

EMCORE CORP
Form 10-K
December 04, 2018
FORM 10-K

x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended September 30, 2018

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

For the transition period from ____ to ____

Commission File Number 001-36632

EMCORE Corporation
(Exact name of registrant as specified in its charter)
New Jersey 22-2746503
(State or other jurisdiction of incorporation or organization) (I.R.S. Employer Identification No.)

2015 W. Chestnut Street, Alhambra, California, 91803
(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (626) 293-3400

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

Title of Each Class	Name of Each Exchange on Which Registered
Common stock, no par value	The Nasdaq Stock Market LLC (Nasdaq Global Market)

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

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

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. " Yes No

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

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

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

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

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

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

The aggregate market value of our common stock held by non-affiliates as of March 29, 2018 (the last business day of our most recently completed second fiscal quarter) was approximately \$132.2 million, based on the closing sale price of \$5.70 per share of common stock as reported on the Nasdaq Global Market. For purposes of this disclosure, shares of common stock held by officers and directors and by each person known by us to own 10% or more of our outstanding common stock have been excluded. This determination of affiliate status is not necessarily a conclusive determination for any other purpose.

As of November 29, 2018, the number of shares outstanding of our no par value common stock totaled 27,607,194.

DOCUMENTS INCORPORATED BY REFERENCE

In accordance with General Instruction G(3) of Form 10-K, certain information required by Part III hereof will either be incorporated into this Form 10-K by reference to our Definitive Proxy Statement for our Annual Meeting of Shareholders filed within 120 days of September 30, 2018 or will be included in an amendment to this Form 10-K filed within 120 days of September 30, 2018.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). These forward-looking statements are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. These forward-looking statements are based on our current expectations and projections about future events and financial trends affecting the financial condition of our business. Such forward-looking statements include, in particular, projections about our future results included in our Exchange Act reports and statements about our plans, strategies, business prospects, changes and trends in our business and the markets in which we operate. These forward-looking statements may be identified by the use of terms and phrases such as "anticipates," "believes," "can," "could," "estimates," "expects," "forecasts," "intends," "may," "plans," "projects," "will," "would," and similar expressions or variations of these terms and similar phrases. Additionally, statements concerning future matters such as our expected liquidity, development of new products, enhancements or technologies, sales levels, expense levels, expectations regarding the outcome of legal proceedings and other statements regarding matters that are not historical are forward-looking statements. Management cautions that these forward-looking statements relate to future events or our future financial performance and are subject to business, economic, and other risks and uncertainties, both known and unknown, that may cause actual results, levels of activity, performance, or achievements of our business or our industry to be materially different from those expressed or implied by any forward-looking statements. Factors that could cause or contribute to such differences in results and outcomes include without limitation the following: (a) the rapidly evolving markets for the Company's products and uncertainty regarding the development of these markets; (b) the Company's historical dependence on sales to a limited number of customers and fluctuations in the mix of products and customers in any period; (c) delays and other difficulties in commercializing new products; (d) the failure of new products: (i) to perform as expected without material defects, (ii) to be manufactured at acceptable volumes, yields, and cost, (iii) to be qualified and accepted by our customers, and (iv) to successfully compete with products offered by our competitors; (e) uncertainties concerning the availability and cost of commodity materials and specialized product components that we do not make internally; (f) actions by competitors; (g) risks and uncertainties related to applicable laws and regulations, including the impact of changes to applicable tax laws and tariff regulations and (h) other risks and uncertainties discussed in Part I, Item 1A, Risk Factors in this Annual Report as well as those discussed elsewhere in this Annual Report, as such risk factors may be amended, supplemented or superseded from time to time by other reports we file with the Securities and Exchange Commission ("SEC"). These cautionary statements apply to all forward-looking statements wherever they appear in this Annual Report.

Forward-looking statements are based on certain assumptions and analysis made in light of our experience and perception of historical trends, current conditions and expected future developments as well as other factors that we believe are appropriate under the circumstances. While these statements represent our judgment on what the future may hold, and we believe these judgments are reasonable, these statements are not guarantees of any events or financial results. All forward-looking statements in this Annual Report are made as of the date hereof, based on information available to us as of the date hereof, and subsequent facts or circumstances may contradict, obviate, undermine, or otherwise fail to support or substantiate such statements. We caution you not to rely on these statements

without also considering the risks and uncertainties associated with these statements and our business that are addressed in this Annual Report on Form 10-K. Certain information included in this Annual Report may supersede or supplement forward-looking statements in our other reports filed with the SEC. We assume no obligation to update any forward-looking statement to conform such statements to actual results or to changes in our expectations, except as required by applicable law or regulation.

EMCORE Corporation
 FORM 10-K
 For The Fiscal Year Ended September 30, 2018

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PART I.

Item 1. Business

Company Overview

EMCORE Corporation, together with its subsidiaries (referred to herein as the “Company,” “we,” “our,” or “EMCORE”), was established in 1984 as a New Jersey corporation. The Company became publicly traded in 1997 and is listed on the Nasdaq Stock Exchange under the ticker symbol EMKR. EMCORE pioneered the linear fiber optic transmission technology that enabled the world’s first delivery of Cable TV directly on fiber, and today is a leading provider of advanced Mixed-Signal Optics products that enable communications systems and service providers to meet growing demand for increased bandwidth and connectivity. The Mixed-Signal Optics technology at the heart of our broadband communications products is shared with our fiber optic gyros and inertial sensors to provide the aerospace and defense markets with state-of-the-art navigations systems technology. With both analog and digital circuits on multiple chips, or even a single chip, the value of Mixed-Signal device solutions is often far greater than traditional digital applications and requires a specialized expertise held by EMCORE which is unique in the optics industry.

EMCORE has fully vertically-integrated manufacturing capability through our Indium Phosphide (“InP”) compound semiconductor wafer fabrication facility at our headquarters in Alhambra, CA. The facility supports EMCORE’s vertically-integrated manufacturing for our laser, transmitter and receiver products for Cable TV and other broadband applications, fiber optic gyro sensors for Navigation Systems, and chip devices for Telecom and Datacom applications.

We currently have one reporting segment: Fiber Optics. This segment is comprised of three product lines: Broadband, Chip Devices and Navigation Systems. Please see our consolidated financial statements and footnotes included in this Annual Report for financial information regarding this segment. Until the quarter ended December 31, 2014, we operated as two segments: Fiber Optics and Photovoltaics. EMCORE's former Solar Photovoltaics business, which was sold in December 2014, provided products for space power applications including high-efficiency multi-junction solar cells, covered interconnect cells and complete satellite solar panels. In addition, as further described below, EMCORE sold certain assets, and transferred certain liabilities, of the Company's telecommunications business, including the ITLA (Integrable Tunable Laser Assembly) micro-ITLA, T-TOSA (Tunable Transmitter Optical Subassembly) and T-XFP (Tunable 10 Gigabit Form Factor Pluggable) product lines within the Company’s telecommunications business, in January 2015. See Note 2 - Summary of Significant Accounting Policies in the notes to our consolidated financial statements for disclosures related to the reclassification of prior period amounts related to discontinued operations as a result of the sale of these businesses to conform to the current period financial statement presentation.

EMCORE’s headquarters and principal executive offices are located at 2015 W. Chestnut Avenue, Alhambra, California, 91803 and our main telephone number is (626) 293-3400. For specific information about us, our products or the markets we serve, please visit our website at <http://www.emcore.com>. The information contained in or linked to our website is not a part of, nor incorporated by reference into, this Annual Report on Form 10-K or a part of any other report or filing with the Securities and Exchange Commission (the “SEC”).

We are subject to the information requirements of the Securities Exchange Act of 1934 (the “Exchange Act”). We file periodic reports, current reports, proxy statements, and other information with the SEC. The SEC maintains a website at <http://www.sec.gov> that contains all of our information that has been filed or furnished electronically with the SEC. We make available free of charge on our website a link to our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as soon as reasonably practicable, after such material is electronically filed with,

or furnished to, the SEC.

Overview of Our Industry and Markets We Serve

InP compound semiconductor-based products provide the foundation of components, subsystems, and systems used in a broad range of technology markets. Compound semiconductor materials can provide electrical or electro-optical functions, such as emitting optical communications signals and detecting optical communications signals.

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Specifically, within our Fiber Optics reporting segment, our Broadband products serve the Cable TV (“CATV”), Satellite Communications and Wireless markets; our Chip products serve the Telecommunications, Fiber-To-The-Premises (“FTTP”), Long-Term Evolution (“LTE”) and Data Center markets; and our Navigation Systems products primarily serve the Aerospace and Defense markets.

Broadband Product Line

Our broadband fiber optic products enable information that is modulated on light signals to be transmitted, routed (switched) and received in communication systems and networks. Our products in this area include:

CATV Products - EMCORE is an established market leader in providing Radio Frequency (“RF”) over fiber products for the CATV industry. Our products enable cable systems providers to increase data transmission distance, speed and bandwidth in Hybrid Fiber Coaxial (“HFC”) networks, with lower noise and power consumption. This empowers cable service operators to meet the growing demand for high-speed Internet, HDTV, Ultra HDTV, video streaming and other advanced services. Our CATV products include forward and return-path analog lasers, receivers, photodetectors and subassembly components; analog and digital fiber-optic transmitters, Quadrature Amplitude Modulation (“QAM”) transmitters, optical switches and CATV fiber amplifiers. EMCORE’s latest series of CATV transmitters feature the Company’s breakthrough Linear Externally Modulated Laser (“L-EML”) technology that enables long distance optical link performance approaching traditional lithium niobate-based externally-modulated transmitters, but is more cost-effective and far exceeds the performance of Distributed Feedback (“DFB”) laser-based systems. EMCORE’s CATV transmitter products are offered on an OEM and ODM basis for integration into complete CATV transmission systems, and the Company also offers its own branded line of EMCORE Medallion series rack-mount CATV transmitters, optical switches and fiber amplifiers. EMCORE’s Medallion series products include DOCSIS 3.1, 1550 nm externally-modulated transmitters, 1550 nm directly-modulated transmitters, optical A/B switches, and 1RU and 2RU rack-mount CATV fiber amplifiers. EMCORE’s Medallion series transmitters, optical switches and fiber amplifiers, in conjunction with EMCORE’s components and Radio Frequency over Glass (“RFoG”) products, comprise a complete end-to-end CATV system.

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Laser, Receiver and Photodetector Component Products - We are a leading provider of optical components including lasers, receivers and photodetectors (also called “photodiodes”). Our products include CWDM (“Coarse Wavelength Division Multiplexing”) and DWDM (“Dense Wavelength Division Multiplexing”), 1310 nm and 1550 nm DFB lasers and optical receivers optimized for CATV, DOCSIS (Data Over Cable Service Interface Specification) 3.1 and wireless applications. Form-factors for laser products include 14-pin butterfly and coaxial TO-Can. In addition, we offer broadband photodiodes used in forward-and return-path broadband and FTTP applications. EMCORE’s component products to the global fiber optics industry leverage the benefits of our vertically-integrated infrastructure, low-cost manufacturing and early access to newly developed internally-produced components.

Radio Frequency over Glass (RFoG) FTTP Products - EMCORE supports deployments of RFoG access networks for homes and businesses worldwide with customer qualified FTTP products for video, voice and data services. Our products include an RFoG Optical Networking Unit (“ONU”) transceiver that features breakthrough OBI (“Optical Beat Interference”) mitigation technology to significantly improve RFoG network performance in high-density customer environments. Additional products for RFoG networks include analog fiber optic transmitters for video overlay, high-power Erbium-Doped Fiber Amplifiers (“EDFA”), analog and digital lasers, photodetectors and subassembly components. Our RFoG-FTTP products provide our customers with higher performance designs and support exceptional network performance capabilities for service providers.

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Satellite/Microwave Communications Products - EMCORE has an established history as a pioneer of innovative RF over fiber solutions for high-performance fiber optic links in the terrestrial portion of satellite communications networks. EMCORE's satellite/microwave band components and complete systems transport an ultra-broadband frequency range including IF, L, S, C, X, DBS, Ku, K, Ka, and Ultra-Wideband signal transport. A wide range of high-dynamic-range applications are supported including satellite antenna remoting and signal distribution, inter- and intra-facility links, site diversity systems, high-performance supertrunking links, electronic warfare systems and radar testing. EMCORE's complete line of satellite and microwave components, subassemblies and systems eliminate the distance limitations of copper-based coaxial systems. Our rack-mount Optiva Platform RF & Microwave Fiber Optic Transport System features a wide range of Simple Network Management Protocol ("SNMP") managed fiber optic transmitters, receivers, optical amplifiers, RF and optical switches, passive devices and Ethernet products that provide high-performance fiber optic transmission between satellite hub equipment and antenna dishes. EMCORE also offers a series of ruggedized microwave flange-mount transmitters, receivers and optical delay line products that meet the reliability and durability requirements of the U.S. government and defense markets. These products are tailored to the requirements of higher frequency applications such as microwave antenna signal distribution, electronic warfare systems and radar system calibration and testing. They provide our customers with high frequency, dynamic range, compact form-factors, and extreme temperature, shock and vibration tolerance. To the extent sales of our satellite/microwave communications products are related to U.S. government contracts or subcontracts, this portion of the business may be subject to renegotiation of profits or termination of contracts or subcontracts at the election of the U.S. government or an agency thereof.

Wireless Communications Products - The increasing dependence on wireless access for social media, text, email, uploading and downloading of apps, music, videos and photos has created greater demand for deployment of cost-effective, high-performance, integrated wireless Distributed Antenna System ("DAS") networks. Wireless systems providers are building systems in subway tunnels, stadiums, hotels, high-speed trains and cruise ships. EMCORE has developed highly linear fiber optic products that are optimized for wireless applications which we believe integrate extremely well into these systems. They enhance bandwidth and linearity to enable the delivery of consistent, reliable signals in areas where interference is high or signals are weak. EMCORE's products for wireless applications include DFB lasers and optical receivers specifically designed for wireless networks, 3 GHz and 6.5 GHz fiber optic links for cellular backhaul, 4G LTE and DAS.

