UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended July 1, 2018

or

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

For transition period from to

Commission File Number: 001-37927

QUANTENNA COMMUNICATIONS, INC.

(Exact name of Registrant as specified in its charter)

Delaware	**33-1127317**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

1704 Automation Parkway
San Jose, California 95131
(Address of principal executive offices, including zip code)

(669) 209-5500
(Registrant's telephone number, including area code)

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, 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	☐	(Do not check if a smaller reporting company)	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 27, 2018, 36,905,345 shares of the registrant's common stock, $0.0001 par value, were outstanding.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains 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, which statements involve substantial risks and uncertainties. Forward-looking statements generally relate to future events or our future financial or operating performance. In some cases, you can identify forward-looking statements because they contain words such as “may,” “will,” “should,” “expects,” “plans,” “anticipates,” “could,” “intends,” “target,” “projects,” “contemplates,” “believes,” “estimates,” “predicts,” “potential” or “continue” or the negative of these words or other similar terms or expressions that concern our expectations, strategy, plans or intentions. Forward-looking statements contained in this Quarterly Report on Form 10-Q include, but are not limited to, statements about our products, technology, customers, business, operations, and market and industry developments.

You should not rely upon forward-looking statements as predictions of future events. We have based the forward-looking statements contained in this Quarterly Report on Form 10-Q primarily on our current expectations and projections about future events and trends that we believe may affect our business, financial condition, results of operations and prospects. The outcome of the events described in these forward-looking statements is subject to risks, uncertainties and other factors described in the section titled “Risk Factors” and elsewhere in this Quarterly Report on Form 10-Q. Moreover, we operate in a very competitive and rapidly changing environment. New risks and uncertainties emerge from time to time and it is not possible for us to predict all risks and uncertainties that could have an impact on the forward-looking statements contained in this Quarterly Report on Form 10-Q. We cannot assure you that the results, events and circumstances reflected in the forward-looking statements will be achieved or occur, and actual results, events or circumstances could differ materially from those described in the forward-looking statements.

The forward-looking statements made in this Quarterly Report on Form 10-Q relate only to events as of the date on which the statements are made. We undertake no obligation to update any forward-looking statements made in this Quarterly Report on Form 10-Q to reflect events or circumstances after the date of this Quarterly Report on Form 10-Q or to reflect new information or the occurrence of unanticipated events, except as required by law.

PART I - FINANCIAL INFORMATION

Item 1. FINANCIAL STATEMENTS

Quantenna Communications, Inc.

Condensed Consolidated Balance Sheets
(In thousands, except share and per share data)
(Unaudited)

	July 1, 2018	December 31, 2017
Assets		
Current assets		
Cash and cash equivalents	$ 23,421	$ 24,432
Marketable securities	96,661	94,195
Accounts receivable	29,700	26,786
Inventory	21,391	12,662
Prepaid expenses and other current assets	2,369	2,744
Total current assets	173,542	160,819
Deferred tax assets	36,482	35,422
Property and equipment, net	12,838	12,511
Intangible and other assets, net	3,901	3,952
Total assets	$ 226,763	$ 212,704
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	$ 8,904	$ 3,754
Accrued liabilities and other current liabilities	23,155	21,065
Long-term debt, current portion	—	3,943
Total current liabilities	32,059	28,762
Other long-term liabilities	3,214	3,339
Total liabilities	35,273	32,101
Commitments and contingencies (see Note 7)		
Stockholders' equity		
Common stock: $0.0001 par value, 1,000,000,000 shares authorized at July 1, 2018 and December 31, 2017, 36,847,791 and 35,528,880 shares issued and outstanding at July 1, 2018 and December 31, 2017, respectively	3	3
Additional paid-in capital	321,669	308,023
Accumulated other comprehensive loss	(751)	(207)
Accumulated deficit	(129,431)	(127,216)
Total stockholders' equity	191,490	180,603
Total liabilities and stockholders' equity	$ 226,763	$ 212,704

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

Quantenna Communications, Inc.

Condensed Consolidated Statements of Operations
(In thousands, except per share data)
(Unaudited)

	Three Months Ended		Six Months Ended	
	July 1, 2018	July 2, 2017	July 1, 2018	July 2, 2017
Revenue	$ 53,427	$ 47,085	$ 98,544	$ 84,976
Cost of revenue	27,563	23,314	49,915	42,621
Gross profit	25,864	23,771	48,629	42,355
Operating expenses:				
Research and development	17,084	16,055	34,685	28,688
Sales and marketing	3,979	3,276	8,474	6,191
General and administrative	4,518	4,106	8,716	7,496
Total operating expenses	25,581	23,437	51,875	42,375
Income (loss) from operations	283	334	(3,246)	(20)
Interest expense	—	(141)	—	(339)
Other income, net	230	186	564	387
Income (loss) before income taxes	513	379	(2,682)	28
(Provision) benefit for income taxes	519	(210)	467	(744)
Net income (loss)	$ 1,032	$ 169	$ (2,215)	$ (716)
Net income (loss) per share:				
Basic	$ 0.03	$ 0.00	$ (0.06)	$ (0.02)
Diluted	$ 0.03	$ 0.00	$ (0.06)	$ (0.02)
Weighted average shares used to compute basic and diluted net income (loss) per share:				
Basic	36,511	33,881	36,179	33,494
Diluted	39,377	38,475	36,179	33,494

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

Quantenna Communications, Inc.

Condensed Consolidated Statements of Comprehensive Income (Loss)
(In thousands)
(Unaudited)

	Three Months Ended		Six Months Ended	
	July 1, 2018	July 2, 2017	July 1, 2018	July 2, 2017
Net income (loss)	$ 1,032	$ 169	$ (2,215)	$ (716)
Other comprehensive loss, net of tax:				
Unrealized gains (losses) on available-for-sale marketable securities	104	(32)	(127)	(32)
Unrealized losses on derivative instruments	(417)	—	(417)	—
Other comprehensive loss, net of tax:	(313)	(32)	(544)	(32)
Comprehensive income (loss)	$ 719	$ 137	$ (2,759)	$ (748)

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

Quantenna Communications, Inc.

Condensed Consolidated Statements of Cash Flows
(Unaudited)

	Six Months Ended	
	July 1, 2018	July 2, 2017
Cash flows from operating activities	(in thousands)	
Net loss	$ (2,215)	$ (716)
Adjustments to reconcile net loss to net cash provided by operating activities:		
Depreciation and amortization	2,263	1,024
Stock-based compensation expense	8,921	4,678
Deferred income taxes	(913)	—
Other	247	197
Changes in assets and liabilities:		
Accounts receivable	(2,914)	(3,216)
Inventory	(8,729)	(5,165)
Prepaid expenses and other current assets	375	(1,898)
Deferred rent and other assets	101	(537)
Accounts payable	4,972	5,968
Accrued liabilities and other current liabilities	1,743	6,597
Net cash provided by operating activities	3,851	6,932
Cash flows from investing activities		
Purchase of property and equipment	(1,378)	(2,446)
Purchase of long-term investment	(590)	—
Purchase of marketable securities	(38,998)	(71,169)
Maturities of marketable securities	36,120	4,994
Net cash used in investing activities	(4,846)	(68,621)
Cash flows from financing activities		
Proceeds from issuance of common stock, net	5,312	3,980
Payments of taxes withheld for vested stock awards	(689)	—
Payments related to intangible asset purchase	(544)	—
Repayments of long-term debt	(3,943)	(1,105)
Net cash provided by financing activities	136	2,875
Effect of exchange rates on cash and cash equivalents	(152)	—
Net decrease in cash and cash equivalents	(1,011)	(58,814)
Cash and cash equivalents		
Beginning of period	24,432	117,045
End of period	$ 23,421	$ 58,231
Supplemental disclosure of cash flow information		
Interest paid during the period	$ —	$ 290
Income taxes paid during the period	$ 171	$ 633
Supplemental disclosure of non-cash investing activity		
Purchases of property and equipment included in accounts payable and accrued liabilities and other current liabilities	$ 1,101	$ 430

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements

1. The Company and Summary of Significant Accounting Policies

Quantenna Communications, Inc. (the "Company") was incorporated in the State of Delaware on November 28, 2005. The Company designs, develops and markets advanced high-speed wireless communication solutions enabling wireless local area networking. The Company's solutions are designed to deliver leading-edge Wi-Fi performance to support an increasing number of connected devices accessing a rapidly growing pool of digital content. The Company applies its wireless systems and software expertise with high-performance radio frequency, mixed-signal and digital semiconductor design skills to provide highly integrated Wi-Fi solutions to its customers.

Reporting Calendar

The Company prepares financial statements on a 52- or 53-week fiscal year that ends on the Sunday closest to December 31. Fiscal 2018 will have 52 weeks and fiscal 2017 had 52 weeks. In a 52-week year, each fiscal quarter consists of 13 weeks. Fiscal 2018 will end on December 30, 2018.

Unaudited Interim Financial Information

The accompanying interim condensed consolidated financial statements and related disclosures are unaudited and in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for a fair statement of the results of operations for the periods presented. The year-end condensed consolidated balance sheet data was derived from audited financial statements, but does not include all disclosures required by accounting principles generally accepted in the United States of America ("US GAAP"). The condensed consolidated results of operations for the three and six months ended July 1, 2018 are not necessarily indicative of the results to be expected for the full year or for any other future year or interim period. The accompanying condensed consolidated financial statements should be read in conjunction with the audited financial statements and the related notes thereto included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the Securities and Exchange Commission (the "SEC") on February 28, 2018 ("2017 Annual Report on Form 10-K").

Use of Estimates

Preparation of financial statements in conformity with US GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and reported amounts of revenue and expenses during the reporting periods covered by the financial statements and accompanying notes. Among the significant estimates affecting the financial statements are those related to inventories, revenue recognition, stock-based compensation and income taxes. Actual results could differ from those estimates.

Principles of Consolidation

The condensed consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries. All intercompany transactions and balances have been eliminated in consolidation.

Significant Accounting Policies

During the three and six months ended July 1, 2018, there have been no changes in our significant accounting policies as described in the 2017 Annual Report on Form 10-K, except as discussed below:

Revenue Recognition

The Company adopted Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2014-09, *Revenue from Contracts with Customers (Topic 606)* on January 1, 2018 which resulted in a change to our revenue policy relating to customer rebate arrangements. Revenue is recognized when control of the promised goods or services is transferred to customers, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services.

Quantenna Communications, Inc.

Notes to Condensed Consolidated Financial Statements
(Unaudited)

The Company adopted Accounting Standard Codification ("ASC") Topic 606 ("ASC Topic 606") as of January 1, 2018 using the modified retrospective transition method. Based on the evaluation of its current contracts and revenue streams under the new standard, the Company identified a change in accounting relating to customer rebate arrangements. Under the new standard, the Company is required to account for customer rebate arrangements as variable consideration which requires an estimate of the variable consideration to be made when revenue is recognized. In order to estimate this amount, the Company used historical data to determine an estimate of breakage which was applied to the amount of customer rebate due under its contractual arrangements. The cumulative effect upon adoption of ASC Topic 606 was not material and did not have a material impact on the Company's consolidated financial position or results of operations. The impact of the estimate of breakage for the three and six months ended July 1, 2018 of $0.2 million and $0.6 million, respectively, recorded as a result of applying the new revenue standard is not considered material to revenue or any other affected financial statement line items.

The following table sets forth the Company's revenue by geographic region, based on ship-to destinations (in thousands):

	Three Months Ended July 1, 2018		Three Months Ended July 2, 2017	
	Amount	% of revenue	Amount	% of revenue
Asia-Pacific	$ 48,959	92%	$ 43,532	92%
Europe, Middle East and Africa	4,445	8	3,504	8
North America	23	—	49	—
Total	$ 53,427	100%	$ 47,085	100%

	Six Months Ended July 1, 2018		Six Months Ended July 2, 2017	
	Amount	% of revenue	Amount	% of revenue
Asia-Pacific	$ 89,697	91%	$ 78,176	92%
Europe, Middle East and Africa	8,812	9	6,738	8
North America	35	—	62	—
Total	$ 98,544	100%	$ 84,976	100%

Derivative Financial Instruments

The Company uses derivative instruments to manage its exposure to changes in foreign currency exchange rates from forecasted cash flows associated with the operational expenses of its foreign subsidiaries. Derivative instruments are measured at their fair values and recognized as either assets or liabilities. The Company's derivative forward contracts are designated as cash-flow hedges and their effectiveness is measured by comparing the cumulative forward-rate changes in the fair value of the hedge contract with the cumulative forward-rate change in the forecasted cash flows of the hedged item.

Refer to Note 2 to the condensed consolidated financial statements, *Recent Accounting Pronouncements*, and to Note 6 to the condensed consolidated financial statements, *Derivative Instruments*, for further details.

Reclassifications

Reclassifications of certain prior period amounts in the condensed consolidated financial statements have been made to conform to the current period presentation.

Quantenna Communications, Inc.

Notes to Condensed Consolidated Financial Statements
(Unaudited)

2. Recent Accounting Pronouncements

On February 14, 2018, the FASB released ASU 2018-02, *Income Statement – Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income.* The guidance allows a company to elect to reclassify from accumulated other comprehensive income ("AOCI") to retained earnings the stranded tax effects from the adoption of the newly enacted federal corporate tax rate as a result of the the 2017 Tax Cuts and Jobs Act (the "Tax Act"). ASU 2018-02 is effective for fiscal years beginning after December 15, 2018 and interim periods within those fiscal years, with early adoption permitted. The Company has decided not to early adopt ASU 2018-02.

In August 2017, the FASB issued ASU 2017-12, *Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities*. The new standard is intended to improve and simplify accounting rules around hedge accounting. The new standard refines and expands hedge accounting for both financial (e.g., foreign currency) and commodity risks. Its provisions create more transparency around how economic results are presented, both on the face of the financial statements and in the footnotes, for investors and analysts. The new standard takes effect for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018. Early adoption is permitted in any interim period or fiscal years before the effective date of the standard. The Company early-adopted ASU 2017-12 during the three months ended July 1, 2018 when it commenced its hedging activities. The early adoption did not result in any adjustment to the Company's condensed consolidated financial statements as of the beginning of the second quarter of fiscal 2018. Refer to Note 6 to the condensed consolidated financial statements, *Derivative Instruments*, for further details.

In February 2016, the FASB issued ASU 2016-02, *Leases* ("ASC 842"), which sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract (i.e., lessees and lessors). The new standard requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease, respectively. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than twelve months regardless of their classification. Leases with a term of twelve months or less will be accounted for similar to existing guidance for operating leases today. ASC 842 supersedes the previous leases standard, ASC 840 *Leases*. The standard is effective on January 1, 2019, with early adoption permitted. The Company is evaluating the effect that the adoption of ASC 842 will have on its financial statements. The Company currently expects that most of its operating lease commitments will be subject to the new standard and recognized as right-of-use assets and operating lease liabilities upon the adoption of ASC 842, which will increase the total assets and total liabilities that it reports relative to such amounts prior to adoption.

Quantenna Communications, Inc.

Notes to Condensed Consolidated Financial Statements
(Unaudited)

3. Earnings Per Share

The following table summarizes the Company's computation of basic and diluted net loss per share:

	Three Months Ended		Six Months Ended	
	July 1, 2018	July 2, 2017	July 1, 2018	July 2, 2017
	(in thousands, except per share data)			
Net income (loss)	$ 1,032	$ 169	$ (2,215)	$ (716)
Weighted-average shares outstanding	36,539	33,933	36,211	33,549
Less: weighted average shares subject to repurchase due to early exercise	(28)	(52)	(32)	(55)
Weighted average shares used to compute basic net income (loss) per share	36,511	33,881	36,179	33,494
Dilutive effect of stock options, ESPP and RSUs	2,866	4,594	—	—
Weighted average shares used to compute diluted net income (loss) per share	39,377	38,475	36,179	33,494
Net income (loss) per share:				
Basic	$ 0.03	$ 0.00	$ (0.06)	$ (0.02)
Diluted	$ 0.03	$ 0.00	$ (0.06)	$ (0.02)

The following potentially dilutive securities outstanding at the end of the periods have been excluded from the computation of diluted shares outstanding as the effect would have been anti-dilutive:

	Three Months Ended		Six Months Ended	
	July 1, 2018	July 2, 2017	July 1, 2018	July 2, 2017
	(in thousands)			
Warrants to purchase common stock	—	—	—	154
Shares available for Employee Stock Purchase Plan (ESPP)	39	26	475	186
Restricted Stock Units (RSUs)	542	105	2,116	913
Options to purchase common stock	1,468	685	4,907	5,874
Total	2,049	816	7,498	7,127

4. Balance Sheets Components

Marketable Securities

Marketable securities at July 1, 2018 consisted of the following:

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(in thousands)			
Corporate debt securities	$ 91,432	$ 6	$ (405)	$ 91,033
Government debt securities	5,654	—	(26)	5,628
	$ 97,086	$ 6	$ (431)	$ 96,661

Quantenna Communications, Inc.

