

SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

FORM 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 or 15(d) of the Securities Exchange Act of 1934 for the Year Ended December 31, 2021.

TRANSITION PURSUANT TO SECTION 13 or 15(d) of the Securities Exchange Act of 1934 for the transition period from \_\_\_\_\_ to \_\_\_\_\_.

COMMISSION FILE NO. (0-16577)

CYBEROPTICS CORPORATION

(Exact name of registrant as specified in its charter)

Minnesota

41-1472057

(State or other jurisdiction of incorporation or organization)

(I.R.S. Employer Identification No.)

5900 Golden Hills Drive  
MINNEAPOLIS, MINNESOTA

55416

(Address of principal executive offices)

(Zip Code)

(763) 542-5000

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Securities Exchange Act of 1934:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, no par value	CYBE	NASDAQ Stock Market LLC

Securities registered pursuant to Section 12(g) of the Exchange 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 Section 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 such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

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

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

Large Accelerated Filer

Accelerated filer

Non-accelerated filer

Smaller Reporting Company

Emerging Growth Company

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

Indicate by check mark whether the company has filed an attestation report regarding management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act by the accounting firm that prepared or issued its audit report. Yes  No

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

State the aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold, or the average bid and asked price of such common equity, as of the last business day of the registrant's most recently completed second fiscal quarter: \$288,262,267.

As of February 28, 2022, there were 7,402,683 shares of the registrant's Common Stock, no par value, issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE:

The responses to Part III items 10, 11, 12, 13 and 14 herein are incorporated by reference to certain information in the Company's definitive Proxy Statement for its Annual Meeting of Shareholders to be held May 12, 2022.

**CYBEROPTICS CORPORATION**  
**FORM 10-K**  
**For the Fiscal Year Ended December 31, 2021**

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## PART I.

### ITEM 1. DESCRIPTION OF BUSINESS

#### GENERAL

##### Background

CyberOptics Corporation was founded in 1984 and is a leading global developer and manufacturer of high precision sensing technology solutions and system products for inspection and metrology. Our headquarters are located at 5900 Golden Hills Drive in Golden Valley, Minnesota. Our website address is [www.cyberoptics.com](http://www.cyberoptics.com). You can access, free of charge, our filings with the Securities and Exchange Commission, including our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports, at our website, or at the Commission's website at [www.sec.gov](http://www.sec.gov). Proxy materials for our upcoming 2022 annual shareholders meeting to be held on May 12, 2022 will be available electronically via the internet at the following address: <http://www.idelivercommunications.com/proxy/cybe/>.

We are a leading global developer and manufacturer of high precision 3D sensors and system products for inspection and metrology. We also develop and manufacture our WaferSense® products, a family of wireless, wafer-shaped sensors that provide measurements of critical factors in the semiconductor fabrication process. We intend to leverage our sensor technologies in the surface mount technology (SMT) and semiconductor industries to deliver profitable growth. A key element of our strategy is the continued development and sale of high precision 3D sensors and system products based on our proprietary Multi-Reflection Suppression™ (MRS™) technology. We believe that our MRS technology is a breakthrough 3D optical technology for high-end inspection and metrology with the potential to significantly expand our markets. Another key element in our strategy is the continued development and introduction of new sensor applications for our WaferSense family of products.

Our products are used in the SMT and semiconductor industries to significantly improve our customers' manufacturing yields and productivity, and to assist our customers in meeting their rigorous demands for manufacturing quality. Our products use a variety of proprietary technologies such as lasers, optics and machine vision, combined with software, electronics and mechanical design. Our products help manufacturers solve their most complex manufacturing challenges by providing them with key information relating to their manufacturing processes, which allows them to improve production volumes, yields and product quality.

Manufacturing yield challenges as electronics and semiconductors become more complex are driving the need for more precise inspection and metrology. As a result, we believe 3D inspection and metrology represent high-growth segments in both the SMT and semiconductor capital equipment markets. We expect a growing number of opportunities in the markets for SMT and semiconductor inspection and metrology, because our 3D MRS technology platform is well suited for many of these applications, particularly with respect to complex circuit boards and semiconductor wafer and advanced packaging inspection and metrology applications.

We manufacture 3D and 2D optical sensors for use in our own proprietary inspection system products and for sale to original equipment manufacturers (OEMs), system integrators and end customers in the SMT and semiconductor capital equipment markets. Our inspection system products are sold to manufacturers of SMT electronic circuit boards to control quality as in-line systems, particularly with respect to complex circuit boards used in smart phones and other high-end electronic products. These products are used by manufacturers to measure screen-printed solder paste, to inspect circuit boards and components after component placement, to confirm proper placement after full assembly of circuit boards and to inspect solder joints on printed circuit boards. We also sell our inspection system products to leading semiconductor manufacturers and outsourced semiconductor assembly and test (OSAT) companies. Manufacturers of DRAM and Flash Memory use our inspection system products to inspect assembly of their memory modules. Increasingly, our inspection system products are being used for various semiconductor related inspection and metrology applications, including advanced packaging.

We believe that a strategy of developing and selling complete inspection systems and metrology products to end-users provides us with valuable customer input in the markets we currently serve, and allows us to refine the sensors and sensor subsystems for these markets and adjacent markets. At the same time, sales to OEMs and system integrators allow us to capitalize on our strengths in optical physics, sensor design and software algorithm development. We believe that the resulting sensor products and subsystems are unique and add significant value to our products and the products of our customers.

Our WaferSense family of products assist with yield improvement and tool uptime in semiconductor wafer fabrication and flat panel display manufacturing by providing highly accurate measurements of critical process factors. These measurements are impossible or very difficult to obtain without powering down the equipment used for wafer fabrication and flat panel display manufacturing. Customers who use our products have better yields, throughput and tool up-time. Our products are more accurate when compared to the various manual techniques historically used by semiconductor manufacturers to obtain critical wafer fabrication process measurements. We have continued to invest in our WaferSense product family and anticipate strong future sales growth for these products.

Covid-19 was first identified in December 2019, and in March 2020, the World Health Organization categorized Covid-19 as a pandemic. The Covid-19 pandemic is affecting our customers, suppliers, service providers and employees to varying degrees, and the ultimate impacts of Covid-19, including the potential impact of known and future variants, on our business, results of operations, liquidity and prospects are not fully known at this time. Overall, the Covid-19 outbreak has had a relatively minimal impact on our business to date. Our revenues increased by 32% to \$92.8 million in 2021, from \$70.1 million in 2020. We are forecasting strong revenue growth on a year-over-year basis in the first quarter of 2022. Our forecast for the first quarter of 2022 could change if the Covid-19 pandemic worsens, or if unforeseen events related to the pandemic occur. We currently do not anticipate any significant credit losses or asset impairments resulting from the Covid-19 pandemic. As of December 31, 2021, our available balances of cash and marketable securities totaled \$38.3 million. We believe that we have the resources required to attain our growth objectives and to meet any unforeseen difficulties resulting from the Covid-19 pandemic. We will continue to closely monitor the Covid-19 pandemic and its impact on our business.

Our ability to implement our strategy effectively is subject to numerous uncertainties and risks, including the risks identified in Item 1A of this Annual Report on Form 10-K. There can be no assurance that our strategy will be successful.

## **OPERATIONS AND PRODUCTS**

### **Multi-Reflection Suppression Technology**

We have successfully launched a number of products based on our 3D MRS technology for inspection and metrology in the SMT and semiconductor industries, including our SQ3000™ and SQ3000™+ Multi-Function systems, MX3000™ system for memory module inspection and our 3D NanoResolution MRS™ sensor and WX3000™ system for semiconductor wafer and advanced packaging inspection and metrology. We are continually developing new high precision 3D sensors and system products based on our proprietary MRS technology. We believe 3D inspection and metrology represent a high growth segment for both the SMT and semiconductor capital equipment markets. Our recent and planned product introductions are designed to strengthen our competitive position in our current markets and expand into adjacent markets.

Challenges with shrinking transistor dimensions have driven the need for advances in semiconductor packaging, including 3D stacking of chips. Accordingly, advanced semiconductor packaging is expected to experience significant growth in the next 5 to 10 years. Yield challenges resulting from the increasing sophistication and complexity of semiconductor packaging and other high-end applications, including mini-LED and advanced SMT for high-end electronics, is driving the need for inspection and metrology. We believe our 3D MRS technology platform is well suited for many of these applications, and we are introducing new products based on our MRS technology that we believe will allow us to capitalize on these opportunities and increase our revenues in the future.

We recently launched our next generation SQ3000™+ Multi-Function system for inspection and metrology that is specifically designed for high-end applications including advanced packaging, mini-LED and advanced SMT for high-end electronics. We have significantly advanced our 3D MRS sensor technology as part of a research initiative aimed at applying our 3D MRS sensor technology to semiconductor advanced packaging inspection and metrology. Our next generation ultra-high resolution 3-micron pixel 3D NanoResolution MRS sensor and WX3000 inspection and metrology system perform two to three times faster than alternate technologies at data processing speeds in excess of 75 million 3D data points per second. The 3D NanoResolution MRS sensor and WX3000 system perform 100% 3D and 2D inspection and metrology simultaneously at high speeds, deliver throughput of more than 25 wafers per hours and are capable of accurately measuring feature sizes down to 25 microns, which makes these products suitable for many high volume semiconductor wafer and advanced packaging inspection and metrology applications. We anticipate that sales of sensors and systems based on 3D MRS technology, including for semiconductor wafer and advanced packaging inspection and metrology, will provide us with long-term growth opportunities.

We intend to expand sales of products based on our MRS technology in the SMT and semiconductor markets through current and new distribution channels, OEM partners, system integrators and direct sales to end-user customers.

### **High Precision 3D and 2D Sensors**

We manufacture high precision sensors for inspection and metrology in the SMT and semiconductor markets. We sell our 3D MRS sensors to OEMs and system integrators for use in their proprietary system products, and we integrate our 3D MRS sensors into our own proprietary system products for inspection and metrology. Our SMT electronic assembly alignment sensor products are a family of sensors that are customized and incorporated into the equipment manufactured by our customers for use in SMT circuit board assembly. We work closely with our OEM customers and system integrators to incorporate our high precision 3D and 2D sensors into their product offerings. Sales of high precision 3D and 2D sensors accounted for 28% of our revenues in 2021 and 25% of our revenues in 2020.

### ***3D MRS Sensors***

Our proprietary 3D MRS sensor technology enables metrology grade accuracy by inhibiting optical measurement distortions and reflections. Our sensor architecture simultaneously captures and transmits multiple images in parallel while proprietary 3D fusing algorithms merge the images together. The result is ultra-high quality 3D images and high-speed inspection. Our 3D MRS sensors are used for inspection and metrology in a variety of applications, including SMT (printed circuit boards), semiconductor component package, solder balls and bumps, wafer bumps, copper pillars and other semiconductor wafer and advanced packaging applications. Our 3D MRS sensors can also be used for industrial metrology. Our high precision 3D MRS sensors are based on commercially available cameras, digital light projectors and other hardware components, which are combined with our proprietary MRS technology, 3D fusing algorithms and precision optics. The combination of these elements allow our sensors to capture microscopic quality images at production speeds. Our 3D MRS sensors include nine models featuring varying fields of view (FOV), 3D acquisition time and minimum feature sizes. Our ultra-high resolution three-micron pixel 3D NanoResolution MRS sensor is capable of measuring feature sizes down to 25 microns accurately and at high speeds, and is suitable for many semiconductor wafer and advanced packaging inspection and metrology applications. We are targeting one micron, three-sigma accuracy, at speeds that would inspect more than 25 300-millimeter wafers in an hour. Sales of high precision 3D MRS sensors accounted for 19% of our revenues in 2021 and 17% of our revenues in 2020.

### ***SMT Electronic Assembly Alignment Sensors***

Our LaserAlign® sensors align both large and extremely small surface mount and through-hole components, known as chip capacitors and resistors, during transport on a pick-and-place machine prior to placement. LaserAlign sensors are incorporated into the placement heads of pick-and-place machines to ensure accurate component placement at high production speeds. LaserAlign sensors integrate an intelligent sensor, composed of a laser, optics and detectors with a microprocessor and software for making specific measurements. LaserAlign sensors enable quick and accurate alignment of each component as it is being transported by the pick-and-place arm for surface mount or through-hole assembly. Using non-contact technology, LaserAlign sensors facilitate orientation and placement of components at higher speeds than can be achieved using conventional mechanical or machine vision component centering systems.

Our board alignment cameras are used to identify fiducial markings on a circuit board to ensure accurate board registration in a pick-and-place machine or a solder paste screen printer. Accurate board placement is needed to ensure proper placement of solder paste deposits and components on a printed circuit board. In some instances, our board alignment cameras are used for 2D solder paste and stencil inspection.

Sales of SMT Electronic Assembly Alignment Sensors accounted for 9% of our revenues in 2021 and 8% of our revenues in 2020.

### ***Inspection and Metrology Systems***

Our inspection and metrology system products are primarily used in the SMT and semiconductor industries for process control, inspection and metrology. These systems are sold to end-user manufacturing customers that use them in a production line or alongside a production line to maintain process and quality control. Our products incorporate our proprietary 3D and 2D optical sensors, off the shelf, translation or robotics hardware and conveyors and complete computer systems or processors with internally developed software. Sales of inspection and metrology systems accounted for 46% of our revenues in 2021 and 54% of our revenues in 2020.

### ***Automated Optical Inspection (AOI) Products***

We have been selling AOI products for two decades and have continued to develop and improve our AOI offerings since they were first introduced. These products are typically used to inspect circuit boards after component placement to determine whether all components have been placed correctly, and to measure the quality of solder joints after reflow. These products are also used for mini-LED and semiconductor inspection and metrology, including semiconductor wafer and advanced packaging applications, and for certain industrial metrology applications.

***SQ3000 Multi-Function systems (SQ3000, SQ3000 3D CMM and SQ3000+).*** Our SQ3000 Multi-Function systems for AOI, solder paste inspection (SPI) and coordinate measurement (CMM) applications, are designed to expand our presence in markets requiring high precision inspection and metrology. In these markets, identifying defects has become highly challenging and critical due to smaller semiconductor and electronics packaging and increasing component density on circuit boards. We believe the combination of our proprietary 3D MRS sensor technology, Ai<sup>2</sup> (Autonomous Image Interpretation) software and sophisticated 3D fusing algorithms allows us to offer microscopic image quality at production line speeds. The SQ3000 is an all-in-one solution for AOI and SPI in a single product. The SQ3000 3D CMM goes a step further by adding metrology functionality. Manufacturers in a variety of industries, including the SMT and semiconductor markets, can use the SQ3000 3D CMM as an in-line or off-line metrology tool to help solve complex manufacturing and product quality challenges. The SQ3000+ Multi-Function system delivers CMM data with a higher resolution MRS sensor that inhibits reflection-based distortions caused by shiny components and surfaces and is capable of measuring feature sizes down to 50 microns at in-line production speeds. The SQ3000+ is specifically designed for high-end inspection and metrology applications including advanced packaging, mini-LED and advanced SMT for high-end electronics.

We believe there are a growing number of sales opportunities for our SQ3000 Multi-Function systems in the markets for SMT and semiconductor inspection and metrology. We believe our 3D MRS sensor technology is uniquely suited for many of these applications. Our SQ3000 Multi-Function systems are available in versions that can accommodate dual production lanes and larger circuit board sizes. Sales of SQ3000 Multi-Function systems accounted for 24% of our revenues in 2021 and 27% of our revenues in 2020.

***QX Series 2D AOI systems.*** Our QX AOI systems feature our strobe inspection module (SIM) sensor technology and are designed for 2D inspection of circuit boards. We offer QX systems with varying levels of resolution and inspection speeds. We also offer QX systems that can accommodate dual production lanes, larger circuit board sizes and both top and bottom inspection of a circuit board.

***MX products.*** Our MX systems and 3D MRS sensors are used for inspection of memory modules following the singulation step of the manufacturing process. Our MX600™ system utilizes our SIM sensor technology and Ai<sup>2</sup> software, and is used for 2D inspection of memory modules. Our MX3000™ system utilizes our 3D MRS sensor technology, SQ3000 system software and Ai<sup>2</sup> software, and is used for 3D inspection of memory modules. Two of the world's three largest memory manufacturers and their subcontractors have now purchased the MX3000 system. We believe the potential market opportunity for our MX products is significant. Sales of MX products accounted for 9% of our revenues in 2021 and 10% of revenue in 2020.

### ***SPI Products***

***SE3000™.*** The SE3000 is an in-line solder paste inspection system based on our 3D MRS sensor technology. The SE3000 utilizes our new Dual-mode MRS™ sensor to measure in 3D the amount of solder paste applied to a circuit board after the first step of the SMT circuit board assembly process. Because of the small size of the components that must be placed on each pad of solder paste and the density of components placed on the circuit board, a significant amount of SMT assembly problems are related to the quality of solder paste deposition. Misplaced solder paste or excess or inadequate amounts of paste can lead to improper connections or bridges between leads causing an entire circuit board to malfunction. The new Dual-Mode MRS sensor provides maximum flexibility for dedicated solder paste applications by offering one mode for high speed inspection and another mode for high resolution inspection. The SE3000 inspects the height, area and volume of solder paste placed on an entire circuit board at production line speeds and with resolution that allows the SE3000 to measure the smallest chip scale packages and micro ball array component sites. The SE3000 can be integrated into most SMT production lines, providing real time quality control immediately after a printed circuit board leaves the screen printer and before component placement commences.

***SE600.*** The SE600 is an in-line solder paste inspection system incorporating a dual-illumination sensor that measures in 3D the height, area and volume of solder paste placed on an entire circuit board at production line speeds. The SE600 can be integrated into most SMT production lines.

***SE500ULTRA.*** The SE500ULTRA is an in-line solder paste inspection system incorporating the same proprietary 3D inspection technology as the SE600 but utilizes a single illumination sensor. The SE500ULTRA inspects at faster speeds than the SE600 and is intended for use in high-volume production environments. Because the SE500ULTRA performs inspections at very high speed, it does not provide the same level of resolution and measurement performance as the SE3000 or SE600.

### ***Semiconductor Wafer and Advanced Packaging Products***

Our new WX3000 system is suitable for many high volume semiconductor wafer and advanced packaging inspection and metrology applications for feature sizes down to 25 microns. The WX3000, which incorporates our next generation ultra-high resolution 3D NanoResolution MRS sensor, performs 100% 3D and 2D inspection and metrology simultaneously at high speeds and delivers throughput of more than 25 wafers per hour. We believe the WX3000 performs two to three times faster than alternate technologies at data processing speeds in excess of 75 million 3D data points per second. We recently received our first purchase order for the WX3000 from a large integrated device manufacturer. We believe the potential market opportunity for the WX3000 is significant.

### ***General Industrial Metrology Products and Services***

***CyberGage®360.*** Manufacturers in a variety of industries use CyberGage360 as a near-line or off-line metrology tool to capture surface data to help solve complex manufacturing and product quality challenges. Our sales of CyberGage360 to date have not been significant. There can be no assurance that CyberGage360 will ever achieve widespread market acceptance.

***Other Metrology Products and Services.*** We also sell 3D scanning and metrology equipment manufactured by other suppliers and provide 3D scanning and metrology services for objects of all sizes and complexity for customers that do not have their own 3D scanning and metrology equipment.

## Semiconductor Sensors

Our principal semiconductor products, the WaferSense family of products, are a series of wireless sensors that provide measurements of critical factors in the semiconductor fabrication process. We designed our WaferSense family of sensors to be used where wafers or reticles are located in semiconductor fabrication to provide measurements of critical factors that are currently impossible or extremely difficult to obtain without powering down the fabrication process equipment. Because the user is not required to break down semiconductor fabrication equipment when using our WaferSense products, significant time is saved. In addition, measurement accuracy is increased over the accuracy of the manual techniques currently used by many customers when checking the process parameters measured by our WaferSense products. As a result of WaferSense technology, our customers are able to improve the up-time, throughput and process yield for their semiconductor fabrication equipment. We intend to continue to enhance and expand the WaferSense family of products in the future. Sales of semiconductor sensors accounted for 26% of our revenues in 2021 and 21% of our revenues in 2020.

**Automatic Leveling Sensor™ (ALST™).** The ALS is a wireless, vacuum-compatible sensor that can be placed in cassettes, FOUPS, on-end effectors, aligners, in-load locks and process chambers used in semiconductor fabrication to ensure that all stations are level and coplanar.

**Automatic Gapping Sensor™ (AGST™).** The AGS is a gapping tool that measures the gap in three places between the showerhead and pedestal in semiconductor process equipment. The amount of gap between the showerhead and pedestal can affect uniformity when material is deposited on semiconductor wafers.

**Automatic Teaching Sensor™ (ATST™).** The ATS measures X-Y-Z offset from robotic transfers of wafers to the pedestal in semiconductor process equipment. The amount of gap and offset after robotic transfer of wafers to the shower pedestal can affect film thickness and uniformity when material is deposited or etched on semiconductor wafers, impacting quality and product yields.

**Automatic Vibration Sensor™ (AVST™).** The AVS measures X-Y-Z acceleration for shock and vibration, which can generate wafer particles, scratches or wafer breakage that reduce yield.

**WaferSense Airborne Particle Sensor™.** The WaferSense airborne particle sensors (APST™) allow engineers to efficiently detect and classify particles and their exact sources in a process as wafers are transferred, slit valves are actuated and chambers are cycled, pumped down and purged. APS sensors are designed to be compatible with front-ends, coater/developer tracks, and deposition and etch equipment. ReticleSense® Airborne Particle Sensors allow users to quickly identify geographic particle sources in reticle environments. The ReticleSense Airborne Particle Sensor is compatible with ASML, Nikon and Canon scanners and can travel the entire reticle path to detect in real-time when and where particles might exist. The ReticleSense Airborne Particle Sensor helps our customers exceed manufacturing quality and productivity standards in the Photo lithography scanner environment.

**In-Line Particle Sensor™.** The In-Line Particle Sensor (IPST™) with CyberSpectrum software detects particles in gas and vacuum lines 24/7 in semiconductor process equipment. The IPS quickly identifies, monitors and enables troubleshooting of particles down to 0.1 micron in size. The IPS can be installed in any gas or vacuum system, and is particularly relevant for EUV lithography tools where the ability to monitor particles in-line can significantly improve EUV lithography tool yield and productivity. For example, an IPS can be installed at the vacuum line in between the EUV process chamber and the vacuum pump, saving significant time compared to current methods of sending a monitor dummy reticle into the EUV system to check for particles before and after sending the reticle into the EUV system. The IPS is constantly collecting data, which is especially critical during chamber purging. Process and equipment engineers in semiconductor fabs can increase the speed of equipment qualification. Contamination sources can be identified quickly and the effects of cleaning, adjustments and repairs can be seen in real-time. Through use of the IPS, fabs can shorten equipment maintenance cycles, lower equipment expenses and optimize preventative maintenance plans.

**WaferSense Auto Multi Sensor™.** The WaferSense Auto Multi Sensor is an all-in-one wireless real-time device that allows engineers to quickly take leveling, vibration and humidity measurements. Humidity measurements are becoming more important as the use of Fin Field Effect Transistor technology increases among semiconductor manufacturers. The ReticleSense Auto Multi Sensor allows users to quickly take leveling, vibration and humidity measurements in reticle environments.

**WaferSense 300mm Auto Resistance Sensor™.** The WaferSense 300mm Auto Resistance Sensor (ARST™) with CyberSpectrum software enables real-time resistance measurements of plating cell contacts in semiconductor Electrochemical Deposition (ECD) applications. The ARS quickly identifies and monitors resistance measurements with 50 separate pads around the perimeter utilizing a Kelvin sensing (4-wire resistance) method to detect residue affecting plating pins. Process and equipment engineers in semiconductor fabs can predict when a tool needs maintenance with quantitative analysis of measured mean resistance over time, shorten equipment maintenance cycles, and improve cell-to-cell uniformity with the wafer-like, 4-wire resistance sensor and CyberSpectrum software's objective and repeatable data.

