UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 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, 2020

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 001-38952

CAMBIUM NETWORKS CORPORATION
(Exact name of Registrant as specified in its Charter)

Cayman Islands	**Not Applicable**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
c/o Cambium Networks, Inc. **3800 Golf Road, Suite 360** **Rolling Meadows, Illinois**	**60008**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (345) 943-3100

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Ordinary shares, $0.0001 par value	CMBM	Nasdaq Global Market

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

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

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. 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 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal controls over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report ☐

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

The aggregate market value of the ordinary shares held by non-affiliates on June 30, 2020 (the last business day of the registrant's most recently completed second fiscal quarter), based on the last sale price of the common shares on that date of $7.36 was $43,104,377. For purposes of this calculation, shares held by Vector Capital and our Chief Executive Officer are deemed to be affiliates of the registrant and are excluded from the calculation.

As of February 24, 2021 there were 26,101,023 shares of the registrant's ordinary shares outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2021 Annual Meeting of Shareholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2020.

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Note regarding forward-looking statements

This Annual Report on Form 10-K contains forward-looking statements within the meaning of the federal securities laws. All statements other than statements of historical fact contained in this Annual Report on Form 10-K, including statements regarding our future results of operations and financial position, business strategy and plans and objectives of management 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.

In some cases, forward-looking statements may be identified by terms such as “may,” “should,” “expects,” “plans,” “anticipates,” “could,” “intends,” “target,” “projects,” “contemplates,” “believes,” “estimates,” “predicts,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this Annual Report on Form 10-K 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 business, financial condition and results of operations. These forward-looking statements speak only as of the date of this report and are subject to a number of risks, uncertainties and assumptions described in Item 1A, “Risk Factors” and elsewhere in this Annual Report on Form 10-K. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, they should not be relied upon as predictions of future events. 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. Some of the key factors that could cause actual results to differ from our expectations include:

- the unpredictability of our operating results;
- our inability to predict and respond to emerging technological trends and network operators’ changing needs;
- the impact of actual or threatened health epidemics and other outbreaks including the impact of the COVID-19 pandemic;
- our reliance on third-party manufacturers, which subjects us to risks of product delivery delays and reduced control over product costs and quality;
- our reliance on distributors and value-added resellers for the substantial majority of our sales;
- the inability of our third-party logistics and warehousing providers to deliver products to our channel partners and network operators in a timely manner;
- our distributors’ and channel partners’ inability to attract new network operators or sell additional products to network operators that currently use our products;
- our limited or sole source suppliers’ inability to produce third-party components to build our products;
- the technological complexity of our products, which may contain undetected hardware defects or software bugs;
- our channel partners’ inability to effectively manage inventory of our products, timely resell our products or estimate expected future demand;
- credit risk of our channel partners, which could adversely affect their ability to purchase or pay for our products;
- our inability to maintain an effective system of internal controls, produce timely and accurate financial statements or comply with applicable regulations;
- our reliance on the availability of third-party licenses;
- risks associated with international sales and operations;
- current or future unfavorable economic conditions, both domestically and in foreign markets; and
- our inability to obtain intellectual property protections for our products.

We caution you that the foregoing list may not contain all of the forward-looking statements made in this Annual Report on Form 10-K.

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 or otherwise.

Summary Risk Factors

The following is a summary of the principal risks described below in Part I, Item 1A “Risk Factors” in this Annual Report on Form 10-K. We believe that the risks described in the “Risk Factors” section are material to investors, but other factors not presently known to us or that we currently believe are immaterial may also adversely affect us. The following summary should not be considered an exhaustive summary of the material risks facing us, and it should be read in conjunction with the “Risk Factors” section and the other information contained in this Annual Report on Form 10-K.

- Our operating results can be difficult to predict and may fluctuate significantly, which could result in a failure to meet investor expectations or our guidance and a decline in the trading price of our shares.
- The introduction of new products and technology is key to our success, and if we fail to predict and respond to emerging technological trends and network operators’ changing needs, we may be unable to remain competitive.
- Competitive pressures may harm our business, revenues, growth rates and market share.
- We rely on third-party manufacturers, which subjects us to risks of product delivery delays and reduced control over product costs and quality.
- We rely on distributors and value-added resellers for the substantial majority of our sales, and the failure of our channel partners to promote and support sales of our products or effectively manage inventory of our products would materially reduce our expected future revenues.
- We outsource manufacturing to third-party manufacturers operating outside the U.S., subjecting us to risks of international operations.
- We face risks related to actual or threatened health epidemics and other outbreaks, which could significantly disrupt our manufacturing, sales and other operations.
- Our third-party logistics and warehousing provider may fail to deliver products to our channel partners and network operators in a timely manner, which could harm our reputation and operating results.
- Our ability to sell our products is highly dependent on the quality of our support and services offerings, and our failure to offer high-quality support and services could have a material adverse effect on our business, operating results and financial condition.
- If we or our distributors and channel partners are unable to attract new network operators or sell additional products to network operators that currently use our products, our revenue growth would be adversely affected, and our revenues could decrease.
- We require third-party components, including components from limited or sole source suppliers, to build our products. The unavailability of these components could substantially disrupt our ability to manufacture our products and fulfill sales orders.
- Our products are technologically complex and may contain undetected hardware defects or software bugs, which could result in increased warranty claims, loss of revenues and harm to our reputation.
- If we are not able to effectively forecast demand or manage our inventory, we may be required to record write-downs for excess or obsolete inventory.
- We are exposed to the credit risk of our channel partners, which could result in material losses.
- Our business and prospects depend on the strength of our brand. Failure to maintain and enhance our brand would harm our ability to increase sales by expanding our network of channel partners as well as the number of network operators who purchase our products.
- A portion of our revenues are generated by sales to government entities, which are subject to a number of challenges and risks.
- We generate a significant amount of revenues from sales outside of the United States, and we are therefore subject to a number of risks associated with international sales and operations.
- A substantial portion of our product portfolio relies on the availability of unlicensed RF spectrum and if such spectrum were to become unavailable through overuse or licensing, the performance of our products could suffer and our revenues from their sales could decrease.

- We may acquire other businesses which could require significant management attention, disrupt our business, dilute shareholder value and adversely affect our operating results.
- New regulations or standards or changes in existing regulations or standards in the United States or internationally related to our products may result in unanticipated costs or liabilities, which could have a material adverse effect on our business, results of operations and future sales.
- We are subject to governmental export and import controls that could impair our ability to compete in international markets and subject us to liability if we are not in compliance with applicable laws.
- We rely on the availability of third-party licenses, the loss of which could materially harm our ability to sell our products.
- If we are unable to protect our intellectual property rights, our competitive position could be harmed or we may incur significant expenses to enforce our rights, and claims by others that we infringe their intellectual property rights could harm our business.
- If we fail to maintain an effective system of internal controls, our ability to produce timely and accurate financial statements or comply with applicable regulations could be impaired.
- Our credit facility contains restrictive financial covenants that may limit our operating flexibility.
- Because Vector Capital holds a controlling interest in us, the influence of our public shareholders over significant corporate actions will be limited.
- The price of our shares may be volatile, and shareholders could lose all or part of their investment.
- Because we are incorporated under Cayman Islands law, shareholders may face difficulties in protecting their interests, and the ability to protect rights through U.S. courts may be limited.
- Our directors may have conflicts of interest because of their ownership of equity interests of, and their employment with, our parent company and our affiliates.
- If we are unable to manage our growth and expand our operations successfully, our business and operating results will be harmed.

Trademarks and Service Marks

"Cambium" , "Cambium Networks", "cnPilot", "cnMaestro", 'cnMedusa", "cnArcher", "cnReach", "cnHeat", "cnRanger", "cnWave", "cnVision", "LinkPlanner", "Xirrus", the Cambium and Xirrus logos and other trademarks or service marks of Cambium Networks, Ltd. appearing in this Annual Report are the property of Cambium Networks Corporation. This Annual Report contains additional trade names, trademarks and service marks, which are the property of their respective owners.

PART I

Item 1. Business.

Business Overview

What we do

We provide fixed wireless broadband and Wi-Fi networking infrastructure solutions for network operators, including wireless internet service providers, mobile network operators, enterprises and government agencies, communities and cities worldwide. Our scalable, reliable and high-performance solutions enable the creation of a purpose-built wireless fabric that connects people, places and things with a unified wireless fabric that spans multiple standards and frequencies of fixed wireless and Wi-Fi, all managed centrally via the cloud, deployed indoors and outdoors. Our multi-gigabit wireless fabric offers a compelling value proposition over traditional fiber and alternative wireless solutions.

Our wireless fabric includes intelligent radios, smart antennas, radio frequency, or RF, algorithms, wireless-aware switches and our on-premise or cloud-based network management software. Our embedded proprietary RF technology and software enables automated optimization of data flow at the outermost points in the network, which we refer to as the "intelligent edge." This intelligent edge offers network operators increased performance, visibility, control and management, as well as the ability to efficiently transfer large amounts of data back to enterprise data centers for fast and efficient analysis and decision-making even in conditions characterized by a high degree of interfering signals generated both within the network or from outside sources, which we refer to as noise. Our products support licensed and unlicensed spectrum, tailored for many frequency bands. We provide deep technical and operational expertise based on years of deploying networks, resulting in ease of use of our products, and all Cambium Networks solutions are backed by our global organization that provides 24/7 support services tailored to meet the business needs of our end users.

Our solutions are deployed by wireless broadband internet service providers, mobile network operators, and managed service providers, as well as in private networks, including enterprises, petrochemical, military, state and local government, education, hospitality, rail, utility, industrial and other network operators. Our technology is used to connect a wide range of network assets, from offices, service organizations (schools, hospitality, healthcare) and industrial processes, to guest and public access via Wi-Fi to complex sensor networks. Network operators deploy our enterprise-grade solutions to take advantage of their scalability, intelligence, reliability, durability, attractive economics and ease of deployment, which offer:

- ***Superior outdoor scalability.*** Our solutions scale to greater density for outdoor applications because of their leading spectral efficiency.
- ***Embedded network intelligence and policy-based automation.*** Our solutions have embedded intelligence, utilizing software and RF algorithms that work together to optimize network performance. This intelligence allows networks to adapt and evolve as network requirements vary, environments change, and network footprints grow over time.
- ***Reliable wireless connectivity in congested environments.*** Our solutions deliver superior reliability enabled by our technology's frequency reuse capabilities, embedded dynamic spectrum optimization and dynamic filtering abilities.
- ***Durability in challenging indoor and outdoor environments.*** Our solutions are designed to perform over time in challenging atmospheric conditions from the frigid temperatures of the far northern hemisphere to heat extremes in deserts, to the humidity of the jungles. We offer equipment that is designed and certified to operate in hazardous environments for the oil and gas industry, and meet demanding performance specifications required by the defense industry.
- ***High quality at attractive economics.*** Our solutions improve economics for network operators by supporting a large number of customer premise equipment, or CPE, per fixed wireless access point while providing enterprise-grade performance and quality. We reduce ongoing management costs through device reliability and embedded software that independently manages and resolves network performance issues.
- ***Ease of deployment and simplicity to scale the network.*** Network operators can utilize our cloud-based software to help design, install and manage their networks from cloud-to-tower-to-edge. Our cloud-based network management software offers full lifecycle management of a network through a single pane of glass, reducing the complexity of network operations and the onboarding of large numbers of devices.
- ***Seamless integration with ecosystem partners.*** We include solutions for a range of additional uses leveraging third party software and services embedded into our network management systems, including video surveillance management software, and Shared Access Spectrum, or SAS, services enabling multiple categories of users to safely share the same frequency bands, and wireless access gateway solutions, as well as third party Wi-Fi planning solutions and guest portal applications.

We market and sell our solutions through our global channel partner network, which drives a substantial majority of our revenues. We sell our solutions as one-time sales as well as a growing number of subscription-based products, with a majority of our revenues in a given period typically being generated by purchases from network operators that have previously purchased our products. Growth from these network operators is driven by expansion within existing networks and in new territories, replacement of competitor products with our solutions, deployment of new and incremental use cases and, in the case of local governments, mandates to offer fixed broadband wireless to all of their citizens.

Current trends impacting our business

Although the outbreak of COVID-19 has resulted and is likely to continue to result in disruption to our business and operations as well as the operations of our customers and suppliers, demand for wireless infrastructure projects globally remains robust, driven by remote work, learn and play from home, in part in response to the COVID-19 pandemic, and accelerated by government funding of broadband solutions. We have experienced increases in customer demand, as a result of strong demand for Point-to-Multi-Point products as the need for connectivity grows, as schools, businesses, and enterprises continue to operate remotely, and increased Point-to-Point revenues from improved federal business. In addition, we have seen a strong recovery in enterprise Wi-Fi solutions driven by improved field deployments and the transition to Wi-Fi 6 solutions. We have benefitted from investments we have made over the past few years in fixed wireless infrastructure technologies in such areas as point-to-multi-point, or PMP, including Citizens Broadband Radio Service, or CBRS, compatible products in the U.S. and in new opportunities such as gigabit wireless solutions with our 60 GHz millimeter wave products, our new enterprise Wi-Fi 6, and cloud-enabled wireless switching products. Our forthcoming 5G 28 GHz millimeter wave products are expected in 2021, further accelerating this trend as we enter markets demanding higher broadband performance, and in the U.S. the first phase of the Rural Digital Opportunity Fund, or RDOF, launched by the Federal Communications Commission, or FCC, is expected to accelerate the provision of high-speed broadband service to millions of underserved communities in the U.S. over the next ten years.

However, we expect that social distancing measures, further waves of shutdowns globally that impact the ability of our end user customers to deploy our products, and continued restrictions and even cessation in travel impacting our sales activities, and general business uncertainty will continue to negatively impact demand in several of our markets. In addition, although all of our suppliers are currently operating, reductions in production due to mandated closures of or labor restrictions at our third-party manufacturers in Mexico, China and elsewhere continue to remain a risk as COVID-19 restrictions continue.

Our supply operations remain impacted by COVID-19; for example, at least one of our mechanical suppliers has ceased operating, causing us to move production to an alternative supplier. We are working with other suppliers who have experienced component part shortages due to capacity restraints that have caused lead times for our products to increase. We expect our suppliers and third-party manufacturers to continue to be disrupted by parts and component shortages.

Our industry and market opportunities

According to Cisco Annual Internet Report (2018-2023), globally, the total number of Internet users is projected to grow from 3.9 billion in 2018 to 5.3 billion by 2023 at a compound annual growth rate (“CAGR”) of 6%. Mobile-to-Mobile connections will be the fastest-growing device and connections category, growing nearly 2.4-fold during the forecast period (19% CAGR) to 14.7 billion connections by 2023. Wi-Fi hotspots will grow four-fold from 2018 to 2023. Globally, there will be nearly 628 million public Wi-Fi hotspots by 2023, up from 169 million hotspots in 2018. We believe that growth in data traffic will be predominately driven by proliferation of connected devices, applications and sensors for both service provider and enterprise use cases. For example:

- Consumers are using connected devices to access cloud applications, stream media-rich content and connect to friends and family utilizing wireless connectivity.
- Enterprises are increasingly deploying their own wireless broadband infrastructure to provide individuals access to, and machines and other devices connectivity with, corporate networks, data centers and cloud applications.
- Industrial enterprises are using wireless broadband to help replace periodic, manual system monitoring with hundreds of wireless sensors and cameras that can monitor key production activities in real-time for safety, productivity and security. For example, wireless connectivity is allowing industrial enterprises real-time comprehensive monitoring of operations across a field of onshore facilities or offshore platforms to increase both the efficiency and safety of industrial operations.

The growing adoption of wireless networks is driving massive amounts of data that is being analyzed locally at the edge or at enterprise or cloud data centers. This requires greater wireless connectivity to capture and evaluate the data locally or to backhaul large amounts of data to a data center. Local operations centers or distant corporate data centers must also communicate with the edge devices to optimize operations. For example, when data is sent back to an operations center that identifies potential equipment overheating, that command center can quickly transmit a data request directly to the machine to analyze and resolve the issue or to a technician to rapidly address the developing situation.

Wireline broadband through cable, DSL and optical networks provides efficient bulk bandwidth transport to densely populated metropolitan areas but can be cost prohibitive in lower-density environments and rural areas. Wireline broadband also lacks real-time adaptability required for industrial networks and faces practical limitations in delivering connectivity to constantly evolving sensor and device networks. Similarly, many existing, more affordable wireless network solutions lack the performance, scalability, reliability and support to provide enterprise-grade IT infrastructure required for critical business applications.

Both wireless internet service providers and enterprises in lower-density, non-metropolitan areas require infrastructure that delivers always-on, high-speed wireless bandwidth for the transmission of large amounts of data in a wide variety of challenging conditions such as noisy spectrum or terrain that can impede wireless broadband communications, such as bodies of water or forests. Carrier-grade wireless infrastructure, primarily used in metropolitan networks, is generally ill-suited to these deployments because the size of the deployment does not justify the high equipment expense and management costs. Many existing wireless solutions are limited by their ability to deliver real-time adaptability, scalability, efficient use of spectrum, network reliability and economical use cases:

- ***Limited real-time adaptability***. Wireless network footprints are continually changing due to individuals moving within a network, rapidly changing environments in an industrial footprint and expanding use cases or functionality. Many fixed wireless solutions lack the software and RF technology to continually optimize performance of rapidly evolving network infrastructure and in noisy conditions.
- ***Lack of network scalability***. Fixed wireless solutions often struggle to scale primarily because they lack end-to-end management capabilities and integrated RF algorithms in the software. Software is required to efficiently plan, synchronize and optimize large-scale deployments of wireless broadband, while mitigating self-interference. Existing solutions are typically provisioned manually and managed by spreadsheets or management tools developed by customers internally. Real-time, efficient management requires embedded software and technology capable of optimizing network performance at the edge in varying environmental conditions.
- ***Inefficient use of spectrum***. Many existing solutions do not contain data path optimization technologies that allow for efficient use of frequency channels and available spectrum. This leads to performance degradation and limits the number of users and devices to which the network can deliver quality access.
- ***Lack of network reliability in areas with congested spectrum***. Many existing solutions struggle with interference in high noise environments because they cannot reuse frequencies to expand available channels for traffic. These solutions also do not include software that identifies congested channels and automatically switches traffic to channels with less congestion. Inability to reuse frequencies or to recognize congested channels can degrade performance and limit available bandwidth.
- ***Uneconomical for certain use cases***. Fixed wireless broadband solutions can be cost-prohibitive because of their inability to serve a high concentration of CPE without the deployment of a high number of fixed wireless access points. Additionally, many existing solutions fail because of a lack of software intelligence to foresee upcoming issues and an inefficient path to resolution for issues given limited services and support capabilities.
- ***Pressure on broadband networks from the emergence of Wi-Fi access points.*** As the migration to Wi-Fi 6 access points progresses, the network bottleneck is moving to the broadband provider. This is putting pressure on broadband service providers to increase symmetrical capacity in a time when adding capacity to or upgrading wireline networks is cost prohibitive. Fixed wireless is emerging as an alternative to address this capacity gap.

In addition, with the emergence of multi-gigabit fixed wireless using 60 GHz millimeter wave technology, service providers and private network operators now have a wireless alternative to fiber for highspeed broadband connectivity. Wireless for the last mile access has a significant cost advantage over fiber. The resources required to deploy mmWave technology is comparable to outdoor Wi-Fi, does not require trenching and may have a much lighter permitting process.

Our market opportunity

The majority of our revenues today come from PTP and PMP solutions. According to Sky Light Research, the PTP Microwave and Millimeter Wave market was estimated to be $3.58 billion in 2019. According to QYResearch, the PMP market was estimated to be $0.75 billion in 2019. We entered into the Wi-Fi market in 2016 and it has become a meaningful portion of our revenues. According to IDC, a market research firm, the enterprise WLAN market is estimated to be $7.0 billion in 2020. In 2018, we entered the Ethernet switching market, although to date our sales in this market have not been material. According to IDC, the non-datacenter Ethernet switching market is estimated to be $14.7 billion in 2020. Combining these served markets, our addressable market for 2020 exceeds $25.0 billion. In 2017, we introduced our cnReach, Industrial Internet of Things, or IIoT, products, and while the market remains at an early stage of development, we believe this market presents a significant commercial opportunity in the longer term.

Wide area networks, or WANs, and local area networks, or LANs, are converging. Broadband internet service providers are expanding into local area network services for enterprise and public sector which means they are expanding their service offerings to include the Wi-Fi-based LAN. Likewise, enterprise managed service providers are looking to extend their offerings to include edge access for Wi-Fi, rather than relying on the wireline provider to trench fiber. We expect to take advantage of these trends with our cnMaestro management software that can be used to manage both the WAN back to the point of presence and the Wi-Fi in the LAN. We are able to provide Wi-Fi to our traditional fixed wireless broadband customers while penetrating the managed service provider market with fixed wireless offerings.

How our solutions work

We offer fixed wireless broadband networking infrastructure solutions differentiated by scalability, embedded intelligence, reliability, high quality at attractive economics and ease of deployment. Our enterprise-grade Wi-Fi solutions provide indoor and outdoor capabilities and leading spectral efficiency that reduces self-interference and optimizes spectral efficiency and frequency reuse across the network.

Our Point-to-Point, or PTP, solutions are typically connected to high-speed, high-bandwidth wireline networks, and provide wireless broadband backhaul to facilities or Point-to-Multipoint, or PMP, access points deployed throughout a network over distances of more than 100 kilometers and at more than 2 Gbps. Our PMP solutions extend wireless broadband access from tower mounted fixed wireless access points to CPE providing broadband access to residences and enterprises covering wide areas with a range of 10 to 30 kilometers. Our PMP solutions are increasingly used to backhaul video surveillance systems. Our cnPilot and Xirrus Wi-Fi solutions provide distributed access to individual users in indoor settings, such as office complexes, and outdoor settings, such as athletic stadiums and outdoor public Wi-Fi spots, over distances as short as two meters with high capacity. Our cnReach solutions offer narrow-band connectivity typically using licensed spectrum below 1 GHz and typically used by industrial customers connecting remote field operations supporting sensors and devices at the network edge. Our embedded proprietary RF technology and software enables automated optimization of data flow at the outermost points in the network. Our cnMatrix cloud-managed wireless-aware switching solution provides the intelligent interface between wireless and wired networks. Our cnVision solutions are purpose built wireless connectivity solutions for video surveillance and CCTV deployments and provide the necessary bandwidth to transport mission-critical video wirelessly, for the video surveillance market.

Our competitive strengths

We have a number of competitive strengths, including the following:

- ***Wireless fabric that enables fast and efficient scalability***. Our solutions allow network operators to densify their networks with incremental fixed wireless access points that linearly scale subscriber support without compromise to quality of service.
- ***Advanced RF signal algorithms***. Our RF algorithms drive network performance by employing technologies such as frequency reuse, congestion-based channel switching and noise filtering.
- ***Broad applicability of our wireless fabric***. Our technology has broad application across a wide range of connectivity use cases, and our core technologies underlying the wireless fabric offer broad extensibility to new markets such as wireline switching and IIoT solutions.
- ***Network management software platform built for scale***. Our cloud-based network management software increases ease of deployment and usage through easy provisioning, configuration, monitoring and complete network visualization, with the ability to support over 100,000 devices.
- ***Culture of constant innovation combined with high velocity product development and service***. We pride ourselves in our strong work ethic and focus on providing innovative products and first-class service to network operators. Our employees are united by our mission to eliminate the "digital divide" by building innovative products to connect underserved and developing communities.

Our growth strategy

The key elements of our growth strategy include:

- ***Continued investment in wireless fabric while expanding into new markets***. We are investing in our wireless fabric technology to expand the breadth of our solutions and to take advantage of new frequencies and communication standards, resulting in the launch of new products such as our 60 GHz millimeter wave products, our Wi-Fi 6 products and our switching products, among others, as well as our early launch of CBRS-compatible products.
- ***Expand our software capabilities***. We will continue to invest in our embedded software capabilities which include GPS synchronization, dynamic optimization and filtering technologies that facilitate the intelligent edge. We continue to invest in cnMaestro, and XMS Cloud, our cloud-based network management software platforms, to improve functionality, ease of deployment and operations and to add a premium version, enabling network operators to improve quality of service.

- ***Drive greater penetration in our existing base***. We intend to work collaboratively with key network operators to evaluate new use cases as these network operators expand their geographical footprint into new territories and increase their deployment of our products.
- ***Deepen and expand channel and network operator relationships***. We intend to deepen and expand our relationships in our channel, which includes over 9,000 channel partners as of December 31, 2020 and received CRN Magazine's five star rating in 2018 and 2019, which is its highest ranking awarded. We intend to invest in training and education for these channel partners while fostering new relationships with incremental channel partners. Additionally, in order to deepen and broaden our network operator relationships, we will continue to invest in our sales and marketing organization for both direct and channel engagements.
- ***Position portfolio to take advantage of proliferation of higher-speed wireless connectivity.*** As wireless networks transition from 4G to 5G technology, fixed wireless will be used more frequently in higher density environments. We intend to continue investing in and positioning our portfolio to pursue opportunities in high density environments as these markets move towards fixed wireless technology that is differentiated by reliability in congested environments.

Our technology and products

Cambium Networks Product Portfolio Summary							
Network Management	cnMaestro X - Cloud-Based Management Software cnMaestro Essentials - Cloud-Based Management Software XMS - On Premises and Cloud-Based Wi-Fi Management Software						
Wired Convergence	cnMatrix - Wireless Aware Switching						
Product Platform	cnWave	PTP 820	PTP 550/670/700	PMP 450	ePMP	cnPilot/Xirrus	cnReach
Design Focus	Gbps to the edge with Terragraph meshing for urban and high density suburban markets	Licensed Microwave Backhaul	Industry Leading Sub-6 GHz Backhaul Performance	Unparalleled Scalability for Multipoint networks	Price/Performance PTP and PMP Leadership	Configurable, Cloud-managed, High performance Wi-Fi	Licensed Narrowband in rugged I/O rich package
Throughput	15 Gbps/DN	2+ Gbps	450 - 1400 Mbps	1.4 Gbps/Sector	1.2 Gbps/ Sector	1+ Gbps/AP	KB to MB
Spectrum (GHz except as noted)	57 - 66	6 - 38 71 - 86	4.4 - 5.925 7.0 - 8.50	900 MHz, 2.4, 3.5, 3.65, 5.x	2.4, 4.9, 5.x, 6.4	2.4, 5	220, 450, 700, 900 MHz

We offer a portfolio of fixed wireless broadband and Wi-Fi solutions that connect people, places and things from distances of two meters to more than 100 kilometers, delivering data rates that range from kilobytes per second to over 2 gigabytes per second, operating indoor and outdoor and utilizing licensed and unlicensed spectrum. The elements of our wireless fabric can be architected to meet a broad range of use cases and needs of network operators. Since 2012, we have shipped over 8.8 million devices. Our products are designed to support more CPE per fixed wireless access point and maximize uptime, providing an attractive total cost of ownership for network operators while delivering a reliable, scalable, flexible and easily managed platform with differentiated performance.

Our products can be categorized into our PTP backhaul, PMP distribution, Wi-Fi access, cnMatrix switching, cnWave 60 GHz solutions and cnReach IIoT solutions, with results for our cnMatrix switching, and other solutions included for reporting purposes with our Wi Fi access products and results for our cnReach IIOT solutions included with our PMP distribution results. We also offer a number of other network management and monitoring tools, such as cnMaestro, XMS Cloud, LINKPlanner, cnHeat, Swift, and cnArcher, to further improve ease of use and network performance.

Point-to-Point backhaul solutions

Our PTP solutions are deployed globally and have proven to reliably operate in formidable and demanding environments. For example, we used PTP 650 radios to establish high quality connectivity over 245 kilometers between Pikes Peak, Colorado and Cheyenne, Wyoming, delivering real-time voice, video and data. We offer PTP solutions that are designed to operate in unlicensed spectrum from 900 MHz to 5.9 GHz and in licensed spectrum from 6-38 and 71-86 GHz. In addition, our PTP700 operates in NATO Band IV from 4.4-5.9 GHz, as well as in the 7 GHz and 8 GHz bands, and meets stringent federal operating, performance and security standards.

Point-to-Multipoint distribution solutions

Our PMP portfolio is composed of the PMP, ePMP, and cnWave distribution and access solutions that enable network operators to provide high-speed wireless broadband in a wide range of applications, ranging from connecting a small network of CCTV cameras, to deploying networks on hundreds of oil pads, to providing broadband access to low-density urban and rural communities. Our PMP and ePMP solutions offer differentiated spectral efficiency, which enables high data rates and efficient utilization of RF spectrum, as well as GPS synchronization and dynamic interference filtering to optimize performance in noisy conditions. We also offer Massive Multi-User Multi-Input Multi-Output technology and proprietary beamforming sector antennas to enable densification of CPE within a network. Together, these PMP distribution solutions allow networks to scale without compromise, from a single fixed wireless access point and a handful of CPE to networks with hundreds of thousands of subscriber radios, both using the identical products and technologies. cnWave, introduced in 2020, utilizes 60 GHz spectrum, is based on the 802.11ay standard, and incorporates Facebook’s Terragraph technology to deliver Gigabit data rates to the edge.

Wi-Fi access solutions

Our cnPilot and Xirrus enterprise and service provider Wi-Fi access points are easily deployed within both new and existing wireless local area networks, including in existing networks with equipment from other manufacturers. Our products include enterprise Wi-Fi access points for both indoor and outdoor use cases, as well as internet service provider-managed home gateways. Our adaptive architecture provides controller functionality and services with high agility for the network operator.

cnMatrix Ethernet enterprise switching solutions

Our cnMatrix Ethernet enterprise switching solutions simplify network deployment and operation. When deployed with cnPilot WLAN access points and the cnMaestro management system, network operators have an affordable, feature-rich, high quality unified wired/wireless enterprise grade network. Our cnMatrix solutions incorporate policy-based automation, automated device segmentation, enhanced power management, and are cloud-managed, to enhance performance, security, and end-user satisfaction while reducing costs.

cnReach IIoT solutions

Our cnReach IIoT solutions offer connectivity for distributed sensors and controls across industrial deployments, delivering real-time monitoring, measurement and analytics to optimize system performance. Our products can be deployed in a variety of industrial verticals such as oil and gas, electrical utilities, water management, rail and transportation operations and smart cities. cnReach focuses on supervisory control and data acquisition systems, or SCADA, for process control and monitoring, providing affordable, narrowband wireless connectivity, operating below 1 GHz, to support distribution automation, substation switches, circuit control and telemetry.

cnVision video surveillance transport solutions

Our cnVision solutions are purpose built wireless connectivity solutions for video surveillance and CCTV deployments and provide the necessary bandwidth to transport mission-critical video wireless, for the video surveillance market.

cnMaestro and network management tools

Our cloud-based cnMaestro network management platform and our Xirrus XMS Cloud platform provide users with an integrated, intelligent, easy to use tool for end-to-end network management of our portfolio from the network operating center to individual CPE on a single pane of glass. cnMaestro’s interface allows users to easily onboard large numbers of new devices, configure existing devices, monitor the entire network and troubleshoot end-to-end. Our cnHeat solution is a network planning subscription service that provides a heat map coverage model display of locations that are available for fixed wireless broadband connectivity that aids in network planning. cnHeat utilized LiDAR or equivalent geospatial data to accurately model the geography being evaluated, coupled with highly accurate RF modeling, to render a visual and quantitative assessment of anticipated RF coverage and performance. cnHeat allows network operators to optimize site selection for coverage, supporting their total cost of ownership and return on investment.

LINKPlanner is a comprehensive tool, developed over the past 12 years, used to plan PTP and PMP networks. LINKPlanner allows users to visualize and analyze hypothetical network deployment scenarios to evaluate performance and reliability allowing for cost-effective expansion and deployment of their networks. cnArcher is a smartphone app that accelerates installation and deployment of our products by field technicians.

Network operators and distribution channel

We sell our solutions globally through our channel partners to wireless Internet service providers, mobile network operators, enterprises and government agencies. Wireless Internet service providers using our products are typically serving between 1,000 and more than 200,000 subscribers. Enterprises using our products are in industries such as oil and gas, agriculture, mining, utilities, transportation, surveillance, hospitality, education and general corporate enterprises. Government entities using our products include local government agencies, federal agencies and defense organizations.

Historically, over 95% of our revenues are derived from sales through our ConnectedPartner channel partner platform, which consists of over 9,000 channel partners, including over 170 distributors as of December 31, 2020.

Through our channel sales network, we sell to our global network of distributors who in turn either sell directly to network operators or supply our products to value added resellers. These channel partners provide lead generation, pre-sales support and product fulfillment. Playing a central role in the channel, distributors support us by promoting and distributing our products in target vertical markets, providing value-added support to the reseller channel by bringing core strengths in technical support and professional services, all in addition to financing, logistics, and sales and marketing support. Our distributors typically stock and manage inventory of our products.

Our ConnectedPartner program is designed to maximize global coverage while minimizing channel conflict and enhance the ability of our channel partners to succeed in the sale and deployment of our products and solutions. Channel partners registered under our ConnectedPartner program gain access to product discounts, sales and marketing tools, marketing materials, specifications sheets, case studies and solution papers to aid in the sale and deployment of our products and solutions globally. We also offer access through our ConnectedPartner program to technical product training, deal registration, account management support, business development support, webinars and events, promotions and joint marketing initiatives, and qualified lead information as well as participation in our demonstration equipment programs.

Sales and marketing

We promote the sale of our products globally in partnership with our channel partners as well as through our direct sales force. Our sales organization typically engages directly with large Internet service providers and certain enterprises even though product fulfillment generally involves our channel partners, and also provide sales support to our channel partners across the platform. Our sales organization includes field and inside sales personnel, as well as regional technical managers with deep technical expertise who are responsible for pre-sales technical support and solutions engineering for network operators, systems integrators and channel partners. As of December 31, 2020, we had 108 sales personnel located in 29 countries.

Our marketing activities consist primarily of technology conferences, web marketing, trade shows, seminars, webinars and events, public training classes, public relations, analyst relations, demand generation and direct marketing to build our brand, increase customer awareness, communicate our product advantages and generate qualified leads for our field sales force and channel partners.

Support and service

Customer support

We support our enterprise class solutions with a range of flexible service plans and 24/7 availability that provide assurance to network operators that their always-on, mission critical communications requirements will be met. We employ a team of support engineers and other support personnel to provide customer service and technical support for our products. Our support organization both supports channel partners in supporting their direct customers and provides first-line support to our direct customers. We offer multiple service options that allow network operators to select the service level that best meets their needs. Our team of support engineers and services personnel provides 24/7 technical support and customer service globally to our network operators. Technical support is also available on-line via chat and automated ticketing systems.

Training

We work closely with our channel partners and network operators to provide comprehensive product training so that they are familiar with the implementation and usage of our products. The training and certification system is administered through a learning management system that provides the user a record of their course work, exam results, current certifications and access to on demand self-directed training resources that complement instructor-led sessions scheduled frequently around the world. In 2017, we also launched Cambium College, a free education program where senior members of our design and development teams share their experience to familiarize people with the math and physics concepts involved in designing and operating a wireless broadband or Wi-Fi network.

Cambium Community Forum

To complement our customer support and training, we launched the Cambium Community Forum in 2014 as a platform where we, our network operators and our channel partners can collaborate in real-time on practical solutions to real-world deployment situations, contribute to and consult a collective online knowledge base concerning our products and best practices, and share stories and photographs of customer experiences about product installations and unique use cases of our technology. In 2019, we added discussion forums focusing on CBRS, Video Surveillance, and Wi-Fi 6. Our Community Forum is moderated by our staff with direct and active engagement by our development engineering and product management personnel. Leveraging the Community Forum, we collect network operator and channel partner feedback on potential product improvements and new product ideas, including through the administration of beta testing on our products. As of December 31, 2020, there were approximately 37,000 registered forum members on our Community Forum, including our WISP Forum.

Manufacturing and supply

We outsource the manufacturing of our products to conserve working capital, reduce our manufacturing overhead and inventory, optimize delivery lead times while maintaining high product quality and scale quickly to handle increased order volume. For certain products, we outsource both the design and manufacture of the product and distribute the product under our name on a white label basis. We require all of our primary contract manufacturers to be ISO-9001 certified.

Our third-party manufacturing partners generally procure the components needed to build and assemble our products according to our design specifications. This allows us to leverage the purchasing power of our contract manufacturing partners. For items that we design, we generally retain complete control over the bill of material, test procedures and quality assurance programs. We review, on an ongoing basis, forecasts, inventory levels, processes, capacity, yields and overall quality. Our third-party manufacturers procure components and assemble our products based on our demand forecasts. These forecasts represent our estimates of future demand for our products based on historical trends and analyses from our sales and product management functions as adjusted for overall market conditions. Generally, for our primary third-party manufacturers, we update these forecasts monthly.

Once the completed products are manufactured and tested, configured, inspected and pass quality control inspection, our contract manufacturers ship the products to our direct fulfillment facilities in Kentucky, the Netherlands and Shanghai for shipment to our distributor partners and network operators. We outsource the warehousing and delivery of our products at these fulfillment facilities to a third-party logistics provider for worldwide fulfillment. Our products are installed by network operators or by third-party service providers such as system integrators or value-added resellers on behalf of the customer.

While components and supplies are generally available from a variety of sources, we and our contract manufacturers currently depend on a single or limited number of suppliers for several components for our products. For example, some of our products are dependent upon the incorporation of components from Qualcomm Atheros and we do not have a second source for these components. In addition, we currently have a limited number of suppliers for several other components for our products. We and our contract manufacturers generally rely on purchase orders rather than long-term contracts with these suppliers, although for certain components our contract suppliers have contracts in place with component suppliers that we are able to leverage. If we need to seek a suitable second source for key components or to modify our designs to use substitute components, our ability to meet the demand for our products, and as a result our business and operating results, could suffer. As a result of increased current global demand for some components used in our products, particularly semiconductor-related components and including components provided by Qualcomm, there are some capacity shortages at foundries, who have responded by allocating existing supply among their customers, including us. Coupled with an increase in demand for our affected products, in part resulting from an increase in demand for bandwidth globally, we have experienced some supply shortages that have caused increased lead times for some of our products.

Our business has been impacted by the effects of the outbreak of respiratory illness caused by COVID-19 and worldwide government efforts to halt the outbreak through restrictions on travel and extended business closures. For example, one of our mechanical suppliers has ceased operating, causing us to move production to an alternate supplier. We are working with other suppliers who have experienced component part shortages due to capacity constraints caused by COVID-19 that have caused lead times for our products to increase. Our suppliers and manufacturers in China and elsewhere could continue to be disrupted by parts and component shortages, worker absenteeism, quarantines, office and factory closures, disruptions to ports and other shipping infrastructure, or other travel or health-related restrictions. In addition, freight and logistics constraints caused in part by restrictions imposed by governments to combat the COVID-19 pandemic have increased costs and constrained available transport, for us and our channel partners. If our supply chain operations continue to be affected or are curtailed by the outbreak of diseases such as COVID-19, our supply chain, manufacturing and product shipments will be delayed, which could adversely affect our business, operations and customer relationships. We have and may continue to need to seek alternate sources of supply which may be more expensive, unavailable or may result in delays in shipments to us and from our supply chain and subsequently to our customers. See "Risk Factors, *We face risks related to actual or threatened health epidemics and other outbreaks, which could significantly disrupt our manufacturing, sales and other operations"* below.

Research and development

As of December 31, 2020, our research and development organization has over 270 employees located primarily in San Jose and Thousand Oaks, California, Rolling Meadows, Illinois, Ashburton, United Kingdom and Bangalore, India. We also work with contract engineers in various locations globally. Our research and development team has deep expertise and experience in wireless technology, antenna design and network architecture and operation. We expect to continue to expand our product offerings and solutions capabilities in the future and to invest significantly in continued research and development efforts.

Intellectual property

Our success depends in part on our ability to protect our core technology and innovations. We rely on federal, state, common law and international rights, as well as contractual restrictions, to protect our intellectual property. We control access to our proprietary technology by entering into confidentiality and invention assignment agreements with our employees and contractors, and confidentiality agreements with third parties, such as Internet service providers, vendors, individuals and entities that may be exploring a business relationship with us. In addition to these contractual arrangements, we also rely on a combination of trade secrets, copyrights, patents, trademarks, service marks and domain names to protect our intellectual property. We seek patent protection for certain of our key innovations, protocols, processes and other inventions. We pursue the registration of our trademarks, service marks and domain names in the United States and England and in certain other locations outside of these jurisdictions. These laws, procedures and restrictions provide only limited protection and the legal standards relating to the validity, enforceability and scope of protection of intellectual property rights are uncertain and still evolving. Furthermore, effective patent, trademark, copyright and trade secret protection may not be available in every country in which our products are available.

As of December 31, 2020, we had 86 issued U.S. patents and 103 patents issued in various foreign jurisdictions as well as 5 U.S. and 39 foreign patent applications pending. We file patent applications in the United States and other countries where we believe there to be a strategic technological or business reason to do so. Although we actively attempt to utilize patents to protect our technologies, we believe that none of our patents, individually, are material to our business.

Competition

The market for wireless broadband solutions is rapidly evolving, highly competitive and subject to rapid technological change. We expect competition to persist, intensify and increase in the future.

In all of our markets, we compete with a number of wireless equipment providers worldwide that vary in size and in the products and solutions offered. Our competitors for products and solutions for the unlicensed, sub-6 GHz spectrum bands include Radwin, MicroTik, Airspan, and Ubiquiti. cnWave, our 60 GHz mm Wave product, competes with Siklu, Radwin, and MikroTik, among others. In the licensed microwave market, our competitors include SIAE, SAF Technica and Aviat Networks, among others. Our Wi-Fi products and solutions compete with HPE (Aruba), CommScope (Ruckus Wireless), Extreme Networks, and Ubiquiti. Our cnReach IIoT products and solutions compete principally with GE MDS and Freewave. Our cnMatrix cloud-managed switch platform competes with Ubiquiti, Ruckus, HPE and MikroTik. Our cnMatrix Ethernet enterprise switching products and solutions complete with MikroTik, Ubiquiti and HPE. As our target markets continue to develop and expand, and as the technology for wireless broadband continues to evolve, we expect competition to increase and expand from both established and emerging market participants. We also expect consolidation to impact the competitive landscape, such as the acquisition by Arris Group of Ruckus Wireless in 2017, and the subsequent acquisition of Arris Group by CommScope in 2019, and the acquisition of Aerohive by Extreme Networks in 2019.

