UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the Fiscal Year Ended June 30, 2019

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 000-09992

KLA CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**04-2564110**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**
One Technology Drive, Milpitas, California	**95035**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's Telephone Number, Including Area Code: (408) 875-3000
Securities Registered Pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbol(s)	Name of Each Exchange on Which Registered
Common Stock, $0.001 par value per share	**KLAC**	**The Nasdaq Stock Market, LLC**
		The NASDAQ Global Select Market

Securities Registered Pursuant to Section 12(g) of the Act:

None

(Title of Class)

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

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

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or 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 and posted on its corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

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

Large accelerated filer ☒		Accelerated filer ☐
Non-accelerated filer ☐	(Do not check if a smaller reporting company)	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 Exchange Act). Yes ☐ No ☒

The aggregate market value of the voting and non-voting common stock held by non-affiliates of the registrant based upon the closing price of the registrant's stock, as of December 31, 2018, was approximately $13.53 billion.

The registrant had 159,255,950 shares of common stock outstanding as of July 19, 2019.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the 2019 Annual Meeting of Stockholders ("Proxy Statement"), and to be filed pursuant to Regulation 14A within 120 days after the registrant's fiscal year ended June 30, 2019, are incorporated by reference into Part III of this report.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. All statements other than statements of historical fact may be forward-looking statements. You can identify these and other forward-looking statements by the use of words such as "may," "will," "could," "would," "should," "expects," "plans," "anticipates," "relies," "believes," "estimates," "predicts," "intends," "potential," "continue," "thinks," "seeks," or the negative of such terms, or other comparable terminology. Forward-looking statements also include the assumptions underlying or relating to any of the foregoing statements. Such forward-looking statements include, among others, forecasts of the future results of our operations, including profitability; orders for our products and capital equipment generally; sales of semiconductors; the investments by our customers in advanced technologies and new materials; the allocation of capital spending by our customers (and, in particular, the percentage of spending that our customers allocate to process control); growth of revenue in the semiconductor industry, the semiconductor capital equipment industry and our business; technological trends in the semiconductor industry; future developments or trends in the global capital and financial markets; our future product offerings and product features; the success and market acceptance of new products; timing of shipment of backlog; our future product shipments and product and service revenues; our future gross margins; our future research and development expenses and selling, general and administrative expenses; our ability to successfully maintain cost discipline; international sales and operations; our ability to maintain or improve our existing competitive position; success of our product offerings; creation and funding of programs for research and development; attraction and retention of employees; results of our investment in leading edge technologies; the effects of hedging transactions; the effect of the sale of trade receivables and promissory notes from customers; our future effective income tax rate; our recognition of tax benefits; the effects of any audits or litigation; future payments of dividends to our stockholders; the completion of any acquisitions of third parties, or the technology or assets thereof; benefits received from any acquisitions and development of acquired technologies; sufficiency of our existing cash balance, investments, cash generated from operations and the unfunded portion of our revolving line of credit under a Credit Agreement (the "Credit Agreement") to meet our operating and working capital requirements, including debt service and payment thereof; future dividends, and stock repurchases; our compliance with the financial covenants under the Credit Agreement; the adoption of new accounting pronouncements including ASC 606; the tax liabilities resulting from the enactment of the Tax Cuts and Jobs Act; and our repayment of our outstanding indebtedness.

Our actual results may differ significantly from those projected in the forward-looking statements in this report. Factors that might cause or contribute to such differences include, but are not limited to, those discussed in Item 1A, "Risk Factors" in this Annual Report on Form 10-K, as well as in Item 1, "Business" and Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this report. You should carefully review these risks and also review the risks described in other documents we file from time to time with the Securities and Exchange Commission, including the Quarterly Reports on Form 10-Q that we will file in the fiscal year ending June 30, 2020. You are cautioned not to place undue reliance on these forward-looking statements, and we expressly assume no obligation and do not intend to update the forward-looking statements in this report after the date hereof.

PART I

ITEM 1. BUSINESS

The Company

KLA Corporation ("KLA" or the "Company" and also referred to as "we" or "our") is a leading supplier of process equipment, process control equipment, and data analytics products for a broad range of industries, including semiconductors, printed circuit boards and displays. We provide advanced process control and process-enabling solutions for manufacturing and testing wafers and reticles, integrated circuits ("IC" or "chip"), packaging, light emitting diodes, power devices, compound semiconductor devices, microelectromechanical systems, data storage, printed circuit boards and flat and flexible panel displays, as well as general materials research.

On February 20, 2019, we completed the acquisition of Orbotech, Ltd. ("Orbotech") for a total purchase consideration of approximately$3.26 billion. For additional details, refer to Note 6 "Business Combinations" to our Consolidated Financial Statements. Orbotech's core business enables electronic device manufacturers to inspect, test and measure printed circuit boards and flat panel displays to verify their quality; pattern electronic circuitry on substrate and perform three-dimensional shaping of metalized circuits on multiple surfaces; and utilize advanced vacuum deposition and etching process in semiconductor device and semiconductor manufacturing and to perform laser drilling of electronic substrates.

Subsequent to the acquisition of Orbotech, we changed our organizational structure, resulting in four reportable segments: Semiconductor Process Control; Specialty Semiconductor Process; PCB, Display and Component Inspection; and Other.

Within the Semiconductor Process Control segment, our comprehensive portfolio of inspection, metrology and data analytics products, and related service helps integrated circuit manufacturers achieve target yield throughout the entire semiconductor fabrication process—from research and development ("R&D") to final volume production. Our differentiated products and services are designed to provide comprehensive solutions that help our customers accelerate development and production ramp cycles, achieve higher and more stable semiconductor die yields and improve their overall profitability.

In the Specialty Semiconductor Process segment, we develop and sell advanced vacuum deposition and etching process tools, which are used by a broad range of specialty semiconductor customers, including manufacturers of microelectromechanical systems ("MEMS"), radio frequency ("RF") communication chips, and power semiconductors for automotive and industrial applications.

In the PCB, Display and Component Inspection segment, we enable electronic device manufacturers to inspect, test and measure printed circuit boards ("PCBs") and flat panel displays ("FPDs") and ICs to verify their quality, pattern the desired electronic circuitry on the relevant substrate and perform three-dimensional shaping of metalized circuits on multiple surfaces.

Our advanced products, coupled with our unique yield management services, allow us to deliver the solutions our semiconductor, printed circuit board and display customers need to achieve their productivity goals, by significantly reducing their risks and costs.

Certain industry and technical terms used in this section are defined in the subsection entitled "Glossary" found at the end of this Item 1.

KLA (then KLA-Tencor) was formed in April 1997 through the merger of KLA Instruments Corporation and Tencor Instruments, two long-time leaders in the semiconductor equipment industry that began operations in 1975 and 1976, respectively.

Additional information about KLA is available on our website at www.kla.com. Our Annual Report on Form 10-K, our 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 Securities Exchange Act of 1934, as amended, are available free of charge on our website as soon as reasonably practicable after we electronically file them with or furnish them to the Securities and Exchange Commission ("SEC"). Information contained on our website is not part of this Annual Report on Form 10-K or our other filings with the SEC. Additionally, these filings may be obtained through the SEC's website (www.sec.gov), which contains reports, proxy and information statements, and other information regarding issuers that file electronically.

Investors and others should note that we announce material financial information to our investors using our investor relations web site (ir.kla.com), SEC filings, press releases, public conference calls and webcasts. We use these channels as well as social media to communicate with the public about our company, our products and services and other matters. It is possible that the information we post on social media could be deemed to be material information. Therefore, we encourage investors, the media, and others interested in our company to review the information we post on the social media channels listed on our investor relations website.

Industry

General Background

KLA's core focus is the semiconductor industry. The semiconductor fabrication process begins with a bare silicon wafer—a round disk that is typically 200 millimeters or 300 millimeters in diameter, about as thick as a credit card and gray in color. The process of manufacturing wafers is highly sophisticated, involving the creation of large ingots of silicon by pulling them out of a vat of molten silicon. The ingots are then sliced into wafers. Prime silicon wafers are then polished to a mirror finish. Other, more specialized wafers, such as epitaxial silicon ("epi"), silicon on insulator ("SOI"), gallium nitride ("GaN") and silicon carbide ("SiC") are also common in the semiconductor industry.

The manufacturing cycle of an IC is grouped into three phases: design, fabrication and testing. IC design involves the architectural layout of the circuit, as well as design verification and reticle generation. The fabrication of a chip is accomplished by depositing a series of film layers that act as conductors, semiconductors or insulators on bare wafers. The deposition of these film layers is interspersed with numerous other process steps that create circuit patterns, remove portions of the film layers, and perform other functions such as heat treatment, measurement and inspection. Most advanced chip designs require hundreds of individual steps, many of which are performed multiple times. Most chips consist of two main structures: the lower structure, typically consisting of transistors or capacitors which perform the "smart" functions of the chip; and the upper "interconnect" structure, typically consisting of circuitry which connects the components in the lower structure. When the layers on the wafer have been fabricated, each chip on the wafer is tested for functionality. The wafer is then cut into individual chips, and the chips that pass functional testing are packaged. Final testing is performed on all packaged chips. Packaged chips are mounted onto printed circuit boards ("PCBs") for connection to the outside world. Additionally, flat panel displays are manufactured using processes similar to ICs (e.g., film deposition, photolithography, etching) except using glass as the starting substrate.

The semiconductor equipment industry is currently experiencing growth from multiple drivers, such as demand for chips providing computational power and connectivity for Artificial Intelligence ("AI") applications and continued need for chips from leading edge foundry and logic chip manufacturers that support mobile devices. Qualification of early extreme ultraviolet ("EUV") lithography processes and equipment is driving growth at leading logic/foundry and dynamic random-access memory ("DRAM") manufacturers. Expansion of the Internet of Things ("IoT") together with the increasing adoption of electrical vehicles and the need for automobile connectivity are accelerating trailing-edge node technology conversions and capacity expansions. Intertwined in these areas, spurred by data storage and connectivity needs, is the growth in demand for memory chips. Finally, China is emerging as a major region for manufacturing of logic and memory chips, adding to its role as the world's largest consumer of ICs. Government initiatives are propelling China to expand its domestic manufacturing capacity and attracting semiconductor manufacturers from Taiwan, Korea, Japan and the US. China is currently seen as an important long-term growth region for the semiconductor capital equipment sector.

Supporting this multi-segmented market growth, the semiconductor industry continues to introduce numerous technology changes. New techniques and architectures in production today include three dimensional finFET transistors; three dimensional flash memory ("3D NAND"); design technology co-optimization ("DTCO"); advanced patterning technologies, including self-aligned multiple patterning and EUV lithography; and advanced packaging methods. KLA's inspection, metrology and data analytics technologies play key roles in enabling our customers to develop and manufacture advanced semiconductor devices to support these trends.

Companies that anticipate future market demands by developing and refining new technologies and manufacturing processes are better positioned to lead in the semiconductor market. Accelerating the yield ramp and maximizing production yields of high-performance devices are key goals of modern semiconductor manufacturing. Ramping to high volume production ahead of competitors can dramatically increase the revenue an IC manufacturer realizes for a given product. During past industry cycles, semiconductor manufacturers generally contended with a few key new technologies or market trends, such as a specific design rule shrink. Today, leading semiconductor manufacturers are investing in simultaneous production integration of multiple new process technologies, some requiring new substrate and film materials, new geometries, advanced multi-patterning and EUV lithography and packaging techniques. While many of these technologies have been adopted at the development and pilot production stages of chip manufacturing, significant challenges and risks associated with each technology have affected the adoption of these technologies into full volume production. For example, as design rules decrease, yields become more sensitive to the size and density of defects, and device performance characteristics (namely speed, capacity or power management) become more sensitive to parameters such as linewidth and film thickness variation. New process materials, such as photoresists for EUV lithography, require extensive characterization before they can be used in the manufacturing process. Moving several of these advanced technologies into production at once only adds to the risks that chipmakers face.

The continuing evolution of semiconductor devices to smaller geometries and more complex multi-level circuitry has significantly increased the performance and cost requirements of the capital equipment used to manufacture these devices. Construction of an advanced wafer fabrication facility today can cost well above $5.00 billion, substantially more than previous-generation facilities. In addition, chipmakers are demanding increased productivity and higher returns from their manufacturing equipment and are also seeking ways to extend the performance of their existing equipment.

By developing new process control and yield management tools that help chipmakers accelerate the adoption of these new technologies into volume production, we enable our customers to better leverage these increasingly expensive facilities and improve their return on investment (“ROI”). Once customers’ production lines are operating at high volume, our systems help ensure that yields are stable and process excursions are identified for quick resolution. In addition, the move to each new generation’s smaller design rules, coupled with new materials and device innovation, has increased in-process variability, which requires an increase in inspection and metrology sampling.

KLA systems not only analyze defectivity and metrology issues at critical points in the wafer, reticle and IC manufacturing processes, but also provide information to our customers so that they can identify and address the underlying process problems. The ability to locate the source of defects and resolve the underlying process issues enables our customers to improve control over their manufacturing processes. This helps them increase their yield of high-performance parts and deliver their products to market faster—thus maximizing their profits. With our broad portfolio of application-focused technologies and our dedicated yield technology expertise, we are in position to be a key supplier of comprehensive yield management solutions for customers’ next-generation products, helping our customers respond to the challenges posed by shrinking device sizes, the transition to new production materials, new device and circuit architectures, more demanding lithography processes, and new packaging techniques.

With the Orbotech acquisition, KLA has expanded its presence in the semiconductor capital equipment market, leveraging products and technologies of Orbotech’s SPTS semiconductor processing business. SPTS develops and sells differentiated custom deposition and etching solutions for fast-growing markets, such as power and analog devices, RF communication chips and MEMS. These devices, which are often built on non-traditional substrates, like SiC and GaN, have become critical to accelerating some of the secular trends in automotive, industrial and communication industries. Infrastructure build-out for 5G is creating demand for RF components; new SiC and GaN based power devices are moving into volume production for electric vehicles; and high-density packaging is growing to support AI.

The acquisition of Orbotech has also allowed KLA to enter the PCB fabrication market, providing a comprehensive portfolio of tools, services and solutions to accelerate technology transitions and production ramp. Our portfolio includes inline inspection tools to monitor the quality of printed circuit board fabrication, equipment to repair defective boards, digital imaging technologies to print fine geometry according to the design, and computer aided manufacturing (“CAM”) software. Growth in the PCB business is driven mainly by investments in 5G technology and its supporting applications: smartphones, smart vehicles, AI and cloud servers/high performance computing. These applications will be based on several technological segments including flexible printed circuits (“FPCs”), high density interconnect (“HDI”), PCBs, and IC substrates.

The acquisition of Orbotech has also allowed KLA to enter the flat panel display market, providing complete yield management solutions, including automated optical inspection systems, repair technologies and electrical testers. An accelerated transition to organic light emitting diode (“OLED”) displays to serve the mobile market, introduction of OLED technology for large size TVs, and a steep ramp in liquid crystal display (“LCD”) production for televisions in China are driving the flat panel display business. New technologies, such as microLED, also represent a growth opportunity for KLA in the display market.

Products

KLA develops industry-leading equipment and services that enable innovation throughout the electronics industry. We provide advanced process control and process-enabling solutions for manufacturing wafers, reticles, integrated circuits, packaging, printed circuit boards, and flat and flexible panel displays.

KLA's inspection, metrology and data analytics products and related offerings can be broadly categorized as supporting customers in the following groups: Chip and Wafer Manufacturing; Reticle Manufacturing; Packaging Manufacturing; Compound Semiconductor and Hard Disk Drive Manufacturing; and General Purpose/Lab Applications. Orbotech's inspection, repair, imaging, laser drilling, electrical testing and wafer processing equipment support customers in Printed Circuit Board Manufacturing, Flexible and Flat Panel Display Manufacturing, Advanced Packaging Manufacturing, and manufacturing of semiconductor devices such as MEMS, LEDs, high speed RF IC devices and power semiconductors. Some of the company's more significant products are described below and also included in the broader product table at the end of this "Products" section.

Semiconductor Process Control:

Chip and Wafer Manufacturing

KLA's comprehensive portfolio of defect inspection, review, metrology, patterning simulation, in situ process monitoring and data analytics products, and related service, software and other offerings, helps substrate and chip manufacturers manage yield throughout the wafer and chip fabrication processes, from research and development to final volume production. These offerings are designed to provide comprehensive solutions to help our customers accelerate their development and production ramp cycles, achieve higher and more stable semiconductor die yields, and improve their overall profitability.

Defect Inspection and Review

KLA's wafer defect inspection and review systems cover a broad range of yield applications for IC and substrate manufacturers, including research and development, wafer qualification, reticle qualification, and tool, process and line monitoring. Patterned and unpatterned wafer inspectors find particles, pattern defects and electrical issues on the front surface, back surface and edge of the wafer, allowing engineers to detect and monitor critical yield excursions. Our defect review systems capture high resolution images of the defects detected by inspection tools, helping substrate manufacturers and chipmakers identify and resolve yield issues. Fabs rely on our high sensitivity reticle inspection systems to identify defects on reticles at an early stage and to prevent reticle defects from printing on production wafers. By implementing our defect inspection and review systems, chipmakers and substrate manufacturers are able to take quick corrective action, resulting in faster yield improvement and better time to market.

For patterned wafer optical inspection, we provide our 3920 Series, 3900 Series, 2950 Series, 2930 Series, 2920 Series, 2910 Series and 2900 Series (high resolution broadband plasma defect inspection for defect discovery, yield learning and inline monitoring across all advanced node layers); the Voyager 1015 (laser scanning patterned wafer inspection system that provides enhanced defect capture for high throughput lithography cell monitoring); the Puma 9980 Series, Puma 9850 Series and Puma 9650 Series (laser scanning defect inspection); our 8 Series systems (high productivity defect inspection); and our CIRCL cluster tool (defect inspection, review and metrology of all wafer surfaces – front side, edge and backside).

In the field of unpatterned wafer and surface inspection, the Surfscan SP7 unpatterned wafer defect inspection system provides high sensitivity on bare wafers, smooth films and rough films, supporting development and production of advanced substrates, processes and devices at wafer shops, original equipment manufacturers ("OEMs") and IC fabs. In addition, we offer the Surfscan SP5 Series and Surfscan SP3 Series (wafer defect inspection systems for process tool qualification and monitoring using blanket films and bare wafers); and SURFmonitor, which enables surface quality measurements and capture of low-contrast defects. For wafer manufacturers, these specialized inspection systems assess surface quality and detect, count and bin defects during the development and production monitoring of polished wafers, epi wafers and engineered substrates, and as a critical part of outgoing inspection. For chip manufacturers, the Surfscan systems qualify incoming bare wafers, and qualify and monitor processes during all manufacturing stages – from development through production.

Our eDR7380 high performance electron-beam (e-beam) wafer defect review and classification system produces a comprehensive defect pareto in one test for accurate defect sourcing and faster excursion detection during production. Unique synergy with our inspectors facilitates accurate identification and classification of patterned wafer, bare wafer and bevel edge defects for faster yield learning during IC and wafer manufacturing.

For in-fab reticle qualification, we offer the Teron SL650 Series and X5.3 reticle inspection systems. These inspectors allow IC fabs to qualify incoming reticles and inspect production reticles for contaminants and other process-related changes. The Teron SL655 reticle inspection system enables IC manufacturers to assess incoming reticle quality, monitor reticle degradation and detect yield-critical reticle defects. The Teron SL655 introduced STAR*light*Gold technology, which provides a golden reference to maximize detection of defects critical to the mask requalification process.

Metrology

KLA's array of metrology solutions addresses IC and substrate manufacturing, as well as scientific research and other applications. Precise metrology and control of pattern dimensions, film thicknesses, layer-to-layer alignment, pattern placement, surface topography, electro-optical and electromagnetic properties are important in many industries as critical dimensions narrow, film thicknesses shrink to countable numbers of atomic layers and devices become more complex.

The Archer Series of imaging-based overlay metrology systems enable characterization of overlay error on lithography process layers for advanced patterning technologies. The ATL Series of scatterometry-based overlay metrology systems utilize tunable laser technology to automatically maintain highly accurate and robust overlay error measurements in the presence of process variations, supporting fast technology ramps and wafer disposition during production.

The SpectraShape optical CD and shape metrology systems characterize and monitor the critical dimensions and 3D shapes of geometrically complex features incorporated by some IC manufacturers into their latest generation devices. The SpectraShape 10K metrology system measures the CDs and three-dimensional shapes of finFET, 3D NAND and other complex IC device structures following etch, chemical mechanical planarization ("CMP") and other process steps.

The SpectraFilm and Aleris film metrology systems provide precise measurement of film thickness, refractive index, stress and composition for a broad range of film layers. The SpectraFilm F1 film metrology system, employs optical technologies that determine single- and multi-layer film thicknesses and uniformity with high precision to monitor deposition processes in production, and deliver bandgap data that predict device electrical performance earlier than end of line test.

The PWG3 patterned wafer geometry metrology system measures stress-induced wafer shape, wafer shape-induced pattern overlay errors, wafer thickness variations and wafer front side and backside topography for a wide range of IC processes. This data is used for inline monitoring of fab processes, overlay corrections and scanner focus control, enabling improved patterning and faster yield ramp. Our WaferSight bare wafer geometry metrology systems are used by substrate manufacturers to qualify polished and epitaxial silicon wafers, and engineered and other advanced substrates.

Magnetic random-access memory ("MRAM") manufacturing requires the control of deposition, annealing, magnetization and etch of very thin ferromagnetic layers. These memory cells are embedded into the logic chip when the chip is getting close to completion. At this late stage, the value of the chip is high so the MRAM cell must be carefully controlled to maintain high yield. KLA offers several systems for manufacturing control of MRAM processes, including the CAPRES CIPTech and microHall series, and the MicroSense PKMRAM and KerrMapper systems.

In Situ Process Monitoring

KLA's SensArray systems are a portfolio of advanced wireless and wired wafers and reticles that enable in situ monitoring of the production process environment. These sensor wafers and reticles provide insight into critical process parameters, such as thermal uniformity, profile temperature and light intensity, under real production conditions. For example, the EtchTemp in situ wafer temperature measurement systems measure the effect of the plasma etch process environment on production wafers. By characterizing thermal conditions that closely represent product wafer conditions, the EtchTemp SE wireless wafer assists process engineers with tuning of the etch process conditions and the qualification, matching and post-PM verification of front end of line plasma etch chambers. The AMW product (Automation Metrology Wafer) enables fab-wide automated wafer handling monitoring. The SensArray Automation package provides fast automated collection of parametric measurement within the process tool chamber. SensArray products are used for many semiconductor and flat panel display fabrication processes, including lithography, etch and deposition, and for reticle manufacturing, including e-beam mask writer qualification and process monitoring.

Patterning Simulation

KLA's PROLITH computational lithography software is used by researchers at advanced IC manufacturers, lithography hardware suppliers, track companies and material providers to explore critical feature designs, manufacturability and process-limited yield of proposed lithographic and patterning technologies without the time and expense of printing hundreds of test wafers using experimental materials and prototype process equipment.

Data Analytics

The data generated by our inspection, metrology and in situ process monitoring systems are compiled and reduced to relevant root cause and yield analysis information with our suite of data analytics and management tools.

Our 5D Analyzer advanced data analysis and patterning control system offers an extendible, open architecture that accepts data from a wide range of metrology and process tools to enable advanced analysis, characterization and real-time control of fab-wide process variations. Our Klarity automated defect and yield analysis systems help IC manufacturers reduce defect inspection, classification and review data to relevant root-cause and yield-analysis information. Our RDC reticle data analysis and management system provides data used for in-fab reticle qualification. Our FabVision data management system offers fab-wide data management and automated yield analysis for wafer manufacturers.

Reticle Manufacturing

Error-free reticles, or masks, are necessary to achieve high semiconductor device yields, since reticle defects can be replicated in every die on production wafers. KLA offers high sensitivity reticle inspection, metrology and data analytics systems for mask blank manufacturers and reticle manufacturers (“mask shops”) to help them manufacture reticle blanks and patterned reticles that are free of defects and meet pattern placement and critical dimension uniformity specifications.

The FlashScan reticle blank inspection product line is used by blank manufacturers for defect control during process development and volume manufacturing, and by mask shops for incoming inspection, tool monitoring and process control.

The Teron 640e reticle inspection system incorporates advanced optical, detector and algorithm technologies that detect critical pattern and particle defects at high throughput, advancing the development and qualification of EUV and optical patterned reticles in leading-edge mask shops. Our reticle inspection portfolio also includes the Teron 600 Series for development and manufacturing of advanced optical and EUV masks, the TeraScan 500XR system for production of reticles for the 32nm node and above, and our X5.3 and Teron SL650 Series products for reticle quality control at IC fabs.

In addition, we offer the LMS IPRO Series of reticle registration metrology systems for measuring mask pattern placement error. If the pattern on the reticle is displaced from its intended location, overlay error can result on the wafer, which can lead to electrical continuity issues affecting yield, performance or reliability of the IC device. The LMS IPRO7 reticle registration metrology system accurately measures on-device reticle pattern placement error with fast cycle time, enabling comprehensive reticle qualification for e-beam mask writer corrections and reduction of reticle-related contributions to device overlay errors in the IC fab.

RDC is a comprehensive data analysis and storage platform that supports multiple KLA reticle inspection and metrology platforms for mask shops and IC fabs.

Packaging Manufacturing

KLA offers standalone and cluster inspection and metrology systems for various applications in the field of semiconductor packaging.

Wafer-Level Packaging Inspection/Metrology

For wafer-level packaging inspection, the Kronos system provides high sensitivity to critical defects for advanced wafer-level packaging production monitoring for processes such as 2.5D/3D IC integration using through silicon vias (“TSVs”), wafer-level chip scale packaging (“WLCSP”) and fan-out wafer-level packaging (“FOWLP”). We also offer our CIRCL-AP cluster tool, which features multiple modules to support all-surface wafer-level packaging inspection, metrology and review. Used for packaging applications associated with LEDs, MEMS, image sensors and flip-chip packaging, our WI-2280 products focus on front side wafer inspection and provide feedback on wafer surface quality, quality of the wafer dicing, or quality of wafer bumps, pads, pillars and interconnects. Zeta-5xx and Zeta-6xx optical surface profilers measure both wafers and large panels for packaging metrology applications. These applications include under-bump metallization (“UBM”) height and roughness, copper pillar height and roughness, and redistribution layer (“RDL”) height and width.

Compound Semiconductor, Power Device, LED and MEMS Manufacturing

The compound semiconductor market comprises a diverse group of applications including power devices, radio frequency (“RF”) communications devices, photonics, LED lighting and photovoltaic and display markets. Our primary products for compound semiconductor manufacturing include the Candela 8520, Candela CS20, 8 Series and WI-2280 inspection systems, MicroXAM and Zeta optical profilers, and the P-Series and HRP-Series stylus profilers. These products are used for the inspection and metrology of substrates, epitaxial (“epi”) layers and process films.

Leading power device manufacturers are targeting faster development and ramp times, high product yields and lower device costs. To achieve these goals, they are implementing solutions for characterizing yield-limiting defects and processes. Full-surface, high sensitivity defect inspection and profiler metrology systems provide accurate process feedback, enabling improvements in SiC substrate quality and optimal epitaxial growth yields on both SiC epi and GaN-on-silicon processes.

KLA offers inspection and metrology systems to support power device manufacturing. The Candela 8520 inspection system integrates surface defect detection and photoluminescence technology for inspection and classification of a wide range of defects on SiC substrates and epi layers. The MicroXAM optical profilers measure step height, texture and form for power device applications. The P-Series and HRP-Series stylus profilers measure step heights and roughness for SiC substrates and patterned wafer applications.

LEDs are becoming more commonly used in solid state lighting, television and notebook backlighting, and automotive applications. As LED device makers target aggressive cost and performance targets, they place significant emphasis on improved process control and yield during the manufacturing process.

KLA offers a portfolio of systems to help LED manufacturers reduce production costs and increase product output: Candela 8720, WI-2280, 8 Series, UltraMap, MicroXAM and Zeta optical profilers and P-Series and HRP-Series stylus profilers. The Candela 8720 substrate and epi wafer inspection system provides automated inspection and quality control of LED substrates, detecting defects that can impact device performance, yield and field reliability. The WI-2280 system is designed specifically for defect inspection and 2D metrology for LED applications. The 8 Series provides patterned wafer defect inspection capability for LED manufacturing. UltraMap provides wafer geometry measurements on sapphire wafers. The MicroXAM and Zeta optical profilers measure step height, texture and form for LED applications. The P Series and HRP-Series stylus profilers are metrology systems for measurement of step heights and roughness for LED substrates and patterned wafer applications. The Zeta-388 measures patterned sapphire substrates (“PSS”) and inspects for defects on high brightness LED substrates.

KLA offers a variety of products for the display market, including the ZetaScan Series defect inspector, SensArray Process Probe 2070, Zeta-300 optical profiler, P-17 OF stylus profiler, and the Nano Indenter nanomechanical tester.

The increasing demand for MEMS technology is coming from diverse industries such as automotive, space and consumer electronics. MEMS have the potential to transform many product categories by bringing together silicon-based microelectronics with micromachining technology, making possible the realization of complete systems-on-a-chip. KLA offers tools and techniques such as defect inspection and review, optical inspection and surface profiling for this emerging market, as highlighted in the product table at the conclusion of this “Products” section.

Data Storage Media/Head Manufacturing

Advancements in data storage are being driven by a wave of innovative consumer electronics with small form factors and immense storage capacities, as well as an increasing need for high-volume storage options to support remote computing and networking, such as cloud computing. Our process control and yield management solutions are designed to enable customers to rapidly understand and resolve complex manufacturing problems, which can help improve time to market and product yields. To support manufacturing of substrates, media and thin film head wafers, we offer a portfolio of metrology and defect inspection solutions, as highlighted in the product table at the conclusion of this “Products” section.

General Purpose/Lab Applications

A range of industries, including general scientific and materials research and optoelectronics, require measurements of surface topography and film thickness, to either control their processes or research new material characteristics. Typical surface metrology parameters that our tools address include flatness, roughness, curvature, peak-to-valley, asperity, waviness, texture, volume, sphericity, slope, density, stress, hardness, bearing ratio and step height (mainly in the micron to nanometer range). Film thickness measurements can also include determination of refractive index. We also offer a portfolio of high-throughput nanomechanical testers for material characterization, including hardness, modulus and adhesion.

Previous-Generation KLA Systems

Our KLA Pro group provides fully refurbished systems, remanufactured legacy systems, and enhancements and upgrades for previous-generation KLA systems. When a customer needs to move to the next manufacturing node, KLA's Pro offerings can help maximize the value of the customer's existing assets.

Specialty Semiconductor Process:

SPTS Technologies, a wholly-owned subsidiary of KLA, designs, manufactures and markets wafer processing solutions for the global semiconductor and related industries. It provides etch and deposition processes on a range of single wafer handling platforms for wafer sizes up to 330mm, as well as 400mm taped frame assemblies. These products include etch and deposition equipment designed to address advanced IC packaging manufacturing, and also manufacturing of devices such as MEMS, LEDs, high speed RF and power semiconductors. The technology and products of SPTS are used by universities, research institutes, and full-scale production companies.

The Omega family of plasma etch solutions includes the Rapier, Synapse, and ICP process modules. The latest generation Rapier deep reactive ion etch ("DRIE") module etches large and small structures in silicon MEMS devices such as microphones, accelerometers and gyroscopes. The Si etch modules are also used in advanced packaging to create through-silicon vias, and to rapidly etch wafers to a thickness of less than 10µm for very high density die stacking. The Synapse module etches strongly bond materials such as wide bandgap compounds for power switches, and piezoelectric resonators. The ICP module is used in the manufacture of devices such as RF power amplifiers and vertical cavity surface emitting lasers ("VCSELs") and etches materials including dielectrics and III-V and II-VI semiconductors.

The Mosaic Plasma Dicing solution includes the Rapier-S series of process modules and uses a non-contact etch process to singulate die on full thickness and taped-framed wafers. Because plasma dicing does not cause chipping or cracking, chip designers can place die much closer together, increasing die count per wafer. Plasma dicing does not degrade silicon strength and produces fewer defects than conventional dicing techniques. These characteristics are increasingly important for zero-defect automotive applications and die-to-die bonding.

The Sigma systems deposit conducting and insulating layers by physical vapor deposition (PVD), sometimes referred to as "sputtering." For the advanced packaging market, the Sigma system is used to create redistribution and under-bump layers in fan-in and fan-out packages. For power management devices, thick conductor layers are deposited on the front side of the wafer, and solderable stacks on the backside. In the RF/MEMS space, the Sigma system is used to deposit uniform, stress-controlled piezoelectric films for bulk acoustic wave ("BAW") high frequency filters.

The Delta plasma enhanced chemical vapor deposition ("PECVD") systems are used for a wide range of dielectric applications within MEMS, compound semiconductor, photonics and advanced packaging industries. SPTS specializes in depositing silicon oxide and nitride layers at temperatures below 200°C, with tightly controlled stress and optical properties.

The Primaxx HF Release Etch products are used to remove sacrificial silicon oxide layers, primarily to release silicon microstructures in MEMS devices. SPTS's proprietary dry process avoids stiction of released moving parts and subsequent damage to delicate structures, common issues with conventional wet processing technology.

The Xactix XeF2 Release Etch products are used for isotropic etching of silicon to release MEMS devices. As a vapor phase etchant, XeF2 avoids many of the problems typically associated with wet or plasma etch processes.

Single wafer platforms: SPTS offers a range of single wafer handling platforms for Omega, Sigma, Mosaic, Delta, Primaxx, and Xactix systems for volume production, R&D and pilot production environments.

The MVD system replaces traditional liquid coating processes with a highly reproducible molecular vapor deposition ("MVD") alternative that is valuable for MEMS/BioMEMS manufacturing applications. The MVD system is also used for commercial applications requiring moisture barriers, anti-corrosion coatings, or release layers for imprinting.

The Magna system uses inkjet technology for three-dimensional printing of underfill dam structures and thick isolating layers in defined areas of a chip, for volume production applications.

JEText is the latest generation inkjet system for semiconductor package marking.

PCB, Display and Component Inspection:

Printed Circuit Board ("PCB") Manufacturing

PCBs are the basic interconnect platforms for the electronic components that comprise all electronic equipment. An assembly of one or more PCBs on which desired components have been mounted forms an essential part of most electronic products. PCBs are manufactured in a series of complex steps, generally starting with a sheet of epoxy-fiberglass (or other material with electric insulating qualities), laminated with a conducting material such as copper. The conductor pattern is subsequently transferred to the substrate either through a direct imaging ("DI") or photolithographic process and a chemical etching process, followed by removal of excess conducting material, leaving the desired conducting metal pattern printed on the layer.

Because PCBs are susceptible to various defects (electrical shorts, open circuits and insufficient or off-measure conductor widths), inspection is required throughout PCB production to identify such defects, which are then repaired, if possible. Early detection of these defects increases the possibility of successful repair and reduces the number of unusable boards, thereby reducing the overall cost to the manufacturer. Early detection and repair are particularly valuable in cases of multilayered and 'build-up' boards, wherein PCB layers are embedded inside the finished board.

KLA's Orbotech subsidiary manufactures several solutions intended for use by manufacturers of PCBs to streamline and increase the efficiency and yield of PCB production.

Direct Imaging ("DI")

Direct imaging technology enables the manufacture of higher density, more complex PCBs, with significantly higher yields and reduced manufacturing costs, through the elimination of artwork costs and the scrap created by contact printing. The DI involves the transfer of digital image data directly from the electronic media onto the photoresist or solder resist, thereby eliminating the need for exposing photoresist through a production photolithography tool. This process translates into fewer manufacturing steps, lower material costs and greater accuracy of layer-to-layer registration.

Orbotech's direct imaging (DI) solutions include the Nuvogo series, the Paragon-Ultra series, and the Orbotech Diamond series. Nuvogo is an advanced DI series for substrate-like PCB ("SLP"), modified semi-additive process ("mSAP"), advanced high density interconnect ("HDI"), and flex and advanced multi-layer PCB ("MLB") mass production. The Paragon-Ultra series serves complex applications including flip chip ball grid array ("FC-BGA"), flip chip-chip scale package ("FC-CSP") and BGA/CSP. Orbotech Diamond is a high capacity, high throughput DI series to address challenging surface topographies.

Automated Optical Inspection ("AOI")

PCB-AOI solutions are computerized, electro-optical systems for inspection and identification of defects in PCBs and photolithography tools at various stages of production. Orbotech's AOI solutions include the Ultra Dimension series, the Ultra Fusion/Fusion series and the Discovery II series. The Ultra Dimension series incorporates pattern inspection, laser via inspection, remote multi-image verification and two-dimensional metrology, to offer advanced electronics manufacturers a way to significantly improve their quality and yield. The Ultra Dimension solutions are suitable for advanced IC substrates, substrate-like PCB ("SLP"), modified semi-additive process ("mSAP"), advanced HDI, flexible printed circuits and more. The Fusion/Ultra Fusion series inspection solutions include offerings for advanced IC substrates, SLP, mSAP, advanced HDI, flexible printed circuits and more. The Discovery II AOI series AOI handles inspection challenges for MLB, quick turnaround ("QTA"), flex and HDI mass production.

Automated Optical Shaping ("AOS")

AOS solutions are designed to address certain limitations inherent in the manual repair of PCBs by enabling the automatic shaping of defects in PCB production. Such defects include excess copper (causing electrical shorts) and missing copper (causing electrical opens). Efficient shaping can reduce the scrapping of unusable panels during the manufacturing process, enabling a significant reduction in manufacturers' overall manufacturing costs. Orbotech AOS solutions ablate the excess conductor material or add copper where missing, and are commonly used for advanced PCBs, where manual repair is not practical.

Orbotech's Precise series is an automated solution for shaping both open and shorts defects for increasingly fine line/space circuitry. The PerFix series addresses excess copper defects for advanced IC substrates, fine line applications, SLP/mSAP, advanced flex applications, and complex HDI and MLB manufacturing.

Inkjet/Additive Printing

Additive printing refers to the stage in the PCB manufacturing process during which characters and other non-functional patterns ("legends") are printed on the PCB. Using a digital, non-contact, additive-based printing technology, digital print heads release droplets of ink from small apertures directly onto a given medium to create the required image. The Sprint series is our flagship solution for additive printing.

Laser Drilling

Ultraviolet ("UV") laser drilling is used to generate the interconnection (vias) between different layers in IC substrates for advanced packaging applications, where traditional mechanical drills or CO2 laser techniques cannot achieve the accuracy required. The Emerald 160 UV laser drilling solutions address challenging IC substrate, IC packaging and flex applications, including skiving and routing.

Laser Plotting

Laser plotters provide PCB manufacturers with the capability to quickly transform circuit designs on electronic media or design data retrieved from computer aided manufacturing ("CAM") databases into accurate, reliable artwork for production photolithography tools. Orbotech's LP-9 high speed laser plotters are designed for printing high density jobs on film that is subsequently used in the traditional PCB photolithography process.

Smart Factory/Industry 4.0

Orbotech Smart Factory is an Industry 4.0 compliant solution that delivers manufacturing intelligence to help manufacturers increase yield, improve production floor management and better track production trends.

Pre-Production

CAM and engineering solutions from Frontline P.C.B. Solutions Limited Partnership ("Frontline"), an Orbotech subsidiary, are designed for use in the PCB pre-production phase to facilitate automation and integration of the sales, tooling, production data and inspection needs associated with PCB production.

Display Manufacturing

Flat Panel Display ("FPDs"), which include liquid-crystal displays ("LCDs"), organic light-emitting diode ("OLED") displays and other types of displays, are currently used for laptop and desktop computers, tablets, televisions, smartphones, public electronic signs, automotive displays, digital and video cameras, augmented reality/virtual reality ("AR/VR"), wearable devices and a variety of other devices for technical, medical, military, aerospace and consumer electronics applications. LCDs and OLEDs are susceptible to various defects, many of which result from the deposition, photolithography and etching processes used in their production. Detection and repair of these defects during the production process allows manufacturers to improve monitoring of their production processes, avoid the expense of further costly material and improve their yields.

Orbotech's FPD AOI and test systems identify and classify defects that may impact the performance of the display panel, while our repair systems are designed to enable customers to repair defects, thereby further improving the manufacturer's yield and grade (quality) of displays.

Automated Optical Inspection ("AOI")

Orbotech's automated optical inspection solutions accommodate all types of display panels up to and including Gen 10.5. The Quantum and FPI-6000 product lines inspect and classify defects to boost yield of high-volume LCD and flex OLED display production.

Electrical Testing

Orbotech's electrical test systems detect, locate, quantify and characterize electrical, contamination and other defects in active matrix LCD and OLED displays after array fabrication. These systems determine whether individual pixels or lines of pixels are functional and also identify subtle defects such as variations in individual pixel voltage. These defect data files are then used for repair and statistical process control. The Array Checker and Accelon systems comprise Orbotech's electrical testing portfolio.

Repair

Orbotech's Prism and Array Saver systems repair defects of any shape and any pattern for high-end TVs and flex OLED displays.

Component Inspection

For packaged IC component inspection, the ICOS F160 system performs inspection and die sorting after wafer-level packages are tested and diced. Our packaged IC component inspector products, including the ICOS T890, inspect various semiconductor components that are handled in a tray, such as microprocessors or memory chips. Component inspection capability includes 3D coplanarity inspection, measurement of the evenness of the contacts, component height and two-dimensional ("2D") surface inspection. The ICOS T3 and T7 Series tools provide high performance, fully automated optical inspection of packaged IC components, with either tray (T3) or tape (T7) output capability. Both incorporate the SPECTRUM and SIGMA modules, which produce increased 2D and 3D measurement sensitivity for improved detection of issues that affect final package quality. The MV Series provides several configurations to support fully automated or portable optical inspection of packaged integrated circuit components with tape or tray output.

Other:

KLA engages in the research, development and marketing of products for the deposition of thin film coating of various materials on crystalline silicon photovoltaic wafers for solar energy panels.

KLA Services:

Our services programs enable our customers in all business sectors to maintain the high performance and productivity of our products through a flexible portfolio of services. Whether a manufacturing site is producing integrated circuits, wafers, reticles, ICs, display or PCB products, our service teams collaborate with customers to determine the best products and services to meet technology and business requirements.

