UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 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 March 31, 2018

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission File Number: 001-37824

IMPINJ, INC.
(Exact Name of Registrant as Specified in its Charter)

Delaware **(State or other jurisdiction of incorporation or organization)**	**91-2041398** **(I.R.S. Employer Identification No.)**
400 Fairview Avenue North, Suite 1200, Seattle, Washington **(Address of principal executive offices)**	**98109** **(Zip Code)**

Registrant's telephone number, including area code: (206) 517-5300

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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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	☐ (Do not check if a small reporting company)	Small 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 April 30, 2018, 21,339,989 shares of common stock were outstanding.

IMPINJ, INC.
QUARTERLY REPORT ON FORM 10-Q

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PART I — FINANC IAL INFORMATION

Item 1. Financial Statements (unaudited)

IMPINJ, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except par value, unaudited)

	March 31, 2018	December 31, 2017
Assets:		
Current assets:		
Cash and cash equivalents	$ 28,000	$ 19,285
Short-term investments	29,873	38,831
Accounts receivable, net	17,023	22,244
Inventory	54,706	47,083
Prepaid expenses and other current assets	1,846	2,359
Total current assets	131,448	129,802
Property and equipment, net	17,507	18,110
Other non-current assets	208	241
Goodwill and other intangible assets, net	3,881	3,881
Total assets	$ 153,044	$ 152,034
Liabilities and stockholders' equity:		
Current liabilities:		
Accounts payable	$ 4,499	$ 4,666
Accrued compensation and employee related benefits	4,444	5,729
Accrued liabilities	3,374	3,162
Accrued restructuring costs	2,352	—
Current portion of long-term debt	—	4,088
Current portion of capital lease obligations	814	936
Current portion of deferred rent	363	628
Current portion of deferred revenue	586	714
Total current liabilities	16,432	19,923
Long-term debt, net of current portion	19,841	5,500
Capital lease obligations, net of current portion	625	745
Long-term liabilities — other	548	532
Long-term restructuring liabilities	1,286	—
Deferred rent, net of current portion	5,596	5,891
Deferred revenue, net of current portion	156	501
Total liabilities	44,484	33,092
Stockholders' equity:		
Preferred stock, $0.001 par value — 5,000 shares authorized, no shares issued and outstanding at March 31, 2018 and December 31, 2017	—	—
Common stock, $0.001 par value — 495,000 shares authorized, 21,332 and 20,973 shares issued and outstanding at March 31, 2018 and December 31, 2017, respectively	21	21
Additional paid-in capital	327,562	323,482
Accumulated other comprehensive loss	(56)	(36)
Accumulated deficit	(218,967)	(204,525)
Total stockholders' equity	108,560	118,942
Total liabilities and stockholders' equity	$ 153,044	$ 152,034

See accompanying notes to condensed consolidated financial statements.

IMPINJ, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share data, unaudited)

	Three Months Ended March 31, 2018		Three Months Ended March 31, 2017	
Revenue	$	25,068	$	31,727
Cost of revenue		13,306		14,959
Gross profit		11,762		16,768
Operating expenses:				
Research and development		8,003		7,343
Sales and marketing		8,859		7,336
General and administrative		5,225		4,087
Restructuring costs		3,927		—
Total operating expenses		26,014		18,766
Loss from operations		(14,252)		(1,998)
Other income (expense), net		90		269
Interest expense		(229)		(374)
Loss before income taxes		(14,391)		(2,103)
Income tax expense		(51)		(57)
Net loss	$	(14,442)	$	(2,160)
Net loss per share — basic and diluted	$	(0.68)	$	(0.11)
Weighted-average shares outstanding — basic and diluted		21,125		20,344

See accompanying notes to condensed consolidated financial statements.

IMPINJ, INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(in thousands, unaudited)

	Three Months Ended March 31,	
	2018	2017
Net loss	$ (14,442)	$ (2,160)
Other comprehensive loss, net of tax:		
Unrealized losses on investments	(20)	(36)
Total other comprehensive loss	(20)	(36)
Comprehensive loss	$ (14,462)	$ (2,196)

See accompanying notes to condensed consolidated financial statements.

IMPINJ, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands, unaudited)

	Three Months Ended March 31, 2018	Three Months Ended March 31, 2017
Operating activities:		
Net loss	$ (14,442)	$ (2,160)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	1,120	874
Stock-based compensation	2,065	1,370
Restructuring costs	454	—
Accretion of discount or amortization of premium on short-term investments	(60)	59
Amortization of debt issuance costs	21	23
Changes in operating assets and liabilities:		
Accounts receivable	5,221	(3,630)
Inventory	(7,623)	(11,455)
Prepaid expenses and other assets	561	543
Deferred revenue	(473)	139
Deferred rent	(1,123)	925
Accounts payable	34	(50)
Accrued compensation and benefits	(1,236)	(3,406)
Accrued liabilities	307	147
Accrued restructuring costs	3,638	—
Net cash used in operating activities	(11,536)	(16,621)
Investing activities:		
Purchases of investments	(8,857)	(17,293)
Proceeds from maturities of investments	17,850	7,861
Purchases of property and equipment	(698)	(1,220)
Net cash provided by (used in) investing activities	8,295	(10,652)
Financing activities:		
Payments on capital lease financing obligations	(242)	(280)
Payments on term loans	(2,147)	(159)
Proceeds from term loans, net of debt issuance costs	12,379	—
Proceeds from exercise of stock options and employee stock purchase plan	1,966	1,983
Payments of deferred offering costs	—	(600)
Net cash provided by financing activities	11,956	944
Net increase (decrease) in cash and cash equivalents	8,715	(26,329)
Cash and cash equivalents		
Beginning of period	19,285	33,636
End of period	$ 28,000	$ 7,307

See accompanying notes to condensed consolidated financial statements.

IMPINJ, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(unaudited)

Note 1. Description of Business

Impinj, Inc. (the "Company", "we", "us" or "our"), a Delaware corporation, is headquartered in Seattle, Washington. Impinj enables wireless connectivity for everyday items, delivering each item's unique identity, location and authenticity to business and consumer applications. Impinj's platform spans endpoints, connectivity and software and provides wireless item connectivity and information delivery. Impinj derives revenue from selling endpoint integrated circuits, or ICs, reader ICs and modules, readers, gateways and software. Our integrated platform connects billions of everyday items to applications, delivering real-time information to businesses about items they create, manage, transport and sell.

Note 2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying condensed consolidated financial statements include Impinj, Inc. and its wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation. These condensed consolidated financial statements have been prepared in conformity with U.S. generally accepted accounting principles, or GAAP, and applicable rules and regulations of the Securities and Exchange Commission, or SEC, regarding interim financial reporting. Certain information and note disclosures normally included in the financial statements prepared in accordance with GAAP have been condensed or omitted pursuant to such rules and regulations. Accordingly, these interim condensed consolidated financial statements should be read in conjunction with the audited financial statements and accompanying notes as of and for the year ended December 31, 2017 included in Impinj, Inc.'s Annual Report on Form 10-K, which was filed with the SEC on March 15, 2018. The condensed consolidated balance sheet as of December 31, 2017, included herein, was derived from the audited financial statements of Impinj, Inc.

The unaudited condensed consolidated interim financial statements, in the opinion of management, reflect all adjustments, consisting of normal recurring adjustments, necessary to state fairly our financial position, results of operations, and our cash flows for the periods presented. Interim results are not necessarily indicative of the results for a full year or for any other future period.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make certain estimates, judgments and assumptions that affect the reported amounts of assets and liabilities and the related disclosures at the date of the financial statements, as well as the reported amounts of revenue and expenses during the periods presented. On an ongoing basis, we evaluate our estimates, including those related to revenue recognition, reserve for sales returns, inventory excess and obsolescence, recoverability of long-lived assets and stock-based compensation, among others. To the extent there are material differences between these estimates, judgments, or assumptions and actual results, our financial statements will be affected.

Risks and Uncertainties

Inherent in our business are various risks and uncertainties, including that we are developing advanced technologies and new applications in a rapidly changing industry. These risks include the failure to develop and extend our products and the rejection of our products by consumers, as well as other risks and uncertainties. If we do not successfully implement our business plan, certain assets may not be recoverable, certain liabilities may not be paid and investments in our capital stock may not be recoverable. Our success depends upon the acceptance and necessity of our technology, development of sales and distribution channels and our ability to generate significant revenue from the use of our technology.

Revenue Recognition

We generate revenue primarily from sales of hardware products. We also generate revenue from software, extended warranty, enhanced maintenance, support services, and non-recurring engineering development services, all of which are not material.

We recognize revenue when control of the promised goods or services is transferred to our customers, which for hardware sales is generally at the time of product shipment as determined by the agreed-upon shipping terms. We measure revenue based on the amou nt of consideration we expect to be entitled to in exchange for those goods or services. Any variable consideration, which consists primarily of sales incentives, is recognized as a reduction of revenue at the time of revenue recognition. Sales incentives are estimated at the time of revenue recognition and updated at the end of each reporting period as additional information becomes available . We present revenue net of sales tax in our consolidated statements of operations. Shipping charges billed to custo mers are included in revenue and the related shipping costs are included in cost of revenue.

Our reader and gateway products are highly dependent on, and interrelated with, embedded software and cannot function without this embedded software. In these cases, we account for the hardware and software license as a single performance obligation and recognize revenue at the point in time when ownership is transferred. Additionally, we sell standalone operating-system and other software that configures, manages and controls readers and gateways and performs other functions. This standalone software is not integrated directly in the functionality of the reader or gateway. Our software licenses, both for embedded and standalone software, provide the customer with a right to use the software as it exists when we make it available to the customer. Based on the software product, customers purchase either perpetual licenses or subscribe to licenses, which differ mainly in the duration over which the customer benefits from the software. We recognize revenue at the point in time when the software is made available to the customer.

Our contracts with customers with multiple performance obligations generally include a combination of hardware products, standalone software, extended warranty, enhanced maintenance and support services. For these contracts, we account for individual performance obligations separately if they are distinct. The transaction price is allocated to the separate performance obligations on a relative standalone selling-price basis. In instances where standalone selling price is not directly observable, such as when we do not sell the product or service separately, we determine the standalone selling price using one, or a combination of, the adjusted market assessment or expected cost-plus margin. Amounts allocated to extended warranty and enhanced maintenance sold with our reader and gateway products are deferred and recognized on a straight-line basis over the term of the arrangement, which is typically from one to three years. Amounts allocated to support services sold with our reader and gateway products are deferred and recognized when control of the promised services is transferred to our customers .

For non-recurring engineering development agreements that involve significant production, modification or customization of our products, we generally recognize revenue over the performance period using the percentage of completion method. We receive payments under these agreements based on a billing schedule. Contract assets relate to our conditional right to consideration for our completed performance under these agreements. Accounts receivable are recorded when the right to consideration becomes unconditional. Contract liability relates to payments received in advance of performance under the contract. Contract liabilities are recognized as revenue as we perform under the contract. For the periods presented in this report, our contract assets, contract liabilities and the value of unsatisfied performance obligations for non-recurring engineering development agreements are not material.

For details on our revenue and changes in deferred revenue, respectively, please refer to Note 11 and Note 12 of these condensed consolidated financial statements .

Practical Expedients and Exemptions: We generally expense sales commissions when incurred because the amortization period would have been one year or less. These costs are recorded within sales and marketing expenses. We do not disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

Allowance for Sales Returns

Sales agreements do not generally provide for a right of return for refund but for certain distributors provide for a right of return in exchange for other similar products, subject to time and quantity limitations. The allowance for sales returns is our best estimate based on historical returns and currently available evidence. We record changes in our estimate to the allowance for sales returns through revenue and reduce the allowance when product returns are received. In the fourth quarter of 2017, we reserved $3.2 million related to a partner's request for a one-time product exchange. We completed the exchange transaction in the first quarter of 2018 and reduced the balance in the allowance for sales returns by $3.2 million .

Recently Adopted Accounting Standards

In May 2014, the Financial Accounting Standards Board, or FASB, issued guidance on revenue recognition. This guidance provides that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. This guidance also requires more detailed disclosures to enable users of financial statements to understand the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. The guidance is effective for interim and annual reporting periods beginning after December 15, 2017, early adoption is permitted, and the guidance must be applied retrospectively to each prior period presented or retrospectively with the cumulative effect of initially applying the guidance recognized at the date of initial application. We adopted the new revenue standard on January 1, 2018 utilizing the full retrospective transition method. Revenue recognition related to our hardware products, standalone software, extended warranty, enhanced maintenance services and non-recurring engineering development agreements, and recognition of cost of sales commissions will remain substantially unchanged. The primary impact of adopting the new standard relates to software license revenue that will generally be recognized at the time of delivery, rather than ratably over the subscription period. Unrecognized software license revenue at December 31, 2017 and 2016 was not material. As adoption of the standard had no material impact on our consolidated financial position, results of operations or cash flows, we did not restate each prior reporting period presented in the period of initial application.

Recently Issued Accounting Standards Not Yet Adopted

In June 2016, the FASB issued guidance on the measurement of credit losses on financial instruments. This guidance requires the measurement and recognition of expected credit losses for financial assets held at amortized cost. This guidance is effective for interim and annual reporting periods beginning after December 15, 2019, and early adoption is permitted. We expect to adopt this guidance on January 1, 2020. The adoption of this guidance requires a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. While we continue to assess all potential impacts of this new standard, we do not expect the adoption of this guidance to have a material impact on our financial position, results of operations or cash flows.

In February 2016, the FASB issued guidance on leases. This standard requires the recognition of a right-of-use asset and lease liability on the balance sheet for all leases. This standard also requires more detailed disclosures to enable users of financial statements to understand the amount, timing, and uncertainty of cash flows arising from leases. This guidance is effective for interim and annual reporting periods beginning after December 15, 2018 and should be applied through a modified retrospective transition approach for leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements, and early adoption is permitted. We expect to adopt this guidance on January 1, 2019. While we continue to assess all potential impacts of this new standard, we anticipate this standard will have a material impact on our financial position, primarily due to our office space operating leases, as we will be required to recognize right-of-use assets and lease liabilities on our consolidated balance sheets. However, we do not expect the adoption to have a significant impact on our results of operations or cash flows.

Note 3. Fair Value Measurements

Accounting standards define fair value as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market in an orderly transaction between market participants on the measurement date. The standards also establish a fair value hierarchy, which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. There are three levels of inputs that may be used to measure fair value:

- Level 1 — Quoted prices in active markets for identical assets or liabilities.
- Level 2 — Assets and liabilities valued based on observable market data for similar instruments, such as quoted prices for similar assets or liabilities.
- Level 3 — Unobservable inputs that are supported by little or no market activity; instruments valued based on the best available data, some of which is internally developed, and considers risk premiums that a market participant would require.

We applied the following methods and assumptions in estimating our fair value measurements:

Cash Equivalents — Cash equivalents are comprised of highly liquid investments, including money market funds and certificates of deposit, with original maturities of less than three months at the acquisition date. The fair value measurement of these assets is based on quoted market prices in active markets and these assets are recorded at fair value.

Investments — Our investments consist of fixed income securities, w hich include U.S. government agency securities and corporate notes and bonds. The fair value measurement of these assets is based on observable market-based inputs or inputs that are derived principally from or corroborated by observable market data by cor relation or other means.

Long-term Debt — The fair values of our long-term debt approximates carrying value based on the borrowing rates currently available to us for loans with similar terms using Level 2 inputs.

The following tables present the balances of assets measured at fair value on a recurring basis, by level within the fair value hierarchy, as of the date presented (in thousands):

	March 31, 2018	
	LEVEL 1	LEVEL 2
Cash equivalents:		
Money market funds	$ 13,772	$ —
Commercial paper	—	2,997
Treasury bill	—	2,500
Short-term investments:		
U.S. government agency securities	—	9,937
Corporate notes and bonds	—	7,540
Commercial paper	—	3,983
Treasury bill	—	8,413
Total	$ 13,772	$ 35,370

	December 31, 2017	
	LEVEL 1	LEVEL 2
Cash equivalents:		
Money market funds	$ 10,393	$ —
Commercial paper	—	1,000
Short-term investments:		
U.S. government agency securities	—	13,970
Corporate notes and bonds	—	7,503
Commercial paper	—	8,972
Treasury bills	—	8,386
Total	$ 10,393	$ 39,831

We did not have any Level 3 assets as of March 31, 2018 or December 31, 2017. There were no liabilities measured at fair value as of March 31, 2018 or December 31, 2017.

Note 4. Cash, Cash Equivalents and Investments

The following tables present the amortized cost, gross unrealized gains and losses, and estimated fair market value of our cash and cash equivalents and available-for-sale securities as of the dates presented (in thousands):

	March 31, 2018			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Cash	$ 8,731	$ —	$ —	$ 8,731
Cash equivalents:				
Money market funds	13,772	—	—	13,772
Commercial paper	2,997	—	—	2,997
Treasury bill	2,500	—	—	2,500
Short-term investments:				
U.S. government agency securities	9,956	—	(19)	9,937
Corporate notes and bonds	7,558	3	(21)	7,540
Commercial paper	3,983	—	—	3,983
Treasury bill	8,432	—	(19)	8,413
Total	$ 57,929	$ 3	$ (59)	$ 57,873

	December 31, 2017			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Cash	$ 7,892	$ —	$ —	$ 7,892
Cash equivalents:				
Money market funds	10,393	—	—	10,393
Commercial paper	1,000	—	—	1,000
Short-term investments:				
U.S. government agency securities	13,979	—	(9)	13,970
Corporate notes and bonds	7,514	—	(11)	7,503
Commercial paper	8,972	—	—	8,972
Treasury bills	8,402	—	(16)	8,386
Total	$ 58,152	$ —	$ (36)	$ 58,116

T he contractual maturities are due in one year or less on our available-for-sale securities as of March 31, 2018.

Note 5. Inventory

The following table presents the detail of inventories as of the dates presented (in thousands):

	March 31, 2018	December 31, 2017
Raw materials	$ 2,852	$ 1,351
Work-in-process	21,557	15,647
Finished goods	30,297	30,085
Total	$ 54,706	$ 47,083

Note 6. Stock-Based Awards

Option Awards

The following table summarizes option award activity for the three months ended March 31, 2018 (in thousands):

	Number of Shares
Outstanding at December 31, 2017	2,850
Granted	106
Exercised	(225)
Forfeited or Cancelled	(222)
Outstanding at March 31, 2018	2,509

Unvested Shares

The following table summarizes activity of unvested shares of our common stock for the three months ended March 31, 2018 (in thousands):

	Number Of Shares
Outstanding at December 31, 2017	48
Vested	(17)
Outstanding at March 31, 2018	31

Restricted Stock Units

The following table summarizes activity for restricted stock units for the three months ended March 31, 2018 (in thousands):

	Number Of Shares
Outstanding at December 31, 2017	12
Granted	1
Outstanding at March 31, 2018	13

Share-Based Compensation Expense

The following table presents the effects of stock-based compensation in our condensed consolidated statements of operations during the periods presented (in thousands):

	Three Months Ended March 31, 2018	Three Months Ended March 31, 2017
Cost of revenue	$ 83	$ 46
Research and development expense	759	483
Sales and marketing expense	757	607
General and administrative expense	466	234
Total	$ 2,065	$ 1,370

Note 7. Commitments and Contingencies

For information on our commitments and contingencies, see Part II, Item 8 (Financial Statements and Supplementary Data , Note 11. Commitments and Contingencies) of our Annual Report on Form 10-K for the year ended December 31, 2017. There have been no material changes to our commitments and contingencies, outside of the ordinary course of our business, as previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2017, except for “Obligations with Third-Party Ma nufacturers,” as discussed below.

Obligations with Third-Party Manufacturers

We manufacture products with third-party manufacturers. We are committed to purchase $11.7 million of inventory as of March 31, 2018.

Note 8. Debt Facilities

On March 5, 2018, we amended our senior credit facility, to, among other things, extend the maturity date of the $25.0 million revolving credit facility, with a $5.0 million letter of credit subfacility, to March 5, 2020, and provide for a new $20.0 million term loan. We incurred $9.0 million in term loan borrowings to refinance $7.9 million of term loan borrowings and $1.1 million of equipment loans and have $11.0 million of term loan borrowings available for general corporate purposes. The new term loan will amortize over 36 months, beginning on April 1, 2019, following an initial interest-only period, and mature on March 1, 2022. We may prepay the term loan at any time, subject to a prepayment fee equal to 2.0% of the outstanding principal amount if prepaid on or before March 5, 2019, or 1.0% of the outstanding principal amount if prepaid after March 5, 2019, but on or before March 5, 2020. At March 31, 2018, we had no revolver borrowings outstanding and $20.0 million of term loan borrowings outstanding.

The loans accrue interest, at our option, at (1) a LIBOR rate determined in accordance with the senior credit facility, plus a margin of 2.75% or 3.25%, in the case of revolving borrowings, or 3.0% or 3.5%, in the case of the term loan borrowings, or (2) a prime rate determined in accordance with the senior credit facility, plus a margin of 0.0% or 0.5%, in the case of revolving borrowings, or 0.25% or 0.75%, in the case of the term loan borrowings, in each case with such margin determined based on our adjusted EBITDA for the preceding 12 month period. Interest is due and payable in arrears monthly for prime rate loans and at the end of an interest period for LIBOR rate loans.

The amendment also amended the financial covenants under the senior credit facility such that if our cash and investments in accounts maintained with the lender, plus available revolver borrowings, falls below $60.0 million for the period of time beginning on March 5, 2018 and ending on December 31, 2018, or $55.0 million for the period of time beginning on January 1, 2019 and at all times thereafter, we must comply with an amended covenant to not exceed maximum adjusted EBITDA loss thresholds that vary by period and the existing minimum liquidity ratio, each determined in accordance with the terms of the senior credit facility.

At March 31, 2018, $20.0 million of term loan borrowings were outstanding, excluding unamortized debt issuance costs of $159,000, and the interest rate was 5.25%. The following table presents the scheduled principal maturities as of March 31, 2018 (in thousands):

2018	$	—
2019		5,000
2020		6,667
2021		6,667
2022		1,666
Total	$	20,000

The senior credit facility contains customary conditions to borrowing, events of default and covenants, including covenants that restrict our and our subsidiaries' ability to dispose of assets, have a change of control, merge with or acquire other entities, incur indebtedness, incur encumbrances, make distributions to holders of their capital stock, make investments or engage in transactions with their affiliates, in each case subject to customary exceptions. We were in compliance with all covenants under our senior credit facility as of March 31, 2018. Our obligations under the senior credit facility are collateraliz ed by substantially all of our assets other than intellectual property. All of our future subsidiaries are required to become co-borrowers under the senior credit facility. The guarantees by future subsidiaries are and will be collateralized by substantially all of the assets of such subsidiaries.

Note 9. Net Loss Per Share

The following table provides a reconciliation of the numerator and denominator used in computing basic and diluted net loss per share for the periods presented (in thousands, except per share amounts):

	Three Months Ended March 31, 2018	2017
Numerator:		
Net loss	$ (14,442)	$ (2,160)
Denominator:		
Weighted-average shares outstanding	21,165	20,453
Weighted-average unvested shares subject to repurchase	(40)	(109)
Weighted-average shares outstanding — basic and diluted	21,125	20,344
Net loss per share — basic and diluted	$ (0.68)	$ (0.11)

The following table presents the outstanding option awards and unvested shares excluded from the computation of diluted net loss per share as of the dates presented because their effect would have been antidilutive (in thousands):

	Three Months Ended March 31, 2018	2017
Stock options	2,513	2,171
Unvested shares of common stock subject to repurchase	31	100

Note 10. Restructuring

On February 13, 2018, we began implementing a restructuring to match strategic and financial objectives and optimize resources for long-term growth, including a reduction-in-force program affecting approximately 9% of our employees. As part of the restructuring, we will also look to sublease office space and close some remote offices.

As a result of the restructuring plan, we recorded a restructuring charge of approximately $3.9 million during the three months ended March 31, 2018, including approximately $1.2 million for severance and other personnel related expenses and approximately $2.7 million for cease-use costs associated with certain operating leases. The restructuring costs for cease-use costs include a non-cash net restructuring benefit of $454,000 associated with the write-off of certain leasehold improvements and deferred rent. The cease-use costs include estimates related to the timeframe it will take us to sublease the office space and the related sublease income.

A summary of accrued restructuring costs as of and for the three months ended March 31, 2018 is shown in the table below (in thousands):

	Employee Termination Benefits	Cease-Use Costs	Other Associated Costs	Total
Restructuring costs	$ 1,177	$ 2,700	$ 50	$ 3,927
Cash payments	(384)	(324)	(35)	(742)
Non-cash benefit, net	—	454	—	454
Accrued restructuring costs of March 31, 2018	$ 793	$ 2,830	$ 15	$ 3,638

We expect to record approximately $200,000 of additional restructuring costs, most of which we expect to incur by the end of 2018.

