UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-K

(Mark One)

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

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2019

OR

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

FOR THE TRANSITION PERIOD FROM _________ TO _________

Commission file number: 001-37851

AIRGAIN, INC.

(Exact name of registrant as specified in its charter)

Delaware **(State or Other Jurisdiction of Incorporation or Organization)**	**95-4523882** **(I.R.S. Employer Identification No.)**
3611 Valley Centre Drive, Suite 150 **San Diego, CA** **(Address of Principal Executive Offices)**	**92130** **(Zip Code)**

(760) 579-0200
(Registrant's Telephone Number, Including Area Code)

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

Title of each class:	Name of each exchange on which registered:
Common Stock, par value $0.0001 per share	**The Nasdaq Capital Market**

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by a check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by a check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934. Yes ☐ No ☒

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

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

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

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

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

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

As of June 28, 2019, (the last business day of the registrant's most recently completed second fiscal quarter), the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately $9.7 million, based on the closing price of the registrant's common stock on The Nasdaq Capital Market of $14.15 per share.

As of February 24, 2020, the registrant had 9,692,285 shares of common stock ($0.0001 par value) outstanding.

AIRGAIN, INC.

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PART I

FORWARD-LOOKING STATEMENTS AND MARKET DATA

This annual report on Form 10-K contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. All statements other than statements of historical fact contained in this annual report, including statements regarding our future operating results, financial position and cash flows, our business strategy and plans and our objectives for future operations, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. This annual report on Form 10-K also contains estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk. In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “would,” “could,” “should,” “expect,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “contemplate,” “believe,” “estimate,” “predict,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this annual report are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our financial condition, operating results, business strategy, short-term and long-term business operations and objectives. These forward-looking statements speak only as of the date of this annual report and are subject to a number of risks, uncertainties and assumptions, including those described in Part I, Item 1A, “Risk Factors.” The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Moreover, we operate in a very competitive and rapidly changing environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

Airgain, the Airgain logo, and other trademarks or service marks of Airgain appearing in this annual report are the property of Airgain. This annual report also includes trademarks, tradenames and service marks that are the property of other organizations. Solely for convenience, trademarks and tradenames referred to in this annual report appear without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or that the applicable owner will not assert its rights, to these trademarks and tradenames.

ITEM 1. BUSINESS

Overview

Airgain is a leading provider of advanced antenna technologies used to enable high performance wireless networking across a broad and increasing range of devices and markets, including consumer, enterprise, and automotive. Our innovative antenna systems are designed to address key challenges with wireless system performance faced by our customers. We provide solutions to complex Radio Frequency, or RF, engineering challenges to help improve wireless services that require higher throughput, broad coverage footprint, and carrier grade quality. Our antennas are deployed in carrier, fleet, enterprise, residential, private, government, and public safety wireless networks and systems, including set-top boxes, access points, routers, modems, gateways, media adapters, extenders, portables, digital televisions, sensors, fleet and asset tracking devices. Through our pedigree in the design, integration, and testing of high performance embedded antenna technology, we have become a leading provider to the residential wireless local area networking, also known as WLAN, market, supplying to leading carriers, Original Equipment Manufacturers, or OEMs, Original Design Manufacturers, or ODMs, and chipset manufacturers who depend on us to achieve their wireless performance goals.

Our embedded and external antenna solutions support a variety of wireless access technologies across the licensed and unlicensed spectrum of frequency bands. These include IEEE 802.11 a/b/g/n, 802.11ac/ax, WCDMA, LTE, 5G, DECT, LPD, LPWAN, Bluetooth, ZigBee and Z-Wave, among others. In addition, we have expertise in the testing and benchmarking of wireless systems and devices. To satisfy the rapidly evolving technology needs of the industry, we have remained on the leading edge of next generation development by providing solutions for Multiple Input, Multiple Output, or MIMO, Multiuser MIMO, or MU-MIMO, short range wireless technologies, beam forming, and active antenna technology.

Our design teams partner with customers from the early stages of antenna prototyping to device throughput testing to facilitate optimal performance and quick time to market. Our capabilities include design, custom engineering support, integration, and over-the-air, or OTA, testing. These capabilities have resulted in a strong reputation across the OEM, ODM and chipset manufacturer ecosystem. Our competencies and strengths have helped us secure design wins used in multiple reference designs from leading Wi-Fi chipset vendors. OEMs, ODMs, chipset manufacturers and service providers rely on these reference designs and our engineering skills to deliver superior throughput performance. We view our relationship with OEM, ODM, chipset manufacturers and service providers as an important attribute to our long-term strategy and success.

In 2019 we had over 1,000 antenna products in our portfolio which shipped worldwide and implemented across millions of devices. During 2019 we supplied our products to carriers, retailers, OEMs, ODMs and end users in three primary geographic regions: North America, Europe, and Asia Pacific. Our customer base includes Aruba, AT&T (DIRECTV U.S., LLC), Belkin International, Inc., Broadcom, Charter Communications, Inc., Comcast Corporation, Commscope, Inc., Dish Network, Liberty Global plc., Nokia, Telefonica SA, Sagemcom SAS, Samsung, Technicolor SA and ZTE Corporation, among others. We have achieved significant growth in our business in a short period of time. From 2012 to 2019, our annual sales have grown from $18.2 million to $55.7 million, while our net income has increased from a net loss of $1.1 million in 2012 to net income of $0.9 million in 2019.

We use third parties to manufacture our embedded antenna products while maintaining oversight for critical quality, test, and calibration functions. We manufacture our Antenna Plus branded products at our Arizona facility. As of December 31, 2019, we had 222 issued patents and 24 pending patent applications in the United States and 24 companion patents and five pending applications outside the United States.

Industry Background and Market Opportunity

Global adoption of Wi-Fi has been a major contributor to our growth to date and underpinning the demand has been the growth in internal protocol, or IP, traffic and IP-enabled devices. According to the Cisco Visual Networking Index, by 2022, Wi-Fi and mobile networks will account for an estimated 71% of IP traffic, up from 52% in 2017. We believe the greater proportion of traffic being transmitted and received over wireless technologies will be a tailwind for greater adoption of antenna systems. According to ABI Research, next to cellular handsets, consumer access points are the second biggest consumers of Wi-Fi chipsets. Residential gateways and Wireless access points make up the majority of consumer access points, the vast majority of which are provided to consumers by carriers, service providers and retailers. Carriers and enterprises have realized the economic benefits of wireless connectivity to enable efficient delivery of premium content and internet services in the home, enterprise and mobile. The rapid growth of mobile data traffic has been widely recognized and reported. The trend toward mobility carries over into the realm of fixed networks since an increasing portion of traffic will originate from portable or mobile devices.

The wireless market for antenna systems is growing rapidly as the technology is adopted across a wide variety of markets, including the following key markets we target:

- *Consumer.* The consumer market encompasses a large and growing market of consumers using wireless-enabled devices and our antennas are deployed in consumer access points, wireless gateways, Wi-Fi Mesh systems and extenders, smart TVs, smart home devices, and set-top boxes. Our antennas support an array of technologies including WLAN, Wi-Fi, LTE, 5G and LPWAN. These devices facilitate a variety of consumer-oriented applications and services including wireless video streaming, home automation, smart appliances, home security systems, and smart TV entertainment systems. We estimate that the total addressable market for our antennas in the consumer market will grow at a compound annual growth rate, or CAGR, of 9% between 2017 and 2022, based on ABI research and our internal estimates of average selling price, or ASP. Furthermore, according to ABI Research, the market for set-top boxes shipped worldwide is expected to increase from 45.4 million device shipments in 2018 to 61.4 million in 2022. In the same period, the number of smart TV's shipped are expected to grow from 125.4 million to 233 million. Within the consumer market, the connected home market has seen an explosion of automation services and broadband-connected devices, making the demand for increased bandwidth, high throughput and reliable connectivity more critical than ever before. Between 2017 and 2022, residential Wi-Fi Mesh systems and smart home devices are anticipated to experience some of the highest growth rates within the consumer market, with a CAGR of 63% and 31%, respectively.
- *Enterprise.* The enterprise market is characterized by devices that provide reliable wireless access for high-density environments such as buildings, campuses, transportation terminals and stadiums. These systems have become mission critical as they require high performance and scalability and are required to support a wide range of applications across different network environments. Within this market, our antennas are deployed across a wide range of systems, devices, and applications that include access points and gateways, fixed wireless access infrastructure, small cells, and remote radio heads. Within the enterprise market, which includes Industrial Internet of Things (IoT), we play a critical role in providing embedded and external connectivity solutions. We estimate that the total addressable market for our antennas in the enterprise market will grow at a CAGR of 26% from 2017 to 2022, based on ABI Research device shipment numbers and our internal estimates of ASP.
- *Automotive*. The automotive industry is in the midst of significant transformation led by innovations around safety, energy efficiency, autonomous driving, and infotainment systems. According to ABI Research, the number of vehicles produced worldwide with wireless connectivity capability is expected to increase from 32 million in 2017 to over 70 million per year by 2022. While one segment of the automotive antenna market is tied to antennas designed and integrated into new vehicles, the other is tied to the fleet and aftermarket segment. In the automotive market, our antennas are deployed in a wide range of vehicles to support a variety of wireless connectivity solutions in the fleet and aftermarket segment and support a variety of technologies that include Wi-Fi, 3G, LTE, Satellite and LPWAN. The fleet and aftermarket segment consist of applications whereby rugged vehicular wireless routers are paired with external antenna systems to provide connectivity to fixed and mobile assets. Within the fleet and aftermarket market segment, there has been a rise in the number of antennas per vehicle. This is largely driven by the increasing needs of connectivity across different access technologies that include Wi-Fi, 3G, LTE, 5G, Satellite, and low power wide area networking, or LPWAN. We estimate the total addressable market for our antennas in the automotive market will grow at a CAGR of 15% from 2017 and 2022, based on ABI Research device shipment numbers and our internal ASP estimates.

Antenna Design and Testing

We are an antenna solution provider that not only has the expertise in antenna design, engineering and integration, but also the testing and optimization of OTA throughput. Our expertise is based on years of experience in dealing with multiple antenna designs performing under varying RF conditions. We believe our expertise is important to our success as the wireless RF environment in homes, enterprises, and public places is a highly complex multipath environment that is not accurately represented by antenna simulation tool modeling. While common antenna industry practice is to design antennas exclusively within a passive environment using simulation tools based on the assumption of free space, we design our antenna systems using a combination of device and environment modeling combined with active antenna OTA throughput performance feedback.

This performance feedback loop forms the foundation of our integration process that optimizes overall device performance, as well as antenna characteristics. Our regional OTA testing facilities are configured to replicate the real-world performance in typical homes and offices, while providing isolation from external RF and wireless interference. This low noise environment is key when comparing and identifying the effect of various antenna and system designs on wireless throughput performance. We have multiple dedicated test sites located in the vicinity of our development locations in San Diego, California, Melbourne, Florida, and Suzhou and Shenzhen, China.

Our engineers work directly with customers to evaluate performance factors, and to provide custom support in the areas of antenna system design and simulation, rapid prototyping, integration and testing. The following is a high-level summary of our design and integration process:

- *Engineering Review*. When a new product is initiated, our engineers review antenna-specific characteristics, such as gain (throughput), efficiency, and coupling, alongside board-level factors, such as on-board noise and radio interference, as well as identification and housing constraints. We plan to expand awareness of our brand and our offerings throughout the OEM and carrier technical community through participation in industry technical working groups, forums and trade events.
- *Antenna Selection and Placement*. Our engineers select several antennas that are best suited for a particular application based on a large database of existing antenna designs from previous efforts, modifications to these prior designs as well as new, full custom designs for particular devices. Together with the industrial design of the product, the engineer also selects candidate antenna placements scenarios that are used in the initial simulation and placement phase. Our extensive experience in this step narrows the possible solutions to only the most promising candidates for detailed simulation and measurement.
- *Simulation and Initial Testing*. When we engage in the early stages of a program before prototype tooling is available, we use 3D CAD models and physical mockups of the device to simulate and measure these interactions. When the project progresses to the prototype stage, we test actual prototype devices to generate even more accurate measurements. While many of our competitors select a final antenna based on RF chambers testing, we proceed with a critical further step and measure actual system level performance of the device in an iterative process to optimize performance.
- *Over-the-Air Throughput Testing*. We have developed a set of proprietary performance metrics, measurement methodologies, and automated test conditions to help enable accurate and repeatable characterization of the relative OTA performance of 802.11-based WLAN devices such as routers, gateways, and set-top boxes. Our benchmark testing provides an accurate assessment of the performance characteristics for devices to enable manufacturers to make informed decisions in selecting the best antenna solution for their needs. This iteration also considers firmware stability, system noise, and interference, as well as antenna performance, to provide a throughput optimized solution.
- *Final Integration*. A final design review is conducted to evaluate the design for manufacturability. Mounting methods are reviewed for ruggedness and ease of assembly in volume production. Fine tuning of the cable routing, antenna parameters and other features of the design are then reviewed before releasing the design.
- *Validation and Reporting*. Upon completion of the design, a summary report is provided detailing the antenna selection, overall performance results and key observations, integration recommendations and detailed test results for each wireless system characterized. As the design moves to production, our product integration engineers serve as the technical interface between the antenna design team and the customer’s production team to validate and ensure product quality and reliability during high volume manufacturing.

Technology Benefits

We continuously strive to remain at the forefront of wireless technologies. We work closely with leading wireless chipset manufacturers, carriers and OEM’s on the cutting edge of new wireless technology introduction, while we continue to focus on extending our core competencies in product innovation, quality, integration and OTA performance verification processes, helping to ensure we continue to deliver on our promise of optimal antenna system performance.

Benefits to our Customers

We have developed strong relationships with leading WLAN chipset vendors, OEMs, and key service providers, keeping us at the forefront of new developments in wireless technologies and industry requirements. We share our expertise with customers in several areas including design, engineering, and testing, and provide insights based on years of experience across hundreds of devices. By harnessing our specialized experience and expertise, we offer solutions that can improve our customers' product performance, reduce their staff costs and allow our customers to focus on non-antenna related factors in the face of short design, engineering and production windows. Rather than rely upon a captive engineering group that only works on in-house opportunities, we act as an outsourced antenna design, engineering, and test group for our customers.

We also bring years of experience in delivering high performance, ultra-reliable wireless connectivity for mobile, fleet, and industrial IoT and machine-to-machine, or M2M, applications. Designed for all environments, our broad range of multi-band products support a variety of applications from kiosk and ATM connectivity to government and public safety fleet applications.

Benefits to Wireless Users

By focusing on performance, we strive to improve product satisfaction with customers. Often, competing makers of wireless devices use chips that are made by the same semiconductor manufacturer. Antenna reliability depends on numerous factors including material, mount position, physical connection and resistance to oxidation. However, the selection and placement of an antenna, or antennas, can change the performance characteristics measurably. Each sale of an antenna solution is customized according to the needs and requirements of the customer. Tradeoffs exist on placement, power, price, and other variables. By focusing on performance, we challenge our engineers to deliver the optimal solution given the customer's product constraints. This commitment to performance has established us as one of the recognized leaders in the design, testing, and performance of wireless systems, and led to what we believe is one of the broadest blue-chip customer lists in the industry.

Products

Our antennas are found in a broad range of applications and end-user devices that are deployed in carrier, fleet, enterprise, residential, private, government, and public safety wireless networks and systems, including set-top boxes, access points, routers, modems, gateways, media adapters, Wi-Fi extenders, portables, digital televisions, sensors, and fleet and asset tracking devices. Our products have been adopted by some of the world's leading telecom manufacturers and networking companies and are now being used by millions of carrier subscribers in the United States, Canada, Europe, and Asia Pacific. We offer several product categories designed to maximize the performance of wireless devices while providing cost and design flexibility:

- *MaxBeam™ Embedded Antennas*. MaxBeam high gain antennas utilize patented technology to deliver up to double the signal strength than conventional antenna solutions. The superior performance is derived by combining the benefits of directional antenna elements with high isolation between each beam. Each antenna utilizes mixed material, multi-element assemblies to provide optimal performance and turnkey integration. The MaxBeam antenna family offers maximum coverage designed for WLAN and Cellular frequency bands.
- *Profile Embedded Antennas*. Profile Embedded Antennas feature highly efficient printed circuit board, or PCB, based solutions offering low profile designs optimized for confined industrial designs. Ideal for embedded applications requiring integration flexibility, the Profile family includes case, through- hole, and SMT mount designs and is available in single, dual, tri-band, and multi-band configurations. Our Profile Embedded Antenna family features four new designs targeting Wi-Fi 6 wireless system design challenges and are designed to enable tailored performance characteristics to meet the needs of any Wi-Fi 6 implementation. These antennas, including the Q Series, X Series, H Series and Q6 Series are designed to help enable us to deliver market-leading antenna integration and OEM design support for complex Wi-Fi 6 carrier gateways and access points.
- *Profile Contour Embedded Antennas*. Profile Contour Embedded line utilizes Flexible Printed Circuit Board, or FPC, providing performance with device integration flexibility. Flexible and very low profile, these antennas can conform to many two-dimensional shapes making them ideal for integration within

curved enclosures and wearable devices. Profile Contour antennas are supplied pre-fitted with adhesive tape for ease of integration.

- *Ultra Embedded Antennas*. The Ultra line of embedded antennas has been designed for lower cost, embedded applications. These stamped metal designs provide high efficiency and allow for rapid customization and tuning to each device, making them ideal for embedded applications requiring integration flexibility. Ideal for high volume applications, these antennas utilize superior materials and plating for optimal performance.
- *OmniMax High Performance External Antennas*. Our external dipole antennas are designed for indoor and outdoor WLAN, cellular and LPWAN applications. With an extensive variety of single and dual-band designs available, this family of dipoles offers superior performance and flexible mounting options for various deployment scenarios. Our dipole antennas are available in 2.4 and 5GHz bands supporting Wi-Fi frequencies, as well as wideband 617MHz to 6GHz for global cellular and 5G New Radio (NR) applications, and ISM band, or industrial, scientific, and medical radio, which includes 868 to 928MHz for international unlicensed LPWAN applications.
- *MaxBeam Carrier Class Antennas*. These are a series of multi-band LTE and WLAN antennas for small cell systems including femtocells, picocells, and Wi-Fi hotspots, backhaul and community systems. These embedded antennas are designed to provide increased range and coverage for indoor or outdoor applications that demand carrier-grade service levels.
- *SmartMax™ Embedded Antennas.* These chipset agnostic smart antennas utilize dynamic spatial and polarity selection, providing optimal throughput performance and coverage for 802.11ac Wi-Fi systems. Designed for set-top-box, gateway, and smart HDTV deployments, SmartMax improves spatial correlation among received signals, producing a significant improvement in the performance of MIMO systems. SmartMax antennas require no dedicated connectivity to Wi-Fi chipset base-band circuits, minimizing the cost and complexity typically associated with Smart Antenna System integration.
- *Antenna Plus Antennas.* Through the Antenna Plus brand, we offer a broad and expanding portfolio of automotive, fleet, public safety and M2M antennas. Our high performance, low profile antennas are designed for many wireless standards and frequencies, including LTE and 5G cellular with MIMO, Wi-Fi, Bluetooth, Dedicated Short Range Communications, or DSRC, and GPS/GNSS. Designed for all environments, our broad range of highly integrated and multi-band products support a variety of applications from kiosk and ATM connectivity to government and public safety vehicular applications. We have over 26 years of experience designing mission critical automotive fleet and mobile antenna applications. As the original inventor of the low-profile cellular antenna, we are known for our market leading performance, quality, and long product life. Our antennas build on the best in class RF performance, leading design features, and extended operational life of our highly successful fleet and public safety antenna products connecting to almost any vehicular router or modem.

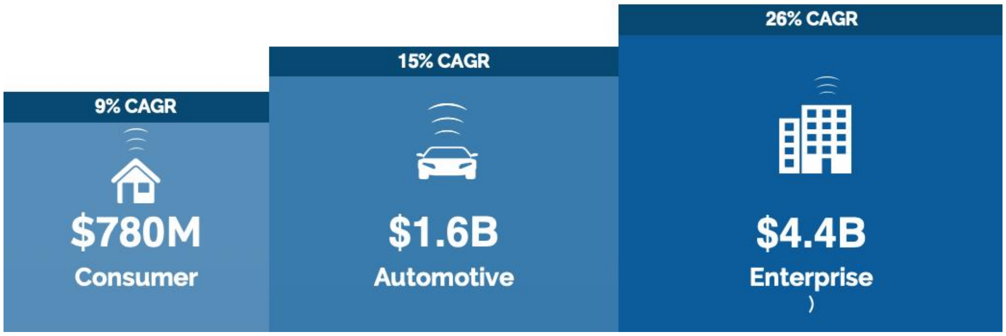
Design Partnerships

We have entered into joint development efforts with WLAN chipset vendors to collaborate on next-generation WLAN reference designs, where we jointly pursue the development of reference design platforms optimized for use with integrated embedded antenna systems. These WLAN reference designs are intended to provide ODMs with high-performance, embedded antenna solutions that provide consistent, measurable results and provide a path to reduced product development costs and cycle times.

Our collaborative relationships with 802.11 chipset vendors offer opportunities for market access and improved sales of both chipsets and antennas. Early access to chipset vendors' offerings, including industrial design tradeoffs in enclosure, board layout and design, all offer chipset vendors the advantage of optimized performance in their reference designs. When our antennas are consequently listed in the reference bill of materials for the major chipset vendors' products, these antennas become the default performance recommendation for all products utilizing that chipset. Ongoing contact with the OEM's and ODM's, along with default use of the reference bill of materials components specified by chipset vendors, generates a dependable flow of sales opportunities for us.

Growth Strategy

Our growth strategy is centered around targeting three key markets, consumer, enterprise and automotive. The following graphic provides a summary of the estimated total addressable market for each of these three markets. As highlighted in the graphic below, based on ABI Research and our internal ASP estimates, by 2022, we estimate a total addressable market to be in excess of $6.7 billion.



The consumer market has seen an explosion of automation services and broadband-connected devices, making the demand for increased bandwidth and reliable connectivity more critical than ever before. Within the carrier gateway and set-top box devices, the transition towards 802.11ac and 802.11ax (also called Wi-Fi 6) standard, and more recently the 6GHz extension to Wi-Fi 6, labelled Wi-Fi 6E is a key market growth driver. The shift toward Gigabit Wi-Fi 802.11ac and 802.11ax is creating increased demand for our solutions as the number of antennas per device increases substantially. 802.11ax provides a theoretical ability to deliver speeds in excess of 14Gbps using 4x4 MIMO which is comparable to full duplex Docsis 3.1 and 5G bandwidths, resulting in wireless bandwidth delivery achieving parity with wireline speeds. Given the performance improvements over existing systems, service providers around the world are expediting their upgrade cycle towards higher performing consumer devices, driving a device design refresh cycle.

We continue to penetrate an increasing scope of adjacent wireless device applications such as home security, smart appliances, waterproof and solar outdoor wireless systems, and healthcare. We are also expanding our footprint in these markets through support of an increasing range of IoT wireless standards, such as Bluetooth, ZigBee, Z-Wave, Thread, NB-IoT and LoRa WAN. Our engineering team provides custom antenna solutions to support a variety of device constraints, including flexible antenna technology for curved and smaller form factors, and specific absorption rate (SARs) compliant antennas for body worn applications. We provide IP alarm and security camera solutions for one of the world’s leading providers of video surveillance products.

In the automotive market, the trend towards the ubiquitous connected car and the demand for increasingly complex aftermarket/fleet wireless connectivity solutions, are key growth drivers for us. Automakers are seeking to integrate a wide range of radio access technologies to support connected vehicles, from 2G and 3G for light, telematics-based connectivity to LTE—leading to 5G, and Wi-Fi for heavy infotainment use, and DSRC for safety applications such as collision avoidance. Other standards such as 802.11p will play a role in vehicle-to-vehicle, or V2V, and vehicle-to-everything, or V2X, communications, while GPS will remain a basic requirement for vehicle location tracking and navigation. The automotive segment has six distinct product categories, including mobility management, vehicle management, entertainment, safety, drive assistance, and well-being. Many of these categories can be particularly useful to owners of vehicle fleets, such as company and service vehicles, as well as companies in the car-rental and car-sharing industries. Although many of the technologies needed to support these functions are already established, the number of fleet sales in this segment is expected to grow. Connected cars require internal and external antennas for a complete wireless solution. We have a leading portfolio of automotive antenna connectivity solutions, from embedded solutions for OBD II, IHU and connected car gateways, to custom shark fin antennas for automotive OEM's, and high-quality antenna products for mobile and automotive fleet applications for government, public safety, and enterprise applications.

In the enterprise market we see growth potential beyond the traditional Wi-Fi market across multiple product categories and applications, driven by availability of new frequency bands in the form of Citizens Broadband Radio Service, or CBRS, and 5G NR. CBRS is driving new use cases including private LTE, leading to private 5G, and cellular operators for Fixed Wireless Access, or FWA, and for secondary indoor spectrum. New 5G spectrum is creating opportunities for operators to establish or expand FWA offerings, to compete with wired incumbents, driving development of a new wave of 5G-enabled customer-premises equipment (CPE) devices and small cells. We are developing core 5G antenna IP, while actively engaged in a new wave of 5G small cell and FWA device integration projects. Technical challenges relate to complexity of integration and coverage of a broader range of frequency bands, including new millimeter wave, or mmW 5G NR spectrum. Our first phase of active beam steering mmW 5G antenna technology is anticipated to be ready in the first quarter of 2020 for customer engagement.

Within the traditional enterprise Wi-Fi markets, we see growth potential in outdoor stadium and arena deployments, in-building coverage for commercial applications, kiosks, asset tracking, and Industrial IoT. According to ABI Research, enterprise access point shipments are estimated to reach 16.5 million per year by 2023. In the connected smart home and city IoT sub-segments, we see embedded and external connectivity solutions for LPWAN, such as NB-IoT and LoRa for multiple applications. This includes security and asset tracking applications. In the M2M and IoT Infrastructure sub-segment serviced by our Antenna Plus products, typical applications include in-building, out-building, and on-building connectivity solutions for commercial, retail, and office, outdoor kiosk, signage, and fixed asset connectivity and tracking. According to ABI research, by 2023, there will be approximately 12 million new M2M wireless modem shipments per year, up from approximately six million new modem shipments in 2018.

We provide a comprehensive set of services for single and multi-client Wi-Fi performance testing, characterization, and validation for wireless devices utilizing advanced MIMO configurations and technologies including WLAN, Bluetooth, ZigBee, Z-Wave, LoRa, CBRS, LTE, and more. Our service offering includes early stage system design, custom engineering support, and superior OTA testing services for service providers and OEMs. Our proprietary OTA testing process has become somewhat of an industry standard in wireless throughput evaluation, enabling our service offering to create stickiness with customers as they depend on our testing services to evaluate their products. We believe there is significant potential for growth of our service offering revenue, including through renewable service provider service contracts, and to further leverage this offering to customers and applications in adjacent markets.

Over the next several years, we believe the adoption of 5G on a global basis will offer incremental growth opportunities for us. According to ABI Research, 25% of network traffic will be 5G by 2023. 5G antenna systems are more complex and highly integrated as they need to support complex active architectures for new configurations such as active beam forming, and new frequency ranges in the sub-6GHz and mmWave, frequency bands. We believe this shift in antenna complexity and integration will allow us to leverage our expertise and antenna performance, including integration between antenna and the RF front end, to enhance the value proposition to our customers. Furthermore, highly integrated and complex designs demanded by 5G will require closer coordination between the ecosystem of component vendors, OEMs and Chipset Vendors, a key strength of ours.

In the United States we have a strong position with service providers and carriers that supply in-home residential wireless equipment. That said, we believe there are growth opportunities on the international front. This includes Europe, especially in areas of the connected home and automotive OEM markets which will offer meaningful opportunities.

Our mission is to be a leading supplier of smart, embedded and external antennas to the expanding wireless device and systems marketplace. The key elements of our strategy are listed below.

- *Expand our customer base within our core markets.* We sold our products in 2019 to over 90 end-customers. Although the customers that pay for our products are often ODMs and distributors, it is primarily the OEMs, carriers and retail-focused end-customers that drive the selection of our solutions.

- *Increase our sales to existing customers.* Within our customer base, we offer solutions that are valued for performance and reliability. In many cases we are providing antenna solutions for an isolated subset of our customer's wireless product portfolios. We plan to initiate targeted marketing campaigns to expand our solutions footprint—effectively to mine our existing customer base more effectively to expand our revenue on a per customer basis.
- *Innovate into new products and markets.* Trends such as the IoT are driving an explosion of demand for wireless connectivity in new applications in and out of the home, including connected vehicles. Our technology and solutions are well suited to the majority of these high growth potential new markets. We also see new opportunities in M2M communications, LTE, Near Field Communications, Identification and Tracking via Radio Frequency Identification, or RFID, Personal Area Networks such as 5G, Wi-Fi 6, ZigBee, Z-Wave, LoRa or Bluetooth, and other wireless communications methods and applications.
- *Focus on system performance and products with long lifecycles*. Our antenna solutions are typically integrated into customers' products at the design stage. Once an equipment manufacturer designs our antennas into its product offering, it is difficult to design out the incumbent solution since changing antenna suppliers involves significant cost, time, effort, and usually re-certification of products. This is especially valuable in the service provider market, where product generations generally ship for two to three years before displacement by next-generation devices.
- *Acquire complementary technologies, assets and companies.* The market for antenna solutions is diverse and fragmented. Opportunities arise for acquisition of technologies, assets and companies that would complement our business. We continue to consider acquisitions that will enable us to improve our market footprint, strategic position and to take advantage of economies of scale through consolidation.

Customers

Our customers are global. The substantial majority of our sales are to ODMs and distributors based in China. However, for the year ended December 31, 2019, approximately 58% of the end-customers of our products, based on sales, were in North America and 42% were outside of North America. In addition, our top two customers, Synnex Technology International (HK) Ltd. and Syntech Asia Ltd., accounted for approximately 36% and 14% of our sales, respectively, for the year ended December 31, 2019. We generally work with Engineering, Product Management, Product Line Management, Product Marketing, Design, and similar groups to provide antenna solutions. While the sale of the product may be to an OEM and ODM, or via a distributor, we also consider our customers to include chipset vendors and service providers. We market our design capabilities directly to chipset vendors and service providers to generate demand.

