FORM S-1 · REGISTRATION STATEMENT

# *Quantenna Communications Inc*

IPO priced 2016-10-28 · $16.00 a share · QTNA



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AS FILED WITH THE SECURITIES AND EXCHANGE COMMISSION ON SEPTEMBER 29, 2016

REGISTRATION NO. 333-

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

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FORM S-1

REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

# QUANTENNA COMMUNICATIONS, INC.

(EXACT NAME OF REGISTRANT AS SPECIFIED IN ITS CHARTER)

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| DELAWARE | 3674 | 33-1127317 |
|---|---|---|
| (STATE OR OTHER JURISDICTION OFINCORPORATION OR ORGANIZATION) | (PRIMARY STANDARD INDUSTRIALCLASSIFICATION CODE NUMBER) | (I.R.S. EMPLOYERIDENTIFICATION NUMBER) |

3450 W. WARREN AVENUE

FREMONT, CALIFORNIA 94538

(510) 743-2260

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

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SAM HEIDARI

CHAIRMAN AND CHIEF EXECUTIVE OFFICER

Quantenna Communications, Inc.

3450 W. WARREN AVENUE

FREMONT, CALIFORNIA 94538

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(NAME, ADDRESS, INCLUDING ZIP CODE, AND TELEPHONE NUMBER, INCLUDING AREA CODE, OF AGENT FOR SERVICE)

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Approximate date of commencement of proposed sale to the public: As soon as practicable after this registration statement becomes effective.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act, check the following box: □

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

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

| | | | |
|---|---|---|---|
| Large accelerated filer | ☐ | Accelerated filer | ☐ |
| Non-accelerated filer | ☒ (Do not check if a smaller reporting company) | Smaller reporting company | ☐ |

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CALCULATION OF REGISTRATION FEE

| TITLE OF EACH CLASS OF SECURITIES TO BE REGISTERED | PROPOSED MAXIMUM AGGREGATE OFFERING PRICE (1)(2) | AMOUNT OF REGISTRATION FEE |
|---|---|---|
| Common Stock, $0.0001 par value per share | $100,000,000 | $10,070 |

(1) Estimated solely for the purpose of computing the amount of the registration fee pursuant to Rule 457(o) under the Securities Act of 1933, as amended.

(2) Includes the aggregate offering price of additional shares that the underwriters have the right to purchase to cover over-allotments, if any.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and we are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

PROSPECTUS (SUBJECT TO COMPLETION)

ISSUED SEPTEMBER 29, 2016

SHARES

COMMON STOCK

_____ Quantenna Communications, Inc. is offering shares of its common stock. This is our initial public offering and no public market exists for our shares. We anticipate that the initial public offering price will be between $ and $ per share.

_____ We will apply to list our common stock on the under the symbol "QTNA".

_____ We are an “emerging growth company” as defined under the federal securities laws. Investing in our common stock involves risks. See “Risk Factors” beginning on page 13.

_____

PRICE $ A SHARE

_____

| | PRICE TO PUBLIC | UNDERWRITING DISCOUNTS AND COMMISSIONS (1) | PROCEEDS TO COMPANY |
|---|---|---|---|
| Per Share | $ | $ | $ |
| Total | $ | $ | $ |

_____ (1) See “Underwriters” for a description of the compensation payable to the underwriters.

The Securities and Exchange Commission and any state securities regulators have not approved or disapproved of these securities, or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

We have granted the underwriters the right to purchase up to an additional shares of our common stock to cover over-allotments.

The underwriters expect to deliver the shares of common stock to purchasers on , 2016.

_____

| MORGAN STANLEY | BARCLAYS | DEUTSCHE BANK SECURITIES |
|---|---|---|
| NEEDHAM & COMPANY | WILLIAM BLAIR | ROTH CAPITAL PARTNERS |

, 2016


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We have not authorized anyone to provide any information or make any representations other than those contained in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or of any sale of our common stock.

Through and including , 2016 (the 25th day after the date of this prospectus), all dealers effecting transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to a dealer's obligation to deliver a prospectus when acting as an underwriter and with respect to an unsold allotment or subscription.

For investors outside of the United States: Neither we nor the underwriters have done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. You are required to inform yourselves about and to observe any restrictions relating to this offering and the distribution of this prospectus outside of the United States.

# *Prospectus Summary*

# *Prospectus Summary*

This summary highlights selected information that is presented in greater detail elsewhere in this prospectus. This summary does not contain all of the information you should consider before investing in our common stock. You should read this entire prospectus carefully, including the sections titled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and the related notes included elsewhere in this prospectus, before making an investment decision. Unless the context otherwise requires, the terms "Quantenna," "the company," "we," "us" and "our" in this prospectus refer to Quantenna Communications, Inc. and its consolidated subsidiaries.

Quantenna Communications, Inc.

**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 combine our Wi-Fi systems and software expertise with high-performance radio frequency, mixed-signal and digital semiconductor design skills to provide highly integrated solutions to our customers. Our technical expertise and focus on innovation enable us to address the increasing complexity inherent in managing Wi-Fi network access for multiple client devices with different high-bandwidth content streams, while simultaneously delivering superior network speed, broad coverage area, and high capacity and reliability. Our innovative solutions have historically addressed the telecommunications service provider market for home networking applications, including home gateways, repeaters, and set-top boxes, or STBs, but we are increasingly addressing additional end markets, with solutions for retail, outdoor, small and medium business, enterprise and consumer electronics. As a pioneer in high-performance Wi-Fi solutions with significant wireless expertise and deep industry relationships, we believe we are best positioned to serve the rapidly evolving Wi-Fi needs of customers in both our existing and future end markets. We also believe our significant engineering expertise in wireless and communications can be applied to address other markets beyond Wi-Fi.

Wi-Fi is a ubiquitous standard for wireless network connectivity, defined by the IEEE 802.11 standardization body working group, that is rapidly evolving to deliver continued performance improvements while maintaining backward compatibility. According to ABI Research, in 2015 there were approximately 2.5 billion Wi-Fi-enabled devices shipped, of which approximately 1 billion were non-mobile phone devices, and cumulatively, over 12 billion Wi-Fi-connected devices have been shipped worldwide as of the end of 2015. This rapid growth in Wi-Fi connected devices, coupled with the steadily rising volume of global Internet Protocol-based, or IP-based, traffic, such as web browsing, email, Internet audio and video, file sharing, cloud computing and online gaming, has significantly increased the performance requirements of access points that power Wi-Fi networks. Such requirements have led to the adoption of 802.11ac, the latest revision of the 802.11 standard, which offers up to a 10-fold improvement in network speeds over its predecessor. Given the limited wireless spectrum available for Wi-Fi networks and the rapidly increasing demand for Wi-Fi-enabled services, the IEEE standardization body is expected to continue to define more advanced capabilities for future revisions of the standard, such as 802.11ax. Furthermore, the 802.11 standard implementation is left to the chipset vendors, and the inherent complexity and many optional features of the standard result in trade-offs leading to wide ranging levels of Wi-Fi chipset functionality, performance, power and cost.

As the performance requirements of next generation Wi-Fi increase, a more advanced approach to the design of high-speed wireless communication products is required. We have pioneered significant enhancements to advanced features such as higher-order Multiple Input and Multiple Output, or MIMO, Multi-User MIMO, or MU-MIMO, transmit beamforming, and additional technologies to achieve superior Wi-Fi performance relative to our competition. Our competitive strengths include support of the most advanced specifications, proprietary technology architectures, and advanced software and system-level algorithms. Furthermore, we have created a cloud-based Wi-Fi analytics and monitoring platform that diagnoses and repairs network inefficiencies remotely.

Customers choose our Wi-Fi solutions to offer products with differentiated network speed, coverage area, reliability and capacity. Our solutions portfolio is currently comprised of multiple generations of our radio frequency chip and our digital baseband chip, which together support the IEEE Wi-Fi standards, including 802.11n and 802.11ac. Radio frequency chips use a combination of analog, digital and high frequency circuits to transmit and receive signals in certain frequencies, such as 2.4GHz and 5GHz for Wi-Fi. Digital baseband chips transmit and receive data to and from radio frequency chips. These chips are - 1 - typically sold together as a chipset combined with software and system-level reference designs that constitute a highly integrated Wi-Fi solution. We maintain our product differentiation by designing and implementing a variety of innovative system architecture features, as well as advanced software system level algorithms.

According to ABI Research, the global market for Wi-Fi chipsets is expected to grow from $3.8 billion in 2016 to $5.2 billion in 2021, a CAGR of 7%. We have shipped over 80 million chips to our customers across four semiconductor process generations. Our chips consist of transistors using various advanced semiconductor fabrication technology nodes, which are measured in nanometers, or nm, to address different system requirements. We are currently in volume production in 90nm, 65nm, and 40nm, and expect to begin volume production in 28nm in early 2017. During the year ended December 27, 2015, our global original equipment manufacturer, or OEM, and original design manufacturer, or ODM, customers included Arris International plc, or Arris, ASUSTeK Computer Inc., or Asus, Sagemcom Broadband SAS, or Sagemcom, and Technicolor SA, or Technicolor. During the same period, these OEM and ODM customers supported a number of major service providers in the United States as well as internationally. For the year ended December 27, 2015, our revenue was $83.8 million and our net loss was $7.0 million, and we had an accumulated deficit of $159.7 million as of December 27, 2015. For the six months ended June 26, 2016, our revenue was $57.5 million and our net loss was $1.9 million, and we had an accumulated deficit of $161.6 million as of June 26, 2016.

### Industry Background

Global growth in data traffic and the proliferation of Wi-Fi devices are driving demand for Wi-Fi connectivity. According to the Cisco 2016 Visual Networking Index report, by 2020, Wi-Fi is expected to carry approximately 55% of mobile IP traffic for devices with both cellular and Wi-Fi capabilities, while cellular is expected to carry approximately 45% of such

traffic. According to ABI Research, 2.8 billion Wi-Fi-enabled devices will be shipped worldwide in 2016, and this number is expected to increase to 4.0 billion in 2021. For a large portion of these devices, including smartphones, tablets, smart home assistants, and Internet of Things, or IoT, devices, Wi-Fi is the primary connection for IP traffic.

In addition, the types of IP traffic carried over Wi-Fi are also expanding. When Wi-Fi was first introduced into homes and enterprises, the predominant applications were email and Internet access. Today, the number of applications supported over Wi-Fi has grown to also encompass voice over IP, high-definition audio, Ultra High Definition TV, cloud computing, gaming and over-the-top video, which refers to the delivery of video over the subscriber's broadband connection without the involvement of traditional TV service providers. Industry reports forecast that Wi-Fi will become the most prevalent method to carry these applications.

To meet these demands, service providers, retail OEMs, enterprise OEMs, and consumer electronics OEMs are increasingly focused on integrating the best Wi-Fi capabilities into their products.

- Service Providers. Service providers, including AT&T Inc., or AT&T, Comcast Corporation, or Comcast, Orange S.A., or Orange, and Telefonica, S.A., or Telefonica, are seeking to deploy and manage the best Wi-Fi infrastructure inside the home to enable the connectivity of a growing number of Wi-Fi devices, and to offer a richer complement of value-added services such as high-speed Internet, Ultra High Definition TV, voice over IP, home security, energy management, cloud computing and gaming. Furthermore, service providers desire to offer their customers a seamless Wi-Fi connectivity experience outside the home. They have increased investments in the deployment of Wi-Fi hotspots. These hotspots need to support sophisticated roaming and authentication with other hotspots and with customers' home gateways.

- Retail OEMs. Retail OEMs, including Asus, Belkin International, Inc., or Belkin, and Netgear, Inc., or Netgear, are focusing on higher performance Wi-Fi as consumers are increasingly motivated to invest in higher-performance Wi-Fi for their homes. As a result, retail OEMs strive to offer routers with the latest Wi-Fi technology and performance to cover customers' homes with the fastest and most reliable speeds.

- Enterprise OEMs. OEMs for enterprise networking, including Brocade Communications Systems, Inc., or Brocade, Cisco Systems, Inc., or Cisco, and HP Inc., or HP, are seeking to meet the demands of an increasingly mobile workforce that is connecting to the network via multiple devices beyond a desktop or laptop, such as smartphones and tablets. As a result, enterprise OEMs are increasingly adopting higher performance Wi-Fi in their products to achieve higher speeds and improved wireless network capacity.



- Consumer Electronics OEMs. A more robust Wi-Fi network inside the home has led to the proliferation of connected Wi-Fi devices and has driven an increasing need for better delivery of content to those Wi-Fi-enabled devices. As a result, consumer electronics OEMs, including Apple Inc., or Apple, Samsung Electronics Co., Ltd., or Samsung, and Sony Corporation, or Sony, are seeking to incorporate high-performance Wi-Fi in their products.

**Industry Challenges**

Designing Wi-Fi solutions to provide the highest levels of performance is imperative to addressing consumer demands, yet remains very challenging due to the following factors.

Increasing Wi-Fi Speeds. 802.11ac-based devices are up to 10 times faster than prior generation devices, sending data at gigabits per second through the wireless channel, an unpredictable medium filled with obstacles, such as walls, doors, and furniture. As a result, more advanced digital signal processing techniques, such as MIMO, MU-MIMO, and explicit transmit beamforming, are required. A device incorporating MIMO technology transmits signals using more than one antenna and receives signals using more than one antenna, which allows the device to have increased speed and range. MU-MIMO refers to an algorithm that allows multiple client devices to be served by a Wi-Fi access point simultaneously. Explicit transmit beamforming is a technique that enables gateways and access points to direct their signals toward a client rather than covering a larger area, which increases transmission efficiency and ultimately improves Wi-Fi speed, range and reliability.

Spectrum Sharing. Wi-Fi operates in a limited, unlicensed wireless spectrum, as regulated in the United States by the Federal Communications Commission, or FCC. While the 5GHz spectrum used by 802.11ac is inherently wider relative to the 2.4GHz spectrum, it is not always entirely available due to regulatory constraints that vary from country to

country. To reliably achieve maximum speeds with 802.11ac, some of this restricted spectrum needs to be utilized. Therefore, a method referred to as Dynamic Frequency Selection, or DFS, needs to be implemented to accurately detect when these channels are available for Wi-Fi use. Implementing efficient use of DFS channels requires complex algorithms.

Competing Traffic. The types of traffic carried by Wi-Fi are rapidly increasing as technology providers seek to enable more device connectivity and value-added services. Each type of traffic has unique quality metrics that must be met in order to create a satisfactory user experience. A comprehensive Quality of Service, or QoS, mechanism is needed to prioritize traffic types, guarantee on-time delivery of specific traffic types ahead of others, and scale to meet the increased number of Wi-Fi clients in a network.

Rapid Evolution of Industry Standards. The IEEE standardization body continually strives to improve Wi-Fi functionality and performance. All competitors in the Wi-Fi solutions market design their products according to the same IEEE Wi-Fi standards, which have become more complex as each subsequent standard includes an increasing number of specifications for both basic and optional features. While all Wi-Fi products need to incorporate all of the basic specifications under the applicable standard, competitors in the high-performance Wi-Fi solutions market distinguish themselves by the speed with which they introduce new products and the degree to which their products are able to support advanced specifications and optional features, such as explicit transmit beamforming, high-order MIMO, and MU-MIMO. Some competitors decide to only implement the mandatory specifications and leave more complex optional features out of their products.

Legacy Wi-Fi Processing Architecture. There are seven distinct layers of functions needed for one Wi-Fi device to transmit data to another under IEEE Wi-Fi standards. Layers one and two comprise the Wi-Fi protocol stack, and layers three and above are referred to as higher-layer network functions. Historically, Wi-Fi chipsets were architected such that the host central processing unit, or CPU, inside a gateway or access point handled the majority of the higher-layer network processing activity. However, as Wi-Fi speeds increase, the ability of the CPU to sustain maximum Wi-Fi data bandwidth while also performing other tasks is compromised. As a result, in order for the end product to meet its performance specifications, the Wi-Fi chipset must be capable of processing greater portions of both the Wi-Fi protocol stack and network functions.

Network Interference Management. As Wi-Fi usage increases, higher levels of network congestion will occur. While the industry's transition to 5GHz networks temporarily helped to alleviate degradation by offering more channels, similar congestion and degradation of performance may occur over time. A Wi-Fi management system is needed to constantly monitor and optimize Wi-Fi network performance.



### Our Solution and Competitive Strengths

Our four generations of Wi-Fi solutions have been designed to achieve and maintain market leadership. Historically, in each case where we have introduced a new high performance Wi-Fi solution compliant with the 802.11 IEEE standard, we have done so well before our competitors have introduced a comparable product with the same features. This first-mover advantage has enabled us to market and monetize our solutions and capture key new customers and design wins while our competitors were still in the product development phase. This advantage has been particularly evident in the service provider market for home networking applications. Due to long design and deployment cycles, service providers may only undertake major product updates every few years. As a result, the ability to secure a service provider design win for a solution with advanced features can create a market advantage that lasts for months to years, depending on various factors, including how quickly a competitor releases a comparable product, how the performance of the competing product compares to ours, and how the timing of such release relates to the service provider's design and deployment cycle. We believe our success in pioneering previous Wi-Fi solutions has also given us a head start in the development of next generation Wi-Fi solutions.

We strive to deliver the industry's highest speed, broadest coverage, highest capacity, and most reliable performance through advanced software and system-level algorithms, Wi-Fi protocol processing using CPUs embedded inside our chipsets, and, more recently, the introduction of a cloud-based Wi-Fi network management system. Our solutions allow us to address the industry challenges posed by increasing Wi-Fi speeds, limited spectrum, increasing traffic, legacy Wi-Fi processing architectures and network interference management. We deliver proprietary feature set extensions beyond standard requirements, offering significant performance advantages to the user. Our innovative solutions have historically addressed the service provider market for home networking applications such as home gateways, repeaters, and set-top boxes, or STBs, and we are increasingly addressing additional end markets.

**Performance Benefits We Provide to Our Customers and Service Providers**

We believe our Wi-Fi solutions enable the highest overall level of Wi-Fi performance in the market relative to network speed, range, capacity and reliability. The performance benefits we provide to our customers and their target service providers are set forth below.

OEM and ODM Customers

- Integrated 2.4GHz and 5GHz Solutions. Our most recent solutions include both 2.4GHz and 5GHz capabilities. This integrated solution not only enables a more streamlined design process, but also maximizes interoperability and performance.

- Streamlined Integration and Faster Time to Market. Our host offload technology streamlines the integration of our chipsets into customer and reference design partner platforms. In addition, our customer engineering support team engages with our OEM and ODM customers and partners early in their design cycle, which we believe accelerates their product development and optimizes product performance.

Service Providers

- Improved Subscriber Experience and Retention. Our Wi-Fi solutions are high-performance solutions, which helps create a positive subscriber experience when using Wi-Fi. Our Wi-Fi solutions also provide enhanced network performance capabilities, which enable service providers to offer their subscribers a broader range of value-added products and services such as wireless phone service, wireless set-top boxes and seamless streaming of ultra-high definition video. By offering such premium products and services, we believe service providers are able to generate more revenue per subscriber and deliver a better subscriber experience, which contributes to improved subscriber retention.

- Longer Lifecycle and Reduced Capital Investment. Devices powered with our solutions can offer the leading edge of Wi-Fi technology, and therefore have a longer lifecycle and time to obsolescence. Additionally, a high-performing Wi-Fi infrastructure results in lower network expenditures for service providers by offloading cellular data, thereby reducing the burden on the cellular network.

- Fewer Service Disruptions and Lower Support Costs. Because our Wi-Fi solutions support the most advanced IEEE Wi-Fi optional specifications, they provide higher speed, greater range and better reliability than our competitors'



products, which increases the quality of data transmission and improves Wi-Fi connectivity within a given area. We believe the high quality and reliability of our Wi-Fi solutions results in fewer service disruptions, and therefore reduces customer complaints and the need for support calls and on-site service requests.

- Automated Network Management. We have a cloud-based Wi-Fi analytics and monitoring capability that can automatically detect, alert, diagnose, and fix network problems, before, during, and after an issue has occurred. Service providers who choose to deploy this capability can quickly diagnose field issues and confirm that new deployments are proceeding as planned. This capability also enables us to provide faster customer support and deployment of our solutions.

Our competitive strengths include:

- Market Leadership through Support of the Most Advanced Specifications. We design Wi-Fi solutions that support the most advanced IEEE Wi-Fi optional specifications, which allow us to be a leader in terms of both performance and innovation. Today, we are the first and only company to support the full 8x8 MIMO specification of 802.11ac with our Wi-Fi solution called QSR10G, which we believe allows us to offer the highest speed as well as the farthest range. While some of our competitors may offer a wider variety of products, many of those products incorporate only basic features for low-performance applications outside our target market segments. In contrast, we focus on segments of the market where advanced features are critical for the targeted application to provide higher performance, such as whole home coverage or video delivery over Wi-Fi.

- Proprietary Technology Architectures. We design proprietary technology architectures that we deliver through our high-performing chipsets. We believe our proprietary architectures are a key part of what enables us to successfully compete against our larger, more established competitors.

- Advanced Software and System-Level Algorithms. We enable our innovative Wi-Fi solutions with advanced proprietary software and system-level algorithms that provide superior functionality. These algorithms include explicit transmit beamforming, MIMO, MU-MIMO, and others. We believe these algorithms are crucial to the performance and stability of products integrating our solutions.

- Pure Focus on High-Performance Wi-Fi Solutions and Deep Wireless Engineering Expertise. Our research and development, engineering, manufacturing, sales, and marketing are focused solely on high-performance Wi-Fi solutions, which we believe gives us an advantage over many of our competitors who do not focus only on Wi-Fi.

- Deep Relationships with Our Customers and Reference Design Partners. We have built collaborative relationships with our customers and reference design partners, many of whom are industry leaders. We believe we have a strong industry reputation for responsiveness and delivering Wi-Fi solutions that meet or exceed our customers and reference design partners' technological requirements, as well as their overall business needs.

**Our Strategy**

The key components of our strategy include the following:

- Continue to Deliver Wi-Fi Innovation. We intend to continue our investment in research and development to drive further innovation, including new Wi-Fi standards, and maintain a market leadership position in the Wi-Fi marketplace.

- Expand Share in Service Provider Market. We intend to leverage our growing number of service provider and OEM and ODM relationships to aggressively market our solutions' competitive advantages and increase our footprint among service providers.

- Leverage Industry Partnerships to Promote Adoption of Our Solutions. We will seek to broaden and strengthen our industry partnerships to drive design wins and establish incumbency.

- Address Other Wi-Fi Market Segments. We intend to leverage our existing technologies and solutions, as well as broaden our Wi-Fi solutions portfolio, to expand our presence in the retail Wi-Fi market and address other markets in order to continue to expand our customer base and provide future opportunities for revenue growth.



- Broaden Solutions Beyond Wi-Fi. We believe our existing technologies and wireless engineering expertise, as well as our industry relationships, provide us an opportunity to expand beyond the Wi-Fi market through a combination of organic investments and acquisitions.

**Our Products and Technology**

The typical applications that use our current solutions are:

- Access Point and Gateways. These applications are at the core of wireless home networking and enterprise access. Our initial solutions supported 2-stream applications with 4x4 5GHz 802.11n, and we have continuously innovated to deliver increasing speeds, culminating in our latest 12-stream (8x8 5GHz 802.11ac and 4x4 2.4GHz and 5GHz 802.11n), 10 gigabit per-second, or Gbps, dual-band dual-concurrent offering, which allows the simultaneous (dual-concurrent) transmission of data in the 2.4GHz and 5GHz (dual-band) frequencies. A 4x4 MIMO transmission uses four antennas, and an 8x8 MIMO transmission uses eight antennas. We refer to these technologies as higher-order MIMO. Four antennas are used in the 2.4GHz band, and four or eight antennas are used in the 5GHz band.

We believe that the increasing demands on wireless home networks and enterprise applications will help drive the need for high performance access points and gateways in the marketplace, which we believe will also contribute to greater demand for high-performance Wi-Fi solutions with higher ASPs given the benefits they provide to our customers. According to ABI Research, shipments of Wi-Fi-enabled consumer and enterprise access point devices are expected to be 180 million and 13 million units, respectively, in 2016 and are expected to grow to 209 million and 22 million units, respectively, by 2021.

- Clients. We provide Wi-Fi solutions for non-mobile client applications such as set-top boxes. We believe the performance advantages of our solutions will better support the latest generation of Ultra High Definition, or UHD, set-top boxes, which have higher Wi-Fi speed requirements. We believe that overall Wi-Fi penetration of set-top boxes in the marketplace is relatively low, with ABI Research forecasting that 82 million Wi-Fi-enabled set top box devices will be shipped in 2016, compared to global set-top box device shipments of 285 million during the same period.

- Repeaters. In certain challenging networking environments, repeaters can be used to provide extended Wi-Fi coverage. Our repeater solutions support advanced functionality, including setup, management, and client connectivity features.

We differentiate our solutions portfolio by designing and implementing a variety of innovative system architecture features that are aimed at solving the challenges of high-performance wireless networking, including:

Increasing Wi-Fi Speeds

- Transmit Beamforming. Beamforming is critical to effectively compete in the high-performance Wi-Fi market as it enables gateways and access points to direct their signals toward a client to increase transmission efficiency and improve Wi-Fi speed and range. Beamforming is an integral part of our solutions, and our engineering team includes leading system algorithm experts to address the design and implementation challenges in this field.

- Advanced MIMO and MU-MIMO. MIMO technology multiplies the capacity of a wireless connection by allowing access points to transmit and receive multiple streams of data at the same time. We have experienced wireless system architects and software engineers to lead the implementation of these technologies.

Spectrum Scarcity

- SuperDFS Dynamic Smart Channel Selection. SuperDFS is a set of system-level algorithms that combine RFIC, baseband, and software functions to select a particular DFS channel that has the least interference and best system capacity.

More Traffic Types

- IQStream Advanced Traffic Management. IQstream is a proprietary system-level algorithm that classifies and prioritizes all types of Wi-Fi traffic in order for the most critical traffic to be delivered with the least interruption.



Legacy Wi-Fi Processing Architecture

- Host Offload. Our host offload technology not only frees up the resources of the host CPU, but also requires less software integration and optimization between our Wi-Fi chips and the host CPU during system design.

Network Management

- Cloud-based Wi-Fi Management Platform. Our proprietary cloud-based platform comprises a debugging agent embedded within a product, such as an access point, which sends Wi-Fi data to an analytics engine in the cloud. This system permits remote, real-time issue identification and resolution. This cloud-based platform can scale to manage millions of Wi-Fi devices and thus provide a complete network-wide Wi-Fi management system for our customers.

**Risks Affecting our Business**

Our business is subject to numerous risks and uncertainties, including those highlighted in the section titled “Risk Factors” immediately following this prospectus summary. These risks include, but are not limited to, the following:

- 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;
- The complexity of our solutions could result in unforeseen design and development delays or expenditures;
- We depend on a limited number of customers and service providers for a significant portion of our revenue;
- We have an accumulated deficit and have incurred net losses in the past, and we may incur net losses in the future;
- 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;
- Consolidation in our industry or in a related industry that involves our customers, service providers, partners and competitors could disrupt our business;
- Our customers may cancel their orders, change production quantities or delay production, which could harm our business;
- 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;
- 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; and
- A limited number of stockholders will continue to have substantial control over us after this offering, which could limit your ability to influence the outcome of key transactions, including a change of control.

**Corporate Information**

Our principal executive offices are located at 3450 W. Warren Avenue, Fremont, California 94538, and our telephone number is (510) 743-2260. Our website address is www.quantenna.com. Information contained on, or that can be accessed through, our website does not constitute part of this prospectus and inclusions of our website address in this prospectus are inactive textual references only. We were incorporated in the state of Delaware in November 2005 as mySource Communications, Inc., and we changed our name to Quantenna Communications, Inc. in January 2007.

“Quantenna” and our other registered or common law trademarks, service marks or trade names appearing in this prospectus are the property of Quantenna Communications, Inc. Other trademarks and trade names referred to in this prospectus are the property of their respective owners.



**Emerging Growth Company**

The Jumpstart Our Business Startups Act, or JOBS Act, was enacted in April 2012 with the intention of encouraging capital formation in the United States and reducing the regulatory burden on newly public companies that qualify as “emerging growth companies.” We are an emerging growth company within the meaning of the JOBS Act. As an emerging growth company, we may take advantage of certain exemptions from various public reporting requirements, including the requirement that our internal control over financial reporting be audited by our independent registered public accounting firm pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, certain requirements related to the disclosure of executive compensation in this prospectus and in our periodic reports and

proxy statements and the requirement that we hold a nonbinding advisory vote on executive compensation and any golden parachute payments. We may take advantage of these exemptions until we are no longer an emerging growth company.

We will remain an emerging growth company until the earliest to occur of (i) the last day of the fiscal year in which we have more than $1.0 billion in annual revenue; (ii) the date we qualify as a "large accelerated filer," with at least $700 million of equity securities held by non-affiliates; (iii) the date on which we have issued, in any three-year period, more than $1.0 billion in non-convertible debt securities; and (iv) the last day of the fiscal year ending after the fifth anniversary of the completion of this offering.

See the section titled "Risk Factors—Risks Related to Our Business and Industry—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 certain risks related to our status as an emerging growth company.



# *The Offering*

| | |
|---|---|
| Common stock offered by us | shares |
| Common stock to be outstanding after this offering | shares |
| Option to purchase additional shares of common stock from us | shares |
| Use of proceeds | We estimate that the net proceeds from the sale of shares of our common stock in this offering will be approximately $ million (or approximately $ million if the underwriters' option to purchase additional shares of our common stock from us is exercised in full), based upon the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.<br><br>The principal purposes of this offering are to increase our capitalization and financial flexibility, create a public market for our common stock and enable access to the public equity markets for us and our stockholders. We intend to use the net proceeds from this offering for general corporate purposes, including working capital, operating expenses and capital expenditures. We may also use a portion of the net proceeds to acquire complementary businesses, products, services or technologies. However, we do not have agreements or commitments for any acquisitions at this time. See the section titled "Use of Proceeds" for additional information. |
| Directed share program | At our request, the underwriters have reserved five percent of the shares of common stock offered by this prospectus for sale, at the initial public offering price, to our directors, officers, certain employees, business associates, and friends and family of our directors and officers. The number of shares of common stock available for sale to the general public will be reduced to the extent these individuals purchase such reserved shares. Any reserved shares that are not so purchased will be offered by the underwriters to the general public on the same basis as the other shares offered by this prospectus. |
| Proposed trading symbol | "QTNA" |

The number of shares of our common stock that will be outstanding after this offering is based on 1,298,088,306 shares of our common stock (including shares of our convertible preferred stock on an as-converted basis) outstanding as of June 26, 2016, and excludes:

- 256,468,336 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock outstanding as of June 26, 2016, with a weighted-average exercise price of $0.04 per share;

- 82,144,000 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock granted after June 26, 2016, with a weighted-average exercise price of $0.17 per share;
- 138,888 shares of our common stock granted after June 26, 2016;
- 21,932,826 shares of our common stock issuable upon the exercise of warrants outstanding as of June 26, 2016, with a weighted-average exercise price of $0.06 per share;



- 1,937,425 shares of our common stock issuable upon the exercise of a warrant (assuming the automatic conversion of an outstanding warrant to purchase 1,937,425 shares of our convertible preferred stock into a warrant to purchase 1,937,425 shares of our common stock) outstanding as of June 26, 2016, with an exercise price of $0.15 per share;
- shares of our common stock reserved for future issuance under our equity compensation plans, consisting of:
  - shares of our common stock reserved for future issuance under our 2016 Omnibus Equity Incentive Plan, or our 2016 Plan, which will become effective prior to the completion of this offering;
  - 16,712,112 shares of our common stock reserved for future issuance under our 2016 Equity Incentive Plan, or our 2016 EIP (after giving effect to increases of an aggregate of 76,850,000 shares of our common stock reserved for issuance under our 2016 EIP effected after June 26, 2016, the grant of 82,144,000 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock after June 26, 2016, the cancellation and return of 987,594 shares of our common stock to our 2016 EIP after June 26, 2016, and the issuance of 138,888 shares of our common stock after June 26, 2016), which shares will be added to the shares of our common stock reserved for future issuance under our 2016 Plan to the extent not granted prior to the completion of this offering, at which time we will cease granting awards under our 2016 EIP; and
  - shares of our common stock reserved for future issuance under our 2016 Employee Stock Purchase Plan, or our ESPP, which will become effective prior to the completion of this offering.

Our 2016 Plan and our ESPP each provide for annual automatic increases in the number of shares reserved thereunder, and our 2016 Plan also provides for increases in the number of shares reserved thereunder based on awards under our 2016 EIP and 2006 Stock Plan, or our 2006 Plan, that expire, are forfeited or otherwise repurchased by us. See the section titled “Executive Compensation—Employee Benefit and Stock Plans” for additional information.

Except as otherwise indicated, all information in this prospectus assumes:

- the filing and effectiveness of our amended and restated certificate of incorporation and the effectiveness of our amended and restated bylaws, each of which will occur immediately prior to the completion of this offering;
- a reverse stock split of our common stock and convertible preferred stock, which will be effected prior to completion of this offering;
- the automatic conversion of all outstanding shares of our convertible preferred stock into an aggregate of 1,239,538,632 shares of our common stock, which will occur immediately prior to the completion of this offering;
- the automatic conversion of an outstanding warrant to purchase 1,937,425 shares of our convertible preferred stock into a warrant to purchase 1,937,425 shares of our common stock, which will occur immediately prior to the completion of this offering;
- no exercise of outstanding stock options or warrants subsequent to June 26, 2016; and
- no exercise by the underwriters of their option to purchase additional shares of our common stock from us.

# *Summary Consolidated Financial and Other Data*

The following tables summarize our consolidated financial and other data. We have derived the summary consolidated statement of operations data for the years ended December 28, 2014 and December 27, 2015 from our audited consolidated financial statements included elsewhere in this prospectus. We have derived the summary consolidated statement of operations data for the six months ended June 28, 2015 and June 26, 2016 and our balance sheet data as of June 26, 2016 from our unaudited interim consolidated financial statements included elsewhere in this prospectus. The unaudited interim consolidated financial statements have been prepared on the same basis as our audited consolidated financial statements and reflect, in the opinion of management, all adjustments of a normal, recurring nature that are necessary for a fair statement of the unaudited interim consolidated financial statements. Our historical results are not necessarily indicative of the results that may be expected in the future, and the results for the six months ended June 26, 2016 are not necessarily indicative of results to be expected for the full year or any other period. The following summary consolidated financial and other data should be read in conjunction with the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our audited consolidated financial statements and related notes included elsewhere in this prospectus.

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (In thousands, except share and per share data) | | | |
| Consolidated Statements of Operations Data: | | | | |
| Revenue | $ 66,860 | $ 83,773 | $ 36,554 | $ 57,472 |
| Cost of revenue[(1)] | 38,211 | 42,554 | 18,734 | 29,205 |
| Gross profit | 28,649 | 41,219 | 17,820 | 28,267 |
| Operating expenses:[(1)] | | | | |
| Research and development | 31,283 | 35,575 | 18,443 | 21,751 |
| Sales and marketing | 5,932 | 6,644 | 3,529 | 3,399 |
| General and administrative | 4,532 | 5,212 | 2,732 | 4,555 |
| Total operating expenses | 41,747 | 47,431 | 24,704 | 29,705 |
| Loss from operations | (13,098) | (6,212) | (6,884) | (1,438) |
| Interest expense | (481) | (697) | (400) | (225) |
| Other income (expense), net | | (21) | (79) | (248) |
| Loss before income taxes | (13,490) | (6,930) | (7,363) | (1,911) |
| Provision for income taxes | (108) | (115) | (37) | (38) |

| | | | | |
|---|---|---|---|---|
| Net loss | $ (13,598) | $ (7,045) | $ (7,400) | $ (1,949) |
| Net loss attributable to common stockholders per share, basic and diluted[2] | $ (0.41) | $ (0.18) | $ (0.21) | $ (0.04) |
| Weighted average shares used to compute basic and diluted net loss per share[2] | 32,808,092 | 38,512,276 | 35,614,157 | 53,131,727 |
| Pro forma net loss per share- basic and diluted[2] | | $ (0.01) | | $ (0.00) |
| Pro forma weighted average number of shares outstanding - basic and diluted net loss per share[2] | | 1,253,342,652 | | 1,292,670,359 |

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



| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (In thousands) | | | |
| Cost of revenue | $ | $ | $ | $ |
| Research and development | | | | |
| Sales and marketing | | | | |
| General and administrative | | | | |
| Total stock-based compensation expense | $ | $ 1,202 | $ | $ 1,190 |

(2) See Notes 1 and 3 to our consolidated financial statements included elsewhere in this prospectus for an explanation of the calculation of our basic and diluted net loss per common share, pro forma net loss per common share, and the weighted-average number of shares used in the computation of the per share amounts.

| | As of June 26, 2016 | | |
|---|---|---|---|
| | (In thousands) | | |
| | Actual | Pro Forma (1) | Pro Forma as Adjusted (2) (3) |
| Consolidated Balance Sheet Data: | | | |
| Cash and cash equivalents | $ 16,943 | $ 16,943 | |
| Working capital | $ 31,865 | $ 31,660 | |

| | | |
|---|---|---|
| Total assets | $ 53,230 | $ 53,230 |
| Total liabilities | $ 24,773 | $ 24,678 |
| Convertible preferred stock | $ 184,704 | $ — |
| Total stockholders' equity (deficit) | $ (156,247) | $ 28,552 |

(1) The pro forma column in the balance sheet data table above reflects (i) the automatic conversion of all outstanding shares of our convertible preferred stock into an aggregate of 1,239,538,632 shares of common stock; (ii) the resulting reclassification of our convertible preferred stock warrant liability to additional paid-in capital; and (iii) the obligation to pay an aggregate of $0.2 million in fees to Silicon Valley Bank under our Amended and Restated Loan and Security Agreement, or the SVB Loan Agreement, which will become due upon the offering, as if such conversion, reclassification, and obligation had occurred on June 26, 2016. We have made an adjustment to the pro forma accumulated deficit to reflect the impact of such fees on our net loss.

(2) The pro forma as adjusted column in the balance sheet data table above gives effect to the pro forma adjustments set forth in the footnote above and the sale and issuance by us of shares of common stock in this offering, based on an assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

(3) Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, the amount of our pro forma as adjusted cash and cash equivalents, total current assets, working capital, total assets, and total stockholders' equity by $ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. An increase or decrease of 1.0 million shares in the number of shares offered by us would increase or decrease, as applicable, the amount of our pro forma as adjusted cash and cash equivalents, total current assets, working capital, total assets, and total stockholders' equity by $ million, assuming an initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.





# *Risk Factors*

**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. 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. 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, 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 chips, 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, 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 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 2014, three customers accounted for approximately 60% of our revenue. In 2015, four 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 our two largest service providers, - 13 - which are based in the United States, represented approximately one-half of our revenue in 2014 and approximately 40% of our revenue in 2015. 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 2014 and 2015 and the six months ended June 26, 2016, we incurred net losses of $13.6 million, $7.0 million and $1.9 million, respectively. As of June 26, 2016, we had an accumulated deficit of $161.6 million. Following the completion of this offering, 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 will also incur significant additional legal, accounting and other expenses. If our revenue growth does not exceed 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, Marvell Technology Group Ltd., or Marvell, MediaTek USA Inc., or MediaTek, and Qualcomm Incorporated, or 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, 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 video business by Technicolor in 2015 and the acquisition of Pace plc, or Pace, by Arris, 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.

Consolidation among our customers and service providers can create significant uncertainty regarding 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 competitors 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. 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 June 26, 2016, we had 37 issued patents in the United States and four 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 U.S. 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.

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, Lesser GNU General Public License and 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.

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 28, 2014 to 274 as of June 26, 2016, and expect our headcount to continue to grow rapidly 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 Corporation, or 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 - 16 - 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 through our 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;
- 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, or 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;
- volatility in our stock price, which may lead to material changes in stock compensation expense;



- our ability to derive benefits from our investments in research, development, sales, marketing, and other activities; and
- general economic or political conditions in our current or future domestic and international markets.

The effects of these and other factors 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. 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 SOCs 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 Corporation, or Intel, or Broadcom network processors, 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. Our revenue increased from $66.9 million in 2014, to $83.8 million in 2015, representing an increase of 25%. Our revenue increased from $36.6 million in the six months ended June 28, 2015 to $57.5 million, in the six months ended June 26, 2016, representing an increase of 57%. Our revenue may be adversely impacted by various factors, including reduced 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. 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.

In the future, we may acquire other businesses, products or technologies, or partner with other businesses. To date, we have not made any acquisitions, and we do not currently have any agreements or commitments for any acquisition. Our ability to make and successfully integrate acquisitions is unproven. Even if we complete one or more acquisitions, we may not be able to strengthen our competitive position or realize the intended benefits of the acquisition in a timely manner, or at all. Any acquisitions 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, and political unrest, 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, 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. 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 average selling prices over time. We anticipate that the average selling prices 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, 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; and
- political and economic instability, and terrorism.



In 2012, we established our Russian subsidiary for research and development activities pursuant to a letter agreement with Joint Stock Company “RUSNANO” (formerly Open Joint Stock Company “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 will terminate upon completion of this offering, RUSNANO will remain entitled to representation on the subsidiary’s board of directors and certain continuing rights regarding use of the subsidiary’s funds. We may incur specified penalties under the letter agreement if

we fail to meet our funding obligations, and may incur other unanticipated costs if we are required to restructure our operations in Russia. See the section titled "Certain Relationships and Related Party Transactions—Agreement with RUSNANO" for additional information about this arrangement.

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. Our failure to manage any of these risks successfully 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. In addition, 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. We may 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, our existing NOLs may be subject to limitations arising from previous ownership changes, and if we undergo an ownership change in connection with or after this offering or any future offering, our ability to utilize NOLs could be further limited by Section 382 of the Internal Revenue Code of 1986, as amended, or 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.

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 will be subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, the listing requirements of the securities exchange on which our common stock is traded, and other applicable securities rules and regulations. Compliance with these rules and regulations will increase our legal and financial compliance costs, make some activities more difficult, time-consuming or costly, and increase 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. We may need to hire additional employees to comply with these requirements in the future, which will increase our costs and expenses.

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.

As a result of becoming a public company, we will be subject to additional regulatory compliance requirements and 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.

We have never operated as a public company and will incur significant legal, accounting and other expenses that we did not incur as a private company. The individuals who constitute our management team have limited experience managing a publicly traded company, and limited experience complying with the increasingly complex and changing laws pertaining to public companies. Our management team and other personnel will need to devote a substantial amount of time to compliance, and we may not effectively or efficiently manage our transition to being a public company. In addition, we have limited internal resources and may not be able to hire additional, qualified resources on a timely basis.

Pursuant to the Exchange Act, we will be required to furnish a report by management on, among other things, the effectiveness of our internal control over financial reporting for the first fiscal year beginning after the effective date of this offering. This assessment will need to include disclosure of any material weaknesses identified by our management in our internal control over financial reporting. We are currently documenting and testing our internal controls in order to identify, evaluate and remediate any deficiencies in those internal controls and documenting the results of our evaluation, testing and remediation. 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 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.

As a public company, we will be required to disclose material changes made in our internal control and procedures on a quarterly basis. However, our independent registered public accounting firm will not be required to formally attest to the effectiveness of our internal control over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act until the later of the year following our first annual report required to be filed with the SEC or the date we are no longer an "emerging growth company" as defined in the JOBS Act, if we take advantage of the exemptions contained in the JOBS Act. To comply with the requirements of being a public company, we may need to undertake various actions, such as implementing new internal controls and procedures and hiring accounting or internal audit staff.

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) identify, select and apply GAAP sufficiently to provide reasonable assurance that transactions were being appropriately recorded, and (ii) 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. We have taken a number of steps to remediate this material weakness, but there is no assurance that these remediation efforts will be successful. If not properly remediated, this material weakness could result in material - 22 - 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 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 SVB Loan Agreement and Mezzanine Loan Agreement contain 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 or the loans, 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 defaults under the loan agreements. In addition, borrowings under these loan agreements are collateralized by certain of our assets, including our receivables and inventory, subject to customary exceptions and limits.

The loan agreements also contain customary events of default. Defaults, if not waived, could cause all of the outstanding indebtedness under our loan agreements to become immediately due and payable and would permit Silicon Valley Bank to exercise remedies against the collateral in which we granted Silicon Valley Bank a security interest.

If we are unable to comply with the terms of these agreements, we may not be able to obtain additional debt or equity financing on favorable terms, if at all, and our assets may become subject to Silicon Valley Bank's security interest. This could materially and adversely affect our working capital, financial condition and our ability to operate.



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 have 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.

To date, we have not used risk management techniques to hedge the risks associated with these fluctuations. Even if we were to implement hedging strategies, 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 this Offering and Ownership of Our Common Stock

There has been no prior trading market for our common stock, and an active trading market may not develop or be sustained following this offering.

We intend to apply for the listing of our common stock on under the symbol "QTNA." However, there has been no prior trading market for our common stock. We cannot assure you that an active trading market for our common stock will develop on such exchange or elsewhere or, if developed, that any market will be sustained. Accordingly, we cannot assure you of the liquidity of any trading market, your ability to sell your shares of our common stock when desired or the prices that you may obtain for your shares of our common stock.

The market price of our common stock may be volatile, which could cause the value of your investment to decline.

Technology stocks have historically experienced high levels of volatility. The trading price of our common stock following this offering may fluctuate substantially. Following the completion of this offering, the market price of our common stock may be higher or lower than the price you pay in the offering, depending on many factors, some of which

are beyond our control and may not be related to our operating performance. These fluctuations could cause you to lose all or part of your 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;
- 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 competitive position could suffer, and our stock price and trading volume could decline.

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, our competitive position could suffer, and our stock price and trading volume could decline.

Purchasers in this offering will immediately experience substantial dilution in net tangible book value.

The initial public offering price of our common stock is substantially higher than the pro forma net tangible book value per share of our common stock immediately following this offering based on the total value of our tangible assets less our total liabilities. Therefore, if you purchase shares of our common stock in this offering, you will experience immediate dilution of $ per share, the difference between the price per share you pay for our common stock and the pro forma net tangible book value per share of our common stock as of June 26, 2016, after giving effect to the issuance of shares of our common stock in this offering. See the section titled "Dilution" below.

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 after this offering, or the perception that such sales could occur, could adversely affect the market price of our common stock and may make it more difficult for you to sell your common stock at a time and price that you deem appropriate. Based on the total number of outstanding shares of our common stock as of June 26, 2016, upon completion of this offering, we will have approximately shares of common stock outstanding. All of the shares of common stock sold in this offering will be freely tradable without restrictions or further registration under the Securities Act of 1933, as amended, or the Securities Act, except for any shares held by our "affiliates" as defined in Rule 144 under the Securities Act.

Subject to certain exceptions described in the section titled "Underwriters," we and all of our directors and executive officers and substantially all of our equity holders have agreed not to offer, pledge, sell or contract to sell, directly or indirectly, any shares of common stock or securities convertible into or exercisable for shares of common stock without the prior written consent of Morgan Stanley & Co. LLC, on behalf of the underwriters, for a period of 180 days from the date of this prospectus. When the lock-up period expires, we and our locked-up security holders will be able to sell our shares in the public market. In addition, Morgan Stanley & Co. LLC, on behalf of the underwriters, may release all or some portion of the shares subject to lock-up agreements prior to the expiration of the lock-up period. See the section titled "Shares Eligible for Future Sale" for more information. Sales of a substantial number of such shares upon expiration, or the perception that such sales may occur, or early release of the lock-up, could cause our stock price to fall or make it more difficult for you to sell your common stock at a time and price that you deem appropriate.



Based on shares outstanding as of June 26, 2016, holders of up to approximately 1,256,638,883 shares (including 17,100,251 shares of our common stock issuable upon the exercise of warrants that were outstanding as of June 26, 2016), or % of our common stock after the completion of this offering, will have rights, subject to certain 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. We also intend to register the offer and sale of all shares of common stock that we may issue under our equity compensation plans.

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 after this offering, 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 owns greater than 5% of our outstanding common stock, in the aggregate, will beneficially own approximately % of the outstanding shares of our common stock after the completion of this offering, based on the number of shares outstanding as of June 26, 2016. 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.

Management will have broad discretion over the use of proceeds from this offering.

The principal purposes of this offering are to increase our capitalization and financial flexibility, create a public market for our stock and thereby enable access to the public equity markets by our employees and stockholders, obtain additional capital and increase our visibility in the marketplace. As of the date of this prospectus, we have no specific plans for the use of the net proceeds we receive from this offering. However, we currently intend to use the net proceeds we receive from this offering primarily for general corporate purposes, including headcount expansion and operating infrastructure development, research and development activities, sales and marketing activities, general and administrative activities, working capital, and capital expenditures. Accordingly, our management will have broad discretion over the specific use of the net proceeds that we receive in this offering and might not be able to obtain a significant return, if any, on investment of these net proceeds. Investors in this offering will need to rely upon the judgment of our management with respect to the use of proceeds. If we do not use the net proceeds that we receive in this offering effectively, our business, results of operations and financial condition could be harmed.

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 Agreement and Mezzanine Loan Agreement impose 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 will 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 that will be in effect upon completion of this offering 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.

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 - 27 - 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, or the JOBS Act, we may take 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 this offering, (ii) the last day of the first fiscal year in which our annual gross revenue is $1 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 may rely 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.



# *Special Note Regarding Forward-Looking Statements*

# *Special Note Regarding Forward-looking Statements*

This prospectus contains forward-looking statements within the meaning of the federal securities laws, 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 prospectus include, but are not limited to, statements about:

- our ability to design and develop Wi-Fi solutions;
- our ability to attract and retain customers;
- our ability to attract and maintain relationships with service providers;
- our ability to maintain an adequate rate of revenue growth;
- our ability to expand into new Wi-Fi market segments and additional markets;
- our ability to achieve design wins;
- our future financial and results of operations;
- our business plan and our ability to effectively manage our growth and associated investments;
- our expectations regarding our industry and potential market;
- beliefs and objectives for future operations;
- beliefs associated with the use of our solutions;
- our ability to further penetrate our existing customer base;
- our ability to further develop strategic relationships;
- our expectations concerning additional purchase orders by existing customers;
- our ability to maintain our competitive technological advantages against new entrants in our industry;
- our ability to timely and effectively scale and adapt our existing technology;
- our ability to innovate new solutions and bring them to market in a timely manner;
- our ability to maintain, protect, and enhance our brand and intellectual property;
- our ability to expand internationally;
- our ability to increase our revenue and our revenue growth rate;
- the effects of increased competition in our market and our ability to compete effectively;
- cost of revenue, including changes in costs associated with production, manufacturing and customer support;
- operating expenses, including changes in research and development, sales and marketing, and general and administrative expenses;

- anticipated income tax rates;
- costs associated with defending intellectual property infringement and other claims;



- our expectations concerning relationships with third parties, including manufacturing partners;
- the release of new products;
- economic and industry trends or trend analysis;
- the attraction and retention of qualified employees and key personnel; and
- future acquisitions of or investments in complementary companies, products or technologies.

We caution you that the foregoing list may not contain all of the forward-looking statements made in this prospectus.

You should not rely upon forward-looking statements as predictions of future events. We have based the forward-looking statements contained in this prospectus 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 prospectus. 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 prospectus. 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 prospectus 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 prospectus to reflect events or circumstances after the date of this prospectus or to reflect new information or the occurrence of unanticipated events, except as required by law. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.



# *Market and Industry Data*

# *Market and Industry Data*

This prospectus contains estimates and information concerning our industry, including market size and growth rates of the markets in which we participate, that are based on industry publications and reports. This information involves a number of assumptions and limitations, and you are cautioned not to give undue weight to these estimates. We have not independently verified the accuracy or completeness of the data contained in these industry publications and reports.

The industry in which we operate is subject to a high degree of uncertainty and risk due to variety of factors, including those described in the section titled “Risk Factors.” These and other factors could cause results to differ materially from those expressed in these publications and reports.

Certain information in the text of this prospectus is contained in independent industry publications. The source of these independent industry publications is provided below:

(1) ABI Research, Wi-Fi Forecast, Publication Date: June 30, 2016.

(2) Cisco 2016 Visual Networking Index, Publication Date: June 6, 2016.

(3) Dell’Oro Group Inc., Wireless LAN Five Year Forecast Report, Publication Date: July 13, 2016.

(4) ABI Research, Set-Top Boxes, Publication Date: April 29, 2016.



# *Use of Proceeds*

# *Use of Proceeds*

We estimate that the net proceeds to us from the sale of shares of our common stock offered by us in this offering at the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, will be approximately $ million, or approximately $ million if the underwriters’ option to purchase additional shares of our common stock from us is exercised in full.

Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, the net proceeds to us from this offering by approximately $ million, assuming the number of shares of our common stock offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions payable by us. Similarly, each 1.0 million increase or decrease in the number of shares of our common stock offered by us would increase or decrease, as applicable, the net proceeds to us from this offering by approximately $ million, assuming the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The principal purposes of this offering are to increase our capitalization and financial flexibility, create a public market for our common stock and enable access to the public equity markets for us and our stockholders.

We intend to use the net proceeds to us from this offering for general corporate purposes, including working capital, operating expenses and capital expenditures. We may also use a portion of the net proceeds to acquire complementary businesses, products, services or technologies. However, we do not have agreements or commitments for any acquisitions at this time. We cannot specify with certainty the particular uses of the net proceeds to us from this offering. Accordingly, we will have broad discretion in using these proceeds. Pending the use of proceeds to us from this offering as described above, we intend to invest the net proceeds to us from this offering in short-term and long-term interest-bearing obligations, including government and investment-grade debt securities and money market funds.

# *Dividend Policy*

# *Dividend Policy*

We have never declared or paid any cash dividends on our capital stock. We currently intend to retain all available funds and any future earnings for use in the operation of our business and do not expect to pay any dividends on our capital stock in the foreseeable future. In addition, our ability to pay dividends on our capital stock is subject to restrictions under the terms of our SVB Loan Agreement and Mezzanine Loan Agreement. Any future determination to declare dividends will be made at the discretion of our board of directors, subject to applicable laws, and will depend on a number of factors, including our financial condition, results of operations, capital requirements, contractual restrictions, general business conditions and other factors that our board of directors may deem relevant.