Note 11. Segment Information and Geographic Data

We have one operating and reportable segment which has been identified based on how our chief operating decision maker manages our business, makes operating decisions and evaluates operating performance. The chief executive officer acts as the chief operating decision maker and reviews financial and operational information on an entity-wide basis. There are no segment managers who are held accountable for operations, operating results or plans for levels or components.

The chief executive officer reviews information about revenue categories, includi ng endpoint ICs, connectivity, software and other revenue. The following table presents our revenue by major categories for the periods presented (in thousands):

	Three Months Ended March 31,			
	2018		2017	
Revenue:				
Endpoint ICs	$	19,409	$	23,767
Systems		5,659		7,960
Total revenue	$	25,068	$	31,727

Systems revenue includes sales of reader ICs and modules, readers, gateways and software. Revenue from readers and gateways as a percentage of total revenue was 17% and 18% for three months ended March 31, 2018 and 2017, respectively. None of our other product families within the above categories were above 10% of total revenue for the periods presented requiring disclosure.

The following table is based on the location of the value-added resellers, inlay manufacturers, reader OEMs, distributors or end users who purchased products and services directly from us. For sales to our resellers and distributors, their location may be different from the locations of the ultimate end users. The following table presents our sales by geography for the periods presented (in thousands):

	Three Months Ended March 31,			
	2018		2017	
Americas	$	4,373	$	8,472
Asia Pacific	$	17,204		19,364
Europe, Middle East and Africa		3,491		3,891
Total revenue	$	25,068	$	31,727

Total revenue in the United States was $ 4.1 million and $8.1 million for the three months ended March 31, 2018 and 2017, respectively.

Note 12. Deferred Revenue

Deferred revenue, consisting of individually immaterial amounts for extended warranty, enhanced maintenance and advanced payments on non-recurring engineering services contracts, represents contracted revenue that has not yet been recognized.

The following table presents the changes in deferred revenue for the periods presented:

	Three Months Ended March 31,			
	2018		2017	
Balance, beginning of period	$	1,215	$	1,411
Deferral of revenue		13		245
Recognition of deferred revenue		(486)		(106)
Balance, end of period	$	742	$	1,550

Note 13. Subsequent Events

On April 18, 2018, we announced a voluntary stock option exchange offer in which eligible employees may exchange certain options to purchase an aggregate of 1,402,592 shares of our common stock granted under the 2016 Equity Incentive Plan, with a per share exercise price equal to or greater than $21.72, whether vested or unvested, that are outstanding at the start of the offer and remain outstanding and unexercised through the expiration of the offer (“eligible options”), for new options to purchase shares of our common stock (“new options”). New options will be granted under, and subject to, the terms and conditions of the 2016 Equity Incentive Plan. All employees of Impinj (including executive officers other than the chief executive officer) who hold eligible options and remain employed through the date of grant for new options may participate in the offer (“eligible employees”). Members of the board of directors will not be eligible to participate.

The offer will expire at 9:00 p.m., Pacific Time, on May 16, 2018, unless we extend the date (such date of expiration, the "expiration date"). Eligible employees may tender eligible options on or before the expiration date in order to receive a number of new options determined by dividing the eligible options by the applicable exchange ratio. The offer is being made on the basis of fixed exchange ratios. The exchange ratios are as follows:

- 1.30 for eligible options with an exercise price of $21.72 to 26.44;
- 1.55 for eligible options with an exercise price of $30.41 to 39.00; and
- 1.80 for eligible options with an exercise price of $40.81 to 58.79.

All new options will have an exercise price per share equal to the closing sales price of a share of our common stock on the expiration date on the Nasdaq Global Select Market and will be subject to a new vesting schedule and term. We expect the new option grant date to be May 16, 2018.

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

This report contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Statements containing words such as "may," "believe," "anticipate," "expect," "intend," "plan," "project," "projections," "business outlook," "estimate," or similar expressions constitute forward-looking statements. You should read these statements carefully because they discuss future expectations, contain projections of future results of operations or financial condition or state other "forward-looking" information. These statements relate to our future plans, objectives, expectations, intentions and financial performance and the assumptions that underlie these statements. They include, but are not limited to, statements about:

- *our market opportunity; the adoption of RAIN RFID technology and solutions; our ability to compete effectively against competitors and competing technologies; and our market share and technology leadership;*
- *our future financial performance, including our average selling prices and gross margins and future macroeconomic conditions;*
- *the performance of third parties on which we rely for product manufacture, assembly and testing; and our relationship with third parties on which we rely for product distribution, sales, integration and development;*
- *our ability to adequately protect our intellectual property; the regulatory regime for our products and services; and*
- *our leadership of standards-setting processes.*

Our actual results may differ materially from those contained in or implied by any forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this report, including those factors discussed in Part II, Item 1A (Risk Factors).

In light of the significant uncertainties and risks inherent in these forward-looking statements, you should not regard these statements as a representation or warranty by us or anyone else that we will achieve our objectives and plans in any specified time frame, or at all, or as predictions of future events. Moreover, neither we nor any other person assumes responsibility for the accuracy and completeness of the forward-looking statements. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

Our Business

Our vision is digital life for everyday items. We are driving toward a future in which everyday physical items have digital counterparts, digital twins, in the cloud, and in which businesses and people engage with trillions of those everyday physical items via their digital twins. Our mission is to deliver a platform that powers that item-to-cloud connectivity, enabling developers to innovate Internet-of-Things, or IoT, applications on our platform. Today, we deliver the identity, location and authenticity of billions of physical items; our future is enabling those cloud-based digital twins, each storing an individual item's ownership, history and available services, and enabling ubiquitous access to them. We believe the item-to-cloud connectivity we will deliver will enhance businesses efficiencies and commerce and, ultimately, improve peoples' lives.

Our platform comprises endpoint ICs, connectivity and software that together deliver item data to business applications. We link the layers of our platform to deliver advanced capabilities and performance that surpasses mix-and-match solutions built from competitor products. Within each layer we sell one or more product families.

Endpoints ICs

Our endpoint IC product family, branded Monza, comprises a family of miniature radios-on-a-chip that attach-to and uniquely identify their host items. Monza ICs include a number to identify a host item and may also include features such as user data storage, security, authentication, loss prevention, consumer privacy and value-added Impinj custom features, all accessible by our platform. Our Monza ICs power themselves from a reader's radio waves so they do not need a battery, can wirelessly connect almost any item, are readable to 30 feet without line-of-sight, yet sell for pennies.

Our OEM partners attach each Monza IC to a thin printed or etched antenna on a paper or Mylar backing, then typically cover the composite inlay with a paper face to form a tag. End customers attach the tag to an item in markets including retail, healthcare, automotive, industrial and manufacturing, consumer experience, food, datacenter, travel and banking. We refer to a tag and its host item as an endpoint.

Endpoint ICs differ from traditional silicon ICs in that most endpoint ICs are disposable. For example, when consumers purchase retail items they discard the price tags containing the endpoint ICs. We believe endpoint ICs are the first market for consumable silicon and are a recurring revenue source for us.

Connectivity

Our connectivity offering comprises a family of reader ICs and modules, readers and gateways that wirelessly identify, locate, authenticate and engage items. Our connectivity products wirelessly provide power to, and communicate bidirectionally with, endpoint ICs on those items, identifying and locating up to 1,000 items per second.

Readers read, write, authenticate or otherwise engage endpoint ICs on items. Gateways integrate stationary readers with scanning antennas to locate and track items. Our readers and gateways are easy to deploy and use, can be powered via power-over-Ethernet and are certified for operation in more than 40 countries. Our customers have deployed our readers and gateways in applications ranging from retail inventory-taking to automated fuel filling to shipping-container tracking to airport luggage handling.

Our reader ICs and modules, branded Indy, comprises a suite of ICs and modules that combine our reader ICs with peripheral circuitry in an easy-to-use format. We sell our reader ICs and modules to original equipment manufacturing, or OEM, and original design manufacturing, or ODM, partners that use them in a variety of products such as mobile or handheld readers, fixed readers, gateways, and RAIN-enabled appliances. We offer easy-to-use APIs, development environments, sample code, drivers and libraries. We sell our reader ICs and modules for tens of dollars.

Our reader product family, branded Speedway, comprises high-performance finished products. We sell our Speedway readers through an established channel of distributors, system integrators, or SIs, value-added resellers, or VARs, and solution providers. Our readers sell for hundreds of dollars.

Our gateway product family integrates our Speedway readers with beamforming antennas to electrically steer a radio beam like a searchlight. Their always-on, autonomous operation delivers timely item data without ongoing labor costs. Our portal gateways, branded xPortal and xSpan, scan doorways or hallways such as front-to-back store transitions, entryways and exits. Our array gateway, branded xArray, scans up to 1,500 square feet of floor space such as in a store, manufacturing facility or hospital room. Our gateways sell for thousands of dollars.

Software

Our primary software offering, ItemSense, is a distributed operating system for our platform. ItemSense transforms item-level RAIN RFID data into actionable business information, enabling analytics and insights about items a business manufactures, transports and sells. ItemSense's key capabilities include enterprise-class RAIN deployment management and health monitoring; software-defined algorithms for item inventory and location determination; and easy-to-use, easy-to-integrate APIs that enable application developers to quickly build powerful IoT solutions on our platform to solve business problems. We believe software revenue will grow over time, but it has not been material to date, and we expect modest software revenue for the foreseeable future.

Recent Developments

In February 2018, we agreed to a partner's request for a one-time product exchange, requiring us to record a sales returns reserve in the fourth quarter of 2017. The sales returns reserve reduced our 2017 revenue by $3.2 million. We completed the exchange transaction in the first quarter of 2018 and recognized revenue of $3.2 million.

In February 2018, we began implementing a restructuring plan to match our strategic and financial objectives and to optimize resources for long-term growth, including a reduction-in-force affecting approximately 9% of our employees. As part of the restructuring, we will also look to reduce leased office space and close some remote offices. We estimate expenses relating to these actions at approximately $4.1 million. We currently expect the reduction-in-force charges, comprising primarily severance benefits, to be $1.3 million; and the lease space reduction, comprising primarily sublease costs and lease cease-use charges, to be $2.8 million. We recognized $3.9 million of restructuring costs in the first quarter of 2018 and expect to record approximately $200,000 of additional restructuring costs, most of which we expect to incur by the end of 2018.

Factors Affecting Our Performance

Investing in Growth

We have invested, and plan to continue investing, significantly in research and development to enhance and extend our platform, including enhancing existing platform products and introducing new platform products. We plan to enhance our operating-system software, including its deployment models and functionalities. We plan to enhance our fixed readers and gateways and leverage them for platform deployments in retail, healthcare and other industries. We also plan to develop next-generation reader and endpoint ICs. We may enter into arrangements with customers, vendors and channel partners to fund a portion of certain of these research and development initiatives. If we are unsuccessful in attracting such funding, our operating results and product time-to-market may be adversely affected.

We are also investing in sales and marketing and are deepening product integration with our software partners to accelerate the development and adoption of solutions based on our platform. These investments will increase research, development, sales and marketing expenses on an absolute dollar basis for the foreseeable future. Many of these investments will occur in advance of experiencing any direct benefit from them and may affect our profitability in future periods.

Market Adoption

Our financial performance generally depends upon the rate, scope and depth of end-user adoption of our platform in multiple industries, including the retail industry which is our largest market. In 2015 and 2016 some major retailers, brand owners and other entities initiated new deployments that significantly increased our product sales. In 2016, our endpoint IC sales exceeded both our expectations and those of our industry's analysts. We believe these deployments indicate a trend toward greater RAIN adoption in retail and other markets, and intend to continue introducing new products to further grow overall market adoption. As a result of these 2016 trends, we invested in endpoint IC inventory both to meet forecasted demand and to enhance our ability to deliver in the event of another unexpected demand surge. However, in the second half of 2017 the growth rate in endpoint IC shipments decelerated due to multiple factors including, but not limited to, delays in both new deployments and the planned expansions at several large retailers.

As another example of growing RAIN adoption, our reader and gateway sales in the second half of 2017 exceeded our expectations, due to end users deploying shipment-verification and asset-tracking use cases that demand real-time fixed reading and RAIN data integration with enterprise software systems. In addition, retailers demanding more transformative business value from RAIN are beginning to turn to real-time fixed reading. However, in the first quarter of 2018 our reader and gateway sales decelerated, which we believe was primarily due to deal timing, our APAC reorganization and first-quarter seasonality. We believe greater adoption of fixed readers and our software will increase the value of our platform, which could further drive adoption over the longer term.

If market adoption of RAIN technology, and our platform products specifically, does not meet our expectations, our growth prospects and operating results will be adversely affected. If endpoint IC, reader IC and module, reader or gateway sales exceed expectations, our revenue and profitability may be positively affected; if we discount prices to win opportunities, our gross margins may be negatively affected. In addition, if we are unable to meet end user or customer volume or performance expectations in the near term our business and prospects may be adversely affected.

Timing and Complexity of Customer Deployments

From 2010 to 2017, our endpoint IC unit sales volume increased at a compounded annual growth rate of 33%. However, deployment of RAIN-based solutions has been uneven and unpredictable in scope, timing and implementation. For example, growth in endpoint IC unit sales volumes decelerated in the second half of 2017. For end users to gain business value from our platform, they typically must integrate our platform with their applications and information systems. End-users may only deploy certain of our hardware products, which may affect the value they derive from our platform, and in turn, our operating results. We have a large and multi-tiered partner channel which serves many markets and end users; we rely on these channel partners to deploy or integrate our platform and products with end user applications and information systems. If our partners fail to deploy or integrate our platform and products as planned then sales of our products and our reputation may be adversely affected. As a result of these factors and our reliance on our channel partners, we may experience significant fluctuation in revenue on a quarterly basis, and we anticipate these factors will continue to characterize our business for the foreseeable future.

Average Selling Price

We occasionally discount prices of our products to win opportunities, particularly large opportunities. In future periods we expect our hardware ASPs to fluctuate based on the level of discounting and competitive price pressures, and generally to decline over time. Historically, we have been able to implement manufacturing and quality improvements that effectively reduce the cost per unit of most of our products, allowing us to maintain, and in some cases increase, gross margins, although the timing variability of these cost reductions likewise fluctuates, and may not materialize or may even increase in any given quarter.

Inventory Supply

From time to time we may experience high inventory levels or shortages of products available for sale. These inventory dynamics can impact some of our hardware components or key SKUs within a particular product line. High inventory levels and potential obsolescence could result in unexpected expenses or increases in reserves that could adversely affect our business. In periods of rapidly increasing demand, lead times for our products can be lengthy, causing us to occasionally experience product shortages. If we underestimate customer demand or if sufficient manufacturing capacity is unavailable, we could potentially lose market share and damage our customer relationships.

Components of Results of Operations

Revenue

We generate substantially all of our revenue from sales of our platform hardware. We sell our products through a broad network of OEMs, ODMs and distribution channel partners; many of these channel partners sell multiple Impinj products. We deliver products and solutions that are easy for our partner ecosystem to sell and deploy. We engender preference for our platform in all sales engagements, encouraging end users to deploy our multiple products to gain full benefit from our platform. As a result, we evaluate our performance primarily on total revenue rather than on the revenue associated with any particular product line.

For our endpoint and reader ICs and modules, we generally recognize revenue upon shipment because the relevant criteria for revenue recognition are met at that time. For our reader and gateway products, which are occasionally sold with other products and support, transaction price is allocated to the separate performance obligations on a relative standalone selling price basis and we generally recognize revenue upon shipment or defer and recognize revenue on a straight-line basis over the term of the arrangement .

We also occasionally derive revenue from non-recurring engineering, or NRE, development agreements under which we develop custom products or services. Although we will continue to pursue strategic NRE opportunities, we expect NRE-based revenue to remain a small percentage of total revenue.

Cost of Revenue and Gross Margin

Cost of revenue includes costs associated with manufacturing our endpoint ICs, reader ICs and modules, readers and gateways, including direct materials and manufacturing costs as well as associated overhead costs such as logistics, quality control, planning and procurement. We outsource all our product manufacturing to third-party manufacturers that build our products to our design specifications. This capital-efficient operating model scales efficiently with volume, allowing us to focus our resources on accelerating development of new products and solutions. Cost of revenue also includes charges for inventory write-downs, warranty costs and accrued losses on purchase commitments to third-party contract manufacturers. Our gross margin varies from period to period based on product mix and discounts to win strategic opportunities. Historical gross margin has remained relatively consistent at between 47% and 55% for the interim and annual periods during the last three fiscal years.

Operating Expenses

Research and Development

Research and development expense consists primarily of salaries and related compensation costs, including stock-based compensation expense, for our product development personnel, contract developers, prototype materials and other expenses related to the development of new and innovative products and solutions. We expect research and development expense to moderately increase in absolute dollars in future periods for platform product development.

Selling and Marketing

Selling and marketing expense consists primarily of salaries and related variable compensation costs, including stock-based compensation expense, for our sales personnel, as well as travel, advertising and promotional expenses and other related expenses to expand our market penetration, develop strategic partnerships and drive adoption of our platform. We expect sales and marketing expense to remain relatively consistent due to the implementation of the restructuring plan during the first quarter of 2018. We expect incentive sales compensation to fluctuate as a function of sales.

General and Administrative

General and administrative expense consists primarily of salaries and related compensation costs, including stock-based compensation expense, for our executive, finance, a ccounting, legal, human resources, facilities, recruiting, corporate information technology costs and other administrative support and other professional services, travel and related expenses, insurance, occupancy and other overhead costs. We expect general and administrative expense to remain relatively consistent due to the implementation of the restructuring plan during the first quarter of 2018.

Restructuring Costs

Restructuring costs consist of workforce reduction expenses and lease termination costs related to a restructuring plan to match strategic and financial objectives and optimize resources for long-term growth.

Other Income (Expense), net

Other income consists primarily of interest income earned on our cash, cash equivalents and investments.

Interest Expense

Interest expense consists primarily of interest on our senior credit facility and amortization of deferred financing fees.

Results of Operations

The following table presents our results of operations for the periods indicated:

	Three Months Ended March 31,	
	2018	2017
	(in thousands, except per share data)	
Statements of Operations Data:		
Revenue	$ 25,068	$ 31,727
Cost of revenue (1)	13,306	14,959
Gross profit	11,762	16,768
Operating expenses:		
Research and development (1)	8,003	7,343
Sales and marketing (1)	8,859	7,336
General and administrative (1)	5,225	4,087
Restructuring costs (1)	3,927	—
Total operating expenses	26,014	18,766
Loss from operations	(14,252)	(1,998)
Other income (expense), net	90	269
Interest expense	(229)	(374)
Loss before income taxes	(14,391)	(2,103)
Income tax expense	(51)	(57)
Net loss	$ (14,442)	$ (2,160)
Net loss per share — basic and diluted (2)	$ (0.68)	$ (0.11)
Weighted-average shares outstanding — basic and diluted	21,125	20,344

(1) Includes stock-based compensation as follows:		
Cost of revenue	$ 83	$ 46
Research and development expense	759	483
Sales and marketing expense	757	607
General and administrative expense	466	234
Total stock-based compensation expense	$ 2,065	$ 1,370

(2) For an explanation of the calculation of our net loss per share — basic and diluted, please refer to Note 9 of our consolidated financial statements included elsewhere in this report.

The following table presents our results of operations for the periods indicated as a percentage of total revenue. Percentages from certain line items may not sum to the subtotal or total line items due to rounding. The period-to-period comparisons of results are not necessarily indicative of results for future period s.

	Three Months Ended March 31, 2018	Three Months Ended March 31, 2017
Percentage of Revenue:		
Revenue	100.0%	100.0%
Cost of revenue	53.1	47.1
Gross profit	46.9	52.9
Operating expenses:		
Research and development	31.9	23.1
Sales and marketing	35.3	23.1
General and administrative	20.8	12.9
Restructuring costs	15.7	—
Total operating expenses	103.8	59.1
Loss from operations	(56.9)	(6.3)
Other income	0.4	0.8
Interest expense	(0.9)	(1.2)
Loss before income taxes	(57.4)	(6.6)
Income tax expense	(0.2)	(0.2)
Net loss	(57.6)%	(6.8)%

Comparison of the Three Months Ended March 31, 2018 and 2017

Revenue

	March 31, 2018	March 31, 2017	Change 2017 to 2018 In Dollars	Change 2017 to 2018 In Percentage
Revenue:				
Endpoint ICs	$ 19,409	$ 23,767	$ (4,358)	(18.3%)
Systems	5,659	7,960	(2,301)	(28.9)
Total revenue	$ 25,068	$ 31,727	$ (6,659)	(21.0%)

The decrease in revenue was primarily attributable to decreased shipment volumes of our Monza 4 and Monza 5 products. Endpoint IC revenue decreased $4.4 million due to a 56% decrease in shipment volumes of Monza 4 and Monza 5, a 6% decrease in shipment volumes for our Monza 6 product family and a decrease in the average selling prices of our endpoint ICs due to the competitive environment and product mix. Partially offsetting these decreases was revenue of $3.2 million due to the completion of a one-time product exchange that required us to take a sales returns reserve in the fourth quarter of 2017. For information regarding the product exchange transaction, see "Management's Discussion and Analysis of Financial Condition and Results of Operations—Recent Developments" of this report . Systems revenue, which primarily includes sales of reader ICs and modules, readers and gateways, decreased $2.3 million due to a 27% decrease in reader and gateway shipment volumes.

Gross Profit

	Three Months Ended March 31, 2018	Three Months Ended March 31, 2017	Change 2017 to 2018 In Dollars	Change 2017 to 2018 In Percentage
	(in thousands, except percentages)			
Gross profit	$ 11,762	$ 16,768	$ (5,006)	(29.9%)
Gross margin	46.9%	52.9%		

The decrease in gross profit was primarily attributable to decreased shipment volumes of our Monza 4, Monza 5, reader ICs, readers and gateways mentioned above . Gross margin decreased in the three months ended March 31, 2018 compared to the three months ended March 31, 2017 primarily due to decreases in average selling prices for our endpoint ICs due to the competitive environment . The decrease in gross margin was partially offset by higher gross margins due to product mix within endpoint ICs and volume pricing discounts from suppliers of our endpoint ICs.

Operating Expenses

Research and Development

	Three Months Ended March 31,		Change 2017 to 2018	
	2018	2017	In Dollars	In Percentage
	(in thousands, except percentages)			
Research and development	$ 8,003	$ 7,343	$ 660	9.0%

The increase in research and development expense was due to an increase of $781,000 in personnel costs as we continue to grow our engineering headcount to support current and future product initiatives.

Sales and Marketing

	Three Months Ended March 31,		Change 2017 to 2018	
	2018	2017	In Dollars	In Percentage
	(in thousands, except percentages)			
Sales and marketing	$ 8,859	$ 7,336	$ 1,523	20.8%

The increase in sales and marketing expense was due to increases of $1.3 million in personnel costs due primarily to growth in the size of our sales team .

General and Administrative

	Three Months Ended March 31,		Change 2017 to 2018	
	2018	2017	In Dollars	In Percentage
	(in thousands, except percentages)			
General and administrative	$ 5,225	$ 4,087	$ 1,138	27.8%

The increase in general and administrative expense was due to increases of $703,000 in personnel costs driven primarily by growth in headcount in shared corporate services and $322,000 in rent, utilities and depreciation.

Restructuring Costs

	Three Months Ended March 31,		Change 2017 to 2018	
	2018	2017	In Dollars	In Percentage
	(in thousands, except percentages)			
Restructuring costs	$ 3,927	$ —	$ 3,927	N/A

Restructuring costs were $3.9 million in the three months ended March 31, 2018 resulting from the implementation of a restructuring plan that began in February 2018 to match our strategic and financial objectives and to optimize resources for long-term growth . We currently expect net restructuring charges of $4.1 million comprised of cash restructuring charges of $4.6 million, of which $1.3 million relates to employee severance costs and $3.3 million is associated with r educed leased office space and closed remote offices, and a non-cash net restructuring benefit of $454,000 associated with write-off of leasehold improvements and deferred rent. The $3.3 million cash charge associated with leased office space include estim ates related to the timeframe it will take to sublease and the related sublease income.

Other Income (Expense), net

	Three Months Ended March 31,		Change 2017 to 2018	
	2018	2017	In Dollars	In Percentage
	(in thousands, except percentages)			
Other income (expense), net	$ 90	$ 269	$ (179)	(66.5)%

The decrease in interest income was due to lower interest income on our short-term investments.

Interest Expense

	Three Months Ended March 31,		Change 2017 to 2018	
	2018	2017	In Dollars	In Percentage
	(in thousands, except percentages)			
Interest expense	$ (229)	$ (374)	$ 145	(38.8)%

The decrease in interest expense was due to lower outstanding borrowings during 2018 compared to 2017.

