

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, 2019.

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

(State or other jurisdiction of incorporation or organization)

41-1472057

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

5900 Golden Hills Drive
MINNEAPOLIS, MINNESOTA

(Address of principal executive offices)

55416

(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 and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

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

Large Accelerated Filer

Accelerated filer

Non-accelerated filer

Smaller Reporting Company

Emerging Growth Company

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the 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: \$112,435,013.

As of February 29, 2019, there were 7,164,654 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 14, 2020.

CYBEROPTICS CORPORATION
FORM 10-K
For the Fiscal Year Ended December 31, 2019

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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. 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. Proxy materials for our upcoming 2020 annual shareholders meeting to be held on May 14, 2020 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 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 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, through-put 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.

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, including our SQ3000™ Multi-Function inspection and measurement machines (SQ3000 and SQ3000™ 3D CMM) and our recently introduced MX3000 memory module inspection system. 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 industries. 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 has resulted in increased 3D stacking of chips. Accordingly, advanced semiconductor packaging is expected to experience significant growth in the next 5 to 10 years. Micro electromechanical systems devices (MEMS) are now being used for many advanced applications. Yield challenges with these products are driving the need for inspection and metrology, and we believe our 3D MRS technology platform is well suited for many of these applications. We are introducing new products based on our MRS technology that we believe will allow us to capitalize on these opportunities and significantly increase our revenues in the future.

We have significantly advanced our MRS-enabled 3D sensor technology as part of a research initiative aimed at applying our 3D MRS technology to semiconductor advanced packaging inspection and metrology. Our next generation ultra-high resolution 3-micron pixel 3D NanoResolution MRS sensor is capable of measuring feature sizes down to 25 microns accurately and at high speeds, which makes this sensor suitable for many semiconductor wafer level 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 per hour. We have received initial purchase orders for our 3D NanoResolution MRS sensor from three OEM customers, and are currently demonstrating this technology to other OEMs, system integrators and directly to semiconductor manufacturers. We believe sales of 3D MRS-enabled sensors and systems for semiconductor wafer level and advanced packaging inspection and metrology represent compelling long-term growth opportunities.

We intend to expand sales of products based on our MRS technology in the SMT and semiconductor markets, including inspection and metrology for advanced packaging applications, through new 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 sensor subsystems to OEMs and system integrators for use in their proprietary system products, and we integrate our 3D MRS sensor subsystems 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 21% of revenues in 2019 and 33% of revenues in 2018.

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), CPU sockets, solder balls and bumps, wafer bumps, copper pillars and other wafer level and advanced packaging applications. 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 allows our sensors to capture microscopic quality images at production speeds. Our 3D MRS sensors include two models featuring varying fields of view (FOV), 3D acquisition time and minimum feature sizes of 130 microns and 180 microns. Our ultra-high resolution 3D MRS sensor has a minimum feature size of 110 microns. 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, and is suitable for many semiconductor wafer level 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 10% of our revenues in 2019 and 12% of our revenues in 2018.

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 10% of revenues in 2019 and 20% of revenues in 2018.

Inspection and Metrology Systems

Our inspection and metrology system products are primarily used in the semiconductor and SMT 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 55% of our revenues in 2019 and 46% of our revenues in 2018.

Automated Optical Inspection (AOI) Products

We have been selling AOI products for well over a decade 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 can also be used for various semiconductor related inspection and metrology applications, including advanced packaging, and for certain industrial metrology applications.

SQ3000™ Multi-Function inspection and measurement machines (SQ3000 and SQ3000™ 3D CMM). Our SQ3000™ Multi-Function inspection and measurement machines 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, Ai² (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 their most complex manufacturing and product quality challenges.

We believe there are a growing number of sales opportunities for our SQ3000™ Multi-Function inspection and measurement machines in the markets for semiconductor inspection and metrology, particularly for advanced packaging applications. We believe our 3D MRS sensor technology is uniquely suited for many of these applications. Our SQ3000™ Multi-Function inspection and measurement machines are also available in versions that can accommodate dual production lanes and larger circuit board sizes. Sales of SQ3000™ Multi-Function inspection and measurement machines accounted for 30% of our revenues in 2019 and 20% of our revenues in 2018.

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

MX products. Our MX products are used for inspection of memory modules following the singulation step of the manufacturing process. Our MX600 system utilizes our SIM sensor technology and Ai² software, and is used for 2D inspection of memory modules. Our 3D MRS-enabled MX3000 utilizes our MRS sensor technology, SQ3000 system software and Ai² software, and is used for 3D inspection of memory modules. We recently received our first purchase order for the MX3000. This order, which is expected to become revenue in the first quarter of 2020, was made to a new memory customer. As a result, two of the world's three largest memory manufacturers now use either our 2D MX600 or 3D MX3000 memory module inspection systems. We believe the potential market opportunity for the MX3000 system is significant.

SPI Products

SE3000™. The SE3000™ is an in-line system solder paste inspection system based on our 3D MRS sensor technology. The SE3000™ measures 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 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 SE3000 or 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.

General Industrial Metrology Products and Services

CyberGage®360. Manufacturers in a variety of industries use CyberGage®360 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 CyberGage®360 to date have not been significant. There can be no assurance that CyberGage®360 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, through-put 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 24% of our revenues in 2019 and 21% of our revenues in 2018.

Automatic Leveling Sensor (ALS). 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 (AGS). 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 (ATS). 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 (AVS). 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 Sensor™ (APS) allows 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. The APS is 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 new In-Line Particle Sensor™ (IPS™) 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 new WaferSense® 300mm Auto Resistance Sensor (ARS) 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 new 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 have resulted in 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.

High Precision 3D and 2D Sensors

3D MRS Sensors

We sell 3D MRS-enabled sensor subsystems to KLA for use in its semiconductor back-end packaging inspection systems. We also have an agreement to supply Nordson-YESTECH with 3D MRS sensor subsystems for its 3D AOI inspection equipment serving the SMT market. We are currently demonstrating our next generation ultra-high resolution 3-micron pixel 3D NanoResolution MRS sensor to OEMs, system integrators and directly to semiconductor manufacturers, and we have received our first purchase orders for sales of sensors and subsystems based on this technology. We believe sales of 3D MRS-enabled sensors for advanced packaging inspection applications represent significant long-term growth opportunities. We estimate that the total available market for sales of our 3D MRS sensors to manufacturers of semiconductor inspection and metrology equipment for the advanced packaging market was approximately \$50 million in 2019, and will grow to approximately \$110 million in 2023.

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. Viscom AG purchases our SPI sensors on an OEM basis for integration into their SPI inspection equipment.

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 products to inspect assembly of their memory modules. Sales of AOI systems account for roughly two-thirds of the approximately \$800 million total annual SPI and AOI SMT inspection systems market, with 3D AOI representing the fastest growing segment of this market. We estimate that the total available market for sales of 3D AOI systems to the SMT inspection systems and metrology markets was approximately \$200 million in 2019, and will grow to approximately \$1.3 billion by 2024. The markets for 2D and 3D semiconductor wafer and advanced packaging inspection and metrology equipment totals approximately \$500 million per year.

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 \$44.8 million or 76% of our total sales in 2019, compared to \$46.4 million or 72% of our total sales in 2018. 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 12 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.

No customer accounted for more than 10% of revenue in 2019.

Sales and Marketing

We market our products by offering on-site demonstrations and evaluations, through appearances at industry trade shows, advertising in industry journals, articles published in industry and technical journals and on the Internet. We support our sales efforts by utilizing internet-based search engine marketing programs to generate leads from prospects who have expressed interest in obtaining the types of products and services that we offer.

High Precision 3D and 2D Sensors

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

Inspection and Metrology Systems

Our AOI and SPI inspection and metrology system products are sold in most countries. Sales of these 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 sales of AOI and SPI systems are sold by direct sales personnel located in Singapore, as well as in the United Kingdom, the United States and China and through independent sales representatives and distributors. Our sales and service office in the United Kingdom serves the European market and we have sales and service team members based in the United States and Mexico to serve the Americas market. We have sales and service offices in China and Singapore to serve the markets for SMT and semiconductor inspection and metrology equipment in Asia. We have agreements with 43 independent sales representatives and distributors, which focus on sales and service of our AOI and SPI inspection and metrology system products to end-user customers. These agreements cover North and South America (14), Europe (16) and China and Asia-Pacific (13). 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 representative and distributors are managed by direct sales personnel located in the United States and Asia.

Backlog and Seasonality

Product backlog was \$17.7 million at December 31, 2019, \$13.6 million at December 31, 2018 and \$11.4 million at December 31, 2017. Product backlog at September 30, 2019 was \$14.4 million. Our products are typically shipped two weeks to two months after the receipt of an order. 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. Our order backlog at December 31, 2019 and September 30, 2019 includes a significant order for 3D MRS sensors from an existing OEM customer that are scheduled for delivery in the next 18 months. Accordingly, backlog may not be an accurate indicator of performance in the future.

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 the development of important next-generation technologies that, we believe, will position us to be a global technology leader in high precision 3D sensors and capture additional market share in our key markets of SMT and semiconductor inspection and metrology. We maintain our commitment to research and development and product development even during periods when strong demand in the markets for our products does not exist. 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:

- 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 level and advanced packaging inspection and metrology applications. We have adapted the system software used in our SQ3000™ Multi-Function inspection and measurement machines to work with wafer handling equipment to facilitate sales of our NanoResolution sensor to OEMs and system integrators.
- Additional new MRS sensors for semiconductor back-end component inspection and metrology, in-line CPU socket metrology and advanced packaging and wafer level inspection and metrology applications.

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- Our next generation MRS-enabled MX3000 AOI 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 Ai² software. We expect to recognize our first revenue from the sale of the MX3000 in the first quarter of 2020.
- We have continued to advance our SQ3000™ Multi-Function inspection and measurement machines, the SQ3000 and SQ3000™ 3D CMM, for 3D AOI, SPI and CMM applications, which are designed to expand our presence in markets requiring high precision inspection and metrology. Improvements include faster programming time and more software features to support new applications. We believe there are a growing number of sales opportunities for our SQ3000™ Multi-Function inspection and measurement machines in the markets for 3D AOI of complex circuit boards and semiconductor inspection and metrology, particularly for advanced packaging applications.
- Development of new semiconductor products, including new applications for our WaferSense® family of products. We recently launched a new In-Line Particle Sensor™ (IPS™) with CyberSpectrum software to detect particles in gas and vacuum lines 24/7 in semiconductor process equipment. The IPS™ is particularly relevant for EUV lithography tools where the ability to monitor particles in-line can significantly improve EUV lithography tool yield and productivity. We also recently launched the new WaferSense® 300mm Auto Resistance Sensor (ARS) with CyberSpectrum software that enables real-time resistance measurements of plating cell contacts in semiconductor 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. Other new WaferSense® products are currently under development.

Research and development expenses were \$9.4 million or 16% of revenue in 2019 and \$8.8 million or 14% of revenue in 2018. 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 the SQ3000 and SQ3000™ 3D CMM products, are assembled in Singapore. We rely on third party automation suppliers to provide the material handling platforms for our 2D MX600 and 3D MX3000 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 up to six months. We believe we have identified alternative assembly contractors for most of our sub-assemblies. Use of those alternative contractors could require substantial rework of the product designs, resulting in periods during which we could not satisfy customer orders. An actual change in such contractors would likely require a period of training and testing.

Accordingly, an interruption in a supply relationship or reduced production capacity experienced by one or more of such contractors could result in the inability to deliver one or more of our products for a period of several months. 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 the competitors in the market for AOI and SPI inspection equipment serving the SMT market 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 the markets for SMT inspection equipment and semiconductor back-end, wafer level and advanced packaging inspection and metrology.

Our SMT electronic assembly alignment sensor products 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 Ai² software used in our SQ3000™ Multi-Function inspection and measurement machines differentiate our products from competing products and that our products compete effectively in the SMT inspection systems and metrology markets based on cost, ease of use and the low rate of false calls. We also believe that our SQ3000™ Multi-Function inspection and measurement machines, 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 equipment are fragmented. Our competitors in the markets for semiconductor wafer level and advanced packaging inspection and metrology equipment include, among others, Camtek, Inc., Unity SC, Utechzone Co. Ltd. and Onto Innovation, Inc.

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. 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, through-put and process yield.

Employees

As of December 31, 2019, we had 173 full-time employees worldwide, including 40 in sales, marketing and customer support, 53 in manufacturing, purchasing and production operations, 63 in engineering, research and development, and 17 in finance, administration and information services. Of these employees, 104 are located at our corporate headquarters in Minneapolis, Minnesota and 69 are located in other offices (6 in other states throughout the U.S., 5 in the United Kingdom, 44 in Singapore, 6 in China, 3 in Taiwan, 2 in Mexico, 1 in Malaysia, 1 in Japan and 1 in Korea). Although we have been successful in attracting and retaining qualified technical personnel, there is an ongoing need for more employees 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 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.

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We hold 50 patents (27 U.S. and 23 foreign) on a number of technologies, including the technologies used in our SQ3000™ Multi-Function inspection and measurement machines for AOI, SPI and CMM applications; other SMT inspection 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 30 pending patents (10 U.S. and 20 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 31 registered trademarks (13 U.S. and 18 foreign) and have 1 U.S. trademark registration pending. We also have 13 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.

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 and improvement 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:

- **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 generated 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 and SQ3000™ Multi-Function inspection and measurement machines. We also expect to use this technology in other new products, including next generation sensors and systems for semiconductor back-end, wafer level and advanced packaging inspection and metrology applications. 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 2020 and longer-term growth in revenue and operating results would be materially adversely affected.
- **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.
- **World events beyond our control 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 and Japan, in which we 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 that could occur in countries in which we do business, labor disputes that impact complex international shipping arrangements, or other unanticipated actions by local populations could affect our ability to do business in specific geographies. 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.
- **The recent coronavirus outbreak may negatively affect our operations, including our revenue and profitability.** Our operations and markets, including the SMT and semiconductor capital equipment markets, could be negatively affected by the recent coronavirus outbreak. Economies and commerce in countries such as China, Korea, Singapore and Japan in which we do business, have been or could be, negatively impacted by the recent coronavirus outbreak. Travel patterns and accessibility to customers and suppliers in these countries have been negatively affected. Recently, large semiconductor industry trade shows in Asia have been canceled. China, which has historically been a large purchaser of semiconductor capital equipment, has been particularly hard hit by the coronavirus outbreak. Our results would be adversely affected if these or other economies were to experience recessions, if our global supply chains were to become disrupted, or if our customers were to stop or reduce purchases of our products due to the coronavirus outbreak.

- **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.
- **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 3D MRS-enabled SQ3000™ Multi-Function inspection and measurement machines, 3D MRS-enabled MX3000 and 2D MX600 memory module inspection systems; 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.
- **Sales of sensors to five OEM customers constituted 19% of our revenues in 2019, 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.
- **We generate over 70% 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 or other events that may affect local economies and our access to markets outside the U.S.
- **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.

- **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 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.
- **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 back-end, wafer level and advanced packaging inspection and metrology applications. 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 surface mount 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 SMT inspection 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 inspection and measurement machines 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.
- **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 system and metrology 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 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.
- **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.

- **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 industry 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 measurement 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 7,154,591 shares of our common stock outstanding as of December 31, 2019. Although our common stock is traded in 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 60,000 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.
- **We must attract, engage, retain and integrate key research and development employees in order to be successful, and failure to do so could have an adverse effect on our ability to profitably grow our business.** Identifying, hiring, developing, training and retaining highly-skilled research and development employees is critical to our future, and competition for these types of employees is intense. 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.
- **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 and system integrators, including KLA, Nordson-YESTECH 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.

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 system and metrology 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, 2019, we also have operating leases for facilities in the United Kingdom and China, which expire in May 2023 and November 2020, 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 29, 2020, there were approximately 200 holders of record of our common stock and approximately 3,000 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.

In July 2019, our Board of Directors authorized a \$3.0 million share repurchase program. Our common stock may be acquired from time to time in open market transactions, block purchases and other transactions complying with the Securities and Exchange Commission's Rule 10b-18. There were no share repurchases under this program in the three months ended December 31, 2019. In the twelve months ended December 31, 2019, we spent \$353,000 to repurchase 25,985 shares of our common stock. The share repurchase program will terminate on June 30, 2020. We also withhold common shares to cover employee tax withholding obligations upon the vesting of restricted stock units and stock option exercises. In the three and twelve months ended December 31, 2019, we withheld 3,944 shares to satisfy employee tax withholding requirements of \$67,464.

ITEM 6. SELECTED FINANCIAL DATA

Not applicable.

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, 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 operating results in 2019 were affected by the cyclical, industry-wide slowdown in demand for SMT and semiconductor capital equipment as well as uncertainty surrounding the global trade environment. We believe the three months ended September 30, 2019 marked the trough of the downturn in the SMT and semiconductor capital equipment markets, and that industry conditions have started to strengthen. 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-enabled sensor and system products and our WaferSense® family 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 and semiconductor wafer level 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™ Multi-Function inspection and measurement machines (the SQ3000 and SQ3000™ 3D CMM) 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. 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 MX3000 AOI system for 3D inspection of memory modules following the singulation step of the manufacturing process. We expect to recognize our first revenue from the sale of the MX3000 in the first quarter of 2020.
- 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 level 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. We believe sales of 3D MRS-enabled sensors and systems for semiconductor wafer level and advanced packaging inspection and metrology applications represent compelling long-term growth opportunities. We have adapted the software used in our SQ3000™ Multi-Function systems to work with wafer handling equipment to facilitate sales of our 3D NanoResolution MRS sensor to OEM's and system integrators.

Despite the difficult conditions in the markets for SMT and semiconductor capital equipment, revenue from our MRS based products, including 3D AOI systems and high precision 3D MRS sensors, increased by \$2.8 million or 13% to \$23.9 million in 2019, from \$21.1 million in 2018. We believe we will continue to increase sales of products based on our MRS technology in the SMT and semiconductor capital equipment markets. In particular, we believe inspection and metrology for semiconductor wafer level and advanced packaging applications represent significant long-term growth opportunities. We anticipate increasing sales of MRS-based products by reaching new OEM customers and system integrators, and by expanding direct sales 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 enhance our revenue growth prospects. The In-Line Particle Sensor™ (IPST™) detects particles in gas and vacuum lines in semiconductor process equipment, and is particularly relevant for EUV lithography tools where the ability to monitor particles in-line can significantly improve tool yield and productivity. The WaferSense® 300mm Auto Resistance Sensor (ARS) enables real-time resistance measurements of plating cell contacts in semiconductor Electrochemical Deposition (ECD) applications. The WaferSense® Auto Vibration and Leveling Sensor (AVLS3) with a thickness of 3.5mm can travel to most locations and tools within a semiconductor fabrication facility where a real semiconductor wafer travels. The AVLS3 collects and displays both vibration and leveling data simultaneously for fast equipment set-up, alignment and real-time equipment diagnostics. Strong future sales growth is anticipated for the WaferSense® family of products.

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Our backlog was \$17.7 million at December 31, 2019, an increase from \$14.4 million at September 30, 2019, and \$13.6 million at December 31, 2018. The order backlog at December 31, 2019 and September 30, 2019 includes a significant order for 3D MRS sensors from an existing OEM customer that is scheduled for delivery in the next 18 months. We are forecasting sales of \$15.0 to \$16.5 million for the first quarter of 2020. We believe that demand in the SMT and semiconductor capital equipment markets will continue to strengthen through 2020. However, a prolonged coronavirus epidemic or an increase in severity of the current outbreak could cause a slow-down in demand for SMT and semiconductor capital equipment. We believe that anticipated sales growth of our 3D MRS-enabled products and WaferSense sensors should increase our revenues and net income in the future. We believe that we have the resources required to attain our growth objectives, given our available cash and marketable securities balances totaling \$26.3 million at December 31, 2019.

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 decreased by 8% to \$59.3 million in 2019, from \$64.7 million in 2018, and increased by 21% to \$64.7 million in 2018, from \$53.3 million in 2017. The following table sets forth, for the years indicated, revenues by product line:

(In thousands)	2019	2018	2017
High precision 3D and 2D sensors	\$ 12,579	\$ 21,532	\$ 17,079
Inspection and metrology systems	32,713	29,582	25,195
Semiconductor sensors	13,971	13,606	11,059
Total	\$ 59,263	\$ 64,720	\$ 53,333

Revenues from sales of high precision 3D and 2D sensors decreased by \$9.0 million or 42% to \$12.6 million in 2019, from \$21.5 million in 2018, and increased by \$4.5 million or 26% to \$21.5 million in 2018, from \$17.1 million in 2017. Sales of 3D MRS sensors decreased by \$1.8 million or 23% to \$6.0 million in 2019, from \$7.9 million in 2018, and increased by \$3.5 million or 80% to \$7.9 million in 2018, from \$4.4 million in 2017. The revenue decrease in 2019 resulted from a reduction of purchases by OEM customers for high precision 3D and 2D sensors due to weak demand in the global SMT and semiconductor capital equipment markets. The revenue increase in 2018 primarily resulted from higher sales of 3D MRS-enabled sensors, reflecting higher adoption rates by our OEM customers for these products. Sales of 3D MRS-enabled sensors started to rebound in early 2020, reflecting improving conditions in the market for semiconductor capital equipment. We believe sales of older high precision 2D sensors will also rebound, but recovery may not happen until later in 2020. We believe sales of our 3D MRS enabled sensors, including our next generation ultra-high resolution 3D NanoResolution MRS sensor, will continue to grow in the future, and will represent an increasing percentage of our total high precision 3D and 2D sensor sales. Sales of high precision 3D and 2D sensors are prone to significant fluctuations, both sequentially and on a year-over-year basis, due to variations in market demand. Sales of high precision 3D and 2D sensors are dependent on the success of OEMs and system integrators selling products that incorporate our sensors.

Revenues from sales of inspection and metrology systems increased by \$3.1 million or 11% to \$32.7 million in 2019, from \$29.6 million in 2018, and increased by \$4.4 million or 17% to \$29.6 million in 2018, from \$25.2 million in 2017. Revenues from sales of inspection and metrology systems increased in 2019 and 2018 because higher sales of SQ3000™ Multi-Function inspection and measurement systems and 2D MX600 systems for memory module inspection were able to offset lower sales of legacy products. Sales of SQ3000™ Multi-Function systems increased by \$4.6 million or 36% to \$17.5 million in 2019, from \$12.9 million in 2018, and increased by \$3.4 million or 36% to \$12.9 million in 2018, from \$9.5 million in 2017. Sales of SQ3000™ Multi-Function systems increased in 2019, despite a global decline in spending for SMT and semiconductor capital equipment, because of the competitive advantages offered by our SQ3000™ Multi-Function system products, and because many companies are transitioning from 2D AOI to 3D AOI to meet the increasingly demanding product inspection and metrology requirements in the SMT and semiconductor markets. The market transition away from 2D AOI is expected to result in a 30% compound annual rate of growth in global sales of 3D AOI systems through 2024. Given these market dynamics and because of the competitive advantages inherent in 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. Sales of MX600 memory module inspection systems increased by \$2.2 million to \$3.3 million in 2019, from \$1.1 million in 2018. There were no sales of MX600 memory module inspection systems in 2017. We recently received our first purchase order for our next generation 3D MRS enabled MX3000 memory module inspection system. This order, which is expected to become revenue in the first quarter of 2020, was made to a new memory customer. As a result, two of the world's three largest memory manufacturers now use either our 2D MX600 or 3D MX3000 memory module inspection systems. We believe the potential market opportunity for the MX3000 system is significant.