The market for our products and solutions is influenced by a variety of factors, including the following:

- Total cost of ownership and return on investment associated with the solutions;
- Ease of configuration, installation and use of the solution;
- Ability to provide a complete compatible solution;
- Broad application across a range of use cases and frequencies;
- Product quality, functionality and reliability;
- Ability to allow centralized management of the solutions to enable better network planning, including scalable provisioning, configuration, monitoring and complete network visualization; and
- Ability to provide quality, full service pre- and post-sales product support.

We believe we compete favorably on each of these factors.

Regulatory requirements

In addition to regulations of general application to global businesses, we are subject to a number of regulatory requirements specific to our industry, including, without limitation:

- Radio frequency usage. Because our products transmit energy in radio frequency spectrum, our products are subject to:
  - rules relating to radio frequency spectrum allocation and authorization of certain radio equipment issued by the Federal Communications Commission for non-federal uses or the National Telecommunications and Information Administration for federal uses; and
  - local type approval, or homologation, rules requiring confirmation that our products meet minimum regulatory, technical and safety requirements prior to sale in various countries around the world, for example: European Technical Standards Institute (ETSI), Industry Canada (IC) and Agencia National De Telecommunicatoes (Anatel).

The applicable regulatory agencies in each jurisdiction adopt regulations to manage spectrum use, establish and enforce priorities among competing uses, limit harmful radio frequency interference and promote policy goals such as broadband deployment. These spectrum regulations regulate allocation, licensing, and equipment authorizations. Since our customers purchase devices to operate in specific spectrum bands allocated by the regulatory authorities, our products must meet the technical requirements set forth for such spectrum allocation(s).

In some bands, the operator, such as our customer, must seek prior regulatory authority to operate using specified frequencies, and the resulting spectrum license authorizes the licensee, for a limited term, to operate in a spectrum consistent with licensed technical parameters within a specified geographic area. We must design and manufacture our products to comply with these technical parameters.

Our products generally are subject to compliance testing prior to approval, and, as a condition of authority in each jurisdiction, we must ensure that our products have the proper labels and documentation specifying such authority. We generally use telecommunications certification bodies to obtain certification for our devices in each jurisdiction in which we intend to market and sell our products.

- Trade compliance requirements. We are subject to compliance with rules in jurisdictions from which we export or into which we import our products, including export control and reporting, import clearance, anti-bribery, antitrust and competition rules and regulations, including:
  - Import and export requirements issued by the United States, the European Union or other jurisdictions, including the U.S. Department of Commerce, the Office of Foreign Assets Control, the U.K. Foreign, Commonwealth & Development Office, Ministry of Defense and Department of International Trade including rules banning sales to persons or entities on applicable designated parties lists, or to persons or entities in embargoed countries, rules requiring export licenses prior to sales of products incorporating encryption technology to certain end users, and local rules governing import of products, including packaging and labeling laws. In addition, some of our products include enabled encryption technology, which may require us to obtain a license prior to a sale to certain foreign agencies. These rules require us to monitor databases of, and establish and enforce policies to prohibit the sale of our products to, embargoed persons, entities and countries.
  - Rules and regulations, particularly in the United States and the European Union, governing environmental matters that restrict the use of certain dangerous substances in electrical or electronic equipment, govern use of certain chemical substances throughout their lifecycle and Waste Electrical and Electronic Equipment, Directive 2012/2019/EU, related to the collection, treatment, recycling and recovery of waste electrical and electronic equipment in the European Union and related laws elsewhere. These rules govern our use of components in our products, requiring us to comply with environmental rules and regulations in our selection of component parts and in the manufacturing process, as well as over the disposal upon destruction or retirement of our products.

We are also subject to rules governing our use of personal data, such as the General Data Protection Regulation in the European Union, the California Consumer Privacy Act, and other applicable regulations in the United States and around the world, and current and proposed e-privacy and direct marketing rules governing direct and email marketing. These rules govern how we use personal data of our employees, customers and others with whom we might do business, including in our marketing activities.

Human Capital Management

We pride ourselves on developing and maintaining a strong reputation for innovation and integrity and conduct our business affairs honestly and in an ethical manner. We expect our corporate culture to embody trust and respect for individuals, teamwork and innovation; Cambium is a place where employees are proud to work, and where customers, suppliers and partners want to work with us. One of our most valuable assets is our integrity. We are guided by our core values of growth and profitability; outstanding global teamwork; relentless innovation and edge, making and meeting commitments; respecting and developing our people; and serving our community.

We are focused on hiring, training, and retaining exceptional talent. As of December 31, 2020, we had approximately 512 full-time employees, of whom 306 are located outside the United States. We have not experienced any work stoppages, and we consider our relationship with our employees to be good. We have a broad base of diverse talent in more than 25 countries and we believe that attracting, developing and retaining the best talent is critical to our success and achievement of our strategic objectives.

We appreciate one another's differences and strengths and are proud that our workforce comprises employees with a diversity of backgrounds and perspectives. Diversity, inclusion and belonging have long been a part of our culture, and we work to continually expand our diversity, inclusion and belonging initiatives and to conform to the principles of equal opportunity. We do not discriminate based on race, religion, national origin, disability, medical condition, marital status, sex, gender, age, military or veteran status, sexual orientation or any other protected characteristic as established by federal, state or local laws. Further, we have policies in place that prohibit harassment of all kinds and we prohibit retaliation in all forms and are committed to encouraging a culture where employees can freely ask questions and raise concerns.

Although we are predominantly working remotely as a result of the COVID-19 pandemic and the resultant closure of our offices, we work collaboratively, without hierarchy, and our management team is readily available to all employees, with additional quarterly global town hall events that allow for open question and answer dialogue.

We offer what we believe is a competitive compensation package, tailored to the job function and geography of each employee. Our team is global, and we offer competitive and meaningful compensation and benefits programs that meet the diverse needs of our employees, while also reflecting local market practices. We believe our compensation structure aligns with our shareholders' long-term interests by balancing profitability and growth, as well as current market practices, and reflects our commitment to pay for performance. Competition for qualified personnel in the technology space is intense, and our success depends in large part on our ability to recruit, develop and retain a productive and engaged workforce. Accordingly, investing in our employees and their well-being, offering competitive compensation and benefits, promoting diversity and inclusion, adopting progressive human capital management practices and community outreach constitute core elements of our corporate strategy. In addition to competitive salaries and bonuses or sales commissions, we offer a robust employment total rewards package that promotes employee well-being and includes health care, extended parental leave, and paid time off, including extended leave for new parents (moms, dads and partners) to care for a newborn or newly adopted child.

We also offer rewards and recognition programs to our employees, including peer-led recognition of employees who best exemplify our values. We believe that these recognition programs help drive strong employee performance. We conduct annual employee performance reviews, where each employee is evaluated by their manager as well as a self-assessment. Employee performance is assessed based on a variety of key performance metrics, including the achievement of corporate objectives and objectives specific to the employee's department or role.

We grant equity-based compensation to many of our employees and have extended the opportunity for equity ownership through our recently launched employee share purchase plan in the United States and the United Kingdom, which we hope to extend to other jurisdictions in the future. Additionally, we offer benefits to support our employees' physical and mental health by providing tools and resources to help them improve or maintain their health and encourage healthy behaviors and facilitate a number of employee support groups.

Our Compensation Committee oversees our company-wide compensation programs and practices, and our Chief Executive Officer and Senior Director of Human Resources regularly update our Board of Directors and the Compensation Committee on human capital matters.

COVID-19 Response

During the COVID-19 pandemic, our primary focus has been on the safety and well-being of our employees and their families. A large majority of our workforce worked remotely and successfully throughout most of 2020. For employees that have needed access to our offices, for example in order to use lab or test equipment, we have followed the advice and recommendations of medical experts to implement new protocols to ensure the safety of our employees, including face coverings, temperature checks, health certifications, social distancing and capacity limits. We supported our employees through programs and benefits provided throughout the year, pivoting all of our people programs and practices to enable business continuity in the current environment, including providing access to resources required to effectively work remotely.

Available information

Our Internet address is www.cambiumnetworks.com and our investor relations website is located at http://investors.cambiumnetworks.com. We make available free of charge on our investor relations website under the heading "Financials" our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports as soon as reasonably practicable after such materials are electronically filed with (or furnished to) the SEC. Information contained on our websites is not incorporated by reference into this Annual Report on Form 10-K. In addition, the public may read and copy materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains an Internet site, www.sec.gov, that includes filings of and information about issuers that file electronically with the SEC.

Item 1A. Risk Factors.

This Report contains forward-looking statements that are subject to risks and uncertainties that could cause actual results to differ materially from those projected. These risks and uncertainties include, but are not limited to, the risk factors set forth below. These risks and uncertainties are not the only ones we face. Our business, financial condition, results of operations or prospects could also be harmed by risks and uncertainties not currently known to us or that we currently do not believe are material. If any of the risks actually occur, our business, financial condition, results of operations and prospects could be adversely affected.

Risks related to our business

Our operating results can be difficult to predict and may fluctuate significantly, which could result in a failure to meet investor expectations or our guidance and a decline in the trading price of our shares.

Our quarterly and annual operating results have fluctuated in the past and may fluctuate significantly in the future. In particular, the timing and size of our sales of our products are difficult to predict and can result in significant fluctuations in our revenues from period to period. For instance, we have historically received and fulfilled a substantial portion of sales orders and generated a substantial portion of revenues during the last few weeks of each quarter. In addition, we generally recognize all product revenues in the same period in which the related products are sold. Because our operating results are relatively fixed in the short term, any failure to meet expectations regarding sales could have an immediate and material effect on our earnings. If our revenues or operating results fall below the expectations of investors or securities analysts or below any estimates we may provide to the market, the trading price of our shares would likely decline, which could have a material and adverse impact on investor confidence and employee retention.

Our operating results may fluctuate due to a variety of factors, many of which are outside of our control, and which we may not foresee. In addition to other risks listed in this "Risks Factors" section, factors that may affect our operating results include:

- Fluctuations in demand for our products, including seasonal variations;
- The impact of COVID-19 and other health crises or pandemics on our operations;
- Our failure to timely fulfill orders for our products, which may be due to a number of factors, including the inability of our third-party manufacturers and suppliers to meet our demand or logistical failures in warehousing and shipping products;
- Failure of our distributors and channel partners to effectively promote and sell our products or manage their inventory and fulfillment;
- Our ability to control costs, including our manufacturing and component costs and operating expenses;
- Our ability to develop, introduce and ship in a timely manner new products and product enhancements, and to anticipate future market demands;
- Changes in the competitive dynamics of our target markets, including new entrants, consolidation and pricing pressures;
- The inherent complexity, length and associated unpredictability of the sales cycles for our products;
- Announcements made by us or our competitors of new or enhanced products, promotions or other transactions;
- Variation in product costs, prices or mix of products we sell;
- Product quality issues that could result in increases in product warranty costs and harm to our reputation and brand;
- General economic or political conditions in our markets; and
- Increasing uncertainty of international trade relations and tariffs.

The effects of these or other factors individually or in combination could result in fluctuations and unpredictability in our operating results, our ability to forecast those results and the trading price of our shares. As a result, our past results should not be relied upon as an indication of our future performance.

The introduction of new products and technology is key to our success, and if we fail to predict and respond to emerging technological trends and network operators' changing needs, we may be unable to remain competitive.

The wireless broadband market is generally characterized by rapidly changing technology, changing needs of network operators, evolving regulations and industry standards and frequent introductions of new products and services. Historically, new product introductions have been a key driver of our revenue growth. To succeed, we must effectively anticipate and adapt in a timely manner to network operator requirements and continue to develop or acquire new products and features that meet market demands, technology trends and evolving regulatory requirements and industry standards. Our ability to keep pace with technological developments, such as 5G, Wi-Fi 6, and LTE, satisfy increasing network operator requirements, and achieve product acceptance depends upon our ability to enhance our current products and develop and introduce or otherwise acquire the rights to new products on a timely basis and at competitive prices. The process of developing new technology is complex and uncertain, and the development of new products and enhancements typically requires significant upfront investment, which may not result in material improvements to existing products or result in marketable new products or cost savings or revenues for an extended period of time, if at all. We are currently investing in the development of products and technology for the 5G standard once it is generally adopted in our target markets. There can be no assurance we will successfully address the new standard in a timely manner or that our products will achieve market acceptance. Network operators have delayed, and may in the future delay, purchases of our products while awaiting release of new products or product enhancements. In addition, the introduction of new or enhanced products requires that we carefully manage the transition from older products to minimize disruption in channel partner ordering practices. If we fail to anticipate industry trends and evolving regulations by developing or acquiring rights to new products or product enhancements and timely and effectively introducing such new products and enhancements, or network operators do not perceive our products to have compelling technological advantages, our business would be adversely affected.

Competitive pressures may harm our business, revenues, growth rates and market share.

We generate a majority of our revenues from sales to wireless internet service providers. The market for wireless broadband products is rapidly evolving, highly competitive and subject to rapid technological change. We expect competition to persist, intensify and increase.

In all our markets, we compete with a number of wireless equipment providers worldwide that vary in size and in the products and solutions offered. Our competitors for products and solutions for the unlicensed, sub-6 GHz spectrum bands include Radwin, MikroTik, Airspan and Ubiquiti. cnWave, our 60 GHz mmWave product, competes with Siklu, Radwin, and MikroTik, among others. In the licensed microwave markets, our competitors include SIAE, SAF Tehnica and Aviat Networks, among others. Our Wi-Fi products and solutions compete with HPE (Aruba), CommScope (Ruckus Wireless), Extreme Networks and Ubiquiti. Our cnReach IIoT products and solutions compete principally with GE MDS and Freewave. Our cnMatrix cloud-managed switch platform competes with Ubiquiti, Ruckus, HPE and MikroTik. Our cnMatrix Ethernet enterprise switching products and solutions compete with MikroTik, Ubiquiti, and HPE. As our target markets continue to develop and expand, and as the technology for wireless broadband continues to evolve, we expect competition to increase. We also expect consolidation to impact the competitive landscape, such as the acquisition by Arris Group of Ruckus Wireless in 2017, and the subsequent acquisition of Arris Group by CommScope in 2019, and the acquisition of Aerohive by Extreme Networks in 2019.

Demand for our solutions versus those of our competitors is influenced by a variety of factors, including the following:

- Product quality, performance, features and functionality, and reliability;
- Depth and breadth of the sales channel;
- Brand awareness and reputation;
- Total cost of ownership and return on investment associated with the products;
- Ease of configuration, installation and use of the products;
- Ability to provide a complete compatible and scalable solution;
- Broad application across a range of use cases;
- Ability to allow centralized management of the products and network to better enable network planning, including scalable provisioning, configuration, monitoring and complete network visualization; and
- Strength, quality and scale of pre- and post-sales product support.

We expect increased competition from our current competitors, as well as emerging companies and established companies, such as Nokia, Ericsson, Huawei and NEC, that may enter our markets. Further, we have in the past and may again experience price competition from lower cost vendors selling to network operators that have lower budget or less demanding applications than our products have been designed to serve. To address these competitive conditions, we introduced our lower cost ePMP and PTP 550 products that allow us to target certain market segments without compromising our gross margins on our more sophisticated and functionally versatile products. We also expect that even higher cost competitors may engage in price competition to establish greater market share, which may adversely affect our ability to grow our revenues and profitability. Competition could result in loss of market share, increased pricing pressure, reduced profit margins, or increased sales and marketing expense, any of which would likely cause serious harm to our business, operating results or financial condition.

A number of our current or potential competitors have longer operating histories, greater name recognition, significantly larger customer bases and sales channels and significantly greater financial, technical, sales, marketing and other resources than we do. Our competitors may be able to anticipate, influence or adapt more quickly to new or emerging technologies and changes in network operator requirements, devote greater resources to the promotion and sale of their products and services, initiate or withstand substantial price competition, bundle similar products to compete, take advantage of acquisitions or other opportunities more readily, and develop and expand their product and service offerings more quickly than we can.

Some of our competitors have been acquired or entered into partnerships or other strategic relationships to offer a more comprehensive solution than they had previously offered. We expect this trend to continue. The companies resulting from such consolidation may create more compelling products and be able to offer greater pricing flexibility, making it more difficult for us to compete effectively. In addition, continued industry consolidation might adversely affect network operators' perceptions of the viability of smaller and even medium-sized wireless broadband equipment providers and, consequently, network operators' willingness to purchase from those companies.

Additionally, 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 due to increased expenditure on sales and marketing, or the loss of market share or expected market share, any of which may significantly harm our business, operating results and financial condition. The success of new products depends on several factors, including appropriate new product definition, component costs, timely completion and introduction of products, differentiation of new products from those of our competitors and market acceptance of these products. We may not be able to successfully anticipate or adapt to changing technology on a timely basis, or at all. New technologies could render our existing products less attractive and if such technologies are widely adopted as the industry standard for wireless Internet service providers, our business financial condition, results of operations and prospects could be materially adversely affected.

We rely on third-party manufacturers, which subjects us to risks of product delivery delays and reduced control over product costs and quality.

We outsource the manufacturing of our products to third-party manufacturers such as Flextronics, with whom we entered into an agreement pursuant to which Flextronics manufactures and supplies certain of our products subject to orders from us and our demand forecasts. In certain cases, we rely on third-party manufacturers to design products to our specifications and license those designs back to us. Purchases from these third-party manufacturers account for the most significant portion of our cost of revenues. Our reliance on third-party manufacturers reduces our control over the manufacturing process, including reduced control over quality, product costs and product supply and timing. From time to time, we have experienced and may in the future experience delays in shipments or issues concerning product quality from our third-party manufacturers. If any of our third-party manufacturers suffer interruptions, delays or disruptions in supplying our products, including by natural disasters or work stoppages or capacity constraints, our ability to ship products to distributors and network operators would be delayed. Additionally, if any of our third-party manufacturers experience quality control problems in their manufacturing operations and our products do not meet network operators' requirements, we could be required to cover the repair or replacement of any defective products. These delays or product quality issues could have an immediate and material adverse effect on our ability to fulfill orders and could have a negative impact on our operating results. In addition, such delays or issues with product quality could harm our reputation and our relationship with our channel partners.

Our agreements do not typically obligate our third-party manufacturers to supply products to us in specific quantities or for an extended term, which could result in short notice to us of supply shortages and increases in the prices we are charged for manufacturing services. We believe that our orders may not represent a material portion of the total orders of our primary third-party manufacturers, such as Flextronics, and, as a result, fulfilling our orders may not be prioritized in the event they are constrained in their abilities or resources to fulfill all of their customer obligations in a timely manner. Although we provide demand forecasts to some of our third-party manufacturers, such forecasts are not generally binding and if we overestimate our requirements, some of our third-party manufacturers may assess charges, or we may have liabilities for excess inventory, each of which could negatively affect our gross margins. Conversely, because lead times for required materials and components vary significantly and depend on factors such as the specific supplier, contract terms and the demand for each component at a given time, if we underestimate our requirements, our third-party manufacturer may have inadequate materials and components required to produce our products. This could result in an interruption of the manufacturing of our products, delays in shipments and deferral or loss of revenues. For example, as a result of increased global demand for some components used in our products, particularly semiconductor-related components and including components provided by Qualcomm, foundries have experienced capacity shortages and have responded by allocating existing supply among their customers, including us. This capacity shortage coupled with an increase in demand for our affected products, due in part to a global increase in demand for bandwidth has resulted in supply shortages that have caused increased lead times for some of our products. We may suffer delays introducing new products to the market and in sales of existing products as a result of parts unavailability or shortages, resulting in loss or delay of revenue.

If our third-party manufacturers experience financial, operational, manufacturing capacity or other difficulties, or experience or continue to experience shortages in required components, or if they are otherwise unable or unwilling to continue to manufacture our products in required volumes or at all, our supply may be disrupted, we may be required to seek alternate manufacturers and we may be required to re-design our products. It would be time-consuming and costly, and could be impracticable, to begin to use new manufacturers and designs and such changes could cause significant interruptions in supply and could have an adverse impact on our ability to meet our scheduled product deliveries and may subsequently lead to the loss of sales, delayed revenues or an increase in our costs, which could materially and adversely affect our business and operating results.

We outsource manufacturing to third-party manufacturers operating outside of the U.S., subjecting us to risks of international operations.

Our third-party manufacturers predominantly operate outside of the U.S. causing us to face risks to our business based on changes in tariffs, trade barriers, export regulations, political conditions and contractual restrictions. For example, our cost of goods in the Wi-Fi and switch products, as well as most of our ePMP products, has been adversely affected by U.S. tariffs on goods produced for us in China and later imported into the United States. Our products manufactured in China and elsewhere may also be adversely affected by the outbreak of diseases such as COVID-19, if such diseases result in delays, shutdowns or other restrictions on our manufacturing processes by our third-party manufacturers, or on our ability to distribute products from our distribution centers. We also have products manufactured for us in Mexico, and any uncertainty of trade relations between Mexico and the United States could cause the cost of our products manufactured there to rise. Our future operating results could be materially affected to the extent additional tariffs are imposed by the United States or other countries.

We rely on distributors and value-added resellers for the substantial majority of our sales, and the failure of our channel partners to promote and support sales of our products would materially reduce our expected future revenues.

We rely on channel partners for a substantial majority of our sales and our future success is highly dependent upon establishing and maintaining successful relationships with distributors and value-added resellers. Recruiting and retaining qualified channel partners and training them in our technology and products require significant time and resources. Our reliance on channel partners for sales of our products results in limited visibility into demand and channel inventory levels which in turn adversely impacts our ability to accurately forecast our future revenues. By relying on our channel partners, we may have less contact with network operators, thereby making it more difficult for us to establish brand awareness, service ongoing network operator requirements and respond to evolving needs for new product functionality.

Sales through distributors have been highly concentrated in a few distributors, with over 37%, 36%, and 41% of our revenues in 2018, 2019 and 2020, respectively, coming from our three largest distributors. In addition, certain of our distributors may rely disproportionately on sales to a small number of end customers. Termination or degradation of a relationship with a major distributor, or of a distributor with its major customer, could result in a temporary or permanent material loss of revenues. We may not be successful in finding other distributors on satisfactory terms, or at all, and our distributors may fail to maintain or replace business with their major customer, either of which could adversely affect our ability to sell in certain geographic markets or to certain network operators, adversely impacting our revenues, cash flow and market share.

We generally do not require minimum purchase commitments from our channel partners, and our agreements do not prohibit our channel partners from offering products or services that compete with ours or from terminating our contract on short notice. Many of our channel partners also sell products from our competitors. Some of our competitors may have stronger relationships with our channel partners than we do and we have limited control, if any, over the sale by our channel partners of our products instead of our competitors' products, or over the extent of the resources devoted to market and support our competitors' products, rather than our products or solutions. Our competitors may be more effective in providing incentives to existing and potential channel partners to favor their products or to prevent or reduce sales of our products. Our failure to establish and maintain successful relationships with our channel partners would materially and adversely affect our business, operating results and financial condition.

We face risks related to actual or threatened health epidemics and other outbreaks, which could significantly disrupt our manufacturing, sales and other operations.

Our business could be adversely impacted by the effects of a widespread outbreak of contagious disease, COVID-19. Our business has been impacted by COVID-19 and worldwide government efforts to halt the outbreak through restrictions on travel and extended business closures. For example, one of our mechanical suppliers has ceased operating, causing us to move production to an alternate supplier. We are working with other suppliers who have experienced component part shortages due to capacity constraints caused by COVID-19 that have caused lead times for our products to increase. The majority of our products are manufactured at contract manufacturers located outside the U.S., and one of our primary distribution centers for the sale and distribution of some of our products is a third-party logistics provider in China. Previously, in an effort to halt the outbreak of COVID-19, the Chinese government placed significant restrictions on travel within China, leading to extended business closures, including closures at our third-party manufacturers. Although most of the restrictions on operations of our third-party manufacturers and other suppliers have been lifted or eased, our suppliers and third-party manufacturers could continue to be disrupted by parts and component shortages, worker absenteeism, quarantines, office and factory closures, disruptions to ports and other shipping infrastructure, or other travel or health-related restrictions and such restrictions could spread to other locations where we outsource manufacture or distribution of our products if the virus and its variants continues to spread or resurge. If our supply chain operations are affected or are curtailed by the outbreak of diseases such as COVID-19, our supply chain, manufacturing and product shipments will be delayed, which could adversely affect our business, operations and customer relationships. We may need to seek alternate sources of supply which may be more expensive, unavailable or may result in delays in shipments to us from our supply chain and subsequently to our customers. Further, if our distributors' or end user customers' businesses are similarly affected, they might delay or reduce purchases from us, which could adversely affect our results of operations.

In addition, freight and logistics constraints caused in part by restrictions imposed by governments to combat the COVID-19 pandemic, have resulted in increased costs and constrained available transport, for us and our channel partners. If our supply chain operations continue to be affected or are curtailed by the outbreak of diseases such as COVID-19, our supply chain, manufacturing and product shipments will be delayed, which could adversely affect our business, operations and customer relationships. We have sought and may continue to seek alternate sources of supply which may be more expensive, unavailable or may result in delays in shipments to us and from our supply chain and subsequently to our customers.

We are conducting business with substantial modifications to employee travel, employee work locations, and virtualization or cancellation of certain sales and marketing events, among other modifications. Our business is highly dependent on travel of our sales, operations, quality and technical support, and other managers and employees. Limitations placed on travel globally could significantly limit our ability to market our products, establish relationships with new customers, and manage post-contract support and maintenance activities. Other companies as well as many governments have imposed significant restrictions on business operations and other precautionary and preemptive actions to address COVID-19, and they may take further actions that cause us or our customers or suppliers to alter their normal business operations. We will continue to actively monitor the situation and may take further actions that alter our business operations as may be required by federal, state or local authorities, or that we determine are in the best interest of our employees, customers, partners, suppliers and shareholders. Any such alterations or modifications may adversely impact our business, our customers and prospects, or our financial results.

The extent to which the COVID-19 pandemic will impact our business and financial results going forward will be dependent on future developments such as the length and severity of the crisis, the potential resurgence of COVID-19 and its variants in the future, future government actions in response to the crisis, the acceptance and effectiveness of the COVID-19 vaccines and the overall impact of the COVID-19 pandemic on the global economy and capital markets, among many other factors, all of which remain highly uncertain and unpredictable. We cannot at this time quantify or forecast the business impact of COVID-19, and there can be no assurance that the COVID-19 pandemic will not have a material and adverse effect on our business, financial results and financial condition. In addition, the COVID-19 pandemic increases the likelihood and potential severity of other risks described in this "Risk Factors" section.

Our revenue growth rate in recent periods may not be indicative of our future performance.

Our revenue growth rate in recent periods may not be indicative of our future performance. For example, our revenues grew 11.6% from 2017 to 2018, 10.4% from 2018 to 2019 and 4.3% from 2019 to 2020. Accordingly, we may not achieve similar revenue growth rates of our earlier years in future periods. Our revenues for any prior annual period may not be an indication of our future revenues or revenue growth. If we are unable to maintain consistent revenues or revenue growth, our operating results and the trading price of our shares could be materially affected.

Our third-party logistics and warehousing provider may fail to deliver products to our channel partners and network operators in a timely manner, which could harm our reputation and operating results.

We rely on our third-party logistics and warehousing provider, with distribution hubs in the United States, the Netherlands and China, to fulfill the majority of our worldwide sales and deliver our products on a timely basis. Any delay in delivery of our products to distributors or network operators could create dissatisfaction, harm our reputation, result in the loss of future sales and, in some cases, subject us to penalties. We rely on our third-party logistics and warehousing provider to accurately segregate and record our inventory for us and to report to us the receipt and shipments of our products. Our third-party logistics and warehousing provider also manages and tracks the delivery of our products from the warehouse and safeguards our inventory, which accounts for a vast majority of our inventory balance. The failure of our third-party logistics and warehousing provider to perform these key tasks sufficiently, or the disruption to its business as a result of restrictions imposed as a result of COVID-19 or other crises, could disrupt the shipment of our products to distributors and network operators or cause errors in our recorded inventory, either of which could adversely affect our business and operating results.

Our ability to sell our products is highly dependent on the quality of our support and services offerings, and our failure to offer high-quality support and services could have a material adverse effect on our business, operating results and financial condition.

Network operators rely on our products for critical applications and, as such, high-quality support is critical for the successful marketing and sale of our products. If we or our channel partners do not provide adequate support to network operators in deploying our products or in resolving post-deployment issues quickly, our reputation may be harmed and our ability to sell our products could be materially and adversely affected.

If we or our distributors and channel partners are unable to attract new network operators or sell additional products to network operators that currently use our products, our revenue growth would be adversely affected, and our revenues could decrease.

To increase our revenues, we depend on the adoption of our solutions by network operators that purchase our products through our channel partners. Network operators typically need to make substantial investments when deploying network infrastructure, which can delay a purchasing decision. Once a network operator has deployed infrastructure for a particular portion of its network, it is often difficult and costly to switch to another vendor's equipment. If we or our channel partners are unable to demonstrate that our products offer significant performance, functionality or cost advantages to the competitor's product, it would be difficult for us to generate sales to that network operator once a competitor's equipment has been deployed.

Our future success also depends significantly on additional purchases of our products by network operators that have previously purchased our products. Network operators may choose not to purchase additional products because of several factors, including dissatisfaction with our products or pricing relative to competitive offerings, reductions in network operators' spending levels or other causes outside of our control. If we are not able to generate repeat purchases from network operators, our revenues may grow more slowly than expected or may decline, and our business and operating results would be adversely affected.

The seasonality of our business creates significant variance in our quarterly revenues, which makes it difficult to compare or forecast our financial results on a quarter-by-quarter basis.

Our revenues fluctuate on a seasonal basis, which affects the comparability of our results between sequential periods. While generally consistent, in certain periods other business factors have masked this seasonal pattern and the quantifiable effects of these seasonal variations are difficult to predict accurately. These factors introduce risk into our business as we rely upon forecasts of demand to build inventory in advance of anticipated sales. If our sales mix changes, or if the geographic mix of our sales changes, the seasonal nature of our revenues may change in unpredictable ways, which could increase the volatility of both our financial results and share price.

We require third-party components, including components from limited or sole source suppliers, to build our products. The unavailability of these components could substantially disrupt our ability to manufacture our products and fulfill sales orders.

We rely on third-party components to build our products, and we rely on our third-party manufacturers to obtain the components necessary for the manufacture of our products. If we underestimate our requirements or our third-party suppliers are not able to timely deliver components, our third-party manufacturers may have inadequate materials and components required to produce our products. This could result in an interruption in the manufacture of our products, delays in shipments and deferral or loss of revenues.

We have in the past and may in the future experience shortages in available supply of required components. For example, as a result of increased global demand for some components used in our products, particularly semiconductor-related components and including components provided by Qualcomm, foundries have experienced capacity shortages and have responded by allocating existing supply among their customers, including us. This capacity shortage, coupled with an increase in demand for our affected products, due in part to a global increase in demand for bandwidth has resulted in supply shortages that have caused increased lead times for some of our products. Unpredictable price increases for such components may also occur. We and our third-party manufacturers generally rely on purchase orders rather than long-term contracts with suppliers of required components. As a result, our third-party manufacturers may not be able to secure sufficient components at reasonable prices or of acceptable quality to build our products in a timely manner, adversely impacting our ability to meet demand for our products. In addition, if our component suppliers cease manufacturing needed components, we could be required to redesign our products to incorporate components from alternative sources or designs, a process which would cause significant delays in the manufacture and delivery of our products.

We currently depend on a limited number of suppliers for several critical components for our products, and in some instances, we use sole or single source suppliers for our components to simplify design and fulfillment logistics. Neither we nor our third-party manufacturers carry substantial inventory of our product components. Many of these components are also widely used in other product types, such as components provided by Qualcomm. Shortages, such as those we are currently experiencing, are possible and our ability to predict the availability of such components may be limited. In the event of a shortage or supply interruption from our component suppliers, we or our third-party manufacturers may not be able to develop alternate or second sources in a timely manner, on commercially reasonable terms or at all, and the development of alternate sources may be time-consuming, difficult and costly. Suppliers allocating their existing short supplies may allocate an insufficient quantity of supplies to us which would result in delays in lead times for manufacture of our products and our inability to timely meet customer demand for our products. Any resulting failure or delay in shipping products could result in lost revenues and a material and adverse effect on our operating results.

Our gross margin varies from period to period and may decline in the future.

Our gross margin varies from period to period, may be difficult to predict and may decline in future periods. Variations in our gross margin are generally driven by shifts in the mix of products we sell, the timing and related cost of fulfilling orders and other factors. In addition, the market for wireless broadband solutions is characterized by rapid innovation and declining average sale prices as products mature in the marketplace. The sales prices and associated gross margin for our products may decline due to change in sales strategy, competitive pricing pressures, demand, promotional discounts and seasonal changes in demand. Larger competitors with more diverse product and service offerings may reduce the price of products or services that compete with ours or may bundle them with other products and services. If we meet such price reductions but do not similarly reduce our product manufacturing costs, our margins would decline. Any decline in our gross margins could have an adverse impact on the trading price of our shares.

Our products are technologically complex and may contain undetected hardware defects or software bugs, which could result in increased warranty claims, loss of revenues and harm to our reputation.

Our products are technologically complex and, when deployed, are critical to network operations. Our products rely on our proprietary embedded software, and have in the past contained and may in the future contain undetected errors, bugs or security vulnerabilities, or suffer reliability or quality issues. Some defects in our products may only be discovered after a product has been installed and used by network operators. Any errors, bugs, defects, security vulnerabilities or quality or reliability issues discovered in our products after commercial release could result in increased warranty claims, damage to our reputation and brand, loss of market shares or loss of revenues, any of which could adversely affect our business, operating results and financial condition. In addition, our products operate in part in outdoor settings and must withstand environmental effects such as severe weather, lightning or other damage. Our products may also contain latent defects and errors from time to time related to embedded third-party components.

We have in the past and may in the future become subject to warranty claims that may require us to make significant expenditures to repair or replace defective products, or redesign our products to eliminate product vulnerabilities. We may in the future also be the subject of product liability claims. Such claims could require a significant amount of time and expense to resolve and defend against and could harm our reputation by calling into question the quality of our products. 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 network operators and harm to our reputation. Additionally, defects and errors may cause our products to be vulnerable to security attacks, cause them to fail to help secure networks or temporarily interrupt network traffic. Although we disclaim responsibility for certain warranty and product liability claims as well as product recalls or security problems, any substantial costs or payments made in connection with warranty and product liability claims, product recalls or security problems could cause our operating results to decline and harm our brand.

If our channel partners do not effectively manage inventory of our products, fail to timely resell our products or overestimate expected future demand, they may reduce purchases in future periods, causing our revenues and operating results to fluctuate or decline.

Our channel partners purchase and maintain inventories of our products to meet future demand and have only limited rights to return the products they have purchased from us. Our channel partners are not generally committed to volume purchases of our products in any period, although some of our products carry minimum order quantities. Accordingly, if our channel partners purchase more product than is required to meet demand in a particular period, causing their inventory levels to grow, they may delay or reduce additional future purchases, causing our quarterly results to fluctuate and adversely impacting our ability to accurately predict future earnings.

If we are not able to effectively forecast demand or manage our inventory, we may be required to record write-downs for excess or obsolete inventory.

We maintain inventory of finished goods and, to a lesser extent, raw materials that we believe are sufficient to allow timely fulfillment of sales, subject to the impact of supply shortages. Growth in our sales and new product launches may require us to build inventory in the future. Higher levels of inventory expose us to a greater risk of carrying excess or obsolete inventory, which may in turn lead to write-downs. We may also record write-downs in connection with the end-of-life for specific products. Decisions to increase or maintain higher inventory levels are typically based upon uncertain forecasts or other assumptions. Because the markets in which we compete are volatile, competitive and subject to rapid technology and price changes, if the assumptions on which we base these decisions turn out to be incorrect, our financial performance could suffer and we could be required to write-off the value of excess products or components inventory.

We are exposed to the credit risk of our channel partners, which could result in material losses.

We generate a substantial majority of our revenues through sales to our distributors. Distributors may not have the resources required to meet payment obligations, or may delay payments if their end customers are late making payments. Our exposure to credit risks of our channel partners and their end customers may increase if such entities are adversely affected by global or regional economic conditions. Given the broad geographic coverage of our distributor relationships, we have in the past and may in the future experience difficulties surrounding the collection of payments. Any significant delay or default in the collection of significant accounts receivable could result in the need for us to obtain working capital from other sources and could adversely impact our operating results and financial condition.

If we do not effectively deploy and train our direct sales force, we may be unable to increase sales.

Although we rely on channel partners to fulfill the substantial majority of our sales, our direct sales force plays a critical role driving our sales through direct engagement with network operators. We have invested and will continue to invest substantially in our sales organization. Our sales headcount has grown from 87 as of December 31, 2016 to 108 as of December 31, 2020, as we focus on growing our business, entering new markets and increasing our market share, and we expect to continue to incur significant expenses as we continue to invest in sales and marketing in order to achieve revenue growth. There is significant competition for sales personnel with the skills and technical knowledge that we require. Our ability to achieve significant revenue growth will depend, in large part, on our success in recruiting, training, retaining and integrating sufficient numbers of sales personnel to support our growth, particularly in international markets. New hires require significant training and may take significant time before they achieve full productivity. Our recent hires may not become productive as quickly as we expect, and we may be unable to hire and retain sufficient numbers of qualified individuals needed to increase our sales. If we are unable to hire and train a sufficient number of effective sales personnel, or the sales personnel we hire do not achieve expected levels of productivity, our business, operating results and financial condition could be materially adversely affected.

Our business and prospects depend on the strength of our brand. Failure to maintain and enhance our brand would harm our ability to increase sales by expanding our network of channel partners as well as the number of network operators who purchase our products.

Maintaining and enhancing our brand is critical to expanding our base of channel partners and the number of network operators who purchase our products. Maintaining and enhancing our brand will depend largely on our ability to continue to develop products and solutions that provide the high quality at attractive economics sought by network operators. If we fail to promote, maintain and protect our brand successfully, our ability to sustain and expand our business and enter new markets will suffer. Our brand may be impaired by a number of factors, including product failure and counterfeiting. If we fail to maintain and enhance our brand, or if we need to incur unanticipated expenses to establish the brand in new markets, our operating results would be negatively affected.

Our sales cycles can be long and unpredictable and our sales efforts require considerable time and expense. As a result, our sales and revenues are difficult to predict and may vary substantially from period to period.

Our sales efforts involve educating channel partners and network operators about the technical capabilities, applications and benefits of our products. Network operators typically require long sales cycles to select a product supplier and place sales orders. The sale process usually begins with an evaluation, followed by one or more network trials, followed by vendor selection and finally installation, testing and deployment. Network operator purchasing activity depends upon the stage of completion of expanding network infrastructures and the availability of funding, among other factors. We spend substantial time and resources on our sales efforts without any assurance that our efforts will produce any sales. In addition, purchases of our products are frequently subject to budget constraints, multiple approvals, and unplanned administrative, processing and other delays. Moreover, the evolving nature of the market may lead prospective network operators to postpone their purchasing decisions pending resolution of network standards or adoption of technology by others. Network operators may also postpone a purchase decision pending the release of new or enhanced products by us or others. As a result, it is difficult to predict whether a sale will be completed, the particular period in which a sale will be completed or the period in which revenues from a sale will be recognized. Our operating results may therefore vary significantly from quarter to quarter.

A portion of our revenues are generated by sales to government entities, which are subject to a number of challenges and risks.

We derive a portion of our revenues from contracts with government agencies and we believe the success and growth of our business will in part depend on our continued and increasing sales to U.S. and foreign, federal, state and local governmental end customers in the future. However, demand from government agencies is often unpredictable, and we may be unable to maintain or grow our revenues from this market. Sales to government agencies are subject to substantial risks, including but not limited to the following:

- selling to government agencies can be highly competitive, expensive and time-consuming, often requiring significant upfront time and expense without any assurance that such efforts will generate a sale;
- government entities may have statutory, contractual or other legal rights to terminate contracts with our channel partners or us for convenience or due to a default, and any such termination may adversely impact our future business, financial condition, results of operations and prospects;
- U.S. or other government certification requirements applicable to our goods and services may be difficult to meet, require an additional administrative or compliance burden on us not found in our commercial contracts, and if we are unable to meet these certification requirements, our ability to sell into the government sector may be adversely impacted until we have attained required certifications;
- government demand and payment for our services may be adversely impacted by public sector budgetary cycles and funding constraints;
- selling to government entities may require us to comply with various regulations that are not applicable to sales to non-government entities, including regulations that may relate to pricing, classified material and other matters, or requirements regarding the development and maintenance of programs such as small business subcontracting, or compliance with EEOC requirements. Complying with such regulations may also require us to put in place controls and procedures to monitor compliance with the applicable regulations that may be costly or not possible;
- the U.S. government may require certain products that it purchases be manufactured in the United States and other relatively high-cost manufacturing locations under Buy American Act or other regulations, and we may not manufacture all products in locations that meet these requirements, which may preclude our ability to sell some products or services; and
- governments may investigate and audit government contractors' administrative and financial processes and compliance with laws and regulations applicable to government contractors, and any unfavorable audit could result in fines, civil or criminal liability, damage to our reputation and suspension or debarment from further government business.

The occurrence of any of the foregoing could cause governments and governmental agencies to delay or refrain from purchasing our products in the future which could materially and adversely affect our operating results.

We generate a significant amount of revenues from sales outside of the United States, and we are therefore subject to a number of risks associated with international sales and operations.