Notes to Condensed Consolidated Financial Statements
(Unaudited)

The contractual maturities of marketable securities as of July 1, 2018 were as follows:

	Amortized Cost	Fair Value
	(in thousands)	
Due in one year or less	$ 67,965	$ 67,747
Due after one year to five years	29,121	28,914
	$ 97,086	$ 96,661

Marketable securities as of December 31, 2017 consisted of the following:

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
		(in thousands)		
Corporate debt securities	$ 83,570	$ 7	$ (250)	$ 83,327
Government debt securities	10,889	—	(21)	10,868
	$ 94,459	$ 7	$ (271)	$ 94,195

The contractual maturities of marketable securities as of December 31, 2017 were as follows:

	Amortized Cost	Fair Value
	(in thousands)	
Due in one year or less	$ 49,201	$ 49,144
Due after one year to five years	45,258	45,051
	$ 94,459	$ 94,195

Property and Equipment, Net

Property and equipment, net consisted of the following:

	July 1, 2018	December 31, 2017
	(in thousands)	
Computer and lab equipment	$ 16,063	$ 14,295
Computer software	888	795
Furniture and fixtures	1,680	1,589
Leasehold improvements	3,982	3,977
Sub-total	22,613	20,656
Accumulated depreciation and amortization	(9,775)	(8,145)
Property and equipment, net	$ 12,838	$ 12,511

Depreciation and amortization expense related to property and equipment was $0.9 million and $0.5 million, respectively, for the three months ended July 1, 2018 and July 2, 2017, and $1.7 million and $1.0 million, respectively, for the six months ended July 1, 2018 and July 2, 2017.

Quantenna Communications, Inc.

Notes to Condensed Consolidated Financial Statements
(Unaudited)

Inventory

Inventory consisted of the following:

	July 1, 2018	December 31, 2017
	(in thousands)	
Raw materials	$ 8,182	$ 5,812
Work in progress	3,301	1,069
Finished goods	9,908	5,781
	$ 21,391	$ 12,662

Accrued Liabilities and Other Current Liabilities

Accrued liabilities and other current liabilities consisted of the following:

	July 1, 2018	December 31, 2017
	(in thousands)	
Accrued customer rebates	$ 8,808	$ 8,710
Accrued payroll and related benefits	5,168	3,411
Accrued expenses	2,785	4,507
Accrual for inventory purchases	2,740	2,124
ESPP employee contributions	866	706
Other	2,788	1,607
	$ 23,155	$ 21,065

5. Fair Value Measurements

The Company determines fair value measurements used in its consolidated financial statements based upon the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value hierarchy distinguishes between (i) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (ii) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy are described below:

Level 1: Valuations based on quoted prices in active markets for identical assets or liabilities that the entity has the ability to access.

Level 2: Valuations based on quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable data for substantially the full term of the assets or liabilities.

Level 3: Valuations based on inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The Company obtains the fair value of our Level 1 investments in money market funds, at the expected market price. These investments are expected to maintain a net asset value of $1 per share.

Quantenna Communications, Inc.

Notes to Condensed Consolidated Financial Statements
(Unaudited)

The Company determines the fair value of our Level 2 financial instruments from third-party asset managers, custodian banks, and the accounting service providers.

The Company classifies financial instruments in Level 3 of the fair value hierarchy when there is reliance on at least one significant unobservable input to the valuation model. In addition to these unobservable inputs, the valuation models for Level 3 financial instruments typically also rely on a number of inputs that are readily observable, either directly or indirectly. The Company's assessment of the significance of a particular input to the fair value measurement in its entirety requires management to make judgments and consider factors specific to the asset or liability. There were no assets or liabilities in Level 3 of the fair value hierarchy and there were no transfers between Level 1 and Level 2 categories during the year ended any of the periods presented.

The Company utilizes the market approach to measure the fair value of our fixed income securities. The market approach is a valuation technique that uses prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities. The fair value of our fixed income securities is obtained using readily-available market prices from a variety of industry standard data providers, large financial institutions and other third-party sources for the identical underlying securities.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The Company measures and reports certain assets at fair value at July 1, 2018 on a recurring basis as follows:

	Fair Value as of July 1, 2018			
	Level 1	Level 2	Level 3	Total
Assets:	(in thousands)			
Cash equivalents:				
Money market funds	$ 3,106	$ —	$ —	$ 3,106
Commercial paper	—	1,500	—	1,500
Total cash equivalents	3,106	1,500	—	4,606
Marketable Securities:				—
Corporate debt securities	—	91,033	—	91,033
Government debt securities	—	5,628	—	5,628
Total marketable securities	—	96,661	—	96,661
Total cash equivalents and marketable securities	$ 3,106	$ 98,161	$ —	$ 101,267

Assets at fair value at December 31, 2017 on a recurring basis were as follows:

	Fair Value as of December 31, 2017			
	Level 1	Level 2	Level 3	Total
Assets:	(in thousands)			
Cash equivalents:				
Money market funds	$ 4,398	$ —	$ —	$ 4,398
Corporate debt securities	—	2,000	—	2,000
Total cash equivalents	4,398	2,000	—	6,398
Marketable Securities:				—
Corporate debt securities	—	83,329	—	83,329
Government debt securities	—	10,866	—	10,866
Total marketable securities	—	94,195	—	94,195
Total cash equivalents and marketable securities	$ 4,398	$ 96,195	$ —	$ 100,593

The Level 1 assets consist of money market funds. The Level 2 assets consist of available-for-sale investment portfolio, which are valued utilizing a market approach.

Foreign currency derivative forward contracts are measured at fair value based on market-based observable inputs including currency exchange spot and forward rates, interest rates, and credit-risk spreads, and are classified at Level 2 of the fair value hierarchy.

Total notional and net fair values for foreign exchange derivative contracts designated as hedging instruments as of July 1, 2018 were as follows:

Derivative Assets*			Derivative Liabilities*		
	Notional Amount	Fair Value		Notional Amount	Fair Value
		(in thousands)			
Current assets	$ 2,529	$ 58	Current liabilities	$ 14,223	$ 463
Non-current assets**	761	39	Non-current liabilities**	4,377	164
Total foreign exchange contracts	$ 3,290	$ 97	Total foreign exchange contracts	$ 18,600	$ 627

* The Company recorded a net derivative liability of $0.5 million as of July 1, 2018. There were no derivative assets or liabilities recorded for the comparative periods in fiscal 2017.

** Non-current derivative assets and liabilities were discounted at the prevailing risk-free interest rate.

Common Stock Warrants

During the three months ended July 1, 2018, the remaining 58,006 common stock warrants of those originally issued in September 2015 were exercised at $2.50 per share. There were no outstanding common stock warrants as of July 1, 2018.

As of December 31, 2017, warrants issued and outstanding were as follows:

Quantenna Communications, Inc.

Notes to Condensed Consolidated Financial Statements (Unaudited)

	Date of Issuance	Number of Warrants	Exercise Price	Expiration Date
Common stock warrants	September 2015	83,006	$ 2.50	February 2019

6. Derivative Financial Instruments

The Company uses foreign currency forward contracts to reduce the earnings impact that exchange rate fluctuations have on operating expenses denominated in currencies other than the U.S. dollar. For accounting purposes, foreign currency forward contracts are designated as hedging instruments and, accordingly, the Company will record the fair value of the effective portion of these contracts as of the end of its' reporting period in its' condensed consolidated balance sheets (as an asset or a liability) with changes in fair value recorded within "Accumulated other comprehensive loss" under "Total stockholders' equity". The fair value of the derivative financial instruments are combined together on the balance sheet whenever there is a master netting arrangement in place. The changes in fair value will remain in "Accumulated other comprehensive loss" until the costs are recognized, at which time the Company will reclassify the cumulative change of fair value relating to the hedges proportionately into the respective line items on the condensed consolidated income statements. Any changes in fair value of the ineffective portion of the forward contracts will be recognized immediately in the Company's consolidated income statement under "Other income, net".

In concurrence with the implementation of its hedging program during three months ended July 1, 2018, the Company early-adopted the provisions of ASU 2017-12 as of the beginning of the second quarter of fiscal 2018 on a prospective basis. The early-adoption of ASU 2017-12 did not result in any adjustment to the Company's consolidated financial statements as of the beginning of the second quarter of fiscal 2018 as the Company did not enter into any hedge accounting activities in prior reporting periods.

The effects of derivative instruments and hedging activities on the condensed consolidated statement of operations was immaterial for the three and six months ended July 1, 2018 and its effect on the condensed consolidated statement of comprehensive loss from changes in fair value for each of the three and six months ended July 1, 2018 was $0.5 million. The Company did not enter into any hedging activities for the comparative periods in fiscal 2017.

7. Commitments and Contingencies

Leases

The Company conducts its operations using leased office facilities in various locations. The following is a schedule of future minimum lease payments under operating leases as of July 1, 2018 (in thousands):

2018 (remaining six months)	$ 1,405
2019	2,761
2020	2,417
2021	1,918
2022	4,085
Total minimum lease payments	$ 12,586

The Company leases office space under arrangements expiring through 2026. Rent expense for the three months ended July 1, 2018 and July 2, 2017 was $0.8 million and $0.4 million, respectively, and $1.5 million and $0.7 million, respectively, for the six months ended July 1, 2018 and July 2, 2017.

Purchase Commitments

The Company has purchase obligations of $24.1 million that are based on outstanding purchase orders as of July 1, 2018, related to the fabrication of certain wafers for which production has started. These purchase orders are cancellable at any time, provided that the Company is required to pay all costs incurred through the cancellation date. Historically, the Company has rarely canceled these agreements once production has started. The Company did not otherwise have any outstanding non-cancellable purchase obligations as of July 1, 2018.

Indemnification

In connection with the sale of its semiconductor products, the Company executes standard software license agreements allowing customers to use its firmware. Under the indemnification clauses of these license agreements, the Company agrees to defend the licensee against third-party claims asserting infringement by the Company's products of certain intellectual property rights, which may include patents, copyrights, trademarks or trade secrets, and to pay any judgments entered on such claims against the licensee, subject to certain restrictions and limitations. The Company has never incurred significant expense defending its licensees against third-party claims. Further, the Company has never incurred significant expense under its standard product or services performance warranties. As a result, the Company believes the estimated fair value of these agreements is minimal. Accordingly, the Company has no liabilities recorded for these agreements at July 1, 2018.

Commitments

In April 2012, an agreement was entered into with Joint Stock Company "RUSNANO" ("RUSNANO") (formerly Open Joint Stock Company "RUSNANO"), which required the Company to form a wholly-owned subsidiary in the Russian Federation and to provide funding to the subsidiary in the three years following April 16, 2012. This wholly-owned subsidiary performs research and development activities for the Company. Funding means cash transfers to the subsidiary for equity investments, reimbursements of subsidiary operating expenses and Company expenses related to the subsidiary. RUSNANO also requires participation in subsidiary financial decisions.

In July 2014, the Company entered into an amended and restated letter agreement with RUSNANO pursuant to which the Company agreed, among other matters, to operate and fund its Russian operations in an aggregate amount of $13.0 million over six annual periods beginning on December 31, 2014. The annual funding requirements in period one to period six are $2.2 million, $1.7 million, $2.0 million, $2.2 million, $2.4 million, and $2.5 million, respectively. In the event that the Company fails to meet its funding obligations for any period, it will be required to pay RUSNANO a penalty fee of 10% on 80% of the difference between the funding obligation and the actual funding for that period, subject to a cure period of one calendar quarter after the applicable period funding deadline. As of July 1, 2018, the Company had met the minimum funding requirements and no penalty had been incurred.

As of July 1, 2018, the Company's non-cancellable obligations for its definite long-lived intangible assets which are comprised of software licenses were approximately $3.3 million, of which $0.7 million is due payable in fiscal 2018 and $2.6 million is due payable within the subsequent two years.

Legal Matters

From time to time, the Company is a party to litigation and subject to claims incident to the ordinary course of business, including intellectual property claims, labor and employment claims, breach of contract claims, and other matters. Significant judgment is required when we assess the likelihood of any adverse judgments or outcomes to a potential claim or legal proceeding, as well as potential ranges of probable losses, and when the outcomes of the claims or proceedings are probable and reasonably estimable. Because of uncertainties related to these matters, we base our estimates on the information available at the time. As additional information becomes available, we reassess the potential liability related to pending claims and litigation, and may revise our estimates. Any revisions in the estimates of potential liabilities could have a material impact on the Company's results of operations, financial position, and cash flows.

8. Long-term Debt

Loan and Security Agreement

The Company's Amended and Restated Loan and Security Agreement with Silicon Valley Bank ("SVB") (the "SVB Loan and Security Agreement") includes (i) term loans, (ii) a revolving line of credit, and (iii) a mezzanine loan. The mezzanine loan was canceled upon its expiration in fiscal 2017 and the revolving line of credit expired in May 2018.

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On December 31, 2017, the Company sought to extinguish its term loans under the SVB Loan and Security Agreement of which approximately $3.9 million (including interest and early termination fees) remained outstanding. The Company reclassified the final $3.9 million payment on December 31, 2017 to "Long-term debt, current portion" in its condensed consolidated balance sheet as of that date. The payment for the extinguishment of the term loans was processed on January 2, 2018.

9. Stockholders' Equity

Common Stock

The Company's Certificate of Incorporation, as amended, authorizes the Company to issue 1,000,000,000 shares of $0.0001 par value common stock. Each share of common stock is entitled to one vote. The holders of common stock are also entitled to receive dividends whenever funds are legally available and when and if declared by the board of directors. The Company has never declared any dividends.

The Company had reserved shares of common stock for issuance, on an as-converted basis, as follows:

	July 1, 2018
Options issued and outstanding	4,906,677
RSUs issued and outstanding	2,116,319
Shares available for ESPP	1,418,697
Shares available for future stock awards	2,578,321
	11,020,014

During the six months ended July 1, 2018, the Company granted 1,370,190 restricted stock units ("RSUs") and 666,250 options to employees. During the six months ended July 2, 2017, the Company granted 822,435 RSUs and 511,750 options to employees.

Options Subject to Repurchase

The Company has a right of repurchase with respect to unvested shares issued upon early exercise of options at an amount equal to the lower of (i) the exercise price of each restricted share being repurchased and (ii) the fair market value of such restricted share at the time the Company's right of repurchase is exercised. The Company's right to repurchase these shares lapses as to 1/36th of the total number of shares originally granted per month for 36 months. At July 1, 2018, 29,000 shares remained subject to the Company's right of repurchase.

The shares purchased by employees pursuant to the early exercise of stock options are not deemed, for accounting purposes, to be issued until those shares vest according to their respective vesting schedules. The cash received in exchange for unvested shares of early exercised stock options is recorded as an early exercise liability on the balance sheets and will be transferred to common stock and additional paid-in capital as such shares vest.

10. Stock-based Compensation

Total stock-based compensation expense for employees and non-employees recognized in the condensed consolidated statements of operations was as follows:

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	Three Months Ended		Six Months Ended	
	July 1, 2018	July 2, 2017	July 1, 2018	July 2, 2017
	(in thousands)			
Cost of revenue	$ 62	$ 42	$ 96	$ 85
Research and development	2,529	1,414	4,922	2,619
Sales and marketing	593	410	1,577	763
General and administrative	1,145	708	2,326	1,211
Total stock-based compensation expense	$ 4,329	$ 2,574	$ 8,921	$ 4,678

The above stock-based compensation expense related to the following equity-based awards:

	Three Months Ended		Nine Months Ended	
	July 1, 2018	July 2, 2017	July 1, 2018	July 2, 2017
	(in thousands)			
Stock options	$ 1,008	$ 881	$ 2,176	$ 1,681
RSU awards	2,713	1,231	5,516	1,950
ESPP shares	608	462	1,229	1,047
Total stock-based compensation expense	$ 4,329	$ 2,574	$ 8,921	$ 4,678

11. Income Taxes

The Company recorded an income tax benefit of $0.5 million and an income tax provision of $0.2 million, for the three months ended July 1, 2018 and July 2, 2017, respectively, and an income tax benefit of $0.5 million and an income tax provision of $0.7 million for the six months ended July 1, 2018 and July 2, 2017, respectively. The income tax benefit consists primarily of discrete excess stock based tax benefits. In the fourth quarter of fiscal 2017, management concluded that the valuation allowance for the Company's U.S. federal and state (with the exception of California) deferred tax assets was no longer needed primarily due to the emergence from cumulative losses over the previous three years.

As of July 1, 2018, based on the available objective evidence, management still believes it is more likely than not that the net deferred tax assets will be realized for federal and state purposes (except for California). We will continue to maintain a valuation allowance in those jurisdictions deemed necessary until sufficient positive evidence exists to support reversal. Such assessment may change in the future as further evidence becomes available.

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Act. The Tax Act makes broad and complex changes to the U.S. tax federal and state tax laws that affected 2017, the current year and onwards, including, but not limited to, a reduction of the U.S. federal corporate tax rate from as high as 35% to 21%, a general elimination of U.S. federal income taxes on dividends from foreign subsidiaries, net operating loss deduction limitations, and 100% disallowance of entertainment expense.

The Tax Act adds new provisions relating to “foreign derived intangible income” (“FDII”) and “global intangible low-taxed income” (“GILTI”). The Company has completed an analysis for FDII and GILTI and due to the forecasted results of the Company, there is currently no impact on the provision.

On December 22, 2017, the SEC staff issued Staff Accounting Bulletin No. 118 (“SAB 118”) which provides guidance on accounting for the tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the Tax Act enactment date for companies to complete the accounting under ASC 740, *Income Taxes* (“ASC 740”) for the year ended December 31, 2017. In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the Tax Act for which the accounting under ASC 740 is complete. The Company is still within the measurement period as of

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the second quarter of fiscal 2018 and no further conclusions have been made, as the Company reviews the law change and the impact to the Company.