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Chip Devices Product Line

Telecommunications companies throughout the world have been extending their Passive Optical Network (“PON”) infrastructure to business, enterprise and residential customers for several years. Since the sale of the Company’s telecom module products in 2015, EMCORE has supported this market through commercialization of products developed in our InP wafer fab to become a merchant supplier of high-performance chip devices to the Telecom industry. EMCORE’s semiconductor wafer fabrication facility features Metal-Organic Chemical Vapor Deposition (“MOCVD”) reactors for 2" or 3" wafer processing for InP-based devices including high-power gain chips, laser chips, Avalanche Photodiode (“APD”) and P-type Intrinsic N-type (“PIN”) photodetector chips. Our technical team has expertise in device design, epitaxial growth, wafer processing, device characterization, and Chip-On-Block (“COB”), TO-Can and Optical Sub-Assembly (“OSA”) from development through manufacturing.

High-Power Gain Chips Products - EMCORE, through our previous experience in the Telecom tunable module market, has design and engineering expertise in development and manufacturing of high-power gain chips for tunable lasers and transceivers utilized in coherent DWDM optical transmission systems.

GPON Fiber-To-The-Premises (FTTP) and Data Center Chip Products - EMCORE’s chip devices portfolio is continually developing to support the latest advances in PON including GPON, 10G-EPON, XG-PON, XGS-PON, along with 4G LTE and data center applications. The Company’s laser chip devices offering includes 2.5G and 10G PON DFB and 10G Fabry-Perot laser chips. Wavelengths supported include 1270, 1290, 1310, 1330, 1490, 1550 and 1610 nm. In addition, EMCORE offers 2.5G and 10G APD top and bottom illuminated chips and COB, along with 10G PIN photodiode chips, with additional products in development.

Navigation Systems Product Line

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EMCORE, through our vertically-integrated infrastructure, has been able to adapt the same technologies, chip designs and production assets applicable to our CATV products to the development of state-of-the-art Fiber Optic Gyroscopes (“FOG”) that have broad application within the aerospace and defense markets for land, sea, air and space navigation. This gives EMCORE the ability to leverage our high-volume infrastructure for lower volume, higher value-added product. EMCORE has expanded its FOG-based product line to include Inertial Measurement Units (“IMU or IMUs”) and Inertial Navigation Systems (“INS”) that provide superior Size, Weight and Power (“SWaP”) compared to competing or legacy systems. To the extent sales of our navigation system products are related to U.S. government contracts or subcontracts, this portion of the business may be subject to renegotiation of profits or termination of contracts or subcontracts at the election of the U.S. government or an agency thereof.

Fiber Optic Gyroscope Products - EMCORE’s FOG program has received multiple U.S. patents and has been qualified for several key military programs for applications including Unmanned Aerial Systems (“UAS”), line-of-site stabilization, aviation and aeronautics. All EMCORE FOGs feature advanced optics with only three components for simplified assembly along with Digital Signal Processing (“DSP”) or Field Programmable Gate Array (“FPGA”) for higher accuracy, lower noise and greater efficiency. The integrated DSP or FGPA also improves optical drift stability and enables higher linearity and greater environmental flexibility. EMCORE’s FOG products range from tactical to navigational grade gyros where the critical specifications for fiber length, Angle Random Walk (“ARW”) and drift rate improves through the product line to provide customers greater flexibility in choosing the performance level that best meets their application.

Inertial Measurement Units and Navigation Systems Products - EMCORE’s IMU and INS systems are based on our advanced FOG technology and provide superior SWaP compared to competing systems. Our products provide customers the flexibility to choose options from straightforward IMU operation to full navigation and are higher performance form, fit and function replacements for other IMUs and legacy systems. EMCORE’s IMUs and INS products deliver high-precision with up to five-times better performance than competing units in compact, portable form-factors that provide standalone aircraft grade navigator performance at one-third the size of competing systems. Recently EMCORE launched its new EMCORE-Orion™ series of high-precision Micro Inertial Navigation (MINAV) systems designed primarily for applications where navigation aids such as GPS are unavailable or denied. The advanced technology incorporated enables these systems to provide performance close to that of traditional RLG (Ring Laser) INS with one-third the SWaP. We believe the EMCORE MINAV’s low SWaP makes it an ideal inertial navigation system for unmanned aerial vehicle and dismounted soldier applications, and the units can operate as navigators or very precise IMUs with lower noise and greater stability than competing systems.

Customers

Our major customers include: ARRIS International plc, BUPT-GuoAn Broadband, Cisco Systems Inc. and Commscope and their respective affiliates, who each at times have represented greater than 10% of our consolidated revenue in the fiscal years ended September 30, 2018, 2017 and 2016. In the fiscal year ended September 30, 2018, ARRIS International plc and Cisco Systems Inc. and their respective affiliates each represented greater than 10% of our consolidated revenue. See Note 15 - Geographical Information in the notes to our consolidated financial statements for additional information about our significant customers.

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Strategic Plan

Strategy and Alternatives Committee of the Board of Directors

In addition to organic growth and development of our existing Fiber Optics business, we intend to pursue other strategies to enhance shareholder value. The Strategy and Alternatives Committee of the Company's Board of Directors (the "Strategy Committee"), which was established in December 2013, is charged with overseeing the Company's strategic plan and evaluating strategic opportunities and alternatives available to the Company, including potential mergers, acquisitions, divestitures and other key strategic transactions outside the ordinary course of the Company's business. Accordingly, the Strategy Committee may from time to time consider strategic opportunities to enhance shareholder value, which may include acquisitions, investments in joint ventures, partnerships, and other strategic alternatives, such as dispositions, reorganizations, recapitalizations or other similar transactions, the repurchase of shares of our outstanding common stock or payment of dividends to our shareholders. The Strategy Committee may engage financial and other advisors to assist it in doing so. Accordingly, the Strategy Committee and our management may from time to time be engaged in evaluating potential strategic opportunities and may enter into definitive agreements with respect to such transactions or other strategic alternatives. However, there is no assurance that the Strategy Committee will identify further strategic opportunities that the Company will determine to pursue, or that the consideration of any such opportunity would result in the completion of a strategic transaction. The Strategy Committee met six (6) times during the fiscal year ended September 30, 2018.

Sale of Photovoltaics and Digital Products Businesses

On September 17, 2014, EMCORE entered into an Asset Purchase Agreement (the "Photovoltaics Agreement") with SolAero Acquisition Corporation ("SolAero"), a Delaware corporation and an affiliate of private equity firm Veritas Capital, pursuant to which SolAero acquired substantially all of the assets, and assumed substantially all of the liabilities, primarily related to or used in connection with the Company's photovoltaics business, including EMCORE's subsidiaries EMCORE Solar Power, Inc. and EMCORE IRB Company, LLC (collectively, the "Photovoltaics Business", and the sale of the Photovoltaics Business, the "Photovoltaics Asset Sale") for \$150.0 million in cash, prior to a \$0.1 million working capital adjustment pursuant to the Photovoltaics Agreement finalized and paid by EMCORE during the fiscal year ended September 30, 2015. On December 10, 2014, EMCORE completed the Photovoltaics Asset Sale.

On October 22, 2014, EMCORE entered into an Asset Purchase Agreement (the "Digital Products Agreement") with NeoPhotonics Corporation, a Delaware corporation ("NeoPhotonics"), pursuant to which the Company sold certain assets and transfer certain liabilities of the Company's telecommunications business (collectively, the "Digital Products Business", and the sale of the Digital Products Business, the "Digital Products Assets Sale") to NeoPhotonics for an aggregate purchase price of \$17.5 million, subject to certain purchase price adjustments, consisting of \$1.5 million in cash at closing and a promissory note in the principal amount of \$16.0 million (the "Promissory Note"). The Promissory Note provided that it would bear interest of 5.0% per annum for the first year and 13.0% per annum for the second year, payable semi-annually in cash, and would mature two years from the closing of the transaction. In addition, the Promissory Note was subject to prepayments under certain circumstances, and was secured by certain of the assets sold to NeoPhotonics in the transaction.

On January 2, 2015, EMCORE and NeoPhotonics entered into Amendment No. 1 (the "APA Amendment") to the Digital Products Agreement. Among other things, the APA Amendment revised the nature and timing of the financial deliverable requirements of the Company to NeoPhotonics under the original Digital Products Agreement. The assets sold pursuant to the Digital Products Agreement included certain fixed assets, inventory, accounts receivable and intellectual property for the ITLA, micro-ITLA, T-TOSA and T-XFP product lines within the Company's

telecommunications business. On January 2, 2015, EMCORE completed the sale of the Digital Products Business. On April 16, 2015, EMCORE and NeoPhotonics entered into an agreement to adjust the purchase price for the Digital Products Business, resulting in an adjusted balance of the Promissory Note of \$15.5 million. On April 17, 2015, NeoPhotonics paid in full the balance outstanding of the Promissory Note of \$15.5 million, plus accrued interest of \$0.2 million.

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We used a portion of the proceeds from the Photovoltaics Asset Sale and the Digital Products Assets Sale (collectively, the "Asset Sales") to pay for transaction costs associated with the Asset Sales, make payments required pursuant to existing retention award agreements, repay certain indebtedness, and for general working capital purposes. In June 2015, we also used a portion of the proceeds from the Asset Sales to repurchase 6.9 million shares of our common stock for an aggregate cost of \$45.0 million (excluding fees and expenses) pursuant to a modified "Dutch auction" tender offer we commenced in May 2015. In addition, in July 2016, we used a portion of the proceeds from the Asset Sales to pay a special cash dividend to our shareholders of \$1.50 per share, or a total of \$39.2 million. The dividend was paid on July 29, 2016 to shareholders of record as of July 18, 2016. See Note 14 - Equity for additional information.

Sources of Raw Materials

We depend on a limited number of suppliers for certain raw materials, components, and equipment used in our products. We continually review our supplier relationships to mitigate risks and lower costs, especially where we depend on one or two suppliers for critical components or raw materials. While maintaining inventories that we believe are sufficient to meet our near-term needs, we strive not to carry significant inventories of raw materials. Accordingly, we maintain ongoing communications with our suppliers in order to prevent any interruptions in supply, and have implemented a supply-chain management program to maintain quality and lower purchase prices through standardized purchasing efficiencies and design requirements. To date, we generally have been able to obtain sufficient quantities of critical supplies in a timely manner.

We are subject to rules promulgated by the SEC pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act regarding the use of "conflict minerals". These rules have imposed and will continue to impose additional costs and may introduce new risks related to our ability to verify the origin of any "conflict minerals" used in our products.

Manufacturing

We utilize MOCVD (metal-organic chemical vapor deposition) systems that are capable of processing virtually all compound semiconductor-based materials. Our operations include wafer fabrication, device design and production and fiber optic module, subsystem and system design and manufacture. Many of our manufacturing operations are computer monitored or controlled to enhance production output and statistical control. We employ a strategy of minimizing ongoing capital investments, while maximizing the variable nature of our cost structure. We maintain supply agreements with key suppliers. Where we can gain cost advantages while maintaining quality and intellectual property control, we outsource the production of certain products, subsystems, components, and subassemblies to contract manufacturers located overseas. Our contract manufacturers maintain comprehensive quality assurance and delivery systems, and we continuously monitor them for compliance.

Our various manufacturing processes involve extensive quality assurance systems and performance testing. Our facilities have acquired and maintain certification status for their quality management systems. Our manufacturing facilities located in Alhambra, California; and Beijing, China are registered to ISO 9001 standards.

Sales and Marketing

We sell our products worldwide through our direct sales force, application engineers, third party sales representatives and distributors. Our sales force communicates with our customers' engineering, manufacturing, and purchasing personnel to provide optimized customer solutions through product design, qualifications, performance, and price. Our strategy is to use our direct sales force to sell to original equipment manufacturers and key accounts and to expand our

use of distribution partners for increased coverage in both international markets and certain domestic segments.

Throughout our sales cycle, we work closely with our customers to qualify our products into their product lines and platforms. As a result, we develop strategic and long-lasting customer relationships with products and services that are tailored to our customers' requirements. We focus our marketing communication efforts on increasing brand awareness, communicating our technologies' advantages, and generating leads for our sales force. We use a variety of marketing methods, including our website, participation at trade shows, and selective advertising to achieve these goals.

Externally, our marketing group works with customers to define requirements, characterize market trends, define new product development activities, identify cost reduction initiatives, and manage new product introductions. Internally, our marketing group communicates and manages customer requirements with the goal of ensuring that our product development activities are aligned with our customers' needs. These product development activities allow our marketing group to manage new product introductions and market trends. See Note 15 - Geographical Information in the notes to the consolidated financial statements for disclosures related to geographic revenue and significant customers.

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Research and Development

Our research and development efforts have been focused on maintaining our technological competitive edge by working to improve the quality and features of our product lines. We are also making investments to expand our existing technology and infrastructure in an effort to develop new products and production technology that we can use to expand into new markets. Our industry is characterized by rapid changes in process technologies with increasing levels of functional integration. Our efforts are focused on designing new proprietary processes and products, on improving the performance of our existing materials, components, and subsystems, and on reducing costs in the product manufacturing process.

As part of the ongoing effort to cut costs, many of our projects have focused on developing lower cost versions of our existing products. In view of the high cost of development, we solicit research contracts that provide opportunities to enhance our core technology base and promote the commercialization of targeted products. Generally, internal research and development funding is used for the development of products that will be released within twelve months and external funding is used for long-term research and development efforts.