Revenues from sales of semiconductor sensors, principally our WaferSense® line of products, increased by \$365,000 or 3% to \$14.0 million in 2019, from \$13.6 million in 2018, and increased by \$2.5 million or 23% to \$13.6 million in 2018, from \$11.1 million in 2017. Sales of semiconductor sensors increased slightly in 2019, despite a global decline in spending for semiconductor capital equipment. The sales increase in 2019 was due to incremental sales of WaferSense products in the first quarter of 2019 to Asian semiconductor manufacturing facilities commissioned in 2018, the growing acceptance of our WaferSense® products as important productivity enhancement tools by semiconductor manufacturers, and improved account penetration at major semiconductor manufacturers and capital equipment suppliers. The sales increase in 2018 was due to favorable conditions in the markets for semiconductor equipment and manufacturing, combined with the growing acceptance of our WaferSense® products in the marketplace and improved account penetration. 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 \$44.8 million or 76% of our revenues in 2019, compared to \$46.4 million or 72% of total revenues in 2018, and \$38.0 million or 71% of total revenues in 2017. Export revenue as a percentage of total revenue was higher in 2019, when compared to 2018, primarily due to higher sales of SQ3000™ Multi-Function inspection and measurement systems, MX600 memory module inspection systems and semiconductor sensors. A higher proportion of these products are generally sold outside the United States as compared to our other products. There was no significant change in export revenue as a percentage of total revenue in 2018, when compared to 2017.

Cost of Revenues and Gross Margin

Cost of revenues decreased by \$3.1 million or 9% to \$33.0 million in 2019, and increased by \$7.5 million or 26% to \$36.1 million in 2018, from \$28.6 million in 2017. Fluctuations in cost of revenues were primarily due to the corresponding fluctuations in revenue levels. Revenue mix also contributed to the changes in cost of revenues. Total revenue decreased by 8% in 2019 and increased by 21% in 2018. Items included in cost of revenues that fluctuate with the level of sales include raw materials, direct labor and factory overhead costs.

Total gross margin as a percentage of revenue was 44% in 2019, 44% in 2018, and 46% in 2017. There was no significant change in our total gross margin as a percentage of revenue in 2019, when compared to 2018. The decrease in gross margin percentage in 2018 compared to 2017, was mainly due to pricing pressures on 2D and 3D inspections systems sold into the broader SMT market, offset in part by a change in mix of products sold.

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 current and future MRS-enabled SQ3000™ Multi-Function inspection and measurement systems, next generation 3D MRS sensors and semiconductor sensors, primarily 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-enabled sensor and system products are being designed for more complex and demanding inspection and metrology applications in the SMT and semiconductor markets, including wafer level and advanced packaging inspection and metrology. Sales prices and gross profit margins for these applications tend to be higher than margins for products sold in the broader SMT market. However, the gross margin percentage for our next generation 3D MRS enabled MX3000 AOI system for inspection of memory modules will be lower than our current total gross margin percentage due to the significant material handling and automation required for this product.

Operating Expenses

Research and development (R&D) expenses were \$9.4 million or 16% of revenues in 2019, \$8.8 million or 14% of revenues in 2018, and \$8.0 million or 15% of revenues in 2017. The increase in R&D expenses in 2019 was the result of higher compensation costs for new and existing R&D employees, and expenses related to development of our next generation 3D NanoResolution MRS sensor, offset in part by lower bonus accruals for employees working in our R&D department. In 2018, the increase in R&D expenses was the result of higher compensation costs for new and existing R&D employees and bonus accruals for employees working in R&D. Current R&D expenditures are primarily focused on continued development of our next generation ultra-high resolution 3D NanoResolution MRS sensors and MX3000 memory module inspection systems, adaptation of the system software used in our SQ3000™ Multi-Function inspection and measurement machines to work with wafer handling equipment, and the continued development of new WaferSense® products. We also continue to enhance our SQ3000™ Multi-Function inspection and measurement machines and portfolio of 3D MRS sensor offerings.

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Selling, general and administrative ("S,G&A") expenses were \$16.0 million or 27% of revenues in 2019, \$16.4 million or 25% of revenues in 2018, and \$15.7 million or 29% of revenues in 2017. The increase in S,G&A expenses as a percentage of revenues in 2019 primarily reflected our lower revenue levels, offset in part by lower expense levels. The decrease in S,G&A expenses in 2019 was due to lower compensation costs resulting from employee departures and lower bonus accruals and sales commissions resulting from the declines in our revenues and financial performance. The increase in SG&A expenses in 2018 was due to higher bonus accruals and commissions paid to outside channel partners, resulting from increases in our sales and profitability, when compared to 2017. SG&A expenses in 2018 were decreased by a \$159,000 reduction in our allowance for doubtful accounts, primarily resulting from collection of a receivable that was fully reserved for in a prior period. We do not expect further large reductions in our allowance for doubtful accounts in future periods.

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 and China. We recognized losses from foreign currency transactions of \$127,000 in 2019, compared to gains from foreign currency transactions of \$72,000 in 2018.

Provision for Income Taxes

We recorded income tax expense of \$386,000 in 2019, compared to income tax expense of \$752,000 in 2018. Our income tax expense in 2019 reflected an effective income tax rate of approximately 33%, which was negatively impacted by the Global Intangible Low-Taxed Income (GILTI) and an increase in our valuation allowance for deferred income taxes, offset by the favorable benefits from U.S. federal R&D tax credits and a non-cash benefit from completion of an audit of our income taxes in the Singapore tax jurisdiction. Our income tax expense in 2018 reflected an effective tax rate of approximately 21%, which was primarily impacted by the GILTI, offset by the favorable benefits from U.S. federal R&D tax credits and excess tax benefits from employee share-based compensation. On a recurring basis, our effective tax rate will be significantly impacted by the GILTI and U.S. federal R&D tax credits.

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 federal 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. Finally, 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, 2019 or December 31, 2018. The valuation allowance recorded against our deferred tax assets increased by \$122,000 in 2019, primarily relating to an increase for U.S. federal R&D tax credits expiring in 2020.

We file income tax returns in the United States and various state and foreign jurisdictions. Our federal income tax returns for years after 2015 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 2015. The Inland Revenue Authority of Singapore recently completed a review of 2016 and 2015 income tax returns. The outcome of these audits did not have a significant impact on our financial position or results of operations.

Liquidity and Capital Resources

Our cash and cash equivalents decreased by \$3.4 million in 2019. Cash provided by operating activities of \$2.1 million and proceeds of \$7.8 million from maturities of marketable securities were more than offset by purchases of marketable securities totaling \$12.0 million and purchases of fixed assets and payment of capitalized patent costs totaling \$1.5 million. 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 \$1.0 million to \$26.3 million as of December 31, 2019, from \$25.3 million as of December 31, 2018.

Operating activities provided \$2.1 million of cash in 2019. The amount of cash provided by operations was favorably impacted by our net income of \$774,000. Net income was affected by non-cash expenses totaling \$5.2 million for depreciation and amortization, non-cash operating lease expense, provision for doubtful accounts, deferred taxes, non-cash losses from foreign currency transactions, share-based compensation costs, and various non-cash gains and losses. Changes in operating assets and liabilities providing cash included a decrease in prepaid expenses and other assets of \$539,000. Changes in operating assets and liabilities using cash included an increase in accounts and trade notes receivable of \$1.2 million, an increase in inventories of \$439,000, a decrease in accounts payable of \$1.5 million, a decrease in accrued expenses of \$856,000 and a decrease in operating lease liabilities of \$308,000. Prepaid expenses and other assets mainly decreased because deposits previously paid to a key supplier of materials were used to purchase inventories. Accounts and trade notes receivable increased due to slower collection of accounts receivable. Sales of inspection and metrology systems, which typically have longer collection periods than sales of our sensor products, were higher in the later half of 2019, when compared to the later half of 2018. The increase in inventories was due to the purchase of materials to support the launch of new products, including our ultra-high resolution 3D NanoResolution MRS sensor and 3D MX3000 AOI system for inspection of memory modules. Accounts payable decreased due to the timing of inventory purchases, with excess raw material purchases from the first half of 2019 being consumed in the later half of 2019, resulting in fewer raw material purchases in the fourth quarter of 2019, when compared to the fourth quarter of 2018. Accrued expenses decreased due to lower compensation accruals, resulting from payment of 2018 bonuses in early 2019, and lower bonuses for 2019. Operating lease liabilities decreased due to monthly lease payments required under our facility leases.

Operating activities provided \$4.1 million of cash in 2018. The amount of cash provided by operations was favorably impacted by our net income of \$2.8 million. Net income was affected by non-cash expenses totaling \$3.5 million for depreciation and amortization, recovery of doubtful accounts, deferred taxes, non-cash gains from foreign currency transactions, share-based compensation costs, and gains and losses on our available for sale securities. Changes in operating assets and liabilities providing cash included an increase in accounts payable of \$4.3 million and an increase in accrued expenses of \$1.8 million. Changes in operating assets and liabilities using cash included an increase in accounts receivable of \$4.9 million, an increase in inventories of \$2.8 million, and an increase in prepaid expenses and other assets of \$542,000. Accounts payable increased due to the timing of inventory purchases, with more materials being acquired in the latter part of the fourth quarter of 2018. The timing of these purchases resulted in a higher accounts payable balance at December 31, 2018. The increase in accrued expenses was primarily due to 2018 bonus accruals that were paid in early 2019, higher income taxes payable and accrued lease incentives resulting from an amendment and extension of the lease for our facility in Golden Valley, Minnesota. Accounts receivable increased due to higher sales levels in the fourth quarter of 2018, when compared to the fourth quarter of 2017. Inventories increased due to a change in the mix of 3D MRS sensors that we offer for sale, an increase in component purchases to support higher sales of 3D MRS sensors originally anticipated for the first quarter of 2019, and the purchase of materials for MX600 memory module inspection systems. The increase in other assets was due to advance payments to a key supplier of materials for the MX600 systems.

Investing activities used \$5.6 million of cash in 2019 and \$2.4 million of cash in 2018. Changes in the level of investment in marketable securities, resulting from the purchases, sales and maturities of those securities used \$4.2 million of cash in 2019 and \$346,000 of cash in 2018. We used \$1.5 million of cash in 2019 and \$2.1 million of cash in the 2018 for the purchase of fixed assets and capitalized patent costs. Proceeds of \$84,000 were received in 2019 from the sale of equipment.

Financing activities provided \$31,000 of cash in 2019 and \$621,000 of cash in 2018. Proceeds from the exercise of stock options and share purchases under our employee stock purchase plan provided \$451,000 of cash in 2019 and \$744,000 of cash in 2018. In July 2019, our Board of Directors authorized a \$3.0 million share repurchase program through June 30, 2020. Share repurchases under this program used \$353,000 of cash in 2019. Payments for employee tax withholding obligations for shares withheld upon the vesting of restricted stock units and exercises of stock options used \$67,000 of cash in 2019 and \$123,000 of cash in 2018.

At December 31, 2019, 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 runs from the expiration date of the old lease in July 2020 through July 2023. Rent and facility operating costs under the new lease are expected to remain unchanged when compared to the old lease expiring in July 2020.

Except for obligations under facility leases and purchase contracts, we had no material commitments for expenditures as of December 31, 2019. Purchase commitments for inventory can vary based on the volume of revenue and resulting inventory requirements.

Our cash, cash equivalents and marketable securities totaled \$26.3 million at December 31, 2019. 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 believe that inflation has not had a significant effect on our operations.

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 120 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 \$57.2 million, or 97% of our total revenue in 2019, and \$60.6 million, or 94% of our total revenue in 2018. 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 \$2.0 million, or 3% of our total revenue in 2019, and \$4.1 million, or 6% of our total revenue in 2018. 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. The allowance for doubtful accounts and trade notes was \$322,000 at December 31, 2019 and \$314,000 at December 31, 2018.

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. The allowance for warranties was \$798,000 at December 31, 2019 and \$789,000 at December 31, 2018.

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. Excess and obsolete inventories were written down by \$649,000 at December 31, 2019 and \$718,000 at December 31, 2018.

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.
- For goodwill, if the carrying value of our net assets (net book value) exceeds fair value.

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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, 2019, we had goodwill of \$1.4 million. Our recent analysis performed as of December 31, 2019 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 taxable income on our tax returns and U.S. GAAP income, R&D tax credit carry forwards and federal 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 are 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. Finally, 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, 2019 or December 31, 2018. The valuation allowance recorded against our deferred tax assets increased by \$122,000 in 2019, primarily relating to an increase for U.S. federal R&D tax credits expiring in 2020.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Not applicable

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

(In thousands, except share information)	December 31, 2019	December 31, 2018
ASSETS		
Cash and cash equivalents	\$ 5,836	\$ 9,248
Marketable securities	8,295	5,771
Accounts receivable, less allowance for doubtful accounts of \$322 at December 31, 2019 and \$314 at December 31, 2018	16,059	15,859
Inventories	15,580	16,163
Prepaid expenses	559	526
Other current assets	1,020	1,570
Total current assets	<u>47,349</u>	<u>49,137</u>
Marketable securities, long-term	12,168	10,322
Equipment and leasehold improvements, net	3,341	2,861
Intangibles, net	310	333
Goodwill	1,366	1,366
Right-of-use assets (operating leases)	2,111	—
Other assets	—	259
Trade notes receivable, long-term	962	—
Deferred tax assets	4,992	5,422
Total assets	<u>\$ 72,599</u>	<u>\$ 69,700</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
Accounts payable	\$ 7,023	\$ 8,513
Advance customer payments	499	636
Accrued expenses	2,572	3,568
Current operating lease liabilities	688	—
Total current liabilities	<u>10,782</u>	<u>12,717</u>
Other liabilities	202	629
Long-term operating lease liabilities	3,141	—
Reserve for income taxes	150	143
Total liabilities	<u>14,275</u>	<u>13,489</u>
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, no par value, 5,000,000 shares authorized, none outstanding	—	—
Common stock, no par value, 25,000,000 shares authorized, 7,154,591 shares issued and outstanding at December 31, 2019 and 7,100,825 shares issued and outstanding at December 31, 2018	36,659	35,637
Accumulated other comprehensive loss	(1,406)	(1,690)
Retained earnings	23,071	22,264
Total stockholders' equity	<u>58,324</u>	<u>56,211</u>
Total liabilities and stockholders' equity	<u>\$ 72,599</u>	<u>\$ 69,700</u>

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

**CONSOLIDATED STATEMENTS OF OPERATIONS
CYBEROPTICS CORPORATION**

(In thousands, except per share amounts)	Year Ended December 31,	
	2019	2018
Revenues	\$ 59,263	\$ 64,720
Cost of revenues	32,961	36,109
Gross margin	26,302	28,611
Research and development expenses	9,362	8,819
Selling, general and administrative expenses	16,004	16,433
Income from operations	936	3,359
Interest income and other, net	224	220
Income before income taxes	1,160	3,579
Income tax provision	386	752
Net income	\$ 774	\$ 2,827
Net income per share – Basic	\$ 0.11	\$ 0.40
Net income per share – Diluted	\$ 0.11	\$ 0.39
Weighted average shares outstanding – Basic	7,113	7,028
Weighted average shares outstanding – Diluted	7,262	7,208

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

**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
CYBEROPTICS CORPORATION**

(In thousands)	Year Ended December 31,	
	2019	2018
Net income	\$ 774	\$ 2,827
Other comprehensive income (loss), before tax:		
Foreign currency translation adjustments	174	(255)
Unrealized gains on available-for-sale securities:		
Unrealized gains	138	26
Reclassification adjustment for gains included in net income	—	(3)
Total unrealized gains on available-for-sale securities	138	23
Other comprehensive income (loss), before tax	312	(232)
Income tax provision	(28)	(5)
Other comprehensive income (loss), net of tax	284	(237)
Total comprehensive income	\$ 1,058	\$ 2,590

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,	
	2019	2018
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income	\$ 774	\$ 2,827
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	2,832	2,499
Non-cash operating lease expense	828	—
Provision (recovery) of doubtful accounts	8	(159)
Deferred taxes	393	371
Foreign currency transaction losses (gains)	127	(155)
Share-based compensation	991	936
Unrealized loss on available for sale equity security	12	37
Realized gain on available for sale marketable securities	—	(3)
Gain on sale of equipment	(26)	—
Changes in operating assets and liabilities:		
Accounts and trade notes receivable	(1,170)	(4,928)
Inventories	(439)	(2,845)
Prepaid expenses and other assets	539	(542)
Accounts payable	(1,529)	4,266
Advance customer payments and other	(49)	10
Accrued expenses	(856)	1,782
Operating lease liabilities	(308)	—
Net cash provided by operating activities	2,127	4,096
CASH FLOWS FROM INVESTING ACTIVITIES:		
Proceeds from maturities of available-for-sale marketable securities	7,835	8,053
Proceeds from sales of available-for-sale marketable securities	—	545
Purchases of available-for-sale marketable securities	(12,033)	(8,944)
Proceeds from sale of equipment	84	—
Additions to equipment and leasehold improvements	(1,301)	(1,964)
Additions to patents	(150)	(115)
Net cash used in investing activities	(5,565)	(2,425)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from exercise of stock options	248	525
Tax payments related to shares withheld for share-based compensation plans	(67)	(123)
Common stock repurchases	(353)	—
Proceeds from issuance of common stock under employee stock purchase plan	203	219
Net cash provided by financing activities	31	621
Effects of exchange rate changes on cash and cash equivalents	(5)	12
Net increase (decrease) in cash and cash equivalents	(3,412)	2,304
Cash and cash equivalents – beginning of period	9,248	6,944
Cash and cash equivalents – end of period	\$ 5,836	\$ 9,248

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

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

(In thousands)	Common Stock		Accumulated Other Comprehensive Loss	Retained Earnings	Total Stockholders' Equity
	Shares	Amount			
BALANCE, December 31, 2017	6,980	\$ 34,080	\$ (1,409)	\$ 19,611	\$ 52,282
Adoption of ASU 2016-01	—	—	(44)	44	—
Adoption of ASU 2014-09	—	—	—	(218)	(218)
Exercise of stock options and vesting of restricted stock units, net of shares exchanged as payment	111	525	—	—	525
Tax payments related to shares withheld for share-based compensation plans	(14)	(123)	—	—	(123)
Share issuances for director compensation	8	—	—	—	—
Share-based compensation	—	936	—	—	936
Issuance of common stock under Employee Stock Purchase Plan	16	219	—	—	219
Other comprehensive loss, net of tax	—	—	(237)	—	(237)
Net income	—	—	—	2,827	2,827
BALANCE, December 31, 2018	7,101	35,637	(1,690)	22,264	56,211
Adoption of ASU 2016-02	—	—	—	33	33
Exercise of stock options and vesting of restricted stock units, net of shares exchanged as payment	58	248	—	—	248
Tax payments related to shares withheld for share-based compensation plans	(4)	(67)	—	—	(67)
Share issuances for director compensation	8	—	—	—	—
Share-based compensation	—	991	—	—	991
Issuance of common stock under Employee Stock Purchase Plan	18	203	—	—	203
Repurchase of common stock	(26)	(353)	—	—	(353)
Other comprehensive income, net of tax	—	—	284	—	284
Net income	—	—	—	774	774
BALANCE, December 31, 2019	7,155	\$ 36,659	\$ (1,406)	\$ 23,071	\$ 58,324

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, corporate debt instruments and U.S. government backed obligations. Cash and cash equivalent balances, at times, may exceed federally insured limits.

Marketable Securities

All marketable securities are classified as available-for-sale and consist of U.S. government and agency backed obligations, certificates of deposit, corporate debt instruments, asset backed securities or equity securities. Marketable securities are classified as short-term or long-term in the consolidated balance sheets based on their maturity date and expectations regarding sales.

Available-for-sale securities are carried at fair value. Unrealized gains and losses for marketable debt securities are reported as a separate component of stockholders’ equity until realized. Unrealized gains and losses for marketable equity securities are recognized in net income. Fair values are primarily determined using quoted market prices. The carrying amounts of securities, for purposes of computing unrealized gains and losses, are determined by specific identification. The cost of securities sold is also determined by specific identification.

We monitor the carrying value of our marketable debt securities compared to their fair value to determine whether an other-than-temporary impairment 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 cost basis, credit quality 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 marketable debt securities is determined to be other-than-temporary, an impairment charge related to that specific investment is recorded in net income.

Cash and marketable securities held by foreign subsidiaries totaled \$327,000 at December 31, 2019 and \$362,000 at December 31, 2018.

Inventories

Inventories are stated at the lower of cost or net realizable value, with cost determined using the first-in, first-out (FIFO) method. 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. In the fourth quarter of 2019, we provided financing to a recurring customer for the purchase of SQ3000™ Multi-Function inspection and measurement machines. The trade notes receivable bear interest at an annual effective rate of approximately 7%, and are repayable over a 36-month period. The current portion of the 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, 2019, 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 conduct a two-step quantitative goodwill impairment test. The first step of the impairment test involves comparing our fair value to 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. If we determine that our carrying value exceeds fair value, the amount of impairment loss must be measured. The second step of the goodwill impairment test involves comparing the implied fair value of our goodwill with the carrying value of that goodwill. The amount by which the carrying value of the goodwill exceeds its implied value, if any, is recognized as an impairment loss.

On December 31, 2019 and 2018, 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 2019 or 2018.

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.

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 120 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.

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 8).

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 a foreign currency transaction loss of \$127,000 in 2019 and a foreign currency transaction gain of \$72,000 in 2018.

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 expense incurred was \$408,000 in 2019 and \$314,000 in 2018.

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.

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.

Only the portion of the unrecognized tax benefit 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. 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. Valuation allowances are established when, in the opinion of management, there is uncertainty 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.

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.

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 6 to the consolidated financial statements for additional information related to employee share-based compensation.

Related Party Transactions

One of our board members serves as the President and Chief Executive Officer of Key Tronic Corporation, and our President and Chief Executive Officer serves on the board of Key Tronic Corporation. Our cumulative sales to Key Tronic Corporation in 2019 and 2018 were less than \$20,000.

Recent Accounting Developments

On January 1, 2018, we adopted ASU 2014-09, *Revenue from Contracts with Customers* and related amendments (Topic 606), which provided guidance on the recognition of revenue from contracts with customers. Topic 606 requires disclosures regarding the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers. We performed a review of the requirements of the new guidance and identified which of our revenue streams are within the scope of Topic 606. We applied the five-step model of the new standard to a selection of contracts within each of our revenue streams, and compared the results to our current accounting practices. We also expanded our consolidated financial statement disclosures to comply with the requirements of Topic 606. We adopted Topic 606 using the modified retrospective method, with the cumulative effect of initially applying the guidance to all uncompleted contracts as an adjustment to the opening balance of retained earnings. Our adoption of Topic 606 on January 1, 2018 resulted in a \$218,000 decrease in retained earnings to record the cumulative effect adjustment.

On January 1, 2018, we adopted ASU 2016-01, *Recognition and Measurement of Financial Assets and Liabilities* (ASU 2016-01), which revised the accounting related to (1) the classification and measurement of investments in equity securities and (2) the presentation of certain fair value changes for financial liabilities measured at fair value. The new standard also amended certain disclosure requirements associated with the fair value of financial instruments. ASU 2016-01 requires the fair value measurement of investments in equity securities and other ownership interests in an entity that do not result in consolidation and are not accounted for under the equity method. Entities are now required to recognize the change in the fair value of these investments in net income. Entities are no longer able to recognize unrealized holding gains and losses on equity securities in other comprehensive income. ASU 2016-01 was effective beginning January 1, 2018 and resulted in a cumulative-effect adjustment to beginning retained earnings, except for guidance relative to equity securities without readily determinable fair values, which was applied prospectively. Our adoption of ASU 2016-01 on January 1, 2018 resulted in a \$44,000 increase in retained earnings and accumulated other comprehensive loss.

