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 June 30, 2020

☐ **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

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

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	PI	The Nasdaq Global Select Market

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

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

Large accelerated filer	☐	Accelerated filer	☑
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☑

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☑

As of July 17,2020, 22,855,297 shares of common stock were outstanding.

IMPINJ, INC.
QUARTERLY REPORT ON FORM 10-Q

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PART I — FINANCIAL INFORMATION

Item 1. Financial Statements (unaudited)

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

	June 30, 2020	December 31, 2019
Assets:		
Current assets:		
Cash and cash equivalents	$ 97,488	$ 66,898
Short-term investments	23,419	49,597
Accounts receivable, net	15,454	23,735
Inventory	37,091	34,153
Prepaid expenses and other current assets	1,785	2,386
Total current assets	175,237	176,769
Property and equipment, net	16,294	17,442
Operating lease right-of-use assets	15,170	16,501
Other non-current assets	701	453
Goodwill	3,881	3,881
Total assets	$ 211,283	$ 215,046
Liabilities and stockholders' equity:		
Current liabilities:		
Accounts payable	$ 4,473	$ 5,600
Accrued compensation and employee related benefits	4,922	5,859
Accrued liabilities	10,613	3,755
Current portion of operating lease liabilities	3,546	3,380
Current portion of deferred revenue	819	551
Other current liabilities	76	352
Total current liabilities	24,449	19,497
Long-term debt, net of current portion	52,669	50,876
Operating lease liabilities, net of current portion	17,082	18,907
Long-term liabilities — other	608	314
Deferred revenue, net of current portion	225	213
Total liabilities	95,033	89,807
Commitments and contingencies (Note 5)		
Stockholders' equity:		
Preferred stock, $0.001 par value — 5,000 shares authorized, no shares issued and outstanding at June 30, 2020 and December 31, 2019	—	—
Common stock, $0.001 par value — 495,000 shares authorized, 22,786 and 22,217 shares issued and outstanding at June 30, 2020 and December 31, 2019, respectively	23	22
Additional paid-in capital	400,772	387,926
Accumulated other comprehensive income	58	34
Accumulated deficit	(284,603)	(262,743)
Total stockholders' equity	116,250	125,239
Total liabilities and stockholders' equity	$ 211,283	$ 215,046

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 June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Revenue	$ 26,457	$ 38,190	$ 74,279	$ 71,253
Cost of revenue	13,497	19,774	39,925	36,964
Gross profit	12,960	18,416	34,354	34,289
Operating expenses:				
Research and development	10,661	8,773	21,718	17,334
Sales and marketing	6,123	8,188	13,613	16,737
General and administrative	12,446	5,455	18,688	11,150
Total operating expenses	29,230	22,416	54,019	45,221
Loss from operations	(16,270)	(4,000)	(19,665)	(10,932)
Other income, net	126	309	535	630
Interest expense	(1,349)	(421)	(2,661)	(850)
Loss before income taxes	(17,493)	(4,112)	(21,791)	(11,152)
Income tax expense	(41)	(46)	(69)	(74)
Net loss	$ (17,534)	$ (4,158)	$ (21,860)	$ (11,226)
Net loss per share — basic and diluted	$ (0.77)	$ (0.19)	$ (0.97)	$ (0.52)
Weighted-average shares outstanding — basic and diluted	22,716	21,709	22,564	21,626

See accompanying notes to condensed consolidated financial statements.

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Net loss	$ (17,534)	$ (4,158)	$ (21,860)	$ (11,226)
Other comprehensive income (loss), net of tax:				
Unrealized gain (loss) on investments	(47)	27	24	43
Total other comprehensive income (loss)	(47)	27	24	43
Comprehensive loss	$ (17,581)	$ (4,131)	$ (21,836)	$ (11,183)

See accompanying notes to condensed consolidated financial statements.

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

	Six Months Ended June 30, 2020	Six Months Ended June 30, 2019
Operating activities:		
Net loss	$ (21,860)	$ (11,226)
Adjustments to reconcile net loss to net cash provided by operating activities:		
Depreciation	2,294	2,417
Stock-based compensation	9,818	7,020
Accretion of discount or amortization of premium on short-term investments	19	(362)
Amortization of debt issuance costs and debt discount	1,793	35
Changes in operating assets and liabilities:		
Accounts receivable	8,281	(2,798)
Inventory	(2,938)	6,815
Prepaid expenses and other assets	364	467
Deferred revenue	280	267
Accounts payable	(1,229)	798
Accrued compensation and employee related benefits	(937)	(1,429)
Operating lease right-of-use assets	1,331	868
Operating lease liabilities	(1,659)	(1,490)
Accrued liabilities and other liabilities	7,252	459
Net cash provided by operating activities	2,809	1,841
Investing activities:		
Purchases of investments	(5,103)	(36,569)
Proceeds from maturities of investments	31,275	37,794
Purchases of property and equipment	(1,237)	(799)
Net cash provided by investing activities	24,935	426
Financing activities:		
Principal payments on finance lease obligations	(183)	(283)
Payments on term and equipment loans	—	(4,222)
Proceeds from term loans, net of debt issuance costs	—	3,991
Proceeds from exercise of stock options and employee stock purchase plan	3,029	2,870
Net cash provided by financing activities	2,846	2,356
Net increase in cash and cash equivalents	30,590	4,623
Cash and cash equivalents		
Beginning of period	66,898	17,530
End of period	$ 97,488	$ 22,153
Supplemental disclosure of non-cashflow information:		
Cash paid for interest	$ 858	$ 787
Purchases of property and equipment not yet paid	464	112

See accompanying notes to condensed consolidated financial statements.

IMPINJ, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
(in thousands, unaudited)

	Common Stock		Additional Paid-in	Accumulated	Accumulated Other Comprehensive	Total Stockholders'
	Shares	Amount	Capital	Deficit	Income	Equity
Balance at December 31, 2019	22,217	$ 22	$ 387,926	$ (262,743)	$ 34	$ 125,239
Issuance of common stock	460	1	2,013	—	—	2,014
Stock-based compensation	—	—	5,221	—	—	5,221
Net loss	—	—	—	(4,326)	—	(4,326)
Other comprehensive income	—	—	—	—	71	71
Balance at March 31, 2020	22,677	23	395,160	(267,069)	105	128,219
Issuance of common stock	109	—	1,015	—	—	1,015
Stock-based compensation	—	—	4,597	—	—	4,597
Net loss	—	—	—	(17,534)	—	(17,534)
Other comprehensive loss	—	—	—	—	(47)	(47)
Balance at June 30, 2020	22,786	$ 23	$ 400,772	$ (284,603)	$ 58	$ 116,250

	Common Stock		Additional Paid-in	Accumulated	Accumulated Other Comprehensive	Total Stockholders'
	Shares	Amount	Capital	Deficit	Income (Loss)	Equity
Balance at December 31, 2018	21,492	$ 21	$ 337,627	$ (239,756)	$ (9)	$ 97,883
Issuance of common stock	135	1	1,862	—	—	1,863
Stock-based compensation	—	—	3,477	—	—	3,477
Net loss	—	—	—	(7,068)	—	(7,068)
Other comprehensive income	—	—	—	—	16	16
Balance at March 31, 2019	21,627	22	342,966	(246,824)	7	96,171
Issuance of common stock	134	—	1,049	—	—	1,049
Stock-based compensation	—	—	3,543	—	—	3,543
Net loss	—	—	—	(4,158)	—	(4,158)
Other comprehensive income	—	—	—	—	27	27
Balance at June 30, 2019	21,761	$ 22	$ 347,558	$ (250,982)	$ 34	$ 96,632

See accompanying notes to condensed consolidated financial statements.

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

Note 1. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying condensed consolidated financial statements include Impinj, Inc. and its wholly owned subsidiaries. We have eliminated intercompany balances and transactions in consolidation. Certain immaterial amounts on our condensed consolidated balance sheets in prior period have been reclassified to conform with current period presentation. We have prepared these condensed consolidated financial statements 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 consolidated financial statements and accompanying notes as of and for the year ended December 31, 2019 included in Impinj, Inc.'s Annual Report on Form 10-K, which was filed with the SEC on March 2, 2020. The condensed consolidated balance sheet as of December 31, 2019, included herein, was derived from the audited consolidated 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

Preparing financial statements in conformity with GAAP requires us to make certain estimates, judgments and assumptions that affect the reported amounts of assets and liabilities and the related disclosures as of 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, sales incentives, estimated costs to complete development contracts, deferred revenue, inventory excess and obsolescence, income taxes, determination of the fair value of stock awards and compensation and employee-related benefits. To the extent there are material differences between these estimates, judgments, or assumptions and actual results, our financial statements will be affected. Covid-19 has introduced significant additional uncertainty with respect to estimates, judgments and assumptions, which may materially impact the estimates previously listed, among others.

Recently Adopted Accounting Standards

In June 2016, the Financial Accounting Standards Board, or FASB, issued guidance on the measurement of credit losses on financial instruments. This guidance requires 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 adopted this standard on January 1, 2020 and the adoption of this guidance did not materially impact our financial positions, results of operations or cash flows.

Recently Issued Accounting Standards Not Yet Adopted

Recent accounting pronouncements issued by the FASB (including its Emerging Issues Task Force), the American Institute of Certified Public Accountants, and the Securities and Exchange Commission did not have, or are not expected to have, a material impact on our present or future consolidated financial statements.

Accounts Receivable

The allowance for doubtful accounts is our best estimate of the amount of probable lifetime-expected credit losses in existing accounts receivable and is determined based on our historical collections experience, age of the receivable, knowledge of the customer and the condition of the general economy and industry as a whole. We record changes in our estimate to the allowance for doubtful accounts through bad debt expense and write off the receivable and corresponding allowance when accounts are ultimately determined to be uncollectible. Bad debt expense is included in general and administrative expenses. For the periods presented in this report, bad debt expense and the allowance for doubtful account were not material.

We derive the majority of our accounts receivables from sales to original equipment manufacturers, or OEMs, original design manufacturers, or ODMs, as well as to distributors who are large, well-established companies. We do not have customers that represent a significant credit risk based on current economic conditions and past collection experience. Also, we have not had material past-due balances on our accounts receivable as of June 30, 2020 and December 31, 2019.

Inventory

We recorded $2.7 million in inventory excess and obsolescence charges for the three months ended March 31, 2020, which accounted for a majority of these charges for the six months ended June 30, 2020. The charges, which reduced the inventory value of the impacted products to zero, relate primarily to decreased demand for endpoint ICs and gateways specifically designed for European applications. This demand decrease was due to (1) the European Commission allocating additional RAIN spectrum in a new frequency band and (2) Covid-19's impact on EU businesses, the latter especially in the EU retail industry. We expect future demand to be met by newer endpoint IC and gateway products. Inventory excess and obsolescence charges to gross margin were not material for the three and six months ended June 30, 2019 and for the three months ended June 30, 2020.

Note 2. 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 consist of highly liquid investments, including money market funds with original maturities of less than three months at the acquisition date. We record the fair value measurement of these assets based on quoted market prices in active markets.

Investments — Our investments consist of fixed income securities, which typically include U.S. government agency securities, treasury bills, commercial paper, money market funds 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 correlation or other means.

Long-term Debt — See Note 6 for the carrying amount and estimated fair value of our convertible senior notes due 2026.

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

	June 30, 2020			December 31, 2019		
	Level 1	Level 2	Total	Level 1	Level 2	Total
Cash equivalents:						
Money market funds	$ 88,508	$ —	$ 88,508	$ 45,663	$ —	$ 45,663
Total cash equivalents	88,508	—	88,508	45,663	—	45,663
Short-term investments:						
U.S. government agency securities	—	17,648	17,648	—	32,323	32,323
Corporate notes and bonds	—	4,773	4,773	—	13,305	13,305
Commercial paper	—	998	998	—	3,969	3,969
Total short-term investments	—	23,419	23,419	—	49,597	49,597
Total	$ 88,508	$ 23,419	$ 111,927	$ 45,663	$ 49,597	$ 95,260

We did not have any Level 3 assets as of June 30, 2020 or December 31, 2019. We did not measure any liabilities at fair value as of June 30, 2020 or December 31, 2019. The gross unrealized gains or losses on cash equivalents and short-term investments as of June 30, 2020 or December 31, 2019 were not material.

Note 3. Inventory

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

	June 30, 2020	December 31, 2019
Raw materials	$ 4,366	$ 5,579
Work-in-process	13,240	7,485
Finished goods	19,485	21,089
Total inventory	$ 37,091	$ 34,153

Note 4. Stock-Based Awards

Stock Options

The following table summarizes stock options activity for the six months ended June 30, 2020 (in thousands):

	Number of Underlying Shares
Outstanding at December 31, 2019	3,262
Granted	575
Exercised	(250)
Forfeited or expired	(163)
Outstanding at June 30, 2020	3,424
Vested and exercisable at June 30, 2020	1,485

Restricted Stock Units

The following table summarizes activity for restricted stock units, or RSUs, and RSUs with performance conditions, or PSUs, for the six months ended June 30, 2020 (in thousands):

	Number of Underlying Shares	
	RSUs	PSUs
Outstanding at December 31, 2019	509	252
Granted	522	—
Vested	(29)	(243)
Forfeited	(43)	(9)
Outstanding at June 30, 2020	959	—

We granted PSUs in 2019 under our annual bonus program to our senior executives and other bonus-eligible employees. The number of PSUs that ultimately vested depended on us attaining a financial metric for the fiscal year as well as on the employee's continued employment through the vesting date. The compensation committee and board of directors approved achievement of the financial metric, vesting 243,000 shares in first-quarter 2020.

Stock-Based Compensation Expense

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Cost of revenue	$ 176	$ 159	$ 383	$ 303
Research and development expense	1,640	1,240	3,661	2,311
Sales and marketing expense	1,204	1,116	2,572	2,406
General and administrative expense	1,577	1,028	3,202	2,000
Total stock-based compensation expense	$ 4,597	$ 3,543	$ 9,818	$ 7,020

Note 5. 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, 2019. 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, 2019, except for “Obligations with Third-Parties” and “Litigation” as discussed below.

Obligations with Third Parties

We have certain non-cancelable obligations, which include obligations with third-party manufacturers who manufacture our products. We are committed to purchase $10.1 million of inventory as of June 30, 2020.

Litigation

From time to time, we are subject to various legal proceedings or claims that arise in the ordinary course of business. We accrue a liability when management believes that it is both probable that a liability has been incurred and the amount of loss can be reasonably estimated. As of June 30, 2020, we have $5.4 million of contingent liabilities included in accrued liabilities on our condensed consolidated balance sheets. As of December 31, 2019, we had not recorded any such liabilities. The following is a description of our significant legal proceedings. Although we believe that resolving these claims, individually or in aggregate, will not have a material adverse impact on our financial statements, these matters are subject to inherent uncertainties.

Federal Securities Class Actions

On August 7, 2018, a class-action complaint for violation of the federal securities laws was filed in the U.S. District Court for the Central District of California against us, our chief executive officer and former chief operating officer. Captioned *Schultz v. Impinj, Inc., et al*, the complaint, purportedly brought on behalf of all purchasers of our common stock from May 7, 2018 through and including August 2, 2018, asserted claims that our quarterly statement filed on Form 10-Q for first-quarter 2018 and a concurrent press release made false or misleading statements about our business prospects and financial condition. The complaint sought monetary damages, costs and expenses. On October 3, 2018, the plaintiff voluntarily dismissed this complaint.

On August 27, 2018, a second class-action complaint for violation of the federal securities laws was filed in the U.S. District Court for the Western District of Washington against us, our chief executive officer, former chief operating officer and former chief financial officer. Captioned *Montemarano v. Impinj, Inc., et al*., the complaint, purportedly brought on behalf of all purchasers of our common stock from May 4, 2017 through and including August 2, 2018, asserts claims that we made false or misleading statements in our financial statements, press releases and conference calls during the purported class period in violation of Section 10(b) of the Securities Exchange Act of 1934, as amended, or the Securities Exchange Act. The complaint seeks monetary damages, costs and expenses.

