled by ISN®, to replace multiple filters and associated componentry for many bands, with

higher performance. Currently, we are leveraging ISN<sup>®</sup> to develop these designs targeted for either the Surface Acoustic Wave (SAW) or Temperature Compensated, Surface Acoustic Wave (TC-SAW) manufacturing processes. In 2018 we further extended ISN for BAW designs. This has resulted in the invention of a unique resonator structure, XBAR<sup>™</sup>, which exhibits performance parameters suitable for 5G applications - high frequency operation, large bandwidth and high power reliability. In order to succeed, we must convince RFFE suppliers that our filter designs can significantly reduce the size and cost of their products.

We believe licensing our designs is the most direct and effective means of validating our ISN<sup>®</sup> platform and related IP libraries to address this rapidly growing market. Our target customers make part or all of the RFFE. We intend to retain ownership of our designs, and we expect to be compensated through license fees and royalties based on sales of RFFE filters that incorporate our designs and leverage our ISN<sup>®</sup> platform.

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Our typical customer engagement process begins with the execution of a Joint Development Agreement, or JDA, and License Agreement, or LA, for specific bands. Depending on the complexity of the design, we estimate that initial samples of products to original equipment manufacturers, or OEMs, will occur typically within nine to thirty-six months following execution of a license agreement. We classify these new designs as either ISN<sup>®</sup> Ready (9-12 months), ISN<sup>®</sup> Pilot (12-18 months), ISN<sup>®</sup> Advanced (18-36 months) or ISN<sup>®</sup> Development (Custom). It is following these development cycles that designs are manufactured, qualified by our customers and sampled to OEM customers. Our customers can take from three to six months to qualify a design and then the OEMs can take an additional three to six months, or longer, to qualify a design as fit for use, reliable and ready for mass production. The point at which an OEM begins taking product from our customers in mass production is typically when royalty revenues would begin. Our customer agreements typically provide for upfront design fees and royalty payments for each unit sold using our filter designs and typically last for a minimum of two years, but may be renewed for a longer period.

We began 2016 with no customers under contract and no license agreements. We ended 2016 with six customers and more than 25 designs contracted. These included a wide range of complex designs ranging from sophisticated "WiFi Co-existence" filters to high frequency duplexers and quadplexers. In late 2016, we expanded our customer focus beyond just filter manufacturers. Through the capabilities provided by our ISN<sup>®</sup> platform, we enabled a new class of customer - fabless filter manufacturers. These companies do not have their own internal filter fabrication facility, or Fab, and typically already would be supplying other products in the RFFE to the OEMs and as a result do not require a protracted, new vendor, qualification process in order to supply parts. It is through our existing customer relationships that we are able to facilitate these third-party Fab relationships, that leverage our ISN<sup>®</sup> tools to deliver cutting edge filter designs to these fabless filter customers.

During 2017, we continued to expand our engagements with existing customers while identifying and contracting with new customers and as a result, ended the year with eight total customers and more than double the number of designs contracted. In many cases the expansion in the number of contracted designs came from customers who already had a significant investment in working with Resonant and confidence in the capabilities of the ISN<sup>®</sup> platform, IP and services team.

Also, in 2017, in order to further facilitate our fabless filter program, and to provide manufacturing stability across the supply chain, we embarked on the creation of our ISN<sup>®</sup> Foundry Program. Foundries joining Resonant's program first complete a foundry evaluation process to ensure alignment with our customers for filter performance, manufacturing quality and capacity, and business practices. Once the evaluation is completed, the foundry runs a characterization lot, used to create a foundry process design kit, or PDK, after which, we are ready to start designs for manufacture in the foundry. Packaging/Back-end vendors can also join the program by completing a back-end evaluation process to match their capabilities with foundry partners and our customers. It is through this program that we can enable a secure supply chain for all our customers.

In 2018, we hired a VP, Software Development to continue the expansion and conversion of our ISN<sup>®</sup> platform for cloud-based delivery. Improving design efficiency with software development/enhancement to our ISN<sup>®</sup> platform and related modules is a top priority to maximize the effectiveness of our engineers. In addition, we hired a VP, Business Operations to implement scalable business processes to improve company efficiency while we continue to grow the Company. Further in 2018, we continued the development of our phone-board testing and reliability capabilities, in order to support our customers with proficiencies critical for their success.