In February 2016, the Financial Accounting Standards Board (FASB) issued new lease accounting guidance, ASU 2016-02, *Leases* (Topic 842), which we adopted on January 1, 2019. Under Topic 842, at the commencement date, lessees are required (a) to recognize a lease liability, which is a lessee's obligation to make lease payments arising from a lease, measured on a discounted basis, and (b) to record a right-of-use asset, which is an asset that represents the lessee's right to use, or control the use of, a specified asset for the lease term. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842), Targeted Improvements*, which gives companies the option of applying the new standard at the adoption date, rather than retrospectively to the earliest period presented in the financial statements, with recognition of a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. We chose the option to apply the new standard at the adoption date, and therefore we were not required to restate the financial statements of prior periods, nor were we required to provide the disclosures required by Topic 842 for those prior periods. Upon adoption of Topic 842, we recognized an approximate \$2.6 million right-of-use asset, and an approximate \$3.2 million lease liability. Our previously recognized liability for lease incentives recorded under prior accounting standards was eliminated. Our adoption of Topic 842 on January 1, 2019 resulted in a \$33,000 increase in retained earnings to record the cumulative effect adjustment. Our adoption of Topic 842 did not impact our cash flows or have a material impact on our results of operations. We have expanded our consolidated financial statement disclosures to comply with the requirements of Topic 842.

In February 2018, the FASB issued ASU 2018-02, *Reclassification of Tax Effects from Accumulated Other Comprehensive Income* (ASU 2018-02), which allows an entity to elect an option to reclassify the stranded tax effects related to the application of the Tax Cuts and Jobs Act (TCJA) from accumulated other comprehensive loss to retained earnings. ASU 2018-02 was effective January 1, 2019 and could be applied either in the period of adoption or retrospectively to all applicable periods. We did not elect to reclassify the stranded tax effects related to the application of the TCJA from accumulated other comprehensive loss to retained earnings.

In January 2017, the FASB issued guidance on simplifying the test for goodwill impairment, ASU 2017-04, *Simplifying the Test for Goodwill Impairment* (ASU 2017-04). Under ASU 2017-04, goodwill impairment would be measured as the amount by which a reporting unit's carrying value exceeds its fair value, but not in an amount in excess of the carrying value of goodwill. The new standard eliminates the requirement to determine goodwill impairment by calculating the implied fair value of goodwill by hypothetically assigning the fair value of a reporting unit to all of its assets and liabilities as if that reporting unit had been acquired in a business combination. ASU 2017-04 is to be applied prospectively to impairment tests beginning January 1, 2020. We do not expect our adoption of ASU 2017-04 to have a material impact on our consolidated financial statements.

NOTE 2 – 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:

(In thousands)	For the Year Ended December 31,			
	2019		2018	
	Revenues	Percent of Revenues	Revenues	Percent of Revenues
Revenue recognized over time	\$ 2,029	3%	\$ 4,118	6%
Revenue recognized at a point in time	57,234	97%	60,602	94%
	<u>\$ 59,263</u>	<u>100%</u>	<u>\$ 64,720</u>	<u>100%</u>

See Note 12 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:

(In thousands)	December 31, 2019	December 31, 2018
Contract assets, included in other current assets	\$ 2	\$ —
Contract liabilities - advance customer payments	\$ 389	\$ 366
Contract liabilities - deferred warranty revenue	\$ 275	\$ 218

Changes in contract assets in the year ended December 31, 2019 and the year ended December 31, 2018 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 8 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 the year ended December 31, 2019 or the year ended December 31, 2018.

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

(In thousands)	Year Ended December 31,	
	2019	2018
Amounts reclassified from beginning contract liabilities to revenue	\$ 334	\$ 354
Amounts reclassified from deferred warranty revenue	213	225
Total	<u>\$ 547</u>	<u>\$ 579</u>

NOTE 3 – MARKETABLE SECURITIES

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

December 31, 2019				
(In thousands)	Cost	Unrealized Gains	Unrealized Losses	Fair Value
Short-Term				
U.S. government and agency obligations	\$ 5,766	\$ 22	\$ —	\$ 5,788
Corporate debt securities and certificates of deposit	1,085	1	—	1,086
Asset backed securities	1,417	4	—	1,421
Marketable securities – short-term	<u>\$ 8,268</u>	<u>\$ 27</u>	<u>\$ —</u>	<u>\$ 8,295</u>
Long-Term				
U.S. government and agency obligations	\$ 6,524	\$ 30	\$ (1)	\$ 6,553
Corporate debt securities and certificates of deposit	3,004	14	—	3,018
Asset backed securities	2,535	15	(1)	2,549
Equity security	42	6	—	48
Marketable securities – long-term	<u>\$ 12,105</u>	<u>\$ 65</u>	<u>\$ (2)</u>	<u>\$ 12,168</u>
December 31, 2018				
(In thousands)	Cost	Unrealized Gains	Unrealized Losses	Fair Value
Short-Term				
U.S. government and agency obligations	\$ 3,377	\$ —	\$ (20)	\$ 3,357
Corporate debt securities and certificates of deposit	1,787	3	(5)	1,785
Asset backed securities	633	—	(4)	629
Marketable securities – short-term	<u>\$ 5,797</u>	<u>\$ 3</u>	<u>\$ (29)</u>	<u>\$ 5,771</u>
Long-Term				
U.S. government and agency obligations	\$ 6,114	\$ 10	\$ (23)	\$ 6,101
Corporate debt securities and certificates of deposit	754	1	(3)	752
Asset backed securities	3,422	2	(15)	3,409
Equity security	42	18	—	60
Marketable securities – long-term	<u>\$ 10,332</u>	<u>\$ 31</u>	<u>\$ (41)</u>	<u>\$ 10,322</u>
December 31, 2019				
(In thousands)	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
December 31, 2019				
U.S. government and agency obligations	\$ 149	\$ (1)	\$ —	\$ —
Corporate debt securities and certificates of deposit	271	—	—	—
Asset backed securities	684	(1)	—	—
Marketable securities	<u>\$ 1,104</u>	<u>\$ (2)</u>	<u>\$ —</u>	<u>\$ —</u>
December 31, 2018				
U.S. government and agency obligations	\$ 1,548	\$ (4)	\$ 4,608	\$ (39)
Corporate debt securities and certificates of deposit	250	—	1,178	(8)
Asset backed securities	1,023	(3)	2,137	(16)
Marketable securities	<u>\$ 2,821</u>	<u>\$ (7)</u>	<u>\$ 7,923</u>	<u>\$ (63)</u>

Our investments in marketable debt securities all have maturities of less than 5 years. Net pre-tax unrealized gains for marketable debt securities of \$84,000 at December 31, 2019 and net pre-tax unrealized losses of \$54,000 at December 31, 2018 have been recorded as a component of accumulated other comprehensive loss in stockholders' equity. We have determined that the net pre-tax unrealized gains and losses for marketable debt securities at December 31, 2019 and December 31, 2018 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, credit quality and our ability and intent to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value. No marketable securities were sold in 2019. We received proceeds from sales of marketable securities of \$545,000 in 2018. We realized a gain of \$3,000 from the sales of marketable securities in 2018. See Note 5 for additional information regarding the fair value of our investments in marketable securities.

Investments in marketable debt securities classified as cash equivalents of \$2.6 million at December 31, 2019 and \$2.5 million at December 31, 2018, 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, 2019 or December 31, 2018.

NOTE 4 – COMPREHENSIVE INCOME

Reclassification adjustments are made to avoid double counting for items included in comprehensive income that are also recorded as part of net income.

Reclassifications and taxes related to items of other comprehensive income (loss) are as follows:

(In thousands)	Year Ended December 31, 2019			Year Ended December 31, 2018		
	Before Tax	Tax Effect	Net of Tax Amount	Before Tax	Tax Effect	Net of Tax Amount
Foreign currency translation adjustments	\$ 174	\$ —	\$ 174	\$ (255)	\$ —	\$ (255)
Net changes related to available-for-sale securities:						
Unrealized gains	138	(28)	110	26	(5)	21
Reclassification adjustments for gains included in interest income and other	—	—	—	(3)	—	(3)
Total net changes related to available-for-sale securities	138	(28)	110	23	(5)	18
Other comprehensive income (loss)	\$ 312	\$ (28)	\$ 284	\$ (232)	\$ (5)	\$ (237)

At December 31, 2019 and December 31, 2018 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, 2017	\$ (1,394)	\$ (15)	\$ (1,409)
Decrease related to adoption of ASU 2016-01	—	(44)	(44)
Other comprehensive income (loss) before reclassifications	(255)	21	(234)
Reclassifications from accumulated other comprehensive loss	—	(3)	(3)
Net current period other comprehensive income (loss)	(255)	18	(237)
Balances at December 31, 2018	\$ (1,649)	\$ (41)	\$ (1,690)
Other comprehensive income before reclassifications	174	110	284
Reclassifications from accumulated other comprehensive loss	—	—	—
Net current period other comprehensive income	174	110	284
Balances at December 31, 2019	\$ (1,475)	\$ 69	\$ (1,406)

NOTE 5 – 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 quoted prices for similar assets or liabilities in active markets or quoted prices for identical or similar assets or liabilities in non-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, 2019 and December 31, 2018 according to the three-level fair value hierarchy.

(In thousands)	Fair Value Measurements at December 31, 2019 Using			
	Balance December 31, 2019	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Marketable securities:				
U.S. government and agency obligations	\$ 12,341	\$ —	\$ 12,341	\$ —
Corporate debt securities and certificates of deposit	4,104	—	4,104	—
Asset backed securities	3,970	—	3,970	—
Equity security	48	48	—	—
Total marketable securities	<u>\$ 20,463</u>	<u>\$ 48</u>	<u>\$ 20,415</u>	<u>\$ —</u>

(In thousands)	Fair Value Measurements at December 31, 2018 Using			
	Balance December 31, 2018	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Marketable securities:				
U.S. government and agency obligations	\$ 9,458	\$ —	\$ 9,458	\$ —
Corporate debt securities and certificates of deposit	2,537	—	2,537	—
Asset backed securities	4,038	—	4,038	—
Equity security	60	60	—	—
Total marketable securities	<u>\$ 16,093</u>	<u>\$ 60</u>	<u>\$ 16,033</u>	<u>\$ —</u>

During the year ended December 31, 2019 and the year ended December 31, 2018, 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 3 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 2019 or 2018.

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 6 – 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, 2019, there are 185,351 shares of common stock reserved in the aggregate for issuance pursuant to future awards under our Employee Stock Incentive Plan and 568,717 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, 2019, there were 52,000 shares of common stock reserved in the aggregate for issuance pursuant to future restricted share grants under our Non-Employee Director Stock Plan and 16,000 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 2019 and 2018 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 2019 annual meeting had an aggregate fair market value on the date of grant equal to \$138,000 (grant date fair value of \$17.26 per share). As of December 31, 2019, 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, 2019 was \$74,000. The shares granted at the 2018 annual meeting had an aggregate fair market value on the date of grant equal to \$130,000 (grant date fair value of \$16.25 per share). As of December 31, 2019, all of the shares granted at the 2018 annual meeting were vested.

Stock Option Activity

The following is a summary of activity in stock options for 2019:

	Options Outstanding	Weighted Average Exercise Price Per Share
Outstanding, December 31, 2018	523,042	\$ 11.48
Granted	61,200	16.23
Exercised	(46,292)	8.05
Expired	(5,750)	10.83
Forfeited	(11,687)	16.05
Outstanding, December 31, 2019	520,513	\$ 12.25
Exercisable, December 31, 2019	380,939	\$ 10.34

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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, 2019, the weighted average remaining contractual term of all outstanding options was 3.61 years and their aggregate intrinsic value was \$3.5 million. At December 31, 2019, the weighted average remaining contractual term of options that were exercisable was 2.73 years and their aggregate intrinsic value was \$3.3 million. The aggregate intrinsic value of stock options exercised was \$359,000 in 2019 and \$1.0 million in 2018. We received proceeds from stock option exercises of \$248,000 in 2019 and \$525,000 in 2018. The aggregate fair value of options that vested was \$439,000 in 2019 and \$616,000 in 2018.

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.

For stock options granted in the two-year period ended December 31, 2019, 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:

	2019	2018
Risk-free interest rates	1.67% - 1.69%	2.70% - 2.71%
Expected life in years	5.00 - 5.40	5.00 - 5.35
Expected volatility	54.38% - 54.87%	52.79% - 53.68%
Dividend yield	0.00%	0.00%
Weighted average fair value on grant date	\$7.96	\$9.59

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. There were 39,550 restricted shares and restricted stock units granted in 2019 (weighted average grant date fair value of \$16.44 each). There were 32,350 restricted shares and restricted stock units granted in 2018 (weighted average grant date fair value of \$18.67 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, 2019 was \$1.3 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 \$458,000 in 2019 and \$553,000 in 2018.

The following is a summary of activity in restricted shares and restricted stock units for 2019:

Non-vested restricted stock units	Shares	Weighted Average Grant Date Fair Value
Non-vested at December 31, 2018	56,411	\$ 17.59
Granted	39,550	16.44
Vested	(26,882)	16.45
Forfeited	(875)	16.19
Non-vested at December 31, 2019	68,204	\$ 17.39

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 17,781 shares in 2019 and 16,403 shares in 2018. As of December 31, 2019, 156,688 shares remain available for future issuance under this plan.

Share-Based Compensation Information

Pre-tax share-based compensation expense for 2019 includes \$751,000 for stock options and restricted stock units, \$107,000 for our employee stock purchase plan, and \$133,000 for restricted shares issued to board members. Pre-tax stock-based compensation expense for 2018 includes \$675,000 for stock options and restricted stock units, \$117,000 for our employee stock purchase plan, and \$144,000 for restricted shares issued to board members.

(In thousands)	2019	2018
Pre-tax share-based compensation expense	\$ 991	\$ 936
Income tax benefits related to share-based compensation	\$ 211	\$ 329

At December 31, 2019, the total unrecognized compensation cost related to non-vested share-based compensation arrangements was \$2.3 million and the related weighted average period over which such cost is expected to be recognized is 2.93 years.

In 2019, we recognized a \$165,000 income tax benefit from the exercise of stock options and vesting of share-based payments, including \$42,000 of excess tax benefits. In 2018, we recognized a \$303,000 income tax benefit from the exercise of stock options and vesting of share-based payments, including \$155,000 of excess tax benefits.

NOTE 7 – 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:

(In thousands except per share amounts)	Net Income	Weighted Average Shares Outstanding	Per Share Amount
Year Ended 12/31/2019:			
Basic	\$ 774	7,113	\$ 0.11
Dilutive effect of common equivalent shares	—	149	—
Dilutive	<u>\$ 774</u>	<u>7,262</u>	<u>\$ 0.11</u>

(In thousands except per share amounts)	Net Income	Weighted Average Shares Outstanding	Per Share Amount
Year Ended 12/31/2018:			
Basic	\$ 2,827	7,028	\$ 0.40
Dilutive effect of common equivalent shares	—	180	(0.01)
Dilutive	<u>\$ 2,827</u>	<u>7,208</u>	<u>\$ 0.39</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: 291,000 shares in 2019 and 258,000 shares in 2018.

NOTE 8 – OTHER FINANCIAL STATEMENT DATA

Inventories consist of the following:

(In thousands)	December 31,	
	2019	2018
Raw materials and purchased parts	\$ 9,845	\$ 8,821
Work in process	1,837	2,446
Finished goods	2,373	2,526
Demonstration inventories, net	1,525	2,370
Total inventories	<u>\$ 15,580</u>	<u>\$ 16,163</u>

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Excess and obsolete inventories were written down by \$649,000 at December 31, 2019 and \$718,000 at December 31, 2018. Demonstration inventories are stated at cost less accumulated amortization, generally based on a 36 month useful life. Accumulated amortization for demonstration inventories totaled \$2.4 million at December 31, 2019 and \$1.9 million at December 31, 2018.

Equipment and leasehold improvements consist of the following:

(In thousands)	December 31,	
	2019	2018
Equipment	\$ 14,742	\$ 14,983
Leasehold improvements	2,987	2,052
	17,729	17,035
Accumulated depreciation and amortization	(14,388)	(14,174)
	<u>\$ 3,341</u>	<u>\$ 2,861</u>

Depreciation and amortization expense related to equipment and leasehold improvements was \$1.6 million in 2019 and \$1.3 million in 2018.

Intangible assets consist of the following:

(In thousands)	December 31, 2019			December 31, 2018		
	Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Patents	\$ 2,898	\$ (2,662)	\$ 236	\$ 2,754	\$ (2,533)	\$ 221
Software	206	(170)	36	206	(141)	65
Marketing assets and customer relationships	101	(63)	38	101	(54)	47
Non-compete agreements	101	(101)	—	101	(101)	—
	<u>\$ 3,306</u>	<u>\$ (2,996)</u>	<u>\$ 310</u>	<u>\$ 3,162</u>	<u>\$ (2,829)</u>	<u>\$ 333</u>

Amortization expense in 2019 and 2018 was as follows:

(In thousands)	Year Ended December 31,		Weighted Avg. Remaining Life-Years at December 31, 2019
	2019	2018	
Patents	\$ 134	\$ 113	1.6
Software	29	30	1.2
Marketing assets and customer relationships	9	9	4.2
Non-compete agreements	—	5	-
	<u>\$ 172</u>	<u>\$ 157</u>	

Estimated aggregate amortization expense based on current intangible assets for the next five years is expected to be as follows: \$169,000 in 2020; \$94,000 in 2021; \$36,000 in 2022; \$9,000 in 2023; and \$2,000 in 2024.

Accrued expenses consist of the following:

(In thousands)	December 31,	
	2019	2018
Wages and benefits	\$ 1,319	\$ 2,166
Warranty liability	761	758
Income taxes payable	333	393
Other	159	251
	<u>\$ 2,572</u>	<u>\$ 3,568</u>

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Other liabilities consist of the following:

(In thousands)	December 31,	
	2019	2018
Deferred rent	\$ —	\$ 521
Warranty liability	37	31
Contract liabilities	84	73
Deferred warranty revenue	81	4
	<u>\$ 202</u>	<u>\$ 629</u>

See Note 2 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.

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

(In thousands)	Year Ended December 31,	
	2019	2018
Balance at beginning of period	\$ 789	\$ 767
Accrual for warranties	815	619
Warranty revision	186	(34)
Settlements made during the period	(992)	(563)
Balance at end of period	<u>798</u>	<u>789</u>
Current portion of estimated warranty liability	(761)	(758)
Long-term estimated warranty liability	<u>\$ 37</u>	<u>\$ 31</u>

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,	
	2019	2018
Balance at beginning of period	\$ 218	\$ 259
Revenue deferrals	488	376
Amortization of deferred revenue	(431)	(417)
Total deferred warranty revenue	<u>275</u>	<u>218</u>
Current portion of deferred warranty revenue	(194)	(214)
Long-term deferred warranty revenue	<u>\$ 81</u>	<u>\$ 4</u>

NOTE 9 – INCOME TAXES

Income before income taxes consists of the following:

(In thousands)	Year Ended December 31,	
	2019	2018
Sources of income (loss) before income taxes:		
United States	\$ (172)	\$ 2,288
Foreign	1,332	1,291
Total income before income taxes	<u>\$ 1,160</u>	<u>\$ 3,579</u>

The provision (benefit) for income taxes consists of the following:

(In thousands)	Year Ended December 31,	
	2019	2018
Current:		
Federal	\$ —	\$ —
State	30	31
Foreign	(37)	350
Total current	<u>\$ (7)</u>	<u>\$ 381</u>
Deferred:		
Federal	\$ 338	\$ 427
State	1	—
Foreign	54	(56)
Total deferred	<u>\$ 393</u>	<u>\$ 371</u>
Total provision for income taxes	<u>\$ 386</u>	<u>\$ 752</u>

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

	Year Ended December 31,	
	2019	2018
Federal statutory rate	21.0%	21.0%
State income taxes, net of federal benefit	2.1	0.7
U.S. Subpart F income	1.2	0.4
Global Intangible Low-Taxed Income (GILTI)	17.4	6.1
Share-based compensation	(0.2)	(3.5)
Research and experimentation (R&D) credit	(16.8)	(5.0)
Foreign rate difference	(6.0)	0.6
Unrecognized tax benefit	(16.6)	—
Valuation allowance	10.5	(0.1)
Expiring and unrecognized deferred tax attributes	16.1	—
Other, net	4.6	0.8
Effective tax rate	<u>33.3%</u>	<u>21.0%</u>

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Our effective tax rate in 2019 was negatively impacted by the GILTI and an increase in our valuation allowance for deferred income taxes related to U.S. federal R&D tax credits expiring in 2020, offset in part by the favorable benefits from current year U.S. federal R&D tax credits and a non-cash benefit from completion of an audit of our income taxes in the Singapore tax jurisdiction. Our effective tax rate in 2018 was negatively impacted by the GILTI, offset by the favorable benefits from U.S. federal R&D tax credits and excess tax benefits from employee share-based compensation.

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

(In thousands)	Year Ended December 31,	
	2019	2018
Gross UTB balance at beginning of year	\$ 2,542	\$ 2,461
Additions based on tax positions related to the current year	97	167
Additions for tax positions of prior years	18	14
Reductions for tax positions of prior years	(896)	(100)
Reductions due to lapse of applicable statute of limitations	—	—
Gross UTB balance at end of year	\$ 1,761	\$ 2,542
Net UTB balance at end of year	\$ 160	\$ 477

The ending net UTB results from adjusting the gross balance for items such as federal, state, and non-U.S. deferred items, interest and penalties, and deductible taxes. The decrease in our gross and net UTB balance as of December 31, 2019 was due to completion of an audit of our income taxes in the Singapore tax jurisdiction. We have classified \$10,000 of our net UTB as a current liability, because we anticipate having to pay this liability within the next year. The remaining 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, 2019 and 2018, 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 2015 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 2015.

The Inland Revenue Authority of Singapore recently completed a review of 2016 and 2015 income tax returns. The outcome of these audits did 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, 2019		December 31, 2018	
	Assets	Liabilities	Assets	Liabilities
Equipment, leaseholds and intangible amortization, net	\$ 200	\$ 287	\$ 202	\$ 448
Operating lease liabilities	755	—	—	—
Right-of-use assets (operating leases)	—	340	—	—
Inventory allowances	610	—	573	—
Accrued expenses	110	—	250	—
Warranty accrual	173	—	170	—
Deferred revenue	429	—	267	—
Federal and state tax credits	4,001	—	4,021	—
Federal and state net operating loss carry forwards	555	—	1,508	—
Share-based compensation	369	—	314	—
Other, net	114	18	122	—
Subtotal	7,316	645	7,427	448
Valuation allowance	(1,679)	—	(1,557)	—
Total deferred tax assets and liabilities	\$ 5,637	\$ 645	\$ 5,870	\$ 448

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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 federal 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. Finally, 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, 2019 or December 31, 2018. The valuation allowance recorded against our deferred tax assets increased by \$122,000 in 2019, primarily relating to an increase for U.S. federal R&D tax credits expiring in 2020. Valuation allowances recorded against our deferred tax assets decreased by \$49,000 in 2018, mainly for expiring state R&D tax credits and state net operating loss carry forwards. At December 31, 2019, we have federal R&D tax credit carry forwards of \$4.1 million that will begin to expire in 2020 and a federal net operating loss carry forward of \$1.3 million that will begin to expire in 2035, if unused.

Cash payments for income taxes, net of refunds received, were \$46,000 in 2019 and \$29,000 in 2018.

NOTE 10 – OPERATING LEASES

We determine if an arrangement is a lease at inception. Operating leases are included 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 at the commencement date 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.

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 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.

We lease a 19,805 square foot mixed office and warehouse facility in Singapore. In February 2020, we finalized a new lease for the existing facility in Singapore which will run from the expiration date of the old lease in July 2020 through July 2023. Rent and facility operating costs under the new lease are expect to remain unchanged when compared to the old lease expiring in July 2020. We also have operating leases in the United Kingdom and China, which expire in May 2023 and November 2020, respectively.

The components of our costs for operating leases in the year ended December 31, 2019 are as follows:

Component (in thousands)	Year Ended December 31, 2019
Operating lease cost	\$ 349
Variable lease cost	264
Short-term lease cost	19
Total	<u>\$ 632</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.

Rent expense was \$1.0 million in 2019 and \$1.3 million in 2018.