- *OEM (Original Equipment Manufacturer).* We sell our products to OEM customers worldwide. These customers make many products including Wi-Fi access points and repeaters, set-top boxes, video gateways, and other wireless equipment found in homes, schools, businesses, and networks. Typically, these customers work with us to help overcome a specific performance issue, or to improve product performance against internal or external benchmarks. OEMs are also often mandated or encouraged by service providers to select us.
- *ODM (Original Design Manufacturer).* We sell our products to ODM customers worldwide with the vast majority being headquartered in Asia. These customers make many of the same products as the OEM customers, but they make these for sale to an OEM or service provider customer. Generally, ODM customers do not own all of the rights to the design and engineering assets of the products they produce and deliver. Historically, ODMs have been thought to focus primarily on cost; however, our ODM customers also emphasize performance and design flexibility when working on antenna selection and placement.
- *Chipset Vendors.* We sell small quantities of our products directly to chipset vendors for their reference designs. Through our close working relationships with the leading chipset makers for WLAN we have developed a significant level of expertise in the testing and evaluation of chipset reference designs and systems. Chipset vendors and Semiconductor manufacturers work with us to promote better integration and improved performance, and to create optimal reference designs. These customers help influence purchasing decisions with OEM and ODMs as their reference designs and associated Bills of Materials (BoM's) and suppliers are usually closely replicated in production designs. This can also improve time-to-market for OEM and ODM customers.

- *Service Providers*. Typically, we do not sell antennas directly to telecommunications and broadband service providers, but these companies often specify overall product performance, and sometimes use our wireless test and validation services. By working with the service providers, we are often written into the carrier's specifications, which are sent to the OEM or ODM. Our antenna products are then shipped directly from our contract manufacturers to the device manufacturer. In doing so, we can have an impact on an OEM's or ODM's ability to hit certain performance levels. We have worked with service providers, and in some cases, we have sold testing equipment that mirrors the testing equipment and environment we use internally.
- *Value Added Reseller (VARs) and Distributors*. These partners combine our antenna products with other devices and services including vehicular modems, to deliver complete integrated and installed aftermarket solutions to end customers.

Sales and Marketing

Our sales and marketing organizations work together closely to improve market awareness, build a strong sales pipeline, and cultivate ongoing customer relationships to drive sales growth.

Sales

We sell our products to OEMs, ODMs, carriers and through manufactures for retail. Our global sales effort consists of direct and indirect sales teams, and indirect channel partners. Our direct sales team consists of inside sales personnel based in China and Taiwan and our outside field sales teams based in the United States, the United Kingdom, Europe, Korea, China, and Taiwan. Our outside field sales teams consist of business, sales, account, technical marketing and program managers, and field application engineers, or FAEs. Our indirect channel partners consist of distributors, engineering design companies and outside sales representatives.

Our outside sales team is engaged in pre-sales, account management, and creating partnership opportunities with third parties such as service providers and semiconductor manufacturers. They are assigned quotas and have defined sales territories and/or accounts. The sales process includes meeting and qualifying potential programs and customers, and actively managing the planning stage of devices they plan to bring to market. Our FAEs assist these managers by providing technical support to existing customers.

Our indirect channel partners provide lead generation, pre-sales support, product fulfillment and, in certain circumstances, post-sales customer service and support. This channel partner network often co-sells with our inside sales and field sales teams. Our channel provides us with additional sales leverage by sourcing new prospects, providing technical support to existing customers, upselling for additional use cases and daily indexing capacities, and maintaining repeat business with existing customers. These channels provide added coverage to customers and prospects we cannot reach directly. The percentage of our sales from indirect channel partners was 26%, 27% and 24% for the years ended December 31, 2019, 2018, and 2017 respectively.

Marketing

Our marketing strategy is focused on building market awareness and acceptance of our products and promoting our brand. We market our products directly to both prospective and existing customers. The marketing department is engaged in product management, product marketing, program management, corporate marketing, tradeshows and public speaking, development of our website and collateral material, and creating partnership opportunities with third parties, such as service providers, distributors and semiconductor manufacturers. Marketing emphasizes our competitive strengths and provides input into the future direction of product development and customer profiles.

Our primary marketing initiatives include trade shows, industry events, industry reputation management, and publications, including white papers and trade journals. We strategically choose the location and focus of each trade show based on each show's prospectus, reputation, and audience attendees, allocating marketing funds to support presence at shows annually in North America, Asia, and Europe. These shows provide us with the opportunity to showcase our newest products and system designs, as well as set up meetings with current and potential OEM and ODM customers, carriers, and chipset manufacturers.

Competition

The embedded and external antenna market is highly competitive and is characterized by rapid technological change and evolving standards. Our principal competitors fall into three categories:

- *Direct competitors.* Direct competitors include independent antenna companies, 2J Antennas USA Corp., Adant Technologies Inc., Asian Creation Communications Factory, AVX Corporation, Fractus S.A., Baylin Technologies Inc., Honglin Technology Group Ltd., Laird PLC, Mobile Mark, Inc., PCTEL, Inc., Pinyon Technologies Inc., Sunwave Communications Co., Ltd., Taoglas Limited, Wanshih Electronic Co. Ltd., and WHA YU Industrial Co., Ltd., among others. In addition, the barriers to entry for the antenna industry are low, and we expect new competitors to emerge in the future.
- *In-house Antenna Design and Engineering Teams.* Several of our existing customers, including OEMs and ODMs which design and build complete wireless devices, also have internal resources to design, engineer, and produce antenna solutions. In such cases, we compete against the captive resource of that ODM. Several ODMs, including Arcadyan Technology Corporation, Foxconn Electronics Inc., Gemtek Technology Co. Ltd., and Wistron Corporation, design, manufacture, and sell antennas, in direct competition with us.
- *Third-Party Custom Design and Engineering Companies.* Some of our existing customers and prospects use outsourced engineering services to provide antenna solutions. In these cases, there may be short-term or long-term contractors who work to design, engineer, test, and manage production of an antenna solution.

The principal competitive factors in our markets include:

- Price and total cost of ownership as a result of reliability and performance issues;
- Brand awareness and reputation;
- Antenna performance, such as reliability, range, throughput;
- Ability to integrate with other technology infrastructures;
- Offerings across breadth of in-home wireless products;
- Antenna design and testing capabilities;
- Lead-time, and flexibility to rapidly customize solutions to individual customer requirements;
- Relationships with semiconductor/chipset vendors; and
- Intellectual property portfolio.

We compete primarily based on antenna performance, our intellectual product portfolio, design and testing capabilities, and reputation. We believe we generally compete favorably on the basis of these factors. However, some of our existing and potential competitors may have advantages over us. Many of our competitors are significantly larger in scale than we are and have access to greater financial, technical, marketing, and other resources. In most instances, competition among these vendors creates some level of pricing pressure and forces us to lower prices below our established list prices. Many direct competitors compete primarily based upon price and do not provide the same level of design collaboration and services as we do. For example, some high-volume Asia-based competitors are prepared to operate at less than 20% gross product margins.

Manufacturing and Operations

We have limited in-house manufacturing capability, solely with respect to antennas deployed in the fleet and M2M market. We do final assembly of these antenna products at our facility located in Scottsdale, Arizona, where we purchase raw materials, assemble, test, and ship products. We outsource the manufacturing for all of our other products to contract manufacturers, or CMs, located in China. We have long-term relationships with these CMs, and work together to control raw materials, assembly, test, quality and shipment of our antenna products. We perform quality assurance and testing at our California facilities.

We maintain a close direct relationship with these manufacturers to help ensure supply and quality meet our requirements. Although the contract manufacturing services required to manufacture and assemble our products can be satisfied by one of our CMs or may be readily available from several established manufacturers, it may be time consuming and costly to qualify and implement new contract manufacturer relationships. If our CMs suffer an interruption in their businesses, or experiences delays, disruptions, or quality control problems in their manufacturing operations, or we otherwise have to change or add additional contract manufacturers or suppliers, our ability to ship products to our customers could be delayed, and our business adversely affected. The CMs manufacture antenna products according to our design specification, materials specification, quality standards, and delivery requirements. We have full control and authority over the selection of materials, manufacturing processes, and inspection processes. Since our products manufactured in China are predominantly shipped to ODM's and CM's within Asia, we have not experienced significant impact as a result of the tariffs imposed on exports from China to the United States.

Research and Development

We invest considerable time and financial resources in research and development to enhance our antenna design and system integration capabilities and conduct quality assurance testing to improve our technology. Our engineering team consists of engineers located in research, design, and test centers in California, Arizona, and Florida, as well as the United Kingdom, China, and Taiwan. Our engineering team actively participates in research and development activities to expand our capabilities and target applications for the consumer, enterprise and automotive markets. We expect to continue to expand our product offerings and technology solutions in the future and to invest significantly in ongoing research and development efforts.

In the connected home, we are developing a series of antenna products for the home security market, including designs ranging from Z-Wave applications for door sensors to customized connectivity solutions for smart metering using LTE and LPWAN standards, and antenna modules enabling gigabit speed last meter connectivity for broadband operators. We continue to architect and improve our antenna systems for our enterprise class smart antenna customers, as well as new high-performance designs for the outdoor Wi-Fi and small cell markets. We continually review alternative antenna designs for increasingly complex carrier gateway products, which are expanding beyond just delivering Wi-Fi to also include 5G, ZigBee, Z-Wave, DECT, LPWAN, NB-IoT and Bluetooth applications. Finally, we are engaged in the design and evaluation of antenna systems for next generation 802.11ax technology, including reference designs with industry leading chipset vendors.

Seasonality

Our operating results historically have not been subject to significant seasonal variations. However, our operating results are affected by how customers make purchasing decisions around local holidays in China. For example, a national holiday the first week of October in China may cause customers to purchase product in the third quarter ahead of their holiday season to account for higher volume requirements in the fourth quarter. In addition, although it is difficult to make broad generalizations, our sales tend to be lower in the first quarter of each year compared to other quarters due to the Chinese New Year. The extension of the lunar new year holidays due to the recent outbreak of the coronavirus disease (COVID19) originating in China, as well as the broader economic impacts caused by the outbreak, may contribute to the traditionally slower first quarter sales this year. Results for any quarter may not be indicative of the results that may be achieved for the full fiscal year and these patterns may change as a result of general customer demand or product cycles.

Intellectual Property

We rely on patent, trademark, copyright and trade secret laws, confidentiality procedures, and contractual provisions to protect our technology. As of December 31, 2019, we had 222 issued U.S. patents covering our embedded and external antenna technology with expiration dates ranging from 2020 to 2039, and 24 pending patent applications in the United States Patent and Trademark Office. Outside of the United States we have 24 issued patents and five pending patent applications with expiration dates ranging from 2020 to 2037, which entail counterparts of U.S. patent applications. The patents consist of several broad areas as summarized by the following four patent groups:

- Methods of determining which antenna pattern to use;
- Antenna pattern selection with multiple stations connected to access point;
- Dynamically selected antennas for MIMO systems; and
- Hardware implementations of switched directional antennas.

Taken together, these patents with priority dates as far back as November 2000, form both a barrier to competition and a licensable asset for customers in the MIMO arena.

Despite our efforts to protect our proprietary rights, unauthorized parties may attempt to copy aspects of our products or obtain and use information that we regard as proprietary. We generally enter into confidentiality agreements with our employees, consultants, vendors and customers, and generally limit access to and distribution of our proprietary information. However, we cannot assure you that the steps taken by us will prevent misappropriation of our technology. In addition, the laws of some foreign countries do not protect our proprietary rights to as great an extent as the laws of the United States, and many foreign countries do not enforce these laws as diligently as government agencies and private parties in the United States.

Our industry is characterized by the existence of many patents and frequent claims and related litigation regarding patent and other intellectual property rights. In particular, leading companies in the technology industry have extensive patent portfolios. Third parties, including certain of these leading companies, may in the future assert patent, copyright, trademark and other intellectual property rights against us, our channel partners or our customers.

Employees

As of December 31, 2019, we had a total of 126 employees including 83 in the United States, 31 in China, six in Taiwan, and four in the United Kingdom. Among the total 126 employees, 49 of them were primarily engaged in research and development, 28 of them were primarily engaged in sales and marketing and 49 of them were primarily engaged in operations and general and administration functions. In addition, we contract directly with engineers and sales contractors domestically and internationally. None of our employees are covered by a collective bargaining agreement or represented by a labor union. We consider our relationship with our employees to be good.

Available Information

We file electronically with the Securities and Exchange Commission, or SEC, our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended. We make available on our website at www.airgain.com, free of charge, copies of these reports, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The public may read or copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street NE, Washington, D.C. 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The address of that website is www.sec.gov. The information in or accessible through the SEC and our website are not incorporated into, and are not considered part of, this filing. Further, our references to the URLs for these websites are intended to be inactive textual references only.

ITEM 1A. RISK FACTORS

You should carefully consider the following risk factors, together with the other information contained in this annual report on Form 10-K, including our financial statements and the related notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations," before making a decision to purchase or sell shares of our common stock. We cannot assure you that any of the events discussed in the risk factors below will not occur. These risks could have a material and adverse impact on our business, results of operations, financial condition and growth prospects. If that were to happen, the trading price of our common stock could decline. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations or financial condition.

Risks Related to Our Business and Industry

The markets for our antenna products are developing and may not develop as we expect.

The wireless industry is developing and the markets for our antenna products may not develop as we expect. It is difficult to predict customer adoption rates, customer demand for our antennas, the size and growth rate of our target markets, the entry of competitive products, or the success of existing competitive products. Any expansion in our markets depends on several factors, including the cost, performance, and perceived value associated with our antennas. If our antenna products do not achieve widespread adoption or there is a reduction in demand for antennas in our markets caused by a lack of customer acceptance, technological challenges, competing technologies and products, decreases in corporate spending, weakening economic conditions, or otherwise, it could result in reduced customer orders, early order cancellations, or decreased sales, any of which would adversely affect our business, operating results and financial condition.

Our operating results may fluctuate significantly, which makes our future operating results difficult to predict and could cause our operating results to fall below expectations or our guidance.

Our quarterly and annual operating results have fluctuated in the past and may fluctuate significantly in the future, which makes it difficult for us to predict our future operating results. The timing and size of sales of our products are variable and difficult to predict and can result in fluctuations in our net sales from period to period. In addition, our budgeted expense levels depend in part on our expectations of future sales. Because any substantial adjustment to expenses to account for lower levels of sales is difficult and takes time, we may not be able to reduce our costs sufficiently to compensate for an unexpected shortfall in net sales, and even a small shortfall in net sales could disproportionately and adversely affect our operating margin and operating results for a given quarter.

Our operating results may also fluctuate due to a variety of other factors, many of which are outside of our control, including the changing and volatile U.S., European, Asian and global economic environments, and any of which may cause our stock price to fluctuate. Besides the other risks in this "Risk Factors" section, factors that may affect our operating results include:

- fluctuations in demand for our products and services;
- the inherent complexity, length and associated unpredictability of product development windows and product lifecycles;
- the timing and extent of investment in our targeted growth markets and the timing and amount of sales in such markets;
- changes in customers' budgets for technology purchases and delays in their purchasing cycles;
- seasonal fluctuations around local holidays in China affecting how customers make purchasing decisions;
- changing market conditions;
- any significant changes in the competitive dynamics of our markets, including new entrants, or further consolidation; the timing of product releases or upgrades by us or by our competitors;

- our ability to develop, introduce and ship in a timely manner new products and product enhancements and anticipate future market demands that meet our customers' requirements;
- public health crises such as the recent COVID 19 outbreak; and
- increasing uncertainty of international relations and tariffs.

For example, the ongoing tension on global trade and macroenvironment are impacting the whole supply chain to varying degrees, which, in addition to the slowdown in customer specific product rollouts, has negatively affected our business and may continue to do so. In addition, the slower than expected rollouts of our customers 802.11ac, 802.11ax and DOCSIS 3.1 upgrade cycles in 2019 shifted the timing of our product sales, and such future deployment delays could also affect our quarterly operating results. The cumulative effects of the factors above could result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. You should not rely on our past results as an indication of future performance.

Our products are subject to intense competition, including competition from the customers to whom we sell.

Antenna solutions is an established technical field with low intellectual property and technological barriers to entry. Antenna competition exists globally for all areas of our business and product lines. The markets in which we compete are rapidly evolving and intensely competitive, and we expect competition to increase in the future from established competitors and new market entrants. The markets are influenced by, among others, brand awareness and reputation, price, strength and scale of sales and marketing efforts, professional services and customer support, product features, reliability and performance, scalability of products, and breadth of product offerings. Due to the proprietary nature of some of our products, competition occurs primarily at the design stage. As a result, a design win by our competitors or by us typically limits further competition regarding that design. This competition could result in increased pricing pressure, reduced profit margins, increased sales and marketing expenses and failure to increase, or the loss of, market share, any of which would likely seriously harm our business, operating results or financial condition. In addition, some of our ODM, OEM and carrier and retail-focused end-customers that drive the use of our antenna solutions have and, in the future, may build internal antenna design teams that compete with our products. From a cost and control perspective, our products generally cost more than our competitors' products. If our ability to design antenna solutions is deemed to be on par or of lesser value than competing solutions, we could lose our customers and prospects.

New entrants and the introduction of other distribution models in our markets may harm our competitive position.

The markets for development, distribution, and sale of our products are rapidly evolving. New entrants seeking to gain market share by introducing new technology and new products may make it more difficult for us to sell our products, and could create increased pricing pressure, reduced profit margins, increased sales and marketing expenses, or the loss of market share or expected market share, any of which may significantly harm our business, operating results and financial condition.

Our future success depends on our ability to develop and successfully introduce new and enhanced products for the wireless market that meet the needs of our customers.

Our sales depend on our ability to anticipate our existing and prospective customers' needs and develop products that address those needs. Our future success will depend on our ability to introduce new products for the wireless market, anticipate improvements and enhancements in wireless technology and wireless standards, and to develop products that are competitive in the rapidly changing wireless industry. In furtherance of these efforts, we expect to invest significantly in ongoing research and development. If we do not adequately fund our research and development efforts, or if our research and development investments do not translate into material enhancements to our antenna products, we may not be able to compete effectively and our business, results of operations, and financial condition may be harmed. Moreover, the introduction of new products and product enhancements will require coordination of our efforts with those of our customers, suppliers, and manufacturers to rapidly achieve volume production. If we fail to coordinate these efforts, develop product enhancements or introduce new products that meet the needs of our customers as scheduled, our operating results will be materially and adversely affected, and our business and prospects will be harmed. We cannot assure that product introductions will meet the anticipated release schedules or that our wireless products will be competitive in the market.

Furthermore, given the emerging nature of the wireless market, there can be no assurance our products and technology will not be rendered obsolete by alternative or competing technologies. The markets in which we operate are characterized by changing technology and evolving industry standards, which includes the introduction and implementation of emerging 5G standards. Despite years of experience in meeting customer design requirements with the latest in technological solutions, we may not be successful in identifying, developing and marketing products or systems that respond to rapid technological change, evolving technical standards and systems developed by others. Our competitors may develop technology that better meets the needs of our customers. If we do not continue to develop, manufacture and market innovative technologies or applications that meet customers' requirements, sales may suffer, and our business may not continue to grow in line with historical rates or at all.

Our business is characterized by short product development windows and short product lifecycles.

Our solutions are purchased and integrated by customers in the electronics industry. In many cases, the products that include our solutions are subject to short product development windows and short product lifecycles. In the case of the short product development window, we may be pressured to provide solutions that are the lowest in cost to be accepted. Customer pressure could force us to reduce our price to win designs with short development windows. Regarding short product lifecycles, we might provide up-front design and engineering work, but ultimately lose the design to a competitor, or even if we win the design, such design could be extremely short-lived due to our customers' inability to sell the product in significant volume. Our up-front costs associated with a design can be significant, particularly for new and emerging technology trends and industry standards, and if the sales volumes are inadequate due to lack of acceptance and/or short lifecycle, our financial performance will be impaired.

Any delays in our sales cycles could result in customers canceling purchases of our products.

Sales cycles for some of our products can be lengthy, often lasting several months to a year or longer. In addition, it can take additional time before a customer commences volume production of equipment that incorporates our products. Sales cycles can be lengthy for several reasons, including:

- our OEM customers and carriers usually complete a lengthy technical evaluation of our products, over which we have no control, before placing a purchase order;
- the commercial introduction of our products by OEM customers and carriers is typically limited during the initial release to evaluate product performance; and
- the development and commercial introduction of products incorporating new technologies frequently are delayed.

A significant portion of our operating expense is relatively fixed and is based in large part on our forecasts of volume and timing of orders. The lengthy sales cycles make forecasting the volume and timing of product orders difficult. In addition, the delays inherent in lengthy sales cycles raise additional risks of customer decisions to cancel or change product phases. If customer cancellations or product changes were to occur, this could result in the loss of anticipated sales without sufficient time for us to reduce our operating expenses. In addition, although we currently do not maintain significant inventories, we may in the future establish significant inventory levels to meet forecasted future demand. If the forecasted demand does not materialize into purchase orders for these products, we may be required to write off our inventory balances or reduce the value of our inventory, based on a reduced sales price. A write off of the inventory, or a reduction in the inventory value due to a sales price reduction, could have an adverse effect on our financial condition and operating results.

We have a history of losses, and we may not be profitable in the future.

Before 2013, we had incurred net losses in each year since our inception. As a result, we had an accumulated deficit of $44.1 million at December 31, 2019. Because the market for our antenna products is rapidly evolving, it is difficult for us to predict our operating results. We expect our operating expenses to increase over the next several years as we hire additional personnel, particularly in engineering, sales, and marketing, and continue to develop new antenna products to address new and evolving markets. In addition, as a public company we will incur additional significant legal, accounting, and other expenses that we did not incur as a private company. If our sales do not increase to offset these increases in our operating expenses, we may not be profitable in future periods. Our historical sales growth has been inconsistent and should not be considered indicative of our future performance. Any failure to sustain or increase our profitability consistently could cause the value of our common stock to materially decline.

A limited number of customers and devices represent a significant portion of our sales. If we were to lose any of these customers or devices, our sales could decrease significantly.

Our top two customers, Synnex Technology International (HK) Ltd. and Syntech Asia Ltd., accounted for approximately 36% and 14% of sales for the year ended December 31, 2019, respectively and 36% and 8% of sales for the year ended December 31, 2018, respectively. Although our top customers that pay for our products are often ODMs and distributors, it is primarily the OEMs, carrier customers and retail-focused end-customers that drive the use of our antenna solutions and the purchase by the ODMs and distributors of our antenna solutions. In addition, a few end-customer devices which incorporate our antenna products comprise a significant amount of our sales, and the discontinuation or modification of such devices may materially and adversely affect our sales and results of operations. Any significant loss of, or a significant reduction in purchases by, these other significant customers or customers that drive the use of our antenna solutions or a modification or discontinuation of a device which constitutes a significant portion of sales could have an adverse effect on our financial condition and operating results.

We sell to customers who are extremely price conscious.

Our customers compete in segments of the electronics market. The electronics market is characterized by intense competition as companies strive to come to market with innovative designs that attract customers based upon design, performance, cost, ease of use, and convenience. Product lifecycles can be extremely short as companies try to gain advantage over their competitors. Because of the high design and engineering costs, companies that are customers or prospects for antenna solutions are extremely cost conscious. As a result, our customers and prospects demand price cuts in established products and negotiate aggressively for lower pricing on new products. Because of the intense competition in the antenna solution market, we encounter situations that lead to difficult price negotiations potentially resulting in lower margins than forecast. Our products generally cost more than our competitors' products. To address these pricing constraints and remain competitive, we must consistently design high quality antenna solutions that are deemed a better value than competing solutions, while also decreasing costs.

Our financial condition and results of operations could be adversely affected by outbreak of contagious disease such as the recent COVID 19 outbreak.

Our business could be adversely affected by the effects of a widespread outbreak of contagious disease, including the recent outbreak of respiratory illness caused by a COVID 19 first identified in Wuhan, Hubei Province, China, resulting in business closures and a limit on consumer and employee travel. Any outbreak of contagious diseases, and other adverse public health developments, particularly in Asia, could have a material and adverse effect on our business operations. These could include disruptions or restrictions on our ability to travel, temporary closures of our office buildings or the facilities of our customers or suppliers and disruptions with our contract manufacturers located in China. Related to sales, we may also see disruptions or delays in shipments and negative impacts to pricing of certain components of our products. Further, any disruption of our customers, suppliers or contract manufacturers would likely impact our sales and operating results. In addition, a significant outbreak of contagious diseases in the human population could result in a widespread health crisis that could adversely affect the economies and financial markets of many countries, resulting in an economic downturn that could affect demand for our end customers' products and likely impact our operating results.

In late January 2020, in response to intensifying efforts to contain the spread of COVID 19, we began to monitor or modify our hours of operation and the hours of our employees based in China, as did our contract manufacturers. While we and our contract manufacturers have resumed normal operations at present time, the duration of the business disruption, reduction in customer and manufacturer engagement and related financial impact cannot be reasonably estimated at this time but may materially affect our business and results of operations. At the time of this filing, the outbreak has started to spread worldwide. The extent to which this outbreak impacts our results will depend on future developments, which are highly uncertain and cannot be predicted, including new information which may emerge concerning the severity of this outbreak and the actions to contain this outbreak or treat its impact, among others.

We generally rely on a limited number of contract manufacturers to produce and ship our products, and the failure to manage our relationships with these parties successfully could adversely affect our ability to market and sell our products.

We have limited manufacturing capability, solely with respect to antennas deployed in the fleet automotive market. For all of our other products, we outsource the manufacturing, assembly and testing of products. We rely on two contract manufacturers, which are both located in China, to manufacture, control quality of, and ship our products. We do not have long-term contracts with these manufacturers that commit them to manufacture products for us and we have limited direct control over their activities. Any significant change in our relationship with these manufacturers could have a material adverse effect on our business, operating results, and financial condition. We make substantially all of our purchases from our contract manufacturers on a purchase order basis. Our contract manufacturers are not required to manufacture our products for any specific period or in any specific quantity. We expect that it would take approximately six to nine months to transition manufacturing, quality assurance, and shipping services to new providers. Relying on contract manufacturers for manufacturing, quality assurance, and shipping also presents significant risks to us, including the inability of our contract manufacturers to:

- qualify appropriate component suppliers;
- manage capacity during periods of high demand;
- meet delivery schedules;
- assure the quality of our products;
- ensure adequate supplies of materials;
- protect our intellectual property; and
- deliver finished products at agreed-upon prices.

We manufacture products for our automotive market primarily in our facilities in Scottsdale, Arizona. We may not be able to manufacture our products with consistent and satisfactory quality or in sufficient quantities to meet demand. We also may experience delays or disruptions at our manufacturing facilities, which could result in delays of product shipments to our customers. Any failure by us or our contract manufacturers to timely product products of satisfactory quality or in sufficient quantities in compliance with applicable laws could hurt our reputation, cause customers to cancel orders or refrain from placing new orders for our products, which could have a material adverse effect on our business, operating results, and financial condition.

We may experience delays in obtaining product from manufacturers and may not be a high priority for our manufacturers.

The ability and willingness of our contract manufacturers to perform is largely outside of our control. We believe that our orders may not represent a material portion of our contract manufacturers' total orders and, as a result, fulfilling our orders may not be a priority if our contract manufacturers are constrained in their abilities or resources to fulfill all of their customer obligations in a timely manner. If any of our contract manufacturers suffers an interruption in its business, experiences delays, disruptions, or quality control problems in its manufacturing operations or we have to change or add additional contract manufacturers, our ability to ship products to our customers would be delayed and our sales could become volatile and our cost of sales may increase. . Additionally, any or all of the following could either limit supply or increase costs, directly or indirectly, to us or our contract manufacturers:

- labor strikes or shortages;
- financial problems of either contract manufacturers or component suppliers;

- reservation of manufacturing capacity at our contract manufactures by other companies, inside or outside of our industry;
- changes or uncertainty in tariffs, economic sanctions, and other trade barriers; and
- industry consolidation occurring within one or more component supplier markets, such as the semiconductor market.

For example, as a result of the extension of the lunar new year holidays due to the recent outbreak of COVID 19 in China, certain of our product shipments from China have been delayed. Although we are monitoring the situation, it is currently unknown whether the outbreak will continue to disrupt our product shipments or impact manufacturing in the region over a prolonged period. If such disruption were to extend over a prolonged period, it could have a material impact on our sales and business and those of our customers.

Our contract manufacturers purchase some components, subassemblies and products from a single or limited number of suppliers. The loss of any of these suppliers may substantially disrupt our ability to obtain orders and fulfill sales as we design in and qualify new components.

We rely on third-party components and technology to build and operate our products, and we rely on our contract manufacturers to obtain the components, subassemblies, and products necessary for the manufacture of certain of our products. Shortages in supply of components we use in our products, or other supply disruptions, are possible, and our ability to predict the availability of such components is limited. If shortages occur in the future, as they have in the past, our business, operating results and financial condition would be materially adversely affected. Unpredictable price increases of such components due to market demand may occur. While components and supplies are generally available from a variety of sources, we and our contract manufacturers depend on a single or limited number of suppliers for several components for our products. Further, certain products may utilize custom components available from only one or a limited number of sources. When a component or product uses new technologies, capacity constraints may exist until the suppliers' manufacturing capacity has increased. Many factors may affect the continued availability of these components at acceptable prices, including if those suppliers decide to concentrate on the production of common components instead of components customized to meet our requirements. There is no assurance that the supply of such components will not be delayed or constrained. If our suppliers of these components or technology were to enter into exclusive relationships with other providers of wireless networking equipment or were to discontinue providing such components and technology to us and we were unable to replace them cost effectively, or at all, our ability to provide our products would be impaired. Additionally, poor quality in any of the single or limited sourced components in our products could result in lost sales or lost sales opportunities. We and our contract manufacturers generally rely on purchase orders rather than long-term contracts with these suppliers. As a result, even if available, we and our contract manufacturers may not be able to secure sufficient components at reasonable prices or of acceptable quality to build our products in a timely manner. Therefore, we may be unable to meet customer demand for our products, which would have a material adverse effect on our business, operating results, and financial condition.

We rely significantly on channel partners to sell and support our products, and the failure of this channel to be effective could materially reduce our sales.

Our indirect channel partners, which include outside sales representatives, accounted for 26% of our sales in 2019 and 27% in 2018. We believe that establishing and maintaining successful relationships with these channel partners is, and will continue to be, important to our financial success. Recruiting and retaining qualified channel partners and training them in our technology and product offerings require significant time and resources. To develop and expand our channel, we must continue to scale and improve our processes and procedures that support our channel partners, including investment in systems and training.

Existing and future channel partners will only work with us if we are able to provide them with competitive products on terms that are commercially reasonable to them. If we fail to maintain the quality of our products or to update and enhance them, existing and future channel partners may elect to work instead with one or more of our competitors. In addition, the terms of our arrangements with our channel partners must be commercially reasonable for both parties. If we are unable to reach agreements that are beneficial to both parties, then our channel partner relationships will not succeed.

We have no minimum purchase commitments with any of our channel partners, and our contracts with channel partners do not prohibit them from offering products or services that compete with ours, including products they currently offer or may develop in the future and incorporate into their own systems. Some of our competitors may have stronger relationships with our channel partners than we do and we have limited control, if any, as to whether those partners use our products, rather than our competitors' products, or whether they devote resources to market and support our competitors' products, rather than our offerings.

