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 June 30, 2020

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 incorporation or organization)	(I.R.S. Employer 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)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.001 par value	RESN	The NASDAQ Stock Market LLC

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	☐

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 August 4, 2020, the issuer had 53,159,858 shares of common stock issued and outstanding.

RESONANT INC.

TABLE OF CONTENTS

PART I: FINANCIAL INFORMATION

Item 1. Financial Statements

RESONANT INC.
Condensed Consolidated Balance Sheets
(Unaudited)

	June 30, 2020	December 31, 2019
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	$ 23,873,000	$ 10,688,000
Accounts receivable	206,000	78,000
Prepaid expenses and other current assets	447,000	375,000
TOTAL CURRENT ASSETS	24,526,000	11,141,000
PROPERTY AND EQUIPMENT		
Property and equipment	4,585,000	4,519,000
Less: Accumulated depreciation and amortization	(3,094,000)	(2,634,000)
PROPERTY AND EQUIPMENT, NET	1,491,000	1,885,000
OTHER NONCURRENT ASSETS		
Domain name and other intangibles, net	24,000	33,000
Patents, net	1,770,000	1,543,000
Restricted cash	150,000	150,000
Goodwill	846,000	831,000
Operating lease right-of-use assets	2,200,000	2,496,000
Other assets	68,000	68,000
TOTAL OTHER NONCURRENT ASSETS	5,058,000	5,121,000
TOTAL ASSETS	$ 31,075,000	$ 18,147,000
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Accounts payable	$ 1,045,000	$ 1,100,000
Accrued expenses	199,000	521,000
Accrued salaries and payroll related expenses	2,456,000	2,368,000
Deferred revenue	1,076,000	1,731,000
Operating lease liabilities, current	638,000	612,000
TOTAL CURRENT LIABILITIES	5,414,000	6,332,000
LONG-TERM LIABILITIES		
Operating lease liabilities, net of current portion	1,734,000	2,059,000
TOTAL LIABILITIES	7,148,000	8,391,000
Commitments and contingencies (Note 11)		
STOCKHOLDERS' EQUITY		
Common stock, $0.001 par value, 100,000,000 authorized and 53,112,681 outstanding as of June 30, 2020, and 33,156,246 outstanding as of December 31, 2019	53,000	33,000
Preferred stock, $0.001 par value, 3,000,000 authorized and none outstanding as of June 30, 2020 and December 31, 2019	—	—
Additional paid-in capital	161,568,000	132,214,000
Accumulated other comprehensive income	18,000	1,000
Accumulated deficit	(137,712,000)	(122,492,000)
TOTAL STOCKHOLDERS' EQUITY	23,927,000	9,756,000
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$ 31,075,000	$ 18,147,000

See Accompanying Notes to Condensed Consolidated Financial Statements

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
REVENUES	$ 604,000	$ 63,000	$ 1,148,000	$ 197,000
OPERATING EXPENSES				
Research and development	4,845,000	4,633,000	10,307,000	9,019,000
Sales, marketing and administration	2,976,000	2,994,000	6,115,000	5,979,000
TOTAL OPERATING EXPENSES	7,821,000	7,627,000	16,422,000	14,998,000
NET OPERATING LOSS	(7,217,000)	(7,564,000)	(15,274,000)	(14,801,000)
OTHER INCOME (EXPENSE)				
Interest and investment income	7,000	72,000	64,000	178,000
Other expense	(5,000)	(6,000)	(9,000)	(11,000)
TOTAL OTHER INCOME, NET	2,000	66,000	55,000	167,000
LOSS BEFORE INCOME TAXES	(7,215,000)	(7,498,000)	(15,219,000)	(14,634,000)
Provision for income taxes	—	—	1,000	1,000
NET LOSS	$ (7,215,000)	$ (7,498,000)	$ (15,220,000)	$ (14,635,000)
Foreign currency translation adjustment, net of tax	8,000	16,000	17,000	6,000
COMPREHENSIVE LOSS	$ (7,207,000)	$ (7,482,000)	$ (15,203,000)	$ (14,629,000)
NET LOSS PER SHARE - BASIC AND DILUTED	$ (0.14)	$ (0.27)	$ (0.31)	$ (0.53)
Weighted average shares outstanding — basic and diluted	**52,901,488**	**28,150,497**	**48,367,308**	**27,850,879**

See Accompanying Notes to Condensed Consolidated Financial Statements

RESONANT INC.
Condensed Consolidated Statements of Stockholders' Equity
For the Three and Six Months Ended June 30, 2020 and 2019
(Unaudited)

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
	Shares	Amount				
Balance, January 1, 2020	33,156,246	$ 33,000	$ 132,214,000	$ (122,492,000)	$ 1,000	$ 9,756,000
Vesting of restricted stock units	378,051	—	—	—	—	—
Stock-based compensation	—	—	1,338,000	—	—	1,338,000
Sale of common stock, net of offering costs	19,166,667	19,000	26,441,000	—	—	26,460,000
Net loss	—	—	—	(8,005,000)	—	(8,005,000)
Foreign currency translation adjustment, net of tax	—	—	—	—	9,000	9,000
Balance, March 31, 2020	52,700,964	$ 52,000	$ 159,993,000	$ (130,497,000)	$ 10,000	$ 29,558,000
Vesting of restricted stock units	405,077	1,000		—	—	1,000
Stock-based compensation		—	1,625,000	—	—	1,625,000
Additional offering costs in connection with February sale of common stock	—	—	(50,000)	—	—	(50,000)
Exercise of warrants	6,640	—	—	—	—	—
Net loss	—	—	—	(7,215,000)	—	(7,215,000)
Foreign currency translation adjustment, net of tax	—	—	—	—	8,000	8,000
Balance, June 30, 2020	53,112,681	$ 53,000	$ 161,568,000	$ (137,712,000)	$ 18,000	$ 23,927,000

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance, January 1, 2019	27,391,290	$ 27,000	$ 115,450,000	$ (92,564,000)	$ (15,000)	$ 22,898,000
Vesting of restricted stock units	116,997	—	—	—	—	—
Stock-based compensation	—	—	1,040,000	—	—	1,040,000
Exercise of warrants	140,000	—	400,000	—	—	400,000
Net loss	—	—	—	(7,137,000)	—	(7,137,000)
Foreign currency translation adjustment, net of tax	—	—	—	—	(10,000)	(10,000)
Balance, March 31, 2019	27,648,287	$ 27,000	$ 116,890,000	$ (99,701,000)	$ (25,000)	$ 17,191,000
Vesting of restricted stock units	334,774	—	—	—	—	—
Stock-based compensation	—	—	1,460,000	—	—	1,460,000
Exercise of warrants	346,809	1,000	986,000	—	—	987,000
Net loss	—	—	—	(7,498,000)	—	(7,498,000)
Foreign currency translation adjustments, net of tax	—	—	—	—	16,000	16,000
Balance, June 30, 2019	28,329,870	$ 28,000	$ 119,336,000	$ (107,199,000)	$ (9,000)	$ 12,156,000

See Accompanying Notes to Condensed Consolidated Financial Statements

Table of Contents

RESONANT INC.
Condensed Consolidated Statements of Cash Flows
(Unaudited)