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At December 31, 2019, the future maturities of lease liabilities are as follows:

Twelve months ending December 31,	(In thousands)
2020	\$ 826
2021	642
2022	657
2023	650
2024	658
2025 & Thereafter	1,078
Total lease payments	4,511
Less: amount representing interest	682
Present value of operating lease liabilities	\$ 3,829

At December 31, 2019, the weighted average remaining term of our operating leases is 6.11 years, and the weighted average discount rate applied to our operating leases was 5.7%.

Cash paid for amounts included in the measurement of operating lease liabilities in the year ended December 31, 2019 was \$635,000. Incentives from the landlord recorded as leasehold improvements in the year ended December 31, 2019 were \$783,000. Operating lease liabilities were increased by \$70,000 in the year ended December 31, 2019 for right-of-use assets.

Because we have not restated prior year information for our adoption of Topic 842, the following presents our future minimum lease payments for operating leases under ASC Topic 840. These amounts include common-area or other maintenance costs under ASC Topic 840 (which was replaced by Topic 842). At December 31, 2018, the future minimum lease payments required under noncancelable operating lease agreements were as follows:

Year ending December 31,	(In thousands)
2019	\$ 1,095
2020	1,298
2021	1,049
2022	1,064
2023	1,080
2024 & Thereafter	3,049
Total	\$ 8,635

NOTE 11 – 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 \$317,000 in 2019 and \$310,000 in 2018.

We also contribute to defined contribution retirement savings plans on behalf of our employees in the United Kingdom. We made contributions to these plans totaling \$32,000 in 2019 and \$32,000 in 2018.

NOTE 12 – REVENUE CONCENTRATIONS, SIGNIFICANT CUSTOMERS, AND GEOGRAPHIC AREAS

The following summarizes our revenue by product line:

(In thousands)	Year Ended December 31,	
	2019	2018
High Precision 3D and 2D Sensors	\$ 12,579	\$ 21,532
Inspection and Metrology Systems	32,713	29,582
Semiconductor Sensors	13,971	13,606
Total	\$ 59,263	\$ 64,720

Revenue from sales of high precision 3D and 2D sensors based on our 3D Multi-Reflection Suppression (MRS) technology was \$6 million in 2019 and \$7.9 million in 2018. Revenue from sales of inspection and metrology systems based on our 3D MRS sensor technology was \$17.9 million in 2019 and \$13.3 million in 2018.

No customer accounted for more than 10% of our revenues in 2019. Two customers each accounted for 10% of our revenues in 2018.

Export revenues as a percentage of total revenues was 76% in 2019 and 72% in 2018. 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:

(In thousands)	Year Ended December 31,	
	2019	2018
United States	\$ 14,459	\$ 18,355
Netherlands	1,658	3,077
Other Europe	8,009	10,041
China	11,553	10,438
Singapore	4,120	2,948
South Korea	4,678	5,375
Japan	3,630	8,097
Other Asia	8,496	4,464
Other	2,660	1,925
Total revenues	\$ 59,263	\$ 64,720

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, 2019 and 2018 are as follows:

(In thousands)	2019	2018
Long-lived assets:		
United States	\$ 3,256	\$ 2,867
Europe	—	2
Asia and other	395	326
Total long-lived assets	\$ 3,651	\$ 3,195

NOTE 13 – SHARE REPURCHASES

In July 2019, our Board of Directors authorized a \$3.0 million share repurchase program. Our common stock may be acquired from time to time in open market transactions, block purchases and other transactions complying with the Securities and Exchange Commission's Rule 10b-18. In 2019, we spent \$353,000 to repurchase 25,985 shares of our common stock. The share repurchase program will terminate on June 30, 2020.

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 limit 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.

NOTE 15 – QUARTERLY FINANCIAL INFORMATION (UNAUDITED)

(In thousands, except per share amounts)

	2019	March 31	June 30	September 30	December 31	Total
Revenues	\$	14,976	\$ 15,044	\$ 12,391	\$ 16,852	\$ 59,263
Gross margin		7,026	6,589	5,506	7,181	26,302
Income (loss) from operations		570	579	(757)	544	936
Net income (loss)		495	464	(353)	168	774
Net income (loss) per share - Basic (1)		0.07	0.07	(0.05)	0.02	0.11
Net income (loss) per share - Diluted (1)		0.07	0.06	(0.05)	0.02	0.11

	2018	March 31	June 30	September 30	December 31	Total
Revenues	\$	14,120	\$ 15,854	\$ 16,683	\$ 18,063	\$ 64,720
Gross margin		6,219	7,264	7,436	7,692	28,611
Income (loss) from operations		(318)	875	1,329	1,473	3,359
Net income (loss)		(173)	740	1,067	1,193	2,827
Net income (loss) per share - Basic (1)		(0.02)	0.11	0.15	0.17	0.40
Net income (loss) per share - Diluted (1)		(0.02)	0.10	0.15	0.16	0.39

- (1) The summation of quarterly per share amounts may not equal the calculation for the full year, as each quarterly calculation is performed discretely.

Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors
CyberOptics Corporation
Minneapolis, Minnesota

Opinion on Internal Control over Financial Reporting

We have audited CyberOptics Corporation and subsidiaries (the “Company”) internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (the “COSO criteria”). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the consolidated balance sheets of the Company as of December 31, 2019, the related consolidated statements of operations, comprehensive income, stockholders’ equity, and cash flows for the year then ended, and the related notes and our report dated March 12, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management’s Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit of internal control over financial reporting in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company’s 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 generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s 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. 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.

/s/BDO USA, LLP

Minneapolis, Minnesota

March 12, 2020

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 sheet of CyberOptics Corporation and subsidiaries (the “Company”) as of December 31, 2019, the related consolidated statements of operations, comprehensive income, stockholders’ equity, and cash flows for the year then ended, 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, 2019, and the results of their operations and their cash flows for the year then ended, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”) and our report dated March 12, 2020 expressed an unqualified opinion thereon.

Change in Accounting Principle

As discussed in Notes 1 and 10 to the consolidated financial statements, the Company has changed its method of accounting for leases in 2019 due to the adoption of Accounting Standards Codification Topic 842, *Leases*.

Basis for Opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

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

/s/BDO USA, LLP

We have served as the Company's auditor since 2019

Minneapolis, Minnesota

March 12, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Shareholders
CyberOptics Corporation

Opinion on the financial statements

We have audited the accompanying consolidated balance sheet of CyberOptics Corporation (a Minnesota corporation) and subsidiaries (the “Company”) as of December 31, 2018, the related consolidated statement of operations, comprehensive income, changes in stockholders equity and cash flows for the year in the period ended December 31, 2018, and the related notes (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018, and the results of its operations and its cash flows for the year in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

Basis for opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audit included performing procedures to assess the risks of material misstatement of the 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 supporting the amounts and disclosures in the financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

/s/ GRANT THORNTON LLP

We served as the Company’s auditor from 2009 through 2018 and are now the predecessor auditor.

Minneapolis, Minnesota
March 12, 2019

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, 2019, 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, 2019. 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, 2019.

Our internal control over financial reporting as of December 31, 2019 has been audited by BDO USA, LLP as stated in their report included elsewhere herein.

ITEM 9B. OTHER INFORMATION

NONE.

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,” “Section 16(a) Beneficial Ownership Reporting Compliance” and “Executive Compensation–Executive Officers” of the Company’s definitive proxy statement for its annual meeting of shareholders to be held May 14, 2020 (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, 2019 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))
Equity compensation plans approved by security holders			
Employee Stock Incentive Plan ¹	568,717	\$ 10.74	185,351
Non-Employee Director Stock Plan	16,000	16.97	52,000
Employee Stock Purchase Plan ²	N/A	N/A	156,688
Total	584,717	\$ 10.91	394,039

(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:

Consolidated Balance Sheets as of December 31, 2019 and 2018.

Consolidated Statements of Operations for the years ended December 31, 2019 and 2018.

Consolidated Statements of Comprehensive Income for the years ended December 31, 2019 and 2018.

Consolidated Statements of Cash Flows for the years ended December 31, 2019 and 2018.

Consolidated Statements of Stockholders' Equity for the years ended December 31, 2019 and 2018.

Notes to the Consolidated Financial Statements.

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(b) LIST OF EXHIBITS

<u>Exhibit Number</u>	<u>Description</u>
3.1	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).
3.2	Bylaws of the Company (incorporated by reference to Exhibit 3.1 to the current report on Form 8-K dated September 8, 2008).
*4.1	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)
*4.2	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).
*4.3	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)
*4.4	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)
4.5	Description of Securities
10.1	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).
10.2	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).
*10.3	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).
*10.4	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).
*10.5	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).
*10.6	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)
10.7	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).
10.8	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).
10.9	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.
*10.10	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).
*10.11	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).
21	Subsidiaries of the Company.
23.1	Consent of Independent Registered Public Accounting Firm.
23.2	Consent of Independent Registered Public Accounting Firm
31.1	Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32	Certification of Chief Executive Officer and Chief Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101	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 (Loss), (iv) the Consolidated Statements of Cash Flows, (v) the Consolidated Statements of Stockholders' Equity, and (vi) the Notes to the Consolidated Financial Statements.

* 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 12, 2020
<u>/s/ VIVEK MOHINDRA</u> Vivek Mohindra	Director	March 12, 2020
<u>/s/ MICHAEL M. SELZER JR.</u> Michael M. Selzer, Jr.	Chairman, Director	March 12, 2020
<u>/s/ IRENE M. QUALTERS</u> Irene M. Qualters	Director	March 12, 2020
<u>/s/ CRAIG D. GATES</u> Craig D. Gates	Director	March 12, 2020
<u>/s/ JEFFREY A. BERTELSEN</u> Jeffrey A. Bertelsen	Vice President, CFO, and COO (Principal Financial Officer and Principal Accounting Officer)	March 12, 2020

CyberOptics Corporation
Description of Securities

Authorized Capitalization

Our authorized capital stock consists of 25,000,000 shares of common stock, no par value, and 5,000,000 shares of preferred stock, no par value. The common stock is registered pursuant to Section 12 of the Securities and Exchange Act of 1934, as amended.

Common Stock

Fully Paid. All outstanding shares of our common stock are fully paid and nonassessable. Fully paid and nonassessable means the full purchase price for the outstanding shares of common stock has been paid and the holders of such shares will not be assessed any additional amounts for such shares. Any additional capital stock that we may issue in the future will also be fully paid and nonassessable.

Dividends. Holders of common stock may receive dividends when declared by our board of directors out of funds that we can legally use to pay dividends. We may pay dividends in cash, stock or other property. Holders of common stock may not receive dividends until we have satisfied our obligations to the holders of outstanding preferred stock, if any.

Voting Rights. Holders of common stock have the exclusive power to vote on all matters presented to our shareholders, unless Minnesota law or the certificate of designation for an outstanding series of preferred stock gives the holders of that series of preferred stock the right to vote on certain matters. Each holder of common stock is entitled to one vote per share.

Each director is elected by plurality of the votes cast. Holders of common stock may not cumulate their votes when voting for directors, which means that a holder cannot cast more than one vote per share for each director. Except for the election of directors, or in circumstances in which Minnesota law requires a larger percentage vote, the shareholders shall take action by the affirmative vote of the holders of the greater of (1) a majority of the voting power of the shares present and entitled to vote on that item of business, or (2) a majority of the voting power of the minimum number of the shares entitled to vote that would constitute a quorum for the transaction of business at the meeting.

Other Rights. If we voluntarily or involuntarily liquidate, dissolve or wind up our business, holders of common stock will receive pro rata, according to the number of shares held by them, any remaining assets we are able to be distributed to our shareholders after we have provided for the liquidation preference of outstanding shares of preferred stock, if any. When we issue securities in the future, holders of common stock have no preemptive rights to buy any portion of such issues of securities. The common stock has no sinking fund or redemption provisions or conversion or exchange rights.

Listing. Our outstanding shares of common stock are listed on the NASDAQ Stock Market under the symbol "CYE."

Antitakeover Provisions Contained in our Articles of Incorporation and our Bylaws

Certain provisions of our Articles of Incorporation and our Bylaws may make it less likely that our management would be changed or someone would acquire voting control of our company, without the consent of our board of directors. These provisions may delay, deter or prevent tender offers or takeover attempts that shareholders may believe are in their best interests, including tender offers or takeover attempts that might allow shareholders to receive premiums over the market price of our common stock.

Preferred Stock. Our board of directors may at any time, under our Articles of Incorporation and without shareholder approval, issue one or more series of preferred stock. In some cases, the issuance of preferred stock without shareholder approval could discourage or make more difficult attempts to take control of our company through a merger, tender offer or proxy contest. Preferred stock with special voting rights or other features issued to persons favoring our management could prevent a takeover by stopping the person trying to take control of our company from acquiring enough voting shares necessary to take control.

Nomination Procedures. In addition to our board of directors, shareholders can nominate candidates for our board of directors. However, a shareholder must follow the advance-notice procedures described in our Bylaws and summarized below under the caption "Advance Notice Requirements for Director Nominations and Shareholder Proposals."

Shareholder-Proposal Procedures. Shareholders can propose that business other than nominations to our board of directors be considered at an annual meeting of shareholders only if a shareholder follows the advance-notice procedures set forth in our Bylaws, which procedures are described below under the caption "Advance Notice Requirements for Director Nominations and Shareholder Proposals."

Unauthorized but Unissued Common Stock

Minnesota law does not require shareholder approval for any issuance of authorized shares of common stock. However, the listing requirements of the NASDAQ Stock Market, which would apply so long as the common stock remains listed on the NASDAQ Stock Market, require shareholder approval of certain issuances equal to or exceeding 20% of the then outstanding voting power or then outstanding number of shares of common stock. This requirement is subject to several exceptions.

One of the effects of the existence of unissued and unreserved common stock may be to enable our board of directors to issue shares to persons friendly to current management, which issuance could render more difficult or discourage an attempt to obtain control of our company by means of a merger, tender offer or proxy contest. As a result, such unissued and unreserved common stock may protect the continuity of our management and possibly deprive our shareholders of opportunities to sell their shares of common stock at prices higher than prevailing market prices.

Advance Notice Requirements for Director Nominations and Shareholder Proposals

Our Bylaws provide that shareholders seeking to nominate candidates for election as directors or to bring other business before an annual meeting of shareholders must provide timely notice of their nominations and proposals in writing to the Secretary of our company.

Generally, to be timely, a shareholder's notice must be received at our principal executive offices at least 120 days prior to the first anniversary of the previous year's annual meeting. Our bylaws also specify requirements as to the form and content of a shareholder's notice.

These provisions may impede shareholders' ability to bring matters of business before an annual meeting of shareholders or make nominations for directors at an annual meeting of shareholders and may delay, deter or prevent tender offers or takeover attempts that shareholders may believe are in their best interests, including tender offers or takeover attempts that might allow shareholders to receive premiums over the market price of their common stock.

Amendment of our Articles of Incorporation and our Bylaws

Our shareholders have the power to amend our Articles of Incorporation, subject to the requirements of the Minnesota Business Corporation Act. Our board of directors may alter or amend, make or adopt, or repeal our Bylaws, subject to the limitations set forth in our Bylaws and the Minnesota Business Corporation Act. Our shareholders also have the power to alter or amend our Bylaws.

RBC INVESTOR SERVICES TRUST SINGAPORE LIMITED
(in its capacity as trustee of ESR-REIT)

CYBEROPTICS (SINGAPORE) PRIVATE LIMITED

TENANCY AGREEMENT
21 Ubi Road 1 #02-01
Singapore 408724

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THIS TENANCY AGREEMENT is made on _____

BETWEEN:

- (1) The Landlord: As defined in Item 2 of Schedule 2.
- (2) The Tenant: As defined in Item 3 of Schedule 2.

THIS AGREEMENT WITNESSETH as follows:

1. TERMS AND INTERPRETATION

1.1 Capitalised words and expressions used in this Agreement shall have the meanings set out in Schedule 1 unless the context requires otherwise.

1.2 The rules of interpretation set out in Schedule 1 apply to this Agreement unless the context requires otherwise.

2. LETTING

2.1 **Letting:** Subject always to the Head Lessor's approval to this Agreement, the Landlord lets the Premises to the Tenant for the Term and the Tenant agrees to pay to the Landlord the Rent and Service Charge, in each case, subject to the rest of this Agreement.

2.2 **Fitting Out Period:** The Landlord shall grant to the Tenant a rent-free fitting out period for the duration specified in Item 1 of Schedule 2 ("**Fitting Out Period**"), such Fitting Out Period to commence on the Possession Date, subject to the following conditions:

- (a) during the Fitting Out Period, the Tenant shall have access to the Premises as a licensee and subject to Clause 2.2(d) the Tenant shall:
 - (i) save for the payment of Rent and Service Charge, observe and perform its obligations imposed by the covenants and conditions in this Agreement as if this Agreement had commenced on the Possession Date. For the avoidance of doubt, the Tenant's obligations to make payment in respect of Utilities, car park charges and any other sums due under this Agreement continue during the Fitting Out Period; and
 - (ii) indemnify the Landlord against all claims, demands, actions, proceedings, judgments, damages, losses, costs and expenses of any nature which the Landlord may suffer or incur for death, injury, loss and/or damage caused by the Tenant to or at the Premises.
- (b) during the Fitting Out Period, the Landlord shall have the same rights and remedies in respect of any breach of obligations imposed on the Tenant by the covenants and conditions in this Agreement as if this Agreement had commenced on the Possession Date;
- (c) any delay by the Tenant in taking possession of the Premises shall not be a ground for postponing the commencement of the Fitting Out Period and the Tenant shall be deemed to have taken possession of the Premises on the Possession Date;

- (d) at the expiry of the Fitting Out Period, the Tenant shall be the tenant of the Premises and where the Landlord has not already done so, the Landlord shall be deemed to have delivered to the Tenant exclusive possession of the Premises on the Term Commencement Date;
- (e) without prejudice to Clause 4.12, the Tenant shall furnish to the Landlord the as-built drawings for any alterations and additions carried out to the Premises within two months after the expiry of the Fitting Out Period; and
- (f) in the event that this Agreement is prematurely terminated by the Tenant for any reason whatsoever, then without prejudice to any other rights of the Landlord, the Tenant shall compensate and pay to the Landlord on demand, and in addition to any remedies or compensation that the Landlord may be entitled to, including the payment of the sum referred to in Clause 11.2, an amount equivalent to the Rent and Service Charge which would have been payable during the Fitting Out Period, for the entire duration of the Fitting Out Period.

2.3 **Rights:**

- (a) The Premises are let with the benefit of the following rights:
 - (i) The right for the Tenant to ingress and egress to and from the Premises, in, over and along all the usual entrances, landings, and passage ways, such rights being only so far as necessary as the Landlord can lawfully grant;
 - (ii) The right for the Tenant to free and uninterrupted use of all Conducting Media, as is necessary for the enjoyment of the Premises;
 - (iii) The right for the Tenant to use the Common Area to pass to and from the Premises only to the extent that it is necessary;
 - (iv) The right for the Tenant to use the toilet facilities in the Common Area; and
 - (v) The right for the Tenant to enjoy the benefit of the air-conditioning system (if any) installed in the Common Area.
- (b) The rights mentioned in Clause 2.3(a) above may also be exercised by:
 - (i) Any persons authorised by the Tenant but only for proper purposes connected with the use or enjoyment of the Premises; and
 - (ii) The Landlord, persons authorised by the Landlord and other persons similarly entitled.

2.4 **Exceptions:**

- (a) The letting is subject to the following rights of the Landlord:
 - (i) to run the Utilities and air-conditioning services and other services through the Conducting Media in the Premises;
 - (ii) to enter the Premises in accordance with the provisions of this Agreement;

- (iii) of support and protection enjoyed by the other parts of the Building;
 - (iv) to erect scaffolding and/or protective barriers for renovating, retrofitting, refurbishing, altering, repairing, cleaning or painting the Building even if the scaffolding temporarily restricts access to or the use and enjoyment of the Premises;
 - (v) the right to light, air, support, protection, shelter and all other easements and rights now or after the date of this Agreement belonging to or enjoyed by other parts of the Building;
 - (vi) to build upon, alter, rebuild, develop or use the land adjoining the Building even if this affects the light and air coming to the Premises or causes nuisance, damage, annoyance or inconvenience to the Tenant or occupier of the Premises by noise, dust, vibration or otherwise provided this does not materially affect the Tenant's ability to use the Premises in accordance with this Agreement; and
 - (vii) the right at any time to carry out any works (whether of repair or otherwise) which the Landlord is liable under this Agreement, including but not limited to an annual power supply shut down for inspection and maintenance.
- (b) The rights mentioned in Clause 2.4(a) above may also be exercised by any persons authorised by the Landlord or any person who is or who becomes entitled to exercise them.

2.5 **Head Lessor Approval:**

- (a) This Agreement is subject to approval being granted from the Head Lessor. In the event that the Head Lessor's approval is not granted, then this Agreement shall be deemed null and void and the Landlord shall return any monies paid by the Tenant hereunder without interest (save for stamp duty or other taxes paid by the Tenant) and thereafter, no Party shall have any claim against each other in respect of any loss, damage, costs and/or expense arising out of or in connection with this Agreement. The Tenant shall apply to the relevant Authorities for a refund of the stamp duty or other taxes paid by the Tenant, as may be allowed by the relevant Authorities and the Landlord shall not be liable to return these sums to the Tenant.
- (b) In addition, during the Term, the Landlord, where it deems necessary, shall submit additional subletting applications in respect of this Agreement to the Head Lessor in accordance with the prevailing requirements of the Head Lessor ("**Subletting Applications**"). In the event that the Head Lessor's approval is not obtained for any one of the Subletting Applications, Clause 15.3 shall apply.

2.6 **State and Condition:** The Tenant shall take possession of the Premises on an "as is where is" basis and the Tenant shall be deemed to have inspected the Premises on or before the Possession Date and have notice of and to be satisfied as to its state and condition. The Landlord makes no warranty or representation whether express or implied as to the state, condition, purpose or fitness of the Premises for the Tenant's intended usage or intended Alterations and Additions to the Premises and shall be under no liability in respect thereof.

3. TENANT'S PAYMENT OBLIGATIONS

3.1 **Rent and Service Charge:** The Tenant must pay the Rent and the Service Charge monthly in advance with the first payment of the Rent and Service Charge payable on the execution of this Agreement and:

- (a) if the Term Commencement Date falls on the first day of a calendar month, the first payment of Rent and Service Charge shall be equivalent to the Rent and Service Charge for that calendar month; or
- (b) if the Term Commencement Date falls on a day other than the first day of a calendar month, the first payment of the Rent and Service Charge shall be equivalent to the aggregate of (aa) the Rent and Service Charge pro-rated for that calendar month in which the Term Commencement Date occurs and (bb) the Rent and Service Charge for the calendar month immediately following the calendar month in which the Term Commencement Date occurs,

and thereafter all monthly payments of Rent and Service Charge shall be made on the first day of each calendar month.

3.2 Service Charge review:

- (a) The Landlord is entitled to change the amount of the Service Charge from time to time by giving notice to the Tenant of the new amount ("**Landlord's Notice**") provided that the new amount must be reasonably reflective of any increase in costs to the Landlord in relation to the Property.
- (b) Where the Landlord exercises its right to change the amount of the Service Charge, the Tenant must pay the revised Service Charge from the date specified in the Landlord's Notice as follows:
 - (i) If the date of increase of the Service Charge specified in the Landlord's Notice is a date on or before the date of issuance of the Landlord's Notice, the total amount of the increase is payable by the Tenant immediately upon the Tenant's receipt of the notice by the Landlord; and
 - (ii) The increased Service Charge for the period after the issuance of the Landlord's Notice shall be the applicable Service Charge until further increased by the Landlord under this Clause 3.2.
- (c) Where the Landlord exercises its right and increases the amount of the Service Charge or where the Rent has increased from one period to the next, the Landlord is entitled to require the Tenant to pay to the Landlord an additional amount by way of security deposit so that the Security Deposit remains the same multiple of the Rent and Service Charge then applicable.
- (d) The calculation of the new amount of Service Charge by the Landlord notified to the Tenant shall be final and binding on the Tenant.