On October 2, 2018, a third class-action complaint for violation of the federal securities laws was filed in the U.S. District Court for the Western District of Washington against us, our chief executive officer, former chief operating officer and former chief financial officer. Captioned *Employees’ Retirement System of the City of Baton Rouge and Parish of East Baton Rouge v. Impinj, Inc., et al*., the complaint, purportedly brought on behalf of all purchasers of our common stock from November 3, 2016 through and including February 15, 2018, asserts claims that we made false or misleading statements about customer demand for our products and inventory in SEC filings, press releases and conference calls in violation of Section 10(b) of the Securities Exchange Act. The complaint seeks monetary damages, costs and expenses.

On January 14, 2019, the U.S. District Court for the Western District of Washington consolidated the *Montemarano* and *Baton Rouge* actions and appointed the Employees’ Retirement System of the City of Baton Rouge and Parish of East Baton Rouge as lead plaintiff. On February 13, 2019, lead plaintiff filed a consolidated amended complaint. The consolidated amended complaint alleges that from July 21, 2016 through February 15, 2018, we made false or misleading statements about customer demand and the capability of our products and platform in violation of Section 10(b) of the Securities Exchange Act.

On March 19, 2019, we filed a motion to dismiss the consolidated amended complaint, and on October 4, 2019, the court entered an order granting in part and denying in part the motion. The court dismissed the Section 10(b) claim against our former chief operating officer, dismissed product-capability-related allegations against our former chief financial officer, and dismissed allegations that defendants made false or misleading statements concerning increasing demand prior to first-quarter 2017. The court denied the motion as to all other claims and defendants.

On July 9, 2020, following a private settlement mediation with lead plaintiff in the federal securities class actions and plaintiff in the New York State securities class action discussed below, the parties in both actions executed a stipulation of settlement that resolves the claims asserted in both actions. The proposed settlement provides for a payment to the plaintiff class of $20.0 million. Our insurers will contribute approximately $14.6 million to the settlement, and we will contribute the remaining settlement amount of approximately $5.4 million. Accordingly, we recorded a provision of $5.4 million related to our estimated settlement amount to general and administrative expenses for the three and six months ended June 30, 2020. The proposed settlement is subject to preliminary and, following notice to class members, final approval by the United States District Court for the Western District of Washington.

New York State Securities Class Action

On January 31, 2019, a fourth class-action complaint for violation of the federal securities laws was filed in the Supreme Court of the State of New York for the County of New York against us, our chief executive officer, former chief operating officer, former chief financial officer, members of our board of directors and the underwriters of our July 2016 initial public stock offering, or IPO, and December 2016 secondary public offering, or SPO. Captioned *Plymouth County Retirement System v. Impinj, Inc., et al.*, the complaint, purportedly brought on behalf of purchasers of our stock pursuant to or traceable to our IPO and SPO, alleges that we made false or misleading statements in the registration statements and prospectuses in those offerings concerning demand for our products and inventory in violation of Section 11 of the Securities Act of 1933. On April 9, 2019, the New York Supreme Court entered an order staying the action and requiring the parties to update the court every 90 days as to the status of the pending federal securities class actions discussed above.

As discussed above in connection with the Federal Securities Class Action, on July 9, 2020, the parties in both this action and the federal securities class actions executed a stipulation of settlement that resolves the claims in both actions. The proposed settlement is subject to preliminary, and, following notice to class members, final approval by the United States District Court for the Western District of Washington. Once the settlement is finally approved by the federal court, plaintiffs will dismiss this action with prejudice.

Shareholder Derivative Actions

On October 26, 2018, two shareholder derivative actions were filed in the U.S. District Court for the District of Delaware against our chief executive officer, former chief operating officer, former chief financial officer and certain of our directors. We are a nominal defendant. On November 8, 2018, a third shareholder derivative action was filed in this same court against the same defendants. Captioned *Weiss v. Diorio, et al*., *Fotouhi v. Diorio, et al*., *and De la Fuente v. Diorio, et al.*, the derivative complaints, purportedly brought on behalf of us, allege that the defendants breached their fiduciary duties to us and allegedly made false or misleading statements and omissions of material fact in violation of Section 14(a) of the Securities Exchange Act regarding our business and operations. The derivative actions include claims for, among other things, unspecified damages in favor of us, corporate actions to purportedly improve our corporate governance, and an award of costs and expenses to the derivative plaintiffs, including attorneys' fees. On January 28, 2019, the Delaware federal court entered a stipulated order that stayed these derivative actions until resolution of the pending federal securities class actions described above.

On July 10, 2020, following a private settlement mediation, the parties in this action executed a stipulation of settlement to settle and resolve the claims asserted in this consolidated derivative action. The proposed settlement requires us to implement certain corporate governance changes and the payment of up to $900,000 to plaintiffs' counsel for attorneys' fees and expenses. Our insurers will contribute the entire amount paid for attorneys' fees and expenses. The proposed settlement is subject to preliminary and, following notice to shareholders, final approval by the United States District Court for the District of Delaware. On July 15, 2020, the court entered an order requesting that the parties file supplemental briefing in respect of their joint motion for preliminary approval of the settlement. These supplemental briefs are due August 5, 2020.

Patent Infringement Claims and Counterclaims

On June 6, 2019, we filed a patent infringement lawsuit against NXP USA, Inc., a Delaware corporation and subsidiary of NXP Semiconductors N.V., or NXP, in the U.S. District Court for the Northern District of California. Our complaint alleges that certain NXP integrated circuit products infringed and continue to infringe numerous U.S. patents owned by us. We are seeking, among other things, past damages, including lost profits, and no less than a reasonable royalty; enhanced damages for willful infringement; and reasonable attorneys' fees and costs for infringement of each of the asserted patents. We are also seeking an injunction against NXP making, selling, using, offering for sale or importing the RAIN RFID integrated circuit product NXP introduced in 2017. Defendants responded to our complaint on September 30, 2019 citing numerous defenses including denying infringement, claiming our asserted patents are invalid, and that the infringed patents were licensed on a royalty-free basis under Impinj's commitments to GS1 EPCglobal. In February 2020, NXP filed *inter partes* review, or IPR, petitions with the Patent Trial and Appeal Board for the U.S. Patent and Trademark Office against all of the patents we accuse NXP of infringing in our Northern District of California case and two additional patents. On March 30, 2020, the Northern District of California case was stayed pending the IPR proceedings for the patents in suit.

On October 4, 2019, NXP USA, Inc. and NXP, filed a patent infringement lawsuit against us in the U.S. District Court for the District of Delaware. The complaint alleges that certain of our products infringed and continue to infringe numerous U.S. patents owned by NXP or NXP USA, Inc. The plaintiffs are seeking, among other things, past damages adequate to compensate them for our alleged infringement of each of the patents-in-suit, and reasonable attorneys' fees and costs. They are also seeking an injunction against us, enjoining continuing acts of infringement of the patents-in-suit. As of the date of this report, there is no court date set.

Note 6. Debt Facilities

Convertible Senior Notes

In December 2019, we issued convertible senior notes due 2026, or the 2019 Notes, in an aggregate principal amount of $86.3 million. The 2019 Notes are our senior unsecured obligations and are governed by the indenture for the 2019 Notes. The 2019 Notes accrue interest at a fixed rate of 2.00% per year, payable semiannually in arrears on June 15 and December 15 of each year, beginning June 15, 2020. Upon conversion, the 2019 Notes will be convertible into cash, shares of our common stock or a combination thereof, at our election. The 2019 Notes will mature on December 15, 2026, unless earlier repurchased, redeemed, or converted in accordance with the terms of the indenture.

Our net proceeds from issuing the 2019 Notes were approximately $83.5 million after deducting fees and expenses. We used a portion of the proceeds to pay the cost of the capped call transactions described below and repay our senior credit facility.

The 2019 Notes are convertible at an initial conversion rate of 28.9415 shares of our common stock per $1,000 principal amount of the 2019 Notes, which is equal to an initial conversion price of approximately $34.55 per share of our common stock, subject to adjustment under certain circumstances in accordance with the indenture. Prior to the close of business on the business day immediately preceding September 15, 2026, holders of the 2019 Notes may convert all or a portion of their 2019 Notes under the following circumstances:

- during any fiscal quarter commencing after the fiscal quarter ending on March 31, 2020 (and only during such fiscal quarter), if the last reported sale price of our common stock, for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding fiscal quarter is greater than or equal to 130% of the conversion price on each applicable trading day;
- during the five-business day period after any five consecutive trading-day period in which the trading price per $1,000 principal amount of the 2019 Notes for each trading day was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day;
- prior to the close of business on the second scheduled trading day immediately preceding the redemption date if we call the 2019 Notes for redemption; or
- upon the occurrence of specified corporate events, as described in the indenture.

On or after September 15, 2026, until the close of business on the second scheduled trading day immediately preceding the maturity date, holders may convert all or any portion of the 2019 Notes, in multiples of $1,000 principal amount, at the option of the holder regardless of the foregoing circumstances.

We may redeem the 2019 Notes for cash, at our option, on or after December 20, 2023, if the last reported sale price of our common stock has been at least 130% of the conversion price at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period at a redemption price equal to 100% of the principal amount of the 2019 Notes being redeemed, plus any accrued and unpaid interest to, but excluding, the redemption date.

Holders of the 2019 Notes who convert their 2019 Notes in connection with certain corporate events that constitute a make-whole fundamental change (as defined in the indenture) are, under certain circumstances, entitled to an increase in the conversion rate. Additionally in the event of a corporate event constituting a fundamental change (as defined in the indenture), holders of the 2019 Notes may require us to repurchase all or a portion of their 2019 Notes at a repurchase price equal to 100% of the principal amount of the 2019 Notes being repurchased, plus any accrued and unpaid interest to, but excluding, the repurchase date.

Certain convertible-debt instruments that may be settled in cash on conversion are required to be separated into a liability and an equity component. The total proceeds are first allocated to the liability component based on the fair value of a similar debt instrument without the conversion option. The remaining proceeds are allocated to the equity component and recognized in additional paid-in capital.

Accordingly, we separated the 2019 Notes into a liability and an equity component. We determined the fair value of the liability component to be $52.5 million calculated as the present value of future cash flows discounted at the borrowing rate for a similar nonconvertible debt instrument based on the expected term. We determined the borrowing rate to be 9.90% based on the market rates for nonconvertible debt instruments issued by other companies with publicly available credit ratings considered to be comparable to us. We recognized the excess of the principal amount of the 2019 Notes over the initial carrying amount of the liability component as a debt discount of $33.8 million and are amortizing it to interest expense over the expected term of the 2019 Notes using the effective interest rate method. We recorded the equity component of $33.8 million as additional paid-in capital, calculated as the difference between the total proceeds of $86.3 million and the initial carrying amount of the liability component. We will not remeasure the equity component as long as it continues to meet the conditions for equity classification.

As of June 30, 2020, the 2019 Notes were not yet convertible and the "if-converted value" did not exceed the remaining principal amount of the 2019 Notes.

We allocated the 2019 Notes total issuance costs of $2.8 million between liability and equity in the same proportion as the allocation of our total proceeds to liability and equity components. We amortize the issuance costs attributable to the liability component of $1.7 million to interest expense over the respective term of the 2019 Notes using the effective interest rate method. We netted the issuance costs attributable to the equity component of $1.1 million against the respective equity component in additional paid-in capital.

The effective interest rate on the liability component of the 2019 Notes is 10.21%. As of June 30, 2020, we have $77,000 of accrued interest related to the 2019 Notes included in accrued liabilities on our condensed consolidated balance sheet.

The following table presents the interest expense related to the 2019 Notes for the periods presented (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Amortization of debt discount	$ 886	$ —	$ 1,740	$ —
Amortization of debt issuance costs	27	—	53	—
Cash interest expense	436	—	868	—
Total interest expense	$ 1,349	$ —	$ 2,661	$ —

Our estimated fair value of the 2019 Notes was $90.8 million and $87.0 million as of June 30, 2020 and December 31, 2019, respectively, which we determined through consideration of quoted market prices. The fair value is classified as Level 2, as defined in Note 2.

The following table presents the outstanding principal amount and carrying value of the 2019 Notes as of the date presented (in thousands):

	June 30, 2020
Outstanding principal amount	86,250
Unamortized debt discount and debt issuance costs	(33,581)
Carrying value	52,669

In connection with our issuance of the 2019 Notes, we entered into privately negotiated capped-call transactions with certain financial counterparties. The capped-call transactions are generally designed to reduce the potential dilution to our common stock upon any conversion or settlement of the 2019 Notes, or to offset any cash payments we are required to make in excess of the principal amount upon conversion of the 2019 Notes, as the case may be, with such reduction or offset subject to a cap based on the cap price. If, however, the market price per share of our common stock exceeds the cap price of the capped-call transactions then our stock would experience some dilution and/or the capped call would not fully offset the potential cash payments, in each case, to the extent the then-market price per share of our common stock exceeds the cap price. The initial cap price of the capped-call transactions is $54.20 per share, which represents a 100% premium over the last reported sale price of our common stock of $27.10 per share on December 11, 2019 subject to certain adjustments under the terms of the capped-call transactions. The capped-call transactions expire over 40 consecutive scheduled trading days ending on December 11, 2026.

The capped-call transactions meet the criteria for classification in equity, are not accounted for as derivatives, and are not remeasured each reporting period. We paid $10.1 million for the capped-call transactions, which we recorded as a reduction to additional paid-in-capital within shareholders' equity.

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PPP Note

On April 20, 2020, we entered into an unsecured promissory note, or the PPP Note, through Silicon Valley Bank under the Paycheck Protection Program, or PPP, a program administered by the Small Business Administration, or SBA, and established as part of the Coronavirus Aid, Relief and Economic Security Act, or CARES Act. The PPP Note had an aggregate principal amount of approximately $5.8 million, and we received the loan proceeds on April 22, 2020. On April 23, 2020, the SBA issued guidance that substantially narrowed the ability of public companies to participate in the PPP program. While we applied for the PPP program in good faith, considering the SBA's new guidance, we repaid the PPP Note in full on April 30, 2020.

Note 7. Leases

The following table presents the components of lease expense in our condensed consolidated statements of operations for the periods presented (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Operating lease costs(a)				
Single lease costs	$ 1,017	$ 1,056	$ 2,046	$ 2,102
Variable lease costs	456	481	883	900
Sublease income(b)	(475)	(468)	(950)	(935)
Total operating lease costs	$ 998	$ 1,069	$ 1,979	$ 2,067

(a) Includes short-term lease costs, which are immaterial.
(b) Sublease income is related to unused office space that was sublet as part of the restructuring in fiscal 2018 where we continue to have the primary obligations.

The following table presents supplemental cash flow information related to operating leases for the periods presented (in thousands):

	Six Months Ended June 30,	
	2020	2019
Cash paid for amounts included in the measurement of lease liabilities		
Operating cash flows used	$ 2,374	$ 2,304

The following table presents weighted-average remaining lease term and weighted-average discount rate related to operating leases as of the dates presented:

	June 30, 2020	December 31, 2019
Weighted-average remaining lease term (years)	5.7	6.1
Weighted-average discount rate	6.8%	6.8%

The following table presents future lease payments under operating leases as of June 30, 2020 (in thousands):

	Operating Leases		
	Lease Payments	Sublease Income	Net
2020	$ 2,381	$ (697)	$ 1,684
2021	4,790	(1,414)	3,376
2022	4,650	(1,457)	3,193
2023	3,263	(123)	3,140
2024	3,219	—	3,219
Thereafter	6,729	—	6,729
Total lease payments	$ 25,032	$ (3,691)	$ 21,341
Less: Imputed interest	(4,404)		
Present value of lease liabilities	20,628		
Less: Current portion of lease liabilities	(3,546)		
Lease liabilities, net of current portion	$ 17,082		

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Note 8. 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 June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Numerator:				
Net loss	$ (17,534)	$ (4,158)	$ (21,860)	$ (11,226)
Denominator:				
Weighted-average shares outstanding — basic and diluted	22,716	21,709	22,564	21,626
Net loss per share — basic and diluted	$ (0.77)	$ (0.19)	$ (0.97)	$ (0.52)

The following table presents the outstanding shares of our common stock equivalents 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 and Six Months Ended June 30,	
	2020	2019
Stock options	3,424	3,343
RSUs and PSUs	959	350
Employee stock purchase plan shares	54	72

Note 9. Segment Information

We have one reportable operating segment, which is the development and sale of our RAIN RFID products and services. We identify this one reportable segment based on how our chief operating decision-maker manages our business, makes decisions and evaluates our operating performance. Our chief executive officer is the chief operating decision-maker and reviews financial and operational information on an entity-wide basis as one business activity. We do not have segment managers who are separately accountable for operations, operating results or plans. Accordingly, we determined that we have a single reportable operating segment.