	Six months ended June 30,	
	2020	**2019**
CASH FLOWS FROM OPERATING ACTIVITIES		
Net Loss	$ (15,220,000)	$ (14,635,000)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	508,000	501,000
Stock-based compensation	2,990,000	2,811,000
Non-cash loss on disposal of assets	—	1,000
Non-cash investment income	—	(19,000)
Non-cash patent write-off	8,000	67,000
Right-of-use asset amortization	296,000	296,000
Changes in assets and liabilities:		
Accounts receivable	(128,000)	116,000
Prepaid expenses and other current assets	(71,000)	—
Other assets	—	1,000
Accounts payable	149,000	124,000
Accrued expenses	(163,000)	41,000
Accrued salaries and payroll related expenses	62,000	(355,000)
Deferred revenue	(655,000)	(84,000)
Operating lease liabilities	(299,000)	(209,000)
Net cash used in operating activities	(12,523,000)	(11,344,000)
CASH FLOWS FROM INVESTING ACTIVITIES		
Purchases of property and equipment	(407,000)	(577,000)
Expenditures for patents and domain names	(295,000)	(195,000)
Redemption of investments held-to-maturity	—	24,831,000
Purchase of investments held-to-maturity	—	(12,432,000)
Net cash provided by (used in) investing activities	(702,000)	11,627,000
CASH FLOWS FROM FINANCING ACTIVITIES		
Net proceeds from the sale of common stock from underwritten public offering	26,410,000	—
Proceeds from exercise of warrants	—	1,387,000
Net cash provided by financing activities	26,410,000	1,387,000
Effects of exchange rates on cash, cash equivalents and restricted cash	—	1,000
NET INCREASE IN CASH, CASH EQUIVALENTS AND RESTRICTED CASH	13,185,000	1,671,000
CASH, CASH EQUIVALENTS AND RESTRICTED CASH — Beginning of period	10,838,000	4,605,000
CASH, CASH EQUIVALENTS AND RESTRICTED CASH — End of period	$ 24,023,000	$ 6,276,000
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION		
Taxes Paid	$ 1,000	$ 1,000
SUPPLEMENTAL DISCLOSURE OF NON-CASH ACTIVITIES		
Restricted stock units issued in settlement of liability	$ 342,000	$ 314,000
Property and equipment included in accounts payable	$ 24,000	$ 17,000
Property and equipment included in accrued liabilities	$ —	$ 57,000
Patents included in accounts payable	$ 62,000	$ 16,000

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:

	June 30,	
	2020	2019
Cash and cash equivalents	$ 23,873,000	$ 6,065,000
Restricted cash	150,000	211,000
Total cash, cash equivalents and restricted cash	$ 24,023,000	$ 6,276,000

See Accompanying Notes to Condensed Consolidated Financial Statements

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, with offices in Burlingame, California, Austin, Texas and Neuchâtel Switzerland. 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, located in Switzerland, is a wholly owned subsidiary of Resonant Inc.

The innovative software platform we continue to develop 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. Currently, we are leveraging ISN® to develop designs targeted for either the Surface Acoustic Wave (SAW) or Temperature Compensated, Surface Acoustic Wave (TC-SAW) manufacturing processes. We also enabled ISN® for BAW designs, which has resulted in our invention of a novel resonator structure based on a combination of interdigital transducer (IDT) and piezoelectric layer, the first family of which we call XBAR™, which exhibits performance parameters suitable for 5G and 5-7GHz WiFi applications - high frequency operation, large bandwidth and high power reliability.

Using ISN® we have developed an IP portfolio of more than240 patents filed or issued, with more than 80 filed or issued targeting XBAR and 5G applications. In addition, with continued requirements for increasing numbers of filter designs our innovative software platform addresses the need for increased designer efficiency, reduced time to market and lower unit costs in the designs of filters for radio frequency, or RF Front-Ends for the mobile device, Customer Premise Equipment (CPE) and Infrastructure industries. The RF Front-End, or RFFE, is the circuitry responsible for analog signal processing and is located between the device's antenna and its digital circuitry. Filters are a critical component of the RFFE used to select desired radio frequency signals and reject unwanted signals.

We believe licensing our designs is the most direct and effective means of validating our IP, IP related libraries and ISN® mulit-physics EDA platform. Our target customers make part or all of the RFFE. We intend to retain ownership of our IP, trade secrets and designs, and we expect to be compensated through license fees and royalties based on sales of RFFE filters that incorporate our IP, trade secrets and designs.

Capital Resources and Liquidity

As of June 30, 2020, our accumulated deficit totaled $137.7 million. In the six months ended June 30, 2020 our net loss totaled 15.2 million and we used $13.2 million of cash for operating activities, the purchase of property and equipment and expenditures for patents. To date we have not generated significant revenues to enable profitability. We expect to continue to incur significant losses. These factors raise substantial doubt regarding our ability to continue as a going concern. At June 30, 2020 we had cash and cash equivalents of $23.9 million. In the absence of a significant revenue increase these cash resources will provide sufficient funding into early 2021. We are subject to the risks and uncertainties associated with a new business. Our continuance as a going concern is dependent on our future profitability. We are actively pursuing expanding our technology portfolio, increasing our revenue opportunities by completing deliverables under current contracts and entering into new prepaid and paid up royalty arrangements, and efficiently managing operations and exploring further cost saving opportunities. We may not be successful in these efforts. We may need to seek to raise additional capital from the sale of equity securities or incurrence of indebtedness. There can be no assurance that additional financing will be available to us on acceptable terms, or at all, in which case 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. The accompanying condensed consolidated financial statements have been prepared on a going concern basis which contemplates the realization of assets and satisfaction of liabilities in the normal course of business. The condensed consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might result from the outcome of this uncertainty.

Recent Developments

COVID-19-- The coronavirus ("COVID-19") pandemic continues to spread in the United States, Asia and Europe, the major markets in which we operate. The COVID-19 pandemic has resulted in significant governmental measures being implemented to control the spread of the virus, including, among others, restrictions on travel and the imposition of stay-at-home or work remote or from home conditions in the locations where we have offices. While we have not yet experienced a significant disruption of our operations as a result of the COVID-19 pandemic, if current restrictions continue for an extended period of time, we may, among other issues, experience delays in product development, a decreased ability to support our customers, disruptions in sales and marketing activities and an overall lack of productivity. Similarly, while we have not experienced a major disruption with our customers as a result of the COVID-19 pandemic, significant outbreaks, continued travel restrictions, stay-at-home or work remote conditions, or other restrictions may impact our customers' ability to manufacture or deliver raw materials or provide key components or services, which could result in delays in the demand from our customers to produce designs. The pandemic may also impact the expansion of current and/or the roll out of new services which could impact our customers' demand for their products, which could reduce their demand for our products or services. While we don't know and cannot quantify specific impacts, we expect we may be negatively affected if we encounter delays in our product development efforts, reductions in demand due to disruptions in the operations of our customers or their end customers, disruptions in local and global economies, volatility in the global financial markets, overall reductions in demand, or other COVID-19 ramifications.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation and Use of Estimates—The accompanying unaudited condensed consolidated financial statements were prepared in accordance with accounting principles generally accepted in the United States ("GAAP") for interim financial information. Certain information and disclosures normally included in consolidated financial statements prepared in accordance with GAAP have been condensed or omitted. Accordingly, these condensed consolidated financial statements should be read in conjunction with our audited consolidated financial statements and the related notes included in our Annual Report for the year ended December 31, 2019 filed with the SEC on March 13, 2020. The year-end condensed balance sheet was derived from our audited consolidated financial statements. Our unaudited interim condensed consolidated financial statements include, in the opinion of management, all adjustments, consisting of normal and recurring items, necessary for the fair statement of the condensed consolidated financial statements. The operating results for the three and six months ended June 30, 2020 are not necessarily indicative of the results expected for the full year ending December 31, 2020. Prior period figures have been reclassified, wherever necessary, to conform to current presentation. 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. On an ongoing basis, we evaluate our estimates and judgments compared to historical experience and expected trends. In March 2020, the outbreak of COVID-19 was declared a pandemic by the World Health Organization. While the nature of the situation is dynamic, we have considered its impact when developing our estimates and assumptions. Actual results and outcomes may differ from management's estimates and assumptions.