# *Capitalization*

# *Capitalization*

The following table sets forth cash and cash equivalents, as well as our capitalization, as of June 26, 2016, as follows:

- on an actual basis;
- on a pro forma basis, giving effect to (i) the automatic conversion of all outstanding shares of our convertible preferred stock into an aggregate of 1,239,538,632 shares of our common stock, (ii) the resulting reclassification of our convertible preferred stock warrant liability to additional paid-in capital, (iii) the obligation to pay an aggregate of $0.2 million in fees to Silicon Valley Bank under our SVB Loan Agreement, which will become due upon the offering; and (iv) the filing and effectiveness of our amended and restated certificate of incorporation in Delaware, as if such conversion, reclassification, obligation, filing and effectiveness had occurred on June 26, 2016; and
- on a pro forma as adjusted basis, giving effect to the pro forma adjustments set forth above and the sale and issuance of shares of our common stock in this offering, based upon the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

You should read this table together with our consolidated financial statements and related notes, and the sections titled “Selected Consolidated Financial and Other Data” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” that are included elsewhere in this prospectus.

| | As of June 26, 2016 | | |
|---|---|---|---|
| | Actual | Pro Forma | Pro Forma As Adjusted (1) |
| | (In thousands, except share and per share data) | | |
| Cash and cash equivalents | $ 16,943 | $ 16,943 | |
| Long-term debt, current and non-current | $ 10,069 | $ 10,069 | |

| | | | |
|---|---|---|---|
| Convertible preferred stock warrant liability | | — | — |
| Convertible preferred stock, $0.0001 par value: 1,152,481,783 shares authorized, 1,123,580,844 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted | 184,704 | — | — |
| Stockholders' equity (deficit): | | | |
| Preferred stock, $0.0001 par value: no shares authorized, issued and outstanding, actual; shares authorized, no shares issued or outstanding, pro forma and pro forma as adjusted | — | — | — |
| Common stock, $0.0001 par value: 1,656,844,627 shares authorized, 58,549,674 shares issued and outstanding, actual; shares authorized, 1,298,088,306 shares issued and outstanding, pro forma; and shares authorized, shares issued and outstanding, pro forma as adjusted | | | |
| Additional paid-in capital | 5,376 | 190,256 | |
| Accumulated deficit | (161,628) | (161,833) | |
| Total stockholders' equity (deficit) | (156,247) | 28,552 | |
| Total capitalization | $ 38,826 | $ 38,621 | |

(1) Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, the amount of our pro forma as adjusted cash and cash equivalents, additional paid-in capital, total stockholders' equity, and total capitalization by approximately $ million, assuming the number of shares of common stock offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each 1.0 million increase or decrease in the



number of shares of common stock offered by us would increase or decrease, as applicable, the amount of our pro forma as adjusted cash and cash equivalents, additional paid-in capital, total stockholders' equity, and total capitalization by approximately $ million, assuming the assumed initial public offering price per share of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters' option to purchase additional shares of our common stock from us were exercised in full, pro forma as adjusted cash and cash equivalents, additional paid-in capital, total stockholders' equity, total capitalization and shares outstanding as of June 26, 2016 would be $ million, $ million, $ million, $ million, and , respectively.

The pro forma and pro forma as adjusted columns in the table above are based on 1,298,088,306 shares of our common stock (including shares of our convertible preferred stock on an as-converted basis) outstanding as of June 26, 2016, and exclude the following:

- 256,468,336 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock outstanding as of June 26, 2016, with a weighted-average exercise price of $0.04 per share;
- 82,144,000 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock granted after June 26, 2016, with a weighted-average exercise price of $0.17 per share;
- 138,888 shares of our common stock granted after June 26, 2016;

- 21,932,826 shares of our common stock issuable upon the exercise of warrants outstanding as of June 26, 2016, with a weighted-average exercise price of $0.06 per share;
- 1,937,425 shares of our common stock issuable upon the exercise of a warrant (assuming the automatic conversion of an outstanding warrant to purchase 1,937,425 shares of our convertible preferred stock into a warrant to purchase 1,937,425 shares of our common stock) outstanding as of June 26, 2016, with an exercise price of $0.15 per share;
- shares of our common stock reserved for future issuance under our equity compensation plans, consisting of:
- shares of our common stock reserved for future issuance under our 2016 Omnibus Equity Incentive Plan, or our 2016 Plan, which will become effective prior to the completion of this offering;
- 16,712,112 shares of our common stock reserved for future issuance under our 2016 Equity Incentive Plan, or our 2016 EIP (after giving effect to increases of an aggregate of 76,850,000 shares of our common stock reserved for issuance under our 2016 EIP effected after June 26, 2016, the grant of 82,144,000 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock after June 26, 2016, the cancellation and return of 987,594 shares of our common stock to our 2016 EIP after June 26, 2016, and the issuance of 138,888 shares of our common stock after June 26, 2016), which shares will be added to the shares of our common stock reserved for future issuance under our 2016 Plan to the extent not granted prior to the completion of this offering, at which time we will cease granting awards under our 2016 EIP; and
- shares of our common stock reserved for future issuance under our 2016 Employee Stock Purchase Plan, or our ESPP, which will become effective prior to the completion of this offering.

Our 2016 Plan and our ESPP each provide for annual automatic increases in the number of shares reserved thereunder, and our 2016 Plan also provides for increases in the number of shares reserved thereunder based on awards under our 2016 EIP and 2006 Plan that expire, are forfeited or otherwise repurchased by us. See the section titled “Executive Compensation—Employee Benefit and Stock Plans” for additional information.



# *Dilution*

# *Dilution*

If you purchase shares of our common stock in this offering, your ownership interest will be diluted to the extent of the difference between the initial public offering price per share of our common stock in this offering and the pro forma as adjusted net tangible book value per share of our common stock immediately after this offering. Dilution in pro forma net tangible book value per share to investors purchasing shares of our common stock in this offering represents the difference between the amount per share paid by such investors and the pro forma as adjusted net tangible book value per share of our common stock immediately after completion of this offering.

Our pro forma net tangible book value as of June 26, 2016 was $27.5 million, or $0.02 per share. Pro forma net tangible book value per share is determined by dividing our total tangible assets less our total liabilities by the total number of shares of our common stock outstanding as of June 26, 2016, after giving effect to (i) the automatic conversion of all outstanding shares of our convertible preferred stock into an aggregate of 1,239,538,632 shares of our common stock, (ii) the resulting reclassification of our convertible preferred stock warrant liability to additional paid-in capital, and (iii) the obligation to pay an aggregate of $0.2 million in fees to Silicon Valley Bank under our SVB Loan Agreement, which will become due upon the offering, as if such conversion, reclassification and obligation had occurred on June 26, 2016.

After giving effect to the sale by us of shares of our common stock in this offering at the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses

payable by us, our pro forma as adjusted net tangible book value as of June 26, 2016 would have been $ million, or $ per share. This represents an immediate increase in pro forma net tangible book value of $ per share to our existing stockholders and an immediate dilution in pro forma net tangible book value of $ per share to investors purchasing shares of our common stock in this offering. The following table illustrates this dilution:

| | |
|---|---|
| Assumed initial public offering price per share | $ |
| Pro forma net tangible book value per share as of June 26, 2016 | $ 0.02 |
| Increase in net tangible book value per share attributable to new investors purchasing shares in this offering | |
| Pro forma as adjusted net tangible book value per share after giving effect to this offering | |
| Dilution in pro forma net tangible book value per share to new investors purchasing shares in this offering | $ |

Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, our pro forma as adjusted net tangible book value per share to new investors by approximately $ , and would increase or decrease, as applicable, dilution per share to investors purchasing shares of our common stock in this offering by approximately $ , assuming the number of shares of common stock offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each 1.0 million increase or decrease in the number of shares of common stock offered by us would increase or decrease, as applicable, our pro forma as adjusted net tangible book value by approximately $ per share and increase or decrease, as applicable, the dilution to investors purchasing shares of our common stock in this offering by approximately $ per share, assuming the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters' option to purchase additional shares of our common stock from us is exercised in full, the pro forma as adjusted net tangible book value per share of our common stock immediately after the completion of this offering would be approximately $ per share, and the dilution in pro forma net tangible book value per share to investors purchasing shares of our common stock in this offering would be approximately $ per share.

The following table presents, as of June 26, 2016, after giving effect to (i) the automatic conversion of all outstanding shares of our convertible preferred stock into an aggregate of 1,239,538,632 shares of our common stock, which conversion will occur - 36 - immediately prior to the completion of this offering, and (ii) the sale by us of shares of our common stock in this offering at the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, the difference between the existing stockholders and the investors purchasing shares of our common stock in this offering with respect to the number of shares of our common stock purchased from us, the total consideration paid or to be paid to us, and the average price per share paid or to be paid to us, before deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us:

| | Shares Purchased | | Total Consideration | | |
|---|---|---|---|---|---|
| | Number | Percent | Amount (In thousands) | Percent | Average Price Per Share |
| Existing stockholders | 1,298,088,306 | | $ 187,654 | | $ 0.14 |
| Investors purchasing shares in this offering | | | | | |
| Total | | % | | % | |

Each $1.00 increase or decrease in the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase or decrease, as applicable, the total consideration paid by investors purchasing shares in this offering and total consideration paid by all stockholders by approximately $ million, assuming the number of shares of our common stock offered by us, as set forth on the cover page of this prospectus, remains the same.

Except as otherwise indicated, the above discussion and tables assume no exercise of the underwriters' option to purchase additional shares of our common stock from us. If the underwriters' option to purchase additional shares of our common stock were exercised in full, our existing stockholders would own approximately % and the investors purchasing shares of our common stock in this offering would own approximately % of the total number of shares of our common stock outstanding immediately following the completion of this offering.

The number of shares of our common stock that will be outstanding after this offering is based on 1,298,088,306 shares of our common stock (including shares of our convertible preferred stock on an as-converted basis) outstanding as of June 26, 2016, and excludes:

- 256,468,336 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock outstanding as of June 26, 2016, with a weighted-average exercise price of $0.04 per share;
- 82,144,000 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock granted after June 26, 2016, with a weighted-average exercise price of $0.17 per share;
- 138,888 shares of our common stock granted after June 26, 2016;
- 21,932,826 shares of our common stock issuable upon the exercise of warrants outstanding as of June 26, 2016, with a weighted-average exercise price of $0.06 per share;
- 1,937,425 shares of our common stock issuable upon the exercise of a warrant (assuming the automatic conversion of an outstanding warrant to purchase 1,937,425 shares of our convertible preferred stock into a warrant to purchase 1,937,425 shares of our common stock) outstanding as of June 26, 2016, with an exercise price of $0.15 per share;
- shares of our common stock reserved for future issuance under our equity compensation plans, consisting of:
  - shares of our common stock reserved for future issuance under our 2016 Omnibus Equity Incentive Plan, or our 2016 Plan, which will become effective prior to the completion of this offering;
  - 16,712,112 shares of our common stock reserved for future issuance under our 2016 Equity Incentive Plan, or our 2016 EIP (after giving effect to increases of an aggregate of 76,850,000 shares of our common stock reserved for issuance under our 2016 EIP effected after June 26, 2016, the grant of 82,144,000 shares of our common stock

issuable upon the exercise of options to purchase shares of our common stock after June 26, 2016, the cancellation and return of 987,594 shares of our common stock to our 2016 EIP after June 26, 2016, and the issuance of 138,888 shares of our common stock after June 26, 2016), which shares will be added to the shares of our common stock reserved for future issuance under our 2016 Plan to the extent not granted prior to the completion of this offering, at which time we will cease granting awards under our 2016 EIP; and

- shares of our common stock reserved for future issuance under our 2016 Employee Stock Purchase Plan, or our ESPP, which will become effective prior to the completion of this offering.

Our 2016 Plan and our ESPP each provide for annual automatic increases in the number of shares reserved thereunder, and our 2016 Plan also provides for increases in the number of shares reserved thereunder based on awards under our 2016 EIP and 2006 Plan that expire, are forfeited or otherwise repurchased by us. See the section titled “Executive Compensation—Employee Benefit and Stock Plans” for additional information.



# *Selected Consolidated Financial and Other Data*

# *Selected Consolidated Financial and Other Data*

The following selected statement of operations data for the years ended December 28, 2014 and December 27, 2015 and the balance sheet data as of December 28, 2014 and December 27, 2015 have been derived from our audited consolidated financial statements included elsewhere in this prospectus. The selected statement of operations data for the six months ended June 28, 2015 and June 26, 2016 and the balance sheet data as of June 26, 2016 have been derived from our unaudited interim consolidated financial statements included elsewhere in this prospectus. The unaudited interim consolidated financial statements have been prepared on the same basis as our audited consolidated financial statements and reflect, in the opinion of management, all adjustments of a normal, recurring nature that are necessary for the fair statement of the unaudited interim consolidated financial statements. Our historical results are not necessarily indicative of the results that may be expected in the future and the results for the six months ended June 26, 2016 are not necessarily indicative of results to be expected for the full year or any other period. The following selected consolidated financial and other data should be read in conjunction with the section titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our audited consolidated financial statements and related notes included elsewhere in this prospectus.

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (In thousands, except share and per share data) | | | |
| Consolidated Statements of Operations Data: | | | | |
| Revenue | $ 66,860 | $ 83,773 | $ 36,554 | $ 57,472 |
| Cost of revenue[(1)] | 38,211 | 42,554 | 18,734 | 29,205 |
| Gross profit | 28,649 | 41,219 | 17,820 | 28,267 |

| | | | | |
|---|---|---|---|---|
| Operating expenses[1]: | | | | |
| Research and development | 31,283 | 35,575 | 18,443 | 21,751 |
| Sales and marketing | 5,932 | 6,644 | 3,529 | 3,399 |
| General and administrative | 4,532 | 5,212 | 2,732 | 4,555 |
| Total operating expenses | 41,747 | 47,431 | 24,704 | 29,705 |
| Loss from operations | (13,098) | (6,212) | (6,884) | (1,438) |
| Interest expense | (481) | (697) | (400) | (225) |
| Other income (expense), net | | (21) | (79) | (248) |
| Loss before income taxes | (13,490) | (6,930) | (7,363) | (1,911) |
| Provision for income taxes | (108) | (115) | (37) | (38) |
| Net loss | $ (13,598) | $ (7,045) | $ (7,400) | $ (1,949) |
| Net loss attributable to common stockholders per share, basic and diluted[2] | $ (0.41) | $ (0.18) | $ (0.21) | $ (0.04) |
| Weighted average shares used to compute basic and diluted net loss per share[2] | 32,808,092 | 38,512,276 | 35,614,157 | 53,131,727 |
| Pro forma net loss per share- basic and diluted[2] | | $ (0.01) | | $ (0.00) |
| Pro forma weighted average number of shares outstanding - basic and diluted net loss per share[2] | | 1,253,342,652 | | 1,292,670,359 |

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



| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (In thousands) | | | |
| Cost of revenue | $ | $ | $ | $ |
| Research and development | | | | |
| Sales and marketing | | | | |
| General and administrative | | | | |

| | | | |
|---|---|---|---|
| Total stock-based compensation expense | $ | $ 1,202 | $ 1,190 |

(2) See Notes 1 and 3 to our consolidated financial statements included elsewhere in this prospectus for an explanation of the calculation of our basic and diluted net loss per common share, pro forma net loss per common share, and the weighted-average number of shares used in the computation of the per share amounts.

| | As of | | |
|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 26, 2016 |
| | (In thousands) | | |
| Consolidated Balance Sheet Data: | | | |
| Cash and cash equivalents | $ 18,320 | $ 18,850 | $ 16,943 |
| Working capital | $ 21,091 | $ 28,287 | $ 31,865 |
| Total assets | $ 43,533 | $ 46,667 | $ 53,230 |
| Total liabilities | $ 23,078 | $ 17,635 | $ 24,773 |
| Convertible preferred stock | $ 170,448 | $ 184,704 | $ 184,704 |
| Total stockholders' deficit | $ (149,993) | $ (155,672) | $ (156,247) |





*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 the section titled "Selected Consolidated Financial and Other Data" and the consolidated financial statements and related notes thereto included elsewhere in this prospectus. This discussion contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those discussed below. Factors that could cause or contribute to such differences include, but are not limited to, those identified below and those discussed in the section titled "Risk Factors" included elsewhere in this prospectus.

**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 combine our wireless

systems and software expertise with high-performance radio frequency, mixed-signal and digital semiconductor design skills to provide highly integrated solutions to our customers.

Our solutions portfolio is currently comprised of multiple generations of our radio frequency chip and our digital baseband chip, which together support the IEEE Wi-Fi standards, including 802.11n and 802.11ac. These chips are typically sold together as a chipset combined with software and system-level reference designs that constitute a highly integrated Wi-Fi solution.

We sell our Wi-Fi solutions directly to global OEMs and ODMs 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 and ODMs. 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 increasingly 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) consumer electronics OEMs for consumer 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. These arrangements are no longer active. In the future, we may enter into new licensing arrangements on an opportunistic basis.

The following table shows percentage of our revenue by category:

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (Percentage of revenue) | | | |
| Wi-Fi Solutions | 90.6% | 89.4% | 89.1% | 98.9% |
| Licensing | 9.4% | 6.8% | 8.4% | 0.9% |
| Non-recurring Arrangements | —% | 3.8% | 2.5% | 0.2% |



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

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (Percentage of revenue) | | | |
| Customer: | | | | |
| Technicolor SA | 11% | 15% | 16% | 12% |
| Pace plc** | * | 14% | * | 17% |
| Prohubs International Corp. | * | 11% | 14% | 10% |
| Gemtek Electronics Co. Ltd. | 28% | 10% | 12% | * |
| CyberTAN Technology, Inc. | 21% | * | * | * |
| Sagemcom Broadband SAS | * | * | * | 14% |
| MitraStar Technology Corp. | * | * | * | 10% |

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* Customer percentage of revenue was less than 10%.

** Pace plc was acquired by Arris International plc in January 2016.

The substantial majority of our revenue has been derived from sales to customers serving the service provider home networking market. Based on sell-through information provided to us by the majority of our OEM customers, we estimate that more than 30 service providers in various stages of product deployment are currently incorporating our Wi-Fi solutions into their products. We estimate that our two largest service providers, which are based in the United States, represented approximately one-half of our revenue in 2014 and approximately 40% of our revenue in 2015. The decrease in the percentage of revenue attributable to our two largest service providers in 2015 compared with 2014 reflects the diversification of our customer base and growth of our business.

Sales to Asia, based on ship-to destinations, accounted for 84%, 82% and 85% of our revenue in 2014, 2015 and the six months ended June 26, 2016, respectively, and we anticipate that the substantial majority of our shipments will continue to be delivered to this region. Although a large percentage of our shipments are delivered to Asia, we believe that a significant number of the products we enable with our Wi-Fi solutions, such as access points, gateways, set-top boxes and repeaters, are ultimately sold by our OEM customers to service providers in North America and Western Europe. To date, all of our revenue has been denominated in U.S. dollars.

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 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 12 to 14 weeks ahead of our customers' desired delivery date, and we build our inventory primarily on the basis of purchase orders from our customers.

Our revenue increased from $66.9 million in 2014 to $83.8 million in 2015, representing an increase of 25%. Our revenue increased from $36.6 million in the six months ended June 28, 2015 to $57.5 million in the six months ended June 26, 2016, representing an increase of 57%. Our net loss was $13.6 million and $7.0 million in 2014 and 2015, respectively. For the six months ended June 28, 2015 and June 26, 2016, our net loss was $7.4 million and $1.9 million, respectively.

Our employee headcount has increased from 241 employees as of December 27, 2015 to 274 as of June 26, 2016, of which 78% are engaged in research and development activities.

We intend to continue scaling our business to meet the needs of our growing customer base. Key elements of our growth strategy include continuing to deliver innovation and drive new standards, expanding our share of the service provider market for home networking, and addressing new markets, such as retail, small and medium business, and enterprise. In addition, we - 42 - are focused on broadening our solutions portfolio to address additional market segments such as consumer electronics. We anticipate that our operating expense will increase in absolute dollars in the future as we further invest in research and development to support and enhance our solutions and a growing number of customer products, in sales and marketing to acquire new customers in both new and existing markets, and in general and administrative to support our growth. We believe these investments will contribute to our long-term growth.

### 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 customers 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 customers 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 Customers and Service Providers; Expanding into New 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 customers 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 customers and service providers 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 customers and service providers often share their product development schedules with us, including the projected launch dates of their wireless product offerings. Once customers and service providers 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 customers will continue to account for a significant percentage of our revenue for the foreseeable future. In light of this customer and service provider concentration, our revenue is likely to continue to be materially impacted by the purchasing decisions of our largest customers and the service providers they serve.

### Wi-Fi Solutions Pricing, Cost and Gross Margin

Our average selling price, or 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 OEM and ODM customers. 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. 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 customers and third-party distributors.

During 2014 and 2015 and the six months ended June 26, 2016, we also derived revenue from a limited number of licensing and non-recurring arrangements. These arrangements are no longer active. In the future, we may enter into new licensing arrangements on an opportunistic basis.

### 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, 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, depreciation expense, and allocated administrative costs associated with supply chain management and quality assurance activities, as well as property insurance premiums and royalty costs.



We often negotiate price 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 in cost of revenue as the chipsets made from such silicon wafers are sold. 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 customers, 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 on a quarterly basis 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, or R&D, sales and marketing, or S&M, and general and administrative, or G&A, expense. 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 expense consists primarily of personnel costs to support our R&D activities, including silicon design, software development and testing, and customers' product development support and qualification. R&D expense also includes 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 chip designs into production. In addition, R&D expense includes design software and simulation tools licenses, depreciation expense, and allocated administrative costs. All R&D costs are expensed as incurred. We expect R&D expense to fluctuate from period to period based on the timing and amount of tape-out costs and hiring.

Sales and Marketing. Our S&M expense consists primarily of personnel costs for our S&M activities, including pre-sales support. S&M expense also includes 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. Our S&M expense in a given period can be particularly affected by the timing of marketing programs and hiring.

General and Administrative. Our G&A expense consists 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 expense also includes professional services fees, insurance premiums, depreciation expense, and allocated administrative costs, as well as any allowance for doubtful accounts. We expect our G&A expense to increase in absolute dollars as we grow our business, support our operations as a public company, and increase our headcount.

### Interest Expense

Interest expense consists primarily of interest related to outstanding debt and amortization of debt discount.

### Other Income (Expense), Net

Other income (expense), net currently consists primarily of interest income from our cash equivalent portfolio, the effect of exchange rates on our foreign currency-denominated asset and liability balances as well as changes in the fair value of our convertible preferred stock warrants.

### Provision for Income Taxes

Provision for income taxes consists primarily of income taxes in the foreign jurisdictions in which we conduct business. We maintain a full valuation allowance for deferred tax assets, including net operating loss carry-forward and R&D credits.



### Consolidated 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:

| | Years Ended | | | | Six Months Ended | | | |
|---|---|---|---|---|---|---|---|---|
| | December 28, 2014 | | December 27, 2015 | | June 28, 2015 | | June 26, 2016 | |
| | Amount | % of Revenue | Amount | % of Revenue | Amount | % of Revenue | Amount | % of Revenue |
| | (In thousands) | | | | | | | |
| Revenue | $ 66,860 | % | $ 83,773 | % | $ 36,554 | % | $ 57,472 | % |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Cost of revenue [1] | 38,211 | | 42,554 | | 18,734 | | 29,205 | |
| Gross profit | 28,649 | | 41,219 | | 17,820 | | 28,267 | |
| Operating expenses [1] | | | | | | | | |
| Research and development | 31,283 | | 35,575 | | 18,443 | | 21,751 | |
| Sales and marketing | 5,932 | | 6,644 | | 3,529 | | 3,399 | |
| General and administrative | 4,532 | | 5,212 | | 2,732 | | 4,555 | |
| Total operating expenses | 41,747 | | 47,431 | | 24,704 | | 29,705 | |
| Loss from operations | (13,098) | (20)% | (6,212) | (7)% | (6,884) | (19)% | (1,438) | (3)% |
| Interest expense | (481) | (1)% | (697) | (1)% | (400) | (1)% | (225) | —% |
| Other income (expense), net | | —% | (21) | —% | (79) | —% | (248) | —% |
| Loss before income taxes | (13,490) | (20)% | (6,930) | (8)% | (7,363) | (20)% | (1,911) | (3)% |
| Provision for income taxes | (108) | —% | (115) | —% | (37) | —% | (38) | —% |
| Net loss | $ (13,598) | (20)% | $ (7,045) | (8)% | $ (7,400) | (20)% | $ (1,949) | (3)% |

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

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (In thousands) | | | |
| Cost of revenue | $ | $ | $ | $ |
| Research and development | | | | |
| Sales and marketing | | | | |
| General and administrative | | | | |
| Total stock-based compensation expense | $ | $ 1,202 | $ | $ 1,190 |

**Comparison of the Six Months Ended June 28, 2015 and June 26, 2016**

**Revenue, Cost of Revenue, Gross Profit and Gross Margin**

| | Six Months Ended | | | |
|---|---|---|---|---|
| | June 28, 2015 | June 26, 2016 | Change | % Change |
| | (Dollars in thousands) | | | |
| Revenue | $ 36,554 | $ 57,472 | $ 20,918 | % |
| Cost of revenue | 18,734 | 29,205 | 10,471 | % |
| Gross profit | $ 17,820 | $ 28,267 | $ 10,447 | % |
| Gross margin | 48.7 % | 49.2 % | 0.5 % | |

Revenue. Revenue increased $20.9 million, or 57%, to $57.5 million in the six months ended June 26, 2016 compared to the same period of the prior year. This increase was primarily due to a $24.3 million increase in sales of our Wi-Fi solutions driven by higher sales volumes on substantially flat ASPs period to period, partially offset by a $3.4 million decrease in revenue from licensing and non-recurring arrangements that ended in January 2016. In the six months ended June 28, 2015 and June 26, 2016, licensing revenue was $3.1 million and $0.5 million, respectively.

Cost of Revenue, Gross Profit and Gross Margin. Cost of revenue increased $10.5 million, or 56%, to $29.2 million in the six months ended June 26, 2016 compared to the same period of the prior year, as a result of higher sales volume partially offset by lower unit cost for our Wi-Fi solutions. Gross profit increased $10.4 million, or 59%, to $28.3 million in the six months ended June 26, 2016 compared to the same period of the prior year due to the higher sales volume and lower unit cost. Gross margin increased by 50 basis points, to 49.2% in the six months ended June 26, 2016, compared to the same period of the prior year, primarily consisting of an approximately 300 basis points gross margin increase from higher gross margin from sales of our Wi-Fi solutions, partially offset by an approximately 250 basis points of lost gross margin from the expiration of certain licensing and non-recurring arrangements. The 300 basis points from higher gross margin from Wi-Fi solutions resulted from a mix shift towards higher margin 802.11ac Wi-Fi solutions, and unit cost reductions due to more favorable pricing from our third-party contractors as a result of higher manufacturing volume.

**Operating Expenses**

| | Six Months Ended | | | | | |
|---|---|---|---|---|---|---|
| | June 28, 2015 | | June 26, 2016 | | | |
| | Amount | % of Revenue | Amount | % of Revenue | Change | % Change |
| | (Dollars in thousands) | | | | | |
| Operating expenses: | | | | | | |
| Research and development | $ 18,443 | % | $ 21,751 | % | $ 3,308 | % |

| | | | | |
|---|---|---|---|---|
| Sales and marketing | 3,529 | 3,399 | (130) | (4)% |
| General and administrative | 2,732 | 4,555 | 1,823 | |
| Total operating expenses | $ 24,704 | $ 29,705 | $ 5,001 | |

Research and Development Expense. R&D expense increased $3.3 million, or 18%, to $21.8 million in the six months ended June 26, 2016 compared to the same period of the prior year, primarily due to a $2.1 million increase in personnel costs resulting from additional headcount to further develop and expand our solutions portfolio, and to support increased customer product development activities. R&D expense also increased due to tapeout related expenses of $1.4 million and equipment related expenses of $0.6 million to support product platforms, offset by a $1.3 million decrease in IP licensing expenses.

Sales and Marketing Expense. S&M expense decreased $0.1 million, or 4%, to $3.4 million in the six months ended June 26, 2016 compared to the same period of the prior year, due to a decrease in personnel costs, primarily from stock-based compensation expense. In the six months ended June 28, 2015, stock-based compensation expense was $0.4 million compared to $0.1 million - 47 - in the six months ended June 26, 2016. The decrease was partially offset by an increase in sales commissions due to increased revenue.

General and Administrative Expense. G&A expense increased $1.8 million, or 67%, to $4.6 million in the six months ended June 26, 2016 compared to the same period of the prior year, primarily due to an increase in stock-based compensation expense. In the six months ended June 28, 2015, stock-based compensation expense was $0.2 million compared to $0.9 million in the six months ended June 26, 2016, primarily related to a $0.6 million expense due to the accelerated vesting of unvested shares of common stock issued upon early exercise of a warrant. G&A expense also increased by $0.8 million for legal and consulting costs as we prepared to become a public company.

**Comparison of the Years Ended December 28, 2014 and December 27, 2015**

**Revenue, Cost of Revenue, Gross Profit and Gross Margin**

| | Years Ended | | | |
|---|---|---|---|---|
| | **December 28, 2014** | **December 27, 2015** | **Change** | **% Change** |
| | **(Dollars in thousands)** | | | |
| Revenue | $ 66,860 | $ 83,773 | $ 16,913 | % |
| Cost of revenue | 38,211 | 42,554 | 4,343 | % |
| Gross profit | $ 28,649 | $ 41,219 | $ 12,570 | % |
| Gross margin | 42.8% | 49.2% | 6.4% | |

Revenue. Revenue increased $16.9 million, or 25%, to $83.8 million in 2015 compared to $66.9 million in 2014. This increase was primarily due to a $14.3 million increase in sales of our Wi-Fi solutions driven by higher sales volumes and higher ASPs resulting from the start of shipment of our latest generation 802.11ac solution in late 2014 and related mix-shift from 802.11n to 802.11ac. The increase was also due to $3.2 million of revenue from a non-recurring arrangement, which ended in 2015, offset by a $0.5 million decrease in licensing revenue. Revenue in each of 2014 and 2015 included $6.2 million and $5.7 million, respectively, from a licensing arrangement that ended in January 2016.

Cost of Revenue, Gross Profit and Gross Margin. Cost of revenue increased $4.3 million, or 11%, to $42.6 million in 2015 compared to 2014, as a result of higher sales volume, partially offset by lower unit cost. Gross profit increased $12.6 million, or 44%, to $41.2 million in 2015 compared to 2014 due to the higher sales volume and lower unit cost. Of the $12.6 million increase, $9.8 million resulted from the growth of our Wi-Fi solutions sales volume, and $2.7 million resulted from revenue from licensing and non-recurring arrangements. Gross margin improved 640 basis points to 49.2% in 2015, from 42.8% in 2014, driven by a 480 basis point increase from sales of our Wi-Fi solutions, and a 160 basis points increase from licensing and non-recurring arrangements. The 480 basis points from higher Wi-Fi solutions gross margin resulted from a more favorable customer mix, the sales of higher margin 802.11ac Wi-Fi solutions and cost reductions due to more favorable pricing from our third-party contractors as a result of higher manufacturing volume.



**Operating Expenses**

| | Years Ended | | | | | | |
|---|---|---|---|---|---|---|---|
| | December 28, 2014 | | December 27, 2015 | | | | |
| | Amount | % of Revenue | Amount | % of Revenue | Change | % Change | (Dollars in thousands) |
| Operating expenses: | | | | | | | |
| Research and development | $ 31,283 | % | $ 35,575 | % | $ 4,292 | % | |
| Sales and marketing | 5,932 | | 6,644 | | | % | |
| General and administrative | 4,532 | | 5,212 | | | % | |
| Total operating expenses | $ 41,747 | % | $ 47,431 | % | $ 5,684 | % | |

Research and Development Expense. R&D expense increased $4.3 million, or 14%, to $35.6 million in 2015, compared to 2014, primarily due to an increase of $2.7 million in tape-out costs related to our next generation solutions, and an increase of $1.5 million in personnel costs from additional headcount to further develop and expand our solutions portfolio, and to support increased customer product development activities.

Sales and Marketing Expense. S&M expense increased $0.7 million, or 12%, to $6.6 million in 2015, compared to 2014, as we increased sales headcount to drive growth, and recorded additional stock-based compensation expense. In 2015, stock-based compensation expense was $0.4 million as compared to $0.1 million in 2014.

General and Administrative Expense. G&A expense increased $0.7 million, or 15%, to $5.2 million in 2015, compared to 2014, primarily due to an increase in personnel costs as we increased our administrative headcount to support the growth of our business.

**Quarterly Results of Operations**

The following table sets forth selected unaudited quarterly consolidated statements of operations data for each of the six quarters in the period ended June 26, 2016. The information for each of these quarters has been prepared on the same basis as our audited consolidated financial statements and reflect, in the opinion of management, all adjustments of a normal, recurring nature that are necessary for a fair statement of this information. These quarterly operating results are

not necessarily indicative of the results that may be expected for a full year or any other period. This information should be read in conjunction with our audited consolidated financial statements and related notes included elsewhere in this prospectus.



| | Three Months Ended | | | | | |
|---|---|---|---|---|---|---|
| | March 29, 2015 | June 28, 2015 | September 27, 2015 | December 27, 2015 | March 27, 2016 | June 26, 2016 |
| | (In thousands) | | | | | |
| Revenue | $ 18,384 | $ 18,171 | $ 21,806 | $ 25,412 | $ 24,437 | $ 33,035 |
| Cost of revenue[(1)] | 9,831 | 8,903 | 11,395 | 12,425 | 12,534 | 16,671 |
| Gross profit | 8,553 | 9,268 | 10,411 | 12,987 | 11,903 | 16,364 |
| Operating expenses[(1)]: | | | | | | |
| Research and development | 9,762 | 8,681 | 7,587 | 9,545 | 10,227 | 11,524 |
| Sales and marketing | 1,848 | 1,681 | 1,490 | 1,625 | 1,630 | 1,769 |
| General and administrative | 1,427 | 1,305 | 1,178 | 1,302 | 1,562 | 2,993 |
| Total operating expenses | 13,037 | 11,667 | 10,255 | 12,472 | 13,419 | 16,286 |
| Income (loss) from operations | (4,484 ) | (2,399 ) | | | (1,516 ) | |
| Interest expense | (221 ) | (179 ) | (160 ) | (137 ) | (114 ) | (111 ) |
| Other income (expense), net | (38 ) | (42 ) | (28 ) | | (68 ) | (180 ) |
| Income (loss) before income taxes | (4,743 ) | (2,620 ) | (32 ) | | (1,698 ) | (213 ) |
| Provision for income taxes | (16 ) | (21 ) | (40 ) | (38 ) | (17 ) | (21 ) |
| Net income (loss) | $ (4,759 ) | $ (2,641 ) | $ (72 ) | $ | $ (1,715 ) | $ (234 ) |

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

| | Three Months Ended | | | | | |
|---|---|---|---|---|---|---|
| | March 29, 2015 | June 28, 2015 | September 27, 2015 | December 27, 2015 | March 27, 2016 | June 26, 2016 |
| | (In thousands) | | | | | |
| Cost of revenue | $ | $ | $ | $ | $ | $ |
| Research and development | | | | | | |
| Sales and marketing | | | | | | |
| General and administrative | | | | | | |
| Total stock-based compensation expense | $ | $ | $ | $ | $ | $ |



| | Three Months Ended | | | | | |
|---|---|---|---|---|---|---|
| | March 29, 2015 | June 28, 2015 | September 27, 2015 | December 27, 2015 | March 27, 2016 | June 26, 2016 |
| | (Percentage of revenue) | | | | | |
| Revenue | 100.0 % | 100.0 % | 100.0 % | 100.0 % | 100.0 % | 100.0 % |
| Cost of revenue | 53.5 | 49.0 | 52.3 | 48.9 | 51.3 | 50.5 |
| Gross profit | 46.5 | 51.0 | 47.7 | 51.1 | 48.7 | 49.5 |
| Operating expenses: | | | | | | |
| Research and development | 53.1 | 47.8 | 34.8 | 37.6 | 41.9 | 34.9 |
| Sales and marketing | 10.1 | 9.3 | 6.8 | 6.4 | 6.7 | 5.4 |
| General and administrative | 7.8 | 7.2 | 5.4 | 5.1 | 6.4 | 9.1 |
| Total operating expenses | 70.9 | 64.2 | 47.0 | 49.1 | 54.9 | 49.3 |
| Income (loss) from operations | (24.4 ) | (13.2 ) | 0.7 | 2.0 | (6.2 ) | 0.2 |
| Interest expense | (1.2 ) | (1.0 ) | (0.7 ) | (0.5 ) | (0.5 ) | (0.3 ) |
| Other income (expense), net | (0.2 ) | (0.2 ) | (0.1 ) | 0.3 | (0.3 ) | (0.5 ) |
| Income (loss) before income taxes | (25.8 ) | (14.4 ) | (0.1 ) | 1.8 | (6.9 ) | (0.6 ) |
| Provision for income taxes | (0.1 ) | (0.1 ) | (0.2 ) | (0.1 ) | (0.1 ) | (0.1 ) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Net income (loss) | (25.9 )% | (14.5 )% | (0.3 )% | 1.7 % | (7.0 )% | (0.7 )% |

**Quarterly Revenue Trends**

Our quarterly revenue was $18.4 million and $18.2 million in the three months ended March 29, 2015 and June 28, 2015, respectively, on flat sales volume and ASPs. Quarterly revenue grew to $21.8 million, $25.4 million, $24.4 million and $33.0 million in the three months ended September 27, 2015, December 27, 2015, March 27, 2016 and June 26, 2016, respectively, as a result of consecutive quarterly sales volume increases reflecting higher customer adoption of our Wi-Fi solutions, and substantially flat ASPs. Revenue in the three months ended March 27, 2016 saw a slight decline over that of the prior quarter as a result of a decrease in revenue from a licensing arrangement that ended in January 2016 and from a non-recurring arrangement that ended in December 2015.

**Quarterly Gross Profit and Gross Margin Trends**

Quarterly gross profit steadily increased sequentially from the three months ended March 29, 2015, through the three months ended December 27, 2015, primarily as a result of increasing sales volume, substantially flat ASPs and declining average unit cost over the four quarterly periods. In addition, in the three months ended June 28, 2015 and December 27, 2015, gross profit was positively impacted by customer cancellation fees. In the three months ended March 27, 2016, gross profit was negatively impacted by the ending of revenue from a licensing arrangement in January 2016 and from a non-recurring arrangement that ended in December 2015. In the three months ended June 26, 2016, gross profit increased primarily as a result of increasing sales volume.

Gross margin increased to 49.5% in the three months ended June 26, 2016 from 46.5% in the three months ended March 29, 2015, as result of product mix shift toward higher margin 802.11ac Wi-Fi solutions with flat ASPs and lower unit cost over the period. In the three months ended June 28, 2015 and December 27, 2015, gross margin increased to approximately 51% as a result of customer cancellation fees we received in each of those quarters.

**Quarterly Operating Expense Trends**

Total operating expenses fluctuated during the period primarily as a result of the timing of tape-out costs, timing of sales and marketing programs, and fluctuations in headcount and stock-based compensation expense.

R&D expense fluctuated from period to period primarily due to the timing and amount of tape-out costs and hiring.



S&M expense was stable between $1.5 million and $1.7 million a quarter, other than at $1.8 million in the three months ended March 29, 2015 and June 26, 2016. For the three months ended March 29, 2015, the increase in expense was primarily as a result of higher sales commission and trade show expenses, as well as stock-based compensation expense. For the three months ended June 26, 2016, the increase was primarily as a result of higher sales commission expenses due to increased revenue.

G&A expense fluctuated from period to period primarily due to hiring and timing of professional services costs to support the growth of our business. In the three months ended June 26, 2016, G&A expense increased primarily related to a $0.6 million expense due to the accelerated vesting of certain early exercised unvested shares. G&A expense also increased as a result of higher legal and consulting costs as we prepared to become a public company.

**Liquidity and Capital Resources**

As of June 26, 2016, we had an accumulated deficit of $161.6 million. Since our inception in 2005, we have financed our operations through a combination of private equity financings, gross profits generated from sales and, to a lesser extent, through technology licensing and debt financing arrangements. As of December 27, 2015 and June 26, 2016, we had cash and cash equivalents of $18.9 million and $16.9 million, respectively.

Credit Facilities

In April 2013, we entered into a Loan and Security Agreement with Silicon Valley Bank, or the Lender. The agreement provided for a revolving line of credit and a term loan. The maximum amount available for borrowing under the revolving line of credit was 80% of eligible accounts receivable, not to exceed $3.5 million in the aggregate. Interest under the revolving line of credit was calculated at the greater of the prime rate plus 0.50% or 3.75%. The original maturity date of the revolving line of credit was April 26, 2015. The term loan amount was for $1.0 million, which was advanced in April 2013. The principal amount outstanding on the term loan accrued interest at a per annum rate equal to prime rate plus 0.75%, fixed at the time of funding. The term loan was payable in 36 equal monthly payments starting on May 1, 2013, with the last payment occurring on April 1, 2016.

In October 2013, we and the Lender agreed to increase the maximum amount available for borrowing under the revolving line of credit to 80% of eligible accounts receivable plus 60% of eligible customer purchase orders, not to exceed $9.5 million in the aggregate. We may request cash advances for eligible purchase orders at any time provided that our net cash balance is equal to or greater than $8.0 million and the amount of purchase order advances outstanding does not exceed $2.0 million. The effective annual interest rate for borrowing against receivables is 4.69%, and the effective annual percentage rate for borrowing against purchase order advances is 6.25%. We and the Lender also added a growth capital term loan for up to $5.0 million, of which $3.0 million was advanced on October 31, 2013, and the remaining $2.0 million was to become available to us upon the achievement of certain milestones related to revenue growth during 2013. We achieved the milestones under this agreement, but we did not borrow the remaining $2.0 million. The principal amount outstanding for the growth capital advance accrues interest at a floating per annum rate equal to prime plus 2.25%. The growth capital loan is payable monthly over a 30-month period starting on October 1, 2014, with the last payment set to occur on March 1, 2017.

On January 30, 2015, we and the Lender agreed to (i) increase the maximum amount available under the revolving line of credit to 80% of eligible accounts receivable, not to exceed $12.5 million in the aggregate, (ii) extend the maturity date of the revolving line of credit to April 26, 2016, and (iii) add a supplemental growth capital term loan for up to $3.0 million, of which $3.0 million was advanced on February 3, 2015. The effective annual interest rate for borrowing against receivables under the revolving line of credit is 4.25% if our net cash is equal to or greater than $4.0 million. If our net cash is less than $4.0 million, the effective annual percentage rate for borrowing against receivables is 6.75%. The principal amount outstanding for the supplemental growth capital loan accrues interest at a floating rate per annum equal to prime plus 1.00%. The supplemental growth capital loan is payable monthly over a 36-month period starting on August 1, 2015, with the last payment set to occur on July 1, 2018.

In May 2016, we and the Lender amended and restated the Loan and Security Agreement to (i) increase the maximum amount available under the revolving line of credit to $20.0 million, (ii) extend the maturity date of the revolving line of credit to May 17, 2018, and (iii) add a new senior term loan in the amount of $4.0 million, in addition to the growth capital term loans described above. The new senior term loan has a one-year draw down period, and the principal amount outstanding under the new senior term loan accrues interest at a floating rate per annum equal to prime plus 0.75%. The new senior term loan is payable - 52 - monthly over a 30-month term starting on June 1, 2017, with the last payment due on November 1, 2019. We have drawn down $3.0 million under the revolving line of credit and have an undrawn balance under the revolving line of credit of $17.0 million as of June 26, 2016.

In connection with the amendment and restatement of the Loan and Security Agreement, we entered into a subordinated secured Mezzanine Loan with the Lender for up to $10.0 million. The principal amount outstanding on the Mezzanine Loan accrues interest at a fixed rate per annum equal to 10.5%. The Mezzanine Loan has a one-year draw down period, with repayment due on May 1, 2019. In connection with the Mezzanine Loan, we issued warrants to purchase up to 6,320,000 shares of common stock, which become exercisable depending on the amounts borrowed under the Mezzanine Loan at an exercise price of $0.08 per share.

As of December 28, 2014, December 27, 2015, and June 26, 2016, the aggregate outstanding balance under the Loan and Security Agreement, in each case as amended through such date, and the Mezzanine Loan was $3.2 million, $4.4 million, and $10.1 million, respectively.

The amended and restated Loan and Security Agreement, or the SVB Loan Agreement, and the Mezzanine Loan are collateralized by certain of our assets, including pledging of certain of our equity interest in our subsidiaries, receivables and inventory, subject to customary exceptions and limits. The SVB Loan Agreement and the Mezzanine Loan contain customary events of default upon the occurrence of certain events, such as nonpayment of amounts due under the revolving line of credit or the term loans, violation of restrictive covenants, violation of other contractual provisions, or a material adverse change in our business. In addition, the credit facilities prohibit the payment of cash dividends on our capital stock and also place restrictions on mergers, sales of assets, investments, incurrence of liens, incurrence of indebtedness and transactions with affiliates. As of the date of this prospectus, we were in compliance with all applicable covenants.

In accordance with the SVB Loan Agreement, upon the occurrence of a liquidity event, including a merger or an IPO, in which our aggregate proceeds are between $60.0 million and $160.0 million, we will be obligated to pay to the Lender an aggregate of $0.2 million in fees.

Based on our current operating plan, we expect that our cash on hand, together with the anticipated funds from our operations and this offering, 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. Our future capital requirements will depend on many factors, including:

- the degree and rate of market adoption of our solutions, including design wins with customers and service providers;
- the emergence of new competing technologies and products;
- the costs of R&D activities we undertake to develop and expand our solutions portfolio;
- the costs of commercialization activities, including sales, marketing and manufacturing;
- the level of working capital required to support our growth; and
- our need for additional personnel, information technology or other operating infrastructure to support our growth and operations as a public company.

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:

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (In thousands) | | | |
| Net cash provided by (used in) : | | | | |
| Operating activities | $ (17,851) | $ (12,077) | $ (10,867) | $ (3,962) |
| Investing activities | (1,257) | (1,702) | (358) | (2,126) |
| Financing activities | 20,566 | 14,309 | 11,730 | 4,181 |
| Net increase (decrease) in cash and cash equivalents | $ 1,458 | $ | $ | $ (1,907) |

Net Cash Provided by (Used in) Operating Activities.

Net cash used in operating activities for the six months ended June 26, 2016 was $4.0 million, compared to net cash used in operating activities for the six months ended June 28, 2015 of $10.9 million.

Net cash used in operating activities for the six months ended June 26, 2016 of $4.0 million was comprised of a net loss of $1.9 million, offset by non-cash expenses of $1.2 million of stock-based compensation and $0.5 million of depreciation and amortization, as well as a net cash outflow from changes in operating assets and liabilities of $3.8 million. The changes in operating assets and liabilities primarily consist of an increase of $5.1 million in accounts receivable due to increased sales, and a decrease of $3.6 million in accounts payable due to timing of payments to our suppliers, partially offset by a $5.0 million increase in accrued liabilities and other current liabilities as a result of an increase in expenses consistent with the growth of our business.

Net cash used in operating activities for the six months ended June 28, 2015 of $10.9 million was comprised of a net loss of $7.4 million, partially offset by non-cash expenses, including $0.7 million of stock-based compensation and $0.5 million of depreciation and amortization, respectively, as well as a net cash outflow from changes in operating assets and liabilities of $4.9 million in the normal course of business. The changes in operating assets and liabilities primarily consisted of a decrease of $5.0 million in accounts payable due to timing of payments to our suppliers, a $2.2 million decrease in deferred revenue as a result of recognition of revenue under a contractual arrangement, and an increase of $2.1 million in accounts receivable due to increased sales, partially offset by decreases of $3.5 million in inventory due to timing of shipments of our Wi-Fi solutions to our customers and $1.0 million in prepaid expenses and other current assets, respectively.

Net cash used in operating activities was $12.1 million and $17.9 million for 2015 and 2014, respectively.

Net cash used in operating activities for 2015 of $12.1 million was comprised of a net loss of $7.0 million, as well as a net cash outflow from changes in operating assets and liabilities of $7.6 million in the normal course of business, partially offset by non-cash expenses of $1.2 million of stock-based compensation and $1.0 million of depreciation and amortization. The changes in operating assets and liabilities primarily consist of an increase of $5.9 million in accounts receivable due to increased sales, decreases of $4.4 million in accounts payable due to timing of payments to our suppliers and $2.2 million in deferred revenue as a result of recognition of revenue under a contractual arrangement, respectively, partially offset by a decrease of $3.4 million in inventory due to timing of shipments of Wi-Fi solutions to our customers, and an increase of $0.9 million in accrued liabilities and other current liabilities.

Net cash used in operating activities for 2014 of $17.9 million was comprised of a net loss of $13.6 million, as well as a net cash outflow from changes in operating assets and liabilities of $5.7 million in the normal course of business, partially offset by non-cash expenses of $0.9 million of depreciation and amortization and $0.6 million of stock-based compensation. The changes in operating assets and liabilities primarily consist of a decrease of $2.7 million in deferred revenue as a result of recognition of revenue under a contractual arrangement, increases of $4.0 million in inventory as a result of production of inventory at the end of the period, $2.1 million in accounts receivable due to increased sales, and $1.6 million in prepaid expenses - 54 - and other current assets, respectively, partially offset by increases of $3.4 million in accounts payable and $1.3 million in accrued liabilities and other current liabilities as a result of an increase in expenses consistent with the growth of our business.

Net Cash Provided by (Used in) Investing Activities.

Net cash used in investing activities was $2.1 million for the six months ended June 26, 2016 compared to $0.4 million for the comparable period in 2015. Cash used in investing activities reflected $1.5 million in restricted cash related to deposits required by our foundry partner in connection with our purchase of silicon wafers, and $0.6 million related to the purchase of property and equipment.

Net cash used in investing activities was $1.7 million and $1.3 million for 2015 and 2014, respectively, primarily due to increased purchases of equipment.

Net Cash Provided by (Used in) Financing Activities.

Net cash provided by financing activities was $4.2 million for the six months ended June 26, 2016, compared to net cash provided by financing activities of $11.7 million for the six months ended June 28, 2015. Cash flow provided by financing activities during the six months ended June 26, 2016 primarily reflected $3.9 million in long-term debt borrowing, net of debt issuance costs, and $3.0 million from borrowing under our revolving line of credit, partially offset by repayments of outstanding long-term debt of $2.7 million.

Net cash provided by financing activities of $11.7 million for the six months ended June 28, 2015 consisted of $10.0 million in proceeds from the issuance of convertible preferred stock, net of issuance costs, and $3.0 million of long-term debt borrowing, partially offset by repayments of outstanding long-term debt of $1.3 million.

Net cash provided by financing activities was $14.3 million for 2015, compared to $20.6 million for 2014. Cash flow from financing activities in 2015 consisted of $14.3 million in net proceeds from the issuance of convertible preferred stock and $3.0 million of long-term debt borrowing, partially offset by repayments of outstanding long-term debt of $3.1 million. Cash flows from financing activities in 2014 consisted primarily of $21.5 million in net proceeds from the issuance of convertible notes and convertible preferred stock, partially offset by repayments of outstanding long-term debt of $1.1 million.

**Contractual Obligations and Commitments**

The following table summarizes our contractual commitments and obligations as of December 27, 2015:

| | Total | Less Than 1 Year | 1-3 Years | 3-5 Years | More Than 5 Years |
|---|---|---|---|---|---|
| | (In thousands) | | | | |
| Debt obligations and related interest payments and fees[1] | $ 6,253 | $ 3,842 | $ 2,411 | $ — | $ — |
| Operating lease obligations | 1,712 | | | — | — |
| Commitments[2] | 10,800 | 3,700 | 2,200 | 4,900 | — |

| | | | | | |
|---|---|---|---|---|---|
| | $ 18,765 | $ 8,259 | $ 5,606 | $ 4,900 | $ — |

(1) Future interest payments were calculated using the rates applicable as of December 27, 2015. See Note 7 of our consolidated financial statements included elsewhere in this prospectus. In May 2016, we amended and restated the April 2013 Loan and Security Agreement with Silicon Valley Bank and entered into a new Mezzanine Loan Agreement to increase the total amount available for borrowing to $34.0 million. Borrowings bear interest at a fluctuating rate, as further discussed in the section titled "—Liquidity and Capital Resources." As of June 26, 2016, the debt obligations and related interest payments and fees amount to $10.8 million. As of December 27, 2015, and June 26, 2016, the aggregate outstanding balance under the Loan and Security Agreement was $4.4 million, and $10.1 million, respectively.



(2) In April 2012, we entered into a letter agreement with RUSNANO, one of our investors, 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 December 27, 2015, we had met the minimum funding requirements. For more information about this agreement, see the section titled "Certain Relationships and Related Party Transactions—Agreement with RUSNANO."

Obligations under contracts that we can cancel without a significant penalty are not included in the table above. As of December 27, 2015 and June 26, 2016, we have purchase obligations of $5.6 million and $15.4 million, respectively, 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.

During the six months ended June 26, 2016, there were no other significant changes to our contractual commitments and obligations.

### Off-Balance Sheet Arrangements

As of December 27, 2015 and June 26, 2016, we did not have any off-balance sheet arrangements.

### Segment Information

We have one primary business activity and operate as one reportable segment.

### 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.

### Quantitative and Qualitative Disclosures about Market Risk

Interest Rate Risk. We had cash and cash equivalents of $18.3 million, $18.9 million and $16.9 million as of December 28, 2014, December 27, 2015 and June 26, 2016, respectively. We manage our cash and cash equivalents portfolio for operating and working capital purposes. Our cash and cash equivalents are held in cash and short-term money market funds. 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 2014, 2015 and the six months ended June 26, 2016,

the effect of a hypothetical 100 basis points increase or decrease in overall interest rates would not have had a material impact on our interest income. In addition, as of June 26, 2016, we had $10.1 million in long-term debt (current and non-current), including accrued interest, with variable interest rate components. A hypothetical 100 basis points increase or decrease in interest rates would not have had a material impact on our consolidated statements of operations.