Under Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"), our ability to utilize net operating loss carry-forwards ("NOLs") or other tax attributes such as research tax credits, in any taxable year may be limited if we experience, or have experienced, an "ownership change." A Section 382 "ownership change" generally occurs if one or more stockholders or groups of stockholders, who own at least 5% of our stock, increase their ownership by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. Similar rules may apply under state tax laws.

We have completed an analysis under Section 382 of the Code through December 31, 2016 and determined that there was no significant limitation to the utilization of NOL or tax credit carryforwards before they expire. We are in the process of updating the study through the current year and will update for any significant limitations to the utilization of NOL or tax credit carryforwards in the current year upon completion of the study.

12. Employee Benefit Plans

Defined Contribution Plan

The Company adopted a 401(k) Plan that qualifies as a deferred compensation arrangement under Section 401 of the Code. Under the 401(k) Plan, participating employees may defer a portion of their pretax earnings not to exceed the maximum amount allowable. The 401(k) Plan permits the Company to make matching contributions and profit sharing contributions to eligible participants. The Company has made matching contributions of $0.3 million for the six months ended July 1, 2018.

13. Related Party Transactions

Purchases from Cadence Design Systems, Inc.

Lip-Bu Tan, a member of the Company's board of directors since June 2015, resigned from the board in accordance with his previously announced intentions, effective June 5, 2018 in connection with the Company's Annual Meeting of Stockholders. As a result, Mr. Tan ceased to be a related party to the Company. Mr. Tan is the President and Chief Executive Officer of Cadence Design Systems, Inc. ("Cadence"), an electronic design automation software and engineering services company.

Since 2012, the Company has paid licensing fees for digital and analog layout tools and simulation tools from Cadence in the ordinary course of business. In fiscal 2017, the Company entered into a software license contract with Cadence for the use of various EDA software tools used for its research and development efforts. The Company classified the software licenses as definite long-lived intangible assets in its condensed consolidated balance sheets amounting to approximately $2.4 million as of July 1, 2018, net of accumulated amortization of approximately $0.8 million. Under the terms of this arrangement, the Company amortized fees of approximately $0.2 million and $0.7 million during the three months ended July 1, 2018 and July 2, 2017, respectively, and $0.5 million and $1.8 million during the six months July 1, 2018 and July 2, 2017, respectively, in its condensed consolidated statements of operations.

During the three months ended July 1, 2018, the Company engaged Cadence for design and development services related to integrated circuits amounting to approximately $1.8 million.

Item 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and related notes included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed with the U.S. Securities and Exchange Commission (the "SEC") on February 28, 2018 ("2017 Annual Report on Form 10-K") and the condensed consolidated financial statements and related notes included elsewhere in this Quarterly Report on Form 10-Q. This discussion contains forward-looking statements based upon current plans, expectations and beliefs that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors. Factors that could cause or contribute to such differences include, but are not limited to, those identified below, those discussed in the section titled "Risk Factors" and those included elsewhere in this Quarterly Report on Form 10-Q.

Our Management's Discussion and Analysis is organized as follows:

- **Overview.** Discussion of our business and overall analysis of financial and other highlights affecting our Company.
- **Results of Operations.** Analysis of our financial results comparing the second quarter and first six months of 2018 to the corresponding periods in 2017.
- **Liquidity and Capital Resources.** Analysis of changes in our balance sheets and cash flows, and discussion of our financial condition and sources of liquidity.
- **Contractual Commitments.** Contractual obligations as of July 1, 2018.

Overview

We are a leader in the design, development, and marketing of advanced high-speed wireless communication solutions enabling wireless local area networking. Our solutions are designed to deliver leading-edge Wi-Fi performance to support an increasing number of connected devices accessing a rapidly growing pool of digital content. We apply our wireless systems and software expertise with high-performance radio frequency, mixed-signal and digital semiconductor design skills to provide highly integrated Wi-Fi solutions to our customers. Wi-Fi is a ubiquitous standard for wireless network connectivity, defined by the Institute of Electrical and Electronics Engineers ("IEEE") 802.11 standardization body working group that is rapidly evolving to deliver continued performance improvements while maintaining backward compatibility.

We sell our Wi-Fi solutions directly to global original equipment manufacturers ("OEMs"), original design manufacturers ("ODMs") and contract manufacturers ("CMs") that serve the end markets we address. In addition, we sell our Wi-Fi solutions to third-party distributors who, in turn, resell to OEMs, ODMs and CMs. OEMs incorporate our solutions into their products, which are then sold to their own customers, such as service providers, retailers, enterprises, small and medium businesses, and retail consumers. To date, we have primarily addressed the service provider market for home networking applications, including home gateways, repeaters, and set-top boxes. We are also addressing additional end markets, with solutions for (i) retail OEMs for home networking as well as small and medium business applications (e.g., routers and repeaters), (ii) enterprise OEMs for enterprise networking applications (e.g., access points), and (iii) potential future opportunities from consumer electronics OEMs for consumer connected home applications, including wireless streaming of audio and video, wireless TVs, and wireless speakers. We believe the life cycles of our customers' products can range from approximately one year to five years or more depending on the end market.

Some OEMs purchase our Wi-Fi solutions directly from us and use them in the design and manufacture (directly or through their third-party contract manufacturers) of their own products. Other OEMs utilize ODMs to design and build subsystem products incorporating our Wi-Fi solutions, which the OEMs then purchase from the ODM and incorporate into the OEM products. Accordingly, we ship our Wi-Fi solutions either directly to the OEM, its contract manufacturer, or its ODM, based on the requirements of each OEM. However, we maintain close relationships with the target OEM to monitor OEM end-market demand as the initial Wi-Fi solution design win is generally awarded by the OEM.

We derive the substantial majority of our revenue from the sale of our Wi-Fi solutions. In addition, historically we also derived a portion of our revenue from a limited number of licensing and non-recurring arrangements. While licensing and non-recurring arrangements are not part of primary focus, we may enter into such arrangements on an opportunistic basis from time to time.

The following table shows OEM, ODM and third-party distributor customers from which we derived 10% or more of our revenue during the periods shown:

	Three Months Ended		Six Months Ended	
	July 1, 2018	July 2, 2017	July 1, 2018	July 2, 2017
	(Percentage of revenue)			
Customer:				
A	13%	12%	14%	13%
B	29%	15%	24%	14%

Over 99% of our revenue was generated outside the United States for the three and six months ended July 1, 2018 and July 2, 2017, based on ship-to destinations, and we anticipate that the vast majority of our shipments will continue to be delivered outside the United States. Although almost all shipments are delivered outside the United States, we believe that a significant number of the Wi-Fi products that include our semiconductors, such as access points, gateways, set-top boxes and repeaters, are ultimately sold by OEM customers to service providers in North America and Western Europe. To date, all of our revenue has been denominated in U.S. dollars. Refer to Note 1 to the condensed consolidated financial statements, *The Company and Summary of Significant Accounting Policies,* for further details of the Company's revenue by geographic region.

We use a fabless semiconductor business model and rely on third-party contractors to fabricate, assemble, and test our chipset designs. We purchase silicon wafers from Taiwan Semiconductor Manufacturing Company Limited ("TSMC"), our foundry partner, which are then shipped to third-party contractors who assemble and test our chipsets. Our inventory is distributed from the third-party contractors and a contracted warehouse in Taiwan. We believe this outsourced manufacturing approach gives us access to the best available process technology, reduces our capital requirements, and allows us to focus our resources on the design, development, marketing, sales, and customer integration of our Wi-Fi solutions. We typically receive purchase orders 16 to 18 weeks ahead of our customers' desired delivery date, and we build our inventory primarily on the basis of purchase orders from our customers.

Second Quarter 2018 and Recent Highlights

Revenue increased $6.3 million, or 13%, to $53.4 million for the three months ended July 1, 2018 and net income increased by $0.9 million for the same period when compared to the three months ended July 2, 2017. Revenue increased $13.6 million, or 16%, to $98.5 million for the six months ended July 1, 2018 and net loss increased by $1.5 million for the same period when compared to the six months ended July 2, 2017.

Gross profit increased $2.1 million, or 9%, to $25.9 million in the three months ended July 1, 2018 and increased $6.3 million, or 15%, to $48.6 million in the six months ended July 1, 2018 when compared to the corresponding periods in 2017.

The increase in revenue and gross profit were primarily due to an increase in sales of our Wi-Fi solutions driven by higher unit volumes. Operating expenses increased $2.1 million, or 9%, to $25.6 million for the three months ended July 1, 2018 and increased $9.5 million, or 22%, to $51.9 million when compared to the corresponding periods in 2017, primarily due to the continued expansion of our operations.

We generated cash from operations of $3.9 million for the six months ended July 1, 2018 and ended the second quarter of 2018 with cash and cash equivalents and marketable securities of $120.1 million, up 1% from December 31, 2017. On January 2, 2018, we extinguished our term loans by paying down the remaining outstanding balance of $3.9 million (including interest and early termination fees). See "Liquidity and Capital Resources" below for further details.

As of July 1, 2018, we had 387 employees, up 2% from 380 employees at the end of the fourth quarter of 2017, and up 11% from 348 employees at the end of the second quarter of 2017. We expect our headcount to continue to grow as we scale our business.

In the first six months of fiscal 2018, we publicly announced that we: partnered with Canal+ Group to deliver an end-to-end solution that enables wireless HD video redistribution from set-top box to a companion Over-The-Top (OTT) set-top box; enhanced Wi-Fi features on our QSR10G chipset family targeting gateways and access points that significantly improve the user experience of mobile Wi-Fi clients; partnered with Greenwave Systems, Inc., to deliver a full duplex 4x4 802.11ac Wave 2 Wi-Fi extender for superior whole-home coverage; collaborated with Icotera to deliver innovative next-generation fiber gateway and Wi-Fi access point solutions to the European market; introduced ViSiON, an innovative cloud-based service for Quantenna enabled devices using advanced analytics to accelerate and improve service provider deployments of best-in-class Wi-Fi devices; successfully integrated our full host offload, Spartan Wi-Fi booster, mesh repeater and access point solutions into more than 20 shipping OEM and ODM designs targeting turnkey implementation by service providers; and announced the new QSR10GU-AX Plus, a new enhanced solution targeting gateways and access points based on the draft IEEE 802.11ax standard that incorporates many unique performance features only offered by us.

We plan to continue to introduce leading edge premium Wi-Fi solutions and related technologies that increase our addressable market and expand our selling opportunities into the strategic customers which we serve.

Factors Affecting Our Performance

Design Wins with Existing and Prospective Service Providers

Existing and prospective service providers that we serve through our OEM and ODM customer partners tend to be global enterprises that are continuously working with their partners to deploy new products. We believe our Wi-Fi solutions enable service providers to differentiate their products and services and drive the next upgrade cycles in their end market to ultimately gain market share. We work closely with service providers to assist in the development of their product specifications and designs. We compete to secure service provider design wins through an extended sales cycle, which can often last six to 18 months. After a design win is achieved, we continue to work closely with the service providers to assist them and their OEMs and ODMs throughout their product development and early deployment, which can often last six to 18 months. We believe our design win performance is dependent on the investments we make in research and development and sales and marketing to bring innovative Wi-Fi solutions to our existing and new markets and develop close relationships with our customer partners and service providers. As a result, we expect our research and development and sales and marketing expenses to increase in absolute dollars as we continue to grow our business.

Because of this extended sales cycle, our revenue is highly dependent upon the ongoing achievement of service provider design wins. We expect future revenue to depend upon sales to service providers with whom we have existing relationships as well as our ability to garner design wins with new service providers with whom we currently do not have relationships or sales. Further, because we expect revenue relating to our earlier generation solutions to decline in the future, we consider these design wins critical to our future success.

Product Life Cycle of our Customer Partners and Service Providers; Expanding into Other End Markets

In the service provider home networking market, once service providers select our Wi-Fi solutions for integration into their products, we work with our OEM and ODM customer partners to monitor all phases of the product life cycle, including the initial design phase, prototype production and volume production. Our service providers' product life cycles typically range from three to five years or more, based on product features, size of subscriber base, and roll-out plans. In contrast, wireless products sold in the retail or consumer electronics end markets have shorter life cycles than those sold into the service provider home networking market. In the retail or consumer electronics markets, a wireless product typically has a product life cycle of one to two years.

Currently, the majority of our revenue is derived from sales to OEMs and ODMs serving the service provider home networking market, with relatively longer sales cycles, longer customer product development cycles and longer time to shipment, but also with longer product life cycles. However, as we expand into additional end markets, such as retail, small and medium business, enterprise or consumer electronics, we expect revenue from such markets to increase as a proportion of our revenue over time. The shorter product life cycles associated with such additional end markets typically require greater frequency of design wins, and they may also result in faster time to shipment of our Wi-Fi solutions.

Sales Volume and Customer Concentration

A typical design win can generate a wide range of sales volumes for our Wi-Fi solutions, depending on the end market demand for our customers' products. Such demand depends on several factors, including end market size, size of the service providers, product price and features, and the ability of our customer partners to sell their products into their end markets. As such, some design wins result in orders and significant revenue shortly after the design win is awarded and other design wins do not result in significant orders and revenue for several months or longer after the initial design win, if at all. As a result, an increase or decrease in the number of design wins we achieve on a quarterly or annual basis does not necessarily correlate to a likely increase or decrease in revenue in the same or immediately succeeding quarter or year. Nonetheless, design wins are critical to our continued sales, and we believe that the collective impact of design wins correlates to our overall revenue growth over time.

Our customer partners often share their product development schedules with us, including the projected launch dates of their wireless product offerings. Once our customer partners are in production, they generally will provide nine to 12-month forecasts of expected demand. However, they may change their purchase orders and demand forecasts at any time with limited or no prior notice.

We derive a significant portion of our revenue from a small number of OEMs and ODMs, and substantially all of our revenue to date has been generated by sales of our solutions to OEMs and ODMs serving the service provider market for home networking. While we strive to expand and diversify our customer base and we expect our customer concentration to decline over time, we anticipate that sales to a limited number of customer partners will continue to account for a significant percentage of our revenue in the foreseeable future. In light of this customer partner concentration, our revenue is likely to continue to be materially impacted by the purchasing decisions of our largest customer partners.

Wi-Fi Solutions Pricing, Cost and Gross Margin

Our average selling price ("ASP") can vary by product mix, customer mix and end market, due to end market-specific characteristics such as supply and demand, competitive landscape, the maturation of Wi-Fi solutions launched in prior years and the launch of new Wi-Fi solutions. Our gross margin depends on a variety of factors, including the sales volume, features, price, and manufacturing costs of our Wi-Fi solutions. We make continuous investments in our solutions to enhance existing and add new features, maintain our competitiveness, minimize ASP erosion, and reduce the cost of our solutions.

As we rely on third-party contractors for the fabrication, assembly and testing of our chipsets, we work closely with these third-parties to improve the manufacturability of our chipsets, lower wafer cost, enhance yields, lower assembly and test costs, and improve quality.

In general, our latest generation solutions have higher prices compared to our prior generation solutions. As is typical in the semiconductor industry and consistent with our historical trends, we expect the ASPs of our solutions to decline as those solutions mature and unit volumes increase. These ASP declines often coincide with improvements in manufacturing yields and lower wafer, assembly and testing costs, which may offset some or all of the margin reduction that results from lower ASPs.

Components of Results of Operations

Revenue

Our revenue is generated primarily from sales of our Wi-Fi solutions to our customer partners, net of accruals for estimated sales rebates. In addition, we sell our Wi-Fi solutions to third-party distributors who in turn resell to OEMs and ODMs. Our Wi-Fi solutions are integrated into OEM products, such as gateways, set-top boxes, repeaters or routers, which are then sold primarily to service providers. Our sales have historically been made on the basis of purchase orders against our standard terms and conditions, rather than long-term agreements and revenue is recognized on a sell-in basis. We account for rebates to end-user customer partners based on the maximum amount of rebate contractually due under the terms of the arrangement. Claims for customer rebates are accrued upon shipment to the ODM and adjusted based on historical settlement data. These rebate claim estimates are adjusted based on actual experience over time.

Sales of our Wi-Fi solutions fluctuate primarily based on competition, sales volume, customer inventory and price. We expect our revenue to fluctuate from quarter to quarter due to a variety of factors, such as customer product development and deployment cycles and the purchasing patterns of our customer partners and third-party distributors.

Cost of Revenue, Gross Margin

We utilize third-party contractors for the production of the chipsets included in our Wi-Fi solutions. Cost of revenue primarily relates to the purchase of silicon wafers from our third-party foundry, and costs associated with assembly, testing and inbound and outbound shipping of our wafers and chipsets. After we purchase wafers from our third-party foundry, we bear the manufacturing yield risk related to assembling and testing these wafers into chipsets, which can result in benefit or expense recorded in cost of revenue. Cost of revenue also includes lower of cost or market adjustments to the carrying value of inventory, scrap and inventory obsolescence, royalty costs, and any accruals for warranty obligations, which we record when revenue is recognized. Additionally, cost of revenue includes manufacturing overhead expense, such as personnel cost which primarily consist of compensation costs related to employees, consultants and contractors, including salaries, sales commissions, bonuses, stock-based compensation and other employee benefits, depreciation expense, and allocated administrative costs associated with supply chain management and quality assurance activities as well as property insurance premiums.