We plan to continue to pursue filter design projects with existing and potential customers and other strategic partners. These types of arrangements may subsidize the expansion of our IP libraries and further the development of our ISN<sup>®</sup> platform, as well as offer complementary technology and market intelligence. We are also investigating the potential of licensing part or all of our ISN<sup>®</sup> software design suite to potential customers in the RFFE industry. However, we intend to retain ownership of our technology, software, designs and related improvements. Our goal is to establish and leverage alliances with new and existing customers, who will help grow the market for our designs by integrating them with their own proprietary technology and products, or by using our software products for their own designs, thus combining their own particular strengths with ours to provide an extensive array of solutions.

Our inception date is May 29, 2012. We commenced business on July 6, 2012 and completed our initial public offering, or IPO, on May 29, 2014.



In July 2016, we acquired GVR Trade S.A., or GVR, by purchasing all of the issued and outstanding capital stock of GVR for a purchase price of approximately \$1.2 million consisting of \$661,000 in cash and 125,000 shares of our common stock. GVR is a Swiss-based company specializing in the consultation and design of SAW and BAW devices. We believe the acquisition was a logical extension to the existing long-term cooperation between our two companies and will further expand our ability to support licensing agreements for both current and future partners and customers. GVR is a wholly owned direct subsidiary of Resonant.

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We are using the net proceeds from our financings for product development to commercialize our technology, research and development, the development of our patent strategy and expansion of our patent portfolio, maturing and commercializing our ISN<sup>®</sup> tools, as well as for working capital and other general corporate purposes. Our costs include employee salaries and benefits, compensation paid to consultants, capital costs for research and other equipment, costs associated with development activities including travel and administration, legal expenses, sales and marketing costs, general and administrative expenses, and other costs associated with a late-stage, publicly-traded technology company. However, our costs are dependent on the nature of our development efforts and our success in commercialization. We anticipate adding employees for research and development, as well as general and administrative functions, to support our efforts. We expect to incur consulting expenses related to technology development and other efforts as well as legal and related expenses to protect our intellectual property.

The amounts that we actually spend for any specific purpose may vary significantly and will depend on a number of factors including, but not limited to, our expected cash resources, the pace of progress of our commercialization and development efforts, actual needs with respect to product testing, development and research, market conditions, and changes in or revisions to our marketing strategies. In addition, we may invest in complementary products, technologies or businesses.

As of September 30, 2018, we have 65 employees and use the services of several outside consultants. Of our employees, 46 are engaged in research and development and 19 in general and administrative activities.

Our patent portfolio at September 30, 2018 is comprised of more than 150 issued and pending patents.

We have earned minimal revenues since inception, and our operations have been funded with initial capital contributions and proceeds from the sale of equity securities and debt. We have incurred accumulated losses totaling \$85.7 million from inception through September 30, 2018. Our losses are primarily the result of research and development costs associated with commercializing our technology, combined with start-up and operating costs including those related to financings and being a public company. We expect to continue to incur substantial costs for commercialization of our technology on a continuous basis because our business model involves developing and licensing custom filter designs.

Our condensed consolidated financial statements account for the continuation of our business as a going concern. We are subject to the risks and uncertainties associated with a new business. Our principal sources of liquidity as of September 30, 2018 consist of existing cash and cash equivalents of \$17.5 million and \$8.9 million in investments. In the nine months ended September 30, 2018, we used approximately \$14.6 million in cash and investments. Due to these conditions, substantial doubt exists as to our ability to continue as a going concern. After evaluation of these conditions, we believe our current resources, in the absence of material revenues, will provide sufficient funding for planned operations into the second half of 2019. If necessary, we will seek to raise additional capital from the sale of equity securities or the incurrence of indebtedness to allow us to continue operations. There can be no assurance that additional financing will be available to us on acceptable terms, or at all. Additionally, if we issue additional equity securities to raise funds, whether to existing investors or others, the ownership percentage of our existing stockholders would be reduced. New investors may demand rights, preferences or privileges senior to those of existing holders of common stock. Additionally, we may be limited as to the amount of funds we can raise pursuant to SEC rules and the continued listing requirements of NASDAQ. If we cannot raise needed funds, we might be forced to make substantial reductions in our operating expenses, which could adversely affect our ability to implement our business plan and ultimately our viability as a company. These consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or amounts and classification of liabilities that might result from this uncertainty.