Foreign Currency Exchange Risk. To date, all of our revenue has been denominated in U.S. dollars. Some of our operating expenses are subject to fluctuations due to changes in foreign currency exchange rates, particularly changes in the Chinese Yuan Renminbi and the Russian Ruble. Fluctuations in foreign currency exchange rates may cause us to recognize transaction gains and losses in our consolidated statements of operations. To date, foreign currency gains and losses have not been material to our consolidated financial statements, and we have not engaged in any foreign currency hedging activities. As our international operations grow, we will continue to reassess our approach to managing the risks relating to fluctuations in foreign currency exchange rates. During 2014, 2015 and the six months ended June 26, 2016, the effect of an immediate 10% adverse change in - 56 - foreign exchange rates on foreign-denominated accounts as of December 27, 2015 and June 26, 2016 would not have had a material impact on our consolidated statements of operations.

Inflation Risk. We do not believe that inflation had a significant impact on our results of operations for any periods presented in our consolidated financial statements.

**Internal Control over Financial Reporting**

We are currently evaluating our internal controls in order to identify, evaluate and remediate any deficiencies in those internal controls. During the course of the preparation of our 2015 consolidated financial statements, we identified a material weakness 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:

- identify, select and apply 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.

In response to the identified material weakness, we have taken a number of steps to remediate this material weakness and have hired a number of individuals, including additional certified public accountants, with appropriate knowledge and capacity to help fulfill our obligations to comply with the accounting and reporting requirements applicable to public companies.

The additional resources added to the finance function (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 that the foregoing actions will improve our internal control over financial reporting. 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 remediation steps set forth above, including training the additional resources in the finance function and potentially hiring additional qualified resources as needed, are fully completed and operate for a sufficient period of time, the material weakness described above will continue to exist.

### Critical Accounting Policies, Significant Judgments and Use of Estimates

This discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with U.S. GAAP. The preparation of these consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of assets and liabilities, revenue and expenses, and the disclosure of contingent assets and liabilities. Our estimates are based on our 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 value of assets and liabilities. Actual results may differ from these estimates. We believe that the critical accounting policies discussed below are essential to understanding our historical and future performance, as these policies relate to the more significant areas involving management's estimates and judgments.

### Revenue Recognition

We derive the majority of our revenue from the sale of Wi-Fi solutions. Revenue is recognized net of accruals for sales returns and rebates, which is estimated based on past experience or contractual rights. We recognize revenue when persuasive evidence of an arrangement exists, delivery has occurred, the price is deemed fixed or determinable and collection is reasonably assured. These criteria are met upon shipment to customers. For sales made through distributors, revenue is recognized when title passes to the distributor upon shipment, and payment by distributors is not contingent on resale of the Wi-Fi solutions. Our sales arrangements with distributors do not allow for rights of return or price protection on unsold Wi-Fi solutions. Our policy is to classify shipping and handling costs, net of costs charged to customers, as cost of revenue.



We also derive revenue from contracts with multiple deliverables, including a mix of intellectual property licenses, research and development services, and other non-recurring arrangements. Revenue recognition for contracts with multiple deliverables is based on the individual units of accounting determined to exist in the contract. A delivered item is considered a separate unit of accounting when (i) the delivered item has value to the customer on a stand-alone basis; and (ii) if a general right of return exists, the delivery or performance of an undelivered item is considered probable and under our control. Items are considered to have a stand-alone value when they are sold separately by any vendor or when the customer could resell the item on a stand-alone basis. In addition, intellectual property deliverables are considered to have value on a stand-alone basis if the customer could use them without the remaining elements of the arrangement. When a deliverable does not meet the criteria to be considered a separate unit of accounting, it is grouped together with other deliverables that, when combined, meet the criteria, and the appropriate allocation of arrangement consideration and revenue recognition is determined.

In April 2013, we entered into an agreement consisting of intellectual property licenses and research and development services. We concluded that the agreement consists of two deliverables, intellectual property licenses and research and development services. We determined that the two deliverables do not meet the criteria to be accounted as separate units of accounting because the intellectual property licenses do not have a value on a standalone basis from the research and development services. As a result, the intellectual property licenses and research and development services are considered one combined unit of accounting. Revenue is recognized on a straight-line basis over the 33-month period the services are expected to be performed, provided all other revenue recognition criteria are met. If the estimated period over which the services are originally expected to be performed changes, the amount of revenue remaining to be recognized will be recognized over the revised remaining performance period. The agreement's term is ten years. The agreement may be terminated by either party if (a) the other party materially breaches a material provision of the agreement unless such breach is cured during the 30 day grace period, (b) the other party materially breaches any provision of the agreement that cannot be cured, or (c) the other party makes any assignment for the benefit of creditors, files a petition in bankruptcy, is adjudged bankrupt, becomes insolvent, or is placed in the hands of a receiver. Certain payments received under the agreement are refundable if the agreement is terminated for our material breach of the

agreement terms. The fees under this agreement totaled $16.5 million, of which $6.2 million, $5.7 million, $3.1 million and $0.5 million was recognized as revenue for the year ended December 28, 2014, December 27, 2015, and the six months ended June 28, 2015 and June 26, 2016, respectively.

### Inventory

Inventory is stated at the lower of cost to purchase or manufacture the inventory or the market value of such inventory. Cost is determined using the standard cost method which approximates the first-in first-out basis. Market value is determined as the lower of replacement cost or net realizable value. On at least a quarterly basis, we assess the recoverability of all inventories to determine whether adjustments are required to record inventory at the lower of cost or market. Potentially excess and obsolete inventory is written off based on management's analysis of inventory levels and estimates of future 12-month demand and market conditions. We are also entitled to receive rebates from our foundry partner on the purchase of silicon wafers upon achieving certain volume targets. Rebates from our foundry partner are recorded as a reduction of inventory cost and are recognized in cost of revenue as the chipsets made from such silicon wafers are sold to customers.

### Stock-Based Compensation

We measure and recognize compensation expense for all stock-based awards made to employees, directors and non-employees, based on estimated fair values recognized using the straight-line method over the requisite service period.

The fair value of stock-based awards issued to employees and non-employees is estimated on the grant date using the Black-Scholes option valuation model. We account for stock-based awards issued to non-employees under ASC 505-50 Equity-Equity based payments to Non-Employees, and the fair value of such non-employee awards is remeasured at each quarter-end over the vesting period.



The Black-Scholes option valuation model requires the use of highly subjective assumptions to determine the fair value of stock-based awards. The assumptions used in our option-pricing model represent management's best estimates. These estimates are complex, involve a number of factors, variables, uncertainties and the application of management's judgment. If factors change and different assumptions are used, our stock-based compensation expense could be materially different in the future. The assumptions and estimates we use in the Black-Scholes option valuation model are as follows:

- Fair Value of Common Stock. Because our stock is not publicly traded, we must estimate its fair value, as discussed in "Common Stock Valuations" below.

- Risk-Free Interest Rate. We base the risk-free interest rate on the implied yield available on U.S. Treasury zero-coupon issues with a term equivalent to that of the expected term of the option or warrant.

- Expected Term. Expected term represents the period that our stock-based awards are expected to be outstanding. Because of the limitations on the sale or transfer or our common stock as a privately held company, we do not believe our historical exercise pattern is indicative of the exercise pattern we will experience as a publicly traded company. We have consequently used the Staff Accounting Bulletin 110, or SAB 110, simplified method, to calculate the expected term, which is the average of the contractual term and vesting period. We plan to continue to use the SAB 110 simplified method until we have sufficient history as a publicly traded company.

- Volatility. We determine the price volatility based on the historical volatilities of industry peers as we have no trading history for our common stock price. Industry peers consist of several public companies in the semiconductor industry with comparable characteristics, including revenue growth, operating model and working capital requirements.

- Dividend Yield. The expected dividend assumption is based on our current expectations about our anticipated dividend policy. To date, we have not declared any dividends and do not expect to declare dividends in the foreseeable future. Consequently, we have used an expected dividend yield of zero.

In addition to the assumptions used in the Black-Scholes option valuation model, we must also estimate a forfeiture rate to calculate the stock-based compensation for our awards. Our forfeiture rate is based on an analysis of our actual forfeitures. We will continue to evaluate the appropriateness of the forfeiture rate based on our actual forfeiture experience, analysis of employee turnover, and other factors. Quarterly changes in our estimated forfeiture rate can have a significant impact on our stock-based compensation expense as the cumulative effect of adjusting the rate is recognized in our financial statements. If a revised forfeiture rate is lower than our previously estimated forfeiture rate, an adjustment is made that will result in an increase to the stock-based compensation expense recognized in our financial statements.

We will continue to use judgment in evaluating the assumptions related to our stock-based compensation on a prospective basis. As we continue to accumulate additional data, we may have refinements to our estimates, which could materially impact our future stock-based compensation expense.

The fair value of the employee stock options was estimated using the following assumptions for the periods presented:

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| Expected term (in years) | 5.0 – 6.1 | 5.6 – 6.5 | 6.0 – 6.1 | 5.8 – 6.1 |
| Volatility | 40% – 51% | 40% – 44% | 42% – 44% | 40% |
| Risk-free interest rate | 1.5% – 1.9% | 1.5% – 2.0% | 1.5% – 1.6% | 1.4% – 1.5% |
| Expected dividend | – | – | – | – |



We recorded the following stock-based compensation expense:

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (In thousands) | | | |
| Cost of revenue | $ | $ | $ | $ |
| Research and development | | | | |
| Sales and marketing | | | | |
| General and administrative | | | | |
| | $ | $ 1,202 | $ | $ 1,190 |

At December 27, 2015, unamortized compensation expense related to unvested shares of common stock issued upon the early exercise of warrants was $1.9 million. The weighted-average period over which such compensation expense will be recognized is 2.9 years.

At June 26, 2016, unamortized compensation expense related to shares of common stock issued upon the early exercise of warrants was $1.7 million. The weighted-average period over which such compensation expense will be recognized is 2.8 years.

The intrinsic value of all outstanding options as of June 26, 2016 was $ million based on the estimated fair value of our common stock of $ per share, the midpoint of the price range set forth on the cover of this prospectus.

**Common Stock Valuations**

The fair value of our common stock for purposes of stock-based awards has historically been determined by our board of directors. Because there has been no public market for our common stock, and in the absence of arm's-length transactions in our common stock with independent third parties, our board of directors has determined the fair value of our common stock with the support of independent third-party valuations prepared in accordance with the guidelines outlined in the American Institute of Certified Public Accountants Practice Aid, Valuation of Privately-Held-Company Equity Securities Issued as Compensation.

In the course of preparing our financial statements, we reassessed the fair value of our common stock on each grant date in light of all available information, including subsequently issued independent third-party valuations and other pertinent factors. In each case, we concluded that the fair value of our common stock, as determined by our board of directors, was appropriate.

In order to assess the fair value of our common stock, we first determined our business enterprise value, or BEV, and then allocated the BEV to each element of our capital structure (preferred stock, common stock, warrants and options). Our BEV was estimated using the income approach under the discounted cash flow method, or DCF, which estimates the enterprise value based on the estimated present value of future net cash flows the business is expected to generate over a forecasted period and an estimate of the present value of cash flows beyond that period, which is referred to as terminal value. The estimated present value is calculated using a discount rate known as the weighted average cost of capital, which accounts for the time value of money and the appropriate degree of risks inherent in the business. In allocating the total equity value between preferred and common stock, we assumed that the preferred stock would convert to common stock. Our indicated BEV at each valuation date was allocated to the shares of preferred stock, common stock, warrants and options, using either an option pricing method, or OPM, and/or a probability weighted method, or PWERM. These methods are described below:

Option Pricing Method (OPM). Under the OPM, shares are valued by creating a series of call options with exercise prices based on the liquidation preferences and conversion terms of each equity class. The values of the preferred and common stock are inferred by analyzing these options.

Probability-Weighted Expected Return Method (PWERM). The PWERM is a scenario-based analysis that estimates the value per share based on the probability-weighted present value of expected future investment returns, considering each of the possible outcomes available to us, as well as the economic and control rights of each share class.



In assessing the fair value of our common stock on each grant date, we considered numerous objectives and subjective factors, including, but not limited to, the following:

- independent third-party valuations as of February 28, 2014, October 31, 2014, March 31, 2015, June 30, 2015, December 27, 2015, March 27, 2016 and June 26, 2016, all of which used the OPM method, except for the June 26, 2016 valuation which was prepared using the PWERM method;
- our current and expected operating and financial performance, including our levels of available capital resources;
- future revenue, free cash flow, and other capital requirements associated with such revenue;
- the discount rate used in the DCF model;
- the value of our tangible and intangible assets;

- rights and preferences of our common stock compared to the rights and preferences of our other outstanding securities;
- capital markets conditions affecting comparable public companies, as reflected in comparable companies' market trading multiples, initial public offering valuations, comparable sales or merger transactions, and other metrics;
- the illiquidity of our common stock by virtue of being a private company, and the resulting discount for lack of marketability;
- recent arm's length transactions involving our common stock;
- the business risks we face;
- the likelihood of achieving a particular liquidity event, such as a sale, a merger, or an initial public offering, given prevailing semiconductor industry and capital markets conditions; and
- the experience of management and the members of our board of directors.

Our board of directors intends that all stock options have an exercise price per share of not less than the fair value of our common stock on the date of grant. From January 1, 2015 through July 27, 2016, our board of directors granted the following options:

| Grant Date | Number of Shares of Common Stock Underlying Options Granted | Exercise Price Per Share | Estimated Fair Value of Common Stock Per Share Used to Determine Stock- Based Compensation Expense |
|---|---|---|---|
| February 5, 2015 | 1,480,000 | $0.04 | $0.04 |
| March 31, 2015 | 6,821,750 | $0.04 | $0.04 |
| August 5, 2015 | 6,750,000 | $0.05 | $0.05 |
| September 30, 2015 | 2,417,500 | $0.05 | $0.05 |
| December 3, 2015 | 26,316,500 | $0.06 | $0.06 |
| February 3, 2016 | 3,398,750 | $0.08 | $0.08 |
| April 6, 2016 | 5,305,000 | $0.10 | $0.10 |
| May 26, 2016 | 2,985,000 | $0.14 | $0.14 |
| June 30, 2016 | 27,455,000 | $0.17 | $0.17 |
| July 13, 2016 | 38,390,000 | $0.17 | $0.17 |
| July 27, 2016 | 16,299,000 | $0.18 | $0.18 |

In addition, on July 27, 2016, our board of directors granted fully vested stock awards consisting of 138,888 shares of our common stock.

For grants of stock-based awards made on dates for which there was no valuation performed by an independent third-party valuation specialist, our board of directors would assess if there had been any significant changes to the business since the date of the most recent valuation and adjust the exercise price accordingly. Historically, for the majority of our grants, our board of directors determined that there had not been any significant changes and used the fair value of the common stock as of the date of the most recent, prior valuation as the exercise price for these grants. As shown in the table above, we have concluded that the fair value of our common stock, as determined by our board of directors on each grant date, was appropriate for purposes of determining our stock-based compensation expense.

In May 2016, our board of directors discontinued the 2006 Plan and approved the adoption of the 2016 EIP. The 2016 EIP permits us to grant up to 97,650,000 shares of our common stock, plus (i) those shares reserved but not issued under our 2006 Plan, as of immediately prior to the termination of the 2006 Plan, and (ii) shares subject to awards under our 2006 Plan that, on or after the termination of the 2006 Plan, expire or terminate without having been exercised in full and shares previously issued pursuant to our 2006 Plan that, on or after the termination of the 2006 Plan, are forfeited or repurchased by us (provided that the maximum number of shares that may be added to our 2016 EIP pursuant to (i) and (ii) is 257,534,483 shares).

Following the closing of this offering, the fair value of our common stock will be determined based on the closing price of our common stock on the grant date.

#### Convertible Preferred Stock Warrants Liability

Warrants to purchase shares of convertible preferred stock are classified as liabilities on the consolidated balance sheets at fair value upon issuance because the underlying shares of convertible preferred stock are redeemable at the option of the holders upon the occurrence of certain deemed liquidation events considered not solely within our control, which may therefore obligate us to transfer assets at some point in the future. The convertible preferred stock warrants are subject to remeasurement to fair value at each balance sheet date and any change in fair value is recognized as a component of “Other income (expense), net” in the consolidated statements of operations. We will continue to adjust the liability for changes in fair value until the earlier of the exercise or expiration of the warrants, the completion of a deemed liquidation event, conversion of convertible preferred stock into common stock, or until the convertible preferred stock can no longer trigger a deemed liquidation event. At that time, the convertible preferred stock warrant liability will be reclassified to convertible preferred stock or additional paid-in-capital, as applicable. We use management judgment to estimate the fair value of these warrants, and these estimates could differ significantly in the future. The convertible preferred stock warrant liabilities will increase or decrease each period based on the fluctuations of the fair value of the underlying security. We expect the fair value of the warrants to increase leading up to this offering, but we do not expect any future charges following the completion of this offering.

#### Common Stock Warrants

We account for common stock warrants as equity in accordance with the accounting guidance for derivatives. The accounting guidance provides a scope exception from classifying and measuring as a financial liability a contract that would otherwise meet the definition of a derivative if the contract is both (i) indexed to the entity’s own stock and (ii) meets the requirement for classification in the stockholders’ equity (deficit) section of the balance sheet.

We determined that the common stock warrants issued in connection with the debt arrangement are required to be classified in equity. Warrants classified as equity are recorded as additional paid in capital on the consolidated balance sheet in “Stockholders’ equity (deficit)” and no further adjustments to their valuation are made.

We account for common stock warrants issued to non-employees for services under ASC 505-50. The fair value of such non-employee warrants is remeasured at each quarter-end over the vesting period. We determine the fair value of the common stock warrants using the Black-Scholes option valuation model using the stock price and other measurement

assumptions as of the earlier of the date at which either (1) a commitment for performance by the counterparty has been reached; or (2) the counterparty's performance is complete.

### Income Taxes

We recognize deferred income taxes for temporary differences between the basis of assets and liabilities for financial statement and income tax purposes. We periodically evaluate the positive and negative evidence bearing upon realizability of our deferred tax assets. Based upon the weight of available evidence, which includes our historical operating performance, - 62 - reported cumulative net losses since inception and difficulty in accurately forecasting our future results, we maintained a full valuation allowance on the net deferred tax assets as of December 28, 2014 and December 27, 2015. We intend to maintain a full valuation allowance on the federal, state and foreign deferred tax assets until sufficient positive evidence exists to support reversal of the valuation allowance.

At December 28, 2014 and December 27, 2015, we had federal net operating loss carry-forwards of $145.1 million and $151.9 million, respectively, and state net operating loss carry-forwards of $109.2 million and $106.7 million, respectively. These federal and state net operating loss carry-forwards expire beginning in 2026 and 2017, respectively. At December 28, 2014 and December 27, 2015, we also had federal research and development tax credit carry-forwards of $5.3 million and $6.3 million, respectively, and state research and development tax credit carry-forwards of $5.4 million and 6.3 million, respectively. The federal tax credits will expire in 2026, and the California tax credits carry forward indefinitely. Realization of these NOL and research tax credit carry-forwards depends on future income, and there is a risk that our existing carry-forwards could expire unused and be unavailable to reduce future income tax liabilities, which could impact our financial position and results of operations.

In addition, under Section 382 of the Code, our ability to utilize NOL carry-forwards 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.

No deferred tax assets have been recognized on our balance sheet related to our NOLs and tax credits, as they are fully reserved by a valuation allowance. We may have previously experienced, and may in the future experience, one or more Section 382 "ownership changes," including in connection with our initial public offering. If so, or if we do not generate sufficient taxable income, we may not be able to utilize a material portion of our NOLs and tax credits even if we achieve profitability. If we are limited in our ability to use our NOLs and tax credits in future years in which we have taxable income, we will pay more taxes than if we were able to fully utilize our NOLs and tax credits. This could adversely affect our results of operations.

We record unrecognized tax benefits as liabilities and adjust these liabilities when our judgment changes as a result of the evaluation of new information not previously available. Because of the complexity of some of these uncertainties, the ultimate resolution may result in a payment that is materially different from our current estimate of the unrecognized tax benefit liabilities. These differences will be reflected as increases or decreases to income tax expense in the period in which new information is available. Our policy is to recognize interest and penalties related to income taxes as a component of income tax expense. No interest and penalties related to income taxes have been recognized in the consolidated statements of operations in 2014 and 2015 and the six months ended June 26, 2016.

### Contingencies and Litigation

The outcome of litigation is inherently uncertain and subject to numerous factors outside of our control. 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. A determination of the amount of accrued liabilities required, if any, for these contingencies is made after the analysis of each matter. 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 our results of operations, financial position and cash flows.

**Recent Accounting Pronouncements**

See Note 2 to our consolidated financial statements for information regarding recently issued accounting pronouncements.



# *Business*

# *Business*

**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. Our technical expertise and focus on innovation enable us to address the increasing complexity inherent in managing Wi-Fi network access for multiple client devices with different high-bandwidth content streams, while simultaneously delivering superior network speed, broad coverage area, and high capacity and reliability. Our innovative solutions have historically addressed the telecommunications service provider market for home networking applications, including home gateways, repeaters, and set-top boxes, or STBs, but we are increasingly addressing additional end markets, with solutions for retail, outdoor, small and medium business, enterprise and consumer electronics. As a pioneer in high performance Wi-Fi solutions, we believe that we are well positioned to serve the rapidly evolving Wi-Fi needs of customers in both our existing and future end markets. We also believe our significant engineering expertise in wireless and communications can be applied to address other markets beyond Wi-Fi.

Wi-Fi is a ubiquitous standard for wireless network connectivity, defined by the IEEE 802.11 standardization body working group, that is rapidly evolving to deliver continued performance improvements while maintaining backward compatibility. According to ABI Research, in 2015 there were approximately 2.5 billion Wi-Fi-enabled devices shipped, of which approximately 1 billion were non-mobile phone devices, and cumulatively, over 12 billion Wi-Fi-connected devices have been shipped worldwide as of the end of 2015. The rapid growth in Wi-Fi connected devices, coupled with the steadily rising volume of global Internet Protocol-based, or IP-based, traffic, such as web browsing, email, Internet audio and video, file sharing, cloud computing and online gaming, has significantly increased the performance requirements of access points that power Wi-Fi networks. Such requirements have led to the adoption of 802.11ac, the latest revision of the 802.11 standard, which offers up to a 10-fold improvement in network speeds over its predecessor. Given the limited wireless spectrum available for Wi-Fi networks and the rapidly increasing demand for Wi-Fi-enabled services, the IEEE standardization body is expected to continue to define more advanced capabilities for future revisions of the standard, such as 802.11ax. The 802.11 standard implementation is left to the chipset vendors, and the inherent complexity and many optional features of the standard result in trade-offs leading to wide-ranging levels of Wi-Fi chipset functionality, performance, power and cost.

As the performance requirements of next generation Wi-Fi increase, a more advanced approach to the design of high-speed wireless communication products is required to address numerous challenges such as increasing Wi-Fi speeds, spectrum sharing, competing traffic, evolving standards, legacy Wi-Fi processing architecture and network interferences.

We have pioneered significant enhancements to advanced features such as higher-order Multiple Input and Multiple Output, or MIMO, Multi-User MIMO, or MU-MIMO, transmit beamforming, and additional technologies to achieve superior Wi-Fi performance relative to our competition. Our competitive strengths include support of the most advanced specifications, proprietary technology architectures, and advanced software and system-level algorithms. Furthermore, we have created a cloud-based Wi-Fi analytics and monitoring platform that diagnoses and repairs network inefficiencies remotely.

Customers choose our Wi-Fi solutions to offer products with differentiated network speed, coverage area, reliability, and capacity. Our solutions portfolio is currently comprised of multiple generations of our radio frequency chip and our digital baseband chip, which together support the IEEE Wi-Fi standards, including 802.11n and 802.11ac. Radio frequency chips use a combination of analog, digital and high frequency circuits to transmit and receive signals in certain frequencies, such as 2.4GHz and 5GHz for Wi-Fi. Digital baseband chips transmit and receive data to and from radio frequency chips. These chips are typically sold together as a chipset combined with software and system-level reference designs that constitute a highly integrated Wi-Fi solution. We maintain our product differentiation by designing and implementing a variety of innovative system architecture features, as well as advanced software and system-level algorithms.

According to ABI Research, the global market for Wi-Fi chipsets is expected to grow from $3.8 billion in 2016 to $5.2 billion in 2021, a CAGR of 7%. We have shipped over 80 million chips to our customers across four semiconductor process generations. Our chips consist of transistors using various advanced semiconductor fabrication technology nodes, which are measured in nanometers, or nm, to address different system requirements. We are currently in volume production in 90nm, 65nm, and 40nm, and expect to begin volume production in 28nm in early 2017. During the year ended December 27, 2015, - 64 - our global OEM and original design manufacturer, or ODM, customers included Arris, Asus, Sagemcom and Technicolor. During the same period, these OEM and ODM customers supported a number of major service providers in the United States as well as internationally. For the year ended December 27, 2015, our revenue was $83.8 million and our net loss was $7.0 million, and we had an accumulated deficit of $159.7 million as of December 27, 2015. For the six months ended June 26, 2016, our revenue was $57.5 million and our net loss was $1.9 million, and we had an accumulated deficit of $161.6 million as of June 26, 2016.

### Industry Background

Global growth in IP data traffic and the proliferation of Wi-Fi connected devices are driving demand for more and better Wi-Fi connectivity. According to the Cisco 2016 Visual Networking Index, or VNI, report, total global IP traffic is expected to increase from approximately 73 exabytes to approximately 194 exabytes per month between 2015 and 2020, a 22% compound annual growth rate, or CAGR. The share of global IP traffic transmitted over Wi-Fi networks is forecasted to increase from 42% in 2015 to 50% by 2020, compared to wired and cellular traffic, which is forecasted to account for 34% and 16%, respectively. By 2020, Wi-Fi is also expected to carry approximately 55% of mobile IP traffic for devices with both cellular and Wi-Fi capabilities, while cellular is expected to carry approximately 45% of such traffic. According to ABI Research, 2.8 billion Wi-Fi-enabled devices will be shipped worldwide in 2016, and this number is expected to increase to 4.0 billion in 2021. For a large portion of these devices, including smartphones, tablets, smart home assistants, and Internet of Things, or IoT, devices, Wi-Fi is the primary IP connection.

In addition to the proliferation of IP traffic and Wi-Fi connected devices, the types of IP traffic carried over Wi-Fi are also expanding. When Wi-Fi was first introduced into homes and enterprises, the predominant applications were email and Internet access. Today, the number of applications supported over Wi-Fi has grown to also encompass voice over IP, high-definition audio, Ultra High Definition TV, cloud computing, gaming and over-the-top video, which refers to the delivery of video over the subscriber's broadband connection without the involvement of traditional TV service providers. Industry reports forecast that Wi-Fi will become the most prevalent method to carry these applications. For example, the Cisco 2016 VNI report forecasts that for voice over IP, Wi-Fi is expected to grow from carrying 16% of all voice minutes

in 2015 to 53% of all voice minutes by 2020, as compared to 26% for cellular and 21% for fixed line. According to Dell'Oro Group, the number of global broadband subscribers is expected to grow from 743 million in 2016 to 967 million by 2020, a CAGR of 7%.

To meet these demands, service providers, retail OEMs, enterprise OEMs, and consumer electronics OEMs are increasingly focused on integrating the best Wi-Fi capabilities into their products.

- Service Providers. Service providers, including AT&T, Comcast, Orange and Telefonica, are seeking to deploy and manage the best Wi-Fi infrastructure inside the home to enable the connectivity of a growing number of Wi-Fi devices, and to offer a richer complement of value-added services such as high-speed Internet, Ultra High Definition TV, voice over IP, home security, energy management, cloud computing and gaming. To meet the connectivity and bandwidth demands of such wireless infrastructure, service providers have migrated from home gateways with single-band 2.4GHz 802.11n to the latest dual-band 2.4GHz and 5GHz solutions, which include support for the latest 802.11ac standard. The 802.11ac standard not only supports faster speeds but also allows more devices to be simultaneously connected within the home, which is a crucial requirement as the average number of connected devices per household will continue to grow rapidly. Furthermore, service providers desire to offer their customers a seamless Wi-Fi connectivity experience outside the home. They have increased investments in the deployment of Wi-Fi hotspots to support sophisticated roaming and authentication with other hotspots and with customers' home gateways. As a result, service providers use Wi-Fi to offer a higher performance, lower cost alternative to traditional mobile cellular services.

- Retail OEMs. Retail OEMs, including Asus, Belkin and Netgear, are focusing on higher performance Wi-Fi as consumers are increasingly motivated to invest in higher-performance Wi-Fi for their homes. Consumers desire high-performance Wi-Fi throughout the home to connect many devices including laptops, smartphones, tablets, TVs, gaming consoles, wireless speakers, thermostats, smoke detectors, home security and other IoT applications. As a result, retail OEMs strive to offer routers with the latest Wi-Fi technology and performance to provide customers' homes with the fastest and most reliable speeds. Accordingly, we believe high-performance Wi-Fi routers will constitute an increasing portion of retail OEM router sales.

- Enterprise OEMs. Enterprise OEMs for enterprise networking, including Brocade, Cisco and HP, are seeking to meet the demands of an increasingly mobile workforce that is connecting to the network via multiple devices beyond a



desktop or laptop, such as smartphones and tablets. Enterprises are also seeking to optimize the costs of their networking infrastructure by adopting cost-effective wireless architecture. As a result, enterprise OEMs are increasingly adopting higher performance Wi-Fi in their products to achieve higher speeds and improved wireless network capacity. Capacity refers to the amount of data that can be supported in a given frequency or channel. 802.11ac access points can support almost three times the capacity of 802.11n access points. Higher capacity translates into a lower cost per bit, which is an important metric when tens, hundreds, or even thousands of access points are deployed in a given enterprise environment. We believe that the combination of higher capacity and lower cost per bit translates into greater enterprise demand for high-performance Wi-Fi enterprise access points.

- Consumer Electronics OEMs. A more robust Wi-Fi network inside the home has enabled a proliferation of connected Wi-Fi devices and has driven an increasing need for better delivery of content to those Wi-Fi-enabled devices. As a result, consumer electronics OEMs, including Apple, Samsung and Sony, are seeking to incorporate high-performance Wi-Fi in their products. We believe high-performance Wi-Fi is becoming a differentiator in consumer purchase decisions for high-end products which deliver optimal user experience and, as a result, we believe consumer electronics device OEMs will increasingly enable devices, such as 4K Ultra High Definition TVs, over-the-top set top boxes, and gaming consoles with higher performance Wi-Fi.

**Industry Challenges**

Designing Wi-Fi solutions to provide the highest levels of performance is imperative to address consumer demands, yet remains very challenging due to the following factors.

Increasing Wi-Fi Speeds. 802.11ac-based devices are up to 10 times faster than prior generation devices, sending data at gigabits per second through the wireless channel, an unpredictable medium filled with obstacles, such as walls, doors, and furniture. As a result, more advanced digital signal processing techniques, such as MIMO, MU-MIMO, and explicit transmit beamforming, are required to keep up with the increasing performance requirements. A device incorporating MIMO technology transmits signals using more than one antenna and receives signals using more than one antenna,

which allows the device to have increased speed and range. MU-MIMO refers to an algorithm that allows multiple client devices to be served by a Wi-Fi access point simultaneously. Explicit transmit beamforming is a technique that enables gateways and access points to direct their signals toward a client rather than covering a larger area, which increases transmission efficiency and ultimately improves Wi-Fi speed, range and reliability. Together, these techniques increase the performance level of 802.11ac solutions with improved range and more reliable connections, while serving an increased number of simultaneous users.

Spectrum Sharing. Wi-Fi operates in a limited, unlicensed wireless spectrum, as regulated in the United States by the Federal Communications Commission, or FCC. While the 5GHz spectrum used by 802.11ac is inherently wider relative to the 2.4GHz spectrum, it is not always entirely available due to regulatory constraints that vary from country to country. For example, in many parts of the world, much of the 5GHz spectrum is reserved for military, weather radar, and air traffic control applications. These regulations mandate that Wi-Fi devices vacate such reserved spectrum upon detection of higher priority applications. To reliably achieve maximum speeds with 802.11ac, some of this restricted spectrum needs to be utilized. Therefore, a method referred to as Dynamic Frequency Selection, or DFS, needs to be implemented to accurately detect when these channels are available for Wi-Fi use. As bands become wider, it becomes increasingly critical for Wi-Fi applications to operate in the DFS spectrum. In the United States, in the 5GHz frequency band, there are 16 DFS channels that can be used in addition to the nine non-DFS channels. Therefore, a network that can use these DFS channels will increase total system capacity by almost three fold. Implementing efficient use of DFS channels requires complex algorithms.

Competing Traffic. The types of traffic carried by Wi-Fi are rapidly increasing as technology providers seek to enable more device connectivity and value-added services. Each type of traffic has unique quality metrics that must be met in order to create a satisfactory user experience. For example, voice and video latencies must be low to ensure that users do not perceive any gaps in performance. Internet webpage and email traffic are sporadic by nature and typically do not have strict latency guidelines. As a result, certain traffic types need to be prioritized over others. A comprehensive Quality of Service, or QoS, mechanism is needed to prioritize traffic types, guarantee on-time delivery of specific traffic types ahead of others, and scale to meet the increased number of Wi-Fi clients in a network.

Rapid Evolution of Industry Standards. The IEEE standardization body continually strives to improve Wi-Fi functionality and performance. For example, from 1997 to 2013, Wi-Fi maximum speeds increased from 1Mbps under the 802.11 standard to 6.8Gbps with the 802.11ac revision. All competitors in the Wi-Fi solutions market design their products according to the same - 66 - IEEE Wi-Fi standards, which have become more complex as each subsequent standard includes an increasing number of specifications for both basic and optional features. While all Wi-Fi products need to incorporate all of the basic specifications under the standards, competitors in the high-performance Wi-Fi solutions market distinguish themselves by the speed with which they introduce new products and the degree to which their products are able to support advanced specifications and optional features such as explicit transmit beamforming, high-order MIMO, and MU-MIMO. This trend will continue with 802.11ax, the future revision of the 802.11 Wi-Fi standard. Some competitors decide to only implement the mandatory specifications and leave more complex optional features out of their products.

Legacy Wi-Fi Processing Architecture. There are seven distinct layers of software functions needed for one Wi-Fi device to transmit data to another under IEEE Wi-Fi standards. Layers one and two comprise the Wi-Fi protocol stack, and layers three and above are referred to as higher-layer network functions. Historically, Wi-Fi chipsets were architected such that the host CPU inside a gateway or access point handled the majority of the higher-layer network processing activity. However, as Wi-Fi speeds increase, the ability of the CPU to sustain maximum Wi-Fi data bandwidth while also performing other tasks is compromised. As a result, in order for the end product to meet its performance specifications, the Wi-Fi chipset must be capable of processing a greater proportion of both the Wi-Fi protocol stack and network functions to ensure that host CPUs have the bandwidth to operate properly.

Network Interference Management. As Wi-Fi usage increases, higher levels of network congestion will occur. This was especially common with 802.11b 2.4GHz networks, which only had three non-overlapping channels. The limited number of channels meant that there was a high likelihood that competing devices were using the same channel, thereby degrading performance. While the industry's transition to 5GHz networks temporarily helped to alleviate such degradation by offering more channels, similar congestion and degradation of performance may occur over time. A Wi-Fi management system is needed to constantly monitor and optimize Wi-Fi network performance. Such a system would not only oversee one access point or gateway within a particular home, but would also have the capability to monitor a whole network of access points, which can comprise millions of Wi-Fi clients.

**Our Solution and Competitive Strengths**

Our four generations of Wi-Fi solutions have been designed to achieve and maintain market leadership. Historically, in each case where we have introduced a new high performance Wi-Fi solution compliant with the 802.11 IEEE standard, we have done so well before our competitors have introduced a comparable product with the same features. This first-mover advantage has enabled us to market and monetize our solutions and capture key new customers and design wins while our competitors were still in the product development phase. This advantage has been particularly evident in the service provider market for home networking applications. Due to long design and deployment cycles, service providers may only undertake major product updates every few years. As a result, the ability to secure a service provider design win for a solution with advanced features can create a market advantage that lasts for months to years, depending on various factors, including how quickly a competitor releases a comparable product, how the performance of the competing product compares to ours, and how the timing of such release relates to the service provider's design and deployment cycle. We believe our success in pioneering previous Wi-Fi solutions has also given us a head start in the development of next generation Wi-Fi solutions.

We strive to deliver the industry's highest speed, broadest coverage, highest capacity, and most reliable performance through advanced software and system-level algorithms, Wi-Fi protocol processing using embedded CPUs, and, more recently, the introduction of a cloud-based Wi-Fi network management system. Our solutions allow us to address the industry challenges posed by increasing Wi-Fi speeds, limited spectrum, increasing traffic, legacy Wi-Fi processing architectures and network interference management. We deliver proprietary feature set extensions beyond standard requirements, offering significant performance advantages to the user. Our innovative solutions have historically addressed the service provider market for home networking applications such as home gateways, repeaters, and STBs, and we are increasingly addressing additional end markets, with solutions for home networking and small and medium business applications (e.g., routers and repeaters), enterprise networking (e.g., access points), and consumer applications, including wireless streaming of audio and video, wireless TVs, and wireless speakers.

**Performance Benefits We Provide to Our Customers and Service Providers**

We believe our Wi-Fi solutions enable the highest overall level of Wi-Fi performance in the market relative to network speed, range, capacity and reliability. A high-performing solution results in a positive user experience and high level of satisfaction - 67 - from customers, service providers and their subscribers. The performance benefits that we provide to our customers and their target service providers are set forth below.

OEM and ODM Customers

- Integrated 2.4GHz and 5GHz Solutions. Our most recent solutions include both 2.4 GHz and 5 GHz capabilities. As a result, our customers only need to design in a single chipset, instead of one for each frequency band. This integrated solution not only enables a more streamlined design process, but also maximizes interoperability and performance.

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- Streamlined Integration and Faster Time to Market. We have designed host offload technology, which allows the majority of Wi-Fi functions to be executed within our baseband chips. This offload software capability streamlines the integration of our chipsets into customer and reference design partner platforms. In addition, our experienced customer engineering support team engages with our OEM and ODM customers and partners early in their respective design cycles, which we believe accelerates their product development and ultimately optimizes product performance.

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Service Providers

- Improved Subscriber Experience and Increased Subscriber Retention. Our Wi-Fi solutions are high-performance solutions, which helps create a positive subscriber experience when using Wi-Fi. Our Wi-Fi solutions also provide enhanced network performance capabilities, which enable service providers to offer their subscribers a broader range of value-added products and services such as wireless phone service, wireless set-top boxes and seamless streaming of ultra-high definition video. By offering such premium products and services, we believe service providers are able to generate more revenue per subscriber and deliver a better subscriber experience, which contributes to improved subscriber retention.

- Longer Lifecycle and Reduced Capital Investment. Subscribers desire the most up-to-date technologies from their service providers. Devices featuring our solutions offer the leading edge of Wi-Fi technology, and therefore have a longer lifecycle and time to obsolescence. Additionally, a high-performing Wi-Fi infrastructure results in lower network expenditures for service providers by offloading cellular data, thereby reducing the burden on the cellular network.

- Fewer Service Disruptions and Lower Support Costs. Because our Wi-Fi solutions support the most advanced IEEE Wi-Fi optional specifications, they provide higher speed, greater range and better reliability than our competitors' products, which increases the quality of data transmission and improves Wi-Fi connectivity within a given area. We believe the high quality and reliability of our Wi-Fi solutions results in fewer service disruptions, and therefore reduces customer complaints and the need for support calls and on-site service requests.

- Automated Network Management. We have a cloud-based Wi-Fi analytics and monitoring capability that can automatically detect, alert, diagnose, and fix network problems, before, during, and after an issue has occurred. Service providers who choose to deploy this capability can quickly diagnose field issues and confirm that new deployments are proceeding as planned, thereby enabling a better overall subscriber experience and further lowering support costs. This capability also enables us to provide faster customer support and deployment of our solutions.

Our competitive strengths include:

- Market Leadership through Support of the Most Advanced Specifications. We design Wi-Fi solutions that support the most advanced IEEE Wi-Fi optional specifications, which allows us to be a leader in terms of both performance and innovation. For example, we shipped the world's first 4x4 MIMO solution when our competitors were providing products with support for only 2x2 or 3x3 MIMO. Today, we are the first and only company to support the full 8x8 MIMO specification of 802.11ac with our QSR10G Wi-Fi solution, which we believe allows us to offer the highest speed as well as the farthest range. While some of our competitors offer a wider variety of products, many of those products incorporate only basic features for low-performance applications outside our target market segments. In contrast, we focus on segments of the market where advanced features are critical for the targeted application to provide higher performance, such as whole home coverage or video delivery over Wi-Fi.

- Proprietary Technology Architectures. We design proprietary technology architectures that we deliver through our high-performing chipsets. The 802.11 standard does not dictate implementation and a significant portion of modem design is vendor discretionary. We were the first to commercially introduce several new technology architectures,



including the first 4-stream 802.11n 4x4 chipset in 2010, the first 4x4 802.11ac chipset in 2013 and the first 802.11ac 8x8 chipset in 2015. Today, we are the only Wi-Fi solution provider to have integrated 12 chains on a single baseband chip die and eight transmit and eight receive chains on a single RFIC die as part of a 10Gbps Wi-Fi access point solution. Transmit and receive chains refer to circuitry in the RFIC responsible for transmitting and receiving data, respectively. We believe our proprietary architectures are a key part of what enables us to successfully compete against our larger, more established competitors.

- Advanced Software and System-Level Algorithms. We enable our innovative Wi-Fi solutions with advanced proprietary software and system-level algorithms that provide superior functionality. For example, we were the first to commercially introduce a number of features built on the 802.11 standards, such as 4x4 MIMO, 8x8 MIMO, MU-MIMO, and 4x4 universal beamforming. We have integrated advanced digital signal processing, or DSP, algorithms in each of our baseband chips. The process of detecting and decoding the desired data from a noisy environment requires sophisticated DSP algorithms, which we have developed over the last 10 years. These algorithms include explicit transmit beamforming, MIMO, MU-MIMO, and others. We believe these algorithms are crucial to the performance and stability of products integrating our solutions.

- Pure Focus on High-Performance Wi-Fi Solutions and Deep Wireless Engineering Expertise. Our research and development, engineering, manufacturing, sales, and marketing activities are focused solely on high-performance Wi-Fi solutions, which we believe gives us an advantage over many of our competitors who do not focus exclusively on Wi-Fi. We have assembled a world-class wireless engineering team comprised of over 200 engineers worldwide with demonstrated capabilities in silicon and systems engineering, software engineering and customer engineering, including more than 145 with advanced degrees in relevant fields.

- Deep Relationships with Our Customers and Reference Design Partners. We have built collaborative relationships with our customers and reference design partners, many of whom are industry leaders. We believe these relationships provide us with enhanced visibility into their future requirements. We often collaborate with these leaders at the front end of the design cycle and help them architect their next-generation products. We believe we have a strong industry reputation for responsiveness and delivering Wi-Fi solutions that meet or exceed our customers and reference design partners' technological requirements, as well as their overall business needs.

**Our Strategy**

The key components of our strategy include the following:

- Continue to Deliver Wi-Fi Innovation. The Wi-Fi industry is constantly evolving as new technologies emerge and standards are updated. We intend to continue our investment in research and development to drive further innovation, including new Wi-Fi standards, and maintain a market leadership position in the Wi-Fi marketplace.

- Expand Share in Service Provider Market. We intend to leverage our growing number of service provider and OEM and ODM relationships to aggressively market our solutions' competitive advantages and increase our footprint among service providers. This market is characterized by long product lifecycles and stable customer engagements with greater visibility into future revenue. In addition, we intend to expand our geographic reach beyond North America and Western Europe, which are currently the predominant end markets for our Wi-Fi solutions.

- Leverage Industry Partnerships to Promote Adoption of Our Solutions. We maintain partnerships with several technology industry leaders to ensure the compatibility of our solutions with other components of the end product, and to promote the adoption of our Wi-Fi solutions. We will seek to broaden and strengthen these partnerships to drive design wins and establish incumbency.

- Address Other Wi-Fi Market Segments. We have addressed only a small portion of the retail Wi-Fi market opportunity and have not yet entered the small and medium business, enterprise and consumer electronics markets. We intend to leverage our existing technologies and solutions, as well as broaden our Wi-Fi solutions portfolio, to continue to expand our presence in the retail Wi-Fi market and address the small and medium business, enterprise, consumer electronics and other markets.



- Broaden Solutions Beyond Wi-Fi. We believe our existing technologies and wireless engineering expertise, as well as our deep industry relationships, provide us an opportunity to expand beyond the Wi-Fi market through a combination of organic investments and acquisitions.

**Our Products and Technology**

Our differentiated Wi-Fi system architecture typically consists of a radio frequency chip, or RFIC, and a digital baseband system-on-chip, or baseband SOC. The RFIC transmits and receives at a particular frequency, and the baseband SOC implements system-level algorithms to process physical layer (layer one) functions and additional logic that executes software to process 802.11 protocols from the signals received to and from the RFIC. The RFIC and baseband SOC are placed on a printed circuit board called a "reference design," where they interact with the rest of the hardware and software system of the end product.

The typical applications that use our current solutions are:

- Access Point and Gateways. These applications are at the core of wireless home networking and enterprise access. Our initial solutions supported 2-stream applications with 4x4 5GHz 802.11n, and we have continuously innovated to deliver increasing speeds, culminating in our latest 12-stream (8x8 5GHz 802.11ac and 4x4 2.4GHz and 5GHz 802.11n), 10Gbps dual-band dual-concurrent offering. Our solutions have also evolved from primarily supporting real-time video delivery over Wi-Fi to supporting voice, video, and data. We seek to extend our industry-leading position by continuing to develop solutions to support the next-generation of Wi-Fi applications. We believe that the increasing demands on wireless home networks and enterprise applications will help drive the need for high performance access points and gateways in the marketplace, which we believe will also contribute to greater demand for high-performance Wi-Fi solutions with higher ASPs given the benefits they provide to our customers. According to ABI Research, shipments of Wi-Fi-enabled consumer and enterprise access point devices are expected to be 180 million and 13 million units, respectively, in 2016 and are expected to grow to 209 million and 22 million units, respectively, by 2021.

- Clients. We provide Wi-Fi solutions for non-mobile client applications such as set-top boxes. We believe the performance advantages of our solutions will better support the latest generation of Ultra High Definition, or UHD, set-top boxes, which have higher Wi-Fi speed requirements. In addition, increased speed, range, capacity and reliability can be achieved when our client solutions are used in conjunction with our access point and gateway solutions. We believe that overall Wi-Fi penetration of set-top boxes in the marketplace is relatively low, with ABI Research forecasting that 82 million Wi-Fi-enabled set top box devices will be shipped in 2016, compared to global set-top box device shipments of 285 million during the same period.

- Repeaters. In certain challenging networking environments, repeaters can be used to provide extended Wi-Fi coverage. Our repeater solutions support advanced functionality, including setup, management, and client connectivity features. We believe repeaters, along with our access point solutions, can play an important role in addressing the growing consumer demand for whole-home coverage.

We differentiate our solutions portfolio by designing and implementing a variety of innovative system architecture and software features that are aimed at solving the challenges of high-performance wireless networking, including:

Increasing Wi-Fi Speeds

- Transmit Beamforming. Beamforming is critical to effectively compete in the high-performance Wi-Fi market as it enables gateways and access points to direct their signals toward a client to increase transmission efficiency and improve Wi-Fi speed and range. We were the first to apply Wi-Fi transmit beamforming technology to four antennas, and have continued to optimize it for eight antennas. Beamforming is an integral part of our solutions, and our engineering team includes leading system algorithm experts to address the design and implementation challenges in this field.

- Advanced MIMO and MU-MIMO. MIMO technology multiplies the capacity of a wireless connection by allowing access points to transmit and receive multiple streams of data at the same time. MU-MIMO technology permits not only multiple streams to a single device, but also enables multiple client devices to receive multiple streams of data at the same time. When combined, these two features allow the most efficient use of a given channel by offering the highest bits per hertz. A 4x4 MIMO transmission uses four antennas, and an 8x8 MIMO transmission uses eight antennas. We refer to these technologies as higher-order MIMO. Four antennas are used in the 2.4GHz band, and four



or eight antennas are used in the 5GHz band. We were the first to introduce MIMO and MU-MIMO for 4x4 802.11n, 4x4 802.11ac, and 8x8 802.11ac. We have experienced wireless system architects and software engineers to lead the implementation of these technologies.

Spectrum Scarcity

- SuperDFS Dynamic Smart Channel Selection. SuperDFS is a set of system-level algorithms that combine RFIC, baseband, and software functions to select a particular DFS channel that has the least interference and best system capacity. Our detection mechanisms have been optimized to pass strict FCC product certification guidelines without being overly reactive in DFS frequencies.

More Traffic Types

- IQStream Advanced Traffic Management. IQstream is a proprietary system-level algorithm that classifies and prioritizes all types of Wi-Fi traffic in order for the most critical traffic to be delivered with the least interruption. For example, IQStream allows the prioritization of real-time HD video or voice call transmissions over lower priority data such as email and Internet webpage access.

### Legacy Wi-Fi Processing Architecture

- Host Offload. We have implemented host offload technology, which allows the majority of Wi-Fi functions to be executed within our baseband chips. This not only frees up the resources of the host CPU, but also requires less software integration and optimization between our Wi-Fi chips and the host CPU during system design. This significantly decreases our customers' product development time.

### Network Management

- Cloud-based Wi-Fi Management Platform. Our proprietary cloud-based platform comprises a debugging agent embedded within a product, such as an access point, which sends Wi-Fi data to an analytics engine in the cloud. This system permits remote, real-time issue identification and resolution. This allows us to deliver enhanced customer support and Wi-Fi performance. Our cloud-based platform can scale to manage millions of Wi-Fi devices and thus can provide a complete network-wide Wi-Fi management system for our customers.

We are currently shipping our second generation 4x4 802.11n and third generation 4x4 802.11ac Wi-Fi solutions in volume, as well as production samples of our fourth generation 10Gbps Wi-Fi solution. The following table shows the applications that we address and their respective end markets by chipset generation.



| Use Case | Solution | Process Node | Data Stream and Standard | Link Speed | Target End Market |
|---|---|---|---|---|---|
| **Generation 2** | | | | | |
| Access Point / Gateway | QHS710 | 90nm/65nm | 4x4 11n | 600 Mbps | SP |
| Clients | QHS710 | 90nm/65nm | 4x4 11n | 600 Mbps | SP |
| **Generation 3** | | | | | |
| Access Point / Gateway | QV840 | 90nm/40nm | 4x4 11ac | 1.7 Gbps | SP, R |
| | QV860 | 90nm/40nm | 4x4 11ac + 2x2 11n | 1.7 Gbps + 300 Mbps | SP |
| Clients | QV842 | 40nm | 4x4 DBS | 1.7 Gbps | SP |
| | QV922/924 | 40nm | 2x4 DBS | 0.85 Gbps (Tx) / 1.7 Gbps (Rx) | SP, CE |
| | QV920 | 90nm/40nm | 2x4 5GHz | 0.85 Gbps (Tx) / 1.7 Gbps (Rx) | SP |
| Repeater | QV864R | 90nm/40nm | 4x4 5GHz + 2x2 2.4GHz | 1.7 Gbps + 1.7 Gbps + 300 Mbps | SP, R |
| | QV860R | 90nm/40nm | 4x4 5GHz + 2x2 2.4GHz | 1.7 Gbps + 300 Mbps | SP |
| | QV840R | 90nm/40nm | 4x4 5GHz | 1.7 Gbps | SP |
| **Generation 4** | | | | | |
| Access Point / Gateway | QSR10GU | 40nm/28nm | 8x8 11ac + 4x4 11n | 9.6 Gbps | SP, R, E |
| | QSR10GT | 40nm/28nm | 8x8 11ac + 2x2 11n | 9.1 Gbps | SP, R, E |

SP: Service Provider; R: Retail; E: Enterprise; CE: Consumer Electronics

**Our Customers**

We sell our Wi-Fi solutions directly to global OEMs and ODMs that serve the end markets we target. In addition, we sell our Wi-Fi solutions to third-party distributors who in turn resell to OEMs and ODMs. OEMs incorporate our Wi-Fi 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 increasingly 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) consumer electronics OEMs for consumer 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.

Service providers purchase the products they sell to, or subsidize for use by, their subscribers through OEMs and ODMs. We typically do not enter into formal agreements with service providers, and our relationship with service providers varies depending on the service provider's strategy:

- Service Providers Selecting Wi-Fi Technology Directly. Some service providers, typically those with large subscriber bases, require that a specific Wi-Fi solution be designed into the OEM products they purchase. As a result, although our customers are OEMs and ODMs, we maintain close relationships with these service providers since they award design wins for our Wi-Fi solutions. 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.

- Service Providers Selecting OEM / ODM Products. Other service providers, typically those with smaller subscriber bases, do not require that specific Wi-Fi solutions be designed into the OEM or ODM products they purchase. As a result, the OEM or ODM is the key decision maker with respect to awarding design wins and may incorporate the



winning design into their products for numerous service providers. We maintain close relationships with our OEM and ODM customers to secure design wins and monitor end-market demand.

The following table represents OEM, ODM and third-party distributor customers comprising 10% or more of our revenue:

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | (Percentage of revenue) | | | |
| Customer: | | | | |
| Technicolor SA | 11% | 15% | 16% | 12% |
| Pace plc** | * | 14% | * | 17% |

| | | | | |
|---|---|---|---|---|
| Prohubs International Corp. | * | 11% | 14% | 10% |
| Gemtek Electronics Co. Ltd. | 28% | 10% | 12% | * |
| CyberTAN Technology, Inc. | 21% | * | * | * |
| Sagemcom Broadband SAS | * | * | * | 14% |
| MitraStar Technology Corp. | * | * | * | 10% |

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* Customer percentage of revenue was less than 10%.

** Pace plc was acquired by Arris International plc in January 2016.

The substantial majority of our revenue has been derived from sales to customers serving the service provider home networking market. Based on sell-through information provided to us by the majority of our OEM and ODM customers, we estimate that more than 30 service providers in various stages of product deployment are currently incorporating our Wi-Fi solutions into their products. We estimate that our two largest service providers, which are based in the United States, represented approximately one-half of our revenue in 2014 and approximately 40% of our revenue in 2015 as our business grew.