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 atone 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 as of June 30, 2020 and December 31, 2019 consists of a $150,000 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. The terms of the letter of credit allow for a step-down of $50,000 annually upon performance of certain events, primarily no late or defaulted payments. See also Note 9- Leases, for further details.

Investments—Securities held-to-maturity: Management determines the appropriate classification of debt 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 other income (expense).

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 other income (expense). 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.

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, 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 June 30, 2020 and December 31, 2019.

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 five 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.

Domain name and other intangibles, 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 June 30, 2020 and December 31, 2019, domain name and other intangibles, net, includes 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.

Patents, net—Patents are recorded at cost and amortized over the useful life. Patents 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 be 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.

Goodwill—At June 30, 2020 and December 31, 2019, 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—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 upfront non-refundable fees received in connection with filter design projects with customers and royalties. 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. We record the expenses related to these projects in the periods incurred and they are generally included in research and development expense.

In most cases, upfront non-refundable payments, in the form of prepaid royalties or other fees, related to design development are recognized over a period of 12 months to 18 months. Contracts generally include upfront non-refundable prepaid royalties or fees, intended to support our initial engineering product development efforts, and may include milestone 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.

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. Sales-based royalties are recognized upon shipment, by our customer, of products that include our licensed design. Payment is generally due within 30 days.

We apply the practical expedients available in ASC Topic 606, *Revenue from Contracts with Customers*, or 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.

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 determine if an arrangement is a lease at lease inception. Operating leases are included in right-of-use ("ROU") lease assets, other current liabilities (current portion of lease obligations), and long term lease obligations on our balance sheets. ROU lease assets represent our right to use an underlying asset for the lease term and lease obligations represent our obligation to make lease payments arising from the lease. Operating ROU lease assets and obligations are recognized at the commencement date based on the present value of lease payments over the lease term. As most of our leases do not provide an implicit rate, we use an incremental borrowing rate based on the information available at the commencement date in determining the present value of lease payments. The ROU lease asset also includes any lease payments made and excludes lease incentives. We evaluate renewal options at lease inception and on an ongoing basis and include renewal options which we are reasonably certain to exercise in our expected lease term when classifying leases and measuring lease liabilities. We allocate the consideration between lease and nonlease components and exclude nonlease components from our recognized lease assets and liabilities. See also Note 9 - Leases.

Minimum lease payments, including scheduled rent increases, are recognized as lease expenses on a straight-line basis over the applicable lease term. We recognize lease expenses within research and development and sales, marketing and administration expenses on a straight-line basis over the lease term.

We are not party to any leases for which we are the lessor.

Stock-Based Compensation—We account for stock options in accordance with ASC Topic 718, *Compensation-Stock Compensation.* We use the Black-Scholes option valuation model for estimating fair value at the date of grant.

We account for restricted stock units issued 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.

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.

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.

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 June 30, 2020 and December 31, 2019, 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 six months ended June 30, 2020 and 2019.

We have filed, or are in the process of filing, tax returns that are subject to audit by the relevant 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 condensed 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 income (loss) in the condensed consolidated statements of comprehensive loss. Gains and losses resulting from foreign currency transactions are included in net loss in the condensed consolidated statements of comprehensive loss.

Recent Accounting Pronouncements

Income Taxes—In December 2019, the FASB issued ASU No. 2019-12,*Income Taxes (Topic 740)*, which simplified the accounting for income taxes by removing certain exceptions to the general principles in Topic 740. The amendments also improve consistent application of and simplify GAAP for other areas of Topic 740 by clarifying and amending existing guidance. ASU No. 2019-12 is effective for interim and annual reporting periods beginning after December 15, 2020 and early adoption is permitted. We have not early adopted the standard and are currently evaluating the impact. We expect the standard to impact the presentation of income taxes on our condensed consolidated statement of comprehensive loss as we will no longer be allowed to present franchise taxes, based partially on income, as an income-based tax.

Credit Losses—In June 2016, the FASB issued ASU No. 2016-13,*Financial Instruments- Credit Losses (Topic 326).* In April and November 2019, and February 2020, the FASB issued implementation amendments to the June 2016 ASU (collectively, the amended guidance). The amended guidance replaced the current incurred loss methodology for credit losses with a current expected credit loss ("CECL") model, which requires the measurement of all expected credit losses for financial assets held at the reporting date based on historical experience, current conditions, and reasonable and supportable forecasts. The amended guidance expanded the information that an entity must consider in developing its expected credit loss estimates. Additionally, the updates amended the accounting for credit losses for purchased financial assets with a more-than-significant amount of credit deterioration since origination. The amended guidance requires enhanced disclosures to help investors and other financial statement users better understand significant estimates and judgments used in estimated credit losses. Early adoption is permitted. The guidance is effective for us in January 2023. We have no plan to early adopt the guidance and are currently evaluating the impact, which we believe will be immaterial to our condensed consolidated financial statements.

NOTE 3—REVENUE RECOGNITION

We record contract assets and contract liabilities in connection with revenue recognized for filter design projects.

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 sheets.

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 sheets.

Summary of changes in contract assets and liabilities for the six months ended June 30, 2020 and 2019:

	Six Months Ended June 30,	
	2020	2019
Contract assets		
Contract assets, beginning	$ —	$ 36,000
Contract assets at beginning of year transferred to accounts receivable	—	(36,000)
Contract assets recorded on contracts during the period	—	8,000
Contract assets, ending	$ —	$ 8,000
Contract liabilities		
Contract liabilities, beginning	$ 1,731,000	$ 271,000
Recognition of revenue included in beginning of year contract liabilities	(1,082,000)	(147,000)
Contract liabilities, net of revenue recognized on contracts during the period	427,000	63,000
Contract liabilities, ending	$ 1,076,000	$ 187,000

Effective September 30, 2019 we entered into a collaboration and license agreement with Murata Manufacturing Co., Ltd. Pursuant to the collaboration agreement, we have agreed with Murata to collaborate on the development of proprietary circuit designs using our XBAR® technology, and we licensed to Murata rights for products in four specific radio frequencies, or bands. Murata has agreed to pay us up to an aggregate of $9.0 million as pre-paid royalties and other fees for the licensed designs and certain other intellectual property developed in the collaboration, payable in installments over a multi-year development period, with each installment conditional upon our achievement of certain milestones and deliverables acceptable to Murata in its discretion. Murata may terminate the collaboration agreement at any time upon thirty (30) days prior written notice to us.

Murata's rights to our XBAR® technology are exclusive for a period of 30 months, through March 2022, during which period we may not grant to any third party the right to develop, make, have made, use, sell, offer for sale or import any filter or resonator produced through the use of the XBAR® technology for use in mobile communication devices.

Under the collaboration agreement, the first of payment of $2.0 million was collected in October 2019.

In accordance with the guidance of ASC 606, we are required to evaluate the variable consideration within the contract, primarily the milestone payments, and assess the likelihood of achievement in determining our transaction price. Additionally, we must assess whether the variable consideration is constrained and whether recording such variable revenue may result in a significant reversal of revenue due to uncertainties. We continue to evaluate variable consideration for inclusion in the transaction price, and ultimately the revenue recognized, at each reporting period. We recognize revenue for the Murata contract over the estimated design development period, based on the level of effort expended over total expected costs, as the services are performed. For the periods ended June 30, 2020 and December 31, 2019, we have determined that the milestone payments due upon achievement of certain performance criteria are constrained and are thus not included in the transaction price. Therefore, revenue related to those milestone payments has not been recognized. Revenue recognition related to each milestone payment will commence once the constraint is lifted.

NOTE 4—INVESTMENTS HELD-TO-MATURITY

We classify investments as held-to-maturity when we have the positive intent and ability to hold the securities to maturity.