**WaferSense Auto Vibration and Leveling Sensor™.** The WaferSense Auto Vibration and Leveling Sensor (AVLS3™) with a thickness of 3.5mm can travel to most locations and tools within a semiconductor fab where a real semiconductor wafer travels. The Chemically Hardened Glass (CHG) substrate enables smooth wafer handling and improved vacuum chucking. The AVLS3, with CyberSpectrum software, collects and displays both vibration and leveling data simultaneously for fast equipment set-up and alignment and real-time equipment diagnostics to speed equipment qualification and shorten equipment maintenance cycles.

## **Markets and Customers**

We sell the majority of our products into the markets for SMT and semiconductor inspection and metrology. The value of automation is high in these markets because the products produced have high unit costs and are manufactured at speeds too great for effective human involvement. Trends in these markets include further efforts to reduce the cost of the manufacturing process and to increase automation. Moreover, the trend toward smaller electronic devices with higher circuit densities, smaller circuit paths and extremely small components requires manufacturing and testing equipment capable of extremely accurate alignment and multidimensional measurement. Challenges with shrinking transistor dimensions has driven the need for advances in semiconductor packaging applications, including 3D stacking of chips. Yield challenges with these products are driving the need for more accurate inspection and metrology. We expect a growing number of opportunities in the markets for SMT and semiconductor inspection and metrology, because our 3D MRS technology platform is well suited for many of these applications. We sell our semiconductor sensors primarily to manufacturers of equipment used in the front-end of the semiconductor fabrication process and to manufacturers of semiconductor wafers and flat panel displays.

### **High Precision 3D and 2D Sensors**

#### ***3D MRS Sensors***

We sell our 3D MRS sensors to OEM customers for use in semiconductor component package inspection. We have an agreement to supply Nordson-YESTECH with 3D MRS sensors for its 3D AOI inspection equipment serving the SMT market. We sell our 3D MRS sensors, including our next generation ultra-high resolution 3D NanoResolution MRS sensor, to OEMs and system integrators that make capital equipment for semiconductor manufacturers and OSATs. We believe sales of 3D MRS sensors to manufacturers of equipment for semiconductor component package inspection and semiconductor wafer and advanced packaging inspection and metrology represent compelling long-term growth opportunities. We estimate that the total available market for sales of our 3D MRS sensors to manufacturers of equipment for these types of inspection and metrology applications was approximately \$100 million in 2021, and will grow to approximately \$190 million in 2025. We have just started selling our 3D MRS sensors for use in semiconductor wafer and advanced packaging inspection and metrology equipment and our sales to date have not been significant.

#### ***SMT Electronic Assembly Alignment Sensors***

The vast majority of our SMT electronic assembly alignment sensors are sold on an OEM basis to Juki Corporation, Kulicke & Soffa Industries, Inc. and ASM Pacific Technology Ltd. for integration into DEK brand equipment serving the SMT circuit board assembly market.

### **Inspection and Metrology Systems**

We sell our AOI and SPI inspection and metrology systems to many of the leading SMT electronic assembly circuit board manufacturers, end-user customers manufacturing their own circuit boards, semiconductor manufacturers and OSAT companies. Manufacturers of DRAM and Flash Memory use our inspection system and 3D MRS sensor products to inspect assembly of their memory modules. Sales of 3D AOI inspection systems account for roughly 40% of the approximately \$1.2 billion total annual AOI inspection systems market, with 3D AOI representing the fastest growing segment of this market. We estimate that the total market for 3D AOI systems for SMT inspection and metrology will grow from approximately \$475 million in 2021 to approximately \$1.5 billion by 2028. We primarily participate in the high-end of the 3D AOI market, which accounts for roughly 50% of the total market for 3D AOI systems for SMT inspection and metrology. We estimate that the total available market of 3D and 2D semiconductor wafer and advanced packaging inspection and metrology equipment was approximately \$480 million in 2021, and will grow to approximately \$1.0 billion by 2025.

The total available market for general industrial metrology equipment is very large, diverse and growing. Our 3D scanning and metrology services scan, model and inspect objects of all sizes and complexity for customers who do not have their own scanning and metrology equipment.

### **Semiconductor Sensors**

Our semiconductor products, primarily our WaferSense family of products, are used by process and equipment engineers as non-contact precision measurement tools to optimize the process for production of semiconductor wafers and manufacturing of flat panel displays. Most of the world's largest manufacturers of semiconductors and semiconductor equipment purchase our WaferSense products. We believe the available market for our WaferSense products is potentially significant, and will continue to increase in the future as new product applications are added.

## **Export Sales and Significant Customers**

Export sales totaled \$77.4 million or 83% of our total sales in 2021, compared to \$56.0 million or 80% of our total sales in 2020. Export sales represent a large percentage of our total sales because a large portion of electronics assembly and semiconductor production occurs outside the United States. In addition, a significant portion of our export sales include high precision 3D and 2D sensors sold to OEM customers located in Europe and Asia. See Note 13 to our consolidated financial statements contained in Item 8 of this Annual Report on Form 10-K for information regarding the percentage of total sales revenue represented by total export sales (sales of products into countries other than the United States, including sales delivered through distributors) by location during the past two years. Most of our international export sales are negotiated, invoiced and paid in U.S. dollars. We manufacture our inspection system products in Singapore and a portion of our raw material purchases are denominated in Singapore dollars. We also have R&D and sales personnel located in Singapore and sales offices located in other parts of the world. Although currency fluctuations do not significantly affect our revenue, they can impact our costs and influence the price competitiveness of our products and the willingness of existing and potential customers to purchase our products.

In 2021, sales to our largest customer accounted for 17% of our total revenues. In 2020, sales to our largest customer accounted for 14% of our total revenues, and sales to another customer accounted for 13% of our total revenues. No other customers accounted for more than 10% of our total revenues in 2021 or 2020.

## **Sales and Marketing**

We market our products by offering demonstrations and evaluations in our facilities and at customer locations, through appearances at industry trade shows, advertising in industry journals, articles published in industry and technical journals and on the Internet.

## **High Precision 3D and 2D Sensors**

Our high precision 3D and 2D sensors are sold in most countries to OEMs and system integrators by direct sales personnel located in Minnesota and Asia. Some of the global channel partners for our other products also market our high precision 3D MRS sensors to system integrators and semiconductor manufacturers.

## **Inspection and Metrology Systems**

Our AOI, SPI and semiconductor wafer and advanced packaging inspection and metrology system products are sold in most countries. Sales and marketing of our inspection and metrology system products are more heavily concentrated in Asia where a significant portion of the worldwide production capacity for circuit board assembly and semiconductor manufacturing occurs. Our inspection and metrology system products are sold by direct sales personnel located in the United States, the United Kingdom, Singapore, Malaysia, Taiwan and China and through independent sales representatives and distributors. We have sales and service team members based in the United States and Mexico to serve the Americas market. Our sales and service office in the United Kingdom serves the European market. We have sales and service offices in Singapore, Malaysia, Taiwan and China to serve the markets in Asia. We have agreements with 48 independent sales representatives and distributors, which focus on sales and service of our inspection and metrology system products to end-user customers. These agreements cover North and South America (16), Europe (17) and China and Asia-Pacific (15). We sell our general industrial metrology products and services to end-user customers mainly through a direct sales staff located in Minnesota.

## **Semiconductor Sensors**

We sell our semiconductor products, primarily our WaferSense family of products, to semiconductor fabrication facilities through a separate worldwide sales channel of independent sales representatives and distributors. We also sell our WaferSense products directly to large OEM customers, which are mainly semiconductor capital equipment manufacturers. We currently have agreements in place or in process with 14 independent sales representatives and distributors, which focus on sales and service for our WaferSense products. These agreements cover the United States (4), Europe (3) and the Asia-Pacific (7). Our sales to OEM customers and our worldwide network of independent sales representatives and distributors are managed by direct sales personnel located in the United States and Asia.

## Backlog and Seasonality

Product backlog was \$47.3 million at December 31, 2021, \$23.0 million at December 31, 2020 and \$17.7 million at December 31, 2019. Product backlog at September 30, 2021 was \$44.2 million. Our products are typically shipped two weeks to six months after the receipt of an order. However, in some cases we have received orders from OEM customers which cover a period of several years. Sales of some inspection and metrology system products may require customer acceptance due to performance or other acceptance criteria included in the terms of sale. For these product sales, revenue is recognized at the time of customer acceptance. Although our business is generally not of a highly seasonal nature, sales may vary based on the capital procurement practices in the SMT and semiconductor fabrication industries. However, we are not able to quantify with any level of precision the impact of these practices on our sales in any given quarterly period, and any seasonal cyclicality is often masked by more dramatic changes in demand caused by the normal volatility in electronics and semiconductor markets that are associated with changes in the economy. Our scheduled backlog at any time may vary significantly based on the timing of orders from OEM customers or the receipt of large orders for inspection and metrology system products.

## Research and Development

We differentiate our products primarily on the basis of innovative and proprietary technology and on our ability to combine several different technologies to address industry and customer needs. In addition, we actively seek ongoing strategic customer relationships with leading product innovators in existing and new markets. We actively investigate the needs of, and seek input from, these customers to facilitate the adoption of current innovative technologies and to identify opportunities to improve manufacturing processes.

We commit substantial resources to development of important next-generation technologies that, we believe, will position us to be a global technology leader in high precision 3D sensors, enable us to capture additional market share in our key markets of SMT and semiconductor inspection and metrology, and maintain our leadership position in the markets served by our WaferSense products. We maintain our commitment to research and development and product development even during periods when demand for our products is not strong. During the past two years, research and development efforts have been focused on a number of activities that are critical to our future growth and success, including the following:

- We have continued to advance our SQ3000 Multi-Function systems for 3D AOI, SPI and CMM applications, which are designed to expand our presence in markets requiring high precision inspection and metrology. The recently introduced SQ3000+ Multi-Function system delivers CMM data with a higher resolution MRS sensor that inhibits reflection-based distortions caused by shiny components and surfaces and is capable of measuring feature sizes down to 50 microns at in-line production speeds. The SQ3000+ is specifically designed for high-end inspection and metrology applications including advanced packaging, mini-LED and advanced SMT for high-end electronics. We believe there are a growing number of sales opportunities for our SQ3000 Multi-Function systems in the markets for 3D AOI of complex circuit boards and semiconductor inspection and metrology. ;
- Our next generation ultra-high resolution three-micron pixel 3D NanoResolution MRS sensor is capable of measuring feature sizes down to 25 microns accurately and at high speeds. We are targeting one micron, three-sigma accuracy, at speeds that would inspect more than 25 300-millimeter wafers in an hour. The 3D NanoResolution MRS sensor is suitable for many semiconductor wafer and advanced packaging inspection and metrology applications. We have adapted the system software used in our SQ3000 Multi-Function systems to work with wafer handling equipment to facilitate sales of our NanoResolution sensor to OEMs and system integrators.
- Our next generation MX3000 system for 3D inspection of memory modules following the singulation step of the manufacturing process. The MX3000 utilizes our MRS sensor technology, SQ3000 system software and Ai<sup>2</sup> software. Two of the world's three largest memory manufacturers and their subcontractors have now purchased our MX3000 system. We believe the potential market opportunity for our MX3000 system and 3D MRS sensors for memory module inspection is significant.
- Our WX3000 system for semiconductor wafer and advanced packaging inspection and metrology. The WX3000, which utilizes our 3D NanoResolution MRS sensor and SQ3000 system software, performs 100% 3D and 2D inspection and metrology simultaneously at high speeds and delivers throughput of more than 25 wafers per hour. We believe the WX3000 performs two to three times faster than alternate technologies at data processing speeds in excess of 75 million 3D data points per second. The WX3000 is suitable for many high volume semiconductor wafer and advanced packaging inspection and metrology applications for feature sizes down to 25 microns.
- Development of new applications for our WaferSense family of products. We recently launched a WaferSense 300mm Auto Resistance Sensor (ARS) that enables real-time resistance measurements of plating cell contacts in semiconductor ECD applications. Other new WaferSense products under development include next generation Automatic Teaching Sensors (ATS) in both wafer and reticle formats, products for wafer edge detection and products that measure temperature during semiconductor fabrication.

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Research and development expenses were \$10.9 million or 12% of revenue in 2021 and \$9.6 million or 14% of revenue in 2020. Research and development expenses consist primarily of salaries, project materials, contract labor and other costs associated with ongoing product development and enhancement efforts. Research and development resource utilization is centrally managed based on market opportunities and the status of individual projects.

### **Manufacturing**

All of our high precision 3D and 2D sensors and semiconductor sensors are assembled at our Minneapolis, Minnesota headquarters facility. Our inspection and metrology systems, including our SQ3000 Multi-Function system products, are assembled in Singapore. We rely on third party automation suppliers to provide the material handling platforms for our 2D MX600, 3D MX3000 and WX3000 system products. Much of our product manufacturing, which is primarily circuit board manufacturing, lens manufacturing and metal parts production, is performed by outside contractors. Our production personnel inspect incoming parts, perform final assembly, calibrate and perform final quality control testing of finished products. We have elected not to make the capital investments necessary for complete internal manufacturing of our products.

A variety of components used in our products are available only from single sources and involve relatively long order cycles, in some cases more than one year in length. Lead times have become longer and it has become increasingly difficult to obtain adequate supplies of certain key components and labor for product assembly due to disruptions in the global supply chain caused by the Covid-19 pandemic. We believe we have identified alternative assembly contractors for most of our sub-assemblies. However, use of alternative contractors could require substantial rework of the product designs. An actual change in such contractors would likely require a period of training and testing.

The inability to obtain adequate supplies of components or labor, an interruption in a supply relationship or reduced production capacity experienced by one or more of the contractors for our sub-assemblies could result in the inability to meet customer demands and deliver one or more of our products for a period of several months or longer. To help prevent delays in the shipment of our products, we maintain in inventory, or on scheduled delivery from suppliers, components that we believe will be sufficient to meet forecasted demand, often times for a minimum of six months or longer.

### **Competition**

We face competition from a number of companies in the machine vision, image processing and inspection and metrology systems markets, many of which are larger and have greater financial resources than we do. However, we believe our current and planned products offer advantages from competing products in terms of price and suitability for specific applications.

### **High Precision 3D and 2D Sensors**

Our high precision 3D and 2D sensors mainly compete with the sensors and vision systems developed by OEMs using their own design employees for incorporation into their products.

Some of our competitors in the markets for AOI, SPI and semiconductor wafer and advanced packaging inspection and metrology systems rely on 3D sensors manufactured by Keyence Corporation. We believe the advantages offered by our 3D MRS sensor technology and SQ system software allow our customers, including OEMs and system integrators, to compete favorably in these markets.

Our SMT electronic assembly alignment sensor products also compete with vision (camera and software-based) systems and component libraries available from Cognex Corporation and others. Although advances in vision systems have reduced some of the advantages of our SMT electronic assembly alignment sensor products in some configurations, we continue to believe that our sensors compete favorably based on our ability to custom design products with stringent physical form requirements, speed, flexibility, low cost and ease of use.

### **Inspection and Metrology Systems**

The primary competition for sales of our AOI and SPI inspection and metrology system products has been from Korean-based companies, including Koh Young Technology, MirTec Ltd., and PARMi Co. Ltd. We also compete with Taiwanese-based Test Research, Inc. and German-based Viscom AG, among others. In our view, the 3D MRS sensor technology, system software and Ai<sup>2</sup> software used in our SQ3000 Multi-Function systems differentiate our products from competing products and our products compete effectively in the AOI and SPI inspection and metrology systems market based on performance, ease of use and the low rate of false calls. We also believe that our SQ3000 Multi-Function systems, enabled by our proprietary MRS technology, 3D fusing algorithms and precision optics, offer advantages over competing products and will allow us to gain market share based on our ability to offer microscopic quality images at fast production line speeds.

The markets for semiconductor wafer and advanced packaging inspection and metrology systems are fragmented. Our competitors in the markets for semiconductor wafer and advanced packaging inspection and metrology systems include Camtek, Inc., Unity SC, Utechzone Co. Ltd. and Onto Innovation, Inc., among others.

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The multi-billion dollar market for 3D scanning and metrology products is highly fragmented. The primary competition for the various metrology products and solutions we sell include coordinate-measuring machines sold by Hexagon, Zeiss and others, and assorted other 3D measurement products offering varying combinations of speed and accuracy, including x-ray systems. The market for 3D scanning and metrology services is dominated by small regional market participants.

### **Semiconductor Sensors**

We believe our semiconductor sensors, primarily consisting of our WaferSense family of products, are unique to the marketplace and mainly face competition from the manual techniques currently used by most customers to monitor their semiconductor fabrication or flat panel display manufacturing equipment. For some WaferSense applications, there are other products available in the marketplace that are capable of monitoring semiconductor fabrication equipment, but these competing solutions are typically not wireless or fully automated like our WaferSense products. We believe that our WaferSense products provide more reliable and accurate measurements than the manual techniques currently in use or other solutions currently available in the marketplace. In a semiconductor fabrication environment, we believe that our WaferSense products save significant time because the user is not required to break down process equipment, or pressurize a vacuum chamber, which improves tool up-time, throughput and process yield.

### **Employees**

As of December 31, 2021, we had 189 full-time employees worldwide, including 47 in sales, marketing and customer support, 55 in manufacturing, purchasing and production operations, 67 in engineering, research and development, and 20 in finance, administration and information services. Of these employees, 106 are located at our corporate headquarters in Minneapolis, Minnesota and 83 are located in other offices (10 in other states throughout the U.S., 5 in the United Kingdom, 48 in Singapore, 7 in China, 6 in Taiwan, 2 in Mexico, 2 in Malaysia, 2 in Korea and 1 in Japan). Although we have been successful in attracting and retaining qualified technical personnel and direct labor for product assembly, there is an ongoing need for more employees, including those with advanced degrees and training in mathematics, optical physics and other key disciplines. There can be no assurance that we will be able to successfully retain or recruit qualified technical personnel or direct labor for product assembly in the future. None of our employees are covered by collective bargaining agreements or are members of a union.

### **Proprietary Protection**

We rely on the technical expertise and know-how of our personnel and trade secret protection, as well as on patents, to maintain our competitive position. We attempt to protect intellectual property by restricting access to proprietary methods by a combination of technical and internal security measures. In addition, we make use of non-disclosure agreements with customers, consultants, suppliers and employees. Nevertheless, there can be no assurance that any of the above measures will be adequate to protect our proprietary technology, and it is possible that any of our products could be duplicated by other companies in the same markets in which we participate.

We hold 70 patents (31 U.S. and 39 foreign) on a number of technologies, including the technologies used in our SQ3000 Multi-Function inspection and metrology systems for AOI, SPI and CMM applications; other inspection and metrology systems; MRS high-precision 3D sensors; SMT electronic assembly alignment sensors, SIM sensors and semiconductor sensors, primarily consisting of our WaferSense wireless measurement devices; and other products. In addition, we have 44 pending patents (10 U.S. and 34 foreign). We protect the proprietary nature of our software primarily through copyright and license agreements, and also through close integration with our hardware offerings. We utilize 42 registered trademarks (11 U.S. and 31 foreign) and have 15 trademark registrations pending. We also have 12 domain names and several common law trademarks. It is our policy to protect the proprietary nature of our new product developments whenever they are likely to become significant sources of revenue. No guarantee can be given that we will be able to obtain patent or other protection for other products.

As the number of our products increases and the functionality of those products expands, we may become increasingly subject to attempts to duplicate our proprietary technology. As a result, we may be required to bring patent infringement lawsuits against parties that have duplicated our proprietary technology. We periodically receive communications from third parties asserting that our products infringe, or may infringe, the proprietary rights of these third parties or others. These claims of infringement may lead to protracted and costly litigation, which could require us to pay substantial damages or have the sale of our products stopped by an injunction. Infringement lawsuits or claims could also cause product delays, require us to redesign our products, hinder our ability to sell our products, or make the sale of these products more expensive. In addition, although we do not believe that any of our products infringe the rights of others, there can be no assurance that third parties will not assert infringement claims in the future or that any such assertion will not require us to enter into a royalty arrangement or result in litigation.

### **Government Regulation**

Our business is subject to many foreign, federal, state and local legal and regulatory requirements, including among others those related to securities, employment, international trade, anticorruption, health, safety and the environment. Significant costs may arise from these requirements, or from new, modified or more stringent requirements, which could affect our operations and competitive position.

## **Note Regarding Forward-Looking Statements**

This Annual Report on Form 10-K contains, or incorporates by reference, not only historical information, but also forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, or the Exchange Act, and that are subject to the safe harbors created by such sections. Forward-looking statements involve numerous risks and uncertainties. Our actual results may differ from our beliefs, expectations, estimates, and projections and, consequently, you should not rely on these forward-looking statements as predictions of future events. Forward-looking statements are not historical in nature and can be identified by words such as “anticipate,” “estimate,” “will,” “should,” “expect,” “target,” “believe,” “intend,” “seek,” “plan,” “goals,” “future,” “likely,” “may,” and similar expressions or their negative forms, or by references to strategy, plans, or intentions. These forward-looking statements are subject to risks and uncertainties, including, among other things, those described in this Annual Report on Form 10-K under the caption “Risk Factors”. Other risks, uncertainties, and factors that could cause actual results to differ materially from those projected are described below and may be described from time to time in reports we file with the Securities and Exchange Commission, or the SEC, including our Quarterly Reports on Form 10-Q and Current Reports on Form 8-K. Forward-looking statements speak only as of the date they are made, and we undertake no obligation to update or revise any such forward-looking statements, whether as a result of new information, future events, or otherwise.

Important factors, among others, that may affect our actual results include: a possible world-wide recession or depression resulting from the economic consequences of the COVID-19 pandemic; the negative effect on our revenue and operating results of the COVID-19 crisis on our customers and suppliers and the global supply chain; market conditions in the global SMT and semiconductor capital equipment industries; trade relations between the United States and China and other countries; the effects of inflation on our future costs; the timing of orders and shipments of our products, particularly our 3D MRS SQ3000 and SQ3000+ Multi-Function systems and MX systems for memory module inspection; increasing price competition and price pressure on our product sales, particularly our inspection and metrology systems; the level of orders from our OEM customers; the availability of parts required to meet customer orders; unanticipated product development challenges; the effect of world events on our sales, the majority of which are from foreign customers; rapid changes in technology in the electronics and semiconductor markets; product introductions and pricing by our competitors; the success of our 3D technology initiatives; the market acceptance of our SQ3000 and SQ3000+ Multi-Function systems and products for semiconductor advanced packaging inspection and metrology; costly and time consuming litigation with third parties related to intellectual property infringement; the negative impact on our customers and suppliers due to past and future terrorist threats and attacks and any acts of war; the impact of lower gross margin MX3000 orders on our consolidated gross margin percentage in any future period; and risks related to cancellation or renegotiation of orders we have received. Our ability to implement our strategy effectively is subject to numerous uncertainties and risks, including the risks identified in Item 1A of this Annual Report on Form 10-K. There can be no assurance that our strategy will be successful.