Non-GAAP Financial Measures

Our key non-GAAP liquidity and performance measures include adjusted EBITDA and non-GAAP net income (loss), as defined below. We use adjusted EBITDA and non-GAAP net income (loss) as key measures to understand and evaluate our core operating performance and trends, to prepare and approve our annual budget and to develop short- and long-term operating plans. We believe excluding those income and expenses inherent in calculating adjusted EBITDA and non-GAAP net income (loss) can provide useful measures for period-to-period comparisons of our business. Accordingly, we believe that adjusted EBITDA and non-GAAP net income (loss) provide useful information to investors and others in understanding and evaluating our operating results in the same manner as it does for our management and board of directors. Our presentation of these non-GAAP financial measures is not meant to be considered in isolation or as a substitute for our financial results prepared in accordance with GAAP, and our non-GAAP measures may be different from non-GAAP measures used by other companies.

Adjusted EBITDA

We define adjusted EBITDA as net income (loss) determined in accordance with GAAP, excluding the effects of stock-based compensation, depreciation, restructuring costs, other income (expense), net, interest expense and income tax expense. Restructuring costs relate to an effort in the first quarter of 2018 to reduce headcount and sublease office space to match strategic and financial objectives and optimize resources for long term growth. We believe that adjusted EBITDA provides meaningful supplemental information regarding our performance and liquidity.

The following table presents a reconciliation of net loss to adjusted EBITDA:

	Three Months Ended March 31,	
	2018	2017
	(in thousands)	
Net loss	$ (14,442)	$ (2,160)
Depreciation	1,120	874
Stock-based compensation	2,065	1,370
Other (income) expense, net	(90)	(269)
Interest expense	229	374
Income tax expense	51	57
Restructuring costs	3,927	—
Adjusted EBITDA	$ (7,140)	$ 246

Non-GAAP Net Income (Loss)

We define non-GAAP net income (loss) to consist of net income (loss) determined in accordance with GAAP, excluding the effects of stock-based compensation, depreciation, restructuring costs (for more information about restructuring costs, please refer to description in adjusted EBITDA above), amortization of debt issuance costs and non-cash income tax expense. We exclude the non-cash portion of income taxes because of our ability to offset a substantial portion of future income tax liabilities by utilizing our deferred tax assets, which primarily consist of federal net operating loss carryforwards and federal research and experimentation credit carryforwards. We have added back all of the net restructuring costs because of the non-recurring nature of restructuring costs.

The following table presents a reconciliation of net loss to non-GAAP net income (loss) and weighted-average shares — basic and diluted — to non-GAAP weighted-average shares — diluted:

	Three Months Ended March 31, 2018	Three Months Ended March 31, 2017
Net loss	$ (14,442)	$ (2,160)
Adjustments:		
Depreciation	1,120	874
Stock-based compensation	2,065	1,370
Amortization of debt issuance costs	21	23
Non-cash income tax expense	16	22
Restructuring costs	3,927	—
Non-GAAP net income (loss)	$ (7,293)	$ 129
Non-GAAP net income (loss) per share:		
Basic	$ (0.35)	$ 0.01
Diluted	$ (0.35)	$ 0.01
GAAP and non-GAAP weighted-average shares — basic	21,125	20,344
GAAP weighted-average shares — diluted	21,125	20,344
Adjustments:		
Effects of dilutive securities		
Unvested shares of common stock subject to repurchase	—	100
Stock awards	—	1,244
Non-GAAP weighted-average shares — diluted	21,125	21,688

Seasonality

We typically renegotiate pricing with many of our endpoint IC customers with an effective date in the first quarter of the calendar year , especially for our endpoint IC products, impacting both revenue and gross margins when compared with prior periods. In addition, endpoint IC volumes tend to be lower in the fourth quarter than the third quarter.

System sales tend to be stronger in the fourth quarter of the calendar year , and less strong in the first quarter. We believe this is due to the availability of residual funding for capital expenditures prior to the end of many customers' fiscal year.

While we expect these seasonal trends to continue, quarter-to-quarter variability in our revenue can be caused by a number of factors (e.g., the timing of large deployments, supply constraints, etc.) that can mask seasonality in any given year. These risks and uncertainties, as well as other risks and uncertainties that could cause our actual results to differ significantly from management's expectations, are described in greater detail in Item 1A of Part II, "Risk Factors."

Liquidity and Capital Resources

As of March 31, 2018, we had cash, cash equivalents and investments of $57.9 million, consisting of cash deposits held at major financial institutions, money market funds and short-term investments in a variety of securities, including U.S. government agencies, corporate notes and bonds, commercial paper and Treasury bills. We had working capital of $115.0 million as of March 31, 2018. Historically, we funded our operations principally by issuing equity securities or incurring debt. In 2018, our principal uses of cash were funding operations to capture our market opportunity, investments in inventory to ensure our ability to meet customer demand, debt service payments, and capital expenditures.

Sources of Funds

We believe, based on our current operating plan, that our existing cash, cash equivalents, short-term investments and available borrowings under our senior credit facility will be sufficient to meet our anticipated cash needs for at least the next 12 months.

From time to time, we may explore additional financing sources and means to lower our cost of capital, which could include equity, equity-linked and debt financing. In addition, in connection with any future acquisitions, we may require additional funding which may be provided in the form of additional debt, equity or equity-linked financing or a combination thereof. There can be no assurance that any additional financing will be available to us on acceptable terms.

Senior Credit Facility

In March 2018, we amended our senior credit facility, to, among other things, extend the maturity date of the revolving credit facility to March 5, 2020, and provide for a new $20.0 million term loan. We incurred $9.0 million in term loan borrowings to refinance $7.9 million of term loan borrowings and $1.1 million of equipment loans and have $11.0 million of term loan borrowings available for general corporate purposes. The new term loan will amortize over 36 months, beginning on April 1, 2019, following an initial interest-only period, and mature on March 1, 2022. We retain the ability to prepay the term loan at any time, subject to a prepayment fee equal to 2.0% of the outstanding principal amount if prepaid on or before March 5, 2019, or 1.0% of the outstanding principal amount if prepaid after March 5, 2019, but on or before March 5, 2020. The amendment also amended the financial covenants under the senior credit facility such that if our cash in accounts maintained with the lender, plus available revolver borrowings, falls below $60.0 million for the period of time beginning on March 5, 2018 and ending on December 31, 2018, or $55.0 million for the period of time beginning on January 1, 2019 and at all times thereafter, we must comply with an amended covenant to not exceed maximum adjusted EBITDA loss thresholds that vary by period and the existing minimum liquidity ratio, each determined in accordance with the terms of the senior credit facility.

At March 31, 2018, $20.0 million of term loan borrowings were outstanding under our senior credit facility, excluding unamortized debt issuance costs of $159,000, and the interest rate was 5.25%.

For information on our debt facilities, please refer to Note 8 of our consolidated financial statements included elsewhere in this report.

Use of Funds

Our principal uses of cash are operating expenses, inventory purchases, debt repayment and other working capital requirements.

Cash Flows

The following table presents selected cash flow data for the periods presented:

	Three Months Ended March 31,	
	2018	2017
	(in thousands)	
Net cash used in operating activities	$ (11,437)	$ (16,621)
Net cash provided by (used in) investing activities	8,196	(10,652)
Net cash provided by financing activities	11,956	944

Operating Cash Flows

For the three months ended March 31, 2018, net cash used in operating activities was $11.4 million. This cash usage was primarily driven by a net loss of $14.4 million, a $7.6 million increase in inventory to meet projected demand for our products, an $895,000 net decrease in accounts payable, accrued liabilities and accrued compensation and benefits due to the timing of when amounts came due, a $560,000 decrease in deferred rent and a $473,000 decrease in deferred revenue. Partially offsetting these uses of cash in operations were benefits of a $3.1 million impact of non-cash items, a $5.2 million decrease in accounts receivable, a $3.6 million increase in accrued restructuring costs and a $551,000 decrease in prepaid expenses and other assets.

For the three months ended March 31, 2017, net cash used in operating activities was $16.6 million. This cash usage was primarily driven by a net loss of $2.2 million, an $11.5 million increase in inventory, a $3.6 million increase in accounts receivable and a $3.3 million net decrease in accounts payable, accrued liabilities and accrued compensation and benefits. Partially offsetting these uses of cash in oper ations were benefits of a $2.3 million net impact of non-cash items, a $925,000 net increase in deferred rent and a $543,000 increase in prepaid expenses and other assets.

Investing Cash Flows

For the three months ended March 31, 2018, net cash provided by investing activities was $8.2 million. This cash benefit was driven by investment maturities of $17.9 million. These maturities were partially offset by purchases of investments and equipment of $8.9 million and $797,000, respectively.

For the three months ended March 31, 2017, net cash used in investing activities was $10.7 million. This cash usage was driven by purchases of investments and equipment of $17.3 million $1.2 million, respectively. These purchases were offset by maturities of investments of $7.9 million

Financing Cash Flows

For the three months ended March 31, 2018, net cash provided by financing activities was $12.0 million. This cash benefit consisted of proceeds of $12.4 million and $2.0 million, respectively, from the term loan and exercise of stock options and employee stock purchase plan. These proceeds were partially offset by repayments of indebtedness of $2.1 million of principal under our senior credit facility and payments of $242,000 for capital lease financing obligations.

For the three months ended March 31, 2017, net cash provided by financing activities was $944,000. This cash benefit consisted of proceeds of $2.0 million from the exercise of stock options and employee stock purchase plan; offset by payments of deferred offering costs of $600,000 and payments of $280,000 for capital lease financing obligations and repayments of indebtedness of $159,000 of principal under our senior credit facility.

Contractual Obligations

The following table reflects a summary of our contractual obligations as of March 31, 2018:

	Payments Due By Period				
	Total	Less Than 1 Year	1-3 Years	3-5 Years	More Than 5 Years
			(in thousands)		
Senior credit facility (1)	$ 20,000	$ —	$ 13,333	$ 6,667	$ —
Capital lease obligations	1,590	909	681	—	—
Operating lease obligations	34,385	4,285	8,696	9,087	12,317
Purchase commitments (2)	11,733	11,733	—	—	—
Total	$ 67,708	$ 16,927	$ 22,710	$ 15,754	$ 12,317

(1) Senior credit facility includes estimated interest payments assuming a change in interest rates only for the conclusion of contractual interest only periods over the term of the repayment periods. As of March 31, 2018, we had principal outstanding under our senior credit facility of $20.0 million with an interest rate of 5.25%.

(2) We manufacture products with third-party manufacturers. We are committed to purchase $11.7 million of inventory as of March 31, 2018.

Off-Balance Sheet Arrangements

Since inception, we have not had any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or for another contractually narrow or limited purpose.

Critical Accounting Policies and Significant Estimates

Our condensed consolidated financial statements are prepared in accordance with GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, expenses and related disclosures. We evaluate our estimates and assumptions on an ongoing basis. Our estimates are based on historical experience and various other assumptions that we believe to be reasonable under the circumstances. Our actual results could differ from these estimates. For information on our critical accounting policies and estimates, see Part II, Item 7 (Management's Discussion and Analysis of Financial Condition and Results of Operations) of our Annual Report on Form 10-K for the year ended December 31, 2017 . Except for the accounting policies for revenue recognition that were updated as a result of adopting Accounting Standards Update No. 2014-09 , *Revenue from Contracts with Customers* , t here have been no material changes to our critical accounting policies and estimates as previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2017 . For more information about our revenue recognition accounting policies , please refer to Note 2 to our consolidated financial statements included elsewhere in this report .

Item 3. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to market risks in the ordinary course of our business. These risks primarily consist of fluctuations in interest rates.

Interest Rate Risk

U nder our current investment policy, we invest our excess cash in money market funds, U.S. government agency securities, corporate notes and bonds and commercial paper . Our current investment policy seeks first to preserve principal, second to provide liquidity for our operating and capital needs and third to maximize yield without putting our principal at risk. We do not enter into investments for trading or speculative purposes.

We had cash, cash equivalents and short-term investments of $57.9 million and $58.1 million as of March 31, 2018 and December 31, 2017, respectively. Our investments are exposed to market risk due to the fluctuation of prevailing interest rates that may reduce the yield on our investments or their fair value. As our investment portfolio is short-term in nature, we do not believe an immediate 10% increase in interest rates would have a material effect on the fair market value of our portfolio, and therefore we do not expect our results of operations or cash flows to be materially affected by a sudden change in market interest rates.

We are subject to interest rate risk in connection with the borrowings under our senior credit facility, which accrue interest at variable rates. As of March 31, 2018, our borrowings under our senior credit facility had an interest rate of 5.25%. Assuming the revolver borrowings under the senior credit facility are fully drawn and holding other variables constant, a 100 basis-point increase in interest rates, occurring April 1, 2018 and sustained throughout the period ended April 30, 2018, would result in an increase in interest expense and a decrease in our cash flows and income before taxes of approximately $467,000.

Inflation Risk

We do not believe that inflation has had a material effect on our business, financial condition or results of operations. If our costs were to become subject to significant inflationary pressures, we may not be able to fully offset such higher costs through price increases. Our inability or failure to do so could adversely affect our business, financial condition and results of operations.

Foreign Currency Exchange Risk

Prices for our products are denominated in U.S. dollars, and as a result, we do not face significant risk with respect to foreign currency exchange rates.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer and our president and chief operating officer, evaluated the effectiveness of our disclosure controls and procedures as of March 31, 2018 . Disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is (1) recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and (2) accumulated and communicated to management, including its principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure. Based on the evaluation of our disclosure controls and procedures, our chief executive officer and our president and chief operating officer concluded that, due to the material weakness in our internal control over financial reporting as described below, our disclosure controls and procedures were not effective as of March 31, 2018 at a reasonable assurance level.

Previously Identified Material Weakness in Internal Control Over Financial Reporting

We previously identified and disclosed in our Annual Report on Form 10-K for the period ended December 31, 2017 , a material weakness in our internal control over financial reporting relating to the accounting and financial statement disclosure over complex accounting matters.

The impact of this material weakness resulted in the restatement of our consolidated financial statements for the years ended December 31, 2012 and 2013 and the restatement of our consolidated financial statements for the three and nine months ended September 30, 2015 and 2016.

Remediation Efforts to Address Previously Disclosed Material Weakness

Our management, with oversight from our audit committee, has taken steps to implement the following remediation actions to address the previously disclosed material weakness and to improve our internal control over financial reporting, primarily through:

- increasing the depth and experience within our accounting and finance organization;
- enhancing the communication and coordination among our accounting and financial reporting department and expanded cross-functional involvement and input into period-end disclosures; and
- implementing additional internal reporting procedures, including enhancing the analytical procedures used to assess period-end balances, to add depth to our review process and improve our segregation of duties.

During the three months ended March 31, 2018, we continued to assess the design of existing controls and implement new controls as needed to remediate the previously identified material weakness. Accordingly, we concluded the previously reported material weakness remained unremediated as of March 31, 2018.

Changes in Internal Control over Financial Reporting

Besides the above changes related to remediation efforts, there were no changes in our internal control over financial reporting identified during the three months ended March 31, 2018 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Controls

Our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of achieving the desired control objectives. Management recognizes that any control system, no matter how well designed and operated, is based upon certain judgments and assumptions and cannot provide absolute assurance that its objectives will be met. Similarly, an evaluation of controls cannot provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been detected.

PART II — OTHE R INFORMATION

Item 1. Legal Proceedings.

As of the date of this quarterly report, we are not a party to any material legal proceedings. In the normal course of business, we may be named as a party to various legal claims, actions and complaints. We cannot predict whether any resulting liability would have a material adverse effect on our financial position, results of operations or cash flows.

Item 1A. Risk Factors.

You should carefully consider the following risk factors, in addition to the other information contained in this report, including the section of this report captioned "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and related notes. If any of the events described in the following risk factors and the risks described elsewhere in this report occurs, our business, operating results and financial condition could be seriously harmed. This report also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of factors that are described below and elsewhere in this report.

Risks Relating to Our Business and Industry

RAIN market adoption is uncertain. If RAIN market adoption does not continue to develop, or develops more slowly than we expect, our business will suffer.

The RAIN market is relatively new and, to a large extent, unproven. RAIN technology and product adoption, including that of Impinj's products and platform, will depend on numerous factors, including:

- whether end users embrace the benefits we believe RAIN offers, and if so whether RAIN will achieve and sustain high demand and market adoption;
- whether end users perceive that the benefits of RAIN adoption outweigh the cost and time to install, replace or modify their existing systems and processes; and
- whether the technological capabilities of RAIN products and applications meet end users' current or anticipated needs.

The adoption of RAIN technology and products has historically been slower than anticipated or forecasted by us and industry sources. Our industry has also experienced periods of accelerated adoption that were not sustained. For example, RAIN adoption accelerated in 2016, but then decelerated in 2017, in part, we believe, due to delays in the implementation of planned programs by certain large retailers. Near-term RAIN adoption depends on large organizations with market influence, particularly in the retail industry, continuing to deploy RAIN solutions. Long-term RAIN market growth will depend on adoption by other industries and government agencies. End users and our prospective customers may not be familiar with our products or RAIN in general, or may use other products and technologies to identify, locate, authenticate, engage, track and prevent loss of their items. Additionally, even if prospective customers are familiar with RAIN, our products or platform, a negative perception of, or experience with, RAIN or a competitor's RAIN products may deter them from adopting RAIN or our products or platform. Before they adopt RAIN, businesses, government agencies and other organizations may need education on the benefits of using RAIN in their operations, and how they outweigh the costs, including potentially significant costs of modifying or replacing existing systems and processes. These educational efforts may not be successful, and organizations may decide that the costs of adopting RAIN outweigh the benefits, or may decide to defer near term RAIN adoption in favor of a more advanced or comprehensive future deployment. Failure of organizations to adopt RAIN generally, and our products and platform specifically, for any reason will hurt the development of our market and, consequently, impair our business and prospects.

Fluctuations in the adoption of RAIN may affect our ability to forecast our future operating results, including revenue, gross margins, cash flows and profitability. Moreover, to ensure adequate inventory supply, we must forecast inventory needs and expenses and place orders sufficiently in advance with our suppliers and contract manufacturers based on our estimates of future demand for particular products. In the near term, we expect to invest significantly in endpoint IC and gateway inventory to support the projected growth in our business. Our failure to accurately forecast demand for RAIN solutions may cause us to experience excess inventory levels or a shortage of products available for sale.

If RAIN adoption by retailers does not continue at the rate we expect, our business will be adversely affected.

The retail apparel industry leads RAIN adoption, and end users in the retail industry were the largest consumers of our endpoint ICs in 2016. We believe the retail industry is a leading indicator of RAIN market adoption and if large apparel retailers in particular continue adopting our platform then adoption within the retail industry and in other industries will accelerate. As such, the retail industry is one of our key strategic areas of focus.

If retailers or others deploying RAIN fail to realize demonstrable benefits from RAIN or delay or abandon their deployments, overall RAIN market acceptance may be materially and adversely affected. For example, in 2017, we believe our growth decelerated due, in part, to delays in the implementation of planned programs by certain large retailers. This contributed toward sequential declines in endpoint IC sales in the third and fourth quarters of 2017. In addition, retailers that have a primarily physical presen ce in the marketplace have experienced financial stress in recent periods. Many of these retailers have deployed RAIN to improve competitiveness; however, if they fail to compete effectively, the number of stores they maintain, and thus the scope of their RAIN deployments, may decrease significantly. Any widespread delay, slowdown or failure by retailers or other organizations to implement RAIN-based systems generally, and our products and platform specifically, will materially and adversely affect our busi ness, operating results, financial condition and long-term prospects.

If we are unsuccessful in fostering meaningful adoption of our products and platform by end users other than retailers, our business prospects may be adversely affected.

We expect end users to deploy our platform in sectors beyond retail, including, for example, healthcare and logistics. If we fail to make our products and platform an easy-to-deploy, economical solution for use cases in these other sectors, our ability to penetrate them may suffer and our business prospects may be adversely affected.

We have a history of losses and have only achieved profitability intermittently. We cannot be certain that we will increase or sustain profitability in the future.

We have incurred losses since our inception in 2000. While we were profitable between 2013 and 2015, we had a net loss of $14.4 million for the three months ended March 31, 2018 and an accumulated deficit of $219.0 million as of March 31, 2018. Our ability to regain or sustain profitability depends on numerous factors, many of which are out of our control, including continued RAIN adoption, our market share and our margins. We expect significant expenditures to support operations, product development, and business and headcount expansion in sales, engineering, and marketing as a public company. If we fail to increase our revenue or manage our expenses, we may not increase or sustain profitability in the future.

Fluctuations in our quarterly and annual operating results may adversely affect our business, prospects and stock price.

You must consider our business and prospects in light of the risks and difficulties we encounter in the uncertain and rapidly evolving RAIN market. Because this market is new and evolving, predicting its future growth rate and size is difficult. The rapidly evolving nature of the markets in which we sell our products, as well as other factors that are beyond our control, reduce our ability to accurately evaluate our future prospects and forecast quarterly or annual performance.

End users drive demand for our products. Because we sell nearly all of our products through channel partners, our ability to determine and forecast end-user demand is limited. For example, our 2016 endpoint IC sales exceeded both our expectations and those of our industry's analysts due in large part to several coincident large-scale deployments. However, in the second quarter of 2017 several large end users that had planned 2017 deployments delayed or slowed those deployments, leading us to reduce expectations for endpoint IC growth for the year. This volatility for demand for RAIN solutions makes accurate forecasting difficult. In addition, we rely on our channel partners to integrate our products with end-user information systems and this integration has been uneven and unpredictable in scope, timing and implementation. Partly as a consequence, in the past, both we and other industry participants have at times overestimated the RAIN market size and growth rates, then failed to meet expectations.

To date, we have had limited success in accurately predicting future sales of our products and platform. Due to our shorter lead-times for endpoint ICs, we are increasingly receiving customer orders and shipping the products within a quarter. A shortened sales cycle decreases our ability to accurately predict both optimal inventory supply and order volume for a quarter. Additionally, customer orders for readers and gateways are generally weighted toward the end of a quarter. If we do not have adequate supply of readers and gateways to fulfill the orders within a quarter or if we do not accurately predict the sales cycle for reader and gateways, sales of some sizeable transactions might extend into a subsequent quarter. We expect that for the foreseeable future our visibility into future sales, including both volumes and prices, will continue to be limited. This poor visibility may cause fluctuations in our operating results, particularly on a quarterly basis, that we are unable to predict as well as failure to achieve our expected operating results.

In addition, if endpoint IC sales (one indicator of market adoption) exceed expectations or if we discount prices to win a particularly large opportunity or in response to competition, our revenue and profitability may be positively affected, but gross margins may be negatively affected depending on product mix for the applicable period. If research analysts or investors perceive such product mix shift negatively, the trading price of our common stock could be adversely affected.

Numerous other factors, many of which are outside our control, may cause or contribute to significant fluctuations in our quarterly and annual operating results. These fluctuations may make financial planning and forecasting difficult . In addition, these fluctuations may result in unanticipated decreases in our available cash, which could negatively affect our business and prospects. Factors that may contribute to fluctuations in our operating results and revenue include:

- variations in RAIN adoption and deployment delays by end users;
- fluctuations in demand for our products or platform, including by tag manufacturers and other significant customers on which we rely for a substantial portion of our revenue;
- fluctuations in the available supply of our products;
- variations in the quality of our products and return rates;
- declines in selling prices for our products;
- delays in our product-shipment timing, customer or end-user sales or deployment cycles, or work performed under development contracts;
- intellectual property disputes involving us, our customers, end users or other participants in our industry;
- adverse outcomes of litigation or governmental proceedings;
- timing variability in product introductions, enhancements, services, and technologies by us and our competitors and market acceptance of these new or enhanced products, services and technologies;
- unanticipated excess or obsolete inventory as a result of supply-chain mismanagement, new-product introduction, quality issues or otherwise;
- changes in the amount and timing of our operating costs, including those related to the expansion of our business, operations and infrastructure;
- changes in business cycles or seasonal fluctuations that may affect the markets in which we sell;
- changes in industry standards or specifications, or changes in government regulations, relating to RAIN, or Impinj's products or platform;
- late, delayed or cancelled payments from our customers; and
- unanticipated impairment of long-lived assets and goodwill.

A substantial portion of our operating expenses are fixed for the short-term, and as a result, fluctuations in revenue or unanticipated expenses can have a material and immediate impact on our profitability. The occurrence of any one of these risks could negatively affect our operating results in any particular period, which could cause the price of our common stock to decline.

Our market is very competitive. If we fail to compete successfully, our business and operating results will suffer.

We face significant competition from both established and emerging competitors. We believe our principal current competitors are: in readers and gateways, Zebra Technologies Corporation and Alien Technology Corporation, or Alien; in reader ICs and modules, STMicroelectronics N.V. and Phychips Inc.; and in endpoint ICs, NXP Semiconductors N.V., or NXP, which in October 2016 entered into a definitive agreement to be acquired by Qualcomm, and Alien. Our channel partners, including distributors, system integrators, or SIs, value-added resellers, or VARs, and software solution partners, may enter our market and compete with us rather than purchase our products, which would not only reduce our customer base but also increase competition in the market, adversely affecting our operating results, business and prospects. In addition, companies in adjacent markets or newly formed companies may decide to enter our market, particularly as RAIN adoption grows. For example, Qualcomm could use its NXP acquisition as an entry point into the RAIN market.