The chief executive officer reviews information about our revenue categories, which are endpoint ICs and systems. Systems revenue includes sales of reader ICs, reader modules, readers, gateways and software. The following table presents our revenue by category for the periods presented (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2020	2019	2020	2019
Endpoint ICs	$ 18,545	$ 23,704	$ 52,220	$ 45,549
Systems	7,912	14,486	22,059	25,704
Total revenue	$ 26,457	$ 38,190	$ 74,279	$ 71,253

Note 10. Deferred Revenue

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

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

	Six Months Ended June 30,	
	2020	2019
Balance at beginning of period	$ 764	$ 834
Deferral of revenue	658	471
Recognition of deferred revenue	(378)	(204)
Balance at end of period	$ 1,044	$ 1,101

We recognized $371,000 of revenue related to amounts included in deferred revenue as of December 31, 2019 for the six months ended June 30, 2020. We recognized $132,000 of revenue related to amounts included in deferred revenue as of December 31, 2018 for the six months ended June 30, 2019.

Note 11: Related-Party Transactions

We have a consulting agreement with a limited liability company owned by Cathal Phelan, a member of our board of directors, pursuant to which Mr. Phelan provides advisory and consulting services. The term of the consulting agreement began in May 2020 and will end in December 2020, unless we and Mr. Phelan mutually agree to extend the term by an additional 12 months. We recognized and paid $112,000 and $180,000 of consulting fee expense to Mr. Phelan, or the limited liability company owned by Mr. Phelan, for the three and six months ended June 30, 2020, respectively.

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; our market share and technology leadership; and the implementation of our business model, strategic plans and product development plans;*
- *the impact of Covid-19, including on macroeconomic conditions and our business, results of operations and financial condition;*
- *our future financial performance, including our average selling prices, gross margins, liquidity and capital resources, as well as future macroeconomic conditions;*
- *the performance of third parties on which we rely for product manufacturing, 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 a future in which everyday physical items are wirelessly connected to digital counterparts, or digital twins, in the cloud, and in which businesses and people engage with those everyday physical items via their digital twins. Our mission is to deliver a platform that powers that item-to-cloud connectivity and to enable 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. We believe our future is delivering the identity, location and authenticity of trillions of everyday items and enabling those cloud-based digital twins, each storing an individual item's ownership, history and links, and enabling ubiquitous access to them. We believe the item-to-cloud connectivity that we will deliver will enhance businesses efficiencies and commerce and, ultimately, improve peoples' lives.

Our platform connects individual items, capturing and delivering data about each item from manufacturing through distribution to sale. We and our channel partners connect those items via a miniature radio chip embedded in the item or in its packaging, reading and delivering the item's unique identity, location and authenticity to business and consumer applications. To date, we have enabled connectivity to more than 40 billion items, enabling retailers, hospitals, airlines, automotive manufacturers, logistics providers, shippers and business in many other industries to derive timely business value from those connected items. We believe our opportunity is to ultimately connect trillions of everyday items, and to deliver valuable information about those items not just to businesses, but also to everyday people, extending and delivering an item's digital life to the person that buys and owns the item.

Our platform comprises three layers: (1) endpoint integrated circuits, or ICs, (2) connectivity and (3) software that together deliver item data to business and consumer 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.

Factors Affecting Our Performance

Covid-19

We are actively monitoring and mitigating the impacts of Covid-19 in all aspects of our business, including for our employees, customers, end users, suppliers, business partners, operations, sales, product features and more.

Covid-19 engendered a 45% endpoint IC revenue decline from first to second-quarter 2020. The two key factors behind this decline were (i) $6.2 million in endpoint IC customer expedite requests from second to first-quarter 2020 due primarily to customer concerns about endpoint IC supply disruptions and (ii) endpoint IC customer reschedule requests from second to third- and fourth- quarters 2020 as a result of Covid-19's negative impact on global retail apparel sales, which normally account for roughly two-thirds of our endpoint IC volumes.

Although global retail apparel sales may improve in second-half 2020, we expect global retail apparel sales to decline in 2020 versus 2019, and second-half 2020 endpoint IC volumes to be adversely impacted as our customers work to adjust channel inventory levels as a result of Covid-19. Forecasting endpoint IC volumes is inherently difficult, even under normal circumstances, because we sell our ICs through inlay partners, limiting our visibility to end-user demand. Covid-19, with its many uncertainties, exacerbates this forecasting difficulty. Additionally, Covid-19's impact on the global economy is complicated by countries reopening at different rates, with some seeming to be able to manage subsequent outbreaks and others seeing infections surge. Covid-19 has also caused uncertain long-term shifts, positive and negative, in other industries important to us besides retail apparel, such as shipping and logistics. Consequently, although we expect Covid-19 to negatively impact our 2020 endpoint IC demand relative to our pre-Covid-19 expectations, we remain uncertain of the magnitude of the impact.

We see evidence of continued RAIN systems adoption, but the extent to which this adoption proceeds, or the degree to which it survives the negative impacts of Covid-19, is unclear. Covid-19 has caused delays in some planned systems deployments, in some cases due to businesses being closed by local regulations and in other cases by reduced or deferred capital expenditures. Those delays will impact our operating results in 2020 and potentially beyond. We also see some end users accelerating their investments in business-process modernization technologies like RAIN during the pandemic, but even in those cases Covid-19 can delay deployments for reasons of health and safety, product and labor availability, and store closures. Consequently, although we expect Covid-19 to impact our 2020 systems demand, we remain uncertain of the direction or the magnitude of the impact.

From an operations standpoint, in second-quarter 2020 Covid-19 caused some of our suppliers to temporarily shut down, operate at reduced capacity, or both. For the most part we successfully navigated these temporary closures and capacity shortfalls. We also navigated shipping challenges due to reduced transport capacity, but in some cases our shipping costs increased. By June 2020, our suppliers had mostly recovered to at least 90% of their pre-Covid-19 manufacturing capacity, but we have no guarantee they will be able to continue operating at near-normal capacity, nor any guarantee we will be able to continue mitigating the Covid-19 supply and shipping challenges. While we were able to fulfill all endpoint IC orders and most systems orders in second-quarter 2020, and while we believe we have sufficient inventory to satisfy endpoint IC demand in third-quarter 2020, given the uncertainty associated with Covid-19, there can be no assurance that we will be able to continue satisfying demand for our products in a cost-effective or timely manner in third-quarter 2020 or beyond.

Covid-19 has had other impacts on our business, such as delaying our Impinj M700 production ramp by more than two months. Although the M700 was in production by the end of second-quarter 2020, we see reduced demand, relative to our expectations, due to the above-mentioned overall endpoint IC demand decline.

Most of our facilities and employees are based in Seattle, where government restrictions to slow Covid-19's spread have adversely impacted our business, albeit modestly. Nearly all our employees, other than those few whose essential functionality make it necessary to be in the office, are successfully working from home. We are striving to minimize Covid-19's impact on our operations. However, our first priority is, and will continue to be, our employees' health and safety. Covid-19 restrictions on travel have also adversely affected our business, again modestly, by slowing new-product launches and typical sales activities requiring travel. Similar to operations, there is no guarantee that Covid-19's impact on our employees and business activities will remain modest. The increase in remote work relating to Covid-19 may result in operational failures due to changes in our normal business practices and related governmental actions. If a natural disaster, power outage, connectivity issue, or other event occurred that impacted our employees' ability to work remotely, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time. The increase in remote working may also result in privacy, data security, and fraud risks, and our understanding of applicable legal and regulatory requirements, as well as the latest guidance from regulatory authorities in connection with Covid-19, may be subject to legal or regulatory challenge, particularly as regulatory guidance evolves in response to future developments.

Despite Covid-19, we continue investing in research and development and the long-term end-user opportunities RAIN offers. Going forward, depending on the business impact from Covid-19, we may choose to slow or suspend our investments, for example in research and development, potentially impairing our ability to meet our long-term strategic objectives.

While we expect the effects of Covid-19 and our responses to it to negatively impact our results of operations, cash flows and financial position, the uncertainty over its duration and the severity of its epidemiological, economic and operational impacts mean we cannot reasonably estimate the magnitude of its financial impact. The extent to which Covid-19 impacts our results will depend on future developments that are unpredictable, including actions we and others need to take to contain its spread and reduce its impact on public health.

For more information on Covid-19, please refer to Part II, Item 1A (Risk Factors) of this report.

Investing in Growth

We have invested and plan to continue investing in research and development to enhance and extend our platform, including enhancing existing products, introducing new products and tightening the platform linkages between our product offerings. Our focus today is enhancing and expanding our endpoint ICs, reader ICs, readers and gateways for platform deployments in retail, supply chain and logistics and other industries.

Most of our investments precede any sales benefit from the investment, and in some instances, we may never see a sales benefit. The potential causes of the latter are many, including the market not being receptive to our product or sales approach, late or failed product development, personnel departures or other causes. We sometimes enter into arrangements with end users, vendors or channel partners for them to fund a portion of our investment, but even in those instances the results of our investments remain uncertain, and in some instances we may be required to refund the investment if the development is unsuccessful or the market opportunity fails to materialize. In some instances, we delay or cancel investments without or until we obtain such funding. The outcome of any investment is almost always uncertain, and if our results do not meet our or your expectations then our operating results, profitability and stock price may be adversely affected.

While our long-term vision of investing for growth remains unchanged, Covid-19 introduces new uncertainty in our business. We continue to monitor the impacts of Covid-19 on our supply chain, market and opportunities and adjust our investment strategy as appropriate.

Market Adoption

Our financial performance depends on the pace, scope and depth of end-user adoption of our products in multiple industries, but especially in the retail industry which is our largest market. Covid-19 has had, and is expected to continue to have, a materially adverse impact on the retail industry. In addition, Covid-19 may accelerate a long-term shift in consumer behavior away from physical stores and that may adversely impact demand for endpoint ICs over the longer term. The extent and duration to which Covid-19 will materially impact the retail industry is unclear, as is the extent to which it will impact our product sales. Other industries that are potential future drivers of market adoption, have also been impacted by Covid-19, although the ultimate impact on RAIN adoption and on our business is unclear. For example, the aviation industry, which had proposed widespread luggage tagging, has been negatively impacted by Covid-19. However, shipping and logistics providers have experienced an increase in demand which could positively impact RAIN adoption. See the section captioned "—Covid-19" for additional information.

The pace, scope and depth of end-user adoption, even without the impact of Covid-19, remains uncertain, potentially causing large fluctuations in our operating results. For example, in 2015 and 2016 several major retailers and brand owners initiated deployments that significantly increased our endpoint IC sales, exceeding our expectations and those of our industry's analysts and lengthening our lead times. In 2017 we invested in internal endpoint IC inventory to reduce those lead times, meet forecasted demand and improve our ability to deliver in the event of continued demand growth. However, in second-half 2017 the endpoint IC growth rate slowed, which we believe was due to several factors including, but not limited to, delays in new deployments and in planned expansions at several large retailers. That decelerating growth rate engendered an endpoint IC channel inventory correction that negatively impacted our operating results for several subsequent quarters. In response, we reduced our internal endpoint IC inventory in second-half 2018 and throughout 2019.

Given the uncertainties in our market, we cannot assure you that adoption will continue, we will have appropriate product inventory, we will not experience future product inventory shortfalls or overages, or the extent to which Covid-19 impacts our business. We also cannot assure you that we will be able to maintain or grow the market share of any of our products, as a result of insufficient inventory, Covid-19, competitors copying our products, competition generally or for a host of other reasons, many of which our outside of our control.

Regardless of the uneven pace of retail and other industry adoption, we believe the underlying, long-term trend is continued RAIN adoption. We recently introduced, and in second-quarter 2020 began shipping to customers our new Impinj M700 endpoint IC which offers significant performance advantages that we believe will foster adoption. However, Covid-19 delayed our M700 rollout and adoption, and further delays in production or qualification may impact market share at these and other deployments in the near term.

We also believe that expanding retail deployments foster RAIN adoption in other markets. For example, our reader and gateway sales in second-half 2017 and our gateway sales in 2019 exceeded our expectations due to supply-chain end users deploying shipment-verification and asset-tracking use cases that demand real-time fixed reading. However, as noted below, at the current stage of RAIN adoption our revenue could decline on a quarterly or annual basis due to fluctuations caused by large-scale deployments by a limited number of large end users.

We sell our products through channel partners and distributors and have limited ability to determine end-user demand. As a consequence, we may incorrectly predict that demand or be unable to identify market shifts in a timely fashion, potentially affecting our business adversely. If RAIN market adoption, and adoption of our platform products specifically, does not meet our expectations or if we are unable to meet partner or end-user volume or performance expectations as a result of the impact of Covid-19 or otherwise then our operating results and growth prospects will be adversely affected. If we reduce prices to win opportunities, then our gross margins may be negatively affected. In contrast, if our endpoint IC, reader IC, reader module, reader, gateway or software sales exceed expectations, then our revenue and profitability may be positively affected.

Timing and Complexity of Customer Deployments

From 2010 to 2019, our endpoint IC sales volumes increased at a compounded annual growth rate of 28%, indicating growing adoption of RAIN-based solutions. However, the pace and scope of RAIN adoption has been uneven and unpredictable. For example, our endpoint IC unit sales volumes increased significantly in 2016, declined in second-half 2017 and in first-half 2018, returned to growth in second-half of 2018 and in 2019 (the latter albeit not at the same pace as in 2016), and then declined again in second-quarter 2020 due to Covid-19. Short-term demand will remain unpredictable in scope and timing. End users may eliminate or significantly reduce or delay spending on RAIN-based solutions to conserve cash in response to Covid-19. Longer term, we believe our opportunity and our market will continue to grow, but we cannot predict whether historical annual growth rates are indicative of the pace of future growth.

Further, although we promote our platform as an integrated offering, we sell our products individually, and end users often use only certain of our products. For any given end-user solution, whether an end user chooses to deploy our entire platform or only a portion will also affect our operating results.

Our systems business relies disproportionally on large-scale deployments at discrete end users. The timing of those large deployments causes large variability in our systems revenue. For example, we generated 14% of 2019 total revenue from a North American systems customer in connection with a project-based gateway deployment. If we are unable to replace project-based revenue from these discrete projects with new revenue streams, or if end users with sizable projects change or delay them without giving us adequate notice, we may experience significant fluctuation in revenue on a quarterly or annual basis. We anticipate that uncertainty to continue to characterize our business for the foreseeable future. Notably, Covid-19 has caused delays in some of our pending global system deployments as system integrators, value-added resellers and their related end users' business locations are temporarily closed, or work remotely, impacting our ability to replace project-based revenue from completed projects in a timely fashion.

Average Selling Price

Our product ASPs fluctuate based on competitive pressures and the discounting we offer to win opportunities, but generally decline over time. We expect that trend to continue. Historically, we have been able to implement manufacturing and quality improvements that effectively reduce the per-unit cost of most of our hardware products, as well as introduce newer and lower-cost products, but the timing of these cost reductions and product introductions fluctuates and may not materialize in any given quarter or year.