## ITEM 1A. RISK FACTORS

Our operations are subject to a number of risks and uncertainties that may affect our financial results, and the accuracy of the forward looking statements we make in this Annual Report on Form 10-K. We make statements regarding anticipated product introductions and performance, changes in markets, customers and customer order rates, expenditures in research and development, growth in revenue, improvements to and changes in gross profit margins and profits, taxation levels, the effects of product pricing, and competition, all of which represent our expectations and beliefs about future events. Our actual results may vary from these expectations because of a number of factors that affect our business. The most important of these factors include the following:

### Risks Related to the Global Economy and Public Health Crises

- **The Covid-19 pandemic has significantly and negatively impacted worldwide economic conditions that could have a material adverse effect on our operations and business in the future.** The Covid-19 pandemic is affecting our customers, suppliers, service providers and employees to varying degrees, and the ultimate impacts of Covid-19, including the potential impact of known and future variants, on our business, results of operations, liquidity and prospects are not fully known at this time. Covid-19 is likely to continue to affect our business, especially if government authorities re-impose mandatory closures, shelter-in-place mandates and social distancing protocols, and seek voluntary facility closures or impose other restrictions. Recently, some domestic and foreign governments have taken actions to re-open their economies. However, as a result of increased cases of Covid-19 infections and deaths, certain domestic and foreign governments have taken steps to reverse some of these re-opening initiatives. Actions to impede spread of Covid-19 could materially adversely affect our ability to adequately staff and maintain our operations and negatively impact long-term research and development projects. Global travel restrictions could hinder our ability to obtain timely customer acceptance for some product sales, thereby negatively impacting our revenue and operating results. Our global supply chain has been and will most likely continue to be disrupted, which could negatively affect our sales, ability to provide products to our customers and ability to service our customers. In addition, the economic disruptions caused by the Covid-19 outbreak could prevent customers from paying us for our products and result in significant credit losses. A prolonged global recession or depression resulting from the Covid-19 pandemic most likely would have a significant negative impact on our revenue and operating results, and could lead to asset impairment charges. As we cannot predict the duration or scope of the Covid-19 pandemic, the anticipated negative financial impact to our operating results cannot be reasonably estimated, but could be material and last for an extended period of time.
- **The Covid-19 pandemic has caused disruptions in the global supply chain, including shortages of raw materials, parts and labor, and shipping and logistics issues, including delays in ocean freight and port congestion. A continuation of these disruptions for an extended period could have a material adverse effect on our operations and business in the future.** It has become increasingly difficult to obtain adequate supplies of certain key components and labor for product assembly. Port congestion and tight bookings for global sea freight have caused delays in product deliveries. These issues have increased the prices we pay for labor and freight, and in some cases the key components for our products. Increases in the cost of components, labor and freight negatively impact our profitability. Delays in product deliveries, the inability to obtain adequate supplies of components or labor, an interruption in a supply relationship or reduced production capacity, could result in the inability to meet customer demands and deliver one or more of our products for a period of several months or longer, negatively impacting our revenue and profitability.
- **Our business has been and will continue to be significantly impacted by the global economy and uncertainty in the outlook for the global economy makes it more likely that our actual results will differ materially from expectations.** Economic uncertainties affect businesses such as ours in a number of ways, making it difficult to accurately forecast and plan our future business activities, and negatively impacting our operating results. Economic instability or uncertainty could cause tightening of credit in financial markets, may lead consumers and businesses to postpone spending, and may cause our customers to cancel, decrease or delay their existing and future orders with us. In addition, financial difficulties experienced by our suppliers, distributors or customers could result in product delays, increased accounts receivable defaults and inventory challenges. The OEMs, system integrators and equipment manufacturers that purchase our sensors, and the semiconductor and SMT manufacturers that purchase our WaferSense® and inspection and metrology system products, are largely dependent on continued demand for consumer and commercial electronics, including smartphones, tablets and computers. Demand for electronics is a function of the health of the economies in the United States and around the world. Sales of our general purpose metrology products and services are also dependent upon the health of the global economy and the competitiveness of the end products manufactured by the customers we serve. Our results would be adversely affected in the future if these economies were to experience recessions, or if the products manufactured by our end customers are not successful in the marketplace.

- **We must attract, retain and integrate employees of all types and abilities in order to be successful, ranging from direct labor for product assembly to key research and development employees. The labor market has become increasingly competitive, causing us to increase our costs which negatively impacts our profitability. The inability to attract and retain the employees we need could have a material adverse effect on our ability to grow our business in the future.** Identifying, hiring, developing, training and retaining employees is critical to our future success, and competition for all types of employees is becoming more intense. It has become increasingly difficult to find, hire and retain the employees we need to operate and grow our business, causing us to increase pay levels for current and prospective employees, which has a negative impact on our costs and profitability. Failure to successfully hire key research and development employees or the loss of key research and development employees could have a significant negative impact on our ability to create innovative new products, effectively compete in the markets we serve, and on our ability to profitably grow our business. The inability to find the direct labor we need for product assembly could impact our ability to deliver products in a timely manner, negatively impacting our revenue and profitability.
- **World events beyond our control, including the current crisis in Ukraine, may affect our operations.** Our operations and markets could be negatively affected by world events that effect economies and commerce in specific countries, such as China, Singapore, Taiwan and Japan, in which we do business, or indirectly by events in other countries, such as Ukraine, in which we do not do business. Natural disasters have affected travel patterns and accessibility in these countries in the past and other natural occurrences could affect the business we do in these countries in the future. Terrorist activity or other armed conflicts, labor disputes that impact complex international shipping arrangements, increases in energy prices or other unanticipated actions could negatively impact our business. Many of the countries in which we do business can be affected by economic forces that are different from the forces that affect the United States and change the amount of business we conduct.
- **Global trade conflicts may negatively impact our sales and results of operations.** Ongoing trade conflicts with other countries, particularly China, may impact our sales and results of operations. Concerns over the impact of the U.S. and China trade war on the global economy may cause our customers to refrain from making investments in capital equipment, which would negatively impact our sales. We or our suppliers source certain raw materials and components from China. If the United States were to increase existing tariff levels or impose new tariffs, our supply chain and costs would be negatively impacted, resulting in an increase in our cost structure and negatively impacting our operating profits.
- **We generate over 80% of our revenue from export sales that are subject to risks of international operations.** Our export sales are subject to many of the risks of international operations, including:
  - currency controls and fluctuations in currency exchange rates;
  - changes in local market business requirements and increased cost and development time required to modify and translate our products for local markets;
  - inability to recruit qualified personnel in a specific country or region;
  - difficulty in establishing and maintaining relationships with local vendors;
  - differing foreign technical standards;
  - differing regulatory requirements;
  - export restrictions and controls, tariffs and other trade barriers;
  - reduced protection for intellectual property rights;
  - changes in political and economic conditions;
  - potentially adverse tax assessments; and
  - terrorism, pandemics, war or other events that may affect local economies and our access to markets outside the U.S.

- **Exchange rate fluctuations may have a significant negative impact on our revenue and results of operations.** Most of our international export sales are negotiated, invoiced and paid in U.S. dollars. Significant fluctuations in the value of the U.S. dollar relative to other currencies could have a negative impact on the price competitiveness of our products relative to foreign competitors and the willingness of customers to purchase our products. A significant portion of our cost of revenues, research and development and sales and marketing costs are denominated in the Singapore dollar. In addition, other sales and marketing costs are denominated in British Pounds Sterling, the new Taiwan dollar and the Chinese Yuan. Our costs will increase and our results will be negatively impacted in future periods, if the U.S. dollar weakens relative to the currencies of these countries. Fluctuations in the relationship between the U.S. dollar and the currencies of other geographies could have a significant negative impact on our future revenue, costs and results of operations.

#### **Risks Related to Our Products and Customer Preferences**

- **The markets for capital equipment in the SMT and semiconductor industries in which we operate are cyclical, and market downturns have occurred, such as the industry-wide slowdown in demand for SMT and semiconductor capital equipment that we experienced in 2019.** We operate in cyclical markets – the SMT and semiconductor capital equipment markets – that periodically adjust independent of global economic conditions. For example, sluggish conditions in the markets for SMT and semiconductor capital equipment emerged late in the fourth quarter of 2018 and continued through the third quarter of 2019. In the past, we have not been able to predict with accuracy the timing or magnitude of periodic downturns in these markets. Some of these downturns have severely affected our operations and resulted in several years of unprofitable operations. Ultimately, we have difficulty determining the duration or severity of any market downturns, the strength of any subsequent recoveries, and the long-term impact that economic conditions may have on our business.
- **We have recently introduced or are in the process of introducing a number of products based upon our 3D MRS™ technology, the failure of new products employing this technology to achieve acceptance in the marketplace would materially adversely affect our future anticipated operating results.** We have incorporated our MRS technology into various products, including our next generation ultra-high resolution 3-micron pixel 3D NanoResolution MRS™ sensor, other 3D MRS sensor offerings, WX3000™ system, MX3000™ system and SQ3000™ and SQ3000+™ Multi-Function systems. We also expect to use this technology in other new products, including next generation sensors and systems for semiconductor component package inspection, semiconductor wafer and advanced packaging inspection and metrology. If the products we have introduced or are about to introduce based upon the MRS technology do not operate up to specifications, if the market otherwise does not find these products attractive, or if we are unable to efficiently identify new customers and new applications for these products given our current sales channels, our operating results for 2022 and longer-term growth in revenue and operating results would be materially adversely affected.
- **Sales of sensors to five OEM customers constituted over 25% of our revenues in 2021, and the loss of any of these customers could have a materially adverse impact on our results of operations.** If the order rates from these five OEM customers are negatively impacted by global economic events or competitive factors, if they choose sensors manufactured by other suppliers, or otherwise terminate their relationships with us, our results of operations could be adversely affected.
- **Our products could become obsolete.** Our current products, as well as the products we have under development, are designed to operate with the technology that we believe currently exists or may exist for electronic components, printed circuit boards, memory modules and semiconductor manufacturing markets, including semiconductor component packaging, semiconductor wafer and advanced packaging inspection and metrology. The products we develop to meet customer needs and requirements are subject to rapid technological change and, because it takes considerable time to develop new products, we must anticipate industry trends, as well as technological developments, in order to effectively compete. Further, because we do not have unlimited development resources, we might choose to forgo the pursuit of what becomes a leading technology or market and devote our resources to technologies and markets that are less successful. If we incorrectly anticipate technology developments or market trends, or have inadequate resources to develop our products to deal with changes in technology and markets, our products could become obsolete, and our future revenue and operating results would be negatively impacted.
- **The market for most SMT capital equipment has become more mature and price competitive.** The electronics capital equipment market for surface mount technologies is becoming more mature, resulting in increased price pressure on suppliers of this type of equipment. Consequently, our AOI and SPI inspection and metrology systems and SMT electronic assembly alignment sensor products have become subject to increased levels of price competition and competition from other suppliers, which may or may not utilize different technology, including lower cost Asian based suppliers.
- **The market for 3D AOI equipment for printed circuit board inspection has become more price competitive, which has negatively impacted our margins.** Pricing for 3D AOI equipment for inspection of printed circuit boards with less demanding features and complexity has become more competitive, resulting in increased price pressure. In some instances, our SQ3000 Multi-Function systems compete in the marketplace for inspection of printed circuit boards in which the inspection requirements are less complex and stringent. In this segment of the market, we have experienced competitive pressures that have reduced the sales prices, which in turn has negatively impacted our revenue and gross margins. If this level of competition were to increase in the future, our revenue and gross margins would be negatively impacted.

- **Because of the high cost of changing equipment, customers in our markets are sometimes resistant to purchasing our products even if they are superior.** We believe that, because of the high cost of installation and integration of new inspection equipment into production lines, once an SMT customer has selected a vendor's equipment, the customer generally relies upon that equipment and, to the extent possible, subsequent generations of the same vendor's equipment. Accordingly, unless our systems offer performance or cost advantages that outweigh the expense of installing and integrating new systems, it may be difficult for us to achieve significant sales to a customer that currently uses a competitor's equipment.
- **An increase in competition in the marketplace for our WaferSense products could negatively impact our future revenue and profitability.** Our WaferSense products generate a high gross margin and are very profitable. As our WaferSense products become more established in the marketplace, we may attract competitors, some of which may be larger than us with better sales channels and more resources for product development. An increase in competition for our WaferSense products could cause us to lose future sales, reduce sales prices, or increase our costs for enhanced sales channels or product development in order to compete, thereby negatively impacting our revenue and profitability.

## Risks Related to Our Business

- **Our operating results have varied, and will likely continue to vary significantly, from quarter to quarter.** Our quarterly operating results have varied in the past and will likely continue to vary significantly from quarter to quarter. Some of the factors that may influence our operating results include the following: changes in customer demand for our sensors, inspection and metrology systems, which is influenced by economic conditions in our markets and the overall health of the global economy; demand for products that use circuit boards and semiconductors; market acceptance of our products and those that have integrated our 3D MRS sensors into their product offerings, including OEM's and system integrators; competition; seasonal variations in customer demand; the timing, cancellation or delay of customer orders, particularly our SQ3000 and SQ3000+ Multi-Function systems and MX systems for memory module inspection; the timing of product shipments and related customer acceptances; and product development and other costs, including increased research, development, engineering and marketing expenses associated with our introduction of new products and product enhancements, and ongoing sales and marketing activities.
- **Our development and assembly operations in Singapore, and our sales operations in Asia and Europe, are subject to unique risks because of the remote nature of the operations.** Our Singapore development and manufacturing operations, and our Asian and European sales operations, present a number of risks. These risks relate to the retention of personnel, management of product development and operations, management and access to customer and distributor interactions, control over administrative and business processes, regulatory and legal issues and other matters relating to foreign operations. Our financial performance, ability to serve our customers and ability to manufacture and sell products in Asia and Europe could be negatively impacted if we are unable to retain our Asian and European based employees, if it costs more than expected to retain these employees or hire other experienced employees in a timely manner, if we are unable to manage these employees appropriately, or if we are unable to locate suitable sources of components for our products manufactured in Asia.
- **Our ability to compete in the markets for our products is dependent upon our ability to recruit new capable channel partners and direct sales employees and the sales skills of our channel partners and employees.** In order to generate significant incremental revenue in the future, we need to expand and enhance our sales capabilities by recruiting new, high quality channel partners and sales employees. Our efforts to increase the size and capability of our direct sales team and channel partners will increase our cost structure. If we are unable to successfully improve our direct sales team and sales channel, our future sales will be negatively impacted, and we will not obtain an adequate return on the increase in our cost structure, including obtaining an adequate return on our investment in research and development. To the extent our competitors have relationships with stronger channel partners, it may be difficult for us to achieve significant incremental revenue, even if our products are technologically superior.
- **Competitors in Asia may be able to compete favorably with us based on lower production and employee costs, greater financial resources and larger sales distribution networks.** We compete with large multinational companies when selling our inspection and metrology system products. These competitors are able to take advantage of greater financial resources and larger sales distribution networks. We also compete with new Asian based suppliers, many of which may have lower overall production and employee costs and are willing to offer their products at lower selling prices to customers.
- **We are exposed to credit risk through sales to our OEM customers and distributors of our inspection and metrology system products.** We sell our products through key OEM customers, and usually have significant credit exposure with respect to these customers. In addition, we sell our inspection and metrology system products through a network of international distributors. These distributors tend to be small and have limited financial resources and access to capital. Although these distributors do not hold our products in inventory for re-sale, we are exposed to credit risk and would incur losses if they are unable to pay for the products they have purchased from us.

- **We are dependent upon outside suppliers and contractors for components of our products, and delays in or unavailability of those components would adversely affect our results.** We use outside contractors to manufacture the components used in many of our products and some of the components we order require significant lead times that could affect our ability to sell our products if the components are not available. In addition, if these components do not meet stringent quality requirements or become obsolete, there could be delays in the availability of our products, and we could be required to make significant investments in designing replacement components.
- **Breaches of our network security could expose us to losses.** We manage and store on our network systems various proprietary information and sensitive or confidential data relating to our operations and products. There has been an increasing incidence of unauthorized access to the computer networks of various technology companies. Computer programmers and hackers may be able to gain unauthorized access to our network system and steal proprietary information, compromise confidential information, create system disruptions, or cause shutdowns. These parties may also be able to develop and deploy viruses, worms, and other malicious software programs that disrupt our operations and create security vulnerabilities. Attacks on our network systems could result in significant losses, compromise our competitive advantages and damage our reputation with customers.
- **We are dependent on several key employees, including Dr. Subodh Kulkarni, our President and Chief Executive Officer, for new product innovation and much of the sales, marketing and business development activity related to our products (especially our MRS sensors).** These key employees perform a critical role for us with respect to product strategy and new product development. Also, they have been instrumental in development and expansion of our relationships with key OEM customers, system integrators and others. If the employment of Dr. Kulkarni and other key employees with CyberOptics were to end for any reason, our ability to develop innovative products and achieve sustained long-term revenue growth may be negatively impacted.

#### **Risks Related to Legal and Regulatory Proceedings**

- **Our efforts to protect our intellectual property may be less effective in certain foreign countries, where intellectual property rights are not as well protected as in the United States.** The laws of some foreign countries do not protect our proprietary rights to as great an extent as do the laws of the U.S., and many U.S. companies have encountered substantial problems in protecting their proprietary rights against infringement abroad. Consequently, there is a risk that we may be unable to adequately protect our proprietary rights in certain foreign countries. If this occurs, it would be easier for our competitors to develop and sell competing products in these countries.
- **We may fail to adequately protect our intellectual property and therefore lose our competitive advantage.** Our future success and competitive position depend in part upon our ability to obtain and maintain proprietary technology for our principal product families, and we rely, in part, on patent and trade secret law and confidentiality agreements to protect that technology. If we fail to adequately protect our intellectual property, our competitors may be able to duplicate and enhance the products we have developed. We own or have licensed a number of patents, and have filed applications for additional patents. Any of our pending patent applications may be rejected, and we may be unable to develop additional proprietary technology that is patentable in the future. In addition, the patents that we do own or that have been issued or licensed to us may not provide us with competitive advantages and may be challenged by third parties. Further, third parties may also design around these patents. In addition to patent protection, we rely upon trade secret protection for our confidential and proprietary information and technology. We routinely enter into confidentiality agreements with our employees and other third parties. Even though these agreements are in place, there can be no assurance that trade secrets and proprietary information will not be disclosed, that others will not independently develop technology substantially equivalent to our proprietary technology or otherwise gain access to our trade secrets, or that we can fully protect our trade secrets and proprietary information. Violations by others of our confidentiality agreements and the loss of employees who have specialized knowledge and expertise could harm our competitive position and cause our sales and operating results to decline as a result of increased competition. Our failure to obtain or maintain trade secret protection might adversely affect our ability to continue our research or bring products to market.

- **Protection of our intellectual property rights, or the efforts of third parties to enforce their own intellectual property rights against us, may result in costly and time-consuming litigation, substantial damages, lost product sales and/or the loss of important intellectual property rights.** We may be required to initiate litigation in order to enforce any patents issued to or licensed by us, or to determine the scope or validity of a third party's patent or other proprietary rights. Any litigation, regardless of outcome, could be expensive and time consuming, and could subject us to significant liabilities or require us to re-engineer our products or obtain expensive licenses from third parties. There can be no assurance that any patents issued to or licensed by us will not be challenged, invalidated or circumvented or that the rights granted thereunder will provide us with a competitive advantage. In addition, our commercial success depends in part on our ability to avoid infringing or misappropriating patents or other proprietary rights owned by third parties. We periodically receive communications from third parties asserting that our products infringe, or may infringe, the proprietary rights of these third parties or others. These claims of infringement may lead to protracted and costly litigation, which could require us to pay substantial damages or have the sale of our products stopped by an injunction. Infringement lawsuits or claims could also cause product delays or require us to redesign our products and these delays could result in the loss of substantial revenues. We may also be required to obtain a license from the third party or cease activities utilizing the third party's proprietary rights. We may not be able to enter into such a license or such a license may not be available on commercially reasonable terms. Accordingly, the patent infringement litigation or claims could hinder our ability to sell our products, or make the sale of these products more expensive.

#### **Risks Related to Financial and Capital Markets and Tax Matters**

- **We have significant deferred tax assets recorded on our balance sheet, and our ability to utilize these deferred tax assets is dependent on our ability to generate sufficient profits in future periods.** A change in income tax laws or a further reduction in income tax rates in the future could require us to write-down the value of our deferred tax assets. The amount of any write-down could be large and may result in a significant charge against future earnings. Our ability to utilize our deferred tax assets and realize their value is dependent upon our ability to generate sufficient levels of profitability and taxable income in future periods. If we do not generate sufficient profits and taxable income in future periods, we most likely would be required to record a valuation allowance against our deferred tax assets, resulting in a significant charge against earnings.
- **Our stock price is highly volatile.** The trading price of our common stock fluctuates significantly in response to, among other risks, the risks described elsewhere in this Annual Report on Form 10-K, as well as:
  - conditions or trends in the industries in which we operate;
  - quarterly variations in our operating results;
  - fluctuations in the stock market in general and market prices for the stock of companies that provide sensing technology solutions and inspection and metrology systems in particular;
  - changes in financial estimates by us or securities analysts and recommendations by securities analysts;
  - changes in capital structure, including issuance of additional debt or equity to the public; and
  - transactions in our common stock by major investors and certain analyst reports, news and speculation.
- **The absence of significant market liquidity in our common stock could impact the ability of our shareholders to purchase and sell larger blocks, the attractiveness of our stock to institutional shareholders, and the market value of our common stock.** There were 7,391,906 shares of our common stock outstanding as of December 31, 2021. Although our common stock is traded on the NASDAQ Stock Market, in part because of the number of shares we have outstanding and available for trading, the daily trading volume in our stock is low, averaging less than 100,000 shares per day. Shareholders wishing to purchase or sell larger blocks of stock may not be able to do so quickly, and disposal by any shareholder of a significant block of stock could adversely affect the sale price in the marketplace. Further, institutional investors often have policies against investment in stock that is illiquid, and many institutional investors may elect not to purchase or hold our stock because of the inability to dispose of it. Lack of institutional interest in our common stock can negatively impact its market price and liquidity.

## **ITEM 1B. UNRESOLVED STAFF COMMENTS**

Not applicable.

## **ITEM 2. PROPERTIES**

We lease a 61,208 square foot mixed office and warehouse facility built to our specifications in Golden Valley, Minnesota, which functions as our corporate headquarters and primary manufacturing facility for our sensor products, including those used in our inspection and metrology system products. Our lease for the Golden Valley facility expires July 31, 2026, contains a rent escalation clause and one renewal option of five years.

We lease a 19,805 square foot mixed office and warehouse facility in Singapore that serves as a sales, development and final assembly and integration facility for our inspection and metrology system products. Our lease for the Singapore facility expires on July 24, 2023.

As of December 31, 2021, we also have operating leases for small facilities in Malaysia, Taiwan, the United Kingdom and China, which expire in December 2023, June 2023, May 2023 and November 2022, respectively.

## **ITEM 3. LEGAL PROCEEDINGS**

We are not currently subject to any material pending or threatened legal proceedings.

## **ITEM 4. MINE SAFETY DISCLOSURES**

Not applicable.

## **PART II.**

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

Our common stock is traded on the Nasdaq Global Market under the trading symbol "CYBE".

As of February 28, 2022, there were approximately 200 holders of record of our common stock and approximately 5,500 beneficial holders. We have never paid a dividend on our common stock. Dividends are payable at the discretion of the Board of Directors out of funds legally available. Our Board has no current intention of paying dividends.

We withhold common shares to cover employee tax withholding obligations from the exercise of stock options and the vesting of restricted stock units. In the three months ended December 31, 2021, we withheld 1,340 shares to satisfy employee tax withholding requirements of \$59,000. In the year ended December 31, 2021, we withheld 18,403 shares to satisfy employee tax withholding requirements of \$787,000.