We have extensive international operations and generate a significant amount of revenues from sales to channel partners in Europe, the Middle East and Africa, Asia-Pacific and South America. For example, sales outside of the United States accounted for 57% of our total revenues in 2018, 55% in 2019, and 49% in 2020. We rely on our third-party logistics and warehousing provider, with distribution hubs in the United States, the Netherlands and China, to fulfill the majority of our worldwide sales and to deliver our products to our customers. We have estimated the geographical distribution of our product revenues based on the ship-to destinations specified by our distributors when placing orders with us. Our ability to grow our business and our future success will depend on our ability to continue to expand our global operations and sales worldwide.

As a result of our international reach, we must hire and train experienced personnel to manage our international operations. If we experience difficulties in recruiting, training, managing and retaining an international staff, and specifically staff related to sales management and sales personnel, we may experience difficulties expanding our sales outside of the United States. If we are not able to maintain these relationships internationally or to recruit additional channel partners, our future international sales could be limited. Business practices in the international markets that we serve may differ from those in the United States and may require us in the future to include terms other than our standard terms in contracts.

Our international sales and operations are subject to a number of risks, including the following:

- fluctuations in currency exchange rates, which could drive fluctuations in our operating expenses;
- required local regulatory certifications in each jurisdiction, which may be delayed for political or other reasons other than product quality or performance;
- requirements or preferences for domestic products, which could reduce demand for our products;
- differing technical standards, existing or future regulatory and certification requirements and required product features and functionality;
- management communication problems related to entering new markets with different languages, cultures and political systems;
- difficulties in enforcing contracts and collecting accounts receivable, and longer payment cycles, especially in emerging markets;
- heightened risks of unfair or corrupt business practices in certain geographies and of improper or fraudulent sales arrangements that may impact financial results and result in restatements of, and irregularities in, financial statements;
- difficulties and costs of staffing and managing foreign operations;
- the uncertainty of protection of intellectual property rights in some countries;
- potentially adverse tax consequences, including regulatory requirements regarding our ability to repatriate profits to the United Kingdom;
- requirements to comply with foreign privacy, information security, and data protection laws and regulations and the risks and costs of non-compliance;
- added legal compliance obligations and complexity;
- the increased cost of terminating employees in some countries;
- political and economic instability and terrorism; and
- the impact of the spread of any diseases globally that might impact our operations.

These and other factors could harm our ability to generate future international revenues. Expanding our existing international operations and entering into additional international markets will require significant management attention and financial commitments. Our failure to successfully manage our international operations and the associated risks effectively could limit our future growth or materially adversely affect our business, operating results and financial condition.

Economic conditions and regulatory changes following the United Kingdom's exit from the European Union could adversely impact our operations, operating results and financial condition.

The United Kingdom ceased to be a member of the European Union on January 31, 2020. While an agreement governing the U.K.'s departure from the European Union, Brexit, was agreed to on December 24, 2020, there continues to be uncertainty over the practical consequences of Brexit and questions remain as to its application, particularly relating to the United Kingdom's trading policies with the EU and other countries. The full effects of Brexit will depend on agreements the United Kingdom may make to retain access to the European Union or other markets. Given the lack of comparable precedent, it is unclear what economic, financial, trade and legal implications the withdrawal of the United Kingdom from the European Union will have generally and how such withdrawal will affect us. The consequences of Brexit have brought legal uncertainty and increased complexity which could continue as national laws and regulations in the U.K. differ from EU laws and regulations and additional requirements come into effect in the U.K. and EU relating to testing, authorization, labeling and other requirements that may impact our ability to import, export and otherwise distribute our products, services, and solutions.

Brexit may, among other outcomes, disrupt the free movement of goods, services and people between the United Kingdom and the European Union, undermine bilateral cooperation in key geographic areas, disrupt the markets we serve, and significantly disrupt trade between the United Kingdom and the European Union or other nations as the United Kingdom pursues independent trade relations. Since we derive most of our revenues through our U.K. subsidiary, which owns our intellectual property, the consequences of Brexit, together with the significant uncertainty regarding the provisions governing the relationship between the U.K. and the European Union after December 31, 2020, could adversely change our tax benefits or liabilities in certain jurisdictions and adversely impact our trade operations and our management of our export compliance from our Netherlands distribution hub. Our U.K. operations may be adversely affected as we become subject to new laws and regulations implemented in the U.K. as part of Brexit, including compliance with U.K. labor and other regulations as well as compliance with EU privacy laws. Brexit could also create uncertainty with respect to the legal and regulatory requirements over the operation of our products to which we and our network operators in the U.K. are subject and lead to divergent national laws and regulations as the U.K. government determines which EU laws to replace or replicate.

While we are not experiencing any immediate adverse impact on our financial condition as a direct result of Brexit, the effects of Brexit will depend on any agreements the United Kingdom makes to retain access to the European Union or other markets. Our U.K. operations will be required to comply with new legal and regulatory requirements in the U.K. that occasionally are in addition to, or inconsistent with, those of the European Economic Area, or EEA, in each case, leading to increased complexity and costs. We import and export our products into our distribution hub in the Netherlands, which will now be subject to the laws of the EU, which may be different from those that we previously operated under as a U.K. company. Compliance with new laws or regulations regarding trade, delivery and other cross-border activities between the United Kingdom and the European Union could be costly, negatively impacting our business, financial condition, operating results and cash flows.

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 is substantially dependent upon the continued service and performance of our senior management team and key technical, marketing and production personnel. Our employees, including our senior management team, are generally at-will employees, and therefore may terminate employment with us at any time with no advance notice. The replacement of any members of our senior management team or other key personnel 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 and retain highly skilled personnel. Competition for highly skilled personnel is frequently intense, particularly for highly skilled research and development personnel. Any failure to successfully attract or retain qualified personnel to fulfill our current or future needs may negatively impact our growth.

A substantial portion of our product portfolio relies on the availability of unlicensed RF spectrum and if such spectrum were to become unavailable through overuse or licensing, the performance of our products could suffer and our revenues from their sales could decrease.

A substantial portion of our product portfolio operates in unlicensed RF spectrum, which is used by a wide range of consumer devices and is becoming increasingly crowded. If such spectrum usage continues to increase through the proliferation of consumer electronics and products competitive with ours, the resultant higher levels of noise in the bands of operation our products use could decrease the effectiveness of our products, which could adversely affect our ability to sell our products. Our business could be further harmed if currently unlicensed RF spectrum becomes licensed in the United States or elsewhere. Network operators that use our products may be unable to obtain licenses for RF spectrum. Even if the unlicensed spectrum remains unlicensed, existing and new governmental regulations may require we make changes in our products. For example, to provide products for network operators who utilize unlicensed RF spectrum, we may be required to limit their ability to use our products in licensed or otherwise restricted RF spectrum. The operation of our products by network operators in the United States or elsewhere in a manner not in compliance with local law could result in fines, operational disruption, or harm to our reputation.

We may acquire other businesses which could require significant management attention, disrupt our business, dilute shareholder value and adversely affect our operating results.

To execute on our business strategy, we may acquire or make investments in complementary companies, products or technologies such as our August 2019 acquisition of the assets and liabilities of the Xirrus business from Riverbed Technology, Inc. Our integration of acquired businesses such as Xirrus may not be successful and we may not achieve the benefits of the acquisition. 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. If we do complete additional acquisitions, we may not ultimately strengthen our competitive position or achieve our goals, and any acquisitions we complete could be viewed negatively by our channel partners, investors and financial analysts. In addition, if we are unsuccessful at integrating such acquisitions, or the technologies associated with such acquisitions, into our company, the revenues and operating results of the combined company could be adversely affected. Any integration process may require significant time and resources, and we may be unable to manage the process successfully. We may not successfully evaluate or utilize the acquired technology or personnel, or accurately forecast the financial impact of an acquisition transaction, including unexpected liability or accounting charges. We may pay cash, incur debt or issue equity securities to pay for any future acquisition, each of which could adversely affect our financial condition or the value of our shares. The sale of equity or issuance of debt to finance any such acquisitions could result in dilution to our shareholders. The incurrence of indebtedness would result in increased fixed obligations and could also include covenants or other restrictions that would impede our ability to manage our operations.

Risks related to our industry

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

Our products are subject to governmental regulations in a variety of jurisdictions. To achieve and maintain market acceptance, our products must comply with these regulations as well as a significant number of industry standards. In the United States, our products must comply with various regulations defined by the Federal Communications Commission, or FCC, Underwriters Laboratories and others. We must also comply with similar international regulations. In addition, radio emissions, such as our products, are subject to health and safety regulation in the United States and in other countries in which we do business, including by the Center for Devices and Radiological Health of the Food and Drug Administration, the Occupational Safety and Health Administration and various state agencies. Member countries of the European Union have enacted similar standards concerning electrical safety and electromagnetic compatibility and emissions, and chemical substances and use standards. As these regulations and standards evolve, and if new regulations or standards are implemented, we could be required to modify our products or develop and support new versions of our products, and our compliance with these regulations and standards may become more burdensome. The failure of our products to comply, or delays in compliance, with the various existing and evolving industry regulations and standards could prevent or delay introduction of our products, which could harm our business. Foreign regulatory agencies may delay or fail to certify our products for political or other reasons other than product quality or performance. Network operator uncertainty regarding future policies may also affect demand for wireless broadband products, including our products. 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 are subject to governmental export and import controls that could impair our ability to compete in international markets and subject us to liability if we are not in compliance with applicable laws.

Our technology and products are subject to export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. customs regulations, the economic and trade sanctions regulations administered by the U.S. Treasury Department’s Office of Foreign Assets Controls, and applicable U.K. and EU export and import laws and regulations. Exports, re-exports and transfers of our products and technology must be made in compliance with these laws and regulations. U.S., U.K. and EU export control laws and economic sanctions include a prohibition on the shipment of certain products and technology to embargoed or sanctioned countries, governments and persons. We take precautions to prevent our products and technology from being shipped to, downloaded by or otherwise transferred to applicable sanctions targets, but our products could be shipped to those targets by our channel partners despite such precautions. If our products are shipped to or downloaded by sanctioned targets in the future in violation of applicable export laws, we could be subject to government investigations, penalties and reputational harm. Certain of our products incorporate encryption technology and may be exported, re-exported or transferred only with the required applicable export license from the U.S. or the U.K. or through an export license exception.

If we fail to comply with applicable export and import regulations, customs and trade regulations, and economic sanctions and other laws, we could be subject to substantial civil and criminal penalties, including fines and incarceration for responsible employees and managers, and the possible loss of export or import privileges as well as harm our reputation and indirectly have a material adverse effect on our business, operating results and financial condition. In addition, if our channel partners fail to comply with applicable export and import regulations, customs regulations, and economic and sanctions and other laws in connection with our products and technology, then we may also be adversely affected, through reputational harm and penalties. Obtaining the necessary export license for a particular sale may be time-consuming, may result in the delay or loss of sales opportunities and approval is not guaranteed.

Any change in export or import, customs or trade and economic sanctions 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 network operators with international operations. Any decreased use of our products or limitation on our ability to export or sell our products could affect our business, financial condition and results of operations.

We do business in countries with a history of corruption and transact business with foreign governments, which increases the risks associated with our international activities.

We are subject to the U.S. Foreign Corrupt Practices Act of 1977, as amended, or the FCPA, the U.K. Bribery Act of 2010, and many other laws around the world that prohibit improper payments or offers or authorization of payments to governments and their employees, officials, and agents and political parties for the purpose of obtaining or retaining business, inducing an individual to not act in good faith, direct business to any person, or secure any advantage. We have operations, deal with and make sales to governmental entities in countries known to experience corruption, particularly certain emerging countries in Asia, Eastern Europe, the Middle East and South America. Our activities in these countries create the risk of illegal or unauthorized payments or offers of payments or other things of value by our employees, consultants or channel partners that could be in violation of applicable anti-corruption laws, including the FCPA. In many foreign countries where we operate, particularly in countries with developing economies, it may be a local custom for businesses to engage in practices that are prohibited by the FCPA or other similar laws and regulations. Although we have taken actions to discourage and prevent illegal practices including our anti-corruption compliance policies, procedures, training and monitoring, the actions taken to safeguard against illegal practices, and any future improvements in our anti-corruption compliance practices, may not be effective, and our employees, consultants or channel partners may engage in illegal conduct for which we might be held responsible. Violations of anti-corruption laws may result in severe criminal or civil sanctions, including suspension or debarment from government contracting, and we may be subject to other liabilities and significant costs for investigations, litigation and fees, diversion of resources, negative press coverage, or reputational harm, all of which could negatively affect our business, operating results and financial condition. In addition, the failure to create and maintain accurate books and records or the failure to maintain an adequate system of internal accounting controls may subject us to sanctions.

If we fail to comply with environmental requirements, our business, financial condition, operating results and reputation could be adversely affected.

We are subject to various environmental laws and regulations including laws governing the hazardous material content of our products and laws relating to the recycling of electrical and electronic equipment. The laws and regulations to which we are subject include the European Union’s Restriction of Hazardous Substances Directive, or RoHS, and Waste Electrical and Electronic Equipment Directive, or WEEE, as implemented by EU member states. Similar laws and regulations exist or are pending in other regions, including in the United States, and we are, or may in the future be, subject to these laws and regulations.

RoHS restricts the use of certain hazardous materials, including lead, mercury and cadmium, in the manufacture of certain electrical and electronic products, including some of our products. We have incurred, and expect to incur in the future, costs to comply with these laws, including research and development costs, and costs associated with assuring the supply of compliant components. Certain of our products are eligible for an exemption for lead used in network infrastructure equipment. If this exemption is revoked, or if there are other changes to RoHS (or its interpretation) or if similar laws are passed in other jurisdictions, we may be required to reengineer our products to use components compatible with these regulations. This reengineering and component substitution could result in additional costs to us or disrupt our operations or logistics.

WEEE requires producers of electrical and electronic equipment to be responsible for the collection, reuse, recycling and treatment of their products. Currently, our distributors generally take responsibility for this requirement, as they are often the importer of record. However, changes to WEEE and existing or future laws similar to WEEE may require us to incur additional costs in the future.

If we are unable to comply with these or similar laws or regulations, we could incur fines, penalties, restrictions on our ability to manufacture our products or restrictions or limitations on our ability to import or export our products to or from various jurisdictions.

Any failure to comply with current and future environmental laws could result in the incurrence of fines or penalties and could adversely affect the demand for or sales of our products.

If we were not able to satisfy data protection, security, privacy and other government- and industry-specific requirements or regulations, our business, results of operations and financial condition could be harmed.

Personal privacy, data protection, information security and telecommunications-related laws and regulations have been widely adopted in the United States, Europe and in other jurisdictions where we offer our products. The regulatory frameworks for these matters, including privacy, data protection and information security matters, is rapidly evolving and is likely to remain uncertain for the foreseeable future. We expect that there will continue to be new proposed laws, regulations and industry standards concerning privacy, data protection, information security and telecommunications services in the United States, the European Union and other jurisdictions in which we operate or may operate, and it is not known what impact such future laws, regulations and standards may have on our business. For example, the European Commission adopted the General Data Protection Regulation, or GDPR, effective in May 2018, which imposes more stringent EU data protection requirements and imposes greater penalties for noncompliance than prior regulations. In July 2020, the European Court of Justice invalidated the Privacy Shield regime that had been established under GDPR as a safe harbor for transfers of data to and from third parties, and raised several questions regarding the efficacy of Standard Contractual Clauses, or SCCs, as a European Commission-approved compliance method to transfer personal data of EEA individuals to the U.S. focusing on whether data transfers under SCCs are consistent with the EU privacy principles. We rely on SCCs for transfers to and from third parties. In addition, we must ensure that third parties processing personal data of our EEA customers and/or employees outside of the EEA have compliant transfer mechanisms. To the extent we rely on SCCs, or any third party relies on the Privacy Shield regime for the compliant transfer of personal data, our ability to process EEA personal data to such parties could be jeopardized.

Additionally, California enacted the California Consumer Privacy Act of 2018, which took effect on January 1, 2020, and broadly defines personal information, gives California residents expanded privacy rights and protections and provides for civil penalties for violations. We understand that additional states as well as other countries around the world are also in the process of enacting or amending data protection, security, and privacy regulations. We also expect that existing laws, regulations and standards may be interpreted in new manners in the future. Future laws, regulations, standards and other obligations, and changes in the interpretation of existing laws, regulations, standards and other obligations could require us to modify our products, restrict our business operations, increase our costs and impair our ability to maintain and grow our channel partner base and increase our revenues. The cost of compliance with, and other burdens imposed by new privacy laws may limit the use and adoption of our products and services and could have an adverse impact on our business, results of operations and financial condition.

Although we work to comply with applicable privacy and data security laws and regulations, industry standards, contractual obligations and other legal obligations, those laws, regulations, standards and obligations are evolving and may be modified, interpreted and applied in an inconsistent manner from one jurisdiction to another, and may conflict with one another. As such, we cannot assure ongoing compliance with all such laws, regulations, standards and obligations. Any failure or perceived failure by us to comply with applicable laws, regulations, standards or obligations, or any actual or suspected security incident, whether or not resulting in unauthorized access to, or acquisition, release or transfer of personally identifiable information or other data, may result in governmental enforcement actions and prosecutions, private litigation, fines and penalties or adverse publicity, and could cause channel partners to lose trust in us, which could have an adverse effect on our reputation and business.

Risks related to our intellectual property

We rely on the availability of third-party licenses, the loss of which could materially harm our ability to sell our products.

We rely on certain software or other intellectual property licensed from third parties. It may be necessary in the future to seek new licenses or renew existing licenses. There can be no assurance that the necessary licenses would be available on acceptable terms, if at all. If we are unable to maintain these licenses, or obtain licenses to alternative third-party intellectual property, on acceptable terms, we may be precluded from selling our products, may be required to re-design our products to eliminate reliance on such third-party intellectual property or otherwise experience disruption in operating our business. Third parties owning such intellectual property may engage in litigation against us seeking protection of their intellectual property rights, any of which could have a material adverse effect on our business, operating results, and financial condition.

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

We protect our proprietary information and technology through license agreements, nondisclosure agreements, noncompetition covenants, and other contractual provisions and agreements, as well as through patent, trademark, copyright and trade secret laws in the United States and similar laws in other countries. These protections may not be available in all jurisdictions and may be inadequate to prevent our competitors or other third-party manufacturers 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. We have focused patent, trademark, copyright and trade secret protection primarily in the United States and Europe, although we distribute our products globally. As a result, we may not have sufficient protection of our intellectual property in all countries where infringement may occur. 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 we may not be successful in such action.

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. A number of companies hold a large number of patents that may cover technology necessary to our products. We have in the past received and expect to continue to receive claims by third parties that we infringe their intellectual property rights. For example, on August 7, 2018, Ubiquiti Networks, Inc. filed a lawsuit, which we refer to as the Ubiquiti Litigation, in the United States District Court, Northern District of Illinois, against us, two of our employees, one of our distributors and one of our end users. The complaint alleged that our development of and sales and promotion of our Elevate software as downloaded on a Ubiquiti device violated the Computer Fraud and Abuse Act and Illinois Computer Crimes Prevention Law, the Digital Millennium Copyright Act and the Copyright Act and constituted misrepresentation and false advertising and false designation of origin in violation of the Lanham Act and state competition laws, breach of contract, tortious interference with contract and unfair competition, and trademark infringement and common law misappropriation. On December 1, 2020, we reached a settlement agreement with Ubiquiti, settling all claims made in the Ubiquiti Litigation. The Court dismissed the Ubiquiti Litigation, with prejudice, on January 5, 2021.

In addition, we have received correspondence from certain patent holding companies who assert that we infringe certain patents related to wireless communication technologies. A court adjudicating a claim that we infringe these patents may not rule in our favor should these patent holding companies file suit against us. As our business expands, we enter into new technologies, and the number of products and competitors in our market increases, we expect that infringement claims may increase in number and significance. It is not uncommon for suppliers of certain components of our products, such as chipsets, to be involved in intellectual property-related lawsuits by or against third parties. Our key component suppliers are often targets of such assertions, and we may become a target as well. Any claims or proceedings against us, whether meritorious or not, could be time-consuming, result in costly litigation, require significant amounts of management time or result in the diversion of significant operational resources, any of which could materially and adversely affect our business and operating results.

Intellectual property lawsuits are subject to inherent uncertainties due to the complexity of the technical issues involved, and we cannot be certain that we will be successful in defending ourselves against intellectual property claims. In addition, we currently have a limited portfolio of issued patents compared to our larger competitors, and therefore may not be able to effectively utilize our intellectual property portfolio to assert defenses or counterclaims in response to patent infringement claims or litigation brought against us by third parties. Patent holding companies may seek to monetize patents they previously developed, have purchased or otherwise obtained. Many companies, including our competitors, may now, and in the future, have significantly larger and more mature patent portfolios than we have, which they may use to assert claims of infringement, misappropriation and other violations of intellectual property rights against us. In addition, future litigation may involve non-practicing entities or other patent owners who have no relevant products or revenue and against whom our own patents may therefore provide little or no deterrence or protection, and many other potential litigants have the capability to dedicate substantially greater resources than we do to enforce their intellectual property rights and to defend claims that may be brought against them.

A successful claimant could secure a judgment that requires us to pay substantial damages or prevents us from distributing certain products, obtaining the services of certain employees or independent contractors, or performing certain services. In addition, we might be required to seek a license for the use of such intellectual property, which may not be available on commercially acceptable terms or at all. Alternatively, we may be required to develop non-infringing technology, which could require significant effort and expense and may ultimately not be successful. Any claims or proceedings against us, whether meritorious or not, could be time consuming, result in costly litigation, require significant amounts of management time, result in the diversion of significant operational resources, or require us to enter into royalty or licensing agreements.

Although we may be able to seek indemnification from our component suppliers and certain of our third-party manufacturers who have provided us with design and build services, these third-party manufacturers or component suppliers may contest their obligations to indemnify us, or their available assets or indemnity obligation may not be sufficient to cover our losses.

Our obligations to indemnify our channel partners and network operators against intellectual property infringement claims could cause us to incur substantial costs.

We have agreed, and expect to continue to agree, to indemnify our channel partners and network operators for certain intellectual property infringement claims, such as the Ubiquiti Litigation. If intellectual property infringement claims are made against our channel partners or network operators concerning our products, we could be required to indemnify them for losses resulting from such claims or to refund amounts they have paid to us. The maximum potential amount of future payments we could be required to make may be substantial or unlimited and could materially harm our business. We may in the future agree to defend and indemnify our distributors, network operators and other parties, even if we do not believe that we have an obligation to indemnify them or that our services and products infringe the asserted intellectual property rights. Alternatively, we may reject certain of these indemnity demands, which may lead to disputes with a distributor, network operator or other party and may negatively impact our relationships with the party demanding indemnification or result in litigation against us.

If our third-party manufacturers do not respect our intellectual property and trade secrets and produce competitive products using our design, our business would be harmed.

We outsource manufacture, and in some cases hardware or software design, to third-party manufacturers predominantly in Mexico, China, Israel and Taiwan. Prosecution of intellectual property infringement and trade secret theft is more difficult in some of these jurisdictions than in the United States. Although our agreements with our third-party manufacturers generally preclude them from misusing our intellectual property and trade secrets, or using our designs to manufacture product for our competitors, we may be unsuccessful in monitoring and enforcing our intellectual property rights and may find counterfeit goods in the market being sold as our products or products similar to ours produced for our competitors using our intellectual property. Although we take steps to stop counterfeits, we may not be successful and network operators who purchase these counterfeit goods may experience product defects or failures, harming our reputation and brand and causing us to lose future sales.

We use open source software in our products that may subject our firmware to general release or require us to re-engineer our products and the firmware contained therein, which may cause harm to our business.

We incorporate open source software into our products. Use and distribution of open source software may entail greater risks than use of third-party commercial software, as open source licensors generally do not provide warranties or other contractual protections regarding infringement claims or the quality of the software code. Some open source licenses contain requirements that we make available source code for modifications or derivative works we create based upon the open source software and that we license such modifications or derivative works under the terms of a particular open source license or other license granting third parties certain rights of further use. If we combine our proprietary firmware or other software with open source software in a certain manner, we could, under certain of the open source licenses, be required to release our proprietary source code publicly or license such source code on unfavorable terms or at no cost. Open source license terms relating to the disclosure of source code in modifications or derivative works to the open source software are often ambiguous and few if any courts in jurisdictions applicable to us have interpreted such terms. As a result, many of the risks associated with usage of open source software cannot be eliminated, and could, if not properly addressed, negatively affect our business.

If we were found to have inappropriately used open source software, we may be required to release our proprietary source code, re-engineer our firmware or other software, discontinue the sale of our products in the event re-engineering cannot be accomplished on a timely basis or take other remedial action that may divert resources away from our development efforts, any of which could adversely increase our expenses and delay our ability to release our products for sale. We could also be subject to similar conditions or restrictions should there be any changes in the licensing terms of the open source software incorporated into our products.

Financial and accounting risks

If we fail to maintain an effective system of internal controls, our ability to produce timely and accurate financial statements or comply with applicable regulations could be impaired.

As a public company, we are subject to the reporting requirements of the Exchange Act, the Sarbanes-Oxley Act, and the rules and regulations of Nasdaq. The requirements of these rules and regulations has and will increase our legal, accounting and financial compliance costs, make some activities more difficult, time-consuming and costly and place strain on our personnel, systems and resources.

The Sarbanes-Oxley Act requires, among other things, that we maintain effective disclosure controls and procedures over financial reporting. We are continuing to develop and refine our disclosure controls, internal control over financial reporting and other procedures that are designed to ensure that information required to be disclosed by us in the reports that we will file with the SEC is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and that information required to be disclosed in reports under the Exchange Act is accumulated and communicated to our principal executive and financial officers.

Our current controls and any new controls we develop may become inadequate because of growth in our business. Further, weaknesses, including material weaknesses, in our internal controls have been discovered in the past and additional weaknesses may be discovered in the future. Any failure to develop or maintain effective controls, or any difficulties encountered in their implementation or improvement, could harm our operating results or cause us to fail to meet our reporting obligations and may result in a restatement of our financial statements for prior periods. Any failure to implement and maintain effective internal controls also could adversely affect the results of periodic management evaluations and annual independent registered public accounting firm attestation reports regarding the effectiveness of our internal control over financial reporting that we will be required to include in our periodic reports we will file with the SEC under Section 404 of the Sarbanes-Oxley Act once we cease to be an emerging growth company. Ineffective disclosure controls and procedures and internal control over financial reporting could also cause investors to lose confidence in our reported financial and other information, which would likely have a negative effect on the market price of our shares.

We have expended and anticipate we will continue to expend significant resources, and we expect to provide significant management oversight, to maintain and improve the effectiveness of our disclosure controls and procedures and internal controls over financial reporting. Any future failure to maintain the adequacy of our internal controls, or consequent inability to produce accurate financial statements on a timely basis, could increase our operating costs and could materially impair our ability to operate our business. If our internal controls are perceived as inadequate or we are unable to produce timely or accurate financial statements, investors may lose confidence in our operating results and our share price could decline. In addition, if we are unable to continue to meet these requirements, we may not be able to remain listed on Nasdaq.

Our independent registered public accounting firm is not required to formally attest to the effectiveness of our internal control over financial reporting until after we are no longer an emerging growth company. At such time, our independent registered public accounting firm may issue a report that is adverse in the event it is not satisfied with the level at which our controls are documented, designed or operating. Any failure to maintain effective disclosure controls and internal control over financial reporting could have a material and adverse effect on our business and operating results and could cause a decline in the price of our shares.

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 overall demand for wireless network technology and 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 deteriorate, become uncertain or volatile, 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 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 impact 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 particular, we cannot be assured of the level of spending on wireless network technology, the deterioration of which would have a material adverse effect on our results of operations and growth rates. The purchase of our products or willingness to replace existing infrastructure is discretionary and highly dependent on a perception of continued rapid growth in consumer usage of mobile devices and in many cases involves a significant commitment of capital and other resources. Therefore, weak economic conditions or a reduction in capital spending would likely adversely impact our business, operating results and financial condition. A reduction in spending on wireless network technology could occur or persist even if economic conditions improve.

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 impact our financial results.

The elimination of LIBOR could adversely affect our business, results of operations or financial condition.

In July 2017, the head of the United Kingdom Financial Conduct Authority announced plans to phase out the use of LIBOR by the end of 2021. Although the impact is uncertain at this time, the elimination of LIBOR could have an adverse impact on our business, results of operations, or financial condition. We may incur significant expenses to amend our LIBOR-indexed loans, and other applicable financial or contractual obligations, including our credit facilities, to a new reference rate, which may differ significantly from LIBOR. Accordingly, the use of an alternative rate could result in increased costs, including increased interest expense on our credit facilities, and increased borrowing and hedging costs in the future. At this time, no consensus exists as to what rate or rates may become acceptable alternatives to LIBOR and we are unable to predict the effect of any such alternatives on our business, results of operations or financial condition.

Our credit facility contains restrictive financial covenants that may limit our operating flexibility.

Our credit facility contains certain restrictive covenants that either limit our ability to, or require a mandatory prepayment in the event we, among other things, incur additional indebtedness and liens, merge with other companies or consummate certain changes of control, acquire other companies, engage in new lines of business, change business locations, make certain investments, make any payments on any subordinated debt, transfer or dispose of assets, amend certain material agreements, and enter into various specified transactions. We, therefore, may not be able to engage in any of the foregoing transactions unless we obtain the consent of our lenders or prepay certain amounts under the credit facility. The credit facility also contains certain financial covenants and financial reporting requirements. We have in the past, and may in the future, fail to comply with all of the financial or restrictive covenants of our credit facility, requiring a waiver from our lenders. Our obligations under the credit facility are secured by substantially all of our assets. We may not be able to generate or sustain sufficient cash flow or sales to meet the financial covenants or pay the principal and interest under the credit facility, and we may in the future be unable to meet our financial covenants, requiring additional waivers that our lenders may be unwilling to grant. Furthermore, our future working capital, proceeds of borrowings or proceeds of equity financings could be required to be used to repay or refinance the amounts outstanding under the credit facility and, therefore, may be unavailable for other purposes. In the event of a liquidation, our lenders would be repaid all outstanding principal and interest prior to distribution of assets to unsecured creditors, and the holders of our shares would receive a portion of any liquidation proceeds only if all of our creditors, including our lenders, were first repaid in full.

We may face exposure to unknown tax liabilities, which could adversely affect our financial condition, cash flows and results of operations .

We are subject to income and non-income based taxes in the United States and in various non-U.S. jurisdictions. We file U.S. federal income tax returns as well as income tax returns in various U.S. state and local jurisdictions and many non-U.S. jurisdictions. The United States, United Kingdom, India, Mexico, and Brazil are the main taxing jurisdictions in which we operate. Significant judgment is required in dealing with uncertainties in the application of complex tax regulations when calculating our worldwide income tax liabilities and other tax liabilities. We are not aware of any uncertain tax positions as specified by Accounting Standards Codification 740, *Income Taxes*. We expect to continue to benefit from our implemented tax positions. We believe that our tax positions comply with applicable tax law and intend to vigorously defend our positions. However, as described below, tax authorities could take differing positions on certain issues.

We may be subject to income tax audits in all the jurisdictions in which we operate. The years open for audit vary depending on the tax jurisdiction. In the United States, we are no longer subject to U.S. federal income tax examinations by tax authorities for years before 2017. In the non-U.S. jurisdictions, the tax returns that are open vary by jurisdiction and are generally for tax years between 2014 through 2020. We routinely assess exposures to any potential issues arising from current or future audits of current and prior years' tax returns. When assessing such potential exposures and where necessary, we provide a reserve to cover any expected loss. To the extent that we establish a reserve, we increase our provision for income taxes. If we ultimately determine that payment of these amounts is unnecessary, we reverse the liability and recognize a tax benefit during the period in which we determine that the liability is no longer necessary. We record an additional charge in our provision for taxes in the period in which we determine that tax liability is greater than the original estimate. If the governing tax authorities have a differing interpretation of the applicable law, a successful challenge of any of our tax positions could adversely affect our financial condition, cash flows and/or results of operations.

Risks related to ownership of our ordinary shares

Because Vector Capital holds a controlling interest in us, the influence of our public shareholders over significant corporate actions will be limited.

Affiliates of Vector Capital directly or indirectly own approximately 63% of our outstanding shares through their ownership of Vector Cambium Holdings (Cayman), L.P., or VCH, L.P., which was reduced from 75% as a result of Vector Capital's sale of 2.5 million of our ordinary shares on December 3, 2020 pursuant to a registration statement declared effective on November 24, 2020. As a result of its controlling interest in us, Vector Capital has the power to:

- control all matters submitted to our shareholders;
- elect our directors; and
- exercise control over our business, policies and affairs.

Vector Capital is not prohibited from selling its interest in us to third parties, and has sold and will continue to periodically sell its interest in us under the currently effective shelf registration statement and future registration statements that are filed by us. While Vector Capital continues to own a majority of our outstanding shares, our ability to engage in significant transactions, such as a merger, acquisition or liquidation, is limited without the consent of Vector Capital. Conflicts of interest could arise between us and Vector Capital, and any conflict of interest may be resolved in a manner that does not favor us. Vector Capital may continue to retain control of us for the foreseeable future and may decide not to enter into a transaction in which our shareholders would receive consideration for their shares that is much higher than the cost to them or the then-current market price of those shares. In addition, Vector Capital could elect to sell a controlling interest in us and shareholders may receive less than the then-current fair market value or the price paid for their shares. Any decision regarding their ownership of us that Vector Capital may make at some future time will be in their absolute discretion.

In addition, pursuant to the terms of our Amended and Restated Memorandum and Articles of Association, Vector Capital and its affiliates have the right to, and have no duty to abstain from, exercising its right to engage or invest in the same or similar business as us, and do business with any of our channel partners, distributors, network operators and any other party with which we do business. In the event that any of our directors or officers who is also a director, officer or employee of Vector Capital or its affiliates acquires knowledge of a corporate opportunity or is offered a corporate opportunity, then Vector Capital or its affiliates may pursue or acquire such corporate opportunity without presenting the corporate opportunity to us without liability, and to the maximum extent permitted by applicable law, such relevant director will be deemed to have fully satisfied their fiduciary duty if the knowledge of such corporate opportunity was not acquired solely in such person's capacity as our director or officer and such person acted in good faith.

In addition, pursuant to our Amended and Restated Memorandum and Articles of Association, a director who is in any way interested in a contract or transaction with us will declare the nature of his interest at a meeting of the board of directors. A director may vote in respect of any such contract or transaction notwithstanding that he may be interested therein and if he does so his vote will be counted and he may be counted in the quorum at any meeting of the board of directors at which any such contract or transaction shall come before the meeting of the board of directors for consideration. We have adopted a written audit committee charter, pursuant to which the audit committee must review all related party transactions required to be disclosed in our financial statements and approve any such related party transaction, unless the transaction is approved by another independent committee of our board.

We are a controlled company within the meaning of Nasdaq rules and, as a result, we qualify for and are relying on exemptions from certain corporate governance requirements.

Vector Capital controls a majority of the voting power of our outstanding shares and as a result, we are a controlled company within the meaning of the corporate governance standards of the Nasdaq. Under Nasdaq rules, a controlled company may elect not to comply with certain corporate governance requirements of the Nasdaq, including the requirements that:

- a majority of the board of directors consist of independent directors;
- the nominating and corporate governance committee be composed entirely of independent directors with a written charter addressing the committee's purpose and responsibilities;
- the compensation committee be composed entirely of independent directors with a written charter addressing the committee's purpose and responsibilities; and
- there be an annual performance evaluation of the nominating and corporate governance and compensation committees.

We are utilizing these exemptions, other than the exemption relating to the independence of the board of directors, as our board of directors is now composed of a majority of independent directors. In addition, although we have adopted charters for our audit and compensation committees and intend to conduct annual performance evaluations for these committees, our compensation committee is not composed entirely of independent directors, although all members of our audit committee are independent. Accordingly, shareholders may not have the same protections afforded to shareholders of companies that are subject to all of the corporate governance requirements of Nasdaq.

The price of our shares may be volatile, and shareholders could lose all or part of their investment.

The trading price of our shares may fluctuate substantially. The trading price of our shares will depend on a number of factors, including those described in this "Risk factors" section, many of which are beyond our control and may not be related to our operating performance. These fluctuations could cause shareholders to lose all or part of their investment in our shares since they might be unable to sell their shares at or above the price paid for them. Factors that could cause fluctuations in the trading price of our shares include the following:

- the financial projections we may provide to the public, any changes in those projections or our failure to meet those projections;
- actual or anticipated developments in our business or our competitors' businesses or the competitive landscape generally;
- sales of our shares by us or our shareholders or hedging activities by market participants;
- 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;
- operating performance or stock market valuations of other technology companies generally, or those in our industry in particular;
- announced or completed acquisitions of businesses or technologies by us or our competitors;
- general economic conditions and slow or negative growth of our markets;
- rumors and market speculation involving us or other companies in our industry;
- 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;

- 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; 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 may seriously affect the market price of our shares, regardless of our actual operating performance. 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.

Our memorandum and articles of association contain anti-takeover provisions that could have a material adverse effect on the rights of holders of our shares.

Our Amended and Restated Memorandum and Articles of Association contain provisions to limit the ability of others to acquire control of our company through non-negotiated transactions. These provisions could have the effect of depriving our shareholders of an opportunity to sell their shares at a premium over prevailing market prices by discouraging third parties from seeking to obtain control of our company in a tender offer or similar transaction. For example, our board of directors has the authority to issue undesignated, or "blank-check," preferred shares without shareholder approval. As a result, our board of directors could authorize and issue a series of preferred shares with terms calculated to delay or prevent a change in control of our company or make removal of management more difficult, which may not be in the interests of holders of our ordinary shares. In addition, our board is staggered and divided into three classes, with each class subject to re-election once every three years on a rotating basis, special meeting of shareholders may only be called by a specified group of directors, executives or shareholders and shareholders must comply with advance notice provisions in order to bring business before or nominate directors for election at shareholder meetings. As a result, shareholders would be prevented from electing an entirely new board of directors at any annual meeting and the ability of shareholders to change the membership of a majority of our board of directors may be delayed.

Because we are incorporated under Cayman Islands law, shareholders may face difficulties in protecting their interests, and the ability to protect rights through U.S. courts may be limited.

We are an exempted company incorporated under the laws of the Cayman Islands. Our corporate affairs are governed by our Amended and Restated Memorandum and Articles of Association, the Companies Act (as amended) of the Cayman Islands and the common law of the Cayman Islands. The rights of shareholders to take action against the directors, actions by minority shareholders and the fiduciary responsibilities of our directors to us under Cayman Islands law are governed by the common law of the Cayman Islands and we have adopted an exclusive forum by law that requires certain shareholder litigations regarding such matters to be brought in Cayman Islands Courts. These exclusive forum provisions do not apply to claims under U.S. federal securities laws. The common law of the Cayman Islands is derived in part from comparatively limited judicial precedent in the Cayman Islands as well as from the common law of England, the decisions of whose courts are of persuasive authority, but are not binding, on a court in the Cayman Islands. The rights of our shareholders and the fiduciary responsibilities of our directors under Cayman Islands law are not as clearly established as they would be under statutes or judicial precedent in some jurisdictions in the United States. In particular, the Cayman Islands has a less developed body of securities laws than the United States. Some U.S. states, such as Delaware, have more fully developed and judicially interpreted bodies of corporate law than the Cayman Islands.

Shareholders of Cayman Islands exempted companies like us have no general rights under Cayman Islands law to inspect corporate records or to obtain copies of lists of shareholders of these companies. Our directors have discretion under our existing articles of association to determine whether or not, and under what conditions, our corporate records may be inspected by our shareholders, but are not obliged to make them available to our shareholders. This may make it more difficult for shareholders to obtain the information needed to establish any facts necessary for a shareholder motion or to solicit proxies from other shareholders in connection with a proxy contest.

In addition, the Cayman Islands courts are also unlikely (1) to recognize or enforce against us judgments of courts of the United States based on certain civil liability provisions of U.S. securities laws, or (2) to impose liabilities against us, in original actions brought in the Cayman Islands, based on certain civil liability provisions of U.S. securities laws that are penal in nature. There is no statutory recognition in the Cayman Islands of judgments obtained in the United States, although the courts of the Cayman Islands will in certain circumstances recognize and enforce a foreign judgment of a foreign court of competent jurisdiction without any re-examination of the merits at common law.

As a result of all of the above, our public shareholders may have more difficulty in protecting their interests in the face of actions taken by management, members of the board of directors or large shareholders than they would as shareholders of a public company incorporated in the United States.

We are an emerging growth company, and any decision on our part to comply only with certain reduced disclosure requirements applicable to emerging growth companies could make our shares less attractive to investors.

We are an emerging growth company, as defined in the JOBS Act, and, for as long as we continue to be an emerging growth company, we may choose to take advantage of exemptions from various reporting requirements applicable to other public companies but not to emerging growth companies, including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. We could be an emerging growth company for up to five years following our initial public offering, although if the market value of our shares that are held by non-affiliates exceeds $700 million as of any June 30 before the conclusion of that five year period, or if we have total annual gross revenues of $1.07 billion or more during any fiscal year before the conclusion of that five year period, we would cease to be an emerging growth company as of the end of the fiscal year in which such threshold is met. In addition, if we issue more than $1 billion in non-convertible debt in a three-year period, we would cease to be an emerging growth company immediately. Investors may find our shares less attractive because we choose to rely on these exemptions. If some investors find our shares less attractive as a result of our choice to reduce our disclosures, there may be a less active trading market for our shares and our share price may be more volatile.

Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

Our directors may have conflicts of interest because of their ownership of equity interests of, and their employment with, our parent company and our affiliates.

Two of our directors hold ownership interests in Vector Capital as well as ownership in and employment positions with its affiliates. Ownership interests in Vector Capital by our directors could create, or appear to create, potential conflicts of interest when our directors are faced with decisions that could have different implications for us and for Vector Capital or its affiliates. Conflicts of interest may not be resolved in our favor.