Competition for customers is intense. Because the RAIN market is evolving rapidly, winning customer and end-user accounts at an early stage in the development of the market is critical to growing our business. End users that instead use competing products and technologies may face high switching costs, which may affect our and our channel partners' ability to successfully convert them to our products. Failure to obtain orders from customers and end users, for competitive reasons or otherwise, will materially adversely affect our operating results, business and prospects.

Some of our competitors may devote more resources than we can to the development, promotion, sale and support of their products. Our competitors include companies that have much greater financial, operating, research and development, marketing and other resources than us. These competitors may discount their products to gain market share. In doing so, they could simply accept smaller margins or they could maintain margins by achieving cost savings through better, more efficient designs or production methods. To gain share, competitors could also bundle near-field communication, or NFC, products with RAIN products, or stationary readers with handheld readers. New competitors could enter the gateway market or develop RAIN platforms or solutions. Larger or more established companies may deliver and directly compete with our products or platform. Smaller companies could launch new products and applications we do not offer and could gain market acceptance quickly. Moreover, consolidation in the RAIN industry could intensify the competitive pressures that we face. Many of our existing and potential competitors may be better positioned than we are to acquire other companies, technologies or products.

Some of our customers have policies requiring diverse supplier bases to enhance competition and maintain multiple RAIN product providers. They do not have an interest in purchasing exclusively from one supplier or promoting a particular brand. Our ability to increase order sizes from these customers and maintain or increase our market share is constrained by these policies. In addition, any decline in quality or availability of our products or any increase in the number of suppliers that such a customer uses may decrease demand for our products and adversely affect our operating results, business and prospects.

We cannot assure you that our products will continue to compete favorably or that we will be successful in the face of increasing competition from new products, or enhancements introduced by our existing competitors, or new companies entering our market. In addition, we cannot assure you that our competitors do not have, or will not develop, processes or product designs that currently or in the future will enable them to produce competitive products at lower costs than ours. Any failure to compete successfully will materially adversely affect our business, prospects, operating results and financial condition.

Downturns in the industries we serve, particularly retail, may adversely affect our business.

Worldwide economic conditions have exhibited significant fluctuations in the past, and customers remain guarded with respect to market volatility and uncertainty. As a consequence, we and our customers have had difficulty forecasting and planning future business activities accurately. Volatile economic conditions could cause our customers or end users to reduce their capital-expense budgets, which could decrease spending for our products resulting in delayed and lengthened deployment, a decrease in sales or a loss of sales opportunities. The retail industry is subject to volatility, especially during uncertain economic conditions. A downturn in the retail industry in particular may disproportionately affect us because retailers comprise a significant portion of the RAIN end users. We cannot predict the timing, strength or duration of any economic slowdown or recovery, whether global, regional or within specific markets. If the conditions of the general economy or markets in which we operate worsen, our business could be harmed.

If we fail to obtain quality products in adequate quantity and in a timely and cost-effective manner, our operating results and growth prospects will be adversely affected.

We do not own or operate manufacturing facilities. Currently, all our endpoint IC wafers are manufactured by Taiwan Semiconductor Manufacturing Company Limited, or TSMC, and primarily post-processed by our subcontractor Stars Microelectronics (Thailand) Public Company Limited, or Stars; all our reader IC wafers are manufactured by Tower Semiconductors Ltd., or TowerJazz, and our modules are manufactured by Stars and Microelectronics Technology Inc., or MTI; and all our readers and gateways are manufactured by Plexus Corp., or Plexus, or Western Corporation. We also use subcontractors for post-processing, assembly and testing.

We do not control our manufacturers' or subcontractors' ability or willingness to meet our supply requirements.

Currently, we do not have long-term supply contracts with TSMC, TowerJazz, MTI, Plexus or Western Corporation, and neither they nor our subcontractors are required to supply us with products for any specific period or in any specific quantity. Suppliers can allocate production capacity to other companies' and reduce deliveries to us on short notice. Our suppliers may allocate capacity to other companies, which could impair our ability to secure sufficient product supply for sale.

Some components of our products have very long lead times, so we place orders with some of our suppliers five or more months before our anticipated product delivery dates to our customers. We base these orders on our customer-demand forecasts. If we inaccurately forecast this customer demand then we may be unable to obtain adequate and cost-effective components, or foundry or assembly capacity to meet our customers' delivery requirements, or we may accumulate excess inventory.

Manufacturing capacity may not be available when we need it or at reasonable prices. For example, in 2010 we experienced wafer shortages from TSMC relative to our submitted endpoint IC wafer purchase orders because of high worldwide demand for semiconductor foundry capacity. These shortages adversely affected our ability to meet our customers' demand and, in some cases, caused customers to cancel orders, qualify alternative suppliers or purchase from our competitors. As another example, in mid-2016, as a consequence of rapid growth in endpoint IC demand, we depleted our endpoint IC buffer stock and were temporarily unable to satisfy demand for all customers, causing some customers to purchase from alternative suppliers even as we increased our wafer orders from TSMC, ramped up our wafer post-processing and rebuilt our inventory. In response to any future shortages, our customers may act similarly or, alternatively, may overbuy our products, which could artificially inflate sales in near-term periods while leading to sales declines in future periods as our customers consume their accumulated inventory.

At times, our suppliers ask us to purchase excess products to ensure we do not face a subsequent shortage. For example, in certain quarters of 2014, 2015 and 2016, we purchased more wafers from TSMC than required, which affected our available cash for that quarter. In addition, we may invest significantly in inventory to support anticipated growth in our business, as we have done with endpoint IC inventory in 2017. If we are unable to sell the additional inventory we purchased, or if we must sell it at lower prices due to obsolescence, our operating results may be adversely affected.

If our suppliers fail to deliver products at reasonable prices or with satisfactory quality levels then our ability to bring products to market and our re putation could suffer. For example, if supplier capacity diminishes, including from a catastrophic loss of facilities or otherwise, we could have difficulty fulfilling our orders, our revenue could decline and our growth prospects could be impaired. We ant icipate requiring three to 18 months to transition our assembly services or foundries to new providers. Such a transition would likely require a qualification process by our customers or end users, which could also adversely affect our ability to sell our products and our operating results. Moreover, in the event of a suspected quality issue, the process of testing suspect products and diagnosing and fixing defects could be time consuming and costly, and could constrain our ability to supply customers with product.

If we are unsuccessful introducing new products and enhancements, our operating results will be harmed.

To keep pace with technology developments, satisfy increasingly stringent end-user requirements and achieve market acceptance, we plan to introduce new products and solutions. We commit significant resources to developing these new products and solutions while improving performance, reliability and reducing costs. For example, we are investing substantial resources to develop and enhance our operating-system software but do not expect to realize material revenue from this software in the near future. The market for our software is nascent, and we need to create market awareness of its benefits to drive end-user adoption. Creating market awareness includes promoting our software as a foundation on which end users, ISVs, consultants, SIs, and others can develop applications that meet end-user needs and drive adoption. We may be late in delivering or improving our software to meet our partners' or end users' needs. In addition, we have limited experience developing and selling software products and cannot be certain that our proposed pricing model, sales strategy, or software quality and reliability will be successful. We rely on and must train our channel partners to sell, develop applications for and integrate our software with end users' systems, but we cannot guarantee that we or they will be successful doing so. We believe that we must continue to dedicate a significant amount of resources to our development efforts to develop and maintain our competitive position. We also cannot be certain that our software will generate revenue from these investments for several years, if it all, or that such revenue will exceed the investment we are committing to develop and deploy our software.

The success of a new or enhanced product is impacted by accurate forecasts of long-term market demand. For example, our xArray and xSpan gateways are relatively new products that incorporate enhanced technological features, but we cannot be certain whether demand for such gateways will develop as forecasted. We may also fail to anticipate or meet market requirements for new features and functionality. By focusing on certain new products and industries, we may miss opportunities for other products and applications that may be more widely adopted.

If we are unable to develop new products and services using new or enhanced technologies, our competitive position will be adversely affected.

In the future, we may not succeed in developing the underlying technologies or processes necessary to create new or enhanced products and services, or license or otherwise acquire these technologies from third parties. In some instances we may be late to market with our innovations, or may choose to be a "fast follower" but subsequently be unable to overcome the lead we gave to our competition. The success of a new or enhanced product depends on technological developments, market positioning and timing, as well as on various implementation factors, including:

- our timely and efficient completion of the design process;
- our timely and efficient implementation of manufacturing, assembly and testing procedures;
- product or service performance;
- product certification;
- our ability to attract, retain and manage technical personnel;
- the quality, reliability and selling price of the product or service; and
- effective marketing, sales and service.

If we are unable to develop new products, features and services to compete effectively, our market share could be adversely affected, which would harm our business, financial condition and operating results.

An inability or limited ability of enterprise systems to exploit RAIN information may adversely affect the market for our products.

A successful end-user RAIN deployment requires not only tags and readers or gateways, but integration with information systems and applications that derive business value from endpoint data. Unless technology providers continue developing and advancing business-analytics tools, and end users install or enhance their information systems and applications to use these tools, deployments of RAIN products and applications could stall. Our efforts to foster development and deployment of these tools by providing software that delivers item-level data could fail. In addition, our guidance to business-analytics tool providers for integrating our products with their tools could prove ineffective.

Solution providers and systems integrators form an essential part of the RAIN market by providing depl oyment know-how to end users who are unable to deploy RAIN solutions on their own. Our efforts to train and support these solution providers and systems integrators could fail. Further, integrating our products with end-user information systems could prove more difficult or time consuming than we or they anticipate, which could delay deployments. If end users are unable to successfully exploit RAIN data, or if we are unable to support solution providers or systems integrators adequately, or if deployments o f our platform are delayed, we could see a material adverse impact on our business, operating results, financial condition or prospects.

Our reliance on a small number of customers could adversely affect our business and operating results.

We sell our endpoint ICs directly to inlay and tag original equipment manufacturers, or OEMs, and original design manufacturers, or ODMs. In 2017, sales to Avery, Smartrac, Arizon and Blue Star accounted for 18%, 14%, 13% and 10% of our total revenue, respectively. This sales concentration to a relatively small number of tag OEMs lowers our bargaining power, and increases the risk that our pricing or sales could decline quickly based on aggressive pricing or sales measures taken by our competitors or our own failure to compete effectively.

We sell our reader ICs and modules to reader OEMs and ODMs, and our readers and gateways to VARs and SIs, primarily through distribution. We are beginning to sell software through these same partners as well as through ISV partners. We have experienced in the past and may again experience in the future purchasing delays or disruptions by some of these channel partners due to conditions within their organizations that are independent of market demand for our products or the RAIN market generally.

Although our strategy is to diversify our partner base by pursuing increased orders from smaller partners, add new partners, and increase end-user demand for our products, we cannot assure you we will succeed in doing so. The number of tag OEMs may decrease by consolidation or otherwise. Even if we are successful in obtaining and retaining new partners, our small number of existing large tag OEMs may continue to account for a substantial portion of our future sales. Changes in markets, channel partners, end-user customers, products, negative economic or financial developments, or poor or limited credit availability may adversely affect the ability of our tag OEMs, reader and gateway partners and distributors to bring our products to market.

Our future performance will depend, in part, on our ability to attract new tag OEMs, reader and gateway partners and distributors that use, market and support our products effectively, especially in market segments where we have not sold products previously. If we cannot retain our current tag manufacturers, reader and gateway partners and distributors or establish new relationships, our business, financial condition and operating results could be harmed. In addition, our competitors' strategic relationships with or acquisitions of these tag OEMs, reader and gateway partners or distributors could disrupt our relationships with them. Any such disruption could impair or delay our product sales to end users and increase our costs of distribution, which could adversely affect our sales or operating results.

Our reliance on distributors, SIs, VARs and software solution providers to sell and distribute our products to end users could harm our business and revenue.

We rely on our partner ecosystem to sell and distribute our products to end users. Our revenue depends on their ability to successfully market, sell, install and provide technical support for the solutions in which our products are integrated or to sell our products on a standalone basis. Our revenue will decline if our channel partners fail. Further, faulty or negligent implementation and installation of our products by systems integrators may harm our reputation.

Because we fulfill through channel partners, our ability to determine end-user demand is constrained. End users drive demand for our products and because we are often at least one step removed from these end users, we may be unable to rectify damage to our reputation caused by our channel partners who have more direct contact with these end users. For strategic or other reasons, our channel partners may choose to prioritize the sale of our competitors' products over our products. Furthermore, some of our channel partners may offer some products that compete with our products and may limit sales of our competing products. If reader IC or module OEMs are unable to obtain components for products in which our products are included, our product sales could be adversely affected. If our distributors, SIs, VARs or software solution providers are unable to sell an adequate amount of our products in a given quarter or if they choose to decrease their inventories of our products for any reason, our sales to these channel partners and our revenue will decline.

Many of our channel partners provide us with customer referrals and cooperate with us in marketing our products; however, our relationships with them may end at any time. If we fail to successfully manage our relationships with our channel partners, our ability to sell our products into new industries and to increase our penetration into existing industries may be impaired and our business will be harmed.

If our channel partners do not properly forecast end users' demand for our products then they may carry excess product inventory, which could adversely affect our revenue and operating results.

If some or all of our channel partners purchase more of our products than they need to satisfy end-user demand in any particular period, inventories held by the channel partners will grow during that period. The channel partners are then likely to reduce future orders until they realign inventory levels with end-user demand, which could adversely affect our product revenue in a subsequent period. Distributors may also return our products in exchange for other products, subject to time and quantity limitations. Our reserve estimates for products stocked by our distributors are based principally on reports provided to us by our distributors, typically on a monthly basis. To the extent this resale and channel-inventory information is inaccurate or we do not receive it in a timely manner, we may not be able to make accurate reserve estimates for future periods, which could adversely affect our operating results.

Our growth strategy depends in part on the success of strategic relationships with third parties and their continued performance and alignment.

To continue our growth, we are investing in our relationships with SIs, VARs and software solution providers that have product offerings that complement our platform and through which we will fulfill sales. Our business will be harmed if we fail to successfully develop and implement such strategic relationships. For example, operating results may suffer if our efforts towards developing our go-to-market relationships consume resources and incur costs, but do not result in a commensurate increase in revenue. In addition, such relationships may involve exclusivity provisions, additional levels of distribution, discount pricing or investments in other companies. The cost of developing and maintaining such relationships may go unrecovered or unrewarded and our efforts may not generate a correspondingly significant increase in revenue.

Selling prices of our products could decrease substantially, which could have a material adverse effect on our revenue and gross margins.

Historically, our market has experienced price erosion. The average selling price, or ASPs, of our products has decreased as the RAIN market has developed. We may experience substantial fluctuations in future operating results due to further ASP reductions.

From time-to-time we reduce the selling prices of our products to meet end-customer demands or due to market pressure from our competition. For example, during the second half of 2017 competitive pressures led to larger declines in ASPs of our endpoint ICs than in recent, prior quarters. As the market has grown, we have generally seen competitive pressures increase. We also sometimes reduce prices to encourage adoption, address macroeconomic conditions or for other reasons. We expect to do so again in the future. If we are unable to offset ASP reductions with increased sales volumes or reduced product costs then our revenue and gross margins will suffer. Further, our customers may be slow to migrate to new, higher margin products. Some competitors have significantly greater resources than we have and may be better able to absorb the negative impact on operating results as a result of such trends.

Rapid market innovation, which we continue to experience, can drive intense pricing pressure, particularly for older products or products using older technology. Short product life cycles cause our channel partners and end users to replace older products with newer ones on a regular basis. When demand for older products declines, ASPs may drop, in some cases precipitously. To profitably sell our products we must continually improve our technology, and processes, and reduce costs in line with the lower selling prices. If we and our third-party suppliers and manufacturers cannot advance process technologies or improve efficiencies to a degree sufficient to maintain required margins, we may not be able to sell our products profitably. Should our cost reductions fail to keep pace with reductions in market prices, our business, financial condition and operating results will be materially adversely affected.

Changes in our product mix could cause our overall gross margin to decline, adversely affecting our operating results and financial condition.

We cannot assure you that we will be able to maintain our historical gross margins. Our gross margins depend strongly on product mix. A shift in sales mix away from our higher margin products to lower margin products will adversely affect our gross margins. We generate a majority of our revenue from sales of our endpoint ICs, which have lower gross margins than our other products, and endpoint IC revenue may continue to increase as a percentage of our total revenue over time. In addition, gross margins can be affected by endpoint IC product mix. As the market for our newer, higher-margin endpoint IC products matures, we expect to experience price erosion for those products which may adversely affect gross margins if we are not able to realize cost reductions or shift towards newer or other higher margin products. If endpoint IC revenue continues to grow relative to our other products, our company-wide gross margin will decline. Additionally, competitive alternatives to our products, overall increased competition, weaker than expected demand, currency exchange rates and other factors may lead to lower prices, revenue and margins in the future, adversely affecting our operating results and financial condition.

We generate most of our revenue from our endpoint ICs, and a decline in sales of these produ cts or increased price competition in the market for endpoint ICs could adversely affect our operating results and financial condition.

We derive, and expect to continue to derive, a majority of our product revenue from our endpoint ICs. Accordingly, we are vulnerable to fluctuations in demand for our endpoint ICs, and if demand for them declines, our business and operating results will be adversely affected. In addition, the continued adoption of our endpoint ICs and maintaining demand for them and our new endpoint IC products, derives in part from our ability to continually innovate and to demonstrate the benefits of using our endpoint ICs with our reader ICs and modules, readers and gateways to achieve superior performance over our competitors. If we are not successful in establishing the benefits of using our products and platform, we may not be successful in countering competitive pressures to lower prices for our endpoint ICs and our business and operating results could be adversely affected.

Our products must meet exacting technical and quality specifications. Defects, errors or interoperability issues with our products, the failure of our products to operate as expected, or undue difficulty in deploying our products in actual operations could affect our reputation, result in significant costs to us and impair our ability to sell our products.

Our products may contain defects or errors or may not operate as we or our channel partners or end-user customers expect, which could materially and adversely affect our reputation, result in significant costs to us and impair our ability to sell our products in the future. Our products must meet demanding specifications for quality, performance and reliability. Our products are highly technical and designed to be deployed in large, complex systems under a variety of conditions. Channel partners and end users may discover errors, defects or incompatibilities only after deploying our products. For example, harsh environments or radio-frequency interference may negatively affect gateway performance. In addition, our channel partners or end users may experience compatibility or interoperability issues between our products and their enterprise software systems or networks, or between our products and other RAIN products they may use.

We may experience quality problems with our products combined with or incorporated into products from other vendors, such as tags produced by our tag OEMs using our endpoint ICs, or readers or gateways assembled by OEMs and ODMs using our reader ICs or modules. We may have difficulty identifying and correcting the source of problems when third parties are combining, incorporating or assembling our products.

If we are unable to fix errors or other problems, we could experience:

- loss of customers or customer orders;
- lost or delayed market acceptance and sales of our products;
- loss of market share;
- damage to our brand and reputation;
- impaired ability to attract new customers or achieve market acceptance;
- diversion of development resources;
- increased service and warranty costs;
- replacement costs;
- legal actions by our customers; and
- increased insurance costs.

Given the technical and business requirements against which end users evaluate RAIN and our products and platform, our business results and prospects could suffer if we are unable to make our products and our platform easy to deploy. To demonstrate the benefits of our platform, or layers of it, in fulfilling business needs and to develop deployment methods to meet those needs, we frequently enter into proof-of-concept deployments, or POCs, with prospective end users. These POCs can extend for relatively long periods of time, and their ultimate outcome can be mixed for a variety of reasons, including changes in end-user business requirements, changes in end-user commitment to the POC as well as deployment challenges. If we fail to deliver deployable solutions through POCs or otherwise, adoption of our products and platform could be adversely affected and our reputation and our business prospects could suffer.

Although our agreements typically contain provisions that purport to limit our liability for damages resulting from defects in our products, such limitations and disclaimers may not be enforceable or otherwise effectively protect us from claims. We may be required to indemnify our customers against liabilities arising from defects in our products or in their solutions that incorporate our products. These liabilities may also include costs incurred by our channel partners or end users to correct problems or replace our products.

The costs we incur correcting product defects or errors may be substantial and could adversely affect our operating results. Although we test our products for defects or errors prior to product release and during pro duction, our customers still occasionally catch defects or errors that we miss. Such defects or errors have occurred in the past and may occur in the future. To the extent product failures are material, they could adversely affect our business, operating r esults, customer relationships, reputation and prospects. Also, we assert that our products conform to the UHF Gen2 protocol. Compatibility issues between our products and the protocol, or among different products that each nominally conform to the protoco l, could disrupt our customers' operations, hurt our customer relations and materially adversely affect our business and prospects.

We will lose market share and may not be successful if end users or customers do not design our products into their products and systems.

End users often undertake extensive pilot programs or qualification processes prior to placing orders for large quantities of our products, in particular for reader and gateway products, because these products must function as part of a larger system or network or meet certain other specifications. We spend significant time and resources to have our products selected by a potential end user or customer, which is known as a "design-in." In the case of reader and gateway products, a "design-in" means the product has been selected to be designed into the end user's system and, in the case of an endpoint IC, may mean the endpoint IC has met certain unique performance criteria established by the end user or customer. If we fail to develop new products that adequately or competitively address the needs of potential end users, they may not select our products to be designed into their systems, which could adversely affect our business, prospects and operating results.

Our business is dependent upon our brand recognition and reputation, and if we fail to maintain or enhance our brand recognition or reputation, our business could be harmed.

We believe that maintaining and enhancing our brand and our reputation is critical to our relationships with our customers and end users and to our ability to attract new customers and end users. We also believe that our brand and reputation will be increasingly important as competition in our market continues to develop. Our success in this area will depend on a wide range of factors, some of which are beyond our control, including the following:

- the efficacy of our marketing efforts;
- our ability to continue to offer high-quality, innovative and defect-free products;
- our ability to maintain the security and privacy of our customers' sensitive and proprietary information;
- our ability to retain existing customers and obtain new customers;
- our ability to maintain high customer satisfaction;
- the quality and perceived value of our products;
- our ability to successfully differentiate our products from those of our competitors;
- actions of competitors and other third parties; and
- positive or negative publicity.

If our brand promotion activities are not successful, our operating results and growth may be harmed.

Furthermore, negative publicity, whether or not justified, relating to events or activities attributed to us, employees, channel partners or others associated with any of these parties, may tarnish our reputation and reduce the value of our brand. Damage to our reputation and loss of brand equity may reduce demand for our products and platform and have an adverse effect on our business, operating results and financial condition. Moreover, any attempts to rebuild our reputation and restore the value of our brands may be costly and time consuming, and such efforts may not ultimately be successful.

If we are unable to protect our intellectual property then our business could be adversely affected.

Our success depends in part upon our ability to obtain, maintain and enforce patents, copyrights, trade secrets, trademarks and other intellectual property rights and to prevent third parties from infringing, misappropriating or circumventing the rights we own or license. Given our industry-leading innovation in RAIN technology, there is a high likelihood that material elements of our endpoint ICs have been or will be copied by competitors, and while we take appropriate and feasible measures to protect our intellectual property rights, we cannot be sure that we will be able to prevent such conduct by simply enforcing, or threatening to enforce, those rights.

We rely on a variety of intellectual property rights, including patents in the United States and copyrights, trademarks and trade secrets in the United States and foreign countries. Because many RAIN products are used in or imported into the United States, we have historically focused on filing U.S. patent applications. We have filed a small number of foreign patent applications, but do not yet have any issued or allowed patents in any foreign country. By seeking patent protection primarily in the United States, our ability to assert our intellectual property rights outside the United States is limited. We have registered trademarks and domain names in selected foreign countries where we believe filing for such protection is appropriate. Regardless, some of our products and technologies may not be covered adequately by any patent, patent application, trademark, copyright, trade secret or domain name.

We cannot guarantee that:

- any of the patents, trademarks, copyrights, trade secrets or other intellectual property rights we presently employ in our business will not lapse or be invalidated, circumvented, challenged or abandoned;
- our intellectual property rights will provide competitive advantages to us;
- our ability to assert our intellectual property rights against potential competitors or to settle current or future disputes will not be limited by our agreements with third parties;
- any of our pending or future patent applications will be issued or have the coverage we originally sought;
- our intellectual property rights will be enforced, particularly in jurisdictions where competition may be intense or where legal protections may be weak;
- we will not lose the ability to assert our intellectual property rights against, or to license our technology to, others and collect royalties or other payments; or
- we will retain the right to ask for a royalty-bearing license in relation to ratification of a standard for which we participate in the standards process if we fail to file an intellectual property declaration pursuant to such standards process.