### **ITEM 6. RESERVED**

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

### Overview

We are a leading global developer and manufacturer of high precision 3D sensors and system products for inspection and metrology. We also develop and manufacture our WaferSense® products, which is a family of wireless, wafer-shaped sensors that provide measurements of critical factors in the semiconductor fabrication process. We intend to leverage our sensor technologies in the surface mount technology (SMT) and semiconductor industries to deliver profitable growth. A key element of our strategy is the continued development and sale of high precision 3D sensors and system products based on our proprietary Multi-Reflection Suppression™ (MRS™) technology. We believe that our MRS technology is a breakthrough 3D optical technology for high-end inspection and metrology with the potential to significantly expand our markets. Another key element in our strategy is the continued development and introduction of new sensor applications for our WaferSense family of products.

We believe that conditions in the SMT and semiconductor capital equipment markets are favorable, and we believe this market strength will continue in 2022. Over the longer-term (i.e., the next several years), we expect a growing number of opportunities in the markets for SMT and semiconductor inspection and metrology. We believe that our 3D MRS sensor and system products and our WaferSense family of products have the potential to expand our presence in the markets for SMT and semiconductor capital equipment.

Manufacturing yield challenges as electronics and semiconductors become more complex are driving the need for more precise inspection and metrology. We believe 3D inspection and metrology represent high-growth segments in both the SMT and semiconductor capital equipment markets. We believe our 3D MRS technology platform is well suited for many applications in these markets, particularly with respect to complex circuit boards, semiconductor component package inspection and semiconductor wafer and advanced packaging inspection and metrology applications. We are taking advantage of current market trends by deploying our 3D MRS sensor technology in the following products:

- Our SQ3000™ and SQ3000™+ Multi-Function systems for Automated Optical Inspection (AOI), Solder Paste Inspection (SPI) and coordinate measurement (CMM) applications, which are designed to expand our presence in markets requiring high precision inspection and metrology. In these markets, identifying defects has become highly challenging and critical due to smaller semiconductor and electronics packaging and increasing component density on circuit boards. The SQ3000+ Multi-Function system with its higher resolution MRS sensor that inhibits reflection-based distortions caused by shiny components and surfaces is capable of measuring feature sizes down to 50 microns and is specifically designed for high-end inspection and metrology applications including advanced packaging, mini-LED and advanced SMT for high-end electronics. We believe our 3D MRS sensor technology is uniquely suited for many of these applications because of its ability to offer microscopic image quality and superior measurement performance at production line speeds.
- Our next generation ultra-high resolution three micron pixel 3D NanoResolution MRS™ sensor, which is capable of measuring feature sizes down to 25 microns accurately and at high speeds, and is suitable for many semiconductor wafer and advanced packaging inspection and metrology applications. We have adapted the software used in our SQ3000 Multi-Function systems to work with wafer handling equipment to facilitate sales of our 3DNanoResolution MRS sensor to OEM's and system integrators.
- Our next generation MX3000™ AOI system for 3D inspection of memory modules following the singulation step of the manufacturing process. We recognized our first revenue from the sale of the MX3000 in the first quarter of 2020, and two of the world's three largest memory manufacturers and their subcontractors have now purchased our MX3000 system. Additional orders for memory module inspection are expected in future periods, and we believe the potential market opportunity for our MX3000 system and 3D MRS sensors for memory module inspection is significant.
- Our WX3000™ metrology and inspection system for semiconductor wafer and advanced packaging applications, which incorporates our next generation ultra-high resolution 3D NanoResolution MRS sensor, performs 100% 3D and 2D inspection and metrology simultaneously at high speeds and delivers throughput of more than 25 wafers per hour. We believe the WX3000 performs two to three times faster than alternate technologies at data processing speeds in excess of 75 million 3D data points per second. The WX3000 is suitable for many high volume semiconductor wafer and advanced packaging inspection and metrology applications for feature sizes down to 25 microns. We recently received our first purchase order for the WX3000, with delivery of the system and recognition of the revenue expected in the first half of 2022. We anticipate that sales of sensors and systems based on our 3D MRS technology for semiconductor wafer and advanced packaging inspection and metrology will provide us with long-term growth opportunities.

Revenue from MRS based products, including 3D AOI systems and high precision 3D MRS sensors, increased by \$16.4 million or 52% to \$48.2 million in 2021, from \$31.8 million in 2020. Over the long term, we anticipate continued increases in sales of products based on our MRS technology in the SMT and semiconductor capital equipment markets. In particular, we believe inspection and metrology for mini and micro-LED, memory modules and semiconductor wafer and advanced packaging applications represent significant long-term growth opportunities. We anticipate increasing sales of MRS-based products by selling them to new OEM customers and system integrators, and by expanding direct sales of inspection and metrology system products to end-user customers.

We have continued to invest in our WaferSense family of products, because fabricators of semiconductors and other customers view these products as valuable tools for improving yields and productivity. We have recently introduced several new WaferSense products to further increase our revenue growth, including the WaferSense 300mm Auto Resistance Sensor (ARS) that enables real-time resistance measurements of plating cell contacts in semiconductor ECD applications. Additional WaferSense applications are under development, including Automatic Teaching Sensors (ATS) in both wafer and reticle formats, products for wafer edge detection and products that measure temperature during semiconductor fabrication. Over the long-term, strong future sales growth is anticipated for our WaferSense family of products.

Our backlog was \$47.3 million at December 31, 2021, an increase from \$44.2 million at September 30, 2021, and \$23.0 million at December 31, 2020. We are forecasting sales of \$22.0 to \$24.0 million for the first quarter of 2022, a significant increase from revenue of \$17.7 million in the first quarter of 2021. We believe that conditions in the SMT and semiconductor capital equipment markets are favorable, and we believe this market strength will continue in 2022. However, an increase in the severity of the current Covid-19 pandemic, an escalation in the Ukraine conflict, and a resulting economic recession or depression, could cause a slow-down in demand for SMT and semiconductor capital equipment. Over the long term, we believe anticipated sales growth of our products based on 3D MRS technology and WaferSense sensors should increase revenues and net income. We believe that we have the resources required to attain our growth objectives, given our available cash and marketable securities balances totaling \$38.3 million at December 31, 2021.

### **Impact from Covid-19**

#### **Effect of Covid-19 Outbreak on Business Operations**

Covid-19 was first identified in December 2019, and in March 2020, the World Health Organization categorized Covid-19 as a pandemic. The Covid-19 pandemic is affecting our customers, suppliers, service providers and employees to varying degrees, and the ultimate impacts of Covid-19, including the potential impact of known and future variants, on our business, results of operations, liquidity and prospects are not fully known at this time. Overall, the Covid-19 outbreak has had a relatively minimal impact on our business to date. Our revenues increased by 32% to \$92.8 million in 2021, from \$70.1 million in 2020. We are forecasting strong revenue growth on a year-over-year basis in the first quarter of 2022. Our forecast for the first quarter of 2022 could change if the Covid-19 pandemic worsens, or if unforeseen events related to the pandemic occur. The most significant impacts on our business from the Covid-19 pandemic include the following:

- Our key factories are located in Minnesota and Singapore. Both of these locations have been subject to government mandated shelter-in-place orders. Because our operations have been deemed essential, we were able to keep our factories up and running while the shelter-in-place mandates were in effect. If the pandemic worsens, it is possible that our operations may not be deemed essential under future government mandated shelter-in-place orders, and we may be required to shut-down factory operations. We have periodically implemented split-shifts for our factory operations to minimize the number of employees in our facilities at any given time, but these measures have not affected our production capacity. Since the start of the pandemic, many of our non-factory employees have spent the majority of their time working remotely. To date, the shelter-in-place mandates and remote work arrangements have had a minimal impact on operations, but that could change if the pandemic worsens and is more than temporary.
- Sales of some products, mainly our SQ3000 Multi-Function systems and MX memory module inspection products, require customer acceptance due to performance or other criteria that is considered more than a formality. Most of our customer's factories have remained open during the Covid-19 pandemic because they are deemed to be essential under government shelter-in-place mandates. However, global travel restrictions and quarantine measures have hindered our ability to obtain some customer acceptances for certain of our products at various times during the Covid-19 pandemic. Continuing or new global travel restrictions and quarantine measures could hinder our ability to obtain customer acceptances in a timely manner in the future, and therefore impact the timing of revenue recognition.
- Certain operating expenses were reduced in 2021 and 2020 due to the Covid-19 pandemic. Travel, trade show expenses and other costs were reduced due to changes in employee travel patterns and trade show cancellations. Travel, trade show and other costs may increase in the future once the Covid-19 pandemic starts to ease.

- The Covid-19 pandemic has caused disruptions in the global supply chain, including shortages of raw materials, parts and labor, and shipping and logistics issues, including delays in ocean freight and port congestion. Key supply chain disruptions impacting our business have been resolved to date. On-hand inventories have been sufficient to enable us to mitigate any supply disruptions with minimal impact on our sales or ability to service customers. Cost increases related to these issues have not had a significant impact on our results of operations. However, it has become increasingly difficult to obtain adequate supplies of certain key components and labor for product assembly. Port congestion and tight bookings for global sea freight have caused delays in product deliveries. Continued increases in the cost of components, labor and freight could negatively impact our profitability in the future if we are unable to recover these costs by charging more for the products we sell. The inability to obtain adequate supplies of components or labor could result in the inability to meet customer demands and deliver one or more of our products for a period of several months or longer, negatively impacting our revenue and profitability. Supply chain disruptions are expected to continue for the foreseeable future and may increase if the pandemic worsens or continues for an extended period of time.

We currently do not anticipate any significant credit losses or asset impairments resulting from the Covid-19 pandemic. As of December 31, 2021, our available balances of cash and marketable securities totaled \$38.3 million. We believe that we have the resources required to attain our growth objectives and to meet any unforeseen difficulties resulting from the Covid-19 pandemic. We will continue to closely monitor the Covid-19 pandemic and its impact on our business in the coming months.

### Singapore Jobs Support Program

The Singapore Government implemented a jobs support program in 2020 that was intended to support businesses and encourage retention of employees during the period of economic uncertainty caused by the Covid-19 pandemic. Under the jobs support program, the Singapore Government co-funded a portion of the gross monthly wages paid to local employees, which reduced our operating expense by \$410,000 in 2020. We did not receive any material benefit from the Singapore jobs support program in 2021, nor do we expect to receive any material benefits in future periods.

Our ability to implement our strategy effectively is subject to numerous uncertainties and risks, including the risks identified in Item 1A of this Annual Report on Form 10-K.

### Revenues

Our revenues increased by 32% to \$92.8 million in 2021, from \$70.1 million in 2020, and increased by 18% to \$70.1 million in 2020, from \$59.3 million in 2019. The following table sets forth, for the years indicated, revenues by product line:

(In thousands)	2021	2020	2019
High precision 3D and 2D sensors	\$ 25,941	\$ 17,522	\$ 12,579
Inspection and metrology systems	42,958	37,547	32,713
Semiconductor sensors	23,875	15,048	13,971
Total	<u>\$ 92,774</u>	<u>\$ 70,117</u>	<u>\$ 59,263</u>

Revenues from sales of high precision 3D and 2D sensors increased by \$8.4 million or 48% to \$25.9 million in 2021, from \$17.5 million in 2020, and increased by \$4.9 million or 39% to \$17.5 million in 2020, from \$12.6 million in 2019. The revenue increases were due to higher sales of 3D MRS sensors and legacy 2D sensors resulting from improving conditions in the global semiconductor and SMT capital equipment markets and higher adoption rates for 3D MRS sensors by existing OEM customers. Sales of 3D MRS sensors increased by \$5.6 million or 48% to \$17.2 million in 2021, from \$11.6 million in 2020, and increased by \$5.6 million or 93% in 2020, from \$6.0 million in 2019.

Sales of high precision 3D and 2D sensors are dependent on the success of our OEM customers and system integrators selling products that incorporate our sensors. We believe sales of our 3D MRS sensors, including our next generation ultra-high resolution three micron pixel 3D NanoResolution MRS sensor, will represent an increasing percentage of our total high precision 3D and 2D sensor sales in the future. Sales of high precision 3D and 2D sensors, including 3D MRS sensors, are prone to significant quarterly fluctuations due to variations in market demand and customer inventory levels.

Revenues from sales of inspection and metrology systems increased by \$5.4 million or 14% to \$43.0 million in 2021, from \$37.5 million in 2020, and increased by \$4.8 million or 15% to \$37.5 million in 2020, from \$32.7 million in 2019. The revenue increases in both periods were mainly due to higher sales of SQ3000 Multi-Function systems and MX memory module inspection systems resulting from improving market conditions, and increasing sales for more complex applications such as inspection and metrology for mini-LED and memory modules. Sales of SQ3000 Multi-Function systems increased by \$3.5 million or 19% to \$22.4 million in 2021, from \$18.9 million in 2020, and increased by \$1.4 million or 8% to \$18.9 million in 2020, from \$17.5 million in 2019. Sales of 2D and 3D MX memory module inspection systems totaled \$8.3 million in 2021, compared to \$6.7 million in 2020 and \$3.3 million in 2019.

In addition to improving market conditions, the increase in sales of SQ3000 Multi-Function systems was due to the competitive advantages offered by our 3D MRS sensor technology and many companies transitioning from 2D to 3D AOI systems to meet the increasingly demanding product inspection and metrology requirements in the SMT and semiconductor markets. The market transition away from 2D AOI systems is expected to result in an industry-wide compound annual rate of growth in global sales of 3D AOI systems of almost 20% through 2028. In addition, we believe the performance advantages of our SQ3000 Multi-Function systems have allowed us to attain a leading position in the high growth mini-LED inspection and metrology market. Sales of SQ3000 Multi-Function systems for mini-LED inspection and metrology applications totaled \$8.0 million in 2021, compared to \$4.6 million in 2020 and \$2.2 million in 2019. Given these market dynamics and because of the competitive advantages of our 3D MRS sensor technology, we anticipate sales of SQ3000 Multi-Function systems will represent an increasing percentage of our total inspection and metrology system sales in the future.

We believe memory manufacturers have determined that post singulation automated optical inspection of memory modules is an important step in their manufacturing process to improve yields and product quality. We recognized our first revenue from the sale of the 3D MX3000™ memory module inspection system in the first quarter of 2020, and two of the world's three largest memory manufacturers and their subcontractors have now purchased the MX3000 system. At December 31, 2021 our backlog of orders for memory module inspection totaled \$3.5 million, and we expect to recognize these orders as revenue primarily in the first half of 2022. Additional orders for memory module inspection are expected in future periods, and we believe the potential market opportunity for our MX3000 system and 3D MRS sensors for memory module inspection is significant.

Revenues from sales of semiconductor sensors, principally our WaferSense line of products, increased by \$8.8 million or 59% to \$23.9 million in 2021, from \$15.0 million in 2020, and increased by \$1.1 million or 8% to \$15.0 million in 2020, from \$14.0 million in 2019. The revenue increases were due to construction of new semiconductor fabs, favorable market conditions for semiconductor capital equipment spending, and growing acceptance of our WaferSense products as important productivity enhancements tools by semiconductor manufacturers and capital equipment suppliers. Over the longer-term, we anticipate that the benefits from growing market awareness of our WaferSense products, improved account penetration at major semiconductor manufacturers and capital equipment suppliers and new product introductions will lead to additional WaferSense product sales.

Export revenues totaled \$77.4 million or 83% of our revenues in 2021, compared to \$56.0 million or 80% of total revenues in 2020, and \$44.8 million or 76% of total revenues in 2019. Export revenues as a percentage of total revenues increased in 2021 and 2020 due to higher sales of 3D and 2D high precision sensors, semiconductor sensors, SQ3000 Multi-Function systems for mini-LED inspection and metrology and MX3000™ memory module inspection systems. A higher proportion of these products are generally sold outside the United States as compared to our other products.

### **Cost of Revenues and Gross Margin**

Cost of revenues increased by \$10.7 million or 28% to \$49.6 million in 2021, and increased by \$5.9 million or 18% to \$38.9 million in 2020, from \$33.0 million in 2019. Increases in cost of revenues in 2021 and 2020 were primarily due to the corresponding increases in revenue levels. Total revenues increased by 32% in 2021 and increased by 18% in 2020. Items included in cost of revenues that fluctuate with the level of sales include raw materials, direct labor and factory overhead costs. Revenue mix also contributed to the changes in cost of revenues.

Total gross margin as a percentage of revenue was 46.5% in 2021, 44.5% in 2020, and 44.4% in 2019. Our gross margin percentage in 2021 was favorably impacted by proportionately higher sales of semiconductor sensors which generate a higher gross margin percentage than our other products, offset in part by sales of lower gross margin MX3000 systems. There was no significant change in our total gross margin as a percentage of revenue in 2020, when compared to 2019.

Our markets are highly price competitive, particularly in the electronics assembly and SMT markets. As a result, we have experienced continual pressure on our gross margins. We compensate for the pressure to reduce the price of our products by introducing new products with more features and improved performance and through manufacturing cost reduction programs. Sales of many products that we have recently introduced or are about to introduce, including our SQ3000+ Multi-Function system, WX3000 system for semiconductor wafer and advanced packaging inspection and metrology, next generation 3D MRS sensors and semiconductor sensors, (consisting primarily of our WaferSense line of products) have, or are expected to have, more favorable gross margins than many of our existing products. Our next generation 3D MRS sensor and system products are being designed for more complex and demanding inspection and metrology applications in the SMT and semiconductor markets. Sales prices and gross profit margins for these applications tend to be higher than margins for products sold in the general purpose SMT market. However, the gross margin percentage for our 3D MX3000 system for inspection of memory modules is lower than our current total gross margin percentage due to the significant costs for material handling and automation required for this product. Our total gross margin percentage would most likely be negatively impacted in the future if sales of our 3D MX3000 become a larger share of our total revenue mix.

The Covid-19 pandemic has caused disruptions in the global supply chain, including shortages of raw materials, parts and labor, and shipping and logistics issues, including delays in ocean freight and port congestion. Cost increases related to these issues have not had a significant impact on our results of operations. However, continued increases in the cost of components, labor and freight could negatively impact our gross margins in the future if we are unable to recover these costs by charging more for the products we sell. Supply chain disruptions are expected to continue for the foreseeable future and may increase if the Covid-19 pandemic worsens or continues for an extended period of time.

## **Operating Expenses**

Research and development (R&D) expenses were \$10.9 million or 12% of revenues in 2021, \$9.6 million or 14% of revenues in 2020, and \$9.4 million or 16% of revenues in 2019. The increase in R&D expenses in 2021 was due to higher compensation costs for new and existing R&D employees, including incentive compensation, engineering prototypes and consulting services. In 2020, higher compensation costs for new and existing R&D employees, including higher incentive compensation accruals, were mostly offset by the \$340,000 favorable impact from the Singapore Government's jobs support program on wage costs discussed above. Current R&D expenditures are primarily focused on development of 3D MRS sensor and system products, including enhancements to existing products and development of next generation products, and continued R&D work on new and next generation WaferSense products.

Selling, general and administrative ("S,G&A") expenses were \$18.0 million or 19% of revenues in 2021, \$15.6 million or 22% of revenues in 2020, and \$16.0 million or 27% of revenues in 2019. The increase in S,G&A expenses in 2021 was due to higher third party channel commissions resulting from the 32% increase in our revenues and higher compensation costs for new and existing S,G&A employees, including incentive compensation due to our improved financial performance. An increase in our allowance for doubtful accounts and bad debt expense also contributed to the increase. The decrease in S,G&A expenses in 2020 was due to lower costs for travel and trade shows resulting from the Covid-19 pandemic, lower costs for professional fees and a \$70,000 benefit from the Singapore Government's jobs support program, offset in part by higher compensation costs, including higher incentive compensation accruals due to our improved financial performance.

We anticipate that operating expenses will increase modestly in 2022 when compared to 2021. We have added incrementally to both R&D and sales employees throughout 2021, which will increase our costs in 2022. We also expect travel and trade show costs to increase once the Covid-19 pandemic begins to ease. These anticipated cost increases in 2022 may be partially offset by lower incentive compensation due to significant bonus over-achievement in 2021 and the higher levels of revenue and profitability required to earn a bonus in 2022.

## **Interest Income and Other**

Interest income and other includes interest earned on investments and gains and losses associated with foreign currency transactions, primarily intercompany financing transactions associated with our subsidiaries in the United Kingdom, Singapore, China and Taiwan. We recognized foreign currency transaction losses of \$11,000 in 2021, compared to foreign currency transaction gains of \$27,000 in 2020.

## **Provision for Income Taxes**

We recorded income tax expense of \$1.7 million in 2021, compared to income tax expense of \$612,000 in 2020. The increase in income tax expense in 2021 was mainly due to higher levels of income. Our income tax expense reflected an effective income tax rate of approximately 12% in 2021 and 10% in 2020. Our effective tax rate in 2021 was favorably impacted by Global Intangible Low-Taxed Income (GILTI), Foreign Derived Intangible Income (FDII), \$605,000 of excess tax benefits from employee share-based compensation and favorable benefits from U.S. federal R&D tax credits and foreign tax credits. Our effective tax rate in 2020 was favorably impacted by \$497,000 of excess tax benefits from employee share-based compensation and favorable benefits from U.S. federal R&D tax credits and foreign tax credits, offset in part by a negative impact from GILTI. All of our remaining federal net operating loss carry forwards were fully utilized in 2020. Credits and excess tax benefits have a reduced effect on our effective tax rate as income levels increase.

## Liquidity and Capital Resources

Our cash and cash equivalents increased by \$5.3 million in 2021. Cash provided by operating activities of \$10.1 million and proceeds of \$10.8 million from maturities and sales of marketable securities were partially offset by purchases of marketable securities totaling \$13.6 million and purchases of fixed assets and payment of capitalized patent costs totaling \$1.9 million. Proceeds from stock option exercises and share purchases under our Employee Stock Purchase Plan totaling \$675,000, were more than offset by \$787,000 of cash used to make employee withholding tax payments for shares withheld related to stock option exercises and vesting of restricted stock units. Our cash and cash equivalents fluctuate in part because of sales and maturities of marketable securities and investment of cash balances in marketable securities, and from other sources of cash. Accordingly, we believe the combined balances of cash and marketable securities provide a more reliable indication of our available liquidity than cash balances alone. Combined balances of cash and marketable securities increased by \$7.7 million to \$38.3 million as of December 31, 2021, from \$30.6 million as of December 31, 2020.

Our cash flow from operating activities increased to \$10.1 million in 2021 from \$6.0 million in 2020, primarily due to an increase in our profitability, offset in part by use of cash for working capital, including inventory and receivables, reflecting the 32% increase in our sales and anticipated customer demands in the future.

Operating activities provided \$10.1 million of cash in 2021. The amount of cash provided by operations was favorably impacted by our net income of \$12.8 million. Net income was affected by non-cash expenses totaling \$5.6 million for depreciation and amortization, non-cash operating lease expense, provision for doubtful accounts, deferred taxes, non-cash gains from foreign currency transactions, share-based compensation costs and an unrealized gain on our available-for-sale equity security. Changes in operating assets and liabilities providing cash included an increase in accounts payable of \$5.2 million and an increase in accrued expenses of \$589,000. Changes in operating assets and liabilities using cash included an increase in accounts and trade notes receivable of \$4.8 million, an increase in inventories of \$8.2 million, a decrease in advance customer payments and other of \$177,000 and a decrease in operating lease liabilities of \$830,000. Increases in accounts payable and inventories at December 31, 2021 were due to planned purchases of raw materials to meet anticipated customer demand. The increase in accrued expenses was mainly due to higher accruals for wages and benefits, including incentive compensation, warranty and income taxes, mainly due to higher sales and our improved financial performance. Accounts and trade notes receivable increased due to higher sales in the fourth quarter of 2021 compared to the fourth quarter of 2020. Advance customer payments and other was down due to a decrease in deposits for equipment prior to transfer of control. The decrease in operating lease liabilities was due to monthly rental payments for our facility leases.