During the six months ended June 30, 2019, we invested in commercial papers that were classified as investments held-to-maturity. As of June 30, 2019, both amortized cost value and fair value were $4.5 million with zero unrealized gain or loss. We did not recognize an other-than-temporary impairment or comprehensive gain or loss for the three and six months ended June 30, 2019.

As of June 30, 2020 and December 31, 2019, we didnot have any investments classified as held-to-maturity.

We recorded interest and investment income of$7,000 and $72,000 for the three months endedJune 30, 2020 and 2019, respectively, and $64,000 and $178,000 for the six months ended June 30, 2020 and 2019, respectively, associated with our cash and investment accounts.

NOTE 5—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.

A roll-forward of warrant share activity from January 1, 2020 toJune 30, 2020 is shown in the following table:

	Exercise Price	Expiration Date	Issued and Outstanding Warrants as of January 1, 2020	Warrants Exercised/ Expired	Issued and Outstanding Warrants as of June 30, 2020
Consulting Warrants	$0.01	6/17/2020	6,667	(6,667) (1)	—
Financing Warrants	$3.35	6/17/2020	62,530	(62,530) (2)	—
Private Placement Warrants - September 2017	$4.85	9/28/2020	1,966,319	—	1,966,319
Placement Agent Warrants	$4.85	9/28/2020	98,846	—	98,846
			2,134,362	(69,197)	2,065,165

(1) During the six months ended June 30, 2020, there were 6,667 warrants that were exercised through a cashless exercise which netted6,640 shares being issued.

(2) During the six months ended June 30, 2020, there were 62,530 warrants that expired.

A roll-forward of warrant share activity from January 1, 2019 toJune 30, 2019 is shown in the following table:

	Issued and Outstanding Warrants as of January 1, 2019	Warrants Exercised/ Expired	Issued and Outstanding Warrants as of June 30, 2019
Consulting Warrants	6,667	—	6,667
Financing Warrants	62,530	—	62,530
Underwriting Warrants	310,500	(310,500) (1)	—
Private Placement Warrants - 2016	818,063	(818,063) (2)	—
Underwriting Warrants - Public Offering 2016	122,175	—	122,175
Private Placement Warrants - September 2017	1,966,319	—	1,966,319
Placement Agent Warrants	98,846	—	98,846
	3,385,100	(1,128,563)	2,256,537

(1) During the six months ended June 30, 2019, there were 310,500 warrants that expired.

(2) During the six months ended June 30, 2019, there were 485,000 warrants exercised for cash, 44,928 warrants that were exercised through a cashless exercise which netted1,809 shares being issued and 288,135 warrants that expired.

NOTE 6—STOCKHOLDERS' EQUITY AND LOSS PER SHARE

Common Stock

Pursuant to our amended and restated certificate of incorporation, we are authorized to issue 100,000,000 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 July 31, 2019, we entered into a securities purchase agreement for the sale of an aggregate of 3,960,560 shares of common stock at a price of $2.53 per share. Gross proceeds were approximately $10.0 million with net proceeds of $9.9 million after deducting fees and operating expenses. The initial closing, for 1,193,762 shares, took place on August 9, 2019 and gross proceeds were approximately $3.0 million. The second closing with a single investor, which was subject to additional conditions, including the execution of a definitive multi-year commercial agreement with an affiliate of the investor, for 2,766,798 shares and gross proceeds of $7.0 million took place on September 30, 2019.

On February 6, 2020, we entered into an underwriting agreement relating to an underwritten public offering of 16,666,667 shares of the Company's common stock, $0.001 par value, at an offering price to the public of $1.50 per share. Pursuant to the underwriting agreement, the Company granted the underwriters a 30-day option to purchase up to an additional 2,500,000 shares of common stock on the same terms and conditions. The underwriters exercised their option with respect to all 2,500,000 additional shares on February 10, 2020. We consummated the sale of an aggregate of 19,166,667 shares of our common stock, including the 2,500,000 shares subject to the underwriters' over-allotment option, on February 11, 2020, and received gross proceeds of approximately $28.8 million, or net proceeds of approximately $26.4 million after deducting the underwriting discount and estimated expenses payable by us.

We have a Form S-3 universal shelf registration statement on file with the SEC. The universal shelf registration statement on Form S-3 permits us to sell, in one or more public offerings, shares of our common stock, shares of preferred stock or debt securities, or any combination of such securities and warrants to purchase securities, for proceeds in an aggregate amount of up to $50.0 million, subject to potential limitations on the amount of securities we may sell in any twelve-month period. As of June 30, 2020, we have raised a total of $28.8 million of gross proceeds from the sale of 19,166,667 shares of our common stock, leaving approximately $21.2 million of securities available for issuance pursuant to the Form S-3. The Form S-3 will expire in November 2021.

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.

Loss Per Share

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:

	Six Months Ended June 30,	
	2020	**2019**
Common stock warrants	2,065,165	2,256,537
Common stock options	1,174,760	1,356,028
Non-vested restricted stock unit awards	3,645,968	2,654,141
Total shares excluded from net loss per share attributable to common stockholders	6,885,893	6,266,706

NOTE 7— 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. Our board of directors and stockholders approved an increase of 1,300,000 shares in June 2016, an increase of 3,250,000 shares in June 2017, an increase of4,000,000 shares in June 2019, and an increase of5,000,000 shares in June 2020, bringing the total shares allowed under the plan to 14,950,000.

Option Valuation

We account for stock options in accordance with ASC Topic 718,*Compensation-Stock Compensation*. We use the Black-Scholes option valuation model for estimating fair value at the date of grant. 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 is the estimated period of time that options granted are expected to be outstanding. We have estimated the expected life of 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. 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

During the three and six months ended June 30, 2020, we granted incentive stock options for the purchase of50,500 and 60,500 shares, respectively, of our common stock. The stock options granted have an exercise price range of $1.74 per share to $2.58 per share. The stock options have a term of 10 years and vest quarterly over sixteen quarters. For the three and six months ended June 30, 2020, the options granted had an aggregate grant date fair value of$83,000 and $95,000, respectively, utilizing the Black-Scholes option valuation model.

During the three and six months ended June 30, 2019, we granted incentive stock options for the purchase of62,000 and 102,000 shares, respectively, of our common stock. The stock options have an exercise price range of $1.52 per share to $3.15 per share with a term of 10 years. The stock options vest quarterly over sixteen quarters. For the three and six months ended June 30, 2019, the options granted had an aggregate grant date fair value of $120,000 and $180,000, respectively, utilizing the Black-Scholes option valuation model.

We estimated the fair value of stock options awarded during thesix months ended June 30, 2020 and 2019 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 Six Months Ended June 30, 2020	Stock Option Grants Awarded During the Six Months Ended June 30, 2019
Stock Price	$1.74 to $2.58	$1.52 to $3.15
Dividend Yield	0.00%	0.00%
Expected Volatility	70% to 80%	70%
Risk-free interest rate	0.47% to 1.52%	1.92% - 2.62%
Expected Life	7 years	7 years

Stock-based compensation expense related to stock options was$62,000 and $114,000 for the three months ended June 30, 2020 and 2019, respectively and $129,000 and $210,000 for the six months ended June 30, 2020 and 2019, respectively. 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 six months ended June 30, 2020 and 2019, we applied a forfeiture rate of10%, which is reflected in our stock-based compensation expense related to stock options.