We seek to negotiate price reductions, which historically has included rebates, from our third-party foundry on the purchase of silicon wafers upon achieving certain volume targets. Such rebates are recorded as a reduction of inventory cost and are recognized as a reduction of cost of revenue. Because we do not have long-term, fixed supply agreements, our wafer costs are subject to changes based on the cyclical demand for semiconductors.

We calculate gross margin as revenue less cost of revenue divided by revenue. Our gross margin has been and will continue to be affected by a variety of factors, including ASPs, sales volume, and wafer, assembly and testing costs. We believe the primary driver of our gross margin is the ASPs negotiated between us and our customer partners, relative to the wafer, assembly and testing costs for our Wi-Fi solutions. As each of our Wi-Fi solutions matures and sales volumes increase, we expect ASPs to decline. Historically, such ASP declines have often coincided with lower wafer, assembly and testing costs, which have offset some or all of the gross margin reduction resulting from lower ASPs. In the future, we expect our gross margin to fluctuate as a result of changes in ASPs, introductions of new Wi-Fi solutions, changes in our product and customer mix, and changes in wafer, assembly and testing costs.

Operating Expenses

Our operating expenses consist of research and development (“R&D”), sales and marketing (“S&M”) and general and administrative (“G&A”) expenses. Personnel costs are the largest component of operating expenses and primarily consist of compensation costs related to employees, consultants and contractors, including salaries, sales commissions, bonuses, stock-based compensation and other employee benefits. As we continue to grow our business, we expect operating expenses to increase in absolute dollars.

Research and Development. Our R&D expenses consisted primarily of personnel costs to support our R&D activities, including silicon design, software development and testing, and customers partner’s product development support and qualification. R&D expenses also include tape-out costs, which include layout services, mask sets, prototype wafers, mask set revisions, intellectual property license fees, and system qualification and testing incurred before releasing new semiconductor designs into production. In addition, R&D expenses include design software and simulation tools licenses, depreciation expense, and allocated administrative costs. All R&D costs are expensed as incurred.

Sales and Marketing. Our S&M expenses consist primarily of personnel costs for our S&M activities, including pre-sales support. S&M expenses also included sales-based commissions we pay to independent sales representatives, public relations costs, trade show expenses, product marketing and communication, promotional activities, travel and entertainment costs and allocated administrative costs.

General and Administrative. Our G&A expenses consist primarily of personnel costs for our administrative personnel in support of our infrastructure functions such as general management, finance, human resources, legal, facilities and information technology. G&A expenses also include professional services fees, insurance premiums, office equipment and supplies, depreciation expense and allocated administrative costs.

Other Income (Expense), Net

Other income (expense), net consists primarily of interest income from our cash and cash equivalents and marketable securities portfolio, and the effect of exchange rates on our foreign currency-denominated asset and liability balances.

Provision for Income Taxes

Provision for income taxes consists primarily of alternative minimum tax and income taxes in the foreign jurisdictions in which we conduct business.

Results of Operations

The following tables set forth our results of operations for the periods presented, in dollars and as a percentage of our revenue:

	Three Months Ended			
	July 1, 2018		July 2, 2017	
	Amount	% of Revenue	Amount	% of Revenue
	(In thousands, except per share data)			
Revenue	$ 53,427	100.0%	$ 47,085	100.0 %
Cost of revenue [1]	27,563	51.6	23,314	49.5
Gross profit	25,864	48.4	23,771	50.5
Operating expenses [1]				
Research and development	17,084	32.0	16,055	34.1
Sales and marketing	3,979	7.4	3,276	7.0
General and administrative	4,518	8.5	4,106	8.7
Total operating expenses	25,581	47.9	23,437	49.8
Income from operations	283	0.5	334	0.7
Interest expense	—	—	(141)	(0.3)
Other income, net	230	0.4	186	0.4
Income before income taxes	513	0.9	379	0.8
(Provision) benefit for income taxes	519	1.0	(210)	(0.4)
Net income	$ 1,032	1.9%	$ 169	0.4 %
Net income per share:				
Basic	$ 0.03		$ 0.00	
Diluted	$ 0.03		$ 0.00	
Weighted average shares used to compute basic and diluted net income per share:				
Basic	36,511		33,881	
Diluted	39,377		38,475	

	Six Months Ended			
	July 1, 2018		July 2, 2017	
	Amount	% of Revenue	Amount	% of Revenue
	(In thousands, except per share data)			
Revenue	$ 98,544	100.0 %	$ 84,976	100.0 %
Cost of revenue (1)	49,915	50.7	42,621	50.2
Gross profit	48,629	49.3	42,355	49.8
Operating expenses (1)				
Research and development	34,685	35.2	28,688	33.7
Sales and marketing	8,474	8.6	6,191	7.3
General and administrative	8,716	8.8	7,496	8.8
Total operating expenses	51,875	52.6	42,375	49.8
Loss from operations	(3,246)	(3.3)	(20)	—
Interest expense	—	—	(339)	(0.4)
Other income, net	564	0.6	387	0.5
Income (loss) before income taxes	(2,682)	(2.7)	28	0.1
(Provision) benefit for income taxes	467	0.5	(744)	(0.9)
Net loss	$ (2,215)	(2.2)%	$ (716)	(0.8)%
Net loss per share:				
Basic and diluted	$ (0.06)		$ (0.02)	
Weighted average shares used to compute net loss per share:				
Basic and diluted	36,179		33,494	

(1) Cost of revenue and operating expenses include stock-based compensation expense as follows:

	Three Months Ended		Six Months Ended	
	July 1, 2018	July 2, 2017	July 1, 2018	July 2, 2017
	(In thousands)			
Cost of revenue	$ 62	$ 42	$ 96	$ 85
Research and development	2,529	1,414	4,922	2,619
Sales and marketing	593	410	1,577	763
General and administrative	1,145	708	2,326	1,211
Total stock-based compensation expense	$ 4,329	$ 2,574	$ 8,921	$ 4,678

Comparison of the three and six months ended July 1, 2018 and July 2, 2017

Revenue, Cost of Revenue, Gross Profit and Gross Margin

	Three Months Ended				Six Months Ended			
	July 1, 2018	July 2, 2017	Change	% Change	July 1, 2018	July 2, 2017	Change	% Change
	(Dollars in thousands)							
Revenue	$ 53,427	$ 47,085	$ 6,342	13%	$ 98,544	$ 84,976	$13,568	16%
Cost of revenue	27,563	23,314	4,249	18%	49,915	42,621	7,294	17%
Gross profit	$ 25,864	$ 23,771	$ 2,093	9%	$ 48,629	$ 42,355	$ 6,274	15%
Gross margin	*48.4%*	*50.5%*	*(210)bps*		*49.3%*	*49.8%*	*(50)bps*	

Revenue. Revenue increased $6.3 million, or 13%, to $53.4 million in the three months ended July 1, 2018 and increased $13.6 million, or 16%, to $98.5 million in the six months ended July 1, 2018 compared to the corresponding periods in 2017, primarily due to higher unit volumes from increased sales of our new 11ac Wave 3 (10G) products. This increase was partially offset by declining sales of our legacy 11n products. We expect revenue will increase in absolute dollars in the third quarter of fiscal 2018 compared to the second quarter of fiscal 2018 due to overall higher unit shipments of our Wi-Fi solutions.

Cost of Revenue, Gross Profit and Gross Margin. Cost of revenue increased $4.2 million, or 18%, to $27.6 million in the three months ended July 1, 2018 and increased $7.3 million, or 17%, to $49.9 million in the six months ended July 1, 2018 compared to the corresponding periods in 2017, as a result of higher unit volumes and changes to the product mix including an increased concentration of our higher cost 10G product.

Gross profit increased $2.1 million, or 9%, to $25.9 million in the three months ended July 1, 2018 and increased $6.3 million, or 15%, to $48.6 million compared to the corresponding periods in 2017 due to the higher unit volumes and changes to the product mix including an increased concentration of our higher priced 10G product.

Gross margin decreased by 210 basis points, to 48.4%, in the three months ended July 1, 2018 and decreased by 50 basis points, to 49.3%, in the six months ended July 1, 2018 compared to the corresponding periods in 2017, primarily due to changes in our product mix including an increased concentration of our higher cost 10G product. We expect gross margin to increase in the third quarter of fiscal 2018 compared to the second quarter of fiscal 2018 due to cost improvements in our 10G and other products.

Operating Expenses

	Three Months Ended					
	July 1, 2018		July 2, 2017			
	Amount	% of Revenue	Amount	% of Revenue	Change	% Change
	(Dollars in thousands)					
Operating expenses:						
Research and development	$ 17,084	32.0%	$ 16,055	34.1%	$ 1,029	6%
Sales and marketing	3,979	7.4	3,276	7.0	703	21
General and administrative	4,518	8.5	4,106	8.7	412	10
Total operating expenses	$ 25,581	47.9%	$ 23,437	49.8%	$ 2,144	9%

	Six Months Ended					
	July 1, 2018		July 2, 2017			
	Amount	% of Revenue	Amount	% of Revenue	Change	% Change
	(Dollars in thousands)					
Operating expenses:						
Research and development	$ 34,685	35.2%	$ 28,688	33.8%	$ 5,997	21%
Sales and marketing	8,474	8.6	6,191	7.3	2,283	37
General and administrative	8,716	8.8	7,496	8.8	1,220	16
Total operating expenses	$ 51,875	52.6%	$ 42,375	49.9%	$ 9,500	22%

Research and Development Expenses. R&D expenses increased $1.0 million, or 6%, to $17.1 million in the three months ended July 1, 2018 compared to the corresponding period in 2017. The increase was primarily due to a $2.5 million increase in personnel costs, including $1.1 million in stock-based compensation expense, resulting from a 9% increase in headcount to further develop and expand our solutions portfolio and to support increased customer product development activities and $0.5 million in allocated administrative costs. This increase was partially offset by a decrease of $1.1 million in tape-out and lay-out expenses, $0.7 million in equipment related expenses to support and qualify new product platforms and $0.3 million in professional services. We expect that R&D expenses will increase in the third quarter of fiscal 2018 compared to the second quarter of fiscal 2018.

R&D expenses increased $6.0 million, or 21%, to $34.7 million in the six months ended July 1, 2018 compared to the corresponding period in 2017. The increase was primarily due to a $5.2 million increase in personnel costs, including $2.3 million in stock-based compensation expense, resulting from a 12% increase in headcount to further develop and expand our solutions portfolio and to support increased customer product development activities, and $1.2 million in allocated administrative costs. This increase was partially offset by a decrease of $0.4 million in tape-out and lay-out expenses and other expenses.

Sales and Marketing Expenses. S&M expenses increased $0.7 million, or 21%, to $4.0 million in the three months ended July 1, 2018 compared to the corresponding period in 2017, primarily due to an increase of $0.5 million in personnel related costs, including $0.2 million in stock based compensation expense to support our expanding business. We expect that S&M expenses will be flat in the third quarter of fiscal 2018 compared to the second quarter of fiscal 2018.

S&M expenses increased $2.3 million, or 37%, to $8.5 million in the six months ended July 1, 2018 compared to the corresponding period in 2017, primarily due to an increase of $1.9 million in personnel related costs, including $0.8 million in stock based compensation expense to support our expanding business and $0.3 million in allocated administrative costs.

General and Administrative Expenses. G&A expenses increased $0.4 million, or 10%, to $4.5 million in the three months ended July 1, 2018 compared to the corresponding period in 2017, primarily due to a $1.0 million increase in personnel costs, including $0.4 million in stock-based compensation expense, as we grew our administrative headcount by 31% and $0.6 million in additional facility costs to support the growth of our business. This increase was partially offset by $0.7 million in lower allocated administrative costs and $0.6 million in professional services. We expect that G&A expenses will increase in the third quarter of fiscal 2018 compared to the second quarter of fiscal 2018.

G&A expenses increased $1.2 million, or 16%, to $8.7 million in the six months ended July 1, 2018 compared to the corresponding period in 2017, primarily due to a $2.1 million in personnel costs, including a $1.1 million increase in stock-based compensation expense, as we increased our administrative headcount by 41%, $1.2 million in additional facility costs and $0.4 million in depreciation and amortization expense to support the growth of our business. This increase was partially offset by $1.5 million in lower allocated administrative costs and $1.0 million in professional services.

Liquidity and Capital Resources

Since our inception in 2005, we have funded our operations primarily through sales of our common stock in conjunction with our initial public offering ("IPO"), private equity financing, gross profits generated from sales, technology licensing and debt financing arrangements. As of July 1, 2018 and December 31, 2017, we had cash and cash equivalents and marketable securities of $120.1 million and $118.6 million, respectively, and as of July 1, 2018, we had an accumulated deficit of $129.4 million. On November 2, 2016, we consummated our IPO and received net proceeds of approximately $97.4 million, after underwriting discounts, commissions and other offering expenses.

Credit Facilities

Our Amended and Restated Loan and Security Agreement with Silicon Valley Bank ("SVB") (the "SVB Loan and Security Agreement") includes (i) term loans, (ii) a revolving line of credit, and (iii) a mezzanine loan. The mezzanine loan was canceled upon its expiration in fiscal 2017 and the revolving line of credit expired in May 2018.

On December 31, 2017, we sought to extinguish our term loans under the SVB Loan and Security Agreement of which approximately $3.9 million (including interest and early termination fees) remained outstanding. The Company reclassified the final $3.9 million payment on December 31, 2017 to "Long-term debt, current portion" in its condensed consolidated balance sheet as of that date. The payment for the extinguishment of the term loans was processed on January 2, 2018.

Based on our current operating plan, we expect that our cash and cash equivalents and marketable securities will be sufficient to fund our operations through at least the next 12 months. However, our liquidity assumptions may prove to be incorrect, and we could utilize our available financial resources sooner than we currently expect.

In the event that additional capital is needed, we may not be able to raise such capital on terms acceptable to us or at all. If we are unable to raise additional capital when desired, our business, results of operations, and financial condition would be adversely affected. We may also seek to raise capital opportunistically to support the anticipated growth of our business.

Cash Flows

The following table sets forth the primary sources and uses of cash and cash equivalents for each of the periods presented below:

	Six Months Ended	
	July 1, 2018	July 2, 2017
	(In thousands)	
Net cash provided by (used in):		
Operating activities	$ 3,851	$ 6,932
Investing activities	(4,846)	(68,621)
Financing activities	$ 136	$ 2,875

Cash flows from Operating Activities.

Net cash provided by operating activities for the six months ended July 1, 2018 and July 2, 2017 was $3.9 million and $6.9 million, respectively.

Net cash provided by operating activities for the six months ended July 1, 2018 of $3.9 million resulted from non-cash expenses of $8.9 million in stock based compensation, $2.3 million of depreciation and amortization and $0.9 million of non-cash deferred taxes, partially offset by net cash outflow from changes in operating assets and liabilities of $4.5 million and a net loss of $2.2 million. The $4.5 million cash outflow from changes in operating assets and liabilities primarily consisted of$8.7 million in increased inventory due to timing of raw materials purchases and $2.9 million in increased accounts receivable due to timing of collections offset by $5.0 million in increased accounts payable due to timing of payments to our suppliers, a $1.7 million increase in accrued and other current liabilities and a $0.4 million decrease in prepaid expenses and other assets required to support the growth of our business.

Net cash provided by operating activities for the six months ended July 2, 2017 of $6.9 million resulted from non-cash stock based compensation expenses of $4.7 million, a net cash inflow from changes in operating assets and liabilities of $1.7 million, $1.0 million of depreciation and amortization and $0.2 million of non-cash interest expense, offset by a net loss of $0.7 million. The $1.7 million inflow from changes in operating assets and liabilities primarily consists of a $9.9 million increase in accrued and other current liabilities related to expenses required to support the growth of our business and a $2.7 million increase in accounts payable due to timing of payments to our suppliers. This was partially offset by a $5.2 million increase in inventory due to timing of purchases of raw materials, a $3.2 million increase in accounts receivable due to increased sales and timing of collections and a $2.4 million increase in prepaid expenses and other current assets to support the growth of our business.

Cash flows from Investing Activities.

Net cash used in investing activities was $4.8 million for the six months ended July 1, 2018 compared to net cash used in investing activities for the six months ended July 2, 2017 of $68.6 million. Cash used in investing activities for the six months ended July 1, 2018 related to $39.0 million of marketable securities purchases, $1.4 million of property and equipment purchases and $0.6 million of long-term investment purchases, partially offset by maturities of $36.1 million in marketable securities.

Net cash used in investing activities for the six months ended July 2, 2017 was primarily related to $71.2 million of marketable securities purchases and $2.4 million of property and equipment purchases, partially offset by the sale of $5.0 million marketable securities.

Cash flows from Financing Activities.

Net cash provided by financing activities was $0.1 million for the six months ended July 1, 2018, compared to net cash provided by financing activities for the six months ended July 2, 2017 of $2.9 million. Net cash flow provided by financing activities during the six months ended July 1, 2018 reflected $5.3 million in proceeds from the issuance of common stock partially offset by the repayment of $3.9 million in outstanding debt, payment of $0.7 million of taxes withheld for vested stock awards and payments of $0.6 million related to intangible asset purchases.

Net cash provided by financing activities for the six months ended July 2, 2017 primarily reflected proceeds from issuance of common stock of $4.0 million, partially offset by the repayment of $1.1 million in outstanding debt.