Sales to Asia accounted for 84%, 82% and 85% of our revenue in 2014, 2015 and the six months ended June 26, 2016, respectively, based on ship-to destinations, and we anticipate that the substantial majority of our shipments will continue to be delivered to this region. Although a large percentage of our shipments are delivered to Asia, we believe that a significant number of the products we enable with our Wi-Fi solutions, such as access points, gateways, set-top boxes and repeaters, are ultimately sold by our OEM customers to service providers in North America and Western Europe. See Note 13 of our consolidated financial statements included elsewhere in this prospectus for information regarding our operations by geographic area.

We currently derive substantially all of our revenue from the sale of our Wi-Fi solutions. During 2014, 2015 and the six months ended June 26, 2016, revenue from sales of our Wi-Fi solutions constituted 91%, 89% and 99% of our total revenue, respectively. In addition, during 2014 and 2015 and the six months ended June 26, 2016, we also derived revenue from a limited number of licensing and non-recurring arrangements, which together constituted 9%, 11% and 1% of our total revenue, respectively. These arrangements are no longer active. In the future, we may enter into new licensing arrangements on an opportunistic basis. To date, all of our revenue has been denominated in U.S. dollars.

### Sales and Marketing

We sell our solutions worldwide using a combination of a direct sales force and third-party distributors. We employ direct sales teams in the United States, Europe and Asia who support our OEM and ODM customers and service providers. We have located our sales and marketing teams near our existing OEM and ODM customers and larger service providers in the United States (serving North America), France, Spain, Japan, and Taiwan (serving greater Asia). Each salesperson has specific end market expertise. We also employ field application engineers, or FAEs, typically co-located with our direct sales teams, who provide technical pre-sales support to our sales team and assistance to existing and potential customers throughout their design-in and qualification cycles. Our FAE team is organized by end markets as well as core competencies in hardware, software, and wireless systems necessary to support our customers and their target service providers.

To supplement our direct sales team, we have contracts with several independent sales representatives and distributors in the United States, Taiwan, Korea, and China. We selected these independent representatives and distributors based on their ability to provide effective field sales, marketing communications and technical support for our Wi-Fi solutions. In the case of representatives, our customers place orders with us directly rather than with the representatives who do not maintain any inventory. In the case of distributors, our customers place orders through distributors who purchase inventory from us.

Our sales have historically been made on the basis of purchase orders rather than customer specific, long-term agreements. All of our material terms and conditions are consistent with general industry practice, but vary from customer to customer. We typically receive purchase orders 12 to 14 weeks ahead of the customer's desired delivery date. Because industry practice allows customers to reschedule or cancel orders on relatively short notice, we believe that backlog is not a reliable indicator of our future revenue.

Our marketing team focuses on our solutions strategy and road maps, product marketing, new solution introduction processes, demand assessment and competitive analysis, marketing communication and public relations.

### Manufacturing

We use a fabless semiconductor business model and rely on third-party contractors to fabricate, assemble, and test our chipset designs. 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 use industry-standard complementary metal-oxide semiconductor manufacturing process technology, which enables us to produce cost-effective products and achieve high-performance. We partner with our third-party contractors to improve the efficiency of our supply chain and to secure the necessary level of manufacturing capacity. We work closely with these contractors to improve our chipset's manufacturability, enhance yields, lower product and manufacturing costs, and improve quality. We are committed to continuous improvements in our chipset design for better manufacturability and in our third-party contractors' manufacturing processes to achieve the high-quality, reliability, cost, and the performance metrics targets.

### Wafer Fabrication, Assembly and Testing

We purchase silicon wafers from Taiwan Semiconductor Manufacturing Corporation, or TSMC, in Taiwan, our foundry partner, which are then shipped to third-party contractors who assemble and test our chipsets. We currently use several process nodes ranging from 90nm to 28nm. We qualify and utilize multiple TSMC facilities to ensure consistent production performance and redundancy, which is a critical component of our supply chain strategy. We currently use Advanced Semiconductor Engineering in Taiwan and Signetics Corporation in Korea for assembly and testing. All of our material terms and conditions are consistent with general industry practice, but vary from vendor to vendor. Our inventory is distributed from the third-party contractors and a contracted warehouse in Taiwan. We require our third-party contractors to have comprehensive quality manufacturing systems, certified at International Organization for Standardization, or ISO, 9000 levels.

### Research and Development

We believe that our success depends on our ability to enhance our existing Wi-Fi solutions, develop new innovative solutions, and integrate additional capabilities to serve our existing and future target markets. We engage in research and development efforts in four core areas:

- System-level algorithm development (core Wi-Fi algorithms and system-level integration);
- Digital, mixed-signal, and RF chipset design (baseband and RFIC Wi-Fi silicon chipsets);
- Software development (embedded Wi-Fi and network-level drivers); and

- Reference hardware platforms (board designs for internal use and customer reference).

We also have a team of dedicated customer engineers to support our OEMs and service providers in their integration of our solutions into their products. We believe our competencies can be leveraged to broaden our solutions portfolio within and beyond the Wi-Fi market.



Our research and development team is comprised of highly skilled engineers and technologists with extensive experience in digital, mixed signal, and RF chipset design, system level architecture, and software development. We have assembled our engineering team in the United States, Australia, China, Taiwan, and Russia. Approximately 70% of our R&D team holds advanced technical degrees.

Our research and development expense was $31.3 million, $35.6 million, and $21.8 million for 2014, 2015 and the six months ended June 26, 2016, respectively. We intend to continue to invest in research and development to support and enhance our existing Wi-Fi solutions and design and develop future product offerings.

### Intellectual Property

We rely on a combination of intellectual property rights, including patents, trade secrets, copyrights and trademarks, and contractual protections, to protect our core technology and intellectual property. As of June 26, 2016, we had 37 issued patents in the United States and four foreign counterpart patents issued in Taiwan. The issued patents in the United States expire beginning in 2026 through 2035. Our issued patents and pending patent applications relate to MIMO systems, algorithms, circuits, system level optimization and wireless network management.

In addition to our own intellectual property, we also use third-party licenses for certain technologies embedded in our Wi-Fi solutions. These are typically non-exclusive contracts provided under royalty-accruing or paid-up licenses. While we do not believe our business is dependent to any significant degree on any individual third-party license, we expect to continue to use and may license additional third-party technology for our solutions. We also invest in the latest commercially available software design and simulation tools, which enable us to leverage our intellectual property portfolio, improve time to commercialization, and deliver high-performance solutions.

We generally control access to and use of our confidential information through employing internal and external controls, including contractual protections with employees, consultants, customers, partners and suppliers. Our employees and consultants are required to execute confidentiality agreements in connection with their employment and consulting relationships with us. We also require them to agree to disclose and assign to us all inventions conceived or made in connection with the employment or consulting relationship. Despite our efforts to protect our intellectual property, unauthorized parties may copy or otherwise obtain and use our software, technology or other information that we regard as proprietary intellectual property.

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. From time to time, we have received communications from other third parties, including non-practicing entities, alleging our infringement of their patents, and we may receive additional claims of infringement in the future. In addition, our customers and our customers' customers may also receive communications regarding alleged infringement of their products that implicate our Wi-Fi solutions, which could trigger warranty and indemnity obligations from us. Any lawsuits could subject us to significant liability for damages, invalidate our proprietary rights and harm our business and our ability to compete. See the section titled "Risk Factors" for additional information.

**Competition**

We compete with numerous domestic and international semiconductor companies, many of which have greater financial and other resources with which to pursue design, development, manufacturing, sales, marketing and distribution of their products. Our competitors include public companies with broader product lines, a larger base of customers and greater resources compared to us. We consider our primary competitors to be other companies that provide Wi-Fi products to the market, including Broadcom, Celeno Communications, Intel, Marvell, MediaTek, Qualcomm and Realtek Semiconductor Corp. We may also face competition from other new and emerging companies, including emerging companies in China.

The principal competitive factors in our market include:

- performance of Wi-Fi solutions, including the ability to support advanced optional IEEE Wi-Fi specifications;
- cost effectiveness of Wi-Fi solutions;
- design process and time to market;
- innovation and development of functionality and features not previously available in the marketplace;



- ability to anticipate requirements of customers' and service providers' next-generation products and applications;
- ability to identify new and emerging markets, applications and technologies;
- brand recognition and reputation;
- strength of personnel, including software engineers and chip designers; and
- customer service and support.

While most of our competitors may offer a wider variety of products, we design Wi-Fi solutions that support the most advanced optional IEEE Wi-Fi specifications. As such, we focus on high-performance Wi-Fi solutions for each of our end markets and we believe we compete favorably with respect to the factors described above.

**Employees**

As of June 26, 2016, we employed a total of 274 people, comprised of 225 in research and development and in operations, and 49 in sales, marketing, and administration. We also engage temporary employees and consultants. We have never had a work stoppage, and we consider our employee relations to be good. None of our employees are represented by a labor organization or subject to a collective bargaining arrangement.

**Facilities**

Our corporate headquarters is located in Fremont, California in a facility consisting of approximately 27,000 square feet of office space under a lease that expires in September 2018. We also lease properties in Australia, China, Russia, and Taiwan which accommodate our design centers and sales support team. Based on our business requirements, the location and size of these leased properties will change from time to time. We intend to expand our existing facilities as we grow our business and add resources. We believe that additional facilities will be available on commercially reasonable terms to accommodate foreseeable expansion of our operations. We do not own any real property.

### Legal Proceedings

We are currently not party to litigation that could have a material adverse affect 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.



# *Management*

# *Management*

### Executive Officers and Directors

The following table provides information regarding our executive officers and directors as of August 1, 2016:

| Name | Age | Position |
|---|---|---|
| Executive Officers: | | |
| Sam Heidari | | Chairman and Chief Executive Officer |
| Sean Sobers | | Chief Financial Officer |
| Lionel Bonnot | | Senior Vice President, Marketing and Business Development |
| David Carroll | | Senior Vice President, Worldwide Sales |
| Non-Employee Directors: | | |
| Dmitry Akhanov | | Director |
| Fahri Diner | | Director |
| Edward Frank | | Director |
| Edwin B. Hooper III | | Director |
| Harold Hughes | | Director |
| Jack Lazar | | Director |
| John Scull | | Director |
| Mark Stevens | | Director |
| Lip-Bu Tan | | Director |

### Executive Officers

Sam Heidari. Mr. Heidari has served as our Chief Executive Officer since February 2011, a member of our board of directors since March 2011 and Chairman of our board of directors since June 2016. From July 2009 to February 2011, Mr. Heidari served as our Vice President of Research and Development. From August 2006 to July 2009, Mr. Heidari served as Chief Technology Officer and Vice President of Engineering at Ikanos Communications, Inc., an advanced semiconductor products and software company. Mr. Heidari currently serves as the chairman of the board of directors of

SiTune Corporation, a privately held integrated circuits company, and a member of the board of directors of several other privately held companies. Mr. Heidari holds a B.S. in Electrical Engineering from Northeastern University and an M.S. and Ph.D. in Electrical Engineering from the University of Southern California.

Mr. Heidari was selected to serve on our board of directors because of the perspective and experience he provides as our Chief Executive Officer, as well as his extensive experience with technology companies.

Sean Sobers. Mr. Sobers has served as our Chief Financial Officer since July 2016. From July 2009 to June 2016, Mr. Sobers served as Corporate Vice President of Finance and Controller at Cadence Design Systems, Inc., an electronic design automation software and engineering services company. Mr. Sobers previously served as Vice President of Finance at Polycom, Inc., a unified communications and collaboration solutions company, Controller of the Software Group at EMC Corporation, a provider of information infrastructure and virtual infrastructure technologies, solutions and services, Controller at Documentum, Inc., an enterprise content management platform prior to its acquisition by EMC Corporation, and auditor at KPMG LLP, a global auditing firm. Mr. Sobers is a certified public accountant (inactive) and holds a B.S. in Accounting from the University of Southern California.

Lionel Bonnot. Mr. Bonnot has served as our Senior Vice President, Marketing and Business Development since January 2015. From January 2013 to January 2015, Mr. Bonnot served as our Senior Vice President, Business Development. From December 2007 to January 2013, Mr. Bonnot served as our Vice President of Worldwide Sales. Mr. Bonnot holds an M.S. in Computer Science from the Ecole Supérieure d'Informatique (ESI) in Paris.

David Carroll. Mr. Carroll has served as our Senior Vice President, Worldwide Sales since January 2016. From January 2013 to January 2016, Mr. Carroll served as our Vice President, Worldwide Sales. From December 2010 to November 2012, - 77 - Mr. Carroll served as Senior Director, Strategic Sales and Global Account Management at Broadcom Corporation, a fabless semiconductor company. Mr. Carroll holds a B.S. in Mechanical Engineering from San Diego State University and an M.B.A. from the University of Southern California Marshall School of Business.

**Non-Employee Directors**

Dmitry Akhanov. Mr. Akhanov has served on our board of directors since February 2014. Since December 2010, Mr. Akhanov has served as President and Chief Executive Officer at Rusnano USA, Inc., a U.S. subsidiary of Joint Stock Company "RUSNANO" (formerly Open Joint Stock Company "RUSNANO"), a Russian state instrument dedicated to fostering the growth of the nanotechnology industry in Russia. From October 2007 to August 2008, Mr. Akhanov was the Head of the Russian Federal Energy Agency, which was responsible for the implementation of national energy policy and management of state-owned energy assets (oil and gas, coal and electricity industries). As the head of the Strategy Department of RAO "UES", from June 2002 to October 2007, Mr. Akhanov was actively involved in developing and implementing strategy for the restructuring of the electricity sector of Russia, and forming a new industry structure and electricity market model. In conjunction with this, Mr. Akhanov also implemented a number of corporate projects for the separation, merger and acquisition of major energy companies in Russia. Mr. Akhanov currently serves on the boards of directors of NeoPhotonics Corporation, an optoelectronic developer and manufacturing company, and six other privately held high tech companies. Mr. Akhanov holds a Bachelor's Degree in economics and law and a Master's Degree in economics from the People's Friendship University in Russia.

Mr. Akhanov was selected to serve on our board of directors because of his extensive experience in strategic planning and management of complex technology projects and cross-border business operations.

Fahri Diner. Mr. Diner has served on our board of directors since July 2007. Since October 2007, Mr. Diner has served as a Managing Director at Sigma Partners, a technology venture capital firm. Mr. Diner has served as Chief Executive Officer of Plume Design, Inc., a privately held cloud-based Wi-Fi control and management software company, since December 2014. Mr. Diner also currently serves on the boards of directors of a number of privately held companies. Mr. Diner holds a B.S. in Electrical Engineering from the Florida Institute of Technology.

Mr. Diner was selected to serve on our board of directors because of his operational and management experience in the technology and venture capital industries.

Edward Frank. Mr. Frank has served on our board of directors since July 2016. Since January 2014, Mr. Frank has served as co-founder and Chief Executive Officer of Cloud Parity, an early-stage voice of the customer startup. From May 2009 to October 2013, Mr. Frank served as Vice President, Macintosh Hardware Systems Engineering at Apple, Inc., a consumer technology company. Mr. Frank currently serves on the boards of directors of Analog Devices, Inc., a global semiconductor company, Cavium, Inc., a provider of highly integrated semiconductor products, and eASIC Corporation, a privately-held provider of ASIC semiconductor devices. He served as a director of Fusion-IO, Inc., a computer hardware and software systems company, from October 2013 until July 2014, when it was acquired by SanDisk Corporation, a flash data storage company. Mr. Frank holds a B.S. and M.S. in Electrical Engineering from Stanford University and a Ph.D. in Computer Science from Carnegie Mellon University.

Mr. Frank was selected to serve on our board of directors because of his understanding of the communications and hardware technology markets and his extensive executive leadership experience.

Edwin B. Hooper III. Mr. Hooper has served on our board of directors since October 2014. Since August 2012, Mr. Hooper has served as a founder and managing partner of Centerview Capital Technology Fund (Delaware), L.P., a private investment firm. From February 1998 to July 2012, Mr. Hooper held multiple roles at Cisco Systems, Inc., a producer of networking equipment, including serving as Senior Vice President and Chief Strategy Officer. Mr. Hooper also currently serves on the boards of directors of a number of privately held companies. Mr. Hooper holds a B.A. in International Affairs from the University of Colorado Boulder, and an M.B.A. from the University of Virginia Darden Graduate School of Business Administration.

Mr. Hooper was selected to serve on our board of directors because of his experience in the wireless and networking industry and because of his strategy and business expertise.

Harold Hughes. Mr. Hughes has served on our board of directors since October 2014. From March 2014 to October 2015, Mr. Hughes has served as the Chief Executive Officer of Manutius IP, Inc., a patent solutions company. Mr. Hughes served as - 78 - the Chief Executive Officer and President at Rambus Inc., a semiconductor and IP products company, from January 2005 to June 2012 and served on the board of directors from June 2003 to April 2013. Mr. Hughes served on the board of directors of Planar Systems Inc., a display and digital signage technology company, from February 2014 until it was acquired by Leyard American Corporation in November 2015. Mr. Hughes holds a B.A. in Liberal Arts from the University of Wisconsin and an M.B.A. from the University of Michigan.

Mr. Hughes was selected to serve on our board of directors because of his significant business leadership experience in the semiconductor industry.

Jack Lazar. Mr. Lazar has served on our board of directors since July 2016. Since March 2016, Mr. Lazar has been an independent business and financial consultant. From January 2014 to March 2016, Mr. Lazar served as the Chief Financial Officer at GoPro, Inc., a provider of wearable and mountable capture devices. From January 2013 to January 2014, he was an independent business and financial consultant. From May 2011 to January 2013, Mr. Lazar served as Senior Vice President, Corporate Development and General Manager of Qualcomm Atheros, Inc., a developer of communications semiconductor solutions. From September 2003 until it was acquired by Qualcomm in May 2011, Mr. Lazar served in various positions at Atheros Communications, Inc., a provider of communications semiconductor solutions, most recently as Senior Vice President of Corporate Development, Chief Financial Officer and Secretary. Mr. Lazar has served on the board of directors of Silicon Laboratories Inc., a semiconductor company, since April 2013 and has served on the board of directors of TubeMogul, Inc., an enterprise software company for digital branding, since October 2013. Mr. Lazar is a certified public accountant (inactive) and holds a B.S. in Commerce with an emphasis in Accounting from Santa Clara University.

Mr. Lazar was selected to serve on our board of directors because of his strong financial and operational expertise gained from his experience as a technology company executive and consultant.

John Scull. Mr. Scull has served as a member of our board of directors since November 2014. Mr. Scull co-founded Southern Cross Venture Partners, a technology venture capital firm, and has served as a managing director of Southern Cross Venture Partners since August 2006. Mr. Scull currently serves on the board of directors of a number of privately held companies. Mr. Scull holds a B.B.A. in Economics from the University of Oklahoma, and an M.B.A. from Harvard University.

Mr. Scull was selected to serve on our board of directors because of his extensive experience in the venture capital industry and service on the boards of directors of software companies.

Mark Stevens. Mr. Stevens has served on our board of directors since July 2016. Mr. Stevens has served as the managing partner of S-Cubed Capital, a private family office investment firm, since April 2012 and has served as a special limited partner of Sequoia Capital, a venture capital investment firm, since April 2012. From March 1993 to April 2012, Mr. Stevens served as a managing partner of Sequoia Capital, where he had been an associate for the preceding four years. From December 2006 to October 2012, Mr. Stevens served as a member of the board of directors of Alpha and Omega Semiconductor Limited, a semiconductor technology company. Currently, Mr. Stevens serves as a director of NVIDIA Corporation, a graphics processor company. Mr. Stevens holds a B.S. in Electrical Engineering, a B.A. in Economics and an M.S. degree in Computer Engineering from the University of Southern California and an M.B.A. from Harvard Business School.

Mr. Stevens was selected to serve on our board of directors because of his extensive experience in the venture capital and semiconductor industries.

Lip-Bu Tan. Mr. Tan has served as a member of our board of directors since June 2015. Since 1987, Mr. Tan has served as the founder and Chairman of Walden International, an international venture capital firm. He has also served as President and Chief Executive Officer of Cadence Design Systems, Inc., an electronic design automation software and engineering services company, since January 2009. Mr. Tan currently serves on the boards of directors of Cadence Design Systems, Inc., Hewlett Packard Enterprise, an information technology enterprise company, Ambarella, Inc., a developer of low-power, HD and Ultra HD video compression and image processing semiconductors, and Semiconductor Manufacturing International Corporation, a semiconductor manufacturing company. He previously served on the board of directors of Inphi Corporation, a semiconductor corporation, from 2002 to 2012, Flextronics International Ltd. from 2003 to 2012, and SINA Corporation from 1999 to 2015. Mr. Tan holds a B.S. in physics from Nanyang University in Singapore, an M.S. in nuclear engineering from the Massachusetts Institute of Technology, and an M.B.A. from the University of San Francisco.



Mr. Tan was selected to serve on our board of directors because of his extensive management and operational experience in the electronic design and semiconductor industries, and as a current and former board member of a number of technology companies, as well as his expertise in international operations and corporate governance.

Each executive officer serves at the discretion of our board of directors and holds office until his successor is duly elected and qualified or until his earlier resignation or removal. There are no family relationships among any of our directors or executive officers.

### Code of Business Conduct and Ethics

We have adopted a code of business conduct and ethics that applies to all of our employees, officers and directors, including our Chief Executive Officer, Chief Financial Officer and other executive and senior financial officers, and a code of ethics applicable to our Chief Executive Officer, Chief Financial Officer and other senior financial officers. The full text of our code of business conduct and ethics will be posted on the investor relations page on our website. We intend to disclose any amendments to our code of business conduct and ethics, or waivers of its requirements, on our website or in filings under the Exchange Act.

### Board of Directors

Our business and affairs are managed under the direction of our board of directors. Our board of directors consists of 12 board seats, two of which are currently vacant. Of the 10 directors currently serving on our board of directors, nine qualify as "independent" under the listing standards of the . Pursuant to our current certificate of incorporation and amended and restated voting agreement, our current directors were elected as follows:

- Sam Heidari was elected as the designee of holders of our common stock;
- Mark Stevens was elected as a designee of holders of our Series A convertible preferred stock;
- Fahri Diner was elected as the designee of holders of our Series B convertible preferred stock;
- John Scull was elected as the designee of holders of our Series C convertible preferred stock;
- Dmitry Akhanov was elected as the designee of holders of our Series F-1 convertible preferred stock;
- Edwin B. Hooper III was elected as the designee of holders of our Series G convertible preferred stock; and
- Edward Frank, Harold Hughes, Jack Lazar and Lip-Bu Tan were elected as the mutual designees of the holders of our common stock and preferred stock, voting together as a single class, subject to the approval of our board of directors.

Pursuant to our amended and restated voting agreement, the holders of Series A convertible preferred stock are allowed to elect one additional board member to our board of directors and the holders of Series E convertible preferred stock are allowed to elect one member to our board of directors. The provisions of our amended and restated voting agreement relating to the election of our directors will terminate and the provisions of our current certificate of incorporation by which our directors were elected will be amended and restated in connection with this offering. Mr. Akhanov plans to resign from our board of directors, effective upon the effective date of the registration statement of which this prospectus forms a part. As a result, our board will be comprised of nine directors effective as of such date. After the completion of this offering, the number of directors will be fixed by our board of directors, subject to the terms of our amended and restated certificate of incorporation and amended and restated bylaws that will become effective immediately prior to the completion of this offering. Each of our current directors will continue to serve as a director until the election and qualification of his successor, or until his earlier death, resignation or removal.



### Classified Board of Directors

Our amended and restated certificate of incorporation that will become effective immediately prior to the completion of this offering will provide that, upon the completion of this offering, our board of directors will be divided into three classes with staggered three-year terms. Only one class of directors will be elected at each annual meeting of stockholders, with the other classes continuing for the remainder of their respective three-year terms. Our current directors will be divided among the three classes as follows:

- The Class I directors will be Edward Frank, Sam Heidari and Harold Hughes, and their terms will expire at the annual meeting of stockholders to be held in 2017;
- The Class II directors will be Fahri Diner, Ned Hooper and John Scull, and their terms will expire at the annual meeting of stockholders to be held in 2018; and

- The Class III directors will be Jack Lazar, Mark Stevens and Lip-Bu Tan, and their terms will expire at the annual meeting of stockholders to be held in 2019.

Each director's term will continue until the election and qualification of his successor, or his earlier death, resignation or removal. Any increase or decrease in the authorized number of directors will be distributed among the three classes so that, as nearly as possible, each class will consist of one-third of our directors.

This classification of our board of directors may have the effect of delaying or preventing changes in control of our company.

### Director Independence

Our board of directors has undertaken a review of the independence of each director. Based on information provided by each director concerning his background, employment and affiliations, our board of directors has determined that none of Messrs. Akhanov, Diner, Frank, Hooper, Hughes, Lazar, Scull, Stevens and Tan has relationships that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is "independent" as that term is defined under the listing standards of the . In making these determinations, our board of directors considered the current and prior relationships that each non-employee director has with our company and all other facts and circumstances our board of directors deemed relevant in determining their independence, including the beneficial ownership of our capital stock by each non-employee director, and the transactions involving them described in the section titled "Certain Relationships and Related Party Transactions."

### Lead Independent Director

Our board of directors intends to adopt corporate governance guidelines that will provide that one of our independent directors should serve as our Lead Independent Director at any time when our Chief Executive Officer serves as the Chairman of our board of directors or if the Chairman is not otherwise independent. Because Sam Heidari is our Chairman and is not an "independent" director as defined in the listing standards of the , our board of directors has appointed Lip-Bu Tan to serve as our Lead Independent Director. As Lead Independent Director, Mr. Tan will preside over periodic meetings of our independent directors, serve as a liaison between our Chairman and our independent directors and perform such additional duties as our board of directors may otherwise determine and delegate.

### Committees of Our Board of Directors

Our board of directors has established an audit committee, a compensation committee and a nominating and corporate governance committee. The composition and responsibilities of each of the committees of our board of directors is described below. Members serve on these committees until their resignation or until otherwise determined by our board of directors.



### Audit Committee

Our audit committee is comprised of Messrs. Akhanov, Hughes, Lazar and Stevens, each of whom satisfies the requirements for independence and financial literacy under the applicable rules and regulations of the SEC and listing standards of the . Upon the effectiveness of the registration statement of which this prospectus forms a part, our audit committee will be comprised of Messrs. Hughes, Lazar and Stevens. Mr. Hughes serves as the chair of our audit committee, qualifies as an "audit committee financial expert" as defined in the rules of the SEC, and satisfies the financial sophistication requirements under the listing standards of the . Following the completion of this offering, our audit committee will, among other things, be responsible for:

- selecting a qualified firm to serve as the independent registered public accounting firm to audit our financial statements;

- helping to ensure the independence and performance of the independent registered public accounting firm;
- discussing the scope and results of the audit with the independent registered public accounting firm, and reviewing, with management and the independent registered public accounting firm, our interim and year-end results of operations;
- developing procedures for employees to submit concerns anonymously about questionable accounting or audit matters;
- reviewing our policies on risk assessment and risk management;
- reviewing related party transactions; and
- approving or, as required, pre-approving, all audit and all permissible non-audit services, other than de minimis non-audit services, to be performed by the independent registered public accounting firm.

Upon completion of this offering, our audit committee will operate under a written charter that satisfies the applicable rules and regulations of the SEC and the listing standards of the .

**Compensation Committee**

Our compensation committee is comprised of Messrs. Diner, Frank, Hughes and Stevens, each of whom satisfies the requirements for independence under the applicable rules and regulations of the SEC and listing standards of the . Upon the effectiveness of the registration statement of which this prospectus forms a part, our compensation committee will be comprised of Messrs. Diner, Frank and Stevens. Mr. Diner serves as the chair of our compensation committee. Each member of our compensation committee is also a non-employee director, as defined pursuant to Rule 16b-3 promulgated under the Exchange Act, and an outside director, as defined pursuant to Section 162(m) of the Internal Revenue Code, or the Code. Upon the completion of this offering, our compensation committee will, among other things, be responsible for:

- reviewing, approving and determining, or making recommendations to our board of directors regarding, the compensation of our executive officers;
- administering our equity compensation plans;
- reviewing, approving and making recommendations to our board of directors regarding incentive compensation and equity compensation plans; and
- establishing and reviewing general policies relating to compensation and benefits of our employees.

Upon completion of this offering, our compensation committee will operate under a written charter that satisfies the applicable rules and regulations of the SEC and the listing standards of the .



**Nominating and Corporate Governance Committee**

Our nominating and corporate governance committee is comprised of Messrs. Hooper, Lazar, Scull and Tan, each of whom satisfies the requirements for independence under the applicable rules and regulations of the SEC and listing standards of the . Upon the effectiveness of the registration statement of which this prospectus forms a part, the nominating and corporate governance committee will be comprised of Messrs. Hooper, Lazar and Scull. Mr. Hooper serves as the chair of our nominating and corporate governance committee. Following the completion of this offering, our nominating and corporate governance committee will, among other things, be responsible for:

- identifying, evaluating and selecting, or making recommendations to our board of directors regarding, nominees for election to our board of directors and its committees;
- evaluating the performance of our board of directors and of individual directors;
- considering and making recommendations to our board of directors regarding the composition of our board of directors and its committees;
- reviewing developments in corporate governance practices;
- evaluating the adequacy of our corporate governance practices and reporting; and
- developing and making recommendations to our board of directors regarding corporate governance guidelines and matters.

Upon the completion of this offering, our nominating and corporate governance committee will operate under a written charter that satisfies the applicable listing standards of the .

**Compensation Committee Interlocks and Insider Participation**

None of the members of our compensation committee is or has been an officer or employee of our company. None of our executive officers currently serves, or in the past year has served, as a member of the board of directors or compensation committee (or other board committee performing equivalent functions) of any entity that has one or more of its executive officers serving on our board of directors or compensation committee.

Mr. Diner, a member of our compensation committee, is a Managing Director at Sigma Partners. In August 2014, entities affiliated with Sigma Partners purchased an aggregate of 3,694,101 shares of our Series G convertible preferred stock from us at a purchase price of $0.27141 per share, for an aggregate purchase price of $1,002,616. The sales of our Series G convertible preferred stock to entities affiliated with Sigma Partners were made in connection with our Series G convertible preferred stock financing and on substantially the same terms and conditions as all other sales of our Series G convertible preferred stock by us in such financing. Entities affiliated with Sigma Partners are also party to our investors' rights agreement, right of first refusal and co-sale agreement and voting agreement.

In June 2016, we entered into offer letters with Messrs. Frank and Stevens, members of our compensation committee, in connection with their appointment to our board of directors. Each offer letter provides for the grant of an option to purchase 3,600,000 shares of our common stock, which options are subject to vesting over 36 months and full acceleration of vesting upon a change of control of our company. In addition, we agreed to reimburse each of the directors for reasonable travel expenses incurred in connection with attendance at meetings of our board of directors, and to indemnify each director in his capacity as a director.

See the section titled "Certain Relationships and Related Party Transactions" for further description of these transactions.

**Non-Employee Director Compensation**

During 2015, our non-employee directors did not receive any cash, equity or other compensation for their service on our board of directors and committees of our board of directors.



As of December 27, 2015, Harold Hughes, one of our non-employee directors, held an option to purchase a total of 3,200,000 shares of our common stock. The shares subject to the option vest in 48 equal monthly installments commencing on October 16, 2014 and are subject to full acceleration of vesting upon a change of control of our company.

We entered into offer letters with each of Edward Frank, Jack Lazar and Mark Stevens in connection with their appointment to our board of directors in July 2016. See the section titled "Certain Relationships and Related Party Transactions" for additional information about these offer letters.

Directors who are also our employees receive no additional compensation for their service as directors. During 2015, Mr. Heidari was our only employee director. See the section titled "Executive Compensation" for additional information about Mr. Heidari's compensation.

### Outside Director Compensation Policy

In September 2016, our board of directors adopted our outside director compensation policy. Members of our board of directors who are not employees are eligible for compensation under our outside director compensation policy. Our outside director compensation policy is effective as of the effective date of the registration statement of which this prospectus forms a part. Under our outside director compensation policy, after the completion of this offering, each non-employee director will be eligible to receive compensation for his or her service consisting of annual cash retainers and equity awards as described below. Our board of directors and our compensation committee will have the discretion to revise non-employee director compensation as they deem necessary or appropriate.

Cash Compensation. Under our outside director compensation policy, all non-employee directors will be entitled to receive the following cash compensation for their services following the completion of this offering:

- $35,000 per year for service as a board member
- $20,000 per year additionally for service as lead independent director of the board
- $15,000 per year additionally for service as chair of the audit committee
- $7,500 per year additionally for service as an audit committee member other than chair
- $10,000 per year additionally for service as chair of the compensation committee
- $5,000 per year additionally for service as a compensation committee member other than chair
- $5,000 per year additionally for service as chair of the nominating and corporate governance committee
- $2,500 per year additional for services as a nominating and corporate governance committee member other than chair

All cash payments to non-employee directors will be paid quarterly in arrears on a prorated basis.

Equity Compensation. Following the completion of this offering, nondiscretionary, automatic grants of restricted stock units will be made to our non-employee directors under our outside director compensation policy.

- Initial Award. Each person who first becomes a non-employee director after the completion of this offering will be granted a restricted stock unit award having a grant date value equal to $270,000, or the Initial Award. The Initial Award will be granted on the date on which such person first becomes a non-employee director. The Initial Award will vest as to one-third of the shares subject to such Initial Award on the one-year anniversary of the date of grant and as to one-third of the shares subject to such Initial Award on each annual anniversary of the date of grant thereafter (and if there is no corresponding day, on the last day of the month), subject to the individual's continued service as a director through the applicable vesting date. A director who is an employee who ceases to be an employee director but who remains a director will not receive an Initial Award.
- Annual Awards. On the date of each annual meeting of stockholders beginning with the first annual meeting following the completion of this offering, each non-employee director, if he or she has served as a director for at

least the preceding six months, automatically will be granted a restricted stock unit award having a grant date value equal to $135,000, or the Annual Award. Each Annual Award will vest as to 100% of the shares subject thereto upon the earlier of the one-year anniversary of the grant date or the day prior to our next annual meeting occurring after the grant date, subject to the individual's continued service as a director through the applicable vesting date.

The value of all equity awards granted under our outside director compensation policy will be determined using the fair market value of the shares subject thereto or such other methodology as our board of directors or our compensation committee may determine prior to the grant of the awards becoming effective, as applicable.

Non-employee directors also are eligible to receive all types of equity awards (except incentive stock options) under our 2016 Plan, including discretionary awards not covered under our outside director compensation policy.

Our 2016 Plan, as described below under the section titled "Executive Compensation—Employee Benefit and Stock Plans," provides that in the event of a change in control, as defined in our 2016 Plan, each outstanding equity award granted under our 2016 Plan that is held by a non-employee director will fully vest, all restrictions on the shares subject to such award will lapse, and with respect to awards with performance-based vesting, all performance goals or other vesting criteria will be deemed achieved at 100% of target levels, and all of the shares subject to such award will become fully exercisable, if applicable, unless specifically provided otherwise under the applicable award agreement or other written agreement with the director.



# *Executive Compensation*

# *Executive Compensation*

**Summary Compensation Table**

The following table provides information regarding the total compensation for services rendered in all capacities that was earned by each individual who served as our principal executive officer at any time in 2015, and our two other most highly compensated executive officers who were serving as executive officers as of December 27, 2015. These individuals are our named executive officers for 2015.

| Name and Principal Position | Year | Salary ($) | Bonus ($) | Stock Awards ($) | Option Awards ($)(1) | Non-Equity Incentive Plan Compensation ($)(2) | Nonqualified Deferred Compensation Earnings ($) | All Other Compensation ($) | Total ($) |
|---|---|---|---|---|---|---|---|---|---|
| Sam Heidari, Chairman and Chief Executive Officer | 2015 | $300,000 | $— | $— | $— | $100,000 | $— | $— | $400,000 |
| Lionel Bonnot, Senior Vice President, Marketing and Business Development | 2015 | $250,000 | $— | $— | $24,835 | $70,000 | $— | $— | $344,835 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| David Carroll, Senior Vice President, Worldwide Sales | 2015 | $220,000 | $— | $— | $9,313 | $105,000 | $— | $— | $334,313 |

_____

(1) The amounts disclosed represent the grant date fair value of the stock options granted to the named executive officers during 2015 as computed in accordance with FASB ASC Topic 718. The assumptions used in calculating the grant date fair value of the stock options reported in this column are set forth in the notes to our consolidated financial statements included in this prospectus.

(2) The amounts included in this column represent cash incentives earned under our 2015 bonus program. See "—Non-Equity Incentive Plan Compensation" section below for more details.

**Named Executive Officer Employment Agreements**

**Sam Heidari**

We entered into an employment letter with Sam Heidari, our Chairman and Chief Executive Officer, dated May 19, 2009, which letter was amended on June 2, 2010 and June 1, 2012. The employment letter has no specific term and provides that Mr. Heidari is an at-will employee. Mr. Heidari's current annual base salary is $330,000.

Mr. Heidari's employment letter provides that if Mr. Heidari's employment is terminated by us without "cause" (as defined in the employment letter) or Mr. Heidari's employment terminates due to Mr. Heidari's resignation for "good reason" (as defined in the employment letter), then, subject to Mr. Heidari's timely execution and non-revocation of a release of claims in a form prescribed by us, Mr. Heidari will receive the following benefits:

- A lump sum severance payment equal to six months of his then-current base salary;
- The ability to exercise each of his then-outstanding and vested stock options until the earlier of (x) three years from his termination date, (y) the original term / expiration date of each option, or (z) the date required by the terms of the equity plan under which such stock option was granted; and
- If the termination is without cause in connection with Mr. Heidari's removal by us from the Chief Executive Officer position or is a resignation for good reason, 25% of the then-unvested shares subject to Mr. Heidari's outstanding equity awards will become fully vested.

Mr. Heidari also is expected to enter into a change of control severance agreement with us under which he will be eligible to receive enhanced severance benefits in the event of an involuntary termination of his employment with us in connection with a change of control. Please see "—Change of Control Severance Agreements" below for more details.



**Lionel Bonnot**

We entered into an employment letter with Lionel Bonnot, our Senior Vice President, Marketing and Business Development, dated October 30, 2007, which letter was amended on December 23, 2008, June 14, 2010, and August 31, 2012. The employment letter has no specific term and provides that Mr. Bonnot is an at-will employee. Mr. Bonnot's current annual base salary is $260,000. Mr. Bonnot is also eligible to earn up to $70,000 in annual performance bonuses based on his achievement of certain quarterly goals and which are payable quarterly.

Mr. Bonnot's employment letter also provides that if Mr. Bonnot's employment is terminated by us without "cause" (as defined in the employment letter), but excluding any termination by reason or his death or disability, or Mr. Bonnot's employment terminates due to Mr. Bonnot's resignation for "good reason" (as defined in the employment letter), then,

subject to Mr. Bonnot's timely execution and non-revocation of a release of claims in a form prescribed by us, Mr. Bonnot will receive the following benefits:

- A lump sum severance payment equal to six months of his then-current base salary;
- A lump sum severance payment of $75,000;
- 50% of shares subject to any then-outstanding stock options will become fully vested; and
- Any vested stock options will remain exercisable until the earlier of (x) 24 months following his termination date, (y) the original term / expiration date of each option.

Mr. Bonnot's employment letter also provides that if Mr. Bonnot resigns from his employment at any time for any reason that does not constitute "good reason," any vested stock options will remain exercisable until the earlier of (x) 12 months following his termination date or (y) the original term / expiration date of each option.

**David Carroll**

We entered into an employment letter with David Carroll, our Senior Vice President, Worldwide Sales, dated December 20, 2012. The employment letter has no specific term and provides that Mr. Carroll is an at-will employee. Mr. Carroll's current base salary is $230,000. Mr. Carroll is also eligible to receive a maximum of $105,000 annually in commissions based on his achievement of certain quarterly goals and which commissions are paid quarterly.

The employment letter provides that if Mr. Carroll's employment is terminated by us without cause, then, Mr. Carroll will receive a lump sum severance payment equal to six months of his then-current base salary.

Mr. Carroll also is expected to enter into a change of control severance agreement with us under which he will be eligible to receive enhanced severance benefits in the event of an involuntary termination of his employment with us in connection with a change of control. Please see "—Change of Control Severance Agreements" below for more details.

**Change of Control Severance Agreements**

We expect each of Messrs. Heidari and Carroll to enter into a change of control severance agreement with us prior to the completion of this offering. These agreements will have a five-year term from the agreement date and will renew automatically for additional, one year terms unless either party provides the other party with written notice of nonrenewal at least six months prior to the date of automatic renewal. Under this agreement, if, within the period beginning three months prior to and ending 12 months following a "change of control" (as such defined terms are defined in such agreement), the executive officer's employment with us is terminated by us for reasons other than "cause" or, with respect to Mr. Heidari only, by him for "good reason", then, subject to the affected executive's timely execution and non-revocation of a release of claims in a form prescribed by us, such executive officer will receive the following benefits:

- A lump sum severance payment equal to 12 months of his then-current base salary;
- For Mr. Heidari only, a lump sum severance payment equal to 100% of his target bonus for the year of termination;
- Company-paid premiums for continued health care coverage under COBRA for up to 12 months for the executive officer and his eligible depends or, if the Company determines that it cannot provide the COBRA premium benefits



without potentially violating applicable laws, a lump sum payment equal to 12 months of COBRA premiums for the executive officer and his eligible dependents; and

- 100% of shares subject to all outstanding equity awards with time-based vesting will become fully vested, and, for any outstanding equity awards with performance-based vesting, the performance metrics will be deemed achieved at target levels.

The change of control severance agreements will control with respect to terminations of employment occurring during the period beginning on a change of control and ending 12 months following a change of control. Prior to a change of control, the severance provisions of the applicable executive officer's employment agreement will apply in accordance with their terms. If an executive officer receives severance payment or benefits under his employment agreement and a change of control occurs during the three-month period following his termination of employment entitling him to severance payments or benefits under this agreement, the executive officer will stop receiving any severance payments or benefits under his employment agreement and the payments and benefits previously paid under that agreement will offset the corresponding payments or benefits under this agreement.

In the event any of the payments provided for under these agreements or otherwise payable to an executive officer would constitute "parachute payments" within the meaning of Section 280G of the Internal Revenue Code and could be subject to the related excise tax under Section 4999 of the Code, such executive officer would be entitled to receive either full payment of benefits or such lesser amount which would result in no portion of the benefits being subject to the excise tax, whichever results in the greater amount of after-tax benefits to him.

### Non-Equity Incentive Plan Compensation

Each named executive officer was awarded quarterly bonus amounts during 2015 based on attainment of corporate objectives that were established by our compensation committee at the beginning of each fiscal quarter, with input from our management team and, in the case of our named executive officers other than Mr. Heidari, individual objectives that were established by Mr. Heidari in consultation with the applicable named executive officer at the beginning of each fiscal quarter. The quarterly bonus amounts for Mr. Heidari were based 100% on achievement of the quarterly corporate objectives, as determined by the compensation committee. The quarterly bonus amounts for the other named executive officers were based 30% on achievement of the quarterly corporate objectives and 70% on achievement of the quarterly individual objectives. No named executive officer was eligible to receive greater than 100% of his quarterly target bonus amount.

The corporate objectives were comprised of key short-term and long-term goals of one or more facets of our business. The individual objectives were comprised of key metrics designed to measure each executive officer's functional contributions to achieving our key strategic goals or promoting other important facets of our business, and generally included one or more of the corporate objectives. The 2015 bonus program was informally overseen and approved by the compensation committee.

Following the end of each quarter, the compensation committee, with input from our management team, reviewed the achievement of the applicable corporate objectives for that quarter and determined the percentage of the corporate objectives component for that quarter to be paid out based on achievement against those objectives. Following the end of each quarter, Mr. Heidari reviewed the achievement of each named executive officer's individual objectives for that quarter and determined the percentage of the individual objectives component for that quarter to be paid out based on achievement against those objectives. The amounts in the Summary Compensation Table under the column "Non-Equity Incentive Plan Compensation" are based on the achievements under the 2015 bonus program.

### Pension Benefits and Non-qualified Deferred Compensation

We do not sponsor any pension plans for our employees, and none of our named executive officers participated in a non-qualified deferred compensation plan in 2015.

### Outstanding Equity Awards at 2015 Year-End

The following table sets forth information regarding outstanding stock options held by our named executive officers as of December 27, 2015:

| | Option Awards | | | | |
|---|---|---|---|---|---|
| Name | Grant Date | Number of Securities Underlying Unexercised Options (#) Exercisable (11) | Number of Securities Underlying Unexercised Options (#) Unexercisable | Option Exercise Price ($) | Option Expiration Date |
| Sam Heidari | 07/28/2009 | 1,500,000 | – | $0.05 | 07/28/2019 |
| | 05/18/2010 | 2,523,000 | – | $0.02 | 05/18/2020 |
| | 02/01/2011 | 2,977,000 | – | $0.02 | 02/01/2021 |
| | 10/07/2011 | 5,696,332 | – | $0.02 | 10/07/2021 |
| | 06/27/2012 (1) | 19,111,819 | 1,737,439 | $0.03 | 06/27/2022 |
| | 08/28/2013 (2) | 4,062,500 | 2,437,500 | $0.03 | 08/28/2023 |
| | 12/10/2014 (3) | 5,182,796 | 15,548,389 | $0.04 | 12/10/2024 |
| Lionel Bonnot | 01/29/2008 | 1,224,000 | – | $0.06 | 01/29/2018 |
| | 07/28/2009 | 300,000 | – | $0.05 | 07/28/2019 |
| | 05/18/2010 | 2,946,000 | – | $0.02 | 05/18/2020 |
| | 02/01/2011 | 1,730,000 | – | $0.02 | 02/01/2021 |
| | 10/07/2011 | 2,264,221 | – | $0.02 | 10/07/2021 |
| | 06/27/2012 (4) | 3,311,175 | 301,016 | $0.03 | 06/27/2022 |
| | 08/28/2013 (5) | 492,187 | 295,313 | $0.03 | 08/28/2023 |
| | 12/10/2014 (6) | 162,500 | 487,500 | $0.04 | 12/10/2024 |
| | 12/03/2015 (7) | – | 1,000,000 | $0.06 | 12/03/2025 |
| David Carroll | 02/05/2013 (8) | 7,810,125 | 2,900,904 | $0.03 | 02/05/2023 |
| | 12/10/2014 (9) | 75,000 | 225,000 | $0.04 | 12/10/2024 |
| | 12/03/2015 (10) | – | 375,000 | $0.06 | 12/03/2025 |

(1) One forty-eighth (1/48) of the shares subject to the option vest monthly commencing on April 26, 2012, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date.

(2) One forty-eighth (1/48) of the shares subject to the option vest monthly commencing on June 19, 2013, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date.

| | |
|---|---|
| (3) | One fourth (1/4) of the shares subject to the option vested on December 10, 2015, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date. |
| (4) | One forty-eighth (1/48) of the shares subject to the option vest monthly commencing on April 26, 2012, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date. |
| (5) | One forty-eighth (1/48) of the shares subject to the option vest monthly commencing on June 19, 2013, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date. |
| (6) | One fourth (1/4) of the shares subject to the option vested on December 10, 2015, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date. |
| (7) | One fourth (1/4) of the shares subject to the option shall vest on December 3, 2016, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date. |
| (8) | One fourth (1/4) of the shares subject to the option vested on January 7, 2014, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date. |
| (9) | One fourth (1/4) of the shares subject to the option vested on December 10, 2015, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date. |
| (10) | One fourth (1/4) of the shares subject to the option shall vest on December 3, 2016, and one forty-eighth (1/48) of the shares vest monthly thereafter, subject to continued service to us on each such vesting date. |
| (11) | Unless otherwise noted, shares subject to the stock option are vested in full. |



**Employee Benefit and Stock Plans**

**2016 Omnibus Equity Incentive Plan**

Prior to the completion of this offering, our board of directors intends to adopt, and we expect our stockholders will approve, our 2016 Omnibus Equity Incentive Plan, or our 2016 Plan. We expect that our 2016 Plan will be effective on the business day immediately prior to the effective date of the registration statement of which this prospectus forms a part. Our 2016 Plan will provide for the grant of incentive stock options, within the meaning of Section 422 of the Code, to our employees and any parent and subsidiary corporations' employees, and for the grant of nonstatutory stock options, restricted stock, restricted stock units, stock appreciation rights, performance units and performance shares to our employees, directors and consultants and our parent and subsidiary corporations' employees and consultants.

Authorized Shares. A total of shares of our common stock will be reserved for issuance pursuant to our 2016 Plan. In addition, the shares reserved for issuance under our 2016 Plan also will include (i) those shares reserved but unissued under our 2016 Equity Incentive Plan, or 2016 EIP, as of immediately prior to the termination of the 2016 EIP, and (ii) shares subject to awards under our 2016 EIP or 2006 Plan that, on or after the termination of the 2016 EIP, expire or terminate and shares previously issued pursuant to our 2016 EIP or 2006 Plan, as applicable, that, on or after the termination of the 2016 EIP, are forfeited or repurchased by us (provided that the maximum number of shares that may be added to our 2016 Plan pursuant to (i) and (ii) is shares). The number of shares available for issuance under our 2016 Plan will also include an annual increase on the first day of each fiscal year beginning on January 1, 2018, equal to the least of:

- shares;

- five percent (5%) of the outstanding shares of our common stock as of the last day of the immediately preceding fiscal year; or

- such other amount as our board of directors may determine.

If an award expires or becomes unexercisable without having been exercised in full, is surrendered pursuant to an exchange program, or, with respect to restricted stock, restricted stock units, performance units or performance shares, is forfeited to or repurchased due to failure to vest, the unpurchased shares (or for awards other than stock options or stock appreciation rights, the forfeited or repurchased shares) will become available for future grant or sale under the 2016 Plan. With respect to stock appreciation rights, only the net shares actually issued will cease to be available under the 2016 Plan and all remaining shares under stock appreciation rights will remain available for future grant or sale under the 2016 Plan. Shares that have actually been issued under the 2016 Plan under any award will not be returned to the 2016 Plan; provided, however, that if shares issued pursuant to awards of restricted stock, restricted stock units, performance shares, or performance units are repurchased or forfeited, such shares will become available for future grant under the 2016 Plan. Shares used to pay the exercise price of an award or satisfy the tax withholding obligations related to an award will become available for future grant or sale under the 2016 Plan. To the extent an award is paid out in cash rather than shares, such cash payment will not result in a reduction in the number of shares available for issuance under the 2016 Plan.

Plan Administration. Our board of directors or one or more committees appointed by our board of directors will administer our 2016 Plan. The compensation committee of our board of directors is expected to administer our 2016 Plan. In the case of awards intended to qualify as "performance-based compensation" within the meaning of Section 162(m) of the Code, the committee will consist of two or more "outside directors" within the meaning of Section 162(m) of the Code. In addition, if we determine it is desirable to qualify transactions under our 2016 Plan as exempt under Rule 16b-3 of the Exchange Act, such transactions will be structured to satisfy the requirements for exemption under Rule 16b-3. Subject to the provisions of our 2016 Plan, the administrator has the power to administer our 2016 Plan and make all determinations deemed necessary or advisable for administering the 2016 Plan, including but not limited to, the power to determine the fair market value of our common stock, select the service providers to whom awards may be granted, determine the number of shares covered by each award, approve forms of award agreements for use under the 2016 Plan, determine the terms and conditions of awards (including, but not limited to, the exercise price, the times or times at which the awards may be exercised, any vesting acceleration or waiver or forfeiture restrictions, and any restriction or limitation regarding any award or the shares relating thereto), construe and interpret the terms of our 2016 Plan and awards granted under it, to prescribe, amend, and rescind rules relating to our 2016 Plan, including creating sub-plans, and to modify or amend each award, including but not limited to the discretionary authority to extend the post-termination exercisability period of awards (provided that no option or stock appreciation right will be extended past its original - 90 - maximum term, and to allow a participant to defer the receipt of payment of cash or the delivery of shares that would otherwise be due to such participant under an award). The administrator also has the authority to allow participants the opportunity to transfer outstanding awards to a financial institution or other person or entity selected by the administrator and to institute an exchange program by which outstanding awards may be surrendered or cancelled in exchange for awards of the same type which may have a higher or lower exercise price and different terms, awards of a different type and/or cash, or by which the exercise price of an outstanding award is increased or reduced. The administrator's decisions, interpretations, and other actions are final and binding on all participants.

Stock Options. Stock options may be granted under our 2016 Plan. The exercise price of options granted under our 2016 Plan must at least be equal to the fair market value of our common stock on the date of grant. The term of an option may not exceed ten years. With respect to any participant who owns more than 10% of the voting power of all classes of our outstanding stock, the term of an incentive stock option granted to such participant must not exceed five years and the exercise price must equal at least 110% of the fair market value on the grant date. The administrator will determine the methods of payment of the exercise price of an option, which may include cash, shares or other property acceptable to

the administrator, as well as other types of consideration permitted by applicable law. After the termination of service of an employee, director or consultant, he or she may exercise his or her option for the period of time stated in his or her option agreement. In the absence of a specified time in an award agreement, if termination is due to death or disability, the option will remain exercisable for 12 months. In all other cases, in the absence of a specified time in an award agreement, the option will remain exercisable for three months following the termination of service. An option may not be exercised later than the expiration of its term. Subject to the provisions of our 2016 Plan, the administrator determines the other terms of options.

Stock Appreciation Rights. Stock appreciation rights may be granted under our 2016 Plan. Stock appreciation rights allow the recipient to receive the appreciation in the fair market value of our common stock between the exercise date and the date of grant. Stock appreciation rights may not have a term exceeding ten years. After the termination of service of an employee, director or consultant, he or she may exercise his or her stock appreciation right for the period of time stated in his or her stock appreciation rights agreement. In the absence of a specified time in an award agreement, if termination is due to death or disability, the stock appreciation rights will remain exercisable for 12 months. In all other cases, in the absence of a specified time in an award agreement, the stock appreciation rights will remain exercisable for three months following the termination of service. However, in no event may a stock appreciation right be exercised later than the expiration of its term. Subject to the provisions of our 2016 Plan, the administrator determines the other terms of stock appreciation rights, including when such rights become exercisable and whether to pay any increased appreciation in cash or with shares of our common stock, or a combination thereof, except that the per share exercise price for the shares to be issued pursuant to the exercise of a stock appreciation right will be no less than 100% of the fair market value per share on the date of grant.