3.3 Security Deposit:

- (a) On the execution of this Agreement, the Tenant shall pay to the Landlord the Security Deposit by way of bank cheque or electronic transfer to the Landlord's bank account.
- (b) The Tenant shall maintain the Security Deposit throughout the term of this Agreement:

- (i) as security for the due observance and performance by the Tenant of each and every term, covenant, condition, stipulation and obligation on the part of the Tenant under this Agreement; and
- (ii) to secure or indemnify the Landlord against:
 - (A) any loss or damage resulting from any default by the Tenant under this Agreement; and
 - (B) any claim by the Landlord at any time against the Tenant in relation to any matter arising out of or in connection with the Premises;

whether or not this Agreement is existing.

- (c) In addition to and without prejudice to the rights of the Landlord at law, in equity or under this Agreement, if the Tenant shall at any time fail to observe or perform any of the terms, covenants, conditions, stipulations and obligations on the part of the Tenant under this Agreement or if the Tenant is liable under any indemnity in this Agreement, the Landlord may, at its option, appropriate and apply all or any part of the Security Deposit held by the Landlord towards payment in respect of such failure or liability, including payment for all and any outstanding Rent, Service Charge or reimbursement or to compensate for loss or damage or provide for any contingent liability under this Agreement. Any appropriation by the Landlord of the Security Deposit shall not be deemed to be a waiver by the Landlord of any non-payment, non-performance or liability on the part of the Tenant and shall not preclude the Landlord from exercising any of its other rights and obligations in this Agreement.
- (d) In the event the Landlord appropriates or applies the Security Deposit in accordance with this Clause 3.3, the Tenant shall immediately on demand pay to the Landlord an amount sufficient to restore the Security Deposit to its full amount.
- (e) The Security Deposit shall be refunded to the Tenant without interest after the expiry of the Term provided that the Tenant has duly performed and observed all of its covenants, conditions, stipulations and obligations under this Agreement to the satisfaction of the Landlord. Notwithstanding any other provision in this Agreement, the Landlord does not hold the Security Deposit on trust for the Tenant.
- (f) The Tenant must not set-off any Rent, Service Charge, reimbursement or other payment to be made by the Tenant to the Landlord against the Security Deposit.
- (g) If, at any time during the Term, pursuant to the financial due diligence carried out by the Landlord based on the latest Financial Statements furnished by the Tenant, the Landlord determines in its absolute discretion that the credit rating of the Tenant is unsatisfactory, the Landlord may increase the amount of Security Deposit payable by the Tenant under this Agreement by notice in writing. Upon receipt of the notice, the Tenant shall immediately pay to the Landlord an amount sufficient to increase the amount held by the Landlord to the full amount of Security Deposit stipulated by the Landlord in the said notice.

3.4 **Utilities:**

- (a) The Tenant shall pay all charges including any taxes now or in the future imposed, in respect of Utilities supplied to the Premises including all hire charges for any equipment or appliances supplied to the Tenant for such Utilities, whether by a direct payment to the Utilities supplier, by reimbursing the Landlord or by paying the Landlord for such Utilities.

- (b) If the Tenant is the account holder for the Utilities and has a direct contractual relationship with the Utilities supplier:
- (i) the Tenant must pay all charges promptly to the supplier; and
 - (ii) if the Landlord, in its discretion, pays such charges, the Tenant must reimburse the Landlord promptly.
- (c) If the Landlord is the account holder for the Utilities and has a contractual relationship with the Utilities supplier, the rate for such Utilities shall be charged at the tariff rate published by SP Services Ltd, and the Landlord shall be entitled to determine the supplier or suppliers of such Utilities from time to time in its absolute discretion.
- (d) Where the Landlord is the account holder for the Utilities, the Tenant must pay to the Landlord a proportionate part of the Utilities charges (including any applicable GST thereon) which are determined by the Landlord to be attributable to the Premises. The Utilities charges (including any applicable GST thereon) payable by the Tenant will be calculated by the Landlord and notified to the Tenant by way of an invoice from the Landlord. The statement is final and binding on the Tenant as to the amount stated.
- (e) Without prejudice to the provisions of this Clause 3.4, the Tenant shall, where required by the Landlord, at its own costs and expenses engage a Qualified Licenced Plumber and the Licenced Electricity Worker to install a water and electricity meter for the Premises.
- (f) Any costs in connection with the opening of account, upgrading or supply of any Utilities to the Premises, as may be required by the Tenant, shall be borne by the Tenant and the Tenant shall reimburse the Landlord immediately on demand should the Landlord pay such costs.
- (g) On the execution of this Agreement, the Tenant shall pay the Utilities Deposit to the Landlord by way of bank cheque or electronic transfer to the Landlord's bank account. Without prejudice to any other right, the Landlord may apply the Utilities Deposit for payment of any outstanding Utilities charges payable by the Tenant. If the Landlord so applies the Utilities Deposit during the Term, the Tenant must immediately pay to the Landlord a sum sufficient to replace the sum so applied. The Utilities Deposit shall be refunded to the Tenant without interest after the expiry of the Term less any part of the Utilities Deposit required to pay any outstanding Utilities Charges payable by the Tenant, and without prejudice to the Landlord's other rights.
- (h) The Landlord is entitled to increase the Utilities Deposit payable by the Tenant if it deems in its absolute discretion that the Utilities Deposit is insufficient:
- (i) based on an annual review of the utilities deposits payable by the tenants at the Property; or
 - (ii) based on a review, conducted by the Landlord from time to time, of the consumption of Utilities by the Tenant, by issuing a written notice stating the new Utilities Deposit payable by the Tenant. The Tenant shall, within (7) days of the date of issue of the written notice, pay such amount as to increase the amount of Utilities Deposit held by the Landlord to the amount specified in the written notice issued by the Landlord. The new Utilities Deposit notified by the Landlord to the Tenant shall be final and binding on the Tenant.

3.5 **Costs and Expenses:**

- (a) The Tenant agrees to pay the Landlord on a full indemnity basis and immediately on demand:
- (i) all the Landlord's costs and expenses incurred in taking any action to rectify any breach of this Agreement by the Tenant;
 - (ii) all the Landlord's legal costs and expenses incurred in enforcing any provision of this Agreement in the event of a breach by the Tenant;
 - (iii) all the Landlord's costs and expenses including solicitors' costs, costs of the Landlord's architect, engineer, surveyor and other consultants, sublet consent fees, administrative fees and other fees, taxes, or charges in connection with (A) applications for subletting or any other application made by the Tenant for any consent or approval required under this Agreement whether or not such consent or approval is granted or given; (B) supervising or implementing the terms of any consent or approval including that given under Clause 4.5; and
 - (iv) all stamp duties in respect of agreements entered into in relation to this Agreement.
- (b) Each party shall bear their own expenses (legal or otherwise) incurred in the preparation and execution of this Agreement and the Tenant shall bear all stamp duties in respect of this Agreement, including reimbursing the Landlord should the Landlord pay such stamp duties.

3.6 **Sanitary and Plumbing Facilities:** All costs and expenses incurred by the Landlord in connection with plumbing works done in the Premises shall be borne by the Tenant and paid immediately upon notice from the Landlord to the Tenant.

3.7 **Property Tax**

- (a) The Tenant must pay any additional property tax imposed by the relevant authority (including any retrospective revisions made after the Term Commencement Date) on the Premises in respect of the Term, which is over and above the Base Property Tax payable by the Landlord in respect of each year of the Term under Clause 10.4 below. The Landlord shall notify the Tenant of such additional property tax and the Landlord's computation shall be conclusive and binding, save for manifest error. Such additional property tax will be recoverable from the Tenant as if it is rent.
- (b) The liability of the Tenant to pay the additional property tax in respect of the Term will not be affected by the expiry or earlier termination of this Agreement.
- (c) Objection to any assessment of annual value or imposition of property tax on the Premises during the Term may only be made by the Landlord in its sole discretion.

3.8 Other payment provisions

- (a) **No Set-off:** The Tenant shall pay the Rent, the Service Charge, reimbursements and other payments required of it under this Agreement, at the times and in the manner specified in this Agreement without any deduction, set-off or demand whatsoever. In particular, there shall be no abatement of such payments to be made by the Tenant to the Landlord by reason of any claim by the Tenant against the Landlord whether for non-performance or breach of the Landlord's obligations under this Agreement or otherwise. For the avoidance of doubt, the Tenant must not claim or exercise any right to withhold any payment to be made to the Landlord or to legal or equitable set-off.
- (b) **GIRO:** The Tenant shall pay the Rent, Service Charge, reimbursement and other payments required of it under this Agreement, to the Landlord by way of GIRO payments to the Landlord's bank account. The Tenant acknowledges that Rent and Service Charge are likely to be deducted on the first working day of the month, and sublet consent fees and Utilities charges will be deducted on the 23rd day of every month. Notwithstanding the above, the Tenant acknowledges that the GIRO deduction dates stated herein are subject to change by the Landlord upon prior written notice. All bank charges levied in respect of any unsuccessful GIRO deductions together with an administrative charge (subject to applicable GST) of Singapore Dollars Twenty (S\$20), shall be borne by the Tenant. The Landlord reserves the right to increase the said administrative charge from time to time in its absolute discretion.
- (c) **Application of sums:** Any sums received by the Landlord from the Tenant towards payment or part payment of the Outstanding Debt may be applied at the Landlord's sole and absolute discretion, in or towards payment of any part of the Outstanding Debt and such application by the Landlord shall override any directions given by the Tenant that such sums be specifically applied in or towards satisfaction of any particular portion or specific items or part thereof of the Outstanding Debt.
- (d) **GST:** The Tenant shall pay any tax levied on the supply of goods and services or such taxes or impositions, by whatever name called, levied or imposed by the appropriate government authority on the Rent, Service Charge and any other payments required of the Tenant under this Agreement or under any Applicable Law.
- (e) **Interest:** In addition and without prejudice to any other right, power or remedy of the Landlord if the Rent, Service Charge, reimbursement or other payment required of the Tenant under this Agreement is not paid within fourteen (14) days after the same shall have become due (whether any formal demand has been made or not) then the Tenant shall pay to the Landlord interest at the rate of twelve per cent (12%) per annum ("**Interest**") accruing and accumulating daily for the period commencing on the date on which such monies fall due for payment up to the date on which such monies are actually paid to the Landlord. The Landlord shall be entitled to recover any monies payable by the Tenant to the Landlord in connection with this Agreement and such Interest on the Rent and/or such monies payable as if such monies payable and such Interest were rent in arrears.

- (f) **Survey:** The Landlord shall be entitled, in its sole and absolute discretion, to carry out a survey of the Premises. All sums (including Rent & Service Charge) payable to the Landlord under this Agreement which are calculated based on the Floor Area of the Premises shall be subject to adjustment upon survey by the Landlord's surveyor, whose determination shall be final and conclusive. If upon survey, the Floor Area shall be more or less than that stated in Item 6 of Schedule 2, the sums payable under this Agreement which are calculated based on the Floor Area of the Premises shall be adjusted proportionately to take effect from the Term Commencement Date. In case of any works, extensions or Alterations and Additions from time to time which shall, in the Landlord's opinion, affect the Floor Area, the Floor Area shall be subject to re-survey. All sums payable to the Landlord under this Agreement calculated based on the Floor Area of the Premises shall then be re-calculated by reference to the re-surveyed floor area with effect from the date of completion of such works, extensions, or Alterations and Additions. Any adjustments shall be paid by the Tenant to the Landlord or vice versa, as the case may be, free of Interests, costs or compensation, within fourteen (14) days of written demand for such payment. In the event the surveyed Floor Area is less than that specified in Item 6 of Schedule 2, then the Tenant shall apply directly to the relevant Authorities for a refund of such amount of taxes or impositions paid by the Tenant on the Rent and Service Charge as may be allowed by the relevant Authorities. The Landlord shall not be liable to reimburse the Tenant for any amount of taxes or impositions paid by the Tenant under this Agreement.

4. TENANT'S USE OF PREMISES

4.1 **Permitted Use:** Unless otherwise permitted by the Landlord, Head Lessor and the Authorities, the Tenant shall at all times only use the Premises strictly for the use specified in Item 10 of Schedule 2 and the Tenant shall under no circumstances use the Premises or the Property for activities listed under Schedule 4.

4.2 **No Cooking or Sleeping:** The Tenant shall not, without the written consent of the Landlord, Authorities or Head Lessor, use the Premises for the cooking or the preparation of food and shall not permit any one to sleep or reside in the Premises but shall keep the Premises securely fastened and locked at all times when it is unattended.

4.3 Use of Lifts:

(a) The Tenant shall ensure that the use of the lifts does not exceed the permissible load limits prescribed for such lifts.

(b) Where service and/or cargo lifts are available, the Tenant shall not permit the contractors, workmen or cleaners (with or without equipment tools) engaged by the Tenant to use the passenger lifts of the Building and shall ensure that they use only the service and/or cargo lifts.

4.4 No Auction or Prohibited Trade:

(a) The Tenant shall not use the Premises for an auction sale or to conduct any sale described as a bankruptcy sale or closing down sale or any sale carrying a description which in the opinion of the Landlord has a negative impact on the Premises and Building.

(b) The Tenant shall not use the Premises for any gambling or any unlawful, immoral, improper, noxious, noisy or offensive purpose, act, trade, business, occupation or calling and shall not do anything which may become a nuisance to or cause annoyance, grievance, damage or disturbance to or give cause for reasonable complaint from the Landlord, the tenants or occupants of the Property or of other buildings adjoining the Property.

4.5 **No Overloading:** The Tenant shall not without the prior written consent of the Landlord at any time load any part of the floors of the Premises to a weight greater than the permissible load limits prescribed in the relevant building plans or approved by the Authorities for the respective floors (or such other weight as may be prescribed by the Landlord) and shall when required by the Landlord distribute any load on any part of the floor of the Premises in accordance with the directions and requirements of the Landlord, and in the interpretation and application of the provisions of this Clause relating to loading requirements the decision of the surveyor or engineer or architect of the Landlord shall be final and binding upon the Tenant.

4.6 **Not to Interfere with Mechanical and Electrical and other Systems:** The Tenant shall not use any heating or cooking devices or any other devices, equipment or machines which may interfere with the efficient running of the lift system, lighting, or power system or any other mechanical or electrical system or apparatus in or serving the Building.

4.7 **No Disturbing Noises:** The Tenant shall not produce any music, sound or noise which is or may be a nuisance or annoyance to the Landlord or to tenants or occupiers of the Property or buildings adjacent to the Property.

4.8 **Not to Cause any Odours and Fumes:** The Tenant shall not burn or cause any odours or smells to be produced or to permeate or emanate from the Premises which are in the Landlord's opinion offensive or unusual. The Tenant shall take necessary measures to ensure proper ventilation and to prevent smoke fumes or unpleasant odours and/or leakage of any substances or materials from or into the Premises.

4.9 **No Animals:** The Tenant shall not keep any animals, fishes, reptiles, birds, insects, pests, vermin or other livestock whatsoever in or about the Premises and shall take all reasonable precautions to keep the Premises free of rodents, insects and other pests.

4.10 **Signs and Advertisements:**

- (a) The Tenant shall not affix, paint, attach or otherwise exhibit in or on any part of the Premises any new sign, device, furnishing, ornament, announcement, placard, poster, light, display, advertisement, nameplate, flag, flag pole, or any other object unless approved in writing by the Landlord and at such location as shall be approved by the Landlord.
- (b) The Tenant shall obtain at its own cost and expense all approvals, permits and licences from the Authorities for the display of any nameplate or signboard approved by the Landlord. In this respect, the Landlord shall assist the Tenant in the submission and application by endorsing on such plans previously approved by the Landlord and all costs and expenses, if any, shall be borne by the Tenant.
- (c) All installation costs and the electricity costs in respect of any nameplate or signboard shall be borne solely by the Tenant.
- (d) The Tenant shall not erect or install any sign, device, furnishing, ornament or object which is visible from the street or from any other building and which, in the opinion of the Landlord is incongruous or unsightly or may detract from the appearance of the Premises, Building or Property.
- (e) Upon written request of the Landlord, the Tenant shall immediately remove anything it may have done in contravention of this Clause 4.10.

- (f) Where the Tenant removes any sign, device, furnishing, ornament or object from the Building or the Property the Tenant shall reinstate the walls and surfaces to which the sign, device, furnishing, ornament or object was affixed or attached, and shall repair any damage to the Building or Property caused by such removal.

4.11 **No Adverse Publicity:** The Tenant shall not advertise the Tenant's business or participate in any form of publicity or promotion which the Landlord in its absolute discretion considers detrimental to the Property and/or the reputation of the Landlord.

4.12 **Additions and Alterations:**

- (a) The Tenant shall not, without the prior written consent of the Landlord and, where required, Head Lessor and relevant Authorities:
- (i) make or permit any alterations or additions to or affecting the structure or exterior of the Premises or the appearance of the Premises as seen from the exterior;
 - (ii) paint the Premises;
 - (iii) make any additions or alterations to or exert any force or load on the curtain wall, its frame structure and all its related parts or place or affix any structures, articles or materials on it;
 - (iv) install any fixtures in the Premises or remove any existing fixtures from the Premises,
- (“**Additions and Alterations**”).
- (b) For the purposes of this Clause, Additions and Alterations shall include but not be limited to any works relating to:
- (i) internal partitions, floors and ceilings within the Premises;
 - (ii) electrical wiring, conduits, light fittings and fixtures;
 - (iii) air conditioning installations, ducts and vents;
 - (iv) fire protection devices;
 - (v) all electricity, plumbing and gas installations, pipes, apparatus, fittings and fixtures;
 - (vi) all mechanical and electrical engineering works.
- (c) In seeking the Landlord's consent under Clause 4.12(a), the Tenant shall:
- (i) submit to the Landlord all plans, layouts, designs, drawings, specifications and proposal for materials relating to all such Additions and Alterations;
 - (ii) provide the Landlord with copies of all consents required from the Head Lessor and/or the Authorities, which shall be accompanied by a statement from the Tenant that the consents provided are exhaustive of all consents required by the Tenant for the Additions and Alterations contemplated for the Premises;

- (iii) provide the Landlord, its Representatives, contractors and consultants with access to the Premises for the purpose of considering the proposal;
 - (iv) provide the Landlord with any other information the Landlord requires including any reports or statements from architects, surveyors, or other professionals.
- (d) For the avoidance of doubt, other provisions of this Agreement continue to apply in addition to this Clause 4.12, including:
 - (i) Clause 3.5 (Costs and Expenses) on the Tenant's obligation to pay the Landlord's costs incurred in relation to the Tenant's application for consent;
 - (ii) Clause 7.4 (Comply with Head Lease) on the Tenant's obligation to comply with the Head Lease and therefore seek any consents that are required; and
 - (iii) Clause 11.4 (The Landlord's Right to Rectify) on the Landlord carrying out rectification at the Tenant's cost and expense.
- (e) The Tenant shall carry out and complete all Additions and Alterations:
 - (i) in accordance with plans, layouts, designs, drawings, specifications and using materials approved by the Landlord;
 - (ii) in a good and workmanlike manner;
 - (iii) in accordance with all planning and other consents referred to in Clause 4.12(a);
 - (iv) in compliance with Applicable Law; and
 - (v) in compliance with the Additions and Alterations Guidelines and the reasonable requirements of the Landlord's consultants.
- (f) The Tenant shall, in connection with the Additions and Alterations:
 - (i) remove all waste material and debris from the Property in a manner satisfactory to the Landlord; and
 - (ii) make good to the satisfaction of the Landlord all damage to the Property resulting from the execution of the Additions and Alterations;
- (g) The Tenant undertakes to ensure that any such proposed Additions and Alterations shall be in compliance with all Applicable Law and shall, furnish to the Landlord copies of all necessary permits, consents, licences, certificates and other approvals for the proposed Additions and Alterations. All planning and other consents necessary or required pursuant to the provisions of any Applicable Law for any Alteration or Addition to the Premises, shall be applied for and obtained by the Tenant at the Tenant's own cost and expense, such expenses to be paid immediately by the Tenant when they fall due.
- (h) In addition to insurance it is required to maintain under Clause 14.1, the Tenant shall effect and maintain comprehensive risk insurance policies and public liability policies, from the period of the commencement of works to effect the Additions and Alterations, with an insurance company in Singapore approved by the Landlord. Copies of such policies shall be furnished to the Landlord by the Tenant without demand, prior to the commencement of such works.

- (i) The Tenant shall submit to the Landlord as-built drawings relating to all such Alterations and Additions or other works. If the Tenant fails to do so, the Landlord shall be entitled to take all action necessary (including engaging consultants to make necessary inspections and to prepare the relevant as-built drawings and making payments to the Tenant's consultants). All costs and expenses so incurred by the Landlord together with Interest from the date of expenditure until the date they are paid by the Tenant to the Landlord shall be recoverable from the Tenant as if they were rent in arrears.

5. TENANT'S UPKEEP OBLIGATIONS

5.1 Keep in Tenantable Repair:

- (a) The Tenant shall at all times keep the Premises clean and in a good and tenantable repair and condition (fair wear and tear excepted), including:
- (i) the structures within the Premises, the interior, the flooring, the interior plaster or other surface material or rendering on the walls and ceilings;
 - (ii) the fixtures and fittings, all doors, windows, glass, locks, fastenings, installations and fittings for light and power;
 - (iii) the Conducting Media within the Property and serving the Premises, sanitary, water, gas and electrical apparatus and fire detection and fire-fighting installations in the Premises;
 - (iv) all improvements, alterations and additions to the Premises; and
 - (v) the Landlord's fixtures, fittings and appurtenances in the Premises.
- (b) In addition to and without prejudice to the other provisions of this Agreement, the Tenant shall at all times, at the Tenant's cost and expense, comply with the provisions set out in Schedule 3.
- (c) The Tenant shall be wholly responsible if any damage or injury is caused to the Landlord or to any person whomsoever directly or indirectly on account of the condition of any part of the interior of the Premises (including flooring, walls, ceiling, doors, windows, curtain wall and its related parts including fluoro-carbon coating thereon (if any) and other fixtures) and the Premises. In the interpretation and application of the provisions of this sub-clause, the decision of the surveyor or architect of the Landlord in relation to property damage shall be final and binding upon the Tenant.

5.2 **To Make Good Damage to Premises:** Subject to Schedule 3, the Tenant shall make good any breakage, defect or damage to the Premises and any other part of the Building or to any facility or appurtenances thereof or to any glass window, glass door, glass wall or glass panel of the Premises or the Building and all damaged or broken lighting, electrical equipment (including light bulbs and fluorescent tubes) and plumbing installed in or about the Premises or the Building caused by the Tenant or its Representatives.

5.3 **Cleaning, Servicing and Landscaping:**

- (a) The Tenant shall regularly clean, service and maintain all fixtures, fittings, installations and appliances in or serving the Premises including but not limited to ventilation system, gas valves, sanitary and waste pipes and domestic waste water pipes (if applicable).
- (b) The Tenant shall pay on demand to the Landlord the costs and expenses incurred by the Landlord in cleaning any drains and pipes choked or blocked up to the extent this is due to the negligent act or omission or default of the Tenant or its Representatives.
- (c) The Tenant shall keep the Premises clean and free from dirt and rubbish and throw all trade waste, debris, dirt and rubbish (and in particular wet waste) in proper receptacles and shall arrange for the regular removal thereof from the Premises.
- (d) The Landlord shall not be liable for any misconduct or negligent acts or defaults of the said cleaning contractor or contractors.

5.4 **Notice of Damage:** The Tenant shall give notice in writing forthwith to the Landlord of:

- (a) any damage to the Premises (including the Landlord's fixtures and fittings) or the Building; and
- (b) to the extent it becomes aware of this, any damage to or want of repair or defects in the Conducting Media, water pipes, electrical wiring, fittings, fixtures or other facilities provided by the Landlord in the Property or of any circumstances likely to result in danger, risk or hazard to any person or property in the Property.