Contractual Obligations and Commitments

The following table summarizes our contractual commitments and obligations as of July 1, 2018:

	Total	Less Than 1 Year	1-3 Years	3-5 Years	More Than 5 Years
			(In thousands)		
Operating lease obligations	$ 12,586	$ 2,095	$ 6,891	$ 3,355	$ 245
Commitments(1)	4,900	2,400	2,500	—	—
Software license commitments	3,348	1,488	1,860	—	—
	$ 20,834	$ 5,983	$ 11,251	$ 3,355	$ 245

(1) In April 2012, we entered into a letter agreement with RUSNANO, pursuant to which we agreed, among other matters, to create a subsidiary to be incorporated in Russia and to fund such subsidiary in an aggregate amount of $20.0 million over three years. In July 2014, we amended and restated such letter agreement with RUSNANO, pursuant to which we agreed, among other matters, to operate and fund our Russian operations in an aggregate amount of $13.0 million over six annual periods beginning on December 31, 2014. The annual funding requirements in period one to period six are $2.2 million, $1.7 million, $2.0 million, $2.2 million, $2.4 million, and $2.5 million, respectively. In the event that we fail to meet our funding obligations for any period, we will be required to pay RUSNANO a penalty fee of 10% on 80% of the difference between the funding obligation and the actual funding for that period, subject to a cure period of one calendar quarter after the applicable period funding deadline. As of July 1, 2018, we had met the minimum funding requirements.

Obligations under contracts that we can cancel without a significant penalty are not included in the table above. As of July 1, 2018, we have purchase obligations of $24.1 million that are based on outstanding purchase orders related to the fabrication of silicon wafers for which production has started. These purchase orders are cancellable at any time, provided that we are required to pay all costs incurred through the cancellation date. Historically, we have rarely canceled these agreements once production has started.

Off-Balance Sheet Arrangements

As of July 1, 2018, we did not have any off-balance sheet arrangements.

JOBS Act Accounting Election

The JOBS Act permits an "emerging growth company" such as us to take advantage of an extended transition period to comply with new or revised accounting standards applicable to public companies. We are choosing to "opt out" of this provision and, as a result, we will comply with new or revised accounting standards as required when they are adopted. This decision to opt out of the extended transition period under the JOBS Act is irrevocable.

Critical Accounting Policies, Significant Judgments and Use of Estimates

Our condensed consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States ("US GAAP"). Our critical accounting policies are more fully described in this "Management's Discussion and Analysis of Financial Condition and Results of Operations" section and Note 1, "The Company and Summary of Significant Accounting Policies" contained in the "Notes to Consolidated Financial Statements" of our 2017 Annual Report on Form 10-K. There were no changes to our significant accounting policies during the three and six months ended July 1, 2018.

An accounting policy is deemed to be critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made, and if different estimates that reasonably could have been used or changes in the accounting estimates that are reasonably likely to occur periodically, could materially impact our condensed consolidated financial statements. Our critical accounting policies include our more significant estimates and assumptions used in the preparation of our condensed consolidated financial statements. Our critical accounting policies are described in Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" of our 2017 Annual Report on Form 10-K.

On an ongoing basis, we evaluate our critical accounting policies and estimates, including those related to revenue recognition, inventory valuation, stock-based compensation, common stock warrants, income taxes, contingencies and litigation. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Recent Accounting Pronouncements

See Note 2 contained in the "Notes to Condensed Consolidated Financial Statements" in Item 1 of Part I of this Quarterly Report on Form 10-Q for a full description of the recent accounting pronouncements and our explanation of their impact, if any, on our results of operations and financial condition.

Item 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We have operations both within the United States and internationally, and we are exposed to market risks in the ordinary course of our business. We are primarily exposed to market risks related to changes in interest rates, foreign currency exchange rates and inflation, as well as risks relating to changes in the general economic conditions in the countries where we conduct business. These exposures may change over time as business practices evolve, and could have a material adverse impact on our financial results.

Interest Rate Risk

We had cash and cash equivalents and marketable securities of $120.1 million and $118.6 million as of July 1, 2018 and December 31, 2017, respectively. We manage our cash and cash equivalents portfolio and marketable securities for operating and working capital purposes.

Our cash and cash equivalents are held in cash, short-term money market funds, agency securities and commercial paper with maturities of less than 90 days when purchased. Due to the short-term nature of these instruments, we believe that we do not have any material exposure to changes in the fair value of our cash equivalents portfolio as a result of changes in interest rates. Declines in interest rates, however, would reduce our future interest income. During the six months ended July 1, 2018, the effect of a hypothetical 100-basis point (one percentage point) increase or decrease in overall interest rates would not have had a material impact on our interest income.

Our exposure to market risk for changes in interest rates relates primarily to our investment portfolio comprising of marketable securities. We invest in a number of securities including U.S. agency notes, U.S. treasuries, commercial paper, corporate bonds, municipal bonds and money market funds. We attempt to ensure the safety and preservation of our invested principal funds by limiting default risk, market risk and reinvestment risk. We mitigate default risk by investing in high grade investment securities.

The fair market value of our fixed rate securities may be adversely impacted by increases in interest rates while income earned may decline as a result of decreases in interest rates. A hypothetical 100 basis-point (one percentage point) increase or decrease in interest rates compared to rates at July 1, 2018 would have affected the fair value of our investment portfolio by approximately $0.7 million.

Foreign Currency Exchange Risk

To date, all of our revenue and the majority of our operating expenses have been denominated in U.S. dollars. Some operating expenses, primarily associated with our international subsidiaries, are denominated in foreign currencies and are therefore exposed to fluctuations due to changes in foreign currency exchange rates, which may cause us to recognize transaction gains and losses in our consolidated statements of operations. During the three months ended July 1, 2018, we established a currency risk management program to hedge against fluctuations and volatility of future cash flows caused by changes in currency exchange rates. Under this program, our strategy is to have increases or decreases in foreign currency exposures mitigated by gains or losses on the foreign currency forward derivative contracts in order to mitigate the risks and volatility associated with foreign currency transaction gains or losses. This strategy reduces, but does not always entirely eliminate, the impact of currency exchange rate movements. Refer to Note 6 to the condensed consolidated financial statements, *Derivative Instruments*, for further details.

Item 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures.

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of July 1, 2018, the last day of the period covered by this Quarterly Report on Form 10-Q. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), refers to controls and procedures that are designed to provide reasonable assurance that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to provide reasonable assurance that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

Because of the material weakness in our internal control over financial reporting as previously disclosed in our final prospectus, dated October 27, 2016, or the Prospectus, and in our Annual Reports on Form 10-K for the fiscal years ended January 1, 2017 and December 31, 2017, and as described below, our Chief Executive Officer and Chief Financial Officer concluded that, as of July 1, 2018, our disclosure controls and procedures were not effective. Notwithstanding the material weakness in our internal control over financial reporting, our management, including our Chief Executive Officer and Chief Financial Officer, believes that the condensed consolidated financial statements in this Quarterly Report on Form 10-Q fairly present, in all material respects, our financial position, results of operations and cash flows for the periods presented in conformity with US GAAP.

During the course of the preparation of our 2015 consolidated financial statements, we identified a control deficiency in our internal control over financial reporting. This control deficiency did not result in a misstatement of the annual or interim financial statements, however, this control deficiency could result in a misstatement of the consolidated financial statements or disclosures that would result in a material misstatement to the annual or interim consolidated financial statements that would not be prevented or detected on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis. Accordingly, our management has determined that this control deficiency constitutes a material weakness.

The material weakness was a result of a lack of sufficient qualified personnel within the finance and accounting function who possessed an appropriate level of expertise to effectively perform the following functions commensurate with our structure and financial reporting requirements:

- identify, select and apply US GAAP sufficiently to provide reasonable assurance that transactions were being appropriately recorded; and
- assess risk and design appropriate control activities over financial and reporting processes necessary to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements.

Management's Remediation Efforts

In response to the identified material weakness, we have taken a number of steps to remediate this material weakness and improve our internal control over financial reporting. Since the beginning of fiscal 2017 and through the second quarter of fiscal 2018, we have increased our dedicated finance and accounting personnel, including certified public accountants and several finance support team members. We have also implemented additional internal controls, including additional workflows relating to change management, review and approval processes, and account reconciliations. The additional resources added to the finance function have enabled us to further (i) allow separate preparation and review of reconciliations and other account analysis, (ii) enable us to develop a more structured close process, including enhancing our existing policies and procedures, to improve the completeness, timeliness and accuracy of our financial reporting, and (iii) identify and review complex or unusual transactions. We believe these individuals possess the appropriate knowledge and capacity to help fulfill our obligations to comply with the accounting and reporting requirements. Additionally, we have further significantly improved internal controls surrounding our financial reporting process. During the second quarter of fiscal 2018, we continued to validate and test the design and operating effectiveness of our internal controls.

While we believe that the foregoing actions have improved our internal control over financial reporting, the implementation of these measures is ongoing and will require validation and testing of the design and operating effectiveness of internal controls over a sustained period of financial reporting cycles. We also believe that our planned efforts to assess risk and identify, design and implement the necessary control activities to address such risk will be effective in remediating the material weakness described above. However, until the above remediation steps have been completed and operate for a sufficient period of time, and subsequent evaluation of their effectiveness is completed, the material weakness previously disclosed, and as described above, will continue to exist. We may also conclude that additional measures may be required to remediate the material weaknesses in our internal control over financial reporting, which may necessitate additional implementation and evaluation time. We will continue to assess the effectiveness of our internal control over financial reporting and take steps to remediate the known material weaknesses expeditiously.

Changes in Internal Control Over Financial Reporting

We are taking actions to remediate the material weakness relating to our internal control over financial reporting, as described above. Except as otherwise described herein, there were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rules 13(a)-15(d) and 15d-15(d) under the Exchange Act that occurred during the quarter ended July 1, 2018 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II - OTHER INFORMATION

Item 1. LEGAL PROCEEDINGS

We are currently not party to litigation that could have a material adverse effect on our business. From time to time, we may be subject to legal proceedings and claims arising in the ordinary course of business. The semiconductor and Wi-Fi industries are characterized by frequent claims and litigation, including claims regarding infringement of intellectual property rights. Litigation is often unpredictable, costly, diverts management's attention, and may result in an unfavorable outcome, including monetary damages or injunctive relief.

Item 1A. RISK FACTORS

You should carefully consider the risks and uncertainties described below, together with all of the other information in this Quarterly Report on Form 10-Q, including "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our condensed consolidated financial statements and related notes included elsewhere. The risks and uncertainties described below are not the only ones we face. Additional risk and uncertainties not presently known to us or that we presently deem less significant may also impair our business operations. If any of the events or circumstances described in the following risk factors actually occurs, our business, operating results, financial condition, cash flows and prospects could be materially and adversely affected. In that event, the trading price of our common stock could decline, and you could lose part or all of your investment.

Risks Related to Our Business and Industry

If we fail to develop and introduce new or enhanced Wi-Fi solutions to meet the requirements of our target markets on a timely basis, our ability to retain and attract customers could be impaired and our competitive position could be harmed.

We are largely dependent on sales of leading-edge, high-performance Wi-Fi solutions. The markets we target with our solutions are characterized by rapidly changing technology, changing customer and service provider needs, evolving industry standards, intense competition and frequent introductions of new products. To succeed, we must effectively anticipate customer and service provider requirements and respond to these requirements on a timely basis. For example, we were the first to announce an 802.11ac 8x8 product, our QSR-10G product, in September 2015. We also announced new products based on the draft 802.11ax standard in October 2016 and January 2017. If we fail to develop new Wi-Fi solutions or enhancements to our existing solutions that offer increased features and performance in a cost-effective manner, or if our customers or service providers do not believe that our solutions have compelling technological advantages, our business could be adversely affected. We must also successfully manage the transition from older solutions to new or enhanced solutions to minimize disruptions in our business. In addition, if our competitors introduce new products that outperform our solutions or provide similar performance at lower prices, we may lose market share or be required to reduce our prices. For example, in February 2017, Qualcomm announced a new 8x8 product based on the draft 802.11ax standard that may compete with our previously announced product. In addition, in August 2017, Broadcom announced new 4x4 Wi-Fi connectivity solutions based on the draft 802.11ax standard and in January 2018, Intel announced new chipsets based on the draft 802.11ax standard for mainstream 2x2 and 4x4 home routers and gateways. We expect our competitors will also introduce new products based on new standards and other next generation technologies in the future. In addition, establishment of new standards, such as 802.11ax, must go through an extensive process with the Institute of Electrical and Electronics Engineers and may be subject to delays and revision. Our failure to accurately predict market needs or timely develop Wi-Fi solutions that address market needs could harm our business, results of operations and financial condition.

The complexity of our solutions could result in unforeseen design and development delays or expenditures.

Developing our Wi-Fi solutions is expensive, complex and time-consuming, and involves uncertainties. We must often make significant investments in product roadmaps, design and development far in advance of established market needs and may not be able to consistently and accurately predict what those actual needs will be in the future. Each phase in the development of our solutions presents serious risks of failure, rework or delay, any one of which could impact the timing and cost-effective development of such solutions and could jeopardize customer acceptance of the solutions. Product development efforts may last two years or longer, and require significant investments of time, third-party development costs, prototypes and sample materials, as well as sales and marketing resources and expenses, which will not be recouped if the product launch is unsuccessful. We also have limited resources and may not be able to develop alternative designs or address a variety of differing market requirements in parallel. Our failure to adequately address any such delays in a cost-effective manner could harm our business, results of operations and financial condition.

In addition, as is common in our industry, our Wi-Fi solutions may contain defects, errors and bugs when they are first introduced or as new versions are released. We have in the past, and may in the future, experience defects, errors and bugs. For example, in 2015, in response to a defect we identified, we were required to make a revision to one of our semiconductors, which resulted in a four-month delay in product introduction. Product defects, errors or bugs could affect the performance of our products resulting in reliability, quality or compatibility problems, cause reduced manufacturing yields, result in excess or obsolete inventory, and delay the development or shipments of new solutions or new versions of our solutions. As a result, our reputation may be damaged and the market adoption of our Wi-Fi solutions could be adversely affected. If any of these problems are not found until after we have commenced shipment of a new solution, we may incur significant additional development costs to redesign, recall, repair or replace the defective solution. These problems may also trigger warranty or contractual indemnity claims against us by our customers or others, and our reputation and results of operations may be adversely affected.

Our solutions must also successfully operate with products from other vendors. As a result, when problems occur in a customer product in which our solution is used, it may be difficult to identify the source of these problems. The products of our customers that use our solutions can also be very complex, which can increase the possibility of design, development or production issues. For example, our customers may be dependent on the successful development and testing of our solutions with products from other vendors as well as the availability on a timely and cost-effective basis of all of the necessary components used in our customers' final products. The occurrence of hardware and software errors, whether or not caused by our solutions, could result in the delay or loss of market adoption of our solutions, and therefore delay our ability to recognize revenue from sales, and any necessary repairs may cause us to incur significant expenses. The occurrence of any such problems could harm our business, results of operations and financial condition.

We depend on a limited number of customers and service providers for a significant portion of our revenue.

We derive a significant portion of our revenue from a small number of OEMs and ODMs, and we anticipate that we will continue to do so for the foreseeable future. In 2017, six customers accounted for approximately 50% of our revenue. In addition, substantially all of our revenue to date has been generated by sales of our solutions to OEMs and ODMs serving the service provider market for home networking. Based on sell-through information provided to us by our OEM and ODM customers, we estimate that the two largest service providers, which are both based in the United States, represented on a combined basis approximately 33% of our revenue in 2017. The demand from these OEM and ODM customers and, their service provider customers, is subject to fluctuations based on a variety of factors affecting the service provider industry and their related businesses. The loss of a key customer or service provider, or a reduction in sales to any key customer or service provider could negatively impact our revenue, cause us to have excess or obsolete inventory, and harm our business, results of operations and financial condition.

We have an accumulated deficit and have incurred net losses in the past, and we may incur net losses in the future.

We have incurred net losses in the past and may incur net losses in the future. For the six months ended July 1, 2018 and July 2, 2017, we incurred net losses of $2.2 million and $0.7 million, respectively. As of July 1, 2018, we had an accumulated deficit of $129.4 million. We expect to continue to make significant investments related to the development of our Wi-Fi solutions and the expansion of our business, including investments to support our research and development, sales and marketing and general and administrative functions. As a public company, we also incur significant additional legal, accounting and other expenses. If we fail to continue to grow our revenue or if our revenue growth is not sufficient to offset the growth of these anticipated expenses, we may not be able to achieve or sustain profitability, and our stock price could decline.

We face intense competition from a number of larger and more established companies and expect competition to increase in the future, which could have an adverse effect on our market share, revenue and results of operations.

Many of our competitors, including Broadcom, Intel Corporation, Marvell, MediaTek, and Qualcomm, have greater financial, technical, sales, marketing and other resources than we do, as well as longer operating histories, greater name recognition, larger customer bases and more established customer relationships. In the future, we may also face competition from other new and emerging companies, including from companies in China.

Our competitors may be able to anticipate, influence or adapt more quickly to new or emerging technologies and standards and changes in customer and service provider requirements. Our competitors may also be able to devote greater resources to the promotion and sale of their products, initiate or withstand substantial price competition, take advantage of acquisitions or other opportunities more readily and develop and expand their product offerings more quickly than we can. In addition, many of our larger competitors offer a broader range of products than we do, including non-Wi-Fi products. These competitors may be able to sell at lower margins, bundle additional products and features with their Wi-Fi products, leverage incumbent positions, or create closed platforms that discourage customers or service providers from purchasing our Wi-Fi solutions. This strategy may be particularly effective for customers and service providers who prefer the convenience of purchasing all of their Wi-Fi products from a single provider. If we are unable to maintain our competitive advantages through the delivery of superior solutions, our business, results of operations and financial condition may be harmed.