General risks

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

We have expanded our operations significantly since inception and anticipate that further significant geographic and market expansion will be required to achieve our business objectives. The growth and expansion of our geographic sales, expansion of our products and our entry into new industry verticals places a 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 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.

Our business is subject to the risks of earthquakes, fire, floods and other catastrophic events, and to interruption by manmade problems such as network security breaches, computer viruses, terrorism and war.

We have substantial operations in Illinois, California, England and India, and our third-party manufacturers are predominantly located in Mexico, China, Taiwan and Israel. Operations in some of these areas are susceptible to disruption due to severe weather, seismic activity, political unrest and other factors. For example, a significant natural disaster, such as an earthquake, a fire or a flood, occurring at the facilities of one of our third-party manufacturers could have a material adverse impact on their ability to manufacture and timely deliver our products. In addition, due to the current fears over the spread of COVID-19, our third-party manufacturers in China may experience disruption of their operations. Despite the implementation of network security measures, we also may be vulnerable to computer viruses, break-ins and similar disruptions from unauthorized tampering with our solutions. In addition, natural disasters, acts of terrorism or war could cause disruptions in the businesses of our suppliers, manufacturers, network operators or the economy as a whole. To the extent that any such disruptions result in delays or cancellations of orders or impede our ability to timely deliver our products, or the deployment of our products, our business, operating results and financial condition would be adversely affected.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

As of December 31, 2020, we occupied approximately 38,000 square feet of office space in Rolling Meadows, Illinois under lease agreements that expire in 2024, where we have corporate and executive functions, research and development, customer support, operations and administration and finance services. We also lease approximately 27,000 square feet of office space in Ashburton, England under lease agreements all of which expire in 2026, approximately 32,000 square feet of space in Bangalore, India under two leases that expire in 2021, approximately 9,000 square feet of office space in San Jose, California under a lease that expires in 2022, and approximately 9,000 square feet of office space in Thousand Oaks, California under a lease that expires in 2022. In addition, we maintain offices in Miami, Florida, Italy, Dubai, Mexico and Singapore.

For additional information regarding obligations under operating leases, see Note 18 - Leases in the Notes to the Consolidated Financial Statements included in Part II, Item 8: “Financial Statements and Supplementary Data” of this Annual Report on Form 10-K.

Item 3. Legal Proceedings.

Third parties may from time to time assert legal claims against us.

Our industry is characterized by vigorous protection and pursuit of intellectual property rights. A number of companies hold a large number of patents that may cover technology necessary to our products. We have in the past received and expect to continue to receive claims by third parties that we infringe their intellectual property rights. For example, on August 7, 2018, Ubiquiti Networks, Inc. filed a lawsuit, which we refer to as the Ubiquiti Litigation, in the United States District Court, Northern District of Illinois, against us, two of our employees, one of our distributors and one of our end users. The complaint alleged that our development of and sales and promotion of our Elevate software as downloaded on a Ubiquiti device violated the Computer Fraud and Abuse Act and Illinois Computer Crimes Prevention Law, the Digital Millennium Copyright Act and the Copyright Act and constituted misrepresentation and false advertising and false designation of origin in violation of the Lanham Act and state competition laws, breach of contract, tortious interference with contract and unfair competition, and trademark infringement and common law misappropriation. On December 1, 2020, we reached a settlement agreement with Ubiquiti, settling all claims made in the Ubiquiti Litigation. The Court dismissed the Ubiquiti Litigation, with prejudice, on January 5, 2021.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

Item 5. Market for Registrant’s Common Equity, Related Shareholder Matters and Issuer Purchases of Equity Securities.

Market information

Our ordinary shares have been listed on the NASDAQ Global Market under the symbol “CMBM” since June 26, 2019.

Holders of record

As of December 31, 2020, there were 175 shareholders of record of our ordinary shares. Because many of our shares are held by brokers and other institutions on behalf of shareholders, we are unable to estimate the total number of shareholders represented by these record holders. The closing price of our ordinary shares on December 31, 2020 was $25.08 per share as reported on the NASDAQ Global Market.

Recent sale of unregistered securities

None.

Use of proceeds from Initial Public Offering of ordinary shares

The offer and sale of all of the shares in our IPO were registered under the Securities Act pursuant to a registration statement on Form S-1 (File No. 333-21789), which was declared effective by the SEC on June 25, 2019. The remainder of the information required by this item regarding the use of our IPO proceeds has been omitted pursuant to SEC rules because such information has not changed since our last periodic report was filed.

Dividend policy

We have not declared or paid dividends on our ordinary shares since our IPO. Neither Cayman Island law nor our amended and restated certificate of incorporation requires our board of directors to declare dividends on our ordinary shares. Any future determination to declare cash dividends on our ordinary shares will be made at the discretion of our board of directors and will depend on our financial condition, results of operations, capital requirements, general business conditions and other factors that our board of directors may deem relevant. We do not anticipate paying cash dividends on our ordinary shares for the foreseeable future.

Equity compensation plan information

Information regarding the securities authorized for issuance under our equity compensation plans will be included in our Proxy Statement relating to our 2021 annual meeting of Shareholders to be filed with the SEC within 120 days after the end of our fiscal year ended December 31, 2020 and is incorporated herein by reference.

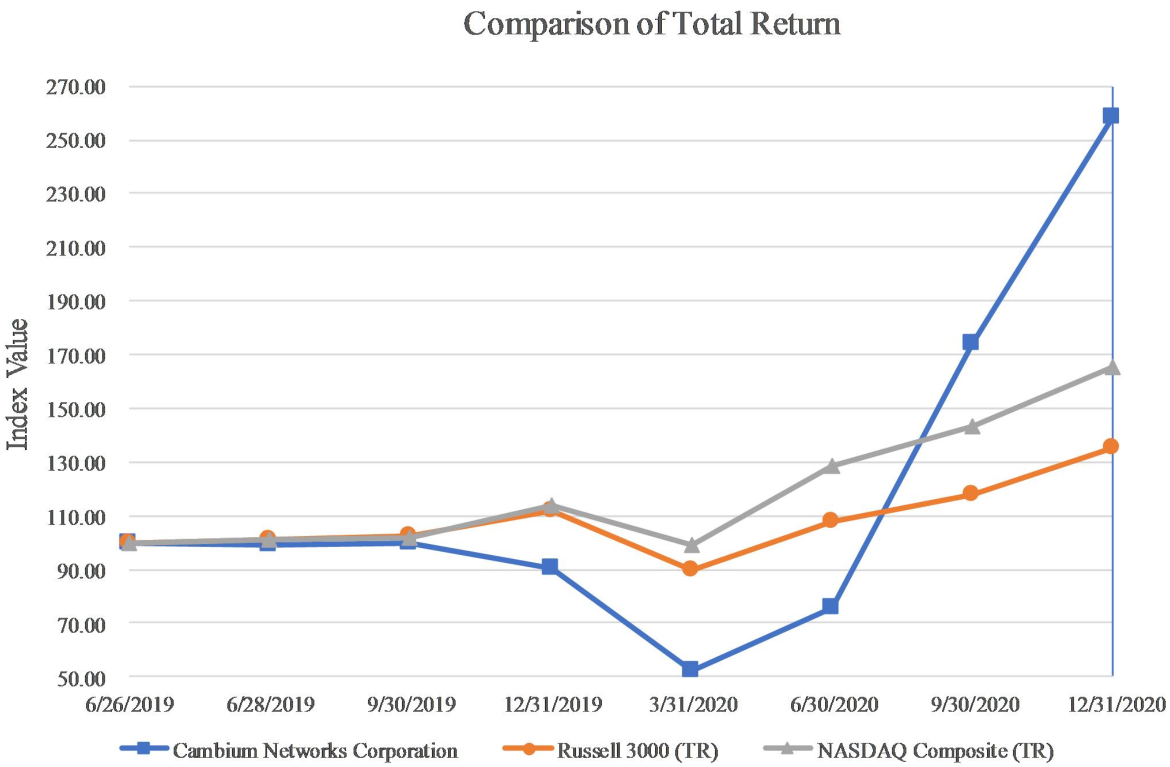
Issuer Purchase of Equity Securities

None.

Performance graph

Notwithstanding any statement to the contrary in any of our filings with the SEC, the following information shall not be deemed "filed" with the SEC or "soliciting material" under the Securities Exchange Act of 1934 and shall not be incorporated by reference into any such filings irrespective of any general incorporation language contained in such filing.

The following graph compares the total cumulative shareholder return on our ordinary shares with the total cumulative return of the Russell 3000 Index and the NASDAQ Composite Index during the period commencing on June 26, 2019, the initial trading day of our ordinary shares, and ending on December 31, 2020. The graph assumes that $100 was invested at the beginning of the period in our ordinary shares and in each of the comparative indices, and the reinvestment of any dividends. Historical share price performance should not be relied upon as an indication of future share price performance.



	6/26/2019	6/28/2019	9/30/2019	12/31/2019	3/31/2020	6/30/2020	9/30/2020	12/31/2020
Cambium Networks Corporation	100.00	98.87	100.00	90.10	52.06	75.88	173.92	258.56
Russell 3000 (TR)	100.00	101.26	102.44	111.75	89.74	107.87	117.80	135.10
NASDAQ Composite (TR)	100.00	101.23	101.41	114.05	99.07	128.50	142.94	165.28

Item 6. Selected Financial Data.

Consolidated Selected Financial Data

The following selected consolidated financial data should be read together with our consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K and the information in Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” Our fiscal year ends on December 31. The following selected financial data has been derived from our audited consolidated financial statements. Historical results are not necessarily indicative of future results.

	Year Ended December 31,		
	2018	2019	2020
Consolidated Statements of Operations Data:		(in thousands)	
Revenues	$ 241,762	$ 267,028	$ 278,459
Cost of revenues	126,267	135,799	139,049
Gross profit	115,495	131,229	139,410
Operating expenses			
Research and development	38,917	47,692	43,188
Sales and marketing	42,658	46,253	36,784
General and administrative	18,804	30,125	28,851
Depreciation and amortization	8,765	5,858	6,639
Total operating expenses	109,144	129,928	115,462
Operating income	6,351	1,301	23,948
Interest expense, net	8,113	8,076	5,326
Other expense, net	550	546	491
(Loss) income before income taxes	(2,312)	(7,321)	18,131
(Benefit) provision for income taxes	(799)	10,280	(444)
Net (loss) income	$ (1,513)	$ (17,601)	$ 18,575
(Loss) earnings per share			
Basic	$ (0.11)	$ (0.89)	$ 0.72
Diluted	$ (0.11)	$ (0.89)	$ 0.70
Weighted-average number of shares outstanding to compute net (loss) earnings per share			
Basic	13,600,411	19,741,764	25,707,092
Diluted	13,600,411	19,741,764	26,403,112

	As of December 31,	
	2019	2020
Consolidated Balance Sheet Data:	(in thousands)	
Cash	$ 19,346	$ 62,472
Working capital (1)	61,449	57,524
Total assets	172,479	205,753
Total debt (2)	63,612	54,158
Total shareholders' equity	39,929	63,387

(1) Working capital is defined as total current assets minus total current liabilities.

(2) Total debt is shown net of deferred financing fees of $1.6 million and $1.1 million for 2019 and 2020, respectively.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion and analysis of financial condition and results of operations should be read in conjunction with the consolidated financial statements and related notes thereto of Cambium Networks Corporation ("Cambium", "we", "our", or "us") included elsewhere in this Annual Report on Form 10-K. The following discussion contains forward-looking statements that reflect our plans, estimates and beliefs. Our actual results could differ materiality from those discussed in the forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this Annual Report on Form 10-K, particularly those discussed under Part I, Item 1A. "Risk Factors." Our historical results are not necessarily indicative of the results that may be expected for any period in the future.

Overview

We provide fixed wireless broadband and Wi-Fi networking infrastructure solutions for network operators, including medium-sized wireless internet service providers, enterprises, mobile network operators and government agencies, communities and cities worldwide. Our scalable, reliable and high-performance solutions enable the creation of a purpose-built wireless fabric that connects people, places and things with a unified wireless fabric that spans multiple standards and frequencies of fixed wireless and Wi-Fi, all managed centrally via the cloud, deployed indoors and outdoors. Our multi-gigabit wireless fabric offers a compelling value proposition to traditional fiber and alternative wireless solutions mobile infrastructure.

Our wireless fabric includes intelligent radios, smart antennas, radio frequency, or RF, algorithms, wireless-aware switches and our on-premises or cloud-based network management software. Our embedded proprietary RF technology and software enables automated optimization of data flow at the outermost points in the network, which we refer to as the "intelligent edge." This intelligent edge offers network operators increased performance, visibility, control and management, as well as the ability to efficiently transfer large amounts of data back to enterprise data centers for fast and efficient analysis and decision-making even in conditions characterized by a high degree of interfering signals generated both within the network or from outside sources, which we refer to as noise. Our products support licensed and unlicensed spectrum, tailored for many frequency bands. We provide deep technical and operational expertise based on years of deploying networks, resulting in ease of use of our products, and all Cambium Networks solutions are backed by our global organization that provides 24/7 support services tailored to meet the business needs of our end users.

We were formed in 2011 when Cambium Networks acquired the Point-to-Point, or PTP, and Point-to-Multi-Point, or PMP, businesses from Motorola Solutions. Prior to the acquisition, Motorola Solutions had invested over a decade in developing the technology and intellectual property assets that formed the foundation for our business, having launched the Canopy PMP business in 1999 and having acquired the Orthogon Systems PTP business in 2006. Following the acquisition, we renamed the business Cambium Networks and we leveraged the technology to continue to develop and offer an extensive portfolio of reliable, scalable and secure enterprise-grade fixed wireless broadband and PTP and PMP platforms, Wi-Fi, switch and IIoT solutions.

We offer our fixed wireless broadband and Wi-Fi solutions in three categories:

- PTP: We offer PTP solutions that are designed to operate in unlicensed spectrum from 900 MHz to 5.9 GHz and in licensed spectrum from 6-38 and 71-86 GHz. In addition, our PTP 700 operates in NATO Band IV from 4.4-5.9 GHz, as well as in the 7 GHz and 8 GHz bands, and meets stringent federal operating, performance and security standards. The mainstay of our backhaul offering is the PTP 670 for commercial applications and PTP 700 for defense and national security applications. In addition, our PTP 820 series offers carrier-grade microwave backhaul in licensed spectrum, and our PTP 550 offers price-performance leadership in spectral efficiency in sub-6GHz unlicensed spectrum.
- PMP: Our PMP portfolio ranges from our top-of-the-line PMP 450 series to our ePMP solutions for network operators that need to optimize for both price and performance to our cnReach family of narrow-bandwidth connectivity products for industrial communications. The PMP 450 series is optimized for performance in high-density and demanding physical environments, and includes the PMP 450m with integrated cnMedusa massive multi-user multiple input/multiple output, or MU-MIMO, technology. The PMP 450 product line also supports the FCC's Citizen Broadband Radio Service, or CBRS. The FCC completed the auction of CBRS Priority Access Licenses, or PAL, in the third quarter of 2020, complementing the existing availability of General Authorized Access, or GAA, licenses. Network operators are adopting the PMP 450 solution to exercise both PAL and GAA licenses. For less demanding environments, ePMP provides a high-quality platform at a more affordable price. The ePMP 3000 supports 4x4 MU-MIMO and is complemented by a broad portfolio of ePMP Force 300 subscriber radios. cnReach products enables IIoT applications, such as supervisory control and data acquisition, or SCADA, processes in the oil and gas, electric utility, water, railroad and other industrial settings. In September 2020, we announced the pending availability of the 60 GHz cnWave solution. cnWave, which began shipping in volume in the fourth quarter of 2020, enables multi Gbps networking using the 60 GHz band and includes Facebook Terragraph technology.

- Wi-Fi: Our Wi-Fi portfolio includes our cnPilot cloud-managed Wi-Fi solutions, our cnMatrix cloud-managed wireless-aware switching solution, and our Xirrus Wi-Fi solutions. cnPilot is for indoor and outdoor enterprise, small business and home applications and offers a range of Wi-Fi access points and RF technology that enable network optimization based on desired geographic coverage and user density. cnMatrix provides the intelligent interface between wireless and wired networks. cnMatrix's policy-based configuration accelerates network deployment, mitigates human error, increases security, and improves reliability. Xirrus has a portfolio of high performance enterprise Wi-Fi access points and cloud based subscription services. In June 2020, we introduced our first Wi-Fi 6 access point, the XV3-8, which supports both cnPilot and Xirrus solutions. Additional Wi-Fi 6 access points are under development to meet diverse user cases.

We generate a substantial majority of our sales through our global channel distribution network, including, as of December 31, 2020, approximately 170 distributors that we sell to directly, together with over 9,000 value added resellers and system integrators supplied by these distributors, for further sales to end-users. Our channel partners provide lead generation, pre-sales support and product fulfillment, along with professional services for network design, installation, commissioning and on-going field support. Although we fulfill sales almost exclusively through our channel partners, through our global sales team we engage directly with network operators in our key vertical markets including service providers, enterprises, industrials, defense and national security entities, and state and local governments. Our sales team responds to bids or requests for quotes, typically in collaboration with a channel partner. Our distributors carry inventory of our products for resale, and generally have stock rotation rights only if they simultaneously place an off-setting order for product. As such, we generally recognize revenue from sales to distributors on a sell-in basis, and manage our finished goods inventory to plan for distributor demand.

We outsource production to third-party manufacturers, who are responsible for purchasing and maintaining inventory of components and raw materials and, in certain cases, we resell third-party products on a white-label basis. We believe that this approach gives us the advantages of relatively low capital investment and significant flexibility in scheduling production, managing inventory levels and providing a comprehensive solution to meet network operator demand. The majority of our products are delivered to us at one of three distribution hubs, where we have outsourced the warehousing and delivery of our products to a third-party logistics provider and from which we manage worldwide fulfillment.

Trends and the impact of COVID-19

Although the outbreak of COVID-19 has resulted and is likely to continue to result in disruption to our business and operations as well as the operations of our customers and suppliers, the severity of the impact has lessened, and our markets are recovering as the need for additional connectivity grows. We have experienced increases in customer demand, as a result of strong demand for PMP products as the need for connectivity grows, as schools, businesses, and enterprises continue to operate remotely, and increased PTP revenues from improved federal business. In addition, we have seen a strong recovery in enterprise Wi-Fi solutions driven by improved field deployments and the transition to Wi-Fi 6 solutions. We also experienced increases in product sales in connection with our wireless broadband solutions for customers accessing the CBRS band. We have benefitted from investments we have made over the past few years in fixed wireless infrastructure technologies in such areas as PMP, including CBRS-compatible products in the U.S. and in new opportunities such as gigabit wireless solutions with our 60 GHz millimeter wave products, our new enterprise Wi-Fi 6, and cloud-enabled wireless switching products. Our forthcoming 5G 28 GHz millimeter wave products are expected in 2021, further accelerating this trend as we enter markets demanding higher broadband performance, and in the U.S. the first phase of the Rural Digital Opportunity Fund, or RDOF, launched by the Federal Communications Commission, or FCC, is expected to accelerate the provision of high-speed broadband service to millions of underserved communities in the U.S. over the next ten years.

However, we expect that continued social distancing measures, continuing shutdowns globally that impact the ability of our end user customers to deploy our products, and continued restrictions and even cessation in travel impacting our sales activities, and general business uncertainty will continue to negatively impact demand in several of our markets. In addition, although all of our major suppliers are currently operating, reductions in production due to mandated closures of or labor restrictions as our third-party manufacturers continue to battle the COVID-19 pandemic.

Our supply operations remain impacted by COVID-19. For example, at least one of our mechanical suppliers has ceased operating, causing us to move production to an alternative supplier. In addition, we are experiencing component part shortages, as the global integrated circuit supply is under pressure as demand surpasses supply capacity for certain chipsets, causing foundries to allocate existing supply among their customers. Logistics challenges have arisen as container shortages in China lengthen availability times of containers and carriage, resulting in increases in relevant freight costs, all at a time when demand across many of our product lines has increased. As a result, we are experiencing increased lead times for the supply of some of our products. We are working with our suppliers to meet our forecasted demand.

Our suppliers and third-party manufacturers could continue to be disrupted by parts and component shortages, workers absenteeism, quarantines, office and factory closures, disruptions to ports and other shipping infrastructure, or other travel or health-related restrictions. If our supply chain operations continue to be affected or are curtailed by the outbreak of diseases such as COVID-19, our supply chain, manufacturing, and product shipments will be delayed, which could adversely affect our business, operations and customer relationships. We have and may continue to need to seek alternate sources of supply which may be more expensive, unavailable or may result in delays in shipments to us and from our supply chain and subsequently to our customers.

We have experienced and expect to continue to experience an increase in certain costs, particularly transportation and logistics expenses. Freight and logistics constraints caused in part by restrictions imposed by governments to combat the COVID-19 pandemic, have increased costs and constrained available transport, for us and our channel partners. The pandemic could lead to an extended disruption of economic activity and the impact on our consolidated results of operations, financial position and cash flows could be material.

We are focused on making sure our employees are safe and continue to operate with a substantial portion of our workforce working from home. We continue to evaluate our timing to open our offices based on the availability and deployment of vaccines among our workforce. We have extended remote working for the first half of 2021and will monitor conditions for extending this further into 2021. While we continue to significantly reduce travel, with the opening in certain countries and the easing of shutdowns in many locations, we are allowing select travel to meet customer needs. The third parties that perform our manufacturing, assembly, packaging and shipping have generally remained operational. The extent of the impact of the COVID-19 pandemic on our operational and financial performance will depend on future developments, including the duration, severity and spread of the pandemic, related restrictions on travel and transportation and other actions that may be taken by governmental authorities and the impact to the business of our suppliers or customers, all of which are uncertain and cannot be predicted.

In addition, a substantial portion of our Wi-Fi products are manufactured in China, and we continue to monitor tensions between the U.S. and China and their potential impact on our ability to produce and ship our products. To date, no disruption in production or shipments have occurred since China re-opened facilities following the COVID-19 induced shutdown at the end of 2019, other than capacity constraint caused by component shortages. We have, however, continued to incur costs related to increased tariffs for China-manufactured goods, and should tensions escalate, our ability to manufacture our products in China could be affected, causing disruptions in our supply chain, and requiring us to seek other sources of supply.

With respect to liquidity, we believe our balance sheet will provide us the necessary capital to navigate the COVID-19 pandemic. In addition, during 2020, we implemented several initiatives to conserve cash and optimize profitability, including limiting discretionary spending, temporarily reducing personnel costs, eliminating non-essential travel, delaying or reducing hiring activities, deferring certain discretionary capital expenditures.

Xirrus acquisition

In August 2019, we acquired select assets and assumed select liabilities of the Xirrus Wi-Fi products and cloud services business from Riverbed Technology, Inc. Xirrus has a portfolio of high performance enterprise Wi-Fi access points and subscription services. We paid $2.0 million upon closing and the agreement provided for additional $3.0 million of contingent consideration subject to Xirrus attaining certain booking targets. As of December 31, 2019, all booking targets were met and we paid the full $3.0 million of consideration through February 2020. This acquisition is intended to enhance and accelerate our existing network service application capabilities.

We account for business combinations in accordance with ASC 805, *Business Combinations*. We recorded the acquisition using the acquisition method of accounting and recognized assets and liabilities at their fair value as of the date of acquisition. We based the preliminary allocation of the purchase price on estimates and assumptions known at the date of acquisition that are subject to change within the purchase price allocation period, which is generally one year from the acquisition date. Our review of the purchase price allocation was completed in the period ended June 30, 2020. We determined the estimated fair value of identifiable intangible assets acquired primarily using an income approach.

Basis of presentation

Revenues

Our revenues are generated primarily from the sale of our products, which consist of hardware with essential embedded software. Our revenues also include limited amounts for software products, extended warranty on hardware products and subscription services. We generally recognize product revenues at the time of shipment, provided that all other revenue recognition criteria have been met. Revenues are recognized net of estimated stock returns, volume-based rebates and cooperative marketing allowances that we provide to distributors. We recognize subscription services revenue ratably over the term in which the services are provided and our performance obligation is satisfied. We provide a standard warranty on our hardware products, with the term depending on the product, and record a liability for the estimated future costs associated with potential warranty claims. In addition, we also offer extended warranties for purchase and represents a future performance obligation for us. The extended warranty is included in deferred revenues and is recognized on a straight-line basis over the term of the extended warranty. We provide our cnMaestro, LINKPlanner and cnArcher applications as supplemental tools to help network operators design, install, and manage their networks, and as a means of driving sales of our hardware products.

Cost of revenues and gross profit

Our cost of revenues is comprised primarily of the costs of procuring finished goods from our third-party manufacturers, third-party logistics and warehousing provider costs, freight costs and warranty costs. We outsource our manufacturing to third-party manufacturers located primarily in Mexico, China, Israel and Taiwan. Cost of revenues also includes costs associated with supply operations, including personnel related costs, provision for excess and obsolete inventory, third-party license costs and third-party costs related to services we provide. From and after our initial public offering in June 2019, cost of revenues also includes share-based compensation expense.

Gross profit has been and will continue to be affected by various factors, including changes in product mix. The margin profile of products within each of our core product categories can vary significantly depending on the operating performance, features and manufacturer of the product. Generally, our gross margins on backhaul and fixed wireless access point products are greater than those on our customer premise equipment (“CPE”) products. Because the ratio of CPE to PTP and PMP access points typically increases as network operators build out the density of their networks, increases in follow-on sales to network operators as a percentage of our total sales typically have a downward effect on our overall gross margins. Finally, gross margin will also vary as a function of changes in pricing due to competitive pressure, our third-party manufacturing and other production costs, cost of shipping and logistics, provision for excess and obsolete inventory and other factors. We expect our gross margins will fluctuate from period to period depending on the interplay of these various factors.

Operating expenses

We classify our operating expense as research and development, sales and marketing, and general and administrative expense. Personnel costs are the primary component of each of these operating expense categories, which consist of cash-based personnel costs, such as salaries, sales commissions, benefits and bonuses. Immediately prior to the completion of our initial public offering (“IPO”), we effected a recapitalization, which among other things, exchanged the vested share-based compensation awards held by our employees for our shares and unvested share-based compensation awards for restricted share awards or restricted share units issued by us, in each case on a value-for-value basis (the “Recapitalization”) and resulted in one-time share-based compensation expenses recognized in June 2019. From and after the Recapitalization and IPO in June 2019, our operating expenses include share-based compensation expense as well as other costs associated with being a public company. In addition, we separate depreciation and amortization in their own category.

Research and development

In addition to personnel-related costs, research and development expense consists of costs associated with design and development of our products, product certification, travel and recruiting. We generally recognize research and development expense as incurred. For certain of our software projects under development, we capitalize the development cost during the period between determining technological feasibility of the product and commercial release. We amortize the capitalized development cost upon commercial release, generally over three years. We typically do not capitalize costs related to the development of first-generation product offerings as technological feasibility generally coincides with general availability of the software. Although research and development expenses decreased in 2020 related to lower contractor spend and travel as a result of restrictions due to the COVID-19 pandemic, as these restrictions are lifted, we expect research and development expense to increase as we continue to invest in our future products and services.

Sales and marketing

In addition to personnel costs for sales, marketing, service and product line management personnel, sales and marketing expense consists of our training programs, trade shows, marketing programs, promotional materials, demonstration equipment, national and local regulatory approval on our products, travel and entertainment, and recruiting. In 2020, we experienced a decrease in payroll related costs driven by a reduction in headcount as part of the restructuring announced in November 2019 and February 2020. In addition, in 2020 we experienced a reduction in travel and entertainment and marketing related spending as a result of restrictions due to the COVID-19 pandemic. We expect sales and marketing expense to begin to increase as these restrictions are lifted and we increase the size of our sales, marketing, service, and product line management organization to support our growth, and, in particular, as we continue to expand our global distribution network.

General and administrative

In addition to personnel costs, general and administrative expense consists of professional fees, such as legal, audit, accounting, information technology and consulting costs, insurance, facilities and other supporting overhead costs. We expect general and administrative expense to increase in absolute dollars as we continue to incur additional costs associated with being a public company, partially offset by the absence of financing and management fees previously paid to Vector Capital, which ended in the second quarter of 2019.

Depreciation and amortization

Depreciation and amortization expense consist of depreciation related to fixed assets such as computer equipment, furniture and fixtures, and testing equipment, as well as amortization related to acquired and internal use software and definite lived intangibles.

Provision for income taxes

Our provision for income taxes consists primarily of income taxes in the jurisdictions in which we conduct business. As we have expanded our international operations, we have incurred additional foreign tax expense, and we expect this to continue. Management assesses our deferred tax assets in each reporting period, and if it is determined that it is not more likely than not to be realized, we will record a valuation allowance in that period.

Results of operations

The following table presents the consolidated statements of operations, as well as the percentage relationship to total revenues for items included in our consolidated statements of operations for the year ended December 31, 2019 compared to the year ended December 31, 2020:

(in thousands)	2019	2020
Statements of Operations Data:		
Revenues	$ 267,028	$ 278,459
Cost of revenues	135,799	139,049
Gross profit	131,229	139,410
Operating expenses		
Research and development	47,692	43,188
Sales and marketing	46,253	36,784
General and administrative	30,125	28,851
Depreciation and amortization	5,858	6,639
Total operating expenses	129,928	115,462
Operating income	1,301	23,948
Interest expense, net	8,076	5,326
Other expense, net	546	491
(Loss) income before income taxes	(7,321)	18,131
Provision (benefit) for income taxes	10,280	(444)
Net (loss) income	**$ (17,601)**	**$ 18,575**

	2019	2020
Percentage of Revenues:		
Revenues	100.0%	100.0%
Cost of revenues	50.9%	49.9%
Gross margin	49.1%	50.1%
Operating expenses		
Research and development	17.9%	15.5%
Sales and marketing	17.3%	13.2%
General and administrative	11.3%	10.4%
Depreciation and amortization	2.2%	2.4%
Total operating expenses	48.7%	41.5%
Operating income	0.4%	8.6%
Interest expense, net	3.0%	1.9%
Other expense, net	0.2%	0.2%
(Loss) income before income taxes	(2.8)%	6.5%
Provision (benefit) for income taxes	3.8%	(0.2)%
Net (loss) income	(6.6)%	6.7%

The following is a discussion and analysis of our results of operations for the year ended December 31, 2019 compared to the year ended December 31, 2020. As permitted by the SEC under the FAST Act Modernization and Simplification of Regulation S-K, we have elected to omit the discussion of the earliest period (2018) presented as it was included in our MD&A in our 2019 Form 10-K filed on March 24, 2020, incorporated by reference from Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" thereto.

Comparison of the year ended December 31, 2019 to the year ended December 31, 2020

Revenues

			Change	
(dollars in thousands)	**2019**	**2020**	**$**	**%**
Revenues	$ 267,028	$ 278,459	$ 11,431	4.3%

Revenues increased $11.4 million, or 4.3%, from $267.0 million in 2019 to $278.5 in 2020, which was attributable to increased demand for our point-to-multi-point products due to increased network traffic and demand for CBRS technology, and our Wi-Fi products, which benefitted from new Wi-Fi 6 products and a full year of Xirrus revenue, partially offset by decreased sales of our Point-to-Point products due to decrease demand in the defense sector. Complementing this overall trend, revenue growth in 2020 also benefitted from continued expansion of our channel, with total registered channel partners of more than 9,000 as of December 31, 2020.

Revenues by product category

			Change	
(dollars in thousands)	**2019**	**2020**	**$**	**%**
Point-to-Multi-Point	$ 156,157	$ 172,601	$ 16,444	10.5%
Point-to-Point	71,618	60,435	(11,183)	(15.6)%
Wi-Fi	35,678	39,990	4,312	12.1%
Other	3,575	5,433	1,858	52.0%
Total revenues by product category	$ 267,028	$ 278,459	$ 11,431	4.3%

Point-to-Multi-Point

Our PMP product line comprised 58% of total revenues for 2019 and 62% of total revenues for 2020. PMP revenue growth was attributable to continued growth in core PMP products from increased network traffic and demand for our CBRS solutions, as well as the benefit from new product introductions.

Point-to-Point

PTP revenue decreased due to softer demand in the defense sector.

Wi-Fi

Wi-Fi revenue increased primarily as a result of recent new product introductions, including Wi-Fi 6 and cnMatrix, as well as a full year of sales of Xirrus products and services which was acquired in August 2019.

Revenues by geography

(dollars in thousands)	2019	2020	Change $	Change %
North America	$ 122,565	$ 147,328	$ 24,763	20.2%
Europe, Middle East, Africa	85,930	80,927	(5,003)	(5.8)%
Caribbean and Latin America	31,767	29,418	(2,349)	(7.4)%
Asia Pacific	26,766	20,786	(5,980)	(22.3)%
Total revenues by geography	$ 267,028	$ 278,459	$ 11,431	4.3%

Revenues increased in 2020 compared to 2019 reflecting higher revenue in North America partially offset by decreases in all other regions. North America contributed 53% of total revenues in 2020 compared with 46% in 2019 due to increased revenues of 20.2% in 2020. The increased revenues in North America was driven by higher revenues for PMP, Wi-Fi and Other products, driven mostly by higher PMP revenues due to increased demand for CBRS and robust network traffic, partially offset by decreased PTP revenues due to the softer demand in the defense industry. Europe, Middle East, Africa revenues decreased mostly due to a technology transition resulting in lower PMP sales to a large customer in Italy partially offset by increases in revenues of Wi-Fi products. Caribbean and Latin America revenues decreased due to lower PMP revenues as a result of adverse economic conditions and currency exchange rates and the impact from business shutdowns and other restrictions due to the COVID-19 pandemic. The decrease in Asia Pacific revenues was driven by lower revenue across all product categories due to softened demand along with the impact of business shutdowns and other restrictions due to the COVID-19 pandemic.

Cost of revenues and gross margin

(dollars in thousands)	2019	2020	Change $	Change %
Cost of revenues	$ 135,799	$ 139,049	$ 3,250	2.4%
Gross margin	49.1%	50.1%		100 bps

Cost of revenues increased $3.2 million, or 2.4%, from $135.8 million for 2019 to $139.0 million for 2020. The increase in cost of revenues was primarily due to increased product and freight costs as a result of increased revenues.

Gross margin increased from 49.1% in 2019 to 50.1% in 2020. The increase was driven by higher volumes, improved mix of higher margin products, and the initiatives we put in place focused on cost reductions and supply chain efficiencies, partially offset by higher shipping costs.

Operating expenses

(dollars in thousands)	2019	2020	Change $	Change %
Research and development	$ 47,692	$ 43,188	$ (4,504)	(9.4)%
Sales and marketing	46,253	36,784	(9,469)	(20.5)%
General and administrative	30,125	28,851	(1,274)	(4.2)%
Depreciation and amortization	5,858	6,639	781	13.3%
Total operating expenses	$ 129,928	$ 115,462	$ (14,466)	(11.1)%

Research and development

Research and development expense decreased $4.5 million, or 9.4%, from $47.7 million in 2019 to $43.2 million in 2020. As a percentage of revenues, research and development expenses decreased from 17.9% in 2019 to 15.5% in 2020. Research and development expense decreased mainly due to a $3.8 million reduction in share-based compensation mostly due to one-time expense recorded in connection with our Recapitalization and IPO in June 2019. The remaining decrease is driven by lower contractor costs of $3.0 million due to fewer contractors and lower negotiated rates in 2020, higher capitalized labor costs of $1.3 million, and lower travel costs of $0.8 million due to reductions in non-essential travel as a result of restrictions on travel due to the COVID-19 pandemic. These decreases were partially offset by $4.1 million higher bonus expense due to improved financial results and higher restructuring costs of $0.5 million in 2020.

Sales and marketing

Sales and marketing expense decreased $9.5 million, or 20.5%, from $46.3 million in 2019 to $36.8 million in 2020. As a percentage of revenues, sales and marketing expense decreased from 17.3% in 2019 to 13.2% in 2019. Sales and marketing expense decreased mainly due to a $3.2 million reduction in share-based compensation mostly due to one-time expense recorded in connection with our Recapitalization and IPO in June 2019. The remainder of the decrease is driven by lower travel spend of $3.5 million due to reduction in non-essential travel as a result of restrictions on travel due to the COVID-19 pandemic, lower payroll related costs of $2.2 million driven by a reduction in headcount, lower marketing related spend of $1.9 million also as a result of restrictions due to the COVID-19 pandemic. These decreases are partially offset by higher bonus expense of $1.6 million due to improved financial results in 2020.

General and administrative

General and administrative expense decreased $1.3 million, or 4.2%, from $30.1 million in 2019 to $28.8 million in 2020. As a percentage of revenues, general and administrative expense decreased from 11.3% in 2019 to 10.4% in 2020. The decrease in general and administrative expense is mainly due to lower share-based compensation of $7.1 million, mostly reflecting one-time expense recorded in connection with our Recapitalization and IPO in June 2019. These decreases were partially offset by an increase in bonus expense of $2.5 million, increase in directors and officers insurance of $1.7 million and higher legal fees of $1.6 million. The higher bonus expense reflected improved financial results in 2020 and additional employees included in our bonus program. The higher directors and officers insurance was due to a full year of directors and officers premiums in 2020 compared with six months in 2019.

Depreciation and amortization

Depreciation and amortization expense increased $0.8 million, or 13.3%, from $5.9 million in 2019 to $6.7 million in 2020. The increase in depreciation and amortization was mostly driven by the addition of assets related to the Xirrus acquisition completed in August 2019, comprising of $0.6 million of intangible amortization related to the intangibles recognized and $0.1 million of higher depreciation related to the assets acquired, along with the addition of amortization of leasehold improvement of $0.1 million.

Interest expense, net

(dollars in thousands)	**2019**	**2020**	**Change $**	**Change %**
Interest expense, net	$ 8,076	$ 5,326	$ (2,750)	(34.1)%

Interest expense decreased $2.8 million, or 34.1% from $8.1 million in 2019 to $5.3 million in 2020. The decrease was primarily due to lower debt balances in 2020 compared with 2019 reflecting payments on the term loan and revolver with proceeds from our IPO in June 2019 and scheduled principal payments on the term loan during 2019 and 2020. In addition, the decrease resulted from lower interest rates on the term loan beginning in January 2020.

Other expense, net

(dollars in thousands)	**2019**	**2020**	**Change $**	**Change %**
Other expense, net	$ 546	$ 491	$ (55)	(10.1)%

Other expense remained relatively flat from 2019 to 2020, and was primarily associated with foreign currency fluctuations.

Provision (benefit) for income taxes

(dollars in thousands)	**2019**	**2020**	**Change $**
Provision (benefit) for income taxes	$ 10,280	$ (444)	$ (10,724)
Effective income tax rate	(140.4)%	(2.4)%	

Our tax expense changed from a tax provision of $10.3 million in 2019 to a tax benefit of ($0.4) million for 2020. The effective tax rates for the years ended December 31, 2019 and 2020 were (140.4)% and (2.4)%, respectively. For the year ended December 31, 2020, our income tax provision (benefit) changed by $10.7 from the year ended December 31, 2019 primarily due to an establishment of a valuation allowance against our deferred tax assets recognized of $9.6 million during 2019, versus net utilization of valuation allowance in 2020 of $1.2 million. The Company’s effective tax rate for the year ended December 31, 2019 differed from the U.S. statutory rate primarily due to the recognition of a valuation allowance against our UK deferred tax assets, taxation of pre-IPO management incentive unit equity awards, tax benefits on research and development, and tax benefits on foreign derived intangible income. The Company's effective tax rate for the year ended December 31, 2020 differed from the U.S. statutory rate primarily due to a benefit on research and development credit, a benefit on the partial release of a valuation allowance, and partially offset by the tax expense due to the increase of the tax rate applied to UK deferred tax assets. See Note 14 - Income taxes in the Notes to the Consolidated Financial Statements for more information related to income taxes.

Liquidity and Capital Resources

As of December 31, 2020, we had a cash balance of $62.5 million. Our primary liquidity needs are: (i) to fund normal operating expenses; (ii) to meet interest and principal requirements of our outstanding indebtedness; and (iii) to fund capital expenditures. We believe these needs will be satisfied over at least the next 12 months using cash flow generated by our operations and our available borrowings under our revolving credit facility. Our future capital requirements may vary materially from those currently planned and will depend on many factors, including our rate of revenue growth, the timing and extent of spending to support development efforts, the timing of new product introductions, market acceptance of our products and overall economic conditions. We expect to regularly assess market conditions and may raise additional equity or incur additional debt if and when our board of directors determines that doing so is in our best interest.

In accordance with the terms of our secured credit facility, we are required to repay a portion of our outstanding principal under our secured credit facility pursuant to the annual excess cash flow provision of the loan agreement. As a result of our cash flow as of December 31, 2020, pursuant to the terms of this excess cash flow provision, we expect to repay $19.7 million of the outstanding principal on our term loan by June 3, 2021, and the $19.7 million is included in the current portion of long-term debt included in current liabilities on our consolidated balance sheets at December 31, 2020. This payment will be funded from cash on hand along with additional cash flow generated by our operations during the first five months of 2021.

Cash Flows

The following table sets forth summarized cash flow data for the periods indicated (in thousands):

	Years Ended December 31, 2019		Years Ended December 31, 2020	
Cash provided by operating activities	$	3,553	$	56,901
Cash used in investing activities	$	(8,612)	$	(5,400)
Cash provided by (used in) financing activities	$	20,022	$	(8,368)

Cash flows from operating activities

Net cash provided by operating activities for 2019 of $3.6 million consisted primarily of a net loss of $17.6 million, adjustments for share-based compensation expense of $17.7 million, depreciation and amortization of $7.5 million and changes in deferred tax assets of $7.4 million along with changes in operating assets and liabilities that resulted in net cash outflows of $11.8 million. The changes in operating assets and liabilities consisted primarily of a $7.6 million increase in inventories as we procured additional inventory of new products in anticipation of increased sales, reduced accounts payable of $2.1 million and reduced accrued payables to Vector Capital of $5.5 million as we paid the accrued Vector Capital management fees following the IPO in June 2019.