6. **TENANT'S SAFETY OBLIGATIONS**

6.1 **Dangerous Goods:** The Tenant shall not store or bring upon the Premises any goods, substances, matters or things which are unlawful or which in the opinion of the Landlord are of a noxious, deleterious, dangerous, poisonous, hazardous, explosive, combustible or inflammable nature ("**Harmful Matter**") without the prior consent in writing of the Landlord. Any increase in the premium of fire or other insurance that may have been taken out by the Landlord as a result of the Tenant storing or bringing any Harmful Matter upon the Premises shall be borne by the Tenant.

6.2 **Discharge of Dangerous Substances:** The Tenant must not permit any Harmful Matter to be discharged into any of the Conducting Media, and must take all measures to ensure that any effluent discharged into the Conducting Media does not harm the environment, or corrode or otherwise harm the Conducting Media or cause obstruction or deposit in the Conducting Media and that the Tenant shall take all precautions to ensure that no Harmful Matter is spilled or deposited on the Property and that contamination does not occur.

6.3 **Safety Measures and Fire Safety:**

- (a) The Tenant shall keep the Premises and all fixtures, fittings, installations and appliances therein in a safe condition including by adopting all necessary measures to prevent any outbreak or occurrence of fire in the Premises, to comply with the requirements of the Singapore Civil Defence Force's Fire Safety and Shelter Department and the Fire Safety Act (Chapter 109A), and upon written notice from the Landlord to comply with such reasonable requirements as the Landlord may in its discretion stipulate as to fire precautions relating to the Premises (including but not limited to appointing a fire safety manager as required under the applicable fire safety regulations, and designating one or more employees to be part of the company emergency response team(s) for the Property).

(b) The Tenant shall comply with insurance, sprinkler and fire alarm regulations in respect of any partitions or other works which may be effected by the Tenant upon the Premises and pay the costs, fees and expenses of the mechanical and engineering consultants appointed by the Landlord to ensure that the Tenant complies with such insurance, sprinkler and fire alarm regulations and pay the costs of any alterations to the said partitions or other works or of repairing or replacing any damaged sprinklers and/or fire alarm installations incurred by reason of the non-compliance by the Tenant with such regulations.

6.4 **Security:** The Tenant shall keep the Premises safe and secure and shall take all reasonable steps to ensure that its and its Representatives' acts or omissions do not compromise the safety or security of the Property, including taking all steps to ensure that access to the Premises is secured when the Premises is not occupied.

6.5 **Prevention of Infectious Diseases:**

(a) The Tenant shall take all steps and measures, at the Tenant's cost and expense, to prevent any outbreak, spread or any transmission whatsoever of any infectious disease (including, but not limited to, thoroughly fumigating and disinfecting the Premises to the satisfaction of the relevant Authorities) and to this end, without affecting Clause 7 below, to promptly comply, at the Tenant's cost and expense, with the Applicable Law and all guidelines, rules and requirements of the relevant Authorities from time to time relating to the prevention of any outbreak and/or spread of such infectious diseases.

(b) The Tenant shall forthwith give notice to the Landlord, and the relevant Authorities if the Tenant is aware or suspects that any person is suffering or has died from or is a carrier or a contact of, or is at risk of infection from, an infectious disease and to provide such other information or particulars as may be required by the Landlord and/or the relevant Authorities.

7. **TENANT'S COMPLIANCE OBLIGATIONS**

7.1 **Approvals, Licences and Permits:** The Tenant shall obtain, effect and keep effective all approvals, licences and permits which may be required by the Landlord, Head Lessor and relevant Authorities in connection with the use and/or occupation of the Premises by the Tenant, including those set out in Schedule 5. Copies of all necessary approvals, licences and permits shall be given to the Landlord forthwith upon receipt/renewal thereof.

7.2 **Inform the Landlord of Notices:** The Tenant shall immediately give to the Landlord a copy of any notice or letter received by the Tenant from any Authority in respect of the Premises.

7.3 **Comply with All Notices:** The Tenant shall promptly comply with all notices, order, requisition or direction made or issued by any Authority in respect of the Premises as may be imposed on the occupier of the Premises.

7.4 **Comply with Head Lease:** The Tenant shall observe and promptly and at the Tenant's own cost and expense comply with and cause its Representatives to comply with all such requirements as may be imposed on the occupier of the Premises by any Applicable Law and with all terms and conditions of the Head Lease.

7.5 **Comply with Immigration Act:** The Tenant shall not use the Premises as a place in which any person is employed or occupies in contravention of Section 57(1)(e) of the Immigration Act (Chapter 133, Singapore).

7.6 **Green Mark Certification:** The Tenant acknowledges that its activities, including any Additions and Alternations, affect the BCA Green Mark Certified rating of the Building and whether it may attain or retain such rating and the Tenant shall use its reasonable endeavours to ensure that its activities do not detract from but continues to enhance the Building's BCA Green Mark Certified rating, including doing all things reasonably required by the Landlord in that regard.

8. TENANT'S REPORTING OBLIGATIONS

8.1 Compliance reporting:

(a) The Tenant shall provide all information required from time to time by the Landlord, the Managers or their respective authorised personnel, to fulfil the Landlord's and the Managers' regulatory obligations including obligations under anti-money laundering regulations. A breach of this clause 8.1(a) shall constitute a material breach under the terms of this Agreement.

(b) The Tenant authorises each of the Landlord and the Managers to provide all information about the Tenant or provided by the Tenant to the Authorities where necessary or desirable to fulfil its obligations or respond to a request from the Authorities and shall obtain all consents necessary for each of them to make such disclosures.

8.2 The Tenant's Manager and Emergency Contact:

(a) Item 3 of Schedule 2 contains details of the Tenant's manager who is responsible for the daily management of the Tenant's business at the Premises and the name and contact number of the authorised personnel to contact in the case of emergency.

(b) The Tenant shall promptly notify the Landlord of any changes in the appointment of and particulars of such manager and/or authorised personnel.

8.3 **Financial Statements:** The Tenant shall arrange and submit to the Landlord copies of its Financial Statements and the report of its auditors when requested by the Landlord from time to time, and in any event within one hundred and twenty (120) days after the close of every financial year of the Tenant (beginning with the financial year immediately preceding the Term Commencement Date). The Tenant shall submit to the Landlord copies of its management accounts when requested by the Landlord.

8.4 Tenant's Relationships:

(a) The Tenant acknowledges that its acts or omissions in the Property is likely to impact on the Landlord's relationships and reputation including renewal of other tenancy agreements and accordingly, the Tenant shall, to the extent reasonably practicable:

- (i) notify the Landlord of and attend to any complaints by any members of the public, other tenants or the other tenants' Representatives against the Tenant in relation to such acts or omissions to the reasonable satisfaction of the Landlord, including consulting with the Landlord;
- (ii) have regard to the Landlord's reputation and interests generally in its dealings with any members of the public, other tenants or the other tenants' Representatives

8.5 **Change of Address:** The Tenant shall advise the Landlord in writing of any change in the address or registered office of the Tenant within seven (7) days of such change.

9. TENANT'S OBLIGATIONS TOWARDS AND AT END OF TERM

9.1 **Yield Up:** At the end of the Term, the Tenant shall quietly yield up the Premises and surrender to the Landlord all keys giving access to all parts of the Premises irrespective of whether or not the same have been supplied by the Landlord.

9.2 **Reinstatement:** Prior to yielding up the Premises at the end of the Term, the Tenant shall reinstate the Premises which means:

- (a) removing any fixtures, fittings, renovations, additions, alterations or improvements made or installed and all Alterations and Additions in the Premises by the Tenant or previous tenants of the Premises, even if these were part of the Premises on the Possession Date, so that the Premises can be yielded up in its bare tenantable state, unless the Landlord expressly agrees in its absolute discretion that the fixtures, fittings, renovations, additions, alterations or improvements made or installed in the Premises need not be removed;
- (b) reinstating the surfaces of the walls and panels, concrete topping, sprinklers and all fixtures, fittings, renovations, additions, alterations or improvements provided by the Landlord (fair wear and tear excepted);
- (c) fulfilling all obligations of the Tenant in respect of the Premises, including cleaning and repairing all damage to the Premises;
- (d) repairing any damage to the Property from the removal of the Tenant's and its Representatives' belongings or the reinstatement of the Premises; and
- (e) washing the whole of the interior of the Premises (including the cleaning of all glass, doors and windows) and painting with two coats of oil paint or emulsion paint of a high quality or other appropriate treatment of all of the internal parts of the Premises,

in each case to the satisfaction of the Landlord and except where the Landlord and the Tenant have expressly agreed otherwise.

9.3 **Elaboration on reinstatement:** In relation to clauses 9.2(a) and (b):

- (a) fixtures, fittings, renovations, additions, alterations, or improvements made or installed by previous tenants may include internal partitions, secondary sprinklers, cooling boards or lighting;
- (b) if the Tenant is unsure of which fixtures, fittings, renovations, additions, alterations, or improvements are to be removed, it must promptly request clarification from the Landlord so that the Tenant may fulfil its reinstatement obligations before yielding up the Premises at the end of the Term;

(c) the Landlord will refer to the plans for the Premises and the Property in determining which fixtures, fittings, renovations, additions, alterations, or improvements are to be removed by the Tenant and the Landlord's determination on the matter shall be final and binding on the Tenant.

9.4 **Joint inspection:** The Landlord and the Tenant shall have a joint inspection prior to the expiry or earlier termination of this Agreement, at a mutually agreed time, to confirm compliance by the Tenant of this Clause 9. If there are still outstanding works to be done, the Landlord shall compile a list of the outstanding works and the costs of each of such works to be completed by the Tenant.

9.5 **Landlord's right to reinstate:** If the Tenant fails to reinstate the Premises by the end of the Term in accordance with Clauses 9.2 and 9.4, the Landlord may effect the same at the Tenant's cost and expense (subject to applicable GST) in accordance with Clause 11.4. All costs and expenses incurred by the Landlord together with double the amount of Rent and Service Charge in accordance with Clause 9.6 which the Landlord shall be entitled to receive had the period within which such works effected by the Landlord been added to the Term, shall be paid by the Tenant within seven (7) days of the Landlord notifying the Tenant of the amount thereof and in this connection, a certificate from the Landlord as to the amount of costs and expenses incurred by the Landlord shall be conclusive and binding on the Tenant.

9.6 **Holding Over:** If the Tenant continues to occupy the Premises beyond the end of the Term, fails to deliver vacant possession of the Premises to the Landlord and/or fails to reinstate the Premises in accordance with Clauses 9.2 and 9.4 by the end of the Term, the Tenant shall pay to the Landlord double the amount of the Rent and Service Charge (subject to applicable GST) last applicable during the Term for every month or part month of such holding over. For the avoidance of doubt, such holding over shall not constitute a renewal of this Agreement and this Agreement applies during such period with necessary changes. The inclusion of this Clause shall not be construed as the Landlord's consent for the Tenant to hold over.

10. LANDLORD'S PRINCIPAL OBLIGATIONS

10.1 **Quiet Enjoyment:** Subject to the Tenant continuing to comply with its obligations under this Agreement, the Landlord agrees that the Tenant shall peaceably hold and have quiet possession and enjoyment of the Premises during the Term without any disturbance by the Landlord or any person lawfully claiming under or in trust for the Landlord except as provided in this Agreement.

10.2 Insurance of the Property:

- (a) The Landlord shall at all times have the sole discretion as to whether to take out and maintain additional insurance in respect of the Property at the Landlord's own cost and expense.
- (b) The Tenant shall not do or permit or suffer to be done anything whereby:
 - (i) any policy of insurance taken out by the Landlord may be vitiated or rendered void or voidable; or
 - (ii) the rate of premium on such insurance shall be liable to be increased.

- (c) If the Tenant is in default of Clause 10.2(b), the Tenant shall make good all damage suffered by the Landlord and repay to the Landlord all sums paid by the Landlord by way of increased premium and all expenses incurred by the Landlord in or about any renewal of such policy or policies rendered necessary by a breach or non-observance of this covenant.

10.3 **Rates, Taxes and Outgoings:** the Landlord shall pay all present and future rates, taxes, assessments, impositions and outgoings (including land rental) throughout the Term imposed upon or in respect of the Property, except where otherwise provided in this Agreement.

10.4 **Property Tax:** If the Tenant pays its portion of the property tax on the Premises in respect of the Term as provided in Clause 3.7 above, the Landlord must pay the Base Property Tax for each year during the Term, calculated as follows:

$$\text{Base Property Tax} = A \times C$$

for each year

where

A: annual value on the Term Commencement Date, excluding and not taking into account any retrospective revisions made by the Comptroller of Property Tax after the Term Commencement Date.

C: property tax rate applicable on the Term Commencement Date, excluding and not taking into account any retrospective revisions made by the Comptroller of Property Tax after the Term Commencement Date.

11. LANDLORD'S OTHER RIGHTS

11.1 **Right of Re-Entry:** If any of the following occurs:

- (a) all or part of the Rent, the Service Charge, any reimbursement, Interest or any other monies payable under this Agreement shall at any time be unpaid for fourteen (14) days after the same shall have become due (whether formally demanded or not); or
- (b) the Tenant breaches any of its obligations under this Agreement; or
- (c) the Tenant is unable to pay its debts as and when they fall due; or
- (d) there is a presentation of a winding up petition (except for the purpose of amalgamation or reconstruction when solvent) for the winding up of the Tenant; or
- (e) there is an issuance of a notice of meeting of members or shareholders for the passing of a resolution for winding up (except for the purpose of amalgamation or reconstruction when solvent) of the Tenant; or
- (f) there is a presentation of a petition for the judicial management of the Tenant; or
- (g) the Tenant being a company shall go into liquidation whether voluntarily (save for the purpose of amalgamation or reconstruction) or compulsorily or a receiver shall be appointed of its undertaking, property or assets; or
- (h) the Tenant shall make a proposal to its creditors for a composition in satisfaction of its debts or a scheme of arrangement of its affairs; or

- (i) there is an appointment of a receiver, receiver and manager, or provisional liquidator in respect of the Tenant or any of its property or assets; or
- (j) in the case of a Tenant which is not incorporated in Singapore, the occurrence of processes or events under the laws of the country of incorporation of the Tenant which are similar or analogous to those specified in Clauses 11.1(c) to (i) above; or
- (k) any distress, execution or attachment shall be levied upon or issued against any of the property or assets of the Tenant;
- (l) the Tenant abandons the Premises which is deemed to have occurred if the Tenant fails to open the Premises for a continuous period of seven (7) days without the Landlord's prior written consent;
- (m) the Tenant ceases to conduct its business without the Landlord's prior written consent;
- (n) the Tenant disposes of all or a substantial portion of its business without the Landlord's prior written consent;
- (o) the Tenant purports to assign, novate or transfer its rights, benefits or obligations under this Agreement in breach of Clause 16.2,

then the Landlord may re-enter and take possession of the Premises (or any part of it) at any time (even if any previous right of re-entry has been waived) and immediately on such re-entry, this Agreement will end.

11.2 Consequences of termination:

- (a) The exercise by the Landlord of its right of re-entry will not affect any other rights of the Landlord against the Tenant (including the rights in respect of the default under which the re-entry is made). The Tenant must indemnify the Landlord from and against all costs, losses, damages and expenses (including loss of Rent and Service Charge which would have been payable by the Tenant if the Term had been completed and all costs and expenses incurred for reletting or attempted reletting of the Premises), suffered by the Landlord as a result of the Landlord exercising its right of re-entry. This indemnity will not affect the other rights of the Landlord against the Tenant.
- (b) If the Tenant purports to terminate this Agreement prior to the expiry of the Term for any reasons, the Tenant shall pay to the Landlord immediately and without demand:
 - (i) all Rent and Service Charge owing up to the date of termination;
 - (ii) the full amount of Rent and Service Charge from the date of termination to the end of the period set out in Item 7 of Schedule 2 or, if later, the date this Agreement would otherwise have expired.

In addition, and without prejudice to any other clause in this Agreement, the Tenant immediately on demand shall pay all other sums, costs and expenses outstanding under this Agreement which shall be set out in an invoice issued by the Landlord to the Tenant after the date of termination. For the avoidance of doubt, nothing in this Clause shall be construed to impose or imply any obligation on the Landlord to accept any purported termination of this Agreement by the Tenant.

11.3 Rights Against the Tenant's Goods:

- (a) Notwithstanding anything in this Agreement, if the Tenant fails to remove all goods, fittings and fixtures (save for those belonging to the Landlord) from the Premises at the end of the Term the Landlord is entitled to sell or otherwise dispose of such goods, fittings and fixtures in the Premises at such time and at such price as the Landlord, its absolute discretion, thinks fit.
- (b) The Landlord's exercise of its rights under Clause 11.3(a) is without prejudice to all other rights and remedies of the Landlord.
- (c) The Landlord shall be entitled to retain all of the proceeds of the sale carried out under Clause 11.3(a).

11.4 The Landlord's Right to Rectify:

- (a) Upon notice being given by the Landlord to the Tenant of any breach by the Tenant of any term of this Agreement, the Landlord may:
 - (i) require the Tenant to remedy such breach, including carrying out all repairs, works, replacements or removals required under this Agreement, within fourteen (14) days after the service of such notice (or within such timeframe as may be reasonably required by the Landlord), to the satisfaction of the Landlord or its Representative; and/or
 - (ii) rectify such breach, including entering the Premises or sending its workmen and Representatives into the Premises and carrying out such repairs, works, replacements or removals with or without contractors or other service providers, where:
 - (A) the Tenant has failed to remedy the breach within the timeframe required under clause 11.4(a)(i) above;
 - (B) the Landlord has given the Tenant notice of its intention to carry out such rectification actions;
 - (C) where the Tenant is in material breach of this Agreement;
 - (D) the Tenant has persistently breached non-material terms of this Agreement and the Tenant is aware of or has been informed of such breach before formal notice is served;
 - (E) where the Tenant's breach would have an immediate effect on other tenants or their Representatives, or any persons present on the Property.

For the avoidance of doubt, in instances under Clause 11.4(a)(ii)(C) to (E), the Landlord is not required to provide prior notice to the Tenant before entering the Premises to carry out such rectification actions.

- (b) The Landlord is not liable for any loss the Tenant may suffer as a result of the Landlord's, its Representatives' or its workmen's entry into the Premises under this Clause 11.4.

- (c) For the avoidance of doubt, the Landlord's rights under Clause 11.4(a) include the right to require remedy of and to rectify the following:
- (i) A breach of Clause 4.8 (Not to Cause any Odours or Fumes) and in such event, the Landlord may without prior notice to the Tenant take all such measures as it deems necessary to rectify this breach;
 - (ii) A breach of Clause 4.10 (Signs and Advertisements) and in such event, the Landlord may remove items from the Premises;
 - (iii) A breach of Clause 4.12 (Additions and Alterations) and in such event, the Landlord may engage consultants to inspect, prepare as-built drawings and advice on any proposals and may remove waste materials and debris and make good damage to any part of the Premises or the Building; and
 - (iv) A breach of Clause 5.3 (Cleaning and Servicing) and in such event, the Landlord may remove and clear any rubbish or trade waste.

(d) The Tenant shall pay to the Landlord immediately on demand:

- (i) all costs and expenses incurred by the Landlord in rectifying the Tenant's breach of this Agreement under this Clause 11.4; and
- (ii) Interest on such costs and expenses calculated from the date of expenditure until the date all such sums are paid by the Tenant to the Landlord,

with a certificate from the Landlord as to the amount of costs and expenses incurred by the Landlord being conclusive and binding on the Tenant and such costs and expenses and Interest to be recoverable as if they were rent in arrears.

(e) The Landlord's rights under Clause 11.4 are without prejudice to the Landlord's other rights both under this Agreement and applying generally. In particular, the Landlord:

- (i) need not exercise its rights under Clause 11.4 before exercising its other rights; and
- (ii) is entitled to claim under the indemnity for any loss or damage it may suffer as a result of taking action to rectify breaches.

11.5 **The Landlord's Right of Access:**

(a) The Tenant shall permit any of the Landlord, the Head Lessor and their respective Representatives at all reasonable times and without prior appointment, to enter into, inspect and view the Premises for purposes including:

- (i) to examine the condition of the Premises, any Conducting Media serving the Premises and any fixtures or fittings on the Premises;
- (ii) to ensure that the provisions of this Agreement have been observed by the Tenant; and
- (iii) to take a schedule of fixtures in the Premises.

(b) The Tenant shall permit the Landlord, the Head Lessor and their respective Representatives at all reasonable times, upon giving to the Tenant prior notice (except in any case which any of them considers an emergency in which case no notice is required) to enter into the Premises to:

- (i) to carry out any works relating to the Conducting Media and to install additional Conducting Media;
- (ii) to carry out any works which the Landlord and/or Head Lessor considers necessary or desirable to any part of the Building (including the services and facilities in it);
- (iii) to exercise any right granted to the Landlord by this Agreement;
- (iv) to repair or maintain the Premises or the Building (including cleaning the exterior windows of the Building); and
- (v) to develop the remainder of the Building or any neighbouring land or premises, including the right to build onto any boundary wall of the Premises.

11.6 Power of the Landlord to Deal: The Landlord is entitled to deal as it may think fit with any of the Property, the Building, other property, buildings or premises adjoining or nearby the Property, the Building or the Premises including:

- (a) erecting or allowing to be erected any buildings whatsoever;
- (b) developing vacant land, including on the Property; and
- (c) altering, renovating, reconstructing or modifying in any way whatsoever any parts of the Property or the Building,

provided that if the Landlord carries out works on areas adjoining the Premises or requires access to the Premises for such works, the Landlord may do so as long as proper means of access to and from the Premises are given (even if such may be temporarily restricted) and essential services are maintained at all times.

11.7 Termination as a result of the exercise of the Landlord's Power: If the Landlord wishes to:

- (a) redevelop, renovate, retrofit, refurbish or alter the whole or part of the Building (including the plant and facilities in it) or the whole or part of the Premises; or
- (b) change the use of the whole or part of the Building or the whole or part of the Premises; or
- (c) assign, sell, transfer, dispose of, mortgage or charge the Property or any part thereof to another party,

the Landlord may terminate this Agreement, without compensation by giving to the Tenant six (6) months' prior notice in writing. This Agreement will determine on the expiry of the notice without affecting the rights of the Landlord against the Tenant for any previous default by the Tenant of the provisions of this Agreement.

11.8 Rights Exercisable in all Circumstances: The Landlord may exercise its rights under any of Clauses 11.4, 11.5 and 11.6 even if such dealings or works interfere with, disturb, interrupt or affect the Tenant's peaceful and quiet enjoyment of the Premises, affect or diminish the access of light and air which may now or at any time be enjoyed by the Tenant in respect of the Premises, affect the way in which the Tenant accesses the Premises or affect the Tenant's access to the Common Areas.

11.9 **Consequences of Landlord Dealing:** If the Landlord exercises any of its rights under Clauses 11.6:

- (a) any dealings or works shall not reduce the Rent or any other charges payable under this Agreement;
- (b) the Landlord shall have the absolute right to let out any new space created; and
- (c) the Tenant shall not have any claim against the Landlord and the Landlord shall not be liable to the Tenant in any manner whatsoever for any loss, damage, cost or expense whatsoever incurred by the Tenant as a result of the Landlord's exercise of any of its rights under Clause 11.6

11.10 **Signs and Advertisements:** The Landlord shall have the right to erect any signs, placards, posters, lights, displays or advertisements at such location and in such manner and for such length of time as the Landlord shall in its sole discretion deem appropriate.