Product Table

SEGMENT	MARKETS	APPLICATIONS	PRODUCTS
Semiconductor Process Control			
	Chip and Wafer Manufacturing		
	Defect Inspection | Review		
		Patterned Wafer	39xx, 29xx Series Puma™ Series Voyager™ 1015
		High Productivity and All Surface	CIRCL™ with 8 Series, CV350i, BDR300™ and Micro300 modules 8 Series
		Unpatterned Wafer/Surface	Surfscan® SPx Series
		Electron-beam Review	eDR72xx™ Series
		Data Analytics	Klarity® product family 5D Analyzer® RDC FabVision® ProDATA™
	Metrology		
		Overlay	Archer™ Series ATL™ Series
		Optical CD and Shape	SpectraShape™ product family
		Film Thickness/Index	SpectraFilm™ product family Aleris® product family Filmetrics F Series products
		Wafer Geometry and Topography	WaferSight™ Series PWG™ Series Microsense UltraMap® Series
		Edge Bead Removal	CIRCL™
		Ion Implant and Anneal	Therma-Probe® 680xp
		Resistivity	OmniMap® RS product family CIPTech® microHall® Series
		Magnetic Metrology	MicroSense PKMRAM, KerrMapper
		Surface Metrology	HRP® Series P Series Zeta™ Series
		Data Analytics	5D Analyzer®
	In Situ Process Management		
		Lithography, Plasma Etch, Deposition, CMP, Ion Implant, Wet Processing	SensArray® product family AMW
	In Situ Data Analytics		
		Lithography, Plasma Etch, Deposition, CMP, Ion Implant, Wet Processing	SensArray® PlasmaSuite, LithoSuite, ThermalSuite
	Patterning Simulation		
		Lithography Simulation	PROLITH™

SEGMENT	MARKETS	APPLICATIONS	PRODUCTS
	Reticle Manufacturing and Quality Control		
		Defect Inspection (mask shop)	Teron™ 600 Series, TeraScan™ 500XR
		Defect Inspection (wafer fab)	Teron™ SL6xx Series, X5.3™
		Defect Inspection (mask blanks)	FlashScan®
		Pattern Placement Metrology	LMS IPRO Series
		Data Analytics	RDC, Klarity® product family
	Packaging Manufacturing		
		Wafer-Level Packaging Inspection | Metrology	CIRCL™-AP, Kronos 1080, WI-2280, Zeta-5xx/6xx
		Automated Optical Inspection	Ultra Fusion™ VeriFine™ Ultra Dimension™
		Data Analytics	Klarity® product family
	Compound Semiconductor | HDD Manufacturing		
		LED, Photonics, RF Communications	8 Series, WI-2280, Candela® 8720, Zeta-388, MicroXAM Series, P Series, HRP® Series, MicroSense UltraMap® Series
		Power Devices	8 Series, WI-2280, Candela® 8520, MicroXAM Series, P Series, HRP® Series
		MEMS	8 Series, P Series, HRP® Series, MicroXAM Series, Zeta-20, Zeta-300, Zeta-388, Nano Indenter® G200X
		CPV Solar	ZetaScan Series, Zeta-20, Zeta-300 MicroSense PV-6060, UltraMap Series
		Display	ZetaScan Series, SensArray® Process Probe 2070, Zeta-300, P-17 OF, Nano Indenter® G200X
		Data Storage Media | Head Manufacturing	8 Series, Candela® 71xx, Candela® 63xx, HRP® Series, P Series, Zeta-20, MicroXAM Series MicroSense Polar Kerr, DiskMapper
		Data Analytics	Klarity® product family
	General Purpose/Lab Applications		
		Surface Metrology: Stylus Profiling	P Series, Alpha-Step® product family, HRP® Series
		Surface Metrology: Optical Profiling	MicroXAM Series, Zeta™ Series, Filmetrics Profilm3D
		Nanomechanical Testers	Nano Indenter® G200X, T150 UTM iMicro, iNano®
Specialty Semiconductor Process			
	Semiconductor Manufacturing		
		Etch	Omega™ Series
		Plasma Dicing	Mosaic™ Series
		Deposition	Sigma™ Series Delta™ Series Primaxx™ Series Xactix™ Series MVD Series
		Additive Printing	Magna™ JEText™

SEGMENT	MARKETS	APPLICATIONS	PRODUCTS
PCB, Display and Component Inspection			
	Printed Circuit Boards		
		Direct Imaging	Nuvogo™ Series Paragon™ Series Orbotech Diamond™ Series
		Automated Optical Inspection	Ultra Dimension™ Series Ultra Fusion™/ Fusion™ Series Discovery™ II Series
		Automated Optical Shaping	Precise™ Series Ultra PerFix™/ PerFix™ Series
		Inkjet / Additive Printing	Sprint™ Series
		UV Laser Drilling	Emerald™ 160 Series
		Laser Plotters	LP™-9 Family
		Computer Aided Engineering / Manufacturing	Frontline InCAM Series, InQuery, InPlan, InPlan Flex
	Display		
		Inspection	Orbotech Quantum™ Series FPI-6000
		Electrical Testing	Array Checker™ Accelon
		Repair	Orbotech Prism™ Array Saver™
	Components		
		Component Inspection	ICOS® F160, ICOS® T890, ICOS® T3 and T7 Series MV Series
Other			
	Photovoltaic Manufacturing		
		Deposition	Aurora PECVD®

Customers

To support our growing global customer base, we maintain a significant presence throughout Asia, the United States and Europe, staffed with local sales and applications engineers, customer and field service engineers and yield management consultants. We count among our largest customers the leading semiconductor, semiconductor-related and electronic device manufacturers in each of these regions.

For the fiscal years ended June 30, 2019, 2018, and 2017, the following customers each accounted for more than 10% of total revenues primarily in Semiconductor Process Control segment:

Year ended June 30,		
2019	**2018**	**2017**
Taiwan Semiconductor Manufacturing Company Limited	Samsung Electronics Co., Ltd.	Samsung Electronics Co., Ltd.
		Taiwan Semiconductor Manufacturing Company Limited

Our business depends upon the capital expenditures of semiconductor, semiconductor-related and electronic device manufacturers, which in turn is driven by the current and anticipated market demand for ICs, products utilizing ICs and other electronic components. We do not consider our business to be seasonal in nature, but it has historically been cyclical with respect to the capital equipment procurement practices of semiconductor manufacturers, and it is impacted by the investment patterns of such manufacturers in different global markets. Downturns in the semiconductor industry or other industries in which we operate, or slowdowns in the worldwide economy as well as customer consolidation could have a material adverse effect on our future business and financial results.

Sales, Service and Marketing

Our sales, service and marketing efforts are aimed at building long-term relationships with our customers. We focus on providing a single and comprehensive resource for the full breadth of process control, process-enabling and yield management solutions for manufacturing and testing wafers and reticles, integrated circuits (“IC” or “chip”), packaging, light emitting diodes, power devices, compound semiconductor devices, microelectromechanical systems, data storage, printed circuit boards and flat and flexible panel displays, as well as general materials research. Our customers benefit from the simplified planning and coordination, as well as the increased equipment compatibility, which are realized as a result of dealing with a single supplier for multiple products and services. Our revenues are derived primarily from product sales and related service contracts, mostly through our direct sales force.

We believe that the size and location of our field sales, service and applications engineering, and marketing organizations represent a competitive advantage in our served markets. We have direct sales forces in Asia, the United States and Europe. We maintain an export compliance program that is designed to meet the requirements of the United States Departments of Commerce and State.

As of June 30, 2019, we employed approximately 4,280 full-time sales and related personnel, service engineers and applications engineers. In addition to sales and service offices in the United States, we conduct sales, marketing and services out of subsidiaries or branches in other countries, including China, Germany, Israel, United Kingdom, Japan, Singapore, Korea and Taiwan. International revenues accounted for approximately 87%, 88% and 86% of our total revenues in the fiscal years endedJune 30, 2019, 2018 and 2017, respectively. Additional information regarding our revenues from foreign operations for our last three fiscal years can be found in Note 17, “Segment Reporting and Geographic Information” to the Consolidated Financial Statements.

We believe that sales outside the United States will continue to be a significant percentage of our total revenues. Our future performance will depend, in part, on our ability to continue to compete successfully in Asia, one of the largest markets for our equipment. Our ability to compete in this area is dependent upon the continuation of favorable trading relationships between countries in the region and the United States, and our continuing ability to maintain satisfactory relationships with leading semiconductor companies in the region.

International sales and operations may be adversely affected by the imposition of governmental controls, restrictions on export technology, political instability, trade restrictions, changes in tariffs and the difficulties associated with staffing and managing international operations. In addition, international sales may be adversely affected by the economic conditions in each country and by fluctuations in currency exchange rates, and such fluctuations may negatively impact our ability to compete on price with local providers or the value of revenues we generate from our international business. Although we attempt to manage some of the currency risk inherent in non-U.S. dollar product sales through hedging activities, there can be no assurance that such efforts will be adequate. These factors, as well as any of the other risk factors related to our international business and operations that are described in Item 1A, “Risk Factors,” could have a material adverse effect on our future business and financial results.

Backlog

Our backlog which represents our performance obligation to deliver products and services, totaled \$1.84 billion and\$1.62 billion as of June 30, 2019 and 2018, respectively, and primarily consists of sales orders where written customer requests have been received and a majority of the delivery is anticipated within the next 12 months. Orders for service contracts and unreleased products are included in the backlog. All orders are subject to risk of delays, pushouts, and cancellation by the customer, usually with limited or no penalties.

Because customers can potentially change delivery schedules or delay or cancel orders, and because some orders are received and shipped within the same quarter, our shipment backlog at any particular date is not necessarily indicative of business volumes or actual sales for any succeeding periods. The historical cyclicality of the semiconductor industry combined with the lead times from our suppliers sometimes result in timing disparities between, on the one hand, our ability to manufacture, deliver and install products and, on the other, the requirements of our customers. In our efforts to balance the requirements of our customers with the availability of resources, management of our operating model and other factors, we often must exercise discretion and judgment as to the timing and prioritization of manufacturing, deliveries and installations of products, which may impact the timing of revenue recognition with respect to such products.

Research and Development

The market for semiconductor and electronics industries is characterized by rapid technological development and product innovation. These technical innovations are inherently complex and require long development cycles and appropriate professional staffing. We believe that continued and timely development of new products and enhancements to existing products are necessary to maintain our competitive position. Accordingly, we devote a significant portion of our human and financial resources to research and development programs and seek to maintain close relationships with customers to remain responsive to their needs. In addition, we may enter into certain strategic development and engineering programs whereby certain government agencies or other third parties fund a portion of our research and development costs. As of June 30, 2019, we employed approximately 2,710 full-time research and development personnel.

Our key research and development activities during the fiscal year endedJune 30, 2019 involved the development of process control and yield management equipment aimed at addressing the challenges posed by shrinking device sizes, the transition to new production materials, new device and circuit architecture, more demanding lithography processes and new packaging techniques. For information regarding our research and development expenses during the last three fiscal years, see Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in this Annual Report on Form 10-K.

The strength of our competitive positions in many of our existing markets is largely due to our leading technology, which is the result of our continuing significant investments in product research and development. Even during down cycles in the semiconductor industry, we have remained committed to significant engineering efforts toward both product improvement and new product development in order to enhance our competitive position. New product introductions, however, may contribute to fluctuations in operating results, since customers may defer ordering existing products, and, if new products have reliability or quality problems, those problems may result in reduced orders, higher manufacturing costs, delays in acceptance of and payment for new products, and additional service and warranty expenses. There can be no assurance that we will successfully develop and manufacture new products, or that new products introduced by us will be accepted in the marketplace. If we do not successfully introduce new products, our results of operations will be adversely affected.

Manufacturing, Raw Materials and Supplies

We perform system design, assembly and testing in-house and utilize an outsourcing strategy for the manufacture of components and major subassemblies. Our in-house manufacturing activities consist primarily of assembling and testing components and subassemblies that are acquired through third-party vendors and integrating those subassemblies into our finished products. Our principal manufacturing activities take place in the United States, Singapore, Israel, Germany, United Kingdom, Italy, and China. As of June 30, 2019, we employed approximately 1,690 full-time manufacturing personnel.

Some critical parts, components and subassemblies (collectively, “parts”) that we use are designed by us and manufactured by suppliers in accordance with our specifications, while other parts are standard commercial products. We use numerous vendors to supply parts and raw materials for the manufacture and support of our products. Although we make reasonable efforts to ensure that these parts and raw materials are available from multiple suppliers, this is not always possible, and certain parts and raw materials included in our systems may be obtained only from a single supplier or a limited group of suppliers. Through our business interruption planning, we endeavor to minimize the risk of production interruption by, among other things, monitoring the financial condition of suppliers of key parts and raw materials, identifying (but not necessarily qualifying) possible alternative suppliers of such parts and materials, and ensuring adequate inventories of key parts and raw materials are available to maintain manufacturing schedules.

Although we seek to reduce our dependence on sole and limited source suppliers, in some cases the partial or complete loss of certain of these sources, or disruptions within our suppliers’ often-complex supply chains, could disrupt scheduled deliveries to customers, damage customer relationships and have a material adverse effect on our results of operations.

Competition

The worldwide market for technologically advanced, process control, process-enabling and yield management solutions used by semiconductor and electronics manufactures is highly competitive. In each of our product markets, we face competition from established and potential competitors, such as Applied Materials, Inc., ASML Holding N.V., Hitachi High-Technologies Corporation, Nanometrics, Inc. and Rudolph Technologies, Inc., some of which may have greater financial, research, engineering, manufacturing and marketing resources than we have. We may also face future competition from new market entrants from other overseas and domestic sources. We expect our competitors to continue to improve the design and performance of their current products and processes and to introduce new products and processes with improved price and performance characteristics. We believe that, to remain competitive, we will require significant financial resources to offer a broad range of products, to maintain customer service and support centers worldwide, and to invest in product and process research and development.

We believe that, while price and delivery are important competitive factors, the customers' overriding requirement is for systems that easily and effectively incorporate automated and highly accurate inspection and metrology capabilities into their existing manufacturing processes to enhance productivity. Significant competitive factors in the market for process control and yield management systems include system performance, ease of use, reliability, interoperability with the existing installed base and technical service and support, as well as overall cost of ownership.

Management believes that we are well positioned in the market with respect to both our products and services. However, any loss of competitive position could negatively impact our prices, customer orders, revenues, gross margins and market share, any of which would negatively impact our operating results and financial condition.

Acquisitions and Alliances

We continuously evaluate strategic acquisitions and alliances to expand our technologies, product offerings and distribution capabilities. Acquisitions involve numerous risks, including management issues and costs in connection with integration of the operations, technologies and products of the acquired companies, and the potential loss of key employees of the acquired companies. The inability to manage these risks effectively could negatively impact our operating results and financial condition.

Patents and Other Proprietary Rights

We protect our proprietary technology through reliance on a variety of intellectual property laws, including patent, copyright and trade secret. We have filed and obtained a number of patents in the United States and abroad and intend to continue pursuing the legal protection of our technology through intellectual property laws. In addition, from time to time we acquire license rights under United States and foreign patents and other proprietary rights of third parties, and we attempt to protect our trade secrets and other proprietary information through confidentiality and other agreements with our customers, suppliers, employees and consultants and through other security measures.

Although we consider patents and other intellectual property significant to our business, no single patent, copyright or trade secret is in itself essential to us as a whole or to any of our business segments.

No assurance can be given that patents will be issued on any of our applications, that license assignments will be made as anticipated, or that our patents, licenses or other proprietary rights will be sufficiently broad to protect our technology. No assurance can be given that any patents issued to or licensed by us will not be challenged, invalidated or circumvented or that the rights granted thereunder will provide us with a competitive advantage. In addition, there can be no assurance that we will be able to protect our technology or that competitors will not be able to independently develop similar or functionally competitive technology.

Environmental Matters

We are subject to a variety of federal, state and local governmental laws and regulations related to the protection of the environment, including without limitation the management of hazardous materials that we use in our business operations. Compliance with these environmental laws and regulations has not had, and is not expected to have, a material effect on our capital expenditures, financial condition, results of operations or competitive position.

However, any failure to comply with environmental laws and regulations may subject us to a range of consequences, including fines, suspension of certain of our business activities, limitations on our ability to sell our products, obligations to remediate environmental contamination, and criminal and civil liabilities or other sanctions. In addition, changes in environmental laws and regulations could require us to invest in potentially costly pollution control equipment, alter our manufacturing processes or use substitute materials. Our failure to comply with these laws and regulations could subject us to future liabilities.

Employees

As of June 30, 2019, we employed approximately 10,020 full-time employees. Except for our employees in Belgium (where a trade union delegation has been recognized) and our employees in the German operations of our MIE business unit (who are represented by employee works council), none of our employees are represented by a labor union. We have not experienced work stoppages and believe that our employee relations are good.

Competition is intense in the recruiting of personnel in the semiconductor and semiconductor equipment industry. We believe that our future success will depend, in part, on our continued ability to hire and retain qualified management, marketing and technical employees.

Glossary

This section provides definitions for certain industry and technical terms commonly used in our business, which are used elsewhere in this Item 1:

active matrix	A technology used in flat panel displays to control the imaging-produced active areas where the display pixels are located.
broadband	An illumination source with a wide spectral bandwidth.
computer-aided manufacturing (CAM)	An application technology that uses computer software and machinery to facilitate and automate manufacturing processes.
critical dimension (CD)	The dimension of a specified geometry (such as the width of a patterned line or the distance between two lines) that must be within design tolerances in order to maintain semiconductor device performance consistency.
design rules	Rules that set forth the allowable dimensions of particular features used in the design and layout of integrated circuits.
design technology co-optimization (DTCO)	The methodology of optimizing semiconductor design and process simultaneously during the technology definition phase.
die	The term for a single semiconductor chip on a wafer.
electron-beam	An illumination source comprised of a stream of electrons emitted by a single source.
epitaxial silicon (epi)	A substrate technology based on growing a crystalline silicon layer on top of a silicon wafer. The added layer, where the structure and orientation are matched to those of the silicon wafer, includes dopants (impurities) to imbue the substrate with special electronic properties.
excursion	For a manufacturing step or process, a deviation from normal operating conditions that can lead to decreased performance or yield of the final product.
fab	The main manufacturing facility for processing semiconductor wafers.
flat panel display (FPD)	A display appliance that uses a thin panel design. Also includes flexible displays.
flexible printed circuit (FPC)	Flexible circuits in a device provide mechanical support and connect various electrical and mechanical components together using material that can be shaped, bent, twisted or folded.
front end	The processes that make up the first half of the semiconductor manufacturing process, from wafer start through final contact window processing.
high-density interconnect (HDI)	HDI PCBs have a higher wiring density per unit area, finer lines and spaces, smaller vias, smaller capture pads and higher connection pad density than conventional PCBs.
in situ	Refers to processing steps or tests that are done without moving the wafer. Latin for “in original position.”
interconnect	A highly conductive material, usually copper or aluminum, which carries electrical signals to different parts of a die.
liquid crystal display (LCD)	A flat panel display technology that uses a backlight to provide light to individual pixels arranged in a grid.

lithography	A process in which a masked pattern is projected onto a photosensitive coating that covers a substrate.
mask shop	A manufacturer that produces the reticles used by semiconductor manufacturers.
metrology	The science of measurement to determine dimensions, quantity or capacity. In the semiconductor industry, typical measurements include critical dimension, overlay and film thickness.
microelectromechanical systems (MEMS)	Micron-sized mechanical devices powered by electricity, created using processes similar to those used to manufacture IC devices.
micron	A metric unit of linear measure that equals 1/1,000,000 meter (10^{-6}m), or 10,000 angstroms (the diameter of a human hair is approximately 75 microns).
Moore's Law	An observation made by Gordon Moore in 1965 and revised in 1975 that the number of transistors on a typical integrated circuit doubles approximately every two years.
multi-layer boards (MLB)	A printed circuit board (PCB) made up of three or more conductive layers that are pressed together.
nanometer (nm)	One billionth (10^{-9}) of a meter.
organic light emitting diode (OLED)	A flat panel display technology containing thin flexible sheets of an organic electroluminescent material, used for visual displays.
patterned	For semiconductor manufacturing and industries using similar processing technologies, refers to substrates that have electronic circuits (transistors, interconnects, etc.) fabricated on the surface.
photoresist	A radiation-sensitive material that, when properly applied to a variety of substrates and then properly exposed and developed, masks portions of the substrate with a high degree of integrity.
printed circuit board (PCB)	A board used to mechanically support and electrically connect various electrical and mechanical components.
process control	The ability to maintain specifications of products and equipment during manufacturing operations.
reticle	A very flat glass plate that contains the patterns to be reproduced on a wafer.
silicon on insulator (SOI)	A substrate technology comprised of a thin top silicon layer separated from the silicon substrate by a thin insulating layer of glass or silicon dioxide, used to improve performance and reduce the power consumption of IC circuits.
SLP/mSAP	Substrate-like PCB/modified semi-additive process is an advanced manufacturing process or technique that enables fine line and space patterns with higher manufacturing precision that maximizes circuit density.
substrate	A wafer or other material on which layers of various materials are added during the process of manufacturing semiconductor devices (circuits), flat panel displays or printed circuit boards.
unpatterned	For semiconductor manufacturing and industries using similar processing technologies, refers to substrates that do not have electronic circuits (transistors, interconnects, etc.) fabricated on the surface. These can include bare silicon wafers, other bare substrates or substrates on which blanket films have been deposited.
yield management	The ability of a semiconductor manufacturer to oversee, manage and control its manufacturing processes so as to maximize the percentage of manufactured wafers or die that conform to pre-determined specifications.

The definitions above are from internal sources, as well as online semiconductor dictionaries such as https://www.semiconductors.org/faq/glossary/.

ITEM 1A. RISK FACTORS

A description of factors that could materially affect our business, financial condition or operating results is provided below.

Risks Associated with Our Industry

Ongoing changes in the technology industry, as well as the semiconductor industry in particular, could expose our business to significant risks.

The industries that we serve, including the semiconductor, flat panel display and printed circuit board industries, are constantly developing and changing over time. Many of the risks associated with operating in these industries are comparable to the risks faced by all technology companies, such as the uncertainty of future growth rates in the industries that we serve, pricing trends in the end-markets for consumer electronics and other products (which place a growing emphasis on our customers' cost of ownership), changes in our customers' capital spending patterns and, in general, an environment of constant change and development, including decreasing product and component dimensions; use of new materials; and increasingly complex device structures, applications and process steps. If we fail to appropriately adjust our cost structure and operations to adapt to any of these trends, or, with respect to technological advances, if we do not timely develop new technologies and products that successfully anticipate and address these changes, we could experience a material adverse effect on our business, financial condition and operating results.

In addition, we face a number of risks specific to ongoing changes in the semiconductor industry, as significant majority of our sales are our process control and yield management products sold to semiconductor manufacturers. Some of the trends that our management monitors in operating our business include the following:

- the potential for reversal of the long-term historical trend of declining cost per transistor with each new generation of technological advancement within the semiconductor industry, and the adverse impact that such reversal may have upon our business;
- the increasing cost of building and operating fabrication facilities and the impact of such increases on our customers' capital equipment investment decisions;
- differing market growth rates and capital requirements for different applications, such as memory, logic and foundry;
- lower level of process control adoption by our memory customers compared to our foundry and logic customers;
- our customers' reuse of existing and installed products, which may decrease their need to purchase new products or solutions at more advanced technology nodes;
- the emergence of disruptive technologies that change the prevailing semiconductor manufacturing processes (or the economics associated with semiconductor manufacturing) and, as a result, also impact the inspection and metrology requirements associated with such processes;
- the higher design costs for the most advanced integrated circuits, which could economically constrain leading-edge manufacturing technology customers to focus their resources on only the large, technologically advanced products and applications;
- the possible introduction of integrated products by our larger competitors that offer inspection and metrology functionality in addition to managing other semiconductor manufacturing processes;
- changes in semiconductor manufacturing processes that are extremely costly for our customers to implement and, accordingly, our customers could reduce their available budgets for process control equipment by reducing inspection and metrology sampling rates for certain technologies;
- the bifurcation of the semiconductor manufacturing industry into (a) leading edge manufacturers driving continued research and development into next-generation products and technologies and (b) other manufacturers that are content with existing (including previous generation) products and technologies;
- the ever escalating cost of next-generation product development, which may result in joint development programs between us and our customers or government entities to help fund such programs that could restrict our control of, ownership of and profitability from the products and technologies developed through those programs; and
- the entry by some semiconductor manufacturers into collaboration or sharing arrangements for capacity, cost or risk with other manufacturers, as well as increased outsourcing of their manufacturing activities, and greater focus only on specific markets or applications, whether in response to adverse market conditions or other market pressures.

Any of the changes described above may negatively affect our customers' rate of investment in the capital equipment that we produce, which could result in downward pressure on our prices, customer orders, revenues and gross margins. If we do not successfully manage the risks resulting from any of these or other potential changes in our industries, our business, financial condition and operating results could be adversely impacted.

We are exposed to risks associated with a highly concentrated customer base.

Our customer base, particularly in the semiconductor industry, historically has been highly concentrated due to corporate consolidation, acquisitions and business closures. In this environment, orders from a relatively limited number of manufacturers have accounted for, and are expected to continue to account for, a substantial portion of our sales. This increasing concentration exposes our business, financial condition and operating results to a number of risks, including the following:

- The mix and type of customers, and sales to any single customer, may vary significantly from quarter to quarter and from year to year, which exposes our business and operating results to increased volatility tied to individual customers.
- New orders from our foundry customers in the past several years have constituted a significant portion of our total orders. This concentration increases the impact that future business or technology changes within the foundry industry may have on our business, financial condition and operating results.
- In a highly concentrated business environment, if a particular customer does not place an order, or if they delay or cancel orders, we may not be able to replace the business. Furthermore, because our process control and yield management products are configured to each customer's specifications, any changes, delays or cancellations of orders may result in significant, non-recoverable costs.
- As a result of this consolidation, the customers that survive the consolidation represent a greater portion of our sales and, consequently, have greater commercial negotiating leverage. Many of our large customers have more aggressive policies regarding engaging alternative, second-source suppliers for the products we offer and, in addition, may seek and, on occasion, receive pricing, payment, intellectual property-related or other commercial terms that may have an adverse impact on our business. Any of these changes could negatively impact our prices, customer orders, revenues and gross margins.
- Certain customers have undergone significant ownership changes, created alliances with other companies, experienced management changes or have outsourced manufacturing activities, any of which may result in additional complexities in managing customer relationships and transactions. Any future change in ownership or management of our existing customers may result in similar challenges, including the possibility of the successor entity or new management deciding to select a competitor's products.
- The highly concentrated business environment also increases our exposure to risks related to the financial condition of each of our customers. For example, as a result of the challenging economic environment during fiscal year 2009, we were (and in some cases continue to be) exposed to additional risks related to the continued financial viability of certain of our customers. To the extent our customers experience liquidity issues in the future, we may be required to incur additional bad debt expense with respect to receivables owed to us by those customers. In addition, customers with liquidity issues may be forced to reduce purchases of our equipment, delay deliveries of our products, discontinue operations or may be acquired by one of our customers, and in either case such event would have the effect of further consolidating our customer base.
- Semiconductor manufacturers generally must commit significant resources to qualify, install and integrate process control and yield management equipment into a semiconductor production line. We believe that once a semiconductor manufacturer selects a particular supplier's process control and yield management equipment, the manufacturer generally relies upon that equipment for that specific production line application for an extended period of time. Accordingly, we expect it to be more difficult to sell our products to a given customer for that specific production line application and other similar production line applications if that customer initially selects a competitor's equipment. Similarly, we expect it to be challenging for a competitor to sell its products to a given customer for a specific production line application if that customer initially selects our equipment.
- Prices differ among the products we offer for different applications due to differences in features offered or manufacturing costs. If there is a shift in demand by our customers from our higher-priced to lower-priced products, our gross margin and revenue would decrease. In addition, when products are initially introduced, they tend to have higher costs because of initial development costs and lower production volumes relative to the previous product generation, which can impact gross margin.

Any of these factors could have a material adverse effect on our business, financial condition and operating results.

We operate in industries that have historically been cyclical, including the semiconductor industry. The purchasing decisions of our customers are highly dependent on the economies of both the local markets in which they are located and the condition of the industry worldwide. If we fail to respond to industry cycles, our business could be seriously harmed.

The timing, length and severity of the up-and-down cycles in the industries in which we serve are difficult to predict. The historically cyclical nature of the semiconductor industry in which we primarily operate is largely a function of our customers' capital spending patterns and need for expanded manufacturing capacity, which in turn are affected by factors such as capacity utilization, consumer demand for products, inventory levels and our customers' access to capital. Cyclicality affects our ability to accurately predict future revenue and, in some cases, future expense levels. During down cycles in our industry, the financial results of our customers may be negatively impacted, which could result not only in a decrease in, or cancellation or delay of, orders (which are generally subject to cancellation or delay by the customer with limited or no penalty) but also a weakening of their financial condition that could impair their ability to pay for our products or our ability to recognize revenue from certain customers. Our ability to recognize revenue from a particular customer may also be negatively impacted by the customer's funding status, which could be weakened not only by adverse business conditions or inaccessibility to capital markets for any number of macroeconomic or company-specific reasons, but also by funding limitations imposed by the customer's unique organizational structure. Any of these factors could negatively impact our business, operating results and financial condition.

When cyclical fluctuations result in lower than expected revenue levels, operating results may be adversely affected and cost reduction measures may be necessary for us to remain competitive and financially sound. During periods of declining revenues, we must be in a position to adjust our cost and expense structure to prevailing market conditions and to continue to motivate and retain our key employees. If we fail to respond, or if our attempts to respond fail to accomplish our intended results, then our business could be seriously harmed. Furthermore, any workforce reductions and cost reduction actions that we adopt in response to down cycles may result in additional restructuring charges, disruptions in our operations and loss of key personnel. In addition, during periods of rapid growth, we must be able to increase manufacturing capacity and personnel to meet customer demand. We can provide no assurance that these objectives can be met in a timely manner in response to industry cycles. Each of these factors could adversely impact our operating results and financial condition.

In addition, our management typically provides quarterly forecasts for certain financial metrics, which, when made, are based on business and operational forecasts that are believed to be reasonable at the time. However, largely due to the historical cyclicality of our business and the industries in which we operate, and the fact that business conditions in our industries can change very rapidly as part of these cycles, our actual results may vary (and have varied in the past) from forecasted results. These variations can occur for any number of reasons, including, but not limited to, unexpected changes in the volume or timing of customer orders, product shipments or product acceptance; an inability to adjust our operations rapidly enough to adapt to changing business conditions; or a different than anticipated effective tax rate. The impact on our business of delays or cancellations of customer orders may be exacerbated by the short lead times that our customers expect between order placement and product shipment. This is because order delays and cancellations may lead not only to lower revenues, but also, due to the advance work we must do in anticipation of receiving a product order to meet the expected lead times, to significant inventory write-offs and manufacturing inefficiencies that decrease our gross margin. Any of these factors could materially and adversely affect our financial results for a particular quarter and could cause those results to differ materially from financial forecasts we have previously provided. We provide these forecasts with the intent of giving investors and analysts a better understanding of management's expectations for the future, but those reviewing such forecasts must recognize that such forecasts are comprised of, and are themselves, forward-looking statements subject to the risks and uncertainties described in this Item 1A and elsewhere in this report and in our other public filings and public statements. If our operating or financial results for a particular period differ from our forecasts or the expectations of investment analysts, or if we revise our forecasts, the market price of our common stock could decline.

Risks Related to Our Business Model and Capital Structure

If we do not develop and introduce new products and technologies in a timely manner in response to changing market conditions or customer requirements, our business could be seriously harmed.

Success in the industries in which we serve, including the semiconductor, flat panel display and printed circuit board industries depends, in part, on continual improvement of existing technologies and rapid innovation of new solutions. The primary driver of technology advancement in the semiconductor industry has been to shrink the lithography that prints the circuit design on semiconductor chips. That driver appears to be slowing, which may cause semiconductor manufacturers to delay investments in equipment, investigate more complex device architectures, use new materials and develop innovative fabrication processes. These and other evolving customer plans and needs require us to respond with continued development programs and cut back or discontinue older programs, which may no longer have industry-wide support. Technical innovations are inherently complex and require long development cycles and appropriate staffing of highly qualified employees. Our competitive advantage and future business success depend on our ability to accurately predict evolving industry standards, develop and introduce new products and solutions that successfully address changing customer needs, win market acceptance of these new products and solutions, and manufacture these new products in a timely and cost-effective manner. Our failure to accurately predict evolving industry standards and develop as well as offer competitive technology solutions in a timely manner with cost-effective products could result in loss of market share, unanticipated costs, and inventory obsolescence, which would adversely impact our business, operating results and financial condition.

We must continue to make significant investments in research and development in order to enhance the performance, features and functionality of our products, to keep pace with competitive products and to satisfy customer demands. Substantial research and development costs typically are incurred before we confirm the technical feasibility and commercial viability of a new product, and not all development activities result in commercially viable products. There can be no assurance that revenues from future products or product enhancements will be sufficient to recover the development costs associated with such products or enhancements. In addition, we cannot be sure that these products or enhancements will receive market acceptance or that we will be able to sell these products at prices that are favorable to us. Our business will be seriously harmed if we are unable to sell our products at favorable prices or if the market in which we operate does not accept our products.

In addition, the complexity of our products exposes us to other risks. We regularly recognize revenue from a sale upon shipment of the applicable product to the customer (even before receiving the customer’s formal acceptance of that product) in certain situations, including sales of products for which installation is considered perfunctory, transactions in which the product is sold to an independent distributor and we have no installation obligations, and sales of products where we have previously delivered the same product to the same customer location and that prior delivery has been accepted. However, our products are very technologically complex and rely on the interconnection of numerous subcomponents (all of which must perform to their respective specifications), so it is conceivable that a product for which we recognize revenue upon shipment may ultimately fail to meet the overall product’s required specifications. In such a situation, the customer may be entitled to certain remedies, which could materially and adversely affect our operating results for various periods and, as a result, our stock price.

We derive a substantial percentage of our revenues from sales of inspection products. As a result, any delay or reduction of sales of these products could have a material adverse effect on our business, financial condition and operating results. The continued customer demand for these products and the development, introduction and market acceptance of new products and technologies are critical to our future success.

Our success is dependent in part on our technology and other proprietary rights. If we are unable to maintain our lead or protect our proprietary technology, we may lose valuable assets.

Our success is dependent in part on our technology and other proprietary rights. We own various United States and international patents and have additional pending patent applications relating to some of our products and technologies. The process of seeking patent protection is lengthy and expensive, and we cannot be certain that pending or future applications will actually result in issued patents or that issued patents will be of sufficient scope or strength to provide meaningful protection or commercial advantage to us. Other companies and individuals, including our larger competitors, may develop technologies and obtain patents relating to our business that are similar or superior to our technology or may design around the patents we own, which may adversely affect our business. In addition, we at times engage in collaborative technology development efforts with our customers and suppliers, and these collaborations may constitute a key component of certain of our ongoing technology and product research and development projects. The termination of any such collaboration, or delays caused by disputes or other unanticipated challenges that may arise in connection with any such collaboration, could significantly impair our research and development efforts, which could have a material adverse impact on our business and operations.

We also maintain trademarks on certain of our products and services and claim copyright protection for certain proprietary software and documentation. However, we can give no assurance that our trademarks and copyrights will be upheld or successfully deter infringement by third parties.

While patent, copyright and trademark protection for our intellectual property is important, we believe our future success in highly dynamic markets is most dependent upon the technical competence and creative skills of our personnel. We attempt to protect our trade secrets and other proprietary information through confidentiality and other agreements with our customers, suppliers, employees and consultants and through other security measures. We also maintain exclusive and non-exclusive licenses with third parties for strategic technology used in certain products. However, these employees, consultants and third parties may breach these agreements, and we may not have adequate remedies for wrongdoing. In addition, the laws of certain territories in which we develop, manufacture or sell our products may not protect our intellectual property rights to the same extent as do the laws of the United States. In any event, the extent to which we can protect our trade secrets through the use of confidentiality agreements is limited, and our success will depend to a significant extent on our ability to innovate ahead of our competitors.

Our future performance depends, in part, upon our ability to continue to compete successfully worldwide.

Our industry includes large manufacturers with substantial resources to support customers worldwide. Some of our competitors are diversified companies with greater financial resources and more extensive research, engineering, manufacturing, marketing, and customer service and support capabilities than we possess. We face competition from companies whose strategy is to provide a broad array of products and services, some of which compete with the products and services that we offer. These competitors may bundle their products in a manner that may discourage customers from purchasing our products, including pricing such competitive tools significantly below our product offerings. In addition, we face competition from smaller emerging companies whose strategy is to provide a portion of the products and services that we offer, using innovative technology to sell products into specialized markets. The strength of our competitive positions in many of our existing markets is largely due to our leading technology, which is the result of continuing significant investments in product research and development. However, we may enter new markets, whether through acquisitions or new internal product development, in which competition is based primarily on product pricing, not technological superiority. Further, some new growth markets that emerge may not require leading technologies. Loss of competitive position in any of the markets we serve, or an inability to sell our products on favorable commercial terms in new markets we may enter, could negatively affect our prices, customer orders, revenues, gross margins and market share, any of which would negatively affect our operating results and financial condition.

Our business would be harmed if we do not receive parts sufficient in number and performance to meet our production requirements and product specifications in a timely and cost-effective manner.

We use a wide range of materials in the production of our products, including custom electronic and mechanical components, and we use numerous suppliers to supply these materials. We generally do not have guaranteed supply arrangements with our suppliers. Because of the variability and uniqueness of customers' orders, we do not maintain an extensive inventory of materials for manufacturing. Through our business interruption planning, we seek to minimize the risk of production and service interruptions and/or shortages of key parts by, among other things, monitoring the financial stability of key suppliers, identifying (but not necessarily qualifying) possible alternative suppliers and maintaining appropriate inventories of key parts. Although we make reasonable efforts to ensure that parts are available from multiple suppliers, certain key parts are available only from a single supplier or a limited group of suppliers. Also, key parts we obtain from some of our suppliers incorporate the suppliers' proprietary intellectual property; in those cases we are increasingly reliant on third parties for high-performance, high-technology components, which reduces the amount of control we have over the availability and protection of the technology and intellectual property that is used in our products. In addition, if certain of our key suppliers experience liquidity issues and are forced to discontinue operations, which is a heightened risk especially during economic downturns, it could affect their ability to deliver parts and could result in delays for our products. Similarly, especially with respect to suppliers of high-technology components, our suppliers themselves have increasingly complex supply chains, and delays or disruptions at any stage of their supply chains may prevent us from obtaining parts in a timely manner and result in delays for our products. Our operating results and business may be adversely impacted if we are unable to obtain parts to meet our production requirements and product specifications, or if we are only able to do so on unfavorable terms. Furthermore, a supplier may discontinue production of a particular part for any number of reasons, including the supplier's financial condition or business operational decisions, which would require us to purchase, in a single transaction, a large number of such discontinued parts in order to ensure that a continuous supply of such parts remains available to our customers. Such "end-of-life" parts purchases could result in significant expenditures by us in a particular period, and ultimately any unused parts may result in a significant inventory write-off, either of which could have an adverse impact on our financial condition and results of operations for the applicable periods.

If we fail to operate our business in accordance with our business plan, our operating results, business and stock price may be significantly and adversely impacted.

We attempt to operate our business in accordance with a business plan that is established annually, revised frequently (generally quarterly), and reviewed by management even more frequently (at least monthly). Our business plan is developed based on a number of factors, many of which require estimates and assumptions, such as our expectations of the economic environment, future business levels, our customers' willingness and ability to place orders, lead-times, and future revenue and cash flow. Our budgeted operating expenses, for example, are based in part on our future revenue expectations. However, our ability to achieve our anticipated revenue levels is a function of numerous factors, including the volatile and historically cyclical nature of our primary industry, customer order cancellations, macroeconomic changes, operational matters regarding particular agreements, our ability to manage customer deliveries, the availability of resources for the installation of our products, delays or accelerations by customers in taking deliveries and the acceptance of our products (for products where customer acceptance is required before we can recognize revenue from such sales), our ability to operate our business and sales processes effectively, and a number of the other risk factors set forth in this Item 1A.

Because our expenses are in most cases relatively fixed in the short term, any revenue shortfall below expectations could have an immediate and significant adverse effect on our operating results. Similarly, if we fail to manage our expenses effectively or otherwise fail to maintain rigorous cost controls, we could experience greater than anticipated expenses during an operating period, which would also negatively affect our results of operations. If we fail to operate our business consistent with our business plan, our operating results in any period may be significantly and adversely impacted. Such an outcome could cause customers, suppliers or investors to view us as less stable, or could cause us to fail to meet financial analysts' revenue or earnings estimates, any of which could have an adverse impact on our stock price.

In addition, our management is constantly striving to balance the requirements and demands of our customers with the availability of resources, the need to manage our operating model and other factors. In furtherance of those efforts, we often must exercise discretion and judgment as to the timing and prioritization of manufacturing, deliveries, installations and payment scheduling. Any such decisions may impact our ability to recognize revenue, including the fiscal period during which such revenue may be recognized, with respect to such products, which could have a material adverse effect on our business, results of operations or stock price.

We have a leveraged capital structure.

As of June 30, 2019, we had $3.45 billion aggregate principal amount of senior, unsecured long-term notes. Additionally, we have commitments for an unfunded Revolving Credit Facility of $1.00 billion under the Credit Agreement. We may incur additional indebtedness in the future by accessing the unfunded portion of our Revolving Credit Facility and/or entering into new financing arrangements. For example, at the same time we announced our intention to acquire Orbotech, we also announced a new stock repurchase program authorizing the repurchase up to $2.00 billion of our common stock, a large portion of which would be financed with new indebtedness. Our ability to pay interest and repay the principal of our current indebtedness is dependent upon our ability to manage our business operations, our credit rating, the ongoing interest rate environment and the other risk factors discussed in this section. There can be no assurance that we will be able to manage any of these risks successfully.

In addition, the interest rates of the senior, unsecured long-term notes may be subject to adjustments from time to time if Moody's Investors Service, Inc. ("Moody's"), Standard & Poor's Ratings Services ("S&P") or, under certain circumstances, a substitute rating agency selected by us as a replacement for Moody's or S&P, as the case may be (a "Substitute Rating Agency"), downgrades (or subsequently upgrades) its rating assigned to the respective series of notes such that the adjusted rating is below investment grade. Accordingly, changes by Moody's, S&P, or a Substitute Rating Agency to the rating of any series of notes, our outlook or credit rating could require us to pay additional interest, which may negatively affect the value and liquidity of our debt and the market price of our common stock could decline. Factors that can affect our credit rating include changes in our operating performance, the economic environment, conditions in the industries we serve, our financial position, including the incurrence of additional indebtedness, and our business strategy.

In certain circumstances involving a change of control followed by a downgrade of the rating of a series of notes by at least two of Moody's, S&P and Fitch Inc., unless we have exercised our right to redeem the notes of such series, we will be required to make an offer to repurchase all or, at the holder's option, any part, of each holder's notes of that series pursuant to the offer described below (the "Change of Control Offer"). In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of notes repurchased plus accrued and unpaid interest, if any, on the notes repurchased, up to, but not including, the date of repurchase. We cannot make any assurance that we will have sufficient financial resources at such time or will be able to arrange financing to pay the repurchase price of that series of notes. Our ability to repurchase that series of notes in such event may be limited by law, by the indenture associated with that series of notes, or by the terms of other agreements to which we may be party at such time. If we fail to repurchase that series of notes as required by the terms of such notes, it would constitute an event of default under the indenture governing that series of notes which, in turn, may also constitute an event of default under other of our obligations.

Borrowings under our Revolving Credit Facility bear interest at a floating rate, and an increase in interest rates would require us to pay additional interest on any borrowings, which may have an adverse effect on the value and liquidity of our debt and the market price of our common stock could decline. The interest rate under our Revolving Credit Facility is also subject to an adjustment in conjunction with our credit rating downgrades or upgrades. Additionally, under our Revolving Credit Facility, we are required to comply with affirmative and negative covenants, which include the maintenance of certain financial ratios, the details of which can be found in Note 8, "Debt," to our Consolidated Financial Statements.

If we fail to comply with these covenants, we will be in default and our borrowings will become immediately due and payable. There can be no assurance that we will have sufficient financial resources or we will be able to arrange financing to repay our borrowings at such time. In addition, certain of our domestic subsidiaries are required to guarantee our borrowings under our Revolving Credit Facility. In the event that we default on our borrowings, these domestic subsidiaries shall be liable for our borrowings, which could disrupt our operations and result in a material adverse impact on our business, financial condition or stock price.

Our leveraged capital structure may adversely affect our financial condition, results of operations and net income per share.

Our issuance and maintenance of higher levels of indebtedness could have adverse consequences including, but not limited to:

- a negative impact on our ability to satisfy our future obligations;
- an increase in the portion of our cash flows that may have to be dedicated to increased interest and principal payments that may not be available for operations, working capital, capital expenditures, acquisitions, investments, dividends, stock repurchases, general corporate or other purposes;
- an impairment of our ability to obtain additional financing in the future; and
- obligations to comply with restrictive and financial covenants as noted in the above risk factor and Note 8, "Debt," to our Consolidated Financial Statements.

Our ability to satisfy our future expenses as well as our new debt obligations will depend on our future performance, which will be affected by financial, business, economic, regulatory and other factors. Furthermore, our future operations may not generate sufficient cash flows to enable us to meet our future expenses and service our new debt obligations, which may impact our ability to manage our capital structure to preserve and maintain our investment grade rating. If our future operations do not generate sufficient cash flows, we may need to access money available for borrowing under our Revolving Credit Facility or enter into new financing arrangements to obtain necessary funds. If we determine it is necessary to seek additional funding for any reason, we may not be able to obtain such funding or, if funding is available, we may not be able to obtain it on acceptable terms. Any borrowings under our Revolving Credit Facility will place further pressure on us to comply with the financial covenants. If we fail to make a payment associated with our debt obligations, we could be in default on such debt, and such a default could cause us to be in default on our other obligations.

There can be no assurance that we will continue to declare cash dividends at all or in any particular amounts.

Our Board of Directors first instituted a quarterly dividend during the fiscal year ended June 30, 2005. Since that time, we have announced a number of increases in the amount of our quarterly dividend level as well as payment of a special cash dividend that was declared and substantially paid in the second quarter of our fiscal year ended June 30, 2015. We intend to continue to pay quarterly dividends subject to capital availability and periodic determinations by our Board of Directors that cash dividends are in the best interest of our stockholders and are in compliance with all laws and agreements applicable to the declaration and payment of cash dividends by us. Future dividends may be affected by, among other factors: our views on potential future capital requirements for investments in acquisitions and the funding of our research and development; legal risks; stock repurchase programs; changes in federal and state income tax laws or corporate laws; changes to our business model; and our increased interest and principal payments required by our outstanding indebtedness and any additional indebtedness that we may incur in the future. Our dividend payments may change from time to time, and we cannot provide assurance that we will continue to declare dividends at all or in any particular amounts. A reduction in our dividend payments could have a negative effect on our stock price.

We are exposed to risks related to our commercial terms and conditions, including our indemnification of third parties, as well as the performance of our products.