Seasonality

We typically renegotiate pricing with most of our endpoint IC customers with an effective date of the first quarter of the calendar year, reducing both revenue and gross margins in the first quarter when compared with prior periods. The impact tends to decline in subsequent quarters as we reduce costs and, to the extent we can migrate our customers to newer, lower-cost products, adjust product mix. Endpoint IC volumes also 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 than in the first quarter. We believe this seasonality is due to the availability of residual funding for capital expenditures prior to the end of many customers' fiscal years.

While, over the longer term, we expect these seasonal trends to continue, quarter-to-quarter variability in our revenue can be caused by a number of factors including uncertainty in demand and supply as a result of Covid-19, the timing of large deployments as well as supply constraints, any or all of which 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 the sections of this report captioned "—Covid-19" Part II, Item 1A (Risk Factors)

Inventory Supply

From time to time we experience inventory overages or shortages, either due to us mis-estimating customer or end-user demand, constrained supplier manufacturing capacity or product availability, fluctuations in our market or the global economy, changes in regulations or tariffs or for a host of other reasons. These inventory dynamics can impact some or all of our hardware products. High inventory levels can result in product obsolescence, increases in reserves or unexpected expenses that adversely affect our business. Low inventory levels can affect our ability to meet customer demand, lengthen lead times and potentially causing us to miss opportunities, lose market share or damage customer relationships, also adversely affecting our business. 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. Our existing ICs use 200mm and 300mm wafers, and some semiconductor industry analysts predict high 200mm wafer demand post Covid-19.

Results of Operations

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

	Three Months Ended June 30,			Six Months Ended June 30,		
(in thousands, except percentages)	2020	2019	Change	2020	2019	Change
Revenue	$ 26,457	$ 38,190	$ (11,733)	$ 74,279	$ 71,253	$ 3,026
Gross profit	$ 12,960	$ 18,416	$ (5,456)	$ 34,354	$ 34,289	$ 65
Gross margin	*49.0%*	*48.2%*	*0.8%*	*46.2%*	*48.1%*	*(1.9)%*
Loss from operations	$ (16,270)	$ (4,000)	$ (12,270)	$ (19,665)	$ (10,932)	$ (8,733)

Three months ended June 30, 2020 compared with three months ended June 30, 2019

Revenue and gross profit decreased due to lower systems and endpoint IC revenue. Gross margin increased primarily due to product mix within endpoint IC, partially offset by lower leverage from comparable overhead on decreased revenue. Loss from operations increased primarily due to decreased gross profit and increased operating expenses primarily due to the proposed litigation settlement and related costs, increased stock-based compensation expense and non-settlement related legal fees.

In second-quarter 2020, we incurred $5.4 million of settlement and related costs in connection with the proposed litigation settlements of the class-action and related derivative lawsuits.

For further information on the proposed settlement and related costs, please refer to Note 5 to our condensed consolidated financial statements included elsewhere in this report.

Six months ended June 30, 2020 compared with six months ended June 30, 2019

Revenue increased primarily due to higher endpoint IC revenue, partially offset by lower systems revenue. Gross profit remained comparable to the prior period with increased revenue partially offset by higher excess and obsolescence charges recorded in first-quarter 2020. Gross margin decreased primarily due to a $2.7 million excess and obsolescence charge recorded in first-quarter 2020. Loss from operations increased primarily due to increased operating expenses on comparable gross profit. The increase in operating expenses is primarily due to the proposed litigation settlement and related costs described above and increased stock-based compensation expense.

Revenue

	Three Months Ended June 30,			Six Months Ended June 30,		
(in thousands)	2020	2019	Change	2020	2019	Change
Endpoint ICs	$ 18,545	$ 23,704	$ (5,159)	$ 52,220	$ 45,549	$ 6,671
Systems	7,912	14,486	(6,574)	22,059	25,704	(3,645)
Total revenue	$ 26,457	$ 38,190	$ (11,733)	$ 74,279	$ 71,253	$ 3,026

We currently derive substantially all our revenue from sales of endpoint ICs, reader ICs, reader modules, readers and gateways. We sell our endpoint ICs primarily to inlay manufacturers; our reader ICs and reader modules primarily to OEMs and ODMs through distributors; and our readers and gateways to value-added resellers, or VARs, and system integrators, or SIs, primarily through distributors. We expect endpoint IC sales to represent a majority of our revenue for the foreseeable future.

The Covid-19 impact to worldwide economies and the retail industry in particular; our future supply-chain uncertainties; the fact that we sell primarily through distribution and are at least one step removed from end users; and a host of other related uncertainties which change near-daily, make it difficult to forecast our revenue at this time.

Three months ended June 30, 2020 compared with three months ended June 30, 2019

Endpoint IC revenue decreased $5.2 million, due primarily to a $7.2 million decrease in shipment volumes, the latter due primarily to $6.2 million in customer expedite requests from second to first-quarter 2020 due, in part, to concerns about potential supply disruptions related to Covid-19 as well as a decrease in volume due to Covid-19's negative impact on global retail apparel sales, which resulted in endpoint IC customer reschedule requests from second to third- and fourth-quarters 2020. This decrease was partially offset by a $2.1 million increase due to ASPs primarily related to higher product mix into industrial applications.

Systems revenue decreased $6.6 million, due primarily to decreases of $5.6 million in gateway revenue and $1.6 million in reader revenue, partially offset by a $633,000 increase in reader IC revenue. Gateway revenue decreased primarily due to decreased shipment volumes to a project-based deployment by a North American systems customer in the prior period; reader revenue decreased due to lower shipment volumes, in part caused by Covid-19 related delays in planned systems deployments; reader IC revenue increased primarily due to higher shipment volumes.

Six months ended June 30, 2020 compared with six months ended June 30, 2019

Endpoint IC revenue increased $6.7 million, due primarily to a $7.5 million increase in shipment volumes, partially offset by lower ASPs due to our annual price negotiations. The increase in shipment volumes was primarily due to growth in our customers' underlying business before Covid-19's negative impact on global retail apparel sales materialized in second-quarter 2020. We expect second-half 2020 endpoint IC sales to decrease over second-half 2019 as our customers work to adjust channel inventory levels as a result of Covid-19.

Systems revenue decreased $3.6 million, due primarily to decreases of $4.6 million in gateway revenue and $1.1 million in reader revenue, partially offset by a $1.7 million increase in reader IC revenue. Gateway revenue decreased primarily due to the project-based deployment described above; reader revenue decreased primarily due to lower shipment volumes, in part caused by Covid-19 related delays in planned systems deployments; reader IC revenue increased primarily due to higher shipment volumes.

For more information, see the sections captioned "—Factors Affecting Our Performance—Covid-19" and "Risk Factors—Covid-19 has adversely affected our business, and the magnitude and duration of future Covid-19 effects on our financial position, results of operations, cash flows and business prospects are uncertain."

Gross Profit and Gross Margin

	Three Months Ended June 30,			Six Months Ended June 30,		
(in thousands, except percentages)	2020	2019	Change	2020	2019	Change
Cost of revenue	$ 13,497	$ 19,774	$ (6,277)	$ 39,925	$ 36,964	$ 2,961
Gross profit	$ 12,960	$ 18,416	$ (5,456)	$ 34,354	$ 34,289	$ 65
Gross margin	49.0%	48.2%	0.8%	46.2%	48.1%	(1.9)%

Cost of revenue includes costs associated with manufacturing our endpoint ICs, reader ICs, reader modules, readers and gateways, including direct materials and outsourced manufacturing costs as well as associated overhead costs such as logistics, quality control, planning and procurement. Cost of revenue also includes charges for excess and obsolescence and warranty costs. Our gross margin varies from period to period based on mix of endpoint IC and systems revenue, underlying product margins driven by changes in ASPs or costs, as well as from inventory excess and obsolescence charges.

Three months ended June 30, 2020 compared with three months ended June 30, 2019

Gross profit decreased primarily due to lower systems and endpoint IC revenue. Gross margin increased primarily due to product mix within Endpoint IC, partially offset by lower leverage from comparable overhead on decreased revenue.

Six months ended June 30, 2020 compared with six months ended June 30, 2019

Gross profit remained comparable to the prior period as increased revenue was partially offset by higher excess and obsolescence charges recorded in first-quarter 2020. Gross margin decreased primarily due to the $2.7 million excess and obsolescence charges recorded in first-quarter 2020. The charges, which reduced the inventory value of the impacted products to zero, relate primarily to decreased demand for endpoint ICs and gateways specifically designed for European applications. This demand decrease was due to (1) the European Commission allocating additional RAIN spectrum in a new frequency band and (2) Covid-19's impact on EU businesses, the latter especially in the EU retail industry. We expect future demand to be met by newer endpoint IC and gateway products.

Operating Expenses

Research and Development

(in thousands)	Three Months Ended June 30, 2020	2019	Change	Six Months Ended June 30, 2020	2019	Change
Research and development	$ 10,661	$ 8,773	$ 1,888	$ 21,718	$ 17,334	$ 4,384

Research and development expense primarily comprises personnel expenses (salaries, benefits and other employee related costs) and stock-based compensation expense for our product-development personnel; external consulting and service costs; prototype materials; other new-product development costs; and an allocated portion of infrastructure costs, which include occupancy, depreciation and software costs. We expect research and development expense to increase in absolute dollars in future periods as we focus on new product development and introductions; however we will continue to monitor the impacts of Covid-19 on our business and may adjust our research and development investment strategy as appropriate.

Three months ended June 30, 2020 compared with three months ended June 30, 2019

Research and development expense increased $1.9 million, primarily due to increases of $903,000 in personnel expenses from increased headcount, $400,000 in stock-based compensation expense from higher headcount and an increased number of stock options and RSUs and $379,000 in external consulting fees.

Six months ended June 30, 2020 compared with six months ended June 30, 2019

Research and development expense increased $4.4 million, primarily due to increases of $1.8 million in personnel expenses from higher headcount, $1.4 million in stock-based compensation expense from higher headcount and an increased number of stock options and RSUs, $428,000 in product development costs and $402,000 in external consulting fees.

Sales and Marketing

(in thousands)	Three Months Ended June 30, 2020	2019	Change	Six Months Ended June 30, 2020	2019	Change
Sales and marketing	$ 6,123	$ 8,188	$ (2,065)	$ 13,613	$ 16,737	$ (3,124)

Sales and marketing expense primarily comprises personnel expenses (salaries, incentive sales compensation, or commission, benefits and other employee related costs) and stock-based compensation expense for our sales and marketing personnel; travel, advertising and promotional expenses; and an allocated portion of infrastructure costs, which include occupancy, depreciation and software costs. We expect sales and marketing expense to remain approximately constant on an absolute dollar basis, except for incentive sales compensation which fluctuates as a function of revenue. In addition, we will continue to monitor the impacts of Covid-19 on our business and may adjust our sales and marketing expense as appropriate.

Three months ended June 30, 2020 compared with three months ended June 30, 2019

Sales and marketing expense decreased $2.1 million, primarily due to decreases of $1.7 million in personnel expenses from lower headcount and lower commissions as a result of decrease and mix of revenue and $420,000 in travel expense due to Covid-19.

Six months ended June 30, 2020 compared with six months ended June 30, 2019

Sales and marketing expense decreased $3.1 million, primarily due to decreases of $2.9 million in personnel expenses due to lower headcount and lower commissions due to revenue mix and $616,000 in travel expense due to Covid-19.

General and Administrative

(in thousands)	Three Months Ended June 30, 2020	2019	Change	Six Months Ended June 30, 2020	2019	Change
General and administrative	$ 12,446	$ 5,455	$ 6,991	$ 18,688	$ 11,150	$ 7,538

General and administrative expense primarily comprises personnel expenses (salaries, benefits, and other employee related costs) and stock-based compensation expense for our executive, finance, human resources and information technology personnel; legal, accounting and other professional service fees; travel and insurance expense; and an allocated portion of infrastructure costs which include, occupancy, depreciation and software costs. We will continue to monitor the impacts of Covid-19 on our business and may adjust our general and administrative expense as appropriate.

Three months ended June 30, 2020 compared with three months ended June 30, 2019

General and administrative expense increased $7.0 million, primarily due to increases of $5.4 million in the proposed litigation settlement and related costs described above, $898,000 in non-settlement related legal fees, and $549,000 in stock-based compensation expense from an increased number of stock options and RSUs.

Six months ended June 30, 2020 compared with six months ended June 30, 2019

General and administrative expense increased $7.5 million, primarily due to increases of $5.4 million in the proposed litigation settlement and related costs described above, $1.2 million in stock-based compensation expense from an increased number of stock options and RSUs and $638,000 in non-settlement related legal fees.

Other Income, net

	Three Months Ended June 30,			Six Months Ended June 30,		
(in thousands)	2020	2019	Change	2020	2019	Change
Other income, net	$ 126	$ 309	$ (183)	$ 535	$ 630	$ (95)

Other income, net for the three and six months ended June 30, 2020 remained comparable to the prior periods.

Interest Expense

	Three Months Ended June 30,			Six Months Ended June 30,		
(in thousands)	2020	2019	Change	2020	2019	Change
Interest expense	$ 1,349	$ 421	$ 928	$ 2,661	$ 850	$ 1,811

Interest expense comprises primarily cash interest, amortization of debt issuance costs and debt discount on our long-term debt.

Interest expense increased $928,000 and $1.8 million for the three and six months ended June 30, 2020, respectively, primarily due to an increase in amortization of debt discount related to our subordinated convertible notes, or the 2019 Notes. For further information on the 2019 Notes, please refer to Note 6 to our condensed consolidated financial statements included elsewhere in this report.

Income Tax Expense

	Three Months Ended June 30,			Six Months Ended June 30,		
(in thousands)	2020	2019	Change	2020	2019	Change
Income tax expense	$ 41	$ 46	$ (5)	$ 69	$ 74	$ (5)

We are subject to federal and state income taxes in the United States and foreign jurisdictions. Income tax expense remained comparable for the periods stated above.

Non-GAAP Financial Measures

Our key non-GAAP 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 these measures provides useful information for period-to-period comparisons of our business to allow investors and others to understand and evaluate 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 similarly termed non-GAAP measures used by other companies.

Adjusted EBITDA

We define adjusted EBITDA differently in this report than we have previously, by excluding proposed litigation settlements of class-action and derivative lawsuits including related costs, such as that we incurred in second-quarter 2020. Our consequent definition of adjusted EBITDA is net income (loss) determined in accordance with GAAP, excluding, if applicable for the periods presented, the effects of stock-based compensation; depreciation; investigation costs; restructuring costs; settlement and related costs; other income, net; interest expense; loss on debt extinguishment; and income tax benefit (expense). We have excluded settlement and related costs because we do not believe they reflect our core operations and us excluding them enables more consistent evaluation of our operating performances. Excluding the settlement and related costs does not impact adjusted EBITDA previously reported for prior periods.

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

	Three Months Ended June 30,			Six Months Ended June 30,		
(in thousands)	2020	2019	Change	2020	2019	Change
Net loss	$ (17,534)	$ (4,158)	$ (13,376)	$ (21,860)	$ (11,226)	$ (10,634)
Adjustments:						
Other income, net	(126)	(309)	183	(535)	(630)	95
Interest expense	1,349	421	928	2,661	850	1,811
Income tax expense	41	46	(5)	69	74	(5)
Depreciation	1,126	1,262	(136)	2,294	2,417	(123)
Stock-based compensation	4,597	3,543	1,054	9,818	7,020	2,798
Settlement and related costs	5,359	—	5,359	5,359	—	5,359
Adjusted EBITDA	$ (5,188)	$ 805	$ (5,993)	$ (2,194)	$ (1,495)	$ (699)

Non-GAAP Net Income (Loss)

We define non-GAAP net income (loss) differently in this report than we have previously, by excluding proposed litigation settlements of class-action and derivative lawsuits including related costs, such as that we incurred in second-quarter 2020. Our consequent definition of non-GAAP net income (loss) is net income (loss) determined in accordance with GAAP, excluding, if applicable for the periods presented, the effects of stock-based compensation; depreciation; investigation costs; restructuring costs; settlement and related costs; amortization of debt discount related to the equity component of our convertible notes; and prepayment penalty on debt extinguishment. We have revised the prior period non-GAAP net income (loss) to conform to our current period presentation. Excluding settlement and related costs did not impact non-GAAP net income previously reported for prior periods.