11.11 **The Landlord's Right to Exhibit Notice and Prospective Tenants to Inspect:** Except where the Tenant is granted an option to renew for the Renewal Term and the Tenant exercises such option pursuant to Clause 13.1, the Landlord has the unqualified and irrevocable right in the six (6) month period preceding the expiration of the Term to exhibit where the Landlord shall think fit a notice indicating that the Premises will be vacant and will be available for letting which notice the Tenant shall not remove or conceal and the Tenant shall allow the Landlord or its Representatives at all reasonable times during that six (6) months to view the Premises with prospective tenants or occupiers.

11.12 **The Landlord's Right to Terminate:** In addition to and without prejudice to any other provisions of this Agreement, the Landlord may forthwith terminate this Agreement, without compensation, by giving the Tenant notice in writing, if, at any time during the Term:

- (a) the Landlord has reasonable grounds to suspect that the Tenant is engaging in any activities or carrying out any action that may contravene any Applicable Law; or
- (b) the Landlord has reasonable grounds to suspect that the business of the Tenant is related to and/or the assets or funds of the Tenant are proceeds of corruption, drug dealing or criminal conduct as defined in the Corruption, Drug Trafficking or Other Serious Crimes (Confiscation of Benefits) Act (Cap 65A), or are related to the facilitation or carrying out of any terrorism financing offence as defined in the Terrorism (Suppression of Financing) Act (Cap. 325), or are in breach of any other applicable anti-money laundering laws, rules or regulations.

Upon issuance of the aforementioned notice, this Agreement will determine without affecting the rights of the Landlord against the Tenant for any previous default by the Tenant of the provisions of this Agreement.

12. COMMON AREAS, PARKING AND RULES

12.1 **Non-exclusive Right to Use:** The Landlord grants to the Tenant the non-exclusive right to use the Common Areas subject to this Agreement and the rules and regulations governing the use of the Building.

12.2 Restrictions on Use of Common Areas:

- (a) The Tenant shall not:
- (i) store any property, temporarily or permanently in the Common Areas;
 - (ii) lock any entrance or exit of the Common Areas including common passageways;
 - (iii) install or erect any structure which may impede the right of way of any person through the Common Areas; or
 - (iv) cause any obstruction in the Common Areas including common stairways and landings passageways.
- (b) In the event of a breach of this clause 12.2, the Landlord may issue a notice to inform the Tenant of this breach and to rectify the same ("**Encroachment Notice**") and the Tenant shall forthwith take all necessary actions to rectify such breach within the timeline specified in the Encroachment Notice and shall inform the Landlord in writing immediately upon such rectification. In the event that the Tenant fails to rectify the breach within the stipulated time, the Landlord shall be entitled to require the Tenant to pay to the Landlord upon demand an amount equivalent to double the pro-rated rent and service charge which would have been payable for the area occupied by the Tenant in the Common Areas, calculated by reference to the rent rate and service charge rate stated in Item 12 of Schedule 2, from the date of issuance of the Encroachment Notice to the date of rectification of the breach by the Tenant to the Landlord's satisfaction.

12.3 Requirements for Use of Common Areas: The Tenant shall:

- (a) Exercise due care in its use of the Common Areas and to the extent the Tenant's acts or omissions result in damage to:
- (i) any part of the Common Areas;
 - (ii) fixtures, fittings, equipment, goods or property in the Common Areas; or
 - (iii) Conducting Media serving the Common Areas,

whether those of the Landlord, other tenants or others, the Tenant must notify the Landlord of such damage and must, at the Landlord's option, repair such damage to the Landlord's satisfaction or pay all costs and expenses for repair by another of such damage, in which case the provisions of Clause 11.4 shall apply to any repair by the Landlord; and

- (b) If instructed by the Landlord or its Representatives in writing, share the responsibility of cleaning adjacent Common Areas with the tenants of adjacent premises.

12.4 Rights of Landlord regarding Common Areas: The Landlord shall have the right, in the Landlord's absolute discretion, from time to time, to:

- (a) make changes to the Common Areas, including changing the location, size, shape and number of lobbies, windows, stairways, air shafts, elevators, escalators, restrooms, driveways, entrances, parking spaces, parking areas, loading and unloading areas, landscaped areas, walkways and utility ways;

- (b) close any of the Common Areas for maintenance, repair, improvement, renovation or additions as long as it only does so in a manner in which the Tenant's means of access to and egress from the Premises are possible;
- (c) use the Common Areas while engaged in making maintenance, repair, improvement, renovation or additions to the Premises, the Building or the Property; and
- (d) do such other acts and make such other changes in relation to the Common Areas.

12.5 Restrictions on Use of Roads: The Tenant shall not cause any obstruction in or on public or private roads adjacent to or leading to the Premises, the Building or the Property including with its vehicles and shall use its best endeavours to ensure that all persons or companies doing business with the Tenant at the Premises shall observe any regulations or instructions made or given by the Landlord with regard to obstruction and the parking of vehicles in the Property.

12.6 Loading and unloading: The Tenant shall not load or unload any goods or materials from any vehicles except when parked in the areas designated as loading bays at that time and shall not obstruct or cause congestion in these or adjoining loading bays or cause inconvenience to other users.

12.7 Parking:

- (a) The Tenant shall not place or park cars, bicycles, motor-cycles, scooters, trolleys and other wheeled vehicles except in designated areas in the Car Park and any other places approved by the Authorities;
- (b) The Landlord shall, in its absolute discretion allocate the number of car park lots stated in Item 14 of Schedule 2 to the Tenant, and the Tenant shall pay such car park fees specified in Item 14 of Schedule 2. The Tenant shall observe all regulations made by the Landlord, its Representatives and the Authorities relating to the parking of vehicles at the Car Park. During the Term, the Landlord reserves the right to appoint a third party car park operator to manage the Car Park. Upon such appointment, the number of car park lots allocated to the Tenant and the car park fees payable by the Tenant may be revised by the appointed car park operator.

12.8 Building Rules:

- (a) The Landlord and its Managers are each entitled to:
 - (i) make rules which in the opinion of the Landlord, may be required for the management, safety, care, cleanliness or appearance of the Building or the Property or for the convenience of the other tenants of the Building, including the Additions and Alterations Guidelines; and
 - (ii) add to, amend, cancel or suspend any such rule,

so long as such rules are not inconsistent with this Agreement. For the avoidance of doubt, rules which elaborate on restrictions in this Agreement are not inconsistent with this Agreement.

- (b) The Tenant shall comply with such rules from the date it receives notice of them and failure of the Tenant to comply with any such rules shall constitute a breach of this Agreement.
- (c) The Tenant shall pay all penalties stipulated in such rules for breach of the rules.
- (d) The Tenant agrees that the Landlord shall not be liable to the Tenant in any way for violation of such rules by any person including other tenants or occupiers of the Building or for the Landlord failing to enforce such rules.

13. RENEWAL OF LEASE

13.1 Option to Renew:

- (a) If:
 - (i) the Tenant gives a written request to the Landlord, not later than six (6) months before the expiry of the Term, (time being of the essence), that it requires an extension of the tenancy created in this Agreement; and
 - (ii) the Tenant is not in breach of this Agreement both at the date of the notice and at all times up to the date of renewal,

the Landlord shall at the Tenant's expense grant to the Tenant a further lease of the Premises for the Renewal Term, conditional upon and subject to consent of the Head Lessor under the Head Lease. Subject to the revised rent and other terms and conditions set out in Item 15 of Schedule 2 (Other Terms and Conditions / Amendments) in respect of the Renewal Term, the further lease shall be on substantially the same terms as this Agreement, save that (A) the rent for the Renewal Term shall be prescribed by the Landlord in its absolute discretion, (B) the further lease shall not include this Clause 13.1 (Option to Renew), unless otherwise agreed by the Landlord, and (C) the Landlord shall be entitled to impose such other terms and conditions for the further lease in its absolute discretion.

- (b) If after the new document for the Renewal Term has been signed but before commencement of the Renewal Term, the Tenant is in default of the provisions of this Agreement, the Landlord is entitled to terminate the agreement for the Renewal Term by giving notice to the Tenant. Upon receipt of the notice, the Renewal Term will be terminated without affecting the other rights of the Landlord against the Tenant in respect of the default. The Landlord will not be liable for any loss, damage, cost, expense or compensation in connection with the termination.
- (c) The Tenant shall pay for (i) all fees payable to the Head Lessor and expenses in connection with the application for and grant of consent of the Head Lessor to the renewal of the Agreement of the Premises; and (ii) stamp duty on the Agreement (in duplicate) for the Renewal Term.

14. INSURANCE, RELEASE AND INDEMNITY

14.1 Insurance:

- (a) The Tenant shall keep current at all times from the Possession Date to the Term Commencement Date, during the Term and during any period of holding over the following insurance policies:
 - (i) an industrial all risks insurance policy, with such insurance coverage as appropriate and typical for the size and type of business carried out by the Tenant at the Premises, and in respect of the Tenant's property including any and all goods and stock-in-trade (including machinery and all contents and internal partitions) belonging to or held in trust by the Tenant within the Premises, against all loss and damage including against loss or damage by fire or water.

- (ii) a public liability insurance policy (including products liability, where applicable) against claims for personal injury, death or property loss or damage arising out of any and all operations of the Tenant and its Representatives in the Premises, in such amounts as may from time to time be determined by the Landlord in respect of any one occurrence;
- (iii) such other insurance policies and in such amounts as the Landlord may specify from time to time, having regard to the market practice and after consultation with the Tenant,

(collectively, the "**Policies**" and each, a "**Policy**"), with the Policies required under Clauses 14.1(a)(ii) and 14.1(a)(iii) to be in the joint names of the Landlord and the Tenant (which shall include a provision for waiver of subrogation against the Landlord).

- (b) All Policies shall be taken out with such insurer as shall be approved in advance by the Landlord and on terms and conditions to be approved by the Landlord.
- (c) The Tenant shall furnish to the Landlord immediately on demand satisfactory documentary evidence of Policies taken up and the receipts for payment of premium in respect thereof.
- (d) If the Tenant fails to effect or maintain any of the Policies, the Landlord may effect such Policy which the Tenant has failed to effect or maintain, and the premium for any such Policy will be a debt due and payable immediately by the Tenant to the Landlord, and such payment will be recoverable from the Tenant as if it is rent in arrears.

14.2 **Use of Premises at Risk of the Tenant:**

- (a) The use, occupation and possession of the Premises is at the risk of the Tenant and the Tenant is responsible for all acts or omissions in the Premises whether or not these are authorised by the Tenant.
- (b) To the full extent permitted by law, the Tenant releases the Landlord and its Representatives from all claims and demands of every kind in respect of or resulting from anything that occurs in the Premises, including any accident, breakage, leakage, damage or injury occurring in the Premises and each of the Landlord and its Representatives shall have no responsibility or liability for any loss, damage or injury suffered by the Tenant or its Representatives whether to or in respect of their person, property or business.

14.3 **No Representations:**

- (a) The Tenant acknowledges that it has had a full opportunity to inspect, examine, inquire into and conduct due diligence on the Premises and, unless otherwise specified in this Agreement, the Tenant has relied on its own investigations in entering into this Agreement.

- (b) This Agreement contains the entire agreement of the parties in relation to its subject matter and therefore:
- (i) this Agreement shall not be modified by and shall not be construed on the basis of any oral discussions which may have preceded the signing of this Agreement;
 - (ii) the Landlord shall not be bound by any statements whether oral or written in relation to the Property, the Building or the Premises, except as expressly set forth in this Agreement and the Landlord shall not be bound by any implied terms;
- (c) The Landlord does not expressly or impliedly warrant that the Premises will remain suitable or adequate for all or any of the purposes of the Tenant notwithstanding that it has agreed to the use of the Premises set out in Item 10 of Schedule 2 and all warranties (if any) as to suitability and adequacy of the Premises implied by law are hereby expressly negated.

14.4 Landlord Not Liable: Notwithstanding anything else in this Agreement, the Landlord and its Representatives shall not be liable to the Tenant and the Tenant must not make a claim against any of the Landlord and its Representatives in respect of any of the following:

- (a) any failure, inability of or delay by any of the Landlord and its Representatives in fulfilling any of its obligations under this Agreement, any interruption in any of the services provided by the Landlord or its Representatives including as a result of:
 - (i) repair, maintenance, installation, damage, destruction, mechanical or other defect or breakdown;
 - (ii) any events or circumstances beyond the reasonable control of the Landlord (including fire, flood, tempest, explosion, storm, lightning, other acts of God, escape of water, riot, civil commotion, curfew, emergency, labour disputes, shortage of manpower, fuel, materials, electricity or water, any acts, restrictions, prohibitions or measures of any kind on the part of any Authority);
- (b) any act, omission, default, misconduct or negligence of any Representative of the Landlord including in or about the performance or purported performance of any services to be provided by the Landlord;
- (c) any act, omission, default, misconduct or negligence of any contractor nominated or approved by the Landlord and appointed by the Tenant;
- (d) any damage, injury or loss arising out of the leakage or defect of the piping, wiring and sprinkler system in the Premises and/or the structure of the Premises;
- (e) any damage, injury or loss caused by other tenants or persons in the Premises;
- (f) the use of the Car Park in the Building; or
- (g) any failure or delay by the Landlord in the taking or implementing of steps and measures, or the insufficiency or inadequacy of any such steps or measures taken by the Landlord to prevent any outbreak, spread or any transmission whatsoever of any infectious disease in the Building.

14.5 Indemnify the Landlord: The Tenant shall indemnify, keep indemnified and hold the Landlord and each of its Representatives (“**Indemnified Persons**”) harmless from and against all claims, demands, writs, summons, actions, suits, proceedings, judgments, orders, decrees, damages, costs, losses and expenses of any nature whatsoever which the Indemnified Person may suffer or incur in connection with this Agreement including all loss or damage arising directly or indirectly from:

- (a) the condition of or any occurrence in the Premises or the use of the Premises, including loss of life, personal injury and/or damage to or loss of property;
- (b) use of the Common Areas by the Tenant and its Representatives;
- (c) the Tenant’s breach of any of its obligations under this Agreement including its obligation to obtain any of the consents set out in Clause 4.12(a), its obligation to comply with the Head Lease under Clause 7.4 and its obligation to comply with the Immigration Act (Chapter 133, Singapore) under Clause 7.5;
- (d) any act or omission of the Tenant or the Tenant’s Representatives including by the use or misuse, waste or abuse of water, electricity or gas or by faulty fittings or fixtures of the Tenant or execution of the Additions and Alterations;
- (e) any liability of the Landlord to any third party whose property is dealt with or disposed of by the Landlord under Clause 11.3(a) in the mistaken belief (which will be presumed unless the contrary is proved) that such property belonged to the Tenant.

15. THIRD PARTY ACTION, FORCE MAJEURE AND DAMAGED BUILDING

15.1 Costs of Improvements as a result of Change of Law: If there is any change in the Applicable Law from that applying on the date of this Agreement, even if such change has been envisaged at such date, to the extent such change requires any alterations or additions to the Premises, the Building or the Property relating to the Tenant’s use of the Premises or the Tenant’s other requirements, the Landlord is entitled to:

- (a) carry out some or all of the alterations or additions through its Representatives including any alterations or additions relating to structure, water, gas, electrical, plumbing or fire equipment, fittings or fixtures or other services or appurtenances and:
 - (i) the Tenant must pay the cost of such alterations or additions, provided that the Tenant is notified of the alterations or additions and their costs before the Landlord commences any such works; and
 - (ii) the Landlord is entitled to require the Tenant to pay a deposit to the Landlord for such costs;
- (b) require the Tenant to carry out some or all of the alterations and additions;
- (c) terminate this Agreement by giving written notice to the Tenant at least four (4) months before the effective date of termination, where the Tenant has failed to provide any deposit required by the Landlord for such costs.

15.2 Government Acquisition: If:

- (a) the Building or the Property is acquired by any relevant Authority; or

- (b) a notice, order or gazette notification is issued, made or published in respect of the intended or actual acquisition of the Building or the Property by any relevant Authority,

the Landlord may terminate this Agreement immediately by giving written notice to the Tenant.

15.3 Termination of Head Lease Term by Head Lessor:

- (a) If the Head Lessor, at any time before the expiry of the Head Lease Term:
- (i) gives notice in writing to the Landlord of the termination of the lease granted to the Landlord under the Head Lease (**Head Lease Termination Notice**);
 - (ii) notifies the Landlord of the revocation of its consent to the Agreement (**Revocation Notice**); or
 - (iii) becomes entitled to and re-enters the Property in the name of the whole, or
- (b) (where applicable) if upon the expiration of the initial leasehold term under the Head Lease, the Head Lessor does not grant the further term from the expiry of such initial leasehold term,
- (c) (where applicable) if pursuant to the Landlord's Subletting Applications, the Head Lessor does not consent to all of the Subletting Applications or rejects any of the Subletting Applications,

the Landlord shall give the Tenant notice as soon as reasonably practicable on the Landlord's receipt of the Head Lease Termination Notice, the Revocation Notice or notice of the Head Lessor's intention to re-enter the Property, (where applicable) the Head Lessor's intention not to grant the further term from the expiry of the initial leasehold term under the Head Lease or (where applicable) the Head Lessor's rejection of any of the Subletting Applications or failure to consent to any of the Subletting Applications.

- (d) On (i) the expiry date of the Head Lease Termination Notice or (ii) the expiry date of the Revocation Notice or (iii) the date of Head Lessor's re-entry into the Property, or (iv) the expiry of the initial leasehold term under the Head Lease or (v) the termination date specified in the Landlord's notice to the Tenant of the Head Lessor's rejection or failure to consent to the Subletting Applications, whichever date is the earliest, the Term and this Agreement will end without affecting the rights of the Landlord against the Tenant for any previous default by the Tenant arising out of or in connection with this Agreement, and without the Head Lessor or the Landlord being liable for any inconvenience, loss, damage, cost, expense or compensation in connection with the termination of this Agreement pursuant to this Clause 15.3.

15.4 Damage To Building:

- (a) In the event that the Building or any part thereof shall be damaged or destroyed by fire, flood, tempest, explosion, storm, lightning, act of God or other cause beyond the control of the Landlord so as to render the Premises or any part thereof substantially unfit for occupation and use then the Landlord may in its absolute discretion decide that it will rebuild or reinstate or make fit for occupation the Premises and in such event the Landlord shall within ninety (90) days after such damage has been sustained give notice in writing to the Tenant of its decision and may in its sole and absolute discretion terminate this Agreement and thereupon the Tenant shall if still in occupation vacate the Premises without compensation from the Landlord within seven (7) days of the issuance of the aforesaid notice by the Landlord.

- (b) In the case of damage caused aforesaid the Tenant shall have no claim against the Landlord for delay howsoever caused in the repairing and/or rebuilding of the Premises or the Building or any part thereof and nothing herein contained or implied shall be deemed to impose any obligations upon the Landlord to rebuild or reinstate or make fit for occupation the Building.
- (c) In the event that such damage or destruction has been caused by the act or default of the Tenant or its Representatives, the Tenant shall be liable to the Landlord for any loss, damage, cost and expense suffered by the Landlord as a result such act or default of the Tenant or its Representatives.
- (d) Any insurance monies payable in respect of such damage shall be wholly the property of the Landlord and the Tenant shall not be entitled to claim against such insurance monies.

15.5 Consequences of Termination: If the Landlord terminates this Agreement under any of the provisions in this Agreement:

- (a) such termination does not prejudice the rights of the Landlord against the Tenant for any previous default by the Tenant arising out of or in connection with this Agreement; and
- (b) the Head Lessor, the Landlord and its Representatives are each not liable for any inconvenience, loss, damage, cost, expense or compensation in connection with such termination.

16. GENERAL

16.1 Special terms: The Landlord and Tenant agree that the additional terms and conditions or amendments stipulated in Item 15 of Schedule 2 (if any) shall form an integral part of this Agreement and shall be read together with all other parts of this Agreement. In the event of any inconsistency between the provisions of the body of this Agreement and Item 15 of Schedule 2, the provisions of Item 15 of Schedule 2 shall prevail to the extent of the inconsistency only.

16.2 Tenant not to Assign: The Tenant shall not assign, sublet, underlet, licence, transfer, dispose or otherwise share or part with possession or use of the Premises or any rights has under this Agreement without the Landlord's prior written approval. For the purposes of this clause, any amalgamation, reconstruction and/or Change in Control of the Tenant shall be deemed an assignment of this Agreement and the Landlord may terminate this Agreement in accordance with clause 11.1(o).

16.3 Landlord May Assign:

- (a) The Landlord may assign or charge all of its rights and benefits under this Agreement to any lender of the Landlord or any mortgagee of the Property.

- (b) The Landlord is entitled to assign, novate, transfer or otherwise dispose of all or part of its rights, benefits and obligations under this Agreement:
 - (i) to any trustee for the time being of the REIT; and
 - (ii) on any disposal of the Property to any subsequent purchaser(s) of the Property.
- (c) Upon such assignment, novation, transfer or disposal, the Tenant:
 - (i) is treated to have consented to such assignment, novation, transfer or disposal;
 - (ii) must accept any transferee of the Landlord as its new Landlord;
 - (iii) must release the Landlord from all its obligations in this Agreement, particularly, the Landlord's obligation to refund the Security Deposit and other sums under this Agreement upon transfer (less any authorized deductions) of such Security Deposit to the transferee; and
 - (iv) must become a party to and sign any agreement with the Landlord and its transferee relating to such assignment, novation, transfer, if required by the Landlord. Such agreement will be prepared by the Landlord at its own cost and expense.

16.4 The Landlord Not a Partner: The Landlord and the Tenant shall not in any way or for any purpose be construed as having the relationship of principal, agent, employer, employee, partner, being in joint venture despite any provision under which rent varies with the Tenant's revenues or profits, such provisions are solely to provide a method of computing rent and shall not create any relationship between the parties other than that of Landlord and Tenant.

16.5 Waivers and Extension of Time:

- (a) Any waiver of a right by the Landlord under this Agreement is only binding on the Landlord if in writing.
- (b) Any waiver, indulgence or extension of time granted by the Landlord shall not operate as a waiver of the Landlord's rights in respect of any continuing or subsequent default, breach or non-observance or non-performance of the Tenant's obligations under this Agreement.
- (c) Any consent given by the Landlord shall operate as a consent only for the particular matter to which it relates and shall in no way operate as a waiver or release of any of the provisions generally, nor shall it be construed as dispensing with the necessity of obtaining the specific written consent of the Landlord in future, unless expressly so extended.
- (d) The acceptance of rent or any other monthly charges or fees (if any) or any other sums payable by the Tenant to the Landlord shall not be deemed to operate as a waiver by the Landlord of any of its rights under this Agreement.

16.6 Further Detail on the Tenant's Obligations:

- (a) The Tenant shall perform and observe all the Tenant's obligations in connection with this Agreement at its own cost and expense.

- (b) Where the Tenant is obliged to do or refrain from doing anything under this Agreement, the Tenant must also ensure that its Representatives comply with the provisions of this Agreement.

16.7 **Severability:** If any provision or part of a provision in this Agreement is invalid, unlawful or unenforceable in any respect under any Applicable Law, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired.

16.8 **Registration of Agreement and Subdivision:** The Tenant shall not at any time, whether before or during the Term, lodge a caveat in respect of this Agreement or register this Agreement at the Singapore Land Authority or at any other registry in Singapore, or require the Landlord to subdivide the Property or any part thereof or to do any act or thing which could result in the Landlord being required to subdivide the Property or any part thereof. The Tenant undertakes to immediately withdraw any caveats lodged in default of this Clause 16.8 at its own cost and expense.

16.9 **Representations & Warranties:** The Tenant hereby represents and warrants for the benefit of the Landlord that:

- (a) it has full power and authority to enter into, exercise its rights and perform and comply with its obligations (where applicable) under this Agreement, and all transactions relating to the same and this Agreement constitutes legal valid binding and enforceable obligations on its part;
- (b) it has taken all actions and fulfilled all conditions (including obtaining any necessary consents or licences or making any filing or registration) in order to (i) enable it lawfully to enter into, exercise its rights and perform and comply with its obligations under this Agreement, and all transactions relating to the same; and
- (c) its entry into, exercise of its rights and/or performance of or compliance with its obligations under this Agreement, and all transactions relating to the same do not and will not violate, or exceed any power or restriction granted or imposed by:
- (i) any Applicable Law or any directive or order (whether or not having the force of law) to which it is subject; or
 - (ii) the memorandum and articles and constitutive documents of it; or
 - (iii) any agreement to which it is a party or which is binding on it; or
 - (iv) any order, judgement or decree of any court or any governmental department or the Authorities.