Stock Option Award Activity

The following is a summary of our stock option activity during thesix months ended June 30, 2020:

	Number of Options	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Life In Years
Outstanding, January 1, 2020	1,340,252	$ 4.57	$ 2.88	6.95
Granted	60,500	2.19	1.56	9.85
Exercised	—	—	—	—
Canceled / Forfeited	(225,992)	4.29	2.81	—
Outstanding, June 30, 2020	1,174,760	$ 4.50	$ 2.83	6.03

	Number of Options	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Life In Years
Exercisable, January 1, 2020	989,092	$ 4.85	$ 3.03	6.37
Vested	73,693	3.70	2.36	5.44
Exercised	—	—	—	—
Canceled / Forfeited	(107,958)	4.72	3.04	—
Exercisable, June 30, 2020	954,827	$ 4.78	$ 2.98	5.40

The following table presents information related to stock options outstanding and exercisable atJune 30, 2020:

Options Outstanding			Options Exercisable
Exercise Price	Outstanding Number of Options	Weighted Average Remaining Life In Years	Exercisable Number of Options
$1.52 – $3.15	321,058	5.72	183,071
$3.25 – $4.92	464,772	6.17	406,053
$5.01 – $6.00	230,500	4.54	216,633
$6.18 – $7.20	68,130	4.46	62,510
$7.54 – $7.80	67,800	3.40	64,060
$8.06 – $12.98	22,500	4.55	22,500
	1,174,760	5.40	954,827

As of June 30, 2020, there was $429,000 of unrecognized compensation expense related to unvested employee stock options, which is expected to be recognized over a weighted-average period of approximately 2.4 years. The aggregate intrinsic values of outstanding stock options and vested stock options as ofJune 30, 2020 were $82,000 and $66,000, respectively, which represent options whose exercise price was less than the closing fair market value of our common stock onJune 30, 2020 of $2.33 per share.

Restricted Stock Units Activity

We account for restricted stock units issued at fair value, based on the market price of our stock on the date of grant, net of estimated forfeitures. RSUs issued in connection with our employee incentive programs typically vest within 10 days of grant. All other RSUs, primarily issued as long term incentives, generally vest annually over three to four years.

During the three months ended June 30, 2020 and 2019, we recorded $1.5 million and $1.3 million, respectively, of stock-based compensation related to the restricted stock unit shares that had been issued to-date. During the six months ended June 30, 2020 and 2019, we recorded $2.8 million and $2.6 million, respectively, of stock-based compensation related to the restricted stock unit shares that had been issued to-date.

A summary of restricted stock unit activity for thesix months ended June 30, 2020 is as follows:

	Number of Restricted Share Units	Weighted-Average Grant-Date Fair Value Per Share
Outstanding at January 1, 2020	2,556,004	$ 3.38
Granted	2,304,059	1.91
Vested	(851,356)	2.89
Forfeited	(362,739)	2.62
Outstanding at June 30, 2020	3,645,968	$ 2.64

As of June 30, 2020, there was $6.2 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. The share price on the date of issuance was $5.06 per share.

In June 2019, the market-based award was modified to increase the number of restricted stock units to500,000 and to decrease the applicable share price. Additionally, the performance period was extended to September 30, 2022. The share price on the date of modification was $2.73 per share.

In December 2019, we granted 200,000 market-based restricted stock units to an executive. The restricted stock units are subject to the same market-based vesting requirements discussed for the award granted in August 2016 and modified in June 2019. The share price on the date of issuance was $2.15 per share and the fair value was determined to be $26,000 using a Monte Carlo simulation.

Once earned, the restricted stock units vest50% on the date such restricted stock units become earned and50% on September 30, 2022. 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. For the three months ended June 30, 2020 and 2019, we recognized $13,000 and $1,000 respectively, and for the six months ended June 30, 2020 and 2019, we recognized $25,000 and $7,000, respectively, of stock compensation expense in connection with market-based awards. For the three months ended June 30, 2020, $2,000 is included in research and development expenses and $11,000 is included in sales, marketing and administration expenses. For the three months endedJune 30, 2019, $1,000 was included in sales, marketing and administration expenses. For the six months ended June 30, 2020, $4,000 is included in research and development expenses and $21,000 is included in sales, marketing and administration expenses. For the six months endedJune 30, 2019, $7,000 was included in sales, marketing and administration expenses. The unamortized expense related to these awards is $114,000 and is expected to be recognized over 2.3 years.

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. If paid in the form of equity, the expense is included in the above disclosures for stock options or restricted stock units as applicable.

Total stock-based compensation recorded in the condensed consolidated statements of comprehensive loss is allocated as follows:

	Three Months Ended June 30, 2020	Three Months Ended June 30, 2019	Six Months Ended June 30, 2020	Six Months Ended June 30, 2019
Research and development	$ 870,000	$ 690,000	$ 1,518,000	$ 1,323,000
Sales, marketing and administration	741,000	767,000	1,472,000	1,488,000
Total stock-based compensation	$ 1,611,000	$ 1,457,000	$ 2,990,000	$ 2,811,000

NOTE 8—INCOME TAXES

There was no income tax expense for the three months ended June 30, 2020 and 2019. Income tax for the six months ended June 30, 2020 and 2019 was $1,000. The effective tax rate for the three and six months ended June 30, 2020 and 2019 differed from the statutory rate primarily due to the valuation allowance recorded against the Company’s deferred tax assets.

Under the Coronavirus Aid, Relief, and Economic Security (“CARES”) Act signed into law on March 27, 2020, NOLs arising in tax years beginning after December 31, 2017, and before January 1, 2021 may be carried back to each of the five tax years preceding the tax year of such loss. Moreover, under the Tax Act as modified by the CARES Act, federal NOLs of our subsidiary generated in tax years ending after December 31, 2017 may be carried forward indefinitely, but the deductibility of federal NOLs, particularly for tax years beginning on or after January 1, 2021, may be limited. The accounting for the material income tax impacts will be reflected in the 2020 financial statements. It is uncertain if and to what extent various states will conform to the Tax Act or the CARES Act. We are currently assessing the impact the CARES Act will have on the Company’s consolidated financial statements.

NOTE 9— LEASES

We lease facilities under two non-cancelable operating leases. The leases expire between January 2022 and November 2024 and include renewal provisions for two to five years, provisions which require us to pay taxes, insurance, maintenance costs or provisions for minimum rent increases. We also lease facilities and equipment under short-term agreements for a period of 12 months or less. All of the information presented below, with the exception of total lease costs, relates to our two non-cancelable operating leases.

On May 1, 2020 we entered into an amendment for one of our non-cancelable operating leases, under which certain rent payments were deferred and the term of the lease was extended by three months to November 30, 2024. The base rent was deferred for three months and the deferred amount will be amortized over the remaining balance of the modified lease term. In addition, operating expenses were deferred for three months and the deferred amount will be paid at the time of the lease's 2020 annual true-up of operating expenses, which is estimated to occur in early 2021. We evaluated the amendment under the provisions of ASU No. 2016-02, *Leases (Topic 842)*, as well as subsequently issued interpretive guidance, and have elected to account for the concessions as if no changes to the lease contract were made. In our evaluation we considered the total amount of lease payments both before and after the amendment and determined they are substantially the same. The deferred base rent and operating expenses are included in accounts payable on our condensed consolidated balance sheet as of June 30, 2020, and until such repayment is made.

One lease requires us to maintain a cash security deposit of $50,000 and also a $150,000 letter of credit in favor of the lessor. The letter of credit was originally for $200,000 at lease inception and steps down $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 $150,000 mutual fund account which is classified as restricted cash in our balance sheet.

Lease renewal options are at our discretion. No renewal options have been recognized in our right-of-use assets and lease liabilities as of June 30, 2020. Our lease agreements do not require material variable minimum lease payments, residual value guarantees or restrictive covenants.

The depreciable lives of operating lease assets and leasehold improvements are limited by the expected lease term.