The reduction in or loss of sales by these channel partners could materially reduce our sales. If we fail to maintain relationships with our channel partners, fail to develop new relationships with other channel partners in new markets, fail to manage, train or incentivize existing channel partners effectively, fail to provide channel partners with competitive products on terms acceptable to them, or if these channel partners are not successful in their sales efforts, our sales may decrease and our operating results could suffer.

Defects in our products or poor design and engineering services could result in lost sales and subject us to substantial liability.

Our antenna solutions are a critical element in determining the operating performance of our customers' products. If our antenna solutions perform poorly, whether due to design, engineering, placement or other reasons, we could lose sales. In certain cases, if our antenna solution is found to be the component that leads to failure or a failure to meet the performance specifications of our customer, we could be required to pay monetary damages to our customer. Real or perceived defects or errors in our antenna solutions could result in claims by channel partners and customers for losses they sustain. If channel partners or customers make these types of claims, we may be required, or may choose, for customer relations or other reasons, to expend additional resources to help correct the problem, including warranty and repair costs, process management costs and costs associated with remanufacturing our inventory. Liability provisions in our standard terms and conditions of sale may not be enforceable under some circumstances or may not fully or effectively protect us from claims and related liabilities and costs. In addition, regardless of the party at fault, errors of these kinds divert the attention of our engineering personnel from our product development efforts, damage our reputation and the reputation of our products, cause significant customer relations problems and can result in product liability claims. We maintain insurance to protect against certain types of claims associated with the use of our products, but our insurance coverage may not adequately cover any such claims. In addition, even claims that ultimately are unsuccessful could result in expenditures of funds in connection with litigation and divert management's time and other resources. We also may incur costs and expenses relating to a recall of one or more of our products.

The process of identifying recalled products that have been widely distributed may be lengthy and require significant resources, and we may incur significant replacement costs, contract damage claims from our customers and significant harm to our reputation. The occurrence of these problems could result in the delay or loss of market acceptance of our products and could adversely affect our business, operating results and financial condition.

Our recent management changes create uncertainties and could have a material adverse impact on our business, results of operations and financial condition.

Effective November 30, 2019, Anil Doradla resigned as Chief Financial Officer, and David Lyle was appointed as Mr. Doradla's replacement effective January 13, 2020. In addition, in August 2019, Jacob Suen was appointed as Chief Executive Officer, succeeding Jim Sims who retained his role as Chairman of the Board. As a result of these management changes, we may experience disruption or have difficulty in maintaining or developing our business. We face significant competition for new executives, and we may not be able to find a suitable replacement for members of our senior management that we may lose in the future, and our business may be harmed as a result. Our ability to effectively manage our business and execute on our business strategy may be adversely affected by the uncertainty associated with these recent management changes.

Executive leadership transitions can be inherently difficult to manage and may cause disruption to our business. As a result of the recent changes in our management team, our existing management team has taken on substantially more responsibility, which has resulted in greater workload demands and could divert their attention away from certain key areas of our business. In addition, management transition inherently causes some loss of institutional knowledge, which can negatively affect strategy and execution, and our results of operations and financial condition could suffer as a result. The loss of services of one or more other members of senior management could have a material adverse effect on our business, operating results and financial condition.

The loss of key personnel or an inability to attract, retain and motivate qualified personnel may impair our ability to expand our business.

Our success depends upon the continued service and performance of our senior management team and key technical, marketing and production personnel, including Jacob Suen, who is our President and recently appointed Chief Executive Officer. The replacement of any members of our senior management team or other key employees or consultants likely would involve significant time and costs and may significantly delay or prevent the achievement of our business objectives.

Our future success also depends, in part, on our ability to continue to attract, integrate and retain highly skilled personnel. Competition, especially our design and technical personnel. As the source of our technological and product innovations, our design and technical personnel represent a significant asset. Any inability to retain, attract or motivate such personnel could have a material adverse effect on our business and results of operations. Further, competition for highly skilled personnel is frequently intense. Any difficulties in obtaining or retaining human resource competencies we need to achieve our business objectives may have an adverse effect on our performance.

We are subject to the risk that third-party consultants will not perform their tasks effectively and that we will be unsuccessful in operating our business as a result.

We have in the past relied on third parties, such as sales consultants and engineering contractors, for a portion of the design and sales and marketing of our products. In the future, we may rely on third-party consultants in addition to our own employees to perform the daily tasks necessary to operate our business in certain areas, including sales and engineering, and cannot ensure that third-party consultants will be able to complete their work for us in a timely manner. The failure of any third-party consultants to perform as anticipated could result in substantial costs, divert management's attention from other strategic activities, or create other operational or financial problems for us. Terminating or transitioning arrangements with key consultants could result in additional costs and a risk of operational delays, potential errors and possible control issues as a result of the termination or during the transition.Accordingly, our reliance on third parties exposes us to the risk that our business will be unsuccessful if they do not design and sell our product as expected.

Our acquisitions expose us to risks that could adversely affect our business and adversely affect our operating results, financial condition, and cash flows.

As part of our strategy to develop and identify new products, services and technologies, we have made, and may continue to make, acquisitions of select assets and businesses. For example, we acquired the Antenna Plus assets in April 2017. When pursuing acquisitions, we may not be able to find suitable acquisition candidates, and we may not be able to complete such acquisitions on favorable terms, if at all. Any acquisitions we complete, may not ultimately strengthen our competitive position or achieve our goals, and could be viewed negatively by our end-customers, investors and financial analysts. Acquisitions involve many risks. An acquisition may negatively affect our operating results, financial condition or cash flows because it may require us to incur charges or assume substantial debt or other liabilities, may cause adverse tax consequences or unfavorable accounting treatment, may expose us to claims and disputes by third parties, including intellectual property claims and disputes, or may not generate sufficient financial return to offset additional costs and expenses related to the acquisition.

Our business may suffer if our strategic alliances are not successful.

We enter into strategic alliances and other relationships with companies whose capabilities complement our own. The objectives and goals for a strategic alliance can include one or more of the following: technology exchange, product development, joint sales and marketing, or new-market creation. To be successful, we must first be able to define, identify and secure alliance partners which align with our growth and technological plans. We cannot be certain that our alliance partners will provide us with the support we anticipate, or that such alliance or other relationships will be successful in creating new or improved products. Our success is also highly dependent upon our ability to manage the alliances, promote the benefits to us, and to not prohibit or discourage other opportunities which may be beneficial to us in the future. Also, certain provisions of alliance agreements may include restrictions that limit our ability to independently pursue or exploit the developments under such strategic alliances. If a strategic alliance fails to perform as expected or if the relationship is terminated, we could experience delays in new product development or impairment of our relationships with customers, and our ability to develop new solutions in response to industry trends or changing technology may be impaired and our results of operations could be adversely affected.

Litigation or legal proceedings could expose us to significant liabilities and damage our reputation.

We may become party to litigation claims and legal proceedings. Litigation involves significant risks, uncertainties and costs, including distraction of management attention away from our current business operations. We evaluate litigation claims and legal proceedings to assess the likelihood of unfavorable outcomes and to estimate, if possible, the amount of potential losses. We caution you that actual outcomes or losses may differ materially from those envisioned by our current estimates. Our policies and procedures require strict compliance by our employees and agents with all United States and local laws and regulations applicable to our business operations, including those prohibiting improper payments to government officials. Nonetheless, there can be no assurance that our policies and procedures will always ensure full compliance by our employees and agents with all applicable legal requirements. Improper conduct by our employees or agents could damage our reputation in the United States and internationally or lead to litigation or legal proceedings that could result in civil or criminal penalties, including substantial monetary fines, as well as disgorgement of profits.

A failure in our information technology systems could negatively impact our business.

We rely on information technology to process, transmit, and store electronic and financial information, to manage a variety of business processes and activities, to maintain the financial accuracy of our records, and to comply with regulatory, legal and tax requirements. We also depend on our information technology infrastructure for digital marketing and sales activities and for electronic communications among our locations, personnel, customers, and suppliers around the world. Many of the information technology systems used by us globally have been in place for many years and not all hardware and software is currently supported by vendors. These information technology systems are susceptible to damage, disruptions, or shutdowns due to failures during the process of upgrading or replacing software, databases or components thereof, power outages, hardware failures, computer viruses, cyber-attacks, telecommunication failures, user errors, or catastrophic events. If our information technology systems suffer severe damage, disruption, or shutdown and our business continuity plans do not effectively resolve the issues in a timely manner, our product sales, financial condition, and results of operations may be materially affected, and we could experience delays in reporting our financial results.

Information technology security threats are increasing in frequency and sophistication. To date, we have seen no material impact on our business or operations from these cyber-attacks or events. Any future significant compromise, breach, or misuse of our data security could result in significant costs and damage to our reputation. The ever-evolving threats mean us, and our third-party service providers must continually evaluate and adapt our respective systems and processes and overall security environment, as well as those of any companies we acquire. There is no guarantee that these measures will be adequate to safeguard against all data security compromises, breaches, or misuses. In addition, as the regulatory environment related to information security, data collection and use, and privacy becomes increasingly rigorous, compliance with those requirements could also result in additional costs.

Recent U.S. tax legislation may materially adversely affect our financial condition, results of operations and cash flows.

On December 22, 2017, the Tax Cuts and Jobs Act, or the 2017 Tax Act, was enacted. The 2017 Tax Act makes broad and complex changes to the U.S. tax code, including, but not limited to, reducing the U.S. corporate income tax rate from 35% to 21% and permitting immediate expensing of certain capital expenditures. Many of these changes are effective immediately, without any transition periods or grandfathering for existing transactions. The legislation is unclear in many respects and could be subject to potential amendments and technical corrections, as well as interpretations and implementing regulations by the Treasury and IRS, any of which could lessen or increase certain adverse impacts of the legislation. In addition, it is unclear how these U.S. federal income tax changes will affect state and local taxation, which often uses federal taxable income as a starting point for computing state and local tax liabilities.

Our ability to use our net operating loss carryforwards and credits to offset future taxable income for U.S. federal income tax purposes may be subject to limitations, and future transfers of shares of our common stock, could cause us to experience an "ownership change" that could limit our ability to utilize our net operating losses.

Under U.S. federal income tax law, a corporation's ability to utilize its net operating losses, or NOLs, to offset future taxable income may be significantly limited if it experiences an "ownership change" as defined in Section 382 of the Internal Revenue Code of 1986, as amended, or the Code. In general, an ownership change will occur if there is a cumulative change in a corporation's ownership by "5 percent shareholders" that exceeds 50 percentage points over a rolling three-year period.

A corporation that experiences an ownership change will generally be subject to an annual limitation on its pre-ownership change NOLs equal to the value of the corporation immediately before the ownership change, multiplied by the long-term tax-exempt rate (subject to certain adjustments). The annual limitation for a taxable year is generally increased by the amount of any "recognized built-in gains" for such a year and the amount of any unused annual limitation in a prior year.

In May 2014, we completed an analysis that determined we had not undergone an ownership change. We believe however, that our initial public offering that occurred during 2016 may have triggered an ownership change. However, based on our value at the ownership change date, we believe that the limitation would not ultimately limit the amount of the net operating losses and credits that could be used prior to their expiration.

In addition, under the 2017 Tax Act, although the treatment of tax losses generated before December 31, 2017 has generally not changed, tax losses generated in calendar year 2018 and beyond may only offset 80% of our taxable income. This change may require us to pay federal income taxes in future years despite generating a loss for federal income tax purposes in prior years. Any such limitations on the ability to use our NOLs and other tax assets could adversely impact our business, financial condition and operating results.

Our election to not opt out of the extended accounting transition period under the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, may make our financial statements difficult to compare to other companies.

Under the JOBS Act, as an emerging growth company, we can elect to opt out of the extended transition period for any new or revised accounting standards. We have elected not to opt out of such extended transition period. This means that when a standard is issued or revised and it has different application dates for public or private companies, we, as an emerging growth company, are permitted to use any extended transition period for adoption that is provided in the new or revised accounting standard having different application dates for public and private companies. This may make the comparison of our financial statements with any other public company, which is not either an emerging growth company nor an emerging growth company which has opted out of using the extended transition period, difficult or impossible as possible different or revised standards may be used.

If we are unable to implement and maintain effective internal control over financial reporting in the future, the accuracy and timeliness of our financial reporting may be adversely affected. In addition, because of our status as an emerging growth company, you will not be able to depend on any attestation from our independent registered public accounting firm as to our internal control over financial reporting for the foreseeable future.

The Sarbanes-Oxley Act of 2002, as amended, or the Sarbanes-Oxley Act, requires, among other things, that we maintain effective disclosure controls and procedures and controls over financial reporting. In particular, we are required to perform system and process evaluations and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal controls over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. We are required to furnish a report by management on, among other things, the effectiveness of our internal control over financial reporting beginning for our fiscal year ending December 31,

2017. However, our independent registered public accounting firm will not be required to attest to the effectiveness of our internal control over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act until the date we are no longer an "emerging growth company" as defined in the JOBS Act. Accordingly, you will not be able to depend on any attestation concerning our internal control over financial reporting from our independent registered public accounting firm for the foreseeable future.

Compliance with environmental matters and worker health and safety laws could be costly, and noncompliance with these laws could have a material adverse effect on our operating results, expenses and financial condition.

Some of our operations use substances regulated under various federal, state, local and international laws governing the environment and worker health and safety, including those governing the discharge of pollutants into the ground, air and water, the management and disposal of hazardous substances and wastes, and the cleanup of contaminated sites. Some of our products are subject to various federal, state, local and international laws governing chemical substances in electronic products. We could be subject to increased costs, fines, civil or criminal sanctions, third-party property damage or personal injury claims if we violate or become liable under environmental and/or worker health and safety laws.

Our business is subject to the risks of earthquakes, fire, floods and other natural catastrophic events.

Our corporate headquarters are located in Southern California, and our two contract manufacturers are located in eastern Asia, both regions known for seismic activity. A significant natural disaster, such as an earthquake, a fire or a flood, occurring near our headquarters, or near the facilities of our contract manufacturers, could have a material adverse impact on our business, operating results and financial condition.

If we are unable to manage our growth and expand our operations successfully, our business and operating results will be harmed, and our reputation may be damaged.

We have expanded our operations significantly since inception and anticipate that further significant expansion will be required to achieve our business objectives. The growth and expansion of our business and product offerings places a continuous and significant strain on our management, operational and financial resources. Any such future growth would also add complexity to and require effective coordination throughout our organization. To date, we have used the services of third parties to perform tasks including design and sales and marketing. Our growth strategy may entail expanding our group of contractors or consultants to implement these tasks going forward. Because we rely on consultants, effectively outsourcing key functions of our business, we will need to be able to manage these consultants to ensure that they successfully carry out their contractual obligations and meet expected deadlines. However, if we are unable to effectively manage our outsourced activities or if the quality of the services provided by consultants is compromised for any reason, our ability to provide quality products in a timely manner could be harmed, which may have a material adverse effect on our business operating results and financial condition.

To manage any future growth effectively, we must continue to improve and expand our information technology and financial infrastructure, our operating and administrative systems and controls, and our ability to manage headcount, capital and processes in an efficient manner. We may not be able to successfully implement improvements to these systems and processes in a timely or efficient manner, which could result in additional operating inefficiencies and could cause our costs to increase more than planned. If we do increase our operating expenses in anticipation of the growth of our business and this growth does not meet our expectations, our operating results may be negatively impacted. If we are unable to manage future expansion, our ability to provide high quality products and services could be harmed, which could damage our reputation and brand and may have a material adverse effect on our business, operating results and financial condition.

The implementation of a new accounting system could interfere with our business and operations.

We have recently implemented a new ERP system, NetSuite. The ERP initial implementation encompassed accounting and customer resource management activities, with a future rollout to integrate our engineering and R&D functions. The implementation of new systems and enhancements may be disruptive to our business and can be time-consuming and divert management's attention. Any disruptions relating to our systems or any problems with the implementation, particularly any disruptions impacting our operations or our ability to accurately report our financial performance on a timely basis during the implementation period, could materially and adversely affect our business and operations.

Our business, operating results and growth rates may be adversely affected by current or future unfavorable economic and market conditions.

Our business depends on the economic health and general willingness of our current and prospective end- customers to make those capital commitments necessary to purchase our products. If the conditions in the U.S. and global economies remain uncertain or continue to be volatile, or if they deteriorate, our business, operating results and financial condition may be materially adversely affected. Economic weakness, end-customer financial difficulties, limited availability of credit and constrained capital spending have at times in the past resulted, and may in the future result, in challenging and delayed sales cycles, slower adoption of new technologies and increased price competition, and could negatively affect our ability to forecast future periods, which could result in an inability to satisfy demand for our products and a loss of market share.

In addition, if interest rates rise or foreign exchange rates weaken for our international customers, overall demand for our products and services could decline and related capital spending may be reduced. Furthermore, any increase in worldwide commodity prices may result in higher component prices for us and increased shipping costs, both of which may negatively affect our business, operating results and financial condition.

Our business and prospects depend on the strength of our market efforts and our brand. Failure to maintain and enhance our brand would harm our ability to maintain and expand our base of customers.

Maintaining and enhancing our brand is important to maintaining and expanding our base of customers who purchase our products. This will depend largely on our ability to continue to provide high-quality solutions, and we may not be able to do so effectively. While we may engage in a broader marketing campaign to further promote our brand, this effort may not succeed. Our efforts in developing our brand may be affected by the marketing efforts of our competitors. If we are unable to cost-effectively maintain and increase awareness of our brand, our business, results of operations and financial condition could be harmed. Our brand may be impaired by other factors, including product malfunctions. Any inability to effectively police our trademark rights against unauthorized uses by third parties could adversely impact the value of our trademarks and our brand recognition. If we fail to maintain and enhance our brand, or if we need to incur unanticipated expenses to establish our brand in new markets, our operating results would be negatively affected from reduced sales and increased marketing expenses.

Risks Relating to Intellectual Property

If we are unable to protect our intellectual property rights, our competitive position could be harmed, or we could be required to incur significant expenses to enforce our rights.

Our ability to compete effectively is dependent in part upon our ability to protect our proprietary technology. We rely on patents, trademarks, trade secret laws, confidentiality procedures and licensing arrangements to protect our intellectual property rights. There can be no assurance these protections will be available in all cases or will be adequate to prevent our competitors from copying, reverse engineering or otherwise obtaining and using our technology, proprietary rights or products. For example, the laws of certain countries in which our products are manufactured or licensed do not protect our proprietary rights to the same extent as the laws of the United States. In addition, third parties may seek to challenge, invalidate or circumvent our patents, trademarks, copyrights and trade secrets, or applications for any of the foregoing. There can be no assurance that our competitors will not independently develop technologies that are substantially equivalent or superior to our technology or design around our proprietary rights. In each case, our ability to compete could be significantly impaired. To prevent substantial unauthorized use of our intellectual property rights, it may be necessary to prosecute actions for infringement and/or misappropriation of our proprietary rights against third parties. Any such action could result in significant costs and diversion of our resources and management’s attention, and there can be no assurance we will be successful in such action. Furthermore, many of our current and potential competitors have the ability to dedicate substantially greater resources to enforce their intellectual property rights than we do. Accordingly, despite our efforts, we may not be able to prevent third parties from infringing upon or misappropriating our intellectual property.

Claims by others that we infringe their intellectual property rights could harm our business.

Our industry is characterized by vigorous protection and pursuit of intellectual property rights, which has resulted in protracted and expensive litigation for many companies. Third parties may in the future assert claims of infringement of intellectual property rights against us or against our customers or channel partners for which we may be liable. As the number of products and competitors in our market increases and overlaps occur, infringement claims may increase.

Intellectual property claims against us, and any resulting lawsuits, may result in our incurring significant expenses and could subject us to significant liability for damages and invalidate what we currently believe are our proprietary rights. Our involvement in any patent dispute or other intellectual property dispute or action to protect trade secrets and know-how could have a material adverse effect on our business. Adverse determinations in any litigation could subject us to significant liabilities to third parties, require us to seek licenses from third parties and prevent us from manufacturing and selling our products. Any of these situations could have a material adverse effect on our business.

These claims, regardless of their merits or outcome, would likely be time consuming and expensive to resolve and could divert management's time and attention.

We are generally obligated to indemnify our channel partners and end-customers for certain expenses and liabilities resulting from intellectual property infringement claims regarding our products, which could force us to incur substantial costs.

We have agreed, and expect to continue to agree, to indemnify our channel partners and end-customers for certain intellectual property infringement claims regarding our products. As a result, in the case of infringement claims against these channel partners and end-customers, we could be required to indemnify them for losses resulting from such claims or to refund amounts they have paid to us. Our channel partners and other end-customers in the future may seek indemnification from us in connection with infringement claims brought against them. We will evaluate each such request on a case-by-case basis, and we may not succeed in refuting all such claims. If a channel partner or end-customer elects to invest resources in enforcing a claim for indemnification against us, we could incur significant costs disputing it. If we do not succeed in disputing it, we could face substantial liability.

Risks Related to Our International Operations

Our international sales and operations subject us to additional risks that can adversely affect our operating results and financial condition.

The substantial majority of our sales are to ODMs and distributors based in China. For the year ended December 31, 2019, approximately 42% of the end-customers of our products, based on sales, are outside of North America, and we are continuing to expand our international operations as part of our growth strategy. We have limited sales personnel and sales and support operations in the United States, Asia, and Europe. Our ability to convince customers to expand their use of our antenna products is directly correlated to our direct engagement with our end-customers and our channel partners. To the extent we are unable to engage with non-U.S. customers effectively with our limited sales force capacity, we may be unable to grow sales to existing customers.

Our international operations subject us to a variety of risks and challenges, including: increased management, travel, infrastructure and legal compliance costs associated with having multiple international operations; reliance on channel partners; increased financial accounting and reporting burdens and complexities; compliance with foreign laws and regulations; compliance with U.S. laws and regulations for foreign operations; and reduced protection for intellectual property rights in some countries and practical difficulties of enforcing rights abroad. Any of these risks could adversely affect our international operations, reduce our international sales or increase our operating costs, adversely affecting our business, operating results and financial condition and growth prospects.

In addition, we are subject to risks related to regulation of exports, reexports and transfers of products, software or technology regulated under United States laws and regulations. From time to time, the U.S. Department of Commerce may impose licensing restrictions on certain parties with whom we conduct business, which may limit or prohibit our ability to continue these activities. For example, certain of our customers have been or are designated on the U.S. Department of Commerce's Entity List and subject to licensing requirements in connection with exports, reexports, and transfers of US-regulated items. These designations may result in the loss or temporary loss of such customers and could have a material adverse effect on our business, financial condition and results of operations and affect our international sales strategy in China and elsewhere around the world. Although we undertake to conduct our business in compliance with applicable laws and regulations and have no knowledge of any issues of noncompliance with respect to export controls, our failure to successfully comply therewith may expose us to negative legal and business consequences, including civil or criminal penalties, government investigations, and reputational harm.

We are subject to governmental export and import controls that could impair our ability to compete in international markets due to licensing requirements and subject us to liability if we are not in compliance with applicable laws.

Our products are subject to export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. Customs regulations and various economic and trade sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Controls. Exports of our products must be made in compliance with these laws and regulations. If we violate these laws and regulations, we and certain of our employees could be subject to substantial civil or criminal penalties, including the possible loss of export or import privileges, fines, which may be imposed on us and responsible employees or managers, and, in extreme cases, the incarceration of responsible employees or managers. In addition, if our channel partners, agents or consultants fail to obtain appropriate import, export or re-export licenses or authorizations, we may also be adversely affected through reputational harm and penalties. Obtaining the necessary authorizations, including any required license, for a particular sale may be time-consuming, is not guaranteed and may result in the delay or loss of sales opportunities. Changes in our products or changes in applicable export or import laws and regulations may also create delays in the introduction and sale of our products in international markets, prevent our end-customers with international operations from deploying our products or, in some cases, prevent the export or import of our products to certain countries, governments or persons altogether. Any change in export or import laws and regulations, shift in the enforcement or scope of existing laws and regulations, or change in the countries, governments, persons or technologies targeted by such laws and regulations, could also result in decreased use of our products, or in our decreased ability to export or sell our products to existing or potential end-customers with international operations. Any decreased use of our products or limitation on our ability to export or sell our products would likely adversely affect our business, financial condition and operating results.

The United Kingdom's withdrawal from the European Union may have a negative effect on global economic conditions, financial markets and our business.

Following a national referendum and enactment of legislation by the government of the United Kingdom, the United Kingdom formally withdrew from the European Union on January 31, 2020 and entered into a transition period during which it will continue its ongoing and complex negotiations with the European Union relating to the future trading relationship between the parties. Significant political and economic uncertainty remains about whether the terms of the relationship will differ materially from the terms before withdrawal, as well as about the possibility that a so-called "no deal" separation will occur if negotiations are not completed by the end of the transition period. The referendum has also given rise to calls for the governments of other European Union member states to consider withdrawal.

These developments, or the perception that any of them could occur, have had and may continue to have a material adverse effect on global economic conditions and the stability of global financial markets, and may significantly reduce global market liquidity and restrict the ability of key market participants to operate in certain financial markets. Any of these factors could depress economic activity and restrict our access to capital and negatively affect our customers, which could have a material adverse effect on our business, financial condition and results of operations and affect our strategy in the European market.

Changes to United States tax, tariff and import/export regulations may have a negative effect on global economic conditions, financial markets and our business.

There have been significant changes and proposed changes to United States trade policies, treaties, tariffs and taxes, including trade policies and tariffs regarding China. For example, the United States has imposed supplemental tariffs of up to 25% on certain imports from China, as well as tariffs on steel and aluminum products imported from various other countries. In response, China and other countries have imposed or proposed additional tariffs on certain exports from the United States. Although we do a significant amount of business in China, including dealing with Chinese suppliers and customers, only a limited number of our products use imported components that are covered under these recent policy changes, and we do not expect these tariffs to have a material impact on us. However, these and other proposed policy changes have created significant uncertainty about the future relationship between the United States and China, as well as other countries, including with respect to the trade policies, treaties, government regulations and tariffs that could apply to trade with those countries. These developments, or the perception that any of them could occur, may have a material adverse effect on global economic conditions and the stability of global financial markets, and may significantly reduce global trade and, in particular, trade between these countries and the United States. Any of these factors could depress economic activity and restrict our access to suppliers or customers and have a material adverse effect on our business, financial condition and results of operations and affect our strategy in China and elsewhere around the world.

New regulations or standards or changes in existing regulations or standards in the United States or internationally related to our end-customer's products may result in unanticipated costs or liabilities, which could have a material adverse effect on our business, operating results and future sales, and could place additional burdens on the operations of our business.

Our end-customers' products are subject to governmental regulations in many jurisdictions. To achieve and maintain market acceptance, our end-customers' products must continue to comply with these regulations and many industry standards. In the United States, our end-customers' products must comply with various regulations defined by the Federal Communications Commission, Underwriters Laboratories and others. Our end-customers must also comply with similar international regulations.

As these regulations and standards evolve, and if new regulations or standards are implemented, our end-customers may have to modify their products. The failure of their products to comply, or delays in compliance, with the existing and evolving industry regulations and standards could prevent or delay introduction of our antennas used in their products, which could harm our business. End-customer uncertainty regarding future policies may also affect demand for communications products, including our products. Moreover, channel partners or customers may require us, or we may otherwise deem it necessary or advisable, to alter our products to address actual or anticipated changes in the regulatory environment. Our inability to alter our products to address these requirements and any regulatory changes may have a material adverse effect on our business, operating results and financial condition.

We could be adversely affected by violations of the U.S. Foreign Corrupt Practices Act and similar worldwide anti-bribery laws.

We operate in several foreign countries. The U.S. Foreign Corrupt Practices Act and similar anti-bribery laws generally prohibit companies and their intermediaries from making improper payments to foreign government officials for the purpose of obtaining or retaining business. Practices in the local business communities of many countries outside the United States have a level of government corruption that is greater than that found in the developed world. Our policies mandate compliance with these anti-bribery laws and we have established policies and procedures designed to monitor compliance with these anti-bribery law requirements; however, we cannot assure that our policies and procedures will protect us from potential reckless or criminal acts committed by individual employees or agents. If we are found to be liable for anti-bribery law violations, we could suffer from criminal or civil penalties or other sanctions that could have a material adverse effect on our business.

Risks Related to Our Common Stock

The price of our common stock may be volatile.

The trading price of our common stock may be volatile and may fluctuate substantially in response to various factors. This may be especially true for companies with a small public float. Prior to our initial public offering, there was no public market for shares of our common stock. From August 12, 2016, the date that our common stock started trading on the Nasdaq Capital Market, through February 21, 2020, the trading price of our common stock has ranged from $7.31 per share to $29.30 per share. The trading price of our common stock depends on several factors, including those described in this “Risk Factors” section and elsewhere in this annual report, including:

- price and volume fluctuations in the overall stock market from time to time;
- volatility in the market prices and trading volumes of technology stocks;
- changes in operating performance and stock market valuations of other technology companies generally, or those in our industry in particular;
- sales of shares of our common stock by us or our stockholders;
- failure of financial analysts to maintain coverage of us, changes in financial estimates by any analysts who follow our company, or our failure to meet these estimates or the expectations of investors;
- the financial projections we may provide to the public, any changes in those projections or our failure to meet those projections;
- announcements by us or our competitors of new products or new or terminated significant contracts, commercial relationships or capital commitments;
- the development and sustainability of an active trading market for our common stock;
- the public’s reaction to our press releases, other public announcements and filings with the SEC;
- rumors and market speculation involving us or other companies in our industry;
- actual or anticipated changes in our operating results or fluctuations in our operating results;
- actual or anticipated developments in our business or our competitors’ businesses or the competitive landscape generally;
- litigation involving us, our industry or both or investigations by regulators into our operations or those of our competitors;
- developments or disputes concerning our intellectual property or other proprietary rights;
- announced or completed acquisitions of businesses or technologies by us or our competitors;
- new laws or regulations or new interpretations of existing laws or regulations applicable to our business;
- changes in accounting standards, policies, guidelines, interpretations or principles;
- any major change in our management;
- general economic conditions and slow or negative growth of our markets; and
- other events or factors, including those resulting from war, incidents of terrorism or responses to these events.

In addition, the stock market in general, and the market for technology companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. Broad market and industry factors, as well as general economic, political and market conditions such as recessions or interest rate changes, may seriously affect the market price of our common stock, regardless of our actual operating performance. The realization of any of the above risks or any of a broad range of other risks, including those described in this “Risk Factors” section and elsewhere in this annual report on Form 10-K could have a dramatic and material adverse impact on the market price for our common stock.

In addition, in the past, following periods of volatility in the overall market and the market prices of particular companies’ securities, securities class action litigations have often been instituted against these companies. Litigation of this type, if instituted against us, could result in substantial costs and a diversion of our management’s attention and resources. Any adverse determination in any such litigation or any amounts paid to settle any such actual or threatened litigation could require that we make significant payments.

If securities or industry analysts issue an adverse opinion regarding our stock our stock price and trading volume could decline.