Operating activities provided \$6.0 million of cash in 2020. The amount of cash provided by operations was favorably impacted by our net income of \$5.7 million. Net income was affected by non-cash expenses totaling \$4.6 million for depreciation and amortization, non-cash operating lease expense, provision for doubtful accounts, deferred taxes, non-cash gains from foreign currency transactions, share-based compensation costs and an unrealized loss on our available-for-sale equity security. Changes in operating assets and liabilities providing cash included a decrease in accounts and trade notes receivable of \$1.9 million, an increase in accrued expenses of \$1.3 million and an increase in advance customer payments of \$247,000. Changes in operating assets and liabilities using cash included an increase in inventories of \$5.2 million, a decrease in accounts payable of \$1.9 million and a decrease in operating lease liabilities of \$772,000. Accounts and trade notes receivable decreased due to an improvement in the rate of collections. Sales of sensor products, which typically have shorter collection cycles than sales of our inspection and metrology system products, were higher in the fourth quarter of 2020, when compared to the fourth quarter of 2019. The increase in accrued expenses was mainly due to bonus accruals resulting from our improved financial performance. Advance customer payments were up due to an increase in deposits for equipment prior to transfer of control. The increase in inventories was due to planned purchases of raw materials in the third quarter of 2020 to meet anticipated customer demand for SQ3000 Multi-Function systems. The decrease in accounts payable was due to the timing of raw material purchases, with lower purchases of raw materials in the fourth quarter of 2020, when compared to the fourth quarter of 2019. Operating lease liabilities decreased due to monthly rental payments under our facility leases.

Investing activities used \$4.7 million of cash in 2021 and \$3.3 million of cash in 2020. Changes in the level of investment in marketable securities, resulting from the purchases, sales and maturities of those securities used \$2.8 million of cash in 2021 and \$1.6 million of cash in 2020. We used \$1.9 million of cash in 2021 and \$1.7 million of cash in 2020 for the purchase of fixed assets and capitalized patent costs.

Financing activities used \$112,000 of cash in 2021 and \$23,000 of cash in 2020. Proceeds from the exercise of stock options and share purchases under our employee stock purchase plan provided \$675,000 of cash in 2021 and \$582,000 of cash in 2020. Tax payments for shares withheld related to stock option exercises and vesting of restricted stock units used \$787,000 of cash in 2021 and \$605,000 of cash in 2020. In July 2019, our Board of Directors authorized a \$3.0 million share repurchase program which expired on June 30, 2020. No shares were repurchased under this program in 2020 prior to its expiration.

At December 31, 2021, we did not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities. These entities are established by some companies for the purpose of establishing off-balance sheet arrangements or for other contractually narrow or limited purposes.

In February 2020, we finalized a new lease for our existing 19,805 square foot mixed office and warehouse facility in Singapore, which serves as a sales, development and final assembly and integration facility for our inspection and metrology system products. The new lease does not contain any incentives or renewal options and runs through July 24, 2023. Rent and facility operating costs under the new lease remain unchanged when compared to the old lease that expired in July 2020.

Except for obligations under facility leases and purchase contracts, we had no material commitments for expenditures as of December 31, 2021. Purchase commitments for raw materials and other inventory can vary based on the volume of revenue and resulting inventory requirements.

Our cash, cash equivalents and marketable securities totaled \$38.3 million at December 31, 2021. We believe that on-hand cash, cash equivalents and marketable securities, coupled with anticipated future cash flow from operations, will be adequate to fund our cash flow needs for the foreseeable future, including the contractual obligations mentioned above.

### **Inflation and Foreign Currency Transactions**

Changes in our revenues have resulted primarily because of changes in the level of unit shipments due to competitive factors and the relative strength or weakness of the worldwide SMT and semiconductor capital equipment markets. We do not believe that inflationary pressures and cost increases had a significant effect on our operations in 2021. Cost increases for material components, freight and employee wages could have an impact on our operations in future periods if inflationary pressures continue for an extended period of time and if we are unable to recover these costs by charging more for the products we sell.

Most of our international export sales are negotiated, invoiced and paid in U.S. dollars. We manufacture our inspection and metrology system products in Singapore and a portion of our raw material purchases are denominated in Singapore dollars. We also have R&D and sales personnel located in Singapore and sales offices located in other parts of the world. Although currency fluctuations do not significantly affect our revenue, they can impact our costs and influence the price competitiveness of our products and the willingness of existing and potential customers to purchase our products.

### **Critical Accounting Policies and Estimates**

Our discussion and analysis of financial condition and results of operations is based upon our consolidated financial statements, which have been prepared in accordance with GAAP. The preparation of these consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. On an on-going basis, we evaluate these estimates, including estimates related to revenue recognition, bad debts, warranty obligations, inventory valuation, intangible assets, and income taxes. We base these estimates on historical experience and on various other assumptions that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Our actual results may differ from these estimates under different assumptions or conditions. The estimates and judgments that we believe have the most effect on our reported financial position and results of operations are as follows:

#### ***Revenue Recognition.***

Revenue is measured based on the consideration specified in a contract with a customer. A performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of account for purposes of revenue recognition. Revenue from all customers, including distributors, is recognized when a performance obligation is satisfied by transferring control of a product or service to a customer. Amounts billed to customers for shipping and handling are included in revenue. Taxes collected from customers and remitted to governmental authorities are excluded from revenue on the net basis of accounting. Accounts receivable are due under normal trade terms, generally 150 days or less.

Sales involving multiple performance obligations typically include the sale of an inspection or metrology systems product, installation and training, and in some cases, an extended warranty. When a sale involves multiple performance obligations, we account for individual products and services separately if the customer can benefit from the product or service on its own or with other resources that are readily available to the customer and the product or service are separately identifiable from other promises in the arrangement. The consideration is allocated between separate performance obligations in proportion to their estimated stand-alone selling price. If the stand-alone selling price is not directly observable, we use the cost plus margin approach to estimate stand-alone selling price. Costs related to products delivered are recognized in the period revenue is recognized, including product warranties for periods ranging from 1 to 3 years.

Our performance obligations are satisfied at a point in time or over time as work progresses. Revenue from products and services transferred to customers at a point in time totaled \$90.5 million, or 97.6% of our total revenue in 2021, and \$68.4 million, or 97.6% of our total revenue in 2020. Revenue from these contracts is recognized when obligations under the terms of the contract with our customers are satisfied, which is generally with the transfer of control upon shipment. Sales of some products may require customer acceptance due to performance or other acceptance criteria that is considered more than a formality. For these product sales, revenue is recognized upon notification of customer acceptance.

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Revenue from products and services transferred to customers over time totaled \$2.3 million, or 2.4% of our total revenue in 2021, and \$1.7 million, or 2.4% of our total revenue in 2020. Periodically, sensor product arrangements with our OEMs will create an asset with no alternative use and include an enforceable right to payment. For these arrangements, control is transferred over the manufacturing process; therefore, revenue is recognized over time utilizing an input method based on actual costs incurred in the manufacturing process to date relative to total expected production costs. For certain longer duration 3D scanning service projects, we progress bill as the services are performed. These arrangements create an asset with no alternative use and include an enforceable right to payment. For these arrangements, control is transferred over the hours incurred to complete the scanning project; therefore, revenue is recognized over time utilizing an input method based on actual hours incurred relative to total projected project hours. For maintenance and extended warranty contracts, revenue is recognized over time on a straight-line basis over the term of the contract as the customer simultaneously receives and consumes the benefits of the coverage.

### ***Allowance for Doubtful Accounts and Trade Notes.***

We maintain allowances for doubtful accounts for estimated losses resulting from the inability of our customers to make required payments. In making the determination of the appropriate allowance for doubtful accounts, we consider specific accounts, historical write-offs, changes in customer relationships and credit worthiness and concentrations of credit risk. Specific accounts and trade notes receivable are written-off once a determination is made that the account is uncollectible. If the financial condition of our customers were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances may be required. If our accounts and trade notes receivable were to increase by \$2.0 million, we estimate that our allowance for doubtful accounts would increase by \$36,000. The allowance for doubtful accounts and trade notes was \$355,000 at December 31, 2021 and \$302,000 at December 31, 2020.

### ***Allowance for Warranty Expenses.***

We provide for the estimated cost of product warranties at the time revenue is recognized. While we engage in extensive product quality programs and processes, including actively monitoring and evaluating the quality of components provided by suppliers, warranty obligations do arise. These obligations are affected by product failure rates, the costs of materials used and service delivery expenses incurred in correcting a product failure. If actual product failure rates and material or service delivery costs differ from our estimates, revisions to the estimated warranty liability are required and could be material. If our sales were to increase by \$10 million, we estimate that our allowance for warranty expenses would increase by \$110,000. The allowance for warranties was \$991,000 at December 31, 2021 and \$839,000 at December 31, 2020.

### ***Inventory Write Downs.***

We write down inventory for estimated obsolescence or lack of marketability equal to the difference between the cost of inventory and the estimated market value based upon assumptions about future demand and market conditions. We formulate our assumptions regarding future demand and market conditions based on order trends and input from customers regarding their future requirements. If actual market conditions are less favorable than those projected, or if in the future we decide to discontinue sales and marketing of any of our products, additional inventory write-downs may be required. For some products, we typically carry on-hand inventories of \$1 million or more. If these products were to become obsolete or otherwise non-saleable, we could be required to write down the value of the inventory by \$1 million or more, depending upon the amount of inventory being carried. Excess and obsolete inventories were written down by \$812,000 at December 31, 2021 and \$752,000 at December 31, 2020.

### ***Valuation of Intangible and Long-Lived Assets.***

We evaluate the carrying value of goodwill annually on December 31, and more frequently if management believes indicators of impairment exist. We assess the impairment of identifiable intangible assets, long lived assets and related goodwill whenever events or changes in circumstances indicate the carrying value may not be recoverable. Factors we consider important, which could trigger an impairment review and that we consider when performing our annual goodwill impairment assessment, include the following:

- Significant under-performance relative to expected historical or projected future operating results.
- Significant changes in the manner of our use of the acquired assets or the strategy for our overall business.
- Significant negative industry or economic trends.
- Significant decline in the price of our common stock for a sustained period, and the size of our market capitalization relative to our net book value.
- For intangible and long-lived assets, if the carrying value exceeds the undiscounted cash flows from such asset.

When we determine that the carrying value of intangibles, long-lived assets and related goodwill may not be recoverable based upon the existence of one or more of the above indicators of impairment, we measure any potential impairment based on a projected discounted cash flow method using a discount rate that we believe is commensurate with the risk inherent in our current business model. We utilize the income approach to estimate our fair value. The income approach is a valuation technique under which we estimate future cash flows using financial forecasts. Future estimated cash flows are discounted to their present value to calculate fair value. When determining fair value, we also give consideration to the control premium in excess of our current market capitalization that might be obtained from a third party acquirer. These assumptions require significant judgment and actual results may differ from assumed or estimated amounts.

At December 31, 2021, we had goodwill of \$1.4 million. Our recent analysis performed as of December 31, 2021 indicates that our goodwill is not impaired. However, our conclusion could change in the future, if our assumptions about future economic conditions, revenue growth or profitability change. Any resulting impairment charge could have a material effect on our financial position and results of operations in the future.

### ***Income Taxes.***

Significant judgment is required in determining worldwide income tax expense based upon tax laws in the various jurisdictions in which we operate. We have established reserves for uncertain tax positions by applying the “more likely than not” threshold (i.e., a likelihood of occurrence greater than fifty percent). The recognition threshold is met when an entity concludes that a tax position, based solely on its technical merits, is more likely than not to be sustained upon examination by the relevant taxing authority. Those tax positions failing to qualify for initial recognition are recognized in the first interim period in which they meet the more likely than not standard, or are resolved through negotiation or litigation with the taxing authority, or upon expiration of the statute of limitations. De-recognition of a tax position that was previously recognized occurs when an entity subsequently determines that a tax position no longer meets the more likely than not threshold of being sustained. All tax positions are analyzed periodically and adjustments are made as events warrant modification, such as the completion of audits or the expiration of statutes of limitations, which may result in future charges or credits to income tax expense.

As part of the process of preparing our consolidated financial statements, management is required to estimate income taxes in each of the jurisdictions in which we operate. This process involves estimating the current tax liability, as well as assessing temporary differences arising from the different treatment of items for financial statement and tax purposes. These differences result in deferred tax assets and liabilities, which are recorded on our consolidated balance sheet.

We have significant deferred tax assets as a result of temporary differences between the taxable income on our tax returns and U.S. GAAP income, R&D tax credit carry forwards and state net operating loss carry forwards. A deferred tax asset generally represents future tax benefits to be received when temporary differences previously reported in our consolidated financial statements become deductible for income tax purposes, when net operating loss carry forwards could be applied against future taxable income, or when tax credit carry forwards are utilized on our tax returns. We assess the realizability of our deferred tax assets and the need for a valuation allowance based on the guidance provided in current financial accounting standards.

At December 31, 2021, we had \$5.2 million of deferred tax assets, of which \$1.5 million were subject to valuation allowances. Our valuation allowances at December 31, 2021 and December 31, 2020 mainly relate to state R&D tax credits and net operating loss carry forwards. Significant judgment is required in determining the realizability of our deferred tax assets. The assessment of whether valuation allowances are required considers, among other matters, the nature, frequency and severity of any current and cumulative losses, forecasts of future profitability, the duration of statutory carry forward periods, our experience with credit and loss carry forwards not expiring unused and tax planning alternatives. In analyzing the need for valuation allowances, we first considered our history of cumulative operating results for income tax purposes over the past three years in each of the tax jurisdictions in which we operate, our financial performance in recent quarters, statutory carry forward periods and tax planning alternatives. In addition, we considered both our near-term and long-term financial outlook. After considering all available evidence (both positive and negative), we concluded that recognition of valuation allowances for substantially all of our U.S. and Singapore based deferred tax assets was not required at December 31, 2021 or December 31, 2020. However, our conclusion could change in the future, if our actual results or assumptions about future economic conditions, revenue growth or profitability deteriorate. Any resulting valuation allowance could have a material negative effect on our financial position and results of operations in the future. For example, if we were to experience losses over a period of several years, we could be required to record valuation allowances for most of our remaining net deferred tax assets, which totaled \$3.7 million at December 31, 2021.

We file income tax returns in the United States and various state and foreign jurisdictions. Our federal income tax returns for years after 2017 are still subject to examination by the Internal Revenue Service. We are no longer subject to state and local income tax examinations for years prior to 2017. The Inland Revenue Authority of Singapore has initiated a routine compliance review of our 2018 income tax return. We presently anticipate that the outcome of this audit will not have a significant impact on our financial position or results of operations.

## **ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

Not applicable

**ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA****CONSOLIDATED BALANCE SHEETS  
CYBEROPTICS CORPORATION**

<b>(In thousands, except share information)</b>	<b>December 31, 2021</b>	<b>December 31, 2020</b>
<b>ASSETS</b>		
Cash and cash equivalents	\$ 13,684	\$ 8,399
Marketable securities	7,327	8,121
Accounts receivable, less allowance for doubtful accounts of \$355 at December 31, 2021 and \$302 at December 31, 2020	19,821	14,735
Inventories	27,602	20,271
Prepaid expenses	808	686
Other current assets	864	890
Total current assets	<u>70,106</u>	<u>53,102</u>
Marketable securities, long-term	17,281	14,052
Equipment and leasehold improvements, net	3,174	3,235
Intangibles, net	375	325
Goodwill	1,366	1,366
Right-of-use assets (operating leases)	2,052	2,621
Trade notes receivable, long-term	—	418
Deferred tax assets	3,668	4,597
Total assets	<u>\$ 98,022</u>	<u>\$ 79,716</u>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Accounts payable	\$ 10,275	\$ 5,118
Advance customer payments	599	823
Accrued expenses	4,418	3,893
Current operating lease liabilities	864	819
Total current liabilities	<u>16,156</u>	<u>10,653</u>
Other liabilities	177	134
Long-term operating lease liabilities	2,369	3,244
Reserve for income taxes	214	157
Total liabilities	<u>18,916</u>	<u>14,188</u>
Commitments and contingencies		
<b>Stockholders' equity:</b>		
Preferred stock, no par value, 5,000,000 shares authorized, none outstanding	—	—
Common stock, no par value, 25,000,000 shares authorized, 7,391,906 shares issued and outstanding at December 31, 2021 and 7,294,617 shares issued and outstanding at December 31, 2020	39,052	37,817
Accumulated other comprehensive loss	(1,510)	(1,102)
Retained earnings	41,564	28,813
Total stockholders' equity	<u>79,106</u>	<u>65,528</u>
Total liabilities and stockholders' equity	<u>\$ 98,022</u>	<u>\$ 79,716</u>

**THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THE CONSOLIDATED FINANCIAL STATEMENTS.**

**CONSOLIDATED STATEMENTS OF OPERATIONS  
CYBEROPTICS CORPORATION**

<b>(In thousands, except per share amounts)</b>	<b>Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
Revenues	\$ 92,774	\$ 70,117
Cost of revenues	49,608	38,900
Gross margin	43,166	31,217
Research and development expenses	10,857	9,572
Selling, general and administrative expenses	17,973	15,648
Income from operations	14,336	5,997
Interest income and other, net	159	357
Income before income taxes	14,495	6,354
Income tax provision	1,744	612
Net income	\$ 12,751	\$ 5,742
Net income per share – Basic	\$ 1.74	\$ 0.80
Net income per share – Diluted	\$ 1.69	\$ 0.77
Weighted average shares outstanding – Basic	7,320	7,215
Weighted average shares outstanding – Diluted	7,537	7,454

**THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THE CONSOLIDATED FINANCIAL STATEMENTS.**

**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME  
CYBEROPTICS CORPORATION**

<b>(In thousands)</b>	<b>Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
Net income	\$ 12,751	\$ 5,742
<b>Other comprehensive income (loss), before tax:</b>		
Foreign currency translation adjustments	(193)	190
Unrealized gains (losses) on available-for-sale securities	(272)	145
Total other comprehensive income (loss) before income taxes	(465)	335
Income tax provision (benefit)	(57)	31
Total other comprehensive income (loss) after income taxes	(408)	304
Total comprehensive income	<u>\$ 12,343</u>	<u>\$ 6,046</u>

**THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THE CONSOLIDATED FINANCIAL STATEMENTS.**

**CONSOLIDATED STATEMENTS OF CASH FLOWS  
CYBEROPTICS CORPORATION**

(In thousands)	Year Ended December 31,	
	2021	2020
<b>CASH FLOWS FROM OPERATING ACTIVITIES:</b>		
Net income	\$ 12,751	\$ 5,742
<b>Adjustments to reconcile net income to net cash provided by operating activities:</b>		
Depreciation and amortization	2,560	2,629
Non-cash operating lease expense	569	521
Provision (recovery) for doubtful accounts	124	(20)
Deferred taxes	983	366
Foreign currency transaction gains	(8)	(97)
Share-based compensation	1,347	1,181
Unrealized (gain) loss on available for sale equity security	(13)	18
<b>Changes in operating assets and liabilities:</b>		
Accounts and trade notes receivable	(4,792)	1,888
Inventories	(8,221)	(5,212)
Prepaid expenses and other assets	9	49
Accounts payable	5,198	(1,903)
Advance customer payments and other	(177)	247
Accrued expenses	589	1,321
Operating lease liabilities	(830)	(772)
Net cash provided by operating activities	10,089	5,958
<b>CASH FLOWS FROM INVESTING ACTIVITIES:</b>		
Proceeds from maturities of available-for-sale marketable securities	10,601	11,576
Proceeds from sale of available-for-sale marketable securities	225	—
Purchases of available-for-sale marketable securities	(13,639)	(13,186)
Additions to equipment and leasehold improvements	(1,627)	(1,527)
Additions to patents	(254)	(212)
Net cash used in investing activities	(4,694)	(3,349)
<b>CASH FLOWS FROM FINANCING ACTIVITIES:</b>		
Proceeds from exercise of stock options	428	358
Tax payments related to shares withheld for share-based compensation plans	(787)	(605)
Proceeds from issuance of common stock under employee stock purchase plan	247	224
Net cash used in financing activities	(112)	(23)
Effects of exchange rate changes on cash and cash equivalents	2	(23)
Net increase in cash and cash equivalents	5,285	2,563
Cash and cash equivalents – beginning of period	8,399	5,836
Cash and cash equivalents – end of period	\$ 13,684	\$ 8,399

**THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THE CONSOLIDATED FINANCIAL STATEMENTS.**

**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY  
CYBEROPTICS CORPORATION**

<b>(In thousands)</b>	<b>Common Stock</b>		<b>Accumulated Other Comprehensive Loss</b>	<b>Retained Earnings</b>	<b>Total Stockholders' Equity</b>
	<b>Shares</b>	<b>Amount</b>			
BALANCE, December 31, 2019	7,155	\$ 36,659	\$ (1,406)	\$ 23,071	\$ 58,324
Exercise of stock options and vesting of restricted stock units, net of shares exchanged as payment	135	358	—	—	358
Tax payments related to shares withheld for share-based compensation plans	(23)	(605)	—	—	(605)
Share issuances for director compensation	8	—	—	—	—
Share-based compensation	—	1,181	—	—	1,181
Issuance of common stock under Employee Stock Purchase Plan	20	224	—	—	224
Other comprehensive income, net of tax	—	—	304	—	304
Net income	—	—	—	5,742	5,742
BALANCE, December 31, 2020	7,295	37,817	(1,102)	28,813	65,528
Exercise of stock options and vesting of restricted stock units, net of shares exchanged as payment	100	428	—	—	428
Tax payments related to shares withheld for share-based compensation plans	(18)	(787)	—	—	(787)
Share issuances for director compensation	8	—	—	—	—
Share-based compensation	—	1,347	—	—	1,347
Issuance of common stock under Employee Stock Purchase Plan	7	247	—	—	247
Other comprehensive loss, net of tax	—	—	(408)	—	(408)
Net income	—	—	—	12,751	12,751
BALANCE, December 31, 2021	7,392	\$ 39,052	\$ (1,510)	\$ 41,564	\$ 79,106

**THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THE CONSOLIDATED FINANCIAL STATEMENTS.**

**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS  
CYBEROPTICS CORPORATION**

**NOTE 1 – BUSINESS DESCRIPTION AND SIGNIFICANT ACCOUNTING POLICIES**

**Description of Business**

We are a leading global developer and manufacturer of high precision 3D sensors and systems for inspection and metrology. We also develop and manufacture our WaferSense® products, a family of wireless, wafer-shaped sensors that provide measurements of critical factors in the semiconductor fabrication process. Our sensors and system products are used in surface mount technology (SMT) and semiconductor markets to significantly improve yields and productivity.

**Principles of Consolidation**

The consolidated financial statements include the accounts of CyberOptics Corporation and its wholly-owned subsidiaries. In these notes to the consolidated financial statements, these companies are collectively referred to as “CyberOptics,” “we,” “us,” or “our.” All significant inter-company accounts and transactions have been eliminated in consolidation.

**Segment Reporting**

We operate in a single reportable segment that includes the design, development and manufacture of high precision sensing, inspection and metrology solutions for the SMT and semiconductor markets.

**Use of Estimates**

The preparation of consolidated financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ significantly from those estimates.

**Cash and Cash Equivalents**

We consider all highly liquid investments purchased with an original maturity of 90 days or less to be cash equivalents. Cash and cash equivalents consist of funds maintained in demand deposit accounts, money market accounts, certificate of deposits, corporate debt instruments and U.S. government backed obligations. Cash and cash equivalent balances, at times, may exceed federally insured limits.

**Marketable Securities**

We determine the classification of investment securities at the time of purchase. Marketable securities are classified as short-term or long-term in the consolidated balance sheets based on their maturity date and expectations regarding sales. All marketable securities are classified as available-for-sale and are a part of our asset/liability management strategy and may be sold in response to changes in interest rates, prepayment risk or other market factors.