Our leases generally do not provide an implicit rate, and therefore we use our incremental borrowing rate as the discount rate when measuring operating lease liabilities. The incremental borrowing rate represents an estimate of the interest rate we would incur at lease commencement to borrow an amount equal to the lease payments on a collateralized basis over the term of the lease. We used a weighted average incremental borrowing rate of 4.75% as of January 1, 2019 for operating leases that commenced prior to that date. The discount rates applied to each lease reflect our estimated incremental borrowing rate. This includes an assessment of our credit rating to determine the rate that we would have to pay to borrow, on a collateralized basis for a similar term, an amount equal to our lease payments in a similar economic environment.

The Company's weighted average remaining lease term and weighted average discount rate for operating leases as of June 30, 2020 is shown below:

	June 30, 2020
Weighted average remaining lease term (years)	4.01
Weighted average discount rate (%)	4.75 %

The table below reconciles the undiscounted cash flows for each of the first five years and total of the remaining years to the total operating lease liabilities recognized on the condensed consolidated balance sheets as of June 30, 2020:

		June 30, 2020
July 1, 2020 through December 31, 2020	$	325,000
2021		748,000
2022		557,000
2023		555,000
2024		517,000
Total minimum lease payments		2,702,000
Less: lease concessions included in undiscounted cash flows		(141,000)
Less: imputed interest		(189,000)
Total operating lease liabilities	$	2,372,000

Operating lease costs were $279,000 for the three months ended June 30, 2020, of which $203,000 and $76,000 are included in research and development expenses and sales, marketing and administration expenses, respectively. Operating lease costs were $263,000 for the three months ended June 30, 2019, of which $196,000 and $67,000 are included in research and development expenses and sales, marketing and administration expenses, respectively.

Operating lease costs were $562,000 for the six months ended June 30, 2020, of which $412,000 and $150,000 are included in research and development expenses and sales, marketing and administration expenses, respectively. Operating lease costs were $527,000 for the six months ended June 30, 2019, of which $393,000 and $134,000 are included in research and development expenses and sales, marketing and administration expenses, respectively.

Cash paid for amounts included in the measurement of operating lease liabilities were $276,000 and $269,000 for the six months ended June 30, 2020 and 2019, respectively, which is included in operating activities in the condensed consolidated statements of cash flows.

NOTE 10—RELATED PARTY TRANSACTIONS

In August 2019, we entered into a consulting agreement with a member of our board of directors, whereby the board member would provide technical advisory services for cash payments totaling $50,000 paid in twelve equal monthly installments as well as an award of restricted stock units equal in value to $100,000 as of the grant date. The initial restricted stock units vested in full on January 1, 2020. Per the agreement, the board member shall be granted an additional $100,000 of restricted stock units if the board member is still providing the technical advisory services in January of 2020. Because the board member was still providing the services in January 2020, the board member received an additional grant of restricted stock units equal to $100,000 of value as of the grant date and the restricted stock units will vest in full on December 31, 2020. In the event the board member is still performing services to the Company after 2020, the Company will issue new grants equal to no less than $100,000 worth of restricted stock units in January of each additional year with such grants vesting at the end of each year so long as the services are still being provided. The agreement is cancelable at any time by either the Company or the board member. During the three and six months ended June 30, 2020, we recorded expenses of $12,500 and $25,000, respectively, in connection with cash compensation portion of the consulting agreement, which are included in general and administrative expenses. Additionally, during the three and six months ended June 30, 2020, we recorded $25,000 and $49,000, respectively, related to the restricted stock unit awards, which is included in research and development expenses. As of June 30, 2020, there was $4,000 due to the board member under this consulting agreement.

NOTE 11— COMMITMENTS AND CONTINGENCIES

Legal Proceedings—We are not party to any 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 June 30, 2020 and 2019, 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 six months ended June 30, 2020 and 2019, respectively, with respect to litigation or loss contingencies.

Intellectual Property Indemnities—We indemnify certain customers and manufacturers against liability arising from third-party claims of intellectual property rights infringement related to our products. These indemnities may appear in license agreements, development agreements and manufacturing agreements, may not be limited in amount or duration and generally survive the expiration date of the contract. Given that the amount of any potential liabilities related to such indemnities cannot be determined until an infringement claim has been made, we are unable to determine the maximum amount of losses that we could incur related to such indemnifications.

Director and Officer Indemnities and Contractual Guarantees—We have entered into indemnification agreements with our directors and executive officers, which require us to indemnify such individuals to the fullest extent permitted by Delaware law. Our indemnification obligations under such agreements are not limited in amount or duration. Certain costs incurred in connection with such indemnifications may be recovered under certain circumstances under various insurance policies. Given that the amount of any potential liabilities related to such indemnities cannot be determined until a lawsuit has been filed, we are unable to determine the maximum amount of losses that we could incur relating to such indemnities.

We have also entered into severance and change in control agreements with certain of our executives. These agreements provide for the payment of specific compensation benefits to such executives upon the termination of their employment with us.

Guarantees and Indemnities—In the normal course of business, we are occasionally required to undertake indemnification for which we may be required to make future payments under specific circumstances. We review our exposure under such obligations no less than annually, or more frequently as required. The amount of any potential liabilities related to such obligations cannot be accurately determined until a formal claim is filed. Historically, any such amounts that become payable have not had a material negative effect on our business, financial condition or results of operations. We maintain general and product liability insurance which may provide a source of recovery to us in the event of an indemnification claim.

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 that 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

We are a late-stage development company that designs filters for the mobile device industry. We have not yet realized material revenues and our focus is on continuing to engage new customers, expand the number of contracts for filter designs and build the necessary infrastructure to support anticipated growth. Consequently, our expenses will continue to modestly increase as we position for a ramp in revenues.

We plan to continue to develop IP associated with high frequency/high-wide bandwidth filters (XBAR™-based filters), to expand our IP and trade secret libraries, and further the development of our ISN® multi-physics EDA platform. While we remain a filter design licensing company, we are also investigating the potential of licensing part or all of our ISN® software design suite and certain patents, including IP associated with our XBAR™ filters, to potential customers in the RFFE industry. During the third quarter of 2019, we completed an investment and commercial agreement with Murata Manufacturing Co., Ltd., the first collaboration agreement leveraging our XBAR™ IP. In all licensing arrangements with our customers 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. We continue to expand our foundry program, which allows fabless companies to enter into the filter business quickly and efficiently. It is through this foundry program that we expect to engage with OEM's and Independent Design House's (IDH's) directly to provide a significant cost and time to market advantage.

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 administration expenses, and other costs associated with a late-stage development, publicly-traded technology company. We continue to add employees, as needed, to support the development of our ISN® platform, applications and system test, research and development, as well as sales, marketing and administration functions, to support our efforts.

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.

Recent Developments

COVID-19-- The coronavirus ("COVID-19") pandemic continues to spread in the United States, Asia and Europe, the major markets in which we operate. The COVID-19 pandemic has resulted in significant governmental measures being implemented to control the spread of the virus, including, among others, restrictions on travel and the imposition of stay-at-home or work remote or from home conditions in the locations where we have offices. While we have not yet experienced a significant disruption of our operations as a result of the COVID-19 pandemic, if current restrictions continue for an extended period of time, we may, among other issues, experience delays in product development, a decreased ability to support our customers, disruptions in sales and marketing activities and an overall lack of productivity. Similarly, while we have not experienced a major disruption with our customers as a result of the COVID-19 pandemic, significant outbreaks, continued travel restrictions, stay-at-home or work remote conditions, or other restrictions may impact our customers' ability to manufacture or deliver raw materials or provide key components or services, which could result in delays in the demand from our customers to produce designs. The pandemic may also impact the expansion of current and/or the roll out of new services which could impact our customers' demand for their products, which could reduce their demand for our products or services. While we don't know and cannot quantify specific impacts, we expect we may be negatively affected if we encounter delays in our product development efforts, reductions in demand due to disruptions in the operations of our customers or their end customers, disruptions in local and global economies, volatility in the global financial markets, overall reductions in demand, or other COVID-19 ramifications.