The trading market for our common stock is influenced by the research and reports that securities or industry analysts may publish about us, our business, our market or our competitors. We currently have limited research coverage by securities and industry analysts. If any of the analysts who may cover us change their recommendation regarding our common stock adversely, or provide more favorable relative recommendations about our competitors, the trading price of our common stock would likely decline. If any analyst who may cover us were to cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause the trading price of our common stock or trading volume to decline.

Anti-takeover provisions in our charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management and limit the market price of our common stock.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws may have the effect of delaying or preventing a change of control or changes in our management. Some of these provisions:

- authorize our board of directors to issue, without further action by the stockholders, up to 10,000,000 shares of undesignated preferred stock and up to 200,000,000 shares of authorized common stock;
- require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
- specify that special meetings of our stockholders can be called only by our board of directors, the Chairman, the Chief Executive Officer or the President;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;
- establish that our board of directors is divided into three classes, Class I, Class II and Class III, with each class serving staggered terms;
- provide that our directors may be removed only for cause; and
- provide that vacancies on our board of directors may, except as otherwise required by law, be filled only by a majority of directors then in office, even if less than a quorum.

In addition, we are subject to the provisions of Section 203 of the Delaware General Corporation Law, which limits the ability of stockholders owning in excess of 15% of our outstanding voting stock to merge or combine with us. Furthermore, our amended and restated certificate of incorporation specifies that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for most legal actions involving actions brought against us by stockholders. We believe this provision benefits us by providing increased consistency in the application of Delaware law by chancellors particularly experienced in resolving corporate disputes, efficient administration of cases on a more expedited schedule relative to other forums and protection against the burdens of multi-forum litigation. However, the provision may have the effect of discouraging lawsuits against our directors and officers. The enforceability of similar choice of forum provisions in other companies’ certificates of incorporation has been challenged in legal proceedings, and it is possible that, in connection with any applicable action brought against us, a court could find the choice of forum provisions contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in such action.

These anti-takeover provisions and other provisions in our amended and restated certificate of incorporation and amended and restated bylaws could make it more difficult for stockholders or potential acquirers to obtain control of our board of directors or initiate actions that are opposed by the then-current board of directors and could also delay or impede a merger, tender offer or proxy contest involving our company. These provisions could also discourage proxy contests and make it more difficult for you and other stockholders to elect directors of your choosing or cause us to take other corporate actions you desire. Any delay or prevention of a change of control transaction or changes in our board of directors could cause the market price of our common stock to decline.

We have never paid cash dividends on our common stock, and we do not anticipate paying cash dividends in the foreseeable future.

We have never declared or paid any cash dividends on our common stock and do not intend to pay any cash dividends in the foreseeable future. We currently intend to retain any future earnings to fund the growth of our business. Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our board of directors may deem relevant and subject to the restrictions contained in any future loan or financing instruments. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for the foreseeable future.

Our inability to raise additional capital on acceptable terms in the future may limit our ability to develop and commercialize new solutions and technologies and expand our operations.

If our available cash balances anticipated cash flow from operations are insufficient to satisfy our liquidity requirements, including because of lower demand for our products as a result of other risks described in this “Risk Factors” section and elsewhere in this annual report, we may seek to raise additional capital through equity offerings, debt financings, collaborations or licensing arrangements. We may also consider raising additional capital in the future to expand our business, pursue strategic investments, take advantage of financing opportunities, or other reasons.

Additional funding may not be available to us on acceptable terms, or at all. If we raise funds by issuing equity securities, dilution to our stockholders could result. Any equity securities issued also may provide for rights, preferences or privileges senior to those of holders of our common stock. The terms of debt securities issued, or borrowings could impose significant restrictions on our operations. The incurrence of indebtedness or the issuance of certain equity securities could result in increased fixed payment obligations and could also result in restrictive covenants, such as limitations on our ability to incur additional debt or issue additional equity, limitations on our ability to acquire or license intellectual property rights, and other operating restrictions that could adversely affect our ability to conduct our business. In addition, the issuance of additional equity securities by us, or the possibility of such issuance, may cause the market price of our common stock to decline. If we do not have, or are not able to obtain, sufficient funds, we may have to delay development or commercialization of our products or license to third parties the rights to commercialize products or technologies that we would otherwise seek to commercialize. If we raise additional funds through collaboration and licensing arrangements with third parties, it may be necessary to relinquish some rights to our technologies or our products, or to grant licenses on terms that are not favorable to us. If we are unable to raise adequate funds, we may have to liquidate some or all of our assets, or delay, reduce the scope of or eliminate some or all of our development programs. We also may have to reduce marketing; customer support or other resources devoted to our products or cease operations. Any of these actions could harm our business, operating results and financial condition.

We are an “emerging growth company” and we cannot be certain if the reduced disclosure requirements applicable to emerging growth companies will make our common stock less attractive to investors.

We are an “emerging growth company” as defined in the JOBS Act. For as long as we continue to be an emerging growth company, we may choose to take advantage of certain exemptions from various reporting requirements applicable to other public companies but not to emerging growth companies, which includes, among other things:

- exemption from the auditor attestation requirements under Section 404 of the Sarbanes-Oxley Act;
- reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements;
- exemption from the requirements of holding non-binding stockholder votes on executive compensation arrangements; and
- exemption from any rules requiring mandatory audit firm rotation and auditor discussion and analysis and, unless the SEC otherwise determines, any future audit rules that may be adopted by the Public Company Accounting Oversight Board.

We could be an emerging growth company until December 31, 2021, which is the last day of the fiscal year following the fifth anniversary after our initial public offering, or until the earliest of (i) the last day of the fiscal year in which we have annual gross revenue of $1.07 billion or more, (ii) the date on which we have, during the previous three year period, issued more than $1.0 billion in non-convertible debt or (iii) the date on which we are deemed to be a large accelerated filer under the federal securities laws. We will qualify as a large accelerated filer as of the first day of the first fiscal year after we have (i) more than $700 million in outstanding common equity held by our non-affiliates and (ii) been public for at least 12 months. The value of our outstanding common equity will be measured each year on the last day of our second fiscal quarter.

We cannot predict if investors will find our common stock less attractive if we 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.

We incur significant costs as a result of operating as a public company, and our management is required to devote substantial time to comply with the laws and regulations affecting public companies, particularly after we are no longer an emerging growth company.

As a public company, particularly after we cease to qualify as an emerging growth company, we incur significant legal, accounting and other expenses that we did not incur as a private company, including costs associated with public company reporting and corporate governance requirements, to comply with the rules and regulations imposed by the Sarbanes-Oxley Act and the Dodd-Frank Act, as well as rules implemented by the SEC and Nasdaq. Our management and other personnel need to devote a substantial amount of time to these compliance initiatives and our legal and accounting compliance costs will increase. It is likely that we will need to hire additional staff in the areas of investor relations, legal and accounting. These new rules and regulations may make it more difficult and expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified individuals to serve on our board of directors or as executive officers. We are evaluating and monitoring developments regarding these rules, and we cannot predict or estimate the amount of additional costs we may incur or the timing of such costs.

For example, the Sarbanes-Oxley Act requires, among other things, that we maintain effective internal controls over financial reporting and disclosure controls and procedures. In particular, as a public company, we are required to perform system and process evaluations and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal controls over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. As described above, as an emerging growth company, we will not need to comply with the auditor attestation provisions of Section 404 for several years. Our testing, or the subsequent testing by our independent registered public accounting firm, may reveal deficiencies in our internal control over financial reporting that are deemed to be material weaknesses. Our compliance with Section 404 will require that we incur substantial accounting expense and management time on compliance-related issues. Moreover, if we are not able to comply with the requirements of Section 404 in a timely manner, or if we or our independent registered public accounting firm identify deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, we could lose investor confidence in the accuracy and completeness of our financial reports, which could cause our stock price to decline.

When the available exemptions under the JOBS Act, as described above, cease to apply, we expect to incur additional expenses and devote increased management effort toward ensuring compliance with them. We cannot predict or estimate the amount of additional costs we may incur as a result of becoming a public company or the timing of such costs.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our corporate headquarters occupy approximately 10,300 square feet in San Diego, California, under a lease that expires in November 2025. We also lease a 4,300 square foot home facility and a 3,900 square foot home facility in Rancho Santa Fe, California that are used as testing facilities. Additionally, we lease a manufacturing plant/facility in Scottsdale, Arizona. In addition, we lease an office space in Melbourne, Florida and office buildings in five locations outside of the United States in Shenzhen, China, Jiangsu Province, China, Shulin City, Taiwan, and Cambridge, United Kingdom. We believe our facilities are suitable and sufficient to meet our current operating needs. We intend to add new facilities as we hire new employees, and we believe that the current headquarters in San Diego offers suitable additional space to accommodate such an expansion.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we may be a party to legal proceedings and subject to claims incident in the ordinary course of business. Although the results of litigation and claims cannot be predicted with certainty, we believe that the final outcome of these matters will not have a material adverse effect on our financial condition or business. Regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources, and other factors.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT’S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market Information

Our common stock is listed on the Nasdaq Capital Market under the symbol “AIRG”.

Holders of Common Stock

As of February 24, 2020, there were 9,692,285 shares of our common stock outstanding held by approximately 53 holders of record of our common stock. This number was derived from our shareholder records and does not include beneficial owners of our common stock whose shares are held in the name of various dealers, clearing agencies, banks, brokers and other fiduciaries.

Dividend Policy

We have never declared or paid cash dividends on our common stock. We currently intend to retain all available funds and any future earnings for use in the operation of our business and do not anticipate paying any cash dividends on our common stock in the foreseeable future. Any future determination to declare dividends will be made at the discretion of our board of directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our board of directors may deem relevant and subject to the restrictions contained in any future loan or financing instruments.

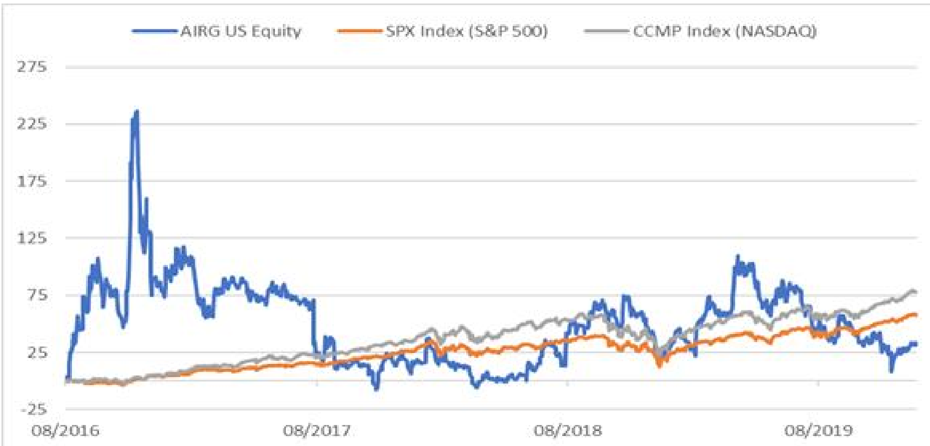
Equity Compensation Plan Information

See Part III, Item 12, "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters" for information regarding securities authorized for issuance under equity compensation plans.

Performance Graph

The information contained in this Performance Graph section shall not be deemed "soliciting material" or to be "filed" with the SEC, for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any filing of Airgain, Inc. under the Securities Act of 1933, as amended, or the Securities Act, or the Exchange Act.

The following graph shows a comparison from August 12, 2016, the date our common stock commenced trading on the Nasdaq Capital Market, through December 31, 2019, of cumulative total return for our common stock, the Nasdaq Composite Index and the S&P Information Technology Index. Such returns are based on historical results and are not intended to suggest future performance. The graph assumes the investment of $100 on August 12, 2016 in our stock at the opening trading price of $8.00 and in the indices at the opening trading prices, with the reinvestment of dividends, although dividends have not been declared on our common stock.



Unregistered Sales of Equity Securities

None.

Issuer Repurchases of Equity Securities

On September 9, 2019, our board of directors approved a new share repurchase program pursuant to which we may purchase up to $7.0 million of shares of our common stock over the twelve-month period following establishment of the program. The repurchases under the share repurchase program are made from time to time in the open market or in privately negotiated transactions and are funded from our working capital. Repurchases will be made in compliance with Rule 10b-18 of the Securities Exchange Act of 1934, as amended, subject to market conditions, available liquidity, cash flow, applicable legal requirements and other factors. All shares of common stock repurchased under our share repurchase program will be returned to the status of authorized but unissued shares of common stock.

The following table sets forth our repurchases of equity securities for the three months ended December 31, 2019 (in thousands, except per share data):

Fiscal Period	Total number of shares repurchased	Average price paid per share	Total number of shares purchased as part of a publicly announced program	Approximate dollar amount of shares that may yet be purchased under the program(1)
October 1, 2019 to October 31, 2019	—	$ —	—	$ 6,393
November 1, 2019 to November 30, 2019	35	9.60	83	6,058
December 1, 2019 to December 31, 2019	10	9.14	93	5,966
Total during the three months ended December 31, 2019	45	$ 9.50	93	$ 5,966

(1) As of December 31, 2019, we have repurchased shares of common stock having an aggregate value of $4.7 million under both programs.

ITEM 6. SELECTED FINANCIAL DATA

The following tables set forth our selected historical financial data for each of our last five fiscal years during the period ended December 31, 2019. We have derived the statements of operations data for the years ended December 31, 2019, 2018, and 2017, and the balance sheet data as of December 31, 2019 and 2018 from our audited financial statements included elsewhere in this annual report. We have derived the statements of operations data for the years ended December 31, 2016, and 2015, and the balance sheet data as of December 31, 2017, 2016, and 2015 from our audited financial statements not included in this annual report. The following selected financial data should be read in conjunction with our financial statements and related notes included elsewhere in this annual report and "Management's Discussion and Analysis of Financial Condition and Results of Operations" included elsewhere in this annual report. Our historical results for any prior period are not indicative of our future results.

	For the year ended December 31 (in thousands, except per share data)				
	2019	2018	2017	2016	2015
Sales	$ 55,739	$ 60,625	$ 49,521	$ 43,434	$ 27,793
Cost of goods sold	30,415	34,114	26,219	24,157	16,148
Gross profit	25,324	26,511	23,302	19,277	11,645
Operating expenses:					
Research and development	8,989	9,319	7,319	5,622	4,258
Sales and marketing	7,036	11,033	7,013	5,671	4,036
General and administrative	8,919	9,545	8,001	4,532	3,453
IPO costs	—	—	—	—	229
Total operating expenses	24,944	29,897	22,333	15,825	11,976
Income (loss) from operations	380	(3,386)	969	3,452	(331)
Other income	(709)	(903)	(197)	(290)	(61)
Income (loss) before income taxes	1,089	(2,483)	1,166	3,742	(270)
Provision for income taxes	163	101	25	8	1
Net income (loss)	$ 926	$ (2,584)	$ 1,141	$ 3,734	$ (271)
Net income (loss) per share(1):					
Basic	$ 0.10	$ (0.27)	$ 0.12	$ 0.65	$ (4.17)
Diluted	$ 0.09	$ (0.27)	$ 0.11	$ 0.40	$ (4.30)
Weighted average shares used in calculating income (loss) per share(1):					
Basic	9,684	9,521	9,485	3,373	652
Diluted	10,097	9,521	10,361	4,668	652

(1) See Note 1 of Notes to Financial Statements for an explanation of the method used to calculate net income or loss per share and the number of shares used in the computation of the net per share amounts.

	As of December 31				
	2019	2018	2017	2016	2015
Balance Sheet Data (in thousands)**:**					
Cash and cash equivalents	$ 13,197	$ 13,621	$ 15,026	$ 45,161	$ 5,336
Short-term investments	21,686	20,169	21,287	—	—
Working capital	38,352	35,574	36,353	41,573	1,803
Total assets	54,726	52,907	56,298	56,064	15,260
Preferred stock warrant liability	—				710
Long-term notes payable	—			1,333	2,722
Preferred redeemable convertible stock	—				43,107
Preferred convertible stock	—				5,969
Additional paid in capital	96,622	93,583	89,908	88,582	—
Accumulated deficit	(44,068)	(44,994)	(42,410)	(43,551)	(46,476)
Total stockholders' equity (deficit)	47,904	45,147	46,225	45,032	(39,413)

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of our financial condition and operating results together with our financial statements and related notes included elsewhere in this annual report. This discussion and analysis contains forward-looking statements based upon current beliefs, plans and expectations that involve risks, uncertainties and assumptions. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth under "Risk Factors" or in other parts of this annual report.

Business Overview

We are a leading provider of advanced antenna technologies used to enable high performance wireless networking across a broad and increasing range of devices and markets, including consumer, enterprise and automotive. Our innovative antenna systems are designed to address key challenges with wireless system performance faced by our customers. We provide solutions to complex RF, engineering challenges to help improve wireless services that require higher throughput, broad coverage footprint, and carrier grade quality.

The consumer market encompasses a large and growing market of consumers using wireless-enabled devices and our antennas are deployed in consumer access points, wireless gateways, Wi-Fi Mesh systems and extenders, smart TVs, smart home devices, and set-top boxes. Our Antennas support an array of technologies, including WLAN, Wi-Fi, LTE, 5G and LPWAN.

The enterprise market is characterized by devices that provide reliable wireless access for high-density environments such as buildings, campuses, transportation terminals and stadiums. Within this market our antennas are deployed across a wide range of systems, devices, and applications that include access points and gateways, fixed wireless access infrastructure, small cells, and remote radio heads. In addition we support an array of technologies, including WiFi, LTE, 5G and LPWAN.

In the automotive market, our antennas are deployed in a wide range of vehicles to support a variety of wireless connectivity solutions in the fleet and aftermarket segment and support a variety of technologies that include WiFi, 3G, LTE, Satellite and LPWAN. The fleet and aftermarket segment consists of applications whereby rugged vehicular wireless routers are paired with external antenna systems to provide connectivity to fixed and mobile assets. Within the fleet and aftermarket market segment, there has been a rise in the number of antennas per vehicle. The majority of our revenues are currently derived from fleet and aftermarket sales and going forward, our strategy is to augment our current sales in the automotive aftermarket with design wins and sales into the automotive OEMs and in 2018 we announced two design wins with automotive OEMs.

Our design teams partner with customers from the early stages of antenna prototyping to device throughput testing to facilitate optimal performance and quick time to market. Our capabilities include design, custom engineering support, integration, and OTA testing. These capabilities have resulted in a strong reputation across the OEM, ODM and chipset manufacturer ecosystem. Our competencies and strengths have helped us secure design wins used in multiple reference designs from leading Wi-Fi chipset vendors, OEMs, ODMs, chipset manufacturers and service providers rely on these reference designs and our engineering skills to deliver superior throughput performance. We view our relationship with OEM, ODM, chipset manufacturers and service providers as an important attribute to our long-term strategy and success.

We believe demand is growing rapidly for our advanced antenna solutions and there is a significant market opportunity. As the ability to provide mobile internet access grows, our solutions and expertise become more important to prospects and customers. As a passive component, embedded antennas can be viewed as a commodity. However, our design, engineering, and research show that antenna selection, placement, and testing can have significant improvements in device performance. We believe that we are chosen when performance is a more significant factor than price, and our distinctive focus on superior designs that provide increased range and throughput has allowed us to build a leadership position in the in-home WLAN device market.

Our financial highlights for 2019 include the following:

- Sales decreased by 8% in 2019 compared to 2018. The decrease in sales was primarily driven by product cycle transition for several large volume embedded antenna products.
- Gross profit as a percentage of sales increased to 45% in 2019 compared to 44% in 2018. The increase in gross profit as a percentage of sales was largely due to a change in the product mix for the year ended December 31, 2019, when compared to the year ended December 31, 2018.
- Income from operations increased by $4.0 million in 2019 compared to 2018. This increase was primarily due to a decrease of $5.1 million in operating expenses offset by a $1.2 million decrease in gross profit.
- Our effective tax rate was 15% in 2019 compared to (4)% in 2018.
- We ended 2019 with cash, cash equivalents, and short-term investments totaling $34.9 million.

We believe that our performance and future success depend upon several factors including manufacturing costs, investments in our growth, our ability to expand into growing addressable markets, including consumer, enterprise, and automotive, the ASP of our products per device, the number of antennas per device, and our ability to diversify the number of devices that incorporate our antenna products. Our customers are extremely price conscious, and our operating results are affected by pricing pressure which may force us to lower prices below our established list prices. In addition, a few end-customer devices which incorporate our antenna products comprise a significant amount of our sales, and the discontinuation or modification of such devices may materially and adversely affect our sales and results of operations. Our ability to maintain or increase our sales depends on, among other things, new and existing end-customers selecting our antenna solutions for their wireless devices and networks, the proliferation of Wi-Fi connected home devices and data intensive applications, investments in our growth to address customer needs, our ability to target new end markets, development of our product offerings and technology solutions, and international expansion, as well as our ability to successfully integrate past and any future acquisitions. While each of these areas presents significant opportunities for us, they also pose significant risks and challenges we must successfully address. We discuss many of these risks, uncertainties and other factors in this annual report in greater detail under the section entitled “Risk Factors.”

Seasonality

Our operating results historically have not been subject to significant seasonal variations. However, our operating results are affected by how customers make purchasing decisions around local holidays in China. For example, a national holiday the first week of October in China may cause customers to purchase product in the third quarter ahead of their holiday season to account for higher volume requirements in the fourth quarter. In addition, although it is difficult to make broad generalizations, our sales tend to be lower in the first quarter of each year compared to other quarters due to the Chinese New Year. The extension of the lunar new year holidays due to the recent outbreak of COVID 19 originating in China may contribute the traditionally slower first quarter sales this year. Results for any quarter may not be indicative of the results that may be achieved for the full fiscal year and these patterns may change as a result of general customer demand or product cycles.

Key Components of Our Results of Operations and Financial Condition

Sales

We primarily generate revenue from the sales of our products. As discussed further in “Critical Accounting Policies and Significant Judgments and Estimates” below, we recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled for those goods or services. We generally recognize sales at the time of shipment to our customers, provided that all other revenue recognition criteria have been met. Although currently insignificant, we also generate service revenue derived from agreements to provide design, engineering, and testing for a customer.

Cost of Goods Sold

The cost of goods sold reflects the cost of producing antenna products that are shipped for our customers’ devices. This primarily includes manufacturing costs of our products payable to our third-party contract manufacturers, as well as manufacturing costs incurred at our facility in Arizona. The cost of goods sold that we generate from services provided to customers primarily includes personnel costs.

Operating Expenses

Our operating expenses are classified into three categories: research and development, sales and marketing, and general and administrative. For each category, the largest component is personnel costs, which includes salaries, employee benefit costs, bonuses, and stock-based compensation. Operating expenses also include allocated overhead costs for depreciation of equipment, facilities and information technology. Allocated costs for facilities consist of leasehold improvements and rent. Operating expenses are generally recognized as incurred.

Research and development. Research and development expenses primarily consist of personnel and facility-related costs attributable to our engineering research and development personnel. These expenses include work related to the design, engineering and testing of antenna designs, and antenna integration, validation and testing of customer devices. These expenses include salaries, including stock-based compensation, benefits, bonuses, travel, communications, and similar costs, and depreciation and allocated operating expenses such as office supplies, premises expenses and insurance. We may also incur expenses from consultants and for prototyping new antenna solutions. We expect research and development expenses to increase in absolute dollars in future periods as we continue to invest in the development of new solutions and markets and as we invest in improving efficiencies within our supply chain, although our research and development expense may fluctuate as a percentage of total sales.

Sales and marketing. Sales and marketing expenses primarily consist of personnel and facility-related costs for our sales, marketing, and business development personnel, stock-based compensation and bonuses earned by our sales personnel, and commissions earned by our third-party sales representative firms. Sales and marketing expenses also includes the costs of trade shows, marketing programs, promotional materials, demonstration equipment, travel, recruiting, and allocated costs for certain facilities. Over the next several quarters, we expect sales and marketing expenses to fluctuate as a percentage of sales.

General and administrative. General and administrative expenses primarily consist of personnel and facility- related costs for our executive, finance, and administrative personnel, including stock-based compensation, as well as legal, accounting, and other professional services fees, depreciation, and other corporate expenses. We expect general and administrative expenses to fluctuate over the next several quarters as we grow our operations.

Other Income

Interest Income. Interest income consists of interest from our cash and cash equivalents and short-term investments.

Gain on Deferred Purchase Price Liability. During the year ending December 31, 2018, Skycross, Inc. and we and Skycross came to an agreement that we would pay Skycross $375,000 for deferred consideration under our asset purchase agreement entered into in December 2015. Gain on deferred purchase price liability consists of the variance between the amount paid to Skycross for the deferred purchase price and the elimination of the accounts receivable due from Skycross and the accounts payable due to Skycross.

Interest Expense. Interest expense consists of interest charges on accrued expenses.

Provision for Income Taxes

Provision for income taxes consists of federal and state income taxes. In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities (including the impact of available carryback and carryforward periods), projected future taxable income, and tax-planning strategies in making this assessment. It is difficult for us to project future taxable income as the timing and size of sales of our products are variable and difficult to predict. We concluded that it is not more likely than not that we will utilize our deferred tax assets other than those that are offset by reversing temporary differences.

On December 22, 2017, the 2017 Tax Act, was enacted. The 2017 Tax Act includes a number of changes to existing U.S. tax laws that impact us, most notably a reduction of the U.S. corporate income tax rate from 35% to 21% effective for tax years beginning January 1, 2018. The 2017 Tax Act changes primarily affected our tax rate on certain deferred tax assets and deferred tax liabilities.

Results of Operations

The following tables set forth our operating results for the periods presented as a percentage of our total sales for those periods. The period-to-period comparison of financial results is not necessarily indicative of financial results to be achieved in future periods.

	For the year ended December 31		
	2019	2018	2017
	(calculated as a percentage of associated sales)		
Statement of Operations Data:			
Sales	100.0%	100.0%	100.0%
Cost of goods sold	54.6	56.3	52.9
Gross profit	45.4	43.7	47.1
Operating expenses:			
Research and development	16.1	15.4	14.8
Sales and marketing	12.6	18.2	14.2
General and administrative	16.0	15.7	16.2
Total operating expenses	44.7	49.3	45.2
Income (loss) from operations	0.7	(5.6)	1.9
Other income	(1.3)	(1.5)	(0.4)
Income (loss) before income taxes	2.0	(4.1)	2.3
Provision for income taxes	0.3	0.2	0.1
Net income (loss)	1.7%	(4.3)%	2.2%

Comparison of the Years Ended December 31, 2019, 2018, and 2017 (all tables—dollars in thousands)

	For the year ended December 31,			
	2019	2018	Increase/(Decrease)	% Change
Sales	$ 55,739	$ 60,625	$ (4,886)	(8.1)%

	For the year ended December 31,			
	2018	2017	Increase/(Decrease)	% Change
Sales	$ 60,625	$ 49,521	$ 11,104	22.4%

The decrease in sales of $4.9 million from $60.6 million for the year ended December 31, 2018, to $55.7 million for the year ended December 31, 2019, was primarily driven by product cycle transition for several large volume embedded antenna products.

The increase in sales of $11.1 million from $49.5 million for the year ended December 31, 2017, to $60.6 million for the year ended December 31, 2018. The increase was primarily driven by a ramp in programs as well as contributions from new designs wins.

Cost of Goods Sold

	For the year ended December 31,			
	2019	2018	Increase/(Decrease)	% Change
Cost of goods sold	$ 30,415	$ 34,114	$ (3,699)	(10.8)%

	For the year ended December 31,			
	2018	2017	Increase/(Decrease)	% Change
Cost of goods sold	$ 34,114	$ 26,219	$ 7,895	30.1%

The decrease in cost of goods sold between the years ended December 31, 2019 and December 31, 2018, was primarily due to a decrease in product sales.

The increase in cost of goods sold between the years ended December 31, 2018 and December 31, 2017, was primarily due to an increase in product sales.

Gross Profit

	For the year ended December 31,			
	2019	2018	Increase/(Decrease)	% Change
Gross profit	$ 25,324	$ 26,511	$ (1,187)	(4.5)%
Gross profit (percentage of sales)	45.4%	43.7%		1.7%

	For the year ended December 31,			
	2018	2017	Increase/(Decrease)	% Change
Gross profit	$ 26,511	$ 23,302	$ 3,209	13.8%
Gross profit (percentage of sales)	43.7%	47.1%		(3.3)%

Gross profit as a percentage of sales increased 1.7% for the year ended December 31, 2019, as compared to the year ended December 31, 2018. The increase in gross profit as a percentage of sales was primarily driven by a shift in the sales mix for the year ended December 31, 2019, when compared to the year ended December 31, 2018.

Gross profit as a percentage of sales decreased 3.3% for the year ended December 31, 2018, as compared to the year ended December 31, 2017. The decrease in gross profit as a percentage of sales was primarily driven by a shift in the sales mix for the year ended December 31, 2018 when compared to the year ended December 31, 2017.

Operating Expenses

	For the year ended December 31,			
	2019	2018	Increase/(Decrease)	% Change
Operating Expenses				
Research and development	$ 8,989	$ 9,319	$ (330)	(3.5)%
Sales and marketing	7,036	11,033	(3,997)	(36.2)
General and administrative	8,919	9,545	(626)	(6.6)
Total	$ 24,944	$ 29,897	$ (4,953)	(16.6)%

	For the year ended December 31,			
	2018	2017	Increase/(Decrease)	% Change
Operating Expenses				
Research and development	$ 9,319	$ 7,319	$ 2,000	27.3%
Sales and marketing	11,033	7,013	4,020	57.3
General and administrative	9,545	8,001	1,544	19.3
Total	$ 29,897	$ 22,333	$ 7,564	33.9%

Research and Development

Research and development expense decreased $0.3 million for the year ended December 31, 2019, compared to the year ended December 31, 2018, primarily due to a decrease in personnel expenses.

Research and development expense increased $2.0 million for the year ended December 31, 2018, compared to the year ended December 31, 2017, primarily due to a $1.4 million increase in operating expenses associated with increase in personnel expenses associated with headcount increases, $0.4 million increase in miscellaneous research and development expenses and $0.1 million increase in depreciation.

Sales and Marketing

Sales and marketing expense decreased $4.0 million for the year ended December 31, 2019, compared to the year ended December 31, 2018, primarily due to a $2.7 million decrease related to the termination of a marketing agreement in 2018 and a $1.3 million decrease in personnel and consultants' expenses and executive severance in 2018.

Sales and marketing expense increased $4.0 million for the year ended December 31, 2018, compared to the year ended December 31, 2017, primarily due to a $1.5 million increase in non-recurring expenses related to a marketing-related agreement and its termination and executive severance, $1.2 million increase in marketing expenses, $0.9 million increase in personnel expenses associated with headcount increases and $0.2 million increase in miscellaneous sales and marketing expenses.

General and Administrative

General and administrative expense decreased $0.6 million for the year ended December 31, 2019, compared to the year ended December 31, 2018, primarily related to a reduction in personnel expenses.