Although our standard commercial documentation sets forth the terms and conditions that we intend to apply to commercial transactions with our business partners, counterparties to such transactions may not explicitly agree to our terms and conditions. In situations where we engage in business with a third party without an explicit master agreement regarding the applicable terms and conditions, or where the commercial documentation applicable to the transaction is subject to varying interpretations, we may have disputes with those third parties regarding the applicable terms and conditions of our business relationship with them. Such disputes could lead to a deterioration of our commercial relationship with those parties, costly and time-consuming litigation, or additional concessions or obligations being offered by us to resolve such disputes, or could impact our revenue or cost recognition. Any of these outcomes could materially and adversely affect our business, financial condition and results of operations.

In addition, in our commercial agreements, from time to time in the normal course of business we indemnify third parties with whom we enter into contractual relationships, including customers, suppliers and lessors, with respect to certain matters. We have agreed, under certain conditions, to hold these third parties harmless against specified losses, such as those arising from a breach of representations or covenants, other third party claims that our products when used for their intended purposes infringe the intellectual property rights of such other third parties, or other claims made against certain parties. We may be compelled to enter into or accrue for probable settlements of alleged indemnification obligations, or we may be subject to potential liability arising from our customers' involvements in legal disputes. In addition, notwithstanding the provisions related to limitations on our liability that we seek to include in our business agreements, the counterparties to such agreements may dispute our interpretation or application of such provisions, and a court of law may not interpret or apply such provisions in our favor, any of which could result in an obligation for us to pay material damages to third parties and engage in costly legal proceedings. It is difficult to determine the maximum potential amount of liability under any indemnification obligations, whether or not asserted, due to our limited history of prior indemnification claims and the unique facts and circumstances that are likely to be involved in any particular claim. Our business, financial condition and results of operations in a reported fiscal period could be materially and adversely affected if we expend significant amounts in defending or settling any purported claims, regardless of their merit or outcomes.

We are also exposed to potential costs associated with unexpected product performance issues. Our products and production processes are extremely complex and thus could contain unexpected product defects, especially when products are first introduced. Unexpected product performance issues could result in significant costs being incurred by us, including increased service or warranty costs, providing product replacements for (or modifications to) defective products, litigation related to defective products, reimbursement for damages caused by our products, product recalls, or product write-offs or disposal costs. These costs could be substantial and could have an adverse impact upon our business, financial condition and operating results. In addition, our reputation with our customers could be damaged as a result of such product defects, which could reduce demand for our products and negatively impact our business.

Furthermore, we occasionally enter into volume purchase agreements with our larger customers, and these agreements may provide for certain volume purchase incentives, such as credits toward future purchases. We believe that these arrangements are beneficial to our long-term business, as they are designed to encourage our customers to purchase higher volumes of our products. However, these arrangements could require us to recognize a reduced level of revenue for the products that are initially purchased, to account for the potential future credits or other volume purchase incentives. Our volume purchase agreements require significant estimation for the amounts to be accrued depending upon the estimate of volume of future purchases. As such, we are required to update our estimates of the accruals on a periodic basis. Until the earnings process is complete, our estimates could differ in comparison to actual results. As a result, these volume purchase arrangements, while expected to be beneficial to our business over time, could materially and adversely affect our results of operations in near-term periods, including the revenue we can recognize on product sales and therefore our gross margins.

In addition, we may, in limited circumstances, enter into agreements that contain customer-specific commitments on pricing, tool reliability, spare parts stocking levels, response time and other commitments. Furthermore, we may give these customers limited audit or inspection rights to enable them to confirm that we are complying with these commitments. If a customer elects to exercise its audit or inspection rights, we may be required to expend significant resources to support the audit or inspection, as well as to defend or settle any dispute with a customer that could potentially arise out of such audit or inspection. To date, we have made no significant accruals in our Consolidated Financial Statements for this contingency. While we have not in the past incurred significant expenses for resolving disputes regarding these types of commitments, we cannot make any assurance that we will not incur any such liabilities in the future. Our business, financial condition and results of operations in a reported fiscal period could be materially and adversely affected if we expend significant amounts in supporting an audit or inspection, or defending or settling any purported claims, regardless of their merit or outcomes.

There are risks associated with our receipt of government funding for research and development.

We are exposed to additional risks related to our receipt of external funding for certain strategic development programs from various governments and government agencies, both domestically and internationally. Governments and government agencies typically have the right to terminate funding programs at any time in their sole discretion, or a project may be terminated by mutual agreement if the parties determine that the project’s goals or milestones are not being achieved, so there is no assurance that these sources of external funding will continue to be available to us in the future. In addition, under the terms of these government grants, the applicable granting agency typically has the right to audit the costs that we incur, directly and indirectly, in connection with such programs. Any such audit could result in modifications to, or even termination of, the applicable government funding program. For example, if an audit were to identify any costs as being improperly allocated to the applicable program, those costs would not be reimbursed, and any such costs that had already been reimbursed would have to be refunded. We do not know the outcome of any future audits. Any adverse finding resulting from any such audit could lead to penalties (financial or otherwise), termination of funding programs, suspension of payments, fines and suspension or prohibition from receiving future government funding from the applicable government or government agency, any of which could adversely impact our operating results, financial condition and ability to operate our business.

We have recorded significant restructuring, inventory write-off and asset impairment charges in the past and may do so again in the future, which could have a material negative impact on our business.

Historically, we have recorded material restructuring charges related to our prior global workforce reductions, large excess inventory write-offs, and material impairment charges related to our goodwill and purchased intangible assets. Workforce changes can also temporarily reduce workforce productivity, which could be disruptive to our business and adversely affect our results of operations. In addition, we may not achieve or sustain the expected cost savings or other benefits of our restructuring plans, or do so within the expected time frame. If we again restructure our organization and business processes, implement additional cost reduction actions or discontinue certain business operations, we may take additional, potentially material, restructuring charges related to, among other things, employee terminations or exit costs. We may also be required to write-off additional inventory if our product build plans or usage of service inventory decline. Also, as our lead times from suppliers increase (due to the increasing complexity of the parts and components they provide) and the lead times demanded by our customers decrease (due to the time pressures they face when introducing new products or technology or bringing new facilities into production), we may be compelled to increase our commitments, and therefore our risk exposure, to inventory purchases to meet our customers’ demands in a timely manner, and that inventory may need to be written-off if demand for the underlying product declines for any reason. Such additional write-offs could result in material charges.

In the past, we have recorded material charges related to the impairment of our goodwill and purchased intangible assets. Goodwill represents the excess of costs over the net fair value of net assets acquired in a business combination. Goodwill is not amortized, but is instead tested for impairment at least annually in accordance with authoritative guidance for goodwill. Purchased intangible assets with estimable useful lives are amortized over their respective estimated useful lives based on economic benefit if known or using the straight-line method, and are reviewed for impairment in accordance with authoritative guidance for long-lived assets. The valuation of goodwill and intangible assets requires assumptions and estimates of many critical factors, including revenue and market growth, operating cash flows, market multiples, and discount rates. A substantial decline in our stock price, or any other adverse change in market conditions, particularly if such change has the effect of changing one of the critical assumptions or estimates we previously used to calculate the value of our goodwill or intangible assets (and, as applicable, the amount of any previous impairment charge), could result in a change to the estimation of fair value that could result in an additional impairment charge.

Any such additional material charges, whether related to restructuring or goodwill or purchased intangible asset impairment, may have a material negative impact on our operating results and related financial statements.

We are exposed to risks related to our financial arrangements with respect to receivables factoring and banking arrangements.

We enter into factoring arrangements with financial institutions to sell certain of our trade receivables and promissory notes from customers without recourse. In addition, we maintain bank accounts with several domestic and foreign financial institutions, any of which may prove not to be financially viable. If we were to stop entering into these factoring arrangements, our operating results, financial condition and cash flows could be adversely impacted by delays or failures in collecting trade receivables. However, by entering into these arrangements, and by engaging these financial institutions for banking services, we are exposed to additional risks. If any of these financial institutions experiences financial difficulties or is otherwise unable to honor the terms of our factoring or deposit arrangements, we may experience material financial losses due to the failure of such arrangements or a lack of access to our funds, any of which could have an adverse impact upon our operating results, financial condition and cash flows.

We are subject to the risks of additional government actions in the event we were to breach the terms of any settlement arrangement into which we have entered.

In connection with the settlement of certain government actions and other legal proceedings related to our historical stock option practices, we have explicitly agreed as a condition to such settlements that we will comply with certain laws, such as the books and records provisions of the federal securities laws. If we were to violate any such law, we might not only be subject to the significant penalties applicable to such violation, but our past settlements may also be impacted by such violation, which could give rise to additional government actions or other legal proceedings. Any such additional actions or proceedings may require us to expend significant management time and incur significant accounting, legal and other expenses, and may divert attention and resources from the operation of our business. These expenditures and diversions, as well as an adverse resolution of any such action or proceeding, could have a material adverse effect on our business, financial condition and results of operations.

General Commercial, Operational, Financial and Regulatory Risks

A majority of our annual revenues are derived from outside the United States, and we maintain significant operations outside the United States. We are exposed to numerous risks as a result of the international nature of our business and operations.

A majority of our annual revenues are derived from outside the United States, and we maintain significant operations outside the United States. We expect that these conditions will continue in the foreseeable future. Managing global operations and sites located throughout the world presents a number of challenges, including but not limited to:

- managing cultural diversity and organizational alignment;
- exposure to the unique characteristics of each region in the global market, which can cause capital equipment investment patterns to vary significantly from period to period;
- periodic local or international economic downturns;
- potential adverse tax consequences, including withholding tax rules that may limit the repatriation of our earnings, and higher effective income tax rates in foreign countries where we do business;
- compliance with customs regulations in the countries in which we do business;
- tariffs or other trade barriers (including those applied to our products or to parts and supplies that we purchase);
- political instability, natural disasters, legal or regulatory changes, acts of war or terrorism in regions where we have operations or where we do business;

- fluctuations in interest and currency exchange rates may adversely impact our ability to compete on price with local providers or the value of revenues we generate from our international business. Although we attempt to manage some of our near-term currency risks through the use of hedging instruments, there can be no assurance that such efforts will be adequate;
- longer payment cycles and difficulties in collecting accounts receivable outside of the United States;
- difficulties in managing foreign distributors (including monitoring and ensuring our distributors' compliance with applicable laws); and
- inadequate protection or enforcement of our intellectual property and other legal rights in foreign jurisdictions.

In addition, government controls, either by the United States or other countries, that restrict our business overseas or the import or export of our products or increase the cost of our operations through the imposition of tariffs or otherwise, could harm our business. For example, effective on October 30, 2018, the United States Department of Commerce added Fujian Jinhua Integrated Circuit Company, Ltd. ("JHICC") to its entity list, restricting exports of technology to JHICC without a license. As a result, unless JHICC is subsequently removed from the entity list, we will be unable to fulfill orders JHICC has made for our products, accept future orders placed by JHICC for our products, and provide services for any of our products already installed at JHICC.

Any of the factors above could have a significant negative impact on our business and results of operations.

We are exposed to risks associated with a weakening in the condition of the financial markets and the global economy.

Demand for our products is ultimately driven by the global demand for electronic devices by consumers and businesses. Economic uncertainty frequently leads to reduced consumer and business spending, which caused our customers to decrease, cancel or delay their equipment and service orders from us in the economic slowdown during fiscal year 2009. In addition, the tightening of credit markets and concerns regarding the availability of credit that accompanied that slowdown made it more difficult for our customers to raise capital, whether debt or equity, to finance their purchases of capital equipment, including the products we sell. Reduced demand, combined with delays in our customers' ability to obtain financing (or the unavailability of such financing), has at times in the past adversely affected our product and service sales and revenues and therefore has harmed our business and operating results, and our operating results and financial condition may again be adversely impacted if economic conditions decline from their current levels.

In addition, a decline in the condition of the global financial markets could adversely impact the market values or liquidity of our investments. Our investment portfolio includes corporate and government securities, money market funds and other types of debt and equity investments. Although we believe our portfolio continues to be comprised of sound investments due to the quality and (where applicable) credit ratings, a decline in the capital and financial markets would adversely impact the market value of our investments and their liquidity. If the market value of such investments were to decline, or if we were to have to sell some of our investments under illiquid market conditions, we may be required to recognize an impairment charge on such investments or a loss on such sales, either of which could have an adverse effect on our financial condition and operating results.

If we are unable to timely and appropriately adapt to changes resulting from difficult macroeconomic conditions, our business, financial condition or results of operations may be materially and adversely affected.

We might be involved in claims or disputes related to intellectual property or other confidential information that may be costly to resolve, prevent us from selling or using the challenged technology and seriously harm our operating results and financial condition.

As is typical in the industries in which we serve, from time to time we have received communications from other parties asserting the existence of patent rights, copyrights, trademark rights or other intellectual property rights which they believe cover certain of our products, processes, technologies or information. In addition, we occasionally receive notification from customers who believe that we owe them indemnification or other obligations related to intellectual property claims made against such customers by third parties. With respect to intellectual property infringement disputes, our customary practice is to evaluate such infringement assertions and to consider whether to seek licenses where appropriate. However, there can be no assurance that licenses can be obtained or, if obtained, will be on acceptable terms or that costly litigation or other administrative proceedings will not occur. The inability to obtain necessary licenses or other rights on reasonable terms could seriously harm our results of operations and financial condition. Furthermore, we may potentially be subject to claims by customers, suppliers or other business partners, or by governmental law enforcement agencies, related to our receipt, distribution and/or use of third-party intellectual property or confidential information. Legal proceedings and claims, regardless of their merit, and associated internal investigations with respect to intellectual property or confidential information disputes are often expensive to prosecute, defend or conduct; may divert management's attention and other company resources; and/or may result in restrictions on our ability to sell our products, settlements on significantly adverse terms or adverse judgments for damages, injunctive relief, penalties and fines, any of which could have a significant negative effect on our business, results of operations and financial condition. There can be no assurance regarding the outcome of future legal proceedings, claims or investigations. The instigation of legal proceedings or claims, our inability to favorably resolve or settle such proceedings or claims, or the determination of any adverse findings against us or any of our employees in connection with such proceedings or claims could materially and adversely affect our business, financial condition and results of operations, as well as our business reputation.

We are exposed to various risks related to the legal, regulatory and tax environments in which we perform our operations and conduct our business.

We are subject to various risks related to compliance with new, existing, different, inconsistent or even conflicting laws, rules and regulations enacted by legislative bodies and/or regulatory agencies in the countries in which we operate and with which we must comply, including environmental, safety, antitrust, anti-corruption/anti-bribery, unclaimed property and export control regulations. Our failure or inability to comply with existing or future laws, rules or regulations, or changes to existing laws, rules or regulations (including changes that result in inconsistent or conflicting laws, rules or regulations), in the countries in which we operate could result in violations of contractual or regulatory obligations that may adversely affect our operating results, financial condition and ability to conduct our business. From time to time, we may receive inquiries or audit notices from governmental or regulatory bodies, or we may participate in voluntary disclosure programs, related to legal, regulatory or tax compliance matters, and these inquiries, notices or programs may result in significant financial cost (including investigation expenses, defense costs, assessments and penalties), reputational harm and other consequences that could materially and adversely affect our operating results and financial condition.

Our properties and many aspects of our business operations are subject to various domestic and international environmental laws and regulations, including those that control and restrict the use, transportation, emission, discharge, storage and disposal of certain chemicals, gases and other substances. Any failure to comply with applicable environmental laws, regulations or requirements may subject us to a range of consequences, including fines, suspension of certain of our business activities, limitations on our ability to sell our products, obligations to remediate environmental contamination, and criminal and civil liabilities or other sanctions. In addition, changes in environmental regulations (including regulations relating to climate change and greenhouse gas emissions) could require us to invest in potentially costly pollution control equipment, alter our manufacturing processes or use substitute (potentially more expensive and/or rarer) materials. Further, we use hazardous and other regulated materials that subject us to risks of strict liability for damages caused by any release, regardless of fault. We also face increasing complexity in our manufacturing, product design and procurement operations as we adjust to new and prospective requirements relating to the materials composition of our products, including restrictions on lead and other substances and requirements to track the sources of certain metals and other materials. The cost of complying, or of failing to comply, with these and other regulatory restrictions or contractual obligations could adversely affect our operating results, financial condition and ability to conduct our business.

In addition, we may from time to time be involved in legal proceedings or claims regarding employment, immigration, contracts, product performance, product liability, antitrust, environmental regulations, securities, unfair competition and other matters. These legal proceedings and claims, regardless of their merit, may be time-consuming and expensive to prosecute or defend, divert management's attention and resources, and/or inhibit our ability to sell our products. There can be no assurance regarding the outcome of current or future legal proceedings or claims, which could adversely affect our operating results, financial condition and ability to operate our business.

We depend on key personnel to manage our business effectively, and if we are unable to attract, retain and motivate our key employees, our sales and product development could be harmed.

Our employees are vital to our success, and our key management, engineering and other employees are difficult to replace. We generally do not have employment contracts with our key employees. Further, we do not maintain key person life insurance on any of our employees. The expansion of high technology companies worldwide has increased demand and competition for qualified personnel. If we are unable to attract and retain key personnel, or if we are not able to attract, assimilate and retain additional highly qualified employees to meet our current and future needs, our business and operations could be harmed.

We outsource a number of services to third-party service providers, which decreases our control over the performance of these functions. Disruptions or delays at our third-party service providers could adversely impact our operations.

We outsource a number of services, including our transportation, information systems management and logistics management of spare parts and certain accounting and procurement functions, to domestic and overseas third-party service providers. While outsourcing arrangements may lower our cost of operations, they also reduce our direct control over the services rendered. It is uncertain what effect such diminished control will have on the quality or quantity of products delivered or services rendered, on our ability to quickly respond to changing market conditions, or on our ability to ensure compliance with all applicable domestic and foreign laws and regulations. In addition, many of these outsourced service providers, including certain hosted software applications that we use for confidential data storage, employ cloud computing technology for such storage. These providers' cloud computing systems may be susceptible to "cyber incidents," such as intentional cyber attacks aimed at theft of sensitive data or inadvertent cyber-security compromises, which are outside of our control. If we do not effectively develop and manage our outsourcing strategies, if required export and other governmental approvals are not timely obtained, if our third-party service providers do not perform as anticipated or do not adequately protect our data from cyber-related security breaches, or if there are delays or difficulties in enhancing business processes, we may experience operational difficulties (such as limitations on our ability to ship products), increased costs, manufacturing or service interruptions or delays, loss of intellectual property rights or other sensitive data, quality and compliance issues, and challenges in managing our product inventory or recording and reporting financial and management information, any of which could materially and adversely affect our business, financial condition and results of operations.

We are exposed to risks related to cybersecurity threats and cyber incidents.

In the conduct of our business, we collect, use, transmit and store data on information systems. This data includes confidential information, transactional information and intellectual property belonging to us, our customers and our business partners, as well as personally-identifiable information of individuals. We allocate significant resources to network security, data encryption and other measures to protect our information systems and data from unauthorized access or misuse. Despite our ongoing efforts to enhance our network security measures, our information systems are susceptible to computer viruses, cyber-related security breaches and similar disruptions from unauthorized intrusions, tampering, misuse, criminal acts, including phishing, or other events or developments that we may be unable to anticipate or fail to mitigate and are subject to the inherent vulnerabilities of network security measures. We have experienced cyber-related attacks in the past, and may experience cyber-related attacks in the future. Our security measures may also be breached due to employee errors, malfeasance, or otherwise. Third parties may also attempt to influence employees, users, suppliers or customers to disclose sensitive information in order to gain access to our, our customers' or business partners' data. Because the techniques used to obtain unauthorized access to the information systems change frequently, and may not be recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures.

Any of such occurrences could result in disruptions to our operations; misappropriation, corruption or theft of confidential information, including intellectual property and other critical data, of KLA, our customers and other business partners; misappropriation of funds and company assets; reduced value of our investments in research, development and engineering; litigation with, or payment of damages to, third parties; reputational damage; costs to comply with regulatory inquiries or actions; data privacy issues; costs to rebuild our internal information systems; and increased cybersecurity protection and remediation costs.

We carry insurance that provides some protection against the potential losses arising from a cybersecurity incident but it will not likely cover all such losses, and the losses that it does not cover may be significant.

We rely upon certain critical information systems for our daily business operations. Our inability to use or access our information systems at critical points in time could unfavorably impact our business operations.

Our global operations are dependent upon certain information systems, including telecommunications, the internet, our corporate intranet, network communications, email and various computer hardware and software applications. System failures or malfunctioning, such as difficulties with our customer relationship management ("CRM") system, could disrupt our operations and our ability to timely and accurately process and report key components of our financial results. Our enterprise resource planning ("ERP") system is integral to our ability to accurately and efficiently maintain our books and records, record transactions, provide critical information to our management, and prepare our financial statements. Any disruptions or difficulties that may occur in connection with our ERP system or other systems (whether in connection with the regular operation, periodic enhancements, modifications or upgrades of such systems or the integration of our acquired businesses into such systems) could adversely affect our ability to complete important business processes, such as the evaluation of our internal control over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act of 2002. Any of these events could have an adverse effect on our business, operating results and financial condition.

Acquisitions are an important element of our strategy but, because of the uncertainties involved, we may not find suitable acquisition candidates and we may not be able to successfully integrate and manage acquired businesses. We are also exposed to risks in connection with strategic alliances into which we may enter.

In addition to our efforts to develop new technologies from internal sources, part of our growth strategy is to pursue acquisitions and acquire new technologies from external sources. As part of this effort, in February 2019, we announced that we had consummated our acquisition of Orbotech. We may also enter into definitive agreements for and consummate acquisitions of, or significant investments in, businesses with complementary products, services and/or technologies. There can be no assurance that we will find suitable acquisition candidates or that acquisitions we complete will be successful. In addition, we may use equity to finance future acquisitions, which would increase our number of shares outstanding and be dilutive to current stockholders.

If we are unable to successfully integrate and manage acquired businesses, if the costs associated with integrating the acquired business exceeds our expectations, or if acquired businesses perform poorly, then our business and financial results may suffer. It is possible that the businesses we have acquired, as well as businesses that we may acquire in the future, may perform worse than expected or prove to be more difficult to integrate and manage than anticipated. In addition, we may lose key employees of the acquired companies. As a result, risks associated with acquisition transactions may lead to a material adverse effect on our business and financial results for a number of reasons, including:

- we may have to devote unanticipated financial and management resources to acquired businesses;
- the combination of businesses may result in the loss of key personnel or an interruption of, or loss of momentum in, the activities of our company and/or the acquired business;
- we may not be able to realize expected operating efficiencies or product integration benefits from our acquisitions;
- we may experience challenges in entering into new market segments for which we have not previously manufactured and sold products;
- we may face difficulties in coordinating geographically separated organizations, systems and facilities;
- the customers, distributors, suppliers, employees and others with whom the companies we acquire have business dealings may have a potentially adverse reaction to the acquisition;
- we may have difficulty implementing a cohesive framework of internal controls over the entire organization;
- we may have to write-off goodwill or other intangible assets; and
- we may incur unforeseen obligations or liabilities in connection with acquisitions.

At times, we may also enter into strategic alliances with customers, suppliers or other business partners with respect to development of technology and intellectual property. These alliances typically require significant investments of capital and exchange of proprietary, highly sensitive information. The success of these alliances depends on various factors over which we may have limited or no control and requires ongoing and effective cooperation with our strategic partners. Mergers and acquisitions and strategic alliances are inherently subject to significant risks, and the inability to effectively manage these risks could materially and adversely affect our business, financial condition and operating results.

Disruption of our manufacturing facilities or other operations, or in the operations of our customers, due to earthquake, flood, other natural catastrophic events, health epidemics or terrorism could result in cancellation of orders, delays in deliveries or other business activities, or loss of customers and could seriously harm our business.

We have significant manufacturing operations in the United States, Singapore, Israel, Germany, United Kingdom, Italy, and China. In addition, our business is international in nature, with our sales, service and administrative personnel and our customers located in numerous countries throughout the world. Operations at our manufacturing facilities and our assembly subcontractors, as well as our other operations and those of our customers, are subject to disruption for a variety of reasons, including work stoppages, acts of war, terrorism, health epidemics, fire, earthquake, volcanic eruptions, energy shortages, flooding or other natural disasters. Such disruption could cause delays in, among other things, shipments of products to our customers, our ability to perform services requested by our customers, or the installation and acceptance of our products at customer sites. We cannot provide any assurance that alternate means of conducting our operations (whether through alternate production capacity or service providers or otherwise) would be available if a major disruption were to occur or that, if such alternate means were available, they could be obtained on favorable terms.

In addition, as part of our cost-cutting actions, we have consolidated several operating facilities. Our California operations are now primarily centralized in our Milpitas facility. The consolidation of our California operations into a single campus could further concentrate the risks related to any of the disruptive events described above, such as acts of war or terrorism, earthquakes, fires or other natural disasters, if any such event were to impact our Milpitas facility.

We are predominantly uninsured for losses and interruptions caused by terrorist acts and acts of war. If international political instability continues or increases, our business and results of operations could be harmed.

The threat of terrorism targeted at, or acts of war in, the regions of the world in which we do business increases the uncertainty in our markets. Any act of terrorism or war that affects the economy or the industries we serve could adversely affect our business. Increased international political instability in various parts of the world, disruption in air transportation and further enhanced security measures as a result of terrorist attacks may hinder our ability to do business and may increase our costs of operations. We maintain significant operations in Israel. Since the establishment of the State of Israel in 1948, a number of armed conflicts have taken place between Israel and its Arab neighbors, and a state of hostility varying in degree and intensity, has led to security and economic challenges for Israel. In addition, some our employees in Israel are obligated to perform annual reserve duty in the Israel Defense Forces, and may be called to active military duty in emergency circumstances. We cannot assess the impact that emergency conditions in Israel in the future may have on our business, operations, financial condition or results of operations, but it could be material. Instability in any region could directly impact our ability to operate our business (or our customers' ability to operate their businesses), cause us to incur increased costs in transportation, make such transportation unreliable, increase our insurance costs, and cause international currency markets to fluctuate. Instability in the region could also have the same effects on our suppliers and their ability to timely deliver their products. If international political instability continues or increases in any region in which we do business, our business and results of operations could be harmed. We are predominantly uninsured for losses and interruptions caused by terrorist acts and acts of war.

We self-insure certain risks including earthquake risk. If one or more of the uninsured events occurs, we could suffer major financial loss.

We purchase insurance to help mitigate the economic impact of certain insurable risks; however, certain risks are uninsurable, are insurable only at significant cost or cannot be mitigated with insurance. Accordingly, we may experience a loss that is not covered by insurance, either because we do not carry applicable insurance or because the loss exceeds the applicable policy amount or is less than the deductible amount of the applicable policy. For example, we do not currently hold earthquake insurance. An earthquake could significantly disrupt our manufacturing operations, a significant portion of which are conducted in California, an area highly susceptible to earthquakes. It could also significantly delay our research and engineering efforts on new products, much of which is also conducted in California. We take steps to minimize the damage that would be caused by an earthquake, but there is no certainty that our efforts will prove successful in the event of an earthquake. We self-insure earthquake risks because we believe this is a prudent financial decision based on our cash reserves and the high cost and limited coverage available in the earthquake insurance market. Certain other risks are also self-insured either based on a similar cost-benefit analysis, or based on the unavailability of insurance. If one or more of the uninsured events occurs, we could suffer major financial loss.

We are exposed to foreign currency exchange rate fluctuations. Although we hedge certain currency risks, we may still be adversely affected by changes in foreign currency exchange rates or declining economic conditions in these countries.

We have some exposure to fluctuations in foreign currency exchange rates, primarily the Japanese Yen, the euro, the pound sterling and the Israeli new shekel. We have international subsidiaries that operate and sell our products globally. In addition, an increasing proportion of our manufacturing activities are conducted outside of the United States, and many of the costs associated with such activities are denominated in foreign currencies. We routinely hedge our exposures to certain foreign currencies with certain financial institutions in an effort to minimize the impact of certain currency exchange rate fluctuations, but these hedges may be inadequate to protect us from currency exchange rate fluctuations. To the extent that these hedges are inadequate, or if there are significant currency exchange rate fluctuations in currencies for which we do not have hedges in place, our reported financial results or the way we conduct our business could be adversely affected. Furthermore, if a financial counterparty to our hedges experiences financial difficulties or is otherwise unable to honor the terms of the foreign currency hedge, we may experience material financial losses.

We are exposed to fluctuations in interest rates and the market values of our portfolio investments; impairment of our investments could harm our earnings. In addition, we and our stockholders are exposed to risks related to the volatility of the market for our common stock.

Our investment portfolio primarily consists of both corporate and government debt securities that are susceptible to changes in market interest rates and bond yields. As market interest rates and bond yields increase, those securities with a lower yield-at-cost show a mark-to-market unrealized loss. We believe we have the ability to realize the full value of all these investments upon maturity. However, an impairment of the fair market value of our investments, even if unrealized, must be reflected in our financial statements for the applicable period and may therefore have a material adverse effect on our results of operations for that period.

In addition, the market price for our common stock is volatile and has fluctuated significantly during recent years. The trading price of our common stock could continue to be highly volatile and fluctuate widely in response to various factors, including without limitation conditions in the semiconductor industry and other industries in which we operate, fluctuations in the global economy or capital markets, our operating results or other performance metrics, or adverse consequences experienced by us as a result of any of the risks described elsewhere in this Item 1A. Volatility in the market price of our common stock could cause an investor in our common stock to experience a loss on the value of their investment in us and could also adversely impact our ability to raise capital through the sale of our common stock or to use our common stock as consideration to acquire other companies.

We are exposed to risks in connection with tax and regulatory compliance audits in various jurisdictions.

We are subject to tax and regulatory compliance audits (such as related to customs or product safety requirements) in various jurisdictions, and such jurisdictions may assess additional income or other taxes, penalties, fines or other prohibitions against us. Although we believe our tax estimates are reasonable and that our products and practices comply with applicable regulations, the final determination of any such audit and any related litigation could be materially different from our historical income tax provisions and accruals related to income taxes and other contingencies. In addition to and in connection with the Israel Tax Authority ("ITA") Assessment described in more detail in Note 13, "Income Taxes" to our Consolidated Financial Statements, there is an ongoing criminal investigation against our Orbotech subsidiary, certain of its employees and its tax consultant that began prior to the Acquisition Date. We can make no assurances that an indictment will not result from the criminal investigation. The results of an audit or litigation could have a material adverse effect on our operating results or cash flows in the period or periods for which that determination is made.

A change in our effective tax rate can have a significant adverse impact on our business.

We earn profits in, and are therefore potentially subject to taxes in, the U.S. and numerous foreign jurisdictions, including Singapore, Israel and the Cayman Islands, the countries in which we earn the majority of our non-U.S. profits. Due to economic, political or other conditions, tax rates in those jurisdictions may be subject to significant change. A number of factors may adversely impact our future effective tax rates, such as the jurisdictions in which our profits are determined to be earned and taxed; changes in the tax rates imposed by those jurisdictions; expiration of tax holidays in certain jurisdictions that are not renewed; the resolution of issues arising from tax audits with various tax authorities; changes in the valuation of our deferred tax assets and liabilities; adjustments to estimated taxes upon finalization of various tax returns; increases in expenses not deductible for tax purposes, including write-offs of acquired in-process research and development and impairment of goodwill in connection with acquisitions; changes in available tax credits; changes in stock-based compensation expense; changes in tax laws or the interpretation of such tax laws; changes in generally accepted accounting principles; and the repatriation of earnings from outside the U.S. for which we have not previously provided for U.S. taxes. A change in our effective tax rate can materially and adversely impact our results from operations.

In addition, recent changes to U.S. tax laws will significantly impact how U.S. multinational corporations are taxed on foreign earnings. Numerous countries are evaluating their existing tax laws due in part, to recommendations made by the Organization for Economic Co-operation and Development's ("OECD's") Base Erosion and Profit Shifting ("BEPS") project. As of December 31, 2018, we have completed our accounting for the tax effects of the Act, which was enacted into law on December 22, 2017. However, the recent U.S. tax law changes are subject to future guidance from U.S. federal and state governments, such as the Treasury Department and/or the IRS. Any future guidance can change our tax liability. A significant portion of the income taxes due to the enactment of the Act is payable by us over a period of eight years. As a result, our cash flows from operating activities will be adversely impacted until tax liability is paid in full.

Compliance with federal securities laws, rules and regulations, as well as NASDAQ requirements, has become increasingly complex, and the significant attention and expense we must devote to those areas may have an adverse impact on our business.

Federal securities laws, rules and regulations, as well as NASDAQ rules and regulations, require companies to maintain extensive corporate governance measures, impose comprehensive reporting and disclosure requirements, set strict independence and financial expertise standards for audit and other committee members and impose civil and criminal penalties for companies and their chief executive officers, chief financial officers and directors for securities law violations. These laws, rules and regulations have increased, and in the future are expected to continue to increase, the scope, complexity and cost of our corporate governance, reporting and disclosure practices, which could harm our results of operations and divert management's attention from business operations.

A change in accounting standards or practices or a change in existing taxation rules or practices (or changes in interpretations of such standards, practices or rules) can have a significant effect on our reported results and may even affect reporting of transactions completed before the change is effective.

New accounting standards and taxation rules and varying interpretations of accounting pronouncements and taxation rules have occurred and will continue to occur in the future. Changes to (or revised interpretations or applications of) existing accounting standards or tax rules or the questioning of current or past practices may adversely affect our reported financial results or the way we conduct our business. For example, in February 2016, the FASB issued an accounting standard update which amends the existing accounting standards for leases. Adoption of new standards may require changes to our processes, accounting systems, and internal controls. Difficulties encountered during adoption could result in internal control deficiencies or delay the reporting of our financial results. In addition, the passing of the Act in December 2017 caused us to significantly increase our provision for income taxes, which had a material adverse effect on our net income for the fiscal year ended June 30, 2018. Further interpretations of the Act from the government and regulatory organizations may change our tax expense provided for our transitional tax liability and deferred tax adjustments as well as our provision liability or accounting treatment of the provisional liability which may potentially affect the measurement of these balances or potentially give rise to new deferred tax amounts.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

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ITEM 2. PROPERTIES

Our headquarters are located in Milpitas, California. As of June 30, 2019, we owned or leased a total of approximately 3.4 million square feet of space for research, engineering, marketing, service, sales and administration worldwide primarily in U.S., Israel, China, Singapore, Germany and Taiwan. Our operating leases expire at various times through November 7, 2028, subject to renewal, with some of the leases containing renewal option clauses at the fair market value, for additional periods up to five years. Additional information regarding these leases is incorporated herein by reference to Note 14, “Commitments and Contingencies” to the Consolidated Financial Statements. We believe our properties are adequately maintained and suitable for their intended use and that our production facilities have capacity adequate for our current needs.

Information regarding our principal properties as of June 30, 2019 is set forth below:

(Square Feet)	United States	Other Countries	Total
Owned(1)	727,302	695,048	1,422,350
Leased	426,535	1,519,614	1,946,149
Total	1,153,837	2,214,662	3,368,499

(1) Includes 248,155 square feet of property owned at out location in Serangoon, Singapore, where the land on which this building resides is leased.

ITEM 3. LEGAL PROCEEDINGS

The information set forth below under Note 15, “Litigation and Other Legal Matters” to the Consolidated Financial Statements is incorporated herein by reference.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

Our common stock is listed and traded on the NASDAQ Global Select Market under the symbol "KLAC."

On August 1, 2019, we announced that our Board of Directors had declared a quarterly cash dividend of $0.75 per share to be paid on September 3, 2019 to stockholders of record as of the close of business on August 15, 2019.

As of July 19, 2019, there were 383 holders of record of our common stock.

Equity Repurchase Plans

The following is a summary of stock repurchases for each month during the fourth quarter of the fiscal year ended June 30, 2019[1]:

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share	Approximate Dollar Value that May Yet Be Purchased Under the Plans or Programs (2)
April 1, 2019 to April 30, 2019	507,700	$ 123.81	$ 1,142,833,354
May 1, 2019 to May 31, 2019	1,693,619	$ 109.10	$ 958,067,283
June 1, 2019 to June 30, 2019	899,092	$ 110.53	$ 858,692,904
Total	3,100,411	$ 111.92	

(1) Our Board of Directors authorized a program which permits us to repurchase up to $2.00 billion of our common stock, reflecting an increase from $1.00 billion upon the close of the Orbotech Acquisition. Shares are reported based on the trade date of the applicable repurchase.

(2) The stock repurchase program has no expiration date and may be suspended at any time. Future repurchases of our common stock under our repurchase program may be effected through various different repurchase transaction structures, including isolated open market transactions or systematic repurchase plans.

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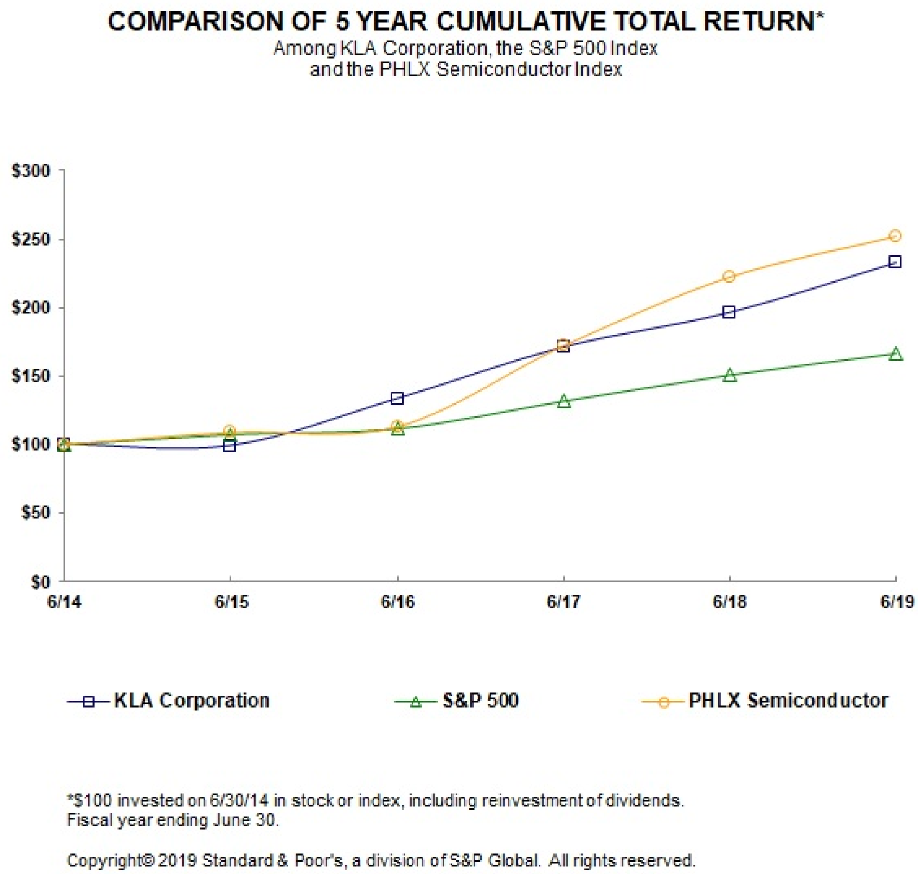
Stock Performance Graph and Cumulative Total Return

Notwithstanding any statement to the contrary in any of our previous or future filings with the Securities and Exchange Commission, the following information relating to the price performance of our common stock shall not be deemed "filed" with the Commission or "soliciting material" under the Securities Exchange Act of 1934 and shall not be incorporated by reference into any such filings.

The following graph compares the cumulative 5-year total return attained by stockholders on our common stock relative to the cumulative total returns of the S&P 500 Index and the Philadelphia Semiconductor Index (PHLX). The graph tracks the performance of a $100 investment in our common stock and in each of the indices (with the reinvestment of all dividends) from June 30, 2014 to June 30, 2019.



	June 2014	June 2015	June 2016	June 2017	June 2018	June 2019
KLA Corporation	$100.00	$99.11	$133.57	$171.34	$196.71	$233.26
S&P 500	$100.00	$107.42	$111.71	$131.70	$150.64	$166.33
PHLX Semiconductor	$100.00	$108.97	$113.07	$172.12	$222.22	$251.80

Our fiscal year ends June 30. The comparisons in the graph above are based upon historical data and are not necessarily indicative of, nor intended to forecast, future stock price performance.

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ITEM 6. SELECTED FINANCIAL DATA

The following tables include selected consolidated summary financial data for each of our last five fiscal years. This data should be read in conjunction with Item 8, "Financial Statements and Supplementary Data," and Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this Annual Report on Form 10-K.

(In thousands, except per share amounts)	Year ended June 30, 2019	2018	2017	2016	2015
Consolidated Statements of Operations[1][2]:					
Total revenues	$ 4,568,904	$ 4,036,701	$ 3,480,014	$ 2,984,493	$ 2,814,049
Net income attributable to KLA[3]	$ 1,175,617	$ 802,265	$ 926,076	$ 704,422	$ 366,158
Cash dividends declared per share (including a special cash dividend of $16.50 per share declared during the three months ended December 31, 2014)	$ 3.00	$ 2.52	$ 2.14	$ 2.08	$ 18.50
Net income per share attributable to KLA:					
Basic	$ 7.53	$ 5.13	$ 5.92	$ 4.52	$ 2.26
Diluted	$ 7.49	$ 5.10	$ 5.88	$ 4.49	$ 2.24

	As of June 30, 2019	2018	2017	2016	2015
Consolidated Balance Sheets[1][2]:					
Cash, cash equivalents and marketable securities	$ 1,739,385	$ 2,880,318	$ 3,016,740	$ 2,491,294	$ 2,387,111
Working capital[4]	$ 2,546,589	$ 3,334,730	$ 3,102,094	$ 2,868,062	$ 2,904,758
Total assets	$ 9,008,516	$ 5,638,619	$ 5,550,334	$ 4,977,076	$ 4,841,023
Long-term debt[5]	$ 3,173,383	$ 2,237,402	$ 2,680,474	$ 3,057,936	$ 3,173,435
Total KLA stockholders' equity[5]	$ 2,659,108	$ 1,620,511	$ 1,326,417	$ 689,114	$ 421,439

(1) On July 1, 2018, we adopted ASC 606 using the modified retrospective transition approach. Results for reporting periods beginning after June 30, 2018 are presented under ASC 606, while prior period amounts are not adjusted and continue to be reported in accordance with the previous revenue guidance in ASC 605. Refer to Note 2, "Revenue" to our Consolidated Financial Statements for additional details.

(2) On February 20, 2019, we completed the acquisition of Orbotech for total purchase consideration of approximately $3.26 billion. The operating results of Orbotech have been included in our Consolidated Financial Statements for the fiscal year ended June 30, 2019 from the Acquisition Date. For additional details, refer to Note 6 "Business Combinations" to our Consolidated Financial Statements.

(3) Our net income decreased to $802.3 million in the fiscal year ended June 30, 2018, primarily as a result of the income tax effects from the enacted tax reform legislation through the Tax Cuts and Jobs Act, which was signed into law on December 22, 2017. Our net income was $366.2 million in the fiscal year ended June 30, 2015, primarily as a result of the impact of the pre-tax net loss of $131.7 million for the loss on extinguishment of debt and certain one-time expenses of $2.5 million associated with the leveraged recapitalization that was completed during the three months ended December 31, 2014.

(4) We adopted the accounting standards update regarding classification of deferred taxes on a prospective basis at the beginning of the fourth quarter of fiscal year ended 2016. Upon adoption, approximately $218.0 million in net current deferred tax assets were reclassified to noncurrent. No prior periods were retrospectively adjusted.

(5) Our long-term debt increased to $3.17 billion at the end of fiscal year ended June 30, 2019, because we issued $1.20 billion aggregate principal amount of senior, unsecured long-term notes. Refer to Note 8, "Debt" to our Consolidated Financial Statements for additional details. Our total stockholders' equity decreased to $421.4 million at the end of fiscal year ended June 30, 2015, because, as part of our leveraged recapitalization plan, we declared a special cash dividend of approximately $2.76 billion. Refer to Note 9, "Equity, Long-term Incentive Compensation Plans and Non-Controlling Interest" to the Consolidated Financial Statements for additional details.

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

The following discussion of our financial condition and results of operations should be read in conjunction with our Consolidated Financial Statements and the related notes included in Item 8, "Financial Statements and Supplementary Data," in this Annual Report on Form 10-K. This discussion contains forward-looking statements, which involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of certain factors, including but not limited to those discussed in Item 1A, "Risk Factors" and elsewhere in this Annual Report on Form 10-K. (See "Special Note Regarding Forward-Looking Statements"). Pursuant to the FAST Act Modernization and Simplification of Regulation S-K, discussions related to the changes in results of operations from fiscal year 2018 to fiscal year 2017 have been omitted. Such omitted discussion can be found under Item 7 of our annual Form 10-K for the fiscal year ended June 30, 2018, filed with the SEC.