In addition, our competitors or others may design around our patents or protected technologies. Effective intellectual property protection may be unavailable or more limited in one or more relevant jurisdictions relative to those protections available in the United States. If we pursue litigation to assert our intellectual property rights, an adverse decision in any legal action could limit our ability to assert our intellectual property rights, limit the value of our technology or otherwise negatively impact our business, financial condition and operating results.

Monitoring unauthorized use of our intellectual property is difficult and costly. Unauthorized use of our intellectual property may have already occurred or may occur in the future. Our failure to identify unauthorized use or otherwise adequately protect our intellectual property could adversely affect our business.

Moreover, any actual or threatened litigation to enforce our intellectual property could be time consuming, distracting, expensive and could result in outcomes or trigger consequences that are harmful to us. We could incur significant costs and divert our attention and the efforts of our employees by threatening or initiating litigation. This could, in turn, result in lower revenue and higher expenses. To the extent we discuss our concerns regarding possible or actual infringement with others prior to or in lieu of litigation, we could also become subject to claims brought by alleged infringers. Because outcomes in litigation are uncertain, we could lose in our enforcement action or weaken our intellectual property through the litigation process. At the same time, any decision not to enforce our intellectual property rights through litigation could embolden others to violate or potentially violate our intellectual property rights, and thus weaken them over time.

Some of our know-how or technology is not patented or patentable and may constitute trade secrets. To protect our trade secrets, we have a policy of requiring our employees, consultants, advisors and other collaborators to enter into confidentiality agreements. We also rely on customary contractual protections with our channel partners, suppliers and end users, and we implement security measures intended to protect our trade secrets, know-how or other proprietary information. However, we cannot guarantee we have entered into appropriate agreements with all parties that have had access to our trade secrets, know-how or other proprietary information. We also cannot assure you that those agreements will provide meaningful protection for our trade secrets, know-how or other proprietary information in the event of any unauthorized use or disclosure. Our trade secrets, know-how or other proprietary information could be obtained by third parties as a result of breaches of our physical or electronic security systems or our suppliers, employees or consultants could assert rights to our intellectual property.

Finally, our use of overseas manufacturers may involve particular risks. The intellectual property protection in countries where our third-party contractors operate is weaker than in the United States. If the steps we have t aken and the protection provided by law do not adequately safeguard our intellectual property rights then we could suffer losses in profits due to the sales of competing products that exploit our intellectual property rights.

We may face claims of intellectual property infringement which could be time consuming, costly to defend or settle, result in the loss of significant rights, and adversely affect RAIN adoption generally.

Many companies in our industry, as well as so-called non-practicing entities, hold large numbers of patents and other intellectual property rights and may vigorously pursue, protect and enforce their intellectual property rights. We have in the past, and may in the future, receive invitations to license patent and other intellectual property rights to technologies that are important to our business. We may also receive assertions against us, our channel partners or end users claiming that we or they infringe patent or other intellectual property rights. Claims that our products, processes, technology or other aspects of our business infringe third-party intellectual property rights, regardless of their merit or resolution, could be costly to defend or settle and could divert the efforts and attention of our management and technical personnel. If we decline to accept an offer, the offering party may allege that we infringe such patents, which could result in litigation.

Intellectual property disputes affecting our industry may adversely affect RAIN adoption. For example, in 2011 Round Rock Research filed lawsuits against 11 end users, including Walmart and Macy's, for patent infringement in the RAIN products these retailers use. We believe these lawsuits materially and adversely affected demand for our products by retailers and others from 2011 to 2014. In 2013, Round Rock Research entered into licensing settlement agreements with a substantial number of RAIN vendors, including us; in early 2015, they reached a settlement agreement with the last of the end-user defendants. We, our channel partners, suppliers or end users could be involved in similar disputes in the future which would materially and adversely affect our operating results and growth prospects.

Many of our agreements require us to indemnify and defend our channel partners and end users from third-party infringement claims and pay damages in the case of adverse rulings. Moreover, we may not know whether we are infringing a third party's rights due to the large number of RAIN-related patents or to other systemic factors. For example, patent applications in the United States are maintained in confidence for up to 18 months after filing or, in some instances, for the entire time prior to patent issuance. Consequently, we may not be able to account for such rights until after publication. Competitors may also have filed patent applications or received patents and may obtain additional patents and proprietary rights that block or compete with our patents. Claims of this sort could harm our relationships with our channel partners or end users and might deter future customers from doing business with us. We do not know whether we will prevail in any such future proceedings given the complex technical issues and inherent uncertainties in intellectual property litigation. If any pending or future proceedings result in an adverse outcome then we could be required to:

- cease the manufacture, use or sale of the infringing products, processes or technology;
- pay substantial damages for infringement;
- expend significant resources to develop non-infringing products, processes or technology;
- license technology from the party claiming infringement, which license may not be available on commercially reasonable terms, or at all;
- cross-license our technology to a competitor to resolve an infringement claim, which could weaken our ability to compete with that competitor; or
- pay substantial damages to our channel partners or end users to cause them to discontinue their use of, or replace, infringing products with non-infringing products.

Any of the foregoing results could have a material adverse effect on our business, financial condition and operating results.

We have limited visibility into the length of the sales and deployment cycles for our products.

Because we have limited sales history for our products, we have limited visibility into the lengths of the product sales and deployment cycles, and from time-to-time these cycles have been longer than we anticipated. For new types of products, such as our gateways and ItemSense software, our visibility into the sales and deployment cycle lengths is even more limited; inasmuch as these products are components in a systems sale, our experience in the systems-selling cycle is even more limited. Numerous factors can contribute to uncertainties in the cycle lengths, including the time channel partners and end users spend evaluating our products, our time educating them on the products' benefits, and our time integrating our systems with their systems. The length and uncertain timing of the sales and deployment cycles can lead to delayed product orders. In anticipation of product orders, we may incur substantial costs before the sales cycle is complete and before we receive any customer orders or payments. If a sale is not completed or is cancelled or delayed, we may incur substantial expenses, which could hinder our ability to achieve or maintain profitability or otherwise negatively affect our financial results.

Significant developments stemming from the current U.S. presidential administration's priorities or initiativ es, or the U.K.'s referendum on membership in the EU could have a material adverse effect on us.

In January 2017, Mr. Donald J. Trump was inaugurated as president of the United States. President Trump's administration has since notified Congress of its intentions to begin renegotiating NAFTA, and withdrawn the United States from negotiations for the TPP; he has also previously proposed restrictions on free trade generally and significant increases in tariffs on goods imported into the United States, particularly from China; and he has expressed an intention to review policies regarding, and possibly restrict, immigration to the United States. Changes in U.S. social, political, regulatory and economic conditions or in laws and policies governing foreign trade, manufacturing, development and investment in the territories and countries where we currently develop and sell products, and immigration to the United States, and any negative sentiments towards the United States as a result of such changes, including our trading partners potentially imposing tariffs on imports of our products, could adversely affect our business. In addition, negative sentiments towards the United States among non-U.S. customers and among non-U.S. employees or prospective employees, or the imposition of restrictions on immigration to the United States, could adversely affect sales or hiring and retention, respectively. To the extent U.S. policies engender an economic downturn, in the United States or abroad, the effects could materially affect our business, in many ways only some of which we can identify as of the date of this report.

In June 2016, the United Kingdom held a referendum and voted in favor of leaving the European Union, or EU, and in March 2017 the United Kingdom began the official process to leave the EU by April 2019. This action has created political and economic uncertainty, particularly in the United Kingdom and the EU, and this uncertainty may last for years. Our business in the United Kingdom, the EU and worldwide could be affected during this period of uncertainty, and perhaps longer, by the impact of the United Kingdom's decision to leave the EU. There are many ways in which our business could be affected, only some of which we can identify as of the date of this report.

The withdrawal of the United Kingdom from the EU, along with events that could occur in the future as a consequence of the United Kingdom's withdrawal, including the possible breakup of the United Kingdom, may cause significant volatility in global financial markets, including in global currency and debt markets. This volatility could cause a slowdown in economic activity in the United Kingdom, Europe or globally, which could adversely affect our operating results and growth prospects. In addition, our business could be negatively affected by new trade agreements between the United Kingdom and other countries, including the United States, and by the possible imposition of trade or other regulatory barriers in the United Kingdom. Furthermore, we currently operate in Europe through an Impinj subsidiary based in the United Kingdom, which currently provides us with certain operational, tax and other benefits. The United Kingdom's withdrawal from the EU could adversely affect our ability to realize those benefits and we may incur costs and suffer disruptions in our European operations as a result. These possible negative impacts, and others resulting from the United Kingdom's withdrawal from the EU, may adversely affect our operating results and growth prospects.

We are subject to order and shipment uncertainties. Inaccuracies in our estimates of end-customer or channel-partner demand and product mix could negatively affect our inventory levels, sales and operating results.

We sell our products primarily through channel partners, and we derive revenue primarily from purchase orders rather than from long-term purchase commitments. To ensure product availability, we typically manufacture from channel-partner forecasts in advance of received purchase orders. However, many of our channel partners have difficulty accurately forecasting their product requirements and estimating the timing of demand for our products. In addition, when we release new products, we may carry higher inventories or have slower inventory turnover depending on our ability to anticipate market acceptance.

Our estimates of channel-partner and end-user demand have historically been inaccurate. Some of the inaccuracies have been material, leading to excess inventory with associated costs or product shortages with its concomitant loss of revenue and gross margin. Further, our channel partners can cancel purchase orders or defer product shipments, in some cases with little or no advance notice to us. Additionally, we sometimes receive soft commitments for larger order sizes which do not materialize.

For all these reasons, our ability to accurately plan purchases or manufacturing is limited. This may cause us to experience excess inventory levels or a shortage of products available for sale. High inventory levels and increased obsolescence could result in unexpected expenses or increases in reserves that could adversely affect our business, operating results and financial condition. Lead times for our products can be lengthy so experiencing product shortages may require us to defer revenue into subsequent periods, or may cause us to lose revenue opportunities entirely. Further, if we underestimate customer demand or if sufficient manufacturing capacity is unavailable, we could potentially lose market share and damage our customer relationships. Any significant product-order cancellations or deferrals or the return of previously sold products could materially and adversely impact our profit margins, increase our write-offs due to product obsolescence and restrict our ability to fund our operations.

We are subject to risks inherent in foreign operations, including social, political and economic flux and compliance with additional U.S. and international laws, including those related to anti-bribery and anti-corruption, and may not be able to successfully maintain or exp and our international operations.

In 2017, 77% of our total revenue was derived from sales outside the United States. We anticipate growing our business, in part, by continuing to expand our international operations, which involves a variety of risks, including:

- changes, some unexpected or unanticipated, in regulatory requirements, taxes, trade laws, tariffs, export quotas, custom duties or other trade restrictions;
- lack of established, clear, or fairly implemented standards or regulations with which our products must comply;
- greater difficulty in enforcing contracts, judgments and arbitration awards in international courts, and in collecting accounts receivable and longer payment and collection periods;
- difficulty in supporting and localizing our international products;
- different or unique competitive pressures as a result of, among other things, the presence of, or preference for, local businesses and market players;
- challenges in managing employees, some foreign nationals, over large geographic distances, including the need to implement appropriate systems, policies, benefits and compliance programs;
- challenges in doing business in different languages and in business cultures with varying norms of transparency and compliance with policies than in the United States;
- limited or unfavorable intellectual property protection;
- misappropriation of our intellectual property;
- inflation and fluctuations in foreign-currency exchange rates and interest rates;
- withholding taxes or other taxes, or changes thereof, on our foreign income;
- restrictions, or changes thereof, on foreign trade or investment, including currency exchange controls;
- changes in a country's or region's political, regulatory, legal or economic conditions;
- political uncertainty, strife, unrest, or conflict;
- differing regulations with regard to maintaining operations, products and public information;
- inequities or difficulties obtaining or maintaining export and import licenses;
- differing labor regulations, including where labor laws may be more advantageous to employees than in the United States
- restrictions on earnings repatriation;
- corrupt or unethical practices in foreign jurisdictions that may subject us to exposure under applicable anti-corruption and anti-bribery laws such as the Foreign Corrupt Practices Act and the United Kingdom Bribery Act of 2010, or U.K. Bribery Act; and
- regulations, and changes thereof, relating to data privacy and the unauthorized use of, or access to, commercial and personal information, particularly in Europe.

Various foreign regulatory or other governmental bodies may issue rulings that invalidate prior laws, regulations, or legal frameworks in manners that may adversely impact our business. The Court of Justice of the European Union in October 2015 issued a ruling immediately invalidating the EU-U.S. Safe Harbor Framework, which facilitated personal data transfers to the United States in compliance with applicable EU data protection laws. EU and U.S. political authorities adopted the -EU-U.S. Privacy Shield on July 12, 2016, which provides a new mechanism for companies to transfer EU personal data to the United States. It is unclear as of the date of this report whether we will make use of the EU-U.S. Privacy Shield, and it has been subject to challenges in EU courts. In view of these developments, there is significant regulatory uncertainty surrounding the future of data transfers from the European Economic Area to the United States. In addition, the European Commission adopted a General Data Protection Regulation that, when fully effective on May 25, 2018, will impose more stringent data protection requirements than the present regulatory regime in the EU and provide for greater penalties for noncompliance. Additionally, the United Kingdom has proposed a Data Protection Bill that is anticipated to provide for similar obligations and associated penalties as the EU General Data Protection Regulation, but as of the date of this report, it remains in the legislative process in the United Kingdom, with it uncertain what such legislation will provide for, should it be enacted.

We opened an office in Shanghai, China in 2011. In addition to the risks listed above, we are also exposed to risks associated with changes in laws and policies governing Chinese operations and, to a lesser extent, changes in U.S. laws and regulations relating to foreign trade and investment. To date, legal, policy or regulatory changes have not had a material adverse effect on our business or financial condition, but we cannot assure you they will not in the future. We may experience increased costs for, or significant impact to, our Chinese operations in the event of changes in Chinese government policies or political unrest or unstable economic conditions in China. The nationalization or other expropriation of private enterprises by the Chinese government could result in total loss of our China investment. Any of these matters could materially and adversely affect our business and results of operations.

Failure to comply with anti-corruption and anti-bribery laws in our foreign activities could subject us to penalties and other adverse consequences. Anti-corruption and anti-bribery laws generally prohibit companies and their employees and intermediaries f rom making payments to foreign officials for the purpose of obtaining or keeping business, securing an advantage or directing business to another person, and require companies to maintain accurate books and records and a system of internal accounting contr ols. Under the U.S. Foreign Corrupt Practices Act of 1977, as amended, or the FCPA, U.S. companies may be held liable for corrupt actions taken by directors, officers, employees, agents, or other strategic or local partners or representatives. If we, our i ntermediaries or our solution providers, SIs, OEMs, VARs, distributors, tag manufacturers, and other channel partners fail to comply with FCPA requirements or similar legislation, government authorities in the United States and elsewhere could seek to impo se civil or criminal fines and penalties which could have a material adverse effect on our business, operating results and financial conditions. Moreover, China is an area of heightened exposure regarding compliance with anticorruption laws such as the FCP A and the U.K. Bribery Act. We intend to increase our international sales and business there and, as such, our risk of violating laws such as the FCPA or U.K. Bribery Act also increases.

We have limited experience marketing, selling and supporting our products and services abroad and may not be able to increase or maintain international market demand for our products. In addition, regulations or standards adopted by other countries may require us to redesign existing products or develop new products for those countries. For example, foreign governments may impose regulations or standards with which our current products do not comply, or may require operation in frequency bands in which our products do not operate. Furthermore, if we are unable to expand international operations in a timely and cost-effective manner in response to increased demand, we could miss sales opportunities and our revenue may decline, adversely affecting our operating results, business and prospects. If we invest substantial time and resources but are unable to expand our international operations successfully and in a timely manner, our business, prospects and operating results will suffer.

We generally conduct our China operations through a wholly owned subsidiary and our European operations through our U.K. subsidiary. We generally report our taxable income in worldwide jurisdictions based on our business operations in those jurisdictions. The relevant taxing authorities may disagree with our determinations as to the income and expenses attributable to the jurisdiction or subsidiary. In the event of a disagreement, if our position was not sustained, we could be required to pay additional taxes, interest and penalties, which could result in tax charges, higher effective tax rates, reduced cash flows and lower overall profitability.

We are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in international markets.

The U.S. and various foreign governments have imposed controls, export license requirements and restrictions on the import or export of certain products, technologies and software. We must export our products in compliance with U.S. export controls, including the Commerce Department's Export Administration Regulations and various economic and trade sanctions established by the Treasury Department's Office of Foreign Assets Controls. We may not always be successful in obtaining necessary export licenses, and our failure to obtain required import or export approval for our products or limitations on our ability to export or sell our products imposed by these laws may harm our international and domestic sales and adversely affect our revenue. Noncompliance with these laws could have negative consequences, including government investigations, penalties and reputational harm.

Changes in our products or changes in export, import and economic sanctions laws and regulations may delay our introduction of new products in international markets, prevent our customers from deploying our products internationally or, in some cases, prevent the export or import of our products to or from certain countries altogether. While we are not aware of any current or proposed export or import regulations that will materially restrict our ability to sell our products, any change in export or import regulations or legislation, shift or change in enforcement, or change in the countries, persons or technologies targeted by these regulations, could result in decreased use of our products by, or in our decreased ability to export or sell our products to, existing or potential customers with international operations. In such event, our business and results of operations could be adversely affected.

Political unrest, as well as changes in the political, social, business or economic conditions in Thailand, could harm our business, financial condition and operating results.

We post-process many of our IC wafers, including testing, dicing and other wafer operations, using subcontractors in Bangkok, Thailand. Deterioration in the political, social, business and economic conditions in Thailand could have a material effect on our business. Thailand has experienced ongoing political and social upheaval over the past two decades, such as in May 2014 when the Royal Thai Army staged a military coup, banned demonstrations and enforced monitoring of civilian activities. In August 2014, Thailand's national assembly appointed the coup leader as prime minister. Thailand may also experience political unrest stemming from the results of its August 2016 constitutional referendum, as well as the death of its king in October 2016. We do not know what direction the political situation may take or if subsequent issues will affect us. Any changes to tax regimes, laws, exchange controls or political action in Thailand may harm our business, financial condition and operating results.

Instability in Thailand could prevent wafer shipments from entering or leaving the country and disrupt our ability to test or post-process wafers in Thailand. In such an event, we could be forced to transfer our testing and dicing activities to more stable, and potentially more costly, regions and find alternative sources for testing and dicing, which could harm our business, financial condition and op erating results.

Intellectual property licensing from or to others, including competitors, may subject us to requirements or limitations that could adversely affect our business and prospects.

We have intellectual property license agreements that give us access to certain patents and intellectual property of others. We have not licensed our patents or intellectual property to others except as necessary for our customers to practice their business using our products and as required pursuant to agreements we have entered into in connection with our participation in the development of GS1 EPCglobal protocols and International Standards Organization, or ISO, standards. In the course of our participation in the development of GS1 EPCglobal protocols, including UHF Gen2, UHF Gen2 V2, tag data standards, low-level reader protocol, and others, we have agreed to license on a royalty-free basis those of our patents that are necessarily infringed by the practice of these protocols to other GS1 EPCglobal members, subject to reciprocal royalty-free rights from those other members. Because it may not be clear whether a member's intellectual property is necessary or optional to the practice of a protocol, disputes could arise among members, resulting in our inability to receive a license on royalty-free terms. Further, some GS1 EPCglobal members declined to provide licenses to some of their intellectual property under royalty-free terms, instead choosing reasonable and non-discriminatory, or RAND, terms. Disputes or confusion may arise about whether we may invoke our necessary intellectual property if these members choose to assert their RAND intellectual property, potentially causing or at least complicating any ensuing litigation and harming our business, financial condition and operating results.

In the course of our participation in the development of certain ISO standards we have agreed to grant to all users worldwide a license to those of our patents that are necessarily infringed by the practice of those standards, including at frequencies other than UHF, on RAND terms, again subject to reciprocity. As a result, we are not always able to limit to whom and, to a certain extent, on what terms we license our technologies, and our control over and our ability to generate licensing revenue from some of our technologies may be limited. We may choose to license our patents or intellectual property to others in the future. We cannot guarantee that any patents and technology that we provide in such future licenses will not be used to compete against us.

We rely on third-party license agreements; impairment of those agreements may cause production or shipment delays that could harm our business.

We have licensing agreements with other entities for patents, software and technology used in our manufacturing operations and products. For example, we license tools from design-automation software vendors to design our silicon products. Third-party licenses for patents, software and other technology important to our business may not continue to be available on commercially reasonable terms, if at all. Loss of any such licenses could cause significant manufacturing interruptions, delays or reductions in product shipments until we can develop, license, integrate, and deploy alternative technologies, if even possible, which would materially harm our business and operating results.

Our use of open-source software may expose us to additional risks and harm our intellectual property.

Our products, processes and technology sometimes use or incorporate software that is subject to an open-source license. Open-source software is typically freely accessible, usable and modifiable, and is made available to the general public on an "as-is" basis under the terms of a non-negotiable license. Use and distribution of open-source software may entail greater risks than use of third-party commercial software. Certain open-source software licenses require a user who intends to distribute the open-source software as a component of the user's software to disclose publicly part or all of the user's source code. In addition, certain open-source software licenses require the user of such software to make derivative works of the open-source code available to others at low or no cost. Consequently, open-source licensing can subject our previously proprietary software to open-source licensing terms, which could enable our competitors to create similar offerings with lower development effort and time and ultimately could result in a loss of sales. In addition, open-source licensors generally do not provide warranties or other contractual protections regarding infringement claims or the quality of their code, opening us to business risks that could materially harm our operating results.

We may face claims alleging noncompliance with open-source license terms or infringement or misappropriation of proprietary software. These claims could result in litigation, require us to purchase a costly license, or require us to devote research and development resources to change our software, any of which would have a negative effect on our business and operating results. Few courts have interpreted open-source licenses, and these licenses could be construed in a way that could impose unanticipated conditions or restrictions on our ability to commercialize our offerings. In addition, if there are changes in the licensing terms for the open-source software we use, we may be forced to re-engineer our solutions, incur additional costs or discontinue sale of our offerings. We cannot guarantee that we have incorporated all open-source software in our software in a manner that is consistent with our current policies and procedures, or in a manner that will not subject us to liability.

Priv acy and security concerns relating to RAIN could damage our reputation and deter current or potential customers from using our products.

Privacy advocates and others have raised and may continue raising concerns about RAIN compromising consumer privacy or facilitating theft. These concerns include unauthorized parties collecting personally identifiable information, tracking consumers, stealing identities or causing other privacy-related issues. Consumers may be subject to unauthorized readers or gateways surreptitiously identifying and tracking their RAIN tags to gain information a consumer considers private, even if the consumer employs protective measures. Retailers may inadvertently or perhaps even intentionally read consumers' tags to gain information, such as shopping behavior, that may be illegal to collect, or if not illegal, may be considered intrusive by consumers. Unauthorized readers or gateways could gain access to sensitive information stored in tags despite measures designed to thwart such unauthorized access. For example, criminals seeking to divert or steal high-value pharmaceutical products could seek to identify these products by looking for tags with Electronic Product Codes, or EPCs, corresponding to these products. If such concerns increase, or if actual malicious or inadvertent breaches of privacy or theft occur, then our reputation could be damaged, our business and prospects may suffer, and we could incur significant liability.

In addition to concerns over privacy or theft, it may be possible for those with malicious intent to misuse RAIN in ways that actually facilitate theft or damage the public trust, such as by changing the EPC on a narcotic to misrepresent it as an over-the-counter product. It may even be possible to embed computer viruses or other malicious code into endpoint ICs so that by reading endpoint IC memory, the malicious code can be inserted into end-user systems. If a breach occurs, our customers could be the target of regulatory actions or private lawsuits. In such cases, a customer might allege that our products did not function as promised and may sue us for breach of contract, breach of warranty, negligence or another cause of action. Additionally, if our customers' security measures are breached, even if through means beyond our control, our reputation may be damaged, we may be subject to litigation and our business and prospects could suffer. Moreover, concerns about security and privacy risks, even if unfounded, could damage our reputation and operating results and could delay the development of the overall RAIN industry. Security breaches could expose us to litigation and possible liability. Even if our products meet new standards or regulations, if our security measures are breached as a result of third-party action, our error or criminal act or otherwise, and, as a result, someone obtains unauthorized access to customer or end-user data, our reputation could be damaged, our business and prospects may suffer, and we could incur significant liability.

Government regulations and guidelines relating to consumer privacy may adversely impact adoption of our products, require us to make design changes or constrain our ability to implement new and desired product features.

Our customers are subject to laws and regulations related to collecting, storing, transmitting and using personal information, as well as additional laws and regulations that address privacy and security issues related to radiofrequency identification, or RFID. For example, some U.S. states have enacted statutes specifically governing the use of RFID, including prohibitions on mandatory implantation of an RFID IC, unauthorized skimming of information from ID cards and documents, unauthorized personnel tracking using RFID and improper use of RFID tags in drivers' licenses or on vehicles. Because RAIN uses RFID technology, we believe these statutes and regulations apply to RAIN systems.