We believe that in order to remain competitive, we must invest significant financial resources in developing new product features and enhancements and in maintaining customer satisfaction worldwide. Research and development expense was \$15.4 million, \$12.5 million and \$9.9 million for the fiscal years ended September 30, 2018, 2017 and 2016, respectively. As a percentage of revenue, research and development expenses were 18.0%, 10.2% and 10.8% for the fiscal years ended September 30, 2018, 2017 and 2016, respectively. Our research and development expense consists primarily of compensation expense including non-cash stock-based compensation expense, as well as engineering and prototype costs, depreciation expense, and other overhead expenses, as they relate to the design, development, and testing of our products. These costs are expensed as incurred.

Intellectual Property and Licensing

We protect our proprietary technology by applying for patents, where appropriate, and in other cases by preserving the technology, related know-how, and information as trade secrets. The success and competitive advantage enjoyed by our product lines depends heavily on our ability to obtain intellectual property protection for our proprietary technologies. We also acquire, through license grants or assignments, rights to patents on inventions originally developed by others. As of September 30, 2018, we held approximately 55 U.S. patents and approximately 25 foreign patents and had over 5 additional patent applications pending. The issued patents cover various products in the major markets we serve. Our U.S. patents will expire on varying dates between 2019 and 2035. These patents and patent applications claim protection for various aspects of current or planned commercial versions of our materials, components, subsystems, and systems.

We also have entered into license agreements with other organizations, under which we have obtained exclusive or non-exclusive rights to practice inventions claimed in various patents and applications issued or pending in the U.S. or other foreign jurisdictions. We do not believe our financial obligations under any of these agreements adversely affects our business, financial condition, or results of operations.

We rely on trade secrets to protect our intellectual property when we believe that publishing patents would make it easier for others to reverse engineer our proprietary processes. We also rely on other intellectual property rights such as trademarks and copyrights where appropriate.

Environmental Regulations

We are subject to U.S. federal, state, and local laws and regulations concerning the use, storage, handling, generation, treatment, emission, release, discharge, and disposal of certain materials used in our research and development and production operations, as well as laws and regulations concerning environmental remediation, homeland security, and employee health and safety. The production of wafers and devices involves the use of certain hazardous raw materials, including, but not limited to, ammonia, phosphine, and arsine. We have in-house professionals to address compliance with applicable environmental, homeland security, and health and safety laws and regulations. We believe that we are currently in compliance with all applicable federal, state, and local environmental protection laws and regulations.

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Competition

The markets for our products are extremely competitive and are characterized by rapid technological change, frequent introduction of new products, short product life cycles, and with respect to certain of our product lines, significant price erosion. We face actual and potential competition from numerous domestic and international companies. Many of these companies have significant engineering, manufacturing, marketing, and financial resources.

Partial lists of our competitors in the markets in which we participate include:

Broadband

CATV Systems - Our primary competitors include BK Tel, Hangzhou-Prevail, Oplink and Furukawa

Lasers & Components - Our primary competitors include Applied Optoelectronics, Finisar, Sumitomo Electric and Fujitsu

Satellite & Microwave Communications - Our primary competitors include Foxcom, MITEQ, Inc., Glenair, Microwave Photonic Systems and Vialite

Chip Level Devices - Our primary competitors include MACOM, Broadcom, Mitsubishi, GCS and Renesas

Navigation Systems - Our primary competitors include Northrup Grumman, Honeywell, iXblue and KVH Industries

In addition to the companies listed above, we compete with many research institutions and universities for research funding. We also sell our products to current competitors and companies with the capability of becoming competitors. As the markets for our products grow, new competitors are likely to emerge and current competitors may increase their market share. In the European Union (“EU”) and certain countries throughout the world, political and legal arrangements encourage the purchase of domestically produced goods, which places us at a disadvantage in those regions or countries.

There are substantial barriers to entry by new competitors across our product lines. These barriers include the large number of existing patents, the time and costs required to develop products, the technical difficulty in manufacturing semiconductor-based products, the lengthy sales and qualification cycles, and the difficulties in hiring and retaining skilled employees with the required scientific and technical backgrounds. We believe that the primary competitive factors within our current markets are product cost, yield, throughput, performance and reliability, breadth of product line, product heritage, customer satisfaction, and customer commitment to competing technologies. Competitors may develop enhancements to or future generations of competitive products that offer superior price and performance characteristics. We believe that in order to remain competitive, we must invest significant financial resources in developing new product features and enhancements and in maintaining customer satisfaction worldwide.

Order Backlog

EMCORE's product sales are made pursuant to purchase orders, often with short lead times. These orders are subject to revision or cancellation and often are made without deposits. Products typically ship within the same quarter in which a purchase order is received; therefore, our order backlog at any particular date is not necessarily indicative of actual revenue or the level of orders for any succeeding period and may not be comparable to prior periods.

Seasonality

In certain of our previous fiscal years, we have experienced an increase in revenues in our third and fourth fiscal quarters due to increased sales of our CATV products resulting from an increased build of cable networks during seasons with warmer weather.

Employees

As of September 30, 2018, we had approximately 391 employees, including approximately 188 international employees that are located primarily in China. This represents an increase of approximately 27 employees when compared to September 30, 2017, primarily as a result of an increase in international employees. None of our employees are covered by a collective bargaining agreement. We have never experienced any labor-related work stoppage and believe that our employee relations are good.

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Competition is intense in the recruiting of personnel in the semiconductor industry and fiber optics industries. Our ability to attract and retain qualified personnel is essential to our continued success. We are focused on retaining key contributors, developing our staff, and cultivating their commitment to our Company.

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ITEM 1A. Risk Factors

We are a small company and dependent on a few products for our success.

We are a small company with a narrow, focused portfolio of products. Our small size could cause our cash flow and growth prospects to be more volatile and makes us more vulnerable to focused competition. As a small company, we will be subject to greater revenue fluctuations if our older product lines' sales were to decline faster than we anticipate. In addition, we may not be able to appropriately restructure or maintain our supporting functions to fit the needs of a small company, which could adversely affect our business, financial condition, results of operations, and cash flows.

We are substantially dependent on revenues from our cable television ("CATV") business and from a small number of customers. A substantial decrease in sales in our CATV business or the loss of or decrease in sales from any one of these customers could adversely affect our business, financial condition, results of operations, and cash flows.

We are substantially dependent on revenues from sales of our CATV products. Sales of our CATV products may decline or fluctuate significantly in the future, and we may not be able to offset any decline in sales of our CATV products with sales of other products. Any decrease in sales of our CATV products without a corresponding increase in sales of our other products would harm our business, operating results, financial condition and cash flows.

Also, a small number of customers account for a significant portion of our revenue, and our dependence on orders from a relatively small number of customers makes our relationship with each customer critically important to our business. For example, for the fiscal year ended September 30, 2018, sales to two customers accounted for an aggregate of 60.3% of our total consolidated revenues, for the fiscal year ended September 30, 2017, sales to three customers accounted for an aggregate of 71% of our total consolidated revenues and for the fiscal year ended September 30, 2016, sales to three customers accounted for an aggregate of 61% of our total consolidated revenues. Sales from any of our major customers may decline or fluctuate significantly in the future. We may not be able to offset any decline in sales from our existing major customers with sales from new customers or other existing customers. Because of our reliance on a limited number of customers, any decrease in sales from, or loss of, one or more of these customers without a corresponding increase in sales from other customers would harm our business, operating results, financial condition and cash flows.

In addition, any negative developments in the business of existing significant customers could result in significantly decreased sales to these customers, which could seriously harm our business, operating results, financial condition and cash flows, and if there is consolidation among our customer base, our customers may be able to command increased leverage in negotiating prices and other terms of sale, which could adversely affect our profitability. If we are required to reduce our pricing, our revenue and gross margins would be adversely impacted. Consolidation among our customer base may also lead to reduced demand for our products, replacement of our products by the combined entity with those of our competitors and cancellations of orders, each of which could adversely affect our business, financial condition, results of operations, and cash flows.

Although we are attempting to expand our customer base, the markets in which we sell our products are dominated by a relatively small number of companies, thereby limiting the number of potential customers. Accordingly, our success will depend on our continued ability to develop and manage relationships with significant customers, and we expect that the majority of our sales will continue to depend on sales of our products to a limited number of customers for the foreseeable future.

If spending for CATV and optical communications networks declines, our business may suffer.

Our future success depends on continued capital investment in CATV and global communications networks infrastructure and on continued demand for high-bandwidth, high-speed communications networks and the ability of original equipment manufacturers to meet this demand. Spending on CATV and communications networks is limited by several factors, including limited investment resources, uncertainty regarding the long-term evolution and sustainability of service provider business models, and a changing regulatory environment. We cannot be certain that demand for bandwidth-intensive content will continue to grow at the same pace in the future or that communications service providers will continue to increase spending to meet such demand. If expectations for growth of CATV and communications networks and bandwidth consumption are not realized and investment in CATV and communications networks does not grow as anticipated, our business, results of operations, and gross margins could be harmed.

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We have incurred losses from continuing operations and our future profitability is not certain.

For the fiscal year ended September 30, 2018, loss from continuing operations was \$17.5 million. For the fiscal years ended September 30, 2017, and 2016, income from continuing operations was \$8.2 million and \$2.6 million, respectively. Our operating results for future periods are subject to numerous uncertainties and we cannot be certain that we will be profitable or that we will not experience substantial losses in the future. If we are not able to increase revenue and reduce our costs, we may not be able to achieve profitability in future periods and our business, financial condition, results of operations and cash flows may be adversely affected.

We are subject to the cyclical nature of the markets in which we compete and any future downturn may reduce demand for our products and revenue.

In the past, the markets in which we compete have experienced significant downturns, often connected with, or in anticipation of, the maturation of product cycles, for both manufacturers' and their customers' products, and declining general economic conditions. These downturns have been characterized by diminished product demand, production overcapacity, high inventory levels, and accelerated erosion of average selling prices. These markets are impacted by the aggregate capital expenditures of service providers and enterprises as they build out and upgrade their network infrastructure. These markets are highly cyclical and characterized by constant and rapid technological change, pricing pressures, evolving standards, and wide fluctuations in product supply and demand.

We may experience substantial period-to-period fluctuations in future results of operations. Any future downturn in the markets in which we compete, or changes in demand for our products from our customers, could result in a significant reduction in our revenue and may also increase the volatility of the price of our common stock.

In addition, the communication networks industry from time to time has experienced and may again experience a pronounced downturn. To respond to a downturn, many service providers and enterprises may slow their capital expenditures, cancel or delay new developments, reduce their workforces and inventories, and take a cautious approach to acquiring new equipment and technologies, any of which could cause our results of operations to fluctuate from period to period and harm our business.

Our future revenue is inherently unpredictable. As a result, our operating results are likely to fluctuate from period to period, and we may fail to meet the expectations of our analysts and/or investors, which may cause volatility in our stock price and may cause our stock price to decline.

Our quarterly and annual operating results have fluctuated substantially in the past and are likely to fluctuate significantly in the future due to a variety of factors, some of which are outside of our control. Factors that could cause our quarterly or annual operating results to fluctuate include:

- a downturn in the markets for our customers' products;
- discontinuation by our vendors of, or unavailability of, components or services used in our products;
- disruptions or delays in our manufacturing processes or in our supply of raw materials or product components;
- a failure to anticipate changing customer product requirements;

- market acceptance of our products;
- cancellations or postponements of previously placed orders;
- increased financing costs or any inability to obtain necessary financing;
- the impact on our business of current or future cost reduction measures;
- a loss of key personnel or the shortage of available skilled workers;

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economic conditions in various geographic areas where we or our customers do business;

- the impact of political uncertainties, such as government sequestration and uncertainties surrounding the federal budget, customer spending and demand for our products;

significant warranty claims, including those not covered by our suppliers;

product liability claims;

other conditions affecting the timing of customer orders;

reductions in prices for our products or increases in the costs of our raw materials;

effects of competitive pricing pressures, including decreases in average selling prices of our products;

fluctuations in manufacturing yields;

obsolescence of products;

research and development expenses incurred associated with new product introductions;

natural disasters, such as hurricanes, earthquakes, fires, and floods;

the emergence of new industry standards;

the loss or gain of significant customers;

the introduction of new products and manufacturing processes;

changes in technology;

intellectual property disputes;

customs (including tariffs imposed on our products or raw materials, equipment or components used in the production of our products), import/export, and other regulations of the countries in which we do business;

the occurrence of M&A activities; and

acts of terrorism or violence and international conflicts or crises.

In addition, the limited lead times with which several of our customers order our products restrict our ability to forecast

revenue. We may also experience a delay in generating or recognizing revenue for a number of reasons. For example, orders at the beginning of each quarter typically represent a small percentage of expected revenue for that quarter. We depend on obtaining orders during each quarter for shipment in that quarter to achieve our revenue objectives. Failure to ship these products by the end of a quarter may adversely affect our results of operations and cash flows.

As a result of the foregoing factors, we believe that period-to-period comparisons of our results of operations should not be solely relied upon as indicators of future performance.

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Changes in U.S. and international trade policies, particularly with regard to China, may adversely impact our business and operating results.

The U.S. government has recently made statements and taken certain actions that may lead to potential changes to U.S. and international trade policies, including recently imposed tariffs affecting certain products manufactured in China. The U.S. and China have applied tariffs or announced tariffs to be applied in the future to certain of each other's exports. With respect to the tariffs that took effect in September 2018, certain of our broadband products manufactured by our Chinese affiliate were included in the tariffs imposed on imports into the U.S. from China. In addition, other products manufactured by our Chinese affiliate may be included on lists of products to be targeted by proposed tariff increases that may be implemented in the future. As a result of these tariffs imposed by the U.S. government, China has recently imposed retaliatory tariffs affecting certain products manufactured in the U.S. In September 2018, certain of our chip products manufactured by us in the U.S. were included in the tariffs imposed on imports into China from the U.S., and other products manufactured by us in the U.S. may be included on lists of products to be targeted by proposed tariff increases that may be implemented by China in the future. Due to the implementation of these tariffs, sales of our products manufactured in China and shipped to the U.S. and sales of our products manufactured in the U.S. and shipped to China could each decrease, which would negatively impact our business.