EXECUTIVE SUMMARY

We are a leading supplier of process control and yield management solutions for the semiconductor and related nanoelectronics industries. Our broad portfolio of inspection and metrology products, and related service, software and other offerings primarily supports integrated circuit ("IC" or "chip") manufacturers throughout the entire semiconductor fabrication process, from research and development to final volume production. We provide leading edge equipment, software and support that enable IC manufacturers to identify, resolve and manage significant advanced technology manufacturing process challenges and obtain higher finished product yields at lower overall cost. In addition to serving the semiconductor industry, we also provide a range of technology solutions to a number of other high technology industries, including advanced packaging, light emitting diode ("LED"), power devices, compound semiconductor, and data storage industries, as well as general materials research.

Our products and services are used by the vast majority of bare wafer, IC, lithography reticle ("reticle" or "mask") and hard disk drive manufacturers around the world. Our products, services and expertise are used by our customers to measure, detect, analyze and resolve critical product defects that arise in that environment in order to control nanometric level manufacturing processes.

Our revenues are driven largely by our customers' spending on capital equipment and related maintenance services necessary to support key transitions in their underlying product technologies, or to increase their production volumes in response to market demand or expansion plans. Our semiconductor customers generally operate in one or more of the three major semiconductor markets - memory, foundry and logic. All three of these markets are characterized by rapid technological changes and sudden shifts in end-user demand, which influence the level and pattern of our customers' spending on our products and services. Although capital spending in all three semiconductor markets has historically been very cyclical, the demand for more advanced and lower cost chips used in a growing number of consumer electronics, communications, data processing, and industrial and automotive products has resulted over the long term in a favorable demand environment for our process control and yield management solutions, particularly in the foundry and logic markets, which have higher levels of process control adoption than the memory market.

Through the acquisition of Orbotech, Ltd. ("Orbotech"), we have expanded our reach in the electronics value chain to include technologically advanced, yield-enhancing and process-enabling solutions to address various manufacturing stages of Printed Circuit Boards ("PCB"), Flat Panel Displays ("FPD"), Specialty Semiconductor Devices ("SD") and other electronic components. The products include Automated Optical Inspection ("AOI"), Automated Optical Shaping ("AOS"), Direct Imaging ("DI"), additive printing, laser drilling, laser plotters, Computer aided manufacturing ("CAM") and engineering solutions for PCB and additional adjacent electronics component manufacturing, as well as AOI, test, repair and process monitoring systems for FPD manufacturing and vacuum process tools for etch, Physical Vapor Deposition ("PVD"), Molecular Vapor Deposition ("MVD") and Chemical Vapor Deposition ("CVD") solutions for SD manufacturing.

In our newly acquired Orbotech business, consumer end markets have been experiencing a fundamental shift in technology complexity, driven primarily by the proliferation of high-end mobile devices and automotive devices, as well as by the demand for large area FPDs such as large-size LCD televisions and OLED displays. The shift towards 5G connectivity and the fast-paced growth of the Internet of Things ("IoT") services is expected to continue to further accelerate this shift as more devices become connected and dependent upon other electronic devices.

As a supplier to the global semiconductor, semiconductor-related and electronics industries, our customer base continues to become more highly concentrated over time, thereby increasing the potential impact of a sudden change in capital spending by a major customer on our revenues and profitability. As our customer base becomes increasingly more concentrated, large orders from a relatively limited number of customers account for a substantial portion of our sales, which potentially exposes us to more volatility for revenues and earnings. In the global semiconductor and electronics related industries, China is emerging as a major region for manufacturing of logic and memory chips, adding to its role as the world's largest consumer of ICs. Additionally, a significant portion of global FPD and PCB manufacturing has migrated to China. Government initiatives are propelling China to expand its domestic manufacturing capacity and attracting semiconductor manufacturers from Taiwan, Korea, Japan and the US. China is currently seen as an important long-term growth region for the semiconductor and electronics capital equipment sector. We are also subject to the cyclical capital spending that has historically characterized the semiconductor, semiconductor-related and electronics industries. The timing, length, intensity and volatility of the capacity-oriented capital spending cycles of our customers are unpredictable.

The semiconductor and electronics industries have also been characterized by constant technological innovation. Currently, there are multiple drivers for growth in the industry with increased demand for chips providing computation power and connectivity for Artificial Intelligence ("AI") applications and support for mobile devices at the leading edge of foundry and logic chip manufacturing. Qualification of early extreme ultraviolet ("EUV") lithography processes and equipment is driving growth at leading logic/foundry and dynamic random-access memory ("DRAM") manufacturers. Expansion of IoT together with increasing acceptance of advanced driver assistance systems ("ADAS") in anticipation of the introduction of autonomous cars have begun to accelerate legacy-node technology conversions and capacity expansions. Intertwined in these areas, spurred by data storage and connectivity needs, is the growth in demand for memory chips. On the other hand, higher design costs for the most advanced ICs could economically constrain leading-edge manufacturing technology customers to focus their resources on only the large technologically advanced products and applications. We believe that, over the long term, our customers will continue to invest in advanced technologies and new materials to enable smaller design rules and higher density applications that fuel demand for process control equipment, although the growth for such equipment may be adversely impacted by higher design costs for advanced ICs, reuse of installed products, and delays in production ramps by our customers in response to higher costs and technical challenges at more advanced technology nodes.

Additionally, current trends in smart mobile devices, 5G connectivity, automotive electronics, smart vehicles, flexible displays, AR/VR and wearable devices, high-performance computing, large size televisions and the IoT are expected to drive the need for production, inspection, test and repair solutions that are able to address the cutting-edge technology embedded in these types of electronic products.

The demand for our products and our revenue levels are driven by our customers' needs to solve the process challenges that they face as they adopt new technologies required to fabricate advanced ICs that are incorporated into sophisticated mobile devices. Our customers continuously seek to increase yields and enhance the efficiency of their manufacturing processes, including by improving their manufacturing, inspection, testing and repair capabilities.

Subsequent to the Orbotech Acquisition, we changed our organizational structure resulting in four reportable segments: Semiconductor Process Control, Specialty Semiconductor Process, PCB, Display and Component Inspection, and Other. Prior period results have been recast to conform to the current presentation.

Our view of the current wafer fab equipment demand climate is aligned with consensus industry analyst expectations for the calendar year 2019, which reflects a decline in capital equipment spending by memory customers. In contrast to the memory business, capital equipment spending by foundry and logic customers at the leading edge has begun to ramp up, and the momentum is expected to continue in calendar year 2019. We have already seen our mix of business begin to shift toward increased purchases by logic and foundry customers as a percentage of total sales, and we expect spending from these customers to continue to remain strong. Because of a more diversified semiconductor device-end demand, and disciplined capacity planning by wafer fab equipment customers, we believe the long-term growth dynamics for the industry remain strong. While manufacturers of PCBs, FPDs, SDs and other electronic components create different products for diverse end-markets, they share similar production challenges in an increasingly competitive environment.

The following table sets forth some of our key consolidated financial information for each of our last three fiscal years[(1)]:

(Dollar amounts in thousands, except diluted net income per share)	Year ended June 30, 2019	2018	2017
Total revenues	$ 4,568,904	$ 4,036,701	$ 3,480,014
Costs of revenues	$ 1,869,377	$ 1,446,041	$ 1,286,215
Gross margin percentage	59 %	64 %	63 %
Net income attributable to KLA[(2)]	$ 1,175,617	$ 802,265	$ 926,076
Diluted net income per share attributable to KLA	$ 7.49	$ 5.10	$ 5.88

(1) On July 1, 2018, we adopted ASC 606 using the modified retrospective transition approach. Results for reporting periods beginning after June 30, 2018 are presented under ASC 606, while prior period amounts are not adjusted and continue to be reported in accordance with the previous revenue guidance in ASC 605.

(2) Our net income attributable to KLA decreased to$802.3 million in the fiscal year ended June 30, 2018, primarily as a result of the income tax effects from the enacted tax reform legislation through the Tax Cuts and Jobs Act, which was signed into law on December 22, 2017.

Total revenues during the fiscal year endedJune 30, 2019 increased by 13% compared to the fiscal year endedJune 30, 2018. Our year over year revenue growth reflected strong demand in the semiconductor process control market, growth in service revenues, and additional revenues from the Orbotech business which was acquired in the fiscal year ended June 30, 2019.

Acquisition of Orbotech, Ltd.

On February 20, 2019, we completed the acquisition of Orbotech for total purchase consideration of approximately$3.26 billion. Orbotech’s core business enables electronic device manufacturers to inspect, test and measure printed circuit boards and flat panel displays to verify their quality; pattern electronic circuitry on substrate and perform three-dimensional shaping of metalized circuits on multiple surfaces; and utilize advanced vacuum deposition and etching process in semiconductor device and semiconductor manufacturing and to perform laser drilling of electronic substrates. For additional details on the financial statement impacts of the Orbotech acquisition, refer to Note 6 “Business Combinations” to our Consolidated Financial Statements.

In addition, our Board of Directors has authorized a share repurchase of up to $2.00 billion of our common stock, reflecting an increase from $1.00 billion upon the close of the Orbotech Acquisition. We raised approximately $1.20 billion in new long-term debt financing to partially refinance our existing debt, to repurchase shares and for general corporate purposes. For additional details, refer to Note 8, “Debt”, and Note 10, “Stock Repurchase Program” to our Consolidated Financial Statements.

CRITICAL ACCOUNTING ESTIMATES AND POLICIES

The preparation of our Consolidated Financial Statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions in applying our accounting policies that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. We base these estimates and assumptions on historical experience and evaluate them on an ongoing basis to ensure that they remain reasonable under current conditions. Actual results could differ from those estimates. We discuss the development and selection of the critical accounting estimates with the Audit Committee of our Board of Directors on a quarterly basis, and the Audit Committee has reviewed our related disclosure in this Annual Report on Form 10-K. The accounting policies that reflect our more significant estimates, judgments and assumptions and which we believe are the most critical to aid in fully understanding and evaluating our reported financial results include the following:

Revenue Recognition. We primarily derive revenue from the sale of process control and yield management solutions for the semiconductor and related nanoelectronics industries, maintenance and support of all these products, installation and training services and the sale of spare parts. Our solutions provide a comprehensive portfolio of inspection, metrology and data analytics products, which are accompanied by a flexible portfolio of services to enable our customers to maintain the performance and productivity of the solutions purchased. The acquisition of Orbotech enabled us to broaden our portfolio to include the yield enhancement and production solutions used by manufacturers of printed circuit boards, flat panel displays, advanced packaging, micro-electro-mechanical systems and other electronic components.

Our solutions are generally not sold with a right of return, nor have we experienced significant returns from or refunds to our customers.

We account for a contract with a customer when there is approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectibility of consideration is probable.

Our revenues are measured based on consideration stipulated in the arrangement with each customer, net of any sales incentives and amounts collected on behalf of third parties, such as sales taxes. The revenues are recognized as separate performance obligations that are satisfied by transferring control of the product or service to the customer.

Our arrangements with our customers include various combinations of products and services, which are generally capable of being distinct and accounted for as separate performance obligations. A product or service is considered distinct if it is separately identifiable from other deliverables in the arrangement and if a customer can benefit from it on its own or with other resources that are readily available to the customer.

The transaction consideration, including any sales incentives, is allocated between separate performance obligations of an arrangement based on the stand-alone selling prices ("SSP") for each distinct product or service. Management considers a variety of factors to determine the SSP, such as, historical standalone sales of products and services, discounting strategies and other observable data.

From time to time, our contracts are modified to account for additional, or to change existing, performance obligations. Our contract modifications are generally accounted for prospectively.

Product Revenue

We recognize revenue from product sales at a point in time when we have satisfied our performance obligation by transferring control of the product to the customer. We use judgment to evaluate whether the control has transferred by considering several indicators, including:

- whether we have a present right to payment;
- the customer has legal title;
- the customer has physical possession;
- the customer has significant risk and rewards of ownership; and
- the customer has accepted the product, or whether customer acceptance is considered a formality based on history of acceptance of similar products (for example, when the customer has previously accepted the same tool, with the same specifications, and when we can objectively demonstrate that the tool meets all of the required acceptance criteria, and when the installation of the system is deemed perfunctory).

Not all of the indicators need to be met for us to conclude that control has transferred to the customer. In circumstances in which revenue is recognized prior to the product acceptance, the portion of revenue associated with our performance obligations to install product is deferred and recognized upon acceptance.

We enter into volume purchase agreements with some of our customers. We adjust the transaction consideration for estimated credits earned by our customers for such incentives. These credits are estimated based upon the forecasted and actual product sales for any given period and agreed-upon incentive rate. The estimate is updated at each reporting period.

We offer perpetual and term licenses for defects and data analysis software. The primary difference between perpetual and term licenses is the duration over which the customer can benefit from the use of the software, while the functionality and the features of the software are the same. With the acquisition of Orbotech we offer computer-aided manufacturing and engineering software solutions for the printed circuit boards production. Software is generally bundled with post-contract customer support ("PCS"), which includes unspecified software updates that are made available throughout the entire term of the arrangement. Revenue from software licenses is recognized at a point in time, when the software is made available to the customer. Revenue from PCS is deferred at contract inception and recognized ratably over the service period, or as services are performed.

Services and Spare Parts Revenue

The majority of product sales include a standard 6 to 12-month warranty that is not separately paid for by the customers. The customers may also purchase extended warranty for periods beyond the initial year as part of the initial product sale. We have concluded that the standard 12-month warranty as well as any extended warranty periods included in the initial product sales are separate performance obligations. The estimated fair value of warranty services is deferred and recognized ratably as revenue over the warranty period, as the customer simultaneously receives and consumes the benefits of warranty services provided by us.

Additionally, we offer product maintenance and support services, which the customer may purchase separately from the standard and extended warranty offered as part of the initial product sale. Revenue from separately negotiated maintenance and support service contracts is also recognized over time based on the terms of the applicable service period. Revenue from services performed in the absence of a maintenance contract, including training revenue, is recognized when the related services are performed. We also sell spare parts, revenue from which is recognized when control over the spare parts is transferred to the customer.

Installation services include connecting and validating configuration of the product. In addition, several testing protocols are completed to confirm the equipment is performing to customer specifications. Revenues from product installation are deferred and recognized at a point in time, once installation is complete.

Significant Judgments

Our contracts with our customers often include promises to transfer multiple products and services. Each product and service is generally capable of being distinct within the context of the contract and represents a separate performance obligation. Determining the SSP for each distinct performance obligation and allocation of consideration from an arrangement to the individual performance obligations and the appropriate timing of revenue recognition are significant judgments with respect to these arrangements. We typically estimate the SSP of products and services based on observable transactions when the products and services are sold on a standalone basis and those prices fall within a reasonable range. We typically have more than one SSP for individual products and services due to the stratification of these products by customers and circumstances. In these instances, we use information such as the size of the customer, geographic region, as well as customization of the products in determining the SSP. In instances where the SSP is not directly observable, we determine the SSP using information that includes market conditions, entity-specific factors, including discounting strategies, information about the customer or class of customer that is reasonably available and other observable inputs. While changes in the allocation of SSP between performance obligations will not affect the amount of total revenue recognized for a particular contract, any material changes could impact the timing of revenue recognition, which could have a material effect on our financial position and result of operations.

Although the products are generally not sold with a right of return, we may provide other credits or sales incentives, which are accounted for either as variable consideration or material right, depending on the specific terms and conditions of the arrangement. These credits and incentives are estimated at contract inception and updated at the end of each reporting period if and when additional information becomes available.

As outlined above, we use judgments to evaluate whether or not the customer has obtained control of the product and considers the several indicators in evaluating whether or not control has transferred to the customer. Not all of the indicators need to be met for us to conclude that control has transferred to the customer.

Contract Assets/Liabilities

The timing of revenue recognition, billings and cash collections may result in accounts receivable, contract assets, and contract liabilities (deferred revenue) on our Consolidated Balance Sheets. A receivable is recorded in the period we deliver products or provide services when we have an unconditional right to payment. Contract assets primarily relate to the value of products and services transferred to the customer for which the right to payment is not just dependent on the passage of time. Contract assets are transferred to receivable when rights to payment become unconditional.

A contract liability is recognized when we receive payment or have an unconditional right to payment in advance of the satisfaction of performance. The contract liabilities represent (1) deferred product revenue related to the value of products that have been shipped and billed to customers and for which the control has not been transferred to the customers, and (2) deferred service revenue, which is recorded when we receive consideration, or such consideration is unconditionally due, from a customer prior to transferring services to the customer under the terms of a contract. Deferred service revenue typically results from warranty services, and maintenance and other service contracts.

Contract assets and liabilities related to rights and obligations in a contract are recorded net in the Consolidated Balance Sheets. Upon the adoption of ASC 606, deferred costs of revenue are included in other current assets while under the legacy guidance deferred costs of revenue was included in deferred system profit.

Business Combinations. Accounting for business combinations requires management to make significant estimates and assumptions to determine the fair values of assets acquired and liabilities assumed at the acquisition date. Although we believe the assumptions and estimates we have made in the past have been reasonable and appropriate, they are based, in part, on historical experience and information obtained from management of the acquired companies and are inherently uncertain. Critical estimates in valuing certain acquired intangible assets include, but are not limited to future expected cash flows including revenue growth rate assumptions from product sales, customer contracts and acquired technologies, expected costs to develop in-process research and development into commercially viable products, estimated cash flows from the projects when completed, including assumptions associated with the technology migration curve, estimated royalty rates used in valuing technology related intangible assets, and discount rates. The discount rates used to discount expected future cash flows to present value are typically derived from a weighted-average cost of capital analysis and adjusted to reflect inherent risks. Unanticipated events and circumstances may occur that could affect either the accuracy or validity of such assumptions, estimates or actual results.

We allocate the fair value of the purchase price of our acquisitions to the tangible assets acquired, liabilities assumed, and intangible assets acquired, including in-process research and development (“IPR&D”), based on their estimated fair values. The excess of the fair value of the purchase price over the fair values of these net tangible and intangible assets acquired is recorded as goodwill. Management’s estimates of fair value are based upon assumptions believed to be reasonable, but our estimates and assumptions are inherently uncertain and subject to refinement. As a result, during the measurement period, which will not exceed one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the fair value of the purchase price of our acquisitions, whichever comes first, any subsequent adjustments are recorded to our Consolidated Statements of Operations.

The fair value of IPR&D is initially capitalized as an intangible asset with an indefinite life and assessed for impairment thereafter whenever events or changes in circumstances indicate that the carrying value of the IPR&D assets may not be recoverable. Impairment of IPR&D is recorded to research and development expenses. When an IPR&D project is completed, the IPR&D is reclassified as an amortizable purchased intangible asset and amortized to costs of revenues over the asset’s estimated useful life.

Acquisition-related expenses are recognized separately from the business combination and are expensed as incurred.

Inventories. Inventories are stated at the lower of cost (on a first-in, first-out basis) or net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. Demonstration units are stated at their manufacturing cost and written down to their net realizable value. We review and set standard costs semi-annually at current manufacturing costs in order to approximate actual costs. Our manufacturing overhead standards for product costs are calculated assuming full absorption of forecasted spending over projected volumes, adjusted for excess capacity. Abnormal inventory costs such as costs of idle facilities, excess freight and handling costs, and spoilage are recognized as current period charges. We write down product inventory based on forecasted demand and technological obsolescence and service spare parts inventory based on forecasted usage. These factors are impacted by market and economic conditions, technology changes, new product introductions and changes in strategic direction and require estimates that may include uncertain elements. Actual demand may differ from forecasted demand, and such differences may have a material effect on recorded inventory values.

Allowance for Doubtful Accounts. A majority of our accounts receivable are derived from sales to large multinational semiconductor manufacturers throughout the world. In order to monitor potential credit losses, we perform ongoing credit evaluations of our customers’ financial condition. An allowance for doubtful accounts is maintained for probable credit losses based upon our assessment of the expected collectibility of the accounts receivable. The allowance for doubtful accounts is reviewed on a quarterly basis to assess the adequacy of the allowance. We take into consideration (1) any circumstances of which we are aware of a customer’s inability to meet its financial obligations; and (2) our judgments as to prevailing economic conditions in the industry and their impact on our customers. If circumstances change, such that the financial conditions of our customers are adversely affected and they are unable to meet their financial obligations to us, we may need to record additional allowances, which would result in a reduction of our net income.

Accounting for Stock-Based Compensation Plans. We account for stock-based awards granted to employees for services based on the fair value of those awards. The fair value of stock-based awards is measured at the grant date and is recognized as expense over the employee's requisite service period. The fair value for restricted stock units granted without "dividend equivalent" rights is determined using the closing price of our common stock on the grant date, adjusted to exclude the present value of dividends which are not accrued on the restricted stock units. The fair value for restricted stock units granted with "dividend equivalent" rights is determined using the closing price of our common stock on the grant date. The award holder is not entitled to receive payments under dividend equivalent rights unless the associated restricted stock unit award vests (i.e., the award holder is entitled to receive credits, payable in cash or shares of our common stock, equal to the cash dividends that would have been received on the shares of our common stock underlying the restricted stock units had the shares been issued and outstanding on the dividend record date, but such dividend equivalents are only paid subject to the recipient satisfying the vesting requirements of the underlying award). Compensation expense for restricted stock units with performance metrics is calculated based upon expected achievement of the metrics specified in the grant, or when a grant contains a market condition, the grant date fair value using a Monte Carlo simulation. The Monte Carlo simulation incorporates estimates of the potential outcomes of the market condition on the grant date fair value of each award. Additionally, we estimate forfeitures based on historical experience and revise those estimates in subsequent periods if actual forfeitures differ from the estimated amounts. The fair value is determined using a Black-Scholes valuation model for purchase rights under our Employee Stock Purchase Plan. The Black-Scholes option-pricing model requires the input of assumptions, including the option's expected term and the expected price volatility of the underlying stock. The expected stock price volatility assumption is based on the market-based historical implied volatility from traded options of our common stock.

Contingencies and Litigation. We are subject to the possibility of losses from various contingencies. Considerable judgment is necessary to estimate the probability and amount of any loss from such contingencies. An accrual is made when it is probable that a liability has been incurred or an asset has been impaired and the amount of loss can be reasonably estimated. We accrue a liability and recognize as expense the estimated costs expected to be incurred to defend or settle asserted and unasserted claims existing as of the balance sheet date. See Note 14, "Commitments and Contingencies" and Note 15, "Litigation and Other Legal Matters" to our Consolidated Financial Statements for additional details.

Goodwill and Purchased Intangible Assets. We assess goodwill for impairment annually as well as whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Long-lived purchased intangible assets are tested for impairment whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable. See Note 7, "Goodwill and Purchased Intangible Assets" to the Consolidated Financial Statements for additional details. Goodwill represents the excess of the purchase price over the fair value of the net tangible and identifiable intangible assets acquired in each business combination. We performed our annual qualitative assessment of the goodwill by reporting unit during the third quarter of the fiscal year ended June 30, 2019 and concluded that there was no impairment. In addition, as a result of the Orbotech Acquisition, we updated our organizational structure and performed a qualitative assessment of the goodwill for our reporting units, which were impacted by the organizational change, and concluded that there were no impairment indicators affecting the valuation of goodwill subsequent to our annual impairment test. The next annual evaluation of the goodwill by reporting unit will be performed in the third quarter of the fiscal year ending June 30, 2020.

If we were to encounter challenging economic conditions, such as a decline in our operating results, an unfavorable industry or macroeconomic environment, a substantial decline in our stock price, or any other adverse change in market conditions, we may be required to perform quantitative goodwill impairment analysis. In addition, if such conditions have the effect of changing one of the critical assumptions or estimates we use to calculate the value of our goodwill or intangible assets, we may be required to record goodwill and/or intangible asset impairment charges in future periods, whether in connection with our next annual impairment assessment or prior to that, if any triggering event occurs outside of the quarter during which the annual goodwill impairment assessment is performed. It is not possible at this time to determine if any such future impairment charge would occur or, if it does, whether such charge would be material to our results of operations.

Income Taxes. We account for income taxes in accordance with the authoritative guidance, which requires income tax effects for changes in tax laws are recognized in the period in which the law is enacted.

Transition tax liability is recognized in the period when the change in the U.S. tax law was enacted and the income tax effects are recorded as a component of provision for income taxes from continuing operations. Several inputs were considered in the calculation, such as the calculation of the post-1986 foreign earnings and profit ("E&P"), income tax pools for all foreign subsidiaries, and the amount of those earnings held in cash and other specified assets. We applied the current interpretations from the U.S. federal and state governments and regulatory organization in its calculation of the transition tax liability.

Deferred tax assets and liabilities are recognized using enacted tax rates for the effect of temporary differences between the book and tax bases of recorded assets and liabilities. The guidance also requires that deferred tax assets be reduced by a valuation allowance if it is more likely than not that a portion of the deferred tax asset will not be realized. We have determined that a valuation allowance is necessary against a portion of the deferred tax assets, but we anticipate that our future taxable income will be sufficient to recover the remainder of our deferred tax assets. However, should there be a change in our ability to recover our deferred tax assets that are not subject to a valuation allowance, we could be required to record an additional valuation allowance against such deferred tax assets. This would result in an increase to our tax provision in the period in which we determine that the recovery is not probable.

On a quarterly basis, we provide for income taxes based upon an estimated annual effective income tax rate. The effective tax rate is highly dependent upon the geographic composition of worldwide earnings, tax regulations governing each region, availability of tax credits and the effectiveness of our tax planning strategies. We carefully monitor the changes in many factors and adjust our effective income tax rate on a timely basis. If actual results differ from these estimates, this could have a material effect on our financial condition and results of operations.

The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax regulations. In accordance with the authoritative guidance on accounting for uncertainty in income taxes, we recognize liabilities for uncertain tax positions based on the two-step process. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained in audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50% likely of being realized upon ultimate settlement. We reevaluate these uncertain tax positions on a quarterly basis. This evaluation is based on factors including, but not limited to, changes in facts or circumstances, changes in tax law, effectively settled issues under audit and new audit activity. Any change in these factors could result in the recognition of a tax benefit or an additional charge to the tax provision.

We record income taxes on the undistributed earnings of foreign subsidiaries unless the subsidiaries' earnings are considered indefinitely reinvested outside the U.S. Our effective tax rate would be adversely affected if we change our intent or if such undistributed earnings are needed for U.S. operations because we would be required to provide or pay income taxes on some or all of these undistributed earnings.

Global Intangible Low-Taxed Income. The Tax Cuts and Jobs Act (the "Act") includes provisions for Global Intangible Low-Taxed Income ("GILTI") wherein taxes on foreign income are imposed in excess of a deemed return on tangible assets of foreign corporations. This income will effectively be taxed at a 10.5% tax rate in general. As a result, our deferred tax assets and liabilities were being evaluated to determine if the deferred tax assets and liabilities should be recognized for the basis differences expected to reverse as a result of GILTI provisions that are effective for us after the fiscal year ending June 30, 2018, or should the tax on GILTI provisions be recognized as period costs in each year incurred. We elected to account for GILTI as a component of current period tax expense starting from the first quarter of the fiscal year ending June 30, 2019.

Valuation of Marketable Securities. Our investments in available-for-sale securities are reported at fair value. Unrealized gains related to increases in the fair value of investments and unrealized losses related to decreases in the fair value are included in accumulated other comprehensive income (loss), net of tax, as reported on our Consolidated Statements of Stockholders' Equity. However, changes in the fair value of investments impact our net income only when such investments are sold or an impairment charge is recognized. Realized gains and losses on the sale of securities are determined by specific identification of the security's cost basis. We periodically review our investment portfolio to determine if any investment is other-than-temporarily impaired due to changes in credit risk or other potential valuation concerns, which would require us to record an impairment charge in the period during which any such determination is made. In making this judgment, we evaluate, among other things, the duration of the investment, the extent to which the fair value of an investment is less than its cost, the credit rating and any changes in credit rating for the investment, default and loss rates of the underlying collateral, structure and credit enhancements to determine if a credit loss may exist. Our assessment that an investment is not other-than-temporarily impaired could change in the future due to new developments or changes in our strategies or assumptions related to any particular investment.

Recent Accounting Pronouncements

For a description of recent accounting pronouncements, including those recently adopted and the expected dates of adoption as well as estimated effects, if any, on our Consolidated Financial Statements of those not yet adopted, see Note 1, "Description of Business and Summary of Significant Accounting Policies" of the notes to our Consolidated Financial Statements.

RESULTS OF OPERATIONS

Revenues and Gross Margin

On July 1, 2018, we adopted ASC 606 using the modified retrospective transition approach. Results for reporting periods beginning after June 30, 2018 are presented under ASC 606, while prior period amounts are presented under legacy guidance. For additional details, refer to Note 2 "Revenue" to our Consolidated Financial Statements.

	Year ended June 30,					
(Dollar amounts in thousands)	2019	2018	2017	FY19 vs. FY18		FY18 vs. FY17	
Revenues:							
Product	$ 3,392,243	$ 3,160,671	$ 2,703,934	$ 231,572	7%	$ 456,737	17%
Service	1,176,661	876,030	776,080	300,631	34%	99,950	13%
Total revenues	$ 4,568,904	$ 4,036,701	$ 3,480,014	$ 532,203	13%	$ 556,687	16%
Costs of revenues	$ 1,869,377	$ 1,446,041	$ 1,286,215	$ 423,336	29%	$ 159,826	12%
Gross margin percentage	59%	64%	63%	(5)%		1%	

Product revenues

Our business is affected by the concentration of our customer base and our customers' capital equipment procurement schedules as a result of their investment plans. Our product revenues in any particular period are significantly impacted by the amount of new orders that we receive during that period and, depending upon the duration of manufacturing and installation cycles, in the preceding period.

The increase in product revenues by 7% in the fiscal year endedJune 30, 2019 compared to the prior year is primarily attributable to product revenue from our newly acquired Orbotech business, increased investments from our foundry and wafer customers, and a favorable impact from the adoption of ASC 606 due to our earlier timing of transfer of control, partially offset by a lower products shipments to customers in the memory business.

Service revenues

Service revenues are generated from product maintenance and support services, as well as billable time and material service calls made to our customers. The amount of our service revenues is typically a function of the number of systems installed at our customers' sites and the utilization of those systems, but it is also impacted by other factors, such as our rate of service contract renewals, the types of systems being serviced and fluctuations in foreign exchange rates.

The increase in service revenues by 34% in the fiscal year endedJune 30, 2019 compared to the prior year is primarily attributable to service revenues from our newly acquired Orbotech business, the impact of adoption of ASC 606 whereby revenue from the standard warranty represents a separate performance obligation and included in our services revenue, and an increase in the number of systems installed at our customers' sites.

Revenues by segment(1)

	Year ended June 30,						
(Dollar amounts in thousands)	2019	2018	2017	FY19 vs. FY18		FY18 vs. FY17	
Revenues:							
Semiconductor Process Control	$ 4,080,822	$ 3,944,015	$ 3,408,876	$ 136,807	3%	$ 535,139	16%
Specialty Semiconductor Process	151,164	—	—	151,164	(3)	—	(3)
PCB, Display and Component Inspection(2)	332,810	92,516	71,557	240,294	(3)	20,959	(3)
Other	4,676	—	—	4,676	(3)	—	(3)
Total revenues	$ 4,569,472	$ 4,036,531	$ 3,480,433	$ 532,941	(3)	$ 556,098	(3)

(1) Segment revenues exclude corporate allocation and the effects of foreign exchange rates. For additional details, refer to Note 17, "Segment Reporting and Geographic Information" to our Consolidated Financial Statements.
(2) Segment revenues for the fiscal years ended June 30, 2018 and 2017 include the component inspection business only.
(3) No meaningful comparative information exists for the prior periods.

Fiscal Year 2019 compared with Fiscal Year 2018

Revenue from our Semiconductor Process Control segment increased by 3% primarily due to a strong demand from our customers in the patterning business, and growth in service revenues. The increase in revenues from Specialty Semiconductor Process, PCB, Display and Component Inspection and Other segments primarily relates to the Orbotech business which was acquired in February of 2019.

Fiscal Year 2018 compared with Fiscal Year 2017

Revenue from our Semiconductor Process Control segment increased by 16%, primarily due to increases from sales of both our wafer inspection and patterning products as our customers continue to invest in the process control and services, and an increase in the number of post-warranty systems installed at our customers' sites over this time period.

Revenues - Top Customers

The following customers each accounted for more than 10% of our total revenues primarily in Semiconductor Process Control segment for the indicated periods:

Year ended June 30,		
2019	**2018**	**2017**
Taiwan Semiconductor Manufacturing Company Limited	Samsung Electronics Co., Ltd.	Samsung Electronics Co., Ltd.
		Taiwan Semiconductor Manufacturing Company Limited

Revenues by region

Revenues by region for the periods indicated were as follows:

	Year ended June 30,					
(Dollar amounts in thousands)	**2019**		**2018**		**2017**	
China	$ 1,215,807	27%	$ 643,033	16%	$ 412,098	12%
Taiwan	1,105,726	24%	636,363	16%	1,104,307	32%
North America	596,452	13%	494,330	12%	523,024	14%
Korea	584,091	13%	1,178,601	29%	688,094	20%
Japan	581,529	13%	638,358	16%	351,202	10%
Europe & Israel	305,924	7%	300,883	7%	263,789	8%
Rest of Asia	179,375	3%	145,133	4%	137,500	4%
Total	$ 4,568,904	100%	$ 4,036,701	100%	$ 3,480,014	100%

A significant portion of our revenues continues to be generated in Asia, where a substantial portion of the world's semiconductor manufacturing capacity is located, and we expect that trend to continue.

Gross margin

Our gross margin fluctuates with revenue levels and product mix and is affected by variations in costs related to manufacturing and servicing our products, including our ability to scale our operations efficiently and effectively in response to prevailing business conditions.

The following table summarizes the major factors that contributed to the changes in gross margin percentage:

	Gross Margin Percentage
Fiscal year ended June 30, 2017	**63.0 %**
Revenue volume of products and services	0.8 %
Mix of products and services sold	0.9 %
Manufacturing labor, overhead and efficiencies	(0.4)%
Other service and manufacturing costs	(0.2)%
Fiscal year ended June 30, 2018	**64.1 %**
Revenue volume of products and services	(1.0)%
Mix of products and services sold	0.7 %
Manufacturing labor, overhead and efficiencies	(1.6)%
Other service and manufacturing costs	(0.5)%
Impact from acquisition of Orbotech	(2.6)%
Fiscal year ended June 30, 2019	**59.1 %**

Changes in gross margin percentage, which are driven by the revenue volume of products and services, reflect our ability to leverage existing infrastructure to generate higher revenues. It also includes the effect of fluctuations in foreign exchange rates, average customer pricing and customer revenue deferrals associated with volume purchase agreements. Changes in gross margin percentage from the mix of products and services sold, reflect the impact of changes within the composition of product and service offerings, and amortization of inventory fair value adjustments from business combinations. Changes in gross margin percentage from manufacturing labor, overhead and efficiencies reflect our ability to manage costs and drive productivity as we scale our manufacturing activity to respond to customer requirements, and amortization of intangible assets. Changes in gross margin percentage from other service and manufacturing costs include the impact of customer support costs, including the efficiencies with which we deliver services to our customers, and the effectiveness with which we manage our production plans and inventory risk.

The decrease in our gross margin to59.1% from 64.1% during the fiscal year ended June 30, 2019 is primarily attributable to the acquisition of Orbotech, which historically had lower product gross margins, an increase in service and manufacturing costs, and a lower revenue volume of products and services. These trends were partially offset by a favorable mix of products and services sold.

Segment gross margin[(1)]

(Dollar amounts in thousands)	Year ended June 30, 2019	2018	2017	FY19 vs. FY18		FY18 vs. FY17	
Segment gross margin:							
Semiconductor Process Control	$ 2,590,434	$ 2,554,223	$ 2,160,747	$ 36,211	1%	$ 393,476	18%
Specialty Semiconductor Process	78,800	—	—	78,800	(3)	—	(3)
PCB, Display and Component Inspection[(2)]	155,765	38,428	30,914	117,337	(3)	7,514	(3)
Other	1,102	—	—	1,102	(3)	—	(3)
	$ 2,826,101	$ 2,592,651	$ 2,191,661	$ 233,450	(3)	$ 400,990	(3)

(1) Segment gross margin is calculated as segment revenues less segment cost of revenues and excludes corporate allocation and the effects of foreign exchange rates, amortization of intangible assets, inventory fair value adjustments, and acquisition related costs. For additional details, refer to Note 17, “Segment Reporting and Geographic Information” to our Consolidated Financial Statements.

(2) Segment gross margin in the fiscal year ended June 30, 2018 and 2017 include the component inspection business only.

(3) No meaningful comparative information exists for the prior periods.

Fiscal Year 2019 compared with Fiscal Year 2018

The primary factors impacting the performance of our segment gross margins are summarized as follows:

- Semiconductor Process Control segment gross margin remained relatively consistent from prior years.
- The segment gross margins of Specialty Semiconductor Process, PCB, Display and Component Inspection and Other segments primarily relate to the Orbotech business, which was acquired in February 2019.

Fiscal Year 2018 compared with Fiscal Year 2017

The primary factors impacting the performance of our segment gross margins are summarized as follows:

- Semiconductor Process Control segment gross margin increased primarily due to a favorable mix of products and services sold, a higher revenue volume of products and services, and lower customer support costs, partially offset by higher manufacturing and service costs to support increased volume of product shipments.
- There were no segment gross margins in Specialty Semiconductor Process and Other segments as both segments relate to the Orbotech business, which was acquired in February 2019.

Research and Development ("R&D")

(Dollar amounts in thousands)	Year ended June 30, 2019	2018	2017	FY19 vs. FY18		FY18 vs. FY17	
R&D expenses	$ 711,030	$ 608,531	$ 526,688	$ 102,499	17%	$ 81,843	16%
R&D expenses as a percentage of total revenues	16%	15%	15%	1%		—%	

R&D expenses may fluctuate with product development phases and project timing as well as our R&D efforts. As technological innovation is essential to our success, we may incur significant costs associated with R&D projects, including compensation for engineering talent, engineering material costs, and other expenses.

R&D expenses during the fiscal year ended June 30, 2019 were higher compared to the fiscal year ended June 30, 2018, primarily due to an increase in employee-related expenses of $36.2 million as a result of additional engineering headcount and higher employee benefit costs, an increase in depreciation expense of $5.1 million, and $55.7 million of expenses from the Orbotech business.

Our future operating results will depend significantly on our ability to produce products and provide services that have a competitive advantage in our marketplace. To do this, we believe that we must continue to make substantial and focused investments in our research and development. We remain committed to product development in new and emerging technologies.

Selling, General and Administrative ("SG&A")

(Dollar amounts in thousands)	Year ended June 30, 2019	2018	2017	FY19 vs. FY18		FY18 vs. FY17	
SG&A expenses	$ 599,124	$ 442,304	$ 388,211	$ 156,820	35%	$ 54,093	14%
SG&A expenses as a percentage of total revenues	13%	11%	11%	2%		—%	

SG&A expenses during the fiscal year ended June 30, 2019 were higher compared to the fiscal year ended June 30, 2018, primarily due to an increase in employee-related expenses of $11.1 million as a result of additional headcount, and higher employee benefit costs, an increase in acquisition-related expenses of $22.0 million, $10.9 million of stock-based compensation expense acceleration for certain equity awards for Orbotech employees and $91.8 million of expenses from the Orbotech business, including $30.2 million of amortization expense for acquired intangible assets.

Interest Expense and Other Expense (Income), Net

(Dollar amounts in thousands)	Year ended June 30, 2019	2018	2017
Interest expense	$ 124,604	$ 114,376	$ 122,476
Other expense (income), net	$ (31,462)	$ (30,482)	$ (16,822)
Interest expense as a percentage of total revenues	3 %	3 %	4 %
Other expense (income), net as a percentage of total revenues	1 %	1 %	— %

The increase in interest expense during the fiscal year ended June 30, 2019 compared to the fiscal year ended June 30, 2018, was primarily due to interest on the $1.20 billion Senior Notes issued in March 2019.

Other expense (income), net is comprised primarily of realized gains or losses on sales of marketable securities, gains or losses from revaluations of certain foreign currency denominated assets and liabilities as well as foreign currency contracts, and interest-related accruals (such as interest and penalty accruals related to our tax obligations) and interest income earned on our invested cash, cash equivalents and marketable securities.

The increase in other expense (income), net during the fiscal year ended June 30, 2019 compared to the fiscal year ended June 30, 2018 was primarily due to an increase in interest income of $3.7 million, partially offset by an increase in accruals related to uncertain tax positions of $2.6 million.

Provision for Income Taxes

The following table provides details of income taxes:

(Dollar amounts in thousands)	Year ended June 30, 2019	2018	2017
Income before income taxes	$ 1,296,231	$ 1,455,931	$ 1,173,246
Provision for income taxes	$ 121,214	$ 653,666	$ 247,170
Effective tax rate	9.4 %	44.9 %	21.1 %

Our effective tax rate during the fiscal years ended June 30, 2019 and June 30, 2018 was impacted by the Tax Cuts and Jobs Act ("the Act"), which was enacted into law on December 22, 2017. Income tax effects resulting from changes in tax laws are accounted for by us in accordance with the authoritative guidance, which requires that these tax effects be recognized in the period in which the law is enacted and the effects are recorded as a component of provision for income taxes from continuing operations. We have completed our accounting for the tax effects of the enactment of the Act. As a result, we recorded a tax benefit of $19.3 million during the year ended June 30, 2019 relating to the transition tax liability provided by the Act.

Tax expense was lower as a percentage of income before taxes during the fiscal year ended June 30, 2019 compared to the fiscal year ended June 30, 2018 primarily due to the impact of the following items:

- Tax expense decreased by $49.9 million relating to the reduction of the U.S. federal corporate tax rate from 28.1% to 21% for the fiscal year ended June 30, 2019. The Act reduces the U.S. federal corporate tax rate from 35.0% to 21.0% as of January 1, 2018. The decrease in the U.S. federal corporate tax rate from 35.0% to 21.0% results in a blended statutory tax rate of 28.1% for the fiscal year ended June 30, 2018;
- Tax expense decreased by $320.2 million relating to the one -time transition tax recorded during the fiscal year ended June 30, 2018 on our total post-1986 earnings and profits ("E&P") of which, prior to the enactment of the Act, was previously deferred from U.S. income taxes; and
- Tax expense decreased by $102.1 million relating to the one-time re-measurement of our deferred tax assets and liabilities recorded during the fiscal year ended June 30, 2018 based on the Act's new corporate tax rate of 21.0%.

Our future effective income tax rate depends on various factors, such as tax legislation, the geographic composition of our pre-tax income, the amount of our pre-tax income as business activities fluctuate, non-deductible expenses incurred in connection with acquisitions, research and development credits as a percentage of aggregate pre-tax income, non-taxable or non-deductible increases or decreases in the assets held within our Executive Deferred Savings Plan, the tax effects of employee stock activity, and the effectiveness of our tax planning strategies.

In the normal course of business, we are subject to examination by tax authorities throughout the world. We are subject to federal income tax examinations for all years beginning from the fiscal year ended June 30, 2016 and are under U.S. federal income tax examination for the fiscal year ended June 30, 2016. We are subject to state income tax examinations for all years beginning from the fiscal year ended June 30, 2015. We are also subject to examinations in other major foreign jurisdictions, including Singapore and Israel, for all years beginning from the calendar year ended December 31, 2012. We are under audit in Germany related to Orbotech for the years ended December 31, 2013 to December 31, 2015. Although we believe our tax estimates are reasonable, the final determination of tax audits and any related litigation could be materially different from our historical income tax provisions and accruals. The results of an audit or litigation could have a material adverse effect on our results of operations or cash flows in the period or periods for which that determination is made.

In May 2017, Orbotech received an assessment from the ITA with respect to its fiscal years 2012 through 2014 (the “Assessment”, and the “Audit Period”, respectively), for an aggregate amount of tax against us, after offsetting all NOLs for tax purposes available through the end of 2014, of approximately NIS 218 million (approximately $61.0 million as of June 30, 2019), which amount includes related interest and linkage differentials to the Israeli consumer price index (as of date of the Assessment). We believe our recorded unrecognized tax benefits are sufficient to cover the resolution of the Assessment.

On August 31, 2018, Orbotech filed an objection in respect of the tax assessment (the “Objection”). Orbotech is now in the process of the second stage, in which the claims raised by it in the Objection are examined by different personnel at the Israel Tax Authority (“ITA”). In addition, the ITA can examine additional items and may assess additional amounts in the second stage. The second stage must be completed within one year of when the Objection was filed.

