CYBEROPTICS CORP
Form 10-K
March 14, 2017
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

x ANNUAL REPORT PURSUANT TO SECTION 13 or 15(d) of the Securities Exchange Act of 1934 for the Year Ended December 31, 2016.
o TRANSITION PURSUANT TO SECTION 13 or 15(d) of the Securities Exchange Act of 1934 for the transition period from _____ to _____.
COMMISSION FILE NO. (0-16577)
CYBEROPTICS CORPORATION
(Exact name of registrant as specified in its charter)

Minnesota	41-1472057
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
5900 Golden Hills Drive MINNEAPOLIS, MINNESOTA	55416
(Address of principal executive offices)	(Zip Code)

(763) 542-5000
(Registrant's telephone number, including area code)
Securities registered pursuant to Section 12(b) of the Exchange Act: Title of each class: Common Stock, no par value
Name of Exchange: 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 þ
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 o NO þ
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 þ No o
Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, 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 and post such files).
Yes þ No o
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. þ
Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definition of "accelerated filer" or "large accelerated filer" in Rule 12b-2 of the Exchange Act.
Large accelerated filer o Accelerated filer þ Non-accelerated filer o Smaller Reporting Company o
Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act).
Yes o No þ

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: $100,332,744.
As of February 28, 2017, there were 6,909,387 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 11, 2017.

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PART I.

ITEM 1. DESCRIPTION OF BUSINESS

Background

CyberOptics Corporation was founded in 1984 and is a leading global developer and manufacturer of high precision sensing technology solutions. 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, our quarterly reports on Form 10-Q, current reports on Form 8-K and any other amendments to those reports, at our website, or at the Commission's website at www.sec.gov. Proxy materials for our upcoming 2017 annual shareholders meeting to be held on May 11, 2017 will be available electronically via the internet at the following address: http://www.idelivercommunications.com/proxy/cybe/.

We are working to establish CyberOptics as a global leader in high precision 3D sensors. Our objective is to deliver profitable growth by leveraging our 3D technologies in our key vertical markets of surface mount technology (SMT), semiconductor and 3D scanning solutions and services.

Our products and services are used in the SMT, semiconductor and 3D scanning solutions and services markets 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 SMT and semiconductor products enable manufacturers to increase production volume, product yields and quality by measuring the characteristics and placement of electronic components and semiconductor packages both during and after the assembly process, or by providing SMT electronic circuit board and semiconductor manufacturers with key metrics related to their manufacturing processes that allow them to improve production volumes and yields. Our 3D scanning solutions and services help manufacturers quickly solve their most complex 3D inspection, analysis and product engineering challenges, allowing them to improve product yields and quality.

The majority of our products (58% of revenue in 2016) are developed and sold for use in SMT electronic circuit board assembly or with equipment used in SMT electronic circuit board assembly. We sell products in these markets both as sensor components that are incorporated into products manufactured by other companies for sale to circuit board assembly companies, and as complete stand-alone inspection systems that are sold directly to circuit board assembly companies.

We manufacture 3D and 2D optical sensors for use in our own proprietary SMT inspection systems and for sale to original equipment manufacturers (OEMs) and other end customers in our key vertical markets and adjacent markets. Our SMT electronic assembly alignment sensor products are sold to manufacturers of pick-and-place machines to align electronic surface mount components during placement on the circuit board and to a solder paste screen printer company to align stencils with circuit boards. We sell high precision 3D sensors to KLA-Tencor for use in systems that inspect back-end semiconductor packaging, and Nordson-YESTECH for the SMT market. We also sell sensors to OEMs for solder paste inspection (SPI) systems. In 2016, we sold high precision 3D sensors to a major new customer for a general purpose metrology application related to the inspection of finished goods.

Our SMT inspection system products are sold to electronic manufacturing services (EMS) companies and other manufacturers of SMT electronic circuit boards to control quality as in-line systems. 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. Manufacturers of DRAM and Flash Memory also use our inspection system products to inspect assembly of their memory modules both before and after module singulation.

Our semiconductor products assist with yield improvement and tool uptime in the semiconductor wafer fabrication process by providing highly accurate measurements of critical process factors. These measurements are impossible or very difficult to obtain without powering down the wafer fabrication equipment. 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.

Our 3D scanning solutions capture surface data for product engineering and inspection. Our 3D scanning services scan, model and inspect objects of all sizes and complexity for customers who do not have their own general purpose metrology equipment.

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Recent Developments in the Business

Our recent and planned product introductions are designed to strengthen our competitive position in our current markets and expand into adjacent markets. We believe 3D inspection represents a high-growth segment of both the electronic assembly market and the semiconductor market. For this reason, we are working to strategically reposition our company as a developer, manufacturer and global leader of high-precision 3D sensors. A key element in our strategic re-positioning is the development of new high precision 3D sensors based on our proprietary Multi-Reflection Suppression (MRS) technology. MRS technology inhibits reflections that can result in measurement inaccuracies, which is particularly critical for inspecting shiny objects.

We believe that MRS is a break-through optical technology for high-end inspection applications, with the potential to expand our markets in the future. In the existing markets for our surface mount technology (SMT), semiconductor inspection and 3D scanning solutions, we are seeing a growing number of opportunities because of our 3D MRS technology platform, and we are introducing new products based on MRS technology that we believe present a significant opportunity for increased revenues.

We have entered into a mutually exclusive agreement to supply KLA-Tencor with high-precision 3D sensor subsystems for its back-end semiconductor packaging inspection systems. We also have entered into an agreement to supply Nordson-YESTECH with high precision 3D sensor subsystems for the SMT market. The sensor subsystems are based on the new MRS technology that we have been developing for the past several years. We intend to expand sales of products based on MRS technology into both the SMT market and adjacent markets that require high precision 3D optical inspection. We also plan to sell products based on our MRS technology to OEMs. During the second quarter of 2016, we received an $800,000 order for 3D MRS-enabled sensors from a major new customer for a general purpose metrology application related to the inspection of finished goods. We believe this customer could generate significant sales going forward.

We have significantly advanced our MRS-enabled 3D sensor technology as part of a research initiative aimed at applying our 3D MRS technology to front-end semiconductor inspection. Features of 50 microns, including devices with mirror-like finishes, are now being measured in our research lab, and progress is being made toward measuring sub-50 micron features. This is an important milestone in our effort to make MRS-enabled 3D sensor technology applicable to front-end semiconductor inspection in the next two to four years. If this initiative proves to be commercially viable, the available market for our MRS-enabled 3D sensors for front-end semiconductor inspection could be significant.

Our 3D MRS technology has also been deployed in our 3D automated optical inspection (AOI) system, the SQ3000, which is designed to expand our presence in markets requiring high precision inspection. In these markets, identifying defects has become highly challenging and critical due to smaller electronics packaging and increasing component density on circuit boards. We believe the combination of our MRS technology and sophisticated 3D fusing algorithms allows us to offer microscopic image quality at production speeds. We recognized our initial revenues from sales of the SQ3000 in the second quarter of 2015. During 2016, we received SQ3000 follow-on orders totaling approximately $4.7 million from a key customer that manufactures a next-generation consumer electronics product. As a result of these sales and the competitive advantages offered by our MRS technology, we believe that the future sales potential of the SQ3000 is significant.

We have incorporated our MRS technology into a new 3D scanning system, CyberGage®360, which we believe will serve a wide range of inspection applications in the general purpose 3D metrology market. We sold our first two CyberGage360 units in the fourth quarter of 2016. Most customers are taking longer than originally anticipated to evaluate the functionality and benefits of CyberGage360 before adopting it for their engineering and quality assurance programs. After starting slowly in the first half of 2017, we anticipate steadily increasing sales of CyberGage360 by the end of 2017. We believe that the unique performance characteristics of our MRS technology, which inhibit reflections and enable very accurate measurements at fast speeds, combined with ease of use, will give CyberGage360 a competitive advantage in the marketplace for 3D scanning systems.

We also have committed funds to development of our MX600 system for inspection of memory modules at the end of the production line after singulation. In 2016 we recognized $5.7 million of revenue from sales of this product to one

of the world’s top four memory manufacturers. We believe that additional MX600 orders could be received in future periods.

We have continued to invest in our WaferSense/ReticleSense product lines and have recently announced new offerings for advanced particle measurement and a line of multi-purpose sensors that measure leveling, vibration and humidity in an all-in-one wireless real-time device.

Our ability to achieve our forecast and 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. We cannot assure you that our efforts will be successful.

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OPERATIONS AND PRODUCTS

We develop, manufacture and sell intelligent, non-contact sensors and systems for process control and inspection and general purpose metrology. Our product offerings are sold to OEMs and end-user customers in the SMT circuit board assembly, semiconductor and general purpose metrology markets. Our OEMs incorporate our sensor offerings into capital equipment serving these industries. We also sell sensors and stand-alone inspection systems directly to end-users. We create value-added solutions for the general purpose metrology market by integrating proprietary software and sensors with other hardware purchased from third parties, and sell these products as complete metrology systems. We also provide services for 3D mapping for those customers who cannot justify the capital cost of a scanning project, or need services for special projects.

Our principal products are used by manufacturers to increase operating efficiencies and yields, and to assist them in meeting rigorous demands for product quality. In addition to proprietary hardware designs that combine precision optics, various light sources and multiple detectors, our products incorporate software that controls the hardware and filters and converts raw data into application specific information. Our 3D scanning solutions and services help manufacturers quickly solve their most complex 3D inspection, analysis and product engineering challenges, allowing them to improve product yields and quality.

Optical Sensors

We manufacture high precision sensors for use in our own products in key vertical markets and for sale into adjacent markets, mainly through OEM relationships. Although most of our revenue from sensor sales has historically come from our alignment sensors, we recently began selling 3D MRS subsystem to OEM's for integration into their own proprietary stand-alone products. In 2016, we sold 3D MRS-enabled sensors to a major new customer for a general purpose metrology application related to the inspection of finished goods. We also have integrated the new MRS 3D sensor technology into our own stand-alone products for 3D AOI and 3D scanning.

In February 2015, we entered into a mutually exclusive agreement to supply KLA-Tencor with high-precision 3D sensor subsystems for its back-end semiconductor packaging inspection systems. We also have entered into an agreement to supply Nordson-YESTECH with high-precision 3D sensor subsystems for the SMT market. The sensor subsystems are based on our new MRS technology. We intend to negotiate agreements for sale of these sensors to OEMs and end-users in other markets. We also have developed a strobe inspection module (SIM) that features extremely fast image acquisition and low false call rates in 2D applications. We use the SIM in our 2D AOI products, including our QX family of products and the MX600 product that is used for post-singulation inspection of memory modules.

We believe that a strategy of developing and selling complete inspection systems and of refining the sensors and sensor subsystems that are part of these complete systems and selling them to OEM customers allows us to have direct end-user customer input as to the features of inspection systems that are most desired and purchased in our markets. At the same time, sales to OEMs allow us to capitalize on our strengths in optical physics and software implementations, such as noise suppression. We believe that the resulting sensor products and subsystems are unique and add significant value to the products of our OEM customers.

SMT Electronic Assembly Alignment Sensors

Our SMT electronic assembly alignment sensor products is a family of alignment 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 to integrate sensors into their equipment.

Sales of our SMT electronic assembly alignment sensor products, including service repairs, to Juki Corporation accounted for approximately 6% of our revenue in 2016 and 10% of our revenue in 2015. Sales of these products, including service repairs to Kulicke and Soffa Industries, accounted for approximately 12% of our revenue in 2016 and 11% of our revenue in 2015. Historically, our revenues and operations have been heavily influenced by the level of purchases from these two customers, reflecting their success in the market for pick-and-place machines, the cyclical nature of the SMT production industry and their ability to accurately forecast production requirements and need for our sensors. We anticipate that our future revenue and operations will be less dependent on these two customers, given the recent success we have had with sales of new MRS-enabled products, including the SQ3000 and 3D sensor

subsystems, and the anticipated future sales of our new CyberGage®360, 3D scanning system.

LaserAlign®. Our LaserAlign sensor family has accounted for the majority of our sales in the SMT electronic assembly alignment sensors product line. These sensors are primarily sold for incorporation into pick-and-place machines manufactured and sold by a number of different OEM customers for use in SMT production lines.

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The LaserAlign family of products aligns 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. Various high-speed pick-and-place machines use between one and twenty LaserAlign sensors per machine. LaserAlign integrates an intelligent sensor, composed of a laser, optics and detectors with a microprocessor and software for making specific measurements. LaserAlign enables 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 facilitates orientation and placement of components at higher speeds than can be achieved using conventional mechanical or machine vision component centering systems.

The LaserAlign sensor is offered in several different configurations to satisfy the requirements of the machines on which it is used. Revenue from product shipments of LaserAlign sensors has been a principal contributor to revenue during the past five years and accounted for 12% of our revenue in 2016 and 14% of our revenue in 2015.

BoardAlign Camera (BA Camera). The BA Camera, which is incorporated directly into the placement head of a pick-and-place machine, identifies fiducial markings on a circuit board and aligns the board in the pick-and-place machine prior to component placement. Revenue from shipments of BA Camera sensors accounted for 6% of our revenue in both 2016 and 2015.

InPrinter Inspection Camera. The InPrinter Inspection Camera, which is mounted directly in DEK brand screen printers manufactured by ASM Pacific Technology Ltd., is used to identify fiducial markings on a circuit board to ensure accurate board registration prior to placement of solder paste, as well as to provide an upgraded capability for 2D solder paste and stencil inspection. Revenue from shipments of the InPrinter Inspection Camera accounted for 3% of our revenue in 2016 and 5% of our revenue in 2015.

3D Solder Paste Inspection (SPI) Sensors

We manufacture custom designed 3D SPI sensors for use in our own family of SPI systems. We also sell our 3D SPI sensors to Viscom GmbH for use in their SPI platforms. Sales of 3D SPI sensors to Viscom accounted for less than 1% of our revenue in both 2016 and 2015.

3D MRS Sensors

We initially developed the MRS sensor for application in the SMT industry with our stand-alone inspection systems. However, we have since determined that the MRS sensor has many more potential applications in a broad range of industries. In January 2015, we entered into a mutually exclusive agreement with KLA-Tencor to supply MRS sensor subsystems for its back-end semiconductor package inspection systems. We also have entered into an agreement to supply Nordson-YESTECH with high-precision 3D sensor subsystems for the SMT market. In 2016, we sold 3D MRS-enabled sensors to a major new customer for a general purpose metrology application related to the inspection of finished goods.

Our high precision 3D sensors are based on commercially available cameras, DLP projectors and other hardware components, combined with our proprietary MRS technology and 3D fusing algorithms. The combination of these elements allows our sensor to capture, what we believe, are microscopic quality images, at production speeds. Revenue from shipments of high precision 3D MRS sensor subsystems accounted for 6% of our revenue in 2016 and 4% of our revenue in 2015.

Strobe Inspection Modules (SIM)

We also design and manufacture 2D sensors based on our strobe inspection module or SIM technology and proprietary Autonomous Image Interpretation (Ai^2) software for automated optical inspection. These sensors are based on a proprietary hardware design utilizing a strobed based lighting concept for extremely fast image acquisition. We deploy these sensors in our family of 2D AOI inspection systems which, we believe, offer an industry leading level of low false call performance, at fast in-line production speeds. We also utilize this technology in our newly-developed MX600 system for post-singulation inspection of memory modules. To date our use of the SIM technology has been limited to our own 2D AOI offerings for SMT. Our SIM technology can be used for a variety of inspection tasks outside of traditional SMT applications, including inspecting for completeness and accuracy at end of line final

assembly.

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SMT Inspection System Products

Our SMT inspection system products are used in the SMT electronic assembly industry for process control and inspection. These systems are sold directly to end-user manufacturing customers that use them in a production line or along-side 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.

Solder Paste Inspection (SPI) Products

We have been selling in-line 3D solder paste measurement machines for over a decade and have continued to develop and evolve our SPI family of products since their introduction.

SE600. The SE600 is an in-line system based on a dual-illumination sensor that measures in 3D the amount of solder paste applied to the 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 SE600 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 SE600 to measure the smallest chip scale packages and micro ball array component sites. The SE600 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.