Cash and marketable securities held by foreign subsidiaries totaled \$588,000 at December 31, 2021 and \$672,000 at December 31, 2020.

**Debt Securities**

Debt securities consist of U.S. government and agency backed obligations, certificates of deposit, corporate debt instruments, or asset backed securities.

Available-for-sale securities are carried at estimated fair value. Unrealized gains and losses for debt securities are reported as a separate component of stockholders' equity in accumulated other comprehensive income (loss), net of applicable income taxes, until realized. Fair values are primarily determined using quoted market prices or valuations provided by external investment managers who obtain them from a variety of industry standard data providers. The amortized cost and fair value of debt securities, for purposes of computing unrealized gains and losses, are determined by specific identification. The cost of debt securities sold and the resulting realized gains or losses are also determined by specific identification. Interest income and dividends are recognized in interest income on an accrual basis. Premiums and discounts on debt securities are amortized as an adjustment to interest income over the period to maturity of the related security using the effective interest method.

We monitor the carrying value of our debt securities compared to their fair value to determine whether an other-than-temporary impairment (“OTTI”) has occurred. Factors considered in determining whether a loss is other-than-temporary include the length of time and extent to which fair value has been less than the amortized cost basis, credit quality (considering factors such as adverse conditions specific to the issuer and the security and ratings agency actions) and our ability and intent to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value. If a decline in fair value of our debt securities is determined to be other-than-temporary, the amount by which amortized cost exceeds the fair value of a debt security is separated into a component representing the credit loss, which is recognized in earnings, and a component related to all other factors, which is recognized in other comprehensive income (loss). The measurement of the credit loss component is equal to the difference between the debt security’s amortized cost basis and the present value of its expected future cash flows discounted at the security’s effective yield. If we intend to sell the security, or if it is more likely than not we will be required to sell the security before recovery, an OTTI write-down is recognized in earnings equal to the entire difference between the amortized cost basis and fair value of the security.

### ***Equity Securities***

Equity securities have readily determinable fair values. Fair values are primarily determined using quoted market prices or valuations provided by external investment managers who obtain them from a variety of industry standard data providers. The fair value of equity securities, for purposes of computing unrealized gains and losses, are determined by specific identification. The cost of equity securities sold and resulting realized gains or losses are also determined by specific identification. Dividends are recognized in interest income on an accrual basis. Unrealized gains and losses for equity securities are reported in net income.

### **Inventories**

Inventories are stated at the lower of cost or net realizable value, with cost determined using the first-in, first-out (FIFO) method. Net realizable value is the estimated selling price in the ordinary course of business less cost to sell and considers our current assessment of general market and economic conditions, slow-moving inventory and future demand. Appropriate consideration is given to deterioration, obsolescence, and other factors in evaluating net realizable value.

### **Accounts and Trade Notes Receivable**

We extend unsecured credit to our customers in the normal course of business. We periodically provide financing to customers for the purchase of SQ3000 Multi-Function system products. Trade notes receivable bear interest at annual effective rates ranging from approximately 5% to 7%, and are repayable over periods ranging from 18 to 36 months. The current portion of the trade notes are classified as accounts receivable in the accompanying balance sheets.

Interest income will be discontinued for any trade notes receivable with a specific reserve established if it is likely that we will be unable to collect all amounts due according to the original terms of the trade notes. For these trade notes receivable, cash collection will first be applied as a reduction to principal outstanding. Any cash received in excess of the outstanding principal payments will be recognized as interest income. Trade notes receivable may be removed from non-accrual status with respect to interest income based upon changes in customer circumstances, including a sustained history of payments. At December 31, 2021 and December 31, 2020, none of our trade notes receivable were in a non-accrual status with respect to interest income.

### **Allowance for Doubtful Accounts and Trade Notes**

Allowances for doubtful accounts are maintained for estimated losses resulting from the inability of our customers to make required payments. In making the determination of the appropriate allowance for doubtful accounts, we consider specific accounts, historical write-offs, changes in customer relationships and credit worthiness and concentrations of credit risk. Specific accounts and trade notes receivable are written-off once a determination is made that the account is uncollectible.

### **Equipment and Leasehold Improvements**

Equipment and leasehold improvements are stated at cost. Significant additions or improvements extending asset lives are capitalized, while repairs and maintenance are charged to expense as incurred. In-progress costs are capitalized with depreciation beginning when assets are placed in service. Depreciation is recorded using the straight-line method over the estimated useful lives of the equipment, ranging from one to seven years. Leasehold improvements are amortized using the straight-line method over the shorter of the asset useful life or the underlying lease term, ranging from one to eight years. Gains or losses on dispositions are included in current operations.

## **Goodwill**

Goodwill represents the excess of purchase price over the fair value of net assets acquired in a business combination. We have determined that we have one reporting unit. We evaluate the carrying value of goodwill annually on December 31st and more frequently if management believes indicators of impairment exist. Such indicators could include, but are not limited to (1) a significant adverse change in legal factors or in business climate, (2) unanticipated competition, or (3) an adverse action or assessment by a regulator. We first assess qualitative factors to determine whether it is more likely than not that our fair value is greater than carrying value (i.e. net book value). If we conclude that it is more likely than not that our fair value is greater than carrying value, no further testing is required. If we conclude that it is more likely than not that our fair value is less than carrying value, we estimate our fair value using the income approach. The income approach is a valuation technique under which we estimate future cash flows using financial forecasts. Future estimated cash flows are discounted to their present value to calculate fair value. When considering fair value, we also give consideration to the control premium in excess of our current market capitalization that might be obtained from a third party acquirer. Goodwill impairment is measured as the amount by which our carrying value exceeds our fair value, but not in an amount in excess of the carrying value of goodwill.

On December 31, 2021 and 2020, we performed a qualitative assessment to determine if there was any indication that our goodwill might be impaired. After considering all available evidence, including our financial performance, financial outlook and current market capitalization, we concluded that it is more likely than not that our fair value is greater than carrying value. As a result, no further testing was deemed necessary, and we determined that our goodwill was not impaired. Therefore, no amounts were recorded for goodwill impairment in 2021 or 2020.

## **Patents**

Patents consist of legal and patent registration costs for protection of our proprietary technology. We amortize patent costs on a straight-line basis, based upon their estimated life.

## **Long Lived Assets**

Intangible assets subject to amortization and other long-lived assets are reviewed for impairment when events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. An impairment loss would be recognized when future undiscounted cash flows expected to result from use of the asset and eventual disposition are less than the carrying amount.

## **Operating Leases**

We determine if an arrangement is a lease at inception. Operating leases are recorded in operating lease right-of-use (ROU) assets, current operating lease liabilities, and long-term operating lease liabilities in our consolidated balance sheets. ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized based on the present value of lease payments over the lease term. The operating lease ROU assets exclude lease incentives. As our leases do not provide an implicit rate, we use our incremental borrowing rate to determine the present value of lease payments. Our leases may include renewal options to extend the lease term, the exercise of which are at our sole discretion. In our accounting treatment of leases, the lease terms used do not include any option to extend the lease, because it is not reasonably certain that we will exercise the option. Lease expense is recognized on a straight-line basis over the lease term. We have lease agreements with lease and non-lease components (e.g., common-area or other maintenance costs) which are generally accounted for separately and expensed monthly. We do not recognize a ROU asset and lease liability for leases having a term of 12 months or less at the effective date.

## **Revenue Recognition**

Revenue is measured based on consideration specified in the contract with a customer. A performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of account for purposes of revenue recognition. Revenue from all customers, including distributors, is recognized when a performance obligation is satisfied by transferring control of a product or service to a customer. Amounts billed to customers for shipping and handling are included in revenue. All shipping and handling costs associated with outbound freight are accounted for as fulfillment costs and are included in cost of sales. Taxes collected from customers and remitted to governmental authorities are excluded from revenue on the net basis of accounting. Accounts receivable are due under normal trade terms, typically 150 days or less.

Our performance obligations are mostly satisfied at a point in time and to a lesser extent over time as work progresses. Revenue for products and services transferred to customers at a point in time is recognized when obligations under the terms of the contract with our customer are satisfied; generally with the transfer of control upon shipment. Sales of some products may require customer acceptance due to performance or other acceptance criteria that is considered more than a formality. For these product sales, revenue is recognized upon notification of customer acceptance.

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Sales involving multiple performance obligations typically include the sale of an inspection or metrology systems product, installation and training, and in some cases, an extended warranty. When a sale involves multiple performance obligations, we account for individual products and services separately if the customer can benefit from the product or service on its own or with other resources that are readily available to the customer and the product or service are separately identifiable from other promises in the arrangement. Undelivered performance obligations in an arrangement are typically minimal, consisting of undelivered installation and training services. The consideration is allocated between separate performance obligations in proportion to their estimated stand-alone selling price. If the stand-alone selling price is not directly observable, we use the cost plus margin approach to estimate stand-alone selling price. Costs related to products delivered are recognized in the period revenue is recognized; including product warranties for periods ranging from 1 to 3 years (see Note 9).

Periodically, sensor product arrangements with our original equipment manufacturers (OEM's) will create an asset with no alternative use and include an enforceable right to payment. For these arrangements, control is transferred over the manufacturing process; therefore, revenue is recognized over time utilizing an input method based on actual costs incurred in the manufacturing process to date relative to total expected production costs. For certain longer duration 3D scanning service projects, we progress bill as the services are performed. These arrangements create an asset with no alternative use and include an enforceable right to payment. For these arrangements, control is transferred over the hours incurred to complete the scanning project; therefore, revenue is recognized over time utilizing an input method based on actual hours incurred relative to total projected project hours. For maintenance and extended warranty contracts, revenue is recognized over time on a straight-line basis over the term of the contract as the customer simultaneously receives and consumes the benefits of the coverage.

### ***Practical Expedients***

We generally expense the incremental costs of obtaining a contract when incurred because the amortization period for these costs would be less than one year. These costs primarily relate to sales commissions and are recorded in selling, general and administrative expense in our consolidated statements of operations.

We do not disclose the value of unsatisfied performance obligations for contracts with an original expected length of one year or less, primarily consisting of product installation and training. We do not adjust the promised amount of consideration for the effects of a significant financing component if we expect, at contract inception, that the period between when we transfer a promised good or service to a customer and when the customer pays for that good or service will be one year or less.

### **Foreign Currency Translation**

Financial position and results of operations of our international subsidiaries are measured using local currency as their functional currency. Assets and liabilities of these operations are translated at the exchange rates in effect at each fiscal year-end. Statements of operations accounts are translated at the average rates of exchange prevailing during the year. Translation adjustments arising from the use of differing exchange rates from period to period are included as a cumulative translation adjustment in stockholders' equity.

### **Foreign Currency Transactions**

Foreign currency transaction gains and losses are included in interest income and other, net in the statement of operations. We recognized foreign currency transaction losses of \$11,000 in 2021. We recognized foreign transaction gains of \$27,000 in 2020.

### **Research and Development**

Research and development (R&D) costs, including product software development, are expensed when incurred. Product software development costs are required to be expensed until the point that technological feasibility and proven marketability of the product are established; costs otherwise capitalizable after such point also are expensed because they are insignificant. All other R&D costs are expensed as incurred. R&D expenses consist primarily of salaries, project materials, contract labor and other costs associated with ongoing product development and enhancement efforts.

### **Advertising Costs**

We expense all advertising costs as incurred. Advertising expenses were \$252,000 in 2021 and \$371,000 in 2020.

### **Warranty Costs**

We provide for the estimated cost of product warranties, which cover products for periods ranging from one to three years at the time revenue is recognized.

See Note 9 to the consolidated financial statements for additional information related to warranty costs.

## **Income Taxes**

We evaluate uncertain tax positions using the “more likely than not” threshold (i.e., a likelihood of occurrence greater than fifty percent). The recognition threshold is met when an entity concludes that a tax position, based solely on its technical merits, is more likely than not to be sustained upon examination by the relevant taxing authority. Those tax positions failing to qualify for initial recognition are classified as a gross unrecognized tax benefit until the first interim period in which they meet the more likely than not standard, or are resolved through negotiation or litigation with the taxing authority, or upon expiration of the statute of limitations. De-recognition of a tax position that was previously recognized occurs when an entity subsequently determines that a tax position no longer meets the more likely than not threshold of being sustained. Our net unrecognized tax benefit (“UTB”) is a long-term income tax reserve within our consolidated balance sheets.

Only the portion of the UTB that is expected to be paid within one year is classified as a current liability. As a result, liabilities expected to be resolved without the payment of cash (e.g., resolution due to the expiration of the statute of limitations) or are not expected to be paid within one year are not classified as current. It is our policy to record estimated interest and penalties as income tax expense and tax credits as a reduction in income tax expense.

Deferred income taxes are recorded to reflect the tax consequences in future years of differences between the financial reporting and tax bases of assets and liabilities. We have made an accounting policy election to record the U.S. income tax effect of future global intangible low-taxed income (“GILTI”) inclusions in the period in which they arise, rather than establishing deferred taxes with respect to the expected future tax liabilities associated with future GILTI inclusion. Income tax expense is the sum of the tax currently payable and the change in the deferred tax assets and liabilities during the period, excluding changes in deferred tax assets recorded to goodwill or accumulated other comprehensive loss. Valuation allowances are established when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized. We assess the realizability of our deferred tax assets and the need for a valuation allowance based on all positive and negative evidence.

## **Net Income Per Share**

Basic net income per basic share is computed by dividing net income by the weighted average number of common shares outstanding during the period. Net income per diluted share is computed by dividing net income by the weighted average number of common and common equivalent shares outstanding during the period. Common equivalent shares consist of common shares to be issued upon exercise of stock options, vesting of restricted stock units, vesting of restricted shares and from purchases of shares under our employee stock purchase plan, as calculated using the treasury stock method. Common equivalent shares are excluded from the calculation of net income per diluted share if their effect is anti-dilutive.

## **Comprehensive Income**

Total comprehensive income and the components of accumulated other comprehensive loss are presented in the Consolidated Statements of Comprehensive Income and the Consolidated Statements of Stockholders' Equity. Accumulated other comprehensive loss is composed of foreign currency translation effects and unrealized gains and losses on available-for-sale marketable debt securities. We use the individual item approach for releasing income tax effects from accumulated other comprehensive loss.

## **Fair Value of Financial Instruments**

The carrying amounts of financial instruments such as cash equivalents, accounts receivable, other assets, accounts payable, advance customer payments, accrued expenses and other liabilities approximate their related fair values due to the short-term maturities of these instruments. The fair value for trade notes receivable is based on discounted future cash flows using current interest rates that would be offered for a similar transaction to a similarly situated customer. The difference between the carrying amount and estimated fair value for trade notes receivable is immaterial.

See Note 6 for information related to fair value of marketable securities.

## **Share-Based Compensation**

All share-based payments to employees, including grants of stock options, are required to be recognized as an expense in our consolidated statements of operations based on the grant date fair value of the award. We utilize the straight-line method of expense recognition over the award’s service period for our graded vesting options. The fair value of stock options has been determined using the Black-Scholes model. We account for the impact of forfeitures related to employee share-based payment arrangements when the forfeitures occur. We have classified employee share-based compensation within our consolidated statements of operations in the same manner as our cash based employee compensation costs.

See Note 7 to the consolidated financial statements for additional information related to employee share-based compensation.

## Related Party Transactions

We periodically sell or purchase products from companies for which our board members serve in an executive capacity and in some cases on the board of directors. These transactions occur in the normal course of business. Our cumulative sales to these companies were \$387,000 in 2021 and \$40,000 in 2020. Accounts receivable due from related party sales were \$185,000 as of December 31, 2021 and \$3,000 as of December 31, 2020. Our cumulative purchases from these companies were \$61,000 in 2021 and \$59,000 in 2020.

## Recent Accounting Developments

In June 2016, the FASB issued ASU No. 2016-13, *Measurement of Credit Losses on Financial Instruments*, which revises guidance for the accounting for credit losses on financial instruments within its scope, and in November 2018, issued ASU No. 2018-19, which amended the standard. The new standard introduces an approach to estimating credit losses that is based on expected losses (referred to as the current expected credit losses model), and applies to most financial assets measured at amortized cost and certain other instruments, including available-for-sale marketable debt securities, trade and other receivables. The new standard is effective for us on January 1, 2023, with early adoption permitted. We are required to apply the standard's provisions as a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is adopted. We presently do not believe the new standard will have a material impact on our consolidated financial statements.

No other new accounting pronouncements are expected to have a significant impact on our consolidated financial statements.

## NOTE 2 - COVID-19 PANDEMIC

### Effect of Covid-19 Outbreak on Business Operations

Covid-19 was first identified in December 2019, and in March 2020, the World Health Organization categorized Covid-19 as a pandemic. The Covid-19 pandemic is affecting our customers, suppliers, service providers and employees to varying degrees, and the ultimate impacts of Covid-19, including the potential impact of known and future variants, on our business, results of operations, liquidity and prospects are not fully known at this time. Overall, the Covid-19 outbreak has not had a significant impact on our business to date. However, the following factors have affected and may continue to affect our business:

- Our key factories are located in Minnesota and Singapore. Both of these locations have been subject to government mandated shelter-in-place orders. Because our operations have been deemed essential, we were able to keep our factories up and running while the shelter-in-place mandates were in effect. If the pandemic worsens, it is possible that our operations may not be deemed essential under future government mandated shelter-in-place orders, and we may be required to shut-down factory operations. We have periodically implemented split-shifts for our factory operations to minimize the number of employees in our facilities at any given time, but these measures have not affected our production capacity. Since the start of the pandemic, many of our non-factory employees have spent the majority of their time working remotely. To date, the shelter-in-place mandates and remote work arrangements have had a minimal impact on operations, but material negative effects on our business could result if the pandemic worsens and continues for an extended period of time.
- Sales of some products, mainly our SQ3000 Multi-Function systems and MX memory module inspection products, require customer acceptance due to performance or other criteria that is considered more than a formality. Most of our customer's factories have remained open during the Covid-19 pandemic because they are deemed to be essential under government shelter-in-place mandates. However, global travel restrictions and quarantine measures have hindered our ability to obtain some customer acceptances of certain products at various times during the Covid-19 pandemic. Continuing or new global travel restrictions and quarantine measures could hinder our ability to obtain customer acceptances in a timely manner in the future, and therefore impact the timing of revenue recognition.
- The Covid-19 pandemic has caused disruptions in the global supply chain, including shortages of raw materials, parts and labor, and shipping and logistics issues, including delays in ocean freight and port congestion. Key supply chain disruptions impacting our business have been resolved to date. On-hand inventories have been sufficient to enable us to mitigate any supply disruptions with minimal impact on our sales or ability to service customers. However, it has become increasingly difficult to obtain adequate supplies of certain key components and labor for product assembly. Port congestion and tight booking for global sea freight have caused delays in product deliveries. The inability to obtain adequate supply of components or labor could result in the inability to meet customer demands and deliver one or more of our products for a period of several months or longer. Supply chain disruptions are expected to continue for the foreseeable future and may increase if the pandemic worsens or continues for an extended period of time.

Although we cannot estimate the continuing impact of the Covid-19 outbreak at this time, it may have an adverse effect on our results of future operations, financial position and liquidity in 2022 and beyond.

**Singapore Jobs Support Program**

The Singapore Government implemented a jobs support program in 2020 that was intended to support businesses and encourage retention of employees during the period of economic uncertainty caused by the Covid-19 pandemic. Under the jobs support program, the Singapore Government co-funded a portion of the gross monthly wages paid to local employees, which reduced our operating expense by \$410,000 in 2020. We did not receive any material benefit from the Singapore jobs support program in 2021.

**NOTE 3 – REVENUE RECOGNITION*****Performance Obligations***

Our revenue performance obligations are primarily satisfied at a point in time and limited revenue streams are satisfied over time as work progresses.

The following is a summary of our revenue performance obligations:

<b>(In thousands)</b>	<b>For the Year Ended December 31,</b>			
	<b>2021</b>		<b>2020</b>	
	<b>Revenues</b>	<b>Percent of Revenues</b>	<b>Revenues</b>	<b>Percent of Revenues</b>
Revenue recognized over time	\$ 2,253	2.4 %	\$ 1,715	2.4 %
Revenue recognized at a point in time	90,521	97.6 %	68,402	97.6 %
	<u>\$ 92,774</u>	<u>100.0 %</u>	<u>\$ 70,117</u>	<u>100.0 %</u>

See Note 13 for additional information regarding disaggregation of revenue.

***Contract Balances***

Contract assets consist of unbilled amounts from sales where we recognize the revenue over time and the revenue recognized exceeds the amount billed to the customer at a point in time. Accounts and trade notes receivable are recorded when the right to payment becomes unconditional. Contract liabilities consist of payments received in advance of performance under the contract. Contract liabilities are recognized as revenue when we perform under the contract.

The following summarizes our contract assets and contract liabilities:

<b>(In thousands)</b>	<b>December 31, 2021</b>	<b>December 31, 2020</b>
Contract assets, included in other current assets	\$ 7	\$ 2
Contract liabilities - advance customer payments	\$ 289	\$ 567
Contract liabilities - deferred warranty revenue	\$ 445	\$ 344

Changes in contract assets in 2021 and 2020 resulted from unbilled amounts under sensor product arrangements and longer duration 3D scanning service projects in which revenue is recognized over time. Changes in contract liabilities primarily resulted from reclassification of beginning contract liabilities to revenue as performance obligations were satisfied or from cash received in advance and not recognized as revenue. See Note 9 for changes in contractual obligations related to deferred warranty revenue. Unsatisfied performance obligations for deferred warranty revenue are generally expected to be recognized as revenue over the next one to three years. There were no impairment losses for contract assets in 2021 or 2020.

The following summarizes the amounts reclassified from beginning contract liabilities to revenue:

<b>(In thousands)</b>	<b>Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
Amounts reclassified from beginning contract liabilities to revenue	\$ 393	\$ 171
Amounts reclassified from deferred warranty revenue	263	193
Total	<u>\$ 656</u>	<u>\$ 364</u>

**NOTE 4 – MARKETABLE SECURITIES**

Our investments in marketable securities are classified as available-for-sale and consist of the following:

(In thousands)	December 31, 2021			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
<b>Short-Term</b>				
U.S. government and agency obligations	\$ 3,005	\$ 13	\$ —	\$ 3,018
Corporate debt securities and certificates of deposit	4,177	8	(2)	4,183
Asset backed securities	125	1	—	126
Marketable securities – short-term	<u>\$ 7,307</u>	<u>\$ 22</u>	<u>\$ (2)</u>	<u>\$ 7,327</u>
<b>Long-Term</b>				
U.S. government and agency obligations	\$ 9,921	\$ 5	\$ (57)	\$ 9,869
Corporate debt securities and certificates of deposit	4,869	9	(18)	4,860
Asset backed securities	2,511	9	(11)	2,509
Equity security	42	1	—	43
Marketable securities – long-term	<u>\$ 17,343</u>	<u>\$ 24</u>	<u>\$ (86)</u>	<u>\$ 17,281</u>

(In thousands)	December 31, 2020			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
<b>Short-Term</b>				
U.S. government and agency obligations	\$ 4,817	\$ 36	\$ —	\$ 4,853
Corporate debt securities and certificates of deposit	3,113	21	—	3,134
Asset backed securities	133	1	—	134
Marketable securities – short-term	<u>\$ 8,063</u>	<u>\$ 58</u>	<u>\$ —</u>	<u>\$ 8,121</u>
<b>Long-Term</b>				
U.S. government and agency obligations	\$ 7,529	\$ 66	\$ —	\$ 7,595
Corporate debt securities and certificates of deposit	3,975	61	(1)	4,035
Asset backed securities	2,347	45	—	2,392
Equity security	42	—	(12)	30
Marketable securities – long-term	<u>\$ 13,893</u>	<u>\$ 172</u>	<u>\$ (13)</u>	<u>\$ 14,052</u>

(In thousands)	In Unrealized Loss Position For Less Than 12 Months		In Unrealized Loss Position For Greater Than 12 Months	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
<b>December 31, 2021</b>				
U.S. government and agency obligations	\$ 9,250	\$ (57)	\$ —	\$ —
Corporate debt securities and certificates of deposit	5,188	(18)	355	(2)
Asset backed securities	1,278	(11)	—	—
Marketable securities	<u>\$ 15,716</u>	<u>\$ (86)</u>	<u>\$ 355</u>	<u>\$ (2)</u>
<b>December 31, 2020</b>				
U.S. government and agency obligations	\$ 330	\$ —	\$ —	\$ —
Corporate debt securities and certificates of deposit	411	(1)	—	—
Marketable securities	<u>\$ 741</u>	<u>\$ (1)</u>	<u>\$ —</u>	<u>\$ —</u>

Our long-term investments in marketable debt securities all have maturities of less than 5 years. Net pre-tax unrealized losses for marketable debt securities of \$43,000 at December 31, 2021 and net pre-tax unrealized gains of \$229,000 at December 31, 2020 have been recorded as a component of accumulated other comprehensive loss in stockholders' equity. We only invest in highly rated investment grade securities. We have determined that the net pre-tax unrealized gains and losses for marketable debt securities at December 31, 2021 and December 31, 2020 were caused by fluctuations in interest rates and are temporary in nature. We review our marketable debt securities to identify and evaluate investments that have indications of possible impairment. Factors considered in determining whether a loss is other-than-temporary include the length of time and extent to which fair value has been less than the cost basis, the investment grade credit quality of our debt securities and our ability and intent to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value. We received proceeds of \$225,000 from the sale of marketable securities in 2021. The gain recognized on the sale was insignificant. No marketable securities were sold in 2020. See Note 6 for additional information regarding the fair value of our investments in marketable securities.