Liquidity and Capital Resources

	As of June 30,		
(Dollar amounts in thousands)	2019	2018	2017
Cash and cash equivalents	$ 1,015,994	$ 1,404,382	$ 1,153,051
Marketable securities	723,391	1,475,936	1,863,689
Total cash, cash equivalents and marketable securities	$ 1,739,385	$ 2,880,318	$ 3,016,740
Percentage of total assets	19%	51%	54%

	Year ended June 30,		
(In thousands)	2019	2018	2017
Cash flows:			
Net cash provided by operating activities	$ 1,152,632	$ 1,229,120	$ 1,079,665
Net cash (used in) provided by investing activities	(1,180,982)	291,618	(560,886)
Net cash used in financing activities	(360,005)	(1,270,103)	(472,805)
Effect of exchange rate changes on cash and cash equivalents	(33)	696	(1,411)
Net (decrease) increase in cash and cash equivalents	$ (388,388)	$ 251,331	$ 44,563

Cash and Cash Equivalents and Marketable Securities:

As of June 30, 2019, our cash, cash equivalents and marketable securities totaled$1.74 billion, which represents a decrease of $1.14 billion from June 30, 2018. The decrease is mainly due to $1.82 billion paid to fund Orbotech and other business acquisitions, payment of dividends and dividend equivalents of $472.3 million, and stock repurchases of $1.10 billion, partially offset by the net proceeds from our 2019 Senior Notes of$1.18 billion, our cash generated from operations of$1.15 billion and net proceeds of $764.2 million from marketable securities transactions. As of June 30, 2019, $669.3 million of our $1.74 billion of cash, cash equivalents, and marketable securities were held by our foreign subsidiaries and branch offices. We currently intend to indefinitely reinvest $379.1 million of the cash, cash equivalents and marketable securities held by our foreign subsidiaries for which we assert that earnings are permanently reinvested. If, however, a portion of these funds were to be repatriated to the United States, we would be required to accrue and pay state and foreign taxes of approximately 1%-22% of the funds repatriated. The amount of taxes due will depend on the amount and manner of the repatriation, as well as the location from which the funds are repatriated. We have accrued state and foreign tax on the remaining cash of $290.2 million of the $669.3 million held by our foreign subsidiaries and branch offices. As such, these funds can be returned to the U.S. without accruing any additional U.S. tax expense.

Cash Dividends and Special Cash Dividend:

The total amount of regular quarterly cash dividends and dividends equivalents paid during the fiscal years ended June 30, 2019, 2018 and 2017 was $469.4 million, $395.6 million and $335.4 million, respectively. The increase in the amount of regular quarterly cash dividends and dividends equivalents paid during the fiscal year ended June 30, 2019 reflected the increase in the level of our regular quarterly cash dividend from $0.59 to $0.75 per share that were instituted during the three months ended June 30, 2018. The amount of accrued dividend equivalents payable for regular quarterly cash dividends on unvested restricted stock units ("RSUs") with dividend equivalent rights was $7.3 million and $6.7 million as of June 30, 2019 and 2018, respectively. These amounts will be paid upon vesting of the underlying unvested RSUs as described in Note 9, "Equity, Long-term Incentive Compensation Plans and Non-Controlling Interest" to our Consolidated Financial Statements.

On August 1, 2019, we announced that our Board of Directors had declared a quarterly cash dividend of $0.75 per share. Refer to Note 19, "Subsequent Events" to the Consolidated Financial Statements for additional information regarding the declaration of our quarterly cash dividend announced subsequent to June 30, 2019.

On November 19, 2014, our Board of Directors declared a special cash dividend of $16.50 per share on our outstanding common stock. The declaration and payment of the special cash dividend was part of our leveraged recapitalization transaction under which the special cash dividend was financed through a combination of existing cash and proceeds from the debt financing disclosed in Note 8, "Debt" that was completed during the three months ended December 31, 2014. The total amount of the special cash dividend accrued by us at the declaration date was substantially paid out during the three months ended December 31, 2014, except for the aggregate special cash dividend of $43.0 million that was accrued for the unvested RSUs and to be paid when such underlying unvested RSUs vest. During the second quarter of fiscal 2019, all of the special cash dividends accrued with respect to outstanding RSUs were vested and paid in full. We paid a special cash dividend with respect to vested restricted stock units during the fiscal years ended June 30, 2019, 2018 and 2017 of $2.9 million, $6.4 million and $8.6 million, respectively. Other than the special cash dividend declared during the three months ended December 31, 2014, we historically have not declared any special cash dividend. For details of the special cash dividend, refer to Note 9 "Equity, Long-Term Incentive Compensation Plans and Non-Controlling Interest," to our Consolidated Financial Statements

Stock Repurchases:

The shares repurchased under our stock repurchase program have reduced our basic and diluted weighted-average shares outstanding for the fiscal years ended June 30, 2019 and 2018. The stock repurchase program is intended, in part, to offset shares issued in connection with the purchases under our Employee Stock Purchase Plan ("ESPP") program and the vesting of employee restricted stock units.

Fiscal Year 2019 Compared to Fiscal Year 2018

Cash Flows from Operating Activities:

We have historically financed our liquidity requirements through cash generated from operations. Net cash provided by operating activities during the fiscal year ended June 30, 2019 decreased by $76.5 million compared to the fiscal year ended June 30, 2018, from $1.23 billion to $1.15 billion primarily as a result of the following factors:

- An increase in accounts payable payments of approximately $58.0 million;
- An increase in payments for employee-related expenses of approximately $51.0 million;
- An increase in payments for merger and acquisition related expenses, net of cash outflow mostly related to the Orbotech acquisition of approximately $51.0 million;

These trends were partially offset by a decrease in income tax payments of $72.7 million, and an increase in collections of approximately $10.0 million.

Cash Flows from Investing Activities:

Net cash used in investing activities during the fiscal year ended June 30, 2019 was $1.18 billion compared to net cash provided by investing activities of $291.6 million during the fiscal year ended June 30, 2018. This increase was mainly due to $1.82 billion paid to fund Orbotech and other acquisitions, an increase in capital expenditures of $63.6 million, partially offset by higher net sales and maturities of marketable securities of $388.8 million.

Cash Flows from Financing Activities:

Net cash used in financing activities during the fiscal year ended June 30, 2019 decreased compared to the fiscal year ended June 30, 2018, from $1.27 billion to $360.0 million. This change was mainly impacted by net proceeds from the issuance of Senior Notes in March 2019 of $1.18 billion, partially offset by an increase in common stock repurchases of $892.0 million and an increase in dividend and dividend equivalent payments of $70.2 million due to an increase in our quarterly dividend from $0.59 to $0.75 per share.

Senior Notes:

In March 2019 and November 2014, we issued $1.20 billion and $2.50 billion, respectively (each a "2019 Senior Notes", a "2014 Senior Notes", and collectively the "Senior Notes"), aggregate principal amount of senior, unsecured long-term notes.

The interest rate specified for each series of the 2014 Senior Notes will be subject to adjustments from time to time if Moody's Investor Service, Inc. ("Moody's") or Standard & Poor's Ratings Services ("S&P") or, under certain circumstances, a substitute rating agency selected by us as a replacement for Moody's or S&P, as the case may be (a "Substitute Rating Agency"), downgrades (or subsequently upgrades) its rating assigned to the respective series of the 2014 Senior Notes such that the adjusted rating is below investment grade. Unlike the 2014 Senior Notes, the interest rate for each series of the 2019 Senior Notes will not be subject to such adjustments. During the three months ended June 30, 2018, we entered into a series of forward contracts (the "2018 Rate Lock Agreements") to lock the benchmark interest rate with notional amount of $500.0 million in aggregate. In October 2014, we entered into a series of forward contracts to lock the 10-year treasury rate ("benchmark rate") on a portion of the 2014 Senior Notes with a notional amount of $1.00 billion in aggregate. For additional details, refer to Note 17, "Derivative Instruments and Hedging Activities" and Note 8 "Debt" to our Consolidated Financial Statements.

The original discounts on the 2019 Senior Notes and the 2014 Senior Notes amounted to $6.7 million and $4.0 million, respectively, and are being amortized over the life of the debt. Interest is payable semi-annually on May 1 and November 1 of each year for the 2014 Senior Notes and semi-annually on March 15 and September 15 of each year for the 2019 Senior Notes. The indenture for the Senior Notes (the "Indenture") includes covenants that limit our ability to grant liens on our facilities and enter into sale and leaseback transactions, subject to certain allowances under which certain sale and leaseback transactions are not restricted.

In certain circumstances involving a change of control followed by a downgrade of the rating of a series of Senior Notes by at least two of Moody's, S&P and Fitch Inc., unless we have exercised our rights to redeem the Senior Notes of such series, we will be required to make an offer to repurchase all or, at the holder's option, any part, of each holder's Senior Notes of that series pursuant to the offer described below (the "Change of Control Offer"). In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of Senior Notes repurchased plus accrued and unpaid interest, if any, on the Senior Notes repurchased, up to, but not including, the date of repurchase.

As of June 30, 2019, we were in compliance with all of our covenants under the Indenture associated with the Senior Notes.

Revolving Credit Facility:

In November 2017, we entered into a Credit Agreement (the "Credit Agreement") providing for a $750.0 million five-year unsecured Revolving Credit Facility (the "Revolving Credit Facility"), which replaced our prior Credit Facility. Subject to the terms of the Credit Agreement, the Revolving Credit Facility may be increased in an amount up to $250.0 million in the aggregate. In November 2018, we entered into an Incremental Facility, Extension and Amendment Agreement (the "Amendment"), which amends the Credit Agreement to (a) extend the Maturity Date (the "Maturity Date") from November 30, 2022 to November 30, 2023, (b) increase the total commitment by $250.0 million and (c) effect certain other amendments to the Credit Agreement as set forth in the Amendment. After giving effect to the Amendment, the total commitments under the Credit Agreement are $1.00 billion. During the third quarter of the fiscal year ended June 30, 2019, we made borrowings of $900.0 million from the Revolving Credit Facility as part of the funding for the Orbotech Acquisition, which were paid in full in the same quarter. As of June 30, 2019, we had no outstanding borrowings under the Revolving Credit Facility.

We may borrow, repay and reborrow funds under the Revolving Credit Facility until the Maturity Date, at which time such Revolving Credit Facility will terminate, and all outstanding loans under such facility, together with all accrued and unpaid interest, must be repaid. We may prepay outstanding borrowings under the Revolving Credit Facility at any time without a prepayment penalty.

Borrowings under the Revolving Credit Facility will bear interest, at our option, at either: (i) the Alternative Base Rate ("ABR") plus a spread, which ranges from 0 bps to 75 bps, or (ii) the London Interbank Offered Rate ("LIBOR") plus a spread, which ranges from100 bps to 175 bps. The spreads under ABR and LIBOR are subject to adjustment in conjunction with credit rating downgrades or upgrades. We are also obligated to pay an annual commitment fee on the daily undrawn balance of the Revolving Credit Facility, which ranges from 10 bps to 25 bps, subject to an adjustment in conjunction with changes to our credit rating. As of June 30, 2019, we pay an annual commitment fee of 12.5 bps on the daily undrawn balance of the Revolving Credit Facility.

The Revolving Credit Facility requires us to maintain an interest expense coverage ratio as described in the Credit Agreement, on a quarterly basis, covering the trailing four consecutive fiscal quarters of no less than3.50 to 1.00. In addition, we are required to maintain the maximum leverage ratio as described in the Credit Agreement, on a quarterly basis of 3.00 to 1.00, covering the trailing four consecutive fiscal quarters for each fiscal quarter, which can be increased to4.00 to 1.00 for a period of time in connection with a material acquisition or a series of material acquisitions. As of June 30, 2019, we elected to increase the maximum allowed leverage ratio to 4.00 to 1.00 following the Orbotech Acquisition.

We were in compliance with all covenants under the Credit Agreement as ofJune 30, 2019 (the interest expense coverage ratio was 14.27 to 1.00 and the leverage ratio was 1.80 to 1.00). Considering our current liquidity position, short-term financial forecasts and ability to prepay the Revolving Credit Facility, if necessary, we expect to continue to be in compliance with our financial covenants at the end of our fiscal year ending June 30, 2020.

Contractual Obligations

The following is a schedule summarizing our significant obligations to make future payments under contractual obligations as ofJune 30, 2019:

		Fiscal year ending June 30,						
(In thousands)	**Total**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025 and thereafter**	**Others**
Debt obligations[1]	$ 3,450,000	$ 250,000	$ —	$ 500,000	$ —	$ —	$ 2,700,000	$ —
Interest payment associated with all debt obligations[2]	1,653,037	152,925	146,942	136,630	126,317	125,581	964,642	—
Purchase commitments[3]	631,128	621,401	7,405	1,405	423	226	268	—
Income taxes payable[4]	139,603	—	—	—	—	—	—	139,603
Operating leases	103,571	30,296	22,250	16,217	11,878	7,912	15,018	—
Cash long-term incentive program[5]	179,346	67,831	58,307	34,884	18,324	—	—	—
Pension obligations[6]	38,415	2,327	2,144	2,806	2,950	5,257	22,931	—
Executive Deferred Savings Plan[7]	208,926	—	—	—	—	—	—	208,926
Transition tax payable[8]	283,143	8,643	26,143	26,143	26,143	49,018	147,053	—
Liability for employee rights upon retirement[9]	52,108	—	—	—	—	—	—	52,108
Other[10]	7,340	3,991	1,696	1,159	418	76	—	—
Total obligations	$ 6,746,617	$ 1,137,414	$ 264,887	$ 719,244	$ 186,453	$ 188,070	$ 3,849,912	$ 400,637

(1) Represents $3.45 billion aggregate principal amount of Senior Notes due from fiscal year 2020 to fiscal year 2049.

(2) The interest payments associated with the Senior Notes payable included in the table above are based on the principal amount multiplied by the applicable interest rate for each series of Senior Notes. Our future interest payments are subject to change if our then effective credit rating is below investment grade as discussed above. The interest payment under the Revolving Credit Facility for the undrawn balance is payable at 12.5 bps as a commitment fee based on the daily undrawn balance and we utilized the existing rate for the projected interest payments included in the table above. Our future interest payments for the Revolving Credit Facility is subject to change due to any upgrades or downgrades to our then effective credit rating.

(3) Represents an estimate of significant commitments to purchase inventory from our suppliers as well as an estimate of significant purchase commitments associated with goods, services and other assets in the ordinary course of business. Our obligation under these purchase commitments is generally restricted to a forecasted time-horizon as mutually agreed upon between the parties. This forecasted time-horizon can vary among different suppliers. Actual expenditures will vary based upon the volume of the transactions and length of contractual service provided. In addition, the amounts paid under these arrangements may be less in the event the arrangements are renegotiated or canceled. Certain agreements provide for potential cancellation penalties.

(4) Represents the estimated income tax payable obligation related to uncertain tax positions as well as related accrued interest. We are unable to make a reasonably reliable estimate of the timing of payments in individual years due to uncertainties in the timing of tax audit outcomes.

(5) Represents the amount committed under our cash long-term incentive program. The expected payment after estimated forfeitures is approximately$145.8 million.

(6) Represents an estimate of expected benefit payments up to fiscal year 2029 that was actuarially determined and excludes the minimum cash required to contribute to the plan. As of June 30, 2019, our defined benefit pension plans do not have material required minimum cash contribution obligations.

(7) Represents the amount committed under our non-qualified executive deferred compensation plan. We are unable to make a reasonably reliable estimate of the timing of payments in individual years due to the uncertainties in the timing around participant’s separation and any potential changes that participants may decide to make to the previous distribution elections.

(8) Represents the transition tax liability associated with our deemed repatriation of accumulated foreign earnings as a result from the enactment of the Tax Cuts and Jobs-Act into law on December 22, 2017.

(9) Represents severance payments due upon dismissal of an employee or upon termination of employment in certain other circumstances as required under Israeli law.

(10) Represents amounts committed for accrued dividends payable for quarterly cash dividends for unvested restricted stock units granted with dividend equivalent rights. For additional details, refer to Note 9, “Equity, Long-term Incentive Compensation Plans and Non-Controlling Interest,” to our Consolidated Financial Statements.

We have adopted a cash-based long-term incentive (“Cash LTI”) program for many of our employees as part of our employee compensation program. Cash LTI awards issued to employees under the Cash Long-Term Incentive Plan (“Cash LTI Plan”) generally vest in three or four equal installments. For additional details, refer to Note 9, “Equity, Long-term Incentive Compensation Plans and Non-Controlling Interest,” to our Consolidated Financial Statements.

We have agreements with financial institutions to sell certain of our trade receivables and promissory notes from customers without recourse. In addition, we periodically sell certain letters of credit (“LCs”), without recourse, received from customers in payment for goods and services.

The following table shows total receivables sold under factoring agreements and proceeds from sales of LCs for the indicated periods:

	Year ended June 30,		
(In thousands)	**2019**	**2018**	**2017**
Receivables sold under factoring agreements	$ 193,089	$ 217,462	$ 152,509
Proceeds from sales of LCs	$ 95,436	$ 5,511	$ 48,780

Factoring and LC fees for the sale of certain trade receivables were recorded in other expense (income), net and were not material for the periods presented.

We maintain guarantee arrangements available through various financial institutions for up to$50.8 million, of which $44.7 million had been issued as of June 30, 2019, primarily to fund guarantees to customs authorities for value-added tax (“VAT”) and other operating requirements of our subsidiaries in Europe, Israel, and Asia.

Working Capital:

Working capital was $2.55 billion as of June 30, 2019, which represents a decrease of $788.1 million compared to our working capital as ofJune 30, 2018. As of June 30, 2019, our principal sources of liquidity consisted of$1.74 billion of cash, cash equivalents and marketable securities. Our liquidity may be affected by many factors, some of which are based on the normal ongoing operations of the business, spending for business acquisitions, and other factors such as uncertainty in the global and regional economies and the semiconductor, semiconductor-related and electronic device industries. Although cash requirements will fluctuate based on the timing and extent of these factors, we believe that cash generated from operations, together with the liquidity provided by existing cash and cash equivalents balances and our $1.00 billion Revolving Credit Facility, will be sufficient to satisfy our liquidity requirements associated with working capital needs, capital expenditures, cash dividends, stock repurchases and other contractual obligations, including repayment of outstanding debt, for at least the next 12 months.

Our credit ratings as of June 30, 2019 are summarized below:

Rating Agency	Rating
Fitch	BBB+
Moody's	Baa1
Standard & Poor's	BBB

Factors that can affect our credit ratings include changes in our operating performance, the economic environment, conditions in the semiconductor and semiconductor equipment industries, our financial position, material acquisitions and changes in our business strategy.

Off-Balance Sheet Arrangements

As of June 30, 2019, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of SEC Regulation S-K, that have or are reasonably likely to have a current or future effect on our financial position, changes in financial condition, revenues and expenses, results of operations, liquidity, capital expenditures, or capital resources that are material to investors. Refer to Note 14 “Commitments and Contingencies” to our Consolidated Financial Statements for information related to indemnification obligations.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to financial market risks, including changes in interest rates, foreign currency exchange rates and marketable equity security prices. To mitigate these risks, we utilize derivative financial instruments, such as foreign currency hedges. All of the potential changes noted below are based on sensitivity analysis performed on our financial position as of June 30, 2019. Actual results may differ materially.

As of June 30, 2019, we had an investment portfolio of fixed income securities of $813.5 million These securities, as with all fixed income instruments, are subject to interest rate risk and will decline in value if market interest rates increase. If market interest rates were to increase immediately and uniformly by 100 bps from levels as of June 30, 2019, the fair value of the portfolio would have declined by $4.3 million.

In March 2019 and November 2014, we issued $1.20 billion and $2.50 billion, respectively, (each, a “2019 Senior Notes”, a “2014 Senior Notes”, and collectively the “Senior Notes”) aggregate principal amount of fixed rate senior, unsecured long-term notes. The fair market value of long-term fixed interest rate notes is subject to interest rate risk. Generally, the fair market value of fixed interest rate notes will increase as interest rates fall and decrease as interest rates rise. As of June 30, 2019, the fair value and the book value of our Senior Notes were $3.70 billion and $3.45 billion, respectively, due in various fiscal years ranging from 2020 to 2049. Additionally, the interest expense for the 2014 Senior Notes is subject to interest rate adjustments following a downgrade of our credit ratings below investment grade by the credit rating agencies. Following a rating change below investment grade, the stated interest rate for each series of the 2014 Senior Notes may increase between 25 bps to 100 bps based on the adjusted credit rating. Refer to Note 8, “Debt” to our Consolidated Financial Statements in Part II, Item 8 and Management’s Discussion and Analysis of Financial Condition and Results of Operations, *“Liquidity and Capital Resources,”* in Part II, Item 7 for additional details. Factors that can affect our credit ratings include changes in our operating performance, the economic environment, conditions in the semiconductor, semiconductor-related, and electronics industries, our financial position, and changes in our business strategy. As of June 30, 2019, if our credit rating was downgraded below investment grade by Moody’s and S&P, the maximum potential increase to our annual interest expense on the 2014 Senior Notes, considering a 200 bps increase to the stated interest rate for each series of our 2014 Senior Notes, is estimated to be approximately $41.7 million. Unlike the 2014 Senior Notes, the interest rate for each series of the 2019 Senior Notes will not be subject to such adjustments.

In November 2017, we entered into a Credit Agreement (the “Credit Agreement”) for a $750.0 million five-year unsecured Revolving Credit Facility (the “Revolving Credit Facility”), which replaced our prior Credit Agreement. Subject to the terms of the Credit Agreement, the Revolving Credit Facility may be increased in an amount up to $250.0 million in the aggregate. In November 2018, we entered into an Incremental Facility, Extension and Amendment Agreement (the “Amendment”), which amends the Credit Agreement to (a) extend the Maturity Date (the “Maturity Date”) from November 30, 2022 to November 30, 2023, (b) increase the total commitment by $250.0 million and (c) effect certain other amendments to the Credit Agreement as set forth in the Amendment. After giving effect to the Amendment, the total commitments under the Credit Agreement are $1.00 billion. As of June 30, 2019, we do not have any outstanding floating rate debts that are subject to an increase in interest rates. We are obligated to pay an annual commitment fee of 12.5 bps on the daily undrawn balance of the Revolving Credit Facility which is subject to an adjustment in conjunction with our credit rating downgrades or upgrades. The annual commitment fee ranges from 10 bps to 25 bps on the daily undrawn balance of the Revolving Credit Facility, depending upon the then effective credit rating. As of June 30, 2019, if our credit ratings were downgraded to be below investment grade, the maximum potential increase to our annual commitment fee for the Revolving Credit Facility, using the highest range of the ranges discussed above, is estimated to be approximately $0.8 million.

See Note 5, “Marketable Securities” to our Consolidated Financial Statements in Part II, Item 8; Management’s Discussion and Analysis of Financial Condition and Results of Operations, “Liquidity and Capital Resources,” in Part II, Item 7; and Risk Factors in Part I, Item 1A of this Annual Report on Form 10-K for a description of recent market events that may affect the value of the investments in our portfolio that we held as of June 30, 2019.

As of June 30, 2019, we had net forward and option contracts to sell $97.6 million in foreign currency in order to hedge certain currency exposures (see Note 16, “Derivative Instruments and Hedging Activities” to our Consolidated Financial Statements for additional details). If we had entered into these contracts on June 30, 2019, the U.S. dollar equivalent would have been $98.3 million. A 10% adverse move in all currency exchange rates affecting the contracts would decrease the fair value of the contracts by $48.3 million. However, if this occurred, the fair value of the underlying exposures hedged by the contracts would increase by a similar amount. Accordingly, we believe that, as a result of the hedging of certain of our foreign currency exposure, changes in most relevant foreign currency exchange rates should have no material impact on our results of operations or cash flows.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

KLA CORPORATION
(formerly known as KLA-TENCOR CORPORATION)
Consolidated Balance Sheets

(In thousands, except par value)	As of June 30, 2019	As of June 30, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 1,015,994	$ 1,404,382
Marketable securities	723,391	1,475,936
Accounts receivable, net	990,113	651,678
Inventories	1,262,500	931,845
Other current assets	323,077	85,159
Total current assets	4,315,075	4,549,000
Land, property and equipment, net	448,799	286,306
Goodwill	2,211,858	354,698
Deferred income taxes	206,141	193,200
Purchased intangible assets, net	1,560,670	19,333
Other non-current assets	265,973	236,082
Total assets	$ 9,008,516	$ 5,638,619
LIABILITIES, NON-CONTROLLING INTEREST AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 202,416	$ 169,354
Deferred system revenue	282,348	—
Deferred service revenue	206,669	69,255
Deferred system profit	—	279,581
Current portion of long-term debt	249,999	—
Other current liabilities	827,054	696,080
Total current liabilities	1,768,486	1,214,270
Non-current liabilities:		
Long-term debt	3,173,383	2,237,402
Deferred tax liabilities	702,285	1,197
Deferred service revenue	98,772	71,997
Other non-current liabilities	587,897	493,242
Total liabilities	6,330,823	4,018,108
Commitments and contingencies (Notes 14 and 15)		
Stockholders' equity:		
Preferred stock, $0.001 par value, 1,000 shares authorized, none outstanding	—	—
Common stock, $0.001 par value, 500,000 shares authorized, 276,202 and 262,718 shares issued, 159,475 and 156,048 shares outstanding, as of June 30, 2019 and June 30, 2018, respectively	159	156
Capital in excess of par value	2,017,153	617,843
Retained earnings	714,825	1,056,445
Accumulated other comprehensive income (loss)	(73,029)	(53,933)
Total KLA stockholders' equity	2,659,108	1,620,511
Non-controlling interest in consolidated subsidiaries	18,585	—
Total stockholders' equity	2,677,693	1,620,511
Total liabilities and stockholders' equity	$ 9,008,516	$ 5,638,619

See accompanying notes to Consolidated Financial Statements.

KLA CORPORATION
(formerly known as KLA-TENCOR CORPORATION)

Consolidated Statements of Operations

	Year ended June 30,		
(In thousands, except per share amounts)	**2019**	**2018**	**2017**
Revenues:			
Product	$ 3,392,243	$ 3,160,671	$ 2,703,934
Service	1,176,661	876,030	776,080
Total revenues	4,568,904	4,036,701	3,480,014
Costs and expenses:			
Costs of revenues	1,869,377	1,446,041	1,286,215
Research and development	711,030	608,531	526,688
Selling, general and administrative	599,124	442,304	388,211
Interest expense	124,604	114,376	122,476
Other expense (income), net	(31,462)	(30,482)	(16,822)
Income before income taxes	1,296,231	1,455,931	1,173,246
Provision for income taxes	121,214	653,666	247,170
Net income	1,175,017	802,265	926,076
Less: Net loss attributable to non-controlling interest	(600)	—	—
Net income attributable to KLA	$ 1,175,617	$ 802,265	$ 926,076
Net income per share attributable to KLA			
Basic	$ 7.53	$ 5.13	$ 5.92
Diluted	$ 7.49	$ 5.10	$ 5.88
Weighted-average number of shares:			
Basic	156,053	156,346	156,468
Diluted	156,949	157,378	157,481

See accompanying notes to Consolidated Financial Statements.

KLA CORPORATION
(formerly known as KLA-TENCOR CORPORATION)

Consolidated Statements of Comprehensive Income

	Year ended June 30,		
(In thousands)	**2019**	**2018**	**2017**
Net income	$ 1,175,017	$ 802,265	$ 926,076
Other comprehensive income (loss):			
Currency translation adjustments:			
Change in currency translation adjustments	(5,190)	1,358	2,332
Change in income tax benefit or expense	117	(678)	(562)
Net change related to currency translation adjustments	(5,073)	680	1,770
Cash flow hedges:			
Change in net unrealized gains or losses	(9,119)	(1,934)	10,138
Reclassification adjustments for net gains or losses included in net income	(4,018)	(3,846)	(3,222)
Change in income tax benefit or expense	2,033	2,491	(2,470)
Net change related to cash flow hedges	(11,104)	(3,289)	4,446
Net change related to unrecognized losses and transition obligations in connection with defined benefit plans	(1,824)	7,162	(1,534)
Available-for-sale securities:			
Change in net unrealized gains or losses	11,664	(9,697)	(8,568)
Reclassification adjustments for net gains or losses included in net income	1,294	209	(191)
Change in income tax benefit or expense	(3,208)	2,325	1,439
Net change related to available-for-sale securities	9,750	(7,163)	(7,320)
Other comprehensive loss	(8,251)	(2,610)	(2,638)
Comprehensive loss attributable to non-controlling interest	(600)	—	—
Total comprehensive income attributable to KLA	$ 1,167,366	$ 799,655	$ 923,438

See accompanying notes to Consolidated Financial Statements.

KLA CORPORATION
(formerly known as KLA-TENCOR CORPORATION)
Consolidated Statements of Stockholders' Equity

(In thousands, except per share amounts)	Common Stock and Capital in Excess of Par Value: Shares	Common Stock and Capital in Excess of Par Value: Amount	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total KLA Stockholders' Equity	Non-Controlling Interest	Total Stockholders' Equity
Balances as of June 30, 2016	155,995	$ 452,974	$ 284,825	$ (48,685)	$ 689,114	$ —	$ 689,114
Net income	—	—	926,076	—	926,076	—	926,076
Other comprehensive loss	—	—	—	(2,638)	(2,638)	—	(2,638)
Net issuance under employee stock plans	1,088	26,132	—	—	26,132	—	26,132
Repurchase of common stock	(243)	(766)	(24,236)	—	(25,002)	—	(25,002)
Cash dividends ($2.14 per share) and dividend equivalents declared	—	—	(338,208)	—	(338,208)	—	(338,208)
Stock-based compensation expense	—	50,943	—	—	50,943	—	50,943
Balances as of June 30, 2017	156,840	529,283	848,457	(51,323)	1,326,417	—	1,326,417
Net income	—	—	802,265	—	802,265	—	802,265
Other comprehensive loss	—	—	—	(2,610)	(2,610)	—	(2,610)
Net issuance under employee stock plans	1,168	32,687	—	—	32,687	—	32,687
Repurchase of common stock	(1,960)	(6,755)	(196,414)	—	(203,169)	—	(203,169)
Cash dividends ($2.52 per share) and dividend equivalents declared	—	—	(397,863)	—	(397,863)	—	(397,863)
Stock-based compensation expense	—	62,784	—	—	62,784	—	62,784
Balances as of June 30, 2018	156,048	617,999	1,056,445	(53,933)	1,620,511	—	1,620,511
Adoption of ASC 606	—	—	(21,215)	75	(21,140)	—	(21,140)
Reclassification of stranded tax effects	—	—	10,920	(10,920)	—	—	—
Balance as of July 1, 2018	156,048	617,999	1,046,150	(64,778)	1,599,371	—	1,599,371
Net income attributable to KLA	—	—	1,175,617	—	1,175,617	—	1,175,617
Net loss attributable to non-controlling interest	—	—	—	—	—	(600)	(600)
Other comprehensive loss	—	—	—	(8,251)	(8,251)	—	(8,251)
Assumption of stock-based compensation plan awards in connection with the acquisition of Orbotech	—	13,281	—	—	13,281	—	13,281
Common stock issued upon the acquisition of Orbotech	12,292	1,330,786	—	—	1,330,786	—	1,330,786
Net issuance under employee stock plans	1,342	27,321	—	—	27,321	—	27,321
Repurchase of common stock	(10,207)	(66,269)	(1,036,933)	—	(1,103,202)	—	(1,103,202)
Cash dividends ($3.00 per share) and dividend equivalents declared	—	—	(470,009)	—	(470,009)	—	(470,009)
Non-controlling interest in connection with the acquisition of Orbotech	—	—	—	—	—	19,185	19,185
Stock-based compensation expense	—	94,194	—	—	94,194	—	94,194
Balances as of June 30, 2019	159,475	$ 2,017,312	$ 714,825	$ (73,029)	$ 2,659,108	$ 18,585	$ 2,677,693

See accompanying notes to Consolidated Financial Statements.

KLA CORPORATION
(formerly known as KLA-TENCOR CORPORATION)
Consolidated Statements of Cash Flows

(In thousands)	Year Ended June 30, 2019	2018	2017
Cash flows from operating activities:			
Net income	$ 1,175,017	$ 802,265	$ 926,076
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	233,224	62,684	57,836
Loss (gains) on unrealized foreign exchange and other	4,051	9,886	(4,173)
Stock-based compensation expense	94,194	62,784	50,943
Deferred income taxes	(27,511)	98,760	4,007
Changes in assets and liabilities, net of assets acquired and liabilities assumed in business acquisitions:			
Accounts receivable	(146,151)	(76,033)	39,750
Inventories	(59,561)	(179,605)	(46,549)
Other assets	(47,123)	(41,748)	(25,961)
Accounts payable	(21,627)	21,778	39,968
Deferred system revenue	(15,674)	—	—
Deferred service revenue	15,064	—	—
Deferred system profit	—	99,457	6,310
Other liabilities	(51,271)	368,892	31,458
Net cash provided by operating activities	1,152,632	1,229,120	1,079,665
Cash flows from investing activities:			
Acquisition of non-marketable securities	(630)	(3,377)	(3,430)
Business acquisitions, net of cash acquired	(1,818,283)	(17,403)	(28,560)
Capital expenditures	(130,498)	(66,947)	(38,594)
Proceeds from sale of assets	—	—	2,947
Purchases of available-for-sale securities	(81,533)	(466,330)	(1,626,983)
Proceeds from sale of available-for-sale securities	256,395	233,259	434,873
Proceeds from maturity of available-for-sale securities	589,324	608,446	699,293
Purchases of trading securities	(81,022)	(77,922)	(97,525)
Proceeds from sale of trading securities	85,265	81,892	97,093
Net cash (used in) provided by investing activities	(1,180,982)	291,618	(560,886)
Cash flows from financing activities:			
Proceeds from issuance of debt, net of issuance costs	1,183,785	—	—
Proceeds from revolving credit facility, net of debt issuance costs	900,000	248,693	—
Repayment of debt	(902,474)	(946,250)	(130,000)
Common stock repurchases	(1,095,202)	(203,169)	(25,002)
Payment of dividends to stockholders	(472,263)	(402,065)	(343,993)
Issuance of common stock	64,828	61,444	45,359
Tax withholding payments related to vested and released restricted stock units	(37,517)	(28,756)	(19,169)
Payment of contingent consideration payable	(1,162)	—	—
Net cash used in financing activities	(360,005)	(1,270,103)	(472,805)
Effect of exchange rate changes on cash and cash equivalents	(33)	696	(1,411)
Net (decrease) increase in cash and cash equivalents	(388,388)	251,331	44,563
Cash and cash equivalents at beginning of period	1,404,382	1,153,051	1,108,488
Cash and cash equivalents at end of period	$ 1,015,994	$ 1,404,382	$ 1,153,051
Supplemental cash flow disclosures:			
Income taxes paid, net	$ 180,470	$ 253,128	$ 234,053
Interest paid	$ 107,073	$ 114,238	$ 119,998
Non-cash activities:			
Issuance of common stock for the acquisition of Orbotech - financing activities	$ 1,330,786	$ —	$ —
Contingent consideration payable - financing activities	$ 6,905	$ —	$ —
Dividends payable - financing activities	$ 7,340	$ 9,571	$ 13,772
Business acquisition holdback amounts - investing activities	$ 440	$ —	$ 5,318
Unsettled common stock repurchase - financing activities	$ 8,000	$ —	$ —
Accrued purchase of land, property and equipment - investing activities	$ 6,353	$ 7,418	$ 3,299

See accompanying notes to Consolidated Financial Statements.

KLA CORPORATION

Notes to Consolidated Financial Statements

NOTE 1— DESCRIPTION OF BUSINESS AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Description of Business and Principles of Consolidation. On July 15, 2019, we changed our corporate name from "KLA-Tencor Corporation" to "KLA Corporation". For purposes of this report, "KLA," the "Company," "we," "our," "us," or similar references mean KLA Corporation, and its majority-owned subsidiaries unless the context requires otherwise. We are a supplier of process equipment, process control equipment, and data analytics products for a broad range of industries, including semiconductors, printed circuit boards and displays. We provide advanced process control and process-enabling solutions for manufacturing and testing wafers and reticles, integrated circuits ("IC" or "chip"), packaging, light emitting diodes, power devices, compound semiconductor devices, microelectromechanical systems, data storage, printed circuit boards and flat and flexible panel displays, as well as general materials research. Our comprehensive portfolio of inspection, metrology and data analytics products, and related services, helps integrated circuit manufacturers achieve target yield throughout the entire semiconductor fabrication process, from research and development to final volume production. We develop and sell advanced vacuum deposition and etching process tools, which are used by a broad range of specialty semiconductor customers. We enable electronic device manufacturers to inspect, test and measure printed circuit boards ("PCBs") and flat panel displays ("FPDs) and ICs to verify their quality, pattern the desired electronic circuitry on the relevant substrate and perform three-dimensional shaping of materialized circuits on multiple surfaces. Our advanced products, coupled with our unique yield management services, allow us to deliver the solutions our semiconductor, printed circuit board and display customers need to achieve their productivity goals, by significantly reducing their risks and costs. Headquartered in Milpitas, California, we have subsidiaries both in the United States and in key markets throughout the world.

The Consolidated Financial Statements include the accounts of KLA and its majority-owned subsidiaries. All significant intercompany balances and transactions have been eliminated.

Acquisition of Orbotech, Ltd. On February 20, 2019 (the "Closing Date" or "Acquisition Date"), we completed the acquisition of Orbotech, Ltd. ("Orbotech") for $38.86 in cash and 0.25 of a share of our common stock in exchange for each ordinary share of Orbotech for a total consideration of $3.26 billion. The acquisition of Orbotech is referred to as the "Orbotech Acquisition". The Orbotech Acquisition was accounted for by applying the acquisition method of accounting for business combinations. The Consolidated Financial Statements in this report include the financial results of Orbotech prospectively from the Acquisition Date. For additional details, refer to Note 6 "Business Combinations."

Subsequent to the Orbotech Acquisition, we changed our organizational structure, resulting in four reportable segments: Semiconductor Process Control; Specialty Semiconductor Process; PCB, Display and Component Inspection; and Other. Prior period results have been recast to conform to the current presentation. For additional information, refer to Note 17, "Segment Reporting and Geographic Information."

Comparability. Effective on the first day of fiscal 2019, we adopted Accounting Standards Update 2014-09, Revenue from Contracts with Customers ("ASC 606"). Prior periods were not retrospectively restated, and accordingly, the Consolidated Balance Sheets as of June 30, 2018, and the Consolidated Statements of Operations for the year ended June 30, 2018 were prepared using accounting standards that were different from those in effect for the year ended June 30, 2019.

Certain reclassifications have been made to the prior year's Consolidated Financial Statements to conform to the current year presentation. The reclassifications did not have material effects on the prior year's Consolidated Balance Sheets, Statements of Operations, Comprehensive Income and Cash Flows.

Management Estimates. The preparation of the Consolidated Financial Statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions in applying our accounting policies that affect the reported amounts of assets and liabilities (and related disclosure of contingent assets and liabilities) at the date of the Consolidated Financial Statements and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates.

Cash Equivalents and Marketable Securities. All highly liquid debt instruments with original or remaining maturities of less than three months at the date of purchase are considered to be cash equivalents. Marketable securities are generally classified as available-for-sale for use in current operations, if required, and are reported at fair value, with unrealized gains and losses, net of tax, presented as a separate component of stockholders' equity under the caption "Accumulated other comprehensive income (loss)." All realized gains and losses and unrealized losses resulting from declines in fair value that are other than temporary are recorded in earnings in the period of occurrence. The specific identification method is used to determine the realized gains and losses on investments. For all investments in debt and equity securities, we assess whether the impairment is other than temporary. If the fair value of a debt security is less than its amortized cost basis, an impairment is considered other than temporary if (i) we have the intent to sell the security or it is more likely than not that we will be required to sell the security before recovery of its entire amortized cost basis, or (ii) we do not expect to recover the entire amortized cost of the security. If an impairment is considered other than temporary based on condition (i), the entire difference between the amortized cost and the fair value of the security is recognized in earnings. If an impairment is considered other than temporary based on condition (ii), the amount representing credit losses, defined as the difference between the present value of the cash flows expected to be collected and the amortized cost basis of the debt security, will be recognized in earnings, and the amount relating to all other factors will be recognized in other comprehensive income (loss). We evaluate both qualitative and quantitative factors such as duration and severity of the unrealized losses, credit ratings, default and loss rates of the underlying collateral, structure and credit enhancements to determine if a credit loss may exist.

Non-Marketable Equity Securities. We acquire certain non-marketable equity investments for the promotion of business and strategic objectives. Non-marketable equity securities do not give us the ability to exercise significant influence over the investees and are accounted for at cost, less impairment, plus or minus observable price changes for identical or similar securities of the same issuer. Non-marketable equity securities are included in “Other non-current assets” on the balance sheet. Non-marketable equity securities are subject to a periodic impairment review; however, since there are no open-market valuations, the impairment analysis requires significant judgment. This analysis includes assessment of the investee’s financial condition, the business outlook for its products and technology, its projected results and cash flow, financing transactions subsequent to the acquisition of the investment, the likelihood of obtaining subsequent rounds of financing and the impact of any relevant contractual equity preferences held by us or the others.

Variable Interest Entities. We use a qualitative approach in assessing the consolidation requirement for variable interest entities. The approach focuses on identifying which enterprise has the power to direct the activities that most significantly impact the variable interest entity’s economic performance and which enterprise has the obligation to absorb losses or the right to receive benefits from the variable interest entity. In the event we are the primary beneficiary of a variable interest entity, the assets, liabilities, and results of operations of the variable interest entity will be included in our Consolidated Financial Statements. We have concluded that none of our equity investments require consolidation based on our most recent qualitative assessment.

Inventories. Inventories are stated at the lower of cost (on a first-in, first-out basis) or net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less costs of completion, disposal and transportation. Demonstration units are stated at their manufacturing cost and written down to their net realizable value. We review and set standard costs at current manufacturing costs in order to approximate actual costs. Our manufacturing overhead standards for product costs are calculated assuming full absorption of forecasted spending over projected volumes, adjusted for excess capacity. Abnormal inventory costs such as costs of idle facilities, excess freight and handling costs, and spoilage are recognized as current period charges. We write down product inventory based on forecasted demand and technological obsolescence and service spare parts inventory based on forecasted usage. These factors are impacted by market and economic conditions, technology changes, new product introductions and changes in strategic direction and require estimates that may include uncertain elements. Actual demand may differ from forecasted demand, and such differences may have a material effect on recorded inventory values.

Allowance for Doubtful Accounts. A majority of our accounts receivable are derived from sales to large multinational semiconductor manufacturers throughout the world. In order to monitor potential credit losses, we perform ongoing credit evaluations of its customers’ financial condition. An allowance for doubtful accounts is maintained for probable credit losses based upon our assessment of the expected collectibility of the accounts receivable. The allowance for doubtful accounts is reviewed on a quarterly basis to assess the adequacy of the allowance.

Property and Equipment. Property and equipment are recorded at cost, net of accumulated depreciation. Depreciation of property and equipment is based on the straight-line method over the estimated useful lives of the assets. The following table sets forth the estimated useful life for various asset categories:

Asset Category	Range of Useful Lives
Buildings	30 to 50 years
Leasehold improvements	Shorter of 15 years or lease term
Machinery and equipment	2 to 10 years
Office furniture and fixtures	7 years

Construction-in-process assets are not depreciated until the assets are placed in service. Depreciation expense for the fiscal years ended June 30, 2019, 2018 and 2017 was $72.6 million, $53.3 million and $49.1 million, respectively.

Goodwill and Purchased Intangible Assets. Effective May 1, 2019, with the change in our reportable segments, we have determined there are now six reporting units, to which goodwill is allocated using an acquisition accounting method. We assess goodwill for impairment annually as well as whenever events or changes in circumstances indicate that the carrying value may not be recoverable. We perform either a qualitative or quantitative analysis when testing a reporting unit's goodwill for impairment. A qualitative goodwill impairment test is performed when the fair value of a reporting unit historically has significantly exceeded the carrying value of its net assets and based on current operations is expected to continue to do so. Otherwise, we are required to conduct a quantitative impairment test for each reporting unit and estimates the fair value of each reporting unit using a combination of a discounted cash flow analysis and a market approach based on market multiples. If the fair value of a reporting unit is less than its carrying value, a goodwill impairment charge is recorded for the difference. We performed our annual qualitative assessment of the goodwill by reporting unit during the third quarter of the fiscal year ended June 30, 2019 and concluded that there was no impairment. In addition, as a result of the Orbotech Acquisition, during the fourth quarter of the fiscal year ended June 30, 2019 we updated our organizational structure and performed a qualitative assessment of the goodwill for our reporting units, which were impacted by the organizational change, and concluded that there were no impairment indicators affecting the valuation of goodwill subsequent to our annual impairment test. The next annual evaluation of the goodwill by reporting unit will be performed in the third quarter of the fiscal year ending June 30, 2020.