Net cash provided by operating activities for 2020 of $56.9 million consisted primarily of net income of $18.6 million, adjustments for depreciation and amortization of $7.8 million, share-based compensation expense of $3.4 million, and increase in provision for inventory excess and obsolescence of $1.9 million along with changes in operating assets and liabilities that resulted in net cash inflows of $25.7 million. The changes in operating assets and liabilities consisted primarily of a $11.1 million increase in accrued employee compensation related to higher bonus due to improved financial results in 2020, which amounts will be paid in 2021, higher accounts payable of $6.1 million due to timing of purchases and payments, lower inventories of $5.7 million as we implemented inventory management strategies in 2020, along with a reduction in accounts receivable of $3.2 million due to stronger cash collections.

Cash flows from investing activities

Our investing activities for both periods presented consisted of capital expenditures for property, equipment and software in support of the growth of our business. Our investing activities in 2019 also included $2.0 million of cash paid for the acquisition of select assets and assumption of select liabilities of the Xirrus Wi-Fi business and a $2.7 million contingent consideration paid in November 2019 related to the acquisition. Our investing activities in 2020 included the remaining $0.3 million contingent consideration payment for the Xirrus acquisition in February 2020.

Cash flows from financing activities

Net cash provided by financing activities of $20.0 million for 2019 was primarily due to $66.0 million in proceeds received from the issuance of shares in our IPO, net of underwriters commissions, paid down $30.7 million in principal under our term loan and revolving loan facilities, payment of $9.5 million in scheduled principal payments due under our term loan facility, and payment of $4.6 million of deferred issuance costs related to our IPO.

Net cash used in financing activities of $8.4 million for 2020 was primarily due to payment of $10.0 million in scheduled principal payments due under our term loan facility offset by $1.6 million in proceeds from the exercise of share options.

Debt

We had outstanding external debt on our term loan of $65.3 million and $55.3 million, including the current portions of $10.0 million and $29.7 million at December 31, 2019 and 2020, respectively. We had no outstanding debt balance on our revolving credit facility at December 31, 2019 and 2020. The current portion of debt at December 31, 2020 includes $19.7 million related to a required repayment in principal in accordance with the excess cash flow provision of the term loan agreement, based on our calculation of cash flow at December 31, 2020, which we expect to pay by June 3, 2021. We have classified this $19.7 million required payment as a current liability rather than long-term debt and is included in the current portion of long-term debt on our consolidated balance sheets.

On June 28, 2019, we entered into a Third Amendment to Amended and Restated Credit Agreement (the “Third Amendment”). The Third Amendment amends the Amended and Restated Credit Agreement, dated December 21, 2017, as amended by that Waiver and First Amendment to Amended and Restated Credit Agreement dated as of November 21, 2018 and as further amended by the Consent, Waiver and Second Amendment to Amended and Restated Credit Agreement dated as of April 26, 2019 (as amended, amended and restated, supplemented, restructured or otherwise modified, renewed or replaced from time to time, the “Credit Agreement”).

Pursuant to the Third Amendment, certain actions taken by us in connection with our June 2019 IPO were consented to by Silicon Valley Bank and the Lenders, including (i) the exchange of outstanding vested and unvested Class B units and phantom units in VCH L.P. for ordinary shares in us (in exchange for vested units) and restricted stock awards (for unvested Class B units) and restricted stock units (for unvested phantom units) and the adoption of the employee share incentive plan and employee share purchase plan and forms of award agreement thereunder by us; (ii) the payment of accrued and unpaid management fees owed to an affiliate of VCH, L.P.; and (iii) the entering into of the Shareholder Agreement by and between VCH, L.P. as a guarantor and loan party and terminated the guaranty granted by an affiliate of VCH, L.P. In addition, the prior two tranches under the loan were combined, with only one tranche of term loan remaining. The minimum consolidated fixed charge coverage ratio for the trailing twelve-month period ending December 31, 2019 and each trailing twelve-month quarterly period ending thereafter was amended to 1.25:1.00. All other financial covenants remained the same.

On July 1, 2019, we repaid $30.7 million to the Lenders out of the net proceeds of our IPO, comprised of $20.7 million repayment of the term loan and repayment of all outstanding amounts under the revolving credit facility, leaving an available revolving commitment of $10.0 million.

The Credit Agreement contains customary representations, warranties and affirmative and negative covenants. We are required to maintain a quarterly minimum consolidated fixed charge coverage ratio and minimum consolidated leverage ratio, and a monthly minimum adjusted quick ratio. As of December 31, 2019 and 2020, we were in compliance with all affirmative and negative covenants.

Contractual Obligations and Commercial Commitments

We lease office space and equipment under operating leases that run through 2026. Additionally, our Credit Agreement matures in December 2022.

Contractual obligations as of December 31, 2020 are as follows (in thousands):

	Payments due by period				
	Less than 1 year	1 to 3 years	3 to 5 years	More than 5 years	Total
Operating lease obligations	$ 2,598	$ 2,788	$ 891	$ 174	$ 6,451
Term credit facility (1)	29,747	25,503	—	—	55,250
Term credit facility interest (1)	2,085	1,145	—	—	3,230
Purchase obligations (2)	69,012	—	—	—	69,012
Total (3)	$ 103,442	$ 29,436	$ 891	$ 174	$ 133,943

(1) Based upon the Credit Agreement debt outstanding, principal payments and interest rate in effect on December 31, 2020, of 5.5%.
(2) Consists primarily of inventory commitments
(3) Comprises liabilities recorded on the balance sheet of $104.7 million and obligations not recorded on the balance sheet of $29.2 million.

Off-balance sheet arrangements

We do not engage in transactions that generate relationships with unconsolidated entities or financial partnerships, such as entities often referred to as variable interest entities, structured finance, or special purpose entities, as part of our ongoing business. Accordingly, our operating results, financial condition and cash flows are not subject to off-balance sheet risks.

Recent accounting pronouncements

We have reviewed all recently issued accounting standards and have disclosed in Note 1 in this Annual Report on Form 10-K the results of our review and assessment of the impact of each of the standards on our consolidated financial statements.

Critical accounting policies and estimates

Our consolidated financial statements are prepared in accordance with U.S. GAAP. The preparation of these financial statements requires our management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expense and related disclosures. Our estimates are based on our 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. Actual results may differ from these judgments and estimates under different assumptions or conditions and any such differences may be material. We believe that the accounting policies discussed below are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management's judgments and estimates. For a summary of all of our accounting policies, including the accounting policies discussed below, see Note 1, *Description of Business and Summary of Significant Accounting Policies*, in the Notes to Consolidated Financial Statements.

Recognition of revenues

Our revenues are generated primarily from the sale of hardware products, with essential embedded software. Our revenues also include limited amounts for software products, extended warranty on hardware products and subscription services. Revenue is recognized upon transfer of control of promised products to customers in an amount that reflects the consideration we expect to receive in exchange for those products. We generally recognize product revenues at the time of shipment, provided that all other revenue recognition criteria have been met. Revenues are recognized net of estimated stock returns, volume-based rebates and cooperative marketing allowances that we provide to distributors. We recognize revenues on extended warranty on a straight-line basis over the term of the extended warranty. We recognize subscription services revenue ratably over the term in which the services are provided and our performance obligation is satisfied. We determine the appropriate revenue recognition for our contracts with customers by analyzing the type, terms and conditions of each contract or arrangement. Certain of our contracts have multiple performance obligations for which we allocate the transaction price to each performance obligation based on the standalone selling price of each distinct product or service in the contract. The standalone selling price is the price at which we expect to be entitled to in exchange for transferring the promised good or service to the customer. The best evidence of standalone selling price is the observable price of a product or service when the Company sells that product or service separately in similar circumstances and to similar customers. In certain cases, the standalone sales price is not directly observable, and we estimate the transaction price allocated to each performance obligation using the expected cost plus margin approach. When, or as, a performance obligation is satisfied, we recognize as revenue the amount of the transaction price that is allocated to that performance obligation. The transaction price recognized excludes an estimate for the consideration related to products we expect to be returned or amounts we expect to refund.

Inventoryandinventory valuation

Inventories are stated at the lower of cost or net realizable value. In determining the cost of raw materials, consumables and goods purchased for resale, the weighted average purchase price is used. For finished goods, cost is computed as production cost including capitalized inbound freight costs.

The valuation of inventory requires us to estimate excess or obsolete inventory. The determination of excess or obsolete inventory is estimated based on a comparison of the quantity and cost of inventory on hand to our forecast of customer demand. The actual amount of inventory written off in future periods will likely differ from the inventory excess and obsolete provisions reflected in our consolidated balance sheets due to difference between estimated and actual future demand, which could have a material effect on our net inventory as reported in our consolidated financial statements. Any adjustments to the valuation of inventory are included in cost of revenues.

Product warranties

We provide a standard warranty on our products, with the term depending on the product, and record a liability for the estimated future costs associated with potential warranty claims at the time products are sold. Our responsibility under our standard warranty is the repair or replacement of in-warranty defective product, or to credit the purchase price of the defective product, at our discretions, without charge to the customer. Our estimate of future warranty costs is largely based on historical experience factors, including product failure rates, material usage, and service delivery cost incurred in correcting product failures. These provisions are reviewed and adjusted by management periodically to reflect actual and anticipated experience. The warranty costs are reflected in our consolidated statements of operations within cost of revenues.

Income taxes

We account for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in our consolidated financial statements. Under this method, deferred tax assets and liabilities are determined on the basis of the differences between the financial statement carrying amount and the tax bases of assets and liabilities using enacted income tax rates in effect for the year in which the differences are expected to be recovered or settled. The effect of a change in income tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date.

We recognize deferred tax assets to the extent that we believe these assets are more likely than not to be realized. In making such a determination, we consider all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. If we determine that we would be able to realize our deferred tax asset in the future in excess of their net recorded amount, we would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

We may be subject to income tax audits in all the jurisdictions in which we operate and, as a result, we must also assess exposures to any potential issues arising from current or future audits of current and prior years' tax returns. Accordingly, we must assess such potential exposures and, where necessary, provide a reserve to cover any expected loss. We recognize the benefit of a tax position if it is more likely than not to be sustained. Recognized tax positions are measured at the largest amount more likely than not of being realized upon settlement. To the extent that we establish a reserve, our income tax expense would be increased. If we ultimately determine that payment of these amounts is unnecessary, we reverse the liability and recognize an income tax benefit during the period in which new information becomes available indicating the liability is no longer necessary. We record an additional income tax expense in the period in which new information becomes available indicating the tax liability is greater than our original estimate.

Share-based compensation

We recognize all share-based compensation expense as a cost in the consolidated financial statements. Equity classified awards are measured at the grant date fair value of the award and expense is recognized, net of estimated forfeitures, on a straight-line basis over the requisite service period for each separately vesting portion of the award and forfeiture rates are periodically updated for actual experience over the vesting term. We estimate the fair value of share options granted using the Black-Sholes option pricing model. We use the Monte-Carlo simulation model to determine the grant date fair value for share awards with a market condition.

Business Combinations

We apply the provisions of ASC 805, *Business Combinations*, in the accounting for our acquisitions. Assets and liabilities assumed are recognized at their acquisition date fair values. Goodwill as of the acquisition date is measured as the excess of consideration transferred and the net of the acquisition date fair values of the assets acquired and the liabilities assumed. Estimates are used in valuing certain intangible assets and include, but are not limited to, future expected cash flows as well as assumptions about the period to be used and discount rates. During the measurement period, which may be up to one year from the acquisition date, any adjustments to the value of the assets acquired and liabilities assumed are recorded with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded to the consolidated statements of operations.

JOBS Act accounting election

We are an emerging growth company, as defined in the JOBS Act. Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, are subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Interest rate risk

We had $55.3 million of debt outstanding as of December 31, 2020 under our Credit Agreement. We are exposed to interest rate risk from fluctuations in the US LIBOR rate that is a component of the interest rate used to calculate interest expense on the debt.

Interest accrues on the outstanding principal amount of the term loan on a quarterly basis and is equal to the US LIBOR rate plus a base rate of 4.75%, 4.25% or 4.00%. The base rate is affected by our financial performance as measured by the consolidated leverage ratio. The rate on the term loan was 6.85% as of December 31, 2019 and was reduced to 6.0% on January 1, 2020 due to a reduction in the LIBOR rate. The rate was further reduced to 5.5% on November 13, 2020 due to a reduction in the base rate from 4.75% to 4.25% based on improved financial performance as measured by our consolidated leverage ratio and remained at 5.5% at December 31, 2020. A hypothetical 100-basis point increase in interest rates, and assuming a constant base rate and required principal payments, would result in an additional $0.5 million in interest expense related to our external debt per year.

In July 2017, the head of the United Kingdom Financial Conduct Authority announced plans to phase out the use of LIBOR by the end of 2021. Our Credit Agreement provides that if LIBOR is not available, the rate shall be determined by the administrative agent by reference to other applicable rates, and additionally allows the Company to convert to an ABR loan or other options. At this time, no consensus exists as to what rate or rates may become the acceptable alternatives to LIBOR and we are unable to predict the effect of any such alternatives on our current interest rate.

Foreign currency exchange risk

We conduct business in all parts of the world and are thereby exposed to market risks related to fluctuations in foreign currency exchange rates. The U.S. dollar is the single largest currency in which our revenue contracts are denominated. Any decline in the value of local foreign currencies against the U.S. dollar results in our products and services being more expensive to a potential foreign customer. In those instances where our goods and services have already been sold, receivables may be more difficult to collect. Additionally, in jurisdictions where the revenue contracts are denominated in U.S. dollars and operating expenses are incurred in the local currency, any decline in the value of the U.S. dollar will have an unfavorable impact to operating margins. We have not entered into any foreign currency hedging transactions. We do not purchase or hold any derivative financial instruments for speculation or arbitrage.

We do not hold any cash in any investment accounts and all cash is deposited with financial institutions that management believes are of high credit quality. Our cash consists primarily of U.S. dollar denominated demand accounts.

Inflation risk

We do not believe that inflation has had a material effect on our business, financial condition or results of operations during the years ended December 31, 2019 and 2020.

Credit risk

We consider the credit risk of all customers and regularly monitor credit risk exposures in our trade receivables. Our standard credit terms with our customers are generally net 30 to 60 days. We had one customer representing more than 10% of trade receivables at December 31, 2019 and two customers representing more than 10% of trade receivables at December 31, 2020. In addition, we had two customers representing more than 10% of revenue for the years ended December 31, 2019 and 2020.

Item 8. Financial Statements and Supplementary Data.

The information required by this item is incorporated by reference to the consolidated financial statements and accompanying notes set forth on pages F-1 through F-37 of this Annual Report on Form 10-K.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Financial Officer and Chief Financial Officer, performed an evaluation of the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities and Exchange Act of 1934, as amended, or the Exchange Act), as of December 31, 2020, the end of the period covered by this Annual Report on Form 10-K. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its Chief Executive and Chief Financial Officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded, that as of such date, our disclosure controls and procedures were effective at a reasonable assurance level.

Management’s Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of our consolidated financial statements for external purposes in accordance with U.S. GAAP. Under the supervision of, and with the participation of our Chief Executive Officer and Chief Financial Officer, management assessed the effectiveness of internal controls over financial reporting as of December 31, 2020.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management based its assessment on criteria established in “Internal Control Integrated Framework (2013)” issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2020.

This Annual Report on Form 10-K does not include an attestation report of our independent registered public accounting firm due to a transition period established by the rules of the SEC for “emerging growth companies”.

Changes in Internal Control

There were no changes in our internal control over financial reporting identified in management’s evaluation pursuant to Rules 13a-15(e) and 15d-15(e) of the Exchange Act for the year ended December 31, 2020 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Effectiveness of Controls and Procedures

None.

Item 9B. Other Information.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

Information required by Part III, Item 10, will be included in our Proxy Statement relating to our 2021 annual meeting of shareholders to be filed with the SEC within 120 days after the end of our year ended December 31, 2020, and is incorporated herein by reference.

Item 11. Executive Compensation.

Information required by Part III, Item 11, will be included in our Proxy Statement relating to our 2021 annual meeting of shareholders to be filed with the SEC within 120 days after the end of our year ended December 31, 2020, and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Shareholder Matters.

Information required by Part III, Item 12, will be included in our Proxy Statement relating to our 2021 annual meeting of shareholders to be filed with the SEC within 120 days after the end of our year ended December 31, 2020, and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

Information required by Part III, Item 13, will be included in our Proxy Statement relating to our 2021 annual meeting of shareholders to be filed with the SEC within 120 days after the end of our year ended December 31, 2020, and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services.

Information required by Part III, Item 14, will be included in our Proxy Statement relating to our 2021 annual meeting of shareholders to be filed with the SEC within 120 days after the end of our year ended December 31, 2020, and is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

Documents filed as part of this annual report on Form 10-K:

(1) ***Financial Statements***. The following index lists consolidated financial statements and notes thereto filed as part of this annual report on Form 10-K:

(2) ***Financial Statement Schedules.*** All schedules have been omitted because they are not applicable as the required information is included in the consolidated financial statements or notes thereto.

(3) ***Exhibits.*** A list of exhibits filed or furnished with this report on Form 10-K (or incorporated by reference to exhibits previously files by Cambium) is provided in the accompanying Exhibit Index.

Item 16. Form 10-K Summary

None.

Exhibit Index

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Form	File No.	Exhibit	Filing Date
1.1	Underwriting Agreement dated December 3, 2020 by and among Cambium Networks Corporation, the Underwriters and the Selling Shareholders	8-K	001-38952	1.1	December 4, 2020
3.1	Form of Amended and Restated Memorandum and Articles of Association to be effective upon completion of this offering	S-1/A	333-231789	3.1	June 13, 2019
4.1	Form of Ordinary Share Certificate of Registrant	S-1/A	333-231789	4.1	June 24, 2019
4.2	Form of Shareholders Agreement by and among Registrant and certain security holders of Registrant to be effective upon completion of this offering	S-1/A	333-231789	4.2	June 13, 2019
4.3*	Description of Registrant's Securities Registered Pursuant to Section 12 of the Securities and Exchange Act of 1934				
10.1+	Form of Indemnification Agreement entered into between Registrant and its directors and executive officers	S-1	333-231789	10.1	May 29, 2019
10.2	Renewal Lease by Reference to an Existing Lease, Part Unit A, Linhay Business Park, Eastern Road, Ashburton, Devon TQ13 7UP, United Kingdom, dated as of November 22, 2016, by and between Registrant and Stephanie Myers Palk, Richard John Palk and Alison June Palk	S-1	333-231789	10.2	May 29, 2019
10.3	Renewal Lease by Reference to an Existing Lease, Unit B2/3, Linhay Business Park, Eastern Road, Ashburton, Devon TQ13 7UP, United Kingdom, dates as of November 22, 2016, by and between Registrant and Stephanie Myers Palk, Richard John Palk and Alison June Palk	S-1	333-231789	10.3	May 29, 2019
10.4	Renewal Lease by Reference to an Existing Lease, Unit B2/3, Linhay Business Park, Eastern Road, Ashburton, Devon TQ13 7UP, United Kingdom, dated as of April 9, 2018, by and between Registrant and Stephanie Myers Palk, Richard John Palk and Alison June Palk	S-1	333-231789	10.4	May 29, 2019
10.5	Renewal Lease by Reference to an Existing Lease, Unit D1, Linhay Business Park, Eastern Road, Ashburton, Devon TQ13 7UP, United Kingdom, dated as of November 22, 2016, by and between Registrant and Stephanie Myers Palk, Richard John Palk and Alison June Palk	S-1	333-231789	10.5	May 29, 2019
10.6	Renewal Lease by Reference to an Existing Lease, Unit D1, Linhay Business Park, Eastern Road, Ashburton, Devon TQ13 7UP, United Kingdom, dated as of April 9, 2018, by and between Registrant and Stephanie Myers Palk, Richard John Palk and Alison June Palk	S-1	333-231789	10.6	May 29, 2019
10.7	Office Lease, dated as of January 31, 2012, by and between Cambium Networks, Inc. and Atrium at 3800 Golf LLC	S-1	333-231789	10.7	May 29, 2019
10.8	The First Amendment, dated March 6, 2012, by and between Cambium Networks, Inc. and Atrium at 3800 Golf LLC	S-1	333-231789	10.8	May 29, 2019

10.9	The Second Amendment, dated February 21, 2013, by and between Cambium Networks, Inc. and Atrium at 3800 Golf LLC	S-1	333-231789	10.9	May 29, 2019
10.10	The Third Amendment, dated June 3, 2015, by and between Cambium Networks, Inc. and Atrium at 3800 Golf LLC	S-1	333-231789	10.10	May 29, 2019
10.11	The Fourth Amendment, dated January 18, 2018, by and between Cambium Networks, Inc. and Atrium at 3800 Golf LLC	S-1	333-231789	10.11	May 29, 2019
10.12	Lease Deed, dated as of June 20, 2016, by and between Cambium Networks Consulting Private Limited and Umiya Holdings Private Limited	S-1	333-231789	10.12	May 29, 2019
10.13	Lease, dated as of December 4, 2017, by and between Cambium Networks, Inc. and Silicon Valley Center Office LLC	S-1	333-231789	10.13	May 29, 2019
10.14++	Corporate Supply Agreement between Cambium Networks Limited and Flextronics Telecom Systems, Ltd. dated as of April 23, 2012	S-1	333-231789	10.14	May 29, 2019
10.15+	2019 Employee Share Purchase Plan	S-1/A	333-231789	10.15	June 13, 2019
10.16	Intentionally Omitted				
10.17+	2019 Share Incentive Plan	S-1/A	333-231789	10.17	June 13, 2019
10.18+	Form of Share Option Grant Notice and Restricted Share Award Agreement under 2019 Share Incentive Plan (to be executed by Atul Bhatnagar)	S-1/A	333-231789	10.18	June 13, 2019
10.19+	Form of Restricted Share Grant Notice and Restricted Share Award Agreement under 2019 Share Incentive Plan (to be executed by Atul Bhatnagar)	S-1/A	333-231789	10.19	June 13, 2019
10.20+	Form of Restricted Share Grant Notice and Restricted Share Award Agreement under 2019 Share Incentive Plan (to be executed by Atul Bhatnagar, Bryan Sheppeck and Ronald Ryan)	S-1/A	333-231789	10.20	June 13, 2019
10.21	Amended and Restated Credit Agreement, dated as of December 21, 2017, by and among Registrant, as Holdings, Cambium Networks, Ltd., as Borrower, Silicon Valley Bank, as Administrative Agent and Issuing Lender, and the lenders party thereto and the other loan parties thereto	S-1	333-231789	10.21	May 29, 2019
10.22	Waiver and First Amendment to Amended and Restated Credit Agreement, dated as of November 21, 2018, by and among Vector Cambium Holding (Cayman), L.P., as Holdings, Cambium Networks, Ltd., as Borrower, Silicon Valley Bank, as Administrative Agent and Issuing Lender, and the lenders party thereto and the other loan parties thereto	S-1	333-231789	10.22	May 29, 2019
10.23	Consent, Waiver and Second Amendment to Amended and Restated Credit Agreement, dated as of April 26, 2019, by and among Vector Cambium Holdings (Cayman), L.P. as Holdings, Cambium Networks, Ltd., as Borrower, Silicon Valley Bank, as Administrative Agent and Issuing Lender, and the lenders party thereto and the other loan parties thereto	S-1	333-231789	10.23	May 29, 2019

10.24+	Employment agreement, dated as of February 15, 2013, between Cambium Networks, Inc. and Atul Bhatnagar	S-1/A	333-231789	10.24	June 13, 2019
10.25+	Sales Incentive Plan Document for Regional Vice Presidents: SVP Global Channels	S-1/A	333-231789	10.25	June 13, 2019
10.26+	Sales Incentive Plan Document for SVP Global Sales	S-1/A	333-231789	10.26	June 13, 2019
10.27+	Form of Executive Restricted Share Unit Grant	S-1/A	333-231789	10.27	June 24, 2019
10.28+	Form of Executive Stock Option Grant	S-1/A	333-231789	10.28	June 24, 2019
10.29+	Form of Director Stock Option Grant	S-1/A	333-231789	10.29	June 24, 2019
10.30	Third Amendment to Amended and Restated Credit Agreement dated June 28, 2019	8-K	001-38952	10.30	July 1, 2019
10.31	Sublease, dated December 1, 2019, by and between Cambium Networks, Inc. and Agfa Corporation	10-K	001-38952	10.31	March 24, 2020
10.32+	Offer Letter, dated as of June 14, 2018, between Cambium Networks, Inc. and Stephen Cumming	10-K	001-38952	10.32	March 24, 2020
10.33+	Amended Offer Letter, dated as of March 19, 2020, between Cambium Networks, Inc. and Stephen Cumming	10-K	001-38952	10.33	March 24, 2020
21.1	Subsidiaries of the Registrant	S-1	333-231789	21.1	May 29, 2019
23.1*	Consent of KPMG LLP (UK), independent registered public accounting firm				
23.2*	Consent of KPMG LLP (US), independent registered public accounting firm				
31.1*	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
31.2*	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
32.1*	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
32.2*	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
101.INS*	XBRL Instance Document				
101.SCH*	XBRL Taxonomy Extension Schema Document				
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document				
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document				

+ Indicates management contract or compensatory plan

++ Confidential treatment has been granted for portions of this exhibit. These portions have been omitted and have been filed separately with the SEC.

Portions of the exhibit have been excluded because it both (i) is not material and (ii) would be competitively harmful if publicly disclosed.

* Filed herewith.

SIGNATURES

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

Cambium Networks Corporation

Date: March 1, 2021

By: /s/ Stephen Cumming
Stephen Cumming
Chief Financial Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Report has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

Name	Title	Date
/s/ Atul Bhatnagar **Atul Bhatnagar**	President and Chief Executive Officer (Principal Executive Officer)	March 1, 2021
/s/ Stephen Cumming **Stephen Cumming**	Chief Financial Officer (Principal Financial Officer)	March 1, 2021
/s/ Marc Nelson **Marc Nelson**	Chief Accounting Officer (Principal Accounting Officer)	March 1, 2021
/s/ Robert Amen **Robert Amen**	Chairman of the Board	March 1, 2021
/s/ Alexander R. Slusky **Alexander R. Slusky**	Director	March 1, 2021
/s/ Bruce Felt **Bruce Felt**	Director	March 1, 2021
/s/ Vikram Verma **Vikram Verma**	Director	March 1, 2021
/s/ Kevin Lynch **Kevin Lynch**	Director	March 1, 2021

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Cambium Networks Corporation:

Opinion on the consolidated financial statements

We have audited the accompanying consolidated statements of operations, comprehensive loss, shareholders' deficit, and cash flows of Cambium Networks Corporation and subsidiaries (the Company) for the year ended December 31, 2018 and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the results of operations of the Company and its cash flows for the year ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

Basis for opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audit. 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 audit 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 consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audit included performing procedures to assess the risks of material misstatement of the consolidated 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 consolidated financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audit provides a reasonable basis for our opinion.

/s/ KPMG LLP

We served as the Company's auditor from 2016 to 2019.

London, United Kingdom
May 3, 2019, except for Note 12 and Note 13 as to which the date is June 12, 2019.

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Cambium Networks Corporation:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Cambium Networks Corporation and subsidiaries (the Company) as of December 31, 2019 and 2020, the related consolidated statements of operations, comprehensive income (loss), shareholders' (deficit) equity, and cash flows for each of the years in the two-year period ended December 31, 2020, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2020, and the results of its operations and its cash flows for each of the years in the two-year period ended December 31, 2020, in conformity with U.S. generally accepted accounting principles.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company has changed its method of accounting for leases as of January 1, 2019, due to the adoption of Accounting Standards Update 2016-02 and all related amendments, which established Accounting Standards Codification Topic 842, *Leases*.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We 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 consolidated 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 consolidated 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 consolidated 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 consolidated 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 2019.

Chicago, Illinois
March 1, 2021

CAMBIUM NETWORKS CORPORATION
Consolidated Balance Sheets
as of December 31, 2019 and 2020
(in thousands, except for share and per share amounts)

	December 31, 2019	December 31, 2020
ASSETS		
Current assets		
Cash	$ 19,346	$ 62,472
Receivables, net of allowances	58,628	58,114
Inventories, net	41,670	33,962
Recoverable income taxes	—	1,420
Prepaid expenses	5,323	4,143
Other current assets	4,350	5,024
Total current assets	129,317	165,135
Noncurrent assets		
Property and equipment, net	8,314	7,535
Software, net	3,395	3,438
Operating lease assets	6,872	5,083
Intangible assets, net	15,100	12,895
Goodwill	8,552	9,842
Deferred tax assets, net	929	1,537
Other noncurrent assets	—	288
TOTAL ASSETS	$ 172,479	$ 205,753
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities		
Accounts payable	$ 25,214	$ 30,859
Accrued liabilities	15,034	20,160
Employee compensation	4,652	14,911
Current portion of long-term external debt, net	9,454	29,201
Deferred revenues	7,430	6,471
Other current liabilities	6,084	6,009
Total current liabilities	67,868	107,611
Noncurrent liabilities		
Long-term external debt, net	54,158	24,957
Deferred revenues	4,852	4,448
Noncurrent operating lease liabilities	5,335	3,332
Deferred tax liabilities, net	337	9
Other noncurrent liabilities	—	2,009
Total liabilities	132,550	142,366
Shareholders' equity		
Share capital; $0.0001 par value; 500,000,000 shares authorized at December 31, 2019 and December 31, 2020; 25,753,603 shares issued and 25,672,983 outstanding at December 31, 2019 and 26,126,775 shares issued and 26,034,526 outstanding at December 31, 2020	3	3
Additional paid in capital	104,773	109,837
Treasury shares, at cost, 80,620 shares at December 31, 2019 and 92,146 shares at December 31, 2020	(1,094)	(1,090)
Accumulated deficit	(63,374)	(44,799)
Accumulated other comprehensive loss	(379)	(564)
Total shareholders' equity	39,929	63,387
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	$ 172,479	$ 205,753

The accompanying Notes are an integral part of these Consolidated Financial Statements.

CAMBIUM NETWORKS CORPORATION
Consolidated Statements of Operations
for the Years ended December 31, 2018, 2019 and 2020
(in thousands, except for share and per share amounts)

	Years Ended December 31,		
	2018	2019	2020
Revenues	$ 241,762	$ 267,028	$ 278,459
Cost of revenues	126,267	135,799	139,049
Gross profit	115,495	131,229	139,410
Operating expenses			
Research and development	38,917	47,692	43,188
Sales and marketing	42,658	46,253	36,784
General and administrative	18,804	30,125	28,851
Depreciation and amortization	8,765	5,858	6,639
Total operating expenses	109,144	129,928	115,462
Operating income	6,351	1,301	23,948
Interest expense, net	8,113	8,076	5,326
Other expense, net	550	546	491
(Loss) income before income taxes	(2,312)	(7,321)	18,131
(Benefit) provision for income taxes	(799)	10,280	(444)
Net (loss) income	$ (1,513)	$ (17,601)	$ 18,575
(Loss) earnings per share			
Basic	$ (0.11)	$ (0.89)	$ 0.72
Diluted	$ (0.11)	$ (0.89)	$ 0.70
Weighted-average number of shares outstanding to compute net (loss) earnings per share			
Basic	13,600,411	19,741,764	25,707,092
Diluted	13,600,411	19,741,764	26,403,112
Share-based compensation included in costs and expenses:			
Cost of revenues	$ —	$ 211	$ 67
Research and development	—	5,363	1,599
Sales and marketing	—	4,185	980
General and administrative	—	7,937	790
Total	$ —	$ 17,696	$ 3,436

The accompanying Notes are an integral part of these Consolidated Financial Statements.

CAMBIUM NETWORKS CORPORATION
Consolidated Statements of Comprehensive Income (Loss)
for the Years ended December 31, 2018, 2019 and 2020
(in thousands)

	Years Ended December 31, 2018	2019	2020
Net (loss) income	$ (1,513)	$ (17,601)	$ 18,575
Other comprehensive (loss) income			
Foreign currency translation adjustment	(372)	(158)	(185)
Comprehensive (loss) income	**$ (1,885)**	**$ (17,759)**	**$ 18,390**

The accompanying Notes are an integral part of these Consolidated Financial Statements.

CAMBIUM NETWORKS CORPORATION
Consolidated Statements of Shareholders' (Deficit) Equity
for the Years ended December 31, 2018, 2019 and 2020
(in thousands)

	Share Capital							
	Shares	Amount	Additional paid in capital	Capital contribution	Treasury shares	Accumulated deficit	Accumulated other comprehensive income (loss)	Total shareholders' (deficit) equity
Balance at December 31, 2017	77	$ —	$ 772	$ 24,651	$ —	$ (43,400)	$ 151	$ (17,826)
Adjustment for adoption of ASC 606	—	—	—	—	—	(860)	—	(860)
Net loss	—	—	—	—	—	(1,513)	—	(1,513)
Foreign currency translation	—	—	—	—	—	—	(372)	(372)
Balance at December 31, 2018	77	—	772	24,651	—	(45,773)	(221)	(20,571)
Net loss	—	—	—	—	—	(17,601)	—	(17,601)
Share-based compensation	—	—	17,696	—	—	—	—	17,696
Issuance of shares upon vesting of restricted share units	29	—	—	—	—	—	—	—
Issuance of shares in Recapitalization and related reclassification	19,848	2	24,651	(24,651)	—	—	—	2
Issuance of shares in initial public offering, net of issuance costs of $8,228	5,800	1	61,372	—	—	—	—	61,373
Treasury shares withheld for net settlement	(81)	—	282	—	(1,094)	—	—	(812)
Foreign currency translation	—	—	—	—	—	—	(158)	(158)
Balance at December 31, 2019	25,673	3	104,773	—	(1,094)	(63,374)	(379)	39,929
Net income	—	—	—	—	—	18,575	—	18,575
Share-based compensation	—	—	3,436	—	—	—	—	3,436
Issuance of vested shares	234	—	—	—	—	—	—	—
Proceeds from exercise of share options	139	—	1,628	—	—	—	—	1,628
Treasury shares withheld for net settlement	(11)	—	—	—	4	—	—	4
Foreign currency translation	—	—	—	—	—	—	(185)	(185)
Balance at December 31, 2020	26,035	$ 3	$ 109,837	$ —	$ (1,090)	$ (44,799)	$ (564)	$ 63,387

The accompanying Notes are an integral part of these Consolidated Financial Statements.

CAMBIUM NETWORKS CORPORATION
Consolidated Statements of Cash Flows
for the Years ended December 31, 2018, 2019 and 2020
(in thousands)

	Years Ended December 31, 2018	2019	2020
Cash flows from operating activities:			
Net (loss) income	$ (1,513)	$ (17,601)	$ 18,575
Adjustments to reconcile net (loss) income to net cash (used in) provided by operating activities:			
Depreciation	2,836	3,583	3,685
Amortization of software and intangible assets	6,182	2,784	3,583
Amortization of debt issuance costs	576	1,141	546
Share-based compensation	—	17,696	3,436
Deferred income taxes	(1,863)	7,402	(1,072)
Provision for inventory excess and obsolescence	1,184	196	1,896
Other	(232)	115	540
Change in assets and liabilities:			
Receivables	(7,395)	622	3,165
Inventories	(10,009)	(7,634)	5,696
Accounts payable	4,261	2,096	6,097
Accrued employee compensation	(4,081)	14	11,116
Accrued liabilities	1,539	(1,296)	1,495
Accrued Sponsor interest and payables	564	(5,457)	—
Other assets and liabilities	(2,444)	(108)	(1,857)
Net cash (used in) provided by operating activities	(10,395)	3,553	56,901
Cash flows from investing activities:			
Purchase of property and equipment	(5,588)	(3,002)	(3,407)
Purchase of software	(1,912)	(944)	(1,659)
Cash paid for acquisitions	—	(4,666)	(334)
Net cash used in investing activities	(7,500)	(8,612)	(5,400)
Cash flows from financing activities:			
Proceeds from issuance of term loan	9,962	—	—
Proceeds from issuance of revolver debt	10,000	—	10,000
Repayment of term loan	(4,500)	(30,212)	(10,000)
Repayment of revolver debt	—	(10,000)	(10,000)
Payment of debt issuance costs	(396)	(336)	—
Proceeds from initial public offering, net of underwriters commission and fees	—	65,988	—
Payment of deferred offering costs	—	(4,616)	—
Proceeds received from share option exercises	—	—	1,628
Taxes paid related to net share settlement of equity awards	—	(802)	4
Net cash provided by (used in) financing activities	15,066	20,022	(8,368)
Effect of exchange rate on cash	(107)	(58)	(7)
Net (decrease) increase in cash	(2,936)	14,905	43,126
Cash, beginning of period	7,377	4,441	19,346
Cash, end of period	$ 4,441	$ 19,346	$ 62,472
Supplemental disclosure of cash flow information:			
Income taxes paid	$ 1,074	$ 1,702	$ 2,232
Interest paid	$ 7,614	$ 6,455	$ 3,998
Significant non-cash activities:			
Issuance of shares for unreturned capital and accumulated yield	$ —	$ 49,252	$ —

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Note 1. Description of Business and Summary of Significant Accounting Policies

Business

Cambium Networks Corporation ("Cambium" or the "Company"), incorporated under the laws of the Cayman Islands, is a holding company whose principal operating entities are Cambium Networks, Ltd. (UK), Cambium Networks, Inc. (USA), and Cambium Networks Private Limited (India). On October 28, 2011, Cambium acquired the point-to-point ("PTP") and point-to-multi-point ("PMP") businesses from Motorola Solutions, Inc. in an acquisition funded by investment funds affiliated with Vector Capital ("Sponsor") and Cambium Networks became the renamed entity subsequent to the acquisition.

Cambium Networks Corporation and its wholly owned subsidiaries provide fixed wireless broadband and Wi-Fi networking infrastructure solutions. The Company's solutions are deployed by wireless broadband internet service providers, mobile network operators, and managed service providers, as well as in private networks, enterprises, petrochemical, military, state and local government, education, hospitality, rail, utility, industrial and other network operators that use its technology to connect a wide range of network assets, from offices, service organization (schools, hospitality, healthcare) and industrial processes, to guest and public access via Wi-Fi to complex sensor networks.

The Company operates on a calendar year ending December 31. As such, all references to 2018, 2019 and 2020 contained within these notes relate to the calendar year, unless otherwise indicated.

Basis of Presentation

The Company's consolidated financial statements and accompanying notes are prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP") and include the accounts of Cambium Networks Corporation and its wholly owned subsidiaries. All intercompany balances and transactions have been eliminated. The consolidated financial statements have been prepared on the same basis other than the adoption with effect from January 1, 2019 of FASB Accounting Standards Codification 842, *Leases*, and, in the opinion of management, reflect all adjustments, which comprise only normal recurring adjustments necessary to state fairly the Company's financial position as of December 31, 2019 and 2020.

The Company has reclassified certain prior period amounts in the consolidated statements of cash flows to conform to the current period's presentation. Specifically, within the consolidated statements of cash flows, the provision for inventory excess and obsolescence has been reclassified from "Other" to "Provision for inventory excess and obsolescence". This change in classification does not affect previously reported cash flows from operating activities in the consolidated statements of cash flows.

On June 6, 2019, the Company completed a 100:1 share subdivision to its sole shareholder of record. Accordingly, all share and per share amounts for all periods presented in these consolidated financial statements and notes thereto have been adjusted retrospectively to reflect the subdivision.

Initial public offering

The Company's registration statement on Form S-1 (the "IPO Registration Statement") related to its initial public offering ("IPO") was declared effective on June 25, 2019, and the Company's ordinary shares began trading on the Nasdaq Global Market on June 26, 2019. On June 28, 2019, the Company completed its IPO, in which the Company sold 5,800,000 shares at a price of $12.00 per share. The Company received aggregate net proceeds of $66.0 million after deducting underwriting discounts and commissions of $3.6 million. As of December 31, 2019, the Company used the proceeds from its IPO to pay offering costs of $4.6 million, paydown debt of $30.7 million, pay management fees owed to Vector Capital of $5.6 million, and pay $4.7 million to acquire select assets and assume select liabilities of the Xirrus Wi-Fi business from Riverbed Technology, Inc.

Immediately prior to the completion of the IPO, the Company effected a recapitalization, which comprised (i) an increase in the authorized and outstanding shares held by Vector Cambium Holdings (Cayman), L.P. ("VCH, L.P.") and (ii) the exchange of the vested share-based compensation awards held by its employees for the Company's shares and unvested share-based compensation awards for restricted share awards or restricted share units issued by the Company, in each case on a value-for-value basis (the "Recapitalization").

Immediately prior to the completion of the IPO, the Company filed its Amended and Restated Memorandum and Articles of Association, which authorizes a total of 500,000,000 ordinary shares. Upon the filing of the Amended and Restated Memorandum and Articles of Association, based on the IPO price of $12.00 per share as part of the Recapitalization described above, the Company (i) issued additional shares to VCH, L.P., such that its aggregate shareholding in it became 17,704,754 shares, (ii) issued 2,140,168 net shares to its employees and service providers and (iii) granted 240,037 restricted share awards or restricted share units in respect of shares that would be subject to vesting based on continued employment with or provision of services to the Company. The Company recorded non-cash share-based compensation expense of $15.4 million in June 2019 related to the aforementioned issuance of the shares to its employees and service providers. In addition, the Company issued an aggregate 2,172,000 share options and restricted share units to employees and directors, effective upon pricing of the IPO of $12.00 per share.

Use of Accounting Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management 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 consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. On an ongoing basis, the Company evaluates these estimates, including those related to the provision for excess and obsolete inventory, the carrying amount of estimated inventory returns, the estimated amount expected to be refunded to customers in respect of inventory returns, fair value of equity awards granted to employees and the associated forfeiture rates, fair value of assets acquired, liabilities assumed, goodwill and identifiable intangible assets in business combinations, leases, provision for income taxes, recoverability of deferred tax assets. The Company bases estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances. Actual results could differ from those estimates.