General and administrative expense increased $1.5 million for the year ended December 31, 2018, compared to the year ended December 31, 2017 primarily due to a $1.2 million increase in stock compensation expenses related to the acceleration of stock compensation expense for a former executive, $0.5 million in non-recurring expenses related to executive severance, and $0.4 million increase in personnel expenses associated with headcount increases offset by a $0.6 million decrease in outsourced services.

Other Income

	For the year ended December 31,			
	2019	2018	Increase/(Decrease)	% Change
Other expense (income):				
Interest income	$ (714)	$ (584)	$ (130)	22.3%
Interest expense	5	31	(26)	(83.9)
Gain on deferred purchase price liability	—	(389)	389	(100.0)
Loss on disposal of fixed assets	—	39	(39)	(100.0)
Total	$ (709)	$ (903)	$ 194	(21.5)%

	For the year ended December 31,			
	2018	2017	Increase/(Decrease)	% Change
Other expense (income):				
Interest income	$ (584)	$ (296)	$ (288)	97.3%
Interest expense	31	99	(68)	(68.7)
Gain on deferred purchase price liability	(389)	—	(389)	100.0
Loss on disposal of fixed assets	39	—	39	100.0
Total	$ (903)	$ (197)	$ (706)	358.4%

Other income decreased $0.2 million for the year ended December 31, 2019, compared to the year ended December 31, 2018, primarily due to the one-time $0.4 million gain on deferred purchase price liability in 2018 but offset in part by a $0.1 million increase in interest income.

Other income increased $0.7 million for the year ended December 31, 2018 compared to the year ended December 31, 2017, primarily due to a $0.4 million gain on deferred purchase price liability, a $0.3 million increase in interest income from investments.

Liquidity and Capital Resources

We had cash and cash equivalents of $13.2 and $21.7 in short-term investments at December 31, 2019. Our short-term investments consist predominantly of commercial paper, corporate debt securities, U.S. Treasury securities and asset backed securities.

Before 2013, we had incurred net losses in each year since our inception. As a result, we had an accumulated deficit of $44.1 million at December 31, 2019.

Since inception, we have primarily financed our operations and capital expenditures through private sales of preferred stock, public offerings of our common stock and cash flows from our operations. We have raised an aggregate of $29.5 million in net proceeds from the issuance of our preferred stock and convertible promissory notes and $37.0 million from the sale of common stock in public offerings.

As of December 31, 2018, we had paid off the remaining balance outstanding under a term loan pursuant to our prior amended and restated loan and security agreement with Silicon Valley Bank. In addition, under our second amended and restated loan and security agreement with Silicon Valley Bank, or the Amended Loan Agreement, we have a revolving line of credit for $10.0 million. As of December 31, 2019, there was no balance owed on the line of credit. The revolving line of credit expired in January 31, 2020 and was not extended or renewed.

On January 31, 2018, we entered into the Amended Loan Agreement with Silicon Valley Bank. The Amended Loan Agreement amended and restated the terms of our prior amended and restated loan and security agreement with Silicon Valley Bank. The agreement, among other things, increased the aggregate principal amount available under the revolving line of credit from $3.0 million to $10.0 million and modified certain existing financial covenants. Under the Amended Loan Agreement, we were allowed to borrow up to $10.0 million under the line of credit, subject to a borrowing base limit of 80% of the aggregate face amount of all eligible receivables. The Amended Loan Agreement removed the minimum EBITDA requirement previously applicable to the line of credit and term loan and maintained the liquidity ratio financial covenant such that we must maintain a ratio of cash and cash equivalents plus accounts receivable to outstanding debt under the Amended Loan Agreement minus deferred revenue of 1.25 to 1.00. We were required to pay interest on borrowings outstanding, if any, under the revolving line of credit at a floating rate per annum equal to 1% above the Wall Street Journal prime rate (or, if unavailable, the

SVB prime rate) on a monthly basis, so long as we maintained a liquidity ratio of cash and cash equivalents plus accounts receivable to outstanding debt under the Amended Loan Agreement minus deferred revenue of 1.25 to 1.00. If this liquidity ratio was not met, we were subject to a minimum interest charge of $3,000 per month and borrowings outstanding, if any, under the revolving line of credit accrued interest at a floating rate per annum equal to 2% above the Wall Street Journal prime rate (or if unavailable, the SVB prime rate) on a monthly basis. Borrowings outstanding on the Amended Loan Agreement matured on December 1, 2018, at which time all remaining balances on the loan were repaid. The revolving line of credit matured on January 31, 2020 and the Amended Loan Agreement expired pursuant to its term.

In August 2017, our board of directors approved a share repurchase program pursuant to which we may purchase up to $7.0 million shares of our common stock over the twelve-month period following the establishment of the program. The repurchases under the share repurchase program are made from time to time in the open market or in privately negotiated transactions and are funded from our working capital. Repurchases will be made in compliance with Rule 10b-18 of the Securities Exchange Act of 1934, as amended, subject to market conditions, available liquidity, cash flow, applicable legal requirements and other factors. All shares of common stock repurchased under our share repurchase program will be returned to the status of authorized and issued shares of common stock. In August 2018, our board of directors approved an extension to our share repurchase program for an additional twelve-month period ending August 14, 2019.

On September 9, 2019, our board of directors approved a new share repurchase program pursuant to which the Company may purchase up to $7.0 million of shares of its common stock over the twelve-month period following the establishment of the program. The repurchases under the new share repurchase program are made from time to time in the open market or in privately negotiated transactions and are funded from our working capital. Repurchases will be made in compliance with Rule 10b-18 of the Securities Exchange Act of 1934, as amended, subject to market conditions, available liquidity, cash flow, applicable legal requirements and other factors. All shares purchased in the three months ended December 31, 2019, were subject to the new share repurchase program. During the year ended December 31, 2019, we repurchased 108,000 shares of common stock under the new share repurchase program. These shares were repurchased at an average price per share of $11.41, for a total cost of $1.2 million. Since inception of the stock repurchase program, we have purchased a total of 465,000 shares for a total cost of $4.7 million.

We plan to continue to invest for long-term growth, including expanding our sales force and engineering organizations and making additional capital expenditures to further penetrate markets both in the United States and internationally, as well as expanding our research and development for new product offerings and technology solutions. We anticipate that these investments will continue to increase in absolute dollars. We believe that our existing cash and cash equivalents balance together with cash proceeds from operations will be sufficient to meet our working capital requirements for at least the next 12 months.

The following table presents a summary of our cash flow activity for the periods set forth below (in thousands):

	For the year ended December 31		
	2019	2018	2017
Net cash provided by (used in) operating activities	$ 2,350	$ 1,377	$ (255)
Net cash provided by (used in) investing activities	(2,382)	336	(27,824)
Net cash used in financing activities	(392)	(3,117)	(2,057)
Net decrease in cash and cash equivalents	$ (424)	$ (1,404)	$ (30,136)

Net Cash Provided by (Used in) Operating Activities. Net cash provided by operating activities was $2.4 million for the year ended December 31, 2019. This was primarily driven by net income of $0.9 million and further adjusted for non-cash operating expenses of $3.1 million and offset by change in operating assets and liabilities of $1.6 million.

Net cash provided by operating activities was $1.4 million for the year ended December 31, 2018. This was primarily driven by net non-cash operating expenses of $3.7 million and the change in operating assets and liabilities of $0.3 million, offset by our net loss of $2.6 million.

Net cash used by operating activities was $0.3 million for the year ended December 31, 2017. This was primarily driven by our net income of $1.1 million, net non-cash operating expenses of $1.7 million and the change in operating assets and liabilities of $3.1 million.

Net Cash Provided by (Used in) Investing Activities. Net cash used by investing activities was $2.4 million for the year ended December 31, 2019. This consisted of $36.5 million in purchases of available-for-sale securities and $1.2 million purchases of property and equipment but offset by $35.3 million in maturities of available-for-sale securities.

Net cash provided by in investing activities was $0.3 million for the year ended December 31, 2018. This consisted of $29.7 million in purchases of available-for-sale securities, $1.0 million of purchases of property and equipment, offset by $31.0 million in maturities of available-for-sale securities.

Net cash used in investing activities was $27.8 million for the year ended December 31, 2017. This consisted of $22.0 million in purchases of available-for-sale securities, $6.3 million in cash paid for the acquisition of the Antenna Plus assets, $0.3 million of purchases of property and equipment, offset by $0.8 million in maturities of available-for-sale securities.

Net Cash Used in Financing Activities. Net financing activities for the year ended December 31, 2019, used net cash of $0.4 million and primarily consisted of common stock repurchases in the amount of $1.2 million, offset by proceeds from the exercise of stock options and ESPP in the amount of $0.8 million.

Net financing activities for the year ended December 31, 2018, used net cash of $3.1 million and primarily consisted of repayment of notes payable in the amount of $1.3 million, common stock repurchases in the amount of $2.2 million, and $0.4 million on the settlement of acquisition related deferred purchase price, offset by proceeds from the exercise of stock options in the amount of $0.8 million.

Net financing activities for the year ended December 31, 2017, used net cash of $2.1 million and primarily consisted of repayment of notes payable in the amount of $1.4 million, common stock repurchases in the amount of $1.3 million offset by proceeds from the exercise of stock options in the amount of $0.6 million.

Contractual Obligations and Commitments

The following table summarizes our contractual obligations at December 31, 2019 (in thousands):

		Payments due by period		
	Total	Less than 1 year	1-3 years	3-5 years
Office operating leases	$ 1,490	$ 886	$ 499	$ 105

We have entered into lease agreements for office space and research facilities in San Diego, California; Scottsdale, Arizona; Melbourne, Florida; Taipei, Taiwan; Shenzhen and Jiangsu, China; and Cambridge, United Kingdom; under non-cancelable operating leases that expire at various dates through 2024.

We subcontract with other companies to manufacture our products. During the normal course of business, our contract manufacturers procure components based upon orders placed by us. If we cancel all or part of the orders, we may still be liable to the contract manufacturers for the cost of the components purchased by the subcontractors to manufacture our products. We periodically review the potential liability, and as of December 31, 2019, we have no significant accruals recorded. Our financial position and operating results could be negatively impacted if we were required to compensate the contract manufacturers for any unrecorded liabilities incurred.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements (as defined by applicable regulations of the Securities and Exchange Commission) that are reasonably likely to have a current or future material effect on our financial condition, results of operations, liquidity, capital expenditures or capital resources.

Critical Accounting Policies and Significant Judgments and Estimates

Our management's discussion and analysis of financial condition and operating results is based on our financial statements, which have been prepared in accordance with GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported sales and expenses during the reporting periods. These items are monitored and analyzed by us for changes in facts and circumstances, and material changes in these estimates could occur in the future. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Changes in estimates are reflected in reported results for the period in which they become known. Actual results may differ materially from these estimates under different assumptions or conditions.

We have elected to use the extended transition period for complying with new or revised financial accounting standards available under Section 102(b)(2)(B) of the Securities Act of 1933, as amended. This election allows us to delay the adoption of new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. As a result of this election, our financial statements may not be comparable to companies that comply with public company effective dates.

While our significant accounting policies are more fully described in the notes to our financial statements in this annual report, we believe that the following accounting policies are critical to the process of making significant judgments and estimates in the preparation of our financial statements and understanding and evaluating our reported financial results.

Revenue Recognition

On January 1, 2019, we adopted Financial Accounting Standards Board, or FASB, Accounting Standards Codification Topic 606, Revenue from Contracts with Customers, or ASC 606, using the modified retrospective method. We generate revenue from the sale of our antenna products. We recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled for those goods or services. Control transfers to customers either when the products are shipped to or received by the customer, based on the terms of the specific agreement with the customer. We incur selling expenses to obtain design wins prior to revenue recognition, which is not a deliverable of a revenue arrangement.

A portion of our sales is made through distributors under agreements allowing for pricing credits and/or rights of return under certain circumstances. Pricing credits and returns under these provisions have been insignificant; accordingly, our allowance for sales returns and pricing credits was insignificant.

To date, services revenues have been immaterial as a percentage of total revenues. Service revenues are recognized ratably over the term of the agreement which are typically one year or less.

To determine revenue recognition for arrangements that we determine are within the scope of ASC 606, we perform the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligation(s) in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligation(s) in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. We only apply the five-step model to contracts when it is probable that we will collect substantially all the consideration we are entitled to in exchange for the goods or services we transfer to the customer. At contract inception, once the contract is determined to be within the scope of ASC 606, we assess the goods or services promised within each contract and determines those that are performance obligations and assess whether each promised good or service is distinct. We then recognize as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of account in ASC 606. Each distinct promise to transfer products is considered to be an identified performance obligation for which revenue is recognized upon transfer of control of the products to the customer. Although customers may place orders for products that are delivered on multiple dates in different quarterly reporting periods; all of the orders are normally scheduled within one year from the order date. We have opted to not disclose the portion of revenues allocated to partially unsatisfied performance obligations, which represent products to be shipped within 12 months under open customer purchase orders, at the end of the current reporting period as allowed under ASC 606. We have also elected to record sales commissions when incurred, pursuant to the practical expedient under ASC 340, Other Assets and Deferred Costs, as the period over which the sales commission asset that would have been recognized is less than one year. Shipping and handling costs are immaterial and reported in in operating expenses in the statement of operations.

Business Combinations

We use an outside third-party consultant to help determine the allocation of the purchase price of a business combination to the assets acquired and liabilities assumed, such as for our acquisition of the Skycross and Antenna Plus assets and related liabilities. The fair values assigned, defined as 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, are determined based on estimates and assumptions made by management. We record any excess consideration over the aggregate fair value of tangible and intangible assets, net of liabilities assumed, as goodwill. These valuations require us to make significant estimates and assumptions, especially with respect to intangible assets.

Stock-based Compensation

We recognize compensation costs related to stock options and restricted stock units granted to employees and directors based on the estimated fair value of the awards on the date of grant. We estimate the grant date fair value, and the resulting stock-based compensation expense, using the Black-Scholes-Merton option-pricing model. The grant date fair value of stock-based awards is expensed on a straight-line basis over the vesting period of the respective award.

We recorded stock-based compensation expense of approximately $2.2 million, $2.9 million, and $0.7 million for the years ended December 31, 2019, 2018, and 2017, respectively. We expect to continue to grant stock options, restricted stock units, and other equity-based awards in the future, and to the extent that we do, our stock-based compensation expense recognized in future periods will likely increase.

The Black-Scholes-Merton option-pricing model requires the use of highly subjective and complex assumptions, which determine the fair value of stock-based awards. If we had made different assumptions, our stock-based compensation expense, net loss and net loss per share of common stock could have been significantly different.

Our assumptions are as follows:

- *Fair value of our common stock.* Prior to our initial public offering, we estimated the fair value of our common stock. See “Significant Factors, Assumptions and Methodologies Used in Determining Fair Value of Our Common Stock” below. Upon the closing of our initial public offering, our common stock is valued by reference to the publicly traded price of our common stock.
- *Expected term.* The expected term represents the period of time stock-based awards are expected to be outstanding. Until the beginning of 2019 our lack of option exercise history did not provide reasonable bases for estimating the expected term. Therefore, we estimate the expected term using the simplified method, which calculates an expected term as the average of the time-to-vesting and the contractual life of an option. Beginning in 2019 our historical option activity data is used to calculate an expected term.
- *Expected volatility.* We have been a private company until August, 2016; therefore we estimate expected volatility using weighted average historical volatilities of publicly traded companies within our industry that we consider to be comparable to our business. We intend to continue to use the same or similar public companies or unless circumstances change such that the identified companies are no longer similar to us, in which case, more suitable companies whose share prices are publicly available would be utilized. At the beginning of 2018 we began using our historical share prices for calculating a weighted average volatility using our volatility along with the volatilities of the selected comparable companies. Over time—as the Company accumulates enough historical data— this weighting formula will favor our volatility more heavily, until such time our share price history is equal to the expected terms of future grants.
- *Risk-free interest rate.* The risk-free interest rate is based on the U.S. Treasury yield in effect at the time of grant for zero coupon U.S. Treasury notes with maturities approximately equal to the expected term.

- *Expected dividend.* The expected dividend is assumed to be zero as we have never paid dividends and have no current plans to pay any dividends on our common stock.

Recent Accounting Pronouncements

See Note 1 of the Notes to Consolidated Financial Statements contained within this annual report for a discussion of recent accounting pronouncements.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Sensitivity

Our investment portfolio is exposed to market risk from changes in interest rates. The fair market value of fixed rate securities may be adversely impacted by fluctuations in interest rates while income earned on floating rate securities may decline as a result of decreases in interest rates. Under our current investment policies, we do not use interest rate derivative instruments to manager exposure to interest rate changes. We attempt to ensure the safety and preservation of our invested principal funds by limiting default risk, market risk, and reinvestment risk. We mitigate default risk by investing in investment grade securities. We maintain a relatively short average maturity for our investment portfolio, and we believe a hypothetical 100 basis point adverse move in interest rates along the entire interest rate yield curve would not materially affect the fair value of our interest sensitive financial statements.

Foreign Currency Risk

All of our sales are denominated in U.S. dollars, and therefore, our sales are not currently subject to significant foreign currency risk. To date, foreign currency transaction gains and losses have not been material to our financial statements, and we have not engaged in any foreign currency hedging transactions.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The financial statements and the report of our independent registered public accounting firm required pursuant to this item are included in this annual report beginning on page F-1.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Conclusion Regarding the Effectiveness of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our periodic and current reports that we file with the SEC is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable and not absolute assurance of achieving the desired control objectives. In reaching a reasonable level of assurance, management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. In addition, the design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, control may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, as of the end of the period covered by this annual report. Based on such evaluation, our principal executive officer and principal financial officer have concluded that as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal controls over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act. Internal control over financial reporting is a process designed under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. Our internal control over financial reporting includes those policies and procedures that: (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets, (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors, and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on our financial statements. Because of its inherent limitations, internal controls over financial reporting may not prevent or detect all misstatements. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

We conducted an evaluation of the effectiveness of our internal control over financial reporting. Based on our evaluation, management has concluded that our internal control over financial reporting was effective as of December 31, 2019.

Attestation Report of the Registered Public Accounting Firm

This annual report does not include an attestation report of our independent registered public accounting firm due to an exemption established by the JOBS Act for "emerging growth companies."

Changes in Internal Control Over Financial Reporting

There has been no change in our internal control over financial reporting during the quarter ended December 31, 2019, that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE.

The information required by this item will be contained in our definitive proxy statement to be filed with the SEC in connection with our 2020 Annual Meeting of Stockholders, or the Definitive Proxy Statement, which we expect to file with the SEC within 120 days after the close of our fiscal year ended December 31, 2019, under the headings "Election of Directors," "Our Executive Officers," and "Section 16(a) Beneficial Ownership Reporting Compliance," and is incorporated herein by reference.

Code of Business Conduct and Ethics

We adopted a Code of Business Conduct and Ethics that applies to our officers, directors and employees which is available, free of charge, on our website at www.airgain.com. The Code of Business Conduct and Ethics contains general guidelines for conducting the business of our company consistent with the highest standards of business ethics, and is intended to qualify as a "code of ethics" within the meaning of Section 406 of the Sarbanes-Oxley Act of 2002 and Item 406 of Regulation S-K. In addition, we intend to promptly disclose on our website in the future (i) the nature of any amendment to our Code of Business Conduct and Ethics that applies to our principal executive officer, principal financial officer, principal accounting officer or controller or persons performing similar functions, and (ii) the nature of any waiver, including an implicit waiver, from a provision of our Code of Business

Conduct and Ethics that is granted to one of these specified officers, the name of such person who is granted the waiver and the date of the waiver.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item will be contained in our Definitive Proxy Statement under the heading "Executive Compensation and Other Information" and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item will be set forth in the section headed "Security Ownership of Certain Beneficial Owners and Management" in our Definitive Proxy Statement and is incorporated herein by reference.

The information required by Item 201(d) of Regulation S-K will be set forth in the section headed "Executive Compensation and Other Information" in our Proxy Statement and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item will be set forth in the section headed "Certain Relationships and Related Person Transactions," "Board Independence" and "Board Committees and Independence" in our Definitive Proxy Statement and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this item will be set forth in the section headed "Independent Registered Public Accounting Firm's' Fees" in our Definitive Proxy Statement and is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

1. Financial Statements.

The financial statements of Airgain, Inc., together with the report thereon of KPMG LLP, an independent registered public accounting firm, are included in this annual report on Form 10-K.

2. Financial Statement Schedules.

All schedules are omitted because they are not applicable, or the required information is shown in the financial statements or notes thereto.

3. Exhibits

A list of exhibits is set forth on the Exhibit Index immediately preceding the signature page of this annual report on Form 10-K and is incorporated herein by reference.

ITEM 16. FORM 10-K SUMMARY

None.

Airgain, Inc.

Index to Financial Statements

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Airgain, Inc.:

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Airgain, Inc. (the Company) as of December 31, 2019 and 2018, the related statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (collectively, the financial statements). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

Change in Accounting Principle

As discussed in Note 2 to the financial statements, the Company has changed is method of accounting for revenue as of January 1, 2019 due to the adoption of Accounting Standards Codification Topic 606, *Revenue from Contracts with Customers.*

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ KPMG LLP

We have served as the Company's auditor since 2012.

San Diego, California
February 28, 2020

Airgain, Inc.

Balance Sheets

(in thousands, except par value)

	December 31	
	2019	2018
Assets		
Current assets:		
Cash and cash equivalents	$ 13,197	$ 13,621
Short-term investments	21,686	20,169
Trade accounts receivable	7,656	7,013
Inventory	1,193	1,351
Prepaid expenses and other current assets	1,379	931
Total current assets	45,111	43,085
Property and equipment, net	2,108	1,401
Goodwill	3,700	3,700
Customer relationships, net	3,110	3,593
Intangible assets, net	687	859
Other assets	10	269
Total assets	$ 54,726	$ 52,907
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 3,838	$ 4,137
Accrued bonus	1,385	2,076
Accrued liabilities	1,451	1,217
Current portion of deferred rent obligation under operating lease	85	81
Total current liabilities	6,759	7,511
Deferred tax liability	52	38
Deferred rent obligation under operating lease	11	211
Total liabilities	6,822	7,760
Stockholders' equity:		
Common stock, par value $0.0001; 200,000 shares authorized; 10,146 shares issued and 9,681 shares outstanding at December 31, 2019; and 9,958 shares issued and 9,601 shares outstanding at December 31, 2018.	1	1
Additional paid in capital	96,622	93,583
Treasury stock, at cost; 465 shares and 357 shares at December 31, 2019 and 2018, respectively	(4,659)	(3,432)
Accumulated other comprehensive income (loss)	8	(11)
Accumulated deficit	(44,068)	(44,994)
Total stockholders' equity	47,904	45,147
Commitments and contingencies (note 11)		
Total liabilities and stockholders' equity	$ 54,726	$ 52,907

See accompanying notes.

Airgain, Inc.

Statements of Operations

(in thousands, except per share data)

	For the year ended December 31		
	2019	2018	2017
Sales	$ 55,739	$ 60,625	$ 49,521
Cost of goods sold	30,415	34,114	26,219
Gross profit	25,324	26,511	23,302
Operating expenses:			
Research and development	8,989	9,319	7,319
Sales and marketing	7,036	11,033	7,013
General and administrative	8,919	9,545	8,001
Total operating expenses	24,944	29,897	22,333
Income (loss) from operations	380	(3,386)	969
Other (income) expense:			
Interest income	(714)	(584)	(297)
Interest expense	5	31	99
Gain on deferred purchase price liability	—	(389)	—
Loss on disposal of fixed assets	—	39	—
Total other income	(709)	(903)	(198)
Income (loss) before income taxes	1,089	(2,483)	1,167
Provision for income taxes	163	101	26
Net income (loss)	$ 926	$ (2,584)	$ 1,141
Net income (loss) per share:			
Basic	$ 0.10	$ (0.27)	$ 0.12
Diluted	$ 0.09	$ (0.27)	$ 0.11
Weighted average shares used in calculating income (loss) per share			
Basic	9,684	9,521	9,485
Diluted	10,097	9,521	10,361

See accompanying notes.

Airgain, Inc.

Statements of Comprehensive Income (Loss)
(in thousands)

	For the year ended December 31		
	2019	2018	2017
Net income (loss)	$ 926	$ (2,584)	$ 1,141
Unrealized gain (loss) on available-for-sale securities, net of deferred taxes	19	6	(17)
Total comprehensive income (loss)	$ 945	$ (2,578)	$ 1,124

See accompanying notes.

Airgain, Inc.

Statements of Stockholders' Equity

(in thousands)

	For the year ended December 31		
	2019	2018	2017
Total stockholders' equity, beginning balance	$ 45,147	$ 46,225	$ 45,033
Common stock:			
Balance at beginning of period	1	1	1
Stock-based compensation	—	—	—
Issuance of shares for stock purchase plans	—	—	—
Balance at end of period	1	1	1
Additional paid-in capital:			
Balance at beginning of period	93,583	89,908	88,583
Reversal of secondary offering cost	—	—	1
Stock-based compensation	2,204	2,910	736
Issuance of shares for stock purchase plans	835	765	588
Balance at end of period	96,622	93,583	89,908
Treasury stock:			
Balance at beginning of period	(3,432)	(1,257)	—
Repurchases of common stock	(1,227)	(2,175)	(1,257)
Balance at end of period	(4,659)	(3,432)	(1,257)
Accumulated other comprehensive income (loss):			
Balance at beginning of period	(11)	(17)	—
Unrealized gain (loss) on available-for-sale securities, net of deferred taxes	19	6	(17)
Balance at end of period	8	(11)	(17)
Accumulated deficit:			
Balance at beginning of period	(44,994)	(42,410)	(43,551)
Net income (loss)	926	(2,584)	1,141
Balance at end of period	(44,068)	(44,994)	(42,410)
Total stockholders' equity, ending balance	$ 47,904	$ 45,147	$ 46,225

See accompanying notes.

Airgain, Inc.

Statements of Cash Flows

(in thousands)

	For the year ended December 31		
	2019	2018	2017
Cash flows from operating activities:			
Net income (loss)	$ 926	$ (2,584)	$ 1,141
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:			
Depreciation	493	587	436
Amortization	655	677	581
Amortization of discounts on investments, net	(312)	(202)	(91)
Stock-based compensation	2,204	2,910	736
Deferred tax liability	14	30	2
Loss on disposal of fixed assets	—	39	—
Gain on deferred purchase price liability	—	(389)	—
Changes in operating assets and liabilities:			
Trade accounts receivable	(643)	1,043	(2,679)
Inventory	158	(610)	(162)
Prepaid expenses and other assets	(189)	(241)	(526)
Accounts payable	(303)	294	(102)
Accrued bonus	(691)	416	476
Accrued liabilities	234	(470)	50
Deferred obligation under operating lease	(196)	(123)	(117)
Net cash provided by (used in) operating activities	2,350	1,377	(255)
Cash flows from investing activities:			
Purchases of available-for-sale securities	(36,456)	(29,666)	(21,962)
Maturities of available-for-sale securities	35,270	30,992	750
Cash paid for acquisition	—	—	(6,349)
Purchases of property and equipment	(1,196)	(990)	(263)
Net cash provided by (used in) investing activities	(2,382)	336	(27,824)
Cash flows from financing activities:			
Repayment of notes payable	—	(1,333)	(1,389)
Costs related to initial public offering	—	—	1
Payment on deferred purchase price liability	—	(375)	—
Repurchase of common stock	(1,227)	(2,174)	(1,257)
Proceeds from issuance of common stock	835	765	588
Net cash used in financing activities	(392)	(3,117)	(2,057)
Net decrease in cash and cash equivalents	(424)	(1,404)	(30,136)
Cash and cash equivalents, beginning of period	13,621	15,025	45,161
Cash and cash equivalents, end of period	$ 13,197	$ 13,621	$ 15,025
Supplemental disclosure of cash flow information			
Interest paid	$ 1	$ 37	$ 99
Taxes paid	$ 71	$ 46	$ 103
Supplemental disclosure of non-cash investing and financing activities:			
Accrual of property and equipment	$ 4	$ —	$ —

See accompanying notes.

(1) Significant Accounting Policies

(a) Description of Business

Airgain, Inc. (the Company) was incorporated in the State of California on March 20, 1995, and reincorporated in the State of Delaware on August 15, 2016. The Company is a leading provider of advanced antenna technologies used to enable high performance wireless networking across a broad range of devices and markets, including consumer, enterprise, and automotive. The Company designs, develops, and engineers its antenna products for original equipment and design manufacturers worldwide. The Company's headquarters is in San Diego, California with office space and research, design, and test facilities in the United States, United Kingdom, China, and Taiwan.

(b) Basis of Presentation

The financial statements of the Company have been prepared in conformity with U.S. generally accepted accounting principles (GAAP).

(c) Recently Issued Accounting Pronouncements

In January 2017, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2017-04, *Simplifying the Test for Goodwill Impairment*, which simplifies the test for goodwill impairment by removing Step 2 which requires a hypothetical purchase price allocation and may require the services of valuation experts. An entity will, therefore, perform the goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount, recognizing an impairment charge for the amount by which the carrying amount exceeds the fair value, not to exceed the total amount of goodwill allocated to the reporting unit. An entity still has the option to perform a qualitative assessment to determine if the quantitative impairment test is necessary. ASU 2017-04 will be effective for the Company in annual periods beginning after December 15, 2020, and interim periods within fiscal years beginning after December 15, 2021, with early adoption permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017. The Company has not yet determined whether it will early adopt ASU 2017-04 and is evaluating the impact the standard will have on its ongoing financial reporting.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments-Credit Losses* (Topic 326), Measurement of Credit Losses on Financial Instruments. This standard changes the methodology for measuring credit losses on financial instruments and the timing of when such losses are recorded. ASU 2016-13 is effective for fiscal years beginning after December 15, 2020, and interim periods within the fiscal year beginning after December 15, 2021, using a modified retrospective adoption method. The Company continues to evaluate the impact of the standard on its consolidated financial statements.

In May 2019, the FASB issued ASU 2019-05, *Financial Instruments-Credit Losses* (Topic 326), Targeted Transition Relief, which provides entities that have certain instruments within the scope of ASC 326-20, Financial Instruments-Credit Losses-Measured at Amortized Cost, with an option to irrevocably elect the fair value option for eligible instruments. The effective date and transition methodology for this standard are the same as in ASU 2016-13.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, which requires lessees to recognize most leases on their balance sheets as lease liabilities with corresponding right-of-use assets. ASU 2016-02 is effective for annual periods beginning after December 15, 2020, and interim periods in fiscal years beginning after December 15, 2021. The Company is evaluating the effect that ASU 2016-02 will have on its financial statements and related disclosures. The Company has not yet selected a transition method, nor has it determined the effect of the standard on the Company's ongoing financial reporting.