Long-lived purchased intangible assets are tested for impairment whenever events or changes in circumstances indicate that their carrying amounts may not be recoverable. See Note 7, "Goodwill and Purchased Intangible Assets" for additional details.

Impairment of Long-Lived Assets. We evaluate the carrying value of our long-lived assets whenever events or changes in circumstances indicate that the carrying value of the asset may be impaired. An impairment loss is recognized when estimated future cash flows expected to result from the use of the asset, including disposition, are less than the carrying value of the asset. Such an impairment charge would be measured as the excess of the carrying value of the asset over its fair value.

Concentration of Credit Risk. Financial instruments that potentially subject us to significant concentrations of credit risk consist primarily of cash equivalents, short-term marketable securities, trade accounts receivable and derivative financial instruments used in hedging activities. We invest in a variety of financial instruments, such as, but not limited to, certificates of deposit, corporate debt and municipal securities, United States Treasury and Government agency securities, and equity securities and, by policy, limits the amount of credit exposure with any one financial institution or commercial issuer. We have not experienced any material credit losses on our investments.

A majority of our accounts receivable are derived from sales to large multinational semiconductor manufacturers located throughout the world, with a majority located in Asia. In recent years, our customer base has become increasingly concentrated due to corporate consolidations, acquisitions and business closures, and to the extent that these customers experience liquidity issues in the future, we may be required to incur additional bad debt expense with respect to trade receivables. We perform ongoing credit evaluations of our customers' financial condition and generally require no collateral to secure accounts receivable. We maintain an allowance for potential credit losses based upon expected collectibility risk of all accounts receivable. In addition, we may utilize letters of credit, credit insurance or non-recourse factoring to mitigate credit risk when considered appropriate.

We are exposed to credit loss in the event of non-performance by counterparties on the foreign exchange contracts that we use in hedging activities and in certain factoring transactions. These counterparties are large international financial institutions, and to date no such counterparty has failed to meet its financial obligations to us under such contracts.

The following customers each accounted for more than 10% of total revenues primarily in Semiconductor Process Control segment for the indicated periods:

Year ended June 30,		
2019	**2018**	**2017**
Taiwan Semiconductor Manufacturing Company Limited	Samsung Electronics Co., Ltd.	Samsung Electronics Co., Ltd.
		Taiwan Semiconductor Manufacturing Company Limited

The following customers each accounted for more than 10% of net accounts receivable as of the dates indicated below:

As of June 30,	
2019	**2018**
Taiwan Semiconductor Manufacturing Company Limited	Samsung Electronics Co., Ltd.
	Taiwan Semiconductor Manufacturing Company Limited
	SK Hynix, Inc.

Foreign Currency. The functional currencies of our foreign subsidiaries are primarily the local currencies, except as described below. Accordingly, all assets and liabilities of these foreign operations are translated to U.S. dollars at current period end exchange rates, and revenues and expenses are translated to U.S. dollars using average exchange rates in effect during the period. The gains and losses from foreign currency translation of these subsidiaries' financial statements are recorded directly into a separate component of stockholders' equity under the caption "Accumulated other comprehensive income (loss)."

Our manufacturing subsidiaries in Singapore, Israel, Germany, and United Kingdom use the U.S. dollar as their functional currency. Accordingly, monetary assets and liabilities in non-functional currency of these subsidiaries are remeasured using exchange rates in effect at the end of the period. Revenues and costs in local currency are remeasured using average exchange rates for the period, except for costs related to those balance sheet items that are remeasured using historical exchange rates. The resulting remeasurement gains and losses are included in the Consolidated Statements of Operations as incurred.

Derivative Financial Instruments. We use financial instruments, such as forward exchange contracts and currency options, to hedge a portion of, but not all, existing and forecasted foreign currency denominated transactions. The purpose of our foreign currency program is to manage the effect of exchange rate fluctuations on certain foreign currency denominated revenues, costs and eventual cash flows. The effect of exchange rate changes on forward exchange contracts is expected to offset the effect of exchange rate changes on the underlying hedged items. We also use interest rate lock agreements to hedge the risk associated with the variability of cash flows due to changes in the benchmark interest rate of the intended debt financing. We believe these financial instruments do not subject us to speculative risk that would otherwise result from changes in currency exchange rates or interest rates. All of our derivative financial instruments are recorded at fair value based upon quoted market prices for comparable instruments adjusted for risk of counterparty non-performance.

For derivative instruments designated and qualifying as cash flow hedges of forecasted foreign currency denominated transactions or debt financing expected to occur within twelve to eighteen months, the effective portion of the gains or losses is reported in accumulated other comprehensive income (loss) ("OCI") and reclassified into earnings in the same period or periods during which the hedged transaction affects earnings. In the second quarter of our fiscal year ending June 30, 2019, we early adopted the new accounting guidance for hedge accounting. Prior to adopting this new accounting guidance, time value was excluded from the assessment of effectiveness for derivative instruments designated as cash flow hedges. Time value was amortized on a mark-to-market basis and recognized in earnings over the life of the derivative contract. For derivative contracts executed after adopting the new accounting guidance, the election to include time value for the assessment of effectiveness is made on all forward contracts designated as cash flow hedges. The change in fair value of the derivative are recorded in OCI until the hedged transaction is recognized in earnings. The assessment effectiveness of options contracts designated as cash flow hedges continue to exclude time value after adopting the new accounting guidance. The initial value of the component excluded from the assessment of effectiveness are recognized in earnings over the life of the derivative contracts. Any difference between change in the fair value of the excluded components and the amounts recognized in earnings are recorded in OCI. For derivative instruments that are not designated as a cash flow hedge, gains and losses are recognized in other expense (income), net. We use foreign currency forward contracts to hedge certain foreign currency denominated assets or liabilities. The gains and losses on these derivative instruments are largely offset by the changes in the fair value of the assets or liabilities being hedged.

Revenue Recognition. We primarily derive revenue from the sale of process control and yield management solutions for the semiconductor and related nanoelectronics industries, maintenance and support of all these products, installation and training services and the sale of spare parts. Our solutions provide a comprehensive portfolio of inspection, metrology and data analytics products, which are accompanied by a flexible portfolio of services to enable our customers to maintain the performance and productivity of the solutions purchased. The acquisition of Orbotech enabled us to broaden our portfolio to include the yield enhancement and production solutions used by manufacturers of printed circuit boards, flat panel displays, advanced packaging, micro-electro-mechanical systems and other electronic components.

Our solutions are generally not sold with a right of return, nor have we experienced significant returns from or refunds to our customers.

We account for a contract with a customer when there is approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectibility of consideration is probable.

Our revenues are measured based on consideration stipulated in the arrangement with each customer, net of any sales incentives and amounts collected on behalf of third parties, such as sales taxes. The revenues are recognized as separate performance obligations that are satisfied by transferring control of the product or service to the customer.

Our arrangements with our customers include various combinations of products and services, which are generally capable of being distinct and accounted for as separate performance obligations. A product or service is considered distinct if it is separately identifiable from other deliverables in the arrangement and if a customer can benefit from it on its own or with other resources that are readily available to the customer.

The transaction consideration, including any sales incentives, is allocated between separate performance obligations of an arrangement based on the stand-alone selling prices (“SSP”) for each distinct product or service. Management considers a variety of factors to determine the SSP, such as, historical standalone sales of products and services, discounting strategies and other observable data.

From time to time, our contracts are modified to account for additional, or to change existing, performance obligations. Our contract modifications are generally accounted for prospectively.

Product Revenue

We recognize revenue from product sales at a point in time when we have satisfied our performance obligation by transferring control of the product to the customer. We use judgment to evaluate whether the control has transferred by considering several indicators, including:

- whether we have a present right to payment;
- the customer has legal title;
- the customer has physical possession;
- the customer has significant risk and rewards of ownership; and
- the customer has accepted the product, or whether customer acceptance is considered a formality based on history of acceptance of similar products (for example, when the customer has previously accepted the same tool, with the same specifications, and when we can objectively demonstrate that the tool meets all of the required acceptance criteria, and when the installation of the system is deemed perfunctory).

Not all of the indicators need to be met for us to conclude that control has transferred to the customer. In circumstances in which revenue is recognized prior to the product acceptance, the portion of revenue associated with our performance obligations to install product is deferred and recognized upon acceptance.

We enter into volume purchase agreements with some of our customers. We adjust the transaction consideration for estimated credits earned by our customers for such incentives. These credits are estimated based upon the forecasted and actual product sales for any given period and agreed-upon incentive rate. The estimate is updated at each reporting period.

We offer perpetual and term licenses for defects and data analysis software. The primary difference between perpetual and term licenses is the duration over which the customer can benefit from the use of the software, while the functionality and the features of the software are the same. With the acquisition of Orbotech we offer computer-aided manufacturing and engineering software solutions for the printed circuit boards production. Software is generally bundled with post-contract customer support (“PCS”), which includes unspecified software updates that are made available throughout the entire term of the arrangement. Revenue from software licenses is recognized at a point in time, when the software is made available to the customer. Revenue from PCS is deferred at contract inception and recognized ratably over the service period, or as services are performed.

Services and Spare Parts Revenue

The majority of product sales include a standard 6 to 12-month warranty that is not separately paid for by the customers. The customers may also purchase extended warranty for periods beyond the initial year as part of the initial product sale. We have concluded that the standard 12-month warranty as well as any extended warranty periods included in the initial product sales are separate performance obligations. The estimated fair value of warranty services is deferred and recognized ratably as revenue over the warranty period, as the customer simultaneously receives and consumes the benefits of warranty services provided by us.

Additionally, we offer product maintenance and support services, which the customer may purchase separately from the standard and extended warranty offered as part of the initial product sale. Revenue from separately negotiated maintenance and support service contracts is also recognized over time based on the terms of the applicable service period. Revenue from services performed in the absence of a maintenance contract, including training revenue, is recognized when the related services are performed. We also sell spare parts, revenue from which is recognized when control over the spare parts is transferred to the customer.

Installation services include connecting and validating configuration of the product. In addition, several testing protocols are completed to confirm the equipment is performing to customer specifications. Revenues from product installation are deferred and recognized at a point in time, once installation is complete.

Significant Judgments

Our contracts with our customers often include promises to transfer multiple products and services. Each product and service is generally capable of being distinct within the context of the contract and represents a separate performance obligation. Determining the SSP for each distinct performance obligation and allocation of consideration from an arrangement to the individual performance obligations and the appropriate timing of revenue recognition are significant judgments with respect to these arrangements. We typically estimate the SSP of products and services based on observable transactions when the products and services are sold on a standalone basis and those prices fall within a reasonable range. We typically have more than one SSP for individual products and services due to the stratification of these products by customers and circumstances. In these instances, we use information such as the size of the customer, geographic region, as well as customization of the products in determining the SSP. In instances where the SSP is not directly observable, we determine the SSP using information that includes market conditions, entity-specific factors, including discounting strategies, information about the customer or class of customer that is reasonably available and other observable inputs. While changes in the allocation of SSP between performance obligations will not affect the amount of total revenue recognized for a particular contract, any material changes could impact the timing of revenue recognition, which could have a material effect on our financial position and result of operations.

Although the products are generally not sold with a right of return, we may provide other credits or sales incentives, which are accounted for either as variable consideration or material right, depending on the specific terms and conditions of the arrangement. These credits and incentives are estimated at contract inception and updated at the end of each reporting period if and when additional information becomes available.

As outlined above, we use judgments to evaluate whether or not the customer has obtained control of the product and considers the several indicators in evaluating whether or not control has transferred to the customer. Not all of the indicators need to be met for us to conclude that control has transferred to the customer.

Contract Assets/Liabilities

The timing of revenue recognition, billings and cash collections may result in accounts receivable, contract assets, and contract liabilities (deferred revenue) on our Consolidated Balance Sheets. A receivable is recorded in the period we deliver products or provide services when we have an unconditional right to payment. Contract assets primarily relate to the value of products and services transferred to the customer for which the right to payment is not just dependent on the passage of time. Contract assets are transferred to receivable when rights to payment become unconditional.

A contract liability is recognized when we receive payment or have an unconditional right to payment in advance of the satisfaction of performance. The contract liabilities represent (1) deferred product revenue related to the value of products that have been shipped and billed to customers and for which the control has not been transferred to the customers, and (2) deferred service revenue, which is recorded when we receive consideration, or such consideration is unconditionally due, from a customer prior to transferring services to the customer under the terms of a contract. Deferred service revenue typically results from warranty services, and maintenance and other service contracts.

Contract assets and liabilities related to rights and obligations in a contract are recorded net in the Consolidated Balance Sheets. Upon the adoption of ASC 606, deferred costs of revenue are included in other current assets while under the legacy guidance deferred costs of revenue was included in deferred system profit.

Research and Development Costs. Research and development costs are expensed as incurred.

Shipping and Handling Costs. Shipping and handling costs are included as a component of cost of sales.

Accounting for Stock-Based Compensation Plans. We account for stock-based awards granted to employees for services based on the fair value of those awards. The fair value of stock-based awards is measured at the grant date and is recognized as expense over the employee's requisite service period. The fair value for restricted stock units granted without "dividend equivalent" rights is determined using the closing price of our common stock on the grant date, adjusted to exclude the present value of dividends which are not accrued on the restricted stock units. The fair value for restricted stock units granted with "dividend equivalent" rights is determined using the closing price of our common stock on the grant date. The award holder is not entitled to receive payments under dividend equivalent rights unless the associated restricted stock unit award vests (i.e., the award holder is entitled to receive credits, payable in cash or shares of common stock, equal to the cash dividends that would have been received on the shares of our common stock underlying the restricted stock units had the shares been issued and outstanding on the dividend record date, but such dividend equivalents are only paid subject to the recipient satisfying the vesting requirements of the underlying award). Compensation expense for restricted stock units with performance metrics is calculated based upon expected achievement of the metrics specified in the grant, or when a grant contains a market condition, the grant date fair value using a Monte Carlo simulation. The Monte Carlo simulation incorporates estimates of the potential outcomes of the market condition on the grant date fair value of each award. Additionally, we estimate forfeitures based on historical experience and revise those estimates in subsequent periods if actual forfeitures differ from the estimated amounts. The fair value is determined using a Black-Scholes valuation model for purchase rights under our Employee Stock Purchase Plan. The Black-Scholes option-pricing model requires the input of assumptions, including the option's expected term and the expected price volatility of the underlying stock. The expected stock price volatility assumption is based on the market-based historical implied volatility from traded options of our common stock.

Accounting for Cash-Based Long-Term Incentive Compensation. Cash-based long-term incentive ("Cash LTI") awards issued to employees under our Cash LTI program vests in three or four equal installments, with one-third or one-fourth of the aggregate amount of the Cash LTI award vesting on each yearly anniversary of the grant date over a three or four-year period. In order to receive payments under a Cash LTI award, participants must remain employed by us as of the applicable award vesting date. Compensation expense related to the Cash LTI awards is recognized over the vesting term and adjusted for the impact of estimated forfeitures.

Accounting for Non-qualified Deferred Compensation Plan. We have a non-qualified deferred compensation plan (known as "Executive Deferred Savings Plan") under which certain executives and non-employee directors may defer a portion of their compensation. Participants are credited with returns based on their allocation of their account balances among measurement funds. We control the investment of these funds, and the participants remain general creditors of ours. We invest these funds in certain mutual funds and such investments are classified as trading securities in the Consolidated Balance Sheets. Investments in trading securities are measured at fair value in the statement of financial position. Unrealized holding gains and losses for trading securities are included in earnings. Distributions from the Executive Deferred Savings Plan commence following a participant's retirement or termination of employment or on a specified date allowed per the Executive Deferred Savings Plan provisions, except in cases where such distributions are required to be delayed in order to avoid a prohibited distribution under Internal Revenue Code Section 409A. Participants can generally elect the distributions to be paid in lump sum or quarterly cash payments over a scheduled period for up to 15 years and are allowed to make subsequent changes to their existing elections as permissible under the Executive Deferred Savings Plan provisions. The liability associated with the Executive Deferred Savings Plan is included as a component of other current liabilities in the Consolidated Balance Sheets. Changes in the Executive Deferred Savings Plan liability is recorded in selling, general and administrative expense in the Consolidated Statements of Operations. The expense associated with changes in the liability included in selling, general and administrative expense was $13.6 million, $19.9 million and $20.9 million for the fiscal years ended June 30, 2019, 2018 and 2017, respectively. We also have a deferred compensation asset that corresponds to the liability under the Executive Deferred Savings Plan and it is included as a component of other non-current assets in the Consolidated Balance Sheets. Changes in the Executive Deferred Savings Plan assets are recorded as gains (losses), net in selling, general and administrative expense in the Consolidated Statements of Operations. The amount of net gains included in selling, general and administrative expense were $14.7 million, $19.5 million and $20.8 million for the fiscal years ended June 30, 2019, 2018 and 2017, respectively.

Income Taxes. We account for income taxes in accordance with the authoritative guidance, which requires income tax effects for changes in tax laws are recognized in the period in which the law is enacted.

Transition tax liability is recognized in the period when the change in the U.S. tax law was enacted and the income tax effects are recorded as a component of provision for income taxes from continuing operations. Several inputs were considered in the calculation, such as the calculation of the post-1986 foreign earnings and profit ("E&P"), income tax pools for all foreign subsidiaries, and the amount of those earnings held in cash and other specified assets. We applied the current interpretations from the U.S. federal and state governments and regulatory organization in its calculation of the transition tax liability.

Deferred tax assets and liabilities are recognized using enacted tax rates for the effect of temporary differences between the book and tax bases of recorded assets and liabilities. The guidance also requires that deferred tax assets be reduced by a valuation allowance if it is more likely than not that a portion of the deferred tax asset will not be realized. We have determined that a valuation allowance is necessary against a portion of the deferred tax assets, but we anticipate that our future taxable income will be sufficient to recover the remainder of our deferred tax assets. However, should there be a change in our ability to recover our deferred tax assets that are not subject to a valuation allowance, we could be required to record an additional valuation allowance against such deferred tax assets. This would result in an increase to our tax provision in the period in which we determine that the recovery is not probable.

On a quarterly basis, we provide for income taxes based upon an estimated annual effective income tax rate. The effective tax rate is highly dependent upon the geographic composition of worldwide earnings, tax regulations governing each region, availability of tax credits and the effectiveness of our tax planning strategies. We carefully monitor the changes in many factors and adjust our effective income tax rate on a timely basis. If actual results differ from these estimates, this could have a material effect on our financial condition and results of operations.

The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax regulations. In accordance with the authoritative guidance on accounting for uncertainty in income taxes, we recognize liabilities for uncertain tax positions based on the two-step process. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained in audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50% likely of being realized upon ultimate settlement. We reevaluate these uncertain tax positions on a quarterly basis. This evaluation is based on factors including, but not limited to, changes in facts or circumstances, changes in tax law, effectively settled issues under audit and new audit activity. Any change in these factors could result in the recognition of a tax benefit or an additional charge to the tax provision.

We record income taxes on the undistributed earnings of foreign subsidiaries unless the subsidiaries' earnings are considered indefinitely reinvested outside the U.S. Our effective tax rate would be adversely affected if we change our intent or if such undistributed earnings are needed for U.S. operations because we would be required to provide or pay income taxes on some or all of these undistributed earnings.

Global Intangible Low-Taxed Income. The Tax Cuts and Jobs Act (the "Act") includes provisions for Global Intangible Low-Taxed Income ("GILTI") wherein taxes on foreign income are imposed in excess of a deemed return on tangible assets of foreign corporations. This income will effectively be taxed at a 10.5% tax rate in general. As a result, our deferred tax assets and liabilities were being evaluated to determine if the deferred tax assets and liabilities should be recognized for the basis differences expected to reverse as a result of GILTI provisions that are effective for us after the fiscal year ending June 30, 2018, or should the tax on GILTI provisions be recognized as period costs in each year incurred. We elected to account for GILTI as a component of current period tax expense starting from the first quarter of the fiscal year ending June 30, 2019.

Business Combinations. Accounting for business combinations requires management to make significant estimates and assumptions to determine the fair values of assets acquired and liabilities assumed at the acquisition date. Although we believe the assumptions and estimates we have made in the past have been reasonable and appropriate, they are based, in part, on historical experience and information obtained from management of the acquired companies and are inherently uncertain. Critical estimates in valuing certain acquired intangible assets include, but are not limited to future expected cash flows including revenue growth rate assumptions from product sales, customer contracts and acquired technologies, expected costs to develop in-process research and development into commercially viable products, estimated cash flows from the projects when completed, including assumptions associated with the technology migration curve, estimated royalty rates used in valuing technology related intangible assets, and discount rates. The discount rates used to discount expected future cash flows to present value are typically derived from a weighted-average cost of capital analysis and adjusted to reflect inherent risks. Unanticipated events and circumstances may occur that could affect either the accuracy or validity of such assumptions, estimates or actual results.

We allocate the fair value of the purchase price of our acquisitions to the tangible assets acquired, liabilities assumed, and intangible assets acquired, including in-process research and development ("IPR&D"), based on their estimated fair values. The excess of the fair value of the purchase price over the fair values of these net tangible and intangible assets acquired is recorded as goodwill. Management's estimates of fair value are based upon assumptions believed to be reasonable, but our estimates and assumptions are inherently uncertain and subject to refinement. As a result, during the measurement period, which will not exceed one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the fair value of the purchase price of our acquisitions, whichever comes first, any subsequent adjustments are recorded to our Consolidated Statements of Operations.

The fair value of IPR&D is initially capitalized as an intangible asset with an indefinite life and assessed for impairment thereafter whenever events or changes in circumstances indicate that the carrying value of the IPR&D assets may not be recoverable. Impairment of IPR&D is recorded to research and development expenses. When an IPR&D project is completed, the IPR&D is reclassified as an amortizable purchased intangible asset and amortized to costs of revenues over the asset's estimated useful life.

Acquisition-related expenses are recognized separately from the business combination and are expensed as incurred.

Net Income Per Share. Basic net income per share is calculated by dividing net income available to common stockholders by the weighted-average number of common shares outstanding during the period. Diluted net income per share is calculated by using the weighted-average number of common shares outstanding during the period increased to include the number of additional shares of common stock that would have been outstanding if the dilutive potential shares of common stock had been issued. The dilutive effect of restricted stock units and options is reflected in diluted net income per share by application of the treasury stock method. The dilutive securities are excluded from the computation of diluted net loss per share when a net loss is recorded for the period as their effect would be anti-dilutive.

Contingencies and Litigation. We are subject to the possibility of losses from various contingencies. Considerable judgment is necessary to estimate the probability and amount of any loss from such contingencies. An accrual is made when it is probable that a liability has been incurred or an asset has been impaired and the amount of loss can be reasonably estimated. We accrue a liability and recognize as expense the estimated costs expected to be incurred to defend or settle asserted and unasserted claims existing as of the balance sheet date. See Note 14, "Commitments and Contingencies" and Note 15, "Litigation and Other Legal Matters" for additional details.

Recent Accounting Pronouncements

Recently Adopted

In May 2014, the Financial Accounting Standards Board ("FASB") issued ASC 606, which supersedes the guidance in ASC 605, Revenue Recognition ("ASC 605"). Under ASC 606, revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In addition, ASC 606 requires enhanced disclosures, including disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. We adopted the ASC 606 as of July 1, 2018 in our first quarter of our fiscal year ending June 30, 2019, using the modified retrospective transition approach. For additional detail, refer to Note 2 "Revenue."

In January 2016, the FASB issued an accounting standard update that changes the accounting for financial instruments primarily related to equity investments (other than those accounted for under the equity method of accounting or those that result in consolidation of the investee), financial liabilities under the fair value option, and the presentation and disclosure requirements for financial instruments. We adopted this update beginning in the first quarter of our fiscal year ending June 30, 2019 on a prospective basis and the adoption had no material impact on our Consolidated Financial Statements.

In August 2016, the FASB issued an accounting standard update intended to clarify how certain cash receipts and cash payments are presented and classified in the statement of cash flows. We adopted this update beginning in the first quarter of our fiscal year ending June 30, 2019 on a retrospective basis and the adoption had no material impact on our Consolidated Financial Statements.

In October 2016, the FASB issued an accounting standard update to recognize the income tax consequences of intra-entity transfers of assets other than inventory when they occur. This eliminates the exception to postpone recognition until the asset has been sold to an outside party. We adopted this update beginning in the first quarter of our fiscal year ending June 30, 2019 on a modified retrospective basis and the adoption had no material impact on our Consolidated Financial Statements.

In January 2017, the FASB issued an accounting standard on clarifying the definition of a business, with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. We adopted this update beginning in the first quarter of our fiscal year ending June 30, 2019 on a prospective basis and the adoption had no material impact on our Consolidated Financial Statements.

In January 2017, the FASB issued an accounting standard update to simplify the subsequent measurement of goodwill by removing the second step of the two-step impairment test, which requires an entity to determine the fair value of assets and liabilities similar to what is required in a purchase price allocation. Under the update, goodwill impairment will be calculated as the amount by which a reporting unit's carrying value exceeds our fair value. We early adopted this update in the first quarter of our fiscal year ending June 30, 2019 on a prospective basis and the adoption had no material impact on our Consolidated Financial Statements.

In March 2017, the FASB issued an accounting standard update that changes the statements of operations classification of net periodic benefit cost related to defined benefit pension and/or other post-retirement benefit plans. Under the update, employers will present the service cost component of net periodic benefit cost in the same statements of operations line item(s) as other employee compensation costs arising from services rendered during the period. Only the service cost component will be eligible for capitalization in assets. Employers will present the other components of the net periodic benefit costs separately from the line item(s) that includes the service cost and outside of any subtotal of operating income, if one is presented. We adopted this update beginning in the first quarter of our fiscal year ending June 30, 2019 on a retrospective basis and the adoption had no material impact on our Consolidated Financial Statements.

In May 2017, the FASB issued an accounting standard update regarding stock compensation that provides guidance about which changes to the terms and conditions of a share-based payment award require an entity to apply modification accounting in order to reduce diversity in practice and reduce complexity. We adopted this update beginning in the first quarter of our fiscal year ending June 30, 2019 on a prospective basis and the adoption had no material impact on our Consolidated Financial Statements.

In August 2017, the FASB issued an accounting standard update to hedge accounting to better align risk management activities by refining financial and non-financial hedging strategy eligibilities. This update also amends the presentation and disclosure requirements to increase transparency to better understand an entity's risk exposures and how hedging strategies are used to manage those exposures. We early adopted this update in the second quarter of our fiscal year ending June 30, 2019 under the modified retrospective approach. The cumulative effect adjustment for the elimination of the ineffectiveness was not material to our Consolidated Financial Statements. The presentation and disclosure have been amended on a prospective basis, as required by this update.

In February 2018, the FASB issued an accounting standard update that provides an option to reclassify disproportional tax effects and other income tax effects ("stranded tax effects") caused by the Tax Cuts and Jobs Act ("the Act") from accumulated other comprehensive income ("AOCI") to retained earnings. We early adopted this update in the first quarter of our fiscal year ending June 30, 2019 and applied this update in the period of adoption. As a result of the adoption, we made a reclassification from AOCI to beginning retained earnings of approximately $10.9 million related to the stranded tax effects.

Updates Not Yet Effective

In February 2016, the FASB issued an accounting standard update, Leases (Topic 842), ("ASC 842") which supersedes the lease recognition requirements in Leases (Topic 840), ("ASC 840"). ASC 842 establishes a right- of-use ("ROU") model that requires a lessee to record a ROU asset and a lease liability on the balance sheet for all leases. Consistent with ASC 840, leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the statements of operations. The new guidance will be effective for us starting in the first quarter of our fiscal year ending June 30, 2020. ASC 842 requires a modified retrospective transition approach for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. In July 2018, the FASB issued an accounting standard update which amends ASC 842 and offers an additional (and optional) transition method by which entities may elect not to recast the comparative periods presented in financial statements in the period of adoption. This ASU has the same transition requirements and effective date as ASC 842. We will adopt ASC 842 using the optional adoption method and thereby not adjust comparative financial statements. Consequently, our reporting for the comparative periods presented in the year of adoption would continue to be in accordance with ASC 840, including the disclosure requirements of ASC 840. We currently plan to apply the package of practical expedients to leases that commenced before the effective date whereby we will elect to not reassess the following: (i) whether any expired or existing contracts contain leases; (ii) the lease classification for any expired or existing leases; and (iii) initial direct costs for any existing leases. We have enhanced system functionality to enable the preparation and reporting of financial information and are evaluating related processes and internal controls. We expect the most significant impact upon the adoption of this standard to be the recognition of ROU assets and lease liabilities on our Consolidated Balance Sheets. We do not expect the adoption of this standard will have a significant impact on our Consolidated Statements of Operations or Cash Flows.

In June 2016, the FASB issued an accounting standard update that changes the accounting for recognizing impairments of financial assets. Under the update, credit losses for certain types of financial instruments will be estimated based on expected losses. The update also modifies the impairment models for available-for-sale debt securities and for purchased financial assets with credit deterioration since their origination. This update is effective for us beginning in the first quarter of our fiscal year ending June 30, 2021, with early adoption permitted starting in the first quarter of fiscal year ending June 30, 2020. We are currently evaluating the impact of this accounting standard update on our Consolidated Financial Statements.

In August 2018, the FASB issued an accounting standard update which modifies the existing accounting standards for fair value measurement disclosure. This update eliminates the disclosure of the amount of and reasons for transfers between level 1 and level 2 of the fair value hierarchy, and the policy for timing of transfers between levels. This standard update is effective for us beginning in the first quarter of our fiscal year ending June 30, 2021, and early adoption is permitted. We are currently evaluating the impact of this accounting standard update on our Consolidated Financial Statements.

In August 2018, the FASB issued an accounting standard update to amend the disclosure requirements related to defined benefit pension and other post-retirement plans. Some of the changes include adding a disclosure requirement for significant gains and losses related to changes in the benefit obligation for the period and removing the amounts in accumulated other comprehensive income expected to be recognized as components of net periodic benefit cost over the next fiscal year. This standard update is effective for us beginning in the first quarter of the fiscal year ending June 30, 2021, and early adoption is permitted. We are currently evaluating the impact of this accounting standard update on our Consolidated Financial Statements.

In August 2018, the FASB issued an accounting standard update to align the requirements for capitalizing implementation costs incurred in a cloud computing arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software. The guidance clarifies which costs should be capitalized including the cost to acquire the license and the related implementation costs. This standard update is effective for us beginning in the first quarter of our fiscal year ending June 30, 2021, with an option to be adopted either prospectively or retrospectively. Early adoption is permitted. We are currently evaluating the impact of this accounting standard update on our Consolidated Financial Statements.

NOTE 2 — REVENUE

New Revenue Accounting Standard

Method and Impact of Adoption

At the beginning of the fiscal year 2019, we adopted ASC 606 using the modified retrospective transition approach for all contracts completed and not completed as of the date of adoption. Under the modified retrospective transition approach, periods prior to the adoption date were not adjusted and continue to be reported in accordance with ASC 605. A cumulative effect of applying ASC 606 was recorded to the beginning retained earnings to reflect the impact of all existing arrangements under ASC 606.

The cumulative effect of applying ASC 606 represents a net decrease to retained earnings of $21.0 million as of July 1, 2018, which primarily related to the following:

- A decrease of approximately $97.0 million in retained earnings related to the deferral of estimated fair value of the warranty services provided with our products for which revenue will be recognized in future periods under ASC 606. Further, upon adoption of ASC 606, we recognize the standard warranty for a majority of products as a separate performance obligation, while in prior periods, we accounted for the estimated warranty cost as a charge to costs of revenues when revenue was recognized. This was partially offset by an increase in retained earnings of approximately $37.0 million related to reversal of standard warranty expense, which was charged to costs of revenues in prior periods.
- An increase in retained earnings of approximately $26.0 million due to a change in the timing of transfer of control over products to the customers.

Under ASC 606, revenue is recognized earlier than it would have been recognized under legacy guidance primarily due to our assessment of timing of transfer of control. Additionally, we render standard warranty coverage on our products for 12 months, providing labor and parts necessary to repair and maintain the products during the warranty period. Prior to adoption of ASC 606, we accounted for the estimated warranty cost as a charge to costs of sales when revenue was recognized. Upon adoption of ASC 606, the standard warranty for the majority of products is recognized as a separate performance obligation in service revenue.

Consistent with our policy, revenue on the majority of Orbotech's contracts is recognized upon delivery because this represents the point in time at which control is transferred to the customers. Revenues derived from performance obligations such as warranty and service contracts are recognized over the period of the service.

The following table, including the results from the acquisition of Orbotech, summarizes the effects of adopting ASC 606 on our Consolidated Balance Sheets as follows:

As of June 30, 2019 (In thousands)	As Reported Under ASC 606	Prior to Adoption of ASC 606	Effect of Changes
ASSETS			
Accounts receivable, net	$ 990,113	$ 1,097,098	$ (106,985)
Other current assets	323,077	158,342	164,735
Deferred income taxes	206,141	195,537	10,604
LIABILITIES			
Deferred system revenue	$ 282,348	$ —	$ 282,348
Deferred service revenue	206,669	114,874	91,795
Deferred system profit	—	382,085	(382,085)
Other current liabilities	827,054	853,253	(26,199)
Deferred service revenue, non-current	98,772	88,289	10,483
STOCKHOLDERS' EQUITY			
Retained earnings	$ 714,825	$ 622,989	$ 91,836
Accumulated other comprehensive income (loss)	(73,029)	(73,205)	176

The following table, including the results from the acquisition of Orbotech, summarizes the effects of adopting ASC 606 on our Consolidated Statements of Operations as follows:

Year ended June 30, 2019 (In thousands, except per share amounts)	As Reported Under ASC 606	Prior to Adoption of ASC 606	Effect of Changes
Revenues:			
Product	$ 3,392,243	$ 3,356,837	$ 35,406
Service	1,176,661	1,029,796	146,865
Costs and expenses:			
Costs of revenues	1,869,377	1,819,060	50,317
Other expense (income), net	(31,462)	(30,989)	(473)
Provision for income taxes	121,214	101,838	19,376
Net income attributable to KLA	1,175,617	1,062,566	113,051
Net income per share attributable to KLA			
Basic	$ 7.53	$ 6.81	$ 0.72
Diluted	$ 7.49	$ 6.77	$ 0.72

Contract Balances

(In thousands, except for percentage)	As of June 30, 2019	As of July 1, 2018	$ Change	% Change
Accounts receivable, net	$ 990,113	$ 635,878	$ 354,235	56%
Contract assets	$ 94,015	$ 14,727	$ 79,288	538%
Contract liabilities	$ 587,789	$ 556,691	$ 31,098	6%

Our payment terms and conditions vary by contract type, although terms generally include a requirement of payment of 70% to 90% of total contract consideration within 30 to 60 days of shipment, with the remainder payable within 30 days of acceptance.

The change in contract assets during the fiscal year ended June 30, 2019 was mainly due to an increase in contract assets of $76.3 million from the Orbotech Acquisition in the third quarter of fiscal year 2019 and $16.8 million of revenue recognized in excess of the amounts billed to the customers, partially offset by $14.7 million of contract assets reclassified to net accounts receivable as our right to consideration for these contract assets became unconditional. Contract assets are included in other current assets on our Consolidated Balance Sheets.

During the fiscal year ended June 30, 2019, we recognized revenue of $461.3 million that was included in contract liabilities as of July 1, 2018. This was partially offset by an increase in contract liabilities of $43.2 million from the Orbotech Acquisition in the third quarter of fiscal year 2019, and the value of products and services billed to customers for which control of the products and service has not transferred to the customers. Contract liabilities are included in current and non-current liabilities on our Consolidated Balance Sheets.

Remaining Performance Obligations

As of June 30, 2019, we had $1.84 billion of remaining performance obligations, which represents our obligation to deliver products and services, and consists primarily of sales orders where written customer requests have been received. We expect to recognize approximately 5% to 15% of these performance obligations as revenue beyond the next twelve months, subject to risk of delays, pushouts, and cancellation by the customer, usually with limited or no penalties.

Refer to Note 17 “Segment Reporting and Geographic Information” for information related to revenue by geographic region as well as significant product and service offerings.

Practical expedients

We apply the following practical expedients:

- We account for shipping and handling costs as activities to fulfill the promise to transfer the goods, instead of a promised service to our customer.
- We have elected to not adjust the promised amount of consideration for the effects of a significant financing component as we expect, at contract inception, that the period between when the entity transfers a promised good or service to a customer and when the customer pays for that good or service will generally be one year or less.
- We have elected to expense costs to obtain a contract as incurred because the expected amortization period is one year or less.
- We have elected to reflect the aggregate effect of all modifications that occurred before July 1, 2018 in determining the transaction price, identifying the satisfied and unsatisfied performance obligations, and allocating the transaction price to the performance obligations.

NOTE 3 — FAIR VALUE MEASUREMENTS

Our financial assets and liabilities are measured and recorded at fair value, except for our debt and certain equity investments in privately-held companies. Prior to July 1, 2018, the equity investments were generally accounted for under the cost method of accounting and were periodically assessed for other-than-temporary impairment when an event or circumstance indicated that an other-than-temporary decline in value may have occurred. Effective July 1, 2018, equity investments without a readily available fair value are accounted for using the measurement alternative. The measurement alternative is calculated as cost minus impairment, if any, plus or minus changes resulting from observable price changes.

Our non-financial assets, such as goodwill, intangible assets, and land, property and equipment, are assessed for impairment when an event or circumstance indicates that an other-than-temporary decline in value may have occurred.

Fair Value of Financial Instruments. We have evaluated the estimated fair value of financial instruments using available market information and valuations as provided by third-party sources. The use of different market assumptions and/or estimation methodologies could have a significant effect on the estimated fair value amounts. The fair value of our cash equivalents, accounts receivable, accounts payable and other current assets and liabilities approximate their carrying amounts due to the relatively short maturity of these items.

Fair Value Hierarchy. The authoritative guidance for fair value measurements establishes a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are described below:

Level 1	Valuations based on quoted prices in active markets for identical assets or liabilities that the entity has the ability to access.
Level 2	Valuations based on quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable data for substantially the full term of the assets or liabilities.
Level 3	Valuations based on inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement.

As of June 30, 2019, the types of instruments valued based on quoted market prices in active markets included money market funds, certain U.S. Treasury securities and U.S. Government agency securities. Such instruments are generally classified within Level 1 of the fair value hierarchy.

The types of instruments valued based on other observable inputs included corporate debt securities, sovereign securities, municipal securities, certain U.S. Treasury securities and U.S. Government agency securities. The market inputs used to value these instruments generally consist of market yields, reported trades and broker/dealer quotes. Such instruments are generally classified within Level 2 of the fair value hierarchy.

The principal market in which we execute our foreign currency contracts is the institutional market in an over-the-counter environment with a relatively high level of price transparency. The market participants generally are large financial institutions. Our foreign currency contracts' valuation inputs are based on quoted prices and quoted pricing intervals from public data sources and do not involve management judgment. These contracts are typically classified within Level 2 of the fair value hierarchy.

The fair value of deferred payments and contingent consideration payable, the majority of which were recorded in connection with business combinations during the fiscal year ended June 30, 2019, were classified as Level 3 and estimated using significant inputs that were not observable in the market. See Note 6 "Business Combinations" for additional information.

Financial assets (excluding cash held in operating accounts and time deposits) and liabilities measured at fair value on a recurring basis as of the date indicated below were presented on our Consolidated Balance Sheets as follow

As of June 30, 2019 (In thousands)	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Little or No Market Activity Inputs (Level 3)
Assets				
Cash equivalents:				
Corporate debt securities	$ 10,988	$ —	$ 10,988	$ —
Money market funds and other	352,708	352,708	—	—
U.S. Government agency securities	27,994	—	27,994	—
U.S. Treasury securities	55,858	—	55,858	—
Marketable securities:				
Corporate debt securities	422,089	—	422,089	—
Municipal securities	1,913	—	1,913	
Sovereign securities	5,994	—	5,994	—
U.S. Government agency securities	131,224	131,224	—	—
U.S. Treasury securities	151,838	151,838	—	—
Total cash equivalents and marketable securities[1]	1,160,606	635,770	524,836	—
Other current assets:				
Derivative assets	2,557	—	2,557	—
Other non-current assets:				
Executive Deferred Savings Plan	207,581	158,021	49,560	—
Total financial assets[1]	$ 1,370,744	$ 793,791	$ 576,953	$ —
Liabilities				
Derivative liabilities	$ (3,334)	$ —	$ (3,334)	$ —
Deferred payments	(8,800)	—	—	(8,800)
Contingent consideration payable	(14,005)	—	—	(14,005)
Total financial liabilities	$ (26,139)	$ —	$ (3,334)	$ (22,805)

(1) Excludes cash of $479.8 million held in operating accounts and time deposits of$99.0 million as of June 30, 2019.

Financial assets (excluding cash held in operating accounts and time deposits) and liabilities measured at fair value on a recurring basis as of the date indicated below were presented on our Consolidated Balance Sheets as follows:

As of June 30, 2018 (In thousands)	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)
Assets			
Cash equivalents:			
Corporate debt securities	$ 4,995	$ —	$ 4,995
Money market funds and other	863,115	863,115	—
U.S. Government agency securities	7,675	—	7,675
U.S. Treasury securities	1,996	—	1,996
Marketable securities:			
Corporate debt securities	735,408	—	735,408
Sovereign securities	17,142	—	17,142
U.S. Government agency securities	316,022	299,501	16,521
U.S. Treasury securities	405,654	364,574	41,080
Total cash equivalents and marketable securities[1]	2,352,007	1,527,190	824,817
Other current assets:			
Derivative assets	5,385	—	5,385
Other non-current assets:			
Executive Deferred Savings Plan	197,213	143,580	53,633
Total financial assets[1]	$ 2,554,605	$ 1,670,770	$ 883,835
Liabilities			
Derivative liabilities	$ (6,828)	$ —	$ (6,828)
Total financial liabilities	$ (6,828)	$ —	$ (6,828)

(1) Excludes cash of $473.8 million held in operating accounts and time deposits of$54.5 million as of June 30, 2018.

There were no transfers between Level 1 and Level 2 fair value measurements during the fiscal year ended June 30,2019 or 2018. We did not have any assets or liabilities measured at fair value on a recurring basis within Level 3 fair value measurements as of June 30, 2018. See Note 8 “Debt” for disclosure of the fair value of our Senior Notes.

NOTE 4 — FINANCIAL STATEMENT COMPONENTS

Consolidated Balance Sheets

(In thousands)	As of June 30, 2019	As of June 30, 2018
Accounts receivable, net:		
Accounts receivable, gross	$ 1,002,114	$ 663,317
Allowance for doubtful accounts	(12,001)	(11,639)
	$ 990,113	$ 651,678
Inventories:		
Customer service parts	$ 328,515	$ 253,639
Raw materials	444,627	331,065
Work-in-process	285,191	280,208
Finished goods	204,167	66,933
	$ 1,262,500	$ 931,845
Other current assets:		
Contract assets	$ 94,015	$ —
Deferred costs of revenue[1]	70,721	—
Prepaid expenses	88,387	47,088
Prepaid income and other taxes	51,889	23,452
Other current assets	18,065	14,619
	$ 323,077	$ 85,159
Land, property and equipment, net:		
Land	$ 67,883	$ 40,599
Buildings and leasehold improvements	402,678	335,647
Machinery and equipment	669,316	577,077
Office furniture and fixtures	28,282	22,171
Construction-in-process	26,029	9,180
	1,194,188	984,674
Less: accumulated depreciation	(745,389)	(698,368)
	$ 448,799	$ 286,306
Other non-current assets:		
Executive Deferred Savings Plan	$ 207,581	$ 197,213
Other non-current assets	58,392	38,869
	$ 265,973	$ 236,082
Other current liabilities:		
Executive Deferred Savings Plan	$ 208,926	$ 199,505
Compensation and benefits	226,462	173,774
Other accrued expenses	196,177	123,869
Customer credits and advances	133,677	116,440
Warranty	6,470	42,258
Income taxes payable	23,350	23,287
Interest payable	31,992	16,947
	$ 827,054	$ 696,080
Other non-current liabilities:		
Pension liabilities	$ 79,622	$ 66,786
Income taxes payable	392,266	371,665
Other non-current liabilities	116,009	54,791
	$ 587,897	$ 493,242

(1) Deferred costs of revenue were previously included under deferred system profit prior to the adoption of ASC 606.