The European Commission, or EC, has issued guidance to address privacy concerns about RFID. In May 2009, the EC issued a recommendation that retail companies in the EU inform their customers when RFID tags are either on or embedded within products. In April 2011, the EC signed a voluntary agreement with private and public stakeholders to develop privacy guidelines for companies using RFID in the EU. The agreement requires companies to conduct privacy impact assessments of new RFID applications and to take measures to address risks identified by the assessment before the RFID application is deployed. While compliance with the guidelines is voluntary, our customers that do business in the EU may have a preference for products that comply with the guidelines. If our RAIN products do not provide the necessary functionality to allow customers to comply with the guidelines then our business may suffer.

The data security and privacy legislative and regulatory landscape in the United States and EU, and other foreign jurisdictions is evolving, and changes in laws and regulations may adversely impact our business, including our ability to develop future products. If we fail to develop products that implement end-user privacy requirements then end users may choose not to use our products in certain applications, which would harm our business, operating results and financial condition.

Although the Gen2 V2 protocol described below includes features for addressing consumer privacy and authenticating a tag, a third party may still breach these features, including as implemented in our products, in which case our reputation could be damaged and our business and prospects may suffer.

Alternative technologies or standards, or changes in existing technologies or standards, may adversely affect RAIN market growth.

Technology developments may affect our business in ways we cannot anticipate. Breakthroughs in legacy RFID technologies or markets, including those using low frequency or high frequency technology, could adversely affect RAIN market growth generally and demand for our products in particular. For example, NFC technology, which today addresses a different market than RAIN, could, with breakthrough innovations, compete with RAIN in item tagging. Likewise, new technologies such as organic transistors may allow lower-cost ICs than our current silicon-based technology allows. These competing technologies could use intellectual property that is either not royalty free or to which we do not have access. If we are unable to innovate using new or enhanced technologies or processes, or are slow to react to changes in existing technologies or in the market, or have difficulty competing with advances in new or legacy technologies, then our development of new or enhanced products could be materially impacted and potentially result in product obsolescence, decreased revenue and reduced market share.

To encourage widespread RAIN market adoption, we have participated in the development of industry standards, and we have designed our products to comply with these standards. In 2013, GS1 EPCglobal ratified "UHF Gen2 Version 2" or simply "Gen2 V2," a new version of the protocol that underlies RAIN communications. In the future, we could lose our position in GS1 EPCglobal or we could lose our project-editorship role for UHF Gen2. If one of our competitors introduces a Gen2 V2 product that gains market adoption before we do, we could lose market share and face difficulty selling our products. The introduction of new industry standards, or changes to existing industry standards, could make our products incompatible with the new or changed standards and could cause us to incur substantial development costs to adapt to these new or changed standards, particularly if they were to achieve, or be perceived as likely to achieve, greater penetration in the marketplace. If Gen2 V2 diverges significantly from our or the RAIN market's needs then our products may likewise fail to keep pace with the market, our competitors' products and end-user requirements, in which case end users could delay RAIN adoption. Moreover, the adoption or expected adoption of new or changed standards could slow the sale of our existing products before products based on the new or changed standards become available. New industry standards or changes to existing standards could also limit our ability to implement new features in our products if those features do not meet the new or changed standards. The lost opportunities as well as time and expense required for us to develop new products or change our existing products to comply with new or changed standards could be substantial, and we cannot assure you that we could successfully develop products that comply with new or changed standards. If we are not successful in complying with any new or changed industry standards, then we could lose market share, causing our business to suffer.

We are a founding member of the RAIN Alliance. Our chief executive officer is presently an Alliance Director and was previously the Alliance Chairman. Board membership is an elected position that we could lose in future elections. It provides industry stature and attendant benefits but is not without risk. If the RAIN market falters, or if the RAIN Alliance falters, then we could be blamed, our reputation and industry position could be impacted, and our business could suffer.

Compliance with, and changes in, government spectrum regulations could adversely affect our ability to sell products and impair our operating results.

Government radio regulations require that our readers and gateways be certified for spectral compliance in jurisdictions where they are sold or operated. Our readers and gateways are collectively certified for use in more than 40 countries worldwide, including the United States, Canada, Mexico, China, Japan, South Korea and each country in the EU. If one of our reader or gateway products is found to be noncompliant despite having such certification then we could be required to modify field-deployed readers or gateways to regain certification and could spend significant resources as well as miss sales opportunities in the process. Our revenue could decline, adversely affecting our operating results, financial condition, business and prospects. Additionally, government regulations may change, requiring us to redesign our products to the new regulations or constraining our ability to implement new and desired features into our products, thereby causing us to incur significant expenses or forego opportunities to improve our products, potentially delaying time-to-market, adversely affecting our operating results, financial condition, business and prospects.

Our products may cannibalize revenue from each other, which could harm our business.

Sales of some of our products enable our channel partners to develop their own products that compete with other of our products. For example, sales of our reader ICs allow technology companies to build and sell readers and gateways that compete with our products. Similarly, sales of our readers allow our channel partners to build and sell products that compete with our xPortal, xArray and xSpan. We even see cannibalization within our own product line—for example, our xSpan sometimes competes with our xPortal. In the future, we may see one product line expand at the expense of another, or we may be asked by channel partners to disadvantage or divest a product line. We cannot predict whether we can manage such conflicts in the future, or retain channel partners despite conflicts. Any of the foregoing could have a material adverse effect on our business, financial condition and operating results.

Acquisitions could result in operating difficult ies, dilution and other harmful consequences.

We have evaluated, and expect to continue evaluating, potential strategic transactions, and we may pursue one or more transactions, including acquisitions. We have limited experience executing acquisitions. Any transaction could be material to our financial condition and operating results. Integrating an acquired company, business or technology may create unforeseen operating difficulties and expenditures. Acquisition-related risks include:

- diverting management time and focus from operating our business to acquisition integration;
- difficulties integrating acquired products into our strategy and product plans;
- customers switching from us to new suppliers because of the acquisition;
- inability to retain employees from the business we acquire;
- challenges associated with integrating employees from the acquired company into our organization;
- difficulties integrating accounting, management information, human resource and other administrative systems to permit effective management of the business we acquire;
- potential requirements for remediating controls, procedures and policies appropriate for a public company in the acquired business that prior to the acquisition lacked these controls, procedures and policies;
- potential liability for past or present environmental, hazardous substance, or contamination concerns associated with the acquired business or its predecessors;
- possible write-offs or impairment charges resulting from the acquisition; and
- unanticipated or unknown liabilities relating to the acquired business.

Foreign acquisitions involve additional risks beyond those above, including risks related to integrating operations across different cultures and languages, currency risks and the economic, political and regulatory risks associated with other countries. Also, the anticipated benefit of any acquisition, domestic or foreign, may not materialize. Future acquisitions or dispositions could result in potentially dilutive issuances of our equity securities, debt incurrence, contingent liabilities or amortization expenses or goodwill write-offs, any of which could harm our financial condition. Future acquisitions may require us to obtain additional equity or debt financing, which may not be available on favorable terms or at all.

Our business could be adversely affected if one or more members of our executive management team departed.

Our success depends, in large part, on the continued contributions of our executive management team including Chris Diorio, Ph.D., our chief executive officer, and Eric Brodersen, our chief operating officer. None of our executive management team is bound by employment contracts to remain with us for a specified period. The loss of any member of our executive management team could harm our ability to implement our business strategy and respond to the rapidly changing market conditions in which we operate.

If we are unable to attract, train and retain qualified personnel, especially technical, sales and marketing personnel, then we may not be able to effectively execute our business strategy.

Our success depends on our ability to attract, motivate and retain qualified personnel. Our technical personnel, the source of our technical and product innovations, and our sales and marketing personnel that drive our go-to-market initiatives are especially important. There is no guarantee we can attract and retain such personnel as we continue to pursue our business strategy. The availability of, and competition for, qualified personnel in the Seattle area, where we are headquartered, constrains our ability to attract qualified personnel. The loss of the services of one or more of our key employees, or our inability to attract, retain and motivate qualified personnel could have a material adverse effect on our business, financial condition and operating results.

Pricing and other provisions in our customer agreements could adversely affect our operating results.

In the ordinary course of business we enter into agreements containing pricing terms; in some instances the terms, whether advertently or inadvertently, may adversely affect our operating results and gross margins. For example, some contracts specify future reader, gateway or IC pricing, or contain most-favored customer pricing for certain products. As another example, some agreements contain exclusivity terms that prevent us from pursuing certain business with other customers during the exclusivity period. Further, reducing prices or offering other favorable terms to one customer could adversely affect our ability to negotiate favorable terms with other customers. We may decide for competitive or strategic reasons to enter into similar types of agreements in the future, and such agreements could impair our operating results.

We and our suppliers ar e subject to environmental laws and regulations that could impose substantial costs on us and may adversely affect our business, operating results and financial condition.

Some of our facilities, including those devoted to research and development, are regulated under federal, state, local, foreign and international environmental laws. Those laws govern pollutant discharge into air and water; managing, disposing, handling, labeling, and exposure to hazardous substances/wastes; and contaminated site cleanup. We could incur costs, fines and civil or criminal sanctions; third-party property damage or personal-injury claims; or could be required to pay substantial investigation or remediation costs, if we were to violate or become liable under environmental laws. Liability under certain environmental laws can be joint and several and without regard to comparative fault. In addition, some of our products contain hazardous substances and are subject to requirements that regulate their content, such as the EU's Restriction of Hazardous Substances Directive and analogous regulations elsewhere. Although we design our products to be compliant with environmental regulations and require our third-party contractors to comply, we cannot guarantee that we or our products will always be in compliance with these requirements. Environmental laws also tend to become more stringent over time, and we cannot predict the ultimate costs under environmental laws or the timing of these costs. Failure to comply with these and other environmental laws could result in fines, penalties and decreased revenue, which could adversely affect our operating results.

If our third-party contractors fail to operate in compliance with environmental requirements, properly dispose of wastes associated with our products, or comply with requirements governing the hazardous-substance content of our products, we could be held liable or suffer reputational harm.

We may not sustain or effectively manage our growth.

We have experienced significant revenue growth in a short period of time. We may not experience similar growth rates in future periods. For example, revenue declined in the second half of 2017. You should not rely on our operating results for any prior periods as an indication of our future operating performance. If we are unable to maintain adequate revenue growth then our financial results could suffer and our stock price would decline.

To manage our growth and the responsibilities of being a public company, we believe we must effectively:

- recruit, hire, train and manage qualified engineers for our research and development activities;
- add sales and marketing personnel and expand our customer-support offices;
- implement and improve administrative, financial and operational systems, procedures and controls;
- integrate and train new employees quickly and effectively; and
- coordinate growth among our executive, engineering, finance, marketing, sales, operations and customer-support organizations.

All the above activities add to our organizational complexity and increase our operating expenses.

We may have insufficient management capabilities or resources to manage our growth and business effectively. As a consequence of our small management team we may be unable to pursue all commercial opportunities. Accordingly, we may require significant additional resources as we increase the complexity and scale of our business operations. We cannot assure you that we will have adequate resources when we need them or that we will have sufficient capital to fund our resource needs. If we are unable to manage our growth effectively, we may not be able to exploit market opportunities or develop new products, and we may fail to satisfy customer requirements, maintain product quality, execute our business plan or respond to competitive pressures.

Our management has limited public-company experience. We are subject to additional regulatory compliance requirements, including Section 404 of the Sarbanes-Oxley Act of 2002. If we fail to maintain an effective system of internal controls then we may not be able to accurately report our consolidated financial results or prevent fraud. In the course of preparing our consolidated financial statements, we previously identified a material weakness in our internal control over financial reporting.

We have a short history of operating as a public company. Some of our executive team, including our chief executive officer, have never managed a publicly traded company prior to our initial public offering and have little experience complying with the complex and everchanging laws pertaining to public companies. In addition, our chief financial officer resigned from our company effective March 30, 2018 and we are in process of identifying a replacement. Our entire management team as well as other company personnel will need to devote substantial time to compliance, and may not effectively or efficiently manage our maturation as a public company. We have incurred and will continue to incur significant legal, accounting and other expenses that we did not incur as a private company.

We expect rules and regulations such as the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, to continue to increase our legal and finance compliance time and costs, and also to increase the time and costs of other activ ities. For example, Section 404 of the Sarbanes-Oxley Act requires that management report on, and in the future, that our independent registered public accounting firm attest to, the effectiveness of our internal control over financial reporting. Effective internal controls are necessary for us to provide reliable financial reports and prevent fraud. Section 404 compliance will continue to divert resources and take significant time and effort to complete. We may be unable to successfully complete the proced ures and certification and attestation requirements of Section 404 in a timely manner. In addition, the Sarbanes-Oxley Act requirements may be modified, supplemented or amended from time to time. Implementing the changes may take significant time and may r equire additional employee compliance training. We may discover internal controls that need improvement. Our or our independent registered public accounting firm's discovery of a material weakness, even if quickly remedied, could reduce the market's confid ence in our financial statements and harm our stock price. Any inability to provide reliable financial reports or prevent fraud could harm our business.

We may be unable to effectively implement, or effectively implement in a timely manner, the necessary controls and employee training to ensure continued compliance with the Sarbanes-Oxley Act and other regulatory and reporting requirements. Our growth will challenge our ability to maintain the internal control and disclosure standards applicable to public companies. If we fail to successfully complete the procedures and certification and attestation requirements of Section 404, or if in the future our chief executive officer, chief financial officer or independent registered public accounting firm determines that our internal control over financial reporting is not effective as defined under Section 404, we could be subject to sanctions or investigations by the Securities and Exchange Commission, or SEC, or by other regulatory authorities. Investor perceptions of our company may suffer, likely causing a decline in our stock's market price. We cannot assure you that we will be able to fully comply with the requirements of the Sarbanes-Oxley Act or that management or our independent registered public accounting firm will conclude that our internal controls are effective in future periods. Irrespective of compliance with Section 404, any failure of our internal controls could have a material adverse effect on our stated operating results and harm our reputation.

In the course of preparing our consolidated financial statements in prior years, we, in conjunction with our independent registered public accounting firm, identified an error in the accounting treatment for the recapitalization of our company in 2012 and the impact of the recapitalization on earnings per share that resulted in the restatement of our previously issued financial statements for the years ended December 31, 2012 and 2013. In 2015, we, in conjunction with our independent registered public accounting firm, identified an error related to the cash flow statement presentation of lease incentives in our consolidated interim financial statements for the nine months ended September 30, 2015. Also, in 2016, we identified that we inadvertently did not reflect the correction of the identified error related to the cash flow statement presentation of lease incentive in our consolidated interim financial statements for the nine months ended September 30, 2015 on the statement of cash flows included in our quarterly report on Form 10-Q filed with the SEC on November 7, 2016. These financial statement errors, combined with other identified control deficiencies, were considered to indicate a material weakness in our internal control over financial reporting related to the accounting and financial statement disclosure over complex accounting matters. A material weakness is a deficiency, or combination of control deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the annual or interim consolidated financial statements will not be prevented or detected on a timely basis. We have taken and continue to take steps to remediate the material weakness, including increasing the depth and experience within our accounting and finance organization, as well as designing and implementing improved processes and internal controls. As of December 31, 2017, this material weakness had not been remediated. Our remediation of this material weakness in future periods may not be effective or prevent future material weaknesses or significant deficiencies in our internal control over financial reporting.

If we fail to retain finance personnel or fail to maintain our financial reporting systems and infrastructure then we may be unable to timely and accurately report our financial results or comply with the requirements of being a public company, including compliance with the Sarbanes-Oxley Act and SEC reporting requirements, which in turn could significantly harm our reputation and our business.

We have hired personnel with financial reporting and Sarbanes-Oxley Act compliance expertise. Our ability to retain personnel could adversely impact our ability to timely and accurately prepare our financial statements. Further, our ability to retain employees with the requisite experience could adversely affect our financial statements because new employees require time and training to learn our business and operating procedures. If our finance and accounting organization is unable for any reason to meet the increased demands of being a public company then the quality and timeliness of our financial reporting may suffer, which could result in material weaknesses in our internal controls. The consequences of inaccuracies or delays in our reported financial statements could cause the trading price of our common stock to decline and could harm our business, operating results and financial condition.

We may need to raise additional capital which may not be available on favorable terms, if at all, causing dilution to stockholders, restricting our operations or adversely affecting our ability to operate our business.

In the course of running our business we may need to raise capital, diluting our stockholders. If our need is due to unforeseen circumstances or material expenditures or if our operating results are worse than expected then we cannot be certain that we will be able to obtain additional financing on favorable terms, if at all, and these additional financings could cause additional dilution to our stockholders. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions such as incurring additional debt, expending capital, or declaring dividends, or which impose financial covenants on us that limit our ability to achieve our business objectives. If we need but cannot raise additional capital on acceptable terms then we may not be able to meet our business objectives, our stock price may fall, and you may lose some or all of your investment.

Our debt obligations contain restrictions that impact our business and expose us to risks that could adversely affect our liquidity and financial condition.

We have a loan and security agreement, or senior credit facility, with Silicon Valley Bank. As amended in March 2018, the senior credit facility provides for (1) a $25.0 million revolving credit facility, with a $5.0 million letter of credit subfacility and (2) a $20.0 million term loan. At March 31, 2018, we had $20.0 million term loan borrowings outstanding and no revolver borrowings outstanding.

Our senior credit facility contains customary covenants, which limit our and our subsidiaries' ability to, among other things:

- incur additional indebtedness or guarantee indebtedness of others;
- create liens on our assets;
- enter into mergers or consolidations;
- dispose of assets;
- pay dividends and make other distributions on our capital stock, and redeem and repurchase our capital stock;
- make investments, including acquisitions; and
- enter into transactions with affiliates.

The amendment also amended the financial covenants under the senior credit facility such that if our cash in accounts maintained with the lender, plus available revolver borrowings, falls below $60.0 million for the period of time beginning on March 5, 2018 and ending on December 31, 2018, or $55.0 million for the period of time beginning on January 1, 2019 and at all times thereafter, we must comply with an amended covenant to not exceed maximum adjusted EBITDA loss thresholds that vary by period and the existing minimum liquidity ratio, each determined in accordance with the terms of the senior credit facility.

If we experience a decline in cash flow due to any of the factors described in this "Risk Factors" section or otherwise, we could have difficulty paying interest and principal amounts due on our indebtedness and meeting the financial covenants set forth in our senior credit facility. If we are unable to generate sufficient cash flow or otherwise obtain the funds necessary to make required payments under our senior credit facility, or if we fail to comply with the requirements of our indebtedness, we could default under our senior credit facility. Any such default that is not cured or waived could result in the acceleration of the obligations under the senior credit facility, an increase in the applicable interest rate under the senior credit facility, and would permit our lender to exercise remedies with respect to all of the collateral that is securing the senior credit facility, including substantially all of our assets, other than intellectual property. Any such default could have a material adverse effect on our liquidity and financial condition.

Even if we comply with all of the applicable covenants, the restrictions on the conduct of our business could adversely affect our business by, among other things, limiting our ability to take advantage of financings, mergers, acquisitions and other corporate opportunities that may be beneficial to the business.

A breach of our security systems could have a material adverse effect on our business.

We use security systems to maintain our facility's physical security and to protect our proprietary and confidential information, including that of our customers, suppliers and employees. Accidental or willful security breaches or other unauthorized access to our facilities or information systems, or viruses, loggers, or other malfeasant code in our data or software, could compromise access to and the integrity of this information. The consequences of such loss and possible misuse of our proprietary and confidential information could include, among other things, unfavorable publicity, damage to our reputation, difficulty marketing our products, customer allegations of breach-of-contract, litigation by affected parties and possible financial liabilities for damages, any of which could have a material adverse effect on our business, financial condition, reputation and relationships with customers and partners. We also rely on third-party providers of corporate infrastructure services relating to, among other things, human resources, electronic communication services and some financial functions, and we are therefore dependent on the security systems of these providers. Any security breaches or other unauthorized access to our service-providers' systems or viruses, loggers, or other malfeasant code in their data or software could expose us to information loss and misappropriation of confidential information. Because the techniques used to obtain unauthorized access to or sabotage security systems change frequently and are often not recognized until after an attack, we may be unable to anticipate the techniques or implement adequate preventative measures, thereby exposing us to material adverse effect on our business, operations and financial condition.

Our operations could be disrupted by natural disasters.

An earthquake, fire, flood or other natural or manmade disaster could disable our facilities, disrupt operations, or cause catastrophic losses. We have facilities in areas with a known history of seismic activity, such as our headquarters in Seattle, Washington. We also have facilities in areas with a known history of flooding, such as our office in Shanghai, China. We have a wafer testing and dicing subcontractor in Thailand, a region with a known, and quite recent, history of flooding. A loss at or of any of these or other of our or our suppliers' facilities could disrupt operations, delay production and shipments, reduce revenue and engender potentially large expenses to repair or replace the facility. As a specific example, in 2011 and 2012 floods in Thailand disrupted our subcontractor's facility for approximately six months. During that time, we relied on a secondary subcontractor that had longer lead times for, and decreased yield of, our endpoint IC wafers. We do not carry insurance policies that cover potential losses caused by earthquakes, floods or other disasters.

Our ability to use net operating losses to offset future taxable income may be limited.

As of December 31, 2017, we had federal net operating loss carryforwards, or NOLs, of $126.4 million and federal research and experimentation credit carryforwards of $9.7 million which we may use to reduce future taxable income or offset income taxes due. We have established a valuation allowance against the carrying value of our deferred tax assets, as it is not currently more likely than not that we will be able to realize these deferred tax assets. The tax loss and research and development credit carryforwards begin to expire in 2023. Insufficient future taxable income will adversely affect our ability to utilize these NOLs and credit carryforwards. Reductions in corporate tax rates may reduce the realization of the NOLs. In addition, under Sections 382 and 383 of the U.S. Internal Revenue Code, or the Code, a corporation that experiences a more-than 50% ownership change over a three-year testing period is limited in its ability to use its pre-change NOLs and other tax assets to offset future taxable income or income taxes due. Our existing NOLs and credit carryforwards may be subject to limitations arising from previous ownership changes; if we undergo an ownership change then our ability to use our NOLs and credit carryforwards could be further limited by Sections 382 and 383 of the Code. Future changes in our stock ownership, the causes of which may be outside our control, could result in an ownership change under Sections 382 and 383 of the Code. Our NOLs may also be impaired under state law. As a result of these limitations, we may not be able to utilize a material portion of, or possibly any of, the NOLs and credit carryforwards.

We could be subject to additional income tax liabilities.

We are subject to income taxes in the United States and certain foreign jurisdictions. We use significant judgment in evaluating our worldwide income-tax provision. During the ordinary course of business, we conduct many transactions for which the ultimate tax determination is uncertain. For example, our effective tax rates could be adversely affected by earnings being lower than anticipated in countries where we have lower statutory rates and higher than anticipated in countries where we have higher statutory rates, by changes in currency exchange rates, by changes in the valuation of our deferred tax assets and liabilities or by changes in the relevant tax, accounting and other laws, regulations, principles and interpretations. We are subject to audit in various jurisdictions, and such jurisdictions may assess additional income tax against us. Although we believe our tax estimates are reasonable, the final determination of tax audits and any related litigation could be materially different from our historical income-tax provisions and accruals. The results of an audit or litigation could have a material effect on our operating results or cash flows in the period or periods for which that determination is made.

Taxing authorities may successfully assert that we should have collected or in the future should collect sales and use, value-added or similar taxes, and we could be subject to liability with respect to past or future sales, which could adversely affect our operating results.

We do not collect sales and use, value-added or similar taxes in all jurisdictions in which we have sales, based on our belief that such taxes are either not applicable or an exemption from such taxes applies. Sales and use, value-added and similar tax laws and rates vary greatly by jurisdiction. Certain jurisdictions in which we do not collect such taxes may assert that such taxes are applicable, which could result in tax assessments, penalties and interest, and we may be required to collect such taxes in the future, including as a result of a change in law. Such tax assessments, penalties and interest or future requirements may adversely affect our operating results.

We are subject to SEC rules regarding the use and disclosure of conflict minerals, which we expect will increase our operating and compliance costs and could potentially harm our reputation, causing a decline in our stock price.

We are subject to the requirements under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 that will require us to diligence, disclose and report whether our solutions contain conflict minerals. The rule requires us to submit forms and reports to the SEC by May 31, 2019 and annually thereafter to disclose our determinations and due-diligence measures regarding conflict minerals. Although we do not directly purchase conflict minerals, tracing the minerals our suppliers use back to country of origin is a complex task that requires us to, among other things, survey our supply chain to understand what programs our suppliers have for tracing the source of minerals used in products supplied to us and ensure these suppliers have performed reasonable due diligence. We have not determined how many or, if any, of our suppliers use conflict minerals. In addition to the increased administrative expense required to comply with these requirements, some of our customers are also subject to this rule, and we have been and will continue to be asked as part of their supply chain to comply with their requirements as part of their compliance with the rule. Moreover, we may face a limited pool of suppliers who can provide “conflict-free” products, and we may not be able to obtain conflict-free products or supplies in sufficient quantities or at competitive prices for our operations. We may be required to disclose our products as not being “conflict free,” which could adversely affect our reputation and may harm relationships with business partners and customers, and our stock price could suffer as a result.