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

Revenues from shipments of our SPI products accounted for 9% of our revenue in 2016 and 8% of our revenue in 2015.

Automated Optical Inspection (AOI) Products

We have been selling AOI products for well over a decade and have continued to develop and evolve our AOI offerings since inception. These products inspect circuit boards after component placement to determine whether all components are present and have been placed correctly. AOI products can also be used to measure the quality of solder joints after reflow.

SQ3000. Our first 3D AOI system, the SQ3000, is designed to expand our presence in markets requiring high precision inspection. Identifying defects on circuit boards has become highly challenging and critical due to smaller electronics packaging and increasing component density, combined with smaller and more complex solder joints. We believe the combination of our MRS technology and sophisticated 3D fusing algorithms allows us to offer microscopic image quality at production speeds. We recognized our initial revenues from sales of the SQ3000 in the second quarter of 2015. Due to the competitive advantages offered by our MRS technology, we believe the future sales potential of the SQ3000 is significant.

QX600 and QX150i. Our next generation 2D QX600 and QX150i AOI systems feature our SIM sensor technology and advanced Ai^2 software which, we believe, offer an industry leading level of low false call performance. We have invested in significant software enhancements for all of our AOI products that improve set-up and programming time and ease of use for the customer. Our QX600 is also available in versions that can accommodate dual production lanes and larger circuit board sizes.

QX100i. We market our 2D QX100i AOI system for production lines requiring faster inspection speeds. These products also feature our SIM sensor technology and advanced Ai^2 software. The QX100i does not offer the resolution capability of the QX600 or QX150i, but instead was designed to provide the fastest AOI inspection times currently available in the market and also an industry leading level of low false call performance.

QX250i. Our new 2D QX250i AOI system features our SIM sensor technology and advanced Ai^2 software. The QX250i features two sensors that allows for both top and bottom side inspection of a circuit board.

MX600. Our newly-developed MX600 system is based on our 2D SIM module and Ai^2 software technology and is used for post-singulation inspection of memory modules. In 2016, we recognized $5.7 million of revenue from sales of this product to one of the world's top four memory manufacturers. We believe that additional MX600 orders could be received in future periods.

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Revenues from shipments of our AOI products accounted for 32% of our revenue in 2016 and 20% of our revenue in 2015.

3D Scanning Solutions and Services

We provide 3D scanning systems and services to the global general purpose metrology market. Global demand for 3D scanning, which digitally captures the shape of an object, is growing as this technology is deployed increasingly in markets ranging from automotive and aerospace to medical and consumer electronics.

We have incorporated our MRS technology into a new 3D scanning system, CyberGage®360, which we believe will serve a wide range of inspection applications in the general purpose 3D metrology market. We sold our first two CyberGage360 units in the fourth quarter of 2016. Most customers are taking longer than originally anticipated to evaluate the functionality and benefits of CyberGage360 before adopting it for their engineering and quality assurance programs. After starting slowly in the first half of 2017, we anticipate steadily increasing sales of CyberGage360 by the end of 2017. We believe that the unique performance characteristics of our MRS technology, which inhibit reflections and enable very accurate measurements at fast speeds, combined with ease of use, will give CyberGage360 a competitive advantage in the marketplace for 3D scanning systems.

We sell other types of 3D scanning equipment and computed tomography or X-ray scanning (CT) equipment manufactured by other suppliers. We combine this equipment with a comprehensive offering of training, installation and support services to provide the customer with a complete solution. We also provide services that scan, model and inspect objects of all sizes and complexity for customers who do not have their own 3D scanning equipment, or the in-house capability to scan complex parts. Revenue from sales of 3D scanning solutions and services accounted for 13% of our revenue in 2016 and 17% of our revenue in 2015.

Semiconductor Products

Our principal semiconductor products, the WaferSense® and ReticleSense™ family of products, are a series of wireless sensors that provide measurements of critical factors in the semiconductor fabrication process. We designed our WaferSense/ReticleSense family of sensors to go 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/ReticleSense products, significant time is saved and accuracy is increased, compared to the manual techniques currently used by many customers when checking the process parameters measured by our WaferSense/ReticleSense products. As a result of WaferSense/ReticleSense technology, our customers are able to improve the up-time, through-put and process yield for their semiconductor fabrication equipment.

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 shower head and pedestal in semiconductor process equipment. The amount of gap between the shower head 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 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/ReticleSense Airborne Particle Sensors. 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. APS is designed to be compatible with front-ends, coater/developer tracks, and deposition and etch equipment.

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We expanded our particle sensing technology by launching a particle sensor in a reticle shaped form factor. The wireless, real-time capability of the ReticleSense Airborne Particle Sensor (APSRQ) allows users to quickly identify geographic particle sources in reticle environments. Designed and developed specifically for use with scanners in semiconductor fabs, APSRQ has all of the necessary alignment marks and bar codes for compatibility with ASML, Nikon and Canon scanners. The APSRQ can be loaded directly into a scanner and can travel the entire reticle path to detect in real-time when and where particles occur. APSRQ helps our customers exceed manufacturing quality and productivity standards in the Photo Lithography scanner environment. We also recently launched a new offering for advanced particle measurement.

WaferSense/ReticleSense Auto Multi Sensors (AMS/AMSR). In 2016, we launched AMS and AMSR to measure leveling, vibration and humidity in an all-in-one wireless real-time device. Humidity measurements are becoming more important as the use of Fin Field Effect Transistor technology increases among semiconductor manufacturers. We intend to continue to enhance and expand the WaferSense/ReticleSense product lines in the future. We sell our semiconductor products to both OEM and end-user customers through a network of independent sales representatives. Sales of our semiconductor products constituted 15% of our revenue in 2016 and 19% of our revenue in 2015.

Markets and Customers

We sell the majority of our products into the SMT electronic circuit board assembly and semiconductor markets. The value of automation is high in these markets because the products produced have high unit costs and are manufactured at speeds too high for effective human intervention. 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, which can be achieved using non-contact optical sensors. Trends in these markets include further efforts to reduce the cost of the manufacturing process, and to limit human intervention through automation.

Our SMT electronic assembly alignment sensors are sold to OEMs serving the SMT circuit board assembly market. The vast majority of our 3D and 2D optical sensors are used in our own SPI and AOI system products that we sell to circuit board assembly manufacturers serving the electronics assembly market or to OEMs which manufacture their own circuit boards. Our AOI and SPI system sales occur in all global geographies. Our sales of inspection systems are more heavily concentrated in Asia where a significant portion of the worldwide production capacity for circuit board assembly occurs. We manufacture all of our sensor products in our Minneapolis, Minnesota headquarters facility. All final assembly and integration for our inspection system products takes place in our Singapore facility.

We sell our SMT sensor and inspection system products worldwide to many of the leading manufacturers of electronic circuit board assembly equipment, manufacturers of semiconductor DRAM and SSD memory and end-user electronic assembly manufacturers, including original design manufacturers (ODMs), electronics manufacturing service (EMS) providers and outsourced semiconductor assembly and test (OSAT) companies, which manufacture cell phones, smart phones, notebook computers, server boards, and other electronic devices. We have sales and service offices in China and Singapore to serve the market for manufacturing production equipment in Asia. 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 to serve the Americas market. We have partnered with Viscom, a German distributor with significant sales to the automotive industry, to better penetrate the European market with our SPI sensors. We also have entered into an agreement to supply Nordson-YESTECH with high-precision 3D MRS sensor subsystems for the SMT market. We believe our arrangement with Nordson-YESTECH will allow us to better penetrate the SMT market with our 3D MRS sensor offerings. We intend to expand our global sales and marketing efforts across all geographies.

In January 2015, we qualified as a supplier to KLA-Tencor and entered into a mutually exclusive agreement to supply 3D sensor subsystems for KLA-Tencor's back-end semiconductor package inspection systems. We believe that our MRS technology is a breakthrough 3D inspection technology that can be deployed in a wide range of markets, including the semiconductor package inspection market served by KLA-Tencor, and that selling sensor subsystems to leading manufacturers such as KLA-Tencor will allow us to reach these markets more effectively. We have significantly advanced our MRS-enabled 3D sensor technology as part of a research initiative aimed at applying our 3D MRS technology to front-end semiconductor inspection. If this initiative proves to be commercially viable, the

available market for our MRS-enabled 3D sensors for front-end semiconductor inspection could be significant.

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The market for our semiconductor products, primarily consisting of our WaferSense and ReticleSense family of products, has the need for non-contact measurement tools that enable the production of more complex, higher density and smaller semiconductor devices. Our WaferSense/ReticleSense precision measurement tools are used by process and equipment engineers for process optimization during the production of semiconductor wafers. The world's largest semiconductor manufacturers purchase our WaferSense/ReticleSense precision measurement tools. We sell them directly to semiconductor fabrication facilities or through semiconductor capital equipment manufacturers to semiconductor fabrication facilities.

We sell our high end 3D scanning solutions, including our new CyberGage®360 3D scanning system, in the market for general purpose metrology to a diverse set of customers with a need to capture surface data for product engineering and quality assurance. Global demand for 3D scanning, which digitally captures the shape of an object, is growing as this technology is deployed increasingly in markets ranging from automotive and aerospace to medical and consumer electronics. Our 3D scanning services scan, model and inspect objects of all sizes and complexity for customers who do not have their own general purpose metrology equipment.

Export sales represent a large percentage of our total sales because a large portion of the global capacity for electronics assembly and semiconductor production occurs outside the United States. In addition, a significant portion of our export sales include SMT electronic assembly alignment sensors and 3D MRS sensors sold to OEM customers located in Europe and Asia.

The following table sets forth the percentage of total sales revenue represented by total export sales (sales for delivery to countries other than the United States, including sales delivered through distributors) by location during the past two years:

	December 31, 2016	2015
Asia	52%	39%
Europe	26%	29%
Other export sales (1)	3 %	4 %

(1) Includes export sales in the Americas, primarily Canada, Mexico and Latin America.

See Note 13 to our consolidated financial statements contained in Item 8 of this Annual Report on Form 10-K. Most of our international export sales are negotiated, invoiced and paid in U.S. dollars. We manufacture our SMT 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 the products.

Sales and Marketing

A direct sales staff located in Minnesota is responsible for sales of SMT alignment and 3D high precision MRS sensors to OEM customers, and sales of 3D high precision MRS sensors to end-user customers for general purpose metrology.

Our stand-alone SMT inspection system products for end-user customers are primarily sold through independent representatives and distributors managed by direct sales personnel located in Singapore, as well as in the United Kingdom, the U.S. and China. We have agreements with 40 independent representatives and distributors which focus on sales and service of our stand-alone system products to end-user customers. These agreements cover North and South America (12), Europe (15) and China and the rest of Asia (13).

We have established a separate worldwide sales channel for our semiconductor products. We currently have agreements in place or in process with 16 independent sales representatives and distributors which focus on sales and service for our WaferSense and ReticleSense semiconductor products. These agreements cover the U.S. (6), Europe (3) and Asia-Pacific (7). In some cases we sell our WaferSense and ReticleSense products directly to large OEM customers. Our sales to OEM customers and our worldwide network of independent sales representative and distributors are managed by direct sales personnel located in the U.S. and Asia.

We also have a separate worldwide sales channel for our 3D scanning solutions and services. We currently have agreements in place with 13 independent sales representatives and distributors which focus on sales and service for our 3D scanning solutions, including CyberGage®360. These agreements cover the Americas (6), Europe (2) and Asia-Pacific (5). We also sell our 3D scanning solutions to end-user customers through a direct sales staff located in Minnesota. Some of our global channel partners for our SMT inspection system products also have agreed to market CyberGage360.

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We market our products through appearances at industry trade shows, advertising in industry journals, articles published in industry and technical journals and on the Internet. In addition, we have strategic relationships with certain key customers that serve as highly visible references. We support our sales efforts for 3D scanning solutions and services by utilizing an internet based search engine marketing program to generate leads from prospects who have expressed interest in obtaining these types of products and services.

Backlog

Product backlog was $10.2 million at December 31, 2016, compared to $15.0 million at December 31, 2015. Our products are typically shipped two weeks to two months after the receipt of an order. Sales of some SMT inspection system products may require customer acceptance due to performance or other acceptance criteria included in the terms of sale. For these SMT 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 electronics assembly, general industrial manufacturing and semiconductor fabrication industries. For example, production capacity expansion in the SMT electronics assembly industry for anticipated holiday or back to school demands can result in higher levels of sales in our second and third quarters. However, we are not able to quantify, with any level of precision, the impact of these events 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 markets that is associated with changes in the economy. Our scheduled backlog at any time may vary significantly based on the timing of orders from OEM customers. 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 customer benefits afforded by the use of innovative and proprietary technology and on our ability to combine several different technical disciplines to address industry and customer needs. In addition, we actively seek ongoing strategic customer relationships with leading product innovators in both our existing and new markets. We actively investigate the needs of, and seek input from, these customers to ensure adoption of current 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 vertical markets of SMT, semiconductor and 3D scanning solutions and services. We maintain our commitment to research and development and product development even during periods when demand in our markets is weak. 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:

- Development of new high precision 3D sensors based on our proprietary MRS technology. MRS is a high speed metrology grade 3D measurement technology using commercially available components and proprietary algorithms that solves many of the reflecting issues impacting all triangulation sensor technologies.
- We have significantly advanced our MRS-enabled 3D sensor technology as part of a research initiative aimed at applying our 3D MRS technology to front-end semiconductor inspection. Features of 50 microns, including devices with mirror-like finishes, are now being measured in our research lab, and progress is being made toward measuring sub-50 micron features. This is an important milestone in our effort to make MRS-enabled 3D sensor technology applicable to front-end semiconductor inspection in the next two to four years.
- Continued development of our first 3D AOI system, the SQ3000. This system is designed to expand our presence in markets requiring high precision measurement and inspection. Identifying defects on circuit boards has become highly challenging and critical due to smaller electronics packaging and increasing component density, combined with smaller and more complex solder joints. We believe the combination of our MRS technology and sophisticated 3D fusing algorithms offers microscopic image quality at production speeds. Due to the competitive advantages offered by our MRS technology, we believe the future sales potential of the SQ3000 is significant.
- Continued development of our system for post-singulation inspection of memory modules, the MX600. This system is based on our 2D SIM sensor technology and Ai^2 image recognition software. The inspection requirements for this

system are similar to AOI requirements for circuit board production. In 2016, we recognized $5.7 million of revenue from sales of this product to one of the world’s top four memory manufacturers. We believe the MX600 system offers superior speed, inspection performance and a low level of false calls.

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- We have incorporated our MRS technology into a new 3D scanning system, CyberGage®360, which we believe will serve a wide range of inspection applications in the general purpose 3D metrology market. We sold our first two CyberGage360 units in the fourth quarter of 2016. Most customers are taking longer than originally anticipated to evaluate the functionality and benefits of CyberGage360 before adopting it for their engineering and quality assurance programs. After starting slowly in the first half of 2017, we anticipate steadily increasing sales of CyberGage360 by the end of 2017. We believe that the unique performance characteristics of our MRS technology, which inhibit reflections and enable very accurate measurements at fast speeds, combined with ease of use, will give CyberGage360 a competitive advantage in the marketplace for 3D scanning systems.
- Continued development of our WaferSense/ReticleSense line of products. We recently announced new offerings for advanced particle measurement and a line of multi-purpose sensors that measure leveling, vibration and humidity in an all-in-one wireless real-time device. Humidity measurements are becoming more important as the use of Fin Field Effect Transistor technology increases among semiconductor manufacturers.

Research and development expenses were $8.0 million or 12% of revenue in 2016 and $7.6 million or 18% of revenue in 2015. 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 2D and 3D optical sensors, SMT alignment sensors, WaferSense/ReticleSense semiconductor sensor products and CyberGage®360 3D scanning systems are assembled at our Minneapolis, Minnesota headquarters facility. Our SMT inspection system products are assembled in Singapore. Much of our product manufacturing, which is primarily circuit board manufacturing, lens manufacturing and metal parts production, is contracted with outside suppliers. Our production personnel inspect incoming parts, perform final assembly, calibrate and perform final quality control testing of finished products. Our products are not well suited for the large production runs that would justify the capital investment necessary for complete internal manufacturing.