GAAP requires that certain convertible debt instruments that may be settled in cash on conversion be accounted for as separate liability and equity components in a manner that reflects our non-convertible debt borrowing rate. This accounting results in the debt component being treated as though it was issued at a discount, with the debt discount being amortized as additional non-cash interest expense over the debt instrument term using the effective interest method. As a result, we believe that excluding this non-cash interest expense attributable to the debt discount in calculating our non-GAAP net income (loss) is useful because this interest expense is not indicative of our ongoing operational performance.

The following table presents a reconciliation of net loss to non-GAAP net income (loss):

	Three Months Ended June 30,			Six Months Ended June 30,		
(in thousands)	2020	2019	Change	2020	2019	Change
Net loss	$ (17,534)	$ (4,158)	$ (13,376)	$ (21,860)	$ (11,226)	$ (10,634)
Adjustments:						-
Depreciation	1,126	1,262	(136)	2,294	2,417	(123)
Stock-based compensation	4,597	3,543	1,054	9,818	7,020	2,798
Amortization of debt discount	886	—	886	1,740	—	1,740
Settlement and related costs	5,359	—	5,359	5,359	—	5,359
Non-GAAP net income (loss)	$ (5,566)	$ 647	$ (6,213)	$ (2,649)	$ (1,789)	$ (860)

Liquidity and Capital Resources

As of June 30, 2020, we had cash, cash equivalents and short-term investments of $120.9 million, comprising cash deposits held at major financial institutions and short-term investments in a variety of securities, including U.S. government agencies, treasury bills, corporate notes and bonds, commercial paper and money market funds. We had working capital of $150.8 million as of June 30, 2020.

Historically, we have funded our operations primarily through cash generated from operations and by issuing equity securities, convertible-debt offerings and/or borrowing under our prior senior credit facility. In 2020, our principal use of cash is capital expenditures and funding operations to capture our market opportunity.

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

Sources of Funds

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 pursue additional funding which may be in the form of additional debt, equity or equity-linked financing or a combination thereof. We can provide no assurance that any additional financing will be available to us on acceptable terms.

2019 Notes

In December 2019, we issued the 2019 Notes in an aggregate principal amount of $86.3 million. The 2019 Notes are our senior unsecured obligations. The 2019 Notes bear interest at a fixed rate of 2.00% per year, payable semi-annually in arrears on June 15 and December 15 of each year, beginning on June 15, 2020. The 2019 Notes will be convertible into cash, shares of our common stock or a combination thereof, at our election. The 2019 Notes will mature on December 15, 2026, unless earlier repurchased, redeemed, or converted in accordance with the terms of the indenture for the 2019 Notes.

The net proceeds from issuing the 2019 Notes were approximately $83.5 million after deducting fees and expenses. We used the net proceeds from issuing the 2019 Notes to pay the cost of the capped call transactions and repay our senior credit facility. We intend to use the remainder of the net proceeds for general corporate purposes.

For further information on the terms of this debt, please refer to Notes 6 to our condensed consolidated financial statements included elsewhere in this report.

Cash Flows

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

	Six Months Ended June 30,	
(in thousands)	2020	2019
Net cash provided by operating activities	$ 2,809	$ 1,841
Net cash provided by investing activities	24,935	426
Net cash provided by financing activities	2,846	2,356

Operating Cash Flows

For the six months ended June 30, 2020, we generated $2.8 million of net cash from operating activities. These net cash proceeds were primarily driven by $10.7 million of working capital contribution, partially offset by $7.9 million of a net loss adjusted for non-cash items. The working capital contribution was primarily due to higher cash collections in accounts receivable based on higher first-quarter 2020 revenue and an increase in accrued liabilities related to the proposed litigation settlement and related-costs, partially offset by higher inventory purchases.

For the six months ended June 30, 2019, we generated $1.8 million of net cash from operating activities. The net cash proceeds were primarily driven by $3.9 million of working capital contribution, partially offset by $2.1 million of a net loss adjusted for non-cash items. The working capital contribution was primarily due to lower cash usage in inventory purchases, partially offset by lower cash collections in accounts receivable due to the timing of when amounts came due.

Investing Cash Flows

For the six months ended June 30, 2020, we generated $24.9 million of net cash from investing activities. These net cash proceeds were primarily driven by investment maturities of $31.3 million, partially offset by investment and equipment purchases of $5.1 million and $1.2 million, respectively.

For the six months ended June 30, 2019, we generated $426,000 of net cash from investing activities. The net cash proceeds were driven by investment maturities of $37.8 million. These maturities were partially offset by investment and equipment purchases of $36.6 million and $799,000, respectively.

Financing Cash Flows

For the six months ended June 30, 2020, we generated $2.8 million of net cash from financing activities. These net cash proceeds primarily comprised $3.0 million from exercised stock options and our employee stock purchase plan.

For the six months ended June 30, 2019, we generated $2.4 million of net cash from financing activities. The net cash proceeds primarily comprised $4.0 million proceeds from term loans, net of debt issuance costs, and $2.9 million proceeds from exercised stock options and our employee stock purchase plan. These proceeds were partially offset by repayments of indebtedness of $4.2 million of principal under our senior credit facility.

Contractual Obligations

The following table reflects a summary of our contractual obligations as of June 30, 2020:

	Payments Due By Period				
(in thousands)	**Total**	**Less Than 1 Year**	**1-3 Years**	**3-5 Years**	**More Than 5 Years**
2019 Notes (1)	$ 97,463	$ 1,725	$ 3,450	$ 3,450	$ 88,838
Operating lease obligations					
Operating lease obligations	25,032	4,811	8,711	6,438	5,071
Sublease income	(3,691)	(1,393)	(2,298)	—	—
Net operating lease commitments	21,341	3,418	6,413	6,438	5,071
Purchase commitments (2)	11,169	11,169	—	—	—
Total	$ 129,973	$ 16,312	$ 9,863	$ 9,888	$ 93,909

(1) 2019 Notes include $11.2 million of interest payments.

(2) Purchase commitments consist primarily of non-cancelable commitments to purchase $10.1 million of inventory as of June 30, 2020, as well as non-cancelable software license agreements with vendors.

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

We have prepared our condensed consolidated financial statements in accordance with GAAP. Our 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 and assumptions. 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, 2019.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to market risks in the ordinary course of our business. Some of these risks are related to fluctuations in interest rates.

Interest Rate Risk

Under our current investment policy, we invest our excess cash in money market funds, U.S. government agency securities, corporate bonds and notes 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 $120.9 million as of June 30, 2020. Our investments are exposed to market risk due to the fluctuation in 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 a hypothetical 100 basis point increase in interest rates or a hypothetical decrease of 10% in the effective yield of our investments would have a material effect on our interest income, 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.

Our 2019 Notes have a fixed interest rate, thus a hypothetical 100 basis point change in interest rates would not impact our interest expense under the 2019 Notes.

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

We consider our foreign subsidiaries to be extensions of the U.S. company. The functional currency of our foreign subsidiaries is the U.S. dollar. Accordingly, gains and losses resulting from remeasuring transactions denominated in currencies other than U.S. dollars are included in other income, net on our condensed consolidated statements of operations. For any of the periods presented, we did not have material impact from exposure to foreign currency fluctuation. As we grow operations, our exposure to foreign currency risk will likely become more significant.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and our principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2020. 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 principal executive officer and principal financial officer concluded that our disclosure controls and procedures were effective at a reasonable assurance level as of June 30, 2020.

Changes in Internal Control over Financial Reporting

There were no changes that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting during the three months ended June 30, 2020.

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. Our 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 — OTHER INFORMATION

Item 1. 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 will have a material adverse effect on our financial position, results of operations or cash flows.

Stockholder Litigation

Between July 2018 and June 2020, four class action complaints for violation of federal securities laws (one of which was subsequently voluntarily dismissed by the plaintiffs) and three shareholder derivative actions were filed against us and certain of our officers and, in the derivative actions, against certain of our directors. For further information on these complaints, please refer to Note 5 of our condensed consolidated financial statements included elsewhere in this report.

Patent Litigation

On June 6, 2019, we filed a patent infringement lawsuit against a competitor, NXP, USA Inc., and on October 4, 2019, NXP USA, Inc. and its parent NXP Semiconductors N.V., filed a patent infringement lawsuit against Impinj. The outcome of this patent litigation remains uncertain, and we may file additional lawsuits against NXP USA and/or its parent or they may file additional lawsuits against us. For further information on these lawsuits, please refer to Note 5 of our condensed consolidated financial statements included elsewhere in this report.

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 materially impacted. 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

Covid-19 has adversely affected our business, and the magnitude and duration of future Covid-19 effects on our financial position, results of operations, cash flows and business prospects are uncertain.

Covid-19 has already created significant worldwide economic volatility, uncertainty and disruption, and these effects are highly likely to persist for some time. Covid-19 has already, and will likely continue to, adversely affect our financial position, results of operations, cash flows and future business prospects. Our Covid-19 risks include but are not limited to:

- decreased product demand given the general decline in business activity globally, particularly in the retail industry, as well as overall delays in RAIN market adoption;
- decreased visibility into market demand and consequent challenges in effectively managing our inventory;
- partner-requested preordering or rescheduling as a result of supply concerns which could increase channel inventory;
- decreased gross margins due to increased manufacturing and shipping costs and increased excess and obsolescence charges;
- increased bad-debt expense and reduced cash flow as customers and end-users delay or default on payments;
- work and shipping-related restrictions affecting key suppliers' ability to produce, process and deliver our products;
- increased operating costs such as those associated with work-from-home edicts and increased legal and regulatory demands;
- delays in customer pilots which could delay project-based deployments;
- partner and/or end-user bankruptcies or defaults which could reduce demand for our products worldwide or supplier bankruptcies which could reduce our ability to meet customer demand;
- delays in research and development efforts which could delay new product introductions or product enhancements;
- inability to engage in in-person sales and market activities, which could reduce our ability to effectively sell our products and drive future demand;
- cost-reduction initiatives, such as lay-offs and furloughs; and
- maintaining employee engagement and productivity in a prolonged work-from-home environment.

The extent to which any or all of these risks materially and negatively affect us, and the duration or those impacts, are largely beyond our control. They will depend on the resiliency of the global economy and on actions taken or not taken by key players in the global economy, including governments, financial and health organizations, businesses and consumers as a result of, and in response to, Covid-19.

The extent of RAIN market adoption is uncertain. If RAIN market adoption does not continue to develop, or develops slower 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 our 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 endpoint IC adoption accelerated rapidly in 2016, which resulted in longer lead times. 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 second-half 2017 and early 2018, the growth rate in endpoint IC shipments decreased relative to 2016, which we believe was due to multiple factors including, but not limited to, delays in new deployments and in planned expansions at several large retailers. In first-quarter 2020, we saw another endpoint IC demand increase, we believe in part due to customer concerns about global supply in light of Covid-19. We did not see that demand increase continue into second-quarter 2020, but instead saw demand decline as our inlay partners saw their inlay demand decline and began reducing the endpoint IC inventory they built in first -quarter 2020. You should expect Covid-19 to impact future demand for endpoint ICs in ways we cannot anticipate today.

The pace of RAIN adoption depends on prospective customers' knowledge of our products and our ability to convey to them the value of using our RAIN platform over other technologies. 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 our 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 products and solutions 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 product demand. Our failure to accurately forecast demand, particularly when introducing new products, may cause us to experience excess product inventory or shortages for sale.

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

Our financial performance depends on the pace, scope and depth of end-user adoption of our products in multiple industries, especially in the retail industry, which is our largest market and which we believe has been a leading indicator of overall RAIN market adoption. Retailers that have a primarily physical presence in the marketplace have experienced financial stress in recent periods. Many of these retailers have deployed RAIN to improve their 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. Covid-19, which has caused widespread store closures, has had, and is expected to continue to have, a materially adverse impact on the retail industry. In addition, Covid-19 may accelerate a long-term shift in consumer behavior away from physical stores which may adversely impact demand for our products over the longer term. Further, many companies have announced plans to reduce or defer capital expenditures in response to Covid-19-related business impacts. The extent and duration to which Covid-19 will materially impact the retail industry is unclear, as is the extent to which it will impact our product sales.

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. 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 business, 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 in supply chain and logistics, aviation and automotive. Many of these industries, and aviation in particular, have been materially and adversely impacted by Covid-19. The aviation industry has experienced a precipitous drop in fliers which has resulted in significant financial stress. If we fail to make our products and platform an easy-to-deploy, economical solution for use cases in these sectors, or if participants in these sectors delay or forgo RAIN investments in response to Covid-19 or otherwise, 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 $21.9 million for the six months ended June 30, 2020 and an accumulated deficit of $284.6 million as of June 30, 2020. Our ability to regain or sustain profitability depends on numerous factors, many of which are out of our control, including continued RAIN adoption and maintaining or growing our market share. We expect significant expenditures to support operations, product development and business and headcount expansion in sales, engineering, and marketing and may, for periods of time, choose to invest more in the opportunity in the short term to grow the market and our market share, to reduce costs, to improve our efficiencies or to shorten our supply chain, over a longer term. If we fail to increase our revenue or manage our expenses, or if our short-term investments in growing the market or our market share do not succeed, we may not attain 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, large and evolving, predicting its growth rate and ultimate 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 value our future prospects and forecast our quarterly or annual performance. Moreover, even 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 a product mix shift negatively, the trading price of our common stock could be adversely affected.

Historically, we have had limited success in accurately predicting future sales of our products and platform for several reasons. End users drive demand for our products, but we sell nearly all our products through channel partners so our ability to determine and forecast end-user demand is limited. We rely on our channel partners to integrate our RAIN-based systems products with end-user information systems and this integration has been uneven and unpredictable in scope, timing and implementation. Also, RAIN-based systems in general often involve time-consuming proofs-of-concepts and other time-consuming steps such as designing and implementing new business processes, which make sales of our system products difficult to forecast. 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.

Our history in recent years reflects the volatility of our sales and limitations in our ability to accurately forecast them. 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 end-user deployments. However, in part of 2017 and 2018, the pace of growth in endpoint IC unit-volume shipments decreased relative to 2016, which we believe was due to multiple factors including, but not limited to, delays in new deployments and in planned expansions at several large retailers as well as a correction in our endpoint IC channel inventory. Due to shorter lead times for our endpoint ICs in 2018 and 2019 relative to prior years, we were, prior to Covid-19, increasingly receiving orders and shipping the ordered products within the same quarter. Shortened lead times decreased our ability to predict both optimal inventory and order volume for a quarter. Additionally, customer orders for readers and gateways were generally weighted toward the end of a quarter. Covid-19 has recently introduced even greater uncertainty as the business impact of the pandemic is unprecedented and its full scope and duration are inherently unpredictable.

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.