Restricted Stock. Restricted stock may be granted under our 2016 Plan. Restricted stock awards are grants of shares of our common stock that vest in accordance with terms and conditions established by the administrator. The administrator will determine the number of shares of restricted stock granted to any employee, director or consultant and, subject to the provisions of our 2016 Plan, will determine the terms and conditions of such awards. The administrator may impose whatever conditions to vesting it determines to be appropriate (for example, the administrator may set restrictions based on the achievement of specific performance goals or continued service to us); provided, however, that the administrator, in its sole discretion, may accelerate the time at which any restrictions will lapse or be removed. Recipients of restricted stock awards generally will have voting and dividend rights with respect to such shares upon grant without regard to vesting, unless the administrator provides otherwise. Shares of restricted stock that do not vest are subject to our right of repurchase or forfeiture.

RSUs. RSUs may be granted under our 2016 Plan. RSUs are bookkeeping entries representing an amount equal to the fair market value of one share of our common stock. Subject to the provisions of our 2016 Plan, the administrator determines the terms and conditions of RSUs, including the vesting criteria and the form and timing of payment. The administrator may set vesting criteria based upon the achievement of company-wide, divisional, business unit, or individual goals (including, but not limited to, continued employment or service), applicable federal or state securities laws, or any other basis determined by the administrator in its discretion. The administrator, in its sole discretion, may pay earned restricted stock units in the form of cash, in shares or in some combination thereof. Notwithstanding the foregoing, the administrator, in its sole discretion, may accelerate the time at which any restrictions will lapse or be removed.

Performance Units and Performance Shares. Performance units and performance shares may be granted under our 2016 Plan. Performance units and performance shares are awards that will result in a payment to a participant only if performance - 91 - goals established by the administrator are achieved or the awards otherwise vest. The administrator will establish performance objectives or other vesting criteria in its discretion, which, depending on the extent to which they are met, will determine the number and/or the value of performance units and performance shares to be paid out to participants. The administrator may set performance objectives based on the achievement of company-wide, divisional, business unit, or individual goals (including, but not limited to, continued employment or service), applicable federal or

state securities laws, or any other basis determined by the administrator in its discretion. After the grant of a performance unit or performance share, the administrator, in its sole discretion, may reduce or waive any performance criteria or other vesting provisions for such performance units or performance shares. Performance units shall have an initial dollar value established by the administrator on or prior to the grant date. Performance shares shall have an initial value equal to the fair market value of our common stock on the grant date. The administrator, in its sole discretion, may pay earned performance units or performance shares in the form of cash, in shares or in some combination thereof.

Outside Directors. Our 2016 Plan provides that all outside (non-employee) directors will be eligible to receive all types of awards (except for incentive stock options) under our 2016 Plan. Prior to the completion of this offering, we intend to implement a formal policy pursuant to which our outside directors will be eligible to receive equity awards under our 2016 Plan. In order to provide a maximum limit on the awards that can be made to our outside directors, our 2016 Plan provides that in any given fiscal year, an outside director will not be granted awards having a grant-date fair value greater than $810,000, but this limit is increased to $1,350,000 in connection with his or her initial service. The grant-date fair values will be determined according to GAAP. The maximum limits do not reflect the intended size of any potential grants or a commitment to make grants to our outside directors under our 2016 Plan in the future.

Non-Transferability of Awards. Unless the administrator provides otherwise, our 2016 Plan generally does not allow for the transfer of awards and only the recipient of an award may exercise an award during his or her lifetime. If the administrator makes an award transferrable, such award will contain such additional terms and conditions as the administrator deems appropriate.

Certain Adjustments. In the event of certain changes in our capitalization, to prevent diminution or enlargement of the benefits or potential benefits available under our 2016 Plan, the administrator will adjust the number and class of shares that may be delivered under our 2016 Plan and/or the number, class and price of shares covered by each outstanding award, and the numerical share limits set forth in our 2016 Plan.

Dissolution or Liquidation. In the event of our proposed liquidation or dissolution, the administrator will notify participants as soon as practicable and all awards will terminate immediately prior to the consummation of such proposed transaction.

Merger or Change in Control. Our 2016 Plan provides that in the event of a merger or change in control, as defined under our 2016 Plan, each outstanding award will be treated as the administrator determines, without a participant's consent. The administrator is not required to treat all awards, all awards held by a participant, or all awards of the same type, similarly.

In the event that a successor corporation or its parent or subsidiary does not assume or substitute an equivalent award for any outstanding award, then such award will fully vest, all restrictions on such award will lapse, all performance goals or other vesting criteria applicable to such award will be deemed achieved at 100% of target levels and such award will become fully exercisable, if applicable, for a specified period prior to the transaction, unless specifically provided for otherwise under the applicable award agreement or other written agreement with the participant. The award will then terminate upon the expiration of the specified period of time. If an option or stock appreciation right is not assumed or substituted, the administrator will notify the participant in writing or electronically that such option or stock appreciation right will be exercisable for a period of time determined by the administrator in its sole discretion and the option or stock appreciation right will terminate upon the expiration of such period.

In the event of a change in control, each outstanding equity award granted under our 2016 Plan that is held by a non-employee director will fully vest, all restrictions on the shares subject to such award will lapse, and with respect to awards with performance-based vesting, all performance goals or other vesting criteria will be deemed achieved at 100% of target levels, and all of the shares subject to such awards will become fully exercisable, if applicable, unless specifically provided otherwise under the applicable award agreement or other written agreement with the director.

Amendment; Termination. The administrator has the authority to amend, suspend or terminate our 2016 Plan provided such action does not impair the existing rights of any participant. Our 2016 Plan automatically will terminate in 2026, unless we terminate it sooner.

**2016 Employee Stock Purchase Plan**

Prior to the effectiveness of this offering, our board of directors intends to adopt, and we expect our stockholders will approve, our Employee Stock Purchase Plan, or the ESPP. Our ESPP will be effective on the effective date it is adopted by our board. We believe that allowing our employees to participate in our ESPP provides them with a further incentive towards ensuring our success and accomplishing our corporate goals.

Authorized Shares. A total of shares of our common stock will be available for sale under our ESPP. The number of shares of our common stock that will be available for sale under our ESPP also includes an annual increase on the first day of each fiscal year beginning on January 1, 2018, equal to the least of:

- shares;

- two percent (2)% of the outstanding shares of our common stock as of the last day of the immediately preceding fiscal year; or

- such other amount as the administrator may determine.

Plan Administration. Our board of directors, or a committee appointed by our board of directors will administer our ESPP, and have full but non-exclusive authority to interpret the terms of our ESPP and determine eligibility to participate, subject to the conditions of our ESPP, as described below. We expect our compensation committee to administer our ESPP. The administrator will have full and exclusive discretionary authority to construe, interpret, and apply the terms of the ESPP, to designate separate offerings under the ESPP, to designate our subsidiaries and affiliates as participating in the ESPP, to determine eligibility, to adjudicate all disputed claims filed under the ESPP and to establish procedures that it deems necessary for the administration of the ESPP.

Eligibility. Generally, all of our employees will be eligible to participate if they are employed by us, or any participating subsidiary, for at least 20 hours per week and more than five months in any calendar year. The administrator, in its discretion, may, prior to an enrollment date for all options granted on such enrollment date in an offering, determine that an employee who (i) has not completed at least two years of service (or a lesser period of time determined by the administrator) since his or her last hire date, (ii) customarily works not more than 20 hours per week (or a lesser period of time determined by the administrator), (iii) customarily works not more than five months per calendar year (or a lesser period of time determined by the administrator), (iv) is a highly compensated employee within the meaning of Section 414(q) of the Code, or (v) is a highly compensated employee within the meaning of Section 414(q) of the Code with compensation above a certain level or is an officer or subject to disclosure requirements under Section 16(a) of the Exchange Act, is or is not eligible to participate in such offering period.

However, an employee may not be granted rights to purchase shares of our common stock under our ESPP if such employee:

- immediately after the grant would own capital stock possessing 5% or more of the total combined voting power or value of all classes of our capital stock; or

- hold rights to purchase shares of our common stock under all of our employee stock purchase plans that accrue at a rate that exceeds $25,000 worth of shares of our common stock for each calendar year in which such rights under our ESPP is outstanding at any time.

Offering Periods. Our ESPP includes a component that allows us to make offerings intended to qualify under Section 423 of the Code and a component that allows us to make offerings not intended to qualify under Section 423 of the Code to designated companies, as described in our ESPP. Our ESPP provides for consecutive, overlapping twelve-month offering periods. The offering periods are scheduled to start on the first trading day on or after May 15 and November 15 of each year, except for the first offering period, which will commence on the first trading day on or after the effective date of the registration statement of which this prospectus forms a part and will end on the first trading day on or after November 15, 2017, and the second offering period, which will commence on the first trading day on or after May 15, 2017. Each offering period will include purchase - 93 - periods, which will be the approximately six-month period commencing with one exercise date and ending with the next exercise date; provided, however, that the first exercise date under the ESPP will be the first trading day on or after May 15, 2017.

Contributions. Our ESPP permits participants to purchase shares of our common stock through payroll deductions of up to twenty percent (20%) of their eligible compensation. A participant may purchase a maximum of shares of our common stock during a purchase period.

Exercise of Purchase Right. Amounts deducted and accumulated by the participant are used to purchase shares of our common stock at the end of each six-month purchase period. The purchase price of the shares will be eighty-five percent (85%) of the lower of the fair market value of our common stock on the first trading day of each offering period or on the exercise date. If the fair market value of our common stock on the exercise date is less than the fair market value on the first trading day of the offering period, participants will be withdrawn from the current offering period following their purchase of shares of our common stock on the purchase date and will be automatically re-enrolled in a new offering period. Participants may end their participation at any time during an offering period and will be paid their accrued contributions that have not yet been used to purchase shares of our common stock. Participation ends automatically upon termination of employment with us.

Non-Transferability. A participant may not transfer rights granted under our ESPP. If our compensation committee permits the transfer of rights, it may only be done by will, the laws of descent and distribution or as otherwise provided under our ESPP.

Merger or Change in Control. Our ESPP provides that in the event of a merger or change in control, as defined under our ESPP, a successor corporation may assume or substitute each outstanding purchase right. If the successor corporation refuses to assume or substitute for the outstanding purchase right, the offering period then in progress will be shortened, and a new exercise date will be set that will be before the date of the proposed merger or change in control. The administrator will notify each participant that the exercise date has been changed and that the participant's option will be exercised automatically on the new exercise date unless prior to such date the participant has withdrawn from the offering period.

Amendment; Termination. The administrator has the authority to amend, suspend or terminate our ESPP, except that, subject to certain exceptions described in our ESPP, no such action may adversely affect any outstanding rights to purchase shares of our common stock under our ESPP. Our ESPP automatically will terminate in 2036, unless we terminate it sooner.

### 2016 Equity Incentive Plan

In May 2016, our board of directors adopted and our stockholders approved, our 2016 Equity Incentive Plan, or 2016 EIP. Our 2016 EIP was most recently amended on July 27, 2016. Our 2016 EIP permits the grant of incentive stock options, within the meaning of Section 422 of the Code, to our employees and any parent and subsidiary corporations' employees, and for the grant of nonstatutory stock options, restricted stock, restricted stock units, and stock appreciation rights to our employees, directors and consultants and our parent and subsidiary corporations' employees and consultants. It is expected that as of one day prior to the effectiveness of the registration statement of which this

prospectus forms a part, the 2016 EIP will be terminated and we will not grant any additional awards under the 2016 EIP. However, the 2016 EIP will continue to govern the terms and conditions of the outstanding awards previously granted thereunder.

Authorized Shares. As of the last time our 2016 EIP was amended, the maximum aggregate number of shares issuable under our 2016 EIP was 97,650,000 shares of our common stock, plus (i) those shares reserved but not issued under our 2006 Plan, as of immediately prior to the termination of the 2006 Plan, and (ii) shares subject to awards under our 2006 Plan that, on or after the termination of the 2006 Plan, expire or terminate without having been exercised in full and shares previously issued pursuant to our 2006 Plan that, on or after the termination of the 2006 Plan, are forfeited or repurchased by us (provided that the maximum number of shares that may be added to our 2016 EIP pursuant to (i) and (ii) is 257,534,483 shares). As of June 26, 2016, options to purchase 2,985,000 shares of our common stock were outstanding under our 2016 EIP, no shares of restricted stock were outstanding under our 2016 EIP, no restricted stock units were outstanding under our 2016 EIP, and no stock appreciation rights were outstanding under our 2016 EIP. In the event that an outstanding award for any reason expires or is canceled, the shares allocable to the unexercised portion of such awards shall be added to the number of shares then available for issuance under the 2016 Plan, to the extent provided under the 2016 Plan, once adopted by our board of directors and our stockholders.

Plan Administration. Our board of directors or one or more committees appointed by our board of directors administers our 2016 EIP. Subject to the provisions of our 2016 EIP, our administrator has the power to administer our 2016 EIP and make - 94 - all determinations deemed necessary or advisable for administering the 2016 EIP, including but not limited to, to construe and interpret the terms of the 2016 EIP, to prescribe, amend, and rescind rules and regulations relating to the 2016 EIP, to modify or amend each award granted under the 2016 EIP, and to make all other determinations deemed necessary or advisable for administering the 2016 EIP. Our administrator also has the authority to allow participants the opportunity to transfer outstanding awards to a financial institution or other person or entity selected by the administrator and to institute an exchange program by which outstanding awards may be surrendered or cancelled in exchange for awards of the same type which may have a higher or lower exercise price and different terms, awards of a different type and/or cash, or by which the exercise price of an outstanding award is increased or reduced. The administrator's decisions, interpretations, and other actions are final and binding on all participants.

Options. Stock options may be granted under our 2016 EIP. The exercise price of options granted under our 2016 EIP must at least be equal to the fair market value of our common stock on the date of grant. The term of an option may not exceed 10 years. With respect to any participant who owns more than 10% of the voting power of all classes of our outstanding stock, the term of an incentive stock option granted to such participant must not exceed five years and the exercise price must equal at least 110% of the fair market value on the grant date. The administrator will determine the methods of payment of the exercise price of an option, which may include cash, shares or other property acceptable to the administrator, as well as other types of consideration permitted by applicable law.

If an individual's service terminates other than due to the participant's death or disability, the participant may exercise his or her option within 30 days of termination or such longer period of time as provided in his or her award agreement. If an individual's service terminates due to the participant's death or disability, the option may be exercised within six months of termination, or such longer period of time as provided in his or her award agreement. However, in no event may an option be exercised later than the expiration of its term. Subject to the provisions of our 2016 EIP, the administrator determines the other terms of options.

Stock Appreciation Rights. Stock appreciation rights may be granted under our 2016 EIP. Stock appreciation rights allow the recipient to receive the appreciation in the fair market value of our common stock between the exercise date and the date of grant. Stock appreciation rights may not have a term exceeding 10 years. After the termination of service of an employee, director or consultant, he or she may exercise his or her stock appreciation right within 30 days of termination (six months if such termination was due to his or her death or disability) or such longer period of time stated in his or her award agreement. However, in no event may a stock appreciation right be exercised later than the expiration of its term. Subject to the provisions of our 2016 EIP, the administrator determines the other terms of stock appreciation rights,

including when such rights become exercisable and whether to pay any increased appreciation in cash or with shares of our common stock, or a combination thereof, except that the per share exercise price for the shares to be issued pursuant to the exercise of a stock appreciation right will be no less than 100% of the fair market value per share on the date of grant.

Restricted Stock. Restricted stock awards may be granted under our 2016 EIP. Restricted stock awards are grants of shares of our common stock that vest in accordance with terms and conditions established by the administrator. The administrator will determine the number of shares of restricted stock granted to any employee, director or consultant and, subject to the provisions of our 2016 EIP, will determine the terms and conditions of such awards. The administrator may impose whatever conditions for lapse of the restriction on the shares it determines to be appropriate (for example, the administrator may set restrictions based on the achievement of specific performance goals or continued service to us); provided, however, that the administrator, in its sole discretion, may accelerate the time at which any restrictions will lapse or be removed. Recipients of restricted stock awards generally will have voting and dividend rights with respect to such shares upon grant without regard to the restriction, unless the administrator provides otherwise. Shares of restricted stock as to which the restrictions have not lapsed are subject to our right of repurchase or forfeiture.

Restricted Stock Units. Restricted stock units were permitted to be granted under our 2016 EIP. Restricted stock units are bookkeeping entries representing an amount equal to the fair market value of one share of our common stock. Subject to the provisions of our 2016 EIP, the administrator will determine the terms and conditions of restricted stock units, including the vesting criteria and the form and timing of payment. The administrator may set vesting criteria based upon the achievement of company-wide, business unit, or individual goals (including, but not limited to, continued employment or service), or any other basis determined by the administrator in its discretion. The administrator, in its sole discretion, may pay earned restricted stock units in the form of cash, in shares or in some combination thereof. Notwithstanding the foregoing, the administrator, in its sole discretion, may accelerate the time at which any restricted stock units will vest.



Non-Transferability of Awards. Unless the administrator provides otherwise, our 2016 EIP generally does not allow for the transfer of awards and only the recipient of an award may exercise an award during his or her lifetime.

Certain Adjustments. In the event of certain changes in our capitalization, to prevent diminution or enlargement of the benefits or potential benefits available under our 2016 EIP, the administrator will adjust the number and class of shares that may be delivered under our 2016 EIP and/or the number, class and price of shares covered by each outstanding award. In the event of our proposed liquidation or dissolution, the administrator will notify participants as soon as practicable and all awards will terminate immediately prior to the consummation of such proposed transaction.

Merger or Change in Control. Our 2016 EIP provides that in the event of a merger or change in control, as defined under the 2016 EIP, each outstanding award will be treated as the administrator determines, without a participant's consent. The administrator is not required to treat all awards, all awards held by a participant, or all awards of the same type, similarly.

In the event that a successor corporation or its parent or subsidiary does not assume or substitute an equivalent award for any outstanding award, then such award will fully vest, all restrictions on the shares subject to such award will lapse, all performance goals or other vesting criteria applicable to the shares subject to such award will be deemed achieved at 100% of target levels and all of the shares subject to such award will become fully exercisable, if applicable, for a specified period prior to the transaction. The award will then terminate upon the expiration of the specified period of time. If an option or stock appreciation right becomes fully vested and exercisable in connection with a change in control due to the successor corporation's refusal to assume the award, the administrator will notify the applicable participant in writing or electronically that the award will be exercisable for a period of time determined by the administrator, and the option or stock appreciation right will terminate upon the expiration of such period.

Amendment, Termination. Our board of directors has the authority to amend the 2016 EIP provided such action will not impair the existing rights of any participant. As noted above our 2016 EIP will terminate in connection with our adoption of our 2016 Plan and no further awards will be granted thereunder. All outstanding awards will continue to be governed by their existing terms.

**2006 Stock Plan, as Amended**

Our board of directors adopted, and our stockholders approved, our 2006 Stock Plan, or the 2006 Plan. Our 2006 Plan was most recently amended in April 2016. Our 2006 Plan was terminated in connection with our adoption of our 2016 EIP. Our 2006 Plan allowed for the grant of incentive stock options, within the meaning of Section 422 of the Code to our employees and our parent and subsidiary corporations' employees, and for the grant of nonstatutory stock options and restricted stock to our employees, directors and consultants and our parent and subsidiary corporations' employees, directors and consultants.

Authorized Shares. Our 2006 Plan was terminated in connection with the adoption of the 2016 EIP, and accordingly, no shares are available for issuance under the 2006 Plan. Our 2006 Plan will continue to govern outstanding awards granted thereunder. As of June 26, 2016, options to purchase 253,483,336 shares of our common stock remained outstanding under our 2006 Plan and no shares of restricted stock remained outstanding under our 2006 Plan. In the event that an outstanding option or other right for any reason expires or is canceled, the shares allocable to the unexercised portion of such option or other right shall be added to the number of shares then available for issuance under the 2016 EIP, to the extent provided under the 2016 EIP, until the 2016 EIP is terminated and then shall be added to the number of shares then available for issuance under the 2016 Plan, to the extent provided under the 2016 Plan, once adopted by our board of directors and our stockholders.

Plan Administration. Our board of directors or a committee of our board (the administrator) administers our 2006 Plan. Subject to the provisions of the 2006 Plan, the administrator has the full authority and discretion to administer our 2006 Plan and make all determinations deemed necessary or advisable for administering the 2006 Plan, including but not limited to, to construe and interpret the terms of the 2006 Plan, to prescribe, amend, and rescind rules and regulations relating to the 2006 Plan, to modify or amend each award granted under the 2006 Plan, and to make all other determinations deemed necessary or advisable for the administration of the 2006 Plan. Our administrator also has the authority to institute an exchange program by which outstanding options may be surrendered or cancelled in exchange for options of the same type which may have a higher or lower exercise price and different terms, options of a different type and/or cash, or by which the exercise price of an outstanding option is reduced. All decisions, interpretations and other actions of the administrator are final and binding on all participants in the 2006 Plan.



Options. Stock options were permitted to be granted under our 2006 Plan. The exercise price per share of all options must equal at least 100% of the fair market value per share of our common stock on the date of grant, as determined by the administrator. The term of a stock option may not exceed 10 years. With respect to any participant who owns 10% of the voting power of all classes of our outstanding stock as of the grant date, the term of an incentive stock option granted to such participant must not exceed five years and the exercise price per share of such incentive stock option must equal at least 110% of the fair market value per share of our common stock on the date of grant, as determined by the administrator. The administrator determines the terms and conditions of options.

If an individual's service terminates other than due to the participant's death or disability, the participant may exercise his or her option within 30 days of termination or such longer period of time as provided in his or her award agreement. If an individual's service terminates due to the participant's death or disability, the participant may exercise his or her option within 6 months of termination, or such longer period of time as provided in his or her award agreement. However, an option may not be exercised later than the expiration of its term.

Restricted Stock. Restricted stock was permitted to be granted under our 2006 Plan. The shares may be subject to a repurchase option, whereby we may repurchase any shares that remain unvested at the time of a participant's termination. Recipients of restricted stock awards generally had voting and dividend rights with respect to such shares upon grant or purchase without regard to the restriction, unless the administrator provided otherwise. Shares of restricted stock as to which the restrictions have not lapsed are subject to our right of repurchase or forfeiture. The administrator determines the terms and conditions of restricted stock awards.

Transferability of Awards. Unless our administrator provided otherwise, our 2006 Plan generally does not allow for the transfer or assignment of awards, except by will or by the laws of descent and distribution.

Certain Adjustments. In the event of certain changes in our capitalization, in order to prevent diminution or enlargement of the benefits or potential benefits intended to be made available under the 2006 Plan, the administrator will adjust the number and class of shares that may be delivered under our 2006 Plan and/or the number, class and price of shares covered by each outstanding award granted under our 2006 Plan.

Merger or Change in Control. Our 2006 Plan provides that, in the event that we are a party to a merger or change in control, outstanding awards may be assumed or substituted by the successor corporation or a parent or subsidiary thereof. In the event the successor corporation refuses to assume or substitute for an award, then such award will become fully vested and exercisable, including shares as to which such award would not otherwise be vested or exercisable, and restrictions on restricted stock will lapse. If an award becomes fully vested and exercisable in lieu of assumption or substitution, the administrator will notify the participant in writing or electronically that the award will be fully vested and exercisable for a period of time as determined by the administrator and that the award will terminate upon the expiration of such period for no consideration, unless otherwise determined by the administrator.

Amendment; Termination. Our board of directors may amend our 2006 Plan at any time, provided that such action does not impair a participant's rights under outstanding awards without such participant's written consent. As noted above, our 2006 Plan was terminated in connection with our adoption of our 2016 EIP and no further awards will be granted thereunder. All outstanding awards will continue to be governed by their existing terms.

#### Executive Incentive Compensation Plan

Prior to the effectiveness of this offering, our board of directors adopted our Executive Incentive Compensation Plan, or our Incentive Compensation Plan. Our Incentive Compensation Plan allows our compensation committee or, with respect to non-executive officer employees, the compensation committee's delegates to provide cash incentive awards to employees selected by our compensation committee, including our named executive officers, based upon performance goals established by our compensation committee.

Under our Incentive Compensation Plan, our compensation committee determines the performance goals applicable to any award, which goals may include, without limitation, the attainment of engineering and research and development milestones, sales bookings, and design wins, business partnerships, divestitures and acquisitions, cash flow, cash position, earnings (which may include any calculation of earnings including, but not limited to, earnings before interest and taxes, earnings before taxes, earnings before interest, taxes, depreciation, and amortization and net earnings), earnings per share, net income, net profit, net - 97 - sales, operating cash flow, operating expenses, operating income (or loss), operating margin, overhead or expense reduction, product defect measures, product release timelines, productivity, profit, return on assets, return on capital, return on equity, return on investment, return on sales, revenue, revenue growth, sales results, sales growth, stock price, time to market, total stockholder return, working capital and individual or departmental objectives, including hiring, managerial and employee objectives, such as peer reviews or other subjective or objective criteria. The performance goals may differ from participant to participant and from award to award.

Our compensation committee will administer our Incentive Compensation Plan and, with respect to the participation of non-executive officer employees, has delegated certain powers and discretion to our executive officers and their delegates. The administrator of our Incentive Compensation Plan may, in its sole discretion and at any time, increase, reduce or

eliminate a participant's actual award, and/or increase, reduce or eliminate the amount allocated to the bonus pool for a particular performance period. The actual award may be below, at or above a participant's target award, in the discretion of the administrator. The administrator may determine the amount of any reduction on the basis of such factors as it deems relevant, and it is not required to establish any allocation or weighting with respect to the factors it considers.

Actual awards will be paid in cash (or its equivalent) only after they are earned, which usually requires continued employment through the last day of the performance period and the date the actual award is paid. The compensation committee reserves the right to settle an actual award with a grant of an equity award under our then current equity compensation plan, which equity award may have such terms and conditions, including vesting, as the compensation committee determines in its sole discretion. Payment of awards occurs as soon as administratively practicable after they are earned, but no later than the dates set forth in our Incentive Compensation Plan.

Our board of directors and our compensation committee will have the authority to amend, alter, suspend or terminate our Incentive Compensation Plan, provided such action does not impair the existing rights of any participant with respect to any earned awards.

**401(k) Plan**

We offer eligible employees the opportunity to participate in a tax-qualified retirement plan, or the 401(k) plan, that provides eligible employees with an opportunity to save for retirement on a tax-advantaged basis. Eligible employees are able to participate in the 401(k) plan as of the first day of the month following the date they meet the 401(k) plan's eligibility requirements, and participants are able to defer up to 100% of their eligible compensation subject to applicable annual Code limits. All participants' interests in their deferrals are 100% vested when contributed. The 401(k) plan permits us to make profit sharing contributions to eligible participants, although we have not made any such contributions to date. Effective July 1, 2016, we implemented a matching contribution program pursuant to which we match 100% of contributions up to 1% of eligible compensation for each plan participant for 2016 and up to two percent (2%) of eligible compensation for each 401(k) plan participant beginning in 2017, in each case, subject to vesting over four years from each such participant's date of employment.





# *Certain Relationships and Related Party Transactions*

In addition to the compensation arrangements, including employment, termination of employment and change in control arrangements, discussed in the sections titled "Management" and "Executive Compensation," the following is a description of each transaction since January 1, 2013 and each currently proposed transaction in which:

- we have been or are to be a participant;
- the amount involved exceeded or will exceed $120,000; and
- any of our directors, executive officers or holders of more than 5% of our outstanding capital stock, or any immediate family member of, or person sharing the household with, any of these individuals or entities, had or will have a direct or indirect material interest.

**Series G Convertible Preferred Stock Financing**

From August 2014 through August 2015, we sold an aggregate of 132,506,113 shares of our Series G convertible preferred stock at a purchase price of $0.27141 per share, for an aggregate purchase price of approximately $35,963,484 paid in cash and through the conversion of outstanding convertible promissory notes issued between February 2014 and July 2014. The following table summarizes purchases of our Series G convertible preferred stock by related persons:

| Stockholder | Shares of Series G Convertible Preferred Stock | Total Purchase Price |
|---|---|---|
| Entities Affiliated with Walden International (1) | 29,475,702 | $ 8,000,000.28 |
| Entities affiliated with Centerview Capital Technology (2) | 19,159,206 | $ 5,200,000.10 |
| Entities affiliated with Sequoia Capital (3) | 14,776,410 | $ 4,010,465.44 |
| Joint Stock Company “RUSNANO” (4) | 5,778,097 | $ 1,568,233.31 |
| Entities affiliated with Sigma Partners (5) | 3,694,101 | $ 1,002,615.95 |
| Entities affiliated with Venrock Associates (6) | 3,027,636 | $ 821,730.69 |
| Entities affiliated with DAG Ventures (7) | 2,585,871 | $ 701,831.25 |

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(1) Affiliates of Walden International holding our securities whose shares are aggregated for purposes of reporting share ownership information are China Walden Venture Investments II, L.P. and WRV II, L.P. Lip-Bu Tan, a member of our board of directors, is the founder and Chairman of Walden International.

(2) Affiliates of Centerview Capital Technology holding our securities whose shares are aggregated for purposes of reporting share ownership information are Centerview Capital Technology Employee Fund, L.P., Centerview Capital Technology Fund (Delaware), L.P. and Centerview Capital Technology Fund-A (Delaware), L.P. Edwin B. Hooper III, a member of our board of directors, is founder and Managing Partner of Centerview Capital Technology.

(3) Affiliates of Sequoia Capital holding our securities whose shares are aggregated for purposes of reporting share ownership information are SC US GF V Holdings, LTD., Sequoia Capital U.S. Growth Fund V, L.P., Sequoia Capital XI, L.P., Sequoia Capital XI Principals Fund, LLC and Sequoia Technology Partners XI, L.P. Michael Goguen, a member of our board of directors through March 2016, was a Partner at Sequoia Capital through March 2016.

(4) Dmitry Akhanov, a member of our board of directors, is President and Chief Executive Officer at Rusnano USA, Inc., a U.S. subsidiary of Joint Stock Company “RUSNANO” (formerly Open Joint Stock Company “RUSNANO”).

(5) Affiliates of Sigma Partners holding our securities whose shares are aggregated for purposes of reporting share ownership information are Sigma Associates 7, L.P., Sigma Investors 7, L.P. and Sigma Partners 7, L.P. Fahri Diner, a member of our board of directors, is a Managing Director at Sigma Partners.

(6) Affiliates of Venrock Associates holding our securities whose shares are aggregated for purposes of reporting share ownership information are Venrock Associates IV, L.P., Venrock Entrepreneurs Fund IV, L.P. and Venrock Partners, L.P. Steven Goldberg, a member of our board of directors through July 2016, is a Partner at Venrock Associates.

(7) Affiliates of DAG Ventures holding our securities whose shares are aggregated for purposes of reporting share ownership information are DAG Ventures IV - QP, L.P., DAG Ventures IV, L.P. and DAG Ventures IV-A, LLC. Nicholas Pianim, a member of our board of directors through June 2016, is a Managing Director at DAG Ventures.

In October 2014, in connection with the Series G financing and the appointment of Edwin B. Hooper III as a member of our board of directors, we issued to Centerview Capital Technology Management, L.P. a warrant to purchase up to 14,435,000 shares of our common stock with an exercise price of $0.001 per share and an aggregate fair value of $0.2 million, determined in accordance with the Black-Scholes option valuation model. 8,661,000 shares underlying the warrant were subject to milestone vesting, and the remaining 5,774,000 shares underlying the warrant were subject to time-based vesting over a period of four years, subject to Mr. Hooper's continued service on our board of directors. In December 2015, the warrant was exercised with respect to all 14,435,000 shares of common stock, of which 4,330,500 shares remained subject to future vesting, and the shares of common stock issued upon exercise of the warrant were subsequently transferred to entities affiliated with Centerview Capital Technology. In June 2016, the vesting of all unvested shares issued upon early exercise of the warrant was accelerated, and no shares remain unvested as of the date of this prospectus.

### Investors' Rights Agreement

We are party to an investors' rights agreement which provides, among other things, that certain holders of our capital stock, including entities affiliated with Centerview Capital, entities affiliated with DAG Ventures, entities affiliated with Sequoia Capital, entities affiliated with Sigma Partners, an entity affiliated with Southern Cross Venture Partners, entities affiliated with Venrock Associates, China Walden Venture Investments II, L.P. and Joint Stock Company "RUSNANO," have the right to demand that we file a registration statement or request that their shares of our capital stock be covered by a registration statement that we are otherwise filing. See the section titled "Description of Capital Stock—Registration Rights" for additional information regarding these registration rights.

### Voting Agreement

We are party to a voting agreement under which certain holders of our capital stock, including entities affiliated with Centerview Capital, entities affiliated with DAG Ventures, entities affiliated with Sequoia Capital, entities affiliated with Sigma Partners, an entity affiliated with Southern Cross Venture Partners, entities affiliated with Venrock Associates, China Walden Venture Investments II, L.P. and Joint Stock Company "RUSNANO," have agreed as to the manner in which they will vote their shares of our capital stock on certain matters, including with respect to the election of directors. Upon completion of this offering, the voting agreement will terminate and none of our stockholders will have any special rights regarding the election or designation of members of our board of directors.

### Right of First Refusal

Pursuant to certain of our equity compensation plans and agreements, including entities affiliated with Centerview Capital, entities affiliated with DAG Ventures, entities affiliated with Sequoia Capital, entities affiliated with Sigma Partners, an entity affiliated with Southern Cross Venture Partners, entities affiliated with Venrock Associates, China Walden Venture Investments II, L.P. and Joint Stock Company "RUSNANO," we or our assignees have a right to purchase shares of our capital stock that certain stockholders propose to sell to other parties. This right will terminate upon completion of this offering. See the section titled "Principal Stockholders" for additional information regarding beneficial ownership of our capital stock.

Purchases from Cadence Design Systems, Inc.

Lip-Bu Tan, a member of our board of directors since June 2015, is the President and Chief Executive Officer of Cadence Design Systems, Inc., or Cadence, an electronic design automation software and engineering services company. Since 2012, we have paid licensing fees for digital and analog layout tools and simulation tools from Cadence in the ordinary course of business. We incurred fees of approximately $1.1 million, $1.1 million, $1.2 million and $0.6 million under the terms of this arrangement in fiscal years 2013, 2014 and 2015 and the six months ended June 26, 2016, respectively, and we expect to incur additional fees under this arrangement in the ordinary course of business following the completion of this offering.

**Agreement with RUSNANO**

In April 2012, we entered into a letter agreement with RUSNANO in connection with its investment in our Series F convertible preferred stock financing, pursuant to which we agreed, among other matters, to create a subsidiary to be incorporated in Russia for research and development activities and to fund such subsidiary in an aggregate amount of $20.0 million over three years. The funding requirements were $10.0 million for the first period of two years following April 16, 2012 and $10.0 million for the second period of one year following the first period. In the event that we failed to meet our funding obligations for any - 100 - period, we were required to pay RUSNANO a penalty fee of 21% during the first period and a penalty fee of 10% during the second period on 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.

In addition, the letter agreement provided RUSNANO with observation rights for meetings of our board of directors and certain rights regarding the governance and operation of our Russian subsidiary, including representation on the board of directors of the subsidiary, involvement in monitoring the subsidiary's use of funds and consent rights for certain corporate actions. RUSNANO's consent was required for the subsidiary to amend its charter, including to increase or decrease its authorized capital; decide placement by the subsidiary of bonds and other issued securities; change the subsidiary's main line of business; approve certain significant interested party transactions involving the subsidiary; approve significant acquisitions or alienations of the subsidiary's property; approve delegation, termination or limitation of auxiliary rights and obligations of the subsidiary's participants; approve a pledge of a share or a part of a share of a participant of the subsidiary to a third party; decide the real value of a share or a part of the share by remaining participants of the subsidiary to the creditors of the participants where the share is levied execution upon; decide the subsidiary's payment of real value of the share or a part of the share if levied execution upon against debt of a participant of the subsidiary; decide the allocation of a share or part of a share of the subsidiary among participants of the subsidiary in proportion to their share of authorized capital in the subsidiary; decide on an offer to sell a share of the subsidiary to certain participants of the subsidiary or to third parties if the subsidiary's share price is sold at a different price than what it was acquired for; make contributions to the subsidiary's property; approve director compensation; and take certain other actions. The letter agreement also required consent from a supermajority of the board of directors of the subsidiary, including at least one director nominated by RUSNANO, for certain actions, including passing a proposal of voluntary liquidation of the subsidiary and appointing a liquidation commission; approving and amending the subsidiary's business plan and quarterly budget based on the subsidiary's finances and cash spending reports; identifying and determining the amount of inappropriate use of funds by the subsidiary; determining the use of reserved and other funds of the subsidiary; forming and liquidating branches and representative offices of the subsidiary, and approving and amending regulations for such branches; approving selection of an independent auditor and internal control procedures; approving or amending employment terms for the person acting as the sole executive body of the subsidiary, including terms of remuneration, payments, compensation and termination; approving the subsidiary's main divisions' maximum authorized staff and average wages based on the subsidiary's budget; initiating or settling material judicial disputes for the subsidiary's business, including decisions to refer the dispute to arbitration courts, executing a settlement agreement, accepting claims, and denying claims; approving transactions relating to significant acquisition or alienation of the subsidiary's immovable property or monetary disbursements; approving transactions related to the acquisition or alienation of encumbrances on the subsidiary; approving material transactions related to extending loans, credits, and sureties securing obligations of third parties to the subsidiary; approving transactions related to the subsidiary's acquisition or alienation of stock in other commercial organizations and terminating the participation in or decrease of shares of such other commercial organization; deciding on the use of rights attached to the stock of other legal entities held by the subsidiary including decisions on the agenda of general meetings with such organizations, appointing representatives of the subsidiary for meetings with such organizations, and proposing candidates to executives bodies of organizations where the subsidiary is a participant; deciding to encumber the stock of other legal entities held by the subsidiary; and taking certain other actions. Dmitry Akhanov, a member of our board of directors, is President and Chief Executive Officer at Rusnano USA, Inc., a U.S. subsidiary of RUSNANO.In July 2014, we amended

and restated our letter agreement with RUSNANO in connection with its investment in convertible promissory notes, which subsequently converted into shares of our Series G convertible preferred stock as described above under the section titled "—Series G Convertible Preferred Stock Financing." Pursuant to the amended and restated letter agreement, 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 June 26, 2016, we had met the minimum funding requirements. The amended and restated letter agreement also provides that our funding obligations will be suspended or terminated in the event that political factors between the United States and Russia impede performance under the agreement, provided that we and RUSNANO take reasonable actions necessary to renegotiate provisions of the agreement affected by such political factors. Certain rights and obligations under the letter agreement, including the board observer and consent rights discussed above, will terminate upon completion of a firm commitment underwritten initial public offering with aggregate gross proceeds to us of at least $35.0 million. After the completion of such an offering, RUSNANO will remain entitled to representation on the board of directors of the subsidiary, and we will continue to be bound by the annual funding obligations and certain governance requirements, - 101 - including the requirements that corporate expenditures for the subsidiary be made in accordance with the quarterly budget approved by its board of directors, that the subsidiary be bound by monitoring regulations approved by RUSNANO to ensure funds are used in accordance with such budget, and that RUSNANO consent to any entry into, amendment of, or termination of subsidiary bank account agreements.

#### Employee Retention Plan

In February 2014, our board of directors approved an employee retention plan, which was amended in June 2015, and in which our executive officers participate. The employee retention plan established a bonus pool upon a change in control calculated based upon the net proceeds of the change in control, which bonus pool can range from zero percent of the net proceeds to five percent of the net proceeds. If no change in control or other plan termination event occurs prior to the effectiveness of our initial public offering, the plan will terminate, and no bonuses will be payable, upon the effectiveness of our initial public offering.

#### Director Offer Letters

In June 2016, we entered into offer letters with each of Edward Frank, Jack Lazar and Mark Stevens in connection with their appointment to our board of directors. Each offer letter provides for the grant of an option to purchase 3,600,000 shares of our common stock, which options are subject to vesting over 36 months and full acceleration of vesting upon a change of control of our company. In addition, we agreed to reimburse each of the directors for reasonable travel expenses incurred in connection with attendance at meetings of our board of directors, and to indemnify each director in his capacity as a director.

#### Executive Offer Letter Agreements

We have entered into at-will offer letters with certain of our executive officers, including our named executive officers. For more information regarding the offer letters with such the named executive officers, see the section titled "Executive Compensation—Named Executive Officer Employment Arrangements."

#### Severance and Change of Control Agreements

Prior to the completion of the offering, we intend to enter into change of control severance agreements with certain of our executive officers, including our named executive officers. For more information regarding these agreements, see the section titled "Executive Compensation—Change of Control Severance Agreements."

### Directed Share Program

At our request, the underwriters have reserved five percent of the shares of common stock offered by this prospectus for sale, at the initial public offering price, to our directors, officers, certain employees, business associates, and friends and family of our directors and officers.

### Limitation of Liability and Indemnification of Officers and Directors

We intend to adopt an amended and restated certificate of incorporation, which will become effective immediately prior to the completion of this offering, and which will contain provisions that limit the liability of our directors for monetary damages to the fullest extent permitted by Delaware law. Consequently, our directors will not be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duties as directors, except liability for the following:

- any breach of their duty of loyalty to us or our stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law; or
- any transaction from which they derived an improper personal benefit.

Any amendment to, or repeal of, these provisions will not eliminate or reduce the effect of these provisions in respect of any act, omission or claim that occurred or arose prior to that amendment or repeal. If the Delaware General Corporation Law - 102 - is amended to provide for further limitations on the personal liability of directors of corporations, then the personal liability of our directors will be further limited to the greatest extent permitted by the Delaware General Corporation Law.

In addition, we intend to adopt amended and restated bylaws, which will become effective immediately prior to the completion of this offering, and which will provide that we will indemnify, to the fullest extent permitted by law, any person who is or was a party or is threatened to be made a party to any action, suit or proceeding by reason of the fact that he or she is or was one of our directors or officers or is or was serving at our request as a director or officer of another corporation, partnership, joint venture, trust or other enterprise. Our amended and restated bylaws will provide that we may indemnify to the fullest extent permitted by law any person who is or was a party or is threatened to be made a party to any action, suit or proceeding by reason of the fact that he or she is or was one of our employees or agents or is or was serving at our request as an employee or agent of another corporation, partnership, joint venture, trust or other enterprise. Our amended and restated bylaws will also provide that we must advance expenses incurred by or on behalf of a director or officer in advance of the final disposition of any action or proceeding, subject to limited exceptions.

Further, we have entered into or will enter into indemnification agreements with each of our directors and executive officers that may be broader than the specific indemnification provisions contained in the Delaware General Corporation Law. These indemnification agreements require us, among other things, to indemnify our directors and executive officers against liabilities that may arise by reason of their status or service. These indemnification agreements also require us to advance all expenses incurred by the directors and executive officers in investigating or defending any such action, suit or proceeding. We believe that these agreements are necessary to attract and retain qualified individuals to serve as directors and executive officers.

The limitation of liability and indemnification provisions that are expected to be included in our amended and restated certificate of incorporation, amended and restated bylaws and in indemnification agreements that we have entered into or will enter into with our directors and executive officers may discourage stockholders from bringing a lawsuit against our directors and executive officers for breach of their fiduciary duties. They may also reduce the likelihood of derivative litigation against our directors and executive officers, even though an action, if successful, might benefit us and other

stockholders. Further, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damage awards against directors and executive officers as required by these indemnification provisions. At present, we are not aware of any pending litigation or proceeding involving any person who is or was one of our directors, officers, employees or other agents or is or was serving at our request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, for which indemnification is sought, and we are not aware of any threatened litigation that may result in claims for indemnification.

We have obtained insurance policies under which, subject to the limitations of the policies, coverage is provided to our directors and executive officers against losses arising from claims made by reason of breach of fiduciary duty or other wrongful acts as a director or executive officer, including claims relating to public securities matters, and to us with respect to payments that may be made by us to these directors and executive officers pursuant to our indemnification obligations or otherwise as a matter of law.

Certain of our non-employee directors may, through their relationships with their employers, be insured and/or indemnified against certain liabilities incurred in their capacity as members of our board of directors.

The underwriting agreement provides for indemnification by the underwriters of us and our officers and directors for certain liabilities arising under the Securities Act or otherwise.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling our company pursuant to the foregoing provisions, we have been informed that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

#### Policies and Procedures for Related Party Transactions

Prior to the completion of this offering, our audit committee will adopt a formal written policy providing that our audit committee will be responsible for reviewing "related party transactions," which are transactions to which we are a party, in which the aggregate amount involved exceeds or may be expected to exceed $120,000 and in which a related person has or will have a direct or indirect material interest. For purposes of this policy, a related person is defined as a director, executive officer, nominee for director or greater than 5% beneficial owner of our capital stock, in each case since the beginning of the most - 103 - recently completed year, and any of their immediate family members. In determining whether to approve or ratify any such transaction, our audit committee will take into account, among other factors it deems appropriate, (i) whether the transaction is on terms no less favorable than terms generally available to unaffiliated third parties under the same or similar circumstances and (ii) the extent of the related party's interest in the transaction. The policy will grant standing pre-approval of certain transactions, including (i) certain compensation arrangements of executive officers, (ii) certain director compensation arrangements, (iii) transactions with another company at which a related party's only relationship is as a non-executive employee, director or beneficial owner of less than 10% of that company's shares and the aggregate amount involved does not exceed the greater of $200,000 or 2% of our total annual revenue, (iv) transactions where a related party's interest arises solely from the ownership of our common stock and all holders of our common stock received the same benefit on a pro rata basis, and (v) transactions available to all U.S. employees generally.



# *Principal Stockholders*

# *Principal Stockholders*

The following table sets forth certain information with respect to the beneficial ownership of our capital stock as of July 31, 2016, as adjusted to reflect the sale of our common stock offered by us in this offering assuming no exercise of the underwriters' option to purchase additional shares of our common stock from us, for:

- each of our named executive officers;
- each of our directors;
- all of our current directors and executive officers as a group; and
- each person known by us to be the beneficial owner of more than 5% of the outstanding shares of our common stock.

We have determined beneficial ownership in accordance with the rules of the SEC, and thus it represents sole or shared voting or investment power with respect to our securities. Unless otherwise indicated below, to our knowledge, the persons and entities named in the table have sole voting and sole investment power with respect to all shares that they beneficially owned, subject to community property laws where applicable. The information does not necessarily indicate beneficial ownership for any other purpose, including for purposes of Sections 13(d) and 13(g) of the Securities Act.

We have based our calculation of the percentage of beneficial ownership prior to this offering on 1,298,638,128 shares of our common stock outstanding as of July 31, 2016, which includes 1,239,538,632 shares of our common stock issuable upon the automatic conversion of all outstanding shares of our convertible preferred stock into shares of our common stock immediately prior to the completion of this offering, as if this conversion had occurred as of July 31, 2016. We have based our calculation of the percentage of beneficial ownership after this offering on shares of our common stock outstanding immediately after the completion of this offering, assuming that the underwriters will not exercise their option to purchase up to an additional shares of our common stock from us. In accordance with SEC rules, we have deemed shares of our common stock subject to stock options that are currently exercisable or exercisable within 60 days of July 31, 2016 to be outstanding and to be beneficially owned by the person holding the stock options for the purpose of computing the percentage ownership of that person. We did not deem these shares outstanding, however, for the purpose of computing the percentage ownership of any other person.

Unless otherwise indicated, the address of each beneficial owner listed in the table below is c/o Quantenna Communications, Inc., 3450 W. Warren Avenue, Fremont, CA 94538.



| | Number of Shares | Percentage of Shares Beneficially Owned | |
|---|---|---|---|
| Name of Beneficial Owner | Beneficially Owned | Before the Offering | After the Offering |
| 5% Stockholders: | | | |
| Entities affiliated with Sequoia Capital (1) | 321,189,582 | 24.73 % | |
| Joint Stock Company "RUSNANO" (2) | 134,939,787 | 10.39 % | |
| Entities affiliated with Venrock Associates (3) | 132,664,493 | 10.22 % | |
| Entities affiliated with Sigma Partners (4) | 122,253,393 | 9.41 % | |
| Entities affiliated with Southern Cross Venture Partners (5) | 115,369,354 | 8.88 % | |
| Entities affiliated with DAG Ventures (6) | 108,017,193 | 8.32 % | |

| | | |
|---|---|---|
| Named Executive Officers and Directors: | | |
| Sam Heidari [7] | 47,896,733 | 3.56 % |
| Lionel Bonnot [8] | 13,000,630 | * |
| David Carroll [9] | 9,949,693 | * |
| Philippe Morali [10] | 6,051,067 | * |
| Dmitry Akhanov | — | — |
| Fahri Diner [11] | 122,253,393 | 9.41 % |
| Edward Frank [12] | 3,600,000 | * |
| Edwin B. Hooper III [13] | 33,594,206 | 2.59 % |
| Harold Hughes [14] | 1,933,333 | * |
| Jack Lazar [15] | 3,600,000 | * |
| John Scull [16] | 115,369,354 | 8.88 % |
| Mark Stevens [17] | 3,600,000 | * |
| Lip-Bu Tan [18] | 29,475,702 | 2.27 % |
| All executive officers and directors as a group (13 persons) [19] | 384,273,044 | 27.87 % |

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* Represents beneficial ownership of less than one percent (1%) of the outstanding shares of our common stock.

(1) Consists of (i) 129,161,690 shares held by SC US GF V Holdings, Ltd. ("SC Holdings"), (ii) 6,216,358 shares held by Sequoia Capital U.S. Growth Fund V, L.P. ("SC Growth"), (iii) 162,938,137 shares held by Sequoia Capital XI, L.P. ("SC XI"), (iv) 17,726,418 shares held by Sequoia Capital XI Principals Fund, LLC ("SC XI PF"), and (v) 5,146,979 shares held by Sequoia Technology Partners XI, L.P. ("STP XI"). SC XI Management, LLC is the general partner of SC XI and STP XI, and the managing member of SC XI PF. Douglas Leone and Michael Moritz are the managing members of SC XI Management, LLC and share voting and investment power with respect to the shares held by SC XI, STP XI and SC XI PF. SC Growth and Sequoia Capital USGF Principals Fund V, L.P. ("SC USGF") together own 100% of the outstanding ordinary shares of SC Holdings. SC US (TTGP), Ltd. is the general partner of SCGF V Management, L.P., which is the general partner of each of SC Growth and SC USGF. Roelof Botha, James J. Goetz, Patrick Grady, Douglas Leone and Michael Moritz are directors of SC US (TTGP), Ltd. and share voting and investment power with respect to the shares held by SC Growth and SC Holdings. The address for each of the entities identified in this footnote is 2800 Sand Hill Road, Suite 101, Menlo Park, California 94025.

(2) RUSNANO is a joint stock company organized under the laws of the Russian Federation. The Russian Federation owns 100% of RUSNANO. RUSNANO is managed by Rusnano Management Company LLC, the Executive Board of which has the power to vote and dispose of the securities held directly by RUSNANO below a certain amount, and is supervised by the Board of Directors of RUSNANO, which, along with the Executive Board of Rusnano Management Company LLC, has the power to dispose of the securities held directly by RUSNANO above a certain amount. Anatoly Chubais, German Pikhoya, Oleg Kiselev, Boris Podolsky and Yury Udaltsov, as the members of the Executive Board of Rusnano Management Company LLC, and Arkadiy Dvorkovich, Anatoly Chubais, Igor Agamirzyan, Mikhail Alfimov, Oleg Fomichev, Andrey Ivanov, Denis Manturov, Vladislav Putilin, Pavel Teplukhin, Viktor Vekselberg and Ilya Yuzhanov, as the members of the board of directors of RUSNANO, may be deemed to share voting and investment power with respect to the shares held by RUSNANO. The address of each of RUSNANO and Rusnano Management Company LLC is 10A prospect 60-letiya Oktyabrya, Moscow, Russia 117036.

(3) Consists of (i) 107,988,901 shares held by Venrock Associates IV, L.P., (ii) 2,653,288 shares held by Venrock Entrepreneurs Fund IV, L.P., and (iii) 22,022,304 shares held by Venrock Partners, L.P. (collectively, the "Venrock Entities"). The sole general partner of Venrock Associates IV, L.P. is Venrock Management IV, LLC. The sole general partner of Venrock Entrepreneurs Fund IV, L.P. is VEF Management IV, LLC. The sole general partner of Venrock Partners, L.P. is Venrock Partners Management, LLC. The address of each of the entities identified in this footnote is 3340 Hillview Avenue, Palo Alto, California 94304.

(4) Consists of (i) 6,977,572 shares held by Sigma Associates 7, L.P., (ii) 1,354,332 shares held by Sigma Investors 7, L.P., and (iii) 113,921,489 shares held by Sigma Partners 7, L.P. (collectively, the "Sigma Entities"). Sigma Management 7, L.L.C. is the general partner of each of the Sigma Entities. Robert E. Davoli, Fahri Diner, Lawrence G. Finch, Gregory Gretsch, John Mandile, Peter Solvik, Robert Spinner and Wade Woodson are the managing members of Sigma Management 7, L.L.C. and share voting and investment power with respect to the shares held by the Sigma Entities. The address of each of the entities identified in this footnote is 2105 South Bascom Avenue, Suite 370, Campbell, California 95008.

(5) Consists of 115,369,354 shares held by Southern Cross Venture Partners Management Pty Ltd as trustee for Southern Cross Fund No 1 Trust. Southern Cross Venture Partners Pty Ltd is the Manager of Southern Cross Fund No 1 Trust. The managing members of Southern Cross Venture Partners Pty Ltd are John Scull, Robert Christiansen, Mark Bonnar, Gareth Dando and William Bartee. John Scull, Robert Christiansen, Mark Bonnar, Gareth Dando and William Bartee own 100% of the outstanding ordinary shares of Southern Cross Venture Partners Pty Ltd. John Scull, Robert Christiansen, Mark Bonnar, Gareth Dando and William Bartee are the directors of Southern Cross Venture Partners Pty Ltd and share voting and investment power with respect to the shares held by Southern Cross Venture Partners Management Pty Ltd as trustee for Southern Cross Fund No 1 Trust. The address for each of the entities identified in this footnote is 80 Mount Street, Level 7, North Sydney, NSW, Australia, 2060.