In addition, it is unknown whether and to what extent new tariffs (or other new laws or regulations) will be adopted that increase the cost of importing products into the U.S., or that might trigger retaliatory action by U.S. trading partners. Further, it is unknown what effect that any such new tariffs or retaliatory actions would have on us or our industry and customers. For example, there are risks that the Chinese government may, among other things, require the use of local suppliers, compel companies that do business in China to partner with local companies to conduct business and provide incentives to government-backed local customers to buy from local suppliers. If any new tariffs, legislation and/or regulations are implemented, or if existing trade agreements are renegotiated or if China or other affected countries take retaliatory trade actions, such changes could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We have substantial operations in China, which exposes us to risks inherent in doing business in China.

In an effort to keep manufacturing costs down, we operate a manufacturing facility in China. Our China-based activities are subject to greater political, legal, and economic risks than those faced by our other operations. In particular, the political, legal, and economic climate in China (both at the national and regional levels) is extremely volatile and unpredictable. Our ability to operate in China may be adversely affected by changes in, or our failure to comply with, Chinese laws and regulations, such as those relating to taxation, import and export tariffs, environmental regulations, land use rights, intellectual property, labor and employment laws and other matters, which laws and regulations remain highly underdeveloped and subject to change for political or other reasons, with little or no prior notice. Moreover, the enforceability of applicable existing Chinese laws and regulations is uncertain. For example, since Chinese administrative and court authorities have significant discretion in interpreting and implementing statutory and contract terms, it may be more difficult to evaluate the outcome of administrative and court proceedings and the level of legal protection we would receive. These uncertainties may impede our ability to enforce the contracts we have entered into with our distributors, business partners, customers and suppliers. In addition, protections of intellectual property rights and confidentiality in China may not be as effective as in the U.S. or other countries or regions. All of these uncertainties could limit the legal protections available to us and could materially and adversely affect our business, financial condition, cash flows and results of operations.

Also, if we are found to be, or to have been, in violation of Chinese laws or regulations governing technology import and export, the relevant regulatory authorities have broad discretion in dealing with such violations, including, but not

limited to, issuing a warning, levying fines, restricting us from benefiting from these technologies inside or outside of China, confiscating our earnings generated from the import or export of such technology or even restricting our future import and export of any technology.

In addition, we may not obtain the requisite legal permits to continue to operate in China and costs or operational limitations may be imposed in connection with obtaining and complying with such permits. Our business could be adversely harmed by any changes in the political, legal, or economic climate in China, our failure to comply with applicable laws and regulations or our inability to enforce applicable Chinese laws and regulations.

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While under certain circumstances we previously were not subject to certain Chinese taxes and were exempt from customs duty assessment on imported components or materials when our finished products were exported from China, we are no longer eligible for such exemptions due to our current Beijing facility being located in a non-economic zone. In addition, we are required to pay income taxes in China subject to certain tax relief. We may become subject to other forms of taxation and duty assessments in China, including import tariffs as described in more detail above, or may be required to pay for export license fees in the future. In the event that we become subject to any increased taxes or new forms of taxation imposed by authorities in China, our results of operations and cash flows could be adversely affected.

Employee turnover of direct labor in the manufacturing sector in China is high and retention of such personnel is a challenge to companies located in or with operations in China. Although direct labor costs do not represent a high proportion of our overall manufacturing costs, direct labor is required for the manufacture of our products. If our direct labor turnover rates are higher than we expect, or we otherwise fail to adequately manage our direct labor turnover rates, then our business and results of operations could be adversely affected.

We may have difficulty establishing and maintaining adequate management and financial controls over our China operations.

Businesses in China have historically not adopted a western style of management and financial reporting concepts and practices, which includes strong corporate governance, internal controls and computer, financial and other control systems. Moreover, familiarity with accounting principles generally accepted in the United States of America (“U.S. GAAP”) principles and reporting procedures is less common in China. As a consequence and due to our significant operations in China, we may have difficulty finding accounting personnel experienced with U.S. GAAP, and we may have difficulty training and integrating our China-based accounting staff with our U.S.-based finance organization. As a result of these factors, we may experience difficulty in establishing management and financial controls over our China operations. These difficulties include collecting financial data and preparing financial statements, books of account and corporate records and instituting business practices that meet U.S. public-company reporting requirements. We may, in turn, experience difficulties in implementing and maintaining adequate internal controls as required under Section 404 of the Sarbanes-Oxley Act. If we cannot provide reliable and timely financial reports, our brand, operating results, and the market value of our equity securities could be harmed.

We have a large amount of intercompany balances with our China entities, which may be subject to taxes and penalties when we try to pay them down or collect them.

Payments for goods and services into and out of China are subject to numerous and over-lapping government regulation with respect to foreign exchange controls, banking controls, import and export controls, and taxes. We have been operating in China for an extended period of time and have accumulated significant intercompany balances with our related entities. Our ability to repay or collect these balances may be restricted by Chinese laws and, as a result, we may be unable to successfully pay down or collect on these balances. As a consequence, we may be assessed additional taxes in China if we are unable to claim bad debt deductions or incur debt forgiveness income from the cancellation of these intercompany balances. Additionally, if we are found not to have complied with the various local laws surrounding cross border payments, we may incur penalties and fines for non-compliance. Any such taxes, penalties and/or fines could be significant in amount and, as a result, could have an adverse effect on our financial condition and results of operations, including our cash and cash equivalent balances.

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We expect to consider from time to time further strategic opportunities that may involve acquisitions, dispositions, investments in joint ventures, partnerships, and other strategic alternatives that may enhance shareholder value, any of which may result in the use of a significant amount of our management resources or significant costs, and we may not be able to fully realize the potential benefit of such transactions.

We expect to continue to consider acquisitions, dispositions, investments in joint ventures, partnerships, and other strategic alternatives that may enhance shareholder value. The Strategy and Alternatives Committee of the Board and our management may from time to time be engaged in evaluating potential transactions and other strategic alternatives. In addition, from time to time, we may engage financial advisors, enter into non-disclosure agreements, conduct discussions, and undertake other actions that may result in one or more transactions. Although there would be uncertainty that any of these activities or discussions would result in definitive agreements or the completion of any transaction, we may devote a significant amount of our management resources to analyzing and pursuing such a transaction, which could negatively impact our operations. In addition, we may incur significant costs in connection with seeking such transactions or other strategic alternatives regardless of whether the transaction is completed. In the event that we consummate an acquisition, disposition, partnership, or other or strategic alternative in the future, we cannot be certain that we would fully realize the potential benefit of such a transaction and cannot predict the impact that such strategic transaction might have on our operations or stock price. We do not undertake to provide updates or make further comments regarding the evaluation of strategic alternatives, unless otherwise required by law.

Acquisitions of other companies or investments in joint ventures with other companies could adversely affect our operating results, dilute our shareholders' equity, or cause us to incur additional debt or assume contingent liabilities.

To increase our business, maintain our competitive position or for other business or strategic reasons, we may acquire other companies or engage in joint ventures or similar transactions in the future. Acquisitions, joint ventures and similar transactions involve a number of risks that could harm our business and result in the acquired business or joint venture not performing as expected, including:

- insufficient experience with technologies and markets in which the acquired business is involved, which may be necessary to successfully operate and integrate the business;
- problems integrating the acquired operations, personnel, technologies, or products with the existing business and products;
- diversion of management's time and attention from our core business to the acquired business or joint venture;
- potential failure to retain key technical, management, sales, and other personnel of the acquired business or joint venture;
- difficulties in retaining relationships with suppliers and customers of the acquired business, particularly where such customers or suppliers compete with us;
- reliance upon joint ventures which we do not control;
- subsequent impairment of goodwill and acquired long-lived assets, including intangible assets; and
- assumption of liabilities including, but not limited to, lawsuits, environmental liabilities, regulatory liabilities, tax examinations and warranty issues.

We may decide that it is in our best interests to enter into acquisitions, joint ventures or similar transactions that are dilutive to earnings per share or that adversely impact margins as a whole. In addition, acquisitions or joint ventures could require investment of significant financial resources and require us to obtain additional equity financing, which may dilute our shareholders' equity, or require us to incur indebtedness.

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Our ability to achieve operational and material cost reductions and to realize production efficiencies for our operations is critical to our ability to achieve long-term profitability.

We have implemented a number of operational and material cost reductions and productivity improvement initiatives, which are intended to reduce our cost structure at both the cost of revenue and the operating expense levels. Cost reduction initiatives often involve the re-design of our products, which requires our customers to accept and qualify the new designs, potentially creating a competitive disadvantage for our products. These initiatives can be time-consuming, disruptive to our operations, and costly in the short-term. Successfully implementing these and other cost-reduction initiatives throughout our operations is critical to our future competitiveness and ability to achieve long-term profitability. However, we cannot be certain that these initiatives will be successful in creating profit margins sufficient to sustain our current operating structure and business.

Customer demand is difficult to forecast and, as a result, we may be unable to optimally match production with customer demand.

We make planning and spending decisions, including determining the levels of business that we will seek and accept, production schedules, component procurement commitments, personnel needs and other resource requirements, based on our estimates of customer demand. While our customers generally provide us with their demand forecasts, they are typically not contractually committed to buy any quantity of products beyond firm purchase orders. The short-term nature of our customer commitments and the possibility of unexpected changes in demand for their products limit our ability to accurately predict future customer demand. On occasion, customers have required rapid increases in production, which has strained our resources. We may not have sufficient capacity at any given time to meet the volume demands of our customers, or one or more of our suppliers may not have sufficient capacity at any given time to meet our volume demands. Conversely, a downturn in the markets in which our customers compete can cause, and in the past has caused, our customers to significantly reduce the amount of products ordered from us or to cancel existing orders, leading to lower utilization of our facilities. Because many of our costs and operating expenses are relatively fixed, reduction in customer demand would have an adverse effect on our gross margin, results of operations, and cash flow. During an industry downturn, there is also a higher risk that a larger portion of our trade receivables would be uncollectible. In addition, certain of our arrangements with component vendors require us to purchase minimum quantities of components within specific time periods, which could cause us to hold excess inventories of these components during periods concurrent with a decrease in customer demand for our products.

We have limited operating history in the fiber to the home (“FTTH”) market, and our business could be harmed if this market does not develop as we expect and we do not grow our business in this market to the level we expect.

In 2017, we began offering products to the FTTH market, and our radio frequency over glass (“RFoG”) products designed for this market have not yet, and may never, gain widespread acceptance by large multiple system operators (“MSOs”). Our business in this market is dependent on the deployment of our optical components, modules and subassemblies. We are relying on increasing demand for bandwidth-intensive services and telecommunications service providers’ acceptance and deployment of RFoG as a technology supporting service to the home. Without network and bandwidth growth and adoption of our solutions by operators in these markets, we will not be able to sell our products in these markets in high volume or at our targeted margins, which would adversely affect our business, financial condition, results of operations and cash flows. For example, RFoG technology may not be adopted by equipment and service providers in the FTTH market as rapidly as we expect or in the volumes we need to achieve acceptable margins. Network and bandwidth growth may be limited by several factors, including an uncertain regulatory environment, high infrastructure costs to purchase and install equipment and uncertainty as to which competing content delivery solution, such as CATV, will gain the most widespread acceptance. In addition, as we

enter new markets for RFoG or expand our RFoG product offerings in existing markets, our margins may be adversely affected due to competition in those markets and commoditization of competing products. We may also face limitations due to sole or limited sources for components of our RFoG products. If our expectations for the growth of these markets are not realized, our business, financial condition, results of operations and cash flows may be adversely affected.

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Our operating results could be harmed if we are unable to obtain timely deliveries of sufficient components of acceptable quality from sole or limited sources of materials, components, or services, or if the prices of components for which we do not have alternative sources increase.

We currently obtain materials, components, and services used in our products from limited or sole sources. We generally do not carry significant inventories of any raw materials. The reliance on a sole supplier, single qualified vendor or limited number of suppliers could result in delivery or quality problems or reduced control over product pricing, reliability and performance. Because we often do not account for a significant part of our suppliers' businesses, we may not have access to sufficient capacity from these suppliers in periods of high demand. In addition, since we generally do not have guaranteed supply arrangements with our suppliers, we risk serious disruption to our operations if an important supplier terminates product lines, changes business focus, or goes out of business, and we may need large end of life purchases when a sole source supplier is ceasing manufacturing of required components. Because some of these suppliers are located overseas, we may be faced with higher costs of purchasing these materials if the U.S. dollar weakens against other currencies, or if import tariffs are imposed on these materials. If we were to change any of our limited or sole source suppliers, we would be required to re-qualify each new supplier. Re-qualification could prevent or delay product shipments that could adversely affect our results of operations and cash flows. In addition, our reliance on these suppliers may adversely affect our production if the components vary in quality or quantity. If we are unable to obtain timely deliveries of sufficient components of acceptable quality or if the prices of components for which we do not have alternative sources increase, our business, financial condition, results of operations, and cash flows could be materially adversely affected.

If our contract manufacturers fail to deliver qualified products at reasonable prices and on a timely basis, our business, financial condition, results of operations, and cash flows could be adversely affected.

We primarily use contract manufacturers located outside of the U.S. as a less-expensive alternative to our manufacturing of certain products. Contract manufacturers in Asia currently manufacture a significant portion of our high-volume fiber optics products. We supply inventory to our contract manufacturers, and we bear the risk of loss, theft, or damage to our inventory while it is held in their facilities.

If these contract manufacturers do not fulfill their obligations to us, or if we do not properly manage these relationships and the transition of production to these contract manufacturers, our existing customer relationships may suffer. In addition, by undertaking these activities, we run the risk that the reputation and competitiveness of our products and services may deteriorate as a result of the reduction of our ability to oversee and control the assembly process, quality and delivery schedules. If we fail to manage our relationship with our contract manufacturers, or if any of the contract manufacturers experience financial difficulty, delays, disruptions, capacity constraints or quality control problems in their operations, our ability to ship products to our customers could be impaired and our competitive position and reputation could be harmed.