## Critical Accounting Policies and Estimates

Our discussion and analysis of financial condition and results of operations is based upon our condensed consolidated financial statements, which have been prepared in conformity with accounting principles generally accepted in the United States of America. Certain accounting policies and estimates are particularly important to the understanding of our financial position and results of operations and require the application of significant judgment by our management

or can be materially affected by changes from period to period in economic factors or conditions that are outside of our control. As a result, they are subject to an inherent degree of uncertainty. In applying these policies, our management uses their judgment to determine the appropriate assumptions to be used in the determination of certain estimates. Those estimates are based on our historical operations, our future business plans and projected financial results, the terms of existing contracts, our observance of trends in the industry, information provided by our customers and information available from other outside sources, as appropriate.

A description of our critical accounting policies that represent the more significant judgments and estimates used in the preparation of our financial statements was provided in the Management's Discussion and Analysis of Financial Condition and Results of Operations section of our Annual Report on Form 10-K for the year ended December 31, 2017. Except for the accounting policy for revenue recognition that was updated as a result of adopting ASU No. 2014-09, there have been no

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changes to our critical accounting policies and estimates described in the Annual Report on Form 10-K for the year ended December 31, 2017 that have had a material impact on our condensed consolidated financial statements and related notes.

### Recently Issued and Adopted Accounting Pronouncements

Recent accounting pronouncements are detailed in Note 2 to our consolidated financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

### Results of Operations

#### Comparison of the Three and Nine Months Ended September 30, 2017 and 2018

Revenues. For the three and nine months ended September 30, 2017, revenues consisted of the recognized portion of amounts received from customers for the development of our filter designs, milestone payments based on the achievement of specific milestones and royalties from shipments of our licensed designs. The revenues primarily related to upfront payments associated with our filter design development contracts which were recognized ratably over the estimated development period associated with that upfront payment. As of January 1, 2018, we adopted ASC 606, which required a change in the method for recognizing revenue from contracts with customers. We recorded an adjustment to accumulated deficit for the cumulative effect as of the date of adoption. For the period ended September 30, 2018, under the new guidance, revenues consist of the recognized portion of the transaction price associated with our contracts from customers recognized over time as the obligations under the terms of the contract are satisfied. Generally, the transaction price includes both upfront and milestone payments which we expect to receive in exchange for providing services. Additionally, we recognized royalty revenue related to sales by our customer of our licensed designs. For the three months ended September 30, 2017 and 2018, we recognized a total of \$106,000 and \$115,000, respectively, of revenue. For the nine months ended September 30, 2017 and 2018, we recognized a total of \$482,000 and \$396,000, respectively, of revenue. The adoption of ASC 606 negatively impacted our revenue by \$40,000 for the three months ended September 30, 2018 and by \$88,000 for the nine months ended September 30, 2018. Using the guidance in effect for 2017, our revenue would have been \$155,000 for the three months ended September 30, 2018 and \$484,000 for the nine months ended September 30, 2018. We expect revenues to continue to be recorded due to the \$187,000 of deferred revenue we have recorded as of September 30, 2018. We also believe that based on the potential royalties from our license agreements, there may be future revenues recorded.

Research and Development. Research and development expenses consist of the direct engineering and other costs associated with the development and commercialization of our technology, including the development of filter designs for our customers. These consist primarily of the cost of employees and consultants, including stock-based compensation, and to a lesser extent, costs for equipment, software and supplies. We also include the costs for our intellectual property development program under research and development. This program focuses on patent strategy and invention extraction. Research and development expenses increased \$1.3 million, from \$2.3 million in the third quarter of 2017 to \$3.6 million in the third quarter of 2018 and increased \$3.2 million, from \$7.0 million for the nine months ended September 30, 2017 to \$10.2 million for the nine months ended September 30, 2018. The increases were the result of the increased payroll, benefit costs, travel and development costs related to expanded activity on our various filter designs under development and increased stock-based compensation expense primarily related to our incentive bonus programs which have been paid in the form of equity awards. We anticipate that our research and development expenses will continue to increase as a result of our planned growth.

General and Administrative Expenses. General and administrative expenses include salaries, stock-based compensation, payroll taxes and employee benefits for the executives and administrative staff. It also includes

expenses for corporate overhead such as rent for our facilities, travel expenses, telecommunications, investor relations, insurance, professional fees and business consulting fees. General and administrative expenses increased \$1.0 million, from \$2.0 million in the third quarter of 2017 to \$3.0 million in the third quarter of 2018 and increased \$1.6 million, from \$6.9 million for the nine months ended September 30, 2017 to \$8.5 million for the nine months ended September 30, 2018. The increases include increased expenses for additional administrative headcount, outside consultant services, facilities rent and expenses paid in connection with our anticipated proxy contest which was settled in April 2018, offset by \$400,000 of senior executive transition costs which occurred in the second quarter of 2017 and had no impact in the nine months ended September 30, 2018. Additionally, stock-based compensation increased primarily related to our incentive bonus programs which have been paid in the form of equity awards. We anticipate that our general and administrative expenses will likely continue to increase as a result of planned growth.