Segments

Management has determined that it operates as one operating segment and one reporting unit as it only reports financial information on an aggregate and consolidated basis to its Chief Executive Officer, who is the Company’s chief operating decision maker. Decisions about resource allocation or operating performance assessments are not made below a total company level. Consequently, impairment testing is performed at the consolidated level as one reporting unit. See Note 16 – Segment information and revenues by geography for additional information.

Recognition of revenues

Revenues consist primarily of revenues from the sale of hardware products with essential embedded software. Revenues also include limited amounts for software products, extended warranty on hardware products and software subscription services. Substantially all products are sold through distributors and other channel partners, such as resellers and systems integrators.

The Company recognizes revenue to reflect the transfer of control of promised products or services to a customer in an amount that reflects the consideration to which the Company expects to be entitled in exchange for products or services.

The Company accounts for a contract when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of consideration is probable.

The Company identifies its distinct performance obligations under each contract. A performance obligation is a promise in a contract to transfer a distinct product or service to the customer. Hardware products with essential embedded software, software products, and extended warranty on hardware products have been identified as separate performance obligations.

The transaction price is the amount of consideration to which the Company expects to be entitled in exchange for transferring products or services to a customer. Exchanges made as part of the Company’s stock rotation program meet the definition of a right of return. An adjustment to revenue is made to adjust the transaction price to exclude the consideration related to products expected to be returned. The Company records an asset at the carrying amount of the estimated stock returns and a liability for the estimated amount expected to be refunded to the customer. The transaction price also excludes other forms of consideration provided to the customer, such as volume-based rebates and cooperative marketing allowances.

The Company recognizes revenue when, or as, it satisfies a performance obligation by transferring control of a promised product or service to a customer. Revenue from hardware products with embedded software is recognized when control is transferred to the customer, which is typically at the time of shipment. Software revenue is from perpetual license software and is recognized at the point in time that the customer is able to use or benefit from the software. Extended warranty is available for purchase on hardware products and is a performance obligation that is satisfied over time, beginning on the effective date of the warranty term and ending on the expiration of the warranty term. The Company recognizes revenue on extended warranties on a straight-line basis over the warranty period. Revenue from subscription services is recognized ratably over the term in which the services are provided and our performance obligation is satisfied.

Multiple performance obligations

The Company enters into revenue arrangements that may consist of multiple performance obligations, such as hardware with embedded essential software and extended warranty. The Company allocates the transaction price to each performance obligation on a relative standalone selling price basis for each distinct product or service in the contract. The best evidence of standalone selling price is the observable price of a product or service when the Company sells that product or service separately in similar circumstances and to similar customers. If a standalone selling price is not directly observable, the Company estimates the transaction price allocated to each performance obligation using the expected costs plus a margin approach.

Cash

The Company deposits cash with financial institutions that management believes are of high credit quality. The Company's cash consists primarily of U.S. dollar denominated demand accounts.

Receivables and concentration of credit risk

Trade accounts receivable are recorded at invoiced amounts, net of the allowance for credit losses. The Company considers the credit risk of all customers and regularly monitors credit risk exposure in its trade receivables. The Company's standard credit terms with their customers are generally net 30 to 60 days. The Company had one customer representing more than 10% of trade receivables at December 31, 2019 and two customers representing more than 10% of trade receivables at December 31, 2020. The Company had two customers representing more than 10% of revenues for the years ended December 31, 2018, 2019 and 2020.

The Company establishes an allowance for credit losses to present the net amount of accounts receivable expected to be collected. The allowance is determined by using the loss-rate method, which requires an estimation of loss rates based on historical loss experience adjusted for factors that are relevant to determining the expected collectability of accounts receivable. Some of these factors include macroeconomic conditions that correlate with historical loss experience, delinquency trends, aging behavior of receivables, and credit and liquidity indicators for individual customers.

Inventory

The Company's inventories are primarily finished goods for resale and, to a lesser extent, raw materials, which have been either consigned to the Company's third-party manufacturers or are held by the Company. Inventories are stated at the lower of cost or net realizable value. In determining the cost of raw materials, consumables and goods purchased for resale, the weighted average purchase price is used. For finished goods, cost is computed as production cost including capitalized inbound freight costs.

The valuation of inventory also requires the Company to estimate excess or obsolete inventory. The determination of excess or obsolete inventory is estimated based on a comparison of the quantity and cost of inventory on hand to the Company's forecast of customer demand and in consideration of historical usage. Any adjustments to the valuation of inventory are included in cost of revenues.

Property and equipment

Per ASC 360, *Property, Plant, and Equipment*, property and equipment are stated at cost. The Company calculates depreciation expense using the straight-line method over the estimated useful lives of each asset based on its asset class. Leasehold improvements are amortized over the shorter of their useful lives or the lease term. See Note 4 – Property and equipment for the useful lives for each asset class.

Upon retirement or disposition, the asset cost and related accumulated depreciation are removed with any gain or loss recognized in operating expense in the Consolidated Statements of Operations. For the years ended 2018, 2019 and 2020, the loss recognized was immaterial.

Software

Software may be purchased or developed internally for internal use. Costs related to internal use software are accounted for in accordance with ASC 350-40, *Internal Use Software*, where the expected life is greater than one year. Costs are expensed as incurred during the preliminary project stage of an internal use software project. Costs are capitalized once the project has been approved by management and is in the application development stage. Post implementation/operation costs, such as maintenance and training costs, are expensed as incurred. Any costs incurred to provide upgrades or enhancements are capitalized only if they provide additional functionality that did not previously exist.

Amortization of internal use software begins when the software is ready for internal use and is amortized over its estimated useful life. The amortization expense for internal use software is computed using the straight-line method over three to seven years.

Costs related to certain software, which is available for sale, are capitalized in accordance with ASC 985-20, *Costs of Software to be Sold, Leased, or Marketed*, when the resulting product reaches technological feasibility. The Company generally determines technological feasibility when it has a detailed program design that takes product function, feature and technical requirements to their most detailed, logical form and the product is ready for coding. The Company does not typically capitalize costs related to the development of first-generation product offerings as technological feasibility generally coincides with general availability of the software.

Amortization of software costs to be sold or marketed externally begins when the product is available for sale to customers and is amortized using the straight-line method over its estimated useful life of three years.

Business Combinations

The Company applies the provisions of ASC 805, *Business Combinations*, in the accounting for its acquisitions. It requires the Company to recognize separately from goodwill the assets acquired and the liabilities assumed at their acquisition date fair values. Goodwill as of the acquisition date is measured as the excess of consideration transferred and the net of the acquisition date fair values of the assets acquired and the liabilities assumed. While the Company uses its best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date, its estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, it records adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded to the Consolidated Statements of Operations.

Critical accounting estimates in valuing certain intangible assets include but are not limited to future expected cash flows from customer relationships, as well as assumptions about customer attrition rate.

Other estimates associated with the accounting for acquisitions may change as additional information becomes available regarding the assets acquired and liabilities assumed.

Fair Value

ASC 820, *Fair Value Measurements and Disclosures* ("ASC 820") defines fair value 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. ASC 820 establishes a fair value hierarchy for valuation inputs that gives the highest priority to quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. ASC 820 requires the Company to use observable market data, when available, and to minimize the use of unobservable inputs when determining fair value. The fair value hierarchy prioritizes the inputs into three levels that may be used in measuring fair value as follows:

Level 1 – observable inputs which include quoted prices in active markets for identical assets or liabilities.

Level 2 – inputs which include observable inputs other than Level 1, such as quoted prices for similar assets or liabilities, quoted prices for identical or similar assets or liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the asset or liability.

Level 3 – inputs which include unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the underlying assets or liability. Level 3 assets and liabilities include those whose fair value measurements are determined using pricing models, discounted cash flow methodologies or similar valuation techniques, as well as significant management judgment or estimation.

Financial assets and liabilities are classified, in their entirety, based on the lowest level of input that is significant to the fair value measurement. Our assessment of the significance of a particular input, to the fair value measurement requires judgment, and may affect the valuation of assets and liabilities and their placement within the fair value hierarchy levels.

The fair value of the Company's external debt under its Credit Agreement approximates its carrying value because the terms and conditions approximate those of current market debt available to the Company. Due to the floating interest rate the debt is classified as Level 2 of the fair value hierarchy. The external debt was estimated based on the current rates offered to the Company for debt with the same remaining maturities. The fair value of the Company's Credit Agreement was $65.3 million and $55.3 million as of December 31, 2019 and 2020, respectively.

The fair value of cash approximates its carrying value (Level 1 of the fair value hierarchy).

The Company's Level 3 liability for contingent consideration of $3.0 million that was added during the three-month period ended September 30, 2019 was fully paid to Riverbed Technologies, Inc. as of February 2020 in consideration for the sale to the Company of the Xirrus business. The entire $3.0 was earned as of December 31, 2019 and the Company made a payment of $2.7 million in November 2019 and paid the remaining $0.3 million in February 2020.

Goodwill and intangible assets

Goodwill represents the excess purchase price over the estimated fair value of net assets acquired in a business combination. Goodwill is measured at cost and is not amortized. Intangible assets acquired, either individually or with a group of assets, are initially recognized and measured at fair value. The Company uses third-party specialists to assist management to determine fair values and estimated useful lives for intangible assets acquired in business combinations. Intangible assets with finite useful lives are amortized on a straight-line basis over their estimated useful lives of between 3 and 18 years. The Company has no intangible assets with indefinite lives.

In accordance with ASC 350, *Goodwill and Other*, the Company assesses goodwill for impairment at least annually and whenever events or circumstances that would more likely than not, reduce the fair value below its carrying value. For 2019 and 2020, the Company tested goodwill for impairment at December 31.

Annual impairment testing is completed at the reporting unit level. Management has concluded the Company operates as one reporting unit and one operating segment for annual impairment testing. Refer to Note 16 – Segment information and revenues by geography for more information.

In completing its impairment evaluations, the Company first assesses qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount, including goodwill. In performing this qualitative assessment, the Company assesses relevant events and changes in circumstances, including industry and market conditions, observable earnings before interest, taxes, depreciation and amortization ("EBITDA") multiples for peer companies, operating results, business plans, and entity-specific events that would affect the fair value or the carrying amount of a reporting unit. If it is more likely than not that the fair value of a reporting unit is less than its carrying value, the Company determines the fair value of the reporting unit and compares the fair value to its carrying value. If the fair value of the reporting unit exceeds its carrying amount, goodwill of the reporting unit is not considered impaired and no further steps are required.

Impairment of long-lived assets

The Company evaluates its long-lived assets, including property and equipment, software and intangible assets, for impairment whenever events or changes in circumstances indicate that the carrying value of these assets may not be recoverable. An impairment loss is recognized when the net book value of such assets exceeds the estimated future undiscounted cash flows attributable to the assets or asset group. If impairment is indicated, the asset is written down to its estimated fair value. The Company did not recognize any material impairment losses for the years ended December 31, 2018, 2019 and 2020.

Leases

The Company has both cancelable and noncancelable operating leases for office space, vehicles, and office equipment. The Company adopted ASC 842, *Leases*, ("ASC 842") and all the related amendments on January 1, 2019, using the optional transition method to not apply the lease standard in the comparative periods presented. The Company elected the "practical expedient package" which permitted the Company to not reassess prior conclusions about lease identification, lease classification, and initial direct costs. The Company also elected the short-term lease recognition for all leases that qualify and to combine the lease and non-lease components into a single lease component for all of its leases.

In accordance with ASC 842, the Company recorded a right-of-use asset and lease liability on its consolidated balance sheet for all leases that qualified. The operating lease liability represents the present value of the future minimum lease payments over the lease term using the Company's incremental borrowing rate at the lease commencement date. The right-of-use asset reflects adjustments for the derecognition of deferred rent and prepaid rent. Leases with an initial term of 12 months or less are not recorded on the Company's consolidated balance sheet, and are expensed on a straight-line basis over the lease term. The Company does not include any renewal periods in the lease term for its leases as sufficient economic factors do not exist that would compel it to continue to use the underlying asset beyond the initial non-cancelable term. See Note 18 – Leases for further details.

Through December 31, 2018, the Company classified leases in accordance with guidance in ASC 840, *Leases*. For any leases that contained lease escalation or rent concession provisions, the Company recorded the total rent expense during the lease term on a straight-line basis over the term of the lease. The Company recorded the difference between the rent paid and the straight-line rent as an increase or decrease to the deferred rent liability included in accrued liabilities in its consolidated balance sheet.

Product warranties

The Company provides a standard warranty on its products, with the term depending on the product, and records a liability for the estimated future costs associated with potential warranty claims. Provisions for warranty claims are recorded at the time products are sold based on historical experience factors including product failure rates, material usage, and service delivery cost incurred in correcting product failures. These provisions are reviewed and adjusted by management periodically to reflect actual and anticipated experience. The warranty costs are reflected in the Company's consolidated statements of operations within cost of revenues. In certain circumstances, the Company may have recourse from its contract manufacturers for replacement cost of defective products, which it also factors into its warranty liability assessment.

Income taxes

The Company accounts for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in its financial statements. Under this method, deferred tax assets and liabilities are determined on the basis of the differences between the financial statement carrying amount and the tax basis of assets and liabilities using enacted income tax rates in effect for the year in which the differences are expected to be recovered or settled. The effect of a change in income tax rates on deferred tax assets and liabilities is recognized in the income tax provision in the period that includes the enactment date.

In assessing the realizability of deferred tax assets, the Company considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized and adjusts the valuation allowances accordingly. In making such a determination, the Company considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations.

In general, it is the practice and intention of the Company to reinvest the earnings of its subsidiaries in those operations. As of December 31, 2018, 2019 and 2020, the Company had not made a provision for withholding taxes on approximately $5.4 million, $8.5 million and $13.8 million, respectively, of undistributed earnings that are indefinitely reinvested. Generally, such amounts become subject to taxation upon the remittance of dividends and under certain other circumstances. It is not practicable to estimate the amount of deferred tax liability to the undistributed earnings in these subsidiaries.

The Company may be subject to income tax audits in all of the jurisdictions in which it operates and, as a result, must also assess exposures to any potential issues arising from current or future audits of current and prior years' tax returns. Accordingly, the Company must assess such potential exposures and, where necessary, provide for any expected loss. The Company would recognize the benefit of a tax position if it is more likely than not to be sustained. Recognized tax positions are measured at the largest amount more likely than not to be realized upon settlement. To the extent that the Company establishes a liability, its income tax expense would be increased. If the Company ultimately determines that payment of these amounts is unnecessary, it would reverse the liability and recognize an income tax benefit during the period in which new information becomes available indicating that the liability is no longer necessary. The Company would record an additional income tax expense in the period in which new information becomes available indicating that the income tax liability is greater than its original estimate. The Company did not record such an adjustment for the years ended December 31, 2018, 2019 or 2020.

Share-based compensation

The Company accounts for share-based compensation in accordance with the guidance in ASC 718, *Share-based Payments*, by measuring and recognizing compensation expense for all share-based payments based on estimated grant date fair values for equity settled awards and period-end fair values for cash settled awards. Employees were granted both equity-settled and cash-settled awards under the Vector Cambium Holdings (Cayman), L.P. limited partnership agreement ('VCH LPA') that included both time-based and performance-based equity awards and were subject to the achievement of varying participation thresholds and contingent conditions prior to being eligible to participate in distributions from VCH L.P. For the year ended December 31, 2018, both equity-settled and cash-settled awards had not met all of the contingent conditions. Accordingly, the Company did not recognize any share-based compensation expense in its financial statements prior to 2019.

Prior to the IPO, the Company effected a Recapitalization, which exchanged the vested share-based compensation awards held by its employees for shares and unvested share-based compensation awards for restricted shares or restricted share units issued by the Company, on a value-for-value basis. After completion of the Recapitalization and the IPO, the Company is no longer party to nor subject to any obligations under the VCH LPA. As a result of the Recapitalization and the completion of the Company's IPO, the contingent conditions had been met on some of the share-based compensation awards and the Company recorded one-time share-based compensation of $15.4 million related to these awards during the year ended December 31, 2019.

Following the IPO, awards are granted under the 2019 Share Incentive Plan. The 2019 Share Incentive Plan provides for the grant of incentive share options, nonqualified share options, share appreciation rights, restricted share awards, restricted share units, or other share-based awards and performance awards. Effective upon pricing of the IPO at $12.00 per share, the Company issued an aggregate 2,172,000 share options and restricted share units to employees and directors.

Contingencies

In accordance with ASC 450, *Contingencies*, the Company periodically evaluates all pending or threatened contingencies and any commitments, if any, that are reasonably likely to have a material adverse effect on its results of operations, financial position or cash flows. Liabilities for loss contingencies arising from claims, assessments, litigation, fines, penalties and other sources are recorded when it is probable that a liability has been incurred and the amount can be reasonably estimated. Legal costs incurred in connection with loss contingencies are expensed as incurred.

Foreign currency translation

The Company records any gain and loss associated with foreign currencies in accordance with ASC 830, *Foreign Currency Matters*. The reporting currency of the Company is the U.S. dollar and the functional currency for each operating subsidiary is the local currency of the operating subsidiary other than for Cambium Networks, Ltd. (UK) for which the functional currency is the U.S. dollar. Local currency denominated monetary assets and liabilities are translated at exchange rates in effect at the balance sheet date, and revenues, cost of revenues and expenses are translated at the average exchange rate in effect during the applicable period. The Company recognizes foreign exchange gains and losses in other expense on its consolidated statements of operations and accumulated other comprehensive income (loss) on its consolidated balance sheets.

Research and development costs

Research and development expenses consists primarily of salary and benefit expenses for employees and contractors engaged in research, design and development activities, and costs for prototypes, facilities and travel costs. Starting in 2019, research and development expenses also include share-based compensation expenses. The Company also incurs research and development costs associated with the development of software for both internal use and to be marketed externally. Research and development costs, other than those associated with the development of software that meet the criteria for capitalization, are expensed as incurred.

For the years ended December 31, 2018, 2019 and 2020, the Company expensed $38.9 million, $47.7 million, and $43.2 million, respectively, which included $0, $5.4 and $1.6 million of share-based compensation expense, respectively, of research and development costs.

Recently adopted accounting pronouncements

Beginning in 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers*, plus a number of related ASUs designed to clarify and interpret ASC 606 (collectively codified as “ASC 606”). The new standard replaced most existing revenue recognition guidance in U.S. GAAP. The core principle of the ASU requires revenue recognition based upon newly defined criteria, either at a point in time or over time, as control of good or services is transferred. The ASU requires additional disclosures about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and estimates, and changes in those estimates. The new standard became effective as of January 1, 2018 and the Company adopted ASC 606 using the modified retrospective transition method which required an adjustment to accumulated deficit for the cumulative effect of applying ASC 606 to active contracts as of the adoption date. The Company recorded an increase to accumulated deficit of $0.9 million upon adoption.

Beginning in February 2016, the FASB issued ASU 2016-02, *Leases*, plus a number of related ASUs, which sets out the principles for the recognition, measurement, presentation and disclosures of leases for both parties to a contract (i.e., lessees and lessors) (collectively codified as “ASC 842”).

ASC 842 requires lessees to recognize right-of-use (“ROU”) assets and lease liabilities on the balance sheet for all leases unless a lessee elects not to apply ASC 842 to short-term leases. In addition, this standard requires both lessees and lessors to disclose certain key information about lease transactions. The Company adopted ASC 842 on January 1, 2019 (the effective date), using the optional transition method to not apply the new lease standard in the comparative periods presented and elected the “practical expedient package”, which permits the Company to not reassess prior conclusions about lease identification, lease classification, and initial direct costs. ASC 842 also provides practical expedients for the Company’s ongoing accounting. The Company elected the short-term lease recognition for all leases that qualify and to combine lease and non-lease components into a single lease component for all of its leases. On January 1, 2019, the Company recognized ROU assets and operating lease liabilities of $8.2 million and $8.8 million, respectively. The difference between ROU assets and operating lease liabilities recognized is due to deferred rent recorded under prior lease accounting standards. ASC 842 requires such balances to be reclassified against ROU assets at transition. Refer to Note 18 – Leases for further details.

In February 2018, the FASB issued ASU 2018-02, *Income Statement – Reporting Comprehensive Income: Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*. This ASU provides an option to reclassify stranded tax effects within accumulated other comprehensive income ("AOCI") to retained earnings in the period in which the effect of the change in the U.S. federal corporate income tax rate in the 2018 U.S. Tax Cuts and Job Act, and information about the income tax effects that are reclassified. The Company adopted ASU 2018-02 as of January 1, 2019. The adoption of ASU 2018-02 had no impact on the Company's consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments – Credit Losses: Measurement of Credit Losses on Financial Instruments*, and subsequent amendments to the initial guidance: ASUs 2018-19, 2019-04, 2019-05, 2019-11, and 2020-02 (collectively, "Topic 326"). Topic 326 sets forth an expected credit loss model which requires the measurement of expected credit losses for financial instruments based on historical experience, current conditions and reasonable and supportable forecasts. This replaces the existing incurred loss model and is applicable to the measurement of credit losses on financial assets measured at amortized cost, including trade accounts receivable, and certain off-balance sheet credit exposures. The Company adopted Topic 326 on January 1, 2020 using the modified retrospective transition method for all financial assets measured at amortized costs, which is primarily trade accounts receivable. Results for the reporting periods beginning after January 1, 2020 are presented under Topic 326 while prior period amounts continue to be reported in accordance with previously applicable U.S. GAAP. The adoption of Topic 326 did not have a material impact to the consolidated financial statements.

In August 2018, the FASB issued ASU 2018-15, *Intangibles – Goodwill and Other Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs incurred in a Cloud Computing Arrangement That is a Service Contract*. The amendments in this update align the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). The accounting for the service element of a hosting arrangement that is a service contract is not affected by the amendments in this update. The Company adopted this ASU effective January 1, 2020 applying the changes prospectively to all implementation costs incurred after this date. The adoption of ASU 2018-15 did not have a material impact on the consolidated financial statements as there were no large implementation projects in 2020.

In March 2020, the FASB issued ASU 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting.* This update provides optional expedients and exceptions for applying generally accepted accounting principles to certain contract modification and hedging relationships that reference London Inter-bank Offered Rate (LIBOR) or another reference rate that is expected to be discontinued. The guidance is effective for all entities as of March 12, 2020 through December 31, 2022, when the reference rate replacement activity is expected to be completed. The adoption of ASU 2020-04 will not have an impact on the consolidated financial statements until the debt agreement is modified to no longer reference LIBOR.

Recently issued accounting pronouncements not yet adopted

In December 2019, the FASB issued ASU 2019-12, *Simplifying the Accounting for Income Taxes*, as part of its Simplification Initiative to reduce the cost and complexity in accounting for income taxes. ASU 2019-12 removes certain exceptions related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period, and the recognition of deferred tax liabilities for outside basis differences. ASU 2019-12 also amends other aspects of the guidance to help simplify and promote consistent application of GAAP. The guidance is effective for interim and annual period beginning after December 15, 2020, with early adoption permitted. The Company will adopt ASU 2019-12 during the first quarter of 2021. The adoption of ASU 2019-12 will effect the classification of taxes, but is not expected to impact reported results in the consolidated financial statements.

Note 2. Business Combinations

In August 2019, the Company acquired select assets and assumed select liabilities of the Xirrus Wi-Fi products and cloud services business from Riverbed Technology, Inc. Xirrus has a portfolio of high-performance enterprise Wi-Fi access points and subscription services. The Company paid $2.0 million upon closing and through February 2020, paid the entire additional $3.0 million contingent consideration that was subject to attaining certain booking targets related to sales of the Xirrus products, which targets were met by December 31, 2019. This acquisition will enhance and accelerate the Company's existing network service application capabilities.

The Company accounts for business combinations in accordance with ASC 805, *Business Combinations*. The Company recorded the acquisition using the acquisition method of accounting and recognized assets and liabilities at their fair value as of the date of acquisition. The Company based the preliminary allocation of the purchase price on estimates and assumptions known at the date of acquisition that are subject to change within the purchase price allocation period, which is generally one year from the acquisition date. The Company's review of the purchase price allocation was completed in the period ended June 30, 2020. The Company determined the estimated fair value of identifiable intangible assets acquired primarily using an income approach.

The following table summarizes the final allocation of the purchase price for Xirrus:

Goodwill	$	1,782
Customer relationships		7,670
Unpatented technology		540
Deferred revenue		(7,460)
Other net assets acquired		2,468
Total purchase price	$	5,000

Goodwill represents the excess of the total purchase consideration over the fair value of the underlying assets acquired and liabilities assumed. The acquisition is considered to be an asset acquisition for tax purposes and goodwill recognized in the acquisition is not deductible for tax purposes.

The results from this acquisition have been included in the Company's consolidated financial statements since the closing of the acquisition.

Note 3. Balance sheet components

Receivables, net

The Company's accounts receivable arise from sales on credit to customers. The Company establishes an allowance for credit losses to present the net amount of accounts receivable expected to be collected. With the adoption of Topic 326 on January 1, 2020, the allowance is determined by using the loss-rate method, which requires an estimation of loss rates based upon historical loss experience adjusted for factors that are relevant to determining the expected collectability of accounts receivables. Some of these factors include macroeconomic conditions that correlate with historical loss experience, delinquency trends, aging behavior of receivables and credit and liquidity indicators for individual customers. Prior to the adoption, the Company established the allowance under an incurred loss model, considering the aging of the accounts receivable, the credit worthiness of each distributor based on payment history, and general economic factors, among other factors.

The components of accounts receivable, net are as follows (in thousands):

	December 31, 2019	December 31, 2020
Trade accounts receivable	$ 58,774	$ 57,657
Other receivables	434	1,376
Total receivables	59,208	59,033
Less: Allowance for doubtful accounts	(580)	(919)
Receivables, net	$ 58,628	$ 58,114

The allowance for credit losses activity was as follows (in thousands):

	Year ended December 31, 2019	Year ended December 31, 2020
Beginning balance	$ 503	$ 580
Increase, charged to expense	333	316
Recoveries	(204)	(101)
Provision for late fee charges	—	191
Amounts written-off	(52)	(67)
Ending balance	$ 580	$ 919

Inventories, net

Inventories, net consisted of the following (in thousands):

	December 31, 2019	December 31, 2020
Finished goods	$ 42,402	$ 35,241
Raw materials	4,227	4,576
Gross inventory	46,629	39,817
Less: Excess and obsolete provision	(4,959)	(5,855)
Inventories, net	$ 41,670	$ 33,962

The following table reflects the activity in the Company's inventory excess and obsolete provision (in thousands):

	Year ended December 31, 2019	Year ended December 31, 2020
Beginning balance	$ 3,950	$ 4,959
Inventory written off	(149)	(1,577)
Increase in excess and obsolete provision	1,158	2,473
Ending balance	$ 4,959	$ 5,855

Accrued liabilities

Accrued liabilities consisted of the following (in thousands):

	December 31, 2019	December 31, 2020
Accrued goods and services	$ 8,364	$ 7,937
Accrued inventory purchases	3,094	4,830
Accrued customer rebates	3,569	7,380
Other	7	13
Accrued liabilities	$ 15,034	$ 20,160

Accrued warranty

Provision for warranty claims is primarily related to our hardware products and recorded at the time products are sold. The change to accrued warranty was as follows (in thousands):

	Year ended December 31, 2019	Year ended December 31, 2020
Beginning balance	$ 488	$ 706
Warranties assumed due to acquisition	180	1,174
Fulfillment of assumed acquisition warranty	—	(482)
Provision increase, net	38	316
Ending balance	$ 706	$ 1,714

At December 31, 2019, $0.7 million is included in Other current liabilities on the Company's consolidated balance sheet. At December 31, 2020, $1.1 million is included in Other current liabilities and $0.6 million is included in Other noncurrent liabilities on the Company's consolidated balance sheet.

Note 4. Property and equipment

Property and equipment, net consisted of the following (in thousands):

	Useful Life	December 31, 2019	December 31, 2020
Equipment and tooling	3 to 5 years	$ 22,150	$ 24,367
Computer equipment	3 to 5 years	2,888	3,137
Furniture and fixtures	10 years	749	745
Leasehold improvements	2 to 3 years	—	282
Total cost		25,787	28,531
Less: Accumulated depreciation		(17,473)	(20,996)
Property and equipment, net		$ 8,314	$ 7,535

Total depreciation expense was $2.8 million, $3.6 million and $3.7 million for the years ended December 31, 2018, 2019 and 2020, respectively.

Note 5. Software

Software consisted of the following (in thousands):

		December 31, 2019			December 31, 2020		
	Useful Life	Gross carrying amount	Accumulated amortization	Net balance	Gross carrying amount	Accumulated amortization	Net balance
Acquired and Software for internal use	3 to 7 years	$ 15,870	$ (13,471)	$ 2,399	$ 15,680	$ (14,214)	$ 1,466
Software marketed for external sale	3 years	1,805	(809)	996	3,411	(1,439)	1,972
Total		$ 17,675	$ (14,280)	$ 3,395	$ 19,091	$ (15,653)	$ 3,438

Amortization of acquired and internal use software is computed using the straight-line method over an estimated useful life of generally three to seven years. Amortization expense recognized on acquired and internal use software is reflected in depreciation and amortization in the consolidated statements of operations. Amortization expense was $1.7 million, $0.7 million and $0.8 million for the years ended December 31, 2018, 2019 and 2020, respectively.

Amortization expense recognized on software to be sold or marketed externally was $0.3 million, $0.5 million and $0.6 million for the years ended December 31, 2018, 2019 and 2020, respectively, and is included in cost of revenues on the consolidated statements of operations.

Based on capitalized software assets at December 31, 2020, estimated amortization expense in future fiscal years is as follows (in thousands):

Year ending December 31,	Acquired and internal use software	Software marketed for external use	Total
2021	683	760	1,443
2022	411	637	1,048
2023	162	504	666
2024	68	68	136
2025	68	3	71
Thereafter	74	—	74
Total amortization	$ 1,466	$ 1,972	$ 3,438

Note 6. Goodwill and Intangible Assets

When the Company acquired the trade assets of Motorola Solutions, Inc.'s wireless point-to-point and point-to-multi-point businesses, the transaction generated goodwill and certain intangible assets. The goodwill associated with this transaction was recorded by Cambium Networks Corporation and allocated to Cambium Networks, Ltd. and Cambium Networks, Inc. using a revenue and asset allocation method. Although goodwill has been allocated to two operating subsidiaries, as noted in Note 16 – Segment information and revenues by geography, the Company operates as one operating segment and one reporting unit and therefore, goodwill is reported, and impairment testing performed, at the Cambium Networks Corporation consolidated level.

See Note 2 – Business combinations for information regarding the acquisition completed during 2019 and the acquisition adjustments to goodwill made in 2020.

The change in the carrying amount of goodwill for the years ended December 31, 2019 and 2020 was as follows (in thousands):

	December 31, 2019	December 31, 2020
Beginning balance	$ 8,060	$ 8,552
Additions attributable to acquisition	492	—
Acquisition adjustments	—	1,290
Ending balance	$ 8,552	$ 9,842

The Company tests goodwill and intangible assets for impairment annually on December 31 and more frequently if impairment indicators exist. For 2019 and 2020, the Company performed qualitative assessments of significant events and circumstances such as a reporting unit's historical and current results, assumptions regarding future performance, strategic initiatives and overall economic factors, including the impact of the current global outbreak of COVID-19 and macro-economic developments, to determine the existence of potential indicators of impairment and assess if it is more likely than not that the fair value of the reporting unit or intangible asset is less than their carrying value. If indicators of impairment are identified, a quantitative impairment test is performed.

The qualitative assessments for 2019 and 2020 did not indicate the existence of impairment indicators. Based on the operating results of the 2019 and 2020 and other considerations, the Company believes that it is more likely than not that the enterprise value for its one reporting unit and the fair value of intangibles is still greater than their carrying values. Accordingly, there was no goodwill impairment to record for either period. In addition, there were no triggering events or changes in circumstances during 2019 and 2020 that would have required an interim impairment assessment other than at the annual test date.

The useful life, gross carrying value, accumulated amortization, and net balance for each major class of definite-lived intangible assets at each balance sheet date were as follows (in thousands):

		December 31, 2019			December 31, 2020		
	Useful Life	Gross carrying amount	Accumulated amortization	Net balance	Gross carrying amount	Accumulated amortization	Net balance
Unpatented technology	3 - 7 years	$ 14,660	$ (14,195)	$ 465	$ 14,660	$ (14,375)	$ 285
Customer relationships	5 - 18 years	19,300	(5,631)	13,669	19,300	(7,128)	12,172
Patents	7 years	11,300	(11,300)	—	11,300	(11,300)	—
Trademarks	10 years	5,270	(4,304)	966	5,270	(4,832)	438
Total		$ 50,530	$ (35,430)	$ 15,100	$ 50,530	$ (37,635)	$ 12,895

Intangible assets are amortized over their expected useful life and none are expected to have a significant residual value at the end of their useful life. Intangible assets amortization expense was $4.2 million, $1.6 million and $2.2 million for the years ended December 31, 2018, 2019 and 2020, respectively.

Based on capitalized intangible assets as of December 31, 2020, estimated amortization expense amounts in future fiscal years are as follows (in thousands):

Year ending December 31,	Amortization
2021	2,116
2022	1,603
2023	1,498
2024	1,498
2025	1,498
Thereafter	4,682
Total amortization	$ 12,895

Note 7. Debt

As of December 31, 2020, the Company had $55.3 million outstanding under its current term loan facility and $0.0 million in borrowings under its revolving credit facility. The Company has available $10.0 million under its revolving credit facility.

As of December 31, 2019, the Company had $65.3 million outstanding under its current term loan facility and $0.0 million in borrowings under its revolving credit facility.

The following table reflects the current and noncurrent portions of the external debt facilities at December 31, 2019 and December 31, 2020 (in thousands):

	December 31, 2019	December 31, 2020
Term loan facility	$ 65,250	$ 55,250
Less debt issuance costs	(1,638)	(1,092)
Total external debt, net	63,612	54,158
Less current portion of term facility	(10,000)	(29,747)
Current portion of debt issuance costs	546	546
Total long-term external debt, net	$ 54,158	$ 24,957

At December 31, 2020, the current portion of term facility includes $19.7 million related to a required repayment of principal in accordance with the excess cash flow provision of the term loan agreement based on our calculation of excess cash flow at December 31, 2020, which we expect to pay by June 3, 2021. The $19.7 million is included in Current portion of external long-term debt, net in the Company's consolidated balance sheets.

Secured credit agreements

On December 21, 2017, the Company entered into the third amended and restated credit agreement (as amended and restated, the "Credit Agreement") to refinance the obligations under the Company's existing credit facility, to an aggregate amount of $100.0 million, consisting of a term loan facility in the aggregate principal amount of $90.0 million and a revolving loan facility in an aggregate principal amount of $10.0 million, including a letter of credit sub-facility in the aggregate availability amount of $5.0 million. The Company may request borrowings under the revolving credit facility until December 21, 2022, which is the date it becomes due. The term loan matures and also becomes due on December 21, 2022.

The proceeds were used to: (i) pay fees and expenses incurred in connection with the refinancing; (ii) pay off the existing senior indebtedness under the Second Amended and Restated Credit Agreement; (iii) finance the return of capital to the Company's Sponsor; and (iv) provide ongoing working capital and other general corporate purposes. The Credit Agreement includes an accordion feature, permitting the Company on not more than five occasions prior to the fourth anniversary of the date of the Credit Agreement to increase the aggregate amount of the term loan by up to $40.0 million, the proceeds of which may be used for permitted acquisitions.

In November 2018, the Company entered into a Waiver and First Amendment to the Credit Agreement ("Amendment"). The Amendment waived certain events of default (which had occurred for the months ended May 31, 2018, July 31, 2018 and August 31, 2018, and for the quarter ended September 30, 2018), reset the debt covenants, and modified and amended certain terms of the Credit Agreement. The Company incurred a $0.25 million administration fee.

On April 26, 2019, the Company entered into a Consent, Waiver and Second Amendment to the Credit Agreement ("Second Amendment"). The Second Amendment waived the Company's failure to comply with the quarterly maximum consolidated leverage ratio and minimum consolidated fixed charge coverage ratio at December 31, 2018.

The Second Amendment also modified the following financial covenants: Minimum Adjusted Quick Ratio to exclude certain accrued legal expenses associated with the Company's IPO and the current lease liability associated with the adoption of ASC 842 starting in April 2019 and continuing through maturity of the loan; consolidated fixed charge coverage ratio to reflect the change in the time period from a trailing twelve-month to a trailing three-month, trailing six-month and trailing nine-month for the quarters ended March 31, 2019, June 30, 2019 and September 30, 2019, respectively, and increased the minimum ratio just for the quarter ended June 30, 2019; and the consolidated leverage ratio to reflect the increase in the maximum ratio until June 30, 2019. There were no modifications to the interest rate, loan maturity date, principal repayment schedule or total borrowings.

On June 21, 2019, the Company entered into a Waiver Agreement ("Waiver Agreement"). The Waiver Agreement waived the Company's failure to comply with the monthly minimum adjusted quick ratio at May 31, 2019. The Waiver Agreement did not modify any financial covenants, interest rate, loan maturity date, principal repayment schedule, or total borrowings.

On June 28, 2019, the Company entered into a Third Amendment to the Credit Agreement (the "Third Amendment").

Pursuant to the Third Amendment, certain actions taken by the Company in connection with its IPO were consented to by Silicon Valley Bank and the lenders, including (i) the exchange of outstanding vested and unvested Class B units and phantom units in VCH L.P. for ordinary shares of the Company (in exchange for vested units) and restricted stock awards (for unvested Class B units) and restricted stock units (for unvested phantom units) and the adoption of the employee share incentive plan and employee share purchase plan and forms of award agreement thereunder by the Company; (ii) the payment of accrued and unpaid management fees owed to an affiliate of VCH, L.P.; and (iii) the entering into of the Shareholder Agreement by and between VCH, L.P. as a guarantor and loan party and termination of the guaranty granted by an affiliate of VCH, L.P.

On July 1, 2019, the Company paid $30.7 million of principal under the Credit Agreement out of the net proceeds of its IPO. Following the repayment, the total term loan commitment under the Credit Agreement was reduced to $70.0 million and all outstanding amounts under the revolving credit facility were repaid, leaving an available revolving commitment of $10.0 million. The minimum consolidated fixed charge coverage ratio for the trailing twelve-month period ending December 31, 2019 and each trailing twelve-month quarterly period ending thereafter was amended to 1.25:1.00. All other financial covenants remained the same.

Under the Third Amendment, the term loan is currently repayable quarterly as follows: $2.5 million is payable in each quarter, with the remaining principal due on maturity on December 21, 2022. In addition, the Third Amendment includes an annual excess cash flow provision whereby 50% of excess cash, defined as EBITDA less tax, capital expenditures, certain investments, scheduled loan repayments, declared distributions, interest, working capital requirement and other items paid in cash to the extent included as an add back to EBITDA, is payable to the lenders as a repayment of outstanding borrowings. The calculation is based on information at December 31 of each year and due in the following year. At December 31, 2020, the excess cash flow payment required under the provision is $19.7 million and is included in Current portion of external long-term debt, net in the Company's consolidated balance sheets.

Interest accrues on the outstanding principal amount of the term loan on a quarterly basis and is equal to the USD LIBOR rate plus a base rate of 4.75%, 4.25% or 4.00%. The base rate is affected by our financial performance as measured by the consolidated leverage ratio. At December 31, 2019, the base rate was set at 4.75%. This was reduced to 4.25% on November 13, 2020 based on improved performance as measured by the consolidated leverage ratio, and remained at 4.25% at December 31, 2020.

In addition to paying the interest on the outstanding principal under the term loan facility, the Company is required to pay a commitment fee in respect of the unutilized commitments under the revolving credit facility, payable quarterly in arrears. The Company is also required to pay letter of credit fees on the maximum amount available to be drawn under all outstanding letters of credit in an amount equal to the applicable margin on LIBOR based borrowings under the revolving credit facility on a per annum basis, payable in arrears, as well as customer fronting fees for the issuance of letters of credit fees and agency fees.

The Company is permitted to voluntarily reduce the unutilized portion of the commitment amount and repay outstanding loans under the Credit Agreement at any time without premium or penalty, other than customary breakage costs with respect to LIBOR based loans.

Maturities on the long-term external debt outstanding at December 31, 2020 are as follows (in thousands):

Year ending December 31,	
2021	29,747
2022	25,503
Total	$ 55,250

Borrowings under the Credit Agreement are secured by a first-priority lien on substantially all of the Company's assets, the equity interests in the Company's subsidiaries, and any intercompany debt. The Credit Agreement also contains certain customary mandatory prepayment provisions. If certain events, as specified in the Credit Agreement, occur, the Company may be required to repay all or a portion of the amounts outstanding under the Credit Agreement.

The Credit Agreement contains customary affirmative and negative covenants, including covenants that limit or restrict the Company and its subsidiaries' ability to, among other things, incur indebtedness, grant liens, merge or consolidate, dispose of assets, pay dividends or make distributions, make investments, make acquisitions, prepay certain indebtedness, change the nature of its business, enter into certain transactions with affiliates, enter into restrictive agreements, and make capital expenditures, in each case subject to customary exceptions for a credit facility of this size and type.

The Company's current debt covenant requirements reflect the following limits required, based on the time period noted, for compliance with the covenant:

		Quarter ending				
Covenant	**Criteria**	**December 31, 2020**	**March 31, 2021**	**June 30, 2021**	**September 30, 2021**	**December 31, 2021**
Monthly minimum adjusted quick ratio	Min ratio	Non quarter-end months 1.00:1.00			Quarter-end months 1.15:1.00	
Quarterly consolidated fixed charge coverage ratio	Min ratio	1.25:1.00	1.25:1.00	1.25:1.00	1.25:1.00	1.25:1.00
Quarterly consolidated fixed charge coverage ratio	Time period			Trailing twelve-month		
Quarterly consolidated leverage ratio	Max ratio	2.50:1.00	2.25:1.00	2.25:1.00	2.00:1.00	1.75:1.00
Quarterly consolidated leverage ratio	Time period			Trailing twelve month		

Based on the above covenants, the Company believes that all covenants will be met at subsequent testing dates for the next twelve months and has classified the amounts due in excess of twelve months as noncurrent. As of December 31, 2019 and 2020, the Company was in compliance with all affirmative and negative quarterly covenants as defined in the Third Amendment.