Investments in marketable debt securities classified as cash equivalents of \$8.8 million at December 31, 2021 and \$1.3 million at December 31, 2020, consist of corporate debt securities and certificates of deposit. There were no unrealized gains or losses associated with any of these securities at December 31, 2021 or December 31, 2020.

**NOTE 5 – OTHER COMPREHENSIVE INCOME (LOSS)**

There were no reclassification adjustments in 2021 or 2020. Changes in components of other comprehensive income (loss) and taxes related to items of other comprehensive income (loss) are as follows:

(In thousands)	Year Ended December 31, 2021			Year Ended December 31, 2020		
	Before Tax	Tax Effect	Net of Tax Amount	Before Tax	Tax Effect	Net of Tax Amount
Foreign currency translation adjustments	\$ (193)	\$ —	\$ (193)	\$ 190	\$ —	\$ 190
Unrealized gains (losses) on available-for-sale securities	(272)	57	(215)	145	(31)	114
Other comprehensive income (loss)	\$ (465)	\$ 57	\$ (408)	\$ 335	\$ (31)	\$ 304

At December 31, 2021 and December 31, 2020 components of accumulated other comprehensive loss is as follows:

(In thousands)	Foreign Currency Translation Adjustments	Available-for-Sale Securities	Accumulated Other Comprehensive Loss
Balances at December 31, 2019	\$ (1,475)	\$ 69	\$ (1,406)
Other comprehensive income for the year ended December 31, 2020	190	114	304
Balances at December 31, 2020	\$ (1,285)	\$ 183	\$ (1,102)
Other comprehensive loss for the year ended December 31, 2021	(193)	(215)	(408)
Balances at December 31, 2021	\$ (1,478)	\$ (32)	\$ (1,510)

**NOTE 6 – FAIR VALUE MEASUREMENTS**

We determine the fair value of our assets and liabilities based on the exchange price that would be received for an asset or paid to transfer a liability (exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value maximize the use of observable inputs and minimize the use of unobservable inputs. We use a fair value hierarchy with three levels of inputs, of which the first two are considered observable and the last is considered unobservable, to measure fair value. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (Level 1). The next highest priority is based on observable inputs other than Level 1 inputs including quoted prices for similar assets or liabilities in active markets or quoted prices for identical or similar assets or liabilities in less active markets or other observable inputs (Level 2). The lowest priority is given to unobservable inputs (Level 3). The following provides information regarding fair value measurements for our marketable securities as of December 31, 2021 and December 31, 2020 according to the three-level fair value hierarchy.

(In thousands)	Fair Value Measurements at December 31, 2021 Using			
	Balance December 31, 2021	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>Marketable securities:</b>				
U.S. government and agency obligations	\$ 12,887	\$ —	\$ 12,887	\$ —
Corporate debt securities and certificates of deposit	9,043	—	9,043	—
Asset backed securities	2,635	—	2,635	—
Equity security	43	43	—	—
Total marketable securities	<u>\$ 24,608</u>	<u>\$ 43</u>	<u>\$ 24,565</u>	<u>\$ —</u>

(In thousands)	Fair Value Measurements at December 31, 2020 Using			
	Balance December 31, 2020	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>Marketable securities:</b>				
U.S. government and agency obligations	\$ 12,448	\$ —	\$ 12,448	\$ —
Corporate debt securities and certificates of deposit	7,169	—	7,169	—
Asset backed securities	2,526	—	2,526	—
Equity security	30	30	—	—
Total marketable securities	<u>\$ 22,173</u>	<u>\$ 30</u>	<u>\$ 22,143</u>	<u>\$ —</u>

During 2021 and 2020, we owned no Level 3 securities and there were no transfers within the three level hierarchy. A significant transfer is recognized when the inputs used to value a security have been changed which merit a transfer between the levels of the valuation hierarchy.

The fair value for our U.S. government and agency obligations, corporate debt securities and certificates of deposit and asset backed securities are determined based on valuations provided by external investment managers who obtain them from a variety of industry standard data providers. The fair value for our equity security is based on a quoted market price obtained from an active market. The carrying amounts of financial instruments included in cash equivalents approximate their related fair values due to the short-term maturities of those instruments. See Note 4 for additional information regarding our investments in marketable securities.

Non-financial assets such as equipment and leasehold improvements, goodwill and intangible assets and right-of-use assets for operating leases are subject to non-recurring fair value measurements if they are deemed impaired. We had no re-measurements of non-financial assets to fair value in 2021 or 2020.

The fair value for trade notes receivable is based on discounted future cash flows using current interest rates that would be offered for a similar transaction to a similarly situated customer. The difference between the carrying amount and estimated fair value for trade notes receivable is immaterial. If measured at fair value in the financial statements, these financial instruments would be classified as Level 3 in the fair value hierarchy.

#### NOTE 7 – SHARE-BASED COMPENSATION

We have three share-based compensation plans that are administered by the Compensation Committee of the Board of Directors. We have (a) an Employee Stock Incentive Plan for officers, other employees, consultants and independent contractors under which we have granted options and restricted stock units to officers and other employees, (b) an Employee Stock Purchase Plan under which shares of our common stock may be acquired by employees at discounted prices, and (c) a Non-Employee Director Stock Plan that provides for automatic grants of restricted shares of our common stock to non-employee directors. New shares of our common stock are issued upon stock option exercises, vesting of restricted stock units, issuances of shares to board members and issuances of shares under the Employee Stock Purchase Plan.

**Employee Stock Incentive Plan**

As of December 31, 2021, there are 87,507 shares of common stock reserved in the aggregate for issuance pursuant to future awards under our Employee Stock Incentive Plan and 397,726 shares of common stock reserved in the aggregate for issuance pursuant to outstanding awards under such plan. Although our Compensation Committee has authority to issue options, restricted stock, restricted stock units, share grants and other share-based benefits under our Employee Stock Incentive Plan, to date only restricted stock units and stock options have been granted under the plan. Options have been granted at an option price per share equal to the market value of our common stock on the date of grant, vest over a four year period and expire seven years after the date of grant. Restricted stock units vest over a four year period and entitle the holders to one share of our common stock for each restricted stock unit. Reserved shares underlying outstanding awards, including options and restricted stock units, that are forfeited are available under the Employee Stock Incentive Plan for future grant.

**Non-Employee Director Stock Plan**

As of December 31, 2021, there were 36,000 shares of common stock reserved in the aggregate for issuance pursuant to future restricted share grants under our Non-Employee Director Stock Plan and 8,000 shares of common stock reserved in the aggregate for issuance pursuant to outstanding stock option awards under our Non-Employee Director Stock Plan (which previously authorized the granting of stock options to non-employee directors). Under the terms of the plan, each non-employee director receives annual restricted share grants of 2,000 shares of our common stock on the date of each annual meeting at which such director is elected to serve on the board. The annual restricted share grants of common stock vest in four equal quarterly installments during the year after the grant date, provided the non-employee director is still serving as a director on the applicable vesting date.

On the dates of our 2021 and 2020 annual meetings, we issued 8,000 shares of our common stock to our non-employee directors, which were restricted as specified in the Non-Employee Director Stock Plan. The shares granted at the 2021 annual meeting had an aggregate fair market value on the date of grant equal to \$224,000 (grant date fair value of \$27.96 per share). As of December 31, 2021, 4,000 of these shares were vested. The aggregate fair value of the 4,000 unvested shares based on the closing price of our common stock on December 31, 2021 was \$186,000. The shares granted at the 2020 annual meeting had an aggregate fair market value on the date of grant equal to \$227,000 (grant date fair value of \$28.34 per share). As of December 31, 2021, all of the shares granted at the 2020 annual meeting were vested.

**Stock Option Activity**

The following is a summary of activity in stock options for 2021:

	<b>Options Outstanding</b>	<b>Weighted Average Exercise Price Per Share</b>
Outstanding, December 31, 2020	419,100	\$ 15.22
Granted	24,000	42.90
Exercised	(89,500)	11.26
Forfeited	(1,775)	17.52
Outstanding, December 31, 2021	351,825	\$ 18.11
Exercisable, December 31, 2021	257,026	\$ 14.82

The intrinsic value of an option is the amount by which the market price of the underlying common stock exceeds the option's exercise price. For options outstanding at December 31, 2021, the weighted average remaining contractual term of all outstanding options was 3.41 years and their aggregate intrinsic value was \$10.0 million. At December 31, 2021, the weighted average remaining contractual term of options that were exercisable was 2.6 years and their aggregate intrinsic value was \$8.1 million. The aggregate intrinsic value of stock options exercised was \$2.7 million in 2021 and \$2.7 million in 2020. We received proceeds from stock option exercises of \$428,000 in 2021 and \$358,000 in 2020. The aggregate fair value of options that vested was \$491,000 in 2021 and \$456,000 in 2020.

The fair value of stock options granted to our employees was estimated on the date of grant using the Black-Scholes model. The Black-Scholes valuation model incorporates ranges of assumptions that are disclosed in the table below. The risk-free interest rate is based on the United States Treasury yield curve at the time of grant with a remaining term equal to the expected life of the awards. We used historical experience to estimate the expected term, representing the length of time in years, that the options are expected to be outstanding. Expected volatility was computed based on historical fluctuations in the daily price of our common stock.

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For stock options granted in the two-year period ended December 31, 2021, we utilized the fair value of our common stock on the date of grant and employed the following key assumptions in computing fair value using the Black-Scholes option-pricing model:

	2021	2020
Risk-free interest rates	1.15% - 1.18%	0.44% - 0.50%
Expected life in years	5.19 - 5.64	5.12 - 5.55
Expected volatility	58.02% - 58.44%	59.43% - 59.81%
Dividend yield	0.00%	0.00%
Weighted average fair value on grant date	\$22.24	\$14.58

### Restricted Shares and Restricted Stock Units

Restricted shares are granted under our Non-Employee Director Stock Plan. Restricted stock units are granted under our Employee Stock Incentive Plan. The fair value of restricted shares and restricted stock units is equal to the market value of our common stock on the date of grant. There were 24,100 restricted shares and restricted stock units granted in 2021 (weighted average grant date fair value of \$37.94 each). There were 30,700 restricted shares and restricted stock units granted in 2020 (weighted average grant date fair value of \$28.33 each). The aggregate fair value of outstanding restricted shares and restricted stock units based on the closing share price of our common stock as of December 31, 2021 was \$2.7 million. The aggregate fair value of restricted shares and stock units that vested, based on the closing share price of our common stock on the vesting date, was \$1.4 million in 2021 and \$857,000 in 2020.

The following is a summary of activity in restricted shares and restricted stock units for 2021:

Non-vested restricted stock units	Shares	Weighted Average Grant Date Fair Value
Non-vested at December 31, 2020	68,454	\$ 21.45
Granted	24,100	37.94
Vested	(33,322)	21.56
Forfeited	(1,331)	23.03
Non-vested at December 31, 2021	57,901	\$ 28.21

### Employee Stock Purchase Plan

We have an Employee Stock Purchase Plan available to eligible U.S. employees. Under terms of the plan, eligible employees may designate from 1% to 10% of their compensation to be withheld through payroll deductions, up to a maximum of \$6,500 in each plan year, for the purchase of common stock at 85% of the lower of the market price on the first or last day of the offering period. Purchases under this plan were 7,380 shares in 2021 and 19,897 shares in 2020. As of December 31, 2021, 129,411 shares remain available for future issuance under this plan.

### Share-Based Compensation Information

Pre-tax share-based compensation expense for 2021 includes \$993,000 for stock options and restricted stock units, \$130,000 for our employee stock purchase plan, and \$224,000 for restricted shares issued to board members. Pre-tax share-based compensation expense for 2020 includes \$876,000 for stock options and restricted stock units, \$111,000 for our employee stock purchase plan, and \$194,000 for restricted shares issued to board members.

(In thousands)	2021	2020
Pre-tax share-based compensation expense	\$ 1,347	\$ 1,181
Income tax benefits related to share-based compensation	\$ 833	\$ 712

At December 31, 2021, the total unrecognized compensation cost related to non-vested share-based compensation arrangements was \$2.9 million and the related weighted average period over which such cost is expected to be recognized is 2.9 years.

**NOTE 8 – NET INCOME PER SHARE**

Net income per basic share is computed by dividing net income by the weighted average number of common shares outstanding during the period. Net income per diluted share is computed by dividing net income by the weighted average number of common and common equivalent shares outstanding during the period. Common equivalent shares consist of common shares to be issued upon exercise of stock options, vesting of restricted stock units, vesting of restricted shares and from purchases of shares under our Employee Stock Purchase Plan, as calculated using the treasury stock method. Common equivalent shares are excluded from the calculation of net income per diluted share if their effect is anti-dilutive. The components of net income per basic and diluted share were as follows:

<b>(In thousands except per share amounts)</b>	<b>Net Income</b>	<b>Weighted Average Shares Outstanding</b>	<b>Per Share Amount</b>
<b>Year Ended 12/31/2021:</b>			
Basic	\$ 12,751	7,320	\$ 1.74
Dilutive effect of common equivalent shares	—	217	(0.05)
Dilutive	<u>\$ 12,751</u>	<u>7,537</u>	<u>\$ 1.69</u>

<b>(In thousands except per share amounts)</b>	<b>Net Income</b>	<b>Weighted Average Shares Outstanding</b>	<b>Per Share Amount</b>
<b>Year Ended 12/31/2020:</b>			
Basic	\$ 5,742	7,215	\$ 0.80
Dilutive effect of common equivalent shares	—	239	(0.03)
Dilutive	<u>\$ 5,742</u>	<u>7,454</u>	<u>\$ 0.77</u>

Potentially dilutive shares consist of stock options, restricted stock units, restricted shares and purchases of shares under our Employee Stock Purchase Plan. Potentially dilutive shares excluded from the calculations of net income per diluted share due to their anti-dilutive effect were as follows: 50,000 shares in 2021 and 57,000 shares in 2020.

**NOTE 9 – OTHER FINANCIAL STATEMENT DATA**

Inventories consist of the following:

<b>(In thousands)</b>	<b>December 31,</b>	
	<b>2021</b>	<b>2020</b>
Raw materials and purchased parts	\$ 18,013	\$ 11,903
Work in process	1,655	2,459
Finished goods	6,859	4,208
Demonstration inventories, net	1,075	1,701
Total inventories	<u>\$ 27,602</u>	<u>\$ 20,271</u>

Demonstration inventories are stated at cost less accumulated amortization, generally based on a 36 month useful life. Accumulated amortization for demonstration inventories totaled \$2.8 million at December 31, 2021 and \$2.7 million at December 31, 2020. Amortization expense related to demonstration inventories was \$709,000 in 2021 and \$770,000 in 2020.

Equipment and leasehold improvements consist of the following:

<b>(In thousands)</b>	<b>December 31,</b>	
	<b>2021</b>	<b>2020</b>
Equipment	\$ 16,051	\$ 15,070
Leasehold improvements	3,070	3,072
	19,121	18,142
Accumulated depreciation and amortization	(15,947)	(14,907)
	<u>\$ 3,174</u>	<u>\$ 3,235</u>

Depreciation and amortization expense related to equipment and leasehold improvements was \$1.6 million in 2021 and \$1.7 million in 2020.

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Intangible assets consist of the following:

(In thousands)	December 31, 2021			December 31, 2020		
	Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Patents	\$ 1,972	\$ (1,614)	\$ 358	\$ 1,832	\$ (1,542)	\$ 290
Software	206	(206)	—	206	(200)	6
Marketing assets and customer relationships	86	(69)	17	101	(72)	29
	<u>\$ 2,264</u>	<u>\$ (1,889)</u>	<u>\$ 375</u>	<u>\$ 2,139</u>	<u>\$ (1,814)</u>	<u>\$ 325</u>

Amortization expense in 2021 and 2020 was as follows:

(In thousands)	Year Ended December 31,		Weighted Avg. Remaining Life-Years at December 31, 2021
	2021	2020	
Patents	\$ 187	\$ 153	1.6
Software	6	29	—
Marketing assets and customer relationships	8	9	2.2
	<u>\$ 201</u>	<u>\$ 191</u>	

Estimated aggregate amortization expense based on current intangible assets for the next three years is expected to be as follows: \$190,000 in 2022; \$141,000 in 2023; and \$44,000 in 2024.

Accrued expenses consist of the following:

(In thousands)	December 31,	
	2021	2020
Wages and benefits	\$ 2,966	\$ 2,768
Warranty liability	949	793
Income taxes payable	341	269
Other	162	63
	<u>\$ 4,418</u>	<u>\$ 3,893</u>

Other liabilities consist of the following:

(In thousands)	December 31,	
	2021	2020
Deferred warranty revenue	\$ 135	\$ 88
Warranty liability	42	46
	<u>\$ 177</u>	<u>\$ 134</u>

See Note 3 for additional information related to contract liabilities.

**Warranty costs:**

We provide for the estimated cost of product warranties, which cover products for periods ranging from one to three years, at the time revenue is recognized. While we engage in extensive product quality programs and processes, including actively monitoring and evaluating the quality of components provided by suppliers, warranty obligations do arise. These obligations are affected by product failure rates, the costs of materials used in correcting product failures and service delivery expenses incurred to make these corrections. If actual product failure rates and material or service delivery costs differ from our estimates, revisions to the estimated warranty liability are required and could be material. At the end of each reporting period, we revise our estimated warranty liability based on these factors. The current portion of our warranty liability is included as a component of accrued expenses. The long-term portion of our warranty liability is included as a component of other liabilities.

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A reconciliation of the changes in our estimated warranty liability is as follows:

(In thousands)	Year Ended December 31,	
	2021	2020
Balance at beginning of period	\$ 839	\$ 798
Accrual for warranties	1,024	836
Warranty revision	(53)	43
Settlements made during the period	(819)	(838)
Balance at end of period	991	839
Current portion of estimated warranty liability	(949)	(793)
Long-term estimated warranty liability	\$ 42	\$ 46

**Deferred warranty revenue:**

The current portion of our deferred warranty revenue is included as a component of advance customer payments. The long-term portion of our deferred warranty revenue is included as a component of other liabilities. A reconciliation of the changes in our deferred warranty revenue is as follows:

(In thousands)	Year Ended December 31,	
	2021	2020
Balance at beginning of period	\$ 344	\$ 275
Revenue deferrals	575	434
Amortization of deferred revenue	(474)	(365)
Total deferred warranty revenue	445	344
Current portion of deferred warranty revenue	(310)	(256)
Long-term deferred warranty revenue	\$ 135	\$ 88

**NOTE 10 – INCOME TAXES**

Income before income taxes consists of the following:

(In thousands)	Year Ended December 31,	
	2021	2020
Sources of income before income taxes:		
United States	\$ 12,741	\$ 4,876
Foreign	1,754	1,478
Total income before income taxes	\$ 14,495	\$ 6,354

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The provision for income taxes consists of the following:

(In thousands)	Year Ended December 31,	
	2021	2020
Current:		
Federal	\$ 417	\$ 26
State	46	19
Foreign	298	201
Total current	\$ 761	\$ 246
Deferred:		
Federal	\$ 960	\$ 361
State	(1)	—
Foreign	24	5
Total deferred	\$ 983	\$ 366
Total provision for income taxes	\$ 1,744	\$ 612

A reconciliation of the statutory rate to the effective income tax rate is as follows:

	Year Ended December 31,	
	2021	2020
Federal statutory rate	21.0%	21.0%
State income taxes, net of federal benefit	0.3	0.2
Global Intangible Low-Taxed Income (GILTI)/Foreign Derived Intangible Income (FDII)	(2.9)	2.1
Share-based compensation	(3.8)	(7.4)
Research and experimentation (R&D) credit	(2.3)	(3.2)
Foreign tax credit	(1.0)	(2.2)
Foreign rate difference	(0.4)	(1.1)
Valuation allowance	0.5	(4.2)
Expiring and unrecognized deferred tax attributes	—	3.7
Other, net	0.6	0.7
Effective tax rate	12.0%	9.6%

Our effective tax rate in 2021 was favorably impacted by GILTI, FDII, \$605,000 of excess tax benefits from employee share-based compensation and favorable benefits from U.S. federal R&D tax credits and foreign tax credits. Our effective tax rate in 2020 was favorably impacted by \$497,000 of excess tax benefits from employee share-based compensation and favorable benefits from U.S. federal R&D tax credits and foreign tax credits, offset in part by GILTI. All of our remaining federal net operating loss carry forwards were fully utilized in 2020.

A reconciliation of the beginning and ending amount of gross unrecognized tax benefits (“UTB”) is as follows:

(In thousands)	Year Ended December 31,	
	2021	2020
Gross UTB balance at beginning of year	\$ 1,789	\$ 1,761
Additions based on tax positions related to the current year	231	137
Additions for tax positions of prior years	1	60
Reductions for tax positions of prior years	(39)	(169)
Gross UTB balance at end of year	\$ 1,982	\$ 1,789
Net UTB balance at end of year	\$ 214	\$ 197

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The difference between the gross and net ending UTB and the difference between the changes in the gross and net UTB during the year are related to the required netting of UTB balances against positions that have an established deferred tax asset, such as our federal and state R&D tax credits. The increase in our gross UTB balance as of December 31, 2021 was primarily related to federal and state R&D tax credits. The increase in our net UTB at December 31, 2021 is primarily related to various inconsequential state tax matters. The net UTB is a long-term income tax reserve within our consolidated balance sheets. We recognize interest and penalties related to unrecognized tax benefits in tax expense. Accrued interest and penalties on a gross basis and estimated gross interest and penalties included in the above amounts for all years were inconsequential. The gross UTB at December 31, 2021 and 2020, if recognized, would favorably impact our effective tax rate.

We file income tax returns in the United States and various state and foreign jurisdictions. Our federal income tax returns for years after 2017 are still subject to examination by the Internal Revenue Service. We are no longer subject to state and local income tax examinations for years prior to 2017.