**Interest and Investment Income.** Interest and investment income increased by \$163,000 from \$14,000 in the third quarter of 2017 to \$177,000 in the third quarter of 2018 and increased by \$284,000, from \$39,000 for the nine months ended

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September 30, 2017 to \$323,000 for the nine months ended September 30, 2018, primarily due to increased cash and investment balances. We expect interest income to fluctuate in proportion to our cash and investment balances.

**Income Taxes.** We have earned minimal revenues and are currently operating at a loss. In the nine months ended September 30, 2017 and 2018, our only tax liability was for minimum taxes in the states where we conduct business. With the acquisition of our foreign subsidiary, GVR, we are also responsible for income taxes in Switzerland related to the earnings of GVR. The benefit from income taxes recorded for the three and nine month periods ended September 30, 2017 and 2018 primarily represents the net change in deferred income taxes of GVR, partially offset by expenses related to minimum state income taxes.

## Liquidity and Capital Resources

### Financing Activities

We have earned minimal revenues since inception. Our operations have been funded with initial capital contributions and proceeds from the sale of equity securities and debt.

As of September 30, 2018, we have raised aggregate gross proceeds of \$85.4 million through the use of loans, convertible debt and equity through an IPO, private placement financings and secondary offering of our common stock.

We had current assets of \$26.8 million and current liabilities of \$2.7 million at September 30, 2018, resulting in working capital of \$24.1 million. This compares to working capital of \$11.6 million at September 30, 2017 and \$17.1 million at December 31, 2017. The change in working capital is primarily the result of proceeds from the issuance of equity offset by the use of cash in our normal business operations.

Our condensed consolidated financial statements account for the continuation of our business as a going concern. We are subject to the risks and uncertainties associated with a new business. Our principal sources of liquidity as of September 30, 2018 consist of existing cash and cash equivalents of \$17.5 million and \$8.9 million in investments. In the nine months ended September 30, 2018, we used approximately \$14.6 million in cash and investments. Due to these conditions, substantial doubt exists as to our ability to continue as a going concern. After evaluation of these conditions, we believe our current resources, in the absence of material revenues, will provide sufficient funding for planned operations into the second half of 2019. If necessary, we will seek to raise additional capital from the sale of equity securities or the incurrence of indebtedness to allow us to continue operations. There can be no assurance that additional financing will be available to us on acceptable terms, or at all. Additionally, if we issue additional equity securities to raise funds, whether to existing investors or others, the ownership percentage of our existing stockholders would be reduced. New investors may demand rights, preferences or privileges senior to those of existing holders of common stock. Additionally, we may be limited as to the amount of funds we can raise pursuant to SEC rules and the continued listing requirements of NASDAQ. If we cannot raise needed funds, we might be forced to make substantial reductions in our operating expenses, which could adversely affect our ability to implement our business plan and ultimately our viability as a company. These consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or amounts and classification of liabilities that might result from this uncertainty.

### Cash Flow Analysis

Operating activities used cash of \$10.6 million in the first nine months of 2017 and \$13.6 million in the first nine months of 2018. The increase is the result of increased payroll-related and travel costs associated with the increase in employee headcount.

Investing activities provided cash of \$4.0 million in the first nine months of 2017 and used cash of \$9.8 million in the first nine months of 2018. In 2017, the cash provided was a result of the redemptions of investments held to maturity, offset by the cash used to purchase property and equipment and expenditures for patents. In 2018, the cash used was a result of the purchase of investments held to maturity in excess of redemptions of investments held to maturity and cash used to purchase property and equipment and expenditures for patents.

Financing activities provided cash of \$15.1 million in the first nine months of 2017 as a result of the net proceeds from the sale of equity securities in a private placement financing completed in February 2017. Financing activities provided cash of \$21.5 million in the first nine months of 2018 as a result of the net proceeds from the sale of equity securities in an underwritten public offering completed in March 2018 along with the underwriter overallotment option exercised in April 2018.