16.10 **Third Party Rights:** This Agreement shall not create any right under the Contracts (Rights of Third Parties) Act (Chapter 53B), which is enforceable by any party who is not a party to this Agreement except that the Managers may enforce rights under this Agreement.

16.11 **Notices:**

- (a) All notices, demands or other communications required or permitted to be given or made under this Agreement shall be in writing and in English and (1) delivered personally, (2) sent by prepaid post (by air-mail if to or from an address outside Singapore) with recorded delivery or (3) sent by facsimile to the intended recipient at its address or facsimile number set out in Schedule 2 (or to such other address or facsimile number as that intended recipient may have notified in writing to the other party).

- (b) Any such notice, demand or communication shall be deemed to have been duly served:
- (i) if given or made by facsimile, when delivery has been recorded by the sender's facsimile machine, provided that the sender does not receive a delivery failure report;
 - (ii) if given or made by letter, 24 hours after posting or if made or given to or from an address outside Singapore, 72 hours after posting and in proving the same it shall be sufficient to show that the envelope containing the same was duly addressed, stamped and posted.
- (c) A notice, demand or communication given or made to the Landlord in accordance with Clause 16.11(b) must also be:
- (i) Sent by email to the Landlord at its email address set out in Schedule 2; and
 - (ii) Sent to ESR Funds Management (S) Limited by email to the following email addresses:
Property & Arrears Related Matters: propertymgmt@esr-reit.com.sg
Lease Related Matters: assetmgmt@esr-reit.com.sg
Finance Related Matters: finance@esr-reit.com.sg
- (or to such other email address as the Landlord may have notified in writing to the Tenant).

16.12 **Governing Law:** The validity, construction, interpretation and enforcement of this Agreement and any document or agreement contemplated in it and all rights, remedies, powers, obligations and liabilities in it shall be governed by the laws of the Republic of Singapore. The parties agree to submit to the jurisdiction of the courts of the Republic of Singapore.

16.13 **Dispute Resolution:**

- (a) In the event of any dispute or difference arising out of this Agreement, including any question regarding the existence, validity, termination, application or interpretation of this Agreement or any of its provisions, a party must not issue proceedings without first notifying the other party of the nature of the dispute and the relief being claimed.
- (b) On receipt of notice of a dispute, the Tenant shall use its best endeavours to settle the dispute without recourse to proceedings and shall act in good faith and co-operate with the Landlord to resolve such dispute.

16.14 **Limitation of Liability:** Notwithstanding any provision to the contrary in this Agreement, the parties agree and acknowledge that the Landlord is entering into this Agreement solely in its capacity as trustee of the REIT and not in its personal capacity and all references to the Landlord in this Agreement shall be construed accordingly. As such, notwithstanding any provision to the contrary in this Agreement, the Landlord has assumed all obligations under this Agreement solely in its capacity as trustee of the REIT and not in its personal capacity and any liability of or indemnity given or to be given by the Landlord arising under this Agreement is given in its capacity as trustee of the REIT and any power and right conferred on any receiver, attorney, agent and/or delegate, shall be limited to the assets of the REIT over which the Landlord in its capacity as trustee has recourse and shall not extend to any personal assets of the Landlord or any assets held by it in its capacity as trustee of any other trust. Notwithstanding any contrary provision in this Agreement, it is acknowledged and agreed that the Landlord's obligations under this Agreement will be solely its corporate obligations and there shall be no recourse against its shareholders, directors, officers or employees for any claims, losses, damages, liabilities or other obligations whatsoever in connection with any of the terms of the Agreement. For the avoidance of doubt, any legal action or proceedings commenced against the Landlord pursuant to this Agreement shall be brought against the Landlord in its capacity as trustee of the REIT and not in its personal capacity. This clause shall apply, *mutatis mutandis*, to any notice, certificate or other document issued by the Landlord under or pursuant to this Agreement as if expressly set out therein, and shall survive the termination or rescission of this Agreement.

16.15 **Counterparts:** This Agreement may be executed in one or more counterparts, and by the parties on separate counterparts, but shall not be effective until each party has executed at least one counterpart and each such counterpart shall constitute an original of this Agreement but all the counterparts shall together constitute one and the same instrument.

SCHEDULE 1

DEFINITIONS & INTERPRETATION

1.1 Definitions:

Affiliate means with respect to any person, any other person directly or indirectly controlling, controlled by, or under common control with it where control means the power or ability to (1) exercise the right to vote attached to 50% or more of the voting securities in a company or other entity, (2) appoint 50% or more of the directors of a company or other entity or (3) otherwise to determine the conduct of that company's or other entity's business;

Agreement means this tenancy agreement;

Additions and Alterations has the meaning ascribed to it under Clause 4.12(a);

Additions and Alterations Guidelines means the guidelines prescribed by the Landlord in relation to Additions and Alterations to be carried out to the Premises;

Applicable Law means all laws including:

- (i) acts, ordinances, regulations, by-laws, orders, awards and proclamations of the jurisdiction of Singapore;
- (ii) principles of law or equity;
- (iii) standards, codes and guidelines having the force of law,

whether existing at the date of this Agreement or later, as applicable to the situation contemplated in the Clause and applicable from time to time;

Authorities means all governmental, semi-governmental, administrative, fiscal, judicial or quasi-judicial body, department, commission, authority, tribunal, agency or entity or Parliament including statutory boards;

Base Property Tax has the meaning ascribed to it under Clause 10.4;

Building means the building erected on the Property and currently known by the building name set out in Item 4(b) of Schedule 2;

Car Park means that part of the Property designated from time to time by the Landlord to be used for the parking of motor vehicles;

Change in Control of an entity occurs where a person who, or a group of persons acting in concert which, did not have control of that entity, directly or indirectly acquires control of that entity where control has the same meaning as given to that term in the definition of Affiliate.

Common Area means:

- (i) (if the Building is subdivided and registered under the Land Titles (Strata) Act (Chapter 158)) the parts of the Building which are within the definition of common property under that act; or

- (ii) (if the Building is not subdivided and registered under the Land Titles (Strata) Act (Chapter 158)) the parts of the Building which would reasonably be treated as common parts of the Building for common use or benefit if the Building had been subdivided and registered under that act,

including the entrances and exits of the Building, all amenities and facilities, equipment and fixtures or other installations therein which are from time to time provided by the Landlord to serve the Building for the general and common use by the Tenant and the Tenant's occupiers in common with the Landlord and other tenants of the Landlord and any other persons authorised by the Landlord, in the manner and for the purposes permitted by this Agreement;

Conducting Media means drains, sewers, conduits, flues, gutters, gullies, channels, ducts, shafts, watercourses, pipes, cables, wires and mains or any of them;

Financial Statements means the audited financial statements of the Tenant for each financial year, which have been prepared, audited, examined, reported on and approved in accordance with accounting principles and practices generally accepted and consistently applied in Singapore and in accordance with the laws of Singapore and the Memorandum and Articles of Association of the Tenant;

Fitting Out Period means the period stated in Item 1 of Schedule 2;

Floor Area means the estimated floor area of the Premises specified in Item 6 of Schedule 2, which is measured to include:

- (i) half the thickness of the walls/partitions/glass (as may be the case) which form the external boundaries of the Premises; and
- (ii) the area occupied by all pillars, columns, mullions and projections within the Premises.

GST means the goods and services tax (which includes any imposition, duty or levy) chargeable under the Goods and Services Tax Act (Chapter 117A) or any statutory modification or re-enactment thereof;

Harmful Matter has the meaning ascribed to it under Clause 6.1;

HDB means Housing Development Board;

Head Lease means the Lease No. 23095 granted by the President of the Republic of Singapore and Lease Agreement No. IA/338968L granted by HDB and any reference in this Agreement to the Head Lease includes that document as from time to time amended, modified or supplemented and any document which amends, modifies or supplements that document;

Head Lease Term means the initial leasehold term of 30 years commencing from 1 February 1997 with a covenant by the Head Lessor to grant a further term of 30 years from the expiry of the initial leasehold term, subject to the fulfilment of the terms and conditions of the Head Lease;

Head Lease Termination Notice has the meaning ascribed to it under Clause 15.3(a)(i);

Head Lessor means the President of the Republic of Singapore and/or the HDB;

Indemnified Person has the meaning ascribed to it under Clause 14.5;

infectious disease means:

- (i) any of the diseases specified in the First Schedule of the Infectious Diseases Act (Chapter 137); and
- (ii) includes any other disease:
 - (A) that is caused or suspected to be caused by a micro-organism or any agent of disease; and
 - (B) that is capable or is suspected to be capable of transmission by any means to human beings.

Interest has the meaning ascribed to it in Clause 3.8(e);

Item means an item in Schedule 2;

Landlord means the person named as such in Item 2 of Schedule 2;

Landlord's Notice has the meaning ascribed to it under Clause 3.2(a);

Manager means each of ESR Funds Management (S) Limited in its capacity as manager of the REIT and ESR Property Management (S) Pte Ltd in its capacity as the property manager of the Property and **Managers** shall mean both entities collectively;

Outstanding Debt means all sums which are or at any time may be or become due from or owing by the Tenant to the Landlord, whether as Security Deposit, Rent, Service Charge, GST, Interest, penalty or otherwise, whether actually or contingently, which the Tenant has covenanted or is liable to pay or discharge, under or in connection with this Agreement;

Policy has the meaning ascribed to it under Clause 14.1(a);

Possession Date means the date referred to Item 1 of Schedule 2;

Premises means the premises in the Building, described in Item 5 of Schedule 2, excluding the exterior faces of exterior walls, external faces of boundary walls and the roof;

Property means the property stated in Item 4 of Schedule 2;

REIT means the real estate investment trust known as ESR-REIT, established in Singapore;

Renewal Term means the further term or each of the further terms specified in Item 11 of Schedule 2;

Rent means the rent (exclusive of service charge) calculated as stated in Item 12(b) of Schedule 2;

Representative in relation to

- (i) the Landlord means the Managers, and officers, directors, employees, contractors, agents, professionals, consultants or advisers of the Landlord or a Manager;

- (ii) the Tenant or other tenants means each of its officers, directors, employees, contractors, agents, sub-tenants, licensees, sub-licensees, customers or invitees;

Revocation Notice has the meaning ascribed to it under Clause 15.3(a)(ii);

S\$ means the lawful currency of Singapore;

Security Deposit means the amount stated in Item 8 of Schedule 2 and any additional amount required to be paid as security deposit under this Agreement;

Service Charge means the service charge calculated as stated in Item 12(d) of Schedule 2 as amended in accordance with Clause 3.2;

Subletting Applications has the meaning ascribed to it under Clause 2.5(b);

Tenant means the person named as such in Item 3 of Schedule 2;

Term means the term of this Agreement stated in Item 7 of Schedule 2 or if this Agreement is:

- (iii) renewed under Clause 13.1, the end of the Renewal Term or if renewed more than once, the end of the last applicable Renewal Term; and
- (iv) terminated earlier, the term of this Agreement up to the date of termination.

Term Commencement Date means the commencement date of the Term, as stated in Item 7 of Schedule 2;

Utilities means electricity, water, gas, sewerage, telecommunications and any other services supplied and metered to the Premises.

Utilities Deposit means the amount stated in Item 9 of Schedule 2 and any additional amount required to be paid as utilities deposit under this Agreement;

1.2 Interpretation:

- (a) **Restrictions on the Tenant:** Where the Tenant is placed under a restriction under this Agreement, the restriction shall be deemed to include the obligation on the Tenant not to permit or allow the infringement of the restriction by any person claiming rights to use, enjoy or visit the Property through, under or in trust for the Tenant.
- (b) **Restrictions in relation to Premises:** Where the Tenant is placed under an obligation under this Agreement to do or to refrain from doing anything in respect of the Premises, the Building, the Property or the Common Areas, the restriction shall be deemed to include an obligation to do or to refrain from doing that thing in any and all parts of the Premises, the Building, the Property or the Common Areas, as applicable.
- (c) **Consents or approvals:** Where the Landlord's consent or approval is required or contemplated under this Agreement, the Landlord shall be entitled to:
 - (i) withhold such consent or approval in its absolute discretion;

- (ii) give such consent or approval subject to terms and conditions and unless stated otherwise, if such terms or conditions are not complied with, the Landlord's consent or approval shall be deemed not to have been given;
- (iii) withdraw such consent or approval or modify or vary terms or conditions attached to such consent or approval, provided that the Tenant has not already incurred costs or expenses in reliance on the consent or approval or if it has, the Landlord agrees to reimburse the Tenant for such costs and expenses.

In addition, in seeking the Landlord's consent or approval, the Tenant shall be deemed to represent and warrant at the time such consent or approval is sought that the Tenant has given the Landlord all information reasonably required for the Landlord to make an informed decision on the request and all information provided is materially accurate, complete and not misleading.

- (d) **Schedules and Annexures:** This Agreement includes the Schedules and Annexures to it, and their provisions shall have the same force and effect as if expressly set out in the body of this Agreement.
- (e) **Headings:** Headings in this Agreement are inserted for ease of reference only and shall not be taken into account in the construction or interpretation of any covenant, condition or proviso to which they refer.
- (f) **Clause, paragraph, Annexure and Schedule references:** References in this Agreement to a clause or Schedule or Annexure are references where the context so admits to a clause or Schedule or Annexure in this Agreement. References in a clause to a paragraph are references to a paragraph of that clause, and references in a Schedule or Annexure to a paragraph are references to a paragraph of that Schedule or Annexure.
- (g) **Singular and plural meanings:** Words in this Agreement importing the singular meaning shall include the plural meaning and vice versa.
- (h) **Statutes and statutory instruments:** References in this Agreement to any statutes or statutory instruments shall include and refer to any statute or statutory instrument amending, consolidating or replacing them respectively from time to time and for the time being in force.
- (i) **Documents:** References in this Agreement to any agreements or documents shall include and refer to such agreement or document as amended, consolidated or replaced from time to time.
- (j) **Gender:** Words in this Agreement for the masculine gender shall include the feminine and neuter genders and vice versa and words denoting natural persons shall include corporations and firms and all such words shall be construed interchangeably in that manner.
- (k) **Including:** The word "including" and similar expressions are not words of limitation.
- (l) **Joint and several obligations:** Where two or more persons are included in the term Tenant:
 - (i) all covenants, agreements, terms, conditions and restrictions shall be binding on and applicable to them jointly and each of them severally;
 - (ii) all rights must be exercised them jointly.

- (m) **Successors and assigns:** References to a person including a party to this Agreement includes that person's successors in title and permitted assigns.

SCHEDULE 2

KEY TERMS AND PARTICULARS OF RENT

1. **Possession Date** : Not Applicable
- Fitting Out Period** : Not Applicable
2. **Landlord**
 - Name : **RBC INVESTOR SERVICES TRUST SINGAPORE LIMITED** in its capacity as trustee of ESR-REIT
 - Company Registration No. : 199504677Z
 - Country of Incorporation : Singapore
 - Address : 8 Marina View
#26-01 Asia Square Tower 1
Singapore 018960
 - Facsimile No : +65 6827 9339
3. **Tenant**
 - Name : **CYBEROPTICS (SINGAPORE) PRIVATE LIMITED**
 - Company Registration No. : 200103162D
 - Country of Incorporation : Singapore
 - Address : 21 Ubi Road 1 #02-01
Singapore 408724
 - Facsimile No : Not Applicable
 - Addressee : Jeff Bertelsen
 - Email : jbertelsen@cyberoptics.com/ dhatteberg@cyberoptics.com
 - Tenant's manager, contact number : David J. Hatteberg; +1 763-542-5836
 - Emergency contact person, contact number : David J. Hatteberg; +1 763-542-5836
4. **Property & Building**
 - (a) Property : The whole of Lot No. 5079V of Mukim 23, known as 21 Ubi Road 1, Singapore 408724
 - (b) Building name : Such name as may be decided by the Landlord and approved by the relevant Authorities

5. **Premises**
- Building Level : Level 2
- Unit No(s). : #02-01
- Demarcation : (for purpose of identification only) edged in red on the attached plan marked Annexure A
6. **Floor Area**
- 19,805.58 Square Feet (Subject to Final Survey)
7. **Term and Term Commencement Date**
- Term Commencement Date : 25 July 2020
- Term : 3 years from the Term Commencement Date and expiring on 24 July 2023
8. **Security Deposit**
- Sum of S\$198,055.80 equivalent to 4 months' Rent and Service Charge
9. **Utilities Deposit**
- S\$12,500
10. **Permitted Use**
- Assembly of electronics inspection machines, storage of high-tech automated optical equipment with office
11. **Renewal Term**
- Not Applicable

12. **Rent and Service Charge**

(a)	Rent Rate (per square feet per month)	S\$1.90
(b)	Monthly Rent (per month) Which is the Rent Rate specified in Item 12(a) applied to the Floor Area specified in Item 6	S\$37,630.60
(c)	Service Charge Rate (per square feet per month)	S\$0.60
(d)	Monthly Service Charge (per month) Which is the Service Charge Rate specified in Item 12(c) applied to the Floor Area specified in Item 6	S\$11,883.35
(e)	Total Monthly Rent & Service Charge	S\$49,513.95

13. **Floor Loading**

12.5 kN/m²

14. **Carpark**

Landlord will allocate 4 complimentary carpark lots to the Tenant. As Landlord has appointed a third party carpark operator during the lease term, Tenant shall liaise with the appointed carpark operator directly on additional allotment of carpark lots and the carpark fees chargeable.

15. **Any Other Terms and Conditions / Amendments**

Air-conditioning will only be supplied from 0800 to 1800 (Mondays to Fridays, excluding Public Holidays).

Tenant is required to submit their request to the Landlord in advance should they require air-conditioning beyond the stipulated time, on weekend or public holiday. Additional request for air-conditioning beyond the stipulated time will be chargeable at S\$100.00 per hour (minimum 2 hours).

SCHEDULE 3

SCOPE FOR PROPERTY MANAGEMENT AND MAINTENANCE SERVICE

1. To keep the Premises and the Landlord's fixtures and fittings therein including without limiting the generality of the foregoing, all doors, locks, window frames, window glass, window fittings, floors, interior plaster and other finishing materials and rendering to walls and ceiling, drainage, water and other pipes and sanitary water, gas and electrical apparatus and wiring, air-conditioning and other installations from the points where the supplies enter into meters that may serve the Premises in good clean tenantable substantial and proper repair and condition (fair wear and tear alone excepted) and to so maintain the same at the expense of the Tenant and not to substitute or replace any external window of the Building but upon any window becoming damaged, broken or defective to give notice to the Landlord.
2. The Tenant particularly agrees:
 - (a) to reimburse the Landlord the cost of replacing all windows broken or damaged by the negligence of the Tenant or its employees, customers, invitees or licensees;
 - (b) to preserve and protect the fire detection and fire fighting installations provided by the Landlord within the Premises against possible damage or unauthorised interference and to indemnify the Landlord against all costs claims and damages arising from all damage thereto;
 - (c) to be wholly responsible for any damage or injury caused to any other person whomsoever directly or indirectly through the defective or damaged condition of any part of the Premises and to make good the same by payment or otherwise and to indemnify the Landlord against all costs, claims, demands, actions, liabilities and legal proceedings whatsoever made upon the Landlord by any person in respect thereof;
 - (d) to make good to the satisfaction of the Landlord any damage or breakage caused to any part of the Premises and/or the Building and/or to the Landlord's fixtures and fittings by the transportation of the Tenant's goods or effects or as a consequence of any neglect or malicious act or default of the Tenant its employees or invitees.
3. **Waste collection service:** All waste disposals from the Property, be it the Tenant's or its Representatives' refuse, shall strictly follow the guidelines set by the Environment Public Health Act.
4. **Pest control service:** The Tenant shall regularly examine and exterminate all pests including and not limited to rodents, cockroaches, ants and termites in the Premises at least once a month.
5. **Other periodic property maintenance programs:**
 - (a) Ensure good up keeping of signage(s) and renewal of the relevant certificate(s).
 - (b) The windows and doors are regularly painted and kept in a good state of repair.

- (c) The Premises is kept clean and free from scribbling or drawings on walls, floors or ceilings.
- (d) Adequate ventilation and lighting are provided in all common and circulation areas and lifts, and any blown fuses, bulbs or defective wires and switches are immediately replaced.
- (e) Roofing and gutters, when damaged, are to be repaired as soon as possible.
- (f) All drawings are to be kept at the maintenance department at all times. This is to ensure proper control of the building services records.

SCHEDULE 4

PROHIBITED MATERIAL / ITEMS / ACTIVITIES ON THE PREMISES, BUILDING OR PROPERTY

The manufacturing (including without limitation printing and publication), assembly and storage of following:

- Pornography, lewd and sexually suggestive materials; and
- Weaponry, ammunition or other device, gadget or mechanism of any description, the primary purpose of utilisation is capable of inflicting bodily harm to humans and may depending on severity of application, result in death to humans.

SCHEDULE 5

LIST OF LICENCES (where applicable)

1. Advertisement Licence;
2. Vehicle Parking Certificate Parking Place Licence;
3. Foodshop Licence;
4. Dangerous Goods Licence; and
5. Flammable Materials Licence.

IN WITNESS WHEREOF, the parties herein have caused this Agreement to be executed on the day and year first above written:

**SIGNED by
for and on behalf of
RBC INVESTOR SERVICES TRUST
SINGAPORE LIMITED**

(in its capacity as trustee of ESR-REIT)
in the presence of:

}

Name:
Designation:

Name:
Designation:

Witness' signature

Name :
Identity Card / Passport No:

SIGNED by Jeffrey A.
Bertelsen
**for and on behalf of
CYBEROPTICS
(SINGAPORE)
PRIVATE LIMITED**
In the presence of:

}

Name:[1] Jeffrey
A. Bertelsen
Designation: Executive VP
& CFO/COO

Witness' signature

Name: David Hatteberg – Corporate Counsel
Identity Card / Passport No: US Passport No. 580404236

¹ Authorised signatory to sign and insert Company stamp. For Company, please insert designation of signatory (e.g. Director etc).

SUBSIDIARIES

Name	Jurisdiction of Formation
CyberOptics Ltd.	United Kingdom
CyberOptics Holdings Ltd.	United Kingdom
CyberOptics (Singapore) Pte. Ltd	Singapore
CyberOptics (China) Co., Ltd.	People's Republic of China

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 reports dated March 12, 2020, relating to the consolidated financial statements and the effectiveness of CyberOptics Corporation's internal control over financial reporting, which appear in this Form 10-K.

/s/BDO USA, LLP

Minneapolis, Minnesota

March 12, 2020

Consent of Independent Registered Public Accounting Firm

We have issued our reports dated March 12, 2019, with respect to the consolidated financial statements and internal control over financial reporting included in the Annual Report of CyberOptics Corporation on Form 10-K for the year ended December 31, 2018. We consent to the incorporation by reference of said reports in the Registration Statements of CyberOptics Corporation on Forms S-8 (File No. 333-211553, File No. 333-183296, File No. 333-176196, File No. 333-103310, and File No. 333-230209).

/s/GRANT THORNTON LLP

Southfield, Michigan

March 12, 2020

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 12, 2020

/s/ Subodh Kulkarni

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 12, 2020

/s/ Jeffrey A. Bertelsen

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, 2019 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

Subodh Kulkarni

President and CEO

March 12, 2020

/s/ Jeffrey A. Bertelsen

Jeffrey A. Bertelsen

Vice President, CFO and COO

March 12, 2020

END OF FILING