The Inland Revenue Authority of Singapore has initiated a routine compliance review of our 2018 income tax return. We presently anticipate that the outcome of this audit will not have a significant impact on our financial position or results of operations.

Deferred tax assets and liabilities consist of the following:

(In thousands)	December 31, 2021		December 31, 2020	
	Assets	Liabilities	Assets	Liabilities
Equipment, leaseholds and intangible amortization, net	\$ 185	\$ 230	\$ 176	\$ 251
Operating lease liabilities	672	—	839	—
Right-of-use assets (operating leases)	—	369	—	478
Inventory allowances	550	20	549	5
Accrued expenses	130	—	129	—
Warranty accrual	214	—	182	—
Deferred revenue	312	—	214	—
Federal and state tax credits	2,992	—	3,960	—
State net operating loss carry forwards	233	—	275	—
Share-based compensation	361	—	358	—
Other, net	131	—	113	50
Subtotal	5,780	619	6,795	784
Valuation allowance	(1,493)	—	(1,414)	—
Total deferred tax assets and liabilities	\$ 4,287	\$ 619	\$ 5,381	\$ 784

We have significant deferred tax assets as a result of temporary differences between the taxable income on our tax returns and U.S. GAAP income, R&D tax credit carry forwards and state net operating loss carry forwards. A deferred tax asset generally represents future tax benefits to be received when temporary differences previously reported in our consolidated financial statements become deductible for income tax purposes, when net operating loss carry forwards could be applied against future taxable income, or when tax credit carry forwards are utilized on our tax returns. We assess the realizability of our deferred tax assets and the need for a valuation allowance based on the guidance provided in current financial accounting standards.

Significant judgment is required in determining the realizability of our deferred tax assets. The assessment of whether valuation allowances are required considers, among other matters, the nature, frequency and severity of any current and cumulative losses, forecasts of future profitability, the duration of statutory carry forward periods, our experience with loss carry forwards not expiring unused and tax planning alternatives. In analyzing the need for valuation allowances, we first considered our history of cumulative operating results for income tax purposes over the past three years in each of the tax jurisdictions in which we operate, our financial performance in recent quarters, statutory carry forward periods and tax planning alternatives. In addition, we considered both our near-term and long-term financial outlook. After considering all available evidence (both positive and negative), we concluded that recognition of valuation allowances for substantially all of our U.S. and Singapore based deferred tax assets was not required at December 31, 2021 or December 31, 2020. Our valuation allowances at December 31, 2021 and December 31, 2020 mainly relate to state R&D tax credits and net operating loss carry forwards. The valuation allowance recorded against our deferred tax assets at December 31, 2021 was increased by \$79,000, mainly for state R&D tax credits that we do not expect to use. The valuation allowance recorded against our deferred tax assets at December 31, 2020 was reduced by \$265,000, mainly for U.S. federal R&D tax credits that were used or expired. At December 31, 2021, we have federal R&D tax credit carry forwards of approximately \$3.0 million that will begin to expire in 2027, if unused.

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We determine on a regular basis the amount of undistributed earnings that will be reinvested in our non-U.S. operations. This assessment is based on our fiscal objectives and the working capital requirements for each of our foreign subsidiaries. The Tax Cuts and Jobs Act provides for a 100% dividends-received-deduction for foreign-source dividends received from 10% or more owned foreign corporations. Additionally, our foreign income is subject to Subpart F, GILTI and is eligible for foreign tax credits. The tax jurisdictions for the vast majority of our foreign operations do not impose a withholding tax. For these reasons, we have not recognized a deferred tax liability for the unremitted earnings of any of our foreign subsidiaries. Determination of the amount of any deferred income or withholding tax liability is not practicable because of the complexities of the hypothetical calculation.

Cash payments for income taxes, net of refunds received, were \$628,000 in 2021 and \$59,000 in 2020.

**NOTE 11 – OPERATING LEASES**

We lease a 61,208 square foot mixed office and warehouse facility in Golden Valley, Minnesota. The lease has a term of 91 months and expires on July 31, 2026. The lease contains a rent escalation clause, one three year renewal option and incentives. Rental expense, including the effects of lease incentives, is recognized on a straight-line basis over the term of the lease. We did not include the renewal option in our accounting for the lease because it is not reasonably certain that we will exercise the option. We are also required to pay insurance, property taxes and other operating expenses related to the leased facility, which are not fixed or tied to an index.

In February 2020, we finalized a new lease for our existing 19,805 square foot mixed office and warehouse facility in Singapore, which serves as a sales, development and final assembly and integration facility for our inspection and metrology system products. The new lease does not contain any incentives or renewal options and runs through July 2023. We also have operating leases for small facilities in Taiwan, the United Kingdom and China which expire in June 2023, May 2023 and November 2022, respectively. Effective January 2022, we have an operating lease for a small facility in Malaysia which expires in December 2023.

The components of our costs for operating leases are as follows:

Component (in thousands)	Year Ended	Year Ended
	December 31, 2021	December 31, 2020
Operating lease cost	\$ 742	\$ 723
Variable lease cost	269	272
Short-term lease cost	39	38
Total	<u>\$ 1,050</u>	<u>\$ 1,033</u>

Variable lease costs generally consists of real estate taxes and insurance for leased facilities, which are paid based on actual costs incurred by the lessor.

At December 31, 2021, the future maturities of lease liabilities are as follows:

Twelve months ending December 31,	(In thousands)
2022	\$ 1,016
2023	873
2024	658
2025	674
2026	403
Total lease payments	3,624
Less: amount representing interest	391
Present value of operating lease liabilities	<u>\$ 3,233</u>

At December 31, 2021, the weighted average remaining term of our operating leases was 4.02 years, and the weighted average discount rate applied to our operating leases was 5.31%. At December 31, 2020, the weighted average remaining term of our operating leases was 4.85 years, and the weighted average discount rate applied to our operating leases was 5.2%.

Cash paid for amounts included in the measurement of operating lease liabilities was \$1.0 million in 2021 and \$975,000 in 2020. Operating lease liabilities and right-of-use assets were increased for new non-cash leases by \$941,000 in 2020.

**NOTE 12 – 401(K) AND OTHER DEFINED CONTRIBUTION PLANS**

We have a retirement savings plan pursuant to Section 401(k) of the Internal Revenue Code (Code), under which eligible employees may contribute a portion of their earnings, not to exceed annual amounts allowed under the Code. In addition, we may also make contributions at the discretion of the Board of Directors. We provided matching contributions to employees totaling \$323,000 in 2021 and \$303,000 in 2020.

We also contribute to defined contribution retirement savings plans on behalf of our employees in the United Kingdom and Taiwan. We made contributions to these plans totaling \$50,000 in 2021 and \$39,000 in 2020.

**NOTE 13 – REVENUE CONCENTRATIONS, SIGNIFICANT CUSTOMERS, AND GEOGRAPHIC AREAS**

The following summarizes our revenue by product line:

<b>(In thousands)</b>	<b>Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
High precision 3D and 2D sensors	\$ 25,941	\$ 17,522
Inspection and metrology systems	42,958	37,547
Semiconductor sensors	23,875	15,048
Total	\$ 92,774	\$ 70,117

Revenue from sales of high precision 3D and 2D sensors based on our 3D Multi-Reflection Suppression™ (MRST™) technology was \$17.2 million in 2021 and \$11.6 million in 2020. Revenue from sales of inspection and metrology systems based on our 3D MRS sensor technology was \$31.0 million in 2021 and \$20.2 million in 2020.

In 2021, sales to significant customer A accounted for 17% of our total revenues. In 2020, sales to significant customer A accounted for 14% of our total revenues, and sales to significant customer B accounted for 13% of our total revenues. As of December 31, 2021, accounts receivable from significant customer A were \$2.0 million, accounts receivable from significant customer C were \$3.6 million and accounts receivable from significant customer D were \$2.7 million.

Export revenues as a percentage of total revenues were 83% in 2021 and 80% in 2020. Export revenues are attributed to the country where the product is shipped. Substantially all of our export revenues are negotiated, invoiced and paid in U.S. dollars.

Revenues by geographic area is summarized as follows:

<b>(In thousands)</b>	<b>Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
United States	\$ 15,327	\$ 14,134
Netherlands	2,700	2,237
Other Europe	9,649	7,017
China	30,698	18,903
Singapore	4,097	3,797
South Korea	14,809	6,376
Japan	5,145	3,172
Other Asia	7,255	11,702
Other	3,094	2,779
Total revenues	\$ 92,774	\$ 70,117

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Long-lived assets include equipment and leasehold improvements and intangible and other assets attributable to each geographic area's operations. Long-lived assets at December 31, 2021 and 2020 are as follows:

<b>(In thousands)</b>	<b>2021</b>	<b>2020</b>
Long-lived assets:		
United States	\$ 2,526	\$ 2,814
Europe	13	6
Asia and other	1,010	740
Total long-lived assets	<u>\$ 3,549</u>	<u>\$ 3,560</u>

**NOTE 14 – CONTINGENCIES**

We are periodically a defendant in miscellaneous lawsuits, claims and disputes in the ordinary course of business. While the outcome of these matters cannot be predicted with certainty, management presently believes the disposition of these matters will not have a material effect on our financial position, results of operations or cash flows.

In the normal course of business to facilitate sales of our products and services, we at times indemnify other parties, including customers, with respect to certain matters. In these instances, we have agreed to hold the other parties harmless against losses arising out of intellectual property infringement or other types of claims. These agreements may limit the time within which an indemnification claim can be made, and almost always limits the amount of the claim. It is not possible to determine the maximum potential amount of exposure under these indemnification agreements due to the limited history of prior indemnification claims and the unique facts and circumstances involved in each particular agreement. Historically, payments made, if any, under these agreements have not had a material impact on our operating results, financial position or cash flows.

## **Report of Independent Registered Public Accounting Firm**

Shareholders and Board of Directors  
CyberOptics Corporation  
Minneapolis, Minnesota

### **Opinion on the Consolidated Financial Statements**

We have audited the accompanying consolidated balance sheets of CyberOptics Corporation and subsidiaries (the “Company”) as of December 31, 2021 and 2020, the related consolidated statements of operations, comprehensive income, stockholders’ equity, and cash flows for each of the two years in the period ended December 31, 2021, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2021, in conformity with accounting principles generally accepted in the United States of America.

### **Basis for Opinion**

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s 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.

### **Critical Audit Matter**

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing separate opinions on the critical audit matter or on the accounts or disclosures to which it relates.

#### *Accounting for Income Taxes*

The Company is a U.S. based multinational entity subject to taxes in the U.S. and multiple foreign jurisdictions which affect the Company’s provision for income taxes. The tax provision is an estimate based on management’s understanding of current enacted tax laws and tax rates of each tax jurisdiction. We identified the accounting for income taxes as a critical audit matter. The Company’s tax provision included the following areas of complexity: (i) the calculation methods and the global legal structure and (ii) evaluation of current tax laws and regulations. Auditing these elements involved especially challenging auditor judgment due to the nature and extent of audit effort required to address these matters, including the extent of specialized skillsets and knowledge needed.

The primary procedures we performed to address this critical audit matter included:

- Tested the completeness and accuracy of the underlying data used to prepare the income tax provision.
- With the assistance of U.S. and international income tax experts, we evaluated management's application of relevant tax laws to its legal entity structure and the effect on the Company's income tax provision, including the Company's calculations of current period income tax expense and deductions associated with current tax laws and regulations by reviewing and evaluating management's income tax calculations and assessing the Company's compliance with tax laws.
- With the assistance of U.S. and international income tax experts, we evaluated management's income reporting to the various tax jurisdictions in which the Company operates based on its global corporate structure.

/s/ BDO USA, LLP

We have served as the Company's auditor since 2019.

Minneapolis, Minnesota

March 11, 2022

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

None.

## **ITEM 9A. CONTROLS AND PROCEDURES**

### **Disclosure Controls and Procedures**

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934 (the “Exchange Act”). Based upon that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that, as of the end of the period covered by this report, our disclosure controls and procedures were effective in ensuring that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in applicable rules and forms and that such information is accumulated and communicated to management, including our Chief Executive Officer and Chief Financial Officer, in a manner that allows timely decisions regarding required disclosure.

During the quarter ended December 31, 2021, there has been no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

### **Management's Report on Internal Control Over Financial Reporting**

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) under the Exchange Act, for CyberOptics Corporation and its subsidiaries (collectively, the Company). Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles (GAAP).

Our internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements, and even when determined to be effective, can only provide reasonable assurance with respect to financial statement preparation and presentation. Also, 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, including our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our internal control over financial reporting as of December 31, 2021. In making this evaluation, our management used the criteria for effective internal control over financial reporting described in the 2013 “Internal Control—Integrated Framework” issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management concluded that our internal control over financial reporting was effective as of December 31, 2021.

## **ITEM 9B. OTHER INFORMATION**

None.

## **ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS**

Not applicable.

**PART III.****ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE**

The information contained under the headings “Proposal I–Election of Directors,” “Information About our Board of Directors and its Committees and Other Corporate Governance Matters” and “Executive Compensation–Information about Our Executive Officers” of the Company’s definitive proxy statement for its annual meeting of shareholders to be held May 12, 2022 (Proxy Statement), is hereby incorporated by reference.

**ITEM 11. EXECUTIVE COMPENSATION**

The information under the headings “Information About our Board of Directors and its Committees and Other Corporate Governance Matters–Compensation of Independent Directors,” and “Executive Compensation” of the Proxy Statement is hereby incorporated by reference.

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

The information contained under the headings “Beneficial Ownership” of the Proxy Statement is hereby incorporated by reference.

The following table describes shares of our common stock that are available as of December 31, 2021 for purchase under outstanding stock-based awards, or reserved for issuance under stock-based awards or other rights that may be granted in the future, under our equity compensation plans:

	(a) Number of securities to be issued upon exercise of outstanding options, warrants and rights	(b) Weighted- average exercise price of outstanding options, warrants and rights	(c) Number of securities remaining available for future issuance under equity compensation plans (excluding those reflected in column (a))
<b>Equity compensation plans approved by security holders</b>			
Employee Stock Incentive Plan <sup>1</sup>	397,726	\$ 18.14	87,507
Non-Employee Director Stock Plan	8,000	16.97	36,000
Employee Stock Purchase Plan <sup>2</sup>	N/A	N/A	129,411
Total	405,726	\$ 18.11	252,918

(1) - In addition to stock options, shares of Common Stock may be received by employees pursuant to stock appreciation rights, restricted stock and restricted stock unit awards, performance awards and dividend equivalents.

(2) - Shares are issued based on an employee's election to participate in the Employee Stock Purchase Plan.

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

The information under the headings “Information About our Board of Directors and its Committees and Other Corporate Governance Matters–Committees of Our Board–Audit Committee” of the Proxy Statement is hereby incorporated by reference.

**ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES**

The information under the heading “Independent Accountants and Payment of Fees” and “Information About our Board of Directors and its Committees and Other Corporate Governance Matters–Committees of Our Board–Audit Committee” of the Proxy Statement is hereby incorporated by reference.

**PART IV.**

**ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES**

(a)(1) Financial Statements: The Consolidated Financial Statements included in Item 8 to this Form 10-K consist of the following:

Report of Independent Registered Public Accounting Firm (BDO USA, LLP; Minneapolis, MN; PCAOB ID#243)

Consolidated Balance Sheets as of December 31, 2021 and 2020.

Consolidated Statements of Operations for the years ended December 31, 2021 and 2020.

Consolidated Statements of Comprehensive Income for the years ended December 31, 2021 and 2020.

Consolidated Statements of Cash Flows for the years ended December 31, 2021 and 2020.

Consolidated Statements of Stockholders' Equity for the years ended December 31, 2021 and 2020.

Notes to the Consolidated Financial Statements.

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### (b) LIST OF EXHIBITS

<u>Exhibit Number</u>	<u>Description</u>
<u>3.1</u>	<u>Articles of Incorporation of the Company, as amended (incorporated by reference to Exhibit 3.1 to the Company's annual report on Form 10-K for the year ended December 31, 1997).</u>
<u>3.2</u>	<u>Bylaws of the Company (incorporated by reference to Exhibit 3.1 to the current report on Form 8-K dated September 8, 2008).</u>
<u>*4.1</u>	<u>CyberOptics Corporation 1998 Stock Incentive Plan, as amended (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K dated May 20, 2016)</u>
<u>*4.2</u>	<u>CyberOptics Corporation Employee Stock Purchase Plan, as amended and restated (incorporated by reference to Exhibit 4.1 to the current report on Form 8-K dated May 10, 2018).</u>
<u>*4.3</u>	<u>CyberOptics Corporation Non-Employee Director Stock Plan (incorporated by reference to Exhibit 10.2 to the current report on Form 8-K dated May 20, 2016)</u>
<u>*4.4</u>	<u>CyberOptics Corporation Amended Non-Employee Director Stock Plan (incorporated by reference to Exhibit 4.1 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2017)</u>
<u>4.5</u>	<u>Description of Securities (incorporated by reference to Exhibit 4.5 to the Company's annual report on Form 10-K for the year ended December 31, 2020).</u>
<u>10.1</u>	<u>Lease Agreement between FirstCal Industrial 2 Acquisitions LLC and the Company dated March 27, 2006 (incorporated by reference to Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended March 31, 2006).</u>
<u>10.2</u>	<u>First Amendment to Lease effective as of March 14, 2011, by and between Hines REIT Minneapolis Industrial, LLC and CyberOptics Corporation (incorporated by reference to Exhibit 10.1 to the Company's quarterly report on Form 10-Q for the quarter ended March 31, 2011).</u>
<u>*10.3</u>	<u>Severance Pay Agreement with Jeffrey A. Bertelsen (incorporated by reference to Exhibit 10.3 to the current report on Form 8-K dated May 19, 2008).</u>
<u>*10.4</u>	<u>Amendment to Severance Pay Agreement with Jeffrey A. Bertelsen (incorporated by reference to Exhibit 10.1 to the current report on Form 8-K dated May 18, 2009).</u>
<u>*10.5</u>	<u>Clarification to Severance Pay Agreement with Jeffrey A. Bertelsen (incorporated by reference to Exhibit 10.9 to the Company's annual report on Form 10-K for the year ended December 31, 2011).</u>
<u>*10.6</u>	<u>Employment agreement with Subodh Kulkarni dated January 13, 2014 (incorporated by reference to Exhibit 10.12 to the Company's annual report on Form 10-K for the year ended December 31, 2013)</u>
<u>10.7</u>	<u>Third Amendment to Lease ("Amendment") effective as of May 17, 2018, by and between GOLDEN HILLS PARK I PROPERTY OWNER, LLC and CYBEROPTICS CORPORATION (incorporated by reference to Exhibit 10.2 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2018).</u>
<u>10.8</u>	<u>Tenancy agreement between RBC Investor Services Trust Singapore Limited and CyberOptics Singapore Private Limited dated December 8, 2016 (incorporated by reference to Exhibit 10.9 to the Company's annual report on Form 10-K for the year ended December 31, 2016).</u>
<u>10.9</u>	<u>Tenancy agreement between RBC Investor Services Trust Singapore Limited (in its capacity as trustee of ESR-REIT) and CyberOptics Singapore Private Limited dated February 25, 2020 (incorporated by reference to Exhibit 10.9 to the Company's annual report on Form 10-K for the year ended December 31, 2019)</u>
<u>*10.10</u>	<u>Form of stock option agreement used for option grants to employees (incorporated by reference to Exhibit 10.9 to the Company's annual report on Form 10-K for the year ended December 31, 2014).</u>
<u>*10.11</u>	<u>Form of restricted stock award agreement used for awards to employees (incorporated by reference to Exhibit 10.10 to the Company's annual report on Form 10-K for the year ended December 31, 2014).</u>
<u>21</u>	<u>Subsidiaries of the Company.</u>
<u>23.1</u>	<u>Consent of Independent Registered Public Accounting Firm</u>
<u>31.1</u>	<u>Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</u>
<u>31.2</u>	<u>Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</u>
<u>32</u>	<u>Certification of Chief Executive Officer and Chief Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</u>
<u>101</u>	Financial statements formatted in Inline Extensible Business Reporting Language: (i) the Consolidated Balance Sheets, (ii) the Consolidated Statement of Operations, (iii) the Consolidated Statements of Comprehensive Income, (iv) the Consolidated Statements of Cash Flows, (v) the Consolidated Statements of Stockholders' Equity, and (vi) the Notes to the Consolidated Financial Statements.
<u>104</u>	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

\* Management Contract or Compensatory Plan or Arrangement

## SIGNATURES

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

CYBEROPTICS CORPORATION

/s/ SUBODH KULKARNI

By Subodh Kulkarni, President and CEO

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

<u>Name</u>	<u>Title</u>	<u>Date</u>
<u>/s/ SUBODH KULKARNI</u> Subodh Kulkarni	President and CEO (Principal Executive Officer)	March 11, 2022
<u>/s/ VIVEK MOHINDRA</u> Vivek Mohindra	Director	March 11, 2022
<u>/s/ MICHAEL M. SELZER JR.</u> Michael M. Selzer, Jr.	Director	March 11, 2022
<u>/s/ CHERYL BERANEK</u> Cheryl Beranek	Director	March 11, 2022
<u>/s/ CORDELL HARDY</u> Cordell Hardy	Director	March 11, 2022
<u>/s/ CRAIG D. GATES</u> Craig D. Gates	Chairman, Director	March 11, 2022
<u>/s/ JEFFREY A. BERTELSEN</u> Jeffrey A. Bertelsen	Vice President, CFO and COO (Principal Financial Officer and Principal Accounting Officer)	March 11, 2022

**SUBSIDIARIES**

<b>Name</b>	<b>Jurisdiction of Formation</b>
CyberOptics Ltd.	United Kingdom
CyberOptics Holdings Ltd.	United Kingdom
CyberOptics (Singapore) Pte. Ltd	Singapore
CyberOptics (China) Co., Ltd.	People's Republic of China
CyberOptics Taiwan Branch	Taiwan
Cybe Malaysia Sdn. Bhd.	Malaysia

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Consent of Independent Registered Public Accounting Firm

CyberOptics Corporation  
Minneapolis, Minnesota

We hereby consent to the incorporation by reference in the Registration Statements on Forms S-8 (File No. 333-230209, File No. 333-211553, File No. 333-183296, File No. 333-176196, and File No. 333-103310) of CyberOptics Corporation of our report dated March 11, 2022, relating to the consolidated financial statements of CyberOptics Corporation which appears in this Form 10-K.

/s/ BDO USA, LLP

Minneapolis, Minnesota

March 11, 2022

I, Subodh Kulkarni, certify that:

1. I have reviewed this Annual Report on Form 10-K of CyberOptics 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 11, 2022

/s/ Subodh Kulkarni

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Signature

Name: Subodh Kulkarni

Title: President and CEO

I, Jeffrey A. Bertelsen, certify that:

1. I have reviewed this Annual Report on Form 10-K of CyberOptics 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 11, 2022

/s/ Jeffrey A. Bertelsen

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Signature

Name: Jeffrey A. Bertelsen

Title: Vice President, CFO and COO

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

In connection with the Annual Report of CyberOptics Corporation (the “Company”) on Form 10-K for the year ended December 31, 2021 as filed with the Securities and Exchange Commission on or about the date hereof (the “Report”), the undersigned, Subodh Kulkarni, Chief Executive Officer, and Jeffrey A. Bertelsen, Chief Financial Officer of the Company, each certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 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 results of operations of the Company.

/s/ Subodh Kulkarni

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Subodh Kulkarni

President and CEO

March 11, 2022

/s/ Jeffrey A. Bertelsen

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Jeffrey A. Bertelsen

Vice President, CFO and COO

March 11, 2022

**END OF FILING**