(6) Consists of (i) 89,568,404 shares held by DAG Ventures IV-QP, L.P. ("DAG IV-QP"), (ii) 9,465,677 shares held by DAG Ventures IV, L.P. ("DAG IV"), and (iii) 8,983,112 shares held by DAG Ventures IV-A, LLC ("DAG IV-A") (collectively, the "DAG Entities"). DAG Ventures Management IV, LLC ("DAG IV LLC") is the general partner of each of DAG IV-QP and DAG IV and is the manager of DAG IV-A. R. Thomas Goodrich and John J. Cadeddu are the managers of DAG IV LLC and share voting and investment power with respect to the shares held by the DAG Entities. The address each of the entities identified in this footnote is 251 Lytton Avenue, Suite 200, Palo Alto, California 94301.

(7) Consists of 47,896,733 shares subject to options exercisable within 60 days of July 31, 2016, all of which are fully vested as of such date.

(8) Consists of 13,000,630 shares subject to options exercisable within 60 days of July 31, 2016, all of which are fully vested as of such date.

(9) Consists of 9,949,693 shares subject to options exercisable within 60 days of July 31, 2016, all of which are fully vested as of such date.

(10) Consists of 6,051,067 shares subject to options exercisable within 60 days of July 31, 2016, all of which are fully vested as of such date. Mr. Morali served as our Chief Financial Officer through July 2016.

(11) Consists of the shares listed in footnote (4) above, which are held by the Sigma Entities. Mr. Diner is a managing member of Sigma Management 7, L.L.C. and shares voting and investment power with respect to the shares held by the Sigma Entities.

(12) Consists of 3,600,000 shares held of record by Mr. Frank, of which 3,400,000 shares may be repurchased by us at the original purchase price of $0.17 within 60 days of July 31, 2016.

(13) Consists of (i) 1,679,710 shares held by Centerview Capital Technology Employee Fund, L.P., (ii) 23,472,175 shares held by Centerview Capital Technology Fund (Delaware), L.P. and (iii) 8,442,321shares held by Centerview Capital Technology Fund-A (Delaware), L.P. (collectively, the "Centerview Entities"). Edwin B. Hooper III is a managing partner of each of the Centerview Entities and shares voting and investment power with respect to the shares held by the Centerview Entities. The address for each of the entities identified in this footnote is 64 Willow Place, Suite 101, Menlo Park, California 94025.

(14) Consists of 1,933,333 shares subject to options exercisable within 60 days of July 31, 2016, 400,000 of which may be acquired upon early exercise, subject to a right of repurchase by us, if Mr. Hughes does not satisfy the option's vesting requirements and 1,533,333 of which are fully vested as of July 31, 2016.

(15) Consists of 3,600,000 shares subject to options exercisable within 60 days of July 31, 2016, all of which may be acquired upon early exercise, subject to a right of repurchase by us, if Mr. Lazar does not satisfy the option's vesting requirements.

(16) Consists of the shares listed in footnote (5) above, which are held by Southern Cross Venture Partners Management Pty Ltd as trustee for Southern Cross Fund No 1 Trust. Mr. Scull is a director of Southern Cross Venture Partners Pty Ltd and shares voting and investment power with respect to the shares held by Southern Cross Venture Partners Management Pty Ltd as trustee for Southern Cross Fund No 1 Trust.



(17) Consists of 3,600,000 shares subject to options exercisable within 60 days of July 31, 2016, all of which may be acquired upon early exercise, subject to a right of repurchase by us, if Mr. Stevens does not satisfy the option's vesting requirements.

(18) Consists of 14,737,851 shares held by China Walden Venture Investments II, L.P. ("CWVI II") and 14,737,851 shares held by WRV II, L.P. ("WRV II"). The general partner of CWVI II is China Walden Venture Investment II G.P., Ltd. ("CWVI II GP"). Lip-Bu Tan and Hing Wong are members of the investment committee of CWVI II GP and share voting and investment power with respect to the shares held by CWVI II. The general partner for WRV II is WRV GP II, LLC ("WRV II GP"). Lip-Bu Tan, Michael Marks, and Nicholas Braithwaite are members of the investment committee of WRV II GP and share voting and investment power with respect to the shares held by WRV II. The address for each of the entities identified in this footnote is One California Street 28th Floor, San Francisco, California 94111.

(19) Includes (i) 304,292,655 shares held by our current executive officers and directors as a group and (ii) 79,980,389 shares subject to options exercisable within 60 days of July 31, 2016, 7,600,000 of which may be acquired upon early exercise, subject to a right of repurchase by us, and 72,380,389 of which are fully vested as of such date.



# *Description of Capital Stock*

# *Description of Capital Stock*

**General**

The following is a summary of the rights of our common stock and preferred stock and certain provisions of our amended and restated certificate of incorporation and amended and restated bylaws as they are expected to be in effect after the completion of this offering. This summary does not purport to be complete and is qualified in its entirety by the provisions of our amended and restated certificate of incorporation, amended and restated bylaws and amended and restated investors' rights agreement, copies of which are filed as exhibits to the registration statement of which this prospectus forms a part, and to the applicable provisions of Delaware law.

Immediately following the completion of this offering, our authorized capital stock will consist of 1,100,000,000 shares of capital stock, $0.0001 par value per share, of which:

- 1,000,000,000 shares are designated as common stock; and

- 100,000,000 shares are designated as preferred stock.

As of June 26, 2016, there were 1,298,088,306 shares of our common stock outstanding, held by 152 stockholders of record, and no shares of our preferred stock outstanding, assuming the automatic conversion of all outstanding shares of our convertible preferred stock into shares of our common stock effective immediately prior to the completion of this offering.

## Common Stock

### Dividend Rights

Subject to preferences that may apply to any shares of preferred stock outstanding at the time, the holders of our common stock are entitled to receive dividends out of funds legally available if our board of directors, in its discretion, determines to issue dividends and then only at the times and in the amounts that our board of directors may determine.

### Voting Rights

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders. We have not provided for cumulative voting for the election of directors in our amended and restated certificate of incorporation. Our amended and restated certificate of incorporation establishes a classified board of directors that is divided into three classes with staggered three-year terms. Only the directors in one class will be subject to election by a plurality of the votes cast at each annual meeting of our stockholders, with the directors in the other classes continuing for the remainder of their respective three-year terms.

### No Preemptive or Similar Rights

Our common stock is not entitled to preemptive rights and is not subject to conversion, redemption or sinking fund provisions.

### Right to Receive Liquidation Distributions

If we become subject to a liquidation, dissolution or winding-up, the assets legally available for distribution to our stockholders would be distributable ratably among the holders of our common stock and any participating preferred stock outstanding at that time, subject to prior satisfaction of all outstanding debt and liabilities and the preferential rights and payment of liquidation preferences, if any, on any outstanding shares of preferred stock.

### Fully Paid and Non-Assessable

All of the outstanding shares of our common stock are, and the shares of our common stock to be issued pursuant to this offering will be, fully paid and non-assessable.



## Preferred Stock

After the completion of this offering, no shares of our preferred stock will be outstanding. Pursuant to our amended and restated certificate of incorporation, our board of directors will have the authority, without further action by the stockholders, to issue from time to time shares of preferred stock in one or more series. Our board of directors may designate the rights, preferences, privileges and restrictions of the preferred stock, including dividend rights, conversion rights, voting rights, redemption rights, liquidation preference, sinking fund terms, and the number of shares constituting any series or the designation of any series. The issuance of preferred stock could have the effect of restricting dividends on our common stock, diluting the voting power of our common stock, impairing the liquidation rights of our common stock, or delaying, deterring, or preventing a change in control. Such issuance could have the effect of decreasing the market price of our common stock. We currently have no plans to issue any shares of preferred stock.

## Options

As of June 26, 2016, we had outstanding options to purchase an aggregate of 256,468,336 shares of our common stock, with a weighted-average exercise price of approximately $0.04 per share, under our equity compensation plans.

### Warrants

As of June 26, 2016, we had outstanding warrants to purchase an aggregate of 23,870,251 shares of our common stock, with a weighted-average exercise price of $0.07 per share, assuming the automatic conversion of an outstanding warrant to purchase 1,937,425 shares of our convertible preferred stock into a warrant to purchase 1,937,425 shares of our common stock, which will occur immediately prior to the completion of this offering. Warrants to purchase 1,937,425 shares of our common stock are exercisable at any time on or before the third anniversary of the effective date of this offering. Warrants to purchase 450,000 shares of our common stock are exercisable at any time on or before the third month following the release of the lock up restrictions in connection with this offering. Warrants to purchase 14,150,326 shares of our common stock are exercisable at any time on or before September 10, 2018. Warrants to purchase 1,012,500 shares of our common stock are exercisable at any time on or before February 2, 2019. Warrants to purchase 1,580,000 shares of our common stock are exercisable at any time on or before May 16, 2026, and warrants to purchase up to an additional 4,740,000 shares of our common stock may become exercisable on or before May 16, 2026 depending on the amounts borrowed under the Mezzanine Loan.

### Registration Rights

After the completion of this offering, certain holders of our common stock will be entitled to rights with respect to the registration of their shares under the Securities Act. These registration rights are contained in our Amended and Restated Investors' Rights Agreement, or IRA, dated as of August 29, 2014. We and certain holders of our convertible preferred stock and warrants to purchase shares of our common stock are parties to the IRA. The registration rights set forth in the IRA will expire on the earlier of (i) five years following the completion of this offering, (ii) a change of control of the company or (iii) with respect to any particular stockholder, when such stockholder is able to sell all of its shares entitled to registration rights pursuant to Rule 144 of the Securities Act during any 90-day period following the completion of this offering. We will pay the registration expenses (other than underwriting discounts, commissions and stock transfer taxes) of the holders of the shares registered pursuant to the registrations described below. In an underwritten offering, the underwriters have the right, subject to specified conditions, to limit the number of shares such holders may include. In addition, in connection with this offering, we expect that each stockholder that has registration rights will agree not to sell or otherwise dispose of any securities without the prior written consent of the underwriters for a period of 180 days after the date of this prospectus, subject to certain terms and conditions and early release of certain holders in specified circumstances. See the section titled "Underwriters" for additional information regarding such restrictions.

### Demand Registration Rights

After the completion of this offering, the holders of up to 1,256,638,883 shares of our common stock (including 17,100,251 shares of our common stock issuable upon the exercise of warrants that were outstanding as of June 26, 2016) will be entitled to certain demand registration rights. At any time beginning six months after the effective date of this offering, the holders of at least 30% of these shares then outstanding can request that we file a registration statement to register the offer and sale of their shares. We are obligated to effect only two such registrations. Such request for registration must cover securities the anticipated aggregate public offering price of which, before payment of underwriting discounts and commissions, is greater than - 110 - $10,000,000. If we determine that it would be seriously detrimental to us and our stockholders to effect such a demand registration, we have the right to defer such registration, not more than twice in any 12-month period, for a period of up to 120 days.

### Piggyback Registration Rights

After the completion of this offering, the holders of up to 1,256,638,883 shares of our common stock (including 17,100,251 shares of our common stock issuable upon the exercise of warrants that were outstanding as of June 26, 2016) will be entitled to certain "piggyback" registration rights. If we propose to register the offer and sale of shares of our common stock under the Securities Act, all holders of these shares then outstanding can request that we include their shares in such registration, subject to certain marketing and other limitations. As a result, whenever we propose to file a

registration statement under the Securities Act, other than with respect to (i) a demand registration, (ii) a Form S-3 registration, (iii) a registration related to any employee benefit plan or a corporate reorganization or other transaction covered by Rule 145 promulgated under the Securities Act, (iv) a registration relating to the offer and sale of debt securities or (v) a registration on any registration form which does not permit secondary sales, the holders of these shares are entitled to notice of the registration and have the right, subject to certain limitations, to include their shares in the registration.

#### S-3 Registration Rights

After the completion of this offering, the holders of up to 1,256,638,883 shares of our common stock (including 17,100,251 shares of our common stock issuable upon the exercise of warrants that were outstanding as of June 26, 2016) will be entitled to certain Form S-3 registration rights. Any holder of these shares then outstanding can request that we register the offer and sale of their shares of our common stock on a registration statement on Form S-3 if we are eligible to file a registration statement on Form S-3 so long as the request covers securities the anticipated aggregate public offering price of which, before payment of underwriting discounts and commissions, is at least $1,000,000. These stockholders may make an unlimited number of requests for registration on a registration statement on Form S-3. However, we will not be required to effect a registration on Form S-3 if we have effected one such registration within the 12-month period preceding the date of the request and such registrations have been ordered or declared effective. Additionally, if we determine that it would be seriously detrimental to us and our stockholders to effect such a registration, we have the right to defer such registration, not more than once in any 12-month period, for a period of up to 120 days.

#### Anti-Takeover Provisions

The provisions of our amended and restated certificate of incorporation and our amended and restated bylaws, which are summarized below, may have the effect of delaying, deferring or discouraging another person from acquiring control of us. These provisions and certain provisions of Delaware law, which are summarized below, may discourage takeovers, coercive of otherwise. These provisions are also designed, in part, to encourage persons seeking to acquire control of us to negotiate first with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms.

#### Delaware Law

We will be governed by the provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a public Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years after the date of the transaction in which the person became an interested stockholder, unless:

- prior to the time that the stockholder became an interested stockholder, the board of directors approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;

- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding shares owned by directors who are also officers of the corporation and shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or

- at or subsequent to the time the stockholder became an interested stockholder, the business combination was approved by the board of directors and authorized at an annual or special meeting of the stockholders, and not by written consent,



by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

In general, Section 203 defines a "business combination" to include mergers, asset sales and other transactions resulting in financial benefit to a stockholder and an "interested stockholder" as a person who, together with affiliates and associates, owns, or within three years did own, 15% or more of the corporation's outstanding voting stock. These provisions may have the effect of delaying, deferring or preventing changes in control of our company.

### Amended and Restated Certificate of Incorporation and Amended and Restated Bylaw Provisions

Our amended and restated certificate of incorporation and our amended and restated bylaws will include a number of provisions that could deter hostile takeovers or delay or prevent changes in control of our board of directors or management team, including the following:

Board of Directors Vacancies. Our amended and restated certificate of incorporation and amended and restated bylaws will authorize only our board of directors to fill vacant directorships, including newly created seats. In addition, the number of directors constituting our board of directors will be permitted to be set only by a resolution adopted by a majority vote of our entire board of directors. These provisions would prevent a stockholder from increasing the size of our board of directors and then gaining control of our board of directors by filling the resulting vacancies with its own nominees. This will make it more difficult to change the composition of our board of directors and will promote continuity of management.

Classified Board. Our amended and restated certificate of incorporation and amended and restated bylaws will provide that our board of directors is classified into three classes of directors. A third party may be discouraged from making a tender offer or otherwise attempting to obtain control of us as it is more difficult and time consuming for stockholders to replace a majority of the directors on a classified board of directors. See the section titled "Management—Classified Board of Directors."

Stockholder Action; Special Meeting of Stockholders. Our amended and restated certificate of incorporation will provide that our stockholders may not take action by written consent, but may only take action at annual or special meetings of our stockholders. As a result, a holder controlling a majority of our capital stock would not be able to amend our amended and restated bylaws or remove directors without holding a meeting of our stockholders called in accordance with our amended and restated bylaws. Our amended and restated bylaws will further provide that special meetings of our stockholders may be called only by a majority of our board of directors, the chairman of our board of directors, our Chief Executive Officer or our President, thus prohibiting a stockholder from calling a special meeting. These provisions might delay the ability of our stockholders to force consideration of a proposal or for stockholders controlling a majority of our capital stock to take any action, including the removal of directors.

Advance Notice Requirements for Stockholder Proposals and Director Nominations. Our amended and restated bylaws will provide advance notice procedures for stockholders seeking to bring business before our annual meeting of stockholders or to nominate candidates for election as directors at our annual meeting of stockholders. Our amended and restated bylaws will specify certain requirements regarding the form and content of a stockholder's notice. These provisions might preclude our stockholders from bringing matters before our annual meeting of stockholders or from making nominations for directors at our annual meeting of stockholders if the proper procedures are not followed. We expect that these provisions may also 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 our company.

No Cumulative Voting. The Delaware General Corporation Law provides that stockholders are not entitled to cumulate votes in the election of directors unless a corporation's certificate of incorporation provides otherwise. Our amended and restated certificate of incorporation does not provide for cumulative voting.

Directors Removed Only for Cause. Our amended and restated certificate of incorporation will provide that stockholders may remove directors only for cause.

Amendment of Charter Provisions. Any amendment of the above provisions in our amended and restated certificate of incorporation would require approval by holders of at least 66 2/3% of our then outstanding capital stock.

Issuance of Undesignated Preferred Stock. Our board of directors will have the authority, without further action by our stockholders, to designate and issue shares of preferred stock with rights and preferences, including voting rights, designated - 112 - from time to time by our board of directors. The existence of authorized but unissued shares of undesignated preferred stock would enable our board of directors to render more difficult or to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or other means.

#### Transfer Agent and Registrar

Upon the completion of this offering, the transfer agent and registrar for our common stock will be . The transfer agent and registrar's address is .

#### Limitations of Liability and Indemnification

See the section titled "Certain Relationships and Related Party Transactions—Limitation of Liability and Indemnification of Officers and Directors."

#### Listing

We intend to apply for the listing of our common stock on the under the symbol "QTNA".

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# *Shares Eligible For Future Sale*

# *Shares Eligible for Future Sale*

Prior to the completion of this offering, there has been no public market for shares of our common stock. Future sales of shares of our common stock in the public market after this offering, or the perception that these sales may occur, could adversely affect the prevailing market price at such time and our ability to raise equity capital in the future.

Following the completion of this offering, based on the number of shares of our common stock outstanding as of June 26, 2016, a total of shares of our common stock will be outstanding. Of these shares, all shares of our common stock sold in this offering will be eligible for sale in the public market without restriction under the Securities Act, except that any shares of our common stock purchased in this offering by our "affiliates," as that term is defined in Rule 144 under the Securities Act, would only be able to be sold in compliance with the conditions of Rule 144 described below.

The remaining shares of our common stock will be deemed "restricted securities," as that term is defined in Rule 144 under the Securities Act. These restricted securities will be eligible for sale in the public market only if they are registered or if they qualify for an exemption from registration under Rule 144 or Rule 701 under the Securities Act, which rules are summarized below. Subject to the lock-up agreements described below, the provisions of our IRA described under the section titled "Description of Capital Stock—Registration Rights," the applicable conditions of Rule 144 or Rule 701, and our insider trading policy, these restricted securities will be eligible for sale in the public market from time to time beginning 181 days after the date of this prospectus.

#### Lock-Up Agreements

We, our executive officers, directors and holders of substantially all of our common stock and securities convertible into or exercisable or exchangeable for shares of our common stock have entered into lock-up agreements with the underwriters of this offering under which we and they have agreed that, subject to certain exceptions, for a period of 180 days after the date of this prospectus, we and they will not, without the prior written consent of Morgan Stanley & Co. LLC on behalf of the underwriters:

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of common stock beneficially owned or any other securities so owned convertible into or exercisable or exchangeable for common stock;

- file any registration statement with the Securities and Exchange Commission relating to the offering of any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock; or

- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the common stock;

whether any such transaction described above is to be settled by delivery of common stock or such other securities, in cash or otherwise. In addition, we and each such person have agreed that, without the prior written consent of Morgan Stanley & Co. LLC on behalf of the underwriters, we or such other person will not, during the restricted period, make any demand for, or exercise any right with respect to, the registration of any shares of common stock or any security convertible into or exercisable or exchangeable for common stock. This agreement is subject to certain exceptions as set forth in the section titled “Underwriters.”

**Rule 144**

Rule 144 generally provides that, once we have been subject to the public company reporting requirements of Section 13 or Section 15(d) of the Exchange Act for at least 90 days, a stockholder who is not deemed to have been one of our affiliates at any time during the preceding 90 days and who has beneficially owned the shares of our common stock proposed to be sold for at least six months is entitled to sell such shares in reliance upon Rule 144 without complying with the volume limitation, manner of sale or notice conditions of Rule 144. If such stockholder has beneficially owned the shares of our common stock proposed to be sold for at least one year, then such person is entitled to sell such shares in reliance upon Rule 144 without complying with any of the conditions of Rule 144.

Rule 144 also provides that a stockholder who is deemed to have been one of our affiliates at any time during the preceding 90 days and who has beneficially owned the shares of our common stock proposed to be sold for at least six months is entitled - 114 - to sell such shares in reliance upon Rule 144 within any three-month period beginning 90 days after the date of this prospectus a number of shares that does not exceed the greater of

- 1% of the number of shares of our capital stock then outstanding, which will equal shares immediately after the completion of this offering; or

- the average weekly trading volume of our common stock during the four calendar weeks preceding the filing of a notice on Form 144 with respect to such sale.

Sales of our common stock made in reliance upon Rule 144 by a stockholder who is deemed to have been one of our affiliates at any time during the preceding 90 days are also subject to the current public information, manner of sale and notice conditions of Rule 144.

**Rule 701**

Rule 701 generally provides that, once we have been subject to the public company reporting requirements of Section 13 or Section 15(d) of the Exchange Act for at least 90 days, a stockholder who purchased shares of our common stock pursuant to a written compensatory benefit plan or contract and who is not deemed to have been one of our affiliates at any time during the preceding 90 days may sell such shares in reliance upon Rule 144 without complying with the current public information or holding period conditions of Rule 144. Rule 701 also provides that a stockholder who purchased shares of our common stock pursuant to a written compensatory benefit plan or contract and who is deemed to have been one of our affiliates during the preceding 90 days may sell such shares under Rule 144 without complying

with the holding period condition of Rule 144. However, all stockholders who purchased shares of our common stock pursuant to a written compensatory benefit plan or contract are required to wait until 90 days after the date of this prospectus before selling such shares pursuant to Rule 701.

**Registration Rights**

After the completion of this offering, the holders of up to 1,256,638,883 shares of our common stock (including 17,100,251 shares of our common stock issuable upon the exercise of a warrant that was outstanding as of June 26, 2016) will be entitled to certain rights with respect to the registration of such shares under the Securities Act. The registration of these shares of our common stock under the Securities Act would result in these shares becoming eligible for sale in the public market without restriction under the Securities Act immediately upon the effectiveness of such registration, subject to the Rule 144 limitations applicable to affiliates. See the section titled "Description of Capital Stock—Registration Rights" for a description of these registration rights.

**Registration Statement**

After the completion of this offering, we intend to file a registration statement on Form S-8 under the Securities Act to register all of the shares of our common stock subject to equity awards outstanding or reserved for issuance under our equity compensation plans. The shares of our common stock covered by this registration statement will be eligible for sale in the public market without restriction under the Securities Act immediately upon the effectiveness of such registration statement, subject to vesting restrictions, the conditions of Rule 144 applicable to affiliates, and any applicable market standoff agreements and lock-up agreements. See the section titled "Executive Compensation—Employee Benefit and Stock Plans" for a description of our equity compensation plans.



# *Material U.S. Federal Income Tax Consequences to Non-U.S. Holders of Our Common Stock*

# *Material U.s. Federal Income Tax Consequences to Non-u.s. Holders of Our Common Stock*

The following is a summary of the material U.S. federal income tax consequences to non-U.S. holders (as defined below) of the ownership and disposition of our common stock but does not purport to be a complete analysis of all the potential tax considerations relating thereto. This summary is based upon the provisions of the Code, Treasury regulations promulgated thereunder, administrative rulings and judicial decisions, all as of the date hereof. These authorities may be changed, possibly retroactively, so as to result in U.S. federal income tax consequences different from those set forth below.

This summary also does not address the tax considerations arising under the laws of any non-U.S., state or local jurisdiction, or under U.S. federal gift and estate tax laws, except to the limited extent set forth below. In addition, this discussion does not address tax considerations applicable to an investor's particular circumstances or to investors that may be subject to special tax rules, including, without limitation:

- banks, insurance companies or other financial institutions;
- persons subject to the alternative minimum tax or net investment income tax;
- tax-exempt organizations or governmental organizations;

- controlled foreign corporations, passive foreign investment companies and corporations that accumulate earnings to avoid U.S. federal income tax;
- brokers or dealers in securities or currencies;
- traders in securities that elect to use a mark-to-market method of accounting for their securities holdings;
- persons that own, or are deemed to own, more than five percent of our capital stock (except to the extent specifically set forth below);
- U.S. expatriates and certain former citizens or long-term residents of the United States;
- partnerships or entities classified as partnerships for U.S. federal income tax purposes or other pass-through entities (and investors therein);
- persons who hold our common stock as a position in a hedging transaction, "straddle," "conversion transaction" or other risk reduction transaction or integrated investment;
- persons who hold or receive our common stock pursuant to the exercise of any employee stock option or otherwise as compensation;
- persons who do not hold our common stock as a capital asset within the meaning of Section 1221 of the Code; or
- persons deemed to sell our common stock under the constructive sale provisions of the Code.

If a partnership or entity classified as a partnership for U.S. federal income tax purposes holds our common stock, the tax treatment of a partner generally will depend on the status of the partner and upon the activities of the partnership. Accordingly, partnerships that hold our common stock, and partners in such partnerships, should consult their tax advisors.

You are urged to consult your tax advisor with respect to the application of the U.S. federal income tax laws to your particular situation, as well as any tax consequences of the purchase, ownership and disposition of our common stock arising under the U.S. federal estate or gift tax rules or under the laws of any state, local, non-U.S., or other taxing jurisdiction or under any applicable tax treaty.



**Non-U.S. Holder Defined**

For purposes of this discussion, you are a non-U.S. holder if you are any beneficial owner of our common stock other than a partnership or:

- an individual citizen or resident of the United States (for U.S. federal income tax purposes);
- a corporation or other entity taxable as a corporation created or organized in the United States or under the laws of the United States or any political subdivision thereof or other entity treated as such for U.S. federal income tax purposes;
- an estate whose income is subject to U.S. federal income tax regardless of its source; or
- a trust (x) whose administration is subject to the primary supervision of a U.S. court and which has one or more "U.S. persons" (within the meaning of Section 7701(a)(30) of the Code) who have the authority to control all substantial decisions of the trust or (y) which has made a valid election to be treated as a U.S. person.

### Distributions

As described in the section titled "Dividend Policy," we have never declared or paid cash dividends on our capital stock and do not anticipate paying any dividends on our capital stock in the foreseeable future. However, if we do make distributions on our common stock, those payments will constitute dividends for U.S. tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. To the extent those distributions exceed both our current and our accumulated earnings and profits, they will constitute a return of capital and will first reduce your basis in our common stock, but not below zero, and then will be treated as gain from the sale of stock as described below under "—Gain on Disposition of Our Common Stock."

Subject to the discussion below on effectively connected income, backup withholding and foreign accounts, any dividend paid to you generally will be subject to U.S. withholding tax either at a rate of 30% of the gross amount of the dividend or such lower rate as may be specified by an applicable income tax treaty. In order to receive a reduced treaty rate, you must provide us with an IRS Form W-8BEN, IRS Form W-8BEN-E or other appropriate version of IRS Form W-8 certifying qualification for the reduced rate. A non-U.S. holder of shares of our common stock eligible for a reduced rate of U.S. withholding tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS. If the non-U.S. holder holds the stock through a financial institution or other agent acting on the non-U.S. holder's behalf, the non-U.S. holder will be required to provide appropriate documentation to the agent, which then will be required to provide certification to us or our paying agent, either directly or through other intermediaries.

Dividends received by you that are effectively connected with your conduct of a U.S. trade or business (and, if required by an applicable income tax treaty, attributable to a permanent establishment maintained by you in the United States) are generally exempt from such withholding tax. In order to obtain this exemption, you must provide us with an IRS Form W-8ECI or other applicable IRS Form W-8 properly certifying such exemption. Such effectively connected dividends, although not subject to withholding tax, are taxed at the same graduated rates applicable to U.S. persons, net of certain deductions and credits. In addition, if you are a corporate non-U.S. holder, dividends you receive that are effectively connected with your conduct of a U.S. trade or business may also be subject to a branch profits tax at a rate of 30% or such lower rate as may be specified by an applicable income tax treaty. You should consult your tax advisor regarding any applicable tax treaties that may provide for different rules.

### Gain on Disposition of Our Common Stock

Subject to the discussion below regarding backup withholding and foreign accounts, you generally will not be required to pay U.S. federal income tax on any gain realized upon the sale or other disposition of our common stock unless:

- the gain is effectively connected with your conduct of a U.S. trade or business (and, if required by an applicable income tax treaty, the gain is attributable to a permanent establishment maintained by you in the United States);

- you are a non-resident alien individual who is present in the United States for a period or periods aggregating 183 days or more during the calendar year in which the sale or disposition occurs and certain other conditions are met; or



- our common stock constitutes a U.S. real property interest by reason of our status as a "United States real property holding corporation," or USRPHC, for U.S. federal income tax purposes at any time within the shorter of the five-year period preceding your disposition of, or your holding period for, our common stock.

We believe that we are not currently and will not become a USRPHC for U.S. federal income tax purposes, and the remainder of this discussion so assumes. However, because the determination of whether we are a USRPHC depends on the fair market value of our U.S. real property relative to the fair market value of our other business assets, there can be no assurance that we will not become a USRPHC in the future. Even if we become a USRPHC, however, as long as our common stock is regularly traded on an established securities market, such common stock will be treated as U.S. real

property interests only if you actually or constructively hold more than five percent of such regularly traded common stock at any time during the shorter of the five-year period preceding your disposition of, or your holding period for, our common stock.

If you are a non-U.S. holder described in the first bullet above, you will be required to pay tax on the net gain derived from the sale under regular graduated U.S. federal income tax rates, and a corporate non-U.S. holder described in such bullet above also may be subject to the branch profits tax at a 30% rate, or such lower rate as may be specified by an applicable income tax treaty. If you are an individual non-U.S. holder described in the second bullet above, you will be required to pay a flat 30% tax (or such lower rate specified by an applicable income tax treaty) on the gain derived from the sale, which gain may be offset by U.S. source capital losses for the year (provided you have timely filed U.S. federal income tax returns with respect to such losses). You should consult any applicable income tax or other treaties that may provide for different rules.

### Federal Estate Tax

Our common stock beneficially owned by an individual who is not a citizen or resident of the United States (as defined for U.S. federal estate tax purposes) at the time of such individual's death will generally be includable in the decedent's gross estate for U.S. federal estate tax purposes, unless an applicable estate tax treaty provides otherwise.

### Backup Withholding and Information Reporting

Generally, we must report annually to the IRS the amount of dividends paid to you, your name and address and the amount of tax withheld, if any. A similar report will be sent to you. Pursuant to applicable income tax treaties or other agreements, the IRS may make these reports available to tax authorities in your country of residence.

Payments of dividends or of proceeds on the disposition of stock made to you may be subject to additional information reporting and backup withholding at a current rate of 28% unless you establish an exemption, for example, by properly certifying your non-U.S. status on an IRS Form W-8BEN, IRS Form W-8BEN-E or another appropriate version of IRS Form W-8.

Backup withholding is not an additional tax; rather, the U.S. federal income tax liability of persons subject to backup withholding will be reduced by the amount of tax withheld. If withholding results in an overpayment of taxes, a refund or credit may generally be obtained from the IRS, provided that the required information is furnished to the IRS in a timely manner.



### Foreign Account Tax Compliance

The Foreign Account Tax Compliance Act, or FATCA, imposes withholding tax at a rate of 30% on dividends on and gross proceeds from the sale or other disposition of our common stock paid to "foreign financial institutions" (as specially defined under these rules), unless such institution enters into an agreement with the U.S. government to withhold on certain payments and to collect and provide to the U.S. tax authorities substantial information regarding the U.S. account holders of such institution (which includes certain equity and debt holders of such institution, as well as certain account holders that are foreign entities with U.S. owners) or otherwise establishes an exemption. FATCA also generally imposes a U.S. federal withholding tax of 30% on dividends on and gross proceeds from the sale or other disposition of our common stock paid to a "non-financial foreign entity" (as specially defined for purposes of these rules) unless such entity provides the withholding agent with a certification identifying certain substantial direct and indirect U.S. owners of the entity, certifies that there are none or otherwise establishes an exemption. The withholding provisions under FATCA generally apply to dividends on our common stock, and under current transition rules, are expected to apply with respect to the gross proceeds from the sale or other disposition of our common stock on or after January 1,

2019. An intergovernmental agreement between the United States and an applicable foreign country may modify the requirements described in this paragraph. Non-U.S. holders should consult their own tax advisors regarding the possible implications of this legislation for their investment in our common stock.

Each prospective investor should consult its own tax advisor regarding the particular U.S. federal, state and local and non-U.S. tax consequences of purchasing, holding and disposing of our common stock, including the consequences of any proposed change in applicable laws.



# *Underwriters*

# *Underwriters*

Under the terms and subject to the conditions in an underwriting agreement dated the date of this prospectus, the underwriters named below, for whom Morgan Stanley & Co. LLC is acting as representative, have severally agreed to purchase, and we have agreed to sell to them, severally, the number of shares indicated below:

| Name | Number of Shares |
|---|---|
| Morgan Stanley & Co. LLC | |
| Barclays Capital Inc. | |
| Deutsche Bank Securities Inc. | |
| Needham & Company, LLC | |
| William Blair & Company, LLC | |
| Roth Capital Partners, LLC | |
| Total: | |

The underwriters and the representative are collectively referred to as the “underwriters” and the “representative,” respectively. The underwriters are offering the shares of common stock subject to their acceptance of the shares from us and subject to prior sale. The underwriting agreement provides that the obligations of the several underwriters to pay for and accept delivery of the shares of common stock offered by this prospectus are subject to the approval of certain legal matters by their counsel and to certain other conditions. The underwriters are obligated to take and pay for all of the shares of common stock offered by this prospectus if any such shares are taken. However, the underwriters are not required to take or pay for the shares covered by the underwriters’ over-allotment option described below.

The underwriters initially propose to offer part of the shares of common stock directly to the public at the offering price listed on the cover page of this prospectus and part to certain dealers. After the initial offering of the shares of common stock, the offering price and other selling terms may from time to time be varied by the representative.

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase up to additional shares of common stock at the public offering price listed on the cover page of this prospectus, less underwriting discounts and commissions. The underwriters may exercise this option solely for the purpose of covering over-allotments, if any, made in connection with the offering of the shares of common stock offered by this prospectus. To the extent the option is exercised, each underwriter will become obligated, subject to certain conditions, to purchase

about the same percentage of the additional shares of common stock as the number listed next to the underwriter's name in the preceding table bears to the total number of shares of common stock listed next to the names of all underwriters in the preceding table.

The following table shows the per share and total public offering price, underwriting discounts and commissions, and proceeds before expenses to us. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase up to an additional shares of common stock.

| | | Total | |
|---|---|---|---|
| | Per Share | No Exercise | Full Exercise |
| Public offering price | | $ $ | $ |
| Underwriting discounts and commissions to be paid by us | | $ $ | $ |
| Proceeds, before expenses, to us | | $ $ | $ |

The estimated offering expenses payable by us, exclusive of the underwriting discounts and commissions, are approximately $ . We have agreed to reimburse the underwriters for expense relating to clearance of this offering with the Financial Industry Regulatory Authority up to $ .

The underwriters have informed us that they do not intend sales to discretionary accounts to exceed 5% of the total number of shares of common stock offered by them.



We intend to apply to list our common stock on the under the trading symbol "QTNA."

We and all directors and officers and the holders of all of our outstanding stock and stock options have agreed that, without the prior written consent of Morgan Stanley & Co. LLC on behalf of the underwriters, we and they will not, during the period ending 180 days after the date of this prospectus, or the restricted period:

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of common stock beneficially owned or any other securities so owned convertible into or exercisable or exchangeable for common stock;

- file any registration statement with the SEC relating to the offering of any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock; or

- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the common stock,

whether any such transaction described above is to be settled by delivery of common stock or such other securities, in cash or otherwise. In addition, we and each such person have agreed that, without the prior written consent of Morgan Stanley & Co. LLC on behalf of the underwriters, we or such other person will not, during the restricted period, make any demand for, or exercise any right with respect to, the registration of any shares of common stock or any security convertible into or exercisable or exchangeable for common stock.

The restrictions described in the immediately preceding paragraph do not apply to:

- transactions relating to shares of common stock or other securities acquired in open market transactions after the completion of this offering;

- the transfer of shares of common stock or any security convertible into or exercisable or exchangeable for common stock by a security holder to (i) an immediate family member or to a trust formed for the benefit of such security holder or an immediate family member of such security holder, (ii) as a bona fide gift or by will or intestacy, (iii) if the security holder is a corporation, partnership, limited liability company or other business entity to (A) another corporation, partnership, limited liability company or other business entity that controls, is controlled by or is under common control with the security holder or (B) as part of a disposition, transfer or distribution by the security holder to its equity holders or limited partners, or (iv) if the undersigned is a trust, to a trustor or beneficiary of the trust, provided that in the case of any transfer or distribution pursuant to this clause (b), each transferee, beneficiary, donee or distributee shall sign and deliver a lock-up agreement prior to or upon such transfer or distribution;

- (i) the receipt by the security holder of shares of our common stock upon the exercise of options or the vesting of restricted stock units, pursuant to an employee benefit plan disclosed in this prospectus, or (ii) the transfer of shares of common stock or any securities convertible into common stock to us upon a vesting event of our securities (including restricted stock units) or upon the exercise of options or warrants to purchase our securities on a "cashless," "net exercise" or "net withholding" basis to cover the exercise price or tax withholding obligations of the undersigned in connection with such vesting or exercise, provided that in the case of either (i) or (ii), any filing under Section 16(a) of the Exchange Act shall clearly indicate in the footnotes thereto that (a) the filing relates to the circumstances described in (i) or (ii), as the case may be, (b) no shares were sold by the reporting person to any third party and (c) in the case of (i) and (ii), the shares received upon exercise of the option or vesting of the restricted stock units are subject to a lock-up agreement with the underwriters;

- the transfer of shares of common stock or any security convertible into or exercisable or exchangeable for common stock to us pursuant to agreements disclosed in this prospectus under which (i) such shares or other security were issued and (ii) we have the option to repurchase such shares or other security or a right of first refusal with respect to transfers of such shares or other security, provided that such shares of common stock or any security convertible into or exercisable or exchangeable for common stock pursuant to this clause remain subject to the terms of the lock-up agreement;

- the establishment of a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of shares of common stock, provided that (i) such plan does not provide for the transfer of common stock during the restricted period and



(ii) to the extent a public announcement or filing under the Exchange Act, if any, is required of or voluntarily made by or on behalf of the security holder or us regarding the establishment of such plan, such announcement or filing shall include a statement to the effect that no transfer of common stock may be made under such plan during the restricted period;

- the conversion or reclassification of outstanding preferred stock or other classes of our common stock into shares of our common stock in connection with the consummation of this offering, provided that such shares of common stock received upon conversion or reclassification remain subject to the terms of the lock-up agreement;

- the transfer of shares of common stock or any security convertible into or exercisable or exchangeable for common stock that occurs solely by operation of law or by order of a court of competent jurisdiction, provided that the transferee signs and delivers a lock-up agreement agreeing to be bound by the restrictions set forth in the lock-up agreement; and

- the disposition by a security holder of shares of common stock purchased from us pursuant to any employee stock purchase plan described in this prospectus after completion of this offering, provided that such shares of common stock remain subject to the terms of the lock-up agreement.

No filing under Section 16(a) of the Exchange Act shall be required or shall be voluntarily made in connection with any of the foregoing clauses, except as expressly set forth therein.

In order to facilitate the offering of the common stock, the underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the common stock. Specifically, the underwriters may sell more shares than they are obligated to purchase under the underwriting agreement, creating a short position. A short sale is covered if the short

position is no greater than the number of shares available for purchase by the underwriters under the over-allotment option. The underwriters can close out a covered short sale by exercising the over-allotment option or purchasing shares in the open market. In determining the source of shares to close out a covered short sale, the underwriters will consider, among other things, the open market price of shares compared to the price available under the over-allotment option. The underwriters may also sell shares in excess of the over-allotment option, creating a naked short position. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the common stock in the open market after pricing that could adversely affect investors who purchase in this offering. As an additional means of facilitating this offering, the underwriters may bid for, and purchase, shares of common stock in the open market to stabilize the price of the common stock. These activities may raise or maintain the market price of the common stock above independent market levels or prevent or retard a decline in the market price of the common stock. The underwriters are not required to engage in these activities and may end any of these activities at any time.

We and the underwriters have agreed to indemnify each other against certain liabilities, including liabilities under the Securities Act.

A prospectus in electronic format may be made available on websites maintained by one or more underwriters, or selling group members, if any, participating in this offering. The representative may agree to allocate a number of shares of common stock to underwriters for sale to their online brokerage account holders. Internet distributions will be allocated by the representative to underwriters that may make Internet distributions on the same basis as other allocations.

### Other Relationships

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their respective affiliates have, from time to time, performed, and may in the future perform, various financial advisory and investment banking services for us, for which they received or will receive customary fees and expenses.

In addition, in the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve our securities and instruments. The underwriters and their respective affiliates may also make investment recommendations or - 122 - publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long or short positions in such securities and instruments.

### Directed Share Program

At our request, the underwriters have reserved five percent of the shares of common stock offered by this prospectus for sale, at the initial public offering price, to our directors, officers, certain employees, business associates, and friends and family of our directors and officers. The number of shares of common stock available for sale to the general public will be reduced to the extent these individuals purchase such reserved shares. Any reserved shares that are not so purchased will be offered by the underwriters to the general public on the same basis as the other shares offered by this prospectus.

### Pricing of the Offering

Prior to this offering, there has been no public market for our common stock. The initial public offering price was determined by negotiations between us and the representative. Among the factors considered in determining the initial public offering price were our future prospects and those of our industry in general, our sales, earnings and certain other financial and operating information in recent periods, and the price-earnings ratios, price-sales ratios, market prices of securities, and certain financial and operating information of companies engaged in activities similar to ours. The

estimated initial public offering price range set forth on the cover page of this preliminary prospectus is subject to change as a result of market conditions and other factors. Neither we nor the underwriters can assure investors that an active trading market for the shares will develop, or that after the offering the shares will trade in the public market at or above the initial public offering price.

### Selling Restrictions

#### Canada

The securities may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the securities must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 Underwriting Conflicts ("NI 33-105"), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

#### European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of any shares of our common stock may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any shares of our common stock may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

(a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;

(b) to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the representatives for any such offer; or



(c) in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of shares of our common stock shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares of our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares of our common stock to be offered so as to enable an investor to decide to purchase any shares of our common stock, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression "Prospectus Directive" means Directive 2003/71/EC (and

amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State, and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

**United Kingdom**

Each underwriter has represented and agreed that:

(a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000 ("FSMA") received by it in connection with the issue or sale of the shares of our common stock in circumstances in which Section 21(1) of the FSMA does not apply to us; and

(b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the shares of our common stock in, from or otherwise involving the United Kingdom.

**Switzerland**

The shares of common stock may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange, or SIX, or on any other stock exchange or regulated trading facility in Switzerland. This document has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this document nor any other offering or marketing material relating to the shares or the offering may be publicly distributed or otherwise made publicly available in Switzerland. Neither this document nor any other offering or marketing material relating to the offering, us, or the shares have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of shares will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, or FINMA, and the offer of shares has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes, or CISA. The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of shares.

**Dubai International Financial Centre**

This prospectus relates to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority, or DFSA. This prospectus is intended for distribution only to persons of a type specified in the Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this prospectus nor taken steps to verify the information set forth herein and has no responsibility for the prospectus. The shares to which this prospectus relates may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the shares offered should conduct their own due diligence on the shares. If you do not understand the contents of this prospectus you should consult an authorized financial advisor.

**Australia**

No placement document, prospectus, product disclosure statement or other disclosure document has been lodged with the Australian Securities and Investments Commission, or ASIC, in relation to the offering. This prospectus does not constitute a prospectus, product disclosure statement or other disclosure document under the Corporations Act 2001, or the Corporations Act, and does not purport to include the information required for a prospectus, product disclosure statement or other disclosure document under the Corporations Act.



Any offer in Australia of the shares may only be made to persons, or the Exempt Investors, who are "sophisticated investors" (within the meaning of section 708(8) of the Corporations Act), "professional investors" (within the meaning of section 708(11) of the Corporations Act) or otherwise pursuant to one or more exemptions contained in section 708

of the Corporations Act so that it is lawful to offer the shares without disclosure to investors under Chapter 6D of the Corporations Act.

The shares applied for by Exempt Investors in Australia must not be offered for sale in Australia in the period of 12 months after the date of allotment under the offering, except in circumstances where disclosure to investors under Chapter 6D of the Corporations Act would not be required pursuant to an exemption under section 708 of the Corporations Act or otherwise or where the offer is pursuant to a disclosure document which complies with Chapter 6D of the Corporations Act. Any person acquiring shares must observe such Australian on-sale restrictions.

This prospectus contains general information only and does not take into account the investment objectives, financial situation or particular needs of any particular person. It does not contain any securities recommendations or financial product advice. Before making an investment decision, investors need to consider whether the information in this prospectus is appropriate for their needs, objectives and circumstances, and, if necessary, seek expert advice on those matters.

### New Zealand

The shares of common stock offered hereby have not been offered or sold, and will not be offered or sold, directly or indirectly in New Zealand and no offering materials or advertisements have been or will be distributed in relation to any offer of shares in New Zealand, in each case other than:

(a) to persons whose principal business is the investment of money or who, in the course of and for the purposes of their business, habitually invest money; or

(b) to persons who in all the circumstances can properly be regarded as having been selected otherwise than as members of the public; or

(c) to persons who are each required to pay a minimum subscription price of at least NZ$500,000 for the shares before the allotment of those shares (disregarding any amounts payable, or paid, out of money lent by the issuer or any associated person of the issuer); or

(d) in other circumstances where there is no contravention of the Securities Act 1978 of New Zealand (or any statutory modification or re-enactment of, or statutory substitution for, the Securities Act 1978 of New Zealand).

### Hong Kong

The shares of common stock have not been offered or sold and will not be offered or sold in Hong Kong, by means of any document, other than (i) to “professional investors” as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance; or (ii) in other circumstances which do not result in the document being a “prospectus” as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of that Ordinance. No advertisement, invitation or document relating to the shares of common stock has been or may be issued or has been or may be in the possession of any person for the purposes of issuance, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to shares of common stock which are or are intended to be disposed of only to persons outside Hong Kong or only to “professional investors” as defined in the Securities and Futures Ordinance and any rules made under that Ordinance.

### Japan

No registration pursuant to Article 4, paragraph 1 of the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948, as amended), or the FIEL, has been made or will be made with respect to the solicitation of the application for the acquisition of the shares of common stock.

Accordingly, the shares of common stock have not been, directly or indirectly, offered or sold and will not be, directly or indirectly, offered or sold in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person - 125 - resident in Japan, including any corporation or other entity organized under the laws of Japan) or to others for re-offering or re-sale, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan except pursuant to an exemption from the registration requirements, and otherwise in compliance with, the FIEL and the other applicable laws and regulations of Japan.

For Qualified Institutional Investors, or QII Please note that the solicitation for newly-issued or secondary securities (each as described in Paragraph 2, Article 4 of the FIEL) in relation to the shares of common stock constitutes either a "QII only private placement" or a "QII only secondary distribution" (each as described in Paragraph 1, Article 23-13 of the FIEL). Disclosure regarding any such solicitation, as is otherwise prescribed in Paragraph 1, Article 4 of the FIEL, has not been made in relation to the shares of common stock. The shares of common stock may only be transferred to QIIs.

For Non-QII Investors Please note that the solicitation for newly-issued or secondary securities (each as described in Paragraph 2, Article 4 of the FIEL) in relation to the shares of common stock constitutes either a "small number private placement" or a "small number private secondary distribution" (each as is described in Paragraph 4, Article 23-13 of the FIEL). Disclosure regarding any such solicitation, as is otherwise prescribed in Paragraph 1, Article 4 of the FIEL, has not been made in relation to the shares of common stock. The shares of common stock may only be transferred en bloc without subdivision to a single investor.

Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares of common stock may not be circulated or distributed, nor may the shares of common stock be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore, or the SFA, (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275, of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares of common stock are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

| | |
|---|---|
| (a) | a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or |
| (b) | a trust (where the trustee is not an accredited investor) the sole purpose of which is to hold investments and each beneficiary of the trust is an individual who is an accredited investor, |

securities (as defined in Section 239(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares of common stock pursuant to an offer made under Section 275 of the SFA except:

| | |
|---|---|
| (a) | to an institutional investor or to a relevant person defined in Section 275(2) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA; |
| (b) | where no consideration is or will be given for the transfer; |
| (c) | where the transfer is by operation of law; |
| (d) | as specified in Section 276(7) of the SFA; or |

as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

(e)



# *Legal Matters*

*Legal Matters*

Wilson Sonsini Goodrich & Rosati, P.C., Palo Alto, California, which has acted as our counsel in connection with this offering, will pass upon the validity of the shares of our common stock being offered by this prospectus. As of the date of this prospectus, certain members of, and investment partnerships comprised of members of, Wilson Sonsini Goodrich & Rosati, P.C. own an interest representing less than 0.0427% of the shares of our common stock. The underwriters have been represented by Davis Polk & Wardwell LLP, Menlo Park, California.

# *Experts*

*Experts*

The consolidated financial statements as of December 27, 2015 and December 28, 2014 and for each of the two years in the period ended December 27, 2015 included in this prospectus have been so included in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

# *Where You Can Find Additional Information*

*Where You Can Find Additional Information*

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of our common stock offered by this prospectus. This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement, some of which is contained in exhibits to the registration statement as permitted by the rules and regulations of the SEC. For further information with respect to us and our common stock, we refer you to the registration statement, including the exhibits filed as a part of the registration statement. Statements contained in this prospectus concerning the contents of any contract or any other document is not necessarily complete. If a contract or document has been filed as an exhibit to the registration statement, please see the copy of the contract or document that has been filed. Each statement is this prospectus relating to a contract or document filed as an exhibit is qualified in all respects by the filed exhibit. You may obtain copies of this information by mail from the Public Reference Section of the SEC, 100 F Street, N.E., Room 1580, Washington, D.C. 20549, at prescribed rates. You may obtain information on the operation of the public reference rooms by calling the SEC at 1-800-SEC-0330. The SEC also maintains an Internet website that contains reports, proxy statements and other information about issuers, like us, that file electronically with the SEC. The address of that website is www.sec.gov.

As a result of this offering, we will become subject to the information and reporting requirements of the Exchange Act and, in accordance with this law, will file periodic reports, proxy statements and other information with the SEC. These periodic reports, proxy statements and other information will be available for inspection and copying at the SEC's public reference facilities and the website of the SEC referred to above. We also maintain a website at www.quantenna.com.

Upon the completion of this offering, you may access these materials free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. Information contained on our website is not a part of this prospectus and the inclusion of our website address in this prospectus is an inactive textual reference only.





# *Index to Consolidated Financial Statements*


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|---|---|
| Report of Independent Registered Public Accounting Firm | |
| Consolidated Balance Sheets | |
| Consolidated Statements of Operations | |
| Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity (Deficit) | |
| Consolidated Statements of Cash Flows | |
| Notes to Consolidated Financial Statements | |


# *Report of Independent Registered Public Accounting Firm*

To the Board of Directors and Stockholders of Quantenna Communications, Inc.:

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations, of convertible preferred stock and stockholders' deficit and cash flows present fairly, in all material respects, the financial position of Quantenna Communications, Inc. and its subsidiaries at December 27, 2015 and December 28, 2014, and the results of their operations and their cash flows for each of the two years in the period ended December 27, 2015 in conformity with accounting principles generally accepted in the United States of America. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits of these statements in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP San Jose, California July 8, 2016

# *Consolidated Balance Sheets*

Quantenna Communications, Inc.

Consolidated Balance Sheets

(In thousands, except share and per share data)

| | | | | Pro Forma |
|---|---|---|---|---|
| | | | | June 26, 2016 |
| | December 28, 2014 | December 27, 2015 | June 26, 2016 | (see Note 1) |
| | | | (unaudited) | (unaudited) |
| Assets | | | | |
| Current assets | | | | |
| Cash and cash equivalents | $ 18,320 | $ 18,850 | $ 16,943 | $ 16,943 |
| Accounts receivable | 9,840 | 15,717 | 20,813 | 20,813 |
| Inventory | 10,794 | 7,407 | 7,449 | 7,449 |
| Restricted cash | | — | 1,500 | 1,500 |
| Prepaid expenses and other current assets | 1,969 | 1,428 | 1,666 | 1,666 |
| Total current assets | 40,982 | 43,402 | 48,371 | 48,371 |
| Property and equipment, net | 2,309 | 3,083 | 3,548 | 3,548 |
| Other assets | | | 1,311 | 1,311 |
| Total assets | $ 43,533 | $ 46,667 | $ 53,230 | $ 53,230 |
| Liabilities, Convertible Preferred Stock, and Stockholders' Equity (Deficit) | | | | |
| Current liabilities | | | | |
| Accounts payable | $ 10,318 | $ 5,917 | $ 3,778 | $ 3,778 |
| Accrued liabilities and other current liabilities | 4,683 | 5,617 | 10,626 | 10,831 |
| Deferred revenue | 2,197 | — | — | — |
| Long-term debt, current portion | 2,693 | 3,581 | 2,102 | 2,102 |
| Total current liabilities | 19,891 | 15,115 | 16,506 | 16,711 |
| Long-term debt | 2,993 | 2,265 | 7,967 | 7,967 |
| Convertible preferred stock warrant liability | | | | — |
| Total liabilities | 23,078 | 17,635 | 24,773 | 24,678 |
| Commitments and contingencies (see Note 6) | | | | |

| | | | | |
|---|---|---|---|---|
| Convertible preferred stock, $0.0001 par value, 1,115,637,156, 1,152,481,783 and 1,152,481,783 (unaudited) shares authorized at December 28, 2014, December 27, 2015 and June 26, 2016, respectively; 1,071,051,753, 1,123,580,844 and 1,123,580,844 (unaudited) shares issued and outstanding at December 28, 2014, December 27, 2015 and June 26, 2016, respectively; liquidation preference of $175,874, $190,130 and $190,130 (unaudited) at December 28, 2014, December 27, 2015 and June 26, 2016, respectively; no shares (unaudited) issued or outstanding pro forma at June 26, 2016 | 170,448 | 184,704 | 184,704 | — |
| Stockholders' equity (deficit) | | | | |
| Common stock, $0.0001 par value, 1,620,000,000, 1,656,844,627 and 1,656,844,627 (unaudited) shares authorized at December 28, 2014, December 27, 2015 and June 26, 2016, respectively; 34,784,124, 55,313,400 and 58,549,674 (unaudited) shares issued and outstanding at December 28, 2014, December 27, 2015 and June 26, 2016, respectively; 1,298,088,306 (unaudited) shares issued and outstanding, pro forma at June 26, 2016 | | | | |
| Additional paid-in capital | 2,638 | 4,002 | 5,376 | 190,256 |
| Accumulated deficit | (152,634) | (159,679) | (161,628) | (161,833) |
| Total stockholders' equity (deficit) | (149,993) | (155,672) | (156,247) | $ 28,552 |
| Total liabilities, convertible preferred stock and stockholders' equity (deficit) | $ 43,533 | $ 46,667 | $ 53,230 | $ 53,230 |

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

# *Consolidated Statements of Operations*

Quantenna Communications, Inc.