In June 2018, the FASB issued ASU 2018-07, *Compensation—Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting,* to expand the scope of Topic 718 to include share-based payment transactions for acquiring goods and services from nonemployees. As a result, the accounting for share-based payment awards to nonemployees and employees will be substantially aligned by eliminating the need to measure nonemployee share-based awards at fair value on the earlier of performance commitment date or date performance is complete. Both employee and nonemployee share-based awards are now measured at grant-date fair value. The Company adopted the amendments in this update as of January 1, 2019. As the Company's nonemployee share-based awards are not significant, such adoption did not have an impact on the Company's consolidated accumulated deficit as of January 1, 2019.

(d) Segment Information

The Company's operations are located primarily in the United States and most of its assets are located in San Diego, California and Scottsdale, Arizona. The Company operates in one segment related to the sale of antenna products. The Company's chief operating decision-maker is its chief executive officer, who reviews operating results on an aggregate basis and manages the Company's operations as a single operating segment.

(e) Cash Equivalents and Short-Term Investments

Cash equivalents are comprised of short-term, highly liquid investments with maturities of 90 days or less at the date of purchase.

Short-term investments consist predominantly of commercial paper, corporate debt securities, U.S. Treasury securities, and asset backed securities. The Company classifies short-term investments based on the facts and circumstances surrounding the investments at the time of purchase and evaluates such classification as of each balance sheet date. All short-term investments are classified as available-for-sale securities as of December 31, 2019, and are recorded at estimated fair value. Unrealized gains and losses for available-for-sale securities are included in accumulated other comprehensive income—a component of stockholders' equity. Realized gains and losses are included in other income in the statement of operations. The Company evaluates its investments to determine whether those with unrealized loss positions are other than temporarily impaired. Impairments are considered to be other than temporary if they are related to deterioration in credit risk or if it is likely that the Company will sell the securities before recovery of their cost basis.

(f) Trade Accounts Receivable

Trade accounts receivable is adjusted for all known uncollectible accounts. The policy for determining when receivables are past due or delinquent is based on the contractual terms agreed upon. Accounts are written off once all collection efforts have been exhausted. An allowance for doubtful accounts is established when, in the opinion of management, collection of the account is doubtful. The allowance for doubtful accounts was $0 as of December 31, 2019 and 2018.

(g) Inventory

The majority of the Company's products are manufactured by third parties that retain ownership of the inventory until title is transferred to the customer at the shipping point. In certain instances shipping terms are delivery at place and the Company is responsible for arranging transportation and delivery of goods ready for unloading at the named place. The Company bears all risk involved in bringing the goods to the named place and records the related goods in transit to the customer as inventory on the accompanying balance sheet. With the acquisition of substantially all of the assets of Antenna Plus, LLC (Antenna Plus), in April 2017, the Company began manufacturing products at its Scottsdale, Arizona and Shullsburg, Wisconsin locations. In July 2017 the Company relocated all of its product manufacturing operations in Shullsburg, Wisconsin to the Scottsdale, Arizona facility. See Note 4 for additional information relating to the Company's acquisition of the Antenna Plus assets.

Inventory is stated at the lower of cost or net realizable value. For items manufactured by the Company cost is determined using the weighted average cost method. For items manufactured by third parties cost is determined using the first-in, first-out method (FIFO). Any adjustments to reduce the cost of inventories to their net realizable value are recognized in earnings in the current period. As of December 31, 2019 and 2018, the Company's inventories consist primarily of raw materials. Provisions for excess and obsolete inventories are estimated based on product life cycles, quality issues, and historical experience. As of December 31, 2019 and 2018, there was no provision for excess and obsolete inventories.

(h) Property and Equipment

Property and equipment are stated at cost and are depreciated using the straight-line method over the estimated useful lives of the assets, generally three to fifteen years. The estimated useful lives for leasehold improvements are determined as either the estimated useful life of the asset or the lease term, whichever is shorter. Depreciation of assets that are recorded under operating leases are included in depreciation expense. Maintenance and repairs are expensed as incurred. Property and equipment are reviewed for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. When assets are sold (or otherwise disposed of) the cost and related accumulated depreciation are removed from the accounts and any gain or loss is included as a non-operating expense.

(i) Goodwill

Goodwill having an indefinite useful life represents the excess of cost over fair value of net assets acquired. The Company reviews goodwill for impairment annually on December 1st and whenever events or changes in circumstances indicate that goodwill may be impaired. The Company completed its annual assessment for goodwill impairment in December 2019 and determined that goodwill is not impaired as of December 31, 2019.

(j) Long-lived Assets

The Company’s identifiable intangible assets are comprised of acquired developed technologies, customer relationships, tradenames, and non-compete agreements. The cost of the identifiable intangible assets with finite lives is amortized on a straight-line basis over the assets’ respective estimated useful lives. The Company periodically re-evaluates the original assumptions and rationale utilized in the establishment of the carrying value and estimated lives of long-lived assets and finite-lived intangible assets. Long-lived assets and finite-lived intangibles are assessed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. If an asset is considered to be impaired the impairment recognized is equal to the amount by which the carrying value of the asset exceeds its fair value.

(k) Revenue Recognition

Effective January 1, 2019, the Company adopted FASB ASU 2014-09, *Revenue from Contracts with Customers*, and the related amendments, which are codified into Accounting Standards Codification (“ASC”) 606 (“ASC 606”), which establishes a broad principle that requires entities to assess the products or services promised in contracts with customers at contract inception to determine the appropriate unit at which to record revenues, which is referred to as a performance obligation. Revenue is recognized when control of the promised products or services is transferred to customers, at an amount that reflects the consideration to which the entity expects to be entitled in exchange for those products or services. The new standard supersedes GAAP guidance on revenue recognition and requires the use of more estimates and judgments than the prior standards. In addition, the standard requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers.

ASC 606 may be applied either retrospectively or through the use of a modified-retrospective method. The full retrospective method requires companies to recast each prior reporting period presented as if the new guidance had always existed. Under the modified retrospective method, companies would recognize the cumulative effect of initially applying the standard as an adjustment to the opening balance of retained earnings at the date of initial application. The Company adopted ASC 606 on January 1, 2019, using the modified retrospective method.

The Company sells antenna products. All of the Company’s revenue relates to contracts with customers. The Company’s accounting contracts are from purchase orders or purchase orders combined with purchase agreements. The majority of the Company’s revenue is recognized on a “point-in-time” basis and a nominal amount of revenue related to service contracts is recognized “over time”. A portion of sales is made through distributors under agreements allowing for pricing credits and/or rights of return under certain circumstances. Pricing credits and returns under these provisions have been insignificant; accordingly, our allowance for sales returns and pricing credits was insignificant.

To date service revenues have been immaterial as a percentage of total revenues. Service revenues are recognized over the term of the agreement which are typically one year or less.

Prior to the adoption of ASC 606, the Company recognized the majority of its revenues using the units-of-delivery method of accounting. Based on the nature of products provided or services performed, revenue was recorded as products were shipped and customers would take ownership of the products. The methodology to recognize revenue under ASC 605 does not differ under ASC 606 as revenue is recognized at a point-in-time.

To determine revenue recognition for arrangements that the Company determines are within the scope of ASC 606, the Company performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligation(s) in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligation(s) in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. The Company only applies the five-step model to contracts when it is probable that the entity will collect substantially all of the consideration it is entitled to in exchange for the goods or services it transfers to the customer. At contract inception, once the contract is determined to be within the scope of ASC 606, the Company assesses the goods or services promised within each contract and determines those that are performance obligations and assesses whether each promised good or service is distinct. The Company then recognizes as revenue the amount of the transaction price that is allocated to the respective performance obligation when the performance obligation is satisfied.

Each distinct promise to transfer products is considered to be an identified performance obligation for which revenue is recognized upon transfer of control of the products to the customer. Although customers may place orders for products that are delivered on multiple dates in different quarterly reporting periods; all of the orders are normally scheduled within one year from the order date. The Company has opted to not disclose the portion of revenues allocated to partially unsatisfied performance obligations, which represent products to be shipped within 12 months under open customer purchase orders, at the end of the current reporting period as allowed under ASC 606. We have also elected to record sales commissions when incurred, pursuant to the practical expedient under ASC 340, as the period over which the sales commission asset that would have been recognized is less than one year. Shipping and handling costs are immaterial and reported in in operating expenses in the statement of operations.

There were no contract assets at December 31, 2019. The Company records contract liabilities for customer prepayments which are recorded in accrued liabilities in the balance sheet.

(l) Shipping and Transportation Costs

Shipping and other transportation costs—expensed as incurred--were $278,000, $433,000, and $462,000 for the years ended December 31, 2019, 2018, and 2017, respectively. These costs are included in general and administrative expenses in the accompanying statements of operations.

(m) Research and Development Costs

Research and development costs are expensed as incurred.

(n) Advertising Costs

Advertising costs—expensed as incurred—were $28,000, $2,526,000, and $16,000 for the years ended December 31, 2019, 2018, and 2017, respectively. These costs are included in sales and marketing expenses in the accompanying statements of operations.

(o) Income Taxes

The Company records income taxes under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statements carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. When applicable a valuation allowance is established to reduce any deferred tax asset when it is determined that it is more likely than not that some portion of the deferred tax asset will not be realized.

The Company recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs. The Company records interest related to unrecognized tax benefits in interest expense and penalties in general and administrative expenses.

(p) Stock-Based Compensation

The Company recognizes all employee stock-based compensation as a cost in the financial statements. Equity classified awards are measured at the grant-date fair value of the award. The Company estimates the grant-date fair value using the Black-Scholes-Merton option-pricing model. The Company recognizes forfeitures when incurred. Compensation cost is recognized on a straight-line basis over the requisite service period for the entire award. Stock-based compensation expense was $2.2 million, $2.9 million, and $0.7 million for the years ended December 31, 2019, 2018, and 2017, respectively.

(q) Fair Value Measurements

The carrying values of the Company's financial instruments, including cash, trade accounts receivable, accounts payable, and accrued liabilities approximate their fair values due to the short maturity of these instruments.

Fair value measurements are market-based measurements, not entity-specific measurements. Therefore, fair value measurements are determined based on the assumptions that market participants would use in pricing the asset or liability. The Company follows a three-level hierarchy to prioritize the inputs used in the valuation techniques to derive fair values. The basis for fair value measurements for each level within the hierarchy is described below:

- Level 1: Quoted prices in active markets for identical assets or liabilities.
- Level 2: Quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable in active markets.
- Level 3: Valuations derived from valuation techniques in which one or more significant inputs are unobservable in active markets.

(r) Use of Estimates

The preparation of financial statements in conformity with 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 the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. Significant items subject to such estimates and assumptions include valuation of intangible assets.

(s) Accumulated Other Comprehensive Income (Loss)

Comprehensive income (loss) is comprised of net income (loss) and other comprehensive income (loss). Accumulated other comprehensive loss on the balance sheet at December 31, 2019 and 2018, includes unrealized gains and losses on the Company's available-for-sale securities.

(t) Net Income (Loss) Per Share

Basic net income (loss) per share is calculated by dividing net income (loss) available to common stockholders by the weighted average shares of common stock outstanding for the period. Diluted net income (loss) per share is calculated by dividing net income (loss) by the weighted average shares of common stock outstanding for the period plus amounts representing the dilutive effect of securities that are convertible into common stock. The Company calculates diluted income (loss) per common share using the treasury stock method.

The following table presents the computation of net income (loss) per share (in thousands, except per share data):

	For the year ended December 31		
	2019	2018	2017
Numerator:			
Net income (loss)	$ 926	$ (2,584)	$ 1,141
Denominator:			
Weighted average common shares outstanding			
Basic	9,684	9,521	9,485
Diluted	10,097	9,521	10,361
Net income (loss) per share:			
Basic	$ 0.10	$ (0.27)	$ 0.12
Diluted	$ 0.09	$ (0.27)	$ 0.11

Diluted weighted average common shares outstanding for the year ended December 31, 2019, includes 1,000 warrants and 412,000 options outstanding. Basic and diluted weighted average common shares outstanding for the year ended December 31, 2018 were the same. Diluted weighted average common shares outstanding for the year ended December 31, 2017 includes 2,000 warrants and 874,000 options outstanding.

Potentially dilutive securities (in common stock equivalent shares) not included in the calculation of diluted net income (loss) per share because to do so would be anti-dilutive are as follows (in thousands):

	For the year ended December 31		
	2019	2018	2017
Stock options	402	978	514
Warrants outstanding	—	51	—
Total	402	1,029	514

(2) Cash, Cash Equivalents and Short-Term Investments

The following tables show the Company's cash and cash equivalents and short-term investments by significant investment category as of December 31 (in thousands):

2019	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Cash and Cash Equivalents	Short-Term Investments
Cash	$ 3,950	$ —	$ —	$ 3,950	$ 3,950	$ —
Level 1(1):						
Money market funds	5,500	—	—	5,500	5,500	—
U.S. treasury securities	3,078	2	(1)	3,079	—	3,079
Subtotal	8,578	2	(1)	8,579	5,500	3,079
Level 2(2):						
Commercial paper	8,920	—	—	8,920	747	8,173
Corporate debt obligations	5,922	5	(1)	5,926	—	5,926
Repurchase agreements	3,000	—	—	3,000	3,000	—
Asset-backed securities	4,505	3	—	4,508	—	4,508
Subtotal	22,347	8	(1)	22,354	3,747	18,607
Total	$ 34,875	$ 10	$ (2)	$ 34,883	$ 13,197	$ 21,686

2018	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Cash and Cash Equivalents	Short-Term Investments
Cash	$ 3,044	$ —	$ —	$ 3,044	$ 3,044	$ —
Level 1(1):						
Money market funds	5,482	—	—	5,482	5,482	—
U.S. treasury securities	1,988	—	—	1,988	—	1,988
Subtotal	7,470	—	—	7,470	5,482	1,988
Level 2(2):						
Commercial paper	10,639	—	—	10,639	2,095	8,544
Corporate debt obligations	5,964	—	(7)	5,957	—	5,957
Repurchase agreements	3,000	—	—	3,000	3,000	—
Asset-backed securities	3,682	—	(3)	3,680	—	3,680
Subtotal	23,285	—	(10)	23,276	5,095	18,181
Total	$ 33,799	$ —	$ (10)	$ 33,790	$ 13,621	$ 20,169

(1) Level 1 fair value estimates are based on quoted prices in active markets for identical assets or liabilities.

(2) Level 2 fair value estimates are based on observable inputs other than quoted prices in active markets for identical assets and liabilities, quoted prices for identical or similar assets or liabilities in inactive markets, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

The Company's investments were primarily valued based upon one or more valuations reported by its investment accounting and reporting service provider. The investment service provider values the securities using a hierarchical security pricing models that relies primarily on valuations provided by a third-party pricing vendor. Such valuations may be based on trade prices in active markets for identical assets or liabilities (Level 1 inputs) or valuation models using inputs that are observable either directly or indirectly (Level 2 inputs), such as quoted prices for similar assets or liabilities, yield curve, volatility factors, credit spreads, default rates, loss severity, current market and contractual prices for underlying instruments or debt, broker and dealer quotes, as well as other relevant economic measures. The Company performs certain procedures to corroborate the fair value of its holdings, including comparing valuations obtained from its investment service provider with other pricing sources to validate the reasonableness of the valuations.

The Company typically invests in highly rated securities and its investment policy limits the amount of credit exposure to any one issuer. The policy requires investments in fixed income instruments denominated and payable in U.S. dollars only and requires investments to be investment grade, with a primary objective of minimizing the potential risk of principal loss.

As of December 31 the Company's short-term investments in a continuous unrealized loss position for 12 months or less are as follows (in thousands):

Description of securities	Estimated fair value	Unrealized losses
2019		
U.S. treasury securities	$ 1,218	$ (1)
Corporate debt obligations	1,428	(1)
Asset-backed securities	753	—
Total	$ 3,399	$ (2)
2018		
U.S. treasury securities	$ 1,988	$ —
Corporate debt obligations	5,957	(7)
Asset-backed securities	3,032	(3)
Total	$ 10,977	$ (10)

The Company considers the declines in market value of its short-term investments to be temporary in nature. Fair values were determined for each individual security in the investment portfolio. When evaluating an investment for other-than-temporary impairment, the Company reviews factors such as length of time and extent to which fair value has been below its cost basis; the financial condition of the issuer and any changes thereto; changes in market interest rates and the Company's intent to sell; or whether it is more likely than not it will be required to sell the investment before recovery of the investment's cost basis. As of December 31, 2019, the Company does not consider any of its investments to be other-than temporarily impaired.

The estimated fair value of contractual maturities of short-term investments as of December 31, 2019 is $21.7 million.

(3) Property and Equipment

Depreciation and amortization of property and equipment is calculated on the straight-line method based on estimated useful lives of six to ten years for tenant improvements and three to fifteen years for all other property and equipment. Property and equipment consist of the following at December 31(in thousands):

	2019	2018
Computers and software	$ 572	$ 361
Furniture, fixtures, and equipment	299	339
Manufacturing and testing equipment	3,444	2,503
Leasehold improvements	911	895
	5,226	4,098
Less accumulated depreciation	(3,118)	(2,697)
	$ 2,108	$ 1,401

Depreciation expense was $493,000, $587,000, and $436,000 for the years ended December 31, 2019, 2018, and 2017, respectively. For the year ended December 31, 2018, the Company incurred a $39,000 loss on disposals of fixed assets.

(4) Acquisitions

Antenna Plus

On April 27, 2017, the Company completed the acquisition of substantially all the assets of Antenna Plus. Goodwill from the acquisition was primarily attributable to the anticipated synergies and economies of scale expected from the operations of the combined business. The synergies include certain cost savings, operating efficiencies, and other strategic benefits projected to be achieved as a result of the acquisition. Goodwill is expected to be deductible for tax purposes.

The following table shows the allocation of the purchase price for Antenna Plus to the acquired identifiable assets, liabilities assumed and goodwill (in thousands):

Consideration:		
Cash	$	6,384
Contingent consideration arrangement		(35)
Fair value of total consideration transferred	$	6,349
Recognized amounts of identifiable assets acquired and liabilities assumed:		
Accounts receivable	$	584
Inventory		433
Fixed assets		403
Intangible assets		2,600
Current liabilities		(122)
Identifiable assets, net		3,898
Goodwill		2,451
Total	$	6,349

Sales associated with the acquired Antenna Plus assets since the date of acquisition was $5.2 million for the year ended December 31, 2017. Cost of goods sold associated with the acquired Antenna Plus assets since the date of acquisition was $2.3 million for the year ended December 31, 2017. Net income associated with the acquired Antenna Plus assets since the date of acquisition was $0.4 million for the year ended December 31, 2017.

Skycross

On December 17, 2015, the Company purchased certain assets of Skycross, Inc. (Skycross), a manufacturer of advanced antenna and radio-frequency solutions. The agreement included a purchase price of $4.0 million and contingent consideration arrangements. In the year ended December 31, 2018, the Company recognized a gain on deferred purchase price liability in settlement of the contingent arrangement as follows (in thousands):

Settlement of contingent consideration:		
Deferred purchase price	$	1,000
Due to Skycross		126
Due from Skycross		(362)
Less consideration paid		(375)
Gain on deferred purchase price	$	389

(5) Goodwill and Intangible Assets

There were no changes to the Company’s goodwill balance during the years ended December 31, 2019 and 2018.

The following is a summary of the Company's acquired intangible assets as of December 31(dollars in thousands):

2019	Weighted average amortization period (years)		Gross carrying amount		Accumulated amortization		Intangibles, net
Customer relationships	10	$	4,830	$	1,720	$	3,110
Developed technologies	9		1,080	$	406		674
Tradename	3		120	$	107		13
Total		$	6,030	$	2,233	$	3,797
2018							
Customer relationships	10	$	4,830	$	1,237	$	3,593
Developed technologies	9		1,080		274		806
Tradename	3		120		67		53
Total		$	6,030	$	1,578	$	4,452

The estimated annual amortization of intangible assets for the next five years and thereafter is shown in the following table (actual amortization expense to be reported in future periods could differ from these estimates as a result of acquisitions, divestitures, and asset impairments, among other factors) (in thousands):

		Estimated future amortization
2020	$	628
2021		598
2022		563
2023		563
2024		563
Thereafter		882
Total	$	3,797

Amortization expense was $655,000, $677,000, and $581,000 for the years ended December 31, 2019, 2018, and 2017, respectively.

(6) Long-term Notes Payable (including current portion) and Line of Credit

In December 2013, the Company amended its revolving line of credit under the amended and restated loan and security with Silicon Valley Bank to include a growth capital term loan of up to $750 thousand. The growth capital term loan matured on February 1, 2017, at which time $55 thousand in principal and accrued interest was paid. The growth capital term loan interest rate was 6.5%. As of December 31, 2019 there was no balance owed under this loan.

In December 2015, the Company further amended its amended and restated loan and security agreement with Silicon Valley Bank to include a term loan in the amount of $4.0 million. The loan required 36 monthly installments of interest and principal. The loan matured on December 1, 2018. The interest rate was fixed at 5%. In January 2018, the Company entered into a second amended and restated loan and security agreement (the Amended Loan Agreement) with Silicon Valley Bank. The Amended Loan Agreement modified the amended and restated loan and security agreement to, among other things, increase the aggregate principal amount available under the revolving line of credit from $3.0 million to $10.0 million and modify certain existing financial covenants. There was no balance owed on the line of credit as of.

Under the Amended Loan Agreement, the Company may borrow up to $10.0 million under the line of credit, subject to a borrowing base limit of 80% of the aggregate face amount of all eligible receivables. The Amended Loan Agreement removed the minimum EBITDA requirement previously applicable to the line of credit and term loan and maintained the liquidity ratio financial covenant such that the Company must maintain a ratio of cash and cash equivalents plus accounts receivable outstanding debt under the Amended Loan Agreement minus deferred revenue of 1.25 to 1.00.

The Company will be required to pay interest on borrowings outstanding, if any, under the revolving line of credit at a floating rate per annum equal to 1% above the Wall Street Journal prime rate (4.75% as of December 31, 2019) (or, if unavailable, the Silicon Valley Bank prime rate) on a monthly basis, so long as the Company maintains a liquidity ratio of cash and cash equivalents plus accounts receivable to outstanding debt under the Amended Loan Agreement minus deferred revenue of 1.50 to 1.00. If this liquidity ratio is not met, the Company will be subject to a minimum interest charge of $3 thousand per month and borrowings outstanding, if any, under the revolving line of credit will accrue interest at a floating rate per annum equal to 2% above the Wall Street Journal prime rate (4.75% as of December 31, 2019) (or, if unavailable the Silicon Valley Bank prime rate) on a monthly basis. Prior to the amendment in January 2018, the revolving line of credit bore interest rate at the U.S. prime rate plus 1.25%. The revolving line of credit matured on January 31, 2020 and was not renewed.

Silicon Valley Bank maintained a first security interest over the Company's assets, excluding intellectual property, for which Silicon Valley Bank received a negative pledge. The Amended Loan Agreement contains customary affirmative and negative covenants and events of default applicable to the Company and any of its subsidiaries. The Company was in compliance with all financial term loan and revolving line of credit financial covenants as of December 31, 2019.

(7) Treasury Stock

In August 2017 the Company's Board of Directors (Board) approved a share repurchase program (2017 Program) pursuant to which the Company may purchase up to $7.0 million of shares of its common stock over the 12-month period following the establishment of the program. The repurchases under the 2017 Program are made from time to time in the open market or in privately negotiated transactions and are funded from the Company's working capital. Repurchases will be made in compliance with Rule 10b-18 of the Securities Exchange Act of 1934, as amended, subject to market conditions, available liquidity, cash flow, applicable legal requirements, and other factors. All shares of common stock repurchased under the Company's share repurchase program will be returned to the status of authorized but unissued shares of common stock. On August 7, 2018, the Board approved an extension to the existing share repurchase program for an additional 12-month period ending August 14, 2019.

On September 9, 2019, the Board approved a new share repurchase program pursuant to which the Company may purchase up to $7.0 million of shares of its common stock over the following 12 months. This newly adopted share repurchase program mirrors all aspects and terms of the 2017 Program as described above.

In the year ended December 31, 2018, the Company repurchased an aggregate of 222,000 shares of common stock under the repurchase program at a weighted average price per share of $9.92, for a total cost of $2.2 million. In the year ended December 31, 2019, the Company repurchased 108,000 shares of common stock under the repurchase programs. These shares were repurchased at a weighted average price per share of $11.41for a total cost of $1.2 million.

As of December 31, 2019, the Company has repurchased an aggregate of 465,000 shares of common stock under the share repurchase programs at a weighted average price per share of $10.02, for a total cost of $4.7 million.

(8) Income Taxes

(a) Income Taxes

The income tax provisions for the years ended December 31 are as follows (in thousands):

	2019	2018	2017
Current:			
U.S. federal	$ 145	$ 67	$ 21
State and local	3	6	3
Total current provision	148	73	24
Deferred:			
U.S. federal	10	23	1
State and local	5	5	1
Total deferred provision	15	28	2
Total tax provision	$ 163	$ 101	$ 26

(b) Tax Rate Reconciliation

Reconciliations of the total income tax provision tax rate to the statutory federal income tax rate of 21%, 21%, and 34% for the years ended December 31, 2019, 2018, and 2017, respectively, are as follows (in thousands):

	2019	2018	2017
Income taxes at statutory rates	$ 229	$ (521)	$ 397
State income tax, net of federal benefit	8	10	4
Permanent items	(11)	18	(5)
Meals and entertainment	50	47	75
Equity based compensation	(8)	(99)	(646)
Corporate tax rate change - impact on deferred income taxes	—	—	2,768
Research and development credit	(94)	(195)	207
Federal NOL adjustment	—	—	(386)
Federal return to provision	101	(168)	53
Other federal credits	-	—	112
Other	145	64	16
Change in federal valuation allowance	(257)	945	(2,569)
	$ 163	$ 101	$ 26

(c) Significant Components of Current and Deferred Taxes

The tax effects of temporary differences that give rise to significant portions of the deferred tax assets and deferred tax liabilities at December 31, are as follows (in thousands):

	2019	2018
Deferred tax assets:		
Net operating loss carryforwards	$ 4,564	$ 4,924
Research and AMT credits	2,208	2,074
Stock based compensation	387	327
Accrued and other	748	651
	7,907	7,976
Less valuation allowance	(7,455)	(7,659)
Deferred tax assets, net of allowance	452	317
Deferred tax liabilities:		
Fixed assets	(288)	(192)
Goodwill	(216)	(163)
Deferred tax liabilities	(504)	(355)
Total deferred tax liabilities	$ (52)	$ (38)

The Company has established a valuation allowance against its net deferred tax assets due to the uncertainty surrounding the realization of such assets. The Company periodically evaluates the recoverability of the deferred tax assets. At such time it is determined that it is more likely than not that deferred assets are realizable, the valuation allowance will be reduced. The Company has recorded a valuation allowance of $7.5 million as of December 31, 2019 as it does not believe it is more likely than not that certain deferred tax assets will be realized due to the recent history of both pre-tax book income and losses, the lack of taxable income available in carryback periods or feasible tax-planning strategies, the limited existing taxable temporary differences, and the subjective nature of forecasting future taxable income into the future.

At December 31, 2019, the Company had federal and California tax loss carryforwards of approximately $19.0 million, and $5.7 million, respectively. The federal loss generated in 2018 of $1.6 million will carryforward indefinitely and be available to offset up to 80% of future taxable income each year. The remaining federal and state net operating loss carry forwards begin to expire in 2020 and 2028, respectively, if unused.

At December 31, 2019, the Company had federal and state tax credit carry forwards of approximately $1.5 million, and $1.5 million, respectively, after reduction for uncertain tax positions. The federal credits will begin to expire in 2026, if unused, and the state credits carry forward indefinitely.
Pursuant to the Internal Revenue Code of 1986, as amended (IRC), specifically IRC §382 and IRC §383, the Company's ability to use net operating loss and research and development tax credit carry forwards ("tax attribute carry forwards") to offset future taxable income is limited if the Company experiences a cumulative change in ownership of more than 50% within a three-year testing period. The Company has not completed an ownership change analysis pursuant to IRC Section 382 for taxable years ended after December 31, 2012. If ownership changes within the meaning of IRC Section 382 are identified as having occurred subsequent to 2012, the amount of remaining tax attribute carry forwards available to offset future taxable income and income tax expense in future years may be significantly restricted or eliminated. Further, the Company's deferred tax assets associated with such tax attributes could be significantly reduced upon realization of an ownership change within the meaning of IRC §382.

The following table summarizes the reconciliation of the unrecognized tax benefits activity during the years ended December 31(in thousands):

	2019	2018
Beginning unrecognized tax benefits	$ 732	$ 710
Decreases related to prior year tax positions	(7)	(65)
Increases related to current year tax positions	40	87
Ending unrecognized tax benefits	$ 765	$ 732

The unrecognized tax benefit amounts are reflected in the determination of the Company's deferred tax assets. If recognized, $9,000 of these amounts would impact company's effective tax rate. The Company does not foresee material changes to its uncertain tax benefits within the next twelve months.

The Company's policy is to recognize interest and/or penalties related to income tax matters in income tax expense. The Company has an accrual for interest or penalties of $3,000 and $2,000 on the Company's balance sheets as of December 31, 2019 and 2018, respectively, and has recognized interest and/or penalties of $1,000 in the Statement of Operations for each of the three years ended December 31, 2019.

Due to the existence of federal and state net operating loss and credit carryovers, the Company's tax years that remain open and subject to examination by tax jurisdiction are years 2000 and forward for federal and years 2006 and forward for the state of California.

(9) Stockholders' Equity

Shares Reserved for Future Issuance

The following common stock is reserved for future issuance at December 31(1) (in thousands):

	2019		2018
Warrants issued and outstanding	51		51
Stock option awards issued and outstanding	1,600		1,407
Authorized for grants under the 2016 Equity Incentive Plan	401	(2)	463
Authorized for grants under the 2016 Employee Stock Purchase Plan	186	(3)	100
	2,238		2,021

(1) Treasury stock in the amount of 465,000 and 357,000 as of December 31, 2019, and 2018, respectively, are excluded from the table above.
(2) On January 1, 2019, the number of authorized shares in the 2016 Equity Incentive Plan increased by 384,045 shares pursuant to the evergreen provisions of the 2016 Equity Incentive Plan.
(3) On January 1, 2019, the number of authorized shares in the 2016 Employee Stock Purchase Plan increased by 96,000 shares pursuant to the evergreen provisions of the 2016 Employee Stock Purchase Plan.

(10) Stock Based Compensation

(a) Stock Options

In August 2016, the Company's board of directors adopted the 2016 Equity Incentive Plan (the 2016 Plan) for employees, directors, and consultants. As of December 31, 2019, 401,000 shares are available for issuance under the 2016 Plan.

The service period for stock options granted to employees is generally one to four years.

The grant-date fair value of each option award is estimated on the date of grant using the Black-Scholes-Merton option-pricing model. The weighted average assumptions for grants during the years ended December 31, 2019, 2018, and 2017, are provided in the following table. Before 2019 the Company's lack of option exercise history did not provide it reasonable basis for estimating the expected term. Therefore, the Company estimated the expected term using the simplified method, which calculates the expected term as the average of the time-to-vesting and the contractual life of an options. Beginning in 2019 the Company uses its historical option activity data to calculate the expected terms.