Numerous 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:

- the impact of Covid-19 on macroeconomic conditions, our business and our customers, end-users, suppliers and other business partners;
- 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 availability or supply of our products;
- variations in the quality of our products and return rates;
- delays in new-product introductions;
- decreases 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 to 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 and negatively affect our operating results, 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 endpoint ICs, NXP and Alien; in reader ICs, ST, Phychips, Iotelligent and MagicRF; in readers and gateways, Alien and Zebra; and in software, Zebra. Our channel partners, including our OEMs, ODMs, distributors, SIs, VARs and software solution partners may choose to 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. Companies in adjacent markets or newly formed companies may decide to enter our market, particularly as RAIN adoption grows. Further, the Chinese government has made development of the Chinese semiconductor industry a priority, potentially increasing competition for us globally while possibly restricting our ability to participate in the Chinese 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 RFID, 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, consequently, maintain multiple RAIN product providers. Consequently, they tend to avoid purchasing exclusively from us or promoting our 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

In short, as the RAIN market develops, we will face ever increasing competition from new or newly enhanced products from our existing competitors, or from entirely new competitors in our market. These competitors may have, or may develop, processes or product designs that will enable them to offer more competitive products 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.

We, and many of our customers and end users of our products, including many significant retailers, are vulnerable to economic downturns and have had difficulty in the past accurately forecasting and planning future business activities. A downturn in the retail industry could disproportionately affect us because retail comprises a significant portion of the RAIN end market and demand. Retail store shutdowns due to Covid-19 have already reduced demand for our products worldwide, and that impact may continue for the foreseeable future.

The economic downturn associated with Covid-19 presents an unprecedented challenge. It has already reduced demand for certain endpoint IC and gateway products we previously developed and built for the EU retail market. That impact, compounded by the expansion of EU spectrum into a new band, caused us to take a $2.7 million one-time excess and obsolescence charge in first-quarter 2020. We expect future demand, when it returns, to be met by newer endpoint ICs and gateways.

Volatile economic conditions in the near and medium term could also cause our customers or end users to reduce their capital-expense budgets, which could slow RAIN adoption and delay deployment of our products, thereby decreasing opportunities and sales. We cannot predict the timing, strength or duration of any economic slowdown or recovery, whether global, regional or within specific markets, as a result of Covid-19 or otherwise. If the global economy and markets in which we operate worsen, our business will likely be materially and adversely affected.

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, and we do not control our manufacturers' or subcontractors' ability or willingness to meet our supply requirements. Currently, all our endpoint IC wafers are manufactured by TSMC, and primarily post-processed by our subcontractor Stars; all our reader IC wafers are manufactured by TowerJazz; all our modules are manufactured by Stars and MTI; and all our readers and gateways are manufactured by Plexus or Computrol. We also use subcontractors for post-processing, assembly and testing.

Currently, we do not have long-term supply contracts with TSMC, TowerJazz, MTI, Plexus or Computrol, 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 for any reason and reduce deliveries to us on short notice, negatively affecting our ability to secure enough product for sale.

Some components of our products have longer lead times and 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 and on an assumed level of production that may prove to be inaccurate. If we inaccurately forecast this customer demand, or if production levels are constrained for any reason, 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 or suffer inventory shortages.

For a variety of reasons, manufacturing capacity may not be available when we need it or at reasonable prices, which may result in us not being able to satisfy demand for our products fully or may distort demand. 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. Some semiconductor industry analysts predict high 200mm wafer demand again in 2021. 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 customer demand, causing some customers to purchase competing products even as we increased production. As yet another example, in 2020, the Malaysian factories that produce our readers and gateways and post-process certain of our endpoint ICs were shut down for approximately three weeks due to Covid-19-related public health measures. These kinds of product shortages may result in decreased sales and possible market share losses as our customers purchase competitive products, or alternatively, artificially inflated sales in near-term periods as customers overbuy products and sales declines in future periods as they 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 we 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 did 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 excess inventory or obsolescence, our operating results may be adversely affected.

Covid-19 has caused travel and work restrictions worldwide and the supply of some of our products is, and remains, disrupted. Moreover, shipping services have been adversely affected in most markets, reducing our ability to obtain timely delivery of products at reasonable cost. We have worked, and are continuing to work, to mitigate these disruptions particularly with respect to our products in highest demand, but the scope and duration of these disruptions are unpredictable and supply disruptions could materially and negatively affect our operating results and business performance.

If our suppliers fail to manufacture our products at reasonable prices or with satisfactory quality levels, then our ability to bring those products to market and our reputation could suffer. If supplier capacity diminishes, whether from closures, bankruptcy, capacity allocation, in response to Covid-19, catastrophic loss of facilities or otherwise, we could have difficulty fulfilling orders, our revenue could decline and our growth prospects could be impaired. We anticipate needing 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 products.

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 services. We commit significant resources to developing these new products and services while improving performance, reliability and reducing costs. Because our products are often used in, and incorporated into, complex business processes and use cases, introduction of our new products and services may take time to be successful or may not succeed at all.

For example, we are investing substantial resources to develop and enhance every layer of our platform. The market for many of our products is nascent, and we need to create market awareness to drive end-user adoption. Creating market awareness includes promoting our products to meet end-user needs and solve end-user problems. Our efforts have been, and may continue to be, hampered by Covid-19-related work and travel restrictions. We may be late in delivering or improving our products to meet our partners' or end users' needs. We may also not adequately solve the problems that end users encounter. We believe we must continue investing significant resources to maintain our competitive position. Still, the success of a new or enhanced product or service is impacted by accurate forecasts of long-term market demand, which is uncertain. We may also fail to anticipate or meet market requirements for new features and functionality. By focusing on certain new products and services, we may miss opportunities for other products and services that may be more widely adopted.

For example, introducing new endpoint ICs may take longer than we expect or may cost more than we expect. Inlay partners may face complications or delays qualifying inlays incorporating our new endpoint ICs with organizations, such as the ARC Program at Auburn University as discussed below, that certify inlays for end-user deployments. Inlay partners may also encounter issues incorporating our new endpoint ICs into their production processes and may see slower-than-expected adoption by end users. We may incur higher testing and manufacturing costs when introducing a new endpoint IC than we anticipated, which could adversely affect our gross margins. Finally, widespread use of new ICs can expose performance anomalies or incompatibilities with existing devices or systems that can require design modifications that can slow production or introduction of new ICs or make them more expensive to produce or introduce. Depending on the scale of these product introduction issues, the success of the product could be adversely affected, and consequently, our business and financial performance could be harmed.

Recent Covid-19 related work-at-home restrictions have affected our ability to pursue research and development efforts at a normal pace and have delayed new-product developments and enhancements. Although our newest endpoint IC family, the Impinj M700, was in production by the end of second-quarter 2020, Covid-19 delayed the M700's production ramp by more than two months. These delays negatively affected our business and financial performance, and may materially and negatively affect our business and financial performance in the future.

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 we may not succeed in licensing or otherwise acquiring 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 could fail. In addition, our guidance to business-analytics tool providers for integrating our products with their tools could prove ineffective.

Solution providers and SIs are essential to the RAIN market by providing deployment 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 SIs 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 SIs adequately, or if deployments of 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 OEMs and ODMs. In 2019, sales to tag OEMs Avery Dennison and Smartrac accounted for 19% and 12% of our total revenue, respectively. In March 2020, Avery Dennison closed its acquisition of Smartrac's transponder, or RFID inlay, segment. The consequent sales concentration to a smaller number of tag OEMs lowers our bargaining power and increases the risk that our pricing or sales could decline based on aggressive pricing or sales measures taken by our competitors or our own failure to compete effectively.

We sell our reader ICs and reader modules to reader OEMs and ODMs, and our readers, gateways and software to VARs and SIs, primarily through distribution. 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. For example, Covid-19 has caused delays in some of our pending system deployments as SIs and VARs and their related end-users' business locations are closed as a result of government travel and business restrictions, impacting our ability to replace project-based revenue from completed projects.

We attempt to diversify our partner base by pursuing orders from smaller partners, adding new partners and increasing end-user demand for our products. We may not succeed in doing so. The number of tag OEMs may also continue to decrease by consolidation or otherwise. Even if we succeed 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 users, 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. If our reader IC or reader module OEMs are unable to obtain components for products in which our products are included, our product sales could be adversely affected.

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.

We engage with large enterprises to adopt our RAIN solutions in large projects that make our revenues and operating results more volatile than they would be without these large projects. These large projects, often involving sizable purchases of our readers and gateways, are often discrete deployments that can result in significant sales for periods of time. For example, we generated 14% of 2019 total revenue from a North American systems customer. If we are unable to replace project-based revenue from these discrete projects with new revenue streams, or if end users with sizable projects change or delay them without giving us with adequate notice, our sales could decline significantly from period to period and harm our stock price as a result.

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 partners fail. Further, faulty or negligent implementation and installation of our products by SIs may harm our reputation.

Because we fulfill through channel partners, our ability to affect or determine end-user demand is limited.

End users drive demand for our products but 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 products. If our distributors, SIs, VARs or software solution providers are unable to sell enough 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, our operating results may suffer if our efforts towards developing 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 ASP, 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-user demands or to respond to market pressure from our competition. For example, during the second half of 2017, competitive pressures led to larger ASP declines for our endpoint ICs than we saw in previous 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. New market requirements can render old products uncompetitive for new opportunities. 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 may not be able to maintain our historical gross margins. We generate a majority of our revenue from endpoint IC sales, which have lower gross margins than our other products. If endpoint IC revenue increases as a percentage of total revenue, then our company-wide gross margin will decline. In addition, endpoint IC gross margins are affected by product mix, which can fluctuate based on competitive pressures and end-user demand. A shift in sales mix away from our higher margin products to lower margin products, in particular for our endpoint ICs, will adversely affect our gross margins. As the market for our endpoint ICs matures, we experience price erosion which will adversely affect gross margins if we are not able to realize cost reductions or introduce or shift towards higher-margin ICs. 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 products 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 endpoint IC demand – if demand declines then our business and operating results will be adversely affected. In addition, the continued adoption of and demand for our existing endpoint ICs, as well as for our new endpoint ICs, derives in part from our ability to continually innovate and to demonstrate the benefits of using our endpoint ICs with our reader ICs and reader 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 users 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, environments with certain physical characteristics or with radio-frequency interference may negatively affect gateway performance and our ability to track or locate items. 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 when our products are combined with or incorporated into products from other vendors, such our tag OEMs using our endpoint ICs with their antennas, or our reader partners using our reader ICs or reader modules in their readers. We may have difficulty identifying and correcting the 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 production, 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 results, customer relationships, reputation and prospects. Also, we assert that our products conform to the Gen2 protocol. Compatibility issues between our products and the protocol, or among different products that each nominally conform to the protocol, 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 performance criteria established by the end user or customer. If we fail to develop new products that adequately or competitively address the needs of end users or customers, 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.

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, 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 products, including our endpoint ICs have been or will be copied by competitors. We take appropriate and feasible measures to protect our intellectual property rights. However, we cannot be sure that we will be able to prevent such conduct by simply enforcing, or threatening to enforce, those rights, particularly against competitors who may have more financial and other resources to deploy against us.

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. 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 and have a small number of foreign patent applications and issued and allowed foreign patents. Regardless, some of our products and technologies may not be covered adequately by any patent, patent application, trademark, copyright, trade secret or domain name. Also, 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.

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 can or 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.

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

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, which could, in turn, decrease revenues and increase 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 litigation outcomes are uncertain, we could lose in our enforcement action or weaken our intellectual property in the litigation process. 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. 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 those rights over time.

In June 2019 we filed a filed a patent infringement lawsuit against NXP USA, Inc., a Delaware corporation and a subsidiary of NXP, in the U.S. District Court for the Northern District of California. Our complaint alleges that certain NXP endpoint ICs infringed and continue to infringe numerous U.S. patents we own. We are seeking, among other things, past damages, including lost profits, and no less than a reasonable royalty; enhanced damages for willful infringement; and reasonable attorneys' fees and costs for infringement of each of the asserted patents. We are also seeking an injunction against NXP making, selling, using, offering for sale or importing an endpoint IC NXP introduced in 2017. In response, NXP asserted various affirmative defenses and various counterclaims including inequitable conduct, fraudulent concealment, breach of contract and promissory estoppel. Their counterclaims allege that we violated purported commitments to GS1 EPCglobal. NXP seeks damages and injunctive relief in connection with its counterclaims. In October 2019, NXP USA, Inc. and NXP filed a patent infringement lawsuit against us in the U.S. District Court for the District of Delaware, which we have moved to transfer to the U.S. District Court for the Western District of Washington. In February 2020, NXP filed *inter partes* review, or IPR, petitions with the Patent Trial and Appeal Board for the U.S. Patent and Trademark Office against all of the patents we accuse NXP of infringing in our Northern District of California case and two additional patents. If we are unsuccessful in prosecuting our claims against NXP or in defending NXP's claims against us, or to the extent we cannot maintain the validity and enforceability of our patents in IPRs or otherwise, we could see a material adverse effect on our business, results of operations and financial condition. Regardless of the outcome, our lawsuit against NXP may increase our expenses, distract management and other key employees, negatively impact relationships with other participants in our supply chain or with customers and could result in retaliatory claims against us.

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. Moreover, the agreements we have entered into may not 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 also 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 extra risk. The intellectual property protection in countries where our third-party contractors operate is weaker than in the United States. If the steps we have taken and the protection provided by law do not adequately safeguard our intellectual property rights then we could suffer lost profits due to sales of competing products that exploit our intellectual property rights.

We may assert or face claims of intellectual property infringement which could be time consuming, costly to prosecute, 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 received in the past, and may receive in the future, invitations to license patent and other intellectual property rights to technologies that could be 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 related to their RAIN usage. We believe those 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. The licensed Round Rock patents were all expired by the end of 2019. However, 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.

We may also be forced, or choose, to take action to protect our own intellectual property against infringement by others. Our actions could materially and adversely affect RAIN adoption as well as our own operating and growth prospects. For example, in June, 2019 we filed a patent infringement lawsuit against NXP USA, Inc., a Delaware corporation and subsidiary of NXP, in the U.S. District Court for the Northern District of California and in October 2019, NXP USA, Inc. and NXP filed a patent infringement lawsuit against us in the U.S. District Court for the District of Delaware. For more information, see "—If we are unable to protect our intellectual property, our business could be adversely affected."

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. These damages could be sizable and disproportionate to the business derived from the accused channel partners or end users. 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 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, and because our market is growing and changing rapidly, we have limited or uncertain 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 product types our visibility into the sales and deployment cycle lengths is even more limited; inasmuch as these products are elements of 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. administration's priorities or initiatives, or the U.K.'s departure from the EU could have a material adverse effect on us.

The current U.S. administration has pursued trade policy that is starkly different from past administrations. Its actions include withdrawing the United States from negotiations for the TPP; renegotiating NAFTA; announcing and imposing tariffs on a wide variety of trading partners including, as of the date of this report, tariffs on up to $550 billion of goods imported into the United States from China; and restricting or proposing restrictions on free trade generally as well as on 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 U.S. products, could materially affect our business or the businesses of our customers or end users, which in turn could result in weakening demand by our customers or end users for our products. 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, or to the extent they increase efforts by other countries to promote its own industries such as the Chinese government's efforts to promote China's domestic semiconductor industry, the effects could materially affect our business or the businesses of our customers or end users in many ways, only some of which we can identify as of the date of this report.

In August 2018, the United States imposed tariffs on products manufactured in China and although a preliminary trade agreement between the United States and China was signed in early 2020, certain tariffs remain as negotiations between the countries continue. Current U.S. tariffs affect certain pre-Monza R6 endpoint IC SKUs that our inlay partners import into, and process in, the United States, representing a small portion of our current endpoint IC sales. Regardless, in general, the imposition of import tariffs by the current U.S. administration could adversely affect our business.

In June 2016, the United Kingdom held a referendum and voted in favor of leaving the European Union or EU, and in January 2020, the United Kingdom officially left the EU, with a transitional period scheduled to end on December 31, 2020. The United Kingdom's departure from the EU and ongoing negotiation related to the United Kingdom's future trade and other relationships with the EU have 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-user or channel-partner demand and product mix, or unexpected external events, could negatively affect our inventory levels, sales and operating results.