The use of contract manufacturers located outside of the U.S. also subjects us to the following additional risks that could significantly impair our ability to source our contract manufacturing requirements internationally, including:

- unexpected changes in regulatory requirements;
- legal uncertainties regarding liability, tariffs, and other trade barriers;
- inadequate protection of intellectual property in some countries;
- greater incidence of shipping delays;

• greater difficulty in overseeing manufacturing operations;

• greater difficulty in hiring talent needed to oversee manufacturing operations;

• potential political and economic instability and natural disasters;

• potential adverse actions by the U.S. government pursuant to its stated intention to reduce the loss of U.S. jobs;

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natural disasters;

trade and travel restrictions; and

the outbreak of infectious diseases which could result in travel restrictions or the closure of the facilities of our contract manufacturers.

Any of these factors could significantly impair our ability to source our contract manufacturing requirements internationally. Prior to our customers accepting products manufactured at our contract manufacturers, they must qualify the product and manufacturing processes. The qualification process can be lengthy and expensive, with no guarantee that any particular product qualification process will lead to profitable product sales. The qualification process determines whether the product manufactured at our contract manufacturer achieves our customers' quality, performance, and reliability standards. Our expectations as to the time periods required to qualify a product line and ship products in volumes to our customers may be erroneous. Delays in qualification can impair our expected timing of the transfer of a product line to our contract manufacturer and may impair our expected amount of sales of the affected products. Any of these uncertainties could adversely affect our operating results and customer relationships.

In addition, our contract manufacturers may terminate our agreements with them upon prior notice to us or immediately for reasons such as if we become insolvent, or if we fail to perform a material obligation under the agreements. If we are required to change contract manufacturers or assume internal manufacturing operations for any reason, including the termination of one of our contracts, we will likely suffer manufacturing and shipping delays, lost revenue, increased costs and damage to our customer relationships, any of which could harm our business, financial condition, results of operations and cash flows.

We participate in vendor managed inventory programs for the benefit of certain of our customers, which could result in increased inventory levels and/or decreased visibility into the timing of sales.

Certain of our more significant customers have implemented a supply chain management tool called vendor managed inventory ("VMI") that requires us to assume responsibility for maintaining an agreed upon level of consigned inventory at the customer's location or at a third-party logistics provider, based on the customer's demand forecast. Notwithstanding the fact that the supplier builds and ships the inventory, the customer does not purchase the consigned inventory until the inventory is drawn or pulled from the customer or third-party location to be used in the manufacture of the customer's product. Though the consigned inventory may be at the customer's or third-party logistics provider's physical location, it remains inventory owned by the supplier until the inventory is drawn or pulled, which is the time at which the sale takes place. In addition, certain of our customers require us to maintain agreed levels of product inventory at our own locations. Our participation in VMI programs and our commitment to other product inventory requirements at our own locations has resulted in our experiencing higher levels of inventory than we might otherwise and has decreased our visibility into the timing of when our finished goods will ultimately result in revenue-generating sales.

Such VMI programs and other inventory requirements increase the likelihood that estimates of our customers' requirements that prove to be greater than our customers' actual purchases could result in surplus inventory and we could be required to record charges for obsolete or excess inventories. If we are unable to effectively manage our customers' VMI programs or other inventory requirements, our business, financial condition, results of operations and cash flows may be adversely affected.

If we do not keep pace with rapid technological change, our products may not be competitive.

We compete in markets that are characterized by rapid technological change, frequent new product introductions, changes in customer requirements, evolving industry standards, continuous improvement in products and the use of our existing products in new applications. We may not be able to develop the underlying core technologies necessary to create new products and enhancements to our existing products at the same rate as or faster than our competitors, to develop products that effectively compete with competitors' products used in new applications, such as remote physical layer ("remote PHY"), or to license the technology from third parties that is necessary for our products. Product development delays may result from numerous factors, including:

- changing product specifications and customer requirements;
- unanticipated engineering complexities;

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- expense reduction measures we have implemented and others we may implement;

• difficulties in hiring and retaining necessary technical personnel; and

• difficulties in allocating engineering resources and overcoming resource limitations.

We cannot be certain that we will be able to identify, develop, manufacture, market, or support new or enhanced products successfully, if at all, or on a timely, cost effective, or repeatable basis. Our future performance will depend on our successful development and introduction of, as well as market acceptance of, new and enhanced products that address market changes, as well as current and potential customer requirements and our ability to respond effectively to product announcements by competitors, technological changes, or emerging industry standards. Because it is generally not possible to predict the amount of time required and the costs involved in achieving certain research, development and engineering objectives, actual development costs may exceed budgeted amounts and estimated product development schedules may be extended. If we are unable to develop, manufacture, market, or support new or enhanced products successfully, or incur budget overruns or delays in our research and development efforts, our business, financial condition, results of operations, and cash flows may be adversely affected.

Spending to develop and improve our technology may adversely impact our financial results.

We may need to increase our research and development and/or capital expenditures and expenses above our historical run-rate model in order to attempt to improve our existing technology and develop new technology. Increasing our investments in research and development of technology could cause our cost structure to fall out of alignment with demand for our products, which would have a negative impact on our financial results. If we are unable to fund these types of expenditures, we may be unable to improve our technology or develop new technologies, which may adversely affect our business, financial condition, results of operations and cash flows. Further, our research and development programs may not produce successful results, and our new products and services may not achieve market acceptance, create additional revenue or become profitable, which could materially harm our business, prospects, financial results and liquidity.

The competitive and rapidly evolving nature of our industries and pressure from competitors with greater resources has in the past resulted in and is likely in the future to result in reductions in our product prices and periods of reduced demand for our products.

We face substantial competition from a number of companies, many of which have greater financial, marketing, manufacturing, and technical resources than we do. Larger-sized competitors often spend more on research and development, which could give those competitors an advantage in meeting customer demands and introducing technologically innovative products before we do. We expect that existing and new competitors will continue to improve the design of their existing products and will introduce new products with enhanced performance characteristics.

The introduction of new products and more efficient production of existing products by our competitors have resulted and are likely in the future to result in price reductions, increases in expenses, and reduced demand for our products. In addition, some of our competitors may be willing to provide their products at lower prices, accept a lower profit margin, or spend more capital in order to obtain or retain business. Competitive pressures have required us to reduce the prices of some of our products. These competitive forces could diminish our market share and gross margins,

resulting in an adverse effect on our business, financial condition, results of operations, and cash flows.

New competitors may also enter our markets, including some of our current and potential customers who may attempt to integrate their operations by producing their own components and subsystems or acquiring one of our competitors, thereby reducing demand for our products. In addition, rapid product development cycles, increasing price competition due to maturation of technologies, the emergence of new competitors in Asia with lower cost structures, and industry consolidation resulting in competitors with greater financial, marketing, and technical resources could result in lower prices or reduced demand for our products, which could have an adverse effect on our business, financial condition, results of operations, and cash flows.

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Expected and actual introductions of new and enhanced products may cause our customers to defer or cancel orders for existing products and may cause our products to become obsolete. A slowdown in demand for existing products ahead of a new product introduction could result in a write-down in the value of inventory on hand related to existing products. We have in the past experienced a slowdown in demand for existing products and delays in new product development and such delays may occur in the future. To the extent customers defer or cancel orders for existing products due to a slowdown in demand or in anticipation of a new product release, or if there is any delay in development or introduction of our new products or enhancements of our products, our business, financial condition, results of operations, and cash flows could be adversely affected.

Our products are difficult to manufacture. Our production could be disrupted and our results of operations and cash flows could suffer if our production yields are low as a result of manufacturing difficulties.

We manufacture many of our wafers and products in our own production facilities. Difficulties in the production process, such as contamination, raw material quality issues, human error, or equipment failure, could cause a substantial percentage of wafers and devices to be nonfunctional. These problems may be difficult to detect at an early stage of the manufacturing process and often are time-consuming and expensive to correct. Lower-than-expected production yields may delay shipments or result in unexpected levels of warranty claims, either of which could adversely affect our results of operations and cash flows. We have experienced difficulties in achieving planned yields in the past, particularly in pre-production and upon initial commencement of full production volumes, which have adversely affected our gross margins. Because the majority of our manufacturing costs are fixed, achieving planned production yields is critical to our results of operations and cash flows. Changes in manufacturing processes required as a result of changes in product specifications, changing customer needs and the introduction of new product lines could significantly reduce our manufacturing yields, resulting in low or negative margins on those products. In addition, transitioning to automation in certain manufacturing processes could result in manufacturing delays or significantly reduce our manufacturing yields.

Manufacturing yields depend on a number of factors, including the stability and manufacturability of the product design, manufacturing improvements gained over cumulative production volumes, the quality and consistency of component parts and the nature and extent of customization requirements by customers. Higher volume demand for more mature designs requiring less customization generally results in higher manufacturing yields than products with lower volumes, less mature designs and requiring extensive customization. Capacity constraints, raw materials shortages, logistics issues, the introduction of new product lines and changes in our customer requirements, manufacturing facilities or processes or those of our third-party contract manufacturers and component suppliers have historically caused, and may in the future cause, significantly reduced manufacturing yields, negatively impacting the gross margins on, and our production capacity for, those products. Our ability to maintain sufficient manufacturing yields is particularly important with respect to certain products we manufacture, as a result of the long manufacturing process. Moreover, an increase in the rejection and rework rate of products during the quality control process before, during or after manufacture would result in lower yields, gross margins and production capacity. Finally, manufacturing yields and margins can also be lower if we receive and inadvertently use defective or contaminated materials from our suppliers.

Also, we have substantial risk of interruption in manufacturing resulting from fire, natural disaster, equipment failures, or similar events, because we manufacture most of our products using a few facilities, and do not have back-up facilities available for manufacturing these products. We could also incur significant costs to repair and/or replace products that are defective and in some cases costly product redesigns and/or rework may be required to correct a defect. Additionally, any defect could adversely affect our reputation and result in the loss of future orders.

Some of the capital equipment used in the manufacture of our products have been developed and made specifically for us, may not be readily available from multiple vendors, and would be difficult to repair or replace if they were to become damaged or stop working. If any of these suppliers were to experience financial difficulties or go out of business, or if there were any damage to, or a breakdown of our manufacturing equipment at a time when we are manufacturing commercial quantities of our products, our business, financial condition, results of operations, and cash flows could be adversely affected.

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It could be discovered that our products contain defects that may cause us to incur significant costs, divert management's attention, result in a loss of customers, and result in product liability claims.

Our products are complex and undergo quality testing and formal qualification by our customers and us. However, defects may occur from time to time. Our customers' testing procedures involve evaluating our products under likely and foreseeable failure scenarios and over varying amounts of time. For various reasons, such as the occurrence of performance problems that are unforeseeable in testing or that are detected only when products age or are operated under peak stress conditions, our products may fail to perform as expected long after customer acceptance. Failures could result from faulty components or design, problems in manufacturing, or other unforeseen reasons. For the majority of our products, we provide a product warranty of one year or less from date of shipment. For select customers, we provide extended warranties beyond our normal product warranty period for specified failures on a case-by-case basis. As a result, we could incur significant costs to repair or replace defective products under warranty, particularly when such failures occur in installed systems. We have experienced failures in the past and will continue to face this risk going forward, as our products are widely deployed throughout the world in multiple demanding environments and applications. In addition, we may in certain circumstances honor warranty claims after the warranty has expired or for problems not covered by warranty in order to maintain customer relationships. Any significant product failure could result in product recalls, product liability claims, lost future sales of the affected product and other products, as well as customer relations problems, litigation, and damage to our reputation.

In addition, our products are typically embedded in, or deployed in conjunction with, our customers' products, which incorporate a variety of components, modules and subsystems and may be expected to interpolate with modules and subsystems produced by third parties. As a result, not all defects are immediately detectable and when problems occur, it may be difficult to identify the source of the problem. These problems may cause us to incur significant damages or warranty and repair costs, divert the attention of our engineering personnel from our product development efforts, and cause significant customer relations problems or loss of customers, all of which would harm our business. The occurrence of any defects in our products could also give rise to liability for damages caused by such defects. Although we carry product liability insurance to mitigate this risk, insurance may not adequately cover costs that may arise from defects in our products or otherwise, nor will it protect us from reputational harm that may result from such defects. Costs incurred in connection with product recalls or warranty or product liability claims may adversely affect our business, financial condition, results of operations, and cash flows.

Our products are complex and may take longer to develop and qualify than anticipated and we face lengthy sales and qualification cycles for our new products and, in many cases, must invest a substantial amount of time and money before we receive orders.

We are constantly developing new products and using new technologies in these products. These products often take substantial time to develop because of their complexity, rigorous testing and qualification requirements and because customer and market requirements can change during the product development or qualification process. Most of our products are tested by current and potential customers to determine whether they meet customer or industry specifications. The length of the qualification process, which can span a year or more, varies substantially by product and customer and, thus, can cause our results of operations and cash flows to be unpredictable. During a given qualification period, we invest significant resources and allocate substantial production capacity to manufacture these new products prior to any commitment to purchase by customers. In addition, it is difficult to obtain new customers during the qualification period as customers are reluctant to expend the resources necessary to qualify a new supplier if they have one or more existing qualified sources. If we are unable to meet applicable specifications or do not receive sufficient orders to profitably use our allocated production capacity, our business, financial condition, results of operations, and cash flows may be adversely affected.

Our historical and future budgets for operating expenses, capital expenditures, operating leases, and service contracts are based upon our assumptions as to the future market acceptance of our products. Because of the lengthy lead times required for product development and the changes in technology that typically occur while a product is being developed, it is difficult to accurately estimate customer demand for any given product. If our products do not achieve an adequate level of customer demand, our business, financial condition, results of operations, and cash flows may be adversely affected.