Workforce Restructuring-- On March 17, 2020, we completed a restructuring of our workforce which included the layoff of ten full-time employees. Of these employees, eight were on our technical staff and two were devoted to sales, marketing and administration matters. In addition, during the first quarter of 2020 we negotiated the retirement or other departure of four executives. The restructuring was implemented as part of a comprehensive review of our operations and is intended to reduce our operating costs as we shift our development initiatives to focus on XBAR® and 5G deployment.

In the first half of 2020, we incurred costs of approximately $200,000, consisting primarily of severance and other termination benefits. Overall, the layoffs and executive departures are expected to result in annual GAAP expense savings of approximately $4.5 million. Depending on our business outlook we may add back employees in the future which would offset these savings.

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, 2019. There have been no changes to our critical accounting policies and estimates described in the Annual Report on Form 10-K for the year ended December 31, 2019 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 condensed 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 Six Months Ended June 30, 2020 and 2019

Revenues. Revenues consist primarily 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. Revenues also include royalties from shipments of our licensed designs. For the three months ended June 30, 2020 and 2019, we recognized a total of $604,000 and $63,000, respectively, of revenue. For the six months ended June 30, 2020 and 2019, we recognized a total of $1,148,000 and $197,000, respectively, of revenue. The increases were primarily a result of the collaboration and license agreement we signed in September 2019 with a major Tier 1 RF filter manufacturer, and from which we now derive a substantial majority of our revenues. We have recorded $1.1 million of deferred revenue as of June 30, 2020, which we expect to recognize over the next year. Additionally, we expect to continue to recognize royalty revenue from our license agreements.

Research and Development. These expenses relate to direct engineering and other costs associated with the development and commercialization of our technology, including the development of filter designs for our customers and consist primarily of the compensation costs of employees, including stock-based compensation, and to a lesser extent, development related costs for consultants, 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 $212,000, from $4.6 million in the second quarter of 2019 to $4.8 million in the second quarter of 2020 and increased $1.3 million, from $9.0 million in the first half of 2019 to $10.3 million in the first half of 2020. The increase for the three month period was primarily a result of increased stock compensation expenses and development costs related to our ISN® and XBAR® technology development, offset by reduced travel expenses of $170,000 due to travel restrictions related to COVID-19. The increase for the six month period was primarily related to higher compensation expenses of $900,000 associated with increased headcount and higher development costs of $300,000 related to our ISN® software development, XBAR® technology development and expanded activity on our filter designs under development, offset by $200,000 of reduced travel expenses related to travel restrictions due to COVID-19. Research and development expenses decreased by $700,000 from $5.5 million in the first quarter of 2020 to $4.8 million in the second quarter of 2020 due to reduced headcount as a result of our workforce restructuring that occurred in March 2020. However, for the remainder of the year we expect research and development expenses to increase due to higher development costs and additional headcount.

Sales, Marketing and Administration Expenses. These expenses relate to our sales and marketing efforts and our back-office support and include compensation costs of employees, including stock-based compensation. They also include expenses for facilities, travel expenses, telecommunications, investor relations, insurance and professional and consulting fees.

Sales, marketing and administration expenses were $3.0 million for the second quarter of 2020 compared to $3.0 million in the second quarter of 2019 and $6.1 million in the first half of 2020 compared to $6.0 million in the first half of 2019. For both the three and six month periods, the net changes primarily related to increased compensation expenses associated with headcount changes, offset by reduced travel expenses due to travel restrictions related to COVID-19. We anticipate that our sales, marketing and administration expenses will increase as we move through the year.

Interest and Investment Income. Interest and investment income decreased by $65,000 from $72,000 in the second quarter of 2019 to $7,000 in the second quarter of 2020, and decreased by $114,000 from $178,000 in the first half of 2019 to $64,000 in the first half of 2020, primarily due to fluctuations in cash and investment balances outstanding and changes in interest rates. 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 thesix months ended June 30, 2020 and 2019, our only tax liability was for minimum taxes in the states where we conduct business.

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 June 30, 2020, we have raised aggregate gross proceeds of $125.9 million through the use of loans, convertible debt and equity through an IPO, private placement financings, exercise of warrants and secondary offerings of our common stock.

We had current assets of $24.5 million and current liabilities of $5.4 million at June 30, 2020, resulting in working capital of $19.1 million. This compares to working capital of $7.5 million at June 30, 2019 and $4.8 million at December 31, 2019. 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.

As of June 30, 2020, our accumulated deficit totaled $137.7 million. In the six months ended June 30, 2020 our net loss totaled $15.2 million and we used $13.2 million of cash for operating activities, the purchase of property and equipment and expenditures for patents. To date we have not generated significant revenues to enable profitability. We expect to continue to incur significant losses. These factors raise substantial doubt regarding our ability to continue as a going concern. At June 30, 2020 we had cash and cash equivalents of $23.9 million. In the absence of a significant revenue increase these cash resources will provide sufficient funding into early 2021. We are subject to the risks and uncertainties associated with a new business. Our continuance as a going concern is dependent on our future profitability. We are actively pursuing expanding our technology portfolio, increasing our revenue opportunities by completing deliverables under current contracts and entering into new prepaid and paid up royalty arrangements, and efficiently managing operations and exploring further cost saving opportunities. We may not be successful in these efforts. We may need to seek to raise additional capital from the sale of equity securities or incurrence of indebtedness. There can be no assurance that additional financing will be available to us on acceptable terms, or at all, in which case 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. The accompanying condensed consolidated financial statements have been prepared on a going concern basis which contemplates the realization of assets and satisfaction of liabilities in the normal course of business. The condensed consolidated financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might result from the outcome of this uncertainty.

Cash Flow Analysis

Operating activities used cash of $12.5 million in the first six months of 2020 and $11.3 million in the first six months of 2019. The increase is primarily the result of our increased loss.

Investing activities used cash of $0.7 million in the first six months of 2020 and provided cash of $11.6 million in the first six months of 2019. In 2020, the cash used was for the purchase of property and equipment and expenditures for patents. In 2019, the cash provided was a result of net redemptions of investments held to maturity, offset by the cash used to purchase property and equipment and expenditures for patents.

Financing activities provided cash of $26.4 million in the first six months of 2020 as a result of the net proceeds from the underwritten sale of equity securities completed in February 2020. Financing activities provided cash of $1.4 million in the first six months of 2019 as a result of the exercise of warrants for cash.

Off-Balance Sheet Transactions

We do not have any off-balance sheet arrangements.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Not Applicable

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 June 30, 2020, 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 June 30, 2020, 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 identified in management’s evaluation pursuant to Rules 13a-15(d) or 15d-15(d) of the Exchange Act during the quarter ended June 30, 2020 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.

PART II: OTHER INFORMATION

Item 1. Legal Proceedings

We are not party to any 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 product offerings continue to develop, 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, 2019. There have been no material changes to such risk factors during the period ended June 30, 2020, except as follows:

The ongoing, global coronavirus pandemic has significantly and adversely affected, and may continue to adversely affect, our business, financial position, results of operations and cash flows.