We have limited ability to accurately plan purchases or manufacturing because lead times for our products can be lengthy and because our ability to accurately forecast near-term product demand is limited, potentially causing us to have either excess or inadequate inventory, to lose sales, or to reduce our profit margins. High inventory levels and potential obsolescence could result in unexpected expenses or increases in reserves that could adversely affect our business, operating results and financial condition. Low inventory levels could cause us to lose sales, market share or damage our customer relationships.

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 before we receive purchase orders. However, many of our channel partners have difficulty accurately forecasting end-user demand for our products and the timing of that demand. Our channel partners can also cancel purchase orders or defer product shipments, in some cases with little or no advance notice to us. 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. We also sometimes receive soft commitments for large orders which do not materialize. We have additional uncertainty from our competition’s business practices and from unanticipated external events, such as changes in regulatory standards, all of which can adversely affect demand and consequently our inventory levels, sales and operating results.

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 expand our international operations.

In 2019, we derived 67% of our total revenue 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, including, for example, global and regional economic disruptions caused by Covid-19;
- political uncertainty, strife, unrest, or conflict, including, for example, the United Kingdom’s departure from the EU and political unrest in Hong Kong;
- 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 U.S. Foreign Corrupt Practices Act of 1977, as amended, or FCPA, and the United Kingdom Bribery Act of 2010, or U.K. Bribery Act; and
- regulations, and changes thereof, relating to data privacy, cybersecurity, and the unauthorized use of, or access to, commercial and personal information, particularly in Europe.

Various foreign regulatory or governmental bodies may issue rulings that invalidate prior laws, regulations, or legal frameworks in ways that may adversely impact our business. For example, the European Union Court of Justice 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. The EU-U.S. Privacy Shield that EU and U.S. authorities subsequently adopted in 2016, providing a mechanism for companies to transfer EU personal data to the United States, was also invalidated by the European Union Court of Justice in July 2020. As another example, the European Commission adopted the General Data Protection Regulation, or GDPR, which became effective on May 25, 2018. The GDPR imposes more stringent data-protection requirements than the former regulatory regime in the EU and provides for greater penalties for noncompliance of up to the greater of 4% of worldwide annual revenue or €20 million. Based on continuingly evolving standards, there remains significant regulatory uncertainty surrounding data transfers from the European Economic Area to the United States. In China, we are monitoring legal and government advisory developments regarding the Chinese Cybersecurity Law and Draft Cybersecurity Review Measures for impacts to our business related to cross-border transfer limitations and evolving privacy, security, or data protection requirements.

Additionally, the United Kingdom has enacted the Data Protection Act of 2018 that substantially implements GDPR, and has made statutory amendments to the Data Protection Act that further align it with the GDPR, but as of the date of this report it remains uncertain how data protection laws or regulations in the United Kingdom will develop in the medium to long term and how data transfers to and from the United Kingdom will be regulated following the December 31, 2020 expiration of a transition period following the UK’s exit from the EU. This uncertainty with regard to data transfers between the UK, the EU and other jurisdictions could require us to further change the way we conduct our business and transmit data between the U.S., the UK, the EU, and the rest of the world. Likewise, the California Consumer Privacy Act of 2018, or the CCPA, became effective on January 1, 2020. The CCPA imposes stringent data privacy and data protection requirements for certain data of California residents, and provides for noncompliance penalties of up to $7,500 per violation. Many aspects of the CCPA and its interpretation and enforcement remain unclear as of the date of this report. The effects of this legislation are potentially far reaching and may require us to modify our data-processing practices and policies and to incur substantial costs and expenses in an effort to comply.

We opened an office in Shanghai, China in 2011. In addition to the risks listed above, our China operations expose us to risks associated with Chinese laws and policies governing Chinese operations and also to U.S. laws and regulations relating to foreign trade and investment, such as those described under the caption “—We are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in international markets.” To date, legal, policy or regulatory changes have not had a material adverse effect on our business or financial condition, but they may 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.

Our failure to comply with anti-corruption and anti-bribery laws related to 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 from 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 controls. Under 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 intermediaries or our solution providers, SIs, OEMs, ODMs, VARs, distributors, tag manufacturers or other partners fail to comply with FCPA or similar legislation, government authorities in the United States and elsewhere could seek to impose 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 FCPA and the U.K. Bribery Act. We intend to increase our international sales and business in China and, as such, our risk of violating laws such as the FCPA or U.K. Bribery Act also increases.

We have limited resources to market, sell and support our products and services abroad and may not be able to maintain or increase international 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. 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 then 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. For other worldwide jurisdictions, we generally report our taxable income 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 us introducing new products in international markets, prevent our customers from using our products internationally or, in some cases, prevent the export or import of our products to or from certain countries altogether. The U.S. government has imposed significant tariffs on a variety of items imported from China. China has responded by imposing significant tariffs on a variety of items imported from the United States. Such tariffs could have a material impact on our product costs and decrease our ability to sell our products to existing or potential customers and harm our ability to compete internationally. Further, it is possible that additional sanctions or restrictions may be imposed by the U.S. government on items imported into the United States from China and any such measures could further adversely affect our ability to sell our products to existing or potential customers and harm our ability to compete internationally. 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, adversely affecting our business and results of operations.

Instability or deterioration in the political, social, business or economic conditions in key production jurisdictions could harm our business, financial condition and operating results.

We outsource manufacturing and production of our hardware products to suppliers in a limited number of jurisdictions, some of which experience significant and abrupt political, social, business or economic change. These jurisdictions include Thailand, Malaysia, Taiwan and China, which have experienced significant change in political, social, business or economic conditions in the past and may experience them in the future. Some of these jurisdictions have also experienced, and may continue to experience, intermittent or sustained mandatory shutdowns or other restrictions to combat Covid-19.

For a non-Covid-19 example, we post-process many of our IC wafers, including testing, dicing and other wafer operations, using subcontractors in Thailand, which has experienced ongoing political and social upheaval over the past two decades.

Deterioration in the political, social, business and economic conditions in any jurisdictions in which we have significant suppliers could slow or halt product shipments or disrupt our ability to test or post-process products. In such an eventuality, we could be forced to transfer our manufacturing, testing and post-processing activities to more stable, and potentially more costly regions or find alternative sources. Any such transfer could disrupt our operations for an extended period of time, all of which could harm our business, financial condition and operating results.

Our business operations could be disrupted by natural disasters.

A pandemic, earthquake, fire, flood, or other natural or manmade disaster could decrease demand for our products, disable our facilities, disrupt operations or cause catastrophic losses. In first-half 2020, Covid-19 caused some of our suppliers to temporarily shut down, operate at reduced capacity, or both. By June 2020, our suppliers had mostly recovered to at least 90% of their pre-Covid-19 manufacturing capacity, but we have no guarantee they will be able to continue operating at near-normal capacity, nor any guarantee we will be able to continue mitigating the Covid-19 supply and shipping challenges. Moreover, while our M700 endpoint ICs was in production by the end of second-quarter 2020, Covid-19-related restrictions on our suppliers and inlay partners delayed availability of inlays incorporating our M700 endpoint ICs by over two months. Most of our facilities and employees are based in Seattle, where the government has imposed restrictions designed to slow the spread of Covid-19 and which have disrupted our normal operations.

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 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 pandemics, earthquakes, floods or other disasters.

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

Various intellectual property license agreements give us access to the patents and intellectual property of others, for example to necessary intellectual property in the Gen2 protocol. We have licensed some of our patents and intellectual property to others, for example for our customers to practice their business using our products, and pursuant to agreements we entered into in connection with us participating in the development of GS1 EPCglobal protocols and ISO standards. For the latter, in the course of us participating 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. Similarly, in the course of us participating in the development of ISO standards, we have agreed to license on a RAND basis those of our patents that are necessarily infringed by the practice of certain ISO standards. Because it may not be clear whether a member's intellectual property is necessary to the practice of a protocol, disputes could arise among members, resulting in our inability to receive a license on royalty-free or RAND terms. Further, some GS1 EPCglobal members declined to license some of their intellectual property under royalty-free terms, instead demanding reasonable and nondiscriminatory, or RAND, terms. Disputes or confusion may arise about whether we may invoke our necessary intellectual property if those 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 also 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 current and future licenses will not be used 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 nonnegotiable 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.

Privacy 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 potentially collecting personally identifiable information or personal data, tracking consumers, stealing identities or causing other issues relating to privacy or data protection. 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 or are perceived to have occurred, 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 possible to embed computer viruses or other malicious code into endpoint ICs, reader ICs, reader modules, readers, gateways or system software to insert malicious code into end-user systems. More generally, we are vulnerable to software bugs, computer viruses, break-ins, phishing attacks, employee errors or malfeasance, attempts to overload our servers with denial-of-service or other attacks and similar disruptions from unauthorized use of our systems, including our IT systems. The security measures we use to detect unauthorized activity and prevent or minimize security breaches may not function as expected or may be insufficient to protect against attacks. Additionally, we may face delays in identifying or responding to security breaches or other security incidents. If a breach or other security incident occurs or is perceived to occur, customer or end-user data, other personally identifiable information or other confidential information could be accessed, obtained, or used without authorization, our and our customers' operations could be disrupted and our customers or we could be the target of regulatory investigations or proceedings and private claims, demands, or litigation, and we could face potential liability and significant costs and expenses to remediate and otherwise take action in response to the incident. In cases in which a customer is the target of a regulatory action or private lawsuit, the customer might allege that our products did not function as promised and may sue us for breach of contract, breach of warranty, negligence or take other action. Additionally, if our customers' security measures are breached or are perceived to have been breached, even if through means beyond our control, our reputation may be damaged, we may be subject to claims, demands, or litigation and our business and prospects could suffer. Moreover, concerns about security and privacy, even if unfounded, could damage our reputation and operating results or could delay overall RAIN industry development. Even if our products meet new or changed standards or regulations, if our security measures are breached or perceived to have been breached as a result of third-party action, our error or criminal act or otherwise, and, as a result, someone obtains or is perceived to have obtained unauthorized access to customer or end-user data, personal data, personally identifiable information, or other confidential information, our reputation could be damaged, our business and prospects may suffer, and we could incur significant liability. We also could be required to expend significant capital and other resources to address any data security incident or breach and to implement measures to prevent further breaches or incidents.

We cannot ensure that any limitation-of-liability provisions in our customer and user agreements, contracts with third-party vendors and service providers or other contracts are enforceable or adequate or would protect us from any liabilities or damages with respect to claims relating to a security breach or other security-related matter. Although our insurance policies include some liability coverage, if we experienced a widespread security breach or other incident then we could be subject to indemnity claims or other damages that either are not covered or exceed our insurance coverage. We also cannot be certain that our insurance coverage is adequate for data-handling or data-security liabilities incurred, or that insurance will continue to be available to us on economically reasonable terms or at all, or that any insurer will not deny coverage as to any future claim. The successful assertion of one or more claims against us that exceed our insurance coverage, or changes in our insurance policies, including premium increases or the imposition of large deductible or co-insurance requirements, could have a material adverse effect on our business, including our financial condition, operating results and reputation.

Government regulations and guidelines and other standards 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 and personal data, as well as additional laws and regulations that address privacy and security issues related to RFID in general. Because RAIN is a type of RFID, we believe these statutes and regulations apply to RAIN systems. 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.

The European Commission, or the EC, has issued guidance to address privacy concerns about RFID. In May 2009, the EC issued a recommendation that retailers 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 entities 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 in other foreign jurisdictions is evolving, and new or changed laws, regulations, guidelines and other standards 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, and although we have incorporated custom features in our products to further protect consumer privacy, 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 and our business.

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, another type of RFID 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 developing industry standards and have designed our products to comply with these standards. In 2013, GS1 EPCglobal ratified "UHF Gen2 Version 2" or Gen2 V2, a new version of the Gen2 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 Gen2. If a competitor introduces a Gen2 V2 product before we do, then we could lose market share of 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 our sale of existing products before we can introduce products based on the new or changed standards. 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 may not 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, an industry organization that promotes RAIN technology and solutions globally. Our chief executive officer is presently a director and was previously chairman of the RAIN Alliance. Board membership is an elected position that we could lose in future elections; and 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.

In addition, certain organizations develop technical specifications for RAIN tags and test those tags against those specifications. For example, the ARC Program at Auburn University, or ARC, is a resource for end users in retail, aviation and manufacturing to develop performance and quality requirements that a RAIN tag needs to meet for deployments specified by those end users. Certain participants in the RAIN market are sponsors of ARC, but we are not among them. A limited number of organizations other than ARC perform this function as well. ARC or a similar organization could develop specifications that few or none of our endpoint ICs meet, which could adversely affect our business.

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 every country in the EU. If one of our reader or gateway products is found to be noncompliant despite being certified then we could be required to modify field-deployed readers or gateways 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, possibly without advance notice, requiring us to redesign our products to conform with the new regulations or constraining our ability to implement new features into our products, thereby causing us to incur significant expenses. These expenses include costs associated with obsolete inventory. Regulatory changes may also cause us forego opportunities to improve our products, potentially delaying our time-to-market and 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 difficulties, 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, 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. None of our executive management team is bound by employment contracts to remain with us for a specified period of time. Our former president and chief operating officer, Eric Brodersen, resigned effective March 2020, and although we currently do not intend to appoint a new chief operating officer in the near future, Mr. Brodersen's departure required us to transition his leadership and management responsibilities to other members of our management team. 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, diverse 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. Moreover, highly qualified personnel are increasingly attracted to companies with diverse workforces. There is no guarantee we can attract and retain qualified 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 personnel with the diverse backgrounds and skills we need. In addition, we may be required to engage in cost containment efforts, such as layoffs and furloughs, in response to Covid-19 that materially impacts our ability to execute our long-term strategy. The loss of the services of one or more of our key employees, or our inability to attract, retain and motivate qualified, diverse 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 that could, in some instances, adversely affect our operating results and gross margins. For example, some contracts specify future IC, reader or gateway pricing or contain most-favored customer pricing for certain products. Other agreements contain exclusivity terms that prevent us from pursuing certain business with other customers during the exclusivity period. Reducing prices or offering other favorable terms to one customer could adversely affect our ability to negotiate favorable terms with other customers. For competitive or strategic reasons, we may decide to enter into agreements containing these types of provisions, which could impair our operating results.

We and our suppliers are 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 comply with those regulations. 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 laws, improperly dispose of wastes associated with our products, or improperly comply with requirements governing the hazardous-substance content of our products, we could be held liable or suffer reputational harm.

We may not continue to grow or effectively manage our key operating metrics.

Although we have experienced recent revenue growth, we may not experience future revenue growth and you should not rely on any of our operating results from any prior periods as an indication of future performance. For example, in fourth-quarter 2017, first- and second-quarters 2018 and second-quarter 2020, our revenue declined compared to the same quarter a year earlier. If we are unable to maintain adequate revenue growth and with it our gross margins, as well as control our expenses then our financial results could suffer and our stock price could decline.

To continue to grow and manage 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 activities and 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.

Our management team is small. We may have insufficient management resources or experience to manage our business effectively or to pursue all commercial opportunities. We may require significant additional management resources as we grow our business. We may not have adequate resources when we need them and we may not have adequate capital to fund our needs. If we are unable to grow effectively then 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 plans or respond to competitive pressures.

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, we may not be able to accurately report our consolidated financial results or prevent fraud. We previously identified a material weakness in our internal control over financial reporting and cannot guarantee we will not have a future material weakness.

We have a short history as a public company. Although our management team and other company personnel devote substantial time to regulatory compliance, we may not effectively or efficiently manage our maturation as a public company. Additionally, we have incurred and will continue to incur significant legal, accounting and other expenses related to compliance with laws, regulations and standards applicable to public companies.