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Shifts in industry-wide demands and inventories could result in significant inventory write-downs.

The life cycles of some of our products depend heavily upon the life cycles of the end products into which our products are designed. Products with short life cycles require us to manage production and inventory levels closely. We evaluate our ending inventories on a quarterly basis for excess quantities, impairment of value, and obsolescence. This evaluation includes analysis of sales levels by product and projections of future demand based upon input received from our customers, sales team, and management. If inventories on hand are in excess of demand, or if they are generally greater than 12-months old, appropriate write-downs may be recorded. In addition, we write off inventories that are considered obsolete based upon changes in customer demand, manufacturing process changes that result in existing inventory obsolescence, or new product introductions, which eliminate demand for existing products. Remaining inventory balances are adjusted to approximate the lower of our manufacturing cost or net realizable market value.

If future demand or market conditions are less favorable than our estimates, inventory write-downs may be required. We cannot be certain that obsolete or excess inventories, which may result from unanticipated changes in the estimated total demand for our products and/or the estimated life cycles of the end products into which our products are designed, will not affect us beyond the inventory charges that we have already taken.

The types of sales contracts we use in the markets we serve subject us to unique risks in each of those markets.

We generally do not have long-term supply contracts with our customers, we typically sell our products pursuant to purchase orders with short lead times, and even where we do have supply contracts, our customers are not obligated to purchase any minimum amount of our products. As a result, our customers could stop purchasing our products at any time, and we must fulfill orders in a timely manner to keep our customers satisfied.

Risks associated with the absence of long-term purchase commitments with our customers include the following:

- our customers can stop purchasing our products at any time without penalty;
- our customers may purchase products from our competitors; and
- our customers are not required to make minimum purchases.

These risks are increased by the fact that our customers in this market are large sophisticated companies which have considerable purchasing power and control over their suppliers. If we are unable to fulfill these orders in a timely manner, it is likely that we will lose sales and customers.

Fixed-price development work inherently has more uncertainty than production contracts and, therefore, entails more variability in estimates of the cost to complete the work. Many of these development programs have very complex designs. As technical or quality issues arise, we may experience schedule delays and adverse cost impacts, which could increase our estimated cost to perform the work, either of which could adversely affect our results of operations. Some fixed-price development contracts include initial production units in their scope of work. Successful performance of these contracts depends on our ability to meet production specifications and delivery rates. If we are unable to perform and deliver to contract requirements, our contract price could be reduced through the incorporation of liquidated damages, termination of the contract for default, or other financially significant consequences. Management uses its best judgment to estimate the cost to perform the work and the price we will eventually be paid on fixed-price development programs. While we believe the cost and price estimates incorporated in the financial statements are appropriate, future events could result in either favorable or unfavorable adjustments to those estimates.

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If we identify deficiencies in our current system of internal controls or fail to remediate them, we may not be able to accurately report our financial results or prevent fraud. As a result, our business could be harmed and current and potential investors could lose confidence in our financial reporting, which could have an adverse effect on the trading price of our equity securities.

We are subject to the ongoing internal control provisions of Section 404 of the Sarbanes-Oxley Act of 2002. These provisions provide for the identification of material weaknesses or other lesser deficiencies in internal control over financial reporting, which is a process to provide reasonable assurance regarding the reliability of financial reporting for external purposes in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). If we cannot provide reliable and timely financial reports, our brand, operating results, and the market value of our equity securities could be harmed. We have in the past discovered, and may in the future discover, areas of our internal controls that need improvement.

We have devoted significant resources to remediate and improve our internal controls. We have also been monitoring the effectiveness of these remediated measures. We cannot be certain that these measures will ensure adequate controls over our financial processes and reporting in the future. Any failure to implement required new or improved controls, or difficulties encountered in their implementation, could harm our operating results or cause us to fail to meet our reporting obligations.

Inadequate internal controls could also cause investors to lose confidence in our reported financial information, which could have an adverse effect on the trading price of our equity securities. Further, the impact of these events could also make it more difficult for us to attract and retain qualified persons to serve on our Board of Directors or as executive officers, which could harm our business.

We could be required to record an impairment charge as a result of changes to assumptions used in our impairment testing.

We have substantial long-lived assets recorded on our balance sheet. As of September 30, 2018, we had \$18.2 million of property and equipment, net, on our consolidated balance sheet. If we make changes in our business strategy or if market or other conditions adversely affect our business operations, we may be forced to record an impairment charge related to these assets, which would adversely impact our results of operations. Impairment assessment inherently involves judgment as to assumptions about expected future cash flows and the impact of market conditions on those assumptions. Future events and changes in market conditions, underlying business operations, competition or technologies may impact our assumptions as to prices, costs, holding periods, or other factors that may result in changes in our estimates of future cash flows. Although we believe the assumptions we used in testing for impairment are reasonable, we will continue to evaluate the recoverability of the carrying amount of our property, plant and equipment on an ongoing basis, and significant changes in any one of our assumptions could produce a significantly different result. In such a circumstance, we may incur substantial impairment charges, which would adversely affect our financial results. In any period where our stock price, as determined by our market capitalization, is less than our book value, this too could indicate a potential impairment and we may be required to record an impairment charge in that period.

Changes in accounting standards issued by the Financial Accounting Standards Board ("FASB") could have a material effect on our balance sheet, revenue and result of operations, and could require a significant expenditure of time, attention and resources, especially by senior management.

Our accounting and financial reporting policies conform to U.S. GAAP, which are periodically revised and/or expanded. The application of accounting principles is also subject to varying interpretations over time. Accordingly, we are required to adopt new or revised accounting standards or comply with revised interpretations that are issued from time to time by various parties, including accounting standard setters and those who interpret the standards, such as the FASB and the SEC and our independent registered public accounting firm. Such new financial accounting standards may result in significant changes that could adversely affect our financial condition and results of operations.

In February 2016, the FASB issued ASU 2016-02, Leases, which requires all operating leases with lease terms longer than twelve months be recorded as lease assets and lease liabilities on our consolidated balance sheets. Implementing changes required by new standards, requirements or laws likely will require a significant expenditure of time, attention and resources. It is impossible to completely predict the impact, if any, on us of future changes to accounting standards and financial reporting and corporate governance requirements.

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Refer to Note 1 - Description of Business, Note 2 - Summary of Significant Accounting Policies and Note 3 - Recent Accounting Pronouncements and U.S. Tax Reform of the notes to the consolidated financial statements for further discussion of these new accounting standards, including the implementation status and potential impact to our consolidated financial statements.

We have significant international sales, which expose us to additional risks and uncertainties.

For the fiscal years ended September 30, 2018, 2017 and 2016, sales to customers located outside the U.S. accounted for approximately 19%, 20% and 28%, respectively, of our annual consolidated revenue, with revenue assigned to geographic regions based on our customers' billing address. Sales to customers in Asia represent the majority of our international sales. We believe that international sales will continue to account for a significant percentage of our revenue as we seek international expansion opportunities. In addition, certain of our sales to customers with a U.S. billing address may be physically shipped to a location outside of the U.S. Our international sales and operations are subject to a number of material risks, including, but not limited to:

- political and economic instability or changes in U.S. government policy with respect to these foreign countries may inhibit export of our products and limit potential customers' access to U.S. dollars in a country or region in which those potential customers are located;

- we may experience difficulties in enforcing our legal contracts or the collecting of foreign accounts receivable in a timely manner and we may be forced to write off these receivables;

- tariffs and other barriers may make our products less cost competitive;

- the laws of certain foreign countries may not adequately protect our trade secrets and intellectual property or may be burdensome to comply with;

- potentially adverse tax consequences to our customers may damage our cost competitiveness;

- customs, import/export, and other regulations of the countries in which we do business may adversely affect our business;

- different technical standards or requirements, such as country or region-specific requirements to eliminate the use of lead

- currency fluctuations may make our products less cost competitive, affecting overseas demand for our products or otherwise adversely affecting our business; and

- language and other cultural barriers may require us to expend additional resources competing in foreign markets or hinder our ability to effectively compete.

Negative developments in one or more countries or regions in which we operate or sell our products could result in a reduction in demand for our products, the cancellation or delay of orders already placed, difficulties in producing and delivering our products, threats to our intellectual property, difficulty in collecting receivables, or a higher cost of doing business, any of which could negatively impact our business, financial condition, cash flows and results of operations. In addition, we may be exposed to legal risks under the laws of the countries outside the U.S. in which we do business, as well as the laws of the U.S. governing our business activities in those other countries, such as the U. S. Foreign Corrupt Practices Act ("FCPA").

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Our failure to successfully manage the transition of certain of our manufacturing operations from our Langfang facility to our new Beijing location could harm our business, financial condition, results of operations and cash flows.

In February 2016, we leased a new manufacturing facility near Beijing, China. We have relocated the manufacture of our existing product lines and sub-assemblies previously manufactured at our Langfang facility to our Beijing facility and have closed our Langfang facility. This transition has and may continue to cause us to incur costs associated with some duplication of facilities, equipment and personnel, and require us to install and/or transplant complex manufacturing equipment and processes and to hire and train a new workforce. In addition, we are subject to the requirements of a different regional government than we were subject to at our Langfang facility, which creates additional uncertainty. If we are unable to manage this transfer and training smoothly and comprehensively, we could suffer delays in recognizing efficiencies, harm to our reputation with our customers, and loss of customers. If we are unable to successfully manage the relocation or initiation of the manufacture of these products, our business, financial condition, results of operations and cash flows could be harmed.

We could be subject to legal and regulatory consequences if we fail to comply with applicable export control laws and regulations.

Exports of certain of our products are subject to export controls imposed by the U.S. government and administered by the United States Departments of State and Commerce. In certain instances, these regulations may require pre-shipment authorization from the administering department. For products subject to the Export Administration Regulations, or EAR, administered by the Department of Commerce's Bureau of Industry and Security, the requirement for a license is dependent on the type and end use of the product, the final destination, the identity of the end user and whether a license exception might apply. Virtually all exports of products subject to the International Traffic in Arms Regulations, or ITAR, administered by the Department of State's Directorate of Defense Trade Controls, require a license.

Obtaining necessary export licenses can be difficult and time-consuming. Failure to obtain necessary export licenses could significantly reduce our revenue and adversely affect our business, financial condition, results of operations and cash flows. We could be subject to investigation and potential regulatory consequences, including, but not limited to, a no-action letter, monetary penalties, debarment from government contracting or denial of export privileges and criminal sanctions, any of which would adversely affect our business, financial condition, results of operations and cash flows. Compliance with U.S. government regulations may also subject us to significant fees and expenses, including legal expenses, and require us to expend significant time and resources. Finally, the absence of comparable restrictions on competitors in other countries may adversely affect our competitive position.

For a portion of our business, we are subject to extensive government regulation, and our failure to comply with applicable regulations could subject us to penalties that may restrict our ability to conduct our business.

As a contractor and/or subcontractor to the U.S. government, we are subject to and must comply with various government regulations that impact our revenue, operating costs, profit margins and the internal organization and operation of our business. The most significant regulations and regulatory authorities affecting the portion of our business related to U.S. government contracts include the following:

the Federal Acquisition Regulations, Defense Federal Acquisition Regulation Supplement and other supplemental agency regulations, which comprehensively regulate the formation and administration of, and performance under, U.S. government contracts;

• the Truth in Negotiations Act, which requires certification and disclosure of all factual cost and pricing data in connection with contract negotiations;

• the False Claims Act and the False Statements Act, which impose penalties for payments made on the basis of false facts provided to the government and on the basis of false statements made to the government, respectively; and

• the Foreign Corrupt Practices Act, which prohibits U.S. companies from providing anything of value to a foreign official to help obtain, retain or direct business, or obtain any unfair advantage.

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Our failure to comply with applicable regulations, rules and approvals or misconduct by any of our employees could result in the imposition of fines and penalties, the loss of our government contracts or our suspension or debarment from contracting with the U.S. government generally, any of which could harm our business, financial condition, results of operations and cash flows. We are also subject to certain regulations of comparable government agencies in other countries, and our failure to comply with these non-U.S. regulations could also harm our business, financial condition, results of operations and cash flows.

Our business related to government contracts subjects us to additional risks.

We believe that the growth of our navigation business for the foreseeable future will depend to a certain degree on our ability to win government contracts and subcontracts, in particular from the Department of Defense. Many of our government customers are subject to budgetary constraints and our continued performance under these contracts or subcontracts, or award of additional contracts or subcontracts from these agencies, could be jeopardized by spending reductions, including constraints on government spending imposed by the Budget Control Act of 2011 and its subsequent amendments, or budget cutbacks at these agencies. The funding of U.S. government programs is uncertain and dependent on continued congressional appropriations and administrative allotment of funds based on an annual budgeting process. We cannot be certain that current levels of congressional funding for our products and services will continue and that our business related to these products will not decline or increase at currently anticipated levels, or that we will not be subject to delays in the negotiation of contracts or increased costs due to changes in the funding of U.S. government programs. A significant decline in government expenditures generally, or with respect to programs for which we provide products, could adversely affect our business and prospects.

In addition, our business could be adversely affected by a negative audit or investigation by the U.S. government. U.S. government agencies, primarily the Defense Contract Audit Agency and the Defense Contract Management Agency, routinely audit and investigate government contractors. These agencies review a contractor's performance under its contracts, cost structure and compliance with applicable laws, regulations and standards. These agencies also may review the adequacy of, and a contractor's compliance with, its internal control systems and policies, including the contractor's purchasing, quality, accounting, property, estimating, compensation and management information systems. Any costs found to be improperly allocated to a specific cost reimbursement contract will not be reimbursed, while such costs already reimbursed must be refunded. If an audit or investigation of our business were to uncover improper or illegal activities, then we could be subject to civil and criminal penalties and administrative sanctions, including termination of contracts, suspension of payments, fines and suspension or debarment from doing business with the U.S. government. We could experience serious harm to our reputation if allegations of impropriety or illegal acts were made against us, even if the allegations were inaccurate. In addition, responding to governmental audits or investigations may involve significant expense and divert management attention. Moreover, if any of our administrative processes and business systems are found not to comply with the applicable requirements, we may be subjected to increased government scrutiny or required to obtain additional governmental approvals that could delay or otherwise adversely affect our ability to compete for or perform contracts. If any of the foregoing were to occur, our business, financial condition, operating results and cash flows may be adversely affected.