The outbreak of the novel coronavirus (which causes the disease now known as COVID-19) was first identified in December 2019 in Wuhan, China, and has since spread rapidly across the world, including in all or most of the countries in which we, our customers, and our suppliers operate. The COVID-19 pandemic has caused, and is expected to continue to cause, a global slowdown in economic activity, a decrease in demand for a broad variety of goods and services, disruptions in global supply chains, and significant volatility and disruption of financial markets. Because the severity, magnitude and duration of the pandemic and its economic consequences are uncertain, vary by region, are rapidly changing and difficult to predict, its full impact on our operations and financial performance, as well as its impact on our near-term ability to successfully execute our strategic objectives, remains similarly uncertain and difficult to predict. Further, the pandemic's ultimate impact depends in part on many factors not within our control and which may vary by region (heightening the uncertainty as to the ultimate impact COVID-19 may have on our operations and financial performance), including, without limitation: restrictive governmental and business actions that have been and continue to be taken in response (including travel restrictions, work from home requirements, and other workforce limitations); economic stimulus, funding and relief programs and other governmental economic responses; the effectiveness of governmental actions; economic uncertainty in key global markets and financial market volatility; levels of economic contraction or growth; the impact of the pandemic on health and safety; the pace of recovery if and when the pandemic subsides; and how significantly the number of cases increases as economies begin to open and restrictive governmental and business actions are relaxed.

Further, the COVID-19 pandemic has recently subjected our operations and financial performance to several risks, including those discussed below:

- *Operations-related risks*: Our business is facing increased operational challenges including a heightened need to protect employee health and safety, office shutdowns, workplace disruptions, and restrictions on the movement of people, both at our own offices and at those of our clients and suppliers. We are also experiencing, and expect to continue experiencing, client requests for engagement deferrals and other factors related directly and indirectly to the COVID-19 pandemic that adversely impact our business. We expect that the longer the period of economic disruption continues, the more severe the negative impact will be on our operations and financial performance.
- *Client-related risks*: Our customers have been and will continue to be disrupted by quarantines and restrictions on employees' ability to work and office closures. Such disruptions have and may continue to restrict our ability to provide products and services to our clients and have also and may continue to reduce demand for our products and services. In addition, COVID-19 has adversely affected the global economy and the economies and financial markets of many countries, which may result in further economic downturn that could affect demand for our products and services and impact our operations.
- *Employee-related risks*: We have experienced and expect to continue to experience disruptions to our operations resulting from quarantines, self-isolations, or other movement and restrictions on the ability of our employees to perform their jobs that may impact our ability to deliver our products and services in a timely manner or meet milestones or customer commitments.

The full extent of the effect of the pandemic on us, our customers, our supply chain and our business will depend on future developments, which are highly uncertain and cannot be predicted with confidence, including the duration and severity of the outbreak or subsequent outbreaks. We may continue to experience the effects of the pandemic even after it has waned, and our business, results of operations and financial condition could continue to be affected. In particular, if COVID-19 continues to spread or re-emerges, particularly in the United States, Japan and China where our operations are most concentrated, resulting in a prolonged period of travel, commercial, social and other similar restrictions, we could experience, among other things:

- Adverse impacts on our operations and financial results caused by government and regulatory measures to contain or mitigate the spread of the virus, temporary closures of our facilities or the facilities of our customers or suppliers, which could impact our ability to timely meet our customers' orders or negatively impact our supply chain;
- The failure of third parties on which we rely, including our suppliers, customers and external business partners, to meet their respective obligations to us, or significant disruptions in their ability to do so, which may be caused by their own financial or operational difficulties including bankruptcy or default;
- Disruptions or restrictions on our employees' ability to work effectively, due to illness, quarantines, travel bans, shelter-in-place orders or other limitations;
- Interruptions to the operations of our business if the health of our executives, management personnel and other employees are affected, particularly if a significant number of individuals are impacted;
- Any accident, COVID-19 illness, or injury to our employees could result in litigation, development delays and harm to our reputation, which could negatively affect our business, results of operations and financial condition;
- Changes in prices of products and services may be impacted by worldwide demand and by the ongoing COVID-19 pandemic, and such price increases could materially increase our operating costs and adversely affect our profit margin;
- Increased cybersecurity and privacy risks and risks related to the reliability of technology to support remote operations;
- Sudden and/or severe declines in the market price of our common stock; and
- Costs incurred and revenues lost during and from the effects of the COVID-19 pandemic likely will not be recoverable.

The COVID-19 pandemic may also affect our operations and financial results in a manner that is not presently known to us or that we currently do not expect to present significant risks to our operations or financial results.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

On July 6, 2020, we issued restricted stock units, or MZ RSUs, for an aggregate of 30,000 shares of common stock to two individual principals of MZ Group Company, as partial consideration for investor relations advisory services to be rendered by MZ Group. Of the shares underlying the MZ RSUs, 15,000 shares vested upon grant and 15,000 shares will vest on July 1, 2021, so long as MZ Group continues to provide investor relations advisory services to us. The issuance of the MZ RSU was exempt from the registration requirements of the Securities Act of 1933 by virtue of Section 4(a)(2) thereof as a transaction not involving a public offering. The recipients of the MZ RSUs represented their intention to acquire the securities for investment only and not with a view to or for sale in connection with any distribution thereof. The MZ RSU recipients had adequate access to information about Resonant, and the issuance of the securities was made without any general solicitation or advertising.

Item 5. Other Information

On August 3, 2020, the Compensation Committee of our Board of Directors approved quarterly bonus awards to our executive officers pursuant to our 2020 Incentive Bonus Program for their performance during the second quarter of 2020. 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 August 13, 2020.

Executive Officers	Number of RSU Shares
Marybeth Carberry	8,243
Neal Fenzi	7,446
Dylan Kelly	6,846
Martin McDermut	8,742

Item 6. Exhibits

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File Number	Exhibit	Filing Date	
3.1.1	Amended and Restated Certificate of Incorporation of the Registrant	8-K	001-36467	3.1	6/5/2014	
3.1.2	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of the Registrant	8-K	001-36467	3.1	6/12/2019	
3.2	Amended and Restated Bylaws of the Registrant	8-K	001-36467	3.2	6/5/2014	
10.1*	Amendment No. 4 to Registrant's Amended and Restated 2014 Omnibus Incentive Plan	8-K	001-36467	10.1	6/10/2020	
31.1	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					X
31.2	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					X
32.1#	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					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 required to be filed as an exhibit to this quarterly report on Form 10-Q.

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.

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:	August 5, 2020	**Resonant Inc.**	
		By:	/s/ Martin S. McDermut
			Martin S. McDermut
			Chief Financial Officer
			(Principal Financial and Accounting Officer)

Exhibit 31.1

Certification of Principal Executive Officer Pursuant To
Exchange Act Rules 13a-14(a) and 15d-14(a),
As Adopted Pursuant To
Section 302 of Sarbanes-Oxley Act of 2002

I, George B. Holmes, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Resonant Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 5, 2020

/s/ George B. Holmes

George B. Holmes
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

**Certification of Principal Financial Officer Pursuant To
Exchange Act Rules 13a-14(a) and 15d-14(a),
As Adopted Pursuant To
Section 302 of Sarbanes-Oxley Act of 2002**

I, Martin S. McDermut, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Resonant Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 5, 2020

/s/ Martin S. McDermut

Martin S. McDermut
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

Certifications 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

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (18 U.S.C. 1350), George B. Holmes, Chief Executive Officer (Principal Executive Officer) and Martin S. McDermut, Chief Financial Officer (Principal Financial and Accounting Officer) of Resonant Inc. (the "Company"), hereby certifies that, to the best of his knowledge:

1. Our Quarterly Report on Form 10-Q for the quarter endedJune 30, 2020, to which this Certification is attached as Exhibit 32.1 (the "Report"), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 5, 2020

/s/ George B. Holmes
George B. Holmes
Chief Executive Officer
(Principal Executive Officer)

/s/ Martin S. McDermut
Martin S. McDermut
Chief Financial Officer
(Principal Financial and Accounting Officer)