A variety of components used in our products are available only from single sources and involve relatively long order cycles, in some cases over one year. 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 the production capacity of one or more of such contractors could result in the inability to deliver one or more 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 (our forecast extends a minimum of 6 months).

Competition

We face competition from a number of companies in the machine vision, image processing and inspection systems market, some of which are larger and have greater financial resources.

Our 3D and 2D optical sensors and SMT electronic assembly alignment sensors primarily compete with the sensors and vision systems developed by OEMs using their own design staff for incorporation into their products. We believe our high precision 3D sensors based on our MRS technology are unique in the marketplace based on the ability to offer microscopic quality images at fast production line speeds. Our 2D SIM sensors and SMT electronic assembly alignment sensor products also compete with vision (camera and software based) systems and component libraries available from Cognex Corporation and others. Although advances in vision systems have reduced some of the advantages of our SMT electronic assembly alignment sensor products in some configurations, we continue to believe that our sensors compete favorably based on our ability to custom design products with stringent physical form requirements, speed, flexibility, low cost and ease of use.

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The primary competition for sales of our SPI and AOI systems has been from Korean based companies, including Koh Young Technology, MirTec Ltd., and Parmi. We also compete with Taiwanese based Test Research, Inc. and German based Viscom, among others. Sales of AOI systems account for roughly two-thirds of the approximate $550 million total SPI/AOI inspection systems market, with 3D AOI representing the fastest growing segment of this market. We believe our 2D SIM and 3D MRS sensor technology and the Ai^2 software used in our QX and SQ family of products is differentiated from the competition and that these products compete effectively in the AOI market based on cost, ease of use at rapid production line speeds and the low rate of false calls. We believe that our new SQ3000 3D AOI product, enabled by our proprietary MRS technology and 3D fusing algorithms, offers 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 multi-billion dollar market for 3D scanning solutions and services is highly fragmented. The primary competition for our 3D scanning solutions include CMM based products from Zeiss and others, articulated robotic arm products from Faro and assorted other 3D measurement technologies offering varying combinations of speed and accuracy. The market for 3D scanning services is dominated by small regional market participants. We believe that the unique performance characteristics of our MRS technology, which inhibit reflections and enable very accurate measurements at fast speeds, combined with ease of use, will give CyberGage®360 a competitive advantage in the portion of the market that prioritizes these performance characteristics.

We believe our WaferSense and ReticleSense products are unique to the marketplace and primarily face competition from the manual techniques currently used by most customers to monitor their semiconductor fabrication equipment. Because the user is not required to break down semiconductor fabrication equipment, or pressurize a vacuum chamber, we believe that our WaferSense/ReticleSense products save significant time and increase measurement accuracy over the manual techniques currently used by customers and that these products improve tool up-time, through-put and process yield.

We believe our current and planned products offer advantages in terms of price and suitability for specific applications. Although we have attempted to protect the proprietary nature of such products, it is possible that any of our products could be duplicated by other companies in the same general markets in which we participate.

Employees

As of December 31, 2016, we had 164 full-time employees worldwide, including 40 in sales, marketing and customer support, 58 in manufacturing, purchasing and production operations, 50 in engineering, research and development, and 16 in finance, administration and information services. Of these employees, 89 are located at our corporate headquarters in Minneapolis, Minnesota, 24 are located at our facility in Bloomington, Minnesota and 51 are located in other offices (5 in the United Kingdom, 1 in Oregon, 1 in California, 36 in Singapore, 4 in China, 2 in Taiwan, 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.

We hold 45 patents (25 U.S. and 20 foreign) on a number of technologies, including those used in our 3D optical sensors, MRS technology, LaserAlign products, SIM sensor technology, inspection systems, WaferSense/ReticleSense products, CyberGage®360 3D scanning system and other products. Some of the patents relate to equipment such as pick-and-place machines into which our products are integrated. In addition, we have 17 pending patents (9 U.S. and 8 foreign). We protect the proprietary nature of our software primarily through copyright and license agreements, but

also through close integration with our hardware offerings. We utilize 28 registered trademarks (13 U.S. and 15 foreign) and have 5 trademark registrations pending (1 U.S. and 4 foreign). We also have 14 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.

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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 and to infringement claims. 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

Many of our products contain lasers. Products containing lasers are classified as either Class I, Class II or Class IIIb Laser Products under applicable rules and regulations of the Center for Devices and Radiological Health (CDRH) of the Food and Drug Administration. Such regulations generally require a self-certification procedure pursuant to which a manufacturer must file with the CDRH with respect to each product incorporating a laser device, periodic reporting of sales and purchases and compliance with product labeling standards. Our lasers are generally not harmful to human tissue, but could result in injury if directed into the eyes of an individual or otherwise misused. We are not aware of any incident involving injury or a claim of injury from our laser devices and believe that our sensors and sensor systems comply with all applicable laws for the manufacture of laser devices.

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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 profits, taxation levels, the effects of 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 which include the following:

- We have recently introduced or are in the process of introducing a number of products based upon our new 3D MRS technology and the failure of this technology to perform up to our expectations would materially adversely affect our anticipated operating results. We believe our MRS technology is unique in the marketplace based upon its ability to inhibit reflections and offer microscopic quality images at production line speeds, and we have high expectations about the prospect for longer-term sales of products based on this technology. We have incorporated the MRS technology into various new products that we have recently introduced, including our 3D AOI offering, the SQ3000, the CyberGage®360 3D scanner and new products for OEM customers, including KLA-Tencor, Nordson-YESTECH and others. We also expect to use this technology in other new products, including next generation inspection systems and in products for new applications. If the performance of the MRS technology does not meet our expectations, 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 this technology attractive, or if we are unable to efficiently identify new customers and new applications for this technology given our current sales channels, our operating results for 2017, and our expectations for longer term growth in revenue, 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. In 2009, the world economy experienced the worst economic recession since the great depression of the 1930's. The severe economic conditions were brought about by extreme disruptions in global credit and financial markets, including severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates, and uncertainty about economic stability. These economic uncertainties affect businesses such as ours in a number of ways, making it difficult to accurately forecast and plan our future business activities. Further political instability or uncertainty could cause new 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 and semiconductor manufacturers that purchase our sensors and the circuit board manufacturers and others that purchase our SMT inspection system products are largely dependent on continued demand for consumer and commercial electronics, including smart phones, 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 3D scanning solutions and services are also dependent upon the health of the global economy. Our results would be adversely affected in the future, if these economies were to experience recessions.
- 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 the specific countries, such as China, Singapore and Japan, in which we do business. Natural disasters, such as the tsunami and earthquake that hit Japan and the floods that hit Thailand in 2011, have affected travel patterns and accessibility in these countries in the past and other natural occurrences, such as a bird flu outbreak, 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.

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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 systems and 3D scanning solutions, which is influenced by economic conditions in these industries and the overall health of the global economy; demand for products that use circuit boards and semiconductors; market acceptance of our products and those developed by our customers; competition; seasonal variations in customer demand; the timing, cancellation or delay of customer orders, shipments and acceptances; and product development costs, including increased research, development, engineering and marketing expenses associated with our introduction of new products and product enhancements.

- The markets for capital equipment in the electronics assembly and semiconductor industries in which we operate are cyclical and we cannot predict with precision when market downturns will occur. We operate in cyclical markets–the electronics assembly and semiconductor capital equipment markets–that periodically adjusts independent of global economic conditions. We have been unable to predict with accuracy the timing or magnitude of periodic downturns in this market. These downturns, particularly the severe downturns in electronics production markets from 2001 through 2003, and from 2008 through 2009, 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 the market may have on our business.
- Our operating results and financial position could be negatively affected by acquisitions. We may be unable to successfully integrate businesses that we may choose to acquire in the future in a cost-effective and non-disruptive manner. Business acquisitions present a number of risks, including:
  - diversion of management's attention from daily operational matters, current products and customers;
  - lack of synergy, or the inability to realize expected synergies;
  - failure to commercialize or meet the expected performance of the new technology or business;
  - failure to retain key employees and customer or supplier relationships;
  - lower-than-expected market opportunities or market acceptance of any new products; and
  - unexpected reduction of sales of existing products by new products.

  Our failure to realize the intended benefits of one or more acquisitions could have a material adverse effect on our business, liquidity, financial position and/or results of operations, including our assumption of unforeseen contingent liabilities.
- Sales of SMT and high precision 3D sensors to four OEM customers constituted 26% of our revenue in 2016, and the loss of any of these customers could have a materially adverse impact on our results of operations. Although we anticipate that our future revenue and operations will be less dependent on any particular customer, given recent success with new products based on our high precision 3D MRS sensor technology, and the anticipated future revenue potential of our new CyberGage®360 3D scanning system, if the order rates from these four OEM customers are negatively impacted by global economic events beyond their control 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 80% of our revenue from export sales that are subject to risks of international operations. Our export sales are subject to many of the risks of international operations, including:
  - currency controls and fluctuations in currency exchange rates;
  - changes in local market business requirements and increased cost and development time required to modify and translate our products for local markets;
  - inability to recruit qualified personnel in a specific country or region;
  - difficulty in establishing and maintaining relationships with local vendors;
  - differing foreign technical standards;
  - differing regulatory requirements;
  - export restrictions and controls, tariffs and other trade barriers;

- reduced protection for intellectual property rights;
- changes in political and economic conditions;
- potentially adverse tax assessments; and
- terrorism, disease, or other events that may affect local economies and access.

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Our development and assembly operations in Singapore, and our sales operations in Asia, are subject to unique risks because of the remote nature of the operations. Our Singapore development and manufacturing operations, and our Asian sales operations, present a number of risks related 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 we may encounter and other matters relating to foreign operations. We cannot be certain that we will be able to retain software development and management personnel in Singapore, and sales personnel in other territories, who are reliable and who will accept employment terms that are attractive. Although most components for our system products are available in Singapore, some of the critical hardware components used in our system products necessary for manufacture in Singapore may be difficult to import at satisfactory prices. Our financial performance, ability to serve our customers and ability to manufacture and sell products could be negatively impacted if we are unable to retain our Asian 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 supply for our products manufactured in Asia.

- We price our products in U.S. dollars, and as a result, our products may have difficulty competing in periods of increasing strength of the dollar. Most of our international export sales are negotiated, invoiced and paid in U.S. dollars, and accordingly, currency fluctuations do not affect our revenue per unit. However, significant fluctuations in the value of the U.S. dollar relative to other currencies could have an impact on the price competitiveness of our products relative to foreign competitors, which could impact the willingness of customers to purchase our products and have an impact on our results of operations.

- Because of our significant operations in Singapore, our costs are negatively impacted when the U.S. dollar weakens relative to the Singapore dollar. 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, resulting from our sales offices located in the UK and China. 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. The ultimate impact of any fluctuation in the relationship between the U.S. dollar and the currencies of other geographies is dependent on the level of cash flows denominated in foreign currencies in future periods.

- 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, and other adjacent markets, including general purpose metrology. The products we develop to meet customer needs and requirements are subject to rapid technological change, and because it takes considerable time to develop new products, we must anticipate industry trends, as well as technological developments, in order to effectively compete. Further, because we do not have unlimited development resources, we might choose to forgo the pursuit of what becomes a leading technology or market and devote our resources to technologies and markets that are less successful. If we incorrectly anticipate technology developments or market trends, or have inadequate resources to develop our products to deal with changes in technology and markets, our products could become obsolete.

- Advances in the SMT electronics assembly alignment sensor market have eliminated some of the advantages of our sensors. Our SMT electronic assembly alignment sensor products compete with products made by larger machine vision companies and other optical sensor companies, and with solutions internally developed by our customers. Advances in machine vision technology in recent years have eliminated some, but not all, of the advantages that have differentiated our products from some of these competitors, and advances in other technologies could eliminate other advantages, thereby making our products less attractive to customers.

- The market for most surface mount capital equipment has become more mature and price competitive, negatively impacting our margins. The electronics capital equipment market for surface mount technologies is becoming more mature, resulting in increased price pressure on suppliers of equipment. Consequently, our SMT electronic assembly inspection systems and alignment sensor products have become subject to increased levels of price competition and

competition from other suppliers and technologies, including lower cost Asian based suppliers.

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- 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 capital equipment, the customer generally relies upon that capital 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 SMT inspection systems and 3D scanners is dependent upon the sales skills of our channel of independent sales representatives, value added resellers and distributors. Our ability to successfully compete in the market for SMT inspection systems and 3D scanners is dependent upon the ability of our channel partners to sell our products. To the extent our competitors have relationships with stronger channel partners, it may be difficult for us to achieve significant sales, even if our products are technologically superior.
- The future success of CyberGage®360 is dependent on our ability to recruit new capable channel partners. The current size and capability of the sale channels for our 3D scanner products is limited. In order to generate significant CyberGage360 sales in the future, we need to greatly expand the capability of our sales channels by recruiting new, high quality independent sales representatives, value added resellers and distributors for CyberGage360. If we are unable to successfully improve the capability of our sales channels for CyberGage360, our future sales of this product will be negatively impacted.
- Competitors in Asia may be able to compete favorably with us based on lower production and employee costs, and in some cases, governmental support. We compete with large multinational companies when selling our inspection system products, many of which 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. Further, we believe some competitors receive government sponsored research and manufacturing assistance that can cause their relative cost of development of new products to be lower. These competitors may also be under less market pressure to forgo the short-term negative financial impact of concentrated investment in research and development.
- We are exposed to credit risk through sales to our OEM customers and distributors of our SMT inspection systems and 3D scanner 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 SMT inspection system and 3D scanner 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. There has been an increasing incidence of unauthorized access to the computer networks of various technology companies, and we are not immune to attempted unauthorized access. 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.

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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. Costly and time-consuming litigation might be necessary to enforce and determine the scope of our proprietary rights, and 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. From time to time, we may receive communications from third parties asserting that our products infringe, or may infringe, the proprietary rights of these third parties. 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 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 loss of important intellectual property rights 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 based on the income tax laws and income tax rates currently in effect. Our ability to utilize these deferred tax assets is dependent on our ability to generate sufficient profits in future periods. The deferred tax assets recorded on our balance sheet are based on the income tax laws and income tax rates currently in effect. A change in income tax laws or a 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.

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- 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 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 6,901,887 shares of our common stock outstanding as of December 31, 2016. Although our common stock is traded in the NASDAQ Global 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 150,000 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 are dependent on our President and Chief Executive Officer, Dr. Subodh Kulkarni, for new product innovation and much of the sales, marketing and business development activities related to our markets, particularly our MRS sensors. Dr. Kulkarni performs a critical role at CyberOptics with respect to product strategy and new product development and innovation. Also, he has been instrumental in development and expansion of our relationships with key OEM customers, including KLA-Tencor and Nordson-YESTECH. In addition, Dr. Kulkarni has significant responsibility for identifying potential new applications and developing new customers for our MRS sensor technology. If Dr. Kulkarni's employment with CyberOptics were to end for any reason, our ability to develop innovative products and achieve sustained long term revenue growth would be negatively impacted in a significant way.

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ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

We lease a 50,724 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 all of our sensor products, including those used in our SMT inspection system products. Our lease for the Golden Valley facility expires December 31, 2018, contains an escalation clause and two renewal options of three years each.

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 SMT inspection system products. We recently extended the lease for our Singapore facility for a period of three years. The new lease expires on July 24, 2020 and contains one three year renewal option.

We lease a 10,165 square foot mixed office and warehouse facility in Bloomington, Minnesota that serves as a sales, service, final assembly and integration facility for our 3D scanning solutions and services. We recently extended the lease for the Bloomington, Minnesota facility through December 31, 2018.

As of December 31, 2016, we also have operating leases in the United Kingdom and China, which expire in June 2018 and November 2018, respectively.

We believe that our leased facilities are adequate for our anticipated needs for the foreseeable future.

ITEM 3. LEGAL PROCEEDINGS

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

ITEM 4. MINE SAFETY DISCLOSURES

None.

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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. The following table sets forth, for the fiscal periods indicated, the high and low sales prices for our common stock as reported by the Nasdaq Global Market. These prices do not reflect adjustments for retail markups, markdowns or commissions.