**Consolidated Statements of Operations**

**(In thousands, except share and per share data)**

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | | | (unaudited) | (unaudited) |
| Revenue | $ 66,860 | $ 83,773 | $ 36,554 | $ 57,472 |
| Cost of revenue | 38,211 | 42,554 | 18,734 | 29,205 |
| Gross profit | 28,649 | 41,219 | 17,820 | 28,267 |
| Operating expenses: | | | | |
| Research and development | 31,283 | 35,575 | 18,443 | 21,751 |
| Sales and marketing | 5,932 | 6,644 | 3,529 | 3,399 |

| | | | | |
|---|---|---|---|---|
| General and administrative | 4,532 | 5,212 | 2,732 | 4,555 |
| Total operating expenses | 41,747 | 47,431 | 24,704 | 29,705 |
| Loss from operations | (13,098) | (6,212) | (6,884) | (1,438) |
| Interest expense | (481) | (697) | (400) | (225) |
| Other income (expense), net | | (21) | (79) | (248) |
| Loss before income taxes | (13,490) | (6,930) | (7,363) | (1,911) |
| Provision for income taxes | (108) | (115) | (37) | (38) |
| Net loss | $ (13,598) | $ (7,045) | $ (7,400) | $ (1,949) |
| Net loss attributable to common stockholders per share, basic and diluted | $ (0.41) | $ (0.18) | $ (0.21) | $ (0.04) |
| Weighted average shares used to compute basic and diluted net loss per share | 32,808,092 | 38,512,276 | 35,614,157 | 53,131,727 |
| Pro forma net loss per share—basic and diluted (unaudited) | | $ (0.01) | | $ (0.00) |
| Pro forma weighted average number of shares outstanding—basic and diluted net loss per share (unaudited) | | 1,253,342,652 | | 1,292,670,359 |

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

# *Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity (Deficit)*

Quantenna Communications, Inc.

Consolidated Statements of Convertible Preferred Stock and Stockholders' Deficit

(In thousands, except share data)

| | Convertible Preferred Stock | | Common Stock | | | | |
|---|---|---|---|---|---|---|---|
| | Shares | Amount | Shares | Amount | Additional Paid-In Capital | Accumulated Deficit | Total Stockholders' Deficit |
| **Balances at December 31, 2013** | 991,074,731 | $ 148,905 | 29,914,853 | $ | $ 1,943 | $ (139,036) | $ (137,090) |
| Issuance of common stock for exercise of options | — | — | 4,869,271 | — | | — | |
| Expiration of Series A preferred stock warrants | — | | — | — | — | — | — |
| Issuance of Series G convertible preferred stock, net of issuance costs | 79,977,022 | 21,538 | — | — | — | — | — |
| Stock-based compensation expense | — | — | — | — | | — | |
| Net loss | — | — | — | — | — | (13,598) | (13,598) |
| **Balances at December 28, 2014** | 1,071,051,753 | 170,448 | 34,784,124 | | 2,638 | (152,634) | (149,993) |
| Issuance of common stock for exercise of options | — | — | 6,094,276 | | | — | |
| Issuance of common stock for exercise of warrants | — | — | 14,435,000 | | | — | |
| Issuance of Series G convertible preferred stock, net of issuance costs | 52,529,091 | 14,256 | — | — | — | — | — |
| Stock-based compensation expense | — | — | — | — | 1,202 | — | 1,202 |
| Net loss | — | — | — | — | — | (7,045) | (7,045) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Balances at December 27, 2015** | 1,123,580,844 | 184,704 | 55,313,400 | | 4,002 | (159,679) | (155,672) |
| Issuance of common stock for exercise of options (unaudited) | — | — | 3,236,274 | — | | — | |
| Stock-based compensation expense (unaudited) | — | — | — | — | 1,190 | — | 1,190 |
| Issuance of common stock warrants (unaudited) | — | — | — | — | | — | |
| Net loss (unaudited) | — | — | — | — | — | (1,949) | (1,949) |
| **Balances at June 26, 2016 (unaudited)** | 1,123,580,844 | $ 184,704 | 58,549,674 | $ | $ 5,376 | $ (161,628) | $ (156,247) |

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

# *Consolidated Statements of Cash Flows*

Quantenna Communications, Inc.

**Consolidated Statements of Cash Flows**

**(In thousands)**

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | **December 28, 2014** | **December 27, 2015** | **June 28, 2015** | **June 26, 2016** |
| | | | **(unaudited)** | **(unaudited)** |
| **Cash flows from operating activities** | | | | |
| Net loss | $ (13,598) | $ (7,045) | $ (7,400) | $ (1,949) |
| Adjustments to reconcile net loss to net cash provided by (used in) operating activities | | | | |
| Depreciation and amortization | | | | |
| Stock-based compensation expense | | 1,202 | | 1,190 |
| Non-cash interest expense | — | | | |

| | | | | |
|---|---|---|---|---|
| Change in fair value of convertible preferred stock warrants liability | (38) | | | |
| Changes in assets and liabilities | | | | |
| Accounts receivable | (2,120) | (5,877) | (2,113) | (5,096) |
| Inventory | (3,967) | 3,387 | 3,500 | (42) |
| Prepaid expenses and other current assets | (1,556) | | | (42) |
| Other assets | | | | (55) |
| Accounts payable | 3,356 | (4,401) | (5,026) | (3,589) |
| Accrued liabilities and other current liabilities | 1,269 | | (27) | 5,009 |
| Deferred revenue | (2,682) | (2,197) | (2,197) | — |
| Net cash used in operating activities | (17,851) | (12,077) | (10,867) | (3,962) |
| **Cash flows from investing activities** | | | | |
| Purchase of property and equipment | (1,257) | (1,761) | (358) | (626) |
| Restricted cash | — | | — | (1,500) |
| Net cash used in investing activities | (1,257) | (1,702) | (358) | (2,126) |
| **Cash flows from financing activities** | | | | |
| Proceeds from issuance of convertible notes | 16,163 | — | — | — |
| Proceeds from issuance of convertible preferred stock, net of issuance costs | 5,375 | 14,256 | 9,985 | — |
| Proceeds from issuance of common stock | | | | |
| Proceeds from revolving line of credit, net of fees paid | — | — | — | 2,950 |
| Proceeds from issuance of long-term debt | — | 3,000 | 3,000 | 3,854 |
| Repayments of long-term debt | (1,100) | (3,111) | (1,331) | (2,711) |
| Net cash provided by financing activities | 20,566 | 14,309 | 11,730 | 4,181 |
| Net increase (decrease) in cash and cash equivalents | $ 1,458 | $ | $ | $ (1,907) |
| **Cash and cash equivalents** | | | | |
| Beginning of period | $ 16,862 | $ 18,320 | $ 18,320 | $ 18,850 |

| | | | | |
|---|---|---|---|---|
| End of period | $ 18,320 | $ 18,850 | $ 18,825 | $ 16,943 |
| **Supplemental disclosure of cash flow information** | | | | |
| Interest paid during the period | $ | $ | $ | $ |
| Income taxes paid during the period | $ | $ | $ | $ |
| **Supplemental disclosure of non-cash investing and financing activities** | | | | |
| Unpaid deferred offering costs | $ — | $ — | $ — | $ 1,074 |

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

Quantenna Communications, Inc.

**Consolidated Statements of Cash Flows**

**(In thousands)**

| | | | | |
|---|---|---|---|---|
| Issuance of convertible preferred stock upon conversion of convertible notes and accrued interest | $ 16,163 | $ — | $ — | $ — |
| Purchases of property and equipment included in accounts payable and accrued liabilities and other current liabilities | $ — | $ — | $ | $ |
| Issuance of warrants in conjunction with the execution of debt agreement | $ — | $ — | $ — | $ |

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

# *Notes to Consolidated Financial Statements*

Quantenna Communications, Inc.

**Notes to 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 develops standards-based 802.11n and 802.11ac Wi-Fi chipsets that deliver high performance, speed, and reliability for wireless networks and devices.

**Reporting Calendar**

The Company’s fiscal year consists of either 52 or 53 weeks. For each year consisting of 52 weeks, the Company’s fiscal year ends on the Sunday nearest the end of December. For each year consisting of 53 weeks, the Company’s fiscal year ends on the first Sunday in January. Fiscal 2014 and 2015 each included 52 weeks and fiscal 2016 will include 53 weeks.

**Liquidity and Capital Resources**

As of December 27, 2015 and June 26, 2016, the Company had completed several rounds of private equity financing with net proceeds totaling $184.7 million and $184.7 million (unaudited), respectively. The Company has incurred losses and negative cash flows from operations for every fiscal year since inception. As of December 27, 2015 and June 26,

2016, the Company had cash and cash equivalents of $18.9 million and $16.9 million (unaudited), respectively, and an accumulated deficit of $159.7 million and $161.6 million (unaudited), respectively. In May 2016, the Company amended and restated the April 2013 Loan and Security Agreement with Silicon Valley Bank and entered into a new Mezzanine Loan Agreement to increase the total amount available for borrowing to $34.0 million (unaudited). The Company has drawn down $3.0 million under the revolving line of credit and has an undrawn balance of $17.0 million as of June 26, 2016. There is no draw down on the Mezzanine Loan as of June 26, 2016.

The Company has a limited operating history and its prospects are subject to risks, expenses and uncertainties frequently encountered by companies in the semiconductor industry. These risks include, but are not limited to, the uncertainty of availability of additional financing, and the uncertainty of achieving future profitability. Management believes that the Company will be successful in raising additional financing from its stockholders or from other sources of capital funding, expanding operations and gaining market share. There can be no assurance that in the event the Company requires additional financing, such financing will be available on terms which are favorable or at all. Failure to generate sufficient cash flows from operations, raise additional capital or reduce certain discretionary spending could have a material adverse effect on the Company's ability to achieve its intended business objectives.

### Use of Estimates

Preparation of financial statements in conformity with accounting principles generally accepted in the United States of America, or 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. Actual results could differ from those estimates.

### Principles of Consolidation

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

### Reclassifications

Certain prior year balances presented in the consolidated financial statements have been reclassified to conform to the current year presentation. For the year ended December 28, 2014, the Company has reallocated $1.7 million of facility and information technology overhead expenses from general and administrative expense, and included $1.5 million in research and development expense and $0.2 million in sales and marketing expense. These reclassifications had no effect on the previously reported net loss.

Quantenna Communications, Inc.

### Notes to Consolidated Financial Statements

### Foreign Currency Remeasurement

The Company and its subsidiaries use the U.S. dollar as the functional currency. Foreign currency assets and liabilities are remeasured into U.S. dollars at the end-of-period exchange rates except for non-monetary assets and liabilities, which are measured at historical exchange rates. Revenue and expenses are remeasured using an average exchange rate for the respective period, except for expenses related to non-monetary assets and liabilities, which are measured at historical exchange rates. Gains or losses from foreign currency remeasurement and transactions are included in "Other income (expense), net." For the years ended December 28, 2014 and December 27, 2015 and for the six months ended June 28, 2015 (unaudited) and June 26, 2016 (unaudited), foreign currency remeasurement and transactions gains and losses were immaterial.

### Cash and Cash Equivalents

Cash equivalents include liquid short-term investments with original or remaining maturities of three months or less at the date of purchase, readily convertible to known amounts of cash.

### Fair Value of Financial Instruments

The carrying amounts of the Company's financial instruments, which include cash equivalents, accounts receivable, accounts payable and accrued liabilities and other current liabilities, approximate their fair values due to their short maturities. The estimated fair value of the Company's debt approximates the carrying value because the interest rate on the borrowings approximates market rates and was determined to be a Level 2 instrument. The Company also has issued certain convertible preferred stock warrants which are accounted for as liabilities at fair value. See Note 5 for further details.

### Accounts Receivable and Allowances for Doubtful Accounts

Accounts receivable is stated at invoice value less estimated allowances for returns and doubtful accounts. The Company continually monitors customer payments and maintains an allowance for estimated losses resulting from its customers' inability to make required payments. The Company considers factors such as historical experience, credit quality, age of the accounts receivable balances, geographic related risks and economic conditions that may affect a customer's ability to pay. In cases where there are circumstances that may impair a specific customer's ability to meet its financial obligations, a specific allowance is recorded against amounts due, which reduces the net recognized receivable to the amount reasonably believed to be collectible. For all periods presented, the Company concluded that no allowance for doubtful accounts was necessary.

### Concentration of Credit Risk

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist principally of cash and cash equivalents and accounts receivable. The Company places its cash and cash equivalents primarily in banks and highly rated institutional money market funds.

The Company generally requires no collateral from its customers. For the years ended December 28, 2014 and December 27, 2015, three and four customers accounted for 10% or more of revenue, respectively. For the six months ended June 28, 2015 and June 26, 2016, three and five customers accounted for 10% or more of revenue (unaudited), respectively. The following table discloses these customers' percentage of revenue for the respective periods:



| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | | | (unaudited) | (unaudited) |
| Customer | | | | |
| A | 11% | 15% | 16% | 12% |
| B | * | 14% | * | 17% |
| | * | 11% | 14% | 10% |

| | | | | |
|---|---|---|---|---|
| D | 28% | 10% | 12% | * |
| E | 21% | * | * | * |
| F | * | * | * | 14% |
| G | * | * | * | 10% |

_____

* Total customer percentage of revenue was less than 10%.

At December 28, 2014, December 27, 2015 and June 26, 2016 (unaudited), three customers accounted for 10% or more of accounts receivable. The following customers represented 10% or more of accounts receivable:

| | December 28, 2014 | December 27, 2015 | June 26, 2016 |
|---|---|---|---|
| | | | (unaudited) |
| **Customer** | | | |
| B | * | 17% | 31% |
| A | 25% | 16% | 13% |
| H | * | 13% | * |
| E | 24% | * | * |
| F | 13% | * | 19% |

_____

* Total customer accounts receivable was less than 10%.

**Restricted Cash**

The Company maintained $59,000 and $1.5 million (unaudited) of restricted cash in certificate of deposit accounts at December 28, 2014 and June 26, 2016, respectively, supporting letters of credit required for the Company's operating lease facility and deposits required by the Company's foundry partner in connection with its purchase of silicon wafers. There was zero restricted cash as of December 27, 2015.

**Inventory**

Inventory is stated at the lower of cost to purchase or manufacture the inventory or the market value of such inventory. Cost is determined using the standard cost method which approximates the first-in first-out basis. Market value is determined as the lower of replacement cost or net realizable value. The Company, at least quarterly, assesses the recoverability of all inventories to determine whether adjustments are required to record inventory at the lower of cost or market. Potentially excess and obsolete inventory is written off based on management's analysis of inventory levels and estimates of future 12-month demand and market conditions. The Company is also entitled to receive rebates from its foundry partner on the purchase of silicon wafers upon achieving certain volume targets. Rebates from the Company's foundry partner are recorded as a reduction of inventory cost and are recognized in cost of revenue as the chipsets made from such silicon wafers are sold to customers.

### Prepaid Expenses and Other Current Assets

The Company purchases rights to software and intellectual property used in the development of its Wi-Fi solutions. Certain of the arrangements require payment over the life of the right to use the related software and intellectual property. The Company records the up-front fees and periodic payments in prepaid expenses and other current assets and amortizes the amount over the life of the arrangement using the straight-line method.

### Debt Issuance Costs and Debt Discounts

Costs incurred in connection with the issuance of new debt are capitalized and amounts paid in connection with the modification of existing debt are expensed as incurred. Capitalizable debt issuance costs paid to third parties and debt discounts paid to creditors, net of amortization, are recorded as a reduction to the long-term debt balance on the consolidated balance sheet.

Amortization expense on capitalized debt issuance costs and debt discounts related to loans with fixed payment terms is calculated using the effective interest method over the term of the associated loans. Amortization expense on capitalized debt issuance costs and debt discounts related to revolving loans are calculated using the straight-line method over the term of the revolving loan commitment, and is recorded as Interest expense in the consolidated statements of operations. When debt is extinguished prior to the maturity date, any remaining associated debt issuance costs or debt discounts are expensed to Interest expense in the consolidated statements of operations.

### Property and Equipment

Property and equipment are stated at cost and depreciated using the straight-line method over the estimated useful lives of the assets as follows:

| | |
|---|---|
| Computer and lab equipment | 3 to 5 years |
| Computer software | 3 years |
| Furniture and fixtures | 3 to 5 years |
| Leasehold improvements | Shorter of remaining lease term or estimated useful lives of the assets |

Costs of maintenance and repairs that do not improve or extend the lives of the respective assets are expensed as incurred. Upon retirement or sale, the cost and related accumulated depreciation are removed from the balance sheet and the resulting gain or loss is reflected in operating expenses.

### Impairment of Long-Lived Assets

The Company evaluates its long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. When the sum of the undiscounted future net cash flows expected to result from the use of the asset or asset group and its eventual disposition is less than its carrying amount, an impairment loss would be measured based on the discounted cash flows compared to the carrying amount attributable to the asset group. No impairment loss has been recognized for the periods presented.

### Warranty

The Company provides 12-month warranty coverage on all of its Wi-Fi solutions. The warranty provides for replacement of the associated Wi-Fi solutions during the warranty period. The Company establishes a liability for estimated warranty costs at the time revenue is recognized. The warranty obligation is affected by historical failure rates and associated replacement costs. The warranty liability is included in accrued liabilities and other current liabilities on the consolidated balance sheet. The warranty liability and activity for the periods presented are immaterial.

### Income Taxes

The Company recognizes deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements or tax returns. The Company recognizes future tax benefits, measured by enacted tax rates attributable to deductible temporary differences between financial statements and income tax bases of assets and liabilities, and net operating loss carry-forwards to the extent that realization of such benefits is more likely than not.

The Company records a liability for the difference between the benefit recognized and measured pursuant to the accounting guidance on accounting for uncertain tax positions and the tax position taken or expected to be taken on the Company's tax return. To the extent that the assessment of such tax positions changes, the change in estimate is recorded in the period in which the determination is made. The Company establishes these liabilities based on estimates of whether, and the extent to which, additional taxes will be due. These liabilities are established when the Company believes that certain positions might be challenged despite the Company's belief that the tax return positions are fully supportable. The liabilities are adjusted in light of changing facts and circumstances, such as the outcome of tax audits.

### Revenue Recognition

The Company derives the majority of its revenue from the sale of its Wi-Fi solutions. Revenue is recognized net of accruals for sales returns and rebates, which is estimated based on past experience or contractual rights. The Company recognizes revenue when persuasive evidence of an arrangement exists, delivery has occurred, the price is deemed fixed or determinable and collection is reasonably assured. These criteria are met upon shipment to customers. For sales made through distributors, revenue is recognized when title passes to the distributor upon shipment, and payment by the Company's distributors is not contingent on resale of the Wi-Fi solutions. The Company's sales arrangements with distributors do not allow for rights of return or price protection on unsold Wi-Fi solutions. The Company's policy is to classify shipping and handling costs, net of costs charged to customers, as cost of revenue.

The Company also derives revenue from contracts with multiple deliverables, including a mix of intellectual property licenses, research and development services, and other non-recurring arrangements. Revenue recognition for contracts with multiple deliverables is based on the individual units of accounting determined to exist in the contract. A delivered item is considered a separate unit of accounting when (i) the delivered item has value to the customer on a stand-alone basis; and (ii) if a general right of return exists, the delivery or performance of an undelivered item is considered probable and under the Company's control. Items are considered to have a stand-alone value when they are sold separately by any vendor or when the customer could resell the item on a stand-alone basis. In addition, intellectual property deliverables are considered to have value on a stand-alone basis if the customer could use them without the remaining elements of the arrangement. When a deliverable does not meet the criteria to be considered a separate unit of accounting, it is grouped together with other deliverables that, when combined, meet the criteria, and the appropriate allocation of arrangement consideration and revenue recognition is determined.

In April 2013, the Company entered into an agreement consisting of intellectual property licenses and research and development services. The Company concluded that the agreement consists of two deliverables, intellectual property license and research and development services. The Company determined that two deliverables do not meet the criteria to be accounted as separate units of accounting because the intellectual property licenses do not have a value on a standalone basis from the research and development services. As a result, the intellectual property licenses and research and development services are considered one combined unit of accounting. Revenue is recognized on a straight-line basis over the 33-month period the services are expected to be performed, provided all other revenue recognition criteria are met. If the estimated period over which the services are originally expected to be performed changes, the amount of revenue remaining to be recognized will be recognized over the revised remaining performance period. The agreement's term is ten (10) years. The agreement may be terminated by either party if (a) the other party materially breaches a material provision of the agreement unless such breach is cured during the thirty (30) day grace period, (b) the other

party materially breaches any provision of the agreement that cannot be cured, or (c) the other party makes any assignment for the benefit of creditors, files a petition in bankruptcy, is adjudged bankrupt, becomes insolvent, or is placed in the hands of a receiver. Certain payments received under the agreement are refundable if the agreement is terminated for the Company's material breach of the agreement terms. The fees under this agreement totaled $16.5 million, of which $6.2 million, $5.7 million, $3.1 million (unaudited) and $0.5 million (unaudited) was recognized as revenue for the year ended December 28, 2014, December 27, 2015, and the six months ended June 28, 2015 and June 26, 2016, respectively.

Quantenna Communications, Inc.

### Notes to Consolidated Financial Statements

#### Deferred Revenue

Deferred revenue is comprised of billings or payments received in advance of meeting revenue recognition criteria.

#### Research and Development Expenses

All costs related to the research and development of the Company's Wi-Fi solutions are expensed as incurred. Research and development ("R&D") expense consists primarily of personnel costs for the Company's R&D activities. R&D expense also includes costs associated with the design and development of the Company's Wi-Fi solutions, such as mask sets, prototype wafers, prototype engineering boards, software and computer-aided design software licenses, intellectual property licenses, reference design development, development testing and evaluation, depreciation expense, and allocated administrative costs.

#### Operating Leases

The Company recognizes rent expense on a straight-line basis over the non-cancellable term of the operating lease. The difference between rent expense and rent paid is recorded as deferred rent in accrued liabilities and other current liabilities on the consolidated balance sheets.

#### Advertising and Promotion Costs

Expenses related to advertising and promotion of products are charged to sales and marketing expense as incurred. The Company incurred immaterial advertising or promotion expenses in the years ended December 28, 2014 and December 27, 2015 and six months ended June 28, 2015 (unaudited) and June 26, 2016 (unaudited).

#### Stock-Based Compensation

The Company measures and recognizes compensation expense for all stock-based awards made to employees, directors and non-employees, based on estimated fair values recognized using the straight-line method over the requisite service period.

The fair value of options and warrants to purchase common stock granted to employees is estimated on the grant date using the Black-Scholes option valuation model. The calculation of stock-based compensation expense requires that the Company make assumptions and judgments about the variables used in the Black-Scholes model, including the expected term, expected volatility of the underlying common stock, risk-free interest rate, as well as estimating future forfeitures of unvested stock options. To the extent actual forfeiture results differ from the estimates, the difference will be recorded as a cumulative adjustment in the period the estimates are revised.

The Company accounts for common stock warrants and options issued to non-employees under ASC 505-50 Equity-Equity based payments to Non-Employees, using the Black-Scholes option valuation model. The fair value of such non-employee awards is remeasured at each quarter-end over the vesting period.

### Common Stock Warrants

The Company accounts for common stock warrants as equity in accordance with the accounting guidance for derivatives. The accounting guidance provides a scope exception from classifying and measuring as a financial liability a contract that would otherwise meet the definition of a derivative if the contract is both (i) indexed to the entity's own stock and (ii) meets the requirement for classification in the stockholders' equity (deficit) section of the balance sheet.

The Company determined that the common stock warrants issued in connection with the debt arrangement are required to be classified in equity. Warrants classified as equity are recorded as additional paid in capital on the consolidated balance sheet in stockholders' equity (deficit) and no further adjustments to their valuation are made.

The Company accounts for common stock warrants issued to non-employees for services under ASC 505-50. The fair value of such non-employee warrants is remeasured at each quarter-end over the vesting period. The Company determines the fair value of the common stock warrants using the Black-Scholes option valuation model using the stock price and other measurement assumptions as of the earlier of the date at which either (1) a commitment for performance by the counterparty has been reached; or (2) the counterparty's performance is complete.

Quantenna Communications, Inc.

### Notes to Consolidated Financial Statements

### Convertible Preferred Stock

The Company recorded the convertible preferred stock at fair value on the dates of issuance, net of issuance costs. The convertible preferred stock is recorded outside of "Stockholders' equity (deficit)" because, in the event of certain deemed liquidation events considered not solely within the Company's control, such as a merger, acquisition and sale of all or substantially all of the Company's assets, the convertible preferred stock will become redeemable at the option of the holders. The Company has not adjusted the carrying values of the convertible preferred stock to the liquidation preferences of such shares because it is uncertain whether or when an event would occur that would obligate the Company to pay the liquidation preferences to holders of shares of convertible preferred stock. Subsequent adjustments to the carrying values to the liquidation preferences will be made only when it becomes probable that such a liquidation event will occur.

### Convertible Preferred Stock Warrants Liability

Warrants to purchase shares of convertible preferred stock are classified as liabilities on the consolidated balance sheets at fair value upon issuance because the underlying shares of convertible preferred stock are redeemable at the option of the holders upon the occurrence of certain deemed liquidation events considered not solely within the Company's control, which may therefore obligate the Company to transfer assets at some point in the future. The convertible preferred stock warrants are subject to remeasurement to fair value at each balance sheet date and any change in fair value is recognized as a component of "Other income (expense), net" in the consolidated statements of operations. The Company will continue to adjust the liability for changes in fair value until the earlier of the exercise or expiration of the warrants, the completion of a deemed liquidation event, conversion of convertible preferred stock into common stock, or until the convertible preferred stock can no longer trigger a deemed liquidation event. At that time, the convertible preferred stock warrant liability will be reclassified to convertible preferred stock or additional paid-in-capital, as applicable.

### Net Loss per Share Attributable to Common Stockholders

Basic net loss per share attributable to common stockholders is calculated by dividing the net loss attributable to common stockholders by the weighted-average number of shares of common stock outstanding during the period, without consideration for potentially dilutive securities. Diluted net loss per share is computed by dividing the net loss attributable to common stockholders by the weighted-average number of shares of common stock and potentially dilutive securities outstanding for the period. For purposes of the diluted net loss per share calculation, stock options,

warrants and convertible preferred stock are considered to be potentially dilutive securities. Basic and diluted net loss attributable to common stockholders per share is presented in conformity with the two-class method required for participating securities as the convertible preferred stock is considered a participating security. In addition, the Company considers shares issued upon the early exercise of non-vested warrants to purchase common stock to be participating securities, as the holders of these shares have a non-forfeitable right to dividends. In accordance with the two-class method, earnings allocated to these participating securities and the related number of outstanding shares of the participating securities, which include contractual participation rights in undistributed earnings, have been excluded from the computation of basic and diluted net loss per share attributable to common stockholders. The Company's participating securities do not have a contractual obligation to share in the Company's losses. As such, the net loss was attributed entirely to common stockholders. Because the Company has reported a net loss in all periods presented, diluted net loss per share attributable to common stockholders is the same as basic net loss per share attributable to common stockholders for all periods presented.

#### Unaudited Pro Forma Net Loss per Share Attributable to Common Stockholders

In contemplation of the Company's planned initial public offering ("IPO"), it has presented the unaudited pro forma basic and diluted net loss per share attributable to common stockholders, which has been computed to give effect to the automatic conversion of the convertible preferred stock into shares of common stock in accordance with conversion features present in the convertible preferred stock (see Note 8) as of the beginning of the respective period or the date of issuance, if later. In addition, the numerator in the pro forma basic and diluted net loss per common share calculation has been adjusted to reflect the following: (i) to remove gains or losses resulting from the remeasurement of the convertible preferred stock warrant liability as the warrants will be converted into warrants to purchase common stock and the related convertible preferred stock warrant liability will be reclassified to additional paid-in capital immediately prior to the sale of the Company's common stock in an IPO, and (ii) upon the effectiveness of the Company's IPO, the Company will be obligated to pay to its lender an aggregate of $0.2 million in fees. The Company has made an adjustment to the pro forma net loss to reflect the impact of such fees.

Quantenna Communications, Inc.

#### Notes to Consolidated Financial Statements

#### Comprehensive Income (Loss)

Comprehensive income (loss) is defined as the change in equity of the Company during a period from transactions and other events and circumstances excluding transactions resulting from investments and distributions to owners. The Company has not included a separate statement of comprehensive income (loss) as there were no transactions to report in the periods presented.

#### Unaudited Interim Consolidated Financial Information

The accompanying interim consolidated financial statements as of June 26, 2016 and for the six months ended June 28, 2015 and June 26, 2016, and the related interim information contained within the notes to the consolidated financial statements, are unaudited. The unaudited interim consolidated financial statements have been prepared in accordance with US GAAP and on the same basis as the audited consolidated financial statements. In the opinion of management, the accompanying unaudited interim consolidated financial statements contain all adjustments which are necessary to state fairly the Company's financial position as of June 26, 2016, and the results of its operations and cash flows for the six months ended June 28, 2015 and June 26, 2016. Such adjustments are of a normal and recurring nature. The results for the six months ended June 26, 2016 are not necessarily indicative of the results to be expected for fiscal 2016, or for any future period.

### Unaudited Pro Forma Balance Sheet Information

The unaudited pro forma stockholders' equity information in the accompanying consolidated balance sheet reflects 58,549,674 shares of the Company's common stock outstanding as of June 26, 2016, and assumes (i) the automatic conversion of all outstanding shares of convertible preferred stock into 1,239,538,632 shares of the Company's common stock, (ii) the conversion of outstanding warrants to purchase shares of convertible preferred stock into warrants to purchase shares of common stock and the resultant reclassification of the warrant liability of $0.3 million to additional paid-in capital, (iii) upon the effectiveness of the Company's IPO, the Company will be obligated to pay to its lender an aggregate of $0.2 million in fees. The Company has made an adjustment to accumulated deficit to reflect the impact of such fees.

Shares of common stock contemplated to be sold in the Company's planned IPO and related net proceeds are excluded from such pro forma information.

### Deferred Offering Costs

Deferred offering costs, consisting of legal, accounting and other fees and costs relating to the Company's planned IPO are capitalized within "Other assets" on the consolidated balance sheet. The deferred offering costs will be offset against the proceeds received upon the closing of the planned IPO. In the event the planned IPO is terminated, all of the deferred offering costs will be expensed within loss from operations. As of June 26, 2016, $1.1 million (unaudited) of deferred offering costs were recorded as other assets on the consolidated balance sheet. There were no deferred offering costs incurred for the previous periods presented.

### 2. Recent Accounting Pronouncements

In June 2016, the FASB issued ASU 2016-13, Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments. ASU 2016-13 requires entities to establish an allowance for credit losses for most financial assets. Previously, GAAP was based on an incurred loss methodology for recognizing credit losses on financial assets measured at amortized cost and available-for sale debt securities. The update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted for fiscal years beginning after December 31, 2018. The Company is currently evaluating the effects, if any, that the adoption of this guidance will have on its consolidated financial statements.

In March 2016, the FASB issued ASU 2016-09, Improvements to Employee Share-Based Payment Accounting as part of its simplification initiative, which involves several aspects of accounting for share-based payment transactions, including the income tax effects, statutory withholding requirements, forfeitures, and classification on the statement of cash flows. The standard is effective for companies for fiscal years beginning after December 15, 2016, and interim periods within those fiscal years with early adoption permitted. If an entity early adopts the amendments in an interim period, any adjustments should be reflected as of the beginning of the fiscal year that includes that interim period. The Company is currently evaluating the effects, if any, that the adoption of this guidance will have on its consolidated financial statements.

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### Notes to Consolidated Financial Statements

In March 2016, the FASB issued ASU No. 2016-06, Derivatives and Hedging (Topic 815)--Contingent Put and Call Options in Debt Instruments. This ASU clarifies the requirements for assessing whether contingent call (put) options that can accelerate the payment of principal on debt instruments are clearly and closely related to their debt hosts. An entity performing the assessment under the amendments in this Update is required to assess the embedded call (put) options solely in accordance with the four-step decision sequence. This guidance should be applied on a modified retrospective basis to existing debt instruments as of the beginning of the fiscal year in which the amendments are

effective, and is effective for fiscal years beginning after December 15, 2016, including interim periods within those fiscal years. The Company is currently evaluating the effects, if any, that the adoption of this guidance will have on its consolidated financial statements.

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 currently evaluating the effects, if any, that the adoption of this guidance will have on its consolidated financial statements.

In January 2016, the FASB issued ASU 2016-01, Recognition and Measurement of Financial Assets and Financial Liabilities, which addresses certain aspects of recognition, measurement, presentation and disclosure of financial instruments. ASU 2016-01 is effective for annual periods, and interim periods within those annual periods, beginning after December 15, 2017. The Company is currently evaluating the effects, if any, that the adoption of this guidance will have on its consolidated financial statements.

In November 2015, the FASB issued ASU 2015-17, Balance Sheet Classification of Deferred Taxes to simplify the presentation of deferred income taxes. The amendments in this update require that deferred tax liabilities and assets be classified as non-current in a classified statement of financial position. The standard is effective on January 1, 2017, with early adoption permitted. The Company does not expect that the adoption of ASU 2015-17 will have a material effect on its consolidated financial statements.

In July 2015, the FASB issued ASU No. 2015-11, Inventory (Topic 330): Simplifying the Measurement of Inventory, which permits companies to measure inventory at the lower of cost and realizable value. ASU 2015-11 applies to all business entities and is effective for annual periods, and interim periods within those annual periods, beginning after December 15, 2016. Early adoption is permitted. The Company is currently evaluating the effects, if any, that the adoption of this guidance will have on its consolidated financial statements.

In April 2015, the FASB issued ASU No. 2015-05, “Customer’s Accounting for Fees Paid in a Cloud Computing Arrangement,” which provides guidance for a customer’s accounting for cloud computing costs. Under ASU 2015-05, if a software cloud computing arrangement contains a software license, customers should account for the license element of the arrangement in a manner consistent with the acquisition of other software licenses. If the arrangement does not contain a software license, customers should account for the arrangement as a service contract. This standard may be applied either prospectively to all arrangements entered into or materially modified after the effective date, or retrospectively. ASU 2015-05 is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2015, and early adoption is permitted. The adoption of ASU 2015-05 did not have a material effect on the Company’s consolidated financial statements.

In April 2015, the FASB issued ASU No. 2015-03, Interest–Imputation of Interest (Subtopic 835-30): Simplifying the Presentation of Debt Issuance Costs. Under ASU No. 2015-03, debt issuance costs related to a recognized debt liability are presented as a direct deduction from the carrying amount of that debt liability, consistent with debt discounts. The adoption of ASU No. 2015-03 has been applied retrospectively to the Company’s Consolidated Balance Sheet and resulted in an immaterial impact on the outstanding carrying value of the debt as of December 27, 2015.

In June 2014, the FASB issued ASU 2014-12, Accounting for Share-Based Payments When the Terms of an Award Provide That a Performance Target Could Be Achieved after the Requisite Service Period. ASU 2014-12 requires that a performance target that affects vesting and could be achieved after the requisite service period be treated as a

performance condition. ASU Quantenna Communications, Inc.

**Notes to Consolidated Financial Statements**

2014-12 is effective for the Company in its first quarter of 2016 with early adoption permitted. The adoption of ASU 2014-12 did not have a material effect on the Company's consolidated financial statements.

In August 2014, the FASB issued ASU 2014-15 related to Presentation of Financial Statements - Going Concern (Subtopic 205-40): Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern. This update provides guidance about management's responsibilities in evaluating an entity's going concern uncertainties, and about the timing and content of related footnote disclosures. Under this amended guidance, an entity's management should evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the entity's ability to continue as a going concern within one year after the date that the financial statements are issued. This update is effective for the annual period ending after December 15, 2016, and for annual periods and interim periods thereafter. Early application is permitted. The Company does not expect that the adoption of ASU 2014-15 will have a material effect on its consolidated financial statements.

In May 2014, the FASB issued ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606), which supersedes the revenue recognition requirements in ASC 605, Revenue Recognition. This ASU is based on the principle that revenue is recognized to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The ASU also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. In August 2015, FASB issued ASU No. 2015-14, Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date, which effectively delayed the adoption date by one year, to an effective date for public entities for annual and interim periods beginning after December 15, 2017. In March, April and May 2016, the FASB issued additional updates to the new revenue standard relating to reporting revenue on a gross versus net basis, identifying performance obligations and licensing arrangements, and narrow-scope improvements and practical expedients, respectively. The effective date of this additional update is the same as that of ASU 2014-09. The Company is currently evaluating the effects, if any, that the adoption of this guidance will have on its consolidated financial statements.

**3. Earnings Per Share**

The following table summarizes the computation of basic and diluted net loss per share attributable to common stockholders of the Company:

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| (in thousands, except share and per share data) | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | | | (unaudited) | (unaudited) |
| Net loss | $ (13,598) | $ (7,045) | $ (7,400) | $ (1,949) |
| Weighted-average shares outstanding | 32,808,092 | 38,821,597 | 35,614,157 | 57,414,376 |
| Less: weighted average shares subject to repurchase due to early exercise | — | (309,321) | — | (4,282,649) |

| | | | | |
|---|---|---|---|---|
| Weighted average shares used to compute basic and diluted net loss per share | 32,808,092 | 38,512,276 | 35,614,157 | 53,131,727 |
| Net loss attributable to common stockholders per share, basic and diluted | $ (0.41) | $ (0.18) | $ (0.21) | $ (0.04) |

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**Notes to Consolidated Financial Statements**

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:

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | | | (unaudited) | (unaudited) |
| Convertible preferred stock (as-converted) | 1,187,009,541 | 1,239,538,632 | 1,223,854,169 | 1,239,538,632 |
| Warrants to purchase convertible preferred stock | 13,562,425 | 13,562,425 | 13,562,425 | 1,937,425 |
| Warrants to purchase common stock | 14,435,000 | 14,150,326 | 14,435,000 | 21,932,826 |
| Options to purchase common stock | 252,318,636 | 253,117,399 | 245,972,186 | 256,468,336 |
| Total | 1,467,325,602 | 1,520,368,782 | 1,497,823,780 | 1,519,877,219 |

Unaudited pro forma basic and diluted loss per share is computed as follows:

| | Years Ended | Six Months Ended |
|---|---|---|
| (in thousands, except shares and per share data) | December 27, 2015 | June 26, 2016 |
| | (unaudited) | (unaudited) |
| Pro forma net loss per share—basic and diluted | | |
| Numerator: | | |
| Net loss | $ (7,045) | $ (1,949) |
| Adjust: change in fair value of convertible preferred stock warrants | | |
| Adjust: fees payable to lender associated with IPO | (205) | (205) |
| Pro forma net loss | $ (7,189) | $ (2,109) |

| | | |
|---|---|---|
| Denominator: | | |
| Weighted-average shares used to compute basic and diluted net loss per share | 38,512,276 | 53,131,727 |
| Adjust: assumed conversion of convertible preferred stock | 1,214,830,376 | 1,239,538,632 |
| Pro forma weighted average number of shares outstanding—basic and diluted net loss per share | 1,253,342,652 | 1,292,670,359 |
| Pro forma net loss per share—basic and diluted | $ (0.01) | $ (0.00) |

Quantenna Communications, Inc.

**Notes to Consolidated Financial Statements**

**4. Balance Sheets Components**

Property and equipment, net consisted of the following:

| (in thousands) | December 28, 2014 | December 27, 2015 | June 26, 2016 |
|---|---|---|---|
| | | | (unaudited) |
| Computer and lab equipment | $ 5,440 | $ 7,100 | $ 8,062 |
| Computer software | | | |
| Furniture and fixtures | | | |
| Leasehold improvements | | | |
| | 6,111 | 7,817 | 8,791 |
| Accumulated depreciation and amortization | (3,802) | (4,734) | (5,243) |
| Property and equipment, net | $ 2,309 | $ 3,083 | $ 3,548 |

Depreciation expense related to property and equipment was $0.9 million, $1.0 million, $0.5 million (unaudited) and $0.5 million (unaudited) for the years ended December 28, 2014 and December 27, 2015 and for the six months ended June 28, 2015 and June 26, 2016, respectively.

**Inventory**

Inventory consisted of the following:

| (in thousands) | December 28, 2014 | December 27, 2015 | June 26, 2016 |
|---|---|---|---|
| | | | (unaudited) |
| Raw materials | $ 5,270 | $ 3,707 | $ 1,986 |
| Work in progress | 1,272 | 1,238 | 2,559 |
| Finished goods | 4,252 | 2,462 | 2,904 |

| | | | |
|---|---|---|---|
| | $ 10,794 | $ 7,407 | $ 7,449 |

**Accrued Liabilities and Other Current Liabilities**

Accrued liabilities and other current liabilities consisted of the following:

| (in thousands) | December 28, 2014 | December 27, 2015 | June 26, 2016 |
|---|---|---|---|
| | | | (unaudited) |
| Accrued payroll and related benefits | $ 1,425 | $ 2,243 | $ 3,535 |
| Accrued customer rebates | 1,951 | 2,501 | 4,619 |
| Other | 1,307 | | 2,472 |
| | $ 4,683 | $ 5,617 | $ 10,626 |

**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 Quantenna Communications, Inc.



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. |

At December 28, 2014, December 27, 2015 and June 26, 2016, highly liquid money market funds of $14.0 million, $10.0 million and $10.0 million (unaudited), respectively, were valued using Level 1 of the fair value hierarchy, quoted prices in active markets for identical assets and are included in cash equivalents.

There were no transfers between Level 1 and Level 2 categories during any of the periods presented.

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. The gains and losses presented below include changes in the fair value related to both observable and unobservable inputs. The Company's only Level 3 financial instruments are convertible preferred stock warrants.

The following tables set forth the fair value of the Company's financial assets and liabilities measured at fair value on a recurring basis as of December 28, 2014, December 27, 2015 and June 26, 2016 based on the three-tier fair value hierarchy:

| | Fair Value as of December 28, 2014 | | | |
|---|---|---|---|---|
| (in thousands) | Level 1 | Level 2 | Level 3 | Total |
| **Assets** | | | | |
| Cash equivalents | $ 14,012 | $ – | $ – | $ 14,012 |
| **Liabilities** | | | | |
| Convertible preferred stock warrant liability | $ – | $ – | $ | $ |

| | Fair Value as of December 27, 2015 | | | |
|---|---|---|---|---|
| (in thousands) | Level 1 | Level 2 | Level 3 | Total |
| **Assets** | | | | |
| Cash equivalents | $ 10,014 | $ – | $ – | $ 10,014 |
| **Liabilities** | | | | |
| Convertible preferred stock warrant liability | $ – | $ – | $ | $ |



| | Fair Value as of June 26, 2016 (unaudited) | | | |
|---|---|---|---|---|
| (in thousands) | Level 1 | Level 2 | Level 3 | Total |
| **Assets** | | | | |
| Cash equivalents | $ 10,021 | $ – | $ – | $ 10,021 |

| | | |
|---|---|---|
| **Liabilities** | | |
| Convertible preferred stock warrant liability | $ | $ |

| (in thousands) | Convertible Preferred Stock Warrant Liability |
|---|---|
| **Fair value using Level 3 inputs** | |
| **Balance at January 1, 2014** | $ |
| Addition | — |
| Change in fair value | (38 ) |
| **Balance at December 28, 2014** | |
| Addition | — |
| Change in fair value | |
| **Balance at December 27, 2015** | |
| Addition (unaudited) | — |
| Change in fair value (unaudited) | |
| **Balance at June 26, 2016 (unaudited)** | $ |

**Series A Convertible Preferred Stock Warrants**

In connection with a $6.0 million debt agreement entered into in 2007, the Company issued warrants to purchase an aggregate of 694,604 shares of Series A convertible preferred stock at an exercise price of $0.34552 per share to two lenders during 2007. The Company recorded the fair value of the warrants of $118,000 on issuance as a debt discount, which was determined using the Black-Scholes option valuation model with the following assumptions: contractual life of seven years, volatility of 74%, risk-free interest rate of 4.5%, and no expected dividends. The Company accreted this discount to interest expense over the three-year contractual life of the debt. The warrants expired in March 2014.

**Series F-1 Convertible Preferred Stock Warrants**

During the Series F-1 financing in March 2012, the Company issued a convertible preferred stock warrant to purchase 11,625,000 shares of Series F-1 convertible preferred stock at an exercise price of $0.0001 per share. The warrants become exercisable upon the achievement of certain milestones. The milestones were not considered probable of being met and were not reached during the periods presented. As a result, no amount was recorded in the Company's consolidated financial statements during the periods presented. On March 23, 2016, the convertible preferred stock warrants expired.

In addition, in October 2013, in connection with a $3.0 million finance agreement, the Company issued a convertible preferred stock warrant to purchase 1,937,425 shares of Series F-1 preferred stock at an exercise price of $0.15484 per share. The Company recorded the fair value of the warrant of $0.2 million on issuance, which was determined using the assumptions: contractual life of 10 years, volatility rate of 49.3%, risk free interest rate of 2.57% and no expected dividends .

The convertible preferred stock warrant liabilities will increase or decrease each period based on the fluctuations of the fair value of the underlying convertible preferred stock.

The Company recorded a gain of $38,000 and a loss of $61,000 within “Other income (expense), net” in the consolidated statements of operations for the years ended December 28, 2014 and December 27, 2015, respectively, and a loss of $16,000 (unaudited) and $45,000 (unaudited) for the six months ended June 28, 2015 and June 26, 2016, respectively, for the change in fair value of the convertible preferred stock warrants.

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The following assumptions were used to determine the fair value of the Series F-1 convertible preferred stock warrants issued in October 2013:

| | December 28, 2014 | December 27, 2015 | June 26, 2016 |
|---|---|---|---|
| | | | (unaudited) |
| Remaining contractual life (in years) | 1.2 - 8.8 | 0.2 - 7.9 | 7.4 |
| Volatility rate | 34% - 48% | 42% - 44% | 41% |
| Risk-free interest rate | 0.4% - 2.1% | 0.2% - 2.1% | 1.3% |
| Expected dividends | — | — | — |

**Common Stock Warrants**

In October 2014, in connection with the Series G financing and the appointment of a member of the Company’s board of directors, the Company issued a common stock warrant to Centerview Capital Technology Management, L.P. (“Centerview”)” to purchase 14,435,000 shares of common stock at an exercise price of $0.001 per share, of which 8,661,000 become exercisable upon the achievement of certain milestones, which were achieved during 2015. The remaining 5,774,000 shares were subject to vesting over a service period of four years ending in October 2018, of which 1,443,500 vested during 2015. In December 2015, the warrant was exercised with respect to all 14,435,000 shares of common stock, of which 4,330,500 shares remained subject to future vesting. In June 2016, the Company accelerated the vesting of the remaining unvested shares of common stock issued upon early exercise of the warrant, and the Company recorded stock-based compensation expense of $0.6 million (unaudited) associated with this modification.

In September 2015 and in February 2016 (unaudited), in connection with a separation agreement with a former executive, the Company issued warrants to purchase 14,150,326 and 1,012,500 shares of common stock, at an exercise price of $0.05 and $0.08 per share, respectively. Both warrants were fully exercisable on the grant date and expire in February 2019.

In February 2016 (unaudited), in connection with a consulting arrangement, the Company issued warrants to purchase 450,000 shares of common stock at an exercise price of $0.001 per share. The warrants are subject to a 12-month vesting term and expire in January 2018.

In May 2016 (unaudited), in connection with the Mezzanine Loan (see Note 7), the Company issued warrants to purchase up to 6,320,000 shares of common stock, of which 1,580,000 were immediately exercisable, and up to an additional 4,740,000 will become exercisable depending on the amounts borrowed under the Mezzanine Loan, at an exercise price of $0.08 per share. The fair value of vested warrants on the date of issuance was $96,000. The warrants expire in May 2026.

For expenses recognized by the Company in connection to the common stock warrants transactions discussed above, see section “stock-based compensation for non-employees” within Note 10.

The following assumptions were used to determine the fair value of the common stock warrants:

| | Years Ended | | Six Months Ended |
|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 26, 2016 |
| | | | (unaudited) |
| Remaining contractual life (in years) | 9.8 | 3.4 - 9.6 | 1.6 - 10.0 |
| Volatility rate | 45% | 36% - 47% | 37% - 44% |
| Risk-free interest rate | 2.2% | 0.2% - 2.5% | 0.6% - 1.8% |
| Expected dividends | — | — | — |



As of December 28, 2014, warrants issued and outstanding were as follows:

| | Date of Issuance | Number of Warrants | Exercise Price | Expiration Date | Series F-1 convertible preferred stock warrants | March 2012 | 11,625,000 | $ 0.0001 | March 2016 |
|---|---|---|---|---|---|---|---|---|---|
| Series F-1 convertible preferred stock warrants | October 2013 | 1,937,425 | $ 0.15 | October 2023 | | | | | |
| Common stock warrants | October 2014 | 14,435,000 | $ 0.001 | October 2024 | | | | | |

As of December 27, 2015, warrants issued and outstanding were as follows:

| | Date of Issuance | Number of Warrants | Exercise Price | Expiration Date | Series F-1 convertible preferred stock warrants | March 2012 | 11,625,000 | $ 0.0001 | March 2016 |
|---|---|---|---|---|---|---|---|---|---|
| Series F-1 convertible preferred stock warrants | October 2013 | 1,937,425 | $ 0.15 | October 2023 | | | | | |
| Common stock warrants | September 2015 | 14,150,326 | $ 0.05 | February 2019 | | | | | |

As of June 26, 2016 (unaudited), warrants issued and outstanding were as follows:

| | Date of Issuance | Number of Warrants | Exercise Price | Expiration Date | Series F-1 convertible preferred stock warrants | October 2013 | 1,937,425 | $ 0.15 | October 2023 |
|---|---|---|---|---|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Common stock warrants | September 2015 | 14,150,326 | $ 0.05 | February 2019 |
| Common stock warrants | February 2016 | 1,012,500 | $ 0.08 | February 2019 |
| Common stock warrants | February 2016 | 450,000 | $ 0.001 | January 2018 |
| Common stock warrants | May 2016 | 6,320,000 | $ 0.08 | May 2026 |

**6. 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 December 27, 2015:

| (in thousands) | |
|---|---|
| 2016 | $ |
| 2017 | |
| 2018 | |
| 2019 | |
| 2020 and beyond | — |
| Total minimum lease payments | $ 1,712 |



The following is a schedule of future minimum lease payments under operating leases as of June 26, 2016 (unaudited):

| (in thousands) | |
|---|---|
| 2016 (remaining six months) | $ |
| 2017 | |
| 2018 | |
| 2019 | |
| 2020 and beyond | — |
| Total minimum lease payments | $ 1,519 |

The Company leases office space under arrangements expiring through 2019. Rent expense for the years ended December 28, 2014 and December 27, 2015 and for the six months ended June 28, 2015 and June 26, 2016 was $0.9 million, $1.0 million, $0.5 million (unaudited) and $0.6 million (unaudited), respectively.

### Purchase Commitments

The Company has purchase obligations of $5.6 million and $15.4 million (unaudited) that are based on outstanding purchase orders as of December 27, 2015 and June 26, 2016, respectively, 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 December 27, 2015 and June 26, 2016.

### Indemnification

In connection with the sale of its semiconductor chip 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. 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 December 27, 2015.

### Commitments

In April 2012, an agreement was entered into with Joint Stock Company "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 shall mean 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 December 27, 2015, no penalty had been incurred, as the Company had met the minimum funding requirements.

Quantenna Communications, Inc.

### Notes to Consolidated Financial Statements

### 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 our results of operations and financial position.

## 7. Long-term Debt

### Convertible Notes

In February 2014 the Company authorized the issuance of convertible notes in connection with a qualified financing to certain investors for up to $30.0 million at an interest rate of 0.5% per annum. Subsequently, the Company issued $16.2 million of convertible notes. On August 29, 2014 the Company issued a total of 59,550,362 shares of Series G convertible preferred stock at $0.27141 to convertible notes holders for the conversion of the convertible notes for the aggregate principal and accumulated interest of $16.2 million.

### Finance Agreement

In October 2013, the Company entered into a finance agreement which provides for equipment funding of $3.0 million over 39 months at an annual percentage rate of 11.9%. The finance agreement is collateralized by all tangible and intangible property of the Company, excluding any intellectual property. This finance agreement was subordinated to the Loan and Security Agreement entered into in April 2013 as amended in October 2013 and in January 2015. In connection with the finance agreement, the Company issued a warrant to the lender to purchase up to 1,937,425 shares of Series F-1 convertible preferred stock at $0.15484 per share (refer to Note 5). As of December 28, 2014 and December 27, 2015 the outstanding balance under the finance agreement was $2.5 million and $1.5 million, respectively. In May 2016, in connection with the amendment and restatement of the April 2013 Loan and Security Agreement described below, the Company paid the remaining outstanding balance of $1.0 million (unaudited) under such finance agreement.

### Loan and Security Agreement

In April 2013, the Company entered into a Loan and Security Agreement with its primary financial institution ("Lender"). The agreement provides for a revolving line of credit and a term loan. The maximum amount available for borrowing under the revolving line of credit was 80% of eligible accounts receivable, not to exceed $3.5 million in the aggregate. Interest under the revolving line of credit was calculated at the greater of the prime rate plus 0.50% or 3.75%. The original maturity date of the revolving line of credit was April 26, 2015. The term loan amount was for $1.0 million, which was advanced in April 2013. The principal amount outstanding on the term loan accrued interest at a per annum rate equal to prime rate plus 0.75%, fixed at the time of funding. The term loan was payable in 36 equal monthly payments starting on May 1, 2013 with the last payment occurring on April 1, 2016.