Expected discontinuation of LIBOR

In July 2017, the United Kingdom's Financial Conduct Authority, which regulates LIBOR, announced it will no longer compel banks to submit rates for the calculation of LIBOR after 2021. The Alternative Reference Rates Committee has proposed the Secured Overnight Financing Rate ("SOFR") as its recommended alternative to LIBOR, and the first publication of SOFR rates was released in April 2018.

The Company is evaluating the potential impact of the transition from LIBOR as an interest rate benchmark to other potential alternative reference rates, including SOFR. The Company's Credit Agreement is currently indexed to LIBOR and the maturity date of the Credit Agreement extends beyond 2021. The Credit Agreement contemplates the discontinuation of LIBOR and provides that if LIBOR is not available, the rate shall be determined by the administrative agent by reference to other applicable rates, and additionally allows the Company to switch to an ABR loan or other options. The Company will continue to actively assess the related opportunities and risks involved in this transition.

Net Interest expense, including bank charges and amortization of debt issuance costs on the external debt, was $8.1 million, $8.1 million and $5.3 million for the years ended December 31, 2018, 2019 and 2020, respectively. Interest expense for the year ended December 31, 2019 included $0.5 million of additional amortization of deferred issuance costs for the write-down of deferred issuance costs related to the $20.7 million prepayment of the term loan.

Note 8. Contributed capital

On June 28, 2019, in connection with the Recapitalization, the unreturned capital and accumulated yield of $49.2 million payable to holders of Class A Units under the VCH, LPA was settled in the form of additional shares in the Company. The Company issued shares to VCH., L.P on a value-for-value basis based on the $12.00 per share offering price. The Recapitalization was recorded as a non-cash transaction which resulted in the transfer of equity ownership from capital contribution to additional paid in capital. After completion of the Recapitalization, the Company is neither party to nor subject to any obligations under the VCH LPA.

Note 9. Employee benefit plans

The Company's employee benefit plans currently consist of a defined contribution plan in the United States and a separate defined contribution plan in the UK. The Company does not offer any other postretirement benefit plans, such as retiree medical and dental benefits or deferred compensation agreements to its employees or officers.

U.S. plan

U.S. regular, full-time employees are eligible to participate in the Cambium Networks, Inc. 401(k) Plan, which is a qualified defined contribution plan under section 401(k) of the Internal Revenue Service Code. Under the Cambium Networks, Inc. 401(k) Plan, the Company contributes a dollar-for-dollar match of the first 4% an employee contributes to the plan. Employees are eligible to participate on the first day of the month following their date of hire and begin receiving company contributions three-months after they become eligible to participate in the plan. Company matching contributions are made each pay period, but the funds do not vest until the employee's second anniversary of employment with the Company. Employees are always fully vested in their own contributions. All contributions, including the Company match, are made in cash and invested in accordance with the participants' investment elections. Contributions made by the Company under the Cambium Networks, Inc. 401(k) Plan were $1.0 million, $1.1 million and $1.0 million for the years ended December 31, 2018, 2019 and 2020, respectively.

UK plan

Regular, full-time UK employees are eligible to participate in the Cambium Networks Ltd. Stakeholder Pension Scheme, which is a qualified defined contribution plan. Employees are eligible to participate on the first of the month following receipt of their enrollment form, and eligible employees are automatically enrolled in the plan at a default employee contribution rate of 3% and a company contribution rate of 5% of the employee's basic salary. The Company contribution rate increases by 1% for each additional 1% that the employee contributes up to a maximum of 7%. Company matching contributions vest immediately and employees are always vested in their own contributions. All contributions, including the Company match, are made in cash and deposited in the participant's account each pay period. The total contributed by the Company under this plan was $0.4 million, $0.4 million and $0.4 million for the years ended December 31, 2018, 2019 and 2020, respectively.

Note 10. Other expense

Other expenses were $0.6 million, $0.5 million and $0.5 million for the years ended December 31, 2018, 2019 and 2020, respectively, and represents foreign exchange losses.

Note 11. Share-based compensation

2011 Management incentive compensation plan

Prior to its IPO, the Company's management incentive compensation represented management incentive units ("MIUs") in its sole shareholder, VCH, L.P.

Just prior to the IPO, the Company effected the Recapitalization, which comprised an increase in the authorized and outstanding shares held by VCH, L.P., and the exchange of the vested share-based compensation awards held by its employees for its ordinary shares and unvested share-based compensation awards for restricted shares or restricted share units issued by the Company, in each case, on a value-for-value basis. After completion of the Recapitalization and the IPO, the Company is no longer party to nor subject to any obligations under the VCH LPA. As a result of the Recapitalization and the completion of the Company's IPO, the contingent conditions had been met on some of the equity-settled and cash-settled awards and the Company recorded one time share-based compensation expense of $15.4 million related to these awards in the year ended December 31, 2019.

2019 Share incentive plan

In June 2019, the Company's Board of Directors adopted, and its shareholders approved, the 2019 Share Incentive Plan ("2019 Plan"). The 2019 Plan provides for the grant of incentive share options, nonqualified share options, share appreciation rights, restricted share awards ("RSAs"), restricted share units ("RSUs"), other share-based awards and performance awards. The number of shares that were reserved under the 2019 Plan was 3,400,000, in addition to the 240,037 RSAs and RSUs the Company granted in substitution for unvested Class B Units or phantom units in VCH L.P. in connection with the Company's Recapitalization and IPO based on a price of $12.00 ("Recapitalization Awards"). The share reserve under the 2019 Plan will be automatically increased on the first day of each fiscal year, beginning with the fiscal year ending December 31, 2020 and will continue until, and including, the fiscal year ending December 31, 2029. The number of shares added annually will be equal to the lowest of 1,320,000 shares, 5% of the number of the Company's shares outstanding on the first day of such fiscal year, or an amount determined by the Board of Directors. On March 24, 2020, the Company registered 1,283,649 additional shares that may be issued under the 2019 Plan.

The Company's employees, officers, directors, consultants, and advisors are eligible to receive awards under the 2019 Plan. Incentive share options, however, may only be granted to its employees. Participants in the 2019 Plan will also consist of persons to whom Recapitalization Awards were granted.

The following table summarizes changes in the number of shares available for grant under the Company's equity incentive plans during the year ended December 31, 2020:

	Number of shares
Available for grant at December 31, 2019	426,022
Added to 2019 Share Incentive Plan	1,283,649
RSUs granted	(506,500)
Options granted	(560,000)
Shares withheld in settlement of taxes and/or exercise price	11,526
Forfeitures	177,437
Available for grant at December 31, 2020	832,134

Share-based compensation

The following table shows total share-based compensation expense for the years ended December 31, 2018, 2019 and 2020 (in thousands):

	Year ended December 31,		
	2018	2019	2020
Cost of revenues	$ —	$ 211	$ 67
Research and development	—	5,363	1,599
Sales and marketing	—	4,185	980
General and administrative	—	7,937	790
Total share-based compensation expense	$ —	$ 17,696	$ 3,436

As of December 31, 2020, the Company estimates the pre-tax unrecognized compensation expense of $12.3 million related to all unvested share-based awards, including share options, restricted share units and restricted share awards will be recognized through the third quarter of 2024. The Company expects to satisfy the exercise of share options and future distributions of shares for restricted share units and restricted share awards by issuing new ordinary shares which have been reserved under the 2019 Plan.

In connection with the Recapitalization, phantom units, which were previously accounted for as liability-settled awards, were modified to equity-settled awards. Due to a performance condition associated with the phantom units, a liability was not recognized in the Company's consolidated financial statements, but was disclosed as liability-settled awards. For the year ended December 31, 2019, the Company recognized $2.2 million in share-based compensation expense associated with the vesting of phantom unit awards upon Recapitalization.

The Company uses the Black-Scholes option pricing model to estimate the fair value of share options. The Company utilized a forfeiture rate of 5% during the year ended December 31, 2020 for estimating the forfeitures of share options and restricted share units granted.

Share options

The following is a summary of option activity for the Company's share incentive plans for year ended December 31, 2020:

	Options	Weighted average exercise price	Weighted Average remaining contractual term (years)	Aggregate intrinsic value
Outstanding at December 31, 2019	2,920,500	$ 10.00	9.6	$ 1,932,000
Options granted	560,000	$ 15.65	—	$ —
Options exercised	(138,878)	$ 11.72	—	$ —
Options forfeited	(177,437)	$ 10.88	—	$ —
Outstanding at December 31, 2020	3,164,185	$ 11.24	8.8	$ 43,793,890
Options exercisable at December 31, 2020	888,255	$ 10.77	8.6	$ 12,707,950
Options vested and expected to vest at December 31, 2020	3,006,834	$ 11.21	8.8	$ 41,699,334

Share options typically have a contractual term of ten years from grant date.

The intrinsic value for share options outstanding and exercisable is defined as the difference between the market value of the Company's ordinary shares as of the end of the period and the grant price. At December 31, 2018, 2019 and 2020, the aggregate intrinsic value of options exercisable under the Company's share incentive plans was $0.0 million, $0.0 million and $12.7 million, respectively, as determined as of the date of grant. No share options were exercised prior to 2020. The Company had 138,878 options exercised during the year ended December 31, 2020. The cash received from the share options exercised in 2020 was $1.6 million.

At December 31, 2020, there was $10.3 million in unrecognized pre-tax share-based compensation expense, net of estimated forfeitures, related to unvested share option awards. The unrecognized share-based compensation expense is expected to be recognized over a weighted-average period of 2.9 years.

The Company estimates the fair value of share options using the Black-Scholes option pricing model. The fair value of share options is being amortized on a straight-line basis over the requisite service period of the awards. The fair value of share options is estimated using the following weighted-average assumptions:

	For the years ended December 31, 2018	2019	2020
Expected dividend yield	—	—	—
Risk-free interest rate	2.70%	1.81%	0.39%
Weighted-average expected volatility	46.8%	40.8%	50.0%
Expected term (in years)	6.0	6.1	6.5
Weighted average grant-date fair value per share of options granted	$ —	$ 4.34	$ 7.56

Restricted shares

The following is a summary of restricted shares activity for the Company's share incentive plans for the year ended December 31, 2020:

	Units	Weighted average grant date fair value
RSU and RSA balance at December 31, 2019	257,119	$ 12.00
RSUs and RSAs granted	506,500	$ 4.56
RSUs and RSAs vested/exercised	(227,844)	$ 1.44
RSUs and RSAs forfeited	(16,578)	$ 7.39
RSU and RSA balance at December 31, 2020	519,197	$ 4.89
RSUs and RSAs expected to vest at December 31, 2020	519,197	$ 4.89

Upon completion of the Company's Recapitalization and IPO, 240,037 RSAs and RSUs were granted to employees in substitution for unvested Class B Units or phantom units with a grant date fair value of $12.00, of which 34,111 of the RSAs and RSUs awards granted carry-forward their prior vesting terms and expiration dates and 205,926 RSAs are exercisable based upon the achievement of a market condition. During 2020, 506,500 RSUs were granted under the 2019 Plan, none of which vested in 2020. In December 2020, the market condition on the 205,926 RSAs was met and these shares vested. The Company withheld 5,074 shares to pay the employees' portion of the minimum payroll withholding taxes on the RSUs and RSAs that vested in 2020.

At December 31, 2020, there was $2.0 million in unrecognized pre-tax compensation expense, net of estimated forfeitures, related to unvested share awards. The unrecognized compensation expense is expected to be recognized over a weighted average period of 3 years.

Employee share purchase plan

In June 2019, the Company's Board of Directors adopted, and its shareholders approved, the Employee Share Purchase Plan ("ESPP"). The ESPP was effective on June 25, 2019 and the offering period or purchase period under the ESPP will begin on January 1, 2021, as determined by the Company's Board of Directors. A total of 806,730 shares will be available under the ESPP, which includes 550,000 shares originally available and 256,730 additional shares registered on March 24, 2020. The number of shares that will be available for sale under the ESPP will be increased annually on the first day of each fiscal year beginning in 2020, and will be equal to the lowest of: 275,000 shares; 1% of the outstanding shares as of the last day of the immediately preceding fiscal year, or such other amount as the administrator may determine. The purchase price of the shares will be 85% of the lower of the fair market value of our shares on the first trading day of each offering period or on the purchase date.

Note 12. Share capital – shares

The following table reflects the share capital activity:

	Number of shares	Value (in thousands)
Balance at December 31, 2018	77,179	$ —
Issuance of shares to VCH, L.P. as part of Recapitalization	13,523,232	1
Issuance of shares to VCH, L.P for return of capital and accumulated yield	4,104,343	1
Issuance of shares to MIU holders	2,220,788	—
Shares withheld for net settlement of shares issued to MIU holders	(80,620)	—
Issuance of shares in Initial Public Offering	5,800,000	1
Issuance of vested shares	28,061	—
Balance at December 31, 2019	25,672,983	$ 3
Issuance of vested shares	234,191	—
Share options exercised	138,878	—
Shares withheld for net settlement of shares issued	(11,526)	—
Balance at December 31, 2020	26,034,526	$ 3

On October 28, 2011, 771.79 shares with a par value of $0.01 per share were issued at an initial subscription price of $1,000 per share. Holders of these shares are entitled to dividends as declared. As of December 31, 2020, no dividends have been declared or paid.

On April 23, 2019, the Board of Directors approved a share subdivision ("Subdivision") whereby the authorized share capital of the Company was subdivided from 5,000,000 shares having a par value of $0.01 per share into 500,000,000 shares with a par value of $0.0001 per share. The Board resolution was made effective in accordance with Cayman law on June 6, 2019. As a result of the Subdivision, issued and outstanding shares for all periods presented increased from 771.79 to 77,179 shares. Earnings per share as calculated and shown throughout has also been recalculated with the revised issued and outstanding shares.

Just prior to the IPO, the Company effected the Recapitalization, which comprised (i) an increase in the authorized and outstanding shares held by VCH, L.P. and (ii) an exchange of the vested share-based compensation awards held by the Company's employees for its shares and unvested share-based compensation awards for restricted shares or restricted share units issued by the Company, in each case on a value-for-value basis. As part of the Recapitalization, VCH, L.P. determined that the unreturned capital and accumulated yield payable to holders of Class A Units under the VCH, LPA will be settled in the form of additional shares in the Company. Based on the share-based compensation awards outstanding and unreturned capital and accumulated yield, and based on the IPO price of $12.00, the Company issued 17,627,575 shares to VCH, L.P and 2,220,788 shares to its employees and service providers, of which 80,620 shares were withheld in net settlement of amounts due. The impact of the Recapitalization does not result in issued and outstanding shares being restated for any prior period. Refer to Note 13 – Earning per share for information on how the issuance of the shares as part of the Recapitalization are reflected in earnings per share.

In June 2019, the Company issued 5,800,000 shares at a price of $12.00 per share in its IPO, which included 1,500,000 shares to it majority shareholder, VCH, L.P.

Note 13. Earnings per share

Basic net earnings (loss) per share is computed by dividing net income (loss) by the weighted-average number of shares outstanding during the period. Diluted net earnings per share is computed by giving effect to all potentially dilutive ordinary share equivalents outstanding for the period. For purposes of this calculation, share options, RSUs, and RSAs are considered to be ordinary share equivalents but are excluded from the calculation of diluted earnings (loss) per share when including them would have an anti-dilutive effect. The following table sets forth the computation of basic and diluted net earnings (loss) per share (in thousands, except for share and per share data):

	Year ended December 31,		
	2018	2019	2020
Numerator:			
Net (loss) income	$ (1,513)	$ (17,601)	$ 18,575
Denominator:			
Basic weighted average shares outstanding	13,600,411	19,741,764	25,707,092
Dilutive effect of share option awards	—	—	228,388
Dilutive effect of restricted share units and restricted share awards	—	—	467,632
Diluted weighted average shares outstanding	13,600,411	19,741,764	26,403,112
Net (loss) earnings per share, basic	$ (0.11)	$ (0.89)	$ 0.72
Net (loss) earnings per share, diluted	$ (0.11)	$ (0.89)	$ 0.70

The following outstanding shares of ordinary share equivalents were excluded from the computation of diluted net loss per share for the periods presented because including them would have had an anti-dilutive effect:

	Year ended December 31,		
	2018	2019	2020
Share options	—	2,921	2,082
Restricted shares (RSUs and RSAs)	—	257	—
Total	—	3,178	2,082

On April 23, 2019, the Board of Directors approved the Subdivision whereby the authorized share capital of the Company was subdivided from 5,000,000 shares having a par value of $0.01 per share into 500,000,000 shares with a par value of $0.0001 per share. The Subdivision was effective in accordance with Cayman law on June 6, 2019. As a result of the Subdivision, issued and outstanding shares for all periods presented have been restated from 771.79 shares to 77,179 shares. Earnings per share as calculated and shown has been recalculated with the revised issued and outstanding shares.

Just prior to the IPO, the Company effected a Recapitalization. As part of the Recapitalization, the Company issued an additional 17,627,575 shares to VCH, L.P. which comprised 4,104,343 shares related to the unreturned capital and accumulated yield to the holder of Class A Units of VCH, L.P. and 13,523,232 shares related to the residual share of Cambium's value attributable to VCH, L.P.'s ownership after such return, based on an IPO price of $12.00. Using guidance in ASC 260, *Earnings per Share,* for purposes of calculating earnings per share, the 13,523,232 shares are retrospectively adjusted as if the exchange had occurred at the beginning of the first period of earnings per share information presented. The 4,104,343 shares issued related to the unreturned capital and accumulated yield and were issued in lieu of payment of cash to VCH, L.P. and therefore, the shares issued are not retrospectively reflected in shares outstanding in the prior periods for purposes of determining earnings per share.

Also as part of the Recapitalization, the Company issued 2,220,788 gross shares to its employees and service providers in exchange for the vested share-based compensation awards in VCH, L.P. held by them. For purposes of calculating earnings per share, the 2,220,788 shares are included in the weighted average number of shares outstanding used in the computation of the basic earnings per share only from the date on which the shares are issued, or June 28, 2019.

Note 14. Income taxes

For the years ended December 31, 2018, 2019 and 2020, income (loss) before income taxes includes the following components (in thousands):

	Years ended December 31, 2018	2019	2020
United States	$ 3,544	$ 4,183	$ 2,648
Foreign	(5,856)	(11,504)	15,483
Total	$ (2,312)	$ (7,321)	$ 18,131

For the years ended December 31, 2018, 2019 and 2020, the (benefit) provision for income taxes consists of the following (in thousands):

	Years ended December 31, 2018	2019	2020
Current:			
U.S. federal	$ 200	$ 1,078	$ (198)
State	129	643	(181)
Foreign	735	1,157	1,007
Current tax provision	1,064	2,878	628
Deferred:			
U.S. federal	$ 107	$ 380	$ (664)
State	(14)	(6)	(144)
Foreign	(1,956)	7,028	(264)
Deferred tax (benefit) provision	(1,863)	7,402	(1,072)
(Benefit) provision for income taxes	$ (799)	$ 10,280	$ (444)

For the years ended December 31, 2018, 2019, and 2020, differences between the income tax expense computed at the statutory U.S. federal income tax rate 21% for 2018, 2019 and 2020) and the (benefit) provision for income taxes computed per the Company's consolidated statements of operation are summarized as follows (in thousands):

	Years ended December 31, 2018	2019	2020
Income tax expense (benefit) at federal statutory rate	$ (486)	$ (1,537)	$ 3,808
State and local income taxes net of federal benefit	115	540	(295)
Tax rate changes	(178)	662	(925)
Valuation allowance changes	(112)	9,599	(1,226)
Foreign rate differential	329	369	(181)
Research and development	(488)	(1,286)	(1,455)
Share-based compensation - excess tax benefit	—	2,807	(171)
Foreign derived intangible income	(266)	(1,166)	(349)
Other	287	292	350
(Benefit) provision for income taxes	$ (799)	$ 10,280	$ (444)

Foreign rate differential represents the non-U.S. jurisdictions. The country having the greatest impact on the tax rate adjustment line shown in the above table as "foreign rate differential" for the years ended December 31, 2018, 2019 and 2020 is the UK where the statutory income tax rate was 19.0% for 2018, 2019 and 2020.

The deferred tax assets and liabilities result from differences in the timing of the recognition of certain income and expense items for tax and financial reporting purposes.

The sources of these differences for the years ended December 31, 2019 and 2020 are as follows (in thousands):

	Years ended December 31, 2019	2020
NOL and tax credit carryforwards	$ 8,466	$ 6,997
Disallowed interest carryforwards	1,686	1,654
Lease liability	1,481	993
Property and equipment	146	573
Share-based compensation	488	1,163
Intangible assets	155	105
Other	73	250
Subtotal	12,495	11,735
Less: Valuation allowance	(9,599)	(8,373)
Net deferred tax assets	2,896	3,362
Operating lease asset	(1,312)	(884)
Prepaid expenses and other assets	(635)	(278)
Other	(357)	(672)
Subtotal	(2,304)	(1,834)
Less: Valuation allowance	—	—
Net deferred tax liabilities	(2,304)	(1,834)
Total deferred tax assets, net	$ 592	$ 1,528
Deferred tax assets/liabilities included in the balance sheet are:		

	Years ended December 31, 2019	2020
Deferred tax assets - non-current	$ 929	$ 1,537
Deferred tax liabilities - non-current	337	9
Total deferred tax assets, net	$ 592	$ 1,528

For the years ended December 31, 2019 and 2020, the following table reflects the activity in the Company's valuation allowance on deferred tax assets (in thousands):

	Years ended December 31, 2019	2020
Beginning balance	$ —	$ 9,599
Increase (release) of valuation allowance	9,599	(1,226)
Ending balance	$ 9,599	$ 8,373

In assessing the realizability of deferred tax assets, the Company 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 period in which those temporary differences become deductible. The Company considers projected future taxable income, reversing taxable temporary differences, carryback opportunities, and tax-planning strategies in making this assessment.

Management assesses the available positive and negative evidence to estimate if sufficient future taxable income will be generated to utilize the existing deferred tax assets before they otherwise expire. In evaluating the recoverability of its deferred tax assets, a significant piece of negative evidence evaluated was the cumulative loss incurred over the three-year period ended December 31, 2019. Cumulative losses are objective evidence that limit the ability to consider other subjective evidence such as the Company's projections for future growth. The amount of the deferred tax asset considered realizable, however, could be adjusted if estimates of future taxable income during the carryforward period are reduced or increased or if objective negative evidence in the form of cumulative losses is no longer present and additional weight may be given to subjective evidence such as the Company's projections for growth.

As of both December 31, 2019 and 2020, the Company's deferred tax assets were primarily the result of UK net operating loss ("NOL"), tax credit carryforwards from the UK and U.S., and the UK corporate interest reduction.

For the year ended December 31, 2019, the Company recorded a change in its valuation allowance of $9.6 million on the basis of management's reassessment of the amount of its deferred tax assets (NOL and research and development credits) that are more likely than not to be realized. As a result of a 3-year cumulative loss analysis, there was sufficient objective evidence that UK cumulative losses over the recent 3-year period for the years ended December 31, 2017, 2018 and 2019 were strong negative and objective evidence that sufficient future income would not be generated to utilize its deferred tax assets. Consequently, the Company established a valuation allowance against its deferred tax asset to income tax expense of $9.3 million. Additionally, during 2019, the Company identified a state research and development tax credit benefit in the state of California, which is only available to offset actual tax liabilities, that is in excess of the amount reasonably expected to be utilized over the next five years. As such, the Company established a valuation allowance against an additional $0.3 million of its deferred tax asset to income tax expense.

For the year ended December 31, 2020, the Company recorded a net decrease in its valuation allowance of $1.2 million. At year-end 2020, the Company continues to maintain a valuation allowance, on the basis of management's reassessment of the amount of its deferred tax assets (NOL and research and development credits) that are more likely than not to be realized. As a result of a review of the 3-year cumulative loss, there was sufficient objective evidence that UK cumulative losses over the recent 3-year period for the years ended December 31, 2018, 2019 and 2020 continued to provide negative and objective evidence that sufficient future income may not be generated to utilize its deferred tax assets. Consequently, the Company continues to maintain a valuation allowance against its deferred tax assets on its foreign operations of $7.7 million. Note this is a reduction from the prior year, as certain underlying deferred tax assets on which the valuation allowance is based, were utilized to offset a portion of taxable income.

The Company reviews the likelihood that it will realize the benefit of its deferred tax assets and therefore, the need for a valuation allowance on a quarterly basis. It established a valuation allowance on all of its net deferred tax assets of its UK business in 2019. The Company has continued to carry the valuation allowance through December 31, 2020. However, it is reasonably possible that within the next twelve months, the Company may release all or a portion of its valuation allowance on the UK net deferred tax assets, if results and other subjective evidence continue to reflect pre-tax income such that the deferred tax assets become more likely than not to be realizable.

Additionally, during 2020, the Company added state research and development tax credit benefits in the state of California, which are only available to offset actual tax liabilities. The state research and development tax credits are in excess of the amount reasonably expected to be utilized over the next five years. As such, the Company established an additional $0.4 million of valuation allowance, for a total of $0.7 million valuation allowance on the related deferred tax asset.

The Company has gross income tax NOL carryforwards related to its international operations. For the year ended December 31, 2019, the NOL carryforward was approximately $38.3 million, of which $38.0 million has an indefinite life. For the year ended December 31, 2020, the NOL carryforward was approximately $28.1 million, all of which has an indefinite life. The Company has recorded a deferred tax asset of $6.7 million related to NOL as of December 31, 2019. The Company has recorded a deferred tax asset of $5.3 million related to NOL as of December 31, 2020. The Company's gross NOL carryforwards expire as follows:

	Years ended December 31,	
	2019	**2020**
Unlimited carryforward	$38.0 million	$28.1 million
10+ year carryforward	$0.3 million	—

The Company has tax credit carryforwards related to research and development. For the year ended December 31, 2019, the carryforward was approximately $1.7 million, all of which has an indefinite life. For the year ended December 31, 2020, the carryforward was approximately $1.5 million, all of which has an indefinite life. The Company's research and development tax credit carryforwards and their expiration are as follows:

	Years ended December 31,	
	2019	**2020**
Unlimited carryforward	$1.7 million	$1.5 million
10+ year carryforward	—	—

The Company has gross corporate interest restriction ("CIR") disallowance carryforwards related to its UK operations. For the year ended December 31, 2019, the CIR carryforward was approximately $9.9 million, which has an indefinite life. For the year ended December 31, 2020, the CIR carryforward was approximately $8.7 million, all of which has an indefinite life. The Company has recorded a reduction to the deferred tax asset of $1.2 million related to utilization of a portion of the CIR as of December 31, 2020. The Company's gross carryforwards expire as follows:

	Years ended December 31,	
	2019	2020
Unlimited carryforward	$9.9 million	$8.7 million

The Company files income tax returns in the U.S. federal jurisdiction, various state and local jurisdictions and many foreign jurisdictions. The U.S., UK, and India are the main taxing jurisdictions in which the Company operates. Open tax years subject to audit vary depending on the tax jurisdiction. In the U.S., the Company is no longer subject to U.S. federal income tax examinations by tax authorities for years before 2017. In the UK, the tax returns that are open are for the tax years 2017, 2018, and 2019. In India, the tax returns that are open are for India assessment years 2014 through 2020.

The Company believes its tax positions comply with applicable tax law and intends to vigorously defend its position. However, differing positions on certain issues could be upheld by tax authorities, which could adversely affect the Company's financial condition and results of operations. The Company does not have any unrecognized tax positions as of December 31, 2019 and 2020.

In 2019, the Company recorded compensation expense related to is management incentive compensation plan upon the completion of its IPO, which was considered a triggering event for such recognition. The Company has reviewed the tax treatment in the various jurisdictions in which it operates and has reflected the associated impacts to taxable income and income tax expense. The expenses and deductions had a significant impact on the Company's determination to record a valuation allowance in the same period as the triggering event during 2019.

The Company recorded income tax benefit of $(0.8) million, income tax expense of $10.3 million and an income tax benefit of $(0.4) million for the years ended December 31, 2018, 2019 and 2020, with an effective tax rate of 34.6%, (140.4) % and (2.4) %, respectively. The Company's effective tax rate for the year ended December 31, 2018 differed from the U.S. statutory rate primarily due to a benefit on research and development credit. The Company's effective tax rate for the year ended December 31, 2019 differed from the U.S. statutory rate primarily due to the recognition of a valuation allowance against its UK deferred tax assets, taxation of pre-IPO management incentive unit equity awards, tax benefits on research and development, and tax benefits on foreign derived intangible income. The Company's effective tax rate for the year ended December 31, 2020 differed from the U.S. Statutory rate primarily due to a benefit on research and development credit, a benefit on the partial release of a valuation allowance, and a tax benefit due to the increase of the tax rate applied to UK deferred tax assets.

Note 15. Commitments and contingencies

In accordance with ASC 460, *Guarantees*, the Company recognizes the fair value for guarantee and indemnification arrangements it issues or modifies, if these arrangements are within the scope of the interpretation. In addition, the Company must continue to monitor the conditions that are subject to the guarantees and indemnifications in order to identify if a loss has incurred. If the Company determines it is probable that a loss has occurred, then any such estimated loss would be recognized under those guarantees and indemnifications and would be recognized in the Company's consolidated statements of operations and corresponding consolidated balance sheets during that period.

Indemnification

The Company generally indemnifies its distributors, value added reseller and network operators against claims brought by a third party to the extent any such claim alleges that the Company's product infringes a patent, copyright or trademark or violates any other proprietary rights of that third party. Although the Company generally tries to limit the maximum amount of potential future liability under its indemnification obligations, in certain agreements this liability may be unlimited. The maximum potential amount of future payments the Company may be required to make under these indemnification agreements is not estimable.

The Company indemnifies its directors and officers and select key employees, including key employees serving as directors or officers of the Company's subsidiaries, for certain events or occurrences, subject to certain limits, while the director or officer is or was serving at the Company's request in such capacity. The term of the indemnification period is for the director's or officer's term of service. The Company may terminate the indemnification agreements with its directors, officers or key employees upon the termination of their services as directors or officers of the Company or its subsidiaries, or the termination of activities for which indemnification has been provided, but termination will not affect claims for indemnification related to events occurring prior to the effective date of termination. The maximum amount of potential future indemnification is unlimited; however, the Company has a director and officer insurance policy that limits its exposure. The Company believes the fair value of these indemnification agreements is minimal.

Warranties

The Company offers a standard warranty on its products, with the term depending on the product, and records a liability for the estimated future costs associated with potential warranty claims. The Company's responsibility under its standard warranty is the repair or replacement of in-warranty defective product, or to credit the purchase price of the defective product, at its discretion, without charge to the customer. The Company's estimate of future warranty costs is largely based on historical experience factors including product failure rates, material usage, and service delivery cost incurred in correcting product failures. The standard warranty is included in either Other current liabilities or Other noncurrent liabilities on the Company's consolidated balance sheets, depending on the time period covered by the warranty. The Company also offers an extended warranty for purchase that represents a future performance obligation for the Company. The extended warranty is included in deferred revenues (both current and noncurrent) on the consolidated balance sheets and recognized on a straight-line basis over the term of the extended warranty. The warranty costs are reflected in the Company's consolidated statements of operations within cost of revenues.

Legal proceedings

Third parties may from time to time assert legal claims against the Company. The Company records accruals for loss contingencies to the extent that it concludes it is probable that a liability has been incurred and the amount of the related loss can be reasonably estimated. The Company evaluates, on a regular basis, developments in legal proceedings and other matters that could cause a change in amounts recorded. Due to the inherent uncertainty involving legal matters, the ultimate resolution could differ from amounts recorded. There is no pending or threatened legal proceedings to which the Company is a party to, and in the Company's opinion, is likely to have a material adverse effect on its financial condition or results of operations.

On August 7, 2018, Ubiquiti Networks, Inc. filed a lawsuit in the United States District Court, Northern District of Illinois, against the Company, two of its employees, one of its distributors and one of its end users. The complaint alleged that the Company's development of and sales and promotion of its Elevate software as downloaded on a Ubiquiti device violated the Computer Fraud and Abuse Act and Illinois Computer Crimes Prevention Law, the Digital Millennium Copyright Act and the Copyright Act and constituted misrepresentation and false advertising and false designation of origin in violation of the Lanham Act and state competition laws, breach of contract, tortious interference with contract and unfair competition, and trademark infringement and common law misappropriation. On December 1, 2020, the Company reached a settlement agreement with Ubiquiti, settling all claims made in the Ubiquiti Litigation. The Court dismissed the Ubiquiti Litigation, with prejudice, on January 5, 2021.

Note 16. Segment information and revenues by geography

The Company's chief operating decision maker ("CODM") is its Chief Executive Officer. The Company's CODM reviews financial information presented on a consolidated basis for purposes of allocating resources and evaluating financial performance. Accordingly, the Company determined that it operates as one operating segment and one reporting unit.

Revenues by product category were as follows (in thousands, except percentages):

	Years ended December 31,					
	2018		2019		2020	
Point-to-Multi-Point	$ 146,621	61%	$ 156,157	59%	$ 172,601	62%
Point-to-Point	71,678	30%	71,618	27%	60,435	22%
Wi-Fi	19,571	8%	35,678	13%	39,990	14%
Other	3,892	1%	3,575	1%	5,433	2%
Total Revenues	$ 241,762	100%	$ 267,028	100%	$ 278,459	100%

The Company's products are predominately distributed through a third-party logistics provider in the United States, Netherlands and China. The Company has determined the geographical distribution of product revenues based upon the ship-to destinations.

Revenue by geography were as follows (in thousands, except percentages):

	Years Ended December 31,					
	2018		2019		2020	
North America	$ 108,884	45%	$ 122,565	46%	$ 147,328	53%
Europe, Middle East and Africa	75,503	31%	85,930	32%	80,927	29%
Caribbean and Latin America	29,833	12%	31,767	12%	29,418	11%
Asia Pacific	27,542	12%	26,766	10%	20,786	7%
Total Revenues	$ 241,762	100%	$ 267,028	100%	$ 278,459	100%

The following countries had revenues greater than 10% of total revenues:

- United States - $101.5 million for 2018, $121.3 million for 2019 and $140.7 million for 2020
- Italy - $36.8 million for 2018, $38.4 million for 2019 and $31.6 million for 2020

Customers with an accounts receivable balance of 10% or greater of total accounts receivable and customers with net revenues of 10% or greater of total revenues are presented below for the periods indicated:

	Percentage of Revenues Years Ended December 31,			Percentage of Accounts Receivable As of December 31,	
	2018	2019	2020	2019	2020
Customer A	16%	16%	19%	20%	31%
Customer B	12%	11%	*	*	*
Customer C	*	*	14%	*	*
Customer D	*	*	*	*	10%

* denotes percentage is less than 10%

Note 17. Revenue from contracts with customers

In accordance with ASC 606, *Revenue From Contracts with Customers*, the Company recognizes revenue to reflect the transfer of control of promised products or services to customers in an amount that reflects the consideration to which the Company expects to be entitled in exchange for those products and services. Refer to Note 16 - Segment Information, for further details, including disaggregation of revenue based on product category and geographic location.

Contract Balances

The following table summarizes contract balances as of December 31, 2019 and December 31, 2020:

	December 31, 2019	December 31, 2020
Trade accounts receivable, net of allowance for doubtful accounts/estimate of credit losses	$ 58,254	$ 56,798
Deferred revenue - current	7,430	6,471
Deferred revenue - noncurrent	4,852	4,448
Refund liability	$ 2,223	$ 2,416

Trade accounts receivable include amounts billed and currently due from customers. Amounts are billed in accordance with contractual terms and are recorded at face amount less an allowance for credit losses.

Deferred revenue consists of amounts due or received from customers in advance of the Company satisfying performance obligations under contractual arrangements. Deferred revenue is classified as current or noncurrent based on the timing of when revenue will be recognized. The changes in deferred revenue were due to normal timing differences between the Company’s performance and the customers’ payment.

The refund liability is the estimated amount expected to be refunded to customers in relation to product exchanges made as part of the Company’s stock rotation program and returns that have been authorized, but not yet received by the Company. It is included within other current liabilities in the consolidated balance sheets.

Remaining performance obligations

Remaining performance obligations represent the revenue that is expected to be recognized in future periods related to performance obligations included in a contract that are unsatisfied, or partially satisfied, as of the end of a period. As of December 31, 2019 and 2020, deferred revenue (both current and noncurrent) of $12.3 million and $10.9 million, respectively, represents the Company's remaining performance obligations, of which $7.4 million and $6.5 million, respectively, is expected to be recognized within one year, with the remainder to be recognized thereafter.

Revenue recognized during the year ended December 31, 2020 which was previously included in deferred revenues as of December 31, 2019 was $7.3 million. Revenue recognized during the year ended December 31, 2019 which was previously included in deferred revenues as of December 31, 2018 was $2.8 million. The increase in 2020 is driven by the addition of deferred revenue related to the acquisition of the Xirrus business (See Note 2 – Business combinations). Revenue recognized during the year ended December 31, 2018 which was previously included in deferred revenues as of December 31, 2017 was $2.9 million.

Cost to obtain a contract

Sales commissions are incremental costs of obtaining a contract. The Company has elected to recognize these expenses as incurred due to the amortization period of these costs being one year or less.

Note 18. Leases

The Company adopted ASC 842 on January 1, 2019 using the optional transition method for all leases existing at January 1, 2019, the date of initial application.

The Company has operating leases for offices, vehicles, and office equipment. Leases with a term of 12 months or less are not recorded on the consolidated balance sheets, and are expensed on a straight-line basis over the lease term.

Right-of-use ("ROU") assets and operating lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at the commencement date. The Company's lease payments are typically fixed or contain fixed escalators. The Company's leases typically include certain lock-in periods and options to renew or extend the leases, however, the Company does not consider renewal periods where it is not reasonably certain the Company will extend the lease pursuant to such option. The Company elected the practical expedient to not separate the lease and non-lease components of its leases and currently has no leases with options to purchase the leased property.

The components of lease expense were as follows and are included in general and administrative expense (in thousands):

	Year Ended December 31, 2019	Year Ended December 31, 2020
Operating lease cost	$ 2,410	$ 2,586
Short-term lease cost	183	341
Variable lease costs	406	375
Total lease expense	$ 2,999	$ 3,302

Rent expense totaled $2.3 million in 2018.

Supplemental balance sheet information related to leases were as follows (in thousands, except lease term and discount rate):

	Balance Sheet Caption	December 31, 2019	December 31, 2020
Operating leases:			
Operating lease assets	Operating lease assets	$ 6,872	$ 5,083
Current lease liabilities	Other current liabilities	$ 2,125	$ 2,167
Noncurrent lease liabilities	Noncurrent operating lease liabilities	$ 5,335	$ 3,332
Weighted average remaining lease term (years):			
Operating leases		3.98	3.35
Weighted average discount rate:			
Operating leases		8.50%	8.36%

Supplemental cash flow information related to leases were as follows (in thousands):

	2019	2020
Supplemental cash flow information:		
Cash paid for amounts included in the measurement of lease liabilities	$ 2,461	$ 2,701

The Company's current lease terms range from one to six years and may include options to extend the lease by one to four years.

Remaining maturities on lease liabilities at December 31, 2020 is as follows (in thousands):

	Operating leases
2021	$ 2,544
2022	1,421
2023	1,323
2024	565
2025	316
Thereafter	174
Total lease payments	6,343
Less: interest	844
Present value of lease liabilities	$ 5,499

As of December 31, 2020, the Company has two leases, an office facility lease and a vehicle lease, with the present value of the lease liabilities of $0.1 million, that have not yet commenced.

Note 19. Related party transactions

The Company follows ASC 850, *Related Party Disclosures*, for the identification of related parties and disclosure of related party transactions. A party is considered to be related to the Company if the party directly or indirectly or through one or more intermediaries, controls, is controlled by, or is under common control with the Company. Related parties also include principal owners of the Company, its management, members of the immediate families of principal owners of the Company and its management and other parties with which the Company may deal.

In connection with the Company's execution of the Waiver and First Amendment to Amended and Restated Credit Agreement dated November 21, 2018, Vector Capital IV, L.P., an affiliate of the Company's largest shareholder, executed a Limited Guaranty agreement whereby it had agreed to guarantee the Company's Tranche B loan up to a maximum of the lesser of: (i) $25.0 million and (ii) an amount equal to (a) 1.10 multiplied by (b) an amount equal to the then aggregate principal amount of the Tranche B loan. In connection with the Company's execution of the Third Amendment to Amended and Restated Credit Agreement dated June 28, 2019, Vector Capital IV, L.P. was relieved of its Limited Guaranty. (Refer to Note 7 – Debt)

For the years ended December 31, 2018, 2019 and 2020, Vector Capital Management, LP, an entity related to VCH, L.P., charged $0.5 million, $0.3 million and $0.0 million, respectively, for management and oversight fees. The Company did not have any amounts due to Vector Capital Management, LP at December 31, 2019 and 2020. On July 3, 2019, the Company paid $5.6 million to Vector Capital Management from the net proceeds from the Company's IPO. In connection with the IPO and the payment of these fees, the Vector Capital Management Agreement was terminated.

In connection with the Recapitalization and upon consummation of the Company's IPO, the Company issued shares to VCH, L.P. representing the amount of unreturned capital and accumulated yield payable to holder of Class A Units of VCH, plus the residual shares of the Company's value attributable to VCH's ownership after such return, based on the IPO price of $12.00 per share. After completion of the Recapitalization and the offering, the Company is neither party to nor subject to any obligations under the VCH LPA.