	2016		2015	
Quarter	High	Low	High	Low
First	$17.99	$8.12	$11.75	$9.01
Second	$19.45	$13.28	$11.24	$9.77
Third	$26.40	$16.41	$10.46	$4.80
Fourth	$40.69	$23.50	$8.48	$5.86

As of February 28, 2017, 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.

ITEM 6. SELECTED FINANCIAL DATA

Not applicable

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

Results of Operations for the Two Years Ended December 31, 2016:

General Overview

Our products are sold primarily into the electronics assembly, DRAM and flash memory, and semiconductor fabrication capital equipment markets. We sell products in these markets both to original equipment manufacturers (OEMs) of production equipment and to end-user customers that assemble circuit boards and semiconductor wafers and devices. Our wholly owned subsidiary, Laser Design, Inc. (LDI), provides 3D scanning solutions and services to the global 3D scanner and services metrology markets.

Our recent and planned product introductions are designed to strengthen our competitive position in our current markets and expand into adjacent markets. We believe 3D inspection represents a high-growth segment of both the electronic assembly market and the semiconductor market. For this reason, we are working to strategically reposition our company as a developer, manufacturer and global leader of high-precision 3D sensors. A key element in our strategic re-positioning is the development of new high precision 3D sensors based on our proprietary MRS technology. MRS technology inhibits reflections that can result in measurement inaccuracies, which is particularly critical for inspecting shiny objects.

We believe that MRS is a break-through optical technology for high-end inspection applications, with the potential to expand our markets in the future. In the existing markets for our SMT, semiconductor inspection and 3D scanning solutions, we are seeing a growing number of opportunities because of our 3D MRS technology platform, and we are introducing new products based on MRS technology that we believe present a significant opportunity for increased revenues.

We have entered into a mutually exclusive agreement to supply KLA-Tencor with high-precision 3D sensor subsystems for its back-end semiconductor packaging inspection systems. We also have entered into an agreement to supply Nordson-YESTECH with high precision 3D sensor subsystems for the SMT market. The sensor subsystems are based on the new MRS technology that we have been developing for the past several years. We intend to expand sales of products based on MRS technology into both the SMT market and adjacent markets that require high precision 3D optical inspection. We also plan to sell products based on our MRS technology to OEMs. During the second quarter of 2016, we received an $800,000 order for 3D MRS-enabled sensors from a major new customer for a general purpose metrology application related to the inspection of finished goods. We believe this customer could generate significant sales going forward.

We have significantly advanced our MRS-enabled 3D sensor technology as part of a research initiative aimed at applying our 3D MRS technology to front-end semiconductor inspection. Features of 50 microns, including devices with mirror-like finishes, are now being measured in our research lab, and progress is being made toward measuring sub-50 micron features. This is an important milestone in our effort to make MRS-enabled 3D sensor technology applicable to front-end semiconductor inspection in the next two to four years. If this initiative proves to be commercially viable, the available market for our MRS-enabled 3D sensors for front-end semiconductor inspection could be significant.

Our 3D MRS technology has also been deployed in our 3D AOI system, the SQ3000, which is designed to expand our presence in markets requiring high precision inspection. In these markets, identifying defects has become highly challenging and critical due to smaller electronics packaging and increasing component density on circuit boards. We believe the combination of our MRS technology and sophisticated 3D fusing algorithms allows us to offer microscopic image quality at production speeds. We recognized our initial revenues from sales of the SQ3000 in the second quarter of 2015. During 2016, we received SQ3000 follow-on orders totaling approximately $4.7 million from a key customer for a next-generation consumer electronics product. Due to these sales and the competitive advantages offered by our MRS technology, we believe the future sales potential of the SQ3000 is significant.

We have incorporated our MRS technology into a new 3D scanning system, CyberGage®360, which we believe will serve a wide range of inspection applications in the general purpose 3D metrology market. We sold our first two CyberGage360 units in the fourth quarter of 2016. Most customers are taking longer than originally anticipated to

evaluate the functionality and benefits of CyberGage360 before adopting it for their engineering and quality assurance programs. After starting slowly in the first half of 2017, we anticipate steadily increasing sales of CyberGage360 by the end of 2017. We believe that the unique performance characteristics of our MRS technology, which inhibit reflections and enable very accurate measurements at fast speeds, combined with ease of use, will give CyberGage360 a competitive advantage in the marketplace for 3D scanning systems.

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We also have committed funds to development of our MX600 system for inspection of memory modules at the end of the production line after singulation. In 2016, we recognized $5.7 million of revenue from sales of this product to one of the world's top four memory manufacturers. We believe that additional MX600 orders could be received in future periods.

We have continued to invest in our WaferSense/ReticleSense product lines and have recently announced new offerings for advanced particle measurement and a line of multi-purpose sensors that measure leveling, vibration and humidity in an all-in-one wireless real-time device.

We ended the fourth quarter of 2016 with a backlog of $10.2 million, down from $12.4 million at September 30, 2016, and down from $15.0 million at December 31, 2015. We are forecasting sales of $11.5 to $12.5 million for the first quarter of 2017, based on the anticipated timing of orders for 3D products and customer acceptances. Order activity and sales prospects for SQ3000 3D AOI systems reflect a strong pipeline of opportunities, including large projects for multiple SQ3000 systems. Given these factors, we are presently forecasting sales of $16 to $19 million for the second quarter of 2017, and solid growth for all of 2017. Longer term, the anticipated sales growth of our MRS-enabled 3D products and WaferSense/ReticleSense products should increase our revenues and net income. We believe that we have the resources required to attain our growth objectives, given our available cash and marketable securities balances totaling $25.9 million at December 31, 2016.

Our ability to achieve our forecast and 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. We cannot assure you that our efforts will be successful.

Revenues

Our revenues increased by 61% to $66.2 million in 2016 from $41.1 million in 2015 and decreased by 12% in 2015 from $46.5 million in 2014. The following table sets forth, for the years indicated, revenues by product line (in thousands):

(In thousands)	2016	2015	2014
SMT and High Precision 3D OEM Sensors	$18,797	$13,022	$15,493
Semiconductor Sensors	10,061	7,677	7,595
SMT Inspection Systems	28,680	13,578	18,089
3D Scanning Solutions and Services	8,702	6,853	5,306
Total	$66,240	$41,130	$46,483

Revenue from sales of SMT and high precision 3D OEM sensors increased by $5.8 million or 44% to $18.8 million in 2016, and decreased by $2.5 million or 16% to $13.0 million in 2015, from $15.5 million in 2014. Revenue increases in 2016 resulted from a significant rebound in sales of legacy 2D LaserAlign sensors to OEM customers, as well as sales of 3D MRS sensors to KLA-Tencor and Nordson, and from an $800,000 order for 3D MRS-enabled sensors from a major new customer for a general purpose metrology application related to the inspection of finished goods. The rebound in sales of 2D LaserAlign sensors was driven by one OEM customer which experienced a significant increase in sales of its products that incorporate our sensors. Revenue decreases in 2015 resulted from soft demand for legacy 2D LaserAlign sensors from OEM customers selling into China, when market conditions were challenging. Sales to KLA-Tencor are expected to continue to increase as our sensors are incorporated into a growing portion of KLA-Tencor's back-end semiconductor packaging inspection systems. Nordson introduced its 3D MRS-equipped AOI system at the IPC APEX Expo trade show in March 2016 to a very favorable reception. We believe that sales of sensors under our Nordson supply agreement should be a positive contributor to our future sales growth. In addition, we believe that our major new customer using our 3D MRS-enabled sensors to inspect finished goods could generate significant sales in the future.

Revenue from sales of semiconductor sensors, principally our WaferSense® and ReticleSense® product lines, increased by $2.4 million or 31% to $10.1 million in 2016, and increased by $82,000 or 1% to $7.7 million in 2015, from $7.6 million in 2014. The sales increases in 2016 were due in part to our new Auto-Multi Sensors that combine leveling, vibration and humidity measurements into an all-in-one wireless, real-time device. Sales increases were also due to increased customer awareness and improved account penetration at major semiconductor manufacturers and

capital equipment suppliers. Sales of semiconductor sensors in 2015 were negatively impacted by a general slowdown in the semiconductor capital equipment market and production delays impacting sales of our new Auto-Multi Sensors. We anticipate that the benefits from growing market awareness and new product introductions will lead to additional WaferSense® and ReticleSense® sales in future periods. We also are increasing our sales of WaferSense® and ReticleSense® products to manufacturers of flat panel displays, as these customers have determined that these products are able to significantly improve their manufacturing processes and yields.

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Revenue from sales of SMT inspection systems increased by $15.1 million or 111% to $28.7 million in 2016, and decreased by $4.5 million or 25% to $13.6 million in 2015, from $18.1 million in 2014. Revenue from SMT inspection systems in 2016 resulted from strong demand for our entire portfolio of SMT inspection system products, including SQ3000 3D MRS-enabled AOI systems and recognition of $5.7 million in revenue from sales of MX600 memory module inspection systems. Strong sales growth from SQ3000 systems in 2016 was due in part to follow-on orders totaling approximately $4.7 million from a key customer that manufactures a next-generation consumer electronics product. The decline in sales of SMT inspection systems in 2015 resulted from lower sales of older more established SPI and 2D AOI systems, offset in part by initial sales of the MX600 and SQ3000 products.

We believe a growing number of companies are transitioning from 2D AOI to 3D AOI systems to meet the increasingly demanding inspection requirements of the electronics and industrial markets. We believe sales of our new 3D MRS enabled AOI products will represent an increasing percentage of our total AOI and SPI product sales in the future. We expect that the competitive advantages of our unique 3D MRS technology will provide us with an opportunity to capture meaningful market share in the 3D AOI systems market.

Revenue from sales of 3D scanning solutions and services increased by $1.8 million or 27% to $8.7 million in 2016, and increased by $1.5 million or 29% to $6.9 million in 2015, from $5.3 million in 2014. Revenue increases in 2016 were due to strong sales of computed tomography or X-ray scanning (CT) systems, mainly to a single customer, and reflects our ability to provide a comprehensive offering of training, installation and support services. We believe future revenue growth from sales of 3D scanning solutions and services will be determined in large part by market acceptance of our new MRS-equipped CyberGage®360 3D scanning system. We sold two CyberGage360 systems in the fourth quarter of 2016. After starting slowly in the first half of 2017, we anticipate steadily increasing sales of CyberGage360 by the end of 2017.

Export revenue totaled $53.5 million or 81% of total revenue in 2016, compared to $29.7 million or 72% of total revenue in 2015, and $34.1 million or 73% of total revenue in 2014. The increase in export revenue as a percentage of total revenue in 2016 was due to the large increase in sales of SMT inspection systems, a higher proportion of which are generally sold outside the United States as compared to our other products. The decrease in export revenue as a percentage of total revenue in 2015 was due to the decline in sales of SMT systems and 2D LaserAlign sensors, which tend to have a higher proportion of sales outside the United States.

Cost of Revenues and Gross Margin

Cost of revenues increased by $14.2 million or 62% to $37.2 million in 2016, from $23.0 million in 2015, and decreased by $2.3 million or 9% in 2015, from $25.3 million in 2014. The increase in cost of revenues in 2016 was primarily due to the corresponding revenue increase of 61%, while the decrease in cost of revenues in 2015, was primarily due to the corresponding 12% decrease in sales. 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 2016, 44% in 2015 and 46% in the 2014. The slight fluctuations in gross margin percentage were mainly due to a change in the mix of products sold. In addition, the decrease in gross margin percentage in 2015, when compared to 2014, was due to sales price erosion for certain SMT inspection system products, reflecting competitive market conditions.

Our markets are highly price competitive, particularly the electronic assembly market, resulting in continual pressure on our gross margins. We compensate for pricing pressure 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 CyberGage®360 3D scanning system, MRS sensor subsystems and WaferSense sensors, have or are expected to have more favorable margins than sales of many of our existing products.

Operating Expenses

Research and development expenses were $8.0 million or 12% of revenue in 2016, compared to $7.6 million or 18% of revenue in 2015, and $8.8 million or 19% of revenue in 2014. Research and development expenses were higher in 2016 when compared to 2015, mainly due to the accrual of incentive compensation resulting from our improved financial performance. Research and development expenses were lower in 2015 when compared to 2014 due to

substantial completion of several critical development programs that required significant investment, including our SQ3000 3D AOI system. Current research and development expenditures are primarily focused on continued development of our MRS technology and related products, including 3D sensor subsystems, and enhancements to the SQ3000 3D AOI system and the CyberGage®360 3D scanning system. In addition, research is under way to determine if our 3D MRS technology is applicable to front-end semiconductor inspection.

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Selling, general and administrative expenses were $14.8 million or 22% of revenue in 2016, compared to $12.6 million or 31% of revenue in 2015, and $13.8 million or 30% of revenue in 2014. The increase in selling, general and administrative expenses in 2016 compared to 2015 was due to higher sales commissions and the accrual of incentive compensation resulting from our significantly improved financial performance. The decrease in selling, general and administrative expenses in 2015 compared to 2014 was due to lower professional fees, lower incentive compensation costs due to financial results below expectations, and savings from selective reductions in personnel in the last six months of 2014.

Interest Income and Other

Interest income and other includes interest earned on investments and gains and losses associated with foreign currency transactions, including intercompany financing transactions associated with our subsidiaries in the United Kingdom, Singapore and China. Because we maintain our investments in instruments designed to avoid risk of loss of principal, we have generated very little interest income in the current interest rate environment. Due to the strength of the U.S. dollar, we recognized gains from foreign currency transactions, primarily intercompany financing transactions, of $207,000 in 2016 and $103,000 in 2015.

Provision for Income Taxes

We recorded an income tax benefit of $5.2 million in 2016, compared to income tax expense of $28,000 in 2015, and income tax expense of $133,000 in 2014. The non-cash income tax benefit recorded in 2016 reflects a substantial reduction in the valuation allowances recorded against our deferred tax assets. Income tax expense in 2015 and 2014 includes minimal state income tax expense and foreign income tax expense incurred by our subsidiaries in the United Kingdom and China.

We have significant deferred tax assets as a result of temporary differences between taxable income on our tax returns and U.S. GAAP income, research and development tax credit carry forwards and federal, state and foreign 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.

During the fourth quarter of 2016, we substantially reduced the valuation allowances recorded against our United States and Singapore based deferred tax assets, primarily due to significant improvement in our operating results and financial outlook. 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 and long-term financial outlook. After considering all available evidence both positive and negative, we concluded that a substantial reduction in the valuation allowances recorded against our United States and Singapore based deferred tax assets was appropriate. The $9.6 million reduction in valuation allowances for 2016 caused us to recognize a significant non-cash income tax benefit. The reduction resulted from utilization of available net operating loss carryforwards and our determination that significant valuation allowances were no longer needed due to the improvement in our operating results and financial outlook.

For the first three quarters of 2016, we reported very little income tax expense due to utilization of our available net operating loss carryforwards. The corresponding reductions in our valuation allowances reduced reported income tax expense. Because a significant portion of the valuation allowances have been reversed, we anticipate that reported income tax expense for GAAP purposes will increase in future periods. The timing of cash payments for income taxes is not impacted.

We file income tax returns in the U.S. federal jurisdiction, and various state and foreign jurisdictions. Our federal income tax returns for years after 2012 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 2012. The Inland Revenue Authority of Singapore recently completed a review of our 2012 income tax return. The review did not result in payment of any additional tax or any change in our taxable income.

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Liquidity and Capital Resources

Our cash and cash equivalents increased by $6.4 million in 2016, principally resulting from $9.1 million of cash provided by operating activities, proceeds of $6.2 million from sales and maturities of marketable securities, and proceeds of $646,000 from stock option exercises and share purchases under our employee stock purchase plan. Cash provided by these activities was offset in part by purchases of marketable securities totaling $8.1 million and purchases of fixed assets and capitalized patent costs totaling $1.4 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 $8.3 million to $25.9 million as of December 31, 2016 from $17.6 million as of December 31, 2015.