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Off-Balance Sheet Transactions

We do not have any off-balance sheet arrangements.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Not Applicable

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Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

The phrase “disclosure controls and procedures” refers to controls and procedures designed to ensure that information required to be disclosed in our reports filed or submitted under the Securities Exchange Act of 1934, as amended, or the Exchange Act, such as this Quarterly Report on Form 10-Q, is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the U.S. Securities and Exchange Commission, or SEC. Disclosure controls and procedures are also designed to ensure that such information is accumulated and communicated to our management, including our chief executive officer, or CEO, and chief financial officer, or CFO, as appropriate to allow timely decision regarding required disclosure.

Our management, with the participation of our CEO and CFO, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act), as of September 30, 2018, the end of the period covered by this Quarterly Report on Form 10-Q. Based on such evaluation, our CEO and CFO have concluded that as of September 30, 2018, our disclosure controls and procedures were designed at a reasonable assurance level and were effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the rules and forms of the SEC, and that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosure.

Changes in Internal Controls over Financial Reporting

There was no change in our internal control over financial reporting during the quarter ended September 30, 2018 that materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Effectiveness of Controls and Procedures

In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply judgment in evaluating the benefits of possible controls and procedures relative to their costs.

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## PART II: OTHER INFORMATION

## Item 1. Legal Proceedings

On September 24, 2015, a purported shareholder derivative action was filed in the United States District Court for the Central District of California. The plaintiff alleges that certain of our officers and directors breached their fiduciary duties to us, including by allegedly violating the federal securities laws and exposing us to possible financial liability. On August 15, 2018, the court granted final approval of a settlement which fully resolved plaintiffs' claims and provided for a release of all claims asserted in the derivative action, bringing the litigation to a close.

We are not party to any other legal proceedings. We may, from time to time, be party to litigation and subject to claims incident to the ordinary course of business. As our growth continues, we may become party to an increasing number of litigation matters and claims. The outcome of litigation and claims cannot be predicted with certainty, and the resolution of any future matters could materially affect our future financial position, results of operations or cash flows.

## Item 1A. Risk Factors

This Quarterly Report on Form 10-Q contains forward-looking statements, which are subject to a variety of risks and uncertainties. Other actual results could differ materially from those anticipated in those forward-looking statements as a result of various factors, including those set forth in the risk factors relating to our business and common stock contained in Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2017. There have been no material changes to such risk factors during the period ended September 30, 2018.

## Item 5. Other Information

On November 2, 2018, the Compensation Committee of our Board of Directors approved quarterly bonus awards to our executive officers pursuant to our 2018 Incentive Bonus Program for their performance during the third quarter of 2018. The bonus awards were paid in the form of restricted stock units for shares of our common stock in the amounts set forth below. The restricted stock units vest in full on November 20, 2018.

	Number
Executive Officers of RSU	
	Shares
Jeff Killian	4,911
Robert Hammond	4,672
Neal Fenzi	3,830

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Item 6.		Exhibits				
Exhibit Number	Exhibit Description	Incorporated by Reference			Filed	
		Form	File Number	Exhibit	Filing Date	Herewith
3.1	<u>Amended and Restated Certificate of Incorporation of the Registrant</u>	8-K	001-36467	3.1	6/5/2014	
3.2	<u>Amended and Restated Bylaws of the Registrant</u>	8-K	001-36467	3.2	6/5/2014	
10.1*	<u>Offer Letter between the Registrant and Michael E. Seifert, dated August 13, 2018</u>	8-K	001-36467	10.1	8/17/2018	
10.2*	<u>Offer Letter between the Registrant and Martin S. McDermut, dated October 14, 2018</u>	8-K	001-36467	10.1	11/5/2018	
31.1	<u>Certification of Principal Executive Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>					X
31.2	<u>Certification of Principal Financial Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>					X
32.1#	<u>Certification of Principal Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>					X
101.INS	XBRL Instance Document					X
101.SCH	XBRL Taxonomy Extension Schema Document					X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document					X

\* Each a management contract or compensatory plan or arrangement.

# The information in this exhibit is furnished and deemed not filed with the Securities and Exchange Commission for purposes of section 18 of the Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of Resonant Inc. under the Securities Act of 1933, as amended, or the Exchange Act of 1934, as amended, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Date: November 13, 2018 Resonant Inc.

By: /s/ Jeff A. Killian  
Jeff A. Killian  
Interim Chief Financial Officer  
(Principal Financial and Accounting Officer)