Consolidation in our industry or in a related industry that involves our customers, service providers, partners and competitors could disrupt our business.

There has been a significant amount of consolidation in our industry and related industries. Examples include consolidation among service providers, such as the acquisition of DIRECTV by AT&T in 2015; consolidation involving our customers, such as the acquisition of the Cisco service provider consumer premise equipment (CPE) business by Technicolor in 2015 and the acquisition of Pace plc, by ARRIS Group, Inc., in 2016; consolidation involving our partners, such as the acquisition of Freescale Semiconductor by NXP Semiconductors in 2015; and consolidation involving our competitors, such as the acquisition of Broadcom by Avago Technologies in 2016, the proposed acquisition of NXP Semiconductors by Qualcomm announced in October 2016 and abandoned in July 2018 after failing to obtain regulatory approval in China, and the acquisition of Cavium Inc. by Marvell announced in November 2017 and completed in July 2018. In addition, in November 2017, Broadcom announced an unsolicited offer to acquire Qualcomm. Broadcom subsequently withdrew and terminated its offer to acquire Qualcomm in March 2018 after the President of the United States issued an executive order prohibiting the acquisition of Qualcomm by Broadcom.

Consolidation among our customers, service providers, competitors and other industry related third parties, including during the period between the announcement and closing of acquisitions when the transaction may be undergoing regulatory scrutiny and otherwise seeking to satisfy required closing conditions, can create significant industry uncertainty, which could impact demand for our Wi-Fi solutions and could cause delays in the purchase of our Wi-Fi solutions or the loss of business. For example, in 2015 our two largest service providers consolidated, resulting in the cancellation of previously submitted purchase orders, which adversely impacted our revenue for several quarters. Consolidation among our customers, service providers, competitors and other industry related third parties could adversely affect the competitive landscape and industry dynamics, including causing increased pricing pressure, intensifying the focus of our competitors on certain markets or customers that could cause us to lose market share or customers, and enabling our competitors to leverage complementary products or technologies of the combined company. Accordingly, any industry consolidation could have an adverse effect on our business, results of operations and financial condition.

Our customers may cancel their orders, change production quantities or delay production, which could harm our business.

Our customers typically do not provide us with firm, long-term purchase commitments. Substantially all of our sales to date have been made on a purchase order basis, which permits our customers to cancel, change or delay their purchases of our solutions with little or no notice to us. As a result, our ability to accurately forecast customer demand is limited. Any such cancellation of or decrease in purchase orders subjects us to a number of risks, including unanticipated revenue shortfalls, loss of volume-based wafer rebates from our third-party foundry and excess or obsolete inventory.

We may face claims of intellectual property infringement, which could be time-consuming and costly to defend or settle and, if adversely adjudicated, could harm our business.

The semiconductor industry is characterized by vigorous protection and pursuit of intellectual property rights, which has resulted in protracted and expensive litigation for many companies. We have received communications from third parties, including non-practicing entities, alleging our infringement of their patents, and we may receive additional claims of infringement in the future. For example, in October 2016, a third party filed suit in the United States District Court for the Northern District of Illinois alleging infringement by us of nine expired United States patents. While this matter was favorably settled by us for an immaterial amount, we cannot predict the results of other future litigation with other third parties. See Note 7, “Commitments and Contingencies” contained in the Notes to Consolidated Financial Statements of our this Annual Report on Form 10-K. In addition, our customers and service providers may become subject to litigation or receive communications regarding alleged infringement of their products that implicate our Wi-Fi solutions. We have certain contractual obligations to defend and indemnify our customers and other third parties from damages and costs which may arise in connection with any such infringement claims. We or our customers may be required to obtain licenses for such patents, which could require us to pay royalties. Any lawsuits could subject us to significant liability for damages, invalidate our proprietary rights and harm our business and our ability to compete. Any litigation, regardless of success or merit, could cause us to incur substantial expenses, reduce our sales and divert the efforts of our technical and management personnel. If we receive an adverse result in any litigation, we could be required to pay substantial damages, seek licenses from third parties, which may not be available on reasonable terms or at all, cease sale of products or licensing of our technology, expend significant resources to redesign our solutions, develop alternative technology or discontinue the use of processes requiring the relevant technology.

Our failure to adequately protect our intellectual property rights could impair our ability to compete effectively or defend ourselves from litigation, which could adversely affect our results of operations and financial condition.

Our success depends, in part, on our ability to adequately protect our intellectual property. We rely primarily on patent, copyright, trademark and trade secret laws, as well as confidentiality and non-disclosure agreements and other contractual provisions, to protect our proprietary technologies and know-how. As of July 1, 2018, we had 57 issued patents in the United States and five foreign counterpart patents issued in Taiwan. The rights granted to us may not be meaningful or provide us with any commercial advantage. For example, any patent claims we make may be deemed insufficient to cover the third party's product or technology or the patent could be opposed, contested, circumvented, designed around or be declared invalid or unenforceable in judicial or administrative proceedings. The failure of any of our patents to adequately protect our technology could make it easier for our competitors to offer similar products or technologies. Our foreign patent protection is not as comprehensive as our United States patent protection. As a result, we may not be able to effectively protect our intellectual property in some countries where our solutions are sold or may be sold in the future. Even if foreign patents are granted, effective enforcement in foreign countries may be challenging or may not be available. Furthermore, changes to the patent laws in the United States and other jurisdictions could also diminish the value of our patents and patent applications or narrow the scope of our patent protection.

We cannot ensure that the steps we have taken will prevent unauthorized use of our intellectual property or the reverse engineering of our technology. In addition to the protection afforded by patents, we rely on confidential proprietary information, including trade secrets and know-how, to develop and maintain our competitive position. Any disclosure or misappropriation by third parties of our confidential proprietary information could enable competitors to quickly duplicate our proprietary information, thus eroding our competitive position. We seek to protect our proprietary information in part by confidentiality agreements with our employees, contractors, customers, partners and other third parties. These agreements are designed to protect our proprietary information; however, any of these parties may breach the agreements and disclose our proprietary information, and we may not be able to obtain adequate remedies for such breaches. Detecting and monitoring unauthorized use of our intellectual property can be difficult and costly. It is possible that unauthorized use of our intellectual property may have occurred or may occur without our knowledge. Our failure to adequately protect our intellectual property could adversely impact our ability to maintain a competitive advantage in our markets, thus harming our business, results of operations and financial condition.

We may in the future need to initiate infringement claims or litigation to try to protect our intellectual property rights. Litigation, whether we are a plaintiff or a defendant, can be very expensive and time-consuming and may divert the efforts of our technical and management personnel without resulting in a favorable outcome. Further, many of our current and potential competitors have the ability to dedicate substantially greater resources to defending intellectual property infringement claims and to enforcing their intellectual property rights. If we are unable to protect our proprietary rights or if third parties independently develop or gain access to our or similar technologies, our business, revenue, reputation and competitive position could be harmed.

We may have difficulty accurately predicting our future revenue, cost of revenue, operating expense, working capital, and capital investments.

We were incorporated in 2005 and only began shipments of our Wi-Fi solutions in 2010. As a result, we have a limited operating history from which to predict future operating results. This limited operating history, combined with the rapidly evolving nature of the markets in which we sell our Wi-Fi solutions, substantial uncertainty concerning how these markets may develop and other factors beyond our control, limit our ability to accurately forecast our future revenue, cost of revenue, operating expense, working capital, and capital investments. Additionally, if we are unable to accurately forecast customer demand or service provider deployments in a timely manner, we may not build enough supply or maintain enough inventory, which could lead to delays in product shipments and lost sales opportunities, as well as cause our customers to identify alternative sources of supply. Alternatively, we may accumulate excess or obsolete inventory. Any of these factors could harm our margins, increase our write-offs due to product obsolescence and restrict our ability to fund our operations. If our revenue does not increase as anticipated, we could incur significant losses to the extent we are unable to decrease our expenses in a timely manner to offset any shortfall in future revenue. Any failure to accurately predict our future operating results could cause us to miss our financial projections and adversely affect the price of our common stock.

If we are unable to effectively manage any future growth, we may not be able to execute our business plan and our results of operations could suffer.

We have expanded our operations significantly since our inception in 2005 and anticipate that further expansion will be required to achieve our business objectives. For example, we grew from 219 employees as of December 27, 2015 to 380 employees as of December 31, 2017, and expect our headcount to continue to grow as we scale our business. The growth and expansion of our business have placed and will continue to place a significant strain on our management, operations and financial resources. We expect that any future growth will also add complexity to, and require effective coordination throughout, our organization.

To manage any future growth effectively, we must continue to improve and expand our operating and administrative systems and controls. We may not be able to successfully implement improvements to these systems and controls in a timely or efficient manner, which could result in operating inefficiencies and could cause our costs to increase more than planned. If we are unable to effectively manage our future growth, our business, results of operations and financial condition may be harmed.

We rely on a limited number of third-party contractors and suppliers in connection with the design and manufacture of certain parts of our solutions. The failed performance or loss of any of these third parties may adversely impact our business.

We currently depend on a single foundry, Taiwan Semiconductor Manufacturing Company Limited (“TSMC”), for the supply of our mask-sets and for the fabrication of our wafers. We also depend on a limited number of sources in connection with the design, development, testing and assembly of our solutions and components thereof. We currently do not have long-term supply contracts with any of our third-party contractors or suppliers, and we typically negotiate pricing separately for each purchase order. Therefore, our contractors and suppliers are not obligated to perform services or supply products to us for any specific period, in any specific quantities, or at any specific price, except as may be provided in a particular purchase order. Sufficient capacity at our third-party foundry or the third-party contractors we rely on for assembly and testing may not be available when we need it or at reasonable prices. In addition, we rely on intellectual property rights and software development tools from third-parties such as Cadence Design Systems, Inc., Mentor Graphics Corporation, and Synopsys, Inc., to support the design, development, simulation and verification of new solutions or enhancement to existing solutions. If licenses to such technologies are not available on commercially reasonable terms and conditions, or such products become unavailable for any other reason, and we cannot otherwise integrate such technologies, our solutions or our customers’ products could become unmarketable or obsolete, and we could lose market share. In such instances, we could also incur substantial unanticipated costs or scheduling delays to develop or acquire substitute technologies to deliver competitive products.

If we lose any of our single source or limited source contractors or suppliers, we could be required to transition to a new third party, which could increase our costs, result in delays in the manufacture and delivery of our solutions, require a redesign of our solutions to transition to alternative sources, or cause us to carry excess, obsolete or insufficient inventory. In addition, if these contractors or suppliers fail to produce and deliver our solutions according to required specifications, quantity, quality, cost and time requirements, our business, results of operations and financial condition could suffer.

Our results of operations are likely to vary significantly from period to period, which could cause the trading price of our common stock to decline.

Our results of operations have fluctuated from period to period, and we expect such results to continue to fluctuate as a result of a number of factors, many of which are outside our control and may be difficult to predict, including:

- the fluctuations in demand for high-performance Wi-Fi products in general;
- the inherent complexity, length and associated unpredictability of the sales cycles for our Wi-Fi solutions;

- changing market conditions and competitive dynamics of our markets, including new entrants and current and potential customer or service provider consolidation;
- timing of introductions of new products by our customers and service providers and our ability to secure design wins related to such products;
- changes to or inaccurate demand forecasts from our customers and service providers;
- delays in deployment schedules or program cancellations by service providers, which can result in delays or cancellations of purchases by our customers;
- the timing and amount of purchase orders, especially from significant customers;
- reductions in or cancellations of purchase orders by our customers, including with little or no notice;
- changes in the mix of our sales in the service provider market versus retail, enterprise or consumer electronics end markets and among different customers;
- declines in average selling prices ("ASPs") and the extent to which the impact of such declines is offset by increased sales volume or decreased manufacturing and other costs;
- changes in manufacturing costs, including wafer fabrication, testing and assembly costs, manufacturing yields and product quality and reliability;
- our ability to develop, introduce and ship new Wi-Fi solutions in a timely manner and anticipate future market demands that meet our customers' requirements;
- the timing and amount of tape-out costs;
- timing of headcount adjustments;
- the timing and amount of litigation expense or settlement of any litigation or other disputes;
- volatility in our stock price, which may lead to material changes in stock compensation expense;
- the impact and timing of taxes or changes in tax law; and
- our ability to derive benefits from our investments in research, development, sales, marketing, and other activities.

The effects of the risk factors noted herein could result in large fluctuations and unpredictability in our quarterly and annual results of operations. Therefore, comparing our results of operations on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance.

If we fail to successfully address additional Wi-Fi markets, our revenue growth and financial condition could be harmed.

Currently, we sell most of our Wi-Fi solutions to OEMs and ODMs that target the service provider market for home networking. Our success will depend in part on our ability to expand beyond the service provider market to other Wi-Fi markets, including the enterprise and consumer electronics markets, as well as grow our market share in the retail market. These other markets have separate and unique requirements that may not be directly addressed by our current Wi-Fi solutions, including different specifications, performance requirements and product support needs. For example, our current Wi-Fi solutions may not be well suited for certain market opportunities and may require significant new functionality or features. Therefore, meeting the technical requirements and securing design wins with customers targeting these markets will require a substantial investment of our time and resources. We may also face challenges and delays in accurately understanding the specific needs of new markets, which in turn may impair our ability to develop the customer and partner relationships necessary to be successful in such markets. If any of these markets do not develop as we currently anticipate or if we are unable to penetrate them successfully, our growth opportunities could be harmed and our business, results of operations and financial condition could be negatively impacted.

If we fail to successfully leverage our engineering expertise to penetrate markets beyond Wi-Fi, our long-term revenue growth and financial condition could be harmed.

Our future growth will depend in part on our ability to leverage our engineering expertise in wireless and communications to address other markets beyond Wi-Fi. We have historically focused on high-performance Wi-Fi solutions, and may not be successful in identifying or implementing strategies to penetrate and sustain growth in new markets. If we are unable to develop solutions that are applicable beyond the Wi-Fi market, or to manage the expansion and growth of our business in such markets, our long-term revenue growth and financial condition could be harmed.

If we are unable to attract, train and retain qualified and key personnel, particularly our engineering personnel, we may not be able to execute our business strategy effectively.

We believe our future success will depend in large part upon our ability to attract, train and retain highly skilled management, engineering and sales and marketing personnel. Each of our employees is an at-will employee. The loss of any key employees or the inability to attract, train or retain qualified personnel, particularly our engineering personnel, could harm our business. For example, if any of these individuals were to leave unexpectedly, we could face substantial difficulty in hiring qualified successors and could experience a loss in productivity during the search for any such successor and while any successor is integrated into our business and operations.

Our key engineering personnel represent a significant asset and serve as the source of our technological and product innovations. We may not be successful in attracting, training and retaining sufficient numbers of technical and engineering personnel to support our anticipated growth. In addition, any changes to immigration laws, or uncertainty regarding potential changes, could impact our ability to hire technical and engineering personnel on a timely basis. The competition for qualified engineering personnel in our industry is very intense, especially in the San Francisco Bay Area, where we have a substantial presence and need for highly skilled personnel.

Changes to industry standards and government requirements relevant to our solutions and markets could adversely affect our business, results of operations and financial condition.

If our customers adopt new or competing industry standards with which our solutions are not compatible, our existing solutions would become less desirable and our revenue and results of operations would suffer. In addition, changes in government-imposed requirements, such as maximum power consumption regulations in Europe, can prevent our solutions from being shipped to certain countries if they do not meet such requirements.

To compete effectively in the Wi-Fi marketplace, we rely on industry partners to enable and complement our Wi-Fi solutions.

Our Wi-Fi solutions need to be integrated with other components and products, such as broadband processors, video system on chips and network processors, to serve the service provider markets. We have developed relationships with various third-party partners who enable and enhance our ability to bring our Wi-Fi solutions to various markets. These partners can provide critical support to enable us to reach certain markets and better address customer needs, including through the development of joint reference designs, the establishment of relationships with key customers, the validation of our Wi-Fi solutions, and the creation of bundled solutions to contend with competitive offerings. For example, when our Wi-Fi solution is designed into a product that also incorporates Intel or Broadcom network processors or other components, we depend on the ability of these partners to deliver their products in a timely fashion in order to meet shipping schedules. These partners may also be our competitors, which can negatively impact their willingness to collaborate with us, to support the integration of our solutions with their products, and to pursue joint sales and marketing efforts. In addition, in some cases it may be necessary to share competitively sensitive information with our partners that could enable our partners to compete more effectively against us or create uncertainty regarding ownership of intellectual property rights. If we are unable to continue to successfully develop or maintain these relationships, we may not be able to compete effectively and our business and results of operations may be adversely affected.

Our historical growth rate may not be indicative of future financial results.

You should not consider the growth rate in our revenue in recent periods as indicative of our future performance. For example, our revenue increased to 176.4 million in the year ended December 31, 2017 from $129.1 million in the year ended January 1, 2017, representing a 37% increase. We may not be able to grow at the same rate, or a higher rate, in future periods compared to historical rates. Our revenue may be adversely impacted by various factors, including reduced or delayed demand for our Wi-Fi solutions, increased competition, a decrease in the size of our target markets, and the failure to capitalize on growth opportunities and other risk factors described herein. Moreover, even if our revenue continues to increase in absolute terms, we expect that our revenue growth rate will decline over time as we mature as a public company.