Operating activities provided $9.1 million of cash in 2016. Cash provided by operations included net income of $11.6 million, including a $5.3 million deferred income tax benefit and non-cash expenses totaling $2.6 million for depreciation and amortization, provision for doubtful accounts, non-cash gains from foreign currency transactions and equity-based compensation costs. Changes in operating assets and liabilities providing cash included a decrease in inventories of $1.0 million, an increase in accounts payable of $550,000 and an increase in accrued expenses of $1.9 million. Changes in operating assets and liabilities using cash included an increase in accounts receivable of $2.8 million, an increase in other assets of $346,000 and a decrease in advance customer payments of $153,000. Inventories decreased due to customer acceptance of our remaining MX600 backlog, offset in part by new purchases of inventory needed to manufacture products for future sales requirements. The accounts payable increase resulted from the timing of new inventory purchases and payments to suppliers. Accrued expenses were higher mainly due to incentive compensation and warranty accruals resulting from our improved financial performance and higher sales levels. Accounts receivable increased because sales were $2.1 million higher in the fourth quarter of 2016, when compared to the fourth quarter of 2015. Other assets increased due to payments for income tax deposits and recoverable goods and services taxes. The small decrease in advance customer payments resulted from the timing of cash collections and recognition of revenue for transactions that were previously deferred.

Operating activities used $2.4 million of cash in 2015. Cash used by operations included our net loss of $2.1 million, which included non-cash expenses totaling $2.2 million for depreciation and amortization, provision for doubtful accounts, deferred taxes, non-cash gains from foreign currency transactions and stock compensation expenses. Changes in operating assets and liabilities providing cash included an increase in accounts payable of $1.1 million. Changes in operating assets and liabilities using cash included increases in inventories of $2.5 million, accounts receivable of $161,000 and a decrease in accrued expenses of $1.0 million. The increase in inventories and accounts payable was related to the timing of inventory purchases needed for higher customer demand, as reflected in our large year end backlog, and new large orders received subsequent to year end. Accounts receivable increased because it took us slightly longer to collect for products sold in the fourth quarter of 2015 compared to the fourth quarter of 2014. Accrued expenses decreased due to payment of calendar year 2014 incentive compensation accruals and LDI stay bonuses in 2015, and lower warranty accruals resulting from the reduced level of sales.

Investing activities used $3.4 million of cash in 2016, compared to providing $954,000 of cash in 2015. Changes in the level of investment in marketable securities, resulting from the purchases, sales and maturities of those securities used $1.9 million of cash in 2016, compared to providing $1.8 million of cash in 2015. We used $1.4 million of cash in the 2016 for the purchase of fixed assets and capitalized patent costs, compared to using $797,000 of cash for these types of purchases in 2015.

Financing activities from stock option exercises and share purchases under our employee stock purchase plan provided $646,000 of cash in 2016, compared to providing $636,000 of cash in 2015.

At December 31, 2016, 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, which are established by some companies for the purpose of establishing off-balance sheet arrangements or for other contractually narrow or limited purposes.

Except for obligations under facility leases and purchase contracts, we had no material commitments for expenditures as of December 31, 2016. Purchase commitments for inventory can vary based on the volume of revenue and resulting inventory requirements.

Our cash, cash equivalents and marketable securities totaled $25.9 million at December 31, 2016. 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.

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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 electronics assembly and semiconductor fabrication 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 SMT 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.

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 accounting principles generally accepted in the United States. 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, derivatives and hedging 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 from all customers, including distributors, is recognized when all significant contractual obligations have been satisfied and collection of the resulting receivable is reasonably assured. Generally, product revenues are recognized upon shipment under Ex-works terms, and include shipping and handling costs. Revenue from services is recognized as work is performed. Taxes collected from customers and remitted to governmental authorities are excluded from revenue on the net basis of accounting. Estimated returns and warranty costs are recorded at the time of sale. Sales of some SMT system products may require customer acceptance due to performance or other acceptance criteria included in the terms of sale. For these SMT product sales, revenue is recognized at the time of customer acceptance. Our multiple deliverable arrangements typically include the sale of an SMT inspection system or 3D scanning solution, related installation and training, and in some cases, an extended warranty. Revenue from installation and training are recognized as the services are provided. Revenue from extended warranties is recognized ratably over the warranty period.

When a sale involves multiple elements, revenue is allocated to each respective element at inception of an arrangement using the relative selling price method. Selling price is determined based on a selling price hierarchy, consisting of vendor specific objective evidence (VSOE), third party evidence or estimated selling price. Management’s best estimate of the selling price of a SMT machine and 3D scanning solution is based on the cost of the product and a reasonable margin based on geographic location and competitive market conditions. We use VSOE to establish fair value for extended warranty, installation and training services. If VSOE is not available to establish fair value for extended warranty, installation and training services, we estimate a selling price based on the cost-build-up for the particular service and a reasonable gross margin. Costs related to products delivered are recognized in the period revenue is recognized. Cost of revenues consists primarily of direct labor, manufacturing overhead, materials and components and excludes amortization of intangible assets.

Allowance for Doubtful Accounts.

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 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 was $547,000 at December 31, 2016 and $521,000 at December 31, 2015.

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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 component suppliers, warranty obligations are affected by product failure rates, material usage and service delivery costs incurred in correcting a product failure. Should actual product failure rates, material usage or service delivery costs differ from our estimates, revisions to the estimated warranty liability would be required. The allowance for warranties was $790,000 at December 31, 2016 and $645,000 at December 31, 2015.

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 $1.2 million at December 31, 2016 and $1.0 million at December 31, 2015.

Valuation of Intangible and Long-Lived Assets.

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. In addition, we perform an annual goodwill impairment assessment. 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 our stock price 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 un-discounted cash flows from such asset.
- For goodwill, if the carrying value of our net assets (net book value) exceeds fair value.

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 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. These assumptions require significant judgment and actual results may differ from assumed or estimated amounts.

At December 31, 2016 we had goodwill of $1.4 million. Our recent analysis performed in the fourth quarter of 2016 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.

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As part of the process of preparing 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, research and development tax credit carry forwards and federal, state and foreign 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.

During the fourth quarter of 2016, we substantially reduced the valuation allowances recorded against our United States and Singapore based deferred tax assets, primarily due to significant improvement in our operating results and financial outlook. 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 where we operate, our financial performance in recent quarters, statutory carry forward periods and tax planning alternatives. Finally, we considered both our near and long-term financial outlook. After considering all available evidence both positive and negative, we concluded that a substantial reduction in the valuation allowances recorded against our United States and Singapore based deferred tax assets was appropriate. A similar analysis was performed at December 31, 2015, resulting in $10.6 million of valuation allowances for our deferred tax assets, primarily due to our cumulative historical operating losses. The $9.6 million reduction in valuation allowances for 2016 caused us to recognize a significant non-cash income tax benefit. The reduction resulted from utilization of available net operating loss carryforwards and our determination that significant valuation allowances were no longer needed due to the improvement in our operating results and financial outlook.

Derivatives and Hedging.

We may enter into foreign exchange forward contracts to hedge against the effect of exchange rate fluctuations on cash flows denominated in foreign currencies associated with our subsidiary in Singapore. These transactions are designated as cash flow hedges and are recorded in the accompanying consolidated balance sheet at fair value. The effective portion of the gain or loss on the derivative is reported as a component of other comprehensive loss and reclassified into earnings in the same period during which the hedged transaction affects earnings. Gains and losses on the derivative representing either hedge ineffectiveness or hedge components excluded from the assessment of effectiveness are recognized in current earnings. The maximum length of time over which we hedge our exposure to the variability in future cash flows is 12 months. At December 31, 2016, there were no open foreign exchange forward contracts. At December 31, 2015, all of our open foreign exchange forward contracts had maturities of one year or less. The dollar equivalent gross notional amount of our foreign exchange forward contracts designated as cash flow hedges was approximately $1.8 million at December 31, 2015.

We estimate any hedge ineffectiveness on a quarterly basis by considering the difference between the prices of a hypothetical forward contract maturing on the last day of a given month, to the prices of a series of hypothetically perfect daily forward contracts. Hedge ineffectiveness and the amounts excluded from effectiveness testing recognized in earnings on cash flow hedges were not material for the years ended December 31, 2016 and 2015. The fair value of our foreign exchange forward contracts representing losses in the amount of $78,000 as of December 31, 2015 have been recorded in accrued expenses.

The fair value for our foreign exchange forward contracts was based on foreign currency spot and forward rates obtained from reputable financial institutions with resulting valuations periodically validated by obtaining foreign currency spot rates and forward quotes from other industry standard sources or third party or counterparty quotes.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Not applicable.

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

(In thousands, except share information)	December 31, 2016	December 31, 2015
ASSETS		
Cash and cash equivalents	$10,640	$4,274
Marketable securities	6,493	5,249
Accounts receivable, less allowance for doubtful accounts of $547 at December 31, 2016 and $521 at December 31, 2015	10,895	8,150
Inventories	11,531	13,265
Other current assets	1,535	1,190
Total current assets	41,094	32,128
Marketable securities, long-term	8,728	8,084
Equipment and leasehold improvements, net	2,438	2,368
Intangibles, net	438	549
Goodwill	1,366	1,366
Other assets	193	186
Deferred tax assets	5,323	58
Total assets	$59,580	$44,739
LIABILITIES AND STOCKHOLDERS' EQUITY		
Accounts payable	$6,217	$5,778
Advance customer payments	328	481
Accrued expenses	3,756	1,959
Total current liabilities	10,301	8,218
Other liabilities	250	268
Deferred tax liability	—	69
Reserve for income taxes	131	126
Total liabilities	10,682	8,681
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, 6,901,887 shares issued and outstanding at December 31, 2016 and 6,771,668 shares issued and outstanding at December 31, 2015	32,801	31,292
Accumulated other comprehensive loss	(1,940)	(1,709)
Retained earnings	18,037	6,475
Total stockholders' equity	48,898	36,058
Total liabilities and stockholders' equity	$59,580	$44,739

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

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CONSOLIDATED STATEMENTS OF OPERATIONS
CYBEROPTICS CORPORATION

	Year Ended December 31,	
(In thousands, except per share amounts)	2016	2015
Revenues	$66,240	$41,130
Cost of revenues	37,185	22,989
Gross margin	29,055	18,141
Research and development expenses	8,040	7,602
Selling, general and administrative expenses	14,796	12,635
Amortization of intangibles	66	67
Income (loss) from operations	6,153	(2,163)
Interest income and other	238	102
Income (loss) before income taxes	6,391	(2,061)
Income tax provision (benefit)	(5,171)	28
Net income (loss)	$11,562	$(2,089)
Net income (loss) per share – Basic	$1.69	$(0.31)
Net income (loss) per share – Diluted	$1.64	$(0.31)
Weighted average shares outstanding – Basic	6,832	6,706
Weighted average shares outstanding – Diluted	7,049	6,706

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

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CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
CYBEROPTICS CORPORATION

	Year Ended December 31,	
(In thousands)	2016	2015
Net income (loss)	$11,562	$(2,089)
Other comprehensive income (loss), before tax:		
Foreign currency translation adjustments	(383)	(625)
Unrealized losses on available-for-sale securities:		
Unrealized losses	(8)	(78)
Total unrealized losses on available-for-sales securities	(8)	(78)
Unrealized gains (losses) on foreign exchange forward contracts:		
Unrealized gains (losses)	53	(298)
Reclassification adjustment for losses included in net income (loss)	36	563
Total unrealized gains on foreign exchange forward contracts	89	265
Other comprehensive loss, before tax	(302)	(438)
Income tax benefit related to items of other comprehensive loss	(71)	—
Other comprehensive loss, net of tax	(231)	(438)
Total comprehensive income (loss)	$11,331	$(2,527)

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

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CONSOLIDATED STATEMENTS OF CASH FLOWS
CYBEROPTICS CORPORATION

(In thousands)	Year Ended December 31, 2016	2015
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income (loss)	$11,562	$(2,089)
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:		
Depreciation and amortization	2,086	1,968
Provision for (recovery of) doubtful accounts	24	(44)
Deferred taxes	(5,269)	38
Foreign currency transaction gains	(341)	(225)
Stock-based compensation	863	511
Changes in operating assets and liabilities:		
Accounts receivable	(2,769)	(161)
Inventories	1,029	(2,489)
Other assets	(346)	(24)
Accounts payable	550	1,146
Advance customer payments	(153)	(9)
Accrued expenses	1,888	(1,011)
Net cash provided by (used in) operating activities	9,124	(2,389)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Proceeds from maturities of available-for-sale marketable securities	4,690	5,167
Proceeds from sales of available-for-sale marketable securities	1,502	1,518
Purchases of available-for-sale marketable securities	(8,127)	(4,934)
Additions to equipment and leasehold improvements	(1,363)	(691)
Additions to patents	(71)	(106)
Net cash provided by (used in) investing activities	(3,369)	954
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from exercise of stock options	465	458
Proceeds from issuance of common stock under employee stock purchase plan	181	178
Net cash provided by financing activities	646	636
Effects of exchange rate changes on cash and cash equivalents	(35)	(98)
Net increase (decrease) in cash and cash equivalents	6,366	(897)
Cash and cash equivalents – beginning of period	4,274	5,171
Cash and cash equivalents – end of period	$10,640	$4,274

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

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CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
CYBEROPTICS CORPORATION

(In thousands)	Common Stock Shares	Common Stock Amount	Accumulated Other Comprehensive Loss	Retained Earnings	Total Stockholders' Equity
BALANCE, DECEMBER 31, 2014	6,644	$30,145	$ (1,271)	$8,564	$ 37,438
Exercise of stock options, vesting of restricted stock units, net of shares exchanged as payment	88	458	—	—	458
Share issuances for compensation purposes	4	41	—	—	41
Stock-based compensation	—	470	—	—	470
Issuance of common stock under Employee Stock Purchase Plan	36	178	—	—	178
Other comprehensive loss, net of tax	—	—	(438)	—	(438)
Net loss	—	—	—	(2,089)	(2,089)
BALANCE, DECEMBER 31, 2015	6,772	31,292	(1,709)	6,475	36,058
Exercise of stock options, vesting of restricted stock units, net of shares exchanged as payment	86	465	—	—	465
Share issuances for compensation purposes	8	136	—	—	136
Stock-based compensation	—	727	—	—	727
Issuance of common stock under Employee Stock Purchase Plan	36	181	—	—	181
Other comprehensive loss, net of tax	—	—	(231)	—	(231)
Net income	—	—	—	11,562	11,562
BALANCE, DECEMBER 31, 2016	6,902	$32,801	$ (1,940)	$18,037	$ 48,898

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

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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 sensing technology solutions. Our sensors are used in general purpose metrology and 3D scanning, 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 technology solutions.

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 sheet based on their maturity date and expectations regarding sales.

Available-for-sale securities are carried at fair value, with unrealized gains and losses reported as a separate component of stockholders' equity until realized. These 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 investments compared to their fair value to determine whether an other-than-temporary impairment has occurred. If a decline in fair value is determined to be other-than-temporary, an impairment charge related to that specific investment is recorded in current operations.

Cash and marketable securities held by foreign subsidiaries totaled $614,000 at December 31, 2016 and $701,000 at December 31, 2015.

Inventories

Inventories are stated at the lower of cost or market, 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. Demonstration inventories are stated at cost less accumulated amortization, generally based on a 36 month useful life.

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Accumulated amortization for demonstration inventories totaled $1.1 million at December 31, 2016 and $1.3 million at December 31, 2015.

Accounts Receivable and Allowance for Doubtful Accounts

We extend unsecured credit to our customers in the normal course of business. 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 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.

Business Combinations

We recognize separately from goodwill the fair value of the assets acquired and the liabilities assumed at the acquisition date. Goodwill is measured as the excess of consideration transferred over the acquisition date fair value of the assets acquired and liabilities assumed. Assets acquired include tangible and intangible assets. We determine the value and useful lives of equipment, leasehold improvements and purchased intangible assets with the assistance of an independent third-party valuation firm using certain estimates and assumptions.

While we use estimates and assumptions that we believe are reasonable as a part of the purchase price allocation process to accurately value the assets acquired and the liabilities assumed at the acquisition date, the estimates and assumptions are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, we may record adjustments to the fair value of the assets acquired and the liabilities assumed based on new information about facts and circumstances that existed as of the acquisition date. Any such adjustments would be recorded as an offset to goodwill. Upon the conclusion of the measurement period or final determination of the fair values, whichever comes first, any subsequent adjustments would be recorded in our consolidated statements of operations.