Risks Relating to the Ownership of Our Common Stock

The market price of our common stock has been and will likely continue to be volatile, and the value of your investment could decline significantly.

There was no public market for our common stock prior to our initial public offering. Since July 2016, when we sold shares of our common stock in our initial public offering at a price of $14.00 per share, our stock price has ranged from $9.95 to $60.85 through April 30, 2018. Securities of companies similar to ours experience significant price and volume fluctuations. The following factors, in addition to other risks described in this report, may have a significant effect on our common stock price:

- price and volume fluctuations in the overall stock market from time to time;
- changes in operating performance, stock market valuations, and volatility in the market prices of other technology companies generally, or those in our industry in particular;
- actual or anticipated quarterly variations in our results of operations or those of our competitors;
- actual or anticipated changes in our growth rate relative to our competitors;
- delays in end-user deployments of RAIN systems;
- announcements by us or our competitors of acquisitions, new products, significant contracts, commercial relationships or capital commitments;
- supply interruptions;
- developments with respect to intellectual property rights;
- our ability to develop and market new and enhanced products on a timely basis;
- commencement of, or our involvement in, litigation;
- changes in our board of directors or management;
- changes in governmental regulations or in the status of our regulatory approvals;
- unstable regional political and economic conditions, such as those caused by the U.S. presidential election and the U.K. referendum to leave the EU;
- the trading volume of our stock;
- limited public float;
- any future sales of our common stock or other securities;
- failure of financial analysts to maintain coverage of us, changes in financial estimates by any analysts who follow our company, or our failure to meet these estimates or the expectations of investors;
- fluctuations in the values of companies perceived by investors to be comparable to us;
- the financial projections we may provide to the public, any changes in these projections or our failure to meet these projections; and
- general economic conditions and slow or negative growth of related markets.

In addition, the stock market in general, and the market for technology companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. Broad market and industry factors may seriously affect our stock price, regardless of our actual operating performance. In addition, in the past, securities class action litigation has often been instituted against companies whose stock prices have declined, especially following periods of volatility in the overall market. This litigation, if instituted against us, could result in substantial costs and a diversion of our management’s attention and resources.

If securities or industry analysts do not publish research reports about our business, or if they issue an adverse opinion about our business, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. If one or more of the analysts who cover us issues an adverse opinion about our company, our stock price would likely decline. If one or more of these analysts ceases coverage of us or fails to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

Future sales of our common stock in the public market could cause our stock price to fall.

Sales of a substantial number of shares of our common stock into the public market, particularly sales by our directors, executive officers, and principal stockholders, or the perception that these sales might occur, could cause the market price of our common stock to decline. These sales, or the possibility that these sales may occur, also might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate.

In addition, in the future, we may issue additional shares of common stock or other equity or debt securities convertible into common stock in connection with a financing, acquisition, litigation settlement, employee arrangement or otherwise. Any such issuance could result in substantial dilution to our existing stockholders and could cause our stock price to decline.

Our principal stockholders and management own a significant percentage of our stock and are able to exercise significant influence over matters subject to stockholder approval.

As of April 30, 2018, our executive officers, directors and principal stockholders, together with their respective affiliates, beneficially owned approximately 46.5% of our capital stock. As a result, our executive officers, directors and principal stockholders, if acting together, may be able to significantly influence, in their capacity as stockholders, matters requiring approval by our stockholders, including the election of directors and the approval of mergers, acquisitions or other extraordinary transactions. They may also have interests that differ from yours and may vote in a way with which you disagree and which may be adverse to your interests. This concentration of ownership could have the effect of delaying or preventing a change in our control or otherwise discouraging a potential acquirer from attempting to obtain control of us, which in turn could have a material adverse effect on our stock price and may prevent attempts by our stockholders to replace or remove our board of directors or management.

Anti-takeover provisions in our charter documents and under Delaware or Washington law could make an acquisition of us difficult, limit attempts by our stockholders to replace or remove our current management and limit our stock price.

Provisions of our certificate of incorporation and bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our stock. Among other things, our certificate of incorporation and bylaws:

- permit our board of directors to issue up to 5,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate;
- provide that the authorized number of directors may be changed only by resolution of the board of directors;
- provide that all vacancies, including newly created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide our board of directors into three classes;
- restrict the forum for certain litigation against us to Delaware;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and may not be taken by written consent;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and also specify requirements as to the form and content of a stockholder's notice;
- do not provide for cumulative voting rights (therefore allowing the holders of a plurality of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- provide that special meetings of our stockholders may be called only by the chair of the board, our chief executive officer or by the board of directors; and
- provide that stockholders will be permitted to amend our bylaws only upon receiving at least two-thirds of the total votes entitled to be cast by holders of all outstanding shares then entitled to vote generally in the election of directors, voting together as a single class.

In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with any "interested" stockholder for a period of three years following the date on which the stockholder became an "interested" stockholder. Likewise, because our principal executive offices are located in Washington, the anti-takeover provisions of the Washington Business Corporation Act may apply to us under certain circumstances now or in the future. These provisions prohibit a "target corporation" from engaging in any of a broad range of business combinations with any stockholder constituting an "acquiring person" for a period of five years following the date on which the stockholder became an "acquiring person."

Our bylaws provide that the Court of Chancery of the State of Delaware is the exclusive forum for substantially all disputes between us and our stockholders, which cou ld limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our bylaws provide that, unless we otherwise consent in writing, the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty, any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our certificate of incorporation or our bylaws or any action asserting a claim against us that is governed by the internal affairs doctrine. The choice of forum provision may limit stockholders' ability to bring a claim in a judicial forum favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find the choice of forum provision contained in our bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could adversely affect our business and financial condition.

As an emerging growth company within the meaning of the Securities Act, we will utilize certain modified disclosure requirements, and we cannot be certain if these reduced requirements will make our common stock less attractive to investors.

We are an emerging growth company, and for as long as we continue to be an emerging growth company, we may choose to take advantage of exemptions from various reporting requirements applicable to other public companies but not to "emerging growth companies" including:

- not being required to have our independent registered public accounting firm audit our internal control over financial reporting under Section 404 of the Sarbanes-Oxley Act;
- reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

We plan in filings with the SEC to continue to utilize the modified disclosure requirements available to emerging growth companies. As a result, our stockholders may not have access to certain information they may deem important.

We could remain an "emerging growth company" for up to five years, or until the earliest of:

- the last day of the first fiscal year in which our annual gross revenue exceeds $1 billion;
- the date that we become a "large accelerated filer" as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our common stock that is held by non-affiliates exceeds $700 million as of the last business day of our most recently completed second fiscal quarter; or
- the date on which we have issued more than $1 billion in non-convertible debt during the preceding three-year period.

We have incurred and will continue to incur costs by being a public company.

As a public company, we have and will incur significant legal, accounting and other expenses, including costs associated with public company reporting requirements. We have and will incur costs associated with recently adopted corporate governance requirements, including requirements of the SEC and The Nasdaq Global Select Market. We expect these rules and regulations to incur ongoing legal and financial compliance costs and to make some activities incrementally more time-consuming and costly. We also expect these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, we may have more difficulty attracting and retaining qualified individuals to serve on our board of directors or as executive officers. We are currently evaluating and monitoring developments with respect to these rules, and we cannot predict or estimate the additional costs we may incur or the timing of such costs.

So long as we remain an "emerging growth company," we expect to avail ourselves of the exemption from the requirement that our independent registered public accounting firm attest to the effectiveness of our internal control over financial reporting under Section 404. When our independent registered public accounting firm is required to undertake an assessment of our internal control over financial reporting, the cost of our compliance with Section 404 will correspondingly increase. Moreover, if we are not able to comply with the requirements of Section 404 applicable to us in a timely manner, or if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by the SEC or other regulatory authorities, which would require additional financial and management resources.

Item 2. Unregistered Sales of Equit y Securities and Use of Proceeds.

Use of Proceeds from Public Offerings of Common Stock

On July 20, 2016, our registration statement on Form S-1 (No. 333-211779) was declared effective for our initial public offering, or IPO. There has been no material change in the planned use of proceeds from our IPO from that described in the final prospectus dated July 20, 2016 filed with the SEC pursuant to Rule 424(b)(4) under the Securities Act. Pending the uses described, we have invested the net proceeds in short-term, investment-grade interest-bearing securities such as U.S. government agencies, corporate notes and bonds and money market funds.

Item 6. Exhibits

Exhibit Number	Exhibit Description
10.1†	First Amendment to Third Amended and Restated Loan and Security Agreement, by and between the Company and Silicon Valley Bank, dated March 5, 2018
10.2+	Separation Agreement, by and between the Company and Evan Fein, dated March 30, 2018
31.1	Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended
31.2	Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended
32.1*	Certification of Principal Executive Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350
32.2*	Certification of Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Linkbase Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

* The certifications attached as Exhibits 32.1 and 32.2 that accompany this Quarterly Report on Form 10-Q are not deemed filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of Impinj, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Form 10-Q, irrespective of any general incorporation language contained in such filing.

† Confidential treatment has been requested with respect to certain portions of this exhibit. Omitted portions have been filed separately with the Securities and Exchange Commission.

\+ Indicates a management contract or compensatory plan.

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.

Impinj, Inc.

Date: May 8, 2018

By: /s/ *Eric Brodersen*
Eric Brodersen
President and Chief Operating Officer (principal financial officer and duly authorized signatory)

Exhibit 10.1

FIRST AMENDMENT
TO
THIRD AMENDED AND RESTATED LOAN AND SECURITY AGREEMENT

THIS **FIRST AMENDMENT** to Third Amended and Restated Loan and Security Agreement (this "Amendment") is entered into this 5th day of March 2018, by and between SILICON VALLEY BANK ("Bank") and IMPINJ, INC., a Delaware corporation ("Borrower") whose address is 400 Fairview Ave. N. Suite 1200, Seattle, WA 98109.

Recitals

A. Bank and Borrower have entered into that certain Third Amended and Restated Loan and Security Agreement dated as of April 24, 2017 (as the same may from time to time be amended, modified, supplemented or restated, the "Loan Agreement").

B. Bank has extended credit to Borrower for the purposes permitted in the Loan Agreement.

C. Bank and Borrower have agreed to amend certain provisions of the Loan Agreement, but only to the extent, in accordance with the terms, subject to the conditions and in reliance upon the representations and warranties set forth below.

Agreement

Now, Therefore , in consideration of the foregoing recitals and other good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, and intending to be legally bound, the parties hereto agree as follows:

1. Definitions. Capitalized terms used but not defined in this Amendment shall have the meanings given to them in the Loan Agreement.

2. Amendment to Loan Agreement.

2.1 Section 2.1.2 (Term Loan). Section 2.1.2 of the Loan Agreement hereby is amended and restated in its entirety and replaced with the following:

"2.1.2 Term Loan .

(a) Availability . On the First Amendment Effective Date, or as soon thereafter as all conditions precedent to the making thereof have been met, Bank shall make a term loan to Borrower in an aggregate principal amount equal to Twenty Million Dollars ($20,000,000) (the "Term Loan"), the proceeds of which shall be used to refinance all Indebtedness owing from Borrower to Bank outstanding as of the First Amendment Effective Date (excluding Indebtedness under the Revolving Line and with respect to Bank Services), for working capital and to fund its general business requirements. For the avoidance of doubt, in connection with the making of the Term Loan, Bank hereby waives the Equipment Advance Prepayment Fee and the Term Loan Prepayment Fee (as such terms were defined prior to the First Amendment Effective Date).

(b) Repayment . No principal payments with respect to the Term Loan shall be required from the First Amendment Effective Date through March 31, 2019 (the "Interest-Only Period"), provided that accrued and unpaid interest shall be due and payable in accordance with Section 2.3(a) hereof. Any amount of the Term Loan outstanding on

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

March 31, 2019, shall be payable in (i) thirty-six (36) consecutive equal monthly installments of principal, plus (ii) monthly payments of accrued interest (each a "Term Loan Payment"), beginning on April 1, 2019, and continuing on th e first day of each month thereafter through the Term Loan Maturity Date. Borrower's final Term Loan Payment, due on the Term Loan Maturity Date, shall include all outstanding principal and accrued and unpaid interest under the Term Loan. Once repaid, th e Term Loan may not be reborrowed.

(c) Prepayment .

(i) Mandatory Prepayment Upon an Acceleration . If the Term Loan is accelerated following the occurrence of an Event of Default, Borrower shall immediately pay to Bank an amount equal to the sum of (a) all outstanding principal with respect to the Term Loan, plus accrued and unpaid interest thereon, (b) the Term Loan Prepayment Fee, and (c) all other sums, including Bank Expenses, if any, that shall have become due and payable hereunder in connection with the Term Loan.

(ii) Voluntary Prepayment . So long as an Event of Default has not occurred and is not continuing, Borrower shall have the option to prepay all, but not less than all, of the Term Loan, provided Borrower (a) delivers written notice to Bank of its election to prepay the Term Loan at least ten (10) days prior to such prepayment, and (b) pays, on the date of such prepayment (i) all outstanding principal with respect to the Term Loan, plus accrued and unpaid interest thereon, (ii) the Term Loan Prepayment Fee, and (iii) all other sums, including Bank Expenses, if any, that shall have become due and payable hereunder in connection with the Term Loan.

2.2 Section 2.1.3 (Equipment Advances). Section 2.1.3 of the Loan Agreement hereby is amended and restated in its entirety and replaced with the following:

"2.1.3 Intentionally Omitted."

2.3 Section 2.4 (Fees). Section 2.4(c) of the Loan Agreement hereby is amended and restated in its entirety and replaced with the following:

"(c) Intentionally Omitted."

2.4 Section 5.10 (Use of Proceeds). Section 5.10 of the Loan Agreement hereby is amended and restated in its entirety and replaced with the following:

"5.10 Use of Proceeds . Borrower shall use the proceeds of the Credit Extensions solely as working capital and for general corporate purposes and not for personal, family, household or agricultural purposes."

2.5 Section 6.7 (Financial Covenants). Section 6.7 of the Loan Agreement hereby is amended and restated in its entirety and replaced with the following:

"6.7 Financial Covenants . Maintain at all times when Borrower's Bank Liquidity is less than the Liquidity Threshold (such Liquidity Threshold to be tested as of the last day of each month) on a consolidated basis with respect to Borrower:

(a) Adjusted EBITDA Loss . Adjusted EBITDA loss, measured on a trailing twelve (12) month basis as of the last day of each calendar quarter, of not greater than the following amounts for the relevant measuring periods:

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

Measuring Period Ending	Maximum Adjusted EBITDA Loss
***	***
***	***
***	***

(b) Liquidity Ratio . A ratio, measured as of the last day of each fiscal quarter of Borrower, of (I) unrestricted cash at Bank or Bank's Affiliates (subject to a Control Agreement) plus net Accounts receivable, to (II) all Indebtedness (excluding Indebtedness owed to Bank from credit cards but including outstanding letters of credit) owing from Borrower to Bank of not less than 1.50 to 1.00."

2.1 Section 7.1 (Dispositions). Section 7.1 of the Loan Agreement hereby is amended and restated in its entirety and replaced with the following:

" **7.1 Dispositions** . Convey, sell, lease, transfer, assign, or otherwise dispose of (collectively, "Transfer"), or permit any of its Subsidiaries to Transfer, all or any part of its business or property, except for Transfers (a) of Inventory in the ordinary course of business; (b) of worn out or obsolete Equipment; (c) in connection with Permitted Liens and Permitted Investments; (d) of non-exclusive licenses for the use of the property of Borrower or its Subsidiaries in the ordinary course of business and licenses that could not result in a legal transfer of title of the licensed property but that may be exclusive in respects other than territory and that may be exclusive as to territory only as to discreet geographical areas outside of the United States and (e) other Transfers that do not exceed $500,000 per fiscal year."

2.2 Section 8.1 (Payment Default). Section 8.1 of the Loan Agreement hereby is amended and restated in its entirety and replaced with the following:

" **8.1 Payment Default** . Borrower fails to (a) make any payment of principal or interest on any Credit Extension on its due date, or (b) pay any other Obligations within three (3) Business Days after such Obligations are due and payable (which three (3) Business Day cure period shall not apply to payments due on the Revolving Line Maturity Date or the Term Loan Maturity Date). During the cure period, the failure to make or pay any payment specified under clause (a) or (b) hereunder is not an Event of Default (but no Credit Extension will be made during the cure period)."

2.3 Section 13 (Definitions) . The following terms and their respective definitions set forth in Section 13.1 hereby are added or amended and restated in their entirety and replaced with the following, as appropriate:

" **Credit Extension"** is any Advance, the Term Loan, Letter of Credit or any other extension of credit by Bank for Borrower's benefit.

" **First Amendment Effective Date** " is March 5, 2018.

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

“ **LIBOR Rate Margin** ” is (a) with respect to Advances, (i) if Borrower’s trailing twelve (12) month Adjusted EBITDA is equal to or greater than Zero Dollars ($0.00), two and three quarters of one percent (2.75%) and (ii) in all other cases, three and one quarter of one percen t (3.25%), and (b) with respect to the Term Loan, (i) if Borrower’s trailing twelve (12) month Adjusted EBITDA is equal to or greater than Zero Dollars ($0.00), three percent (3.00%) and (ii) in all other cases, three and one half of one percent (3.50%).

“Liquidity Threshold” means (i) Sixty Million Dollars ($60,000,000) for the period of time beginning on the First Amendment Effective Date and ending on December 31, 2018; and (ii) Fifty Five Million Dollars ($55,000,000) for the period of time beginning on January 1, 2019 and at all times thereafter.

“ **Permitted Acquisition** ” means an acquisition by Borrower of all or substantially all of the assets or capital stock of another Person, including the creation and capitalization of any Subsidiary in connection with such acquisition, in which: (a) the Borrower’s board of directors has approved such acquisition, (b) the Person so acquired is in the same or a similar line of business or a business reasonably related thereto, (c) the acquisition is non-hostile, (d) Borrower is the sole surviving legal entity or any acquired Subsidiary is directly or indirectly owned by Borrower and, at Bank’s election, made in its sole discretion, such entity becomes a Borrower hereunder within thirty (30) days after the closing of such acquisition, (e) both before and after giving effect to such acquisition (including any Earn-out Obligations), Borrower has Bank Liquidity in an amount no less than the Liquidity Threshold, (f) no Event of Default shall have occurred and be continuing either before consummation of such acquisition or after giving effect to such acquisition, (g) both before and after giving effect to such acquisition, Borrower is able to demonstrate pro-forma compliance with all provisions of this Agreement and (h) the parties comply with Section 6.11 hereof in connection with the closing thereof (subject to clause (d), above).

“ **Prime Rate Margin** ” is (a) with respect to Advances, (i) if Borrower’s trailing twelve (12) month Adjusted EBITDA is equal to or greater than Zero Dollars ($0.00), zero percent (0.00%) and (ii) in all other cases, one half of one percent (0.50%), and (b) with respect to the Term Loan, (i) if Borrower’s trailing twelve (12) month Adjusted EBITDA is equal to or greater than Zero Dollars ($0.00), one quarter of one percent (0.25%) and (ii) in all other cases, three quarters of one percent (0.75%).

“ **Revolving Line Maturity Date”** is March 5, 2020.

“ **Term Loan Maturity Date** ” is March 1, 2022.

“ **Term Loan Prepayment Fee”** means a fee equal to (i) two percent (2.00%) of the principal amount of the Term Loan prepaid if the prepayment is on or prior to the first anniversary of the First Amendment Effective Date and (ii) one percent (1.00%) of the principal amount of the Term Loan prepaid if the prepayment is after the first anniversary of the First Amendment Effective Date but on or prior to the second anniversary of the First Amendment Effective Date.

2.4 Section 13 (Definitions) . Subsection (c) of the defined term “Permitted Liens” set forth in Section 13.1 hereby is amended and restated in its entirety and replaced with the following:

“(c) purchase money Liens (i) on Equipment acquired or held by Borrower incurred for financing the acquisition of the Equipment securing no more than Five Million Dollars ($5,000,0 00) in the aggregate amount outstanding, or (ii) existing on Equipment

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

when acquired, if the Lien is confined to the property and improvements and the proceeds of the Equipment;"

2.5 Section 13 (Definitions) . The following terms and their respective definitions set forth in Section 13.1 hereby are deleted in their entirety:

"Eligible Equipment", "Equipment Advance", "Equipment Advance Prepayment Fee", "Equipment Maturity Date", "Financed Equipment", "Original Equipment Advances", "Original Equipment A Advance", "Original Equipment B Advance", "Other Equipment".

2.6 Exhibit D to the Loan Agreement is hereby replaced with Exhibit D attached hereto.

3. Limitation of Amendments.

3.1 The amendments set forth in **Section 2** above are effective for the purposes set forth herein and shall be limited precisely as written and shall not be deemed to (a) be a consent to any amendment, waiver or modification of any other term or condition of any Loan Document, or (b) otherwise prejudice any right or remedy which Bank may now have or may have in the future under or in connection with any Loan Document.

3.2 This Amendment shall be construed in connection with and as part of the Loan Documents and all terms, conditions, representations, warranties, covenants and agreements set forth in the Loan Documents, except as herein amended, are hereby ratified and confirmed and shall remain in full force and effect.

4. Representations and Warranties. To induce Bank to enter into this Amendment, Borrower hereby represents and warrants to Bank as follows:

4.1 Immediately after giving effect to this Amendment (a) the representations and warranties contained in the Loan Documents are true, accurate and complete in all material respects as of the date hereof (except to the extent such representations and warranties relate to an earlier date, in which case they are true and correct as of such date), and (b) no Event of Default has occurred and is continuing;

4.2 Borrower has the power and authority to execute and deliver this Amendment and to perform its obligations under the Loan Agreement, as amended by this Amendment;

4.3 The organizational documents of Borrower delivered to Bank on the Effective Date or thereafter remain true, accurate and complete and have not been amended, supplemented or restated and are and continue to be in full force and effect;

4.4 The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, have been duly authorized;

4.5 The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not and will not contravene (a) any law or regulation binding on or affecting Borrower, (b) any contractual restriction with a Person binding on Borrower, (c) any order, judgment or decree of any court or other governmental or public body or authority, or subdivision thereof, binding on Borrower, or (d) the organizational documents of Borrower;

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

4.6 The execution and delivery by Borr ower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not require any order, consent, approval, license, authorization or validation of, or filing, recording or registration wit h, or exemption by any governmental or public body or authority, or subdivision thereof, binding on either Borrower, except as already has been obtained or made; and

4.7 This Amendment has been duly executed and delivered by Borrower and is the binding obligation of Borrower, enforceable against Borrower in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, liquidation, moratorium or other similar laws of general application and equitable principles relating to or affecting creditors' rights.

5. Counterparts. This Amendment may be executed in any number of counterparts and all of such counterparts taken together shall be deemed to constitute one and the same instrument.

6. Effectiveness. This Amendment shall be deemed effective upon (i) the due execution and delivery to Bank of this Amendment by each party hereto, (ii) the due execution and delivery to Bank of updated Borrowing Resolutions in the form attached hereto and (iii) Borrower's payment to Bank of (a) a facility fee with respect to the Revolving Line in the amount of Twenty Eight Thousand Six Hundred Forty Five Dollars ($28,645), (b) a facility fee with respect to the Term Loan in the amount of Twenty Seven Thousand Five Hundred Dollars ($27,500) and (c) all Bank Expenses incurred through the date of this Amendment.

[*Balance of Page Intentionally Left Blank*]

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

In Witness Whereof, the parties hereto have caused this Amendment to be duly executed and delivered as of the date first written above.

BANK	**BORROWER**
SILICON VALLEY BANK	IMPINJ, INC.
By:/s/ Soren Peterson	By:/s/ Evan Fein
Name:Soren Peterson	Name:Evan Fein
Title:Vice President	Title:Chief Financial Officer

[*Signature Page to First Amendment to Third Amended and Restated Loan and Security Agreement*]

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

EXHIBIT D
COMPLIANCE CERTIFICATE

TO: SILICON VALLEY BANK Date:
FROM: IMPINJ, INC.

The undersigned authorized officer of Impinj, Inc. (“Borrower”) certifies that under the terms and conditions of the Third Amended and Restated Loan and Security Agreement between Borrower and Bank (the “Agreement”):

(1) Borrower is in complete compliance for the period ending _______________ with all required covenants except as noted below; (2) there are no Events of Default; (3) all representations and warranties in the Agreement are true and correct in all material respects on this date except as noted below; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date ; (4) Borrower, and each of its Subsidiaries, has timely filed all required tax returns and reports, and Borrower has timely paid all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower except as otherwise permitted pursuant to the terms of Section 5.9 of the Agreement; and (5) no Liens have been levied or claims made against Borrower or any of its Subsidiaries relating to unpaid employee payroll or benefits of which Borrower has not previously provided written notification to Bank.