Our failure to obtain or maintain the right to use certain intellectual property may adversely affect our business, financial condition, results of operations, and cash flows.

Our industries are characterized by frequent litigation regarding patent and other intellectual property rights. From time to time we have received, and may receive in the future, notice of claims of infringement of other parties' proprietary rights and licensing offers to commercialize third party patent rights. Numerous patents in our industry are held by others, including our competitors and certain academic institutions. Our competitors may seek to gain a

competitive advantage or other third parties may seek an economic return on their intellectual property portfolios by making infringement claims against us. We cannot be certain that:

• infringement claims (or claims for indemnification resulting from infringement claims) will not be asserted against us or that such claims will not be successful;

• future assertions will not result in an injunction against the sale of infringing products, which could require us to cease the manufacture, use or sale of the infringing products, processes or technology and expend significant resources to develop non-infringing technology, adversely affecting our business, results of operations, and cash flows;

• any patent owned or licensed by us will not be invalidated, circumvented, or challenged; or

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we will not be required to obtain licenses or pay substantial damages for past, present and future use of the infringing technology, the expense of which may adversely affect our results of operations, and cash flows.

In addition, effective copyright and trade secret protection may be unavailable or limited in certain foreign jurisdictions. Litigation, which could result in substantial cost and diversion of our resources, may be necessary to defend our rights or defend us against claimed infringement of the rights of others. In certain circumstances, our intellectual property rights associated with government contracts may be limited.

If we fail to protect, or incur significant costs in defending, our intellectual property and other proprietary rights, our business and results of operations could be materially harmed.

Our success depends to a significant degree on our ability to protect our intellectual property and other proprietary rights. We rely on a combination of patent, trademark, trade secret and unfair competition laws, as well as license agreements and other contractual provisions, to establish and protect our intellectual property and other proprietary rights. We have applied for patent registrations in the United States and selected international jurisdictions, most of which have been issued. We cannot guarantee that our pending applications will be approved by the applicable governmental authorities. Moreover, our existing and future patents and trademarks may not be sufficiently broad to protect our proprietary rights or may be held invalid or unenforceable in court. Failure to obtain patent registrations or a successful challenge to our registrations in the United States or other foreign countries may limit our ability to protect the intellectual property rights that these applications and registrations are intended to cover.

We also attempt to protect our intellectual property, including our trade secrets and know-how, through the use of trade secret and other intellectual property laws, and contractual provisions. We enter into confidentiality and invention assignment agreements with our employees and independent consultants. We also use non-disclosure agreements with other third parties who may have access to our proprietary technologies and information. Such measures, however, provide only limited protection, and we cannot be certain that our confidentiality and non-disclosure agreements will not be breached, especially after our employees or those of our third-party contract manufacturers end their employment or engagement, and that our trade secrets will not otherwise become known by competitors or that we will have adequate remedies in the event of unauthorized use or disclosure of proprietary information. Unauthorized third parties may try to copy or reverse engineer our products or portions of our products, otherwise obtain and use our intellectual property, or may independently develop similar or equivalent trade secrets or know-how. If we fail to protect our intellectual property and other proprietary rights, or if such intellectual property and proprietary rights are infringed or misappropriated, we could lose our competitive advantage and our business, results of operations, financial condition and cash flows could be materially harmed.

Policing unauthorized use of our technology is difficult, and we cannot be certain that the steps we have taken will prevent the misappropriation, unauthorized use, or other infringement of our intellectual property rights. Further, we may not be able to effectively protect our intellectual property rights from misappropriation or other infringement in foreign countries where we have not applied for patent protections, and where effective patent, trademark, trade secret, and other intellectual property laws may be unavailable, or may not protect our proprietary rights as fully as U.S. law.

In the future, we may need to take legal actions to prevent third parties from infringing upon or misappropriating our intellectual property or from otherwise gaining access to our technology. Protecting and enforcing our intellectual property rights and determining their validity and scope could result in significant litigation costs and require significant time and attention from our technical and management personnel, which could significantly harm our business. The availability of financial resources may limit our ability to commence or defend such litigation. In addition, we may not prevail in such proceedings. An adverse outcome of such proceedings may reduce our

competitive advantage or otherwise harm our business, financial condition, results of operations and cash flows.

We may be obligated to indemnify our customers and vendors for claims that our intellectual property infringes the rights of others, which may result in substantial expenses to us.

We may be required to indemnify our customers or vendors for intellectual property claims made against them for products incorporating our technology. As such, claims against our customers and vendors may require us to incur substantial expenses, such as legal expenses, damages for past infringement or royalties for future use. Future indemnity claims could adversely affect our business relationships and result in substantial costs to us.

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We face certain litigation risks that could harm our business.

We are and may become subject to various legal proceedings and claims that arise in or outside the ordinary course of business. The results of complex legal proceedings are difficult to predict. Moreover, many of the complaints filed against us do not specify the amount of damages that plaintiffs seek, and we therefore are unable to estimate the possible range of damages that might be incurred should these lawsuits be resolved against us. However, certain of these lawsuits assert types of claims that, if resolved against us, could give rise to substantial damages. Thus, an unfavorable outcome or settlement of one or more of these lawsuits may have an adverse effect on our business, financial condition, results of operations and cash flows. Even if these lawsuits are not resolved against us, the uncertainty and expense associated with unresolved lawsuits could seriously harm our business, financial condition, and reputation. Litigation is costly, time-consuming and disruptive to normal business operations. The costs of defending these lawsuits, particularly the securities class actions and shareholder derivative actions, have been significant, will continue to be costly, and may not be covered by our insurance policies. The defense of these lawsuits could also result in continued diversion of our management's time and attention away from business operations, which could harm our business. For additional discussion regarding litigation in which we are involved, see Note 13 - Commitments and Contingencies in the notes to our consolidated financial statements.

The costs of compliance with state, federal and international legal and regulatory requirements, such as environmental, labor, trade and tax regulations, and customers' standards of corporate citizenship could cause an increase in our operating costs.

We are subject to environmental and health and safety laws and regulations and must obtain certain permits and licenses relating to the use of hazardous materials in our production activities. If our control systems are unsuccessful in preventing a release of these materials into the environment or other adverse environmental conditions or human exposure occurs, we could experience interruptions in our operations and incur substantial remediation and other costs or liabilities. In addition, certain foreign laws and regulations place restrictions on the concentration of certain hazardous materials, including, but not limited to, lead, mercury, and cadmium, in our products. Failure to comply with such laws and regulations could subject us to future liabilities or result in the limitation or suspension of the sale or production of our products. These regulations include the European Union's (EU) Restrictions on Hazardous Substances and Directive on Waste Electrical and Electronic Equipment. Failure to comply with environmental and health and safety laws and regulations may limit our ability to export products to the EU and could adversely affect our business, financial condition, results of operations, and cash flows. In addition, the Department of Homeland Security has commenced a program to evaluate the security of certain chemicals which may be of interest to terrorists, including chemicals utilized by us. This evaluation may lead to regulations or restrictions affecting our ability to utilize these chemicals or the costs of doing so.

In connection with our compliance with such environmental laws and regulations, as well as our compliance with industry environmental initiatives, the standards of business conduct required by some of our customers, and our commitment to sound corporate citizenship in all aspects of our business, we could incur substantial compliance and operating costs and be subject to disruptions to our operations. In addition, in the last few years, there has been increased media scrutiny and associated reports focusing on a potential link between working in semiconductor manufacturing clean room environments and certain illnesses, primarily different types of cancers. Regulatory agencies and industry associations have begun to study the issue to see if any actual correlation exists. Because we utilize clean rooms, we may become subject to liability claims. These reports may also affect our ability to recruit and retain employees. If we were found to be in violation of environmental and safety regulations laws or noncompliance with industry initiatives or standards of conduct, we could be subject to government fines or liabilities owed to our customers, which could have an adverse effect on our business, financial condition, results of operations, and cash flows.

In addition, climate change is a significant topic of discussion and potential regulatory activity and has generated and may continue to generate federal or other regulatory responses in the near future. If we or our component suppliers fail to timely comply with applicable legislation, our customers may refuse to purchase our products or we may face increased operating costs as a result of taxes, fines or penalties, which may have an adverse effect on our business, financial condition, results of operations and cash flows.

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In connection with our compliance with such environmental laws and regulations, as well as our compliance with industry environmental initiatives, the standards of business conduct required by some of our customers, and our commitment to sound corporate citizenship in all aspects of our business, we could incur substantial compliance and operating costs and be subject to disruptions to our operations and logistics. In addition, if we were found to be in violation of these laws or noncompliant with these initiatives or standards of conduct, we could be subject to governmental fines, liability to our customers and damage to our reputation and corporate brand which could cause our business, financial condition, results of operations and cash flows to suffer.

We are subject to anti-corruption laws in the jurisdictions in which we operate, including the FCPA. Our failure to comply with these laws could result in penalties which could harm our reputation and have an adverse effect on our business, results of operations and financial condition.

We are subject to the FCPA, which generally prohibits companies and their intermediaries from making improper payments to foreign officials for the purpose of obtaining or keeping business and/or other benefits, along with various other anticorruption laws. Although we have implemented policies and procedures designed to ensure that we, our employees and other intermediaries comply with the FCPA and other anticorruption laws to which we are subject, we cannot be certain that such policies or procedures will work effectively all of the time or protect us against liability under the FCPA or other laws for actions taken by our employees and other intermediaries with respect to our business or any businesses that we may acquire.

We have manufacturing operations in China and other jurisdictions, many of which pose elevated risks of anti-corruption violations, and we export our products for sale internationally. This puts us in frequent contact with persons who may be considered “foreign officials” under the FCPA, resulting in an elevated risk of potential FCPA violations. If we are not in compliance with the FCPA and other laws governing the conduct of business with government entities (including local laws), we may be subject to criminal and civil penalties and other remedial measures, which could have an adverse impact on our business, financial condition, results of operations and cash flows. Any investigation of any potential violations of the FCPA or other anticorruption laws by U.S. or foreign authorities could harm our reputation and have an adverse impact on our business, financial condition, results of operations and cash flows.

Compliance with regulations related to conflict minerals and other regulations with respect to our supply chains could increase costs and affect the manufacturing and sale of our products.

Public companies are required to disclose the use of tin, tantalum, tungsten and gold (collectively, “conflict minerals”) mined from the Democratic Republic of the Congo and adjoining countries (the “covered countries”) if a conflict mineral(s) is necessary to the functionality of a product manufactured, or contracted to be manufactured, by the company. We may determine, as part of our compliance efforts, that certain products or components we obtain from our suppliers contain conflict minerals. If we are unable to conclude that all our products are free from conflict minerals originating from covered countries, this could have a negative impact on our business, reputation and/or results of operations. We may also encounter challenges to satisfy customers who require that our products be certified as conflict free, which could place us at a competitive disadvantage if we are unable to substantiate such a claim. Compliance with these rules could also affect the sourcing and availability of some of the minerals used in the manufacture of products or components we obtain from our suppliers, including our ability to obtain products or components in sufficient quantities and/or at competitive prices. Certain of our customers are requiring additional information from us regarding the origin of our raw materials, and complying with these customer requirements may cause us to incur additional costs, such as costs related to determining the origin of any minerals used in our products. Our supply chain is complex and we may be unable to verify the origins for all metals used in our products.

In addition, the U.S. federal government has issued new policies for federal procurement focused on eradicating the practice of forced labor and human trafficking, and the United Kingdom and the State of California have issued laws that require us to disclose our policy and practices for identifying and eliminating forced labor and human trafficking in our supply chain. Several customers as well as the Electronic Industry Citizenship Coalition (EICC) have also issued expectations to eliminate these practices that may impact us. While we have a policy and management systems to identify and avoid these practices in our supply chain, we cannot guarantee that our suppliers will always be in conformance to these laws and expectations. We may face enforcement liability and reputational challenges if we are unable to sufficiently meet these expectations. Moreover, we are likely to encounter challenges with customers if we cannot satisfy their forced and trafficked labor polices and they may choose a competitor's product.

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A failure to attract and retain managerial, technical, and other key personnel could reduce our revenue and our operational effectiveness.

Our future success depends, in part, on our ability to attract and retain certain key personnel, including scientific, operational, financial, and managerial personnel. In addition, our technical personnel represent a significant asset and serve as the source of our technological and product innovations. The competition for attracting and retaining key employees (especially scientists, technical personnel, and senior managers and executives) is intense. Because of this competition for skilled employees, we may be unable to retain our existing personnel or attract additional qualified employees in the future to keep up with our business demands and changes, and our business, financial condition, results of operations, and cash flows could be adversely affected. The risks involved in recruiting and retaining these key personnel may be increased by our historical lack of profitability, the volatility of our stock price, and the perceived effect of previously implemented reductions in force and other cost reduction efforts.

Our business and results of operations may continue to be negatively impacted by general economic and financial market conditions and market conditions in the industries in which we operate, and such conditions may increase the other risks that affect our business.