Goodwill

Goodwill represents the excess of purchase price over the fair value of net assets acquired in a business combination. We evaluate the carrying value of goodwill during the fourth quarter of each year and between annual evaluations if events occur or circumstances change that indicate goodwill might be impaired. We have determined that we have one reporting unit. When we determine that our goodwill might be impaired, we test for impairment by comparing our fair value, as determined based on our future estimated discounted cash flows, to our net book value.

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.

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Revenue Recognition

Revenue from all customers, including distributors, is recognized when all significant contractual obligations have been satisfied, pricing is fixed and determinable and collection of the resulting receivable is reasonably assured. Generally, product revenues are recognized upon shipment under Ex-works terms, and include shipping and handling costs. Revenue from services is recognized as work is performed. Taxes collected from customers and remitted to governmental authorities are excluded from revenue on the net basis of accounting. Estimated returns and warranty costs are recorded at the time of sale. Sales of some surface mount technology (SMT) system products may require customer acceptance due to performance or other acceptance criteria included in the terms of sale. For these SMT product sales, revenue is recognized at the time of customer acceptance. Our multiple deliverable arrangements typically include the sale of an SMT inspection system or 3D scanning solution, related installation and training, and in some cases, an extended warranty. Revenue from installation and training are recognized as the services are provided. Revenue from extended warranties is recognized ratably over the warranty period.

When a sale involves multiple elements, revenue is allocated to each respective element at inception of an arrangement using the relative selling price method. Selling price is determined based on a selling price hierarchy, consisting of vendor specific objective evidence (VSOE), third party evidence or estimated selling price. Management's best estimate of the selling price of an SMT machine and 3D scanning solution is based on the cost of the product and a reasonable margin based on geographic location and competitive market conditions. We use VSOE to establish fair value for extended warranty, installation and training services. If VSOE is not available to establish fair value for extended warranty, installation and training services, we estimate a selling price based on the cost-build-up for the particular service and a reasonable gross margin. Costs related to products delivered are recognized in the period revenue is recognized. Cost of revenues consists primarily of direct labor, manufacturing overhead, materials and components and excludes amortization of intangible assets.

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 in the statement of operations. We recognized a foreign currency transaction gain of $207,000 in 2016 and $103,000 in 2015.

Research and Development

Research and development (R&D) costs, including software development, are expensed when incurred. 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.

Derivatives and Hedging

We may enter into foreign exchange forward contracts to hedge against the effect of exchange rate fluctuations on cash flows denominated in foreign currencies associated with our subsidiary in Singapore. These transactions are designated as cash flow hedges and are recorded in the accompanying consolidated balance sheet at fair value. The effective portion of the gain or loss on the derivative is reported as a component of other comprehensive income (loss) and reclassified into earnings in the same period during which the hedged transaction affects earnings. Gains and losses on the derivative representing either hedge ineffectiveness or hedge components excluded from the assessment of effectiveness are recognized in current earnings. Cash flows from derivative instruments are classified in the consolidated statement of cash flows in the same category as the cash flows from the items subject to designated hedge relationships.

Advertising Costs

We expense all advertising costs as incurred. Advertising expense incurred was $356,000 in 2016 and $410,000 in 2015.

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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 equity and 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 (Loss) Per Share

Basic net income (loss) per basic share is computed by dividing net income (loss) 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 and from purchases of shares under our employee stock purchase plan, as calculated using the treasury stock method. All common equivalent shares are excluded from the calculation of net loss per diluted share due to their anti-dilutive effect.

Fair Value of Financial Instruments

The carrying amounts of financial instruments such as cash equivalents, accounts receivable, other assets, accounts payable, accrued expenses and other liabilities approximate their related fair values due to the short-term maturities of these instruments.

Stock-Based Compensation

All equity-based payments to employees, including grants of employee 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. The compensation expense recognized for all equity based awards is net of estimated forfeitures, which is based on historical data. We have classified equity based compensation within our consolidated statement of operations in the same manner as our cash based employee compensation costs. We elected to use the alternative transition guidance known as the “short-cut method” to determine our pool of windfall tax benefits at January 1, 2006.

See Note 6 to the consolidated financial statements for additional information on stock-based compensation.

Related Party Transactions

One of our board members serves as the Chief Executive Officer of Key Tronic Corporation. Our sales to Key Tronic Corporation totaled $556,000 in 2016 and $82,000 in 2015.

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Recent Accounting Developments

In January 2017, the FASB issued guidance on simplifying the test for goodwill impairment (ASU No. 2017-04, Simplifying the Test for Goodwill Impairment). Under the new standard, goodwill impairment would be measured as the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying value of goodwill. The new guidance 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. The new guidance is to be applied prospectively to impairment tests beginning January 1, 2020, with early adoption permitted. We would apply this guidance to applicable impairment tests after the adoption date.

In May 2014, the Financial Accounting Standards Board (FASB) issued guidance on the recognition of revenue from contracts with customers (Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers). Revenue recognition will depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The guidance also requires disclosures regarding the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers. The guidance permits two methods of adoption: retrospectively to each prior reporting period presented or retrospectively with the cumulative effect of initially applying the guidance recognized at the date of initial application. The FASB has delayed the effective date of the standard by one year to January 1, 2018, with early adoption permitted as of the original effective date of January 1, 2017. We have performed a review of the requirements of the new guidance and have identified which of our revenue streams will be within the scope of ASU 2014-09. We are continuing to evaluate the impact of the new guidance on our consolidated financial statements, and anticipate we will expand our consolidated financial statement disclosures in order to comply with the new ASU. We presently anticipate that we will adopt the new standard retrospectively to each prior reporting period presented.

In March 2016, the FASB issued guidance on simplifying the accounting for stock compensation (ASU No. 2016-09, Improvements to Employee Share-Based Payment Accounting). The guidance impacts the accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities, and classification in the consolidated statement of cash flows. For U.S. public companies, the updated guidance is effective for fiscal years beginning after December 15, 2016, including interim periods within those fiscal years. We presently have excess tax benefits from stock option exercises that are not recognized because current taxes payable have not been reduced. Under the new guidance, an entity recognizes excess tax benefits regardless of whether or not they reduce taxes payable in the current period. The new guidance also requires all excess tax benefits and tax deficiencies to be recognized as income tax expense or benefit in the statement of operations. Stock compensation expense is currently based on the number of awards that are expected to vest in the future. Under the new guidance, we intend to account for stock option forfeitures when they occur. Changes related to the recognition of excess tax benefits and stock option forfeitures should be applied using a modified retrospective approach by recording a cumulative effect adjustment to equity at the beginning of the adoption period. On January 1, 2017, we recorded a $256,000 credit to equity for the cumulative effect adjustment resulting from our adoption of this new guidance.

In February 2016, the FASB issued new lease accounting guidance (ASU No. 2016-02, Leases). Under the new guidance, at the commencement date, lessees will be required 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 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. The new guidance is not applicable for leases with a term of 12 months or less. Lessor accounting is largely unchanged. Public business entities should apply the amendments in ASU 2016-02 for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early application is permitted upon issuance. Lessees (for capital and operating leases) and lessors (for sales-type, direct financing, and operating leases) must apply a modified retrospective transition approach for leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. The modified retrospective approach would not require any transition accounting for leases that expired before the earliest comparative period presented. Lessees and lessors may not apply a full retrospective transition approach. We are currently evaluating the impact of the new guidance on our

consolidated financial statements.

In July 2015, the FASB issued guidance on simplifying the measurement of inventory (ASU No. 2015-11, Simplifying the Measurement of Inventory). The guidance requires an entity to measure inventory at the lower of cost or net realizable value, which consists of estimated selling prices in the ordinary course of business, less reasonably predictable cost of completion, disposal, and transportation. The new guidance eliminates unnecessary complexity that exists under current "lower of cost or market" guidance. For public entities, the updated guidance is effective for fiscal years beginning after December 15, 2016, including interim periods within those fiscal years. The guidance is to be applied prospectively as of the beginning of an interim or annual reporting period. Our adoption of this standard did not have a material impact on our consolidated financial statements.

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In November 2015, the FASB issued guidance on simplifying the balance sheet classification of deferred taxes (ASU No. 2015-17, Balance Sheet Classification of Deferred Taxes). To simplify the presentation of deferred income taxes, the new guidance requires that deferred tax liabilities and assets be classified as non-current in a classified statement of financial position. Under prior guidance, an entity was required to separate deferred income tax liabilities and assets into current and non-current amounts. The current requirement that deferred tax liabilities and assets of a tax-paying component of an entity be offset and presented as a single amount is not affected. For public entities, the guidance is effective for fiscal years beginning after December 15, 2016, including interim periods within those fiscal years, with early adoption permitted. The guidance may be applied either prospectively to all deferred tax liabilities and assets or retrospectively to all periods presented. We adopted the new guidance on a prospective basis for our year ending December 31, 2015. Financial statements for prior periods were not retrospectively adjusted. The new guidance was adopted to simplify the balance sheet presentation of deferred taxes, and had no other impact on our consolidated financial statements.

NOTE 2 – MARKETABLE SECURITIES

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

	December 31, 2016			
(In thousands)	Cost	Unrealized Gains	Unrealized Losses	Fair Value
Short-Term				
U.S. government and agency obligations	$5,005	$ 4	$ (1)	$5,008
Corporate debt securities and certificates of deposit	1,476	1	(1)	1,476
Asset backed securities	9	—	—	9
Marketable securities – short-term	$6,490	$ 5	$ (2)	$6,493
Long-Term				
U.S. government and agency obligations	$4,815	$ 1	$ (12)	$4,804
Corporate debt securities and certificates of deposit	2,161	—	(17)	2,144
Asset backed securities	1,732	—	(5)	1,727
Equity security	42	11	—	53
Marketable securities – long-term	$8,750	$ 12	$ (34)	$8,728

	December 31, 2015			
(In thousands)	Cost	Unrealized Gains	Unrealized Losses	Fair Value
Short-Term				
U.S. government and agency obligations	$3,806	$ —	$ (2)	$3,804
Corporate debt securities and certificates of deposit	1,440	—	(1)	1,439
Asset backed securities	6	—	—	6
Marketable securities – short-term	$5,252	$ —	$ (3)	$5,249
Long-Term				
U.S. government and agency obligations	$6,681	$ 1	$ (18)	$6,664
Corporate debt securities and certificates of deposit	675	—	(1)	674
Asset backed securities	694	—	(1)	693
Equity security	42	11	—	53
Marketable securities – long-term	$8,092	$ 12	$ (20)	$8,084

Our investments in marketable debt securities all have maturities of less than 5 years. At December 31, 2016, marketable debt securities valued at $6.4 million were in an unrealized gain position totaling $6,000 and marketable debt securities valued at $8.8 million were in an unrealized loss position totaling $36,000 (all had been in an unrealized loss position for less than 12 months). At December 31, 2015, marketable debt securities valued at $2.3 million were in an unrealized gain position totaling $1,000 and marketable debt securities valued at $11.0 million were in an unrealized loss position totaling $23,000 (all had been in an unrealized loss position for less than 12

months).

We hold an investment in one equity security. At both December 31, 2016 and December 31, 2015, our equity security had a fair value of $53,000, and was in an $11,000 unrealized gain position.

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Net pre-tax unrealized losses for marketable securities of $19,000 at December 31, 2016 and net pre-tax unrealized losses for marketable securities of $11,000 at December 31, 2015 were recorded as a component of accumulated other comprehensive loss in stockholders' equity. We received proceeds from the sale of marketable securities of $1.5 million in 2016 and $1.5 million in 2015. No gain or loss was recognized from the sale of marketable securities in 2016 or 2015.

Investments in marketable securities classified as cash equivalents of $5.2 million at December 31, 2016 and $791,000 at December 31, 2015 consist of the following:

	December 31, 2016			
(In thousands)	Cost	Unrealized Gains	Unrealized Losses	Recorded Basis
Corporate debt securities and certificates of deposit	$5,195	$ —	$ —	$ 5,195
	$5,195	$ —	$ —	$ 5,195

	December 31, 2015			
(In thousands)	Cost	Unrealized Gains	Unrealized Losses	Recorded Basis
Corporate debt securities and certificates of deposit	$791	$ —	$ —	$ 791
	$791	$ —	$ —	$ 791

NOTE 3 – DERIVATIVES

We may enter into foreign exchange forward contracts to hedge against the effect of exchange rate fluctuations on cash flows denominated in foreign currencies associated with our subsidiary in Singapore. These transactions are designated as cash flow hedges and are recorded in the accompanying consolidated balance sheet at fair value. The effective portion of the gain or loss on the derivative is reported as a component of other comprehensive income (loss) and reclassified into earnings in the same period during which the hedged transaction affects earnings. Gains and losses on the derivative representing either hedge ineffectiveness or hedge components excluded from the assessment of effectiveness are recognized in current earnings. Hedge ineffectiveness and the amounts excluded from effectiveness testing recognized in earnings on cash flow hedges were not material for the years ended December 31, 2016 and December 31, 2015.

The maximum length of time over which we hedge our exposure to the variability in future cash flows is 12 months. At December 31, 2016, there were no open foreign exchange forward contracts. At December 31, 2015, all of our open foreign exchange forward contracts had maturities of one year or less. The dollar equivalent gross notional amount of our foreign exchange forward contracts designated as cash flow hedges was approximately $1.8 million at December 31, 2015.

Reclassifications of amounts from accumulated other comprehensive loss into earnings include accumulated gains (losses) at the time earnings are impacted by the forecasted transaction. The location in the consolidated statements of operations and consolidated statements of comprehensive loss and amounts of gains and losses related to derivative instruments designated as cash flow hedges are as follows:

	Year Ended December 31, 2016	
(In thousands)	Pretax Gain Recognized in Other Comprehensive Income (Loss) on Effective Portion of Derivative	Pretax Loss Recognized in Earnings on Effective Portion of Derivative as a Result of Reclassification from Accumulated

		Other Comprehensive Loss
Cost of revenues	$ 32	$ (27)
Research and development	14	(6)
Selling, general and administrative	7	(3)
Total	$ 53	$ (36)

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(In thousands)	Year Ended December 31, 2015	
	Pretax Loss Recognized in Other Comprehensive Income (Loss) on Effective Portion of Derivative	Pretax Loss Recognized in Earnings on Effective Portion of Derivative as a Result of Reclassification from Accumulated Other Comprehensive Loss
Cost of revenues	$(185)	$ (352)
Research and development	(71)	(118)
Selling, general and administrative	(42)	(93)
Total	$(298)	$ (563)

At December 31, 2016, there were no amounts recorded in accumulated other comprehensive loss for cash flow hedging instruments. The $147,000 after tax net unrealized loss recorded in accumulated other comprehensive loss at December 31, 2015 for cash flow hedging instruments was reclassified to earnings during 2016. The fair value of our open foreign exchange forward contracts representing losses in the amount of $78,000 as of December 31, 2015 have been recorded in accrued expenses.

Additional information with respect to the impact of derivative instruments on other comprehensive loss is included in Note 4. Additional information with respect to the fair value of derivative instruments is included in Note 5.

Our foreign exchange forward contracts contain credit risk to the extent that our bank counter-parties may be unable to meet the terms of the agreements. We minimize such risk by limiting our counter-parties to major financial institutions. We do not expect material losses as a result of defaults by other parties.

NOTE 4 – COMPREHENSIVE INCOME (LOSS)

Reclassification adjustments are made to avoid double counting for items included in comprehensive income (loss) that are also recorded as part of net income (loss). Reclassifications to earnings related to cash flow hedging instruments are discussed in Note 3.