Since the Company's shares have only been publicly traded since August 12, 2016 and its shares were rarely traded privately, expected volatility is estimated based on the average historical volatility of similar entities with publicly traded shares in addition to the average historical volatility of the Company. The risk-free rate for the expected term of the option is based on the U.S. Treasury yield curve at the date of grant.

Commencing in 2019 each non-employee member of the board of directors will receive an annual award on the first trading day in February of each year of (1) a number of stock options having a value of $30,000 (with the award to the chairperson of the board of directors having a value of $45,000), (calculated as of the date of grant in accordance with the Black-Scholes option pricing model) and (2) the restricted stock units described below.

	As of December 31,		
	2019	2018	2017
Valuation assumptions:			
Expected dividend yield	0%	0%	0%
Expected volatility	40.78%	37.60%	39.37%
Expected term (years)	5.96	5.86	6.06
Risk-free interest rate	2.1%	2.6%	1.9%

A summary of the Company's stock option activity is as follows (shares in thousands):

	Number of shares	Weighted average exercise price	Weighted average remaining contractual term
Balance at December 31, 2018	1,407	$ 8.73	
Granted	782	11.77	
Exercised	(176)	4.20	
Expired/Forfeited	(413)	11.45	
Balance at December 31, 2019	1,600	9.98	7.8
Vested and exercisable at December 31, 2019	746	$ 8.39	6.6
Vested and expected to vest at December 31, 2019	1,600	$ 9.98	7.8

The weighted average grant-date fair values of options granted during the years ended December 31, 2019, 2018, and 2017, were $4.93, $3.97, and $6.02, respectively. For fully vested stock options the aggregate intrinsic values were $2.3 million, $2.5 million, and $3.6 million as of December 31, 2019, 2018, and 2017, respectively. For stock options expected to vest the aggregate intrinsic values were $0.3 million, $1.0 million, and $1.5 million as of December 31, 2019, 2018, and 2017, respectively. The grant date fair value of shares vested during the years ended December 31, 2019, 2018, and 2017 was $2.1 million, $2.8 million, and $0.3 million, respectively.

At December 31, 2019, 2018, and 2017, there was $2.3 million, $2.8 million, and $2.5 million, respectively, of total unrecognized compensation cost related to unvested stock options and restricted stock granted under the plans. That cost is expected to be recognized over the next three years.

(b) Restricted Stock

The following table summarizes the Company's Restricted Stock Unit activity (shares in thousands):

	Restricted stock units	Weighted average grant date fair value
Non-vested balance at December 31, 2018	4	$ 13.67
Grants	96	11.35
Vested	(1)	13.67
Forfeitures	(18)	11.35
Non-vested balance at December 31, 2019	80	11.43

Commencing in 2019, each non-employee member of the board of directors will receive, on the first trading day in February of each year, such number of restricted stock units as is determined by dividing (a) $30,000 (with the award to the chairperson of the board of directors having a value of $45,000) by (b) the 30-day trailing average share price.

During the year ended December 31, 2019, 14,000 restricted stock units with a fair value of $10.75 per share were issued to the members of the Company's board of directors of which the shares vest on the first anniversary of the grant date, and 81,000 restricted stock units with a fair value of $11.46 per share were issued to employees of which the shares vest equally on each of the annual anniversaries over a four-year period. During the year ended December 31, 2018, 4,000 restricted stock units with a fair value of $12.62 per share were issued to a member of the Company's board of directors of which the shares vest equally on each of the annual anniversaries over a three-year period.

As of December 31, 2019, there was $0.6 million of total unrecognized stock-based compensation expense related to non-vested restricted stock units which is expected to be recognized over a remaining weighted-average vesting period of 2.7 years.

The Company currently uses authorized and unissued shares to satisfy share award exercises.

(c) Employee Stock Purchase Plan (ESPP)

The Company maintains the Employee Stock Purchase Plan (ESPP) that provides employees an opportunity to purchase common stock through payroll deductions. The ESPP is implemented through consecutive 6-month offering periods commencing on March 1 and September 1 of each year. The first offering period under the ESPP commenced on March 1, 2019. The purchase price is set at 85% of the fair market value of the Company's common stock on either the first or last trading day of the offering period, whichever is lower, and annual contributions are limited to the lower of 20% of an employee's eligible compensation or such other limits as apply under Section 423 of the Internal Revenue Code for such plans such as the ESPP. The ESPP is intended to qualify as an employee stock purchase plan for purposes of Section 423 of the Internal Revenue Code.

Based on the 15% discount and the fair value of the option feature of the ESPP, it is considered compensatory. Compensation expense is calculated using the fair value of the employees' purchase rights under the Black-Scholes model. The Company currently uses authorized and unissued shares to satisfy share award exercises.

The Company received proceeds of $97,000 from the issuance of 10,000 shares under the ESPP in August 2019.

(11) Commitments and Contingencies

(a) Operating Leases

The Company has entered into lease agreements for office space and research facilities in San Diego County, California; Melbourne, Florida; Scottsdale, Arizona; Taipei, Taiwan; Shenzhen and Jiangsu, China; and Cambridge, United Kingdom. Rent expense was $973,000, $912,000, and $805,000 for the years ended December 31, 2019, 2018, and 2017, respectively. The longest lease expires in November

2024. The Company moved into its facility in San Diego, California during the year ended December 31, 2014. The San Diego facility lease agreement included a tenant improvement allowance which provided for the landlord to pay for tenant improvements on behalf of the Company up to $515,000. Based on the terms of this landlord incentive and involvement of the Company in the construction process, the leasehold improvements purchased under the landlord incentive were determined to be property of the Company.

The future minimum lease payments required under operating leases in effect at December 31, 2019, were as follows (in thousands):

Year ending:		
2020	$	886
2021		395
2022		104
2023		72
2024		33
	$	1,490

In February 2020, the Company extended its office space lease agreement in San Diego though 2025 adding a total of approximately $3.2 million to be paid as follows; $1,212,000 in one to three years, $1.3 million in three to five years, and $0.6 million after five years.

(b) Indemnification

In some agreements to which the Company is a party, the Company has agreed to indemnify the other party for certain matters, including, but not limited to, product liability and intellectual property. To date, there have been no known events or circumstances that have resulted in any material costs related to these indemnification provisions and no liabilities have been recorded in the accompanying financial statements.

(c) Employment Agreements

On January 16, 2019, the Company entered into amended and restated employment agreements with Jacob Suen, the Company's President, Anil Doradla, the Company's Chief Financial Officer and Secretary, and Kevin Thill, the Company's Senior Vice President, Engineering.

The amended and restated employment agreements provide for an indefinite term and for at-will employment. The agreements also set forth each executive's annual base salary and target bonus opportunity and provide that each executive will be entitled to the benefits provided to employees generally.

Pursuant to the amended and restated employment agreements, severance in the aggregate amount in excess of $455,000 for termination without cause is provided.

On March 13, 2019, the Company entered into an employment agreement with James K. Sims, the Company's Chairman and Chief Executive Officer. On August 8, 2019, the Company entered into an amended and restated employment agreement with James K. Sims to appoint Mr. Sims as Advisor to the newly appointed Chief Executive Officer. The amended and restated employment agreement provided for a term that expired on February 9, 2020, and for at-will employment. The agreement also sets forth Mr. Sim's annual base salary and target bonus opportunity and provides that he will be entitled to the benefits provided to employees generally. Pursuant to the agreement, Mr. Sims is eligible for severance in excess of $400,000.

On August 8, 2019, the Company entered into an amendment to the amended and restated employment agreement with Jacob Suen in connection with his promotion to Chief Executive Officer of the Company. The amendment to the amended and restated employment agreement also sets forth Mr. Suen's annual base salary.

On November 30, 2019, Anil Doradla, the Company's Chief Financial Officer resigned from his position. Following his resignation, Mr. Doradla provided consulting services to the Company for three months and his outstanding stock awards continued to vest during the term of his consulting services.

On January 13, 2020, the Company entered into an employment agreement with David B. Lyle, the Company's Chief Financial Officer and Secretary. The agreement sets forth Mr. Lyle's base salary, target bonus, and stock awards.

(12) Concentration of Credit Risk

(a) Concentration of Sales and Accounts Receivable

The following represents customers that accounted for 10% or more of total revenue during the years ended December 31, 2019, 2018, and 2017, and customers that accounted for 10% or more of total trade accounts receivable at December 31, 2019 and 2018:

	For the year ended December 31		
	2019	**2018**	**2017**
Percentage of net revenue			
Customer A	36%	36%	21%
Customer B	14%	8%	13%
Customer C	5%	7%	10%

	As of December 31	
	2019	**2018**
Percentage of gross trade accounts receivable		
Customer A	33%	32%
Customer B	14%	0%
Customer C	3%	14%
Customer D	5%	14%

(b) Concentration of Purchases

During the years ended December 31, 2019 and 2018, all of the Company's products were manufactured in our Scottsdale, Arizona facilities and by two vendors in China. During the year ended December 31, 2017, all the Company's products were manufactured in Shullsburg, Wisconsin and Scottsdale, Arizona facilities and by two vendors in China. The Shullsburg, Wisconsin facility was closed in July 2017.

(13) Disaggregated Revenues

Disaggregated revenues for the years ended December 31 are as follows (in thousands):

By Sales Channel

	2019	2018	2017
Fullfilment distributors	$ 32,273	$ 34,389	$ 21,802
OEM/ODM/CM	$ 17,075	20,155	21,504
Other	$ 6,391	6,081	6,215
Total	$ 55,739	$ 60,625	$ 49,521

By Geography

	2019	2018	2017
Asia	$ 40,810	$ 45,235	$ 33,165
North America	11,611	9,979	8,775
Other	3,318	5,412	7,581
Total	$ 55,739	$ 60,625	$ 49,521

(14) Termination Costs

On June 30, 2018, the Company terminated a marketing-related agreement to better align its sales and marketing efforts with its longer-term growth objectives and near-to-immediate term profitability goals. In consideration of terminating the agreement, the Company paid $1.3 million in termination costs. The termination costs were included in sales and marketing expense on the statement of operations for the year ended December 31, 2018.

On May 2, 2018, Charles Myers, the Company's Chief Executive Officer, President and member of the Board resigned from all positions with the Company, effective immediately, to pursue other opportunities. The Board accepted Mr. Myers resignation on May 2, 2018. Mr. Myer's decision to resign was not related to a disagreement with the Company over any of its operations, policies, or practices.

In connection with his resignation, Mr. Myers, upon a general release of claims as set forth in his employment agreement, received a lump sum cash payment in the amount of $484,000; a lump sum cash payment in the amount $3,000 covering twelve months of monthly premiums for disability insurance under the Company's disability insurance plan; a lump sum cash payment in the amount of $20,000 covering certain other employment benefits; the acceleration of all his unvested options for a total of 283,000 shares and the continuation of his health coverage pursuant to COBRA at the Company's expense for a period of twelve months following his last day of employment. In connection with Mr. Myers' resignation, the Company recognized stock compensation expense of $1.2 million for the year ended December 31, 2018. Mr. Myers' costs were included in general and administrative expense on the statement of operations for the year ended December 31, 2018.

On April 2, 2018, Glenn Selbo, the Company's Chief Operating Officer, resigned from his position with the Company. Following his resignation, Mr. Selbo will be providing consulting services to the Company. Mr. Selbo's outstanding stock options continue to vest during the term of his consulting services.

In connection with his resignation, Mr. Selbo, upon a general release of claims as set forth in his employment agreement, received a lump sum cash payment in the amount of $150,000 and the continuation of his health coverage pursuant to COBRA at the Company's expense for a period of six months following his last day of employment. In connection with Mr. Selbo's resignation, the Company recognized stock compensation expense of $44,000. Mr. Selbo's costs were included in sales and marketing expense on the statement of operations for the year ended December 31, 2018.

(15) Employee Benefit Plan

The Company established a discretionary 401(k) plan effective January 2005. The 401(k) plan was amended and restated in May 2006. The 401(k) plan covers substantially all employees who have attained age 21. The participants may elect to defer a percentage of their compensation as allowable by law. The Company can make discretionary matching contributions but has not done so through December 31, 2019.

(16) Quarterly Financial Information (unaudited)

The following is a summary of the quarterly results of operations for the years ended December 31, 2019 and 2018 (in thousands except per share data):

	For the three months ended			
2019	**December 31**	**September 30**	**June 30**	**March 31**
Sales	$ 13,028	$ 13,142	$ 14,462	$ 15,107
Gross profit	5,779	6,075	6,685	6,785
Total operating expenses	5,868	6,280	6,189	6,607
Net income (loss)	63	(135)	662	336
Basic net income (loss) per share	0.01	(0.01)	0.07	0.03
Diluted net income (loss) per share	0.01	(0.01)	0.07	0.03
2018				
Sales	$ 16,562	$ 15,787	$ 14,972	$ 13,305
Gross profit	6,850	6,865	6,602	6,194
Total operating expenses	5,730	6,558	10,251	7,358
Net income (loss)	1,275	437	(3,190)	(1,106)
Basic net loss per share	0.13	0.05	(0.34)	(0.12)
Diluted net loss per share	0.13	0.04	(0.34)	(0.12)

EXHIBIT INDEX

Exhibit Number	Description of Exhibit
3.1(1)	Amended and Restated Certificate of Incorporation
3.2(1)	Amended and Restated Bylaws
4.1(2)	Specimen stock certificate evidencing the shares of common stock
4.2(2)	Form of Warrant issued to Northland Securities, Inc. in connection with the Registrant's initial public offering
4.3	Description of Registered Securities
10.1(3)	Office Lease, dated June 13, 2013, by and between Kilroy Realty, L.P. and the Registrant
10.2(2)	Form of Indemnity Agreement for Directors and Officers
10.3#(3)	Airgain, Inc. 2003 Equity Incentive Plan
10.4#(3)	Form of Stock Option Agreement under the Airgain, Inc. 2003 Equity Incentive Plan
10.5#(3)	Airgain, Inc. 2013 Equity Incentive Plan
10.6#(3)	Form of Stock Option Grant Notice and Stock Option Agreement under the Airgain, Inc. 2013 Equity Incentive Plan
10.7#(3)	Restricted Stock Grant Notice and Restricted Stock Agreement under the Airgain, Inc. 2013 Equity Incentive Plan dated March 1, 2014, by and between Charles Myers and the Registrant
10.8#(2)	Airgain, Inc. 2016 Incentive Award Plan
10.9#(2)	Form of Stock Option Agreement under the Airgain, Inc. 2016 Incentive Award Plan
10.10#(4)	Form of Restricted Stock Unit Agreement under the Airgain, Inc. 2016 Incentive Award Plan
10.11#(2)	Airgain, Inc. 2016 Employee Stock Purchase Plan
10.12#(4)	Non-Employee Director Compensation and Stock Ownership Program (as amended through October 25, 2018)
10.13#(4)	Release Agreement, dated April 20, 2018, by and between Glenn Selbo and the Registrant
10.14#(5)	Employment Transition Agreement, dated March 15, 2018, by and between Leo Johnson and the Registrant
10.15#(4)	Release Agreement, dated May 2, 2018, by and between Charles A. Myers and the Registrant
10.16#(4)	Letter Agreement, dated May 8, 2018, by and between James K. Sims and the Registrant
10.17#(4)	Employment Agreement, dated October 25, 2018, by and between James K. Sims and the Registrant
10.18#(4)	Amended and Restated Employment Agreement, dated January 16, 2019, by and between Jacob Suen and the Registrant
10.19#(4)	Amended and Restated Employment Agreement, dated January 16, 2019, by and between Anil Doradla and the Registrant
10.20#(4)	Amended and Restated Employment Agreement, dated January 16, 2019, by and between Kevin Thill and the Registrant
10.21#(4)	Amended and Restated Employment Agreement, dated March 13, 2019, by and between James K. Sims and the Registrant
10.22(6)	Asset Purchase Agreement, dated as of April 7, 2017, by and between the Registrant and MCA Financial Group, Inc. acting as the appointed received for Antenna Plus, LLC.

Exhibit Number	Description of Exhibit
10.23(7)	Second Amended and Restated Loan and Security Agreement, dated January 31, 2018, by and between Silicon Valley Bank and the Registrant
10.24#(8)	Amendment to Amended and Restated Employment Agreement, dated August 8, 2019, by and between Jacob Suen and the Registrant
10.25#(8)	Amended and Restated Employment Agreement, dated August 8, 2019, by and between James K. Sims and the Registrant
10.26#	Employment Agreement, dated January 13, 2020, by and between David Lyle and the Registrant
23.1	Consent of KPMG LLP, independent registered public accounting firm
31.1	Certification of Chief Executive Officer pursuant to Rules 13a-14 and 15d-14 promulgated pursuant to the Securities Exchange Act of 1934, as amended
31.2	Certification of Chief Financial Officer pursuant to Rules 13a-14 and 15d-14 promulgated pursuant to the Securities Exchange Act of 1934, as amended
32.1*	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2*	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

(1) Incorporated by reference to the Registrant's Current Report on Form 8-K, filed with the SEC on August 17, 2016.

(2) Incorporated by reference to Amendment No. 1 to the Registrant's Registration Statement on Form S-1 (Registration No. 333-212542), filed with the SEC on July 29, 2016.

(3) Incorporated by reference to the Registrant's Registration Statement on Form S-1 (Registration No. 333-212542), filed with the SEC on July 15, 2016.

(4) Incorporated by reference to the Registrant's Annual Report on Form 10-K, filed with the SEC on March 15, 2019

(5) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q, filed with the SEC on November 8, 2018.

(6) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q, filed with the SEC on May 12, 2017.

(7) Incorporated by reference to the Registrant's Annual Report on Form 10-K, filed with the SEC on March 15, 2018.

(8) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q, filed with the SEC on November 7, 2019.

\# Indicates management contract or compensatory plan.

* These certifications are being furnished solely to accompany this annual report pursuant to 18 U.S.C. Section 1350, and are not being filed for purposes of Section 18 of the Securities Exchange Act of 1934 and are not to be incorporated by reference into any filing of the Registrant, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

SIGNATURES

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

AIRGAIN, INC.

/s/ Jacob Suen
Jacob Suen
Chief Executive Officer

Date: February 28, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this annual report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Jacob Suen **Jacob Suen**	Chief Executive Officer, President and Director (Principal Executive Officer)	February 28, 2020
/s/ David B. Lyle **David B. Lyle**	Chief Financial Officer (Principal Financial and Accounting Officer)	February 28, 2020
/s/ James K. Sims **James K. Sims**	Chairman	February 28, 2020
/s/ Tzau-Jin Chung **Tzau-Jin Chung**	Director	February 28, 2020
/s/ Joan H. Gillman **Joan H. Gillman**	Director	February 28, 2020
/s/ Thomas A. Munro **Thomas A. Munro**	Director	February 28, 2020
/s/ Arthur M. Toscanini **Arthur M. Toscanini**	Director	February 28, 2020

Exhibit 4.3

DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

Airgain, Inc. ("Airgain," "we," "our" and "us") has one class of securities registered pursuant to Section 12 of the Securities Exchange Act of 1934, as amended: our common stock.

Description of Common Stock

General

The following summary of the terms of our common stock does not purport to be complete and is subject to and qualified in its entirety by reference to our amended and restated certificate of incorporation and amended and restated bylaws, which are filed as exhibits to our most recent Annual Report on Form 10-K and are incorporated by reference herein.

As of December 31, 2019, our authorized capital stock consists of:

- 200,000,000 shares of common stock, $0.0001 par value; and
- 10,000,000 shares of preferred stock, $0.0001 par value.

Voting Rights

Each share of common stock entitles the holder to one vote with respect to each matter presented to our stockholders on which the holders of common stock are entitled to vote, including the election of directors. Holders of our common stock will not have cumulative voting rights. Except in respect of matters relating to the election and removal of directors on our board of directors and as otherwise provided in our amended and restated certificate of incorporation or required by law, all matters to be voted on by our stockholders must be approved by a majority of the shares present in person or by proxy at the meeting and entitled to vote on the subject matter. In the case of election of directors, all matters to be voted on by our stockholders must be approved by a plurality of the votes entitled to be cast by all shares of common stock. Accordingly, the holders of a majority of the outstanding shares of common stock entitled to vote in any election of directors can elect all of the directors standing for election, if they so choose, other than any directors that holders of any preferred stock we may issue may be entitled to elect.

Dividends

Subject to preferences that may apply to any shares of preferred stock outstanding at the time, the holders of our common stock will be entitled to share equally, identically, and ratably in any dividends that our board of directors may determine to issue from time to time.

Liquidation Rights

In the event of any voluntary or involuntary liquidation, dissolution, or winding up of our affairs, holders of our common stock would be entitled to share ratably in our assets that are legally available for distribution to stockholders after payment of our debts and other liabilities. If we have any preferred stock outstanding at such time, holders of the preferred stock may be entitled to distribution and/or liquidation preferences. In either such case, we must pay the applicable distribution to the holders of our preferred stock before we may pay distributions to the holders of our common stock.

Other Rights

Our stockholders have no preemptive, conversion, or other rights to subscribe for additional shares and there are no redemption or sinking funds provisions applicable to the common stock.

Fully Paid and Nonassessable

All outstanding shares are of our common stock are validly issued, fully paid, and nonassessable. The rights, preferences, and privileges of the holders of our common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of our preferred stock that we may designate and issue in the future.

Listing

Our common stock is listed for trading on the Nasdaq Capital Market under the symbol "AIRG."

Transfer Agent

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC.

Anti-Takeover Effects of Delaware Law and Our Certificate of Incorporation and Bylaws

Some provisions of Delaware law, our amended and restated certificate of incorporation and our amended and restated bylaws contain provisions that could make the following transactions more difficult: an acquisition of us by means of a tender offer; an acquisition of us by means of a proxy contest or otherwise; or the removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions which provide for payment of a premium over the market price for our shares.

These provisions, summarized below, are intended to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of the increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging these proposals because negotiation of these proposals could result in an improvement of their terms.

Undesignated Preferred Stock

The ability of our board of directors, without action by the stockholders, to issue up to 10,000,000 shares of undesignated preferred stock with voting or other rights or preferences as designated by our board of directors could impede the success of any attempt to change control of us. These and other provisions may have the effect of deferring hostile takeovers or delaying changes in control or management of our company.

Stockholder Meetings

Our amended and restated bylaws provide that a special meeting of stockholders may be called only by our chairman of the board, chief executive officer, or president (in the absence of a chief executive officer), or by a resolution adopted by a majority of our board of directors.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our amended and restated bylaws establish advance notice procedures with respect to stockholder proposals to be brought before a stockholder meeting and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board of directors.

Elimination of Stockholder Action by Written Consent

Our amended and restated certificate of incorporation and amended and restated bylaws eliminate the right of stockholders to act by written consent without a meeting.

Staggered Board

Our board of directors is divided into three classes. The directors in each class serve for a three-year term, one class being elected each year by our stockholders. This system of electing and removing directors may tend to discourage a third-party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Removal of Directors

Our amended and restated certificate of incorporation provides that no member of our board of directors may be removed from office by our stockholders except for cause and, in addition to any other vote required by law, upon the approval of not less than two thirds of the total voting power of all of our outstanding voting stock then entitled to vote in the election of directors.

Stockholders Not Entitled to Cumulative Voting

Our amended and restated certificate of incorporation does not permit stockholders to cumulate their votes in the election of directors. Accordingly, the holders of a majority of the outstanding shares of our common stock entitled to vote in any election of directors can elect all of the directors standing for election, if they choose, other than any directors that holders of our preferred stock may be entitled to elect.

Delaware Anti-Takeover Statute

We are subject to Section 203 of the General Corporation Law of the State of Delaware, which prohibits persons deemed to be "interested stockholders" from engaging in a "business combination" with a publicly held Delaware corporation for three years following the date these persons become interested stockholders unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an "interested stockholder" is a person who, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation's voting stock. Generally, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the board of directors.

Choice of Forum

Our amended and restated certificate of incorporation provides that, unless we consent in writing to the selection of an alternative form, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for: (1) any derivative action or proceeding brought on our behalf; (2) any action asserting a claim of breach of a fiduciary duty or other wrongdoing by any of our directors, officers, employees or agents to us or our stockholders; (3) any action asserting a claim against us arising pursuant to any provision of the General Corporation Law of the State of Delaware, our amended and restated certificate of incorporation or our amended and restated bylaws; (4) any action to interpret, apply, enforce, or determine the validity of our amended and restated certificate of incorporation or bylaws; or (5) any action asserting a claim governed by the internal affairs doctrine. Our amended and restated certificate of incorporation also provides that any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock will be deemed to have notice of and to have consented to this choice of forum provision. It is possible that a court of law could rule that the choice of forum provision contained in our amended and restated certificate of incorporation is inapplicable or unenforceable if it is challenged in a proceeding or otherwise.

Amendment of Charter Provisions

The amendment of any of the above provisions, except for the provision making it possible for our board of directors to issue preferred stock, would require approval by holders of at least two thirds of the total voting power of all of our outstanding voting stock. The provisions of Delaware law, our amended and restated certificate of incorporation, and our amended and restated bylaws; could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in the composition of our board and management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

EMPLOYMENT AGREEMENT

This EMPLOYMENT AGREEMENT ("Agreement"), effective as of January 13, 2020 (the "Effective Date"), is made by and between AIRGAIN, INC. (the "Company"), and DAVID LYLE ("Employee").

WHEREAS, the Board of Directors of the Company (the "Board") has determined that it is in the best interests of the Company and its shareholders to employ Employee under the following terms and conditions; and

WHEREAS, Employee desires to be employed by the Company and to accept such terms and conditions of employment as are contained in this Agreement.

NOW, THEREFORE, in consideration of the promises and mutual covenants contained herein and for other good and valuable consideration, the receipt of which is mutually acknowledged, the Company and Employee (individually a "Party" and together the "Parties") agree as follows:

AGREEMENT

1. Effective Date.

Employee's employment under the terms of this Agreement shall commence on the Effective Date.

2. At-will Employment.

Employee's employment relationship with the Company under this Agreement ("Employment") is at-will, terminable at any time and for any reason by either the Company or Employee. While certain sections of this Agreement describe events that could occur at a particular time in the future, nothing in this Agreement shall be construed as a guarantee of employment of any length.

3. Employment Duties.

a. Title/Responsibilities. Effective from and after the Effective Date, Employee shall be the Chief Financial Officer and Secretary of the Company, reporting to the Chief Executive Officer and President (the "Supervising Officer") of the Company. Employee shall perform all of the duties and responsibilities of such offices set forth in the Bylaws of the Company and those commonly associated with such offices and such further duties and responsibilities as may from time to time be assigned to him by the Board or the Supervising Officer.

b. Full-Time Attention. Employee shall devote his full time, attention, energy and skills to the Company during the period he is employed under this Agreement.

c. Policy Compliance. Employee shall comply with all of the Company's policies, practices and procedures, as well as, all applicable laws. As a condition to his commencement of employment, Employee will execute and deliver to the Company the Employee Proprietary Information and Inventions Assignment Agreement (the "Employee Proprietary Information and Inventions Assignment Agreement") attached hereto as Exhibit 1.

4. Compensation.

a. Base Salary. The Company shall pay Employee a base salary of $325,000 per year, or such higher amount as the Board may determine from time to time, less applicable federal and state withholding taxes, in accordance with the Company's regular payroll practices (the "Base Salary").

b. Annual Bonus Compensation. In addition to the Base Salary, Employee will be eligible to receive an incentive bonus (the "Bonus") at an initial target for 2020 of 60% of his Base Salary (the "Target Bonus").

c. Effective Date Awards.

i. On the Effective Date, the Company shall grant to Employee stock options to purchase an aggregate of 100,000 shares of the Company's common stock (the "Stock Option"). The Stock Option shall vest as follows: 25% of the original number of shares subject to the Stock Option shall vest on the first anniversary of the Effective Date, and 1/48th of the original number of shares subject to the Stock Option shall vest following each one-month period thereafter, subject to Employee's continued service to the Company through each such vesting date, so that all of the shares subject to the Stock Option shall be vested on the fourth (4th) anniversary of the Effective Date. The Stock Option will be granted pursuant to the Company's 2016 Incentive Award Plan (the "Plan"). The Stock Option will have an exercise price per share equal to the then-current fair market value per share of the common stock of the Company (as determined pursuant to the Plan) on the date of grant. The Stock Option shall be an incentive stock option to the extent permitted under Section 422 of the Internal Revenue Code of 1986, as amended (the "Code"). The Stock Option shall have a ten-year term and shall be subject to the terms and conditions of the Plan and the stock option agreement pursuant to which the Stock Option is granted.

ii. On the Effective Date, the Company shall grant to Employee 35,000 restricted stock units (the "RSUs"). The RSUs will be granted pursuant to the Plan. The RSUs shall vest in four equal annual installments on each of March 1, 2021, 2022, 2023, and 2024, subject to Employee's continued service to the Company through each such vesting date. The RSUs shall be subject to the terms and conditions of the Plan and the stock option agreement pursuant to which the RSUs are granted.

iii. Notwithstanding the foregoing, the Stock Option and the RSUs (and all Equity Awards held by Employee (as defined below)) shall become fully vested in the event of Employee's termination of employment by the Company without Cause (as defined below), or Employee's Resignation for Good Reason (as defined below), in each case within sixty (60) days prior to a Change in Control or at any time following a Change in Control (as defined below). For the avoidance of doubt, any acceleration in the event of Employee's termination of employment by the Company without Cause or Employee's Resignation for Good Reason within sixty (60) days prior to a Change in Control will be effective on the date of the Change in Control occurring within such sixty (60) day period following such termination.

iv. For purposes of this Agreement, "Equity Awards" means all stock options, restricted stock, restricted stock units and such other awards granted pursuant to the Company's stock option and equity incentive award plans or agreements and any shares of stock issued upon exercise thereof, including the Stock Option and the RSUs.

d. Additional Equity Awards. Employee shall be entitled to participate in any equity or other employee benefit plan that is generally available to senior executive officers, as distinguished from general management, of the Company. Except as otherwise provided in this Agreement, Employee's participation in and benefits under any such plan shall be on the terms and subject to the conditions specified in the governing document of the particular plan.

e. Employee Benefits. Employee shall be entitled to participate in all employee benefit plans, programs and arrangements maintained by the Company and made available to employees generally, including, without limitation, bonus, retirement, profit sharing and savings plans and medical, disability, dental, life and accidental death and dismemberment insurance plans.

f. Reimbursement of Expenses. During his Employment with the Company, Employee shall be entitled to reimbursement for all reasonable and necessary business expenses incurred on behalf of the Company, including without limitation, travel and entertainment expenses, business supplies and communication expenses, in accordance with the Company's policies and procedures.