In recent years, the world's financial markets have experienced significant turmoil, resulting in reductions in available credit, increased costs of credit, extreme volatility in security prices, potential changes to existing credit terms, and rating downgrades of investments. These conditions materially and adversely affected the market conditions in the industries in which we operate and caused many of our customers to reduce their spending plans, leading them to draw down their existing inventory and reduce orders for our products, which, in turn, had an adverse impact on our revenues. We cannot predict the timing, strength or duration of any economic slowdown or subsequent economic recovery, worldwide or within our industry. It is possible that economic conditions could result in further setbacks, and that these customers, or others, could as a result significantly reduce their capital expenditures, draw down their inventories, reduce production levels of existing products, defer introduction of new products or place orders and accept delivery for products for which they do not pay us due to their economic difficulties or other reasons. If any of these events occur, our business, financial condition, results of operations and cash flows may be adversely affected.

Natural disasters or other catastrophic events could have an adverse effect on our business.

Natural disasters, such as hurricanes, earthquakes, fires, and floods, could adversely affect our operations and financial performance. Such events could result in physical damage to one or more of our facilities, the temporary closure of one or more of our facilities or those of our suppliers, a temporary lack of an adequate work force in a market, a temporary or long-term disruption in the supply of products from some local and overseas suppliers, a temporary disruption in the transport of goods from overseas, and delays in the delivery of goods. Public health issues, whether occurring in the United States or abroad, could disrupt our operations, disrupt the operations of suppliers or customers, or have an adverse impact on customer demand. As a result of any of these events, we may be required to suspend operations in some or all of our locations, which could have an adverse effect on our business, financial condition, results of operations, and cash flows. These events could also reduce demand for our products or make it difficult or impossible to receive products from suppliers. Although we maintain business interruption insurance and other insurance intended to cover some or all of these risks, such insurance may be inadequate, whether because of coverage amount, policy limitations, the financial viability of the insurance companies issuing such policies, or other reasons.

We are subject to risks associated with the availability and coverage of insurance.

For certain risks, we do not maintain insurance coverage because of cost or availability. Because we retain some portion of our insurable risks, and in some cases self-insure completely, unforeseen or catastrophic losses in excess of insured limits may have an adverse effect on our business, financial condition, results of operations and cash flows.

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Our business and operations could be adversely impacted in the event of a failure or security breach of our information technology infrastructure.

We rely upon the capacity, reliability, and security of our information technology hardware and software infrastructure and our ability to expand and update this infrastructure in response to our changing needs. We are constantly updating our information technology infrastructure. Although we have a disaster recovery plan, any failure to manage, expand, and update our information technology infrastructure or any failure in the operation of this infrastructure could harm our business.

The secure maintenance of this information is critical to our business and reputation. Despite our implementation of security measures, our systems are vulnerable to damages from computer viruses, computer denial-of-service attacks, worms, and other malicious software programs or other attacks, covert introduction of malware to computers and networks, unauthorized access, including impersonation of unauthorized users, efforts to discover and exploit any security vulnerabilities or securities weaknesses, and other similar disruptions. Our business is also subject to break-ins, sabotage, and intentional acts of vandalism by third parties as well as intentional and unintentional acts by employees or other insiders with access privileges. Our customers' network and storage applications may be subject to similar disruptions. It is often difficult to anticipate or immediately detect such incidents and the damage caused by such incidents. Data breaches and any unauthorized access or disclosure of our information, employee information or intellectual property could compromise our intellectual property, trade secrets and other sensitive business information, any of which could result in legal action against us, exposure of our intellectual property to our competitors, damages, fines and other adverse effects. A data security breach could also lead to public exposure of personal information of our employees, customers and others. Any such theft, loss or misuse of personal data collected, used, stored or transferred by us to run our business could result in significantly increased security costs or costs related to defending legal claims. Cyber attacks, such as computer viruses or other forms of cyber terrorism, may disrupt access to our network or storage applications. Such disruptions could result in delays or cancellations of customer orders or delays or interruptions in the production or shipment of our products. Data security breaches involving our data center customers could affect their financial condition and ability to continue to purchase our products. In addition, cyber attacks may cause us to incur significant remediation costs, result in product development delays, disrupt key business operations and divert attention of management and key information technology resources. These incidents could also subject us to liability, expose us to significant expense and cause significant harm to our reputation and business.

In addition, our technology infrastructure and systems are vulnerable to damage or interruption from natural disasters, power loss and telecommunications failures. Further, our products contain sophisticated hardware and operating system software and applications that may contain security problems, security vulnerabilities, or defects in design or manufacture, including "bugs" and other problems that could interfere with the intended operation of our products. To the extent that any disruption or security breach results in a loss or damage to our technology infrastructure, systems or data or inappropriate disclosure of confidential information or sensitive or personal information, it could harm our relationships with customers and other third parties and damage our brand and reputation and our business. In addition, we may be required to incur significant costs to protect against damage caused by these disruptions or security breaches in the future.

We may be subject to theft, loss, or misuse of personal data about our employees, customers, or other third parties, which could increase our expenses, damage our reputation, or result in legal or regulatory proceedings.

The theft, loss, or misuse of personal data collected, used, stored, or transferred by us to run our business could result in significantly increased security costs or costs related to defending legal claims. Global privacy legislation, enforcement, and policy activity in this area are rapidly expanding and creating a complex compliance regulatory

environment. Costs to comply with and implement these privacy-related and data protection measures could be significant. In addition, our even inadvertent failure to comply with federal, state, or international privacy-related or data protection laws and regulations could result in proceedings against us by governmental entities or others or cause us to incur penalties or other significant legal liability or change our business practices.

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The market price for our common stock has experienced significant price and volume volatility and is likely to continue to experience significant volatility in the future. This volatility may impair our ability to finance strategic transactions with our stock and otherwise harm our business.

Our stock price has experienced significant price and volume volatility for the past several years, and our stock price is likely to experience significant volatility in the future. The trading price of our common stock may be influenced by factors beyond our control, such as the volatility of the financial markets, uncertainty surrounding domestic and foreign economies, conditions and trends in the markets we serve, changes in the estimation of the future size and growth rate of our markets, publication of research reports and recommendations by financial analysts relating to our business, the business of our competitors or the industry in which we operate and compete, changes in market valuation or earnings of our competitors, legislation or regulatory policies, practices, or actions, sales of our common stock by our principal shareholders, and the trading volume of our common stock. The historical market prices of our common stock may not be indicative of future market prices and we may be unable to sustain or increase the value of our common stock. We have historically used equity incentive compensation as part of our overall compensation arrangements. The effectiveness of equity incentive compensation in retaining key employees may be adversely impacted by volatility in our stock price. Significant declines in our stock price may also interfere with our ability, if needed, to raise additional funds through equity financing or to finance strategic transactions with our stock. In addition, there may be increased risk of securities litigation following periods of fluctuations in our stock price. Securities class action lawsuits are often brought against companies after periods of volatility in the market price of their securities. These and other consequences of volatility in our stock price which could be exacerbated by macroeconomic conditions that affect the market generally, or our industry in particular could have the effect of diverting management's attention and could materially harm our business.

We may not pay additional dividends on our common stock and, consequently, your only opportunity to achieve a return on your investment may be an increase in the price of our common stock.

Although we paid a special dividend in 2016, we cannot guarantee that that we will pay additional dividends in the future. In addition, the terms of our loan and security agreement with our financial institution restrict our ability to pay dividends. Consequently, your only opportunity to achieve a return on any shares of our common stock may be for you to sell your shares at a profit. There is no guarantee that the market price of our common stock will increase or ever exceed the price that you paid for the shares.

We may undergo an "ownership change" within the meaning of Section 382 of the Code, which could affect our ability to offset U.S. federal income tax against our net operating losses and certain of our tax credit carryovers.

Section 382 of the Internal Revenue Code, as amended (the "Code") contains rules that limit the ability of a company that undergoes an ownership change to utilize its net operating losses and tax credits (the "Tax Benefits") existing as of the date of such ownership change. Under the rules, such an ownership change is generally any change in ownership of more than 50% of a company's stock within a rolling three-year period. The rules generally operate by focusing on changes in ownership among shareholders considered by the rules as owning, directly or indirectly, 5% or more of the stock of a company and any change in ownership arising from new issuances of stock by the company.

If we were to undergo one or more "ownership changes" within the meaning of Section 382 of the Code, our net operating losses and certain of our tax credits existing as of the date of each ownership change may be unavailable, in whole or in part, to offset U.S. federal income tax resulting from our operations or any gains from the disposition of any of our assets and/or business, which could result in increased U.S. federal income tax liability.

Certain provisions of New Jersey law and our governing documents may make a takeover of our Company difficult even if such takeover could be beneficial to some of our shareholders.

Certain provisions of our organizational documents and New Jersey law could discourage potential acquisition proposals, delay or prevent a change in control of the Company or limit the price that investors may be willing to pay in the future for shares of our common stock. For example, our amended and restated certificate of incorporation and amended and restated bylaws:

classify our Board of Directors into three classes, with staggered three-year terms and, until recent respective amendments to our certificate of incorporation and bylaws that became effective in March 2018 to declassify our Board of Directors are fully phased in beginning with our 2021 annual meeting of

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shareholders, the current three-year terms of our directors will remain in effect until the current terms expire;

provide that directors are not subject to removal except for cause by the vote of the holders of a majority of our capital stock;

provide that a supermajority vote of our shareholders is required to amend some portions of our amended and restated certificate of incorporation and amended and restated bylaws, including requiring approval by the holders of 80% of our voting stock for certain business combinations unless these transactions meet certain fair price criteria and procedural requirements or are approved by two-thirds of our continuing directors;

authorize the issuance of preferred stock that can be created and issued by our Board of Directors without prior shareholder approval, commonly referred to as “blank check” preferred stock, with rights senior to those of our common stock;

limit the persons who can call special shareholder meetings;

establish advance notice requirements to nominate persons for election to our Board of Directors or to propose matters that can be acted on by shareholders at shareholder meetings;

do not provide for cumulative voting in the election of directors; and

provide for the filling of vacancies on our Board of Directors by action of 66 2/3% of the directors and not by the shareholders.

These and other provisions in our organizational documents could allow our Board of Directors to affect the rights of our shareholders in a number of ways, including making it difficult for shareholders to replace members of the Board of Directors. Because our Board of Directors is responsible for approving the appointment of members of our management team, these provisions could in turn affect any attempt to replace the current management team. These provisions could also limit the price that investors would be willing to pay in the future for shares of our common stock. We may in the future adopt other measures that may have the effect of delaying or discouraging an unsolicited takeover, even if the takeover were at a premium price or favored by a majority of unaffiliated shareholders. Certain of these measures may be adopted without any further vote or action by our shareholders and this could depress the price of our common stock.

We may not be able to obtain capital when desired on favorable terms, if at all, or without dilution to our shareholders.

We believe that our existing cash and cash equivalents, and cash flows from our operating activities and funds available under our credit facilities, will be sufficient to meet our anticipated cash needs for at least the next 12 months. We operate in an industry, however, that makes our prospects difficult to evaluate. It is possible that we may not generate sufficient cash flow from operations or otherwise have the capital resources to meet our future capital needs. If this occurs, we may need additional financing to continue operations or execute on our current or future business strategies, including to:

invest in our research and development efforts, including by hiring additional technical and other personnel;

maintain and expand our operating or manufacturing infrastructure;

acquire complementary businesses, products, services or technologies; or

- otherwise pursue our strategic plans and respond to competitive pressures.

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If we raise additional funds through the issuance of equity or convertible debt securities, the percentage ownership of our shareholders could be significantly diluted, and these newly-issued securities may have rights, preferences or privileges senior to those of existing shareholders. We cannot be certain that additional financing will be available on terms favorable to us, or at all. If adequate funds are not available or are not available on acceptable terms, if and when needed, our ability to fund our operations, take advantage of unanticipated opportunities, develop or enhance our products, or otherwise respond to competitive pressures could be significantly limited. Furthermore, in the event adequate capital is not available to us as required, or is not available on favorable terms, our business, financial condition, results of operations, and cash flows may be adversely affected.

The risks above are not the only risks we face. If any of the events described in our risk factors actually occur, or if additional risks and uncertainties not presently known to us or that we currently deem immaterial, materialize, then our business, financial condition, results of operations, and cash flows could be materially affected.

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ITEM 1B. Unresolved Staff Comments

Not Applicable.

ITEM 2. Properties

The following chart contains certain information regarding each of our principal facilities.

Location	Function	Approximate Square Footage	Term (in calendar year)
Alhambra, California	Corporate Headquarters Manufacturing and research and development facilities	75,000	Leases covering two of six buildings expired in 2011; another lease covering four of six buildings expires in 2020 (1) and (2)
Langfang, China	Warehouse facility	1,100	Lease expires in 2019
Beijing, China	Manufacturing facility	23,200	Lease expires in 2021 (1)
Ivyland, Pennsylvania	Former manufacturing and research and development facility (3)	9,000	Lease expires in 2019 (3)

Footnotes

(1) Leases have the option to be renewed by us at fixed terms.

(2) Certain facility leases in Alhambra, California which have expired are being maintained on a month-to-month basis.

(3) The Ivyland, Pennsylvania facility was closed during the fiscal year ended September 30, 2018 and is no longer occupied.

ITEM 3. Legal Proceedings

See the disclosures under the caption “Legal Proceedings” in Note 13- Commitments and Contingencies in the notes to our consolidated financial statements for disclosures related to our legal proceedings, which disclosures are incorporated herein by reference.

ITEM 4. Mine Safety Disclosures

Not Applicable.

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PART II. Other Information

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 and is quoted under the symbol "EMKR". As of November 29, 2018, we had approximately 92 shareholders of record. Many of our shares of common stock are held by brokers and other institutions on behalf of shareholders, and we are unable to estimate the number of these shareholders.

Price Range of Common Stock

The price ranges presented below represent the highest and lowest sales prices for our common stock on the Nasdaq Global Market during each quarter over the two most recent fiscal years.

High and Low Sales Price Ranges of EMCORE Corporation's Common Stock	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Fiscal 2018	\$5.80 - \$8.75	\$4.90 - \$7.25	\$4.40 - \$5.85	