We may pursue strategic acquisitions or partnerships which could require significant management attention, increase operating risk, dilute stockholder value, fail to achieve intended results, and adversely affect our business, results of operations and financial condition.

We may acquire other businesses, products or technologies, or partner with other businesses. Our ability to make and successfully integrate acquisitions is unproven. Even if we complete one or more acquisitions or strategic partnerships, we may not be able to strengthen our competitive position or realize the intended benefits of the acquisition or the strategic partnership in a timely manner, or at all. Any acquisitions or strategic partnerships may also be viewed negatively by our customers, financial markets or investors. In addition, any acquisitions we make could lead to difficulties in integrating technologies, products and operations from the acquired businesses and in retaining and motivating key personnel from these businesses. Acquisitions may disrupt our ongoing operations, divert management from their primary responsibilities, subject us to additional liabilities, increase our expense and adversely impact our business. Acquisitions may also reduce our cash available for operations and other uses, and could also result in an increase in amortization expense related to identifiable assets acquired, potentially dilutive issuances of equity securities or the incurrence of debt, any of which could harm our business.

Our business is subject to disruption from hazards, natural disasters, terrorism, political unrest and other similar events, which could cause significant delays in the design, development, production or shipment of our solutions.

Our operations and those of our third-party contractors are vulnerable to interruptions caused by technical breakdowns, computer hardware and software malfunctions, software viruses, infrastructure failures, fires, earthquakes, power losses, telecommunications failures, terrorist attacks, wars, political unrest and disputes, Internet failures and other events beyond our control. For example, our sole foundry, TSMC, is located in Taiwan, which has been subject to a number of earthquakes, which has in the past impacted, and may in the future impact, the fabrication of our solutions. In addition, a significant portion of our engineering equipment, servers, storage and networking equipment, and other office equipment is located in our offices in the seismically active San Francisco Bay Area and Taiwan. Another example relates to rising political tensions and the potential for one or more countries to engage in hostilities with North Korea that could adversely affect various locations where we or our customers conduct business. If we suffer a significant hazard or outage to these offices and equipment, our business could experience disruption, which could harm our business and negatively impact our business, results of operations and financial condition.

The average selling prices for our Wi-Fi solutions could decrease over time, which could harm our revenue, gross margin and results of operations.

Products sold in our industry, including our Wi-Fi solutions, have often experienced a decrease in ASPs over time. We anticipate that the ASPs of our solutions may decrease in the future in response to competitive pricing pressures, customer expectations for price reduction, increased sales discounts, and new product introductions by our competitors. Our future results of operations may be harmed due to the decrease of our average selling prices.

Additionally, because we use a fabless semiconductor business model and rely on third-party contractors to fabricate, assemble, and test our chipset designs, we may not be able to reduce our costs as rapidly as companies that operate their own manufacturing processes, and our costs may even increase, which could also reduce our gross margins. To maintain our current gross margins or increase our gross margins in the future, we must develop and introduce on a timely basis new solutions and enhancements to existing solutions; continually reduce the costs of manufacturing our solutions; and manage transitions from one solution to another in a timely and cost-effective manner. Our failure to do so would likely cause our revenue and gross margins to decline, which could have an adverse effect on our business, results of operations and financial condition.

Our international operations expose us to additional business risks, and failure to manage these risks may adversely affect our business.

We have international operations in China, Russia, Taiwan, Australia, Japan, Singapore and parts of Europe, and we derive substantially all of our revenue from shipments delivered outside the United States, particularly in Asia. International operations are subject to inherent risks, and our future results could be adversely affected by a number of factors, including:

- differing technical standards, existing or future regulatory and certification requirements and required product features and functionality;
- challenges related to managing and integrating operations in new markets with different languages, cultures and political systems;
- heightened risks of unfair or corrupt business practices in certain countries and of improper or fraudulent sales arrangements that may impact financial results and lead to restatements of, and irregularities in, our financial statements or violations of law, including the U.S. Foreign Corrupt Practices Act;
- tariffs and trade barriers, export controls and trade and economic sanctions regulations and other regulatory or contractual limitations on our ability to sell or develop our solutions in certain foreign markets, particularly in China and Russia;
- difficulties and costs associated with staffing and managing international operations;
- difficulties associated with enforcing and protecting intellectual property rights in some countries;
- requirements or preferences for in-country products, which could reduce demand for our products;
- difficulties in enforcing contracts and collecting accounts receivable, which may result in longer payment cycles, especially in emerging markets;
- potentially adverse tax consequences, including taxes impacting our ability to repatriate profits to the United States;
- added legal compliance obligations and complexity;
- public health emergencies and other disasters, such as earthquakes and tsunamis, that are more common in certain regions;
- increased cost of terminating employees in some countries;
- the effect of currency exchange rate fluctuations;
- the effect of inflation;
- political and economic instability;
- war between countries; and
- acts of terrorism.

In particular, the United States has recently enacted significant changes, and has indicated it may seek additional changes, with respect to a variety of issues, including trade agreements among nations, import and export regulations, tariffs and customs duties, foreign relations, and immigration, tax and corporate governance laws and regulations. For example, during the first half of 2018, the United States and China each imposed new tariffs, and announced further proposed tariffs, on various products imported from China and the United States, respectively. For example, in July 2018 the United States Trade Representative announced potential additional tariffs of 10% on over 6,000 categories of products imported from China with a value of $200 billion, which may include certain networking equipment. The United States has also announced potential tariffs on other countries. We cannot predict what actions may ultimately be taken with respect to tariffs or trade relations between the United States and other countries, what products may be subject to such actions, or what actions may be taken by the other countries in retaliation. Accordingly, it is difficult to predict how such actions may impact our business, or the business of our customers, partners or vendors. However, our business operations, as well as the businesses of our customers and vendors on which we are substantially dependent, are located in various countries at risk for escalating trade disputes, including the United States, China and Europe. Any resulting trade wars could have a significant adverse effect on world trade and could adversely impact our revenues, gross margins and business operations.

Additionally, the United States has announced restrictions on exports involving specific companies. In April 2018, the U.S. Department of Commerce's Bureau of Industry and Security imposed a denial of export privileges against Zhongxing Telecommunications Equipment Corporation ("ZTE") and a second ZTE entity. These restrictions were subsequently lifted in July 2018, but may be imposed in the future with little or no advance notice. While the export ban applicable to ZTE has been lifted by the United States, the imposition of any export bans and the resulting uncertainty regarding the eventual resolution or potential for future export bans, can delay or cause the loss of revenue opportunities and harm our results of operations.

Data privacy laws in various jurisdictions are changing significantly and creating a complex regulatory compliance environment. For example, the European Union adopted the General Data Protection Regulation (the "GDPR"), which requires companies to meet new requirements beginning in May 2018 regarding the use and handling of personal data in the European Union. Failure to meet GDPR requirements could result in penalties of the greater of €20 million or up to 4% of a company's worldwide revenue, as well as other potential penalties and fines. It can be challenging to comply with these changing laws and our efforts to comply could cause us to incur substantial costs. Failure to comply also subjects us to significant potential penalties, reputational damage and loss of business.

In 2012, we established our Russian subsidiary for research and development activities pursuant to a letter agreement with Joint Stock Company "RUSNANO" ("RUSNANO"). Pursuant to the letter agreement, as amended, we have obligations to periodically fund the subsidiary, and RUSNANO has certain rights regarding the governance and operation of the subsidiary. While certain of these rights terminated upon completion of our initial public offering, RUSNANO may seek to continue to remain involved with our subsidiary, including its board of directors and use of our subsidiary's funds. We may incur specified penalties under the letter agreement if we fail to meet any applicable funding obligations, and may incur other unanticipated costs if we are required to restructure our operations in Russia.

We expect that we will continue to rely on our international operations, and our success will depend on our ability to anticipate and effectively manage these and other associated risks. The imposition, or even the mere threat of imposition, of any of the actions described above, or similar actions, increases the overall business risks related to international commerce and creates additional uncertainty in connection with the Company's international operations. Our failure to successfully manage any of these risks, and take appropriate action in a timely manner in response to any such new developments, could harm our international operations and adversely affect our business.

We could be subject to additional tax liabilities.

We are subject to U.S. federal, state and local income, sales and other taxes in the United States and foreign income taxes, withholding taxes and value-added and other transaction taxes in numerous foreign jurisdictions. Significant judgment is required in evaluating our tax positions and our worldwide provision for taxes. During the ordinary course of business, there are many activities and transactions for which the ultimate tax determination is uncertain. Our tax obligations and effective tax rates could be adversely affected by changes in the relevant tax, accounting and other laws, regulations, principles and interpretations, including those relating to income tax nexus, by challenges to our intercompany arrangements, valuation methodologies and transfer pricing, by recognizing tax losses or lower than anticipated earnings in jurisdictions where we have lower statutory rates and higher than anticipated earnings in jurisdictions where we have higher statutory rates, by changes in foreign currency exchange rates, or by changes in the valuation of our deferred tax assets and liabilities. In addition, on December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the "Tax Act") was signed into legislation, which contains many significant changes to the U.S. tax laws. The Tax Act, among other changes, reduces the U.S. federal corporate tax rate from 34% to 21%, implements a modified territorial tax system that includes a one-time transition tax on deemed repatriation of previously untaxed accumulated earnings and profits of certain foreign subsidiaries, and creates new taxes on certain foreign-sourced earnings. We are still evaluating the impact of the recently enacted Tax Act, including whether and how state, local and foreign jurisdictions will react to such changes. The changes under the Tax Act could have an adverse impact on our tax liabilities. Changes in corporate tax rates, the realizability of the net deferred tax assets relating to our U.S. operations, the taxation of foreign earnings and the deductibility of expenses contained in the Tax Act or other tax reform legislation could result in significant one-time charges in the current or future taxable years and could increase our future U.S. tax expense. Furthermore, changes to the taxation of undistributed foreign earnings could change our future intentions regarding reinvestment of such earnings. The foregoing items could have an adverse effect on our operating results, cash flow or financial condition. We may also be audited in various jurisdictions, and such jurisdictions may challenge our intercompany structures or assess additional taxes, interest and penalties, including sales taxes and value-added taxes against us. Although we believe our tax estimates are reasonable, the final determination of any tax audits or litigation could be materially different from our historical tax provisions and accruals, which could have an adverse effect on our results of operations or cash flows in the period or periods for which a determination is made.

Our ability to use our net operating losses to offset future taxable income may be subject to certain limitations.

We currently have a significant amount of net operating losses, or NOLs, which we expect will reduce our overall tax liability for the foreseeable future. However, if we undergo an ownership change our ability to utilize NOLs could be further limited by Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"). Future changes in our stock ownership, some of which are outside of our control, could result in an ownership change under Section 382 of the Code. Furthermore, our ability to utilize NOLs of companies that we may acquire in the future may be subject to limitations. There is also a risk that due to regulatory changes, such as suspensions on the use of NOLs, or other unforeseen reasons, our existing NOLs could expire or otherwise be unavailable to offset future income tax liabilities. For these reasons, we may not be able to utilize a material portion of the NOLs reflected on our balance sheet, even if we attain profitability.

Our use of open source software in our solutions, processes and technology may expose us to additional risks and compromise our proprietary intellectual property.

We incorporate open source software into our Wi-Fi solutions, including certain open source code governed by the GNU General Public License, the GNU Lesser General Public License and the Common Development and Distribution License. The terms of many open source licenses have not been interpreted by U.S. courts, and there is a risk that these licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to commercialize our solutions. In such event, we could be required to seek licenses from third parties to continue offering our solutions, make our proprietary code generally available in source code form (for example, proprietary code that links to certain open source modules), re-engineer our solutions, discontinue the sale of our solutions if re-engineering cannot be accomplished on a cost-effective and timely basis, or become subject to other consequences, any of which could adversely affect our business, results of operations and financial condition.

The requirements of being a public company may strain our resources and divert management's attention from managing our business.

As a public company, we are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), the listing requirements of the securities exchange on which our common stock is traded, and other applicable securities rules and regulations. Our management team and other personnel devote a substantial amount of time to compliance. Compliance with these rules and regulations has increased our legal and financial compliance costs, made some activities more difficult, time-consuming or costly, and increased demands on our administrative systems and resources. Among other things, the Exchange Act requires that we file annual, quarterly and current reports with respect to our business and results of operations, and maintain effective disclosure controls and procedures and internal control over financial reporting. To maintain and, if required, improve our disclosure controls and procedures and internal control over financial reporting to meet this standard, significant resources and management oversight may be required. As a result, management's attention may be diverted from other business concerns, which could harm our business and results of operations. In addition, we have limited internal resources and we may need to hire additional employees to comply with these requirements in the future, which will increase our costs and expenses. We may also not be able to hire additional, qualified resources on a timely basis.

In addition, changing laws, regulations and standards relating to corporate governance and public disclosure are creating uncertainty for public companies, increasing legal and financial compliance costs, and making some activities more time consuming. These laws, regulations and standards are subject to varying interpretations, in many cases due to their lack of specificity, and as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices. We intend to invest resources to comply with evolving laws, regulations, and standards, and this investment will increase our general and administrative expense and result in a diversion of management's time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new laws, regulations, and standards are unsuccessful, regulatory authorities may initiate legal proceedings against us and our business, results of operations and financial condition may be harmed.

We have identified a material weakness in our internal control over financial reporting that, if not properly remediated, could result in material misstatements in our financial statements in future periods and impair our ability to comply with the accounting and reporting requirements applicable to public companies.

During the course of the preparation of our 2015 consolidated financial statements, we identified a material weakness in our internal control over financial reporting as a result of a lack of sufficient qualified personnel within the finance and accounting function who possessed an appropriate level of expertise to effectively perform the following functions commensurate with our structure and financial reporting requirements: (i) identifying, selecting and applying generally accepted principles in the United States sufficiently to provide reasonable assurance that transactions are being appropriately recorded, and (ii) assessing risk and designing appropriate control activities over financial and reporting processes necessary to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements.

In response to the identified material weakness, although we do not believe it has been fully remediated yet, we have taken a number of steps towards remediating this material weakness and improving our internal control over financial reporting. Since the beginning of fiscal 2017 and up to the second quarter of fiscal 2018, we have increased our dedicated finance and accounting personnel, including certified public accountants and several finance support team members and we have further implemented additional internal controls, including additional workflows relating to change management, review and approval processes, and account reconciliations. The additional resources added to the finance function have enabled us to further (i) allow separate preparation and review of reconciliations and other account analysis, (ii) enable us to develop a more structured close process, including enhancing our existing policies and procedures, to improve the completeness, timeliness and accuracy of our financial reporting, and (iii) identify and review complex or unusual transactions.

While we believe that the foregoing actions will improve our internal control over financial reporting, the implementation of these measures is ongoing and will require validation and testing of the design and operating effectiveness of internal controls over a sustained period of financial reporting cycles. In addition, we may need to implement additional systems and controls, including further segregation of duties, to help ensure that our internal controls are effective. As a result, we determined that the material weaknesses had not been fully remediated as of July 1, 2018, and there is no assurance that these remediation efforts will be successful. If not properly remediated, this material weakness could result in material misstatements in our financial statements in future periods and impair our ability to comply with accounting and reporting requirements.

We also cannot be certain that other material weaknesses and control deficiencies will not be discovered in the future. In addition, if our remediation efforts are not successful or other material weaknesses or control deficiencies occur in the future, we may be unable to report our financial results accurately or on a timely basis, which could cause our reported financial results to be materially misstated and result in the loss of investor confidence or delisting and cause the trading price of our common stock to decline. As a result of any such failures, we could also become subject to investigations by the stock exchange on which our securities are listed, the SEC, or other regulatory authorities, and become subject to litigation from investors and stockholders, which could harm our reputation and financial condition, or divert financial and management resources from our core business.

We may not be able to implement an effective system of internal controls and accurately report our financial results on a timely basis, which may adversely affect investor confidence in our Company and negatively impact the trading price of our common stock.

Pursuant to the Exchange Act, we are required to furnish a report by management on, among other things, the effectiveness of our internal control over financial reporting in our Annual Report on Form 10-K. This assessment includes disclosure of a material weaknesses identified by our management in our internal control over financial reporting. We plan to continue to further document and test our internal controls in order to identify, evaluate and remediate any deficiencies in those internal controls and document the results of our evaluation, testing and remediation, provided, however, we may not be able to complete our evaluation, testing and any required remediation in a timely fashion. During the evaluation and testing process, if we identify one or more additional material weaknesses in our internal control over financial reporting, as we did in preparing our 2015, 2016 and 2017 consolidated financial statements, that we are unable to remediate before the end of the same fiscal year in which the material weakness is identified, we will be unable to assert that our internal controls are effective. If we are unable to assert that our internal control over financial reporting is effective, or if our auditors, when required, are unable to attest to management’s report on the effectiveness of our internal controls, we could lose investor confidence in the accuracy and completeness of our financial reports, which would cause the price of our common stock to decline.

We are subject to the cyclical nature of the semiconductor industry, which has suffered, and may in the future suffer, from cyclical downturns.