Accumulated Other Comprehensive Income (Loss)

The components of accumulated other comprehensive income (loss) ("OCI") as of the dates indicated below were as follows:

(In thousands)	Currency Translation Adjustments	Unrealized Gains (Losses) on Available-for-Sale Securities	Unrealized Gains (Losses) on Cash Flow Hedges	Unrealized Gains (Losses) on Defined Benefit Plans	Total
Balance as of June 30, 2019	$ (44,041)	$ (1,616)	$ (8,725)	$ (18,647)	$ (73,029)
Balance as of June 30, 2018	$ (29,974)	$ (11,032)	$ 1,932	$ (14,859)	$ (53,933)

The effects on net income of amounts reclassified from accumulated OCI to the Consolidated Statements of Operations for the indicated periods were as follows (in thousands):

Accumulated OCI Components	Location in the Consolidated Statements of Operations	Year ended June 30, 2019	Year ended June 30, 2018
Unrealized gains (losses) on cash flow hedges from foreign exchange and interest rate contracts[(1)]	Revenues	$ 4,329	$ 955
	Costs of revenues and operating expenses	(739)	2,137
	Interest expense	424	754
	Other expense (income), net	4	—
	Net gains reclassified from accumulated OCI	$ 4,018	$ 3,846
Unrealized gains (losses) on available-for-sale securities	Other expense (income), net	$ (1,294)	$ (209)

(1) Reflects the adoption of the new accounting guidance for hedge accounting in the second quarter of fiscal year 2019. For additional details, refer to Note 16, "Derivative Instruments and Hedging Activities."

The amounts reclassified out of accumulated OCI related to our defined benefit pension plans, which were recognized as a component of net periodic cost for the fiscal years ended June 30, 2019 and 2018 were $1.1 million and $1.8 million, respectively. For additional details, refer to Note 12, "Employee Benefit Plans."

Consolidated Statements of Operations

The following table shows other expense (income), net for the indicated periods:

(In thousands)	Year ended June 30, 2019	2018	2017
Other expense (income), net:			
Interest income	$ (40,367)	$ (36,869)	$ (23,270)
Foreign exchange (gains) losses, net	(322)	708	641
Net realized losses (gains) on sale of investments	1,294	209	(191)
Other	7,933	5,470	5,998
	$ (31,462)	$ (30,482)	$ (16,822)

NOTE 5 — MARKETABLE SECURITIES

The amortized cost and fair value of marketable securities as of the dates indicated below were as follows:

As of June 30, 2019 (In thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Corporate debt securities	$ 433,518	$ 141	$ (582)	$ 433,077
Money market funds and other	352,708	—	—	352,708
Municipal securities	1,910	3	—	1,913
Sovereign securities	6,001	1	(8)	5,994
U.S. Government agency securities	159,454	5	(241)	159,218
U.S. Treasury securities	208,058	39	(401)	207,696
Subtotal	1,161,649	189	(1,232)	1,160,606
Add: Time deposits[1]	99,006	—	—	99,006
Less: Cash equivalents	536,206	17	(2)	536,221
Marketable securities	$ 724,449	$ 172	$ (1,230)	$ 723,391

As of June 30, 2018 (In thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Corporate debt securities	$ 747,763	$ 148	$ (7,508)	$ 740,403
Money market funds and other	863,115	—	—	863,115
Sovereign securities	17,293	—	(151)	17,142
U.S. Government agency securities	326,508	16	(2,827)	323,697
U.S. Treasury securities	411,329	3	(3,682)	407,650
Subtotal	2,366,008	167	(14,168)	2,352,007
Add: Time deposits[1]	54,537	—	—	54,537
Less: Cash equivalents	930,608	—	—	930,608
Marketable securities	$ 1,489,937	$ 167	$ (14,168)	$ 1,475,936

(1) Time deposits excluded from fair value measurements.

Our investment portfolio consists of both corporate and government securities that have a maximum maturity ofthree years. The longer the duration of these securities, the more susceptible they are to changes in market interest rates and bond yields. As yields increase, those securities with a lower yield-at-cost show a mark-to-market unrealized loss. Most of our unrealized losses are due to changes in market interest rates, and bond yields. We believe that we have the ability to realize the full value of all of these investments upon maturity. As of June 30, 2019, we had 246 investments in an unrealized loss position. The following table summarizes the fair value and gross unrealized losses of our investments that were in an unrealized loss position as of the date indicated below, the majority of which were in a continuous loss position for 12 months or more:

As of June 30, 2019 (In thousands)	Fair Value	Gross Unrealized Losses
Corporate debt securities	$ 321,972	$ (580)
Sovereign securities	1,999	(8)
U.S. Government agency securities	126,694	(241)
U.S. Treasury securities	142,796	(401)
Total	$ 593,461	$ (1,230)

The contractual maturities of securities classified as available-for-sale, regardless of their classification on our Consolidated Balance Sheets, as of the date indicated below were as follows:

As of June 30, 2019 (In thousands)	Amortized Cost	Fair Value
Due within one year	$ 554,039	$ 553,048
Due after one year through three years	170,410	170,343
	$ 724,449	$ 723,391

Actual maturities may differ from contractual maturities because borrowers may have the right to call or prepay obligations with or without call or prepayment penalties. Realized gains on available for sale securities were immaterial for the fiscal years ended June 30, 2019, 2018 and 2017. Realized losses on available for sale securities were$1.4 million for the fiscal year ended June 30, 2019 and were immaterial for the fiscal years ended June 30, 2018 and 2017.

NOTE 6 - BUSINESS COMBINATIONS

Orbotech Acquisition

On February 20, 2019, we completed the acquisition of Orbotech for total purchase consideration of approximately$3.26 billion which was paid in part by cash of$1.90 billion, in part by KLA common stock with a fair value of$1.32 billion and the balance by the assumption of stock options and RSUs. Orbotech is a global supplier of yield-enhancing and process-enabling solutions for the manufacture of electronics products. KLA acquired Orbotech to extend and enhance its portfolio of products to address market opportunities in the printed circuit board, flat panel display, advanced packaging and semiconductor manufacturing areas.

Preliminary Purchase Price Allocation

The aggregate purchase consideration has been preliminarily allocated as follows (in thousands):

Purchase Price	
Cash for outstanding Orbotech shares[1]	$ 1,901,948
Fair value of KLA common stock issued for outstanding Orbotech shares[2]	1,324,657
Cash for Orbotech equity awards[3]	9,543
Fair value of KLA common stock issued to settle Orbotech equity awards[4]	6,129
Stock options and RSUs assumed[5]	13,281
Total purchase consideration	3,255,558
Less: cash acquired	(215,640)
Total purchase consideration, net of cash acquired	$ 3,039,918
Allocation	
Accounts receivable, net	$ 200,517
Inventories	329,491
Contract assets	63,181
Other current assets	73,557
Property, plant and equipment	102,086
Goodwill	1,811,760
Intangible assets	1,553,570
Other non-current assets	73,179
Accounts payable	(53,015)
Accrued liabilities	(179,624)
Other current liabilities[6]	(69,860)
Deferred tax liabilities[7]	(777,838)
Other non-current liabilities[6]	(67,901)
Non-controlling interest	(19,185)
	$ 3,039,918

(1) Represents the total cash paid to settle 48.9 million outstanding Orbotech shares as of February 20, 2019 at $38.86 per Orbotech share.

(2) Represents the fair value of 12.2 million shares of our common stock issued to settle 48.9 million outstanding Orbotech shares. KLA issued 0.25 shares for each Orbotech share. The fair value of KLA's common stock was $108.26 per share on the Acquisition Date.

(3) Represents primarily cash consideration for the settlement of the vested stock options and restricted stock units for which services were rendered by the employees of Orbotech prior to the closing, and a small portion for the settlement of fractional shares.

(4) Represents the fair value of share of 56,614 shares of KLA common stock issued to settle the vested Orbotech stock options. The fair value of KLA's common stock was $108.26 per share on the Acquisition Date.

(5) Represents the fair value of the assumed stock options and RSUs to the extent those related to services provided by the employee of Orbotech prior to closing. Also refer to Note 9, "Equity, Long-Term Incentive Compensation Plans and Non-Controlling Interest" for additional information about assumed stock options and RSUs.

(6) On December 24, 2018, Orbotech, as part of its strategy to invest in the high growth area of the software business within the Printed Circuit Boards ("PCB") industry, acquired the remaining 50% shares of Frontline, which was prior to that accounted as an equity investee, from Mentor Graphics Development Services (Israel) Ltd. Orbotech acquired all of the joint venture interests it did not previously own for $85.0 million in cash on hand and agreed to pay an additional $10.0 million in cash over four years plus a cash earn-out of not less than $5.0 million and up to $20.0 million. The earn out amounts are based on revenues from a Frontline product currently under development. As of both February 20, 2019 and June 30, 2019, the estimated fair market values of the four-year cash payment was $8.8 million and the earn-out was $7.1 million. As of both February 20, 2019 and June 30, 2019, these amounts have been included in current and non-current liabilities at $4.3 million and $11.6 million, respectively.

(7) Primarily related to tax impact on the future amortization of intangible assets acquired and inventory fair value adjustments.

During the fourth quarter of the fiscal year ended June 30, 2019, we recorded measurement period adjustments to reflect facts and circumstances in existence as of the Acquisition Date. These adjustments primarily related to the valuation of acquired intangible assets of $75.5 million, trade accounts receivable of $21.5 million, non-controlling interest of $17.4 million, other immaterial adjustments of $6.1 million, and related impacts on the deferred income tax liabilities of $47.5 million with resulting to corresponding increase to goodwill of $38.2 million.

KLA allocated the purchase price to tangible and identified intangible assets acquired and liabilities assumed based on the preliminary estimates of their estimated fair values, which were determined using generally accepted valuation techniques based on estimates and assumptions made by management at the time of the Orbotech Acquisition and are subject to change during the measurement period which is not expected to exceed one year. The primary tasks that are required to be completed include discovery and the remeasurement of unknown uncertain tax positions that existed at the acquisition date, adjustments to the deferred tax liabilities for unremitted earnings, validation of synergies expected to be derived from the acquisition of Orbotech, recoverability of certain acquired assets and reallocation of certain acquired intangible assets between jurisdictions based on the outcome of ongoing tax audits, including any related tax impacts. Any adjustments to our preliminary purchase price allocation identified during the measurement period will be recognized in the period in which the adjustments are determined and recorded against goodwill.

The operating results of Orbotech have been included in our Consolidated Financial Statements for the fiscal year ended June 30, 2019 from the Acquisition Date. The goodwill was primarily attributable to the assembled workforce of Orbotech, planned growth in new markets and synergies expected to be achieved from the combined operations of KLA and Orbotech. None of the goodwill is deductible for income tax purposes. Goodwill arising from the Orbotech Acquisition has been allocated to the Specialty Semiconductor Process; and the PCB and Display reporting units during the fiscal year ended June 30, 2019. For additional details, refer to Note 7 "Goodwill and Purchased Intangible Assets."

Intangible Assets

The estimated fair value and weighted average useful life of the Orbotech intangible assets are as follows:

(In thousands)		Fair Value	Weighted Average Useful Lives
Existing technology(1)	$	1,008,000	8
Customer-related assets(2)		227,000	8
Backlog(3)		37,500	1
Trade name(4)		91,500	7
Off market leases (5)		2,070	7
Total identified finite-lived intangible assets		1,366,070	
In-process research and development(6)		187,500	N/A
Total identified intangible assets	$	1,553,570	

(1) Existing technology was identified from the products of Orbotech and its fair value was determined using the Relief-from-Royalty Method under the income approach, which estimates the cost savings generated by a company related to the ownership of an asset for which it would otherwise have had to pay royalties or license fees on revenues earned through the use of the asset. The discount rate used was determined at the time of measurement based on an analysis of the implied internal rate of return of the transaction, weighted average cost of capital and weighted average return on assets. The economic useful life was determined based on the technology cycle related to each developed technology, as well as the cash flows over the forecast period.

(2) Customer contracts and related relationships represent the fair value of the existing relationships with the Orbotech customers and its fair value was determined using the Multi-Period Excess Earning Method which involves isolating the net earnings attributable to the asset being measured based on present value of the incremental after-tax cash flows (excess earnings) attributable solely to the intangible asset over its remaining useful life. The economic useful life was determined based on historical customer attrition rates.

(3) Backlog primarily relates to the dollar value of purchase arrangements with customers, effective, as of a given point in time, that are based on mutually agreed terms which, in some cases, may still be subject to completion of written documentation and may be changed or cancelled by the customer, often without penalty. Orbotech's backlog consists of these arrangements with assigned shipment dates expected, in most cases, within three to twelve months. The fair value was determined using the Multi-Period Excess Earning Method. The economic useful life is based on the time to fulfill the outstanding order backlog obligation.

(4) Trade name primarily relates to the "Orbotech" trade name. The fair value was determined by applying the Relief-From-Royalty method under the income approach. The economic useful life was determined based on the expected life of the trade name.

(5) The favorable/unfavorable components of the acquired leases were determined using the Income Approach which involves present valuing the difference in future cash flows between the contracted lease payments and the rent payable to a market participant over the lease terms. The economic useful life is based on the remaining lease term.

(6) The fair value of in-process research and development ("IPR&D") was determined using the relief-from-royalty method under the income approach, which estimates the cost savings generated by a company related to the ownership of an asset for which it would otherwise have had to pay royalties or license fees on revenues earned through the use of the asset.

We believe the amounts of purchased intangible assets recorded above represent the fair values of and approximate the amounts a market participant would pay for, these intangible assets as of the acquisition date.

Our Consolidated Statements of Operations for the fiscal year ended June 30, 2019 included revenue of $388.9 million and a net loss of $61.6 million from Orbotech.

Other Fiscal 2019 Acquisitions

During the three months ended March 31, 2019, we acquired three privately-held companies primarily to expand our products and services offerings for an aggregate purchase price of $118.3 million, including a post-closing working capital adjustment, and the fair value of the promise to pay additional consideration of up to $13.0 million contingent on the achievement of certain milestones. As of June 30, 2019, the estimated fair value of the additional consideration was $5.1 million, which is classified as a current liability on the Consolidated Balance Sheets.

During the three months ended September 30, 2018 we acquired two privately-held companies for an aggregate purchase price of $15.4 million, including the fair value of the promise to pay total additional consideration of up to $6.0 million contingent on the achievement of certain milestones. As of June 30, 2019, the estimated fair value of the additional consideration was $1.8 million, which is classified as a current liability on the Consolidated Balance Sheets.

None of these acquisitions were individually material to our Consolidated Financial Statements.

The aggregate purchase price of the other fiscal 2019 acquisitions was allocated on a preliminary basis as follows:

(In thousands)		Fair Value
Net tangible assets (including Cash and cash equivalents of $2.6 million)	$	13,214
Identifiable intangible assets		75,130
Goodwill		45,380
Total	$	133,724

The goodwill was primarily attributable to the assembled workforce, and planned growth in new markets. A portion of the goodwill is deductible for income tax purposes. Our Consolidated Statements of Operations for the fiscal year ended June 30, 2019 included revenues of $9.7 million, respectively, and net losses of $3.5 million from these privately-held companies.

KLA, in the aggregate for the Orbotech and other fiscal 2019 acquisitions, incurred approximately $40.2 million of acquisition-related costs, which are primarily included within selling, general and administrative expenses in our Consolidated Statements of Operations.

Fiscal 2018 Acquisition

In the fiscal year ended June 30, 2018, we acquired a product line from Keysight Technologies, Inc., a related party, for a total purchase consideration of $12.1 million, of which $5.2 million was allocated to goodwill based on the fair value at the acquisition date. Goodwill recognized was deductible for income tax purposes. See Note 18 "Related Party Transactions" for additional details.

Supplemental Unaudited Pro Forma Information:

The following unaudited pro forma financial information summarizes the combined results of operations for KLA, Orbotech, and the three acquisitions completed in the third quarter of fiscal 2019 as if the companies were combined as of the beginning of fiscal 2018. The unaudited pro forma information includes adjustments to amortization and depreciation for intangible assets and property, plant and equipment acquired, adjustments to stock-based compensation expense, the purchase accounting effect on inventory acquired, the purchase accounting effect on deferred revenue, interest expense and amortization of debt issuance costs associated with the Senior Notes financing, and transaction costs.

The table below reflects the impact of material and nonrecurring adjustments to the unaudited pro forma results for the fiscal year ended June 30, 2019 and 2018 that are directly attributable to the acquisitions:

	Year ended June 30,			
Non-recurring Adjustments (In thousands)		2019		2018
Decrease to revenue as a result of deferred revenue fair value adjustment	$	—	$	5,349
Increase to expense as a result of inventory fair value adjustment	$	1,029	$	85,778
(Decrease)/increase to expense as a result of transaction costs	$	(64,343)	$	64,343
Increase to expense as a result of compensation costs	$	7,201	$	39,888

The unaudited pro forma information presented below is for informational purposes only and is not necessarily indicative of our consolidated results of operations of the combined business had the acquisitions actually occurred at the beginning of fiscal year 2018 or of the results of our future operations of the combined businesses.

(In thousands)	Pro Forma Year ended June 30, 2019	2018
Revenues	$ 5,154,823	$ 5,079,654
Net income attributable to KLA	$ 1,288,467	$ 608,542

We have not included pro forma results of operations for the acquisition of privately-held companies completed in the first quarter of fiscal 2019 herein as they were not material to us on either an individual or in aggregate. We included the results of operations of each acquisition in our Consolidated Statements of Operations from the date of each acquisition.

NOTE 7 — GOODWILL AND PURCHASED INTANGIBLE ASSETS

Goodwill

Goodwill represents the excess of the purchase price over the fair value of the net tangible and identifiable intangible assets acquired in the current and prior business combinations. Following the update of the organizational structure during the fiscal year 2019, as described in Note 17, “Segment Reporting and Geographic Information”, we have four reportable segments and six reporting units. To reflect our new segment structure, goodwill arising from the Orbotech Acquisition has been allocated to the Specialty Semiconductor Process; and the PCB and Display reporting units using an acquisition accounting method. The following table presents goodwill carrying value and the movements during the fiscal years ended June 30, 2019 and 2018[(1)]:

(In thousands)	Wafer Inspection	Patterning	GSS	SPC Others	Wafer Inspection and Patterning	Specialty Semiconductor Process	PCB and Display	Component Inspection	Total
Balance as of June 30, 2017	$ 281,095	$ 53,255	$ 2,856	$ 12,320	$ —	$ —	$ —	$ —	$ 349,526
Acquired goodwill	—	—	5,163	—	—	—	—	—	5,163
Foreign currency adjustment	(90)	—	20	79	—	—	—	—	9
Balance as of June 30, 2018	281,005	53,255	8,039	12,399	—	—	—	—	354,698
Acquired goodwill	—	26,362	17,869	1,176	—	821,842	989,918	—	1,857,167
Reallocation due to change in segments	(281,005)	(79,617)	—	(13,575)	360,622	—	—	13,575	—
Foreign currency and other adjustments		—	—	—	(7)	—	—	—	(7)
Balance as of June 30, 2019	$ —	$ —	$ 25,908	$ —	$ 360,615	$ 821,842	$ 989,918	$ 13,575	$ 2,211,858

(1) No goodwill was assigned to the Other reporting unit, and accordingly not disclosed in the table above.

Goodwill is net of accumulated impairment losses of $277.6 million, which were recorded prior to the fiscal year ended June 30, 2014. As of June 30, 2019, all of accumulated impairment losses were included in the Wafer Inspection and Patterning reporting unit. As of June 30, 2018 and 2017, approximately $1.0 million and $276.6 million of accumulated impairment losses were included in the Wafer Inspection reporting unit and the Patterning reporting unit, respectively.

The change in goodwill during the fiscal year endedJune 30, 2019 is due to $1.81 billion related to the acquisition of Orbotech and $45.4 million related to the acquisition of the privately-held companies during the period. For additional details, refer to Note 6 “Business Combinations”.

We performed a qualitative assessment of the goodwill for our reporting units during the three months endedMarch 31, 2019. Based on this assessment we concluded that it was more likely than not that the fair value of each of the reporting units exceeded its carrying amount. As a result of our determination based on our qualitative assessment, it was not necessary to perform the quantitative goodwill impairment test at this time. In assessing the qualitative factors, we considered the impact of key factors, including changes in the industry and competitive environment, market capitalization, stock price, earnings multiples, budgeted-to-actual revenue performance from prior year, gross margin and cash flows from operating activities. In addition, subsequent to the update of the organizational structure, we performed a qualitative assessment of the goodwill for our reporting units, which were impacted by the organizational change, and concluded that there were no impairment indicators identified.

Based on our assessment, goodwill in the reporting units was not impaired as ofJune 30, 2019 and 2018. The next annual assessment of goodwill by reporting unit is scheduled to be performed in the third quarter of the fiscal year ending June 30, 2020.

Purchased Intangible Assets

The components of purchased intangible assets as of the dates indicated below were as follows:

(In thousands)		As of June 30, 2019			As of June 30, 2018		
Category	Range of Useful Lives (in years)	Gross Carrying Amount	Accumulated Amortization and Impairment	Net Amount	Gross Carrying Amount	Accumulated Amortization and Impairment	Net Amount
Existing technology	4-8	$ 1,224,629	$ 196,582	$ 1,028,047	$ 160,859	$ 144,202	$ 16,657
Trade name/trademark	4-7	114,573	25,052	89,521	20,993	20,060	933
Customer relationships	4-9	297,250	66,471	230,779	56,680	55,136	1,544
Backlog and other	<1- 9	43,969	19,146	24,823	660	461	199
Intangible assets subject to amortization		1,680,421	307,251	1,373,170	239,192	219,859	19,333
In-process research and development		187,500	—	187,500	—	—	—
Total		$ 1,867,921	$ 307,251	$ 1,560,670	$ 239,192	$ 219,859	$ 19,333

Purchased intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset or asset group may not be recoverable. The change in the gross carrying amounts of intangible assets is due to the acquisition of Orbotech and other privately-held companies. For additional details, refer to Note 6 “Business Combinations.”

Amortization expense for purchased intangible assets for the periods indicated below was as follows:

	Year ended June 30,	
(In thousands)	2019	2018
Amortization expense- Cost of revenues	$ 52,387	$ 4,095
Amortization expense- Selling, general and administrative	34,992	535
Amortization expense- Research and development	13	—
Total	$ 87,392	$ 4,630

Based on the purchased intangible assets gross carrying amount recorded as ofJune 30, 2019, the underlying assets, the remaining estimated annual amortization expense is expected to be as follows:

Fiscal year ending June 30:	Amortization (In thousands)
2020	$ 206,293
2021	186,609
2022	185,159
2023	184,060
2024	182,113
Thereafter	428,936
Total	$ 1,373,170

NOTE 8 — DEBT

The following table summarizes our debt as ofJune 30, 2019 and June 30, 2018:

	As of June 30, 2019		As of June 30, 2018	
	Amount (In thousands)	Effective Interest Rate	Amount (In thousands)	Effective Interest Rate
Fixed-rate 3.375% Senior Notes due on November 1, 2019	250,000	3.377%	250,000	3.377%
Fixed-rate 4.125% Senior Notes due on November 1, 2021	500,000	4.128%	500,000	4.128%
Fixed-rate 4.650% Senior Notes due on November 1, 2024	1,250,000	4.682%	1,250,000	4.682%
Fixed-rate 5.650% Senior Notes due on November 1, 2034	250,000	5.670%	250,000	5.670%
Fixed-rate 4.100% Senior Notes due on March 15, 2029	800,000	4.159%	—	—%
Fixed-rate 5.000% Senior Notes due on March 15, 2049	400,000	5.047%	—	—%
Total	3,450,000		2,250,000	
Unamortized discount	(8,738)		(2,523)	
Unamortized debt issuance costs	(17,880)		(10,075)	
Total	$ 3,423,382		$ 2,237,402	
Reported as:				
Current portion of long-term debt	$ 249,999		$ —	
Long-term debt	3,173,383		2,237,402	
Total	$ 3,423,382		$ 2,237,402	

As of June 30, 2019, future principal payments for the long-term debt are$250.0 million in fiscal year 2020; $500.0 million in fiscal year 2022; and $2.70 billion after fiscal year 2023.

Senior Notes:

In March 2019 and November 2014, we issued$1.20 billion and $2.50 billion, respectively (each, a “2019 Senior Notes”, a “2014 Senior Notes”, and collectively the “Senior Notes”), aggregate principal amount of senior, unsecured long-term notes.

The interest rate specified for each series of the 2014 Senior Notes will be subject to adjustments from time to time if Moody’s Investor Service, Inc. (“Moody’s”) or Standard & Poor’s Ratings Services (“S&P”) or, under certain circumstances, a substitute rating agency selected by us as a replacement for Moody’s or S&P, as the case may be (a “Substitute Rating Agency”), downgrades (or subsequently upgrades) its rating assigned to the respective series of the 2014 Senior Notes such that the adjusted rating is below investment grade. If the adjusted rating of any series of the 2014 Senior Notes from Moody’s (or, if applicable, any Substitute Rating Agency) is decreased to Ba1, Ba2, Ba3 or B1 or below, the stated interest rate on such series of the 2014 Senior Notes as noted above will increase by 25 bps, 50 bps, 75 bps or 100 bps, respectively (“bps” refers to Basis Points and 1% is equal to 100 bps). If the rating of any series of the 2014 Senior Notes from S&P (or, if applicable, any Substitute Rating Agency) with respect to such series of the 2014 Senior Notes is decreased to BB+, BB, BB- or B+ or below, the stated interest rate on such series of the 2014 Senior Notes as noted above will increase by 25 bps, 50 bps, 75 bps or 100 bps, respectively. The interest rates on any series of the 2014 Senior Notes will permanently cease to be subject to any adjustment (notwithstanding any subsequent decrease in the ratings by any of Moody’s, S&P and, if applicable, any Substitute Rating Agency) if such series of the 2014 Senior Notes becomes rated “Baa1” (or its equivalent) or higher by Moody’s (or, if applicable, any Substitute Rating Agency) and “BBB+” (or its equivalent) or higher by S&P (or, if applicable, any Substitute Rating Agency), or one of those ratings if rated by only one of Moody’s, S&P and, if applicable, any Substitute Rating Agency, in each case with a stable or positive outlook. Unlike the 2014 Senior Notes, the interest rate for each series of the 2019 Senior Notes will not be subject to such adjustments.

During the three months ended June 30, 2018, we entered into a series of forward contracts (the “2018 Rate Lock Agreements”) to lock the benchmark interest rate with notional amount of $500.0 million in aggregate. In October 2014, we entered into a series of forward contracts to lock the 10-year treasury rate (“benchmark rate”) on a portion of the 2014 Senior Notes with a notional amount of $1.00 billion in aggregate. For additional details on the forward contracts, refer to Note 17, “Derivative Instruments and Hedging Activities.”

The original discounts on the 2019 Senior Notes and the 2014 Senior Notes amounted to $6.7 million and $4.0 million, respectively, and are being amortized over the life of the debt. Interest is payable semi-annually on May 1 and November 1 of each year for the 2014 Senior Notes and semi-annually on March 15 and September 15 of each year for the 2019 Senior Notes. The indenture for the Senior Notes (the "Indenture") includes covenants that limit our ability to grant liens on our facilities and enter into sale and leaseback transactions, subject to certain allowances under which certain sale and leaseback transactions are not restricted.

In certain circumstances involving a change of control followed by a downgrade of the rating of a series of Senior Notes by at least two of Moody's, S&P and Fitch Inc., unless we have exercised our rights to redeem the Senior Notes of such series, we will be required to make an offer to repurchase all or, at the holder's option, any part, of each holder's Senior Notes of that series pursuant to the offer described below (the "Change of Control Offer"). In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of Senior Notes repurchased plus accrued and unpaid interest, if any, on the Senior Notes repurchased, up to, but not including, the date of repurchase.

Based on the trading prices of the Senior Notes on the applicable dates, the fair value of the Senior Notes as of June 30, 2019 and June 30, 2018 was approximately $3.70 billion and $2.33 billion, respectively. While the Senior Notes are recorded at cost, the fair value of the long-term debt was determined based on quoted prices in markets that are not active; accordingly, the long-term debt is categorized as Level 2 for purposes of the fair value measurement hierarchy.

As of June 30, 2019, we were in compliance with all of our covenants under the Indenture associated with the Senior Notes.

Revolving Credit Facility:

In November 2017, we entered into a Credit Agreement (the "Credit Agreement") providing for a $750.0 million five-year unsecured Revolving Credit Facility (the "Revolving Credit Facility"), which replaced our prior Credit Facility. Subject to the terms of the Credit Agreement, the Revolving Credit Facility may be increased in an amount up to $250.0 million in the aggregate. In November 2018, we entered into an Incremental Facility, Extension and Amendment Agreement (the "Amendment"), which amends the Credit Agreement to (a) extend the Maturity Date (the "Maturity Date") from November 30, 2022 to November 30, 2023, (b) increase the total commitment by $250.0 million and (c) effect certain other amendments to the Credit Agreement as set forth in the Amendment. After giving effect to the Amendment, the total commitments under the Credit Agreement are $1.00 billion. During the third quarter of the fiscal year ended June 30, 2019, we made borrowings of $900.0 million from the Revolving Credit Facility, which were paid in full in the same quarter. As of June 30, 2019, we had no outstanding borrowings under the Revolving Credit Facility.

We may borrow, repay and reborrow funds under the Revolving Credit Facility until the Maturity Date, at which time such Revolving Credit Facility will terminate, and all outstanding loans under such facility, together with all accrued and unpaid interest, must be repaid. We may prepay outstanding borrowings under the Revolving Credit Facility at any time without a prepayment penalty.

Borrowings under the Revolving Credit Facility will bear interest, at our option, at either: (i) the Alternative Base Rate ("ABR") plus a spread, which ranges from 0 bps to 75 bps, or (ii) the London Interbank Offered Rate ("LIBOR") plus a spread, which ranges from 100 bps to 175 bps. The spreads under ABR and LIBOR are subject to adjustment in conjunction with credit rating downgrades or upgrades. We are also obligated to pay an annual commitment fee on the daily undrawn balance of the Revolving Credit Facility, which ranges from 10 bps to 25 bps, subject to an adjustment in conjunction with changes to our credit rating. As of June 30, 2019, we pay an annual commitment fee of 12.5 bps on the daily undrawn balance of the Revolving Credit Facility.

The Revolving Credit Facility requires us to maintain an interest expense coverage ratio as described in the Credit Agreement, on a quarterly basis, covering the trailing four consecutive fiscal quarters of no less than 3.50 to 1.00. In addition, we are required to maintain the maximum leverage ratio as described in the Credit Agreement on a quarterly basis of 3.00 to 1.00, covering the trailing four consecutive fiscal quarters for each fiscal quarter, which can be increased to 4.00 to 1.00 for a period of time in connection with a material acquisition or a series of material acquisitions. As of June 30, 2019, we elected to increase the maximum allowed leverage ratio to 4.00 to 1.00 following the Orbotech Acquisition.

We were in compliance with all covenants under the Credit Agreement as of June 30, 2019.

NOTE 9 — EQUITY, LONG-TERM INCENTIVE COMPENSATION PLANS AND NON-CONTROLLING INTEREST

Equity Incentive Program

As of June 30, 2019, we were able to issue new equity incentive awards, such as restricted stock units ("RSUs") and stock options, to our employees, consultants and members of our Board of Directors under our 2004 Equity Incentive Plan (the "2004 Plan") with 11.6 million shares available for issuance.

Any 2004 Plan awards of restricted stock units, performance shares, performance units or deferred stock units are counted against the total number of shares issuable under the 2004 Plan as follows, based on the grant date of the applicable award: (a) for any such awards granted before November 6, 2013, the awards counted against the 2004 Plan share reserve as 1.8 shares for every one share subject thereto; and (b) for any such awards granted on or after November 6, 2013, the awards count against the 2004 Plan share reserve as 2.0 shares for every one share subject thereto.

In addition, the plan administrator has the ability to grant "dividend equivalent" rights in connection with awards of restricted stock units, performance shares, performance units and deferred stock units before they are fully vested. The plan administrator, at its discretion, may grant a right to receive dividends on the aforementioned awards which may be settled in cash or our stock at the discretion of the plan administrator subject to meeting the vesting requirement of the underlying awards.

Assumed Equity Plans

As of the Acquisition Date, we assumed outstanding equity incentive awards under the following Orbotech equity incentive plans: (i) Equity Remuneration Plan for Key Employees of Orbotech and its Affiliates and Subsidiaries (as Amended and Restated in 2005), (ii) 2010 Equity-Based Incentive Plan, and (iii) 2015 Equity-Based Incentive Plan (each, an "Assumed Equity Plan" and collectively the "Assumed Equity Plans"). The awards under the Assumed Equity Plans, previously issued in the form of stock options and restricted share units ("RSUs"), were generally settled as follows:

a) Each award of Orbotech's stock options and RSUs that was outstanding and vested immediately prior to the Acquisition Date (collectively the "Vested Equity Awards") was canceled and terminated and converted into the right to receive the purchase consideration in respect of such Vested Equity Awards as of the Acquisition Date, and in the case of stock options, less the exercise price.
b) Each award of Orbotech's stock options and RSUs that was outstanding and unvested immediately prior to the Acquisition Date was assumed by us (each, an "Assumed Option" and "Assumed RSU", and collectively the "Assumed Equity Awards") and converted to stock options and RSUs exercisable for the number of shares of our common stock equal to the product of (i) the number of Orbotech shares underlying such Assumed Equity Awards as of immediately prior to the Acquisition Date multiplied by (ii) the exchange ratio defined in the Acquisition Agreement. The Assumed Equity Awards generally retain all of the rights, terms and conditions of the respective plans under which they were originally granted, including the same service-based vesting schedule, applicable thereto.

As of the Acquisition Date, the estimated fair value of the Assumed Equity Awards was $55.0 million, of which $13.3 million was recognized as goodwill and the balance of $41.7 million will be recognized as stock-based compensation expense over the remaining service period of the Assumed Equity Awards. The fair value of the Assumed Equity Awards for services rendered through the Acquisition Date was recognized as a component of the merger consideration, with the remaining fair value related to the post-combination services to be recorded as stock-based compensation over the remaining vesting period.

A total of 14,558 and 518,971 shares of our common stock underly the Assumed Options and RSUs and have an estimated weighted average fair value at the Acquisition Date of $53.3 and $104.5 per share, respectively. As of June 30, 2019, there were 14,558 and 465,587 shares of our common stock underlying the outstanding Assumed Options and RSUs, respectively, under the Assumed Equity Plans. The weighted-average remaining contractual terms, the aggregate intrinsic values, and the weighted average exercise price for the stock options outstanding under the Assumed Equity Plans as of June 30, 2019 were 4.4 years, $0.9 million, and $54.0 per share, respectively. No Assumed Options were exercised during the year ended June 30, 2019.

Equity Incentive Plans - General Information

The following table summarizes the combined activity under our equity incentive plans:

(In thousands)	Available For Grant(1)(5)
Balances as of June 30, 2016	6,778
Restricted stock units granted(2)	(2,169)
Restricted stock units canceled	101
Balances as of June 30, 2017	4,710
Restricted stock units granted(2)	(1,132)
Restricted stock units granted adjustment(4)	33
Restricted stock units canceled	69
Balances as of June 30, 2018	3,680
Plan shares increased	12,000
Restricted stock units granted(2)(3)	(2,463)
Restricted stock units granted adjustment(4)	5
Restricted stock units canceled	51
Plan shares expired (1998 Director Plan)	(1,660)
Balances as of June 30, 2019	11,613

(1) The number of RSUs reflects the application of the award multiplier as described above (1.8x or 2.0x depending on the grant date of the applicable award).

(2) Includes RSUs granted to senior management with performance-based vesting criteria (in addition to service-based vesting criteria for any of such RSUs that are deemed to have been earned) (“performance-based RSUs”). As of June 30, 2019, it had not yet been determined the extent to which (if at all) the performance-based vesting criteria had been satisfied. Therefore, this line item includes all such performance-based RSUs granted during the fiscal year, reported at the maximum possible number of shares that may ultimately be issuable if all applicable performance-based criteria are achieved at their maximum levels and all applicable service-based criteria are fully satisfied (0.7 million shares, 0.3 million shares and 84 thousand shares for the fiscal years ended June 30, 2019, 2018 and 2017, respectively, reflects the application of the 1.8x or 2.0x multiplier described above).

(3) Includes RSUs granted to executive management during the fiscal year ended June 30, 2019 with both a market condition and a service condition (“market-based RSUs”). Under the award agreements, the vesting of the market-based RSUs is contingent on achieving total stockholder return (including stock price appreciation and cash dividends) objectives on a per share basis of equal to or greater than 150%, 175% and 200% multiplied by the measurement price of $116.39 during the five-year period ending March 20, 2024. The awards are split into three tranches and, to the extent that total stockholder return targets have been met, one-third of the maximum number of shares available under these awards will vest on each of the third, fourth, and fifth anniversaries of the grant date. This line item includes all such market-based RSUs granted during the third quarter of the fiscal year ended June 30, 2019 reported at the maximum possible number of shares that may ultimately be issuable if all applicable market-based criteria are met at their maximum levels and all applicable service-based criteria are fully satisfied (0.8 million shares for the year ended June 30, 2019 reflects the application of the multiplier described above).

(4) Represents the portion of RSUs granted with performance-based vesting criteria and reported at the actual number of shares issued upon achievement of the performance vesting criteria during the year ended June 30, 2019 and 2018.

(5) No additional stock options, RSUs or other awards will be granted under the Assumed Equity Plans.

The fair value of stock-based awards is measured at the grant date and is recognized as an expense over the employee’s requisite service period. For RSUs granted without “dividend equivalent” rights, fair value is calculated using the closing price of our common stock on the grant date, adjusted to exclude the present value of dividends which are not accrued on those RSUs. The fair value for RSUs granted with “dividend equivalent” rights is determined using the closing price of our common stock on the grant date The fair value for market-based RSUs is estimated on the grant date using a Monte Carlo simulation model with the following assumptions: expected volatilities ranging from 27.8% to 28.1%, based on a combination of implied volatility from traded options on our common stock and the historical volatility of our common stock; dividend yield ranging from 2.4% to 2.5%, based on our current expectations about our anticipated dividend policy; risk-free interest rate ranging from 2.3% to 2.4%, based on the implied yield available on U.S. Treasury zero-coupon issues with terms equal to the contractual terms of each tranche; and an expected term which takes into consideration the vesting term and the contractual term of the market-based award. The awards are amortized over service periods of three, four, and five years, which is the longer of the explicit service period or the period in which the market target is expected to be met. The fair value for purchase rights under our Employee Stock Purchase Plan is determined using a Black-Scholes model.

The following table shows stock-based compensation expense for the indicated periods:

	Year ended June 30,		
(In thousands)	2019(1)	2018	2017
Stock-based compensation expense by:			
Costs of revenues	$ 10,384	$ 8,062	$ 5,338
Research and development	16,225	11,249	8,089
Selling, general and administrative	67,585	43,473	37,516
Total stock-based compensation expense	$ 94,194	$ 62,784	$ 50,943

(1) Includes $10.9 million of stock-based compensation expense acceleration for certain equity awards for Orbotech employees.

The following table shows stock-based compensation capitalized as inventory as of the dates indicated below:

	As of June 30,	
(In thousands)	2019	2018
Inventory	$ 4,819	$ 4,580

Restricted Stock Units

The following table shows the activity and weighted-average grant date fair value for RSUs during the fiscal year ended June 30, 2019:

	Shares (In thousands) (1)	Weighted-Average Grant Date Fair Value
Outstanding restricted stock units as of June 30, 2018(2)	2,014	$ 76.50
Granted(2)	1,232	$ 99.53
Granted adjustments(3)	(2)	$ 50.88
Assumed upon Orbotech Acquisition(4)	519	$ 104.49
Vested and released	(500)	$ 73.88
Withheld for taxes	(323)	$ 73.88
Forfeited	(38)	$ 92.08
Outstanding restricted stock units as of June 30, 2019(2)	2,902	$ 91.84

(1) Share numbers reflect actual shares subject to awarded RSUs. Under the terms of the 2004 Plan, the number of shares subject to each award reflected in this number is multiplied by either 1.8x or 2.0x (depending on the grant date of the award) to calculate the impact of the award on the share reserve under the 2004 Plan.

(2) Includes performance-based and market-based RSUs. As of June 30, 2019, it had not yet been determined the extent to which (if at all) the performance-based or market-based vesting criteria had been satisfied. Therefore, this line item includes all such RSUs, reported at the maximum possible number of shares (i.e., 0.7 million shares for the fiscal year ended June 30, 2019, 0.2 million shares for fiscal year ended June 30, 2018 and 42 thousand shares for the fiscal year ended June 30, 2017) that may ultimately be issuable if all applicable performance-based and market-based criteria are achieved at their maximum and all applicable service-based criteria are fully satisfied.

(3) Represents the portion of RSUs granted with performance-based vesting criteria and reported at the actual number of shares issued upon achievement of the performance vesting criteria during the fiscal year ended June 30, 2019.

(4) Represents Assumed RSUs under the Assumed Equity Plans. Since the Assumed RSUs do not have “dividend equivalent” rights, the fair value was calculated using the closing price of our common stock on the Acquisition Date, adjusted to exclude the present value of dividends.

The RSUs granted by us generally vest (a) with respect to awards with only service-based vesting criteria, over periods ranging from two to four years and (b) with respect to awards with both performance-based and service-based vesting criteria, in two equal installments on the third and fourth anniversaries of the grant date, and (c) with respect to awards with both market-based and service-based vesting criteria in three equal installments on the third, fourth and fifth anniversaries of the grant date, in each case subject to the recipient remaining employed by us as of the applicable vesting date. The RSUs granted to the independent members of the Board of Directors vest annually.

The following table shows the weighted-average grant date fair value per unit for the RSUs granted, vested, and tax benefits realized by us in connection with vested and released RSUs for the indicated periods:

	Year ended June 30,		
(In thousands, except for weighted-average grant date fair value)	**2019**	**2018**	**2017**
Weighted-average grant date fair value per unit	$ 99.53	$ 95.95	$ 78.83
Weighted-average fair value per unit assumed upon Orbotech Acquisition	$ 104.49	$ —	$ —
Grant date fair value of vested restricted stock units	$ 60,749	$ 49,606	$ 33,820
Tax benefits realized by us in connection with vested and released restricted stock units	$ 15,053	$ 16,615	$ 15,829

As of June 30, 2019, the unrecognized stock-based compensation expense balance related to RSUs was $179.7 million, excluding the impact of estimated forfeitures, and will be recognized over a weighted-average remaining contractual term and an estimated weighted-average amortization period of 1.6 years. The intrinsic value of outstanding RSUs as of June 30, 2019 was $343.0 million.

Cash-Based Long-Term Incentive Compensation

We have adopted a cash-based long-term incentive ("Cash LTI Plan") program for many of our employees as part of our employee compensation program. Executives and non-employee members of the Board of Directors are not participating in this program. During the fiscal years ended June 30, 2019 and 2018, we approved Cash LTI awards of $85.2 million and $64.9 million, respectively. Cash LTI awards issued to employees under the Cash LTI Plan will vest in three or four equal installments, with one-third or one-fourth of the aggregate amount of the Cash LTI award vesting on each anniversary of the grant date over a three or four-year period. In order to receive payments under a Cash LTI award, participants must remain employed by us as of the applicable award vesting date. During the fiscal years ended June 30, 2019, 2018 and 2017, we recognized $55.5 million, $52.4 million and $48.8 million, respectively, in compensation expense under the Cash LTI Plan. As of June 30, 2019, the unrecognized compensation balance (excluding the impact of estimated forfeitures) related to the Cash LTI Plan was $152.2 million.

Employee Stock Purchase Plan

Our Employee Stock Purchase Plan ("ESPP") provides that eligible employees may contribute up to 15% of their eligible earnings toward the semi-annual purchase of our common stock. The ESPP is qualified under Section 423 of the Internal Revenue Code. The employee's purchase price is derived from a formula based on the closing price of the common stock on the first day of the offering period versus the closing price on the date of purchase (or, if not a trading day, on the immediately preceding trading day).

The offering period (or length of the look-back period) under the ESPP has a duration of six months, and the purchase price with respect to each offering period beginning on or after such date is, until otherwise amended, equal to 85% of the lesser of (i) the fair market value of our common stock at the commencement of the applicable six-month offering period or (ii) the fair market value of our common stock on the purchase date. We estimate the fair value of purchase rights under the ESPP using a Black-Scholes model.