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

(In thousands)	Year Ended December 31, 2016			Year Ended December 31, 2015		
	Before Tax	Tax Effect	Net of Tax Amount	Before Tax	Tax Effect	Net of Tax Amount
Foreign currency translation adjustments	$(383)	$ —	$ (383)	$(625)	$ —	$ (625)
Net changes related to available-for-sale securities:						
Unrealized gains (losses)	(8)	7	(1)	(78)	—	(78)
Reclassification adjustment for losses included in interest income and other	—	6	6	—	—	—
Total net changes related to available-for-sale securities	(8)	13	5	(78)	—	(78)
Net changes related to foreign exchange forward contracts:						
Unrealized gains (losses)	53	—	53	(298)	—	(298)
Reclassification adjustment for losses included in net income (loss)						
Cost of revenues	27	41	68	352	—	352
Research and development expenses	6	10	16	118	—	118
Selling, general and administrative expenses	3	7	10	93	—	93
Total net changes related to foreign exchange forward contracts	89	58	147	265	—	265
Other comprehensive loss	$(302)	$ 71	$ (231)	$(438)	$ —	$ (438)

At December 31, 2016 and December 31, 2015 components of accumulated other comprehensive loss is as follows:

(In thousands)	Foreign Currency Translation Adjustments	Available-for-Sale Securities	Foreign Exchange Forward Contracts	Accumulated Other Comprehensive Loss
Balances at December 31, 2014	$ (920)	$ 61	$ (412)	$ (1,271)
Other comprehensive loss before reclassifications	(625)	(78)	(298)	(1,001)
Reclassifications from accumulated other comprehensive loss	—	—	563	563
Net current period other comprehensive income (loss)	(625)	(78)	265	(438)
Balances at December 31, 2015	$ (1,545)	$ (17)	$ (147)	$ (1,709)
Other comprehensive income (loss) before reclassifications	(383)	(1)	53	(331)
Reclassifications from accumulated other comprehensive loss	—	6	94	100
Net current period other comprehensive income (loss)	(383)	5	147	(231)
Balances at December 31, 2016	$ (1,928)	$ (12)	$ —	$ (1,940)

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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 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 and open foreign exchange forward contracts as of December 31, 2016 and December 31, 2015 according to the three-level fair value hierarchy.

	Fair Value Measurements at December 31, 2016 Using			
(In thousands)	Balance December 31, 2016	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	$9,812	$ —	$ 9,812	$ —
Corporate debt securities and certificates of deposit	3,620	—	3,620	—
Asset backed securities	1,736	—	1,736	—
Equity security	53	53	—	—
Total marketable securities	$15,221	$ 53	$ 15,168	$ —
Derivative instruments-liabilities:				
Foreign exchange forward contracts	$—	$ —	$ —	$ —

	Fair Value Measurements at December 31, 2015 Using			
(In thousands)	Balance December 31, 2015	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	$10,468	$ —	$ 10,468	$ —
Corporate debt securities and certificates of deposit	2,113	—	2,113	—
Asset backed securities	699	—	699	—
Equity security	53	53	—	—
Total marketable securities	$13,333	$ 53	$ 13,280	$ —
Derivative instruments-liabilities:				
Foreign exchange forward contracts	$78	$ —	$ 78	$ —

During the years ended December 31, 2016 and 2015 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 disclosed 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.

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The fair value for our open foreign exchange forward contracts is based on foreign currency spot and forward rates obtained from reputable financial institutions, with resulting valuations periodically validated by obtaining foreign currency spot rate and forward quotes from other industry standard sources or third party or counterparty quotes. The fair value of our foreign exchange forward contracts representing losses in the amount of $78,000 as of December 31, 2015 has been recorded in accrued expenses.

The carrying amounts of financial instruments such as cash equivalents, accounts receivable, other assets, accounts payable, accrued expenses and other liabilities approximate their related fair values due to the short-term maturities of these instruments. Non-financial assets such as equipment and leasehold improvements, goodwill and intangible assets 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 2016 or 2015.

NOTE 6 – STOCK-BASED COMPENSATION

We have four stock-based compensation plans that are administered by the Compensation Committee of the Board of Directors. We have 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, an Employee Stock Purchase Plan under which shares of our common stock may be acquired by employees at discounted prices, and a Non-Employee Director Stock Plan that provides for automatic grants of stock options and shares of our common stock to non-employee directors. We also have another stock incentive plan for non-employee directors, but no further awards are made under this plan. 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 our the Employee Stock Purchase Plan.

Employee Stock Incentive Plan

As of December 31, 2016, there are 995,913 shares of common stock reserved in the aggregate for issuance pursuant to outstanding or future awards under our Employee Stock Incentive 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 issued 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. As of December 31, 2016, there were 427,739 shares of common stock available for future awards under our Employee Stock Incentive Plan, including an additional 350,000 shares authorized in May 2016. Reserved shares underlying outstanding awards, including options and restricted shares, that are forfeited are available under the Employee Stock Incentive Plan for future grant.

Non-Employee Director Stock Plan

At our annual meeting on May 20, 2016, our shareholders, upon recommendation of the Board of Directors, approved a new Non-Employee Director Stock Plan. A total of 100,000 shares of common stock were authorized for issuance pursuant to the plan. Under the terms of the new plan, each non-employee director will automatically be granted, on the date of each annual meeting at which such director is elected to serve on the board (beginning with our May 2016 annual meeting), 2,000 shares of our common stock and a stock option to acquire 4,000 shares of our common stock. Shares granted under the plan are not subject to vesting restrictions. Each stock option granted under this plan will be fully exercisable, have an exercise price equal to the closing price of our common stock on the date of grant and have a term of 10 years.

Pursuant to the plan, on the date of our 2016 annual meeting, we issued a total of 8,000 shares of our common stock and stock options to acquire 16,000 shares of our common stock to our non-employee directors. The shares had a total fair market value on the date of grant equal to $136,000 (grant date fair value of $16.97 per share) and the options had a total fair market value on the date of grant using the Black-Scholes model equal to $139,000 (grant date fair value of $8.71 per option to acquire one share of our common stock). As of December 31, 2016, there were 76,000 shares of common stock available for future awards under the Non-Employee Director Stock Plan.

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Stock Option Activity

The following is a summary of stock option activity for the year ended December 31, 2016:

	Options Outstanding	Weighted Average Exercise Price Per Share
Outstanding, December 31, 2015	570,500	$ 8.00
Granted	58,000	22.34
Exercised	(80,875)	8.87
Expired	—	—
Forfeited	—	—
Outstanding, December 31, 2016	547,625	$ 9.39
Exercisable, December 31, 2016	248,313	$ 8.53

The intrinsic value of an option is the amount by which the fair value of the underlying stock exceeds the option's exercise price. For options outstanding at December 31, 2016, the weighted average remaining contractual term of all outstanding options was 4.83 years and their aggregate intrinsic value was $9.2 million. At December 31, 2016, the weighted average remaining contractual term of options that were exercisable was 4.29 years and their aggregate intrinsic value was $4.4 million. The aggregate intrinsic value of stock options exercised was $720,000 in 2016 and $182,000 in 2015. We received proceeds from stock option exercises of $465,000 in 2016 and $458,000 in 2015. No tax benefit was realized from the exercise of these stock options and no amounts were credited to additional paid-in capital. The aggregate fair value of shares that vested in 2016 was $495,000 and the aggregate fair value of shares that vested in 2015 was $264,000.

The fair value of stock options granted to our employees and non-employee directors 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, 2016, 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:

	2016	2015
Risk-free interest rates	1.24% - 1.89%	1.56%
Expected life in years	5.09 - 7.50	5.01 - 5.11
Expected volatility	42.22% - 46.67%	40.82%
Dividend yield	0.00%	0.00%
Weighted average fair value on grant date	$9.88	$2.73

Restricted Stock Units

Restricted stock units are granted under our Employee Stock Incentive Plan. There were 10,700 restricted stock units granted in 2016 and their weighted average grant date fair value was $26.40 each. There were 18,250 restricted stock units granted in 2015 and their weighted average grant date fair value was $7.18 each. The aggregate fair value of outstanding restricted stock units based on the closing share price of our common stock as of December 31, 2016 was $1.2 million. No tax benefit was realized from the vesting of restricted stock units and no amounts were credited to additional paid-in capital. The aggregate fair value of restricted stock units that vested, based on the closing share price of our common stock on the vesting date, was $394,000 for the year ended December 31, 2016 and $129,000 for the year ended December 31, 2015.

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A summary of activity in non-vested restricted stock units for the year ended December 31, 2016 is as follows:

Non-vested restricted stock units	Shares	Weighted Average Grant Date Fair Value
Non-vested at December 31, 2015	54,315	$ 7.43
Granted	10,700	26.40
Vested	(19,466)	7.32
Forfeited	—	—
Non-vested at December 31, 2016	45,549	$ 11.93

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. There were 36,481 shares issued under this plan in the year ended December 31, 2016 and 35,845 shares issued in the year ended December 31, 2015. As of December 31, 2016, 59,276 shares remain available for future issuance under this plan.

Stock Grant Plan for Non-Employee Directors

Previously, we had a stock grant plan for non-employee directors that provided for automatic grants of 1,000 shares of our common stock to each of our non-employee directors upon their re-election to the Board of Directors. This plan was terminated and our non-employee directors did not receive any share grants under this plan on the date of our 2016 annual meeting at which our shareholders approved the new Non-Employee Director Stock Plan. Share issuances under the stock grant plan for non-employee directors were 4,000 shares in the year ended December 31, 2015. The shares issued in 2015 had a fair market value on the date of grant equal to $41,000 (weighted average grant date fair value of $10.36).

Stock Based Compensation Information

Pre-tax stock-based compensation expense for 2016 included $648,000 for stock options and restricted stock units, $79,000 for our employee stock purchase plan, and $136,000 for 8,000 shares issued to board members for compensation purposes. Pre-tax stock-based compensation expense for 2015 included $398,000 for stock options and restricted stock units, $72,000 for our employee stock purchase plan, and $41,000 for 4,000 shares issued to board members for compensation purposes.

(In thousands)	2016	2015
Pre-tax stock-based compensation expense	$863	$511
Income tax benefits related to stock-based compensation	$428	$—

We use historical data to estimate pre-vesting forfeitures. At December 31, 2016, the total unrecognized compensation cost related to non-vested stock-based compensation arrangements was $1.6 million and the related weighted average period over which such cost is expected to be recognized is 1.98 years.

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NOTE 7 – NET INCOME (LOSS) PER SHARE

Basic net income (loss) per share is computed by dividing net income (loss) 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 and the purchase of shares under our employee stock purchase plan, as calculated using the treasury stock method. All common equivalent shares were excluded from the calculation of net loss per diluted share in 2015 due to their anti-dilutive effect. As a result, no common equivalent shares were included in the calculation of net loss per diluted share for the year ended December 31, 2015. The components of net income (loss) per basic and diluted share are as follows:

(In thousands except per share amounts)	Net Income	Weighted Average Shares Outstanding	Per Share Amount
Year Ended 12/31/2016:			
Basic	$11,562	6,832	$ 1.69
Dilutive effect of common equivalent shares	—	217	(0.05)
Dilutive	$11,562	7,049	$ 1.64
(In thousands except per share amounts)	Net Loss	Weighted Average Shares Outstanding	Per Share Amount
Year Ended 12/31/2015:			
Basic	$(2,089)	6,706	$ (0.31)
Dilutive effect of common equivalent shares	—	—	—
Dilutive	$(2,089)	6,706	$ (0.31)

The calculation of diluted net loss per common share excludes 108,000 potentially dilutive shares for the year ended December 31, 2016 and 587,000 potentially dilutive shares for the year ended December 31, 2015, because their effect would be anti-dilutive.

NOTE 8 – OTHER FINANCIAL STATEMENT DATA

Inventories consist of the following:

	December 31,	
(In thousands)	2016	2015
Raw materials and purchased parts	$6,475	$6,787
Work in process	826	508
Finished goods	4,230	5,970
Total inventories	$11,531	$13,265

Equipment and leasehold improvements consist of the following:

	December 31,	
(In thousands)	2016	2015
Equipment	$13,624	$12,500
Leasehold improvements	1,628	1,588
	15,252	14,088
Accumulated depreciation and amortization	(12,814)	(11,720)
	$2,438	$2,368

Total depreciation and amortization expense related to equipment and leasehold improvements was $1.3 million for the year ended December 31, 2016 and $1.2 million for the year ended December 31, 2015.

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Intangible assets consist of the following:

(In thousands)	December 31, 2016			December 31, 2015		
	Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Patents	$2,567	$ (2,351)	$216	$2,513	$ (2,253)	$260
Software	206	(82)	124	206	(53)	153
Marketing assets and customer relationships	101	(33)	68	101	(21)	80
Non-compete agreements	101	(71)	30	101	(45)	56
	$2,975	$ (2,537)	$438	$2,921	$ (2,372)	$549

Amortization expense for the years ended December 31, 2016 and 2015 is as follows:

(In thousands)	Year Ended December 31,		Weighted Avg. Remaining Life-Years at December 31, 2016
	2016	2015	
Patents	$98	$110	2.5
Software	29	29	4.2
Marketing assets and customer relationships	12	12	5.8
Non-compete agreements	26	25	1.2
	$165	$176	

Amortization of patents has been classified as research and development expense in the accompanying consolidated statement of operations. Estimated aggregate amortization expense based on current intangible assets for the next five years is expected to be as follows: $157,000 in 2017, $107,000 in 2018, $73,000 in 2019, $62,000 in 2020 and $20,000 in 2021.

Accrued expenses consist of the following:

(In thousands)	December 31,	
	2016	2015
Wages and benefits	$2,673	$1,014
Warranty liability	717	584
Other	366	361
	$3,756	$1,959

Other liabilities consist of the following:

(In thousands)	December 31,	
	2016	2015
Deferred rent	$111	$204
Warranty liability	73	61
Deferred warranty revenue	66	3
	$250	$268

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 component suppliers, warranty obligations are affected by product failure rates, material usage and service delivery costs incurred in correcting a product failure. Should actual product failure rates, material usage or service delivery costs differ from our estimates, revisions to the estimated warranty liability would be required and could be material. Our warranty liability is included as a component of accrued expenses. At the end of each reporting period we revise our estimated warranty liability based on these

factors.

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

	Year Ended December 31,	
(In thousands)	2016	2015
Balance at beginning of period	$645	$839
Accrual for warranties	688	441
Warranty revision	(53)	(19)
Settlements made during the period	(490)	(616)
Balance at end of period	790	645
Current portion of estimated warranty liability	(717)	(584)
Long-term estimated warranty liability	$73	$61

Deferred warranty revenue:

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

	Year Ended December 31,	
(In thousands)	2016	2015
Balance at beginning of period	$199	$475
Revenue deferrals	581	353
Amortization of deferred revenue	(434)	(629)
Total deferred warranty revenue	346	199
Current portion of deferred warranty revenue	(280)	(196)
Long-term deferred warranty revenue	$66	$3

NOTE 9 – GOODWILL

We assess our goodwill for impairment in the fourth quarter of each year, and whenever events or changes in circumstances indicate that the carrying value may not be recoverable.

In the fourth quarter of 2016, we performed a qualitative assessment to determine if there was any indication that our goodwill might be impaired. After assessing the totality of events and circumstances, if we determine that it is more likely than not (i.e., a likelihood of more than 50%) that the fair value of the company is greater than its recorded value (i.e. net book value), no further testing is required. If we determine that is more likely than not that the fair value of the company is less than its recorded value, then we are required to perform the first step of the two-step goodwill impairment test. After considering all available evidence, including our significant improved financial performance, improved financial outlook and significant increase in market capitalization, we concluded that it is more likely than not that the fair value of the company exceeds its recorded value. As a result, no further testing was deemed necessary, and we have determined that our goodwill at December 31, 2016 in the amount of $1.4 million was not impaired.

In 2015, when evaluating whether goodwill was impaired, we compared our fair value to our net book value or carrying value (Step 1 of the impairment test). In calculating fair value, we used 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 gave consideration to the control premium in excess of our current market capitalization that might be obtained from a third party acquirer. In the situation where net book value or carrying value exceeds fair value, the amount of impairment loss must be measured. The measurement of impairment (Step 2 of the impairment test) is calculated by determining the implied fair value of goodwill, which equals the excess of any remaining fair value over the fair values assigned to other assets and liabilities. Goodwill impairment is measured as the excess of the carrying amount of goodwill over its implied fair value.

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In determining fair value under the income approach, our expected cash flows are affected by various assumptions. Fair value on a discounted cash flow basis uses our business plan and projections as the basis for expected future cash flow forecasts, with an estimation of residual growth rates thereafter. For our 2015 goodwill impairment tests, we utilized a 15% discount rate and our terminal value was based on a multiple equal to 6 times our projected future earnings before interest, taxes, depreciation and amortization. We believe the significant assumptions used in our 2015 goodwill impairment test, including a 15% discount rate, are reflective of the assumptions currently used in the marketplace to evaluate fair value. Our 2015 analysis indicated that our goodwill was not impaired.