We expect rules and regulations such as the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, to continue increasing the time and costs we must devote to compliance as well as to other activities. For example, Section 404 of the Sarbanes-Oxley Act, or Section 404, requires management to report on, and after we no longer qualify as an emerging growth company that our independent registered public accounting firm attest to, the effectiveness of our internal controls 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. We may be unable to successfully complete the procedures, certifications and attestation requirements of Section 404 in a timely manner. We or our independent registered public accounting firm may find internal controls that need improvement or may uncover a material weakness. A material weakness, even if quickly remedied, could reduce the market's confidence 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 controls and employee training necessary to ensure continued compliance with the Sarbanes-Oxley Act and other regulatory and reporting requirements. In addition, the Sarbanes-Oxley Act requirements may be modified, supplemented or amended from time to time, in which case implementing the requisite changes may take us significant time and may require additional controls and employee training. Our growth will challenge our ability to maintain these internal control and disclosure standards. If we fail to successfully complete the procedures, certifications and attestation requirements of Section 404, or if our chief executive officer, chief financial officer or independent registered public accounting firm determine 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 may not be able to fully comply with the requirements of the Sarbanes-Oxley Act or management or our independent registered public accounting firm may conclude that our internal controls will not be effective in future periods. Regardless 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.

A material weakness is a deficiency, or a combination of deficiencies, in internal controls over financial reporting. A consequence of a material weakness is a reasonable possibility that a material misstatement in our annual or interim consolidated financial statements will not be prevented or detected on a timely basis.

In the course of preparing our consolidated financial statements in prior years, we, in conjunction with our independent registered public accounting firm, identified errors which, combined with other identified control deficiencies, were considered to indicate a material weakness in our internal control over financial reporting. These errors related to accounting and financial disclosure of complex accounting matters related to the cash flow statement presentation of lease incentives in our consolidated interim financial statements for the nine months ended September 30, 2015. In 2016, we identified that we did not reflect the correction of the identified error in our consolidated interim financial statements for the nine months ended September 30, 2015 on the statement of cash flows in our Quarterly Report on Form 10-Q filed with the SEC on November 7, 2016.

We remediated this material weakness as of December 31, 2018, including increasing the depth and experience in our accounting and finance organization, as well as designing and implementing improved processes and internal controls. However, our remediation may not be effective in future periods or may not prevent other material weaknesses or significant deficiencies in our internal control over financial reporting from arising in the future.

We are currently subject to securities class-action litigation and may be subject to similar or other litigation in the future, all of which will require significant management time and attention, result in significant legal expenses and may result in unfavorable outcomes, which may have a material adverse effect on our business, operating results and financial condition, and negatively affect the price of our common stock.

We are, and may in the future become, subject to various legal proceedings and claims that arise in or outside the ordinary course of business. For example, we currently have securities class-action complaints pending against us, our chief executive officer, chief operations officer and former chief financial officer, asserting that we made false or misleading statements in our financial statements, press releases and conference calls during the applicable class periods. The complaints each seek monetary damages, costs and expenses. For more information, see Note 5 of our condensed consolidated financial statements included elsewhere in this report.

We have entered into an agreement with the plaintiffs in these securities class actions to resolve them for $20.0 million, of which $14.6 million will be paid by our insurers. This settlement is conditioned upon court approval. If the settlement is not approved by the court or otherwise does not become final, we cannot predict the outcome of these proceedings or provide an estimate of potential damages, if any. We believe that the claims in the securities class actions are without merit. If the settlement does not become final and we recommence litigation in these lawsuits, failure by us to obtain a favorable resolution of the claims set forth in the complaints could require us to pay damage awards or otherwise enter into alternative settlement arrangements for which our insurance coverage may be insufficient. Our assets could even be insufficient to cover amounts that exceed our insurance coverage. Any such damage awards or alternative settlement arrangements in current or future litigation could have a material adverse effect on our business, operating results or financial condition. Even if plaintiffs’ claims are not successful, the litigation would have substantial costs and could significantly and adversely impact our reputation and divert management’s attention and resources, all of which could have a material adverse effect on our business, operating results and financial condition and negatively affect the price of our common stock. In addition, such lawsuits may make it more difficult for us to finance our operations in the future.

Our business could be negatively affected as a result of actions of activist stockholders.

We may be subject to actions or proposals from stockholders that may not align with our business strategies or the interests of our other stockholders. Responding to any such actions or proposals could be costly and time-consuming, disrupt our business operations and divert the attention of our board of directors, management and employees from pursuing our business strategies.

Activist stockholders could create uncertainties as to the future direction of our business. Our competitors could exploit the uncertainties, potentially causing us to lose business or create a perception of instability, which could make it more difficult for us to attract and retain qualified personnel. Similarly, any proxy contest for the election of directors at our annual meeting of stockholders would require us to incur significant legal fees and proxy solicitation expenses and require significant time and attention by our board of directors and management. Any such activist events or perceived uncertainties as to our future direction may affect our relationships with our customers, vendors, channel partners, investors or other third parties and affect the market price and volatility of our stock.

If we fail to retain finance personnel or fail to maintain our financial reporting systems and infrastructure, 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 inability to retain these personnel could adversely impact our ability to timely and accurately prepare and file our financial statements, as well as adversely affect our future financial statements because replacement 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 demands of being a public company then the quality and timeliness of our financial reporting may suffer, which could result in errors, filing delays and/or material weaknesses in our internal controls. The consequences of errors 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, potentially diluting our stockholders. In December 2019, we issued and sold $86.3 million aggregate principal amount of 2.00% convertible senior notes due 2026, or the 2019 Notes, and we may in the future engage in additional equity, equity-linked or debt financings to secure additional funds. If our financing needs are driven by unforeseen circumstances, such as unforeseen expenditures or if our operating results are worse than we expect, then we may not be able to raise capital on favorable terms, if at all. Debt financing, if available, may 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 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.

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 and information-technology 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 breaches due to viruses, loggers, or other malfeasant code in our data or software, or other causes, including phishing, social engineering, and employee or contractor negligence or malfeasance, could compromise access to and the integrity of this information. The consequences of loss and possible misuse of our proprietary and confidential information could include, among other things, unfavorable publicity, damage to our reputation, difficulty marketing or selling our products, customer allegations of breach-of-contract, loss or theft of intellectual property, 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 financial functions, and we are therefore dependent on the security systems of these third-party providers. These third-party providers also face several risks of security breaches, and our ability to monitor their security is limited. 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 loss or misappropriation of, or unauthorized use or disclosure of, confidential and proprietary 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.

We may incur significant costs in an effort to detect and prevent security breaches and other security-related incidents. In the event of an actual or perceived security breach, we could be required to expend additional significant capital and other resources in an effort to prevent further breaches. Moreover, we could be required or otherwise find it appropriate to expend significant capital and other resources to respond to, notify third parties of, and otherwise address the breach and its root cause.

Claims relating to an actual or perceived security breach may not be adequately covered by insurance, and may result in increased costs for insurance or insurance not being feasible at all.

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

As of December 31, 2019, we had federal net operating loss carryforwards, or NOLs, of $179.1 million and federal research and development credit carryforwards of $12.0 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 these deferred tax assets. The tax loss and research and development credit carryforwards begin expiring in 2020. Insufficient future taxable income will adversely affect our ability to utilize these NOLs and credit carryforwards. Reductions in corporate tax rates may also reduce our ability to utilize 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 a future 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. During the ordinary course of business we use significant judgment in evaluating our worldwide income-tax obligations and we conduct many transactions for which the ultimate tax determination is uncertain. Additionally, 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 these jurisdictions may assess additional income tax against us. Although we believe our tax determinations are proper, the final determination of any tax audits and possible 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.

Risks Relating to Owning 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 through December 31, 2019, our stock price has ranged from $9.95 to $60.85. Securities of companies similar to ours also experience significant price and volume fluctuations. The following factors, in addition to other risks described in this report, may have a significant effect on the trading price of our common stock:

- price and volume fluctuations in the overall stock market;
- 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 relating to intellectual property rights or in disputes relating to those 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;
- the trading volume of our stock;
- actual or perceived security breaches;
- limited public float;
- any future sales of our common stock or other securities;
- financial analysts dropping or reducing their coverage of us; changes in financial estimates by analysts who do cover us; or our failure to meet analyst estimates or investor expectations;
- fluctuations in the values of companies investors perceive 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 markets in which we operate.

The market for technology companies like us has experienced extreme price and volume fluctuations often unrelated or disproportionate to the operating performance of those companies. Broad market and industry factors also affect the trading price of our common stock, often regardless of our actual operating performance. Securities class-action litigation is often instituted against companies whose stock prices have declined, as it has been against us. That litigation has already resulted in substantial costs and a diversion of management's attention and resources, and those costs and diversion could escalate significantly. For further information regarding this litigation risk, please refer to Note 5 of our condensed consolidated financial statements included elsewhere in this report.

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

The trading market for our common stock is influenced by the research and reports that industry or securities analysts publish about us or our market. If one or more of the analysts who cover us issues an adverse opinion about us, the trading price of the notes and our common stock, in each case, could decline. If one or more of these analysts stops covering us or fails to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause the trading price or trading volume of our stock price to decline.

Transactions relating to the 2019 Notes may affect the value of our common stock.

If the 2019 Notes are converted by holders, we have the ability under the indenture for the 2019 Notes to deliver cash, common stock or any combination of cash or common stock, at our election upon conversion of the 2019 Notes. If we elect to deliver common stock upon conversion of the 2019 Notes, then doing so will dilute the ownership interests of our existing stockholders. Any sales in the public market of the common stock issuable upon such conversion could adversely affect prevailing market prices of our common stock. Anticipated future conversions of such 2019 Notes into shares of our common stock could depress the price of our common stock. Certain holders of the 2019 Notes may also engage in short selling to hedge their position in the 2019 Notes, which could decrease the price of our common stock.

Additionally, in connection with the issuance of the 2019 Notes, we entered into privately negotiated capped-call transactions with certain financial counterparties. The capped call transactions are generally designed to reduce potential dilution to our common stock upon any conversion or settlement of the 2019 Notes or offset any cash payments we are required to make in excess of the principal amount of converted 2019 Notes, as the case may be, with such reduction or offset subject to a cap based on the cap price. From time to time, the financial counterparties to the capped calls may modify their hedge positions by entering into or unwinding various derivative transactions with respect to our common stock or purchasing or selling our common stock or other securities of ours in secondary market transactions prior to the maturity of the capped calls. This activity could cause a decrease in the market price of our common stock.

For more information on the 2019 Notes and the capped call transactions, see Note 6 of our condensed consolidated financial statements included elsewhere in this report.

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

Significant sales of our stock, especially by our directors, executive officers and principal stockholders, or the perception that these sales might occur, could cause the trading price of the notes and our common stock to decline. These sales, or the possibility that they may occur, also may make it more difficult for us to sell equity securities at a time and price acceptable to us.

We may in the future 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, including any issuance of shares upon the conversion of the notes, 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 June 30, 2020, our executive officers, directors and principal stockholders, together with their respective affiliates, beneficially owned approximately 36.2% of our capital stock. As a result, our executive officers, directors and principal stockholders may be able to significantly influence, in their capacity as stockholders, matters requiring approval by our stockholders, including electing directors and approving mergers, acquisitions or other extraordinary transactions. They may 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.

Servicing the 2019 Notes may require a significant amount of cash, and we may not have sufficient cash flow or the ability to raise the funds necessary to satisfy our obligations under the 2019 Notes, and our current and future indebtedness may limit our operating flexibility or otherwise affect our business.

Our ability to make scheduled payments of the principal of, to pay interest on or to refinance any current or future indebtedness, including the 2019 Notes, or to make cash payments in connection with any conversion of 2019 Notes or upon any fundamental change if holders require us to repurchase their 2019 Notes for cash, depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not generate cash flow from operations in the future sufficient to service our indebtedness and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring indebtedness or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance any of our indebtedness, including the 2019 Notes, will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations. In addition, our existing and future indebtedness could have important consequences to our stockholders and significant effects on our business. For example, it could:

- make it more difficult for us to satisfy our debt obligations, including the 2019 Notes;
- increase our vulnerability to general adverse economic and industry conditions;
- require us to dedicate a substantial portion of our cash flow from operations to payments on our indebtedness, thereby reducing the availability of our cash flow to fund working capital and other general corporate purposes;
- limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate;
- restrict us from exploiting business opportunities;
- place us at a competitive disadvantage compared to our competitors that have less indebtedness; and
- limit our availability to borrow additional funds for working capital, capital expenditures, acquisitions, debt service requirements, execution of our business strategy or other general purposes.

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 our 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 our stock price. 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 (subject to gradual declassification beginning at the 2021 annual meeting of stockholders, such that our board of directors will be fully declassified beginning at the 2023 annual meeting of stockholders);
- restrict the forum for certain litigation against us to Delaware;
- require that any action taken by our stockholders be effected at a duly called annual or special meeting of stockholders and not 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 uncontested 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 could 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 utilize certain modified disclosure requirements, and those requirements may make our common stock less attractive to investors.

We are an emerging growth company, and for as long as we remain an emerging growth company we may choose to take advantage of exemptions from some 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 to hold a nonbinding advisory vote on executive compensation and receive stockholder approval of any golden parachute payments not previously approved.

We plan in our filings with the SEC to continue to use 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 can remain an emerging growth company until the earliest of:

- December 31, 2021;
- 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 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, in the future, will incur higher costs by being a public company.

We have incurred significant legal, accounting and other costs associated with public-company reporting requirements. Those costs will increase as we transition to no-longer being an emerging growth company. For as long as we remain an emerging growth company, we will use the exemption from the requirement under Section 404 that our independent registered public accounting firm attest to the effectiveness of our internal control over financial reporting. At the time when our independent registered public accounting firm is required to assess our internal control over financial reporting, the cost of our compliance with Section 404 will increase. If we are unable to comply with those requirements of Section 404 applicable to us, or if we or our independent registered public accounting firm identify deficiencies in our internal control over financial reporting, we could incur sanctions or investigations by the SEC or other regulatory authorities which would require additional financial and management resources and further increase costs, all of which could cause the market price of our stock to decline.

We have and will continue to incur costs associated with recently adopted corporate governance requirements, including those of the SEC and The Nasdaq Global Select Market. We expect those governance requirements to lead to ongoing legal and financial costs and make some activities more time consuming and costly. We also expect those requirements to increase the difficulty and expense for us to obtain director and officer liability insurance, and we may need to accept reduced policy limits and coverage or pay substantially higher costs to obtain similar or higher coverage to what we have today. As a result, we may find it difficult to attract and retain qualified persons to serve on our board of directors or as executive officers or may need to pay higher compensation to attract and retain them. Although we monitor developments with respect to those requirements, we cannot predict or estimate the additional costs we may incur or the timing of such costs.

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

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

Not applicable.

Item 6. Exhibits

Exhibit Number	Exhibit Description	Incorporation by Reference			Filed Herewith
		Form	**Date**	**Number**	
3.1	Amended and Restated Certificate of Incorporation of Impinj, Inc., as filed with the Secretary of State of the State of Delaware of June 10, 2020	8-K	6/12/2020	3.1	

3.2	Amended and Restated Bylaws of Impinj, Inc., adopted as of April 13, 2020	8-K	4/16/2020	3.1	
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				X
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				X
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				X
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				X
101	Inline XBRL Document Set for the condensed consolidated financial statements and accompanying notes in Part I, Item 1, "Financial Statements" of this Quarterly Report on Form 10-Q.				X
104	Inline XBRL for the cover page of this Quarterly Report on Form 10-Q, included in the Exhibit 101 Inline XBRL Document Set.				X

* 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.

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: July 29,2020

By: /s/ *Cary Baker*
Cary Baker
Chief Financial Officer (principal financial officer and duly authorized signatory)

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 registrant 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: July 29,2020

/s/ Chris Diorio

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

Exhibit 31.2

CERTIFICATIONS

I, Cary Baker, 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 registrant 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: July 29,2020

/s/ Cary Baker

Cary Baker

Chief Financial 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 June 30, 2020, 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)

July 29,2020

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 June 30, 2020, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Cary Baker, Chief Financial 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/ Cary Baker
Cary Baker
Chief Financial Officer
(Principal Financial Officer)

July 29,2020

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.