Note 20. Quarterly financial data (unaudited)

The following table presents the Company's unaudited consolidated statements of operations data for each of the eight quarters during the years ended December 31, 2019 and 2020. This information has been presented on the same basis as the audited consolidated financial statements included in this report, and all necessary adjustments, consisting only of normal recurring adjustments, have been included in the amounts below to state fairly the unaudited quarterly results when read in conjunction with the audited consolidated financial statements and related notes.

	Three months ended				Year ended
	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019	December 31, 2019
	(unaudited)				
Revenues	$ 68,112	$ 69,151	$ 65,703	$ 64,062	$ 267,028
Cost of revenues	36,322	34,839	33,871	30,767	135,799
Gross profit	31,790	34,312	31,832	33,295	131,229
Operating expenses					
Research and development	10,482	15,189	9,895	12,126	47,692
Sales and marketing	10,218	14,227	10,363	11,445	46,253
General and administrative	5,130	13,063	5,996	5,936	30,125
Depreciation and amortization	1,281	1,227	1,449	1,901	5,858
Total operating expenses	27,111	43,706	27,703	31,408	129,928
Operating income (loss)	4,679	(9,394)	4,129	1,887	1,301
Interest expense, net	2,268	2,301	2,105	1,402	8,076
Other expense, net	134	56	61	295	546
Income (loss) before income taxes	2,277	(11,751)	1,963	190	(7,321)
Provision for income taxes	415	8,623	3	1,239	10,280
Net income (loss)	$ 1,862	$ (20,374)	$ 1,960	$ (1,049)	$ (17,601)

	Three months ended				Year ended
	March 31, 2020	June 30, 2020	September 30, 2020	December 31, 2020	December 31, 2020
	(unaudited)				
Revenues	$ 60,429	$ 62,254	$ 72,971	$ 82,805	$ 278,459
Cost of revenues	29,797	31,782	36,902	40,568	139,049
Gross profit	30,632	30,472	36,069	42,237	139,410
Operating expenses					
Research and development	11,814	9,299	10,213	11,862	43,188
Sales and marketing	10,304	8,035	8,293	10,152	36,784
General and administrative	6,446	6,625	8,604	7,176	28,851
Depreciation and amortization	1,695	1,700	1,643	1,601	6,639
Total operating expenses	30,259	25,659	28,753	30,791	115,462
Operating income	373	4,813	7,316	11,446	23,948
Interest expense, net	1,345	1,525	1,259	1,197	5,326
Other (income) expense, net	(216)	(22)	318	411	491
(Loss) income before income taxes	(756)	3,310	5,739	9,838	18,131
Provision (benefit) for income taxes	82	(2)	144	(668)	(444)
Net (loss) income	$ (838)	$ 3,312	$ 5,595	$ 10,506	$ 18,575

Exhibit 4.3

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

The following summary describes the capital stock of Cambium Networks Corporation (the "Company," "Cambium," "we," "us," and "our") and the material provisions of our amended and restated memorandum and articles of association, the shareholders agreement to which we and Vector Capital are parties and of the Companies Law (as amended) of the Cayman Islands. Because the following is only a summary, it does not contain all of the information that may be important to you. For a complete description, you should refer to our amended and restated memorandum and articles of association and shareholders agreement, copies of which are incorporated by reference as exhibits to our Annual Report on Form 10-K.

As of December 31, 2020, Cambium had ordinary shares, par value $0.0001 per share, registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and listed on The Nasdaq Global Market under the trading symbol "CMBM."

General

Our Amended and Restated Memorandum and Articles of Association authorizes the issuance of up to 500,000,000 ordinary shares, $0.0001 par value per share, of which 26,034,526 ordinary shares were issued and outstanding as of December 31, 2020, held by approximately 175 shareholders of record. This number does not include the beneficial owners whose shares are held by nominees in street name. There were outstanding 3,164,185 ordinary shares subject to outstanding stock options and 519,197 shares subject to outstanding restricted share awards and restricted share units as of December 31, 2020.

We are incorporated as an exempted company with limited liability under Cayman Islands law and our affairs are governed by the provisions of our Amended and Restated Memorandum and Articles of Association, as amended and restated from time to time, and by the provisions of the Companies Law (as amended) of the Cayman Islands (the "Companies Law"). A Cayman Islands company qualifies for exempted status if its operations will be conducted mainly outside of the Cayman Islands. Exempted companies are exempted from complying with certain provisions of the Companies Law. An exempted company is not required to obtain prior approval for registration or to hold an annual general meeting, and the annual return that must be filed with the Registrar of Companies in the Cayman Islands is considerably simpler than for non-exempted Cayman Islands companies. Names of shareholders are not required to be filed with the Registrar of Companies in the Cayman Islands. While there are currently no forms of direct taxation, withholding or capital gains tax in the Cayman Islands, an exempted company is entitled to apply for a tax exemption certificate from the Government of the Cayman Islands, which provides written confirmation that, among other things, should the laws of the Cayman Islands change, the company will not be subject to taxes for the period during which the certificate is valid (usually 20 years).

Ordinary shares

General

All of our issued and outstanding ordinary shares are fully paid and non-assessable. Legal title to the issued ordinary shares is recorded in registered form in our register of members. Our shareholders may freely hold and vote their ordinary shares.

Dividends

The holders of our ordinary shares are entitled to such dividends as may be declared by our board of directors subject to the Companies Law. Dividends may be paid only out of profits, which include net earnings and retained earnings undistributed in prior years, out of share premium, a concept analogous to paid-in surplus in the United States and distributable reserves, subject to a statutory solvency test.

Voting rights

Our outstanding share capital consists of ordinary shares. Each shareholder is entitled to one vote for each ordinary share on all matters upon which the ordinary shares are entitled to vote, including the election of directors. Voting at any shareholders' meeting is by way of a poll.

A quorum required for a general meeting of shareholders consists of one or more holders of ordinary shares present in person or by proxy (or, if a corporation or other non-natural person, by its duly authorized representative) together holding (or representing by proxy) not less than a majority of the total voting power of all ordinary shares outstanding and entitled to vote. General meetings of our shareholders are held annually and may be convened by our board of directors on its own initiative. Extraordinary meetings of our shareholders may be called at any time at the direction of the board of directors or the chairman of the board of directors or by a vote of an aggregate of 20% of our ordinary shares held by not more than five shareholders; however, so long as Vector Cambium Holdings (Cayman) L.P. or its affiliates ("Vector") own at least 25% of our outstanding ordinary shares, extraordinary meetings of our shareholders will also be called by the board of directors at the request of Vector. Advance notice to shareholders of at least 14 calendar days is required for the convening of any annual general meeting or other shareholders' meetings.

An ordinary resolution to be passed by the shareholders requires the affirmative vote of a simple majority of the votes cast by those shareholders entitled to vote who are present in person or by proxy at a general meeting, while a special resolution requires the affirmative vote of no less than 66⅔% of the votes cast by those shareholders entitled to vote who are present in person or by proxy at a general meeting. Under the Companies Law, certain matters must be approved by special resolution of the shareholders, including alteration of the memorandum or articles of association, reduction of share capital, change of name, voluntary winding up the company, a merger with another company and transferring the company to a new jurisdiction.

Winding up

On the winding up of our company, if the assets available for distribution amongst our shareholders shall be more than sufficient to repay the whole of the share capital at the commencement of the winding up, the surplus shall be distributed amongst our shareholders in proportion to the par value of the shares held by them at the commencement of the winding up, subject to a deduction from those shares in respect of which there are monies due, of all monies payable to our company for unpaid calls or otherwise. If our assets available for distribution are insufficient to repay all of the paid-up capital, the assets will be distributed so that the losses are borne by our shareholders in proportion to the par value of the shares held by them.

The liquidator may, with the sanction of a special resolution of our shareholders, divide amongst the shareholders in specie or in kind the whole or any part of the assets of our company, and may for such purpose set such value as the liquidator deems fair upon any property to be divided as aforesaid and may determine how the division shall be carried out as between our shareholders or different classes of shareholders.

Redemption, repurchase and surrender of ordinary shares

We may issue shares on terms that such shares are subject to redemption, at our option or at the option of the holders thereof, on such terms and in such manner as may be determined by our board of directors before the issue of such shares. We may also repurchase any of our shares provided that the manner and terms of such purchase have been approved by our board of directors or by ordinary resolution of our shareholders (but no repurchase may be made contrary to the terms or manner recommended by our directors), or as otherwise authorized by our Amended and Restated Memorandum and Articles of Association. Under the Companies Law, the redemption or repurchase of any share may be paid out of our profits or out of the proceeds of a new issue of shares made for the purpose of such redemption or repurchase, or out of capital (including share premium account and capital redemption reserve) if we can, immediately following such payment, pay our debts as they fall due in the ordinary course of business. In addition, under the Companies Law no such share may be redeemed or repurchased (i) unless it is fully paid up, (ii) if such redemption or repurchase would result in there being no shares outstanding or (iii) if the company has commenced winding up or liquidation. In addition, we may accept the surrender by any shareholder of any fully paid share for no consideration.

Proceedings of board of directors

Our business is managed and conducted by our board of directors. The quorum necessary for board meetings may be fixed by the board and, unless so fixed at another number, will be a majority of the directors then in office.

The board may from time to time at its discretion exercise all powers of our company to raise capital or borrow money, to mortgage or charge all or any part of the undertaking, property and assets (present and future) and uncalled capital of our company and issue debentures, bonds and other securities of our company, whether outright or as collateral security for any debt, liability or obligation of our company or of any third party.

Changes in capital

Our shareholders may from time to time by ordinary resolution:

- increase our share capital by such sum, to be divided into shares of such classes and amount, as the resolution shall prescribe;
- consolidate and divide all or any of our share capital into shares of a larger amount than our existing shares;
- sub-divide our existing shares, or any of them, into shares of a smaller amount; or
- cancel any shares which, at the date of the passing of the resolution, have not been taken or agreed to be taken by any person and diminish the amount of our share capital by the amount of the shares so cancelled.

Our shareholders may by special resolution, subject to confirmation by the Grand Court of the Cayman Islands on an application by our company for an order confirming such reduction, reduce our share capital or any capital redemption reserve in any manner permitted by law.

Inspection of books and records

Holders of our ordinary shares will have no general right under the Companies Law to inspect or obtain copies of our register of members or our corporate records. However, we will provide our shareholders with annual audited financial statements.

Register of members

Under Cayman Islands law, we must keep a register of members and there should be entered therein:

- the names and addresses of the shareholders, a statement of the shares held by each shareholder, and of the amount paid or agreed to be considered as paid, on the shares of each shareholder;
- the date on which the name of any person was entered on the register as a shareholder; and
- the date on which any person ceased to be a shareholder.

In accordance with Section 48 of the Companies Law, the register of members is prima facie evidence of the matters set out therein (i.e., the register of members will raise a presumption of fact on the matters referred to above unless rebutted). Therefore, a person is deemed as a matter of Cayman Islands law to have legal title to the shares set against its name in the register of members once such shareholder has been entered in the register of members. Entries of any change in the shares and member information, including allotment, transfer, consolidation, subdivision or cancellation, need to be made in the register of members as and when completed or notified. The register of members of our Company is not required to be maintained in the Cayman Islands and our directors will maintain one register of members, at our principal executive offices.

Undesignated preferred shares

Pursuant to our Amended and Restated Memorandum and Articles of Association, our board of directors has the authority, without further action by the shareholders, to issue undesignated preferred shares in one or more series and to designate the price, rights, preferences, privileges and restrictions of such preferred shares without any further vote or action by our shareholders, any or all of which may be greater than the rights of the ordinary shares.

Exempted company

We are an exempted company with limited liability duly incorporated and validly existing under the Companies Law. The Companies Law distinguishes between ordinary resident companies and exempted companies. Any company that is registered in the Cayman Islands but conducts business mainly outside of the Cayman Islands may apply to be registered as an exempted company. The requirements for an exempted company are essentially the same as for an ordinary company, except that an exempted company:

- is not required to file an annual return of its shareholders with the Registrar of Companies of the Cayman Islands;
- is not required to open its register of members for inspection;
- is not required to hold an annual general meeting;
- may obtain an undertaking against the imposition of any future taxation in the Cayman Islands (such undertakings are usually given for 20 or 30 years in the first instance);
- may register by way of continuation in another jurisdiction and be deregistered in the Cayman Islands;
- may register as a limited duration company; and
- may register as a segregated portfolio company.

“Limited liability” means that the liability of each shareholder is limited to the amount unpaid by the shareholder on that shareholder’s shares of the company (except in exceptional circumstances, such as involving fraud, the establishment of an agency relationship or an illegal or improper purpose or other circumstances in which a court may be prepared to pierce or lift the corporate veil). We may follow home country practice for certain corporate governance practices which may differ from the Corporate Governance Rules of Nasdaq. The listing requirements of Nasdaq require that every listed company hold an annual general meeting of shareholders. In addition, our directors may call extraordinary general meetings of our shareholders pursuant to the procedures set forth in our Amended and Restated Memorandum and Articles of Association.

Anti-takeover provisions of our Amended and Restated Memorandum and Articles of Association

Some provisions of our Amended and Restated Memorandum and Articles of Association may discourage, delay or prevent a change of control of our company or management that shareholders might otherwise view as favorable and are intended to enhance the likelihood of continuity and stability in the composition of our board of directors and to discourage certain types of transactions that may involve an actual or threatened acquisition of our company. These provisions are intended to avoid costly takeover battles, reduce our vulnerability to a hostile change in control or other unsolicited acquisition proposal and enhance the ability of our board of directors to maximize shareholder value in connection with any unsolicited offer to acquire us. However, these provisions may have the effect of delaying, deterring or preventing a merger or acquisition of our company by means of a tender offer, a proxy contest or other takeover attempt that a shareholder might consider in its best interest, including attempts that might result in a premium over the prevailing market price for our ordinary shares.

Classified board of directors

Our Amended and Restated Memorandum and Articles of Association provides that our board of directors is classified into three classes of directors with staggered three year terms. A third party may be discouraged from making a tender offer or otherwise attempting to obtain control of us as it is more difficult and time consuming for shareholders to replace a majority of the directors on a classified board of directors.

Breaches of fiduciary duty

To the maximum extent permitted under Cayman Islands law, our Amended and Restated Memorandum and Articles of Association will indemnify our directors against any personal liability of our directors for breaches of fiduciary duty.

Removal of directors

Our Amended and Restated Memorandum and Articles of Association provides that directors may be removed only for cause upon the affirmative vote of 75% of our outstanding ordinary shares.

Vacancies

Our Amended and Restated Memorandum and Articles of Association also provides that any newly created directorship on the board of directors that results from an increase in the number of directors and any vacancies on our board of directors will be filled by the affirmative vote of a majority of the remaining directors, even if less than a quorum or by a sole remaining director. Our Amended and Restated Memorandum and Articles of Association provides that the board of directors may increase the number of directors by the affirmative vote of a majority of the directors.

Board quorum

Our Amended and Restated Memorandum and Articles of Association provides that at any meeting of the board of directors, a majority of the total number of directors then in office constitutes a quorum for all purposes.

Shareholder action by written consent

Our Amended and Restated Memorandum and Articles of Association provides that any action required to be taken at any annual or extraordinary meeting of the shareholders may be taken without a meeting, without prior notice and without a vote if, in the case of an ordinary resolution, a consent or consents in writing, setting forth the action so taken, is signed by the holders of outstanding ordinary shares having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all of our outstanding ordinary shares were present and voted, or in the case of a special resolution by all holders of ordinary shares having the right to vote, so long as Vector collectively owns at least a majority of our outstanding ordinary shares. Our Amended and Restated Memorandum and Articles of Association precludes shareholder action by written consent at any time when Vector collectively owns less than a majority of our outstanding ordinary shares, provided that the holders of ordinary shares may always act by a unanimous written resolution.

General and extraordinary shareholder meetings

As a Cayman Islands exempted company, we are not obliged by the Companies Law to call shareholders' annual general meetings. We may (but are not obliged to) in each year hold a general meeting as our annual general meeting in which case we shall specify the meeting as such in the notices calling it, and the annual general meeting shall be held at such time and place as may be determined by our directors. A quorum required for a general meeting of shareholders consists of one or more holders of ordinary shares present in person or by proxy (or, if a corporation or other non-natural person, by its duly authorized representative) together holding (or representing by proxy) not less than a majority of the total voting power of all ordinary shares outstanding and entitled to vote.

Extraordinary meetings of our shareholders may be called at any time at the direction of the board of directors or the chairman of the board of directors or by a vote of an aggregate of 20% of our ordinary shares held by not more than five shareholders; however, so long as Vector owns at least 25% of our outstanding ordinary shares, extraordinary meetings of our shareholders will also be called by the board of directors at the request of Vector. Advance notice to shareholders of at least 14 calendar days is required for the convening of any annual general meeting or other shareholders' meetings.

Supermajority provisions

Our Amended and Restated Memorandum and Articles of Association provides that the affirmative vote of at least two-thirds of our outstanding ordinary shares attending and voting at a general meeting or a unanimous written resolution is required to amend certain provisions of our Amended and Restated Memorandum and Articles of Association related principally to reductions in share capital, changing our name, certain matters pertaining to bankruptcy or winding up of the Company, and merger or reincorporation of the Company among others.

The combination of the foregoing provisions will make it more difficult for our existing shareholders to replace our board of directors as well as for another party to obtain control of us by replacing our board of directors. Because our board of directors has the power to retain and discharge our officers, these provisions could also make it more difficult for existing shareholders or another party to effect a change in management. However, under Cayman Islands law, our directors may only exercise the rights and powers granted to them under our Amended and Restated Memorandum and Articles of Association for a proper purpose and for what they believe in good faith to be in the best interests of our company.

Differences in corporate law

The Companies Law is derived, to a large extent, from the older Companies Acts of England, but does not follow recent statutory enactments in England and accordingly there are significant differences between the Companies Law and the current Companies Act of England. In addition, the Companies Law differs from laws applicable to U.S. corporations and their shareholders. Set forth below is a summary of certain significant differences between the provisions of the Companies Law applicable to us and the laws applicable to companies incorporated in the State of Delaware.

Mergers and similar arrangements

The Companies Law permits mergers and consolidations between Cayman Islands companies and between Cayman Islands companies and non-Cayman Islands companies. For these purposes, (i) “merger” means the merging of two or more constituent companies and the vesting of their undertaking, property and liabilities in one of such companies as the surviving company, and (ii) a “consolidation” means the combination of two or more constituent companies into a consolidated company and the vesting of the undertaking, property and liabilities of such companies to the consolidated company. In order to effect such a merger or consolidation, the directors of each constituent company must approve a written plan of merger or consolidation, which must then be authorized by (i) a special resolution of the shareholders of each constituent company, and (ii) such other authorization, if any, as may be specified in such constituent company’s articles of association. The written plan of merger or consolidation must be filed with the Registrar of Companies of the Cayman Islands together with a declaration as to the solvency of the consolidated or surviving company, a declaration as to the assets and liabilities of each constituent company and an undertaking that a copy of the certificate of merger or consolidation will be given to the members and creditors of each constituent company and that notification of the merger or consolidation will be published in the Cayman Islands Gazette. Court approval is not required for a merger or consolidation which is effected in compliance with these statutory procedures.

A merger between a Cayman parent company and its Cayman subsidiary or subsidiaries does not require authorization by a resolution of shareholders. For this purpose, a subsidiary is a company of which at least 90% of the issued shares entitled to vote are owned by the parent company.

The consent of each holder of a fixed or floating security interest of a constituent company is required unless this requirement is waived by a court in the Cayman Islands.

Except in certain limited circumstances, a shareholder of a Cayman Islands constituent company who dissents from the merger or consolidation is entitled to payment of the fair value of his or her shares (which, if not agreed between the parties, will be determined by the Cayman Islands court) upon dissenting from a merger or consolidation, provide the dissenting shareholder complies strictly with the procedures set out in the Companies Law. The exercise of such dissenter rights will preclude the exercise by the dissenting shareholder of any other rights to which he or she might otherwise be entitled by virtue of holding shares, except for the right to seek relief on the grounds that the merger or consolidation is void or unlawful.

Separately from the statutory provisions relating to mergers and consolidations, the Companies Law also contains statutory provisions that facilitate the reconstruction and/or amalgamation of companies by way of schemes of arrangement. A scheme of arrangement may be proposed between a company and its creditors or any class of them, or between the company and its shareholders or any class of them. A successful scheme of arrangement must be approved by a majority in number of each class of shareholders or creditors with whom the arrangement is to be made, and who must, in addition, represent three-fourths in value of each such class of shareholders or creditors, as the case may be, that are present and voting either in person or by proxy at a meeting, or meetings, convened for that purpose. The convening of the meetings and the subsequent sanctioning of any scheme of arrangement must be approved by the Grand Court of the Cayman Islands. While a dissenting shareholder has the right to express to the Grand Court the view that the transaction ought not to be approved, the Grand Court can be expected to approve the arrangement if it determines that:

- the statutory provisions as to the required majority vote have been met;
- the shareholders have been fairly represented at the meeting in question and the statutory majority are acting bona fide without coercion of the minority to promote interests adverse to those of the class;
- the scheme of arrangement is such that may be reasonably approved by an intelligent and honest man of that class acting in respect of his interest; and
- the scheme of arrangement is not one that would more properly be sanctioned under some other provision of the Companies Law.

The Companies Law also contains a statutory power of compulsory acquisition which may facilitate the “squeeze out” of dissentient minority shareholder upon a tender offer. When a tender offer is made and accepted by holders of 90% in the number of the shares affected within four months of the offer being made, the offeror may, within a two-month period commencing on the expiration of such four month period, require the holders of the remaining shares to transfer such shares on the terms of the offer. An objection can be made to the Grand Court of the Cayman Islands but this is unlikely to succeed in the case of an offer which has been so approved unless there is evidence of fraud, bad faith or collusion.

If an arrangement and reconstruction is thus approved, or if a tender offer is made and accepted, a dissenting shareholder would have no rights comparable to appraisal rights, which would otherwise ordinarily be available to dissenting shareholders of Delaware corporations, providing rights to receive payment in cash for the judicially determined value of the shares.

Further, transactions similar to a merger, reconstruction and/or an amalgamation may in some circumstances be achieved through other means to these statutory provisions, such as a share capital exchange, asset acquisition or control, through contractual arrangements, of an operating business.

Shareholders' suits

In principle, we will normally be the proper plaintiff to sue for a wrong done to us as a company and as a general rule, a derivative action may not be brought by a minority shareholder. However, based on English law authorities, which would in all likelihood be of persuasive authority in the Cayman Islands, the Cayman Islands court can be expected to follow and apply the common law principles (namely the rule in *Foss v. Harbottle* and the exceptions thereto) so that a non-controlling shareholder may be permitted to commence a class action against or derivative actions in the name of the company to challenge:

- an act which is illegal or *ultra vires* with respect to the company and is therefore incapable of ratification by the shareholders;
- an act which, although not *ultra vires*, requires authorization by a qualified (or special) majority (that is, more than a simple majority) which has not been obtained; and
- an act which constitutes a "fraud on the minority" where the wrongdoers are themselves in control of the company.

Protection of minority shareholders

In the case of a company (not being a bank) having its share capital divided into shares, the Grand Court of the Cayman Islands may, on the application of members holding not less than one fifth of the shares of the company in issue, appoint an inspector to examine the affairs of the company and to report thereon in such manner as the Grand Court of the Cayman Islands shall direct.

Any of our shareholders may petition the Grand Court of the Cayman Islands which may make a winding up order if the Grand Court of the Cayman Islands is of the opinion that it is just and equitable that we should be wound up or, as an alternative to a winding up order, (a) an order regulating the conduct of our affairs in the future, (b) an order requiring us to refrain from doing or continuing an act complained of by the shareholder petitioner or to do an act which the shareholder petitioner has complained we have omitted to do, (c) an order authorizing civil proceedings to be brought in our name and on our behalf by the shareholder petitioner on such terms as the Grand Court of the Cayman Islands may direct, or (d) an order providing for the purchase of the shares of any of our shareholders by other shareholders or us and, in the case of a purchase by us, a reduction of our capital accordingly.

Generally, claims against us must be based on the general laws of contract or tort applicable in the Cayman Islands or individual rights as shareholders as established by our Amended and Restated Memorandum and Articles of Association.

Anti-takeover provisions in our articles

Some provisions of our Amended and Restated Memorandum and Articles of Association may discourage, delay or prevent a change in control of our company or management that shareholders may consider favorable, including provisions that authorize our board of directors to issue preferred shares in one or more series and to designate the price, rights, preferences, privileges and restrictions of such preferred shares without any further vote or action by our shareholders.

However, under Cayman Islands law, our directors may only exercise the rights and powers granted to them under our Amended and Restated Memorandum and Articles of Association, as amended and restated from time to time, for a proper purpose and in what they believe in good faith to be in the best interests of our company.

Directors' fiduciary duties

Under Delaware corporate law, a director of a Delaware corporation has a fiduciary duty to the corporation and its shareholders. This duty has two components: the duty of care and the duty of loyalty. The duty of care requires that a director act in good faith, with the care that an ordinarily prudent person would exercise under similar circumstances. Under this duty, a director must inform himself of, and disclose to shareholders, all material information reasonably available regarding a significant transaction. The duty of loyalty requires that a director act in a manner he or she reasonably believes to be in the best interests of the corporation. He or she must not use his or her corporate position for personal gain or advantage. This duty prohibits self-dealing by a director and mandates that the best interests of the corporation and its shareholders take precedence over any interest possessed by a director, officer or controlling shareholder and not shared by the shareholders generally. In general, actions of a director are presumed to have been made on an informed basis, in good faith and in the honest belief that the action taken was in the best interests of the corporation. However, this presumption may be rebutted by evidence of a breach of one of the fiduciary duties. Should such evidence be presented concerning a transaction by a director, a director must prove the procedural fairness of the transaction, and that the transaction was of fair value to the corporation.

As a matter of Cayman law, a director of a Cayman Islands company is in the position of a fiduciary with respect to the company and therefore he owes the following duties to the company—a duty to act in good faith (bona fide) in the best interests of the company, a duty not to make a profit based on his or her position as director (unless the company permits him to do so), a duty not to put himself in a position where the interests of the company conflict with his or her personal interest or his or her duty to a third party, and a duty to exercise powers for the purpose for which such powers were intended. A director of a Cayman Islands company owes to the company a duty to act with skill and care. It was previously considered that a director need not exhibit in the performance of his or her duties a greater degree of skill than may reasonably be expected from a person of his or her knowledge and experience. However, English and Commonwealth courts have moved towards an objective standard with regard to the required skill and care and these authorities are likely to be followed in the Cayman Islands.

Shareholder proposals

Under the Delaware General Corporation Law, a shareholder has the right to put any proposal before the annual meeting of shareholders, provided it complies with the notice provisions in the governing documents. The Delaware General Corporation Law does not provide shareholders an express right to put any proposal before the annual meeting of shareholders, but in keeping with common law, Delaware corporations generally afford shareholders an opportunity to make proposals and nominations provided that they comply with the notice provisions in the certificate of incorporation or bylaws. A special meeting may be called by the board of directors or any other person authorized to do so in the governing documents, but shareholders may be precluded from calling special meetings.

The Companies Law provides shareholders with only limited rights to requisition a general meeting, and does not provide shareholders with any right to put any proposal before a general meeting. However, these rights may be provided in a company's articles of association.

As of December 31, 2020, Vector beneficially owns a majority of our outstanding shares. Our Amended and Restated Memorandum and Articles of Association provides that Vector will have the ability to appoint a number of our directors according to their ownership of our outstanding ordinary shares as follows: (i) 50% or more of our outstanding ordinary shares, then a number of directors proportionate to such share ownership, (ii) between 25% and 50% of our outstanding ordinary shares, then two directors, (iii) between 5% and 25% of our outstanding ordinary shares, then one director and (iv) less than 5% of our outstanding ordinary share, then Vector no longer has the right to appoint any directors.

In addition, our Amended and Restated Memorandum and Articles of Association establishes advance notice procedures for shareholder proposals and nomination of candidates for election as directors other than nominations made by or at the direction of our board of directors or a committee of our board of directors. Shareholders may consider only those proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our board of directors or by a shareholder who was a shareholder of record on the record date for the meeting, who is entitled to vote at the meeting and who has given to the Company secretary timely written notice, in proper form, of the shareholder's intention to bring that business before the meeting. To be timely, except in certain limited circumstances, notice for shareholder proposals must be delivered to the Company not later than the close of business on the 90th day nor earlier than the close of business on the 120th day in advance of the anniversary of the previous year's annual general meeting. For the nomination of any person or persons for election to the board of directors, a shareholder's notice to the Company must set forth with respect to each nominee (i) name, age, business address and residence address; (ii) principal occupation or employment; (iii) number of shares of the Company which are owned of record and beneficially (if any); (iv) such other information concerning each such nominee as would be required to be disclosed in a proxy statement soliciting proxies for the election of such nominee as a director in an election contest (even if an election contest is not involved) or that is otherwise required to be disclosed, under proxy rules; and (v) the consent of the nominee to being named in the proxy statement as a nominee and to serving as a director if elected. Such notice must also state, with respect to the proposing shareholder and the beneficial owner, if any, on whose behalf the nomination is being made, their name and address, the class and number of shares of the Company which are owned, and descriptions of any agreement, arrangement or understanding between or among such persons, any of their affiliates or associates, and any others (including their names) acting in concert with any of the foregoing, with respect to such nomination, the shares of the Company (including any derivative or short positions, profit interests, options, hedging transactions, and borrowed or loaned shares), the effect or intent of which is to mitigate loss to, manage risk or benefit of share price changes for, or increase or decrease the voting power of the proposing shareholder or any of its affiliates or associates. Additionally, a proposing shareholder must make certain representations, including that it intends to deliver a proxy statement and/or form of proxy to holders of at least the percentage of the Company's outstanding shares required to approve the nomination and/or otherwise to solicit proxies from shareholders in support of the nomination. The Company may require any proposed nominee to furnish such other information as it may reasonably require to determine the eligibility of such proposed nominee to serve as an independent director of the Company or that could be material to a reasonable shareholder's understanding of the independence, or lack thereof, of such nominee. For all business other than director nominations, a proposing shareholder's notice to the Company shall set forth as to each matter proposed: (i) a brief description of the business desired to be brought before the annual general meeting and the reasons for conducting such business at the annual general meeting; (ii) any other information relating to such shareholder and beneficial owner, if any, on whose behalf the proposal is being made, required to be disclosed in a proxy statement or other filings required to be made in connection with solicitations of proxies for the proposal and pursuant to and in accordance with proxy rules; and (iii) the same information with respect to the proposing shareholder as is required in connection with director nominations.

Cumulative voting

Under the Delaware General Corporation Law, cumulative voting for elections of directors is not permitted unless the corporation's certificate of incorporation specifically provides for it. Cumulative voting potentially facilitates the representation of minority shareholders on a board of directors since it permits the minority shareholder to cast all the votes to which the shareholder is entitled on a single director, which increases the shareholder's voting power with respect to electing such director. Cayman Islands law does not prohibit cumulative voting, but our Amended and Restated Memorandum and Articles of Association do not provide for cumulative voting and instead provides for plurality voting. As a result, our shareholders are not afforded any less protections or rights on this issue than shareholders of a Delaware corporation.

Removal of directors

Under the Delaware General Corporation Law, a director of a corporation with a classified board may be removed only for cause with the approval of a majority of the outstanding shares entitled to vote, unless the certificate of incorporation provides otherwise. Under Cayman Islands law, no such rules apply and directors may be removed in accordance with the terms set out in the company's articles of association. Under our Amended and Restated Memorandum and Articles of Association, directors may be removed for cause by resolution adopted by holders of 75% of our outstanding ordinary shares.

Transactions with interested shareholders

The Delaware General Corporation Law contains a business combination statute applicable to Delaware public corporations whereby, unless the corporation has specifically elected not to be governed by such statute by amendment to its certificate of incorporation or bylaws that is approved by its shareholders, it is prohibited from engaging in certain business combinations with an "interested shareholder" for three years following the date that such person becomes an interested shareholder. An interested shareholder generally is a person or a group who or which owns or owned 15% or more of the target's outstanding voting stock or who or which is an affiliate or associate of the corporation and owned 15% or more of the corporation's outstanding voting stock within the past three years. This has the effect of limiting the ability of a potential acquirer to make a two-tiered bid for the target in which all shareholders would not be treated equally. The statute does not apply if, among other things, prior to the date on which such shareholder becomes an interested shareholder, the board of directors approves either the business combination or the transaction which resulted in the person becoming an interested shareholder. This encourages any potential acquirer of a Delaware corporation to negotiate the terms of any acquisition transaction with the target's board of directors.

Cayman Islands law has no comparable statute. As a result, we cannot avail ourselves of the types of protections afforded by the Delaware business combination statute. However, although Cayman Islands law does not regulate transactions between a company and its significant shareholders, the fiduciary duties owed by our directors do require that such transactions must be entered into bona fide in the best interests of the company and for a proper corporate purpose and not with the effect of constituting a fraud on the minority shareholders. We have adopted a Policy for Approval of Related Party Transactions.

Dissolution; winding up

Under the Delaware General Corporation Law, unless the board of directors approves the proposal to dissolve, dissolution must be approved by shareholders holding 100% of the total voting power of the corporation. Only if the dissolution is initiated by the board of directors may it be approved by a simple majority of the corporation's outstanding shares. Delaware law allows a Delaware corporation to include in its certificate of incorporation a supermajority voting requirement in connection with dissolutions initiated by the board of directors.

Under the Companies Law, our company may be wound up by either a special resolution of our members or, if our company is unable to pay its debts as they fall due, by an ordinary resolution of our members. In addition, a company may be wound up by an order of the courts of the Cayman Islands. The court has authority to order winding up in a number of specified circumstances including where it is, in the opinion of the court, just and equitable to do so.

Variation of rights of shares

Under the Delaware General Corporation Law, a corporation may vary the rights of a class of shares with the approval of a majority of the outstanding shares of such class, unless the certificate of incorporation provides otherwise.

Amendment of governing documents

Under the Delaware General Corporation Law, a corporation's certificate of incorporation may be amended only if adopted and declared advisable by the board of directors and approved by a majority of the outstanding shares entitled to vote, and the bylaws may be amended with the approval of a majority of the outstanding shares entitled to vote and may, if so provided in the certificate of incorporation, also be amended by the board of directors. Under the Companies Law and our Amended and Restated Memorandum and Articles of Association, our articles may only be amended by special resolution of our shareholders.

Rights of non-resident or foreign shareholders

There are no limitations imposed by our Amended and Restated Memorandum and Articles of Association on the rights of non-resident or foreign shareholders to hold or exercise voting rights on our shares. In addition, there are no provisions in our Amended and Restated Memorandum and Articles of Association governing the ownership threshold above which shareholder ownership must be disclosed.

Directors' power to issue shares

Our board of directors is empowered to issue or allot shares or grant options, restricted shares, restricted share units, share appreciation rights, dividend equivalent rights, warrants and analogous equity-based rights with or without preferred, deferred, qualified or other special rights or restrictions. In particular, our board of directors has the authority, without further action by the shareholders, to issue all or any part of our capital and to fix the designations, powers, preferences, privileges, and relative participating, optional or special rights and the qualifications, limitations or restrictions therefrom, including dividend rights, conversion rights, voting rights, terms of redemption and liquidation preferences, any or all of which may be greater than the rights of our ordinary shares. Our board of directors, without shareholder approval, may issue preferred shares with voting, conversion or other rights that could adversely affect the voting power and other rights of holders of our ordinary shares. Subject to the directors' duty of acting in the best interest of our company, preferred shares can be issued quickly with terms calculated to delay or prevent a change in control of us or make removal of management more difficult.

Additionally, the issuance of preferred shares may have the effect of decreasing the market price of the ordinary shares, and may adversely affect the voting and other rights of the holders of ordinary shares.

Shareholder agreement

We are party to a shareholders agreement, by and among us, our subsidiaries, and Vector pursuant to which Vector is entitled to nominate members of our board of directors as follows: so long as affiliates of Vector own, in the aggregate, (i) more than 5% but up to 25% of our outstanding ordinary shares, Vector will be entitled to nominate one director, (ii) more than 25% but up to 50% of our ordinary shares, Vector will be entitled to nominate two directors or (iii) more than 50% of our ordinary shares, Vector will be entitled to a number of directors proportionate to their voting interest.

Registration rights

Pursuant to the shareholders agreement, we have granted certain registration rights to Vector. Set forth below is a description of the registration rights granted under the shareholders agreement.

Demand registration rights

At any time or from time to time after six (6) months following the date of closing of our initial public offering, Vector may request in writing that we effect a registration on Nasdaq; provided that we shall not be obligated to effect such requested registration if (x) it is for a public offering of ordinary shares reasonably anticipated to have an aggregate offering price to the public of less than $10,000,000 or (y) we then meet the eligibility requirements applicable to use the Form S-3 in connection with such registration and are able to effect such requested registration. We shall be obligated to effect no more than two registrations pursuant to the demand registration rights that have been declared and ordered effective.

Form S-3 registration rights

Holders of our registrable securities have the right to request that we file a registration statement on Form S-3 when we are qualified for registration on such form. We shall be obligated to effect no more than two registrations that have been declared and ordered effective within any 12-month period.

Piggyback registration rights

If we propose to file a registration statement for a public offering of our securities, subject to certain exceptions, we shall notify all holders of registrable securities and afford them an opportunity to include in the registration all or any part of their registrable securities that each such holder has requested to be registered.

Expenses of registration

Subject to certain exceptions such as withdrawal of the registration by the securityholders, we will pay all expenses (other than underwriting discounts and commissions) in connection with the demand registration, Form S-3 registration and piggyback registration including, among others, all registration and filing fees, printers' and accounting fees, fees and disbursements of counsel for us, reasonable fees and disbursements of a single special counsel for the holders.

Termination of registration rights

The registration rights discussed above shall terminate on the earlier of (i) the date that is 7 years from the date of our initial public offering and (ii) with respect to any securityholder, the date on which such holder may sell all of its registrable securities under Rule 144 of the Securities Act in any 90-day period.

Limitations on subsequent registration right

From and after the date of the shareholders agreement, we shall not, without the prior written consent of holders of at least two-thirds of outstanding shares on issue, enter into any agreement with any holder or prospective holder of any equity securities of us that would allow such holder or prospective holder (i) to include such equity securities in any registration, unless under the terms of such agreement such holder or prospective holder may include such equity securities in any such registration only to the extent that the inclusion of such equity securities will not reduce the amount of the registrable securities of the holders that are included, (ii) to demand registration of their securities, or (iii) cause us to include such equity securities in any registration discussed above on a basis more favorable to such holder or prospective holder than is provided to the holders thereunder.

Exclusive forum

Our Amended and Restated Memorandum and Articles of Association provides that the courts located within the Cayman Islands will be the sole and exclusive forum for any action or proceeding brought by a shareholder on our behalf, any action asserting a claim for breach of a fiduciary duty owed by any director, officer, employee or agent to us or our shareholders, any action asserting a claim or dispute arising pursuant to any provision of the Companies Law, our Amended and Restated Memorandum and Articles of Association or any action asserting a claim governed by the internal affairs doctrine or otherwise relating to the internal affairs of the Company, including without limitation, our governance and the relationship between our board of directors, officers and shareholders, unless, in the case of any of the foregoing, the Company consents in writing to the selection of an alternative forum for any such particular action or proceeding. If, notwithstanding the foregoing, an action or proceeding that should have been brought in a court located within the Cayman Islands is brought in a court that is not located within the Cayman Islands, the person who brings such action or proceeding will be liable for the costs and expenses incurred by the Company in connection with such action or proceeding. These exclusive forum provisions do not apply to claims under U.S. federal securities laws.

Transfer agent and registrar

The registrar and transfer agent for our ordinary shares is Computershare Trust Company, N.A.

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Cambium Networks Corporation:

We consent to the incorporation by reference in the registration statements on Form S-8 (Nos. 333-232341 and 333-237357) and Form S-3 (No. 333-250005) of Cambium Networks Corporation of our report dated May 3, 2019, except for note 12 and note 13, as to which the date is June 12, 2019, with respect to the consolidated statements of operations, comprehensive loss, shareholders' deficit, and cash flows for the year ended December 31, 2018, and the related notes (collectively, the consolidated financial statements), which report appears in the December 31, 2020 annual report on Form 10-K of Cambium Networks Corporation.

/s/ KPMG LLP

London, United Kingdom
March 1, 2021

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Cambium Networks Corporation:

We consent to the incorporation by reference in the registration statements (Nos. 333-232341 and 333-237357) on Form S-8 and (No. 333-250005) on Form S-3 of Cambium Networks Corporation of our report dated March 1, 2021, with respect to the consolidated balance sheets of Cambium Networks Corporation as of December 31, 2019 and 2020, the related consolidated statements of operations, comprehensive income (loss), shareholders' (deficit) equity, and cash flows for each of the years in the two-year period ended December 31, 2020, and the related notes, which report appears in the December 31, 2020 annual report on Form 10-K of Cambium Networks Corporation.

Our report refers to a change to the lease accounting principle as a result of the adoption of Accounting Standards Codification Topic 842, *Leases*.

/s/ KPMG LLP

Chicago, Illinois
March 1, 2021

Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Atul Bhatnagar, certify that:

1. I have reviewed this Annual Report on Form 10-K of Cambium Networks Corporation;

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: March 1, 2021

By: /s/ ATUL BHATNAGAR
Atul Bhatnagar
Chief Executive Officer

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Stephen Cumming, certify that:

1. I have reviewed this Annual Report on Form 10-K of Cambium Networks Corporation;

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: March 1, 2021

By: /s/ STEPHEN CUMMING
Stephen Cumming
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 Cambium Networks Corporation (the “Company”) on Form 10-K for the year ended December 31, 2020 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

Date: March 1, 2021	By:	/s/ Atul Bhatnagar
		Atul Bhatnagar
		Chief Executive Officer

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 Cambium Networks Corporation (the "Company") on Form 10-K for the year ended December 31, 2020 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

Date: March 1, 2021	By:	/s/ STEPHEN CUMMING
		Stephen Cumming
		Chief Financial Officer