NOTE 10 – INCOME TAXES

Income (loss) before income taxes consists of the following:

	Year Ended December 31,	
(In thousands)	2016	2015
Sources of income (loss) before income taxes:		
United States	$5,135	$(2,994)
Foreign	1,256	933
Total income (loss) before income taxes	$6,391	$(2,061)

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

	Year Ended December 31,	
(In thousands)	2016	2015
Current:		
Federal	$76	$(14)
State	10	4
Foreign	12	—
Total current	$98	$(10)
Deferred:		
Federal	$(4,799)	$(4)
State	—	1
Foreign	(470)	41
Total deferred	$(5,269)	$38
Total provision for income taxes	$(5,171)	$28

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

	Year Ended December 31,	
	2016	2015
Federal statutory rate	34.0 %	34.0 %
State income taxes, net of federal benefit	0.1	(0.2)
U.S. Subpart F income	3.2	(1.0)
Earnings and dividends of foreign affiliate	32.2	(28.9)
Stock based compensation	0.5	(1.4)
Research and experimentation credit	(2.2)	4.6
Foreign rate difference	(7.1)	17.8
Reserve for income taxes	—	0.7
Valuation allowance	(141.9)	(26.1)
Other, net	0.3	(0.8)
Effective tax rate	(80.9)%	(1.3)%

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Our effective tax rate for 2016 was favorably impacted by 141.9% due to a substantial reduction in the valuation allowances for our deferred tax assets. Recognition of the deferred tax liability for the undistributed earnings of our subsidiary in Singapore impacted our effective tax rate by 32.2% in 2016. Receipt of a dividend from our subsidiary in Singapore impacted our income tax rate by a negative 28.9% in 2015.

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

	Year Ended December 31,	
(In thousands)	2016	2015
Gross UTB balance at beginning of year	$1,887	$1,508
Additions based on tax positions related to the current year	178	186
Additions for tax positions of prior years	—	289
Reductions for tax positions of prior years	(96)	(78)
Reductions due to lapse of applicable statute of limitations	(212)	(18)
Gross UTB balance at end of year	$1,757	$1,887
Net UTB balance at end of year	$131	$126

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 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 were $1,000 as of both December 31, 2016 and December 31, 2015. During the year ended December 31, 2016 we recorded a $5,000 increase in our liability for uncertain tax positions that was recorded as income tax expense. Estimated gross interest and penalties included in this amount were $1,000. During the year ended December 31, 2015 we recorded a $14,000 decrease in our liability for uncertain tax positions that was recorded as an income tax benefit. Estimated gross interest and penalties included in this amount were $5,000.

We file income tax returns in the U.S. federal jurisdiction, and various state and foreign jurisdictions. Our federal income tax returns for years after 2012 are still subject to examination by the Internal Revenue Service. We are no longer subject to state and local income tax examinations by tax authorities for years prior to 2012. The Inland Revenue Authority of Singapore recently completed a review of our 2012 income tax return. The review did not result in payment of any additional tax or change in our taxable income.

Deferred tax assets and liabilities consist of the following:

	December 31, 2016		December 31, 2015	
(In thousands)	Assets	Liabilities	Assets	Liabilities
Equipment, leaseholds and intangible amortization, net	$352	$ 395	$377	$ 367
Inventory allowances	783	21	797	6
Accrued expenses	221	—	286	—
Warranty accrual	272	—	222	—
Deferred revenue	181	—	686	—
Accounts receivable allowance	188	—	179	—
Federal and state tax credits	3,624	—	3,319	—
Federal and state net operating loss carry forwards	2,801	—	4,379	—
Foreign net operating loss carry forwards	463	—	394	—
Stock based compensation	381	—	331	—
Unrealized gains and losses	7	—	—	35
Earnings of foreign subsidiary	—	2,520	—	—
Other, net	72	—	73	—
Subtotal	9,345	2,936	11,043	408
Valuation allowance	(1,086)	—	(10,644)	—

Total deferred tax assets and liabilities	$8,259	$ 2,936	$399	$ 408

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We have significant deferred tax assets as a result of temporary differences between taxable income on our tax returns and U.S. GAAP income, research and development tax credit carry forwards and federal, state and foreign 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.

During the fourth quarter of 2016, we substantially reduced the valuation allowances recorded against our United States and Singapore based deferred tax assets, primarily due to significant improvement in our operating results and financial outlook. 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 where we operate, our financial performance in recent quarters, statutory carry forward periods and tax planning alternatives. Finally, we considered both our near and long-term financial outlook. After considering all available evidence both positive and negative, we concluded that a substantial reduction in the valuation allowances recorded against our United States and Singapore based deferred tax assets was appropriate. A similar analysis was performed at December 31, 2015, resulting in $10.6 million of valuation allowances for our deferred tax assets, primarily due to our cumulative historical operating losses. The $9.6 million reduction in valuation allowances for 2016 caused us to recognize a significant non-cash income tax benefit. The reduction resulted from utilization of available net operating loss carryforwards and our determination that significant valuation allowances were no longer needed due to the improvement in our operating results and financial outlook. At December 31, 2016, the remaining valuation allowance primarily relates to state net operating loss carryforwards and state R&D tax credit carryforwards that we do not expect to use.

At December 31, 2016, we have federal R&D tax credit carryforwards of $3.7 million that will begin to expire in 2019 and a federal net operating loss carry forward of $8.1 million that will begin to expire in 2022, if unused. At December 31, 2016, there are $278,000 of tax benefits from the exercise of stock options that will be recognized through a cumulative effect adjustment to stockholder's equity on January 1, 2017 from our adoption of ASU No. 2016-09, Improvements to Employee Share-Based Payment Accounting.

Cash payments for income taxes, net of refunds received, were $144,000 for the year ended December 31, 2016. Cash payments for income taxes, net of refunds received, were $16,000 for the year ended December 31, 2015.

During 2015, our Singapore subsidiary repatriated approximately $3.6 million to our U.S. based parent, of which approximately $1.9 million had been previously taxed. We were able to accomplish the repatriation without having to pay cash taxes given our available U.S. net operating loss carryforwards. At the time, we viewed the repatriation as a one-time event that did not change our position regarding our intent to permanently reinvest the undistributed earnings of our Singapore subsidiary. We may have our Singapore subsidiary pay another dividend in the near future due to the growing intercompany receivable balance and because we do not intend to leave cash balances invested with our international subsidiaries. As a result, we have concluded that it is no longer our intent to permanently reinvest the undistributed earnings of our Singapore subsidiary. Accordingly, a $2.5 million deferred tax liability has been recorded at December 31, 2016 for the Singapore subsidiary's undistributed earnings. There is no intent to repatriate funds from any of our other international subsidiaries due to the scope of their operations or because they have accumulated deficits. The amount of any deferred tax liability related to the undistributed earnings of these subsidiaries would be negligible. If we were to change our position on permanent reinvestment of undistributed earnings of these subsidiaries, it is anticipated that any such change would not have a significant impact on our financial position or results of operations.

NOTE 11 – OPERATING LEASES

We lease a 50,724 square foot mixed office and warehouse facility in Golden Valley, Minnesota. The lease has a term of 90 months and expires on December 31, 2018. The lease contains an escalation clause and two renewal options of three years each. 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.

We lease a 10,165 square foot mixed office and warehouse facility in Bloomington, Minnesota. The lease expires on April 30, 2018. Rental expense, including the effects of lease incentives, is recognized on a straight-line basis over the term of the lease.

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We are also required to pay insurance, property taxes and other operating expenses related to the leased facility. We recently extended the lease for a period of 8 months so that it now expires on December 31, 2018.

We lease a 19,805 square foot mixed office and warehouse facility in Singapore. The current lease contains an escalation clause and expires in July 2017. We recently extended the lease for a period of three years expiring in July 2020. The new lease contains one three year renewal option. In addition, we lease facilities for the operations of our other subsidiaries under operating leases that expire at various times through November 2018.

Total rent expense was $1.3 million for the year ended December 31, 2016 and $1.2 million for the year ended December 31, 2015. At December 31, 2016, the future minimum lease payments required under non-cancelable operating lease agreements are as follows:

Year ending December 31,	(In thousands)
2017	$ 1,357
2018	1,342
2019	411
2020	240
Total	$ 3,350

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

We have a retirement savings plan pursuant to Section 401(k) of the Internal Revenue Code (the Code), whereby 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 $261,000 in 2016 and $300,000 in 2015.

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 $30,000 in 2016 and $33,000 in 2015.

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

The following summarizes our revenue by product line:

(In thousands)	2016	2015
SMT and High Precision 3D OEM Sensors	$18,797	$13,022
Semiconductor Sensors	10,061	7,677
SMT Inspection Systems	28,680	13,578
3D Scanning Solutions and Services	8,702	6,853
Total	$66,240	$41,130

The following summarizes certain significant customer information:

(In thousands)	Significant Customer	Percentage of Revenues
Year ended December 31, 2016	B	12 %
	C	11 %
Year ended December 31, 2015	A	10 %
	B	11 %

Export sales as a percentage of total sales were 81% for the year ended December 31, 2016 and 72% for the year ended December 31, 2015. Export sales are attributed to the country where the product is shipped. Substantially all of our export sales are negotiated, invoiced and paid in U.S. dollars.

As of December 31, 2016, accounts receivable from significant customer B were $925,000 and accounts receivable from significant customer C were $417,000.

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Revenue by geographic area is summarized as follows:

	Year Ended December 31,	
(In thousands)	2016	2015
United States	$12,754	$11,452
Americas	1,613	1,424
Netherlands	8,033	4,533
Other Europe	9,183	7,462
China	14,626	4,060
South Korea	7,634	3,462
Japan	4,505	4,802
Other Asia	7,873	3,590
Other	19	345
Total revenues	$66,240	$41,130

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, 2016 and 2015 are as follows:

(In thousands)	2016	2015
Long-lived assets:		
United States	$2,721	$2,782
Europe	7	2
Asia and other	148	133
Total long-lived assets	$2,876	$2,917

NOTE 14 – CONTINGENCIES

We are periodically a defendant in miscellaneous 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 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)

2016	March 31	June 30	September 30	December 31
Revenues	$19,114	$18,631	$ 15,040	$ 13,455
Gross margin	7,944	8,145	6,641	6,325
Income from operations	2,391	1,987	1,137	638
Net income	2,263	2,041	1,172	6,086
Net income per share - Basic (1)	0.33	0.30	0.17	0.88
Net income per share - Diluted (1)	0.33	0.29	0.16	0.85

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2015	March 31	June 30	September 30	December 31
Revenues	$9,545	$10,254	$ 9,937	$11,394
Gross margin	4,561	4,569	4,239	4,772
Income (loss) from operations	(826)	(655)	(721)	39
Net loss	(781)	(761)	(514)	(33)
Net loss per share - Basic (1)	(0.12)	(0.11)	(0.08)	0.00
Net loss per share - Diluted (1)	(0.12)	(0.11)	(0.08)	0.00

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

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders

CyberOptics Corporation

We have audited the internal control over financial reporting of CyberOptics Corporation (a Minnesota corporation) and subsidiaries (the "Company") as of December 31, 2016, based on criteria established in the 2013 Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). 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 conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether 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, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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.

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on criteria established in the 2013 Internal Control—Integrated Framework issued by COSO.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated financial statements of the Company as of and for the year ended December 31, 2016, and our report dated March 14, 2017 expressed an unqualified opinion on those financial statements.

/s/ GRANT THORNTON LLP

Minneapolis, Minnesota

March 14, 2017

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders

CyberOptics Corporation

We have audited the accompanying consolidated balance sheets of CyberOptics Corporation (a Minnesota corporation) and subsidiaries (the "Company") as of December 31, 2016 and 2015, and the related consolidated statements of operations, comprehensive income (loss), changes in stockholders' equity, and cash flows for each of the two years in the period ended December 31, 2016. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of CyberOptics Corporation and subsidiaries as of December 31, 2016 and 2015, and the results of their operations and their cash flows for each of the two years in the period ended December 31, 2016 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), the Company's internal control over financial reporting as of December 31, 2016, based on criteria established in the 2013 Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated March 14, 2017 expressed an unqualified opinion on those financial statements.

/s/ GRANT THORNTON LLP

Minneapolis, Minnesota

March 14, 2017

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

NONE.

ITEM 9A. 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.

(i). 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. 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 CyberOptics Corporation; (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 CyberOptics Corporation are being made only in accordance with authorizations of management and directors of CyberOptics Corporation; 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, 2016. 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, 2016.

Our internal control over financial reporting as of December 31, 2016 has been audited by Grant Thornton LLP, as stated in their report included elsewhere herein.

(ii). During the quarter ended December 31, 2016, there has been no change in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

NONE.

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PART III.

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information contained under the headings “Proposal I–Election of Directors,” “Information About our Board of Directors and its Committees and Other Corporate Governance Matters” and “Section 16(a) Beneficial Ownership Reporting Compliance” of the Company’s definitive proxy statement for its annual meeting of shareholders to be held May 11, 2017 (the 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” and "Equity Compensation Plan Information" of the Proxy Statement is hereby incorporated by reference.

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” and "Related Person Transactions" 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.

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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, 2016 and 2015.
Consolidated Statements of Operations for the years ended December 31, 2016 and 2015.
Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2016 and 2015.
Consolidated Statements of Cash Flows for the years ended December 31, 2016 and 2015.
Consolidated Statements of Stockholders' Equity for the years ended December 31, 2016 and 2015.
Notes to the Consolidated Financial Statements.

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(b) LIST OF EXHIBITS

Exhibit Number	Description
2.0	Asset purchase agreement by and among LDI Acquisition Corp., Laser Design Inc., GKS Services Corp., Innovative Design Group, Inc. 3D Scanning Technologies, Ltd., and certain shareholders of Laser Design, Inc. dated as of January 14, 2014 (incorporated by reference to Exhibit 2.0 to the Company's annual report on Form 10-K for the year ended December 31, 2013).
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 Stock Option Plan for Non-Employee Directors, as amended (incorporated by reference to Exhibit 4.2 of the Company’s Registration Statement on Form S-8 filed August 10, 2006 (file no 333-136500)).
*4.2	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)
*4.3	CyberOptics Corporation Employee Stock Purchase Plan (incorporated by reference to Exhibit 4.1 of the Company’s Registration Statement on Form S-8 filed August 10, 2011 (file no 333-176196)).
*4.4	CyberOptics Corporation Stock Grant Plan for Non-Employee Directors (incorporated by reference to the Company's Registration Statement on Form S-8 filed August 13, 2014 (file no 333-198100) and Exhibit 4.1 of the Company’s Registration Statement on Form S-8 filed August 14, 2008 (file no 333-153015)).
*4.5	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)
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)
10.8	Tenancy agreement between RBC Investor Services Trust Singapore Limited and CyberOptics Singapore Private Limited dated April 4, 2013 (incorporated by reference to Exhibit 10 to the Company’s quarterly report on Form 10-Q for the quarter ended March 31, 2013).
10.9	Tenancy agreement between RBC Investor Services Trust Singapore Limited and CyberOptics Singapore Private Limited dated December 8, 2016.
*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).
21.0	Subsidiaries of the Company.
23.1	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.
32.0	Certification of Chief Executive Officer and Chief Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.0	Financial statements formatted in 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

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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.

Name	Title	Date
/s/ SUBODH KULKARNI Subodh Kulkarni	President and CEO (Principal Executive Officer)	March 14, 2017
/s/ ALEX B. CIMOCHOWSKI Alex B. Cimochowski	Director	March 14, 2017
/s/ MICHAEL M. SELZER JR. Michael M. Selzer, Jr.	Chairman, Director	March 14, 2017
/s/ IRENE M. QUALTERS Irene M. Qualters	Director	March 14, 2017
/s/ CRAIG D. GATES Craig D. Gates	Director	March 14, 2017
/s/ JEFFREY A. BERTELSEN Jeffrey A. Bertelsen	Vice President, CFO, and COO (Principal Financial Officer and Principal Accounting Officer)	March 14, 2017