5. Voluntary Resignation or Termination for "Cause."

a. Payment upon Voluntary Resignation other than for Good Reason or Termination for Cause. If Employee voluntarily resigns his Employment other than for Good Reason or if Employee is terminated for Cause, the Company shall pay Employee the following: (i) all accrued and unpaid Base Salary, if any is due, through the date of termination and any vacation which is accrued but unused as of such date; (ii) Employee's business expenses that are reimbursable pursuant to this Agreement and Company policies, but which have not been reimbursed by the Company as of the date of termination; and (iii) the Employee's Bonus compensation for the calendar year immediately preceding the year in which the date of termination occurs if such Bonus has been determined but not paid as of the date of termination (payable at the time such Bonus would otherwise have been paid to Employee, but in no event later than March 15 of the year in which the date of termination occurs) (collectively, the "Accrued Obligations"). Employee shall not be eligible for severance payments under Sections 6, 7 or 8 below, or any continuation of benefits (other than as required by law), or any other compensation pursuant to this Agreement or otherwise.

b. Definition of "Cause". As set forth above, the employment relationship between the Parties is at-will, terminable at any time by either Party for any reason or no reason. The termination may nonetheless be for "Cause". For purposes of this Agreement, "Cause" is defined as the Company's good faith determination of: (i) Employee's material breach of this

Agreement or the Employee Proprietary Information and Inventions Assignment Agreement or the definitive agreements relating to the Equity Awards referenced in Section 4(c) above; (ii) Employee's continued substantial and material failure or refusal to perform according to, or to comply with, the policies, procedures or practices established by the Company; (iii) the appropriation (or attempted appropriation) of a material business opportunity of the Company, including attempting to secure or securing any personal profit in connection with any transaction entered into on behalf of the Company; (iv) the misappropriation (or attempted appropriation) of any of the Company's funds or property of any kind; (v) willful gross misconduct; or (vi) Employee's conviction of a felony involving moral turpitude that is likely to inflict or has inflicted material injury on the business of the Company; provided, however, that except for Cause being the result of item (vi) above, the Company shall provide written notice to Employee, which notice specifically identifies the nature of the alleged Cause claimed by the Company with enough specificity for Employee to be able to cure, and Employee shall thereafter have fifteen (15) days to cure the purported ground(s) for Cause.

c. Definition of "Good Reason". For purposes of this Agreement, "Good Reason" and "Resignation for Good Reason" are defined as:

i. a material reduction in Employee's authority, duties or responsibilities relative to Employee's authority, duties or responsibilities in effect immediately prior to such reduction;

ii. a material reduction by the Company in Employee's Base Salary relative to Employee's Base Salary in effect immediately prior to such reduction (and the Parties agree that a reduction of ten percent (10%) or more will be considered material for purposes of this clause (ii)), other than a general reduction in the base salaries of similarly-situated employees of the Company;

iii. a material change in the geographic location at which Employee must perform his duties (and the Company and Employee agree that any requirement that Employee be based at any place outside a 25-mile radius of his or her place of employment as of the Effective Date, except for reasonably required travel on the Company's or any successor's or affiliate's business that is not materially greater than such travel requirements prior to the Effective Date, shall be considered a material change); or

iv. the Company's material breach of this Agreement;

provided, however, that Employee must provide written notice to the Board of the condition that could constitute a "Good Reason" event within ninety (90) days of the initial existence of such condition and such condition must not have been remedied by the Company within thirty (30) days (the "Cure Period") of such written notice. Employee's Resignation for Good Reason must occur within six (6) months following the initial existence of such condition.

6. Termination Without "Cause" or "Resignation for Good Reason". In the event Employee is terminated without Cause or resigns for Good Reason, Employee shall be entitled

to:

a. the Accrued Obligations; plus

b. subject to Employee's execution and non-revocation of a full and final Release (as defined in Section 9 below) and Employee's continued compliance with the Employee Proprietary Information and Inventions Assignment Agreement, severance pay in an amount equal to the sum of (i) twelve (12) months' Base Salary as in effect immediately prior to the date of termination, plus (ii) an amount equal to Employee's Target Bonus for the calendar year during which the date of termination occurs, prorated for such portion of the calendar year during which such termination occurs that has elapsed through the date of termination, payable in a lump sum on the date that is thirty (30) days following the date of termination; plus

c. subject to Employee's execution and non-revocation of a full and final Release and Employee's continued compliance with the Employee Proprietary Information and Inventions Assignment Agreement, for the period beginning on the date of Employee's termination of employment and ending on the date which is twelve (12) full months following the date of Employee's termination of employment (or, if earlier, the date on which the applicable continuation period under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA") expires) (the "COBRA Coverage Period"), the Company shall arrange to provide Employee and his eligible dependents who were covered under the Company's health insurance plans as of the date of Employee's termination of employment with health (including medical and dental) insurance benefits substantially similar to those provided to Employee and his dependents immediately prior to the date of such termination. If the Company is not reasonably able to continue health insurance benefits coverage under the Company's insurance plans, the Company shall provide substantially equivalent coverage under other third-party insurance sources. If any of the Company's health benefits are self-funded as of the date of Employee's termination of employment, or if the Company cannot provide the foregoing benefits in a manner that is exempt from or otherwise compliant with applicable law (including, without limitation, Section 409A of the Code and Section 2716 of the Public Health Service Act), instead of providing continued health insurance benefits as set forth above, the Company shall instead pay to Employee an amount equal to the monthly premium payment for Employee and his eligible dependents who were covered under the Company's health plans as of the date of Employee's termination of employment (calculated by reference to the premium as of the date of termination) as currently taxable compensation in substantially equal monthly installments over the COBRA Coverage Period (or the remaining portion thereof).

7. Employee's Disability or Death. Employee's employment shall terminate automatically in the event of Employee's death or termination of employment by reason of his "Disability." In the event of Employee's death or termination of employment as a result of Employee's Disability, Employee or his heirs shall be entitled to (a) the Accrued Obligations, plus (b) payment of an amount equal to Employee's "earned" Bonus for the calendar year during which Employee's date of termination occurs calculated as of the date of termination (wherein "earned" means that Employee has met the applicable bonus metrics as of date of such termination, as determined by the Board), prorated for such portion of the calendar year during which such termination occurs that has elapsed through the date of termination, payable in a lump sum on the date that is thirty (30) days following the date of termination. For purposes of this Agreement, "Disability" shall mean the Employee's failure to perform his duties hereunder, for a period of not less than one hundred twenty (120) consecutive days

because of Employee's incapacitation due to physical or mental injury, disability, or illness.

8. Change in Control Termination.

a. Payment Upon Change in Control Termination. In the event of a "Change in Control Termination", as defined below, Employee shall be entitled to:

i. the Accrued Obligations; plus

ii. subject to Employee's execution and non-revocation of a full and final Release and Employee's continued compliance with the Employee Proprietary Information and Inventions Assignment Agreement, severance pay in an amount equal to the sum of (a) twelve (12) months' Base Salary as in effect immediately prior to the date of termination, plus (b) Employee's Target Bonus for the calendar year during which such date of termination occurs, payable in a lump sum on the date that is thirty (30) days following the date of termination; plus

iii. subject to Employee's execution and non-revocation of a full and final Release and Employee's continued compliance with the Employee Proprietary Information and Inventions Assignment Agreement, for the period beginning on the date of Employee's termination of employment and ending on the date which is eighteen (18) full months following the date of Employee's termination of employment (or, if earlier, the date on which the applicable continuation period under COBRA expires) (the "CIC COBRA Coverage Period"), the Company shall arrange to provide Employee and his eligible dependents who were covered under the Company's health insurance plans as of the date of Employee's termination of employment with health (including medical and dental) insurance benefits substantially similar to those provided to Employee and his dependents immediately prior to the date of such termination. If the Company is not reasonably able to continue health insurance benefits coverage under the Company's insurance plans, the Company shall provide substantially equivalent coverage under other third-party insurance sources. If any of the Company's health benefits are self-funded as of the date of Employee's termination of employment, or if the Company cannot provide the foregoing benefits in a manner that is exempt from or otherwise compliant with applicable law (including, without limitation, Section 409A of the Code and Section 2716 of the Public Health Service Act), instead of providing continued health insurance benefits as set forth above, the Company shall instead pay to Employee an amount equal to the monthly premium payment for Employee and his eligible dependents who were covered under the Company's health plans as of the date of Employee's termination of employment (calculated by reference to the premium as of the date of termination) as currently taxable compensation in substantially equal monthly installments over the CIC COBRA Coverage Period (or the remaining portion thereof).

b. Definition of "Change in Control Termination". A "Change in Control Termination" occurs if Employee (i) is terminated without Cause, or (ii) terminates his employment pursuant to a Resignation for Good Reason, in each case within twelve (12) months following a "Change in Control" (as defined below). For purposes of this Agreement, a "Change in Control" means and includes each of the following:

i. A transaction or series of transactions (other than an offering of the Company's common stock to the general public through a registration statement filed with the Securities and Exchange Commission or a transaction or series of transactions that meets the requirements of clauses (x) and (y) of subsection (iii) below) whereby any "person" or related "group" of "persons" (as such terms are used in Sections 13(d) and 14(d)(2) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") (other than the Company, any of its subsidiaries, an employee benefit plan maintained by the Company or any of its subsidiaries or a "person" that, prior to such transaction, directly or indirectly controls, is controlled by, or is under common control with, the Company) directly or indirectly acquires beneficial ownership (within the meaning of Rule 13d-3 under the Exchange Act) of securities of the Company possessing more than fifty percent (50%) of the total combined voting power of the Company's securities outstanding immediately after such acquisition; or

ii. During any period of two consecutive years, individuals who, at the beginning of such period, constitute the Board together with any new director(s) (other than a director designated by a person who shall have entered into an agreement with the Company to effect a transaction described in subsections (i) or (iii)) whose election by the Board or nomination for election by the Company's stockholders was approved by a vote of at least two-thirds (2/3) of the directors then still in office who either were directors at the beginning of the two (2)-year period or whose election or nomination for election was previously so approved, cease for any reason to constitute a majority thereof; or

iii. The consummation by the Company (whether directly involving the Company or indirectly involving the Company through one or more intermediaries) of (A) a merger, consolidation, reorganization, or business combination or (B) a sale or other disposition of all or substantially all of the Company's assets in any single transaction or series of related transactions or (C) the acquisition of assets or stock of another entity, in each case other than a transaction:

x. which results in the Company's voting securities outstanding immediately before the transaction continuing to represent (either by remaining outstanding or by being converted into voting securities of the Company or the person that, as a result of the transaction, controls, directly or indirectly, the Company or owns, directly or indirectly, all or substantially all of the Company's assets or otherwise succeeds to the business of the Company (the Company or such person, the "Successor Entity")) directly or indirectly, at least a majority of the combined voting power of the Successor Entity's outstanding voting securities immediately after the transaction, and

y. after which no person or group beneficially owns voting securities representing fifty percent (50%) or more of the combined voting power of the Successor Entity; provided, however, that no person or group shall be treated for purposes of this clause (y) as beneficially owning fifty percent (50%) or more of the combined voting power of the Successor Entity solely as a result of the voting power held in the Company prior to the consummation of the transaction.

In addition, if a Change in Control constitutes a payment event with respect to any payment under this Agreement which provides for the deferral of compensation and is subject to Section 409A of the Code, the transaction or event described in clause (i), (ii), or (iii) with respect to such payment must also constitute a "change in control event," as defined in Treasury Regulation Section 1.409A-3(i)(5) to the extent required by Section 409A of the Code.

9. Release. Notwithstanding any provision to the contrary in this Agreement, no amount shall be paid or benefit provided pursuant to Section 6 or Section 8 (other than the Accrued Obligations) and no accelerated vesting of the Equity Awards shall occur as a result of Employee's termination of employment pursuant to Section 4(c) unless, on or prior to the thirtieth (30th) day following the date of Employee's termination of employment, an effective general release of claims agreement (the "Release") in substantially the form attached hereto as Exhibit 2 has been executed by Employee and remains effective on such date and any applicable revocation period thereunder has expired.

10. Notices. Any reports, notices or other communications required or permitted to be given by either Party hereto, shall be given in writing by personal delivery, overnight courier service, or by registered or certified mail, postage prepaid, return receipt requested, addressed to the Company at its principal executive offices and to Employee at his most recent address on the Company's payroll records.

11. Notice of Termination. Any purported termination of Employment by the Company or the Employee shall be communicated by written Notice of Termination to the other Party. For purposes of this Agreement, a "Notice of Termination" shall mean a notice which indicates, if applicable, the specific termination provision in this Agreement relied upon and shall set forth in reasonable detail the facts and circumstances claimed to provide a basis for termination of the Employee's employment under the provision so indicated. For purposes of this Agreement, no such purported termination of employment shall be effective without delivery of such a Notice of Termination.

12. General Provisions.

a. Governing Law; Venue. This Agreement shall be governed by and construed in accordance with the laws of the State of California without regard to the conflicts of laws principles thereof. Employee and the Company agree that any litigation regarding this Agreement shall be conducted in San Diego, California. Employee and the Company hereby consent to the jurisdiction of the courts of the State of California and the United States District Court for the Southern District of California.

b. Assignment; Assumption by Successor. The rights of the Company under this Agreement may, without the consent of Employee, be assigned by the Company, in its sole and unfettered discretion, to any person, firm, corporation or other business entity which at any time, whether by purchase, merger or otherwise, directly or indirectly, acquires all or substantially all of the assets or business of the Company. The Company will require any successor (whether direct or indirect, by purchase, merger or otherwise) to all or substantially all of the business or assets of the Company expressly to assume and to agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform it if no such succession had taken place; provided, however, that no such assumption shall relieve the Company of its obligations hereunder. As used in this Agreement, the "Company" shall mean the Company as hereinbefore defined and any successor to its business and/or assets as aforesaid which assumes and agrees to perform this Agreement by operation of law or otherwise.

c. No Waiver of Breach. The failure to enforce any provision of this Agreement shall not be construed as a waiver of any such provision, nor prevent a Party thereafter from enforcing the provision or any other provision of this Agreement. The rights granted the Parties are cumulative, and the election of one shall not constitute a waiver of such Party's right to assert all other legal and equitable remedies available under the circumstances.

d. Severability. The provisions of this Agreement are severable, and if any provision shall be held to be invalid or otherwise unenforceable, in whole or in part, the remainder of the provisions, or enforceable parts of this Agreement, shall not be affected.

e. Entire Agreement. This Agreement and the Employee Proprietary Information and Inventions Assignment Agreement constitute the entire agreement of the Parties with respect to the subject matter of this Agreement and supersede all prior and contemporaneous negotiations, agreements and understandings between the Parties, whether oral or written, including, without limitation any offer letter between the parties.

f. Modifications and Waivers. No modification or waiver of this Agreement shall be valid unless in writing, signed by the Party against whom such modification or waiver is sought to be enforced.

g. Amendment. This Agreement may be amended or supplemented only by a writing signed by both of the Parties hereto.

h. Duplicate Counterparts; Facsimile. This Agreement may be executed in duplicate counterparts, each of which shall be deemed an original; provided, however, such counterparts shall together constitute only one agreement. Facsimile signatures or signatures sent via electronic mail shall be as effective as original signatures.

i. Interpretation. The headings contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement.

j. Non-transferability of Interest. None of the rights of Employee to receive any form of compensation payable pursuant to this Agreement shall be assignable or transferable except through a testamentary disposition or by the laws of descent and distribution upon the death of Employee. Any attempted assignment, transfer, conveyance, or other disposition (other than as aforesaid) of any interest in the rights of Employee to receive any form of compensation to be made by the Company pursuant to this Agreement shall be void.

k. Construction. The language in all parts of this Agreement shall in all cases be construed simply, according to its fair meaning, and not strictly for or against any of the parties hereto. Without limitation, there shall be no presumption against any party on the ground that such party was responsible for drafting this Agreement or any part thereof.

l. Section 409A.

i. Notwithstanding anything to the contrary in this Agreement, no payment or benefit to be paid or provided to Employee upon his termination of employment, if any, pursuant to this Agreement that, when considered together with any other payments or benefits, are considered deferred compensation under Section 409A (together, the "Deferred Payments") will be paid or otherwise provided until Employee has a "separation from service" within the meaning of Section 409A. Similarly, no amounts payable to Employee, if any, pursuant to this Agreement that otherwise would be exempt from Section 409A pursuant to Treasury Regulation Section 1.409A-1(b)(9) will be payable until Employee has a "separation from service" within the meaning of Section 409A.

ii. Notwithstanding anything to the contrary in this Agreement, if Employee is a "specified employee" within the meaning of Section 409A at the time of Employee's termination of employment (other than due to death), then the Deferred Payments that are payable within the first six (6) months following Employee's separation from service, will become payable on the first payroll date that occurs on or after the date six (6) months and one (1) day following the date of Employee's separation from service. All subsequent Deferred Payments, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit. Notwithstanding anything herein to the contrary, if Employee dies following Employee's separation from service, but prior to the six (6) month anniversary of the separation from service, then any payments delayed in accordance with this paragraph will be payable in a lump sum as soon as administratively practicable after the date of Employee's death and all other Deferred Payments will be payable in accordance with the payment schedule applicable to each payment or benefit. Each payment and benefit payable under this Agreement is intended to constitute a separate payment for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.

iii. Any amount paid under this Agreement that satisfies the requirements of the "short-term deferral" rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute a Deferred Payment for purposes of clauses (i) and (ii) above.

iv. Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that does not exceed the limits set forth therein will not constitute a Deferred Payment for purposes of clauses (i) and (ii) above.

v. This Agreement is intended to be written, administered, interpreted and construed in a manner such that no payment or benefits provided under the Agreement become subject to (A) the gross income inclusion set forth within Code Section 409A(a)(1)(A) or (B) the interest and additional tax set forth within Code Section 409A(a)(1)(B) (together, referred to herein as the "Section 409A Penalties"), including, where appropriate, the construction of defined terms to have meanings that would not cause the imposition of Section 409A Penalties. In no event shall the Company be required to provide a tax gross-up payment to Employee or otherwise reimburse Employee with respect to Section 409A Penalties. The Company and Employee agree to work together in good faith to consider amendments to this Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition of any Section 409A Penalties on Employee.

vi. Any reimbursement of expenses or in-kind benefits payable under this Agreement shall be made in accordance with Treasury Regulation Section 1.409A-3(i)(1)(iv) and shall be paid on or before the last day of Employee's taxable year following the taxable year in which Employee incurred the expenses. The amount of expenses reimbursed or in-kind benefits payable in one year shall not affect the amount eligible for reimbursement or in-kind benefits payable in any other taxable year of Employee's, and Employee's right to reimbursement for such amounts shall not be subject to liquidation or exchange for any other benefit.

m. Whistleblower Provision. Nothing herein shall be construed to prohibit Employee from communicating directly with, cooperating with, or providing information to, any government regulator, including, but not limited to, the U.S. Securities and Exchange Commission, the U.S. Commodity Futures Trading Commission, or the U.S. Department of Justice. Employee acknowledges that the Company has provided Employee with the following notice of immunity rights in compliance with the requirements of the Defend Trade Secrets Act: (i) Employee shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of proprietary information of the Company that is made in confidence to a Federal, State, or local government official or to an attorney solely for the purpose of reporting or investigating a suspected violation of law, (ii) Employee shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of proprietary information of the Company that is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal and (iii) if Employee files a lawsuit for retaliation by the Company for reporting a suspected violation of law, Employee may disclose the proprietary information to my attorney and use the proprietary information in the court proceeding, if Employee files any document containing the proprietary information under seal, and does not disclose the proprietary information, except pursuant to court order.

(Signature Page Follows)

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date(s) set forth below.

AIRGAIN, INC.

Dated: January 13, 2020 By:/s/ Jacob Suen__________________

Name: Jacob Suen_____________________

Title: CEO and President_______________

EMPLOYEE

Dated: January 13, 2020 /s/ David Lyle_________________________

DAVID LYLE

EXHIBIT 1

Employee Proprietary Information and Inventions Assignment Agreement

[Attached]

EXHIBIT 2

GENERAL RELEASE OF CLAIMS

[*The language in this Release may change based on legal developments and evolving best practices; this form is provided as an example of what will be included in the final Release document.*]

This General Release of Claims ("Release") is entered into as of this _____ day of ________, ____, between DAVID LYLE ("Employee"), and AIRGAIN, INC., a Delaware corporation (the "Company") (collectively referred to herein as the "Parties").

WHEREAS, Employee and the Company are parties to that certain Employment Agreement effective as of January 13, 2020 (the "Agreement");

WHEREAS, the Parties agree that Employee is entitled to certain severance benefits under the Agreement, subject to Employee's execution of this Release; and

WHEREAS, the Company and Employee now wish to fully and finally to resolve all matters between them.

NOW, THEREFORE, in consideration of, and subject to, the severance benefits payable to Employee pursuant to the Agreement, the adequacy of which is hereby acknowledged by Employee, and which Employee acknowledges that he would not otherwise be entitled to receive, Employee and the Company hereby agree as follows:

1. General Release of Claims by Employee.

(a)Employee, on behalf of himself and his executors, heirs, administrators, representatives and assigns, hereby agrees to release and forever discharge the Company and all predecessors, successors and their respective parent corporations, affiliates, related, and/or subsidiary entities, and all of their past and present investors, directors, shareholders, officers, general or limited partners, employees, attorneys, agents and representatives, and the employee benefit plans in which Employee is or has been a participant by virtue of his employment with or service to the Company (collectively, the "Company Releasees"), from any and all claims, debts, demands, accounts, judgments, rights, causes of action, equitable relief, damages, costs, charges, complaints, obligations, promises, agreements, controversies, suits, expenses, compensation, responsibility and liability of every kind and character whatsoever (including attorneys' fees and costs), whether in law or equity, known or unknown, asserted or unasserted, suspected or unsuspected (collectively, "Claims"), which Employee has or may have had against such entities based on any events or circumstances arising or occurring on or prior to the date hereof or on or prior to the date hereof, arising directly or indirectly out of, relating to, or in any other way involving in any manner whatsoever Employee's employment by or service to the Company or the termination thereof, including any and all claims arising under federal, state, or local laws relating to employment, including without limitation claims of wrongful discharge, breach of express or implied contract, fraud, misrepresentation, defamation, or liability in tort, and claims of any kind that may be brought in any court or administrative agency including, without limitation, claims under Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. Section 2000, et seq.; the Americans with Disabilities Act, as amended, 42 U.S.C. § 12101 et seq.; the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 701 et seq.; the Civil Rights Act of 1866, and the Civil Rights Act of 1991; 42 U.S.C. Section 1981, et seq.; the Age Discrimination in Employment Act, as amended, 29 U.S.C. Section 621, et seq. (the "ADEA"); the Equal Pay Act, as amended, 29 U.S.C. Section 206(d); regulations of the Office of Federal Contract Compliance, 41 C.F.R. Section 60, et seq.; the Family and Medical Leave Act, as amended, 29 U.S.C. § 2601 et seq.; the Fair Labor Standards Act of 1938, as amended, 29 U.S.C. § 201 et seq.; the Employee Retirement Income Security Act, as amended, 29 U.S.C. § 1001 et seq.; and the California Fair Employment and Housing Act, California Government Code Section 12940, et seq.

Notwithstanding the generality of the foregoing, Employee does not release the following claims:

(i) Claims for unemployment compensation or any state disability insurance benefits pursuant to the terms of applicable state law;

(ii) Claims for workers' compensation insurance benefits under the terms of any worker's compensation insurance policy or fund of the Company;

(iii) Claims pursuant to the terms and conditions of the federal law known as COBRA;

(iv)Claims for indemnity under the bylaws of the Company, as provided for by California or Delaware law or under any applicable indemnification agreement or insurance policy with respect to Employee's liability as an employee, director or officer of the Company;

(v) Employee's right to bring to the attention of the Equal Employment Opportunity Commission or the California Department of Fair Employment and Housing or any other federal, state or local government agency claims of discrimination, or from participating in an investigation or proceeding conducted by the Equal Employment Opportunity Commission or any other federal, state or local government agency; provided, however, that Employee does release his right to secure any damages for alleged discriminatory treatment;

(vi) Claims based on any right Employee may have to enforce the Company's executory obligations under the Agreement;

(vii) Claims Employee may have to vested or earned compensation and benefits; and

(viii) Employee's right to communicate or cooperate with any government agency.

(b) EMPLOYEE ACKNOWLEDGES THAT HE HAS BEEN ADVISED OF AND IS FAMILIAR WITH THE PROVISIONS OF CALIFORNIA CIVIL CODE SECTION 1542, WHICH PROVIDES AS FOLLOWS:

"A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR OR RELEASING PARTY DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH, IF KNOWN BY HIM OR HER, WOULD HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR OR RELEASED PARTY."

BEING AWARE OF SAID CODE SECTION, EMPLOYEE HEREBY EXPRESSLY WAIVES ANY RIGHTS HE MAY HAVE THEREUNDER, AS WELL AS UNDER ANY OTHER STATUTES OR COMMON LAW PRINCIPLES OF SIMILAR EFFECT.

[Note: Clauses (c), (d) and (e) apply only if Employee is age 40 or older at time of termination]

(c)Employee acknowledges that this Release was presented to him on the date indicated above and that Employee is entitled to have twenty-one (21) days' time in which to consider it. Employee further acknowledges that the Company has advised him that he is waiving his rights under the ADEA, and that Employee should consult with an attorney of his choice before signing this Release, and Employee has had sufficient time to consider the terms of this Release. Employee represents and acknowledges that if Employee executes this Release before twenty-one (21) days have elapsed, Employee does so knowingly, voluntarily, and upon the advice and with the approval of Employee's legal counsel (if any), and that Employee voluntarily waives any remaining consideration period.

(d) Employee understands that after executing this Release, Employee has the right to revoke it within seven (7) days after his execution of it. Employee understands that this Release will not become effective and enforceable unless the seven (7) day revocation period passes and Employee does not revoke the Release in writing. Employee understands that this Release may not be revoked after the seven (7) day revocation period has passed. Employee also understands that any revocation of this Release must be made in writing and delivered to the Company at its principal place of business within the seven (7) day period.

(e) Employee understands that this Release shall become effective, irrevocable, and binding upon Employee on the eighth (8^{th}) day after his execution of it, so long as Employee has not revoked it within the time period and in the manner specified in clause (d) above.

(f) Employee further understands that Employee will not be given any severance benefits under the Agreement unless this Release is effective on or before the date that is thirty (30) days following the date of Employee's termination of employment.

2. No Assignment. Employee represents and warrants to the Company Releasees that there has been no assignment or other transfer of any interest in any Claim that Employee

may have against the Company Releasees. Employee agrees to indemnify and hold harmless the Company Releasees from any liability, claims, demands, damages, costs, expenses and attorneys' fees incurred as a result of any such assignment or transfer from Employee.

3. Whistleblower Provision. Nothing herein shall be construed to prohibit Employee from communicating directly with, cooperating with, or providing information to, any government regulator, including, but not limited to, the U.S. Securities and Exchange Commission, the U.S. Commodity Futures Trading Commission, or the U.S. Department of Justice. Employee acknowledges that the Company has provided Employee with the following notice of immunity rights in compliance with the requirements of the Defend Trade Secrets Act: (i) Employee shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of proprietary information of the Company that is made in confidence to a Federal, State, or local government official or to an attorney solely for the purpose of reporting or investigating a suspected violation of law, (ii) Employee shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of proprietary information of the Company that is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal and (iii) if Employee files a lawsuit for retaliation by the Company for reporting a suspected violation of law, Employee may disclose the proprietary information to my attorney and use the proprietary information in the court proceeding, if Employee files any document containing the proprietary information under seal, and does not disclose the proprietary information, except pursuant to court order.

4. Severability. In the event any provision of this Release is found to be unenforceable by an arbitrator or court of competent jurisdiction, such provision shall be deemed modified to the extent necessary to allow enforceability of the provision as so limited, it being intended that the parties shall receive the benefit contemplated herein to the fullest extent permitted by law. If a deemed modification is not satisfactory in the judgment of such arbitrator or court, the unenforceable provision shall be deemed deleted, and the validity and enforceability of the remaining provisions shall not be affected thereby.

5. Interpretation; Construction. The headings set forth in this Release are for convenience only and shall not be used in interpreting this Agreement. This Release has been drafted by legal counsel representing the Company, but Employee has participated in the negotiation of its terms. Furthermore, Employee acknowledges that Employee has had an opportunity to review and revise the Release and have it reviewed by legal counsel, if desired, and, therefore, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Release. Either party's failure to enforce any provision of this Release shall not in any way be construed as a waiver of any such provision, or prevent that party thereafter from enforcing each and every other provision of this Release.

6. Governing Law; Venue. This Release shall be governed by and construed in accordance with the laws of the State of California without regard to the conflicts of laws principles thereof. Employee and the Company agree that any litigation regarding this Release shall be conducted in San Diego, California. Employee and the Company hereby consent to the jurisdiction of the courts of the State of California and the United States District Court for the Southern District of California.

7. Entire Agreement. This Release and the Agreement constitute the entire agreement of the Parties in respect of the subject matter contained herein and therein and supersede all prior or simultaneous representations, discussions, negotiations and agreements, whether written or oral. This Release may be amended or modified only with the written consent of Employee and an authorized representative of the Company. No oral waiver, amendment or modification will be effective under any circumstances whatsoever.

8. Counterparts. This Release may be executed in multiple counterparts, each of which shall be deemed to be an original but all of which together shall constitute one and the same instrument.

(Signature Page Follows)

IN WITNESS WHEREOF, the Parties have executed this Release as of the date(s) set forth below.

AIRGAIN, INC.

Dated: By:______________________________

Name: ______________________________

Title: ______________________________

EMPLOYEE

Dated: ____________________________________

DAVID LYLE

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Airgain, Inc.:

We consent to the incorporation by reference in the registration statement (No. 333-229680) on Form S-3 of Airgain, Inc. and to the incorporation by reference in the registration statement (No. 333-213770) on Form S-8 of Airgain, Inc. of our report dated February 28, 2020, with respect to the balance sheets of Airgain, Inc. as of December 31, 2019 and 2018, the related statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes, which report appears in the December 31, 2019 annual report on Form 10-K of Airgain, Inc.

/s/ KPMG LLP

San Diego, California
February 28, 2020

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Jacob Suen, certify that:

1. I have reviewed this annual report on Form 10-K of Airgain, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: February 28, 2020

/s/ Jacob Suen
Jacob Suen
Chief Executive Officer

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, David B. Lyle, certify that:

1. I have reviewed this annual report on Form 10-K of Airgain, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: February 28, 2020

/s/ David B. Lyle
David B. Lyle
Chief Financial Officer

Exhibit 32.1

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

In connection with the annual report of Airgain, Inc. (the “Company”) on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Jacob Suen, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

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

Date: February 28, 2020

/s/ Jacob Suen
Jacob Suen
Chief Executive Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document.

Exhibit 32.2

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

In connection with the annual report of Airgain, Inc. (the “Company”) on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, David B. Lyle, Chief Financial Officer and Secretary of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

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

Date: February 28, 2020

/s/ David B. Lyle
David B. Lyle
Chief Financial Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document.