The semiconductor industry is highly cyclical and is characterized by constant and rapid technological change, rapid product obsolescence, price erosion, evolving standards, consolidation and wide fluctuations in product supply and demand. The industry has historically experienced cyclical downturns, including during global recessions, which have been characterized by diminished product demand, production overcapacity, high inventory levels and accelerated erosion of ASPs. A significant portion of our operating expense is incurred in connection with developing our Wi-Fi solutions, securing design wins and assisting customers and service providers in the development of their product specifications in advance of anticipated sales. As a result, in the event that such sales do not ultimately materialize due to a cyclical downturn or otherwise, we may not be able to decrease our operating expense rapidly enough to offset any unanticipated shortfall in revenue. There is a risk that future downturns could negatively impact our revenue, which could harm our business, results of operations and financial condition.

Our results of operations and financial condition could be seriously impacted by security breaches, including cyber security incidents.

We may not be able to effectively detect, prevent and recover from security breaches, including attacks on information technology and infrastructure by hackers and viruses. Cyber attacks could result in unauthorized parties gaining access to certain confidential business information, and could include unauthorized third parties obtaining trade secrets and proprietary information related to our solutions. For example, we offer a cloud-based Wi-Fi analytics and monitoring platform that collects certain Wi-Fi network and system data. While we utilize Amazon Web Services for this platform, which provides a number of sophisticated technical and physical controls designed to prevent unauthorized access to or disclosure of customer content, we cannot be certain that such controls will be sufficient to prevent a security breach. It can be difficult, if not impossible, to entirely prevent cyber attacks. As these threats continue to evolve, we may be required to expend significant resources to enhance our control environment, processes, practices and other protective measures. Despite these efforts, if we experience a cyber security incident, such incident could adversely affect our business, results of operations and financial condition.

Failure to comply with the terms of our loan and security agreements with a financial institution may adversely affect our working capital and financial condition.

Our Amended and Restated Loan and Security Agreement with Silicon Valley Bank (“SVB”) contains customary covenants, which could restrict our ability to operate and finance our business and operations, such as nonpayment of amounts due under the revolving line of credit, violation of the restrictive covenants, violation of other contractual provisions, or a material adverse change in our business. Our ability to comply with these covenants may be affected by events beyond our control, and breaches of any of these covenants could result in default under the loan agreement. In addition, borrowings under this loan agreement are collateralized by certain of our assets, including our receivables and inventory, subject to customary exceptions and limits.

The SVB Loan and Security Agreement includes (i) term loans, (ii) a revolving line of credit, and (iii) a mezzanine loan. The mezzanine loan was canceled upon its expiration in fiscal 2017 and the revolving line of credit expired in May 2018.

On December 31, 2017, the Company sought to effect the extinguishment of its term loans under the SVB Loan and Security Agreement, of which approximately $3.9 million (including interest and early termination fees) remained outstanding. The payment for the extinguishment of the term loans was processed on January 2, 2018. See Note 8 to the Notes to condensed consolidated financial statements, *Long-Term Debt*, for further details.

We are exposed to fluctuations in currency exchange rates that could negatively impact our business, operating results and financial condition.

Because a portion of our business is conducted outside of the United States, we face exposure to adverse movements in foreign currency exchange rates. These exposures may change over time, as international customer mix, business practices and our international footprint evolve, and they could have a material adverse impact on our business, operating results and financial condition.

To date, all of our revenue has been denominated in U.S. dollars; however, most of our expenses associated with our international operations are denominated in local currencies. As a result, a decline in the value of the U.S. dollar relative to the value of these local currencies could have a material adverse effect on our results of operations. Conversely, an increase in the value of the U.S. dollar could result in our Wi-Fi solutions being more expensive to our customers in their local currencies, and could have an adverse impact on our pricing and our business.

Although we hedge a portion of our international currency exposure, not every exposure can be hedged and, where hedges are put in place based on expected foreign currency exchange exposure, they are based on forecasts that may vary or that may later prove to have been inaccurate. As a result, fluctuations in foreign currency exchange rates or our failure to successfully hedge against these fluctuations could have a material adverse effect on business, operating results and financial condition.

Risks Related to Ownership of Our Common Stock

The market price of our common stock has been and may continue to be volatile, which could cause the value of an investment in our common stock to decline.

Technology stocks have historically experienced high levels of volatility. Prior to our initial public offering, there had been no public market for shares of our common stock. Since our initial public offering, the trading price of our common stock has fluctuated from an intra-day high of $25.45 to an intra-day low of $9.60 and may continue to fluctuate substantially. These fluctuations depend on many factors, some of which are beyond our control and may not be related to our operating performance. These fluctuations could cause an investor to lose all or part of their investment in our common stock. Factors that could cause fluctuations in the trading price of our common stock include the following:

- announcements of new products or technologies, commercial relationships, acquisitions or other events by us or our competitors;
- changes in how customers perceive the benefits of our Wi-Fi solutions;
- departures of key personnel;
- price and volume fluctuations in the overall stock market from time to time;
- fluctuations in the trading volume of our shares or the size of our public float;
- sales of large blocks of our common stock;
- sales of our common stock by our directors and officers;
- actual or anticipated changes or fluctuations in our results of operations;
- whether our results of operations meet the expectations of securities analysts or investors;
- changes in actual or future expectations of investors or securities analysts;
- litigation involving us, our industry, or both;
- regulatory developments in the United States, foreign countries or both;
- general economic conditions and trends;
- major catastrophic events in our domestic and foreign markets; and
- “flash crashes,” “freeze flashes” or other glitches that disrupt trading on the securities exchange on which we are listed.

In addition, if the market for technology stocks or the stock market in general experiences a loss of investor confidence, the trading price of our common stock could decline for reasons unrelated to our business, results of operations or financial condition. The trading price of our common stock might also decline in reaction to events that affect other companies in our industry even if these events do not directly affect us. In the past, following periods of volatility in the market price of a company’s securities, securities class action litigation has often been brought against that company. If our stock price is volatile, we may become the target of securities litigation. Securities litigation could result in substantial costs and divert our management’s attention and resources from our business. This could have a material adverse effect on our business, results of operations and financial condition.

If securities analysts or industry analysts downgrade our stock, publish negative research or reports or fail to publish reports about our business, our stock price could be adversely affected.

The trading market for our common stock will, to some extent, depend on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. If one or more of the analysts who cover us should downgrade our stock or publish negative research or reports, cease coverage of our company or fail to regularly publish reports about our business, such actions could adversely affect our stock price.

Sales of substantial amounts of our common stock in the public markets, or the perception that such sales might occur, could reduce the price that our common stock might otherwise attain.

Sales of a substantial number of shares of our common stock in the public market, or the perception that such sales could occur, could have an adverse effect on the market price of our common stock and may make it more difficult for investors to sell their shares of our common stock at a desirable time and price. For example, the lock-up period in connection with our initial public offering expired on April 25, 2017 with respect to shares of our common stock held by stockholders and rights to purchase shares of our common stock held by option holders and warrant holders prior to our initial public offering. Accordingly, such holders are now able to sell their shares in the public market, subject to applicable securities laws. We also previously filed a registration statement to register shares of our common stock reserved for future issuance under our employee equity incentive plans. As a result, subject to the satisfaction of applicable exercise periods and securities laws, the shares of our common stock that are issued upon exercise of outstanding options to purchase shares of our common stock or vesting of other types of equity awards will be available for immediate resale in the United States in the open market. In addition, our executive officers and directors may wish to sell shares of our common stock held by them, including sales through automatic and non-discretionary written plans, known as "Rule 10b5-1 Plans." Sales made by our executive officers and directors, including sales pursuant to Rule 10b5-1 Plans, regardless of the amount of such sales, could adversely affect the market price of our common stock.

Certain holders of our common stock also have rights, subject to some conditions, to require us to file registration statements covering the sale of their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. Such a transaction could divert management's attention from the Company's core business, require us to incur additional expenses, and could have an adverse effect on the price of our common stock.

Our issuance of additional capital stock in connection with financings, acquisitions, investments, our stock incentive plans or otherwise will dilute all other stockholders.

We expect to issue additional capital stock in the future that will result in dilution to all other stockholders. We expect to grant equity awards to employees, directors and consultants under our stock incentive plans. We may also raise capital through equity financings in the future. As part of our business strategy, we may acquire or make investments in complementary companies, products or technologies and issue equity securities to pay for any such acquisition or investment. Any such issuances of additional capital stock may cause stockholders to experience significant dilution of their ownership interests and the per share value of our common stock to decline.

A limited number of stockholders will continue to have substantial control over us, which could limit your ability to influence the outcome of key transactions, including a change of control and other matters requiring stockholder approval.

Our directors, executive officers and each of our stockholders who own greater than 5% of our outstanding common stock, in the aggregate, beneficially own a significant portion of the outstanding shares of our common stock. As a result, these stockholders, if acting together, will be able to influence or control matters requiring approval by our stockholders, and limit your ability to influence the outcome of key transactions, including the election of directors and the approval of mergers, acquisitions or other extraordinary transactions. They may also have interests that differ from yours and may vote in a way with which you disagree and which may be adverse to your interests. This concentration of ownership may have the effect of delaying, preventing or deterring a change of control of our company, could deprive our stockholders of an opportunity to receive a premium for their common stock as part of a sale of our company and might ultimately affect the market price of our common stock.

We do not intend to pay dividends on our common stock and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock.

We have never declared or paid any dividends on our common stock. We intend to retain any earnings to finance the operation and expansion of our business, and we do not anticipate paying any cash dividends in the foreseeable future. In addition, our SVB Loan and Security Agreement imposes restrictions on our ability to pay dividends on our common stock. As a result, you may only receive a return on your investment in our common stock if the market price of our common stock increases.

Delaware law and our corporate charter and bylaws contain anti-takeover provisions that could delay or discourage takeover attempts that stockholders may consider favorable.

Our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws contain provisions that could delay or prevent a change in control of our company. These provisions could also make it difficult for stockholders to elect directors who are not nominated by the current members of our board of directors or take other corporate actions, including effecting changes in our management. These provisions include:

- a classified board of directors with three-year staggered terms, which could delay the ability of stockholders to change the membership of a majority of our board of directors;
- the ability of our board of directors to issue shares of preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquirer;
- the exclusive right of our board of directors to elect a director to fill a vacancy created by the expansion of our board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;
- the requirement that a special meeting of stockholders may be called only by our board of directors, the chairperson of our board of directors, our chief executive officer or our president (in the absence of a chief executive officer), which could delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors;
- the requirement for the affirmative vote of holders of at least 66 2/3% of the voting power of all of the then outstanding shares of the voting stock, voting together as a single class, to amend the provisions of our amended and restated certificate of incorporation relating to the management of our business (including our classified board structure) or certain provisions of our Amended and Restated Bylaws, which may inhibit the ability of an acquirer to effect such amendments to facilitate an unsolicited takeover attempt;
- the ability of our board of directors to amend the bylaws, which may allow our board of directors to take additional actions to prevent an unsolicited takeover and inhibit the ability of an acquirer to amend the bylaws to facilitate an unsolicited takeover attempt; and
- advance notice procedures with which stockholders must comply to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of us.

In addition, as a Delaware corporation, we are subject to Section 203 of the Delaware General Corporation Law, which may prohibit large stockholders, in particular those owning 15% or more of our outstanding voting stock, from merging or combining with us for a specified period of time.

Our Amended and Restated Bylaws designate a State or Federal court located within the State of Delaware as the exclusive forum for certain litigation that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us.

Pursuant to our Amended and Restated Bylaws, unless we consent in writing to the selection of an alternative forum, the sole and exclusive forum for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (3) any action asserting a claim against us arising pursuant to any provision of the Delaware General Corporation Law, or (4) any action asserting a claim against us that is governed by the internal affairs doctrine, shall be a State or Federal court located within the State of Delaware, in all cases subject to the court's having personal jurisdiction over indispensable parties named as defendants. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and consented to this provision. The forum selection clause in our Amended and Restated Bylaws will limit stockholders' choice in selecting a judicial forum for disputes with our company and may have the effect of discouraging lawsuits against us or our directors and officers.

We may not be able to obtain capital when desired on favorable terms, if at all, or without dilution to our stockholders and our failure to raise capital when needed could prevent us from executing our growth strategy.

We intend to continue to make investments to support our business growth and may require additional funds to respond to business challenges, including the need to develop new and enhance our existing Wi-Fi solutions, improve our operating infrastructure or acquire complementary businesses and technologies. Accordingly, we may need to engage in equity or debt financings to secure additional funds. If we raise additional equity financing, our stockholders may experience significant dilution of their ownership interests and the per share value of our common stock could decline. Furthermore, if we engage in debt financing, the holders of debt would have priority over the holders of common stock, and we may be required to accept terms that restrict our ability to incur additional indebtedness. We may also be required to take other actions that would otherwise be in the interests of the debt holders and force us to maintain specified liquidity or other ratios, any of which could harm our business, results of operations, and financial condition. If we need additional capital and cannot raise it on acceptable terms, we may not be able to, among other things:

- develop new or enhance our existing Wi-Fi solutions;
- expand our research and development and sales and marketing organizations;
- respond to competitive pressures or unanticipated working capital requirements;
- hire, train and retain employees;
- expand our operations, in the United States or internationally; or
- acquire complementary technologies, products or businesses.

Our failure to do any of these things could harm our business, financial condition and results of operations.

We are an "emerging growth company," and our election to comply with the reduced disclosure requirements as a public company may make our common stock less attractive to investors.

For so long as we remain an "emerging growth company," as defined in the Jumpstart Our Business Startups Act (the "JOBS Act") we have taken advantage of certain exemptions from various requirements that are applicable to public companies that are not "emerging growth companies," including not being required to comply with the independent auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a non-binding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We will remain an "emerging growth company" until the earliest of (i) the last day of the fiscal year following the fifth anniversary of the completion of our initial public offering, (ii) the last day of the first fiscal year in which our annual gross revenue is $1.07 billion or more, (iii) the date on which we have, during the previous rolling three-year period, issued more than $1 billion in non-convertible debt securities or (iv) the date on which we are deemed to be a "large accelerated filer" as defined in the Exchange Act. We cannot predict if investors will find our common stock less attractive because we have relied on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock, and our stock price may be more volatile and may decline.

In addition, the JOBS Act also provides that an "emerging growth company" can take advantage of an extended transition period for complying with new or revised accounting standards. However, we have chosen to "opt out" of such extended transition period, and as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth companies. Our decision to opt out of the extended transition period for complying with new or revised accounting standards is irrevocable.

Item 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

Unregistered Sales of Equity Securities

None.

Use of Proceeds

On October 27, 2016, the Registration Statement on Form S-1 (File No. 333-213871) for our initial public offering ("IPO") of our common stock was declared effective by the SEC, pursuant to which we sold 6,775,466 shares of our common stock, including the exercise of the underwriters' option to purchase an additional 75,466 shares, at an offering price of $16.00 per share, for an aggregate offering price of approximately $108.4 million. There has been no material change in the planned use of proceeds from our IPO as described in our final prospectus, dated October 27, 2016, pursuant to Rule 424(b) of the Securities Act.

Issuer Purchases of Equity Securities

None.

Item 3. DEFAULTS UPON SENIOR SECURITIES

Not applicable.

Item 4. MINE SAFETY DISCLOSURES

Not applicable.

Item 5. OTHER INFORMATION

Not applicable.

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Item 6. EXHIBITS

		Incorporated by Reference			
Exhibit Number	**Description**	**Form**	**File No.**	**Exhibit**	**Filing Date**
31.1	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
31.2	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
32.1*	Certification of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
101.INS	XBRL Instance Document				
101.SCH	XBRL Taxonomy Extension Schema Document				
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB	XBRL Taxonomy Extension Label Linkbase Document				
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document				

* The certifications attached as Exhibit 32.1 that accompany this Quarterly Report on Form 10-Q is deemed furnished and not filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Quantenna Communications, 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 Quarterly Report on Form 10-Q, irrespective of any general incorporation language contained in such filing.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Quarterly Report on Form 10-Q to be signed on its behalf by the undersigned, thereunto duly authorized.

QUANTENNA COMMUNICATIONS, INC.

Date: July 30, 2018	By: /s/ Sam Heidari *Sam Heidari* *Chairman and Chief Executive Officer* *(Principal Executive Officer)*
Date: July 30, 2018	By: /s/ Sean Sobers *Sean Sobers* *Chief Financial Officer* *(Principal Accounting and Financial Officer)*

Exhibit 31.1

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO
EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Sam Heidari, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Quantenna Communications, 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 30, 2018	By: /s/ Sam Heidari
	Name: Sam Heidari
	Title: Chief Executive Officer
	(Principal Executive Officer)

Exhibit 31.2

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO
EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Sean Sobers, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Quantenna Communications, 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 30, 2018

By: /s/ Sean Sobers
Name: Sean Sobers
Title: Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Sam Heidari, the Chief Executive Officer of Quantenna Communications, Inc., hereby 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, the Quarterly Report on Form 10-Q of Quantenna Communications, Inc. for the fiscal quarter ended July 1, 2018 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Quarterly Report on Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of Quantenna Communications, Inc.

Date: July 30, 2018	By:	/s/ Sam Heidari
	Name:	Sam Heidari
	Title:	Chief Executive Officer
		(Principal Executive Officer)

I, Sean Sobers, the Chief Financial Officer of Quantenna Communications, Inc., hereby 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, the Quarterly Report on Form 10-Q of Quantenna Communications, Inc. for the fiscal quarter ended July 1, 2018 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Quarterly Report on Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of Quantenna Communications, Inc.

Date: July 30, 2018	By:	/s/ Sean Sobers
	Name:	Sean Sobers
	Title:	Chief Financial Officer
		(Principal Financial Officer)