In October 2013, the Company and Lender agreed to increase the maximum amount available for borrowing under the revolving line of credit to 80% of eligible accounts receivable plus 60% of eligible customer purchase orders, not to exceed $9.5 million in the aggregate. The Company may request cash advances for eligible purchase orders at any time provided that the Company's net cash balance is equal to or greater than $8.0 million and the amount of purchase order advances outstanding does not exceed $2.0 million. The effective annual interest rate for borrowing against receivables is 4.69% and the effective annual percentage rate for borrowing against purchase order advances is 6.25%. The Company and the Lender also added a growth capital term loan for up to $5.0 million of which $3.0 million was advanced on October 31, 2013 and the remaining $2.0 million was to become available upon the Company achieving certain milestones related to revenue growth during 2013. The milestones under this agreement were achieved by the Company but the Company did not borrow the remaining $2.0 million. The principal amount outstanding for the growth capital advance accrues interest at a floating per annum rate equal to prime Quantenna Communications, Inc.



plus 2.25%. The growth capital loan is payable monthly over a 30-month period starting on October 1, 2014 with the last payment set to occur on March 1, 2017.

On January 30, 2015, the Company and the Lender agreed to (i) increase the maximum amount available under the revolving line of credit to 80% of eligible accounts receivable, not to exceed $12.5 million in the aggregate, (ii) extend the maturity date of the revolving line of credit to April 26, 2016, and (iii) add a supplemental growth capital term loan for up to $3.0 million of which $3.0 million was advanced on February 3, 2015. The effective annual interest rate for borrowing against receivables under the revolving line of credit is 4.25% if the Company's net cash is equal to or greater than $4.0 million. If the Company's net cash is less than $4.0 million, the effective annual percentage rate for borrowing against receivables is 6.75%. The principal amount outstanding for the supplemental growth capital loan accrues interest at a floating rate per annum equal to prime plus 1.00%. The supplemental growth capital loan is payable monthly over a 36-month period starting on August 1, 2015 with the last payment set to occur on July 1, 2018.

In May 2016 (unaudited), the Company and the Lender amended and restated the Loan and Security Agreement to (i) increase the maximum amount available under the revolving line of credit to $20.0 million, (ii) extend the maturity date of the revolving line of credit to May 17, 2018, and (iii) add a new senior term loan in the amount of $4.0 million, in addition to the growth capital term loans described above. The effective annual percentage rate on the revolving line of credit is between 4.25% to 5.00% depending on the Company's consolidated leverage ratio. The new senior term loan has a one-year draw down period, and the principal amount outstanding under the new senior term loan accrues interest at a floating rate per annum equal to prime plus 0.75%. The new senior term loan is payable monthly over a 30-month term starting on June 1, 2017 with the last payment due on November 1, 2019. The Company has drawn down $3.0 million under the revolving line of credit and have an undrawn balance under the revolving line of credit of $17.0 million as of June 26, 2016.

In connection with the amendment and restatement of the Loan and Security Agreement, the Company concurrently entered into a subordinated secured Mezzanine Loan with the Lender for up to $10.0 million (unaudited). The principal amount outstanding on the Mezzanine Loan accrues interest at a fixed rate per annum equal to 10.5%. The Mezzanine Loan has a one-year draw down period, with repayment due on May 1, 2019. In connection with the Mezzanine Loan, the Company issued warrants to purchase up to 6,320,000 shares of common stock, of which 1,580,000 were immediately exercisable, and up to an additional 4,740,000 may become exercisable depending on the amounts borrowed under the Mezzanine Loan, at an exercise price of $0.08 per share. The fair value of vested warrants on the date of issuance was $96,000. The Company paid $0.2 million in May 2016 to the lender as origination fees. The fair value of warrants and origination fees are accounted as debt discounts and are recorded as interest expense in the consolidated statement of operations over the term of the loan. The debt discounts related to the Mezzanine Loan is recorded in "Prepaid expense and other current assets" on the consolidated balance sheet, as the Company has not yet drawn down from the Mezzanine Loan as of June 26, 2016.

As of December 28, 2014, December 27, 2015, and June 26, 2016 the aggregate outstanding balance under the Loan and Security Agreement, in each case as amended through such date, and the Mezzanine Loan was $3.2 million, $4.4 million, and $10.1 million (unaudited), respectively.

The agreement contains usual and customary events of default upon the occurrence of certain events, such as nonpayment of amounts due under the revolving line of credit or the term loans, violation of the restrictive covenants, violation of other contractual provisions, or a material adverse change in its business. The agreement includes customary administrative covenants, including a prohibition on declaring dividends, but does not include any financial maintenance or operating related covenants.

In accordance with the Loan and Security Agreement, as amended and restated, upon the occurrence of a liquidity event, including a merger or an IPO, in which the aggregate proceeds of the Company are between $60.0 million and $160.0 million, the Company will be obligated to pay to its lender an aggregate of $0.2 million in fees.

The amended and restated Loan and Security Agreement (the "SVB Loan Agreement"), and the Mezzanine Loan are collateralized by certain of our assets, including pledges of certain of our equity interests in our subsidiaries, receivables and inventory, subject to customary exceptions and limits. The SVB Loan Agreement and the Mezzanine Loan contain

customary events of default upon the occurrence of certain events, such as nonpayment of amounts due under the revolving line of credit or the term loans, violation of restrictive covenants, violation of other contractual provisions, or a material adverse change in the Company's business. In addition, the credit facilities prohibit the payment of cash dividends on the Company's capital stock and also place restrictions on mergers, sales of assets, investments, incurrence of liens, incurrence of indebtedness and transactions with affiliates.

Quantenna Communications, Inc.

**Notes to Consolidated Financial Statements**

As of December 27, 2015, future minimum payments for the long-term debt are as follows (in thousands):

| | Long-term debt |
|---|---|
| 2016 | $ 3,842 |
| 2017 | 1,729 |
| 2018 | |
| Total minimum payments | 6,253 |
| Less: Amount representing interest | (294) |
| Less: Amount representing closing and repayment fees | (383) |
| Present value of minimum payments | 5,576 |
| Less: Unamortized debt discounts | (31) |
| Plus: Accretion of closing and repayment fees | |
| Long-term debt, net | 5,846 |
| Less: Long-term debt, current portion | 3,581 |
| Non-current portion of long-term debt | $ 2,265 |

As of June 26, 2016, future minimum payments for the long-term debt are as follows (in thousands):

| | Long-term debt |
|---|---|
| | (unaudited) |
| 2016 (remaining six months) | $ 1,248 |
| 2017 | 2,570 |
| 2018 | 5,383 |
| 2019 | 1,618 |
| Total minimum payments | 10,819 |
| Less: Amount representing interest | (506) |

| | |
|---|---|
| Less: Amount representing closing and repayment fees | (330) |
| Present value of minimum payments | 9,983 |
| Less: Unamortized debt discounts | (91) |
| Plus: Accretion of closing and repayment fees | |
| Long-term debt, net | 10,069 |
| Less: Long-term debt, current portion | 2,102 |
| Non-current portion of long-term debt | 7,967 |

**8. Convertible Preferred Stock**

The Company's Certificate of Incorporation, as amended, authorizes the Company to issue up to 1,152,481,783 shares of convertible preferred stock. Under the terms of the Certificate of Incorporation, the board of directors may determine the rights, preferences and terms of the Company's authorized shares of convertible preferred stock.

From August 2014 through December 2014, the Company issued 79,977,022 shares of Series G convertible preferred stock to new and existing investors at $0.27141 per share with gross proceeds of $21.7 million, including the conversion of notes of $16.2 million as disclosed in Note 7.

From May 2015 through August 2015, the Company issued 52,529,091 shares of Series G convertible preferred stock to new investors at $0.27141 per share with gross proceeds of $14.3 million.



Convertible preferred stock was as follows:

| | December 28, 2014 | | |
|---|---|---|---|
| | Shares Authorized | Shares Issued and Outstanding | Aggregate Liquidation Preference |
| | | | (in thousands) |
| Series A | 39,193,115 | 39,193,115 | $ 13,542 |
| Series B | 41,112,100 | 41,112,100 | 15,277 |
| Series C | 43,759,958 | 43,759,958 | 19,254 |
| Series D | 218,460,217 | 218,460,217 | 17,309 |
| Series E | 267,440,814 | 267,440,814 | 29,772 |
| Series F-1 | 394,670,952 | 381,108,527 | 59,013 |
| Series G | 111,000,000 | 79,977,022 | 21,707 |
| | 1,115,637,156 | 1,071,051,753 | $ 175,874 |

As of December 27, 2015 and June 26, 2016 (unaudited)

| | Shares Authorized | Shares Issued and Outstanding | Aggregate Liquidation Preference |
|---|---|---|---|
| | | | (in thousands) |
| Series A | 39,193,115 | 39,193,115 | $ 13,542 |
| Series B | 41,112,100 | 41,112,100 | 15,277 |
| Series C | 43,759,958 | 43,759,958 | 19,254 |
| Series D | 218,460,217 | 218,460,217 | 17,309 |
| Series E | 267,440,814 | 267,440,814 | 29,772 |
| Series F-1 | 394,670,952 | 381,108,527 | 59,013 |
| Series G | 147,844,627 | 132,506,113 | 35,963 |
| | 1,152,481,783 | 1,123,580,844 | $ 190,130 |

Significant terms of the Series A, B, C, D, E, F-1 and G convertible preferred stock (collectively, the “Preferred Stock”) are as follows:

**Liquidation Preference**

In the event of any liquidation, dissolution, or winding up of the Company, either voluntary or involuntary, the holders of the then outstanding shares of Series G stock are first entitled to receive the amount of $0.27141 per share plus all declared but unpaid dividends for such shares, prior and in preference to any distribution of any assets of the Company to the holders of the Series A stock, Series B stock, Series C stock, Series D stock, Series E stock, Series F-1 stock and common stock. Next, the holders of the then outstanding Series F-1 stock are first entitled to receive, prior and in preference to any distribution of any assets of the Company to the holders of the Series A stock, Series B stock, Series C stock, Series D stock, Series E and common stock, the amount of $0.154844675 per share plus all declared but unpaid dividends for such shares. Next, the holders of the then outstanding Series E stock are first entitled to receive, prior and in preference to any distribution of any assets of the Company to the holders of the Series A stock, Series B stock, Series C stock, Series D stock, and common stock, the amount of $0.11132 per share plus all declared but unpaid dividends for such shares. Next, the holder of the then outstanding Series D stock are first entitled to receive, prior and in preference to any distribution of any assets of the Company to the holders of the Series A stock, Series B stock, Series C stock and common stock, the amount of $0.07923 per share plus all declared but unpaid dividends for such shares. Next, the holders of the then outstanding Series C stock are first entitled to receive, prior and in preference to any distribution of any assets of the Company to the holders of the Series A stock, Series B stock and common stock, the amount of $0.44 per share plus all declared but unpaid dividends for such shares. Next, the holders of the then Quantenna Communications, Inc.



outstanding Series B and Series A stock are entitled to receive, prior and in preference to any distribution of any assets of the Company to the holders of the common stock, the amount of $0.3716 and $0.34552 per share, respectively, plus all declared but unpaid dividends for such shares. If, upon the occurrence of such event, the proceeds distributed among the holders of the Series A, B, C, D, E, F-1 and G convertible preferred stock shall be insufficient to permit the full payment of the aforesaid preferential amounts to each holder within a particular Series, then the entire proceeds legally available

for distribution to that Series shall be distributed ratably among the holders of the Series A, B, C, D, E, F-1 and G convertible preferred stock, as the case may be, in proportion to the full preferential amount that each such holder of the Series is otherwise entitled to receive.

Upon completion of the distributions required by the above-mentioned liquidation preferences, any remaining proceeds shall be distributed among the holders of Series G convertible preferred stock, Series F-1 convertible preferred stock, Series E convertible preferred stock, Series D convertible preferred stock, Series C convertible preferred stock and common stock pro rata based on the number of shares of common stock held by each, assuming full conversion of all such preferred stock to common stock.

**Dividends**

The holders of shares of Series A, B, C, D, E, F-1 and G convertible preferred stock shall be entitled to receive dividends, out of any assets legally available, prior and in preference to any declaration or payment of any dividend on the common stock, at the applicable dividend rate of $0.02764 per annum for each share of Series A convertible preferred stock, $0.02972 per annum for each share of Series B convertible preferred stock, $0.032 per annum for each share of Series C convertible preferred stock, $0.00634 per annum for each share of Series D convertible preferred stock, $0.0089 per annum for each share of Series E convertible preferred stock, $0.01238 per annum for each share of Series F-1 convertible preferred stock and $0.021712 per annum for each share of Series G convertible preferred stock, all subject to adjustment from time to time for recapitalization, payable when and if declared by the Company's board of directors. Such dividends shall not be cumulative. No dividends have ever been declared.

**Voting**

The holder of each share of convertible preferred stock shall have the right to one vote for each share of common stock into which such preferred stock could then be converted and, with respect to such vote, such holder shall have full voting rights and powers equal to the voting rights and powers of the holders of common stock and shall be entitled, notwithstanding any provision hereof, to notice of any stockholders' meeting in accordance with the Company's bylaws. As long as 12,000,000 shares of a Series of convertible preferred stock is outstanding, the holders of such shares of Series A convertible preferred stock shall be entitled to elect two of the Company's directors. The holders of convertible Series B, C, E, F-1, and G preferred stock shall each be entitled to elect one of Company's directors. The holders of outstanding common stock shall be entitled to elect one of the Company's directors. The holders of convertible preferred stock and common stock, voting together as a single class, and not as separate series, and on an as converted basis, shall be entitled to elect any remaining directors of the Company, subject to the approval of the then serving members of the Company's directors.

**Conversion**

The holder of each share of convertible preferred stock has the option to convert each share of convertible preferred stock into such number of fully paid and nonassessable shares of common stock as is determined by dividing the applicable original issue price for such series by the applicable conversion price for such series in effect on the date the certificate is surrendered for conversion. Each share of convertible preferred stock shall automatically be converted into shares of common stock at the conversion rate at the time in effect for such series of convertible preferred stock immediately prior to the earlier of (i) the sale of the Company's common stock in a firm commitment underwritten public offering pursuant to a registration statement under the Securities Act of 1933, as amended, with gross proceeds of not less than $50.0 million in the aggregate and an offering price to the public reflecting a pre-money valuation of not less than $325 million, or (ii) upon the receipt by the Company of a written request or agreement of the holders of a majority of the outstanding Series A, B, C, D, E, F-1 and G convertible preferred stock, voting together as a single class and on an as converted basis, provided, however, that the consent of at least a majority of then outstanding shares of Series F-1 is required for shares of Series F-1 to convert in each case. In addition, the Series E will not be converted automatically pursuant to such written consent or vote without the written consent or vote of at least 68% of the then

outstanding shares of Series E in connection with a liquidation event where the amount of proceeds that the Series E would receive in such liquidation event after such conversion would be less than the amount of proceeds that the Series E would receive if no such conversion had occurred.

Quantenna Communications, Inc.

**Notes to Consolidated Financial Statements**

The conversion price of each series of convertible preferred stock, which was initially set at an amount equal to the issue price, is subject to adjustment for stock dividends, stock splits, re-capitalization and upon the occurrence of certain triggering events related to anti-dilution protection rights. In the event that a preferred stock financing should occur at a price lower than the last round, the conversion ratios of the existing preferred stock are changed to protect the ownership position of existing investors.

The following table shows as of June 26, 2016 (unaudited) the current conversion ratios and the incremental number of shares of common stock into which each Series of convertible preferred stock would convert:

| | Current Conversion Ratio | Convertible Preferred Stock Outstanding | Shares of Common Stock Issuable upon Conversion |
|---|---|---|---|
| Series A | 1.89 to 1 | 39,193,115 | 73,951,529 |
| Series B | 1.93 to 1 | 41,112,100 | 79,477,912 |
| Series C | 1.98 to 1 | 43,759,958 | 86,593,520 |
| Series D | 1 to 1 | 218,460,217 | 218,460,217 |
| Series E | 1 to 1 | 267,440,814 | 267,440,814 |
| Series F-1 | 1 to 1 | 381,108,527 | 381,108,527 |
| Series G | 1 to 1 | 132,506,113 | 132,506,113 |
| | | 1,123,580,844 | 1,239,538,632 |

**Common Stock**

Shares of common stock reserved for issuance are as follows:

| | December 28, 2014 | December 27, 2015 | June 26, 2016 |
|---|---|---|---|
| | | | (unaudited) |
| Conversion of Series A preferred stock | 73,951,529 | 73,951,529 | 73,951,529 |
| Conversion of Series B preferred stock | 79,477,912 | 79,477,912 | 79,477,912 |
| Conversion of Series C preferred stock | 86,593,520 | 86,593,520 | 86,593,520 |
| Conversion of Series D preferred stock | 218,460,217 | 218,460,217 | 218,460,217 |
| Conversion of Series E preferred stock | 267,440,814 | 267,440,814 | 267,440,814 |
| Conversion of Series F-1 preferred stock | 381,108,527 | 381,108,527 | 381,108,527 |
| Conversion of Series G preferred stock | 79,977,022 | 132,506,113 | 132,506,113 |
| Conversion of Series F-1 preferred stock warrants | 13,562,425 | 13,562,425 | 1,937,425 |

| | | | |
|---|---|---|---|
| Total conversion of preferred stock and warrants | 1,200,571,966 | 1,253,101,057 | 1,241,476,057 |
| Warrants to purchase common stock | 14,435,000 | 14,150,326 | 21,932,826 |
| Options outstanding | 252,318,636 | 253,117,399 | 256,468,336 |
| Options available for future grant under stock option plan | 10,841,754 | 3,948,715 | 21,166,147 |
| | 1,478,167,356 | 1,524,317,497 | 1,541,043,366 |

### 9. Stockholders' Equity (Deficit)

#### Common Stock

The Company's Certificate of Incorporation, as amended, authorizes the Company to issue 1,656,844,627 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 Quantenna Communications, Inc.

#### Notes to Consolidated Financial Statements

receive dividends whenever funds are legally available and when and if declared by the board of directors, subject to the prior rights of holders of all classes of preferred stock outstanding. The Company has never declared any dividends.

### 10. Stock-based Compensation

Under the Company's 2006 Stock Plan (the "2006 Plan"), the Company may grant options to purchase or directly issue shares of common stock to employees, directors, and consultants of the Company. In 2014 and 2016, the Company's board of directors and stockholders approved an increase to the shares available under the 2006 Plan of 51,710,000 and 3,004,643 shares, respectively. Options may be granted at an exercise price per share of not less than 100% of the fair market value at the date of grant. If an incentive stock option is granted to a 10% stockholder, then the purchase or exercise price per share must not be less than 110% of the fair market value per share of common stock on the grant date. Options granted are exercisable over a maximum term of 10 years from the date of grant and generally vest over a period of four years.

In May 2016 (unaudited), the Company's board of directors discontinued the 2006 Plan and approved the adoption of the 2016 Equity Incentive Plan (the "2016 EIP"). All outstanding shares under the 2006 Plan were rolled over to the 2016 EIP. Initially the 2016 EIP permitted the Company to grant up to 20,800,000 shares of the Company's common stock awards, including incentive stock options, non-statutory stock options, stock appreciation rights, restricted stock and restricted stock units to employees, directors, and consultants of the Company. In June 2016 (unaudited), the number of shares authorized for issuance under the 2016 EIP was increased to 82,650,000. All granted shares that are canceled, forfeited or expired are returned to the 2016 EIP and are available for grant in conjunction with the issuance of new equity awards. Stock options may be granted at an exercise price per share not less than 100% of the fair market value at the date of grant. If a stock option is granted to a 10% stockholder, then the exercise price per share must not be less than 110% of the fair market value per share of common stock on the grant date. Options granted are exercisable over a maximum term of 10 years from the date of grant and generally vest over a period of four years.

Subsequent to June 26, 2016 (unaudited), the Company increased the number of shares authorized for issuance under the 2016 EIP to 97,650,000. Subsequent to June 26, 2016 (unaudited), the Company granted additional options to purchase 82,144,000 shares of common stock, with a weighted-average exercise price of $0.17 per share.

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

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| (in thousands) | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | | | (unaudited) | (unaudited) |
| Cost of revenue | $ | $ | $ | $ |
| Research and development | | | | |
| Sales and marketing | | | | |
| General and administrative | | | | |
| Total stock-based compensation expense | $ | $ 1,202 | $ | $ 1,190 |

At December 27, 2015, unamortized compensation expense related to unvested stock awards was approximately $1.9 million. The weighted-average period over which such compensation expense will be recognized is 2.9 years.

At June 26, 2016 (unaudited), unamortized compensation expense related to unvested stock awards was approximately $1.7 million. The weighted-average period over which such compensation expense will be recognized is 2.8 years.

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**Notes to Consolidated Financial Statements**

**Stock Option Activity**

The table below summarizes stock option activity under the 2006 Plan and 2016 EIP:

| | Number of Shares Available for Issuance | Number of Shares Outstanding | Weighted-Average Exercise Price | Weighted-Average Remaining Contractual Term (Years) | Aggregate Intrinsic Value (in thousands) |
|---|---|---|---|---|---|
| **Balances at January 1, 2014** | 17,965,539 | 198,354,122 | $ 0.03 | 8.1 | |
| Authorized | 51,710,000 | | | | |
| Granted (weighted-average fair value of $0.02 per share) | (78,734,093) | 78,734,093 | 0.04 | | |
| Exercised | | (4,869,271) | 0.03 | | |
| Canceled | 19,900,308 | (19,900,308) | 0.03 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Balances at December 28, 2014** | 10,841,754 | 252,318,636 | 0.03 | 7.4 | $ 2,391 |
| Granted (weighted-average fair value of $0.02 per share) | (43,785,750) | 43,785,750 | 0.05 | | |
| Exercised | | (6,094,276) | 0.03 | | |
| Canceled | 36,892,711 | (36,892,711) | 0.03 | | |
| **Balances at December 27, 2015** | 3,948,715 | 253,117,399 | 0.04 | 7.4 | $ 11,269 |
| Authorized | 23,804,643 | | | | |
| Granted (weighted-average fair value of $0.04 per share) (unaudited) | (11,688,750) | 11,688,750 | 0.10 | | |
| Exercised (unaudited) | | (3,236,274) | 0.03 | | |
| Canceled (unaudited) | 5,101,539 | (5,101,539) | 0.04 | | |
| **Balances at June 26, 2016 (unaudited)** | 21,166,147 | 256,468,336 | 0.04 | 7.1 | $ 33,685 |
| Options Exercisable—December 27, 2015 | | 145,184.957 | 0.03 | 6.3 | 7,378 |
| Options vested and expected to vest—December 27, 2015 (1) | | 236,513,566 | 0.03 | 7.3 | $ 10,761 |
| Options Exercisable—June 26, 2016 (unaudited) | | 159,589.919 | 0.03 | 6.1 | 22,335 |
| Options vested and expected to vest—June 26, 2016 (unaudited) (1) | | 241,900,933 | $ 0.04 | 7.0 | $ 32,102 |

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(1) Options expected to vest reflect an estimated forfeiture rate.

The aggregate intrinsic value of options exercised was $68,000, $0.8 million, $26,000 (unaudited) and $0.1 million (unaudited) for the years ended December 28, 2014 and December 27, 2015 and for the six months ended June 28, 2015 and June 26, 2016, respectively. Upon the exercise of options, the Company issues new common stock from its authorized shares.

The aggregate fair value of options vested during the years ended December 28, 2014 and December 27, 2015 and for the six months ended June 28, 2015 and June 26, 2016 was $0.5 million, $1.2 million, $0.6 million (unaudited) and $1.1 million (unaudited), respectively.

Quantenna Communications, Inc.

**Notes to Consolidated Financial Statements**

Additional information regarding options outstanding at December 27, 2015 and June 26, 2016 are as follows:

December 27, 2015

| Options Outstanding | | | | Options Vested | | |
|---|---|---|---|---|---|---|
| Exercise Price | Number of Shares | Weighted-Average Remaining Contractual Life (Years) | Aggregate Intrinsic Value (in thousands) | Weighted-Average Exercise Price | Number of Shares | Aggregate Intrinsic Value (in thousands) |
| $ 0.02 | 49,765,556 | 4.98 | $ 2,986 | $ 0.02 | 49,765,556 | $ 2,986 |
| $ 0.03 | 85,604,442 | 6.91 | 4,280 | $ 0.03 | 67,309,969 | 3,365 |
| $ 0.04 | 76,841,901 | 8.85 | 3,074 | $ 0.04 | 21,886,474 | |
| $ 0.05 | 11,182,500 | 8.28 | | $ 0.05 | 2,751,458 | |
| $ 0.06 | 29,723,000 | 9.05 | | $ 0.06 | 3,471,500 | |
| | 253,117,399 | 7.43 | $ 11,269 | | 145,184,957 | $ 7,378 |

June 26, 2016 (unaudited)

| Options Outstanding | | | | Options Vested | | |
|---|---|---|---|---|---|---|
| Exercise Price | Number of Shares | Weighted-Average Remaining Contractual Life (Years) | Aggregate Intrinsic Value (in thousands) | Weighted-Average Exercise Price | Number of Shares | Aggregate Intrinsic Value (in thousands) |
| $ 0.02 | 46,680,556 | 4.70 | $ 7,002 | $ 0.02 | 46,680,556 | $ 7,002 |
| $ 0.03 | 84,524,442 | 6.40 | 11,833 | $ 0.03 | 75,294,000 | 10,541 |
| $ 0.04 | 74,011,588 | 8.36 | 9,622 | $ 0.04 | 31,250,322 | 4,063 |
| $ 0.05 | 10,932,500 | 7.75 | 1,312 | $ 0.05 | 2,893,541 | |
| $ 0.06 | 28,630,500 | 8.51 | 3,149 | $ 0.06 | 3,471,500 | |
| $ 0.08 | 3,398,750 | 9.61 | | $ 0.08 | — | — |
| $ 0.10 | 5,305,000 | 9.78 | | $ 0.10 | — | — |

| | | | | | | |
|---|---|---|---|---|---|---|
| $ 0.14 | 2,985,000 | 9.91 | | $ 0.14 | — | — |
| | 256,468,336 | 7.11 | $ 33,685 | | 159,589,919 | $ 22,335 |

**Stock Options Granted to Employees and Non-Employee Directors**

Stock-based compensation expense is based on the grant date fair value. The Company recognizes compensation expense for all stock-based awards on a straight-line basis over the requisite service period of the awards, which is generally the option vesting term of four years.

The Company uses the Black-Scholes option valuation model, which requires the use of highly subjective assumptions to determine the fair value of stock-based awards. The assumptions used in the Company's option-pricing model represent management's best estimates. These estimates are complex, involve a number of variables, uncertainties and assumptions and the application of management's judgment. If factors change and different assumptions are used, the Company's stock-based compensation expense could be materially different in the future. The assumptions and estimates that the Company uses in the Black-Scholes model are as follows:

- Fair Value of Common Stock. As the common stock is not publicly traded, the Company must estimate its fair value. The fair value of common stock was determined on a periodic basis by the Company's board of directors, with the assistance of an independent third-party valuation firm. The board of directors intended all options granted to be exercisable at a price per share not less than the estimated per share fair value of common stock underlying those options on the date of grant.



- Risk-Free Interest Rate. The Company bases the risk-free interest rate used in the Black-Scholes valuation model on the implied yield available on U.S. Treasury zero-coupon issues with a term equivalent to that of the expected term of the options for each option group.

- Expected Term. The expected term represents the period that the Company's stock-based awards are expected to be outstanding. Because of the limitations on the sale or transfer of the Company's common stock as a privately held company, the Company does not believe its historical exercise pattern is indicative of the pattern it will experience as a publicly traded company. The Company has consequently used the Staff Accounting Bulletin 110, or SAB 110, simplified method to calculate the expected term, which is the average of the contractual term and vesting period. The Company plans to continue to use the SAB 110 simplified method until it has sufficient trading history as a publicly traded company.

- Volatility. The Company determines the price volatility based on the historical volatilities of industry peers as it has no trading history for its common stock price. Industry peers consist of several public companies in the semiconductor industry with comparable characteristics, including revenue growth, operating model and working capital requirements. The Company intends to continue to consistently apply this process using the same or a similar peer group of public companies until a sufficient amount of historical information regarding the volatility of its own common stock price becomes available, or unless circumstances change such that the identified peer companies are no longer similar, in which case other suitable peer companies whose common stock prices are publicly available would be utilized in the calculation.

- Dividend Yield. The expected dividend assumption is based on the Company's current expectations about its anticipated dividend policy. To date, the Company has not declared any dividends, and therefore the Company has used an expected dividend yield of zero.

In addition to the assumptions used in the Black-Scholes valuation model, the Company must also estimate a forfeiture rate to calculate the stock-based compensation for its equity awards. The Company will continue to use judgment in evaluating the assumptions related to the Company's stock-based compensation on a prospective basis. As the Company continues to accumulate additional data, it may have refinements to its estimates, which could materially impact the Company's future stock-based compensation expense. The following assumptions were used to calculate the fair value of options granted to employees and non-employee directors during the years indicated:

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | | | (unaudited) | (unaudited) |
| Expected term (in years) | 5.0 – 6.1 | 5.6 – 6.5 | 6.0 – 6.1 | 5.8 – 6.1 |
| Volatility | 40% – 51% | 40% – 44% | 42% – 44% | 40% |
| Risk-free interest rate | 1.5% – 1.9% | 1.5% – 2.0% | 1.5% – 1.6% | 1.4% – 1.5% |
| Expected dividend | – | – | – | – |

**Stock-Based Compensation for Non-employees**

Stock-based compensation expense related to stock awards granted to non-employee is recognized as the awards vest. The Company believes that the fair value of the stock-based awards granted is more reliably measurable than the fair value of the services received. The fair value of stock awards granted is calculated using the Black-Scholes option valuation model. Stock-based compensation expense related to awards granted to non-employees for the years ended December 28, 2014 and December 27, 2015 and for the six months ended June 28, 2015 and June 26, 2016 was $22,000, $0.4 million, $0.4 million (unaudited) and $0.8 million (unaudited), respectively.

Quantenna Communications, Inc.

**Notes to Consolidated Financial Statements**

In June 2016, the Company accelerated the vesting of the remaining unvested shares of common stock issued upon early exercise of a warrant by Centerview, and the Company recorded stock-based compensation expense of $0.6 million (unaudited) associated with this modification. For additional information on the Centerview common stock warrants, see the section titled “Common Stock Warrants” within Note 5.

The fair values of options and common stock warrants granted to non-employees were calculated using the following assumptions for the periods presented:

| | Years Ended | | Six Months Ended | |
|---|---|---|---|---|
| | December 28, 2014 | December 27, 2015 | June 28, 2015 | June 26, 2016 |
| | | | (unaudited) | (unaudited) |
| Contractual term remaining (in years) | 5.0 - 10.0 | 3.4 - 10.0 | 8.8 – 10.0 | 1.6 - 9.5 |
| Volatility | 44% - 76% | 36% - 48% | 44% – 48% | 37% - 47% |
| Risk-free interest rate | 0.7% - 4.7% | 0.2% - 2.5% | 1.5% – 2.3% | 0.6% - 1.8% |
| Expected dividend | – | – | – | – |

**11. Income Taxes**

The components of loss before income taxes were as follows:

| | Years Ended | |
|---|---|---|
| (in thousands) | December 28, 2014 | December 27, 2015 |
| United States | $ (14,353) | $ (7,584) |
| Foreign | | |
| | $ (13,490) | $ (6,930) |

The components of the provision for income taxes were as follows:

| | Years Ended | |
|---|---|---|
| (in thousands) | December 28, 2014 | December 27, 2015 |
| State | $ | $ |
| Foreign | | |
| | $ | $ |



The material components of the deferred tax assets and liabilities consisted of net operating loss carry-forwards and tax credit carry-forwards.

| (in thousands) | December 28, 2014 | December 27, 2015 |
|---|---|---|
| Deferred tax assets: | | |
| Accrual, reserve and other | $ 2,170 | $ 2,129 |
| Depreciation and amortization | (100) | (159) |
| Net operating loss and credits carry forwards | 61,482 | 64,837 |
| Stock based compensation | | |
| Total gross deferred tax assets | 63,929 | 67,194 |
| Valuation allowance | (63,929) | (67,194) |
| Total net deferred tax assets | $ – | $ – |

The net valuation allowance increased by $6.5 million and $3.2 million for the years ended December 28, 2014 and December 27, 2015, respectively.

A reconciliation of the Company's effective tax rate to the statutory U.S. federal rate is as follows:

| | Years Ended | |
|---|---|---|
| | December 28, 2014 | December 27, 2015 |
| US Federal Rate | 34.0 % | 34.0 % |
| Difference between statutory rate and foreign effective tax rate | 2.2 | 1.7 |
| Other permanent Items | 5.1 | 8.7 |
| Stock based compensation | (1.1 ) | (2.7 ) |
| Change in valuation allowance | (41.1 ) | (43.4 ) |
| | (0.9 )% | (1.7 )% |

The reported amount of income tax expense differs from an expected amount based on statutory rates primarily due to the Company's valuation allowance.

As of December 28, 2014 and December 27, 2015, based on the available objective evidence, management believes it is more likely than not that the net deferred tax assets will not be realized. Accordingly, management has applied a full valuation allowance against its net deferred tax assets at December 28, 2014 and December 27, 2015.

At December 28, 2014 and December 27, 2015, the Company has federal net operating loss carry-forwards of approximately $145.1 million and $151.9 million, respectively, and state net operating loss carry-forwards of approximately $109.2 million and $106.7 million, respectively. These federal and state net operating loss carry-forwards will expire beginning in 2026 and 2017, respectively. At December 28, 2014 and December 27, 2015, the Company also has federal research and development tax credit carry-forwards of approximately $5.3 million and $6.3 million, respectively, and state research and development tax credit carry-forwards of approximately $5.4 million and 6.3 million, respectively. The federal tax credits begin to expire in 2026, and the California tax credits carry forward indefinitely.

Utilization of the net operating loss carry-forwards and credits may be subject to a substantial annual limitation due to the ownership change limitations provided by the Internal Revenue Code of 1986, as amended, and similar state provisions. The annual limitation may result in the expiration of net operating losses and credits before utilization.

As of December 28, 2014 and December 27, 2015, the Company had $3.7 million and $4.4 million of total unrecognized tax benefits. If the Company is able to eventually recognize these uncertain tax positions, $3.1 million and $3.6 million, respectively, of the unrecognized benefit would reduce the Company's effective tax rate. The Company currently has a full Quantenna Communications, Inc.



valuation allowance against its net deferred tax assets which would impact the timing of the effective tax rate benefit should any of these uncertain tax positions be favorably settled in the future. The Company's policy is to record interest and penalties related to unrecognized tax benefits as income tax expense. During the years ended December 28, 2014 and December 27, 2015, the Company had immaterial amounts related to the accrual of interest and penalties.

A reconciliation of the beginning and ending unrecognized tax benefit amount is as follows :

| (in thousands) | December 28, 2014 | December 27, 2015 |
|---|---|---|
| Beginning Balance | $ 2,936 | $ 3,738 |
| Current year addition | | |
| Ending Balance | $ 3,738 | $ 4,425 |

The Company does not have any tax positions for which it is reasonably possible the total amount of gross unrecognized tax benefits will increase or decrease within 12 months of the years ended December 28, 2014 and December 27, 2015.

The Company is subject to taxation in the U.S. and various states and foreign jurisdictions. Due to the Company's net losses, substantially all of its federal, state and foreign income tax returns since inception are still subject to audit.

The Company intends to reinvest the earnings of its non U.S. subsidiaries in those operations. The Company does not provide for U.S. income taxes on the earnings of foreign subsidiaries because the Company intends to reinvest such earnings offshore indefinitely. As of December 28, 2014 and December 27, 2015, there is an immaterial cumulative amount of earnings upon which U.S. income taxes have not been provided.

The Company files tax returns as prescribed by the tax laws of the jurisdictions in which it operates. In the normal course of business, the Company is subject to examination by federal, state, local and foreign jurisdictions, where applicable. As of December 27, 2015, the tax years that remain subject to examination by the major tax jurisdictions under the statute of limitations is from the year 2006 forward (with limited exceptions):

| | Earliest Tax Year Subject to Examination |
|---|---|
| **Jurisdiction** | |
| U.S. Federal | 2006 |
| California State | 2006 |

**12. 401(k) Plan**

The Company adopted a 401(k) Plan that qualifies as a deferred compensation arrangement under Section 401 of the Internal Revenue 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, although the Company has not made any such contributions as of June 26, 2016.

**13. Segment Information and Operations by Geographic Area**

The chief operating decision maker for the Company is the Chief Executive Officer. The Chief Executive Officer reviews financial information presented on a consolidated basis for purposes of allocating resources and evaluating financial performance. The Company has one business activity, and there are no segment managers who are held accountable for operations, operating results or plans for levels or components below the consolidated level. Accordingly, the Company has determined that it has a single reportable and operating segment structure.

The following table sets forth revenue by country, based on ship-to destinations, for countries with 10% or more of revenue during any of the periods presented:

| | Years Ended | | | | Six Months Ended | | | |
|---|---|---|---|---|---|---|---|---|
| | December 28, 2014 | | December 27, 2015 | | June 28, 2015 | | June 26, 2016 | |
| | Amount | % of Revenue | Amount | % of Revenue | Amount | % of Revenue | Amount | % of Revenue |
| | | | | | (unaudited) | | (unaudited) | |
| | (Dollars in thousands) | | | | | | | |
| China | $ 43,185 | % | $ 45,102 | % | $ 16,777 | % | $ 34,350 | % |
| Taiwan | 4,925 | | 10,169 | | 5,767 | | 6,962 | |
| Tunisia | 4,039 | | 5,414 | | 2,770 | | 8,001 | |
| United States | | — | 3,326 | | 1,018 | | | — |
| Other foreign countries | 14,390 | | 19,762 | | 10,222 | | 7,930 | |
| Total | $ 66,860 | % | $ 83,773 | % | 36,554 | % | $ 57,472 | % |

Long-lived assets outside the U.S. are immaterial; therefore, disclosures have been limited to revenue.

### 14. Related Party transactions

Purchases from Cadence Design Systems, Inc.

Lip-Bu Tan, a member of the Company's board of directors since June 2015, is the President and Chief Executive Officer of Cadence Design Systems, Inc., or 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. The Company incurred fees of approximately $1.1 million, $1.2 million and $0.6 million (unaudited) under the terms of this arrangement in fiscal years 2014 and 2015 and the six months ended June 26, 2016, respectively.

### Agreement with RUSNANO

Dmitry Akhanov, a member of the Company's board of directors, is President and Chief Executive Officer at Rusnano USA, Inc., a U.S. subsidiary of RUSNANO, one of the Company's investors. In July 2014, the Company entered into an amended and restated letter agreement with RUSNANO in connection with RUSNANO's investment in convertible promissory notes, which subsequently converted into shares of the Company's Series G convertible preferred stock. Pursuant to the amended and restated letter agreement, the Company agreed, among other matters, to operate and fund the Company's 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, the Company 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 December 27, 2015, the Company had met the minimum funding requirements.

**Common stock warrants granted to Centerview**

In October 2014, in connection with the Series G financing and the appointment of a member of the Company's board of directors, the Company issued a common stock warrant to Centerview, a convertible preferred stockholder of the Company, to purchase 14,435,000 shares of common stock at an exercise price of $0.001 per share. In December 2015, the warrant was fully exercised by Centerview (see Note 5). In June 2016, the Company accelerated the vesting of the remaining unvested shares of common stock issued upon early exercise of the warrant, and the Company recorded stock-based compensation expense of $0.6 million (unaudited) associated with this modification.

Quantenna Communications, Inc.

**Notes to Consolidated Financial Statements**

**15. Subsequent Events**

The Company has reviewed and evaluated subsequent events that occurred through July 8, 2016, the date the consolidated financial statements were available to be issued, and determined that no additional subsequent events had occurred that would require recognition in these consolidated financial statements.

**16. Subsequent Events (unaudited)**

The Company has reviewed and evaluated subsequent events that occurred through August 17, 2016, the date that the unaudited interim consolidated financial statements were available to be issued, and determined that no additional subsequent events had occurred that would require recognition in these unaudited interim consolidated financial statements.

# *Part Ii*

# *Information Not Required in Prospectus*

ITEM 13. OTHER EXPENSES OF ISSUANCE AND DISTRIBUTION.

The following table sets forth all expenses to be paid by the Registrant, other than underwriting discounts and commissions, upon the completion of this offering. All amounts shown are estimates except for the SEC registration fee, the FINRA filing fee and the exchange listing fee.

| | **Amount to be Paid** |
|---|---|
| SEC registration fee | $ 10,070 |
| FINRA filing fee | 15,500 |
| Exchange listing fee | * |
| Printing and engraving expenses | * |
| Legal fees and expenses | * |

| | |
|---|---|
| Accounting fees and expenses | * |
| Transfer agent and registrar fees | * |
| Miscellaneous expenses | * |
| Total | $.....* |

_____

* To be filed by amendment.

ITEM 14. INDEMNIFICATION OF DIRECTORS AND OFFICERS.

Section 145 of the Delaware General Corporation Law authorizes a corporation's board of directors to grant, and authorizes a court to award, indemnity to officers, directors, and other corporate agents.

On the completion of this offering, as permitted by Section 102(b)(7) of the Delaware General Corporation Law, the Registrant's amended and restated certificate of incorporation will include provisions that eliminate the personal liability of its directors and officers for monetary damages for breach of their fiduciary duty as directors and officers.

In addition, as permitted by Section 145 of the Delaware General Corporation Law, the amended and restated certificate of incorporation and amended and restated bylaws of the Registrant will provide that:

- The Registrant shall indemnify its directors and officers for serving the Registrant in those capacities or for serving other business enterprises at the Registrant's request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the Registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful.
- The Registrant may, in its discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law.
- The Registrant is required to advance expenses, as incurred, to its directors and officers in connection with defending a proceeding, except that such director or officer shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification.
- The Registrant will not be obligated pursuant to the amended and restated bylaws to indemnify a person with respect to proceedings initiated by that person, except with respect to proceedings authorized by the Registrant's board of directors or brought to enforce a right to indemnification.
- The rights conferred in the amended and restated certificate of incorporation and amended and restated bylaws are not exclusive, and the Registrant is authorized to enter into indemnification agreements with its directors, officers, employees, and agents and to obtain insurance to indemnify such persons.
- The Registrant may not retroactively amend the bylaw provisions to reduce its indemnification obligations to directors, officers, employees, and agents.

The Registrant's policy is to enter into separate indemnification agreements with each of its directors and officers that provide the maximum indemnity allowed to directors and executive officers by Section 145 of the Delaware General Corporation Law and also to provide for certain additional procedural protections. The Registrant also maintains directors and officers insurance to insure such persons against certain liabilities.

These indemnification provisions and the indemnification agreements entered into between the Registrant and its officers and directors may be sufficiently broad to permit indemnification of the Registrant's officers and directors for liabilities (including reimbursement of expenses incurred) arising under the Securities Act of 1933, as amended (Securities Act).

The underwriting agreement to be filed as Exhibit 1.1 to this registration statement will provide for indemnification by the underwriters of the Registrant and its officers and directors for certain liabilities arising under the Securities Act and otherwise.

ITEM 15. RECENT SALES OF UNREGISTERED SECURITIES.

Since July 1, 2013, the Registrant issued the following unregistered securities:

**Convertible Promissory Note Issuances**

From February 2014 to July 2014, the Registrant sold an aggregate of $14.5 million in the principal amount of convertible promissory notes to 22 accredited investors, which were convertible into Series G convertible preferred stock.

**Preferred Stock Issuances**

From August 2014 through August 2015, the Registrant sold an aggregate of 132,506,113 shares of its Series G convertible preferred stock to 34 accredited investors at a purchase price of $0.27141 per share, for an aggregate purchase price of approximately $35,963,484, which was paid in cash and through the conversion of outstanding convertible promissory notes issued from February 2014 to July 2014.

**Warrant Issuance**

In October 2013, the Registrant issued warrants to purchase up to 1,937,425 shares of its Series F-1 Preferred Stock to one accredited investor in connection with a finance agreement at an exercise price of $0.1548446 per share.

In October 2014, the Registrant issued warrants to purchase up to 14,435,000 shares of common stock to one accredited investor in connection with the Registrant's Series G convertible preferred stock financing and the appointment of a member of the Registrant's board of directors at an exercise price of $0.001 per share.

In September 2015, the Registrant issued warrants to purchase up to 14,150,326 shares of its common stock to one accredited investor in connection with a separation agreement at an exercise price of $0.05 per share.

In February 2016, the Registrant issued warrants to purchase up to 450,000 shares of its common stock to one accredited investor in connection with a consulting agreement at an exercise price of $0.001 per share and warrants to purchase up to 1,012,500 shares of its common stock to one accredited investor in connection with a separation agreement at an exercise price of $0.08 per share.

In May 2016, the Registrant issued warrants to purchase up to 6,320,000 shares of its common stock to two accredited investors in connection with a loan agreement at an exercise price of $0.08 per share.

**Option and Common Stock Issuances**

Since July 2013, the Registrant has granted to its directors, officers, employees, consultants and other service providers options to purchase an aggregate of 164,945,929 shares of its common stock under its 2006 Stock Plan at exercise prices ranging from $0.03 to $0.10 per share.

Since May 2016, the Registrant has granted to its directors, officers, employees, consultants and other service providers options to purchase an aggregate of 85,129,000 shares of its common stock under its 2016 Equity Incentive Plan at exercise prices ranging from $0.14 to $0.18 per share.

Since May 2016, the Registrant has issued to consultants an aggregate of 138,888 shares of its common stock under its 2016 Equity Incentive Plan in exchange for services rendered.

Since July 2013, the Registrant has issued and sold to its officers, directors, employees, consultants, and other service providers an aggregate of 16,965,054 shares of its common stock upon the exercise of options under its 2006 Stock Plan at exercise prices ranging from $0.02 to $0.06 per share, for an aggregate exercise price of $482,854.31.

Since May 2016, the Registrant has issued and sold to its officers, directors, employees, consultants, and other service providers an aggregate of 3,600,000 shares of its common stock upon the exercise of options under its 2016 Equity Incentive Plan at an exercise price of $0.17 per share, for an aggregate exercise price of $612,000.00.

Since July 2013, the Registrant has issued and sold to one accredited investor an aggregate of 14,435,000 shares of common stock upon the exercise of warrants at an exercise price of $0.001 per share, for an aggregate exercise price of $14,435.00.

None of the foregoing transactions involved any underwriters, underwriting discounts or commissions, or any public offering. The Registrant believes the offers, sales and issuances of the above securities were exempt from registration under the Securities Act by virtue of Section 4(a)(2) of the Securities Act (or Regulation D promulgated thereunder) because the issuance of securities to the recipients did not involve a public offering, or in reliance on Rule 701 because the transactions were pursuant to compensatory benefit plans or contracts relating to compensation as provided under such rule. The recipients of the securities in each of these transactions represented their intentions to acquire the securities for investment only and not with a view to or for sale in connection with any distribution thereof, and appropriate legends were placed upon the stock certificates issued in these transactions. All recipients had adequate access, through their relationships with us, to information about us. The sales of these securities were made without any general solicitation or advertising.

ITEM 16. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES.

(a) Exhibits.

We have filed the exhibits listed on the accompanying Exhibit Index of this Registration Statement.

(b) Financial Statement Schedules.

All financial statement schedules are omitted because the information called for is not required or is shown either in the consolidated financial statements or in the notes thereto.

ITEM 17. UNDERTAKINGS.

The undersigned Registrant hereby undertakes to provide to the underwriters at the closing specified in the underwriting agreement certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

The undersigned Registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

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| (2) | For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. |

# *Signatures*

Pursuant to the requirements of the Securities Act of 1933, the Registrant has duly caused this registration statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in Fremont, California, on the 29th day of September, 2016.

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| QUANTENNA COMMUNICATIONS, INC. | |
| By: | /s/ Sam Heidari |
| | Sam Heidari |
| | Chairman and Chief Executive Officer |

# *Power of Attorney*

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Sam Heidari and Sean Sobers, and each of them, as his or her true and lawful attorney-in-fact and agent with full power of substitution, for him or her in any and all capacities, to sign any and all amendments to this registration statement (including post-effective amendments or any abbreviated registration statement and any amendments thereto filed pursuant to Rule 462(b) under the Securities Act of 1933 increasing the number of securities for which registration is sought), and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact, proxy, and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact, proxy and agent, or his substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement on Form S-1 has been signed by the following persons in the capacities and on the dates indicated.

| Signature | Title | Date |
|---|---|---|
| /s/ Sam Heidari<br>Sam Heidari | Chairman and Chief Executive Officer (Principal Executive Officer) | September 29, 2016 |
| /s/ Sean Sobers<br>Sean Sobers | Chief Financial Officer (Principal Accounting and Financial Officer) | September 29, 2016 |
| /s/ Dmitry Akhanov<br>Dmitry Akhanov | Director | September 29, 2016 |
| /s/ Fahri Diner<br>Fahri Diner | Director | September 29, 2016 |
| /s/ Edward Frank<br>Edward Frank | Director | September 29, 2016 |

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| /s/ Edwin B. Hooper III<br>Edwin B. Hooper III | Director | September 29, 2016 |
| /s/ Harold Hughes<br>Harold Hughes | Director | September 29, 2016 |
| /s/ Jack Lazar<br>Jack Lazar | Director | September 29, 2016 |
| /s/ John Scull<br>John Scull | Director | September 29, 2016 |
| /s/ Mark Stevens<br>Mark Stevens | Director | September 29, 2016 |
| /s/ Lip-Bu Tan<br>Lip-Bu Tan | Director | September 29, 2016 |

# *Exhibit Index*

| Exhibit Number | Description |
|---|---|
| 1.1* | Form of Underwriting Agreement. |
| 3.1 | Amended and Restated Certificate of Incorporation of the Registrant, as currently in effect. |
| 3.2 | Form of Amended and Restated Certificate of Incorporation of the Registrant, to be in effect upon the completion of this offering. |
| 3.3 | Bylaws of the Registrant, as currently in effect. |
| 3.4 | Form of Amended and Restated Bylaws of the Registrant, to be in effect upon the completion of this offering. |
| 4.1* | Form of common stock certificate of the Registrant. |
| 5.1* | Opinion of Wilson Sonsini Goodrich & Rosati, P.C. |
| 10.1+ | Form of Indemnification Agreement between the Registrant and each of its directors and executive officers. |
| 10.2+* | Quantenna Communications, Inc. 2016 Omnibus Equity Incentive Plan and related form agreements. |
| 10.3+* | Quantenna Communications, Inc. 2016 Employee Stock Purchase Plan and related form agreements. |
| 10.4+ | Quantenna Communications, Inc. 2016 Equity Incentive Plan and related form agreements. |
| 10.5+ | Quantenna Communications, Inc. 2006 Stock Plan and related form agreements. |
| 10.6+ | Quantenna Communications, Inc. Executive Incentive Compensation Plan. |
| 10.7 | Warrant to Purchase Shares of Preferred Stock of the Registrant issued to Eastward Fund Management, LLC, dated October 31, 2013. |
| 10.8 | Warrant to Purchase Shares of Common Stock of the Registrant issued to Behrooz Rezvani, dated September 10, 2015. |
| 10.9 | Warrant to Purchase Shares of Common Stock of the Registrant issued to Behrooz Rezvani, dated February 3, 2016. |

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| 10.10 | Warrant to Purchase Shares of Common Stock of the Registrant issued to Airfide Networks, dated February 3, 2016. |
| 10.11 | Warrant to Purchase Stock issued to Silicon Valley Bank, dated May 17, 2016. |
| 10.12 | Warrant to Purchase Stock issued to Westriver Mezzanine Loans, dated May 17, 2016. |
| 10.13 | Amended and Restated Loan and Security Agreement, dated May 17, 2016, between the Registrant, as Borrower, and Silicon Valley Bank, as Bank. |
| 10.14 | Mezzanine Loan and Security Agreement, dated May 17, 2016, between the Registrant, as Borrower, and Silicon Valley Bank, as Bank. |
| 10.15 | Amended and Restated Stock Pledge Agreement, dated May 17, 2016, between the Registrant, as Pledgor, and Silicon Valley Bank, as Bank. |
| 10.16 | Amended and Restated Investors' Rights Agreement among the Registrant and certain holders of its capital stock, dated August 29, 2014, as amended from time to time. |
| 10.17 | Agreement Regarding Investment in Series F Preferred Stock Financing, dated April 16, 2012, between the Registrant and Open Joint Stock Company "RUSNANO," as amended on July 9, 2014. |
| 10.18+* | Executive Change of Control Agreement between the Registrant and Sam Heidari. |
| 10.19+* | Executive Change of Control Agreement between the Registrant and Sean Sobers. |
| 10.20+* | Executive Change of Control Agreement between the Registrant and David Carroll. |
| 10.21 | Industrial Lease between the Registrant, BTP Investors, LLC and other parties therein. |
| 10.22 | Landlords Consent and Agreement (Sublease) among the Registrant, JER Bayside, LLC, DCG Systems, Inc. and other parties therein. |
| 10.23+ | Offer Letter between the Registrant and Sam Heidari, dated May 19, 2009, and amendments thereto. |
| 10.24+ | Offer Letter between the Registrant and Philippe Morali, dated August 25, 2014. |
| 10.25+ | Offer Letter between the Registrant and Lionel Bonnot, dated October 30, 2007, and amendments thereto. |
| 10.26+ | Offer Letter between the Registrant and David Carroll, dated December 20, 2012. |
| 10.27+ | Offer Letter between the Registrant and Harold Hughes, dated October 17, 2014. |
| 10.28+ | Offer Letter between the Registrant and Jack Lazar, dated June 9, 2016. |
| 10.29+ | Offer Letter between the Registrant and Edward Frank, dated June 13, 2016. |
| 10.30+ | Offer Letter between the Registrant and Mark Stevens, dated June 24, 2016. |
| 10.31+ | Offer Letter between the Registrant and Sean Sobers, dated July 8, 2016. |
| 10.32+* | Quantenna Communications, Inc. Outside Director Compensation Policy. |
| 21.1 | List of subsidiaries of the Registrant. |
| 23.1 | Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm. |
| 23.2* | Consent of Wilson Sonsini Goodrich & Rosati, P.C. (included in Exhibit 5.1). |
| 24.1 | Power of Attorney (see the signature page to this Registration Statement on Form S-1). |

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* To be filed by amendment.

\+ Indicates management contract or compensatory plan.