Attached are the required documents supporting the certification. The undersigned certifies that these are prepared in accordance with GAAP consistently applied from one period to the next except as explained in an accompanying letter or footnotes. The undersigned acknowledges that no borrowings may be requested at any time or date of determination that Borrower is not in compliance with any of the terms of the Agreement, and that compliance is determined not just at the date this certificate is delivered. Capitalized terms used but not otherwise defined herein shall have the meanings given them in the Agreement.

Please indicate compliance status by circling Yes/No under “Complies” column.

Reporting Covenant	Required	Complies
Quarterly financial statements with Compliance Certificate	Quarterly within 45 days	Yes No
Annual financial statement (CPA Audited)	FYE within 120 days	Yes No
10-Q, 10-K and 8-K	Within 5 days after filing with SEC	Yes No
Annual Projections	30 days after FYE	Yes No

Financial Covenant	Required	Actual	Complies
Maintain at all times (measured quarterly)*			
Adjusted EBITDA Loss (on a trailing twelve (12) month basis)	See Section 6.7	$_______	Yes No
Liquidity	> 1.50 : 1.00	_____:1.0	Yes No

* Applicable only when Borrower’s Bank Liquidity is less than the Liquidity Threshold

Performance Pricing for Advances		Applies
Trailing 12-month Adjusted EBITDA ≥ $0.00	LIBOR Rate + 2.75%/Prime Rate + 0.00%	Yes No
Trailing 12-month Adjusted EBITDA < $0.00	LIBOR Rate + 3.25%/Prime Rate + 0.50%	Yes No

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Performance Pricing for the Term Loan		**Applies**
Trailing 12-month Adjusted EBITDA ≥ $0.00	LIBOR Rate + 3.00%/Prime Rate + 0.25%	Yes No
Trailing 12-month Adjusted EBITDA < $0.00	LIBOR Rate + 3.50%/Prime Rate + 0.75%	Yes No
Determination of Unused Fee		**Applies**
Trailing 12-month Adjusted EBITDA ≥ $0.00	0.25%	Yes No
Trailing 12-month Adjusted EBITDA < $0.00	0.35%	Yes No

The following financial covenant analyses and information set forth in Schedule 1 attached hereto are true and accurate as of the date of this Certificate.

The following are the exceptions with respect to the certification above: (If no exceptions exist, state "No exceptions to note.")

IMPINJ, INC.

By:
Name:
Title:

BANK USE ONLY

Received by: ______________________
AUTHORIZED SIGNER

Date: _________________________

Verified: ________________________
AUTHORIZED SIGNER

Date: _________________________

Compliance Status:Yes No

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

Exhibit 10.1

Schedule 1 to Compliance Certificate

Financial Covenants of Borrower

In the event of a conflict between this Schedule and the Loan Agreement, the terms of the Loan Agreement shall govern.

Dated: ____________________

I. **Adjusted EBITDA Loss** (Section 6.7(a))*

Required: Adjusted EBITDA Loss, measured quarterly on a trailing twelve (12) month basis, of not greater than the amounts set forth in Section 6.7(a) of the Loan Agreement

Actual:

A.	Net Income	$
B.	To the extent included in the determination of Net Income	
1.	The provision for income taxes	$
2.	Depreciation expense	$
3.	Amortization expense	$
4.	Net Interest Expense	$
5.	All non-cash impairment charges and non-cash stock compensation expense	$
6.	The sum of lines 1 through 5	$
C.	Adjusted EBITDA (line A plus line B.6)	

Is line C equal to or greater than the required amount set forth in Section 6.7(a) as of the end of the calendar quarter?

No, not in compliance   Yes, in compliance

* Applicable only when Borrower's Bank Liquidity is less than the Liquidity Threshold

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II Liquidity Ratio (Section 6.7(b))*

Required: A ratio, measured quarterly, of (I) unrestricted cash at Bank or Bank's Affiliates (subject to a Control Agreement) plus net Accounts receivable, to (II) all Indebtedness (excluding Indebtedness owed to Bank from credit cards but including outstanding letters of credit) owing from Borrower to Bank of not less than 1.50 to 1.00.

Actual (quarter end):

A.	Aggregate value of Borrower's unrestricted cash at Bank or Bank Affiliates subject to a Control Agreement	$
B.	Aggregate value of net Accounts receivable of Borrower	$
C.	Liquidity (line A plus line B)	$
D.	Aggregate value of all Indebtedness owing from Borrower to Bank (including outstanding letters of credit)	$
E.	Aggregate value of all Indebtedness owed to Bank from credit cards	$
F.	Liquidity Ratio (line C divided by (line D minus line E))	____:1.00

Is line F equal to or greater than the ratio required above as of the end of the quarter?

No, not in compliance Yes, in compliance

* Applicable only when Borrower's Bank Liquidity is less than the Liquidity Threshold

Exhibit 10.1

BORROWING RESOLUTIONS

SVB Silicon Valley Bank
A Member of SVB Financial Group

CORPORATE BORROWING CERTIFICATE

Borrower : **IMPINJ, INC.** **Date** : March 5, 2018
Bank: Silicon Valley Bank

I hereby certify as follows, as of the date set forth above:

1. I am the Secretary, Assistant Secretary or other officer of the Borrower. My title is as set forth below.

2. Borrower's exact legal name is set forth above. Borrower is a corporation existing under the laws of the State of Delaware.

3. Attached hereto are true, correct and complete copies of Borrower's Certificate of Incorporation (including amendments), as filed with the Secretary of State of the state in which Borrower is incorporated as set forth in paragraph 2 above. Such Certificate of Incorporation have not been amended, annulled, rescinded, revoked or supplemented, and remain in full force and effect as of the date hereof.

4. The following resolutions were duly and validly adopted by Borrower's Board of Directors at a duly held meeting of such directors (or pursuant to a unanimous written consent or other authorized corporate action). Such resolutions are in full force and effect as of the date hereof and have not been in any way modified, repealed, rescinded, amended or revoked, and Bank may rely on them until Bank receives written notice of revocation from Borrower.

Resolved , that **any one** of the following officers or employees of Borrower, whose names, titles and signatures are below, may act on behalf of Borrower:

Name	Title	Signature	Authorized to Add or Remove Signatories
			□
			□
			□
			□

Resolved Further, that **any one** of the persons designated above with a checked box beside his or her name may, from time to time, add or remove any individuals to and from the above list of persons authorized to act on behalf of Borrower.

Resolved Further , that such individuals may, on behalf of Borrower:

Borrow Money . Borrow money from Bank.
Execute Loan Documents . Execute any loan documents Bank requires.
Grant Security . Grant Bank a security interest in any of Borrower's assets.

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

Negotiate Items . Negotiate or discount all drafts , trade acceptances, promissory notes, or other indebtedness in which Borrower has an interest and receive cash or otherwise use the proceeds.
Letters of Credit . Apply for letters of credit from Bank.
Further Acts . Designate other individuals to request advances, pay fees and costs and execute other documents or agreements (including documents or agreement that waive Borrower's right to a jury trial) they believe to be necessary to effectuate such resolutions.

Resolved Further , that all acts authorized by the above resolutions and any prior acts relating thereto are ratified.

5. T he persons listed above are Borrower's officers or employees with their titles and signatures shown next to their names.

'.

By:
Name:
Title:

ssistant Secretary or other certifying officer executing above is designated by the resolutions set forth in paragraph 4 as one of the authorized signing officers, this Certificate must also be signed by a second authorized officer or director of Borrower.

____________ of B orrower, hereby certify as to paragraphs 1 through 5 above, as
[print title]
of the date set forth above.

By:
Name:
Title:

*** Indicates text has been omitted from this Exhibit pursuant to a confidential treatment request and has been filed separately with the Securities and Exchange Commission.

Exhibit 10.2

SEPARATION AND RELEASE OF CLAIMS AGREEMENT

This Separation and Release of Claims Agreement (“Agreement”) is entered into as of March 30, 2018, hereinafter “Effective Date,” by and between Evan Fein, his marital community, heirs, and assigns (hereinafter “Employee”), and Impinj Inc., its affiliates (including, without limitation, and all of its subsidiaries), its successors and assigns (hereinafter the “Company”). Employee and the Company are sometimes collectively referred to as the “Parties.”

1. Employee has an Executive Employment Agreement with the Company dated December 23, 2009 (“Employment Agreement”). Employee’s employment with the Company will be terminated effective March 30, 2018, (hereinafter “Separation Date”). The Company expressly disclaims any liability to Employee. In exchange for the consideration described herein, Employee hereby represents and warrants the following:

   (a) Employee has authority to enter into this Agreement.

   (b) Employee has not transferred, in whole or in part, any rights related to his employment with the Company.

   (c) Employee intends to settle any and all claims that Employee may have against the Company as a result of the Company’s hiring Employee, his employment with the Company and the termination of his employment with the Company.

   (d) Employee has not transferred any Confidential Information.

2. Pursuant to Section 7(a) of the Employment Agreement, in exchange for Employee’s execution of this Agreement and the performance of his obligations hereunder, the Company agrees to provide to Employee the following severance benefits after the expiration of the seven (7) day revocation period described in Paragraph 14 below, upon which the Agreement becomes effective (“Effective Date”); provided, Employee has not revoked this Agreement as described in Paragraph 14:

   (a) On the first regular payroll date that is at least five (5) business days after the later of the Effective Date or the Separation Date, the Company will begin to pay to Employee on a salary continuation basis his Base Salary as described in Section 7(a)(ii)(A) of the Employment Agreement, less applicable taxes and withholdings, for a period of 6 months:

   (b) Provided Employee timely elects continuation coverage COBRA, reimbursement for COBRA premium costs for continued coverage for himself and his eligible covered dependents, at existing levels for up to six (6) months, or until Employee obtains replacement coverage, whichever is earlier; and,

   (c) On the first regular payroll date that is at least five (5) business days after the later of the Effective Date or the Separation Date, the Company will pay to Employee, less applicable taxes and withholdings:

      i. $35,356.16, representing Employee’s target performance bonus accrued as of the Separation Date,

ii. $ 54,072.70 , representing 387.84 accrued vacation hours at Employee's current pay rate as per the Company's current standard policy, and,

iii. $10,000.00, in consideration of Employee's commitment to provide up to 40 hours of transition consulting services from the Separation Date through May 4, 2018, and to, subject to Employee's availability, provide additional transition consulting services as an independent contractor at a rate of $200/hr. should the Company request transition consulting services in excess of 40 hours prior to May 4, 2018, and anytime thereafter for up to 90 days following the Separation Date.

(d) The exercise period for vested stock options granted to Employee is extended by one year from the date such options may be exercised (i.e., three (3) months from the Separation Date), but in no cases later than the original maximum term of any stock option. Options are governed by the Company's equity incentive plan, and the option agreement under which it was granted (the "Equity Documents"). Employee will comply with the terms of the Company's Insider Trading Policy (the "Policy") through May 15, 2017 and for such time thereafter as required under the Policy or by law. For the avoidance of doubt, in addition to complying with any pre-clearance requirements under the Policy, for 90 days following the Separation Date, Employee will inform Yukio Morikubo of any transaction involving Company equity for which a Form 4 is required to be filed under federal securities laws. Employee will provide such notification no later than the date on which the transaction is initiated and provide sufficient detail for the Company to file a complete and compliant Form 4 with respect to the transaction.

Employee specifically acknowledges and agrees that the above payments are in exchange for Employee entering into this Agreement. Employee will not at any time seek additional consideration in any form from the Company except as expressly set forth in this Agreement. Employee specifically acknowledges and agrees that the Company has made no representations to him regarding the tax consequences of any amounts received by Employee or for Employee's benefit pursuant to this Agreement. Employee agrees to pay all taxes and/or tax assessments due to be paid by Employee, and to indemnify the Company for any claims, costs and/or penalties caused by Employee's failure to pay such taxes and/or tax assessments.

3. Subject to the exceptions set forth in Paragraph 6 below, Employee represents that he has not filed, and will not file, any complaints, lawsuits, administrative complaints or charges arising from or relating to Employee's employment with, or termination from, the Company, and agrees that he will not initiate, assist or encourage any such actions, except as required by law. Employee further agrees that if a commission, agency, or court assumes jurisdiction of any such action against the Company or any Company Releasee (as defined below) on behalf of Employee he will request the commission, agency or court to withdraw from the matter. This clause does not prohibit Employee from enforcing the terms of this Agreement.

4. Subject to the exceptions set forth in Paragraph 6 below, Employee acknowledges that as an employee of the Company it has been Employee's obligation to advise the Company completely and candidly of all facts of which Employee is aware that constitute or might constitute violations of the Company's ethical standards or legal or regulatory obligations. Employee represents and warrants that Employee is not aware of any such facts or that Employee has previously advised the Company about any such facts. Employee further agrees to advise the Company in the future of all such facts that come to Employee's attention.

5. Subject to the exceptions set forth in Paragraph 6 below, Employee agrees to give written notice immediately to Yukio Morikubo if Employee is requested or required pursuant to court order, judicial process or regulatory authority to reveal any information specified in this Agreement prior to providing this information. However, Employee is not required to provide the Company with such notice as set forth in Paragraph 6 or if the court order, judicial process or regulatory authority prohibits Em ployee from doing so.

6. Employee understands that nothing in this Agreement shall in any way limit or prohibit Employee from engaging for a lawful purpose in any Protected Activity. For purposes of this Agreement, "Protected Activity" shall mean filing a charge or complaint, or otherwise communicating, cooperating, or participating with, any state, federal, or other governmental agency, including the Securities and Exchange Commission, the Equal Employment Opportunity Commission, and the National Labor Relations Board. Notwithstanding any restrictions set forth in this Agreement, Employee understands that he is not required to obtain authorization from the Company prior to disclosing information to, or communicating with, such agencies, nor is Employee obligated to advise the Company as to any such disclosures or communications. Notwithstanding, in making any such disclosures or communications, Employee agrees to take all reasonable precautions to prevent any unauthorized use or disclosure of any information that may constitute Company confidential information under the PIIA to any parties other than the relevant government agencies. Employee further understands that "Protected Activity" does not include his disclosure of any Company attorney-client privileged communications, and that any such disclosure without the Company's written consent shall constitute a material breach of this Agreement. In addition, pursuant to the Defend Trade Secrets Act of 2016, Employee is notified that an individual will not be held criminally or civilly liable under any federal or state trade secret law for the disclosure of a trade secret that (i) is made in confidence to a federal, state, or local government official (directly or indirectly) or to an attorney solely for the purpose of reporting or investigating a suspected violation of law, or (ii) is made in a complaint or other document filed in a lawsuit or other proceeding, if (and only if) such filing is made under seal. In addition, an individual who files a lawsuit for retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to the individual's attorney and use the trade secret information in the court proceeding, if the individual files any document containing the trade secret under seal and does not disclose the trade secret, except pursuant to court order.

7. Employee agrees to release the Company, its Board of Directors, officers, employees, agents and assigns (the "Company Releasees"), from any and all claims, charges, complaints, causes of action or demands of whatever kind or nature that Employee now has or has ever had against the Company, whether known or unknown, arising from or relating to Employee's employment with or discharge from the Company. This release includes but is not limited to: wrongful or tortious termination; constructive discharge; implied or express employment contracts and/or estoppel; discrimination and/or retaliation under any federal, state or local statute or regulation, specifically including any claims Employee may have under the Fair Labor Standards Act, the Americans with Disabilities Act, 42 U.S.C. § 12101, et seq ., Title VII of the Civil Rights Act of 1964, 42 U..S.C. § 2000e, et seq ., as amended, the Genetic Information Nondiscrimination Act of 2008; the Age Discrimination in Employment Act, as amended by the Older Workers Benefit Protection Act, 29 U.S.C. § 621, et seq ., Section 1981 of U.S.C. Title 42, the Equal Pay Act, the Family and Medical Leave Act, the Corporate and Criminal Fraud Accountability Act of 2002, 18 U.S.C. § 1514A, also known as the Sarbanes-Oxley Act, the Rehabilitation Act of 1973, 29 U.S.C. § 703, et seq ., Executive Orders 11246 or 11141, the Employee Retirement Income Security Act of 1974, 29 U.S.C. § 1001, et seq ., the Worker Adjustment and Retraining Notification Act, 29 U.S.C. § 2101, et seq ., and COBRA, 29 U.S.C. 1161, et seq .; the Washington State Minimum Wage Act,

the Older Workers Benefit Protection Act, the Washington State Family Leave Act, the Washington State Family Care Act, the Washington State Law Against Discrimination, and the Washington State Industrial Welfare Act; The California Labor Code, California Government Code, the California Fair Emplo yment and Housing Act, and any claims brought under any federal or state statute or regulation for non-payment of wages or other compensation, or other state, local, or common law, expense reimbursements and/or bonuses due after March 31, 2017, stock grant s or stock options; and libel, slander, or breach of contract other than the breach of this Agreement. This release specifically excludes claims, charges, complaints, causes of action or demand that post-date March 31, 2017 or the Effective Date of this Ag reement, whichever is later, and that are based on factual allegations that do not arise from or relate to Employee's present employment with or termination from the Company.

8. Subject to the exceptions set forth in Paragraph 6 above, Employee agrees that he will keep the terms and amount of this Agreement completely confidential, and that he will not hereafter disclose such information to anyone except his spouse or current significant other, his attorneys and their current law firm employees, his accountant, or as may be required by law, court order or in proceedings relating to the parties' rights or obligations under this Agreement. Employee agrees to provide reasonable written notice to the Company in the event that a person or entity not a party hereto attempts to compel from him the production of this Agreement or the contents thereof, so that the Company may contest such disclosure at its discretion. Notwithstanding anything in this Agreement, this confidentiality provision and those in Paragraph 9 below do not prevent Employee from providing information in response to valid and enforceable subpoenas or otherwise required by law or regulation, from providing information necessary for preparation and filing of any income tax return, or from using this Agreement to enforce its terms.

9. Employee acknowledges and affirms that the terms and conditions of his Employment Agreement (including Exhibit A – the Proprietary Information and Inventions Agreement (the "PIIA") that survive the employment relationship, including but not limited to Employee's continuing confidentiality, non-competition and non-solicitation and arbitration obligations, survive and are not affected by this Separation and Release of Claims Agreement. Employee's rights to stock options are governed by the applicable agreements and Company plans. Disputes under this Agreement are subject to the arbitration provisions of the Employment Agreement.

10. Employee represents that he has returned to the Company all property belonging to the Company, including but not limited to documents, corporate cards, access cards, office keys, office equipment, laptop and desktop computers, cell phones and other wireless devices, thumb drives, zip drives and all other media storage devices.

11. Employee will direct all employment verification inquires to the Company's VP of People, Environment and Culture, Jenny Armstrong-Owen. In response to inquiries regarding Employee's employment with the Company, the Company by and through its speaking agent(s) agrees to provide date of hire, title, and end date, and to confirm rate of pay if already known by the inquirer.

12. If any provision of this Agreement or compliance by Employee or the Company with any provision of this Agreement constitutes a violation of any law, or is or becomes unenforceable or void, then such provision, to the extent only that it is in violation of law, unenforceable or void, will be deemed modified to the extent necessary so that it is no longer in violation of law, unenforceable or void, and such provision will be enforced to the fullest extent permitted by law. If such modification is not possible, said provision, to the extent that it is in violation of law, unenforceable or void, will be deemed severable from the remaining provisions of this Agreement,

which provisions will remain binding on both Employee and the Company. This Agreement is governed by the laws of the state of Washington.

13. Employee agrees that if Employee challenges this Agreement, files any claims against the Company arising from or relating to Employee's employment with, or termination from, the Company, excluding any claim challenging the validity of Employee's waiver of rights under the Age Discrimination in Employment Act, or otherwise fails to abide by the terms of this Agreement, (a) Employee will return all monies and benefits received by Employee from the Company pursuant to this Agreement and (b) the Company may elect, at its option and without waiver of any other rights or remedies it may have, not to pay or provide any unpaid monies or benefits. In the event that Employee challenges the validity of his waiver of rights under the Age Discrimination in Employment Act, he agrees that the Company may recover money and benefits paid under this Agreement if Employee's challenge and subsequent Age Discrimination in Employment Act claim are successful and he obtains a monetary award.

14. Employee specifically agrees and acknowledges that: (a) Employee's waiver of rights under this Agreement is knowing and voluntary as required under the Older Workers Benefit Protection Act; (b) Employee understands the terms of this Agreement; (c) Employee has been advised in writing by the Company to consult with an attorney prior to executing this Agreement; (d) the Company has given Employee a period of up to twenty one (21) days within which to consider this Agreement, that if Employee executes this Agreement within such period Employee waives the remainder of the period, and that modifications to this Agreement during such period, whether material or immaterial, do not restart the running of such period; (e) following Employee's execution of this Agreement, Employee has seven (7) days in which to revoke Employee's agreement to this Agreement and that, if Employee chooses not to so revoke, the Agreement shall then become effective and enforceable and the payment and extension of benefits listed above shall then be made to Employee in accordance with the terms of this Agreement; and (f) nothing in this Agreement shall be construed to prohibit Employee from filing a charge or complaint, including a challenge to the validity of the waiver provision of this Agreement, with the Equal Employment Opportunity Commission or participating in any investigation conducted by the Equal Employment Opportunity Commission. To cancel this Agreement, Employee understands that Employee must give a written revocation to Company headquarters either by hand delivery or certified mail within the seven (7)-day period. If Employee revokes the Agreement, it will not become effective or enforceable and Employee will not be entitled to any of the benefits set forth in this Agreement.

15. The Parties understand, covenant, and agree that this Agreement, together with the PIIA and the Equity Documents (except as amended herein), constitutes the entire agreement relating to the matters stated herein, that there are no other agreements, covenants, promises, or arrangements between Employee and Company relating to the matters covered by this Agreement, that the terms and conditions of this Agreement cancel and supersede any prior agreements, promises, representations or understandings that may have existed between Employee and Company with respect to all matters covered by this Agreement, that no other promise or inducement has been offered to either party except as set forth herein, and that this Agreement is binding upon all parties, and their respective heirs, executors, administrators, successors and assigns. Notwithstanding the foregoing, all of Employee's post-termination obligations remain in full force and effect, except that such post-termination obligations shall be subject to the exceptions set forth in Paragraph 6 of this Agreement.

16. This Agreement may be executed via facsimile and/or PDF and in one or more counterparts, each of which shall be deemed an original, but all of which together constitute one and the same instrument, binding on the parties.

17. EMPLOYEE ACKNOWLEDGES AND AGREES THAT HE HAS CAREFULLY READ AND VOLUNTARILY SIGNED THIS AGREEMENT, THAT HE HAS HAD AN OPPORTUNITY TO CONS ULT WITH AN ATTORNEY OF HIS CHOICE , AND THAT HE SIGNS THIS AGREEMENT WITH THE INTENT OF RELEASING IMPINJ INC. AND ITS OFFICERS, DIRECTORS, EMPLOYEES AND AGENTS FROM ANY AND ALL CLAIMS.
ACCEPTED AND AGREED TO:

Impinj Inc.

/s/ Chris Diorio /s/ Evan Fein
By: Chris Diorio Evan Fein
Its: CEO

March 30, 2018 March 30, 2018
Date Date

Exhibit 31.1

CERTIFICATIONS

I, Chris Diorio, Ph.D., certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Impinj, 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 small business issuer as of, and for, the periods presented in this report;

4. The registrant's other certifying officer 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 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: May 8, 2018

/s/ Chris Diorio
Chris Diorio, Ph.D.
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, Eric Brodersen, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Impinj, 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 small business issuer as of, and for, the periods presented in this report;

4. The registrant's other certifying officer 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 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: May 8, 2018

/s/ Eric Brodersen
Eric Brodersen
President and Chief Operating Officer
(Principal Financial Officer)

Exhibit 32.1

IMPINJ, INC.
CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Impinj, Inc. (the "Company") on Form 10-Q for the quarter ended March 31, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Chris Diorio, Ph.D., Chief Executive Officer *(Principal Executive Officer)* of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(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.

/s/ Chris Diorio
Chris Diorio, Ph.D.
Chief Executive Officer
(Principal Executive Officer)

May 8, 2018

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies the Report to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Impinj, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Report), irrespective of any general incorporation language contained in such filing.

Exhibit 32.2

IMPINJ, INC.
CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Impinj, Inc. (the "Company") on Form 10-Q for the quarter ended March 31, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Eric Brodersen, President and Chief Operating Officer *(Principal Financial Officer)* of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(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.

/s/ Eric Brodersen
Eric Brodersen
President and Chief Operating Officer
(Principal Financial Officer)

May 8, 2018

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies the Report to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Impinj, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Report), irrespective of any general incorporation language contained in such filing.