The fair value of each purchase right under the ESPP was estimated on the date of grant using the Black-Scholes model and the straight-line attribution approach with the following weighted-average assumptions:

	Year ended June 30,		
	2019	2018	2017
Stock purchase plan:			
Expected stock price volatility	33.2%	28.7%	23.4%
Risk-free interest rate	2.1%	1.1%	0.5%
Dividend yield	3.1%	2.5%	2.8%
Expected life (in years)	0.50	0.50	0.50

The following table shows total cash received from employees for the issuance of shares under the ESPP, the number of shares purchased by employees through the ESPP, the tax benefits realized by us in connection with the disqualifying dispositions of shares purchased under the ESPP and the weighted-average fair value per share for the indicated periods:

	Year ended June 30,		
(In thousands, except for weighted-average fair value per share)	2019	2018	2017
Total cash received from employees for the issuance of shares under the ESPP	$ 64,828	$ 61,452	$ 45,358
Number of shares purchased by employees through the ESPP	843	733	705
Tax benefits realized by us in connection with the disqualifying dispositions of shares purchased under the ESPP	$ 1,133	$ 1,664	$ 1,999
Weighted-average fair value per share based on Black-Scholes model	$ 21.72	$ 21.95	$ 15.16

The ESPP shares are replenished annually on the first day of each fiscal year by virtue of an evergreen provision. The provision allows for share replenishment equal to the lesser of 2.0 million shares or the number of shares which we estimate will be required to be issued under the ESPP during the forthcoming fiscal year. As of June 30, 2019, a total of 1.8 million shares were reserved and available for issuance under the ESPP.

Quarterly cash dividends

On May 3, 2019, our Board of Directors declared a regular quarterly cash dividend of $0.75 per share on the outstanding shares of our common stock, which was paid on June 4, 2019 to the stockholders of record as of the close of business on May 15, 2019. The total amount of regular quarterly cash dividends and dividend equivalents paid during the fiscal years ended June 30, 2019 and 2018 was $469.4 million and $395.6 million, respectively. The amount of accrued dividends equivalents payable for regular quarterly cash dividends on unvested RSUs with dividend equivalent rights was $7.3 million and $6.7 million as of June 30, 2019 and 2018, respectively. These amounts will be paid upon vesting of the underlying RSUs. Refer to Note 19, “Subsequent Events” to the Consolidated Financial Statements for additional information regarding the declaration of our quarterly cash dividend announced subsequent to June 30, 2019.

Special cash dividend

On November 19, 2014, our Board of Directors declared a special cash dividend of $16.50 per share on our outstanding common stock, which was paid on December 9, 2014 to the stockholders of record as of the close of business on December 1, 2014. The declaration and payment of the special cash dividend was part of our leveraged recapitalization transaction under which the special cash dividend was financed through a combination of existing cash and proceeds from the debt financing disclosed in Note 8, “Debt” that was completed during the three months ended December 31, 2014. As of the declaration date, the total amount of the special cash dividend accrued by us was approximately $2.76 billion, substantially all of which was paid out during the three months ended December 31, 2014, except for the aggregate special cash dividend of $43.0 million that was accrued for the unvested RSUs and to be paid when such underlying unvested RSUs vest. During the second quarter of fiscal 2019, all of the special cash dividends accrued with respect to outstanding RSUs were vested and paid in full. We paid a special cash dividend with respect to vested RSUs during the fiscal years ended June 30, 2019 and 2018 of $2.9 million and $6.4 million respectively. Other than the special cash dividend declared during the three months ended December 31, 2014, we historically have not declared any special cash dividend.

Non-controlling Interest

We have consolidated the results of Orbotech LT Solar, LLC ("OLTS") and Orbograph Ltd. ("Orbograph"), in which we own approximately84% and 94% of the outstanding equity interest, respectively. OLTS is engaged in the research, development and marketing of products for the deposition of thin film coating of various materials on crystalline silicon photovoltaic wafers for solar energy panels through plasma-enhanced chemical vapor deposition ("PECVD"). Orbograph is engaged in the development and marketing of character recognition solutions to banks, financial and other payment processing institutions and healthcare providers.

Additionally, we have consolidated the results of PixCell, an Israeli company developing diagnostic equipment for point-of-care hematology applications of which we own approximately 52% of the outstanding equity interest and are entitled to appoint the majority of this company's directors.

NOTE 10 — STOCK REPURCHASE PROGRAM

Our Board of Directors has authorized a program which permits us to repurchase up to$2.00 billion of our common stock, reflecting an increase from$1.00 billion upon the close of the Orbotech Acquisition. For additional details, refer to Note 1, "Description of Business and Summary of Significant Accounting Policies." The intent of this program is to offset the dilution from our equity incentive plans, employee stock purchase plan, the issuance of shares in the Orbotech Acquisition, as well as to return excess cash to our stockholders. Subject to market conditions, applicable legal requirements and other factors, the repurchases were made in the open market in compliance with applicable securities laws, including the Securities Exchange Act of 1934 and the rules promulgated thereunder such as Rule 10b-18 and Rule 10b5-1. This stock repurchase program has no expiration date and may be suspended at any time. As of June 30, 2019, an aggregate of approximately $858.7 million was available for repurchase under our stock repurchase program.

Share repurchases for the indicated periods (based on the trade date of the applicable repurchase) were as follows:

	Year ended June 30,		
(In thousands)	**2019**	**2018**	**2017**
Number of shares of common stock repurchased	10,207	1,960	243
Total cost of repurchases	$ 1,103,202	$ 203,169	$ 25,002

As of June 30, 2019, we had repurchased 68 thousand shares for $8.0 million, for which repurchases had not settled prior to June 30, 2019. The amount was recorded as a component of other current liabilities for the period presented.

NOTE 11 — NET INCOME PER SHARE

Basic net income per share is calculated by dividing net income available to common stockholders by the weighted-average number of common shares outstanding during the period. Diluted net income per share is calculated by using the weighted-average number of common shares outstanding during the period, increased to include the number of additional shares of common stock that would have been outstanding if the shares of common stock underlying our outstanding dilutive restricted stock units had been issued. The dilutive effect of outstanding restricted stock units is reflected in diluted net income per share by application of the treasury stock method.

The following table sets forth the computation of basic and diluted net income per share attributable to KLA:

	Year ended June 30,		
(In thousands, except per share amounts)	**2019**	**2018**	**2017**
Numerator:			
Net income attributable to KLA	$ 1,175,617	$ 802,265	$ 926,076
Denominator:			
Weighted-average shares-basic, excluding unvested restricted stock units	156,053	156,346	156,468
Effect of dilutive restricted stock units and options	896	1,032	1,013
Weighted-average shares-diluted	156,949	157,378	157,481
Basic net income per share attributable to KLA	$ 7.53	$ 5.13	$ 5.92
Diluted net income per share attributable to KLA	$ 7.49	$ 5.10	$ 5.88
Anti-dilutive securities excluded from the computation of diluted net income per share	227	—	46

NOTE 12 — EMPLOYEE BENEFIT PLANS

We have a profit sharing program for eligible employees, which distributes, on a quarterly basis, a percentage of our pre-tax profits. In addition, we have an employee savings plan that qualifies as a deferred salary arrangement under Section 401(k) of the Internal Revenue Code. Since April 1, 2011, the employer match amount was 50% of the first $8,000 of an eligible employee's contribution (i.e., a maximum of $4,000) during each fiscal year.

The total expenses under the profit sharing and 401(k) programs aggregated $18.6 million, $16.0 million, and $15.3 million in the fiscal years ended June 30, 2019, 2018 and 2017, respectively. We have no defined benefit plans in the United States. In addition to the profit sharing plan and the United States 401(k), several of our foreign subsidiaries have retirement plans for their full-time employees, several of which are defined benefit plans. Consistent with the requirements of local law, our deposits funds for certain of these plans with insurance companies, with third-party trustees or into government-managed accounts and/or accrues for the unfunded portion of the obligation. The assumptions used in calculating the obligation for the foreign plans depend on the local economic environment.

We apply authoritative guidance that requires an employer to recognize the funded status of each of its defined pension and post-retirement benefit plans as a net asset or liability on its balance sheets. Additionally, the authoritative guidance requires an employer to measure the funded status of each of its plans as of the date of its year-end statement of financial position. The benefit obligations and related assets under our plans have been measured as of June 30, 2019 and 2018.

Summary data relating to our foreign defined benefit pension plans, including key weighted-average assumptions used, is provided in the following tables:

	Year ended June 30,	
(In thousands)	**2019**	**2018**
Change in projected benefit obligation:		
Projected benefit obligation as of the beginning of the fiscal year	$ 96,682	$ 97,265
Service cost	4,220	4,127
Interest cost	1,132	1,302
Contributions by plan participants	69	78
Actuarial (gain) loss	4,187	(8,228)
Benefit payments	(1,755)	(1,190)
Assumed benefit obligation from acquisition	11,095	—
Transfer in	—	2,806
Foreign currency exchange rate changes and others, net	(140)	522
Projected benefit obligation as of the end of the fiscal year	$ 115,490	$ 96,682

	Year ended June 30,	
(In thousands)	**2019**	**2018**
Change in fair value of plan assets:		
Fair value of plan assets as of the beginning of the fiscal year	$ 27,932	$ 21,780
Actual return on plan assets	854	850
Employer contributions	3,587	3,662
Benefit and expense payments	(1,752)	(1,190)
Assumed plan assets from acquisition	3,424	—
Transfer in	—	2,806
Foreign currency exchange rate changes and others, net	(490)	24
Fair value of plan assets as of the end of the fiscal year	$ 33,555	$ 27,932

(In thousands)	As of June 30, 2019	As of June 30, 2018
Underfunded status	$ 81,935	$ 68,750

(In thousands)	As of June 30, 2019	As of June 30, 2018
Plans with accumulated benefit obligations in excess of plan assets:		
Accumulated benefit obligation	$ 72,508	$ 60,047
Projected benefit obligation	$ 115,490	$ 96,682
Plan assets at fair value	$ 33,555	$ 27,932

	Year ended June 30, 2019	2018	2017
Weighted-average assumptions(1):			
Discount rate	0.3%-1.7%	0.5%-2.3%	0.8%-1.9%
Expected rate of return on assets	1.0%-2.9%	1.3%-2.9%	1.5%-2.9%
Rate of compensation increases	1.8%-4.5%	3.0%-4.5%	3.0%-5.8%

(1) Represents the weighted-average assumptions used to determine the benefit obligation.

The assumptions for expected rate of return on assets were developed by considering the historical returns and expectations of future returns relevant to the country in which each plan is in effect and the investments applicable to the corresponding plan. The discount rate for each plan was derived by reference to appropriate benchmark yields on high quality corporate bonds, allowing for the approximate duration of both plan obligations and the relevant benchmark index.

The following table presents losses recognized in accumulated other comprehensive income (loss) before tax related to our foreign defined benefit pension plans:

(In thousands)	As of June 30, 2019	As of June 30, 2018
Unrecognized transition obligation	$ 242	$ 251
Unrecognized prior service cost	4	28
Unrealized net loss	25,721	23,208
Amount of losses recognized	$ 25,967	$ 23,487

Losses in accumulated other comprehensive income (loss) related to our foreign defined benefit pension plans expected to be recognized as components of net periodic benefit cost over the fiscal year ending June 30, 2020 are as follows:

(In thousands)	
Unrecognized prior service cost	$ 3
Unrealized net loss	906
Amount of losses expected to be recognized	$ 909

The components of our net periodic cost relating to its foreign subsidiaries' defined pension plans are as follows:

(In thousands)	Year ended June 30, 2019	2018	2017
Components of net periodic pension cost:			
Service cost(1)	$ 4,220	$ 4,127	$ 4,015
Interest cost	1,132	1,302	1,117
Return on plan assets	(476)	(428)	(393)
Amortization of transitional obligation	—	—	251
Amortization of prior service cost	21	26	46
Amortization of net loss	1,047	1,731	1,617
Net periodic pension cost	$ 5,944	$ 6,758	$ 6,653

(1) Service cost is reported in cost of revenues, research and development and selling, general and administrative expenses. All other components of net periodic pension cost are reported in other expense (income), net in the Consolidated Statements of Operations.

Fair Value of Plan Assets

Fair value is the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The three levels of inputs used to measure fair value of plan assets are described in Note 3, "Fair Value Measurements."

The foreign plans' investments are managed by third-party trustees consistent with the regulations or market practice of the country where the assets are invested. We are not actively involved in the investment strategy, nor does it have control over the target allocation of these investments. These investments made up 100% of total foreign plan assets in the fiscal years ended June 30, 2019 and 2018.

The expected aggregate employer contribution for the foreign plans during the fiscal year ending June 30, 2020 is $3.1 million.

The total benefits to be paid from the foreign pension plans are not expected to exceed $5.3 million in any year through the fiscal year ending June 30, 2029.

Foreign plan assets measured at fair value on a recurring basis consisted of the following investment categories as of June 30, 2019 and 2018, respectively:

As of June 30, 2019 (In thousands)	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)
Cash and cash equivalents	$ 18,571	$ 18,571	$ —
Bonds, equity securities and other investments	14,984	—	14,984
Total assets measured at fair value	$ 33,555	$ 18,571	$ 14,984

As of June 30, 2018 (In thousands)	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)
Cash and cash equivalents	$ 15,737	$ 15,737	$ —
Bonds, equity securities and other investments	12,195	—	12,195
Total assets measured at fair value	$ 27,932	$ 15,737	$ 12,195

Concentration of Risk

We manage a variety of risks, including market, credit and liquidity risks, across our plan assets through our investment managers. We define a concentration of risk as an undiversified exposure to one of the above-mentioned risks that increases the exposure of the loss of plan assets unnecessarily. We monitor exposure to such risks in the foreign plans by monitoring the magnitude of the risk in each plan and diversifying our exposure to such risks across a variety of instruments, markets and counterparties. As of June 30, 2019, we did not have concentrations of plan asset investment risk in any single entity, manager, counterparty, sector, industry or country.

NOTE 13 — INCOME TAXES

The components of income before income taxes are as follows:

	Year ended June 30,		
(In thousands)	**2019**	**2018**	**2017**
Domestic income before income taxes	$ 545,401	$ 716,015	$ 615,906
Foreign income before income taxes	750,830	739,916	557,340
Total income before income taxes	$ 1,296,231	$ 1,455,931	$ 1,173,246

The provision for income taxes is comprised of the following:

	Year ended June 30,		
(In thousands)	**2019**	**2018**	**2017**
Current:			
Federal	$ 82,460	$ 504,758	$ 200,831
State	5,665	6,422	4,660
Foreign	59,274	41,414	38,208
	147,399	552,594	243,699
Deferred:			
Federal	1,636	98,702	444
State	2,118	1,526	2,852
Foreign	(29,939)	844	175
	(26,185)	101,072	3,471
Provision for income taxes	$ 121,214	$ 653,666	$ 247,170

The significant components of deferred income tax assets and liabilities are as follows:

(In thousands)		As of June 30, 2019		2018
Deferred tax assets:				
Tax credits and net operating losses	$	208,572	$	171,701
Employee benefits accrual		65,065		64,707
Stock-based compensation		9,432		8,902
Inventory reserves		67,249		62,232
Non-deductible reserves		21,633		29,841
Depreciation and amortization		—		701
Unearned revenue		16,126		11,104
Unrealized loss on investments		1,492		956
Other		55,518		25,602
Gross deferred tax assets		445,087		375,746
Valuation allowance		(166,571)		(163,570)
Net deferred tax assets	$	278,516	$	212,176
Deferred tax liabilities:				
Unremitted earnings of foreign subsidiaries not indefinitely reinvested	$	(243,491)	$	(7,146)
Deferred profit		(15,718)		(13,027)
Depreciation and amortization		(515,643)		—
Total deferred tax liabilities		(774,852)		(20,173)
Total net deferred tax assets (liabilities)	$	(496,336)	$	192,003

The provision for income taxes and the significant components of deferred income tax assets and liabilities for the year ended June 30, 2019 includes the tax impact of the acquisition of Orbotech.

As of June 30, 2019, we, excluding Orbotech, had U.S. federal, state and foreign net operating loss ("NOL") carry-forwards of approximately $20.5 million, $28.9 million and $23.1 million, respectively. Orbotech had U.S. federal, state, and foreign NOLs of approximately $49.0 million, $27.5 million and $53.6 million, respectively. Orbotech also had capital loss carry-forwards of approximately $44.6 million. The U.S. federal NOL carry-forwards will expire at various dates beginning in 2023 through 2033. The utilization of NOLs created by acquired companies is subject to annual limitations under Section 382 of the Internal Revenue Code. However, it is not expected that such annual limitation will significantly impair the realization of these NOLs. The state NOLs will begin to expire in 2019. Foreign NOLs and capital loss carry-forwards will be carried forward indefinitely. State credits of $225.8 million for us including Orbotech, will also be carried forward indefinitely.

The net deferred tax asset valuation allowance was $166.6 million and $163.6 million as of June 30, 2019 and June 30, 2018, respectively. The change was primarily due to an increase in the valuation allowance related to state credit carry-forwards generated in the fiscal year ended June 30, 2019, partially offset by a decrease in the valuation allowance related to foreign NOL carry-forwards. The valuation allowance is based on our assessment that it is more likely than not that certain deferred tax assets will not be realized in the foreseeable future. Of the valuation allowance as of June 30, 2019, $163.2 million relates to federal and state credit carry-forwards. The remainder of the valuation allowance relates to state NOL carry-forwards.

As of June 30, 2019, we intend to indefinitely reinvest $2.94 billion of cumulative undistributed earnings held by certain non-U.S. subsidiaries. If these undistributed earnings were repatriated to the U.S., the potential deferred tax liability associated with the undistributed earnings would be approximately $104.8 million.

We benefit from tax holidays in Israel and Singapore where we manufacture certain of our products. These tax holidays are on approved investments and are scheduled to expire at varying times in the next one to nine years. We are in compliance with all the terms and conditions of the tax holidays as of June 30, 2019. The net impact of these tax holidays was to decrease our tax expense by approximately $31.6 million, $39.7 million and $32.6 million in the fiscal years ended June 30, 2019, 2018 and 2017, respectively. The benefits of the tax holidays on diluted net income per share were $0.20, $0.25 and $0.21 for the fiscal years ended June 30, 2019, 2018 and 2017, respectively.

Our Israel tax holiday is scheduled to expire in June 2020. We will adopt Israel's Preferred Technology Enterprise ("PTE") regime after the expiration of the current holiday.

The reconciliation of the U.S. federal statutory income tax rate to our effective income tax rate is as follows:

	Year ended June 30,		
	2019	2018	2017
Federal statutory rate	21.0 %	28.1 %	35.0 %
State income taxes, net of federal benefit	0.5 %	0.5 %	0.4 %
Effect of foreign operations taxed at various rates	(10.5)%	(11.0)%	(12.2)%
Tax Cuts and Jobs Act of 2017 - Transition tax and deferred tax effects	(1.5)%	30.3 %	— %
Global intangible low-taxed income	3.5 %	— %	— %
Foreign derived intangible income	(4.0)%	— %	— %
Research and development tax credit	(1.8)%	(1.4)%	(1.1)%
Net change in tax reserves	1.4 %	(0.4)%	1.3 %
Domestic manufacturing benefit	— %	(1.1)%	(1.5)%
Effect of stock-based compensation	0.4 %	(0.1)%	(0.2)%
Other	0.4 %	— %	(0.6)%
Effective income tax rate	9.4 %	44.9 %	21.1 %

A reconciliation of gross unrecognized tax benefits is as follows:

	Year ended June 30,		
(In thousands)	2019	2018	2017
Unrecognized tax benefits at the beginning of the year	$ 63,994	$ 68,439	$ 50,365
Increases for tax positions from acquisitions	60,753	—	—
Increases for tax positions taken in prior years	13,001	4,642	6,788
Decreases for tax positions taken in prior years	(1,304)	(6,045)	(246)
Increases for tax positions taken in current year	26,178	16,812	14,696
Decreases for settlements with taxing authorities	—	(9,666)	—
Decreases for lapsing of statutes of limitations	(16,196)	(10,188)	(3,164)
Unrecognized tax benefits at the end of the year	$ 146,426	$ 63,994	$ 68,439

The amount of unrecognized tax benefits that would impact the effective tax rate was $136.1 million, $57.9 million and $68.4 million as of June 30, 2019, 2018 and 2017, respectively. The amount of interest and penalties recognized during the years ended June 30, 2019, 2018 and 2017 was expense of $2.9 million, expense of $0.1 million, and income of $2.2 million as a result of a release of unrecognized tax benefits, respectively. Our policy is to include interest and penalties related to unrecognized tax benefits within other expense (income), net. The amount of interest and penalties accrued as of June 30, 2019 and 2018 was approximately $21.8 million and $6.0 million, respectively.

We are subject to federal income tax examinations for all years beginning from the fiscal year ended June 30, 2016 and are under U.S. federal income tax examination for the fiscal year ended June 30, 2016. We are subject to state income tax examinations for all years beginning from the fiscal year ended June 30, 2015. We are also subject to examinations in other major foreign jurisdictions, including Singapore and Israel, for all years beginning from the calendar year ended December 31, 2012. We are under audit in Germany related to a wholly owned subsidiary of Orbotech for the years ended December 31, 2013 to December 31, 2015.

In May 2017, Orbotech received an assessment from the Israel Tax Authority ("ITA") with respect to its fiscal years 2012 through 2014 (the "Assessment", and the "Audit Period", respectively), for an aggregate amount of tax against us, after offsetting all NOLs for tax purposes available through the end of 2014, of approximately NIS 218 million (approximately $61.0 million as of June 30, 2019), which amount includes related interest and linkage differentials to the Israeli consumer price index (as of date of the Assessment). We believe our recorded unrecognized tax benefits are sufficient to cover the resolution of the Assessment.

On August 31, 2018, Orbotech filed an objection in respect of the tax assessment (the "Objection"). Orbotech is now in the process of the second stage, in which the claims raised by it in the Objection are examined by different personnel at the ITA. In addition, the ITA can examine additional items and may assess additional amounts in the second stage. The second stage must be completed within one year of when the Objection was filed.

In connection with the above, there is an ongoing criminal investigation in Israel against Orbotech, which became our wholly owned subsidiary as of the acquisition date, certain of its employees and its tax consultant. On April 11, 2018, Orbotech received a "suspect notification letter" (dated March 28, 2018) from the Tel Aviv District Attorney's Office (Fiscal and Financial). In the letter, it was noted that the investigation file was transferred from the Assessment Investigation Officer to the District Attorney's Office. The letter further states that the District Attorney's Office has not yet made a decision regarding submission of an indictment against Orbotech; and that if after studying the case, a decision is made to consider prosecuting Orbotech, Orbotech will receive an additional letter, and within 30 days, Orbotech may present its arguments to the District Attorney's Office as to why it should not be indicted. To date, neither we nor Orbotech has received such an additional letter or any other correspondence or contact from the District Attorney's Office. We will continue to monitor the progress of the District Attorney's Office investigation, however, cannot anticipate when the review of the case will be completed and what will be the results thereof. We intend to cooperate with the District Attorney's Office to enable them to conclude their investigation.

It is possible that certain examinations may be concluded in the next twelve months. We believe that we may recognize up to $14.3 million of our existing unrecognized tax benefits within the next twelve months as a result of the lapse of statutes of limitations and the resolution of examinations with various tax authorities.

NOTE 14 — COMMITMENTS AND CONTINGENCIES

Factoring. We have agreements (referred to as "factoring agreements") with financial institutions to sell certain of our trade receivables and promissory notes from customers without recourse. We do not believe we are at risk for any material losses as a result of these agreements. In addition, we periodically sell certain letters of credit ("LCs"), without recourse, received from customers in payment for goods and services.

The following table shows total receivables sold under factoring agreements and proceeds from sales of LCs for the indicated periods:

	Year ended June 30,		
(In thousands)	2019	2018	2017
Receivables sold under factoring agreements	$ 193,089	$ 217,462	$ 152,509
Proceeds from sales of LCs	$ 95,436	$ 5,511	$ 48,780

Factoring and LC fees for the sale of certain trade receivables were recorded in other expense (income), net and were not material for the periods presented.

Leases. We lease certain of our facilities, autos and equipment under arrangements that are accounted for as operating leases. Facilities rent expense was $13.5 million, $10.4 million and $9.6 million for the fiscal years ended June 30, 2019, 2018 and 2017, respectively.

The following is a schedule of expected operating lease payments:

Fiscal year ending June 30,	Amount (In thousands)
2020	$ 30,296
2021	22,250
2022	16,217
2023	11,878
2024	7,912
2025 and thereafter	15,018
Total minimum lease payments	$ 103,571

Purchase Commitments. We maintain commitments to purchase inventory from our suppliers as well as goods, services, and other assets in the ordinary course of business. Our liability under these purchase commitments is generally restricted to a forecasted time-horizon as mutually agreed upon between the parties. This forecasted time-horizon can vary among different suppliers. Our estimate of our significant purchase commitments for primarily material, services, supplies and asset purchases is approximately $631.1 million as of June 30, 2019, which are primarily due within the next 12 months. Actual expenditures will vary based upon the volume of the transactions and length of contractual service provided. In addition, the amounts paid under these arrangements may be less in the event that the arrangements are renegotiated or canceled. Certain agreements provide for potential cancellation penalties.

Cash Long-Term Incentive Plan. As of June 30, 2019, we have committed $179.3 million for future payment obligations under our Cash LTI Plan. The calculation of compensation expense related to the Cash LTI Plan includes estimated forfeiture rate assumptions. Cash LTI awards issued to employees under the Cash LTI Plan vest in three or four equal installments, with one-third or one-fourth of the aggregate amount of the Cash LTI award vesting on each anniversary of the grant date over a three or four-year period. In order to receive payments under a Cash LTI award, participants must remain employed by us as of the applicable award vesting date.

Guarantees and Contingencies. We maintain guarantee arrangements available through various financial institutions for up to $50.8 million, of which $44.7 million had been issued as of June 30, 2019, primarily to fund guarantees to customs authorities for value-added tax ("VAT") and other operating requirements of our subsidiaries in Europe, Israel and Asia.

Indemnification Obligations. Subject to certain limitations, we are obligated to indemnify our current and former directors, officers and employees with respect to certain litigation matters and investigations that arise in connection with their service to us. These obligations arise under the terms of our certificate of incorporation, its bylaws, applicable contracts, and Delaware and California law. The obligation to indemnify generally means that we are required to pay or reimburse the individuals' reasonable legal expenses and possibly damages and other liabilities incurred in connection with these matters. For example, we have paid or reimbursed legal expenses incurred in connection with the investigation of our historical stock option practices and the related litigation and government inquiries by several of our current and former directors, officers and employees. Although the maximum potential amount of future payments we could be required to make under the indemnification obligations generally described in this paragraph is theoretically unlimited, we believe the fair value of this liability, to the extent estimable, is appropriately considered within the reserve we have established for currently pending legal proceedings.

We are a party to a variety of agreements pursuant to which we may be obligated to indemnify the other party with respect to certain matters. Typically, these obligations arise in connection with contracts and license agreements or the sale of assets, under which we customarily agrees to hold the other party harmless against losses arising from, or provides customers with other remedies to protect against, bodily injury or damage to personal property caused by our products, non-compliance with our product performance specifications, infringement by our products of third-party intellectual property rights and a breach of warranties, representations and covenants related to matters such as title to assets sold, validity of certain intellectual property rights, non-infringement of third-party rights, and certain income tax-related matters. In each of these circumstances, payment by us is typically subject to the other party making a claim to and cooperating with us pursuant to the procedures specified in the particular contract. This usually allows us to challenge the other party's claims or, in case of breach of intellectual property representations or covenants, to control the defense or settlement of any third-party claims brought against the other party. Further, our obligations under these agreements may be limited in terms of amounts, activity (typically at our option to replace or correct the products or terminate the agreement with a refund to the other party), and duration. In some instances, we may have recourse against third parties and/or insurance covering certain payments made by us.

In addition, we may in limited circumstances enter into agreements that contain customer-specific commitments on pricing, tool reliability, spare parts stocking levels, response time and other commitments. Furthermore, we may give these customers limited audit or inspection rights to enable them to confirm that we are complying with these commitments. If a customer elects to exercise its audit or inspection rights, we may be required to expend significant resources to support the audit or inspection, as well as to defend or settle any dispute with a customer that could potentially arise out of such audit or inspection. To date, we have made no significant accruals in our Consolidated Financial Statements for this contingency. While we have not in the past incurred significant expenses for resolving disputes regarding these types of commitments, we cannot make any assurance that it will not incur any such liabilities in the future.

It is not possible to predict the maximum potential amount of future payments under these or similar agreements due to the conditional nature of our obligations and the unique facts and circumstances involved in each particular agreement. Historically, payments made by us under these agreements have not had a material effect on our business, financial condition, results of operations or cash flows.

NOTE 15 — LITIGATION AND OTHER LEGAL MATTERS

We are named from time to time as a party to lawsuits and other types of legal proceedings and claims in the normal course of our business. Actions filed against us include commercial, intellectual property, customer, and labor and employment related claims, including complaints of alleged wrongful termination and potential class action lawsuits regarding alleged violations of federal and state wage and hour and other laws. In general, legal proceedings and claims, regardless of their merit, and associated internal investigations (especially those relating to intellectual property or confidential information disputes) are often expensive to prosecute, defend or conduct and may divert management's attention and other company resources. Moreover, the results of legal proceedings are difficult to predict, and the costs incurred in litigation can be substantial, regardless of outcome. We believe the amounts provided in our Consolidated Financial Statements are adequate in light of the probable and estimated liabilities. However, because such matters are subject to many uncertainties, the ultimate outcomes are not predictable, and there can be no assurances that the actual amounts required to satisfy alleged liabilities from the matters described above will not exceed the amounts reflected in our Consolidated Financial Statements or will not have a material adverse effect on our results of operations, financial condition or cash flows.

NOTE 16 — DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES

The authoritative guidance requires companies to recognize all derivative instruments and hedging activities, including foreign currency exchange contracts and interest rate lock agreements, (collectively "derivatives") as either assets or liabilities at fair value on the Consolidated Balance Sheets. In accordance with the accounting guidance, we designate foreign currency exchange contracts and interest rate lock agreements as cash flow hedges of certain forecasted foreign currency denominated sales, purchase and spending transactions, and the benchmark interest rate of the corresponding debt financing, respectively.

Our foreign subsidiaries operate and sell our products in various global markets. As a result, we are exposed to risks relating to changes in foreign currency exchange rates. We utilize foreign currency forward exchange contracts and option contracts to hedge against future movements in foreign exchange rates that affect certain existing and forecasted foreign currency denominated sales and purchase transactions, such as the Japanese yen, the euro, the pound sterling and the Israeli new shekel. We routinely hedge our exposures to certain foreign currencies with various financial institutions in an effort to minimize the impact of certain currency exchange rate fluctuations. These currency forward exchange contracts and options, designated as cash flow hedges, generally have maturities of less than 18 months. Cash flow hedges are evaluated for effectiveness monthly, based on changes in total fair value of the derivatives. If a financial counterparty to any of our hedging arrangements experiences financial difficulties or is otherwise unable to honor the terms of the foreign currency hedge, we may experience material losses.

In October 2014, we entered into a series of forward contracts ("Rate Lock Agreements") to lock the benchmark rate on a portion of the 2014 Senior Notes. The Rate Lock Agreements had a notional amount of $1.00 billion in aggregate which matured in the second quarter of the fiscal year ended June 30, 2015. The Rate Lock Agreements were terminated on the date of pricing of the $1.25 billion of 4.650% Senior Notes due in 2024 and we recorded the fair value of $7.5 million as a gain within accumulated other comprehensive income (loss) ("OCI") as of December 31, 2014. We recognized $0.8 million for each of the fiscal years ended June 30, 2019, 2018 and 2017, for the amortization of the gain recognized in accumulated other comprehensive income (loss), which amount reduced the interest expense. As of June 30, 2019, the unamortized portion of the fair value of the forward contracts for the rate lock agreements was $4.0 million.

During the three months ended June 30, 2018, we entered into a series of forward contracts (the "2018 Rate Lock Agreements") to lock the benchmark interest rate prior to expected debt issuances. The objective of the 2018 Rate Lock Agreements was to hedge the risk associated with the variability in interest rates due to the changes in the benchmark rate leading up to the closing of the intended financing, on the notional amount being hedged. The 2018 Rate Lock Agreement had a notional amount of $500.0 million in aggregate, which matured and terminated in the third quarter of fiscal year ended June 30, 2019 and we recorded the fair value of $13.6 million as a loss within OCI. We recognized $0.3 million amortization of the loss recognized in AOCI, which increased the interest expense for the fiscal year ended June 30, 2019. As of June 30, 2019, the unamortized portion of the fair value of the 2018 Rate Lock Agreements was $13.2 million.

For derivatives that are designated and qualify as cash flow hedges, the effective portion of the gains or losses is reported in OCI and reclassified into earnings in the same period or periods during which the hedged transaction affects earnings. Prior to adopting the new accounting guidance for hedge accounting, time value was excluded from the assessment of effectiveness for derivatives designated as cash flow hedges. Time value was amortized on a mark-to-market basis and recognized in earnings over the life of the derivative contract. For derivative contracts executed after adopting the new accounting guidance, the election to include time value for the assessment of effectiveness is made on all forward contracts designated as cash flow hedges. The change in fair value of the derivative are recorded in OCI until the hedged item is recognized in earnings. The assessment of effectiveness of options contracts designated as cash flow hedges continue to exclude time value after adopting the new accounting guidance. The initial value of the component excluded from the assessment of effectiveness are recognized in earnings over the life of the derivative contract. Any difference between change in the fair value of the excluded components and the amounts recognized in earnings are recorded in OCI.

For derivatives that are not designated as cash flow hedges, gains and losses are recognized in other expense (income), net. We use foreign currency forward contracts to hedge certain foreign currency denominated assets or liabilities. The gains and losses on these derivative instruments are largely offset by the changes in the fair value of the assets or liabilities being hedged.

Derivatives in Cash Flow Hedging Relationships: Foreign Exchange and Interest Rate Contracts

The gains (losses) on derivatives in cash flow hedging relationships recognized in OCI for the indicated periods were as follows:

	Year ended June 30,	
(In thousands)	**2019**	**2018**
Derivatives Designated as Hedging Instruments:		
Rate lock agreements:		
Amounts included in the assessment of effectiveness	$ (8,649)	$ —
Foreign exchange contracts:		
Amounts included in the assessment of effectiveness	$ (358)	$ (1,934)
Amounts excluded from the assessment of effectiveness	$ (112)	$ —

The locations and amounts of designated and non-designated derivative’s gains and losses reported in the Consolidated Statements of Operations for the indicated periods were as follows:

	Year ended June 30,							
	2019				2018			
(In thousands)	**Revenues**	**Costs of Revenues and Operating Expense**	**Interest Expense**	**Other Expense (Income), Net**	**Revenues**	**Costs of Revenues**	**Interest Expense**	**Other Expense (Income), Net**
Total amounts presented in the Consolidated Statements of Operations in which the effects of cash flow hedges are recorded	$ 4,568,904	$ 1,869,377	$ 124,604	$ (31,462)	$ 4,036,701	$ 1,446,041	$ 114,376	$ (30,482)
Gains (losses) on Derivatives Designated as Hedging Instruments:								
Rate lock agreements:								
Amount of gains (losses) reclassified from accumulated OCI to earnings	$ —	$ —	$ 424	$ —	$ —	$ —	$ —	$ —
Amount of gains (losses) reclassified from accumulated OCI to earnings as a result that a forecasted transaction is no longer probable of occurring	$ —	$ —	$ —	$ 4	$ —	$ —	$ —	$ —
Foreign exchange contracts:								
Amount of gains (losses) reclassified from accumulated OCI to earnings	$ 4,329	$ (739)	$ —	$ —	$ 955	$ 2,137	$ 754	—
Amount excluded from the assessment of effectiveness recognized in earnings based on an amortization approach	$ —	$ —	$ —	$ —	$ —	$ —	$ —	$ —
Amount excluded from the assessment of effectiveness	$ —	$ —	$ —	$ (323)	$ —	$ —	$ —	$ (567)
Gains (losses) on Derivatives Not Designated as Hedging Instruments:								
Amount of gains (losses) recognized in earnings	$ —	$ —	$ —	$ (23)	$ —	$ —	$ —	$ (2,311)

The U.S. dollar equivalent of all outstanding notional amounts of foreign currency hedge contracts, with maximum remaining maturities of approximatelyten months as of June 30, 2019 and 2018, were as follows:

(In thousands)	As of June 30, 2019	As of June 30, 2018
Cash flow hedge contracts- foreign currency		
Purchase	$ 31,108	$ 8,116
Sell	$ 113,226	$ 115,032
Other foreign currency hedge contracts		
Purchase	$ 257,614	$ 130,442
Sell	$ 273,061	$ 154,442

The locations and fair value of our derivatives reported in our Consolidated Balance Sheets as of the dates indicated below were as follows:

	Asset Derivatives			Liability Derivatives		
		As of June 30, 2019	As of June 30, 2018		As of June 30, 2019	As of June 30, 2018
(In thousands)	Balance Sheet Location	Fair Value		Balance Sheet Location	Fair Value	
Derivatives designated as hedging instruments						
Rate lock contracts	Other current assets	$ —	$ 219	Other current liabilities	$ —	$ 5,158
Foreign exchange contracts	Other current assets	397	3,259	Other current liabilities	2,097	312
Total derivatives designated as hedging instruments		397	3,478		2,097	5,470
Derivatives not designated as hedging instruments						
Foreign exchange contracts	Other current assets	2,160	1,907	Other current liabilities	1,237	1,358
Total derivatives not designated as hedging instruments		2,160	1,907		1,237	1,358
Total derivatives		$ 2,557	$ 5,385		$ 3,334	$ 6,828

The changes in OCI, before taxes, related to derivatives for the indicated periods were as follows:

	Year ended June 30,	
(In thousands)	2019	2018
Beginning balance	$ 2,346	$ 8,126
Amount reclassified to earnings	(4,018)	(3,846)
Net change in unrealized gains or losses	(9,119)	(1,934)
Ending balance	$ (10,791)	$ 2,346

Offsetting of Derivative Assets and Liabilities

We present derivatives at gross fair values in the Consolidated Balance Sheets. We have entered into arrangements with each of our counterparties, which reduce credit risk by permitting net settlement of transactions with the same counterparty under certain conditions. The information related to the offsetting arrangements for the periods indicated was as follows (in thousands):

As of June 30, 2019				Gross Amounts of Derivatives Not Offset in the Consolidated Balance Sheets		
Description	Gross Amounts of Derivatives	Gross Amounts of Derivatives Offset in the Consolidated Balance Sheets	Net Amount of Derivatives Presented in the Consolidated Balance Sheets	Financial Instruments	Cash Collateral Received	Net Amount
Derivatives - assets	$ 2,557	$ —	$ 2,557	$ (1,397)	$ —	$ 1,160
Derivatives - liabilities	$ (3,334)	$ —	$ (3,334)	$ 1,397	$ —	$ (1,937)

As of June 30, 2018				Gross Amounts of Derivatives Not Offset in the Consolidated Balance Sheets		
Description	Gross Amounts of Derivatives	Gross Amounts of Derivatives Offset in the Consolidated Balance Sheets	Net Amount of Derivatives Presented in the Consolidated Balance Sheets	Financial Instruments	Cash Collateral Received	Net Amount
Derivatives - assets	$ 5,385	$ —	$ 5,385	$ (1,888)	$ —	$ 3,497
Derivatives - liabilities	$ (6,828)	$ —	$ (6,828)	$ 1,888	$ —	$ (4,940)

NOTE 17 — SEGMENT REPORTING AND GEOGRAPHIC INFORMATION

ASC 280, Segment Reporting, establishes standards for reporting information about operating segments. Operating segments are defined as components of an enterprise about which separate financial information is evaluated regularly by the chief operating decision maker ("CODM") in deciding how to allocate resources and in assessing performance. Our CODM is our Chief Executive Officer.

As a result of the Orbotech Acquisition, we updated our organizational structure resulting infour reportable segments: Semiconductor Process Control; Specialty Semiconductor Process; PCB, Display and Component Inspection; and Other. The reportable segments are determined based on several factors including, but not limited to, customer base, homogeneity of products, technology, delivery channels and similar economic characteristics.

Semiconductor Process Control.

The Semiconductor Process Control ("SPC") segment offers comprehensive portfolio of inspection, metrology and data analytics products, and related service, which helps integrated circuit manufacturers achieve target yield throughout the entire semiconductor fabrication process-from research and development ("R&D") to final volume production. Our differentiated products and services are designed to provide comprehensive solutions that help our customers accelerate development and production ramp cycles, achieve higher and more stable semiconductor die yields and improve their overall profitability. This reportable segment is comprised of two operating segments.

Specialty Semiconductor Process

The Specialty Semiconductor Manufacturing segment develops and sells advanced vacuum deposition and etching process tools, which are used by a broad range of specialty semiconductor customers, including manufacturers of microelectromechanical systems ("MEMS"), radio frequency ("RF") communication chips, and power semiconductors for automotive and industrial applications. This reportable segment is comprised of one operating segment.

PCB, Display and Component Inspection

The PCB, Display and Component Inspection segment enable electronic device manufacturers to inspect, test and measure printed circuit boards ("PCBs"), flat panel displays ("FPDs") and ICs to verify their quality, pattern the desired electronic circuitry on the relevant substrate and perform three-dimensional shaping of metalized circuits on multiple surfaces. This segment also engages in the development and marketing of character recognition solutions to banks, financial and other payment processing institutions and healthcare providers. This reportable segment is comprised of two operating segments.

Other

We engage in the research, development and marketing of products for the deposition of thin film coating of various materials on crystalline silicon photovoltaic wafers for solar energy panels. This reportable segment is comprised of one operating segment.

The CODM assesses the performance of each operating segment and allocates resources to those segments based on total revenue and segment gross margin and does not evaluate the segments using discrete asset information. Segment gross margin excludes corporate allocation and effects of foreign exchange rates, amortization of intangible assets, amortization of inventory fair value adjustments, and transaction costs associated with our acquisitions related to costs of revenues.

The following is a summary of results for each of our four reportable segments for the indicated periods:

	Year ended June 30,		
(In thousands)	**2019**	**2018**	**2017**
Semiconductor Process Control:			
Revenue	$ 4,080,822	$ 3,944,015	$ 3,408,876
Segment gross margin	$ 2,590,434	$ 2,554,223	$ 2,160,747
Specialty Semiconductor Process:			
Revenue	$ 151,164	$ —	$ —
Segment gross margin	$ 78,800	$ —	$ —
PCB, Display and Component Inspection:			
Revenue	$ 332,810	$ 92,516	$ 71,557
Segment gross margin	$ 155,765	$ 38,428	$ 30,914
Other:			
Revenue	$ 4,676	$ —	$ —
Segment gross margin	$ 1,102	$ —	$ —
Totals:			
Revenue	$ 4,569,472	$ 4,036,531	$ 3,480,433
Segment gross margin	$ 2,826,101	$ 2,592,651	$ 2,191,661

The following table reconciles total reportable segment revenue to total revenue for the indicated periods:

	Year ended June 30,		
(In thousands)	**2019**	**2018**	**2017**
Total revenue for reportable segments	$ 4,569,472	$ 4,036,531	$ 3,480,433
Corporate allocation and effects of foreign exchange rates	(568)	170	(419)
Total revenue	$ 4,568,904	$ 4,036,701	$ 3,480,014

The following table reconciles total segment gross margin to total income before income taxes for the indicated periods:

	Year ended June 30,		
(In thousands)	**2019**	**2018**	**2017**
Total segment gross margin	$ 2,826,101	$ 2,592,651	$ 2,191,661
Merger and acquisition-related charges, corporate allocation, and effects of foreign exchange rates(1)	126,574	1,991	(2,138)
Research and development	711,030	608,531	526,688
Selling, general and administrative	599,124	442,304	388,211
Interest expense	124,604	114,376	122,476
Other expense (income), net	(31,462)	(30,482)	(16,822)
Income before income taxes	$ 1,296,231	$ 1,455,931	$ 1,173,246

(1) Acquisition-related charges primarily include amortization of intangible assets, amortization of inventory fair value adjustments, and other acquisition-related costs classified or presented as part of costs of revenues. Merger-related charges are associated with the merger agreement terminated during the fiscal year ended June 30, 2017 between KLA and Lam Research Corporation ("Lam") primarily includes employee retention-related expenses associated with costs of revenues.

Our significant operations outside the United States include manufacturing facilities in China, Germany, Israel and Singapore and sales, marketing and service offices in Japan, the rest of the Asia Pacific region and Europe. For geographical revenue reporting, revenues are attributed to the geographic location in which the customer is located. Long-lived assets consist of land, property and equipment, net and are attributed to the geographic region in which they are located.

The following is a summary of revenues by geographic region, based on ship-to location, for the indicated periods:

	Year ended June 30,					
(Dollar amounts in thousands)	2019		2018		2017	
Revenues:						
China	$ 1,215,807	27%	$ 643,033	16%	$ 412,098	12%
Taiwan	1,105,726	24%	636,363	16%	1,104,307	32%
North America	596,452	13%	494,330	12%	523,024	14%
Korea	584,091	13%	1,178,601	29%	688,094	20%
Japan	581,529	13%	638,358	16%	351,202	10%
Europe and Israel	305,924	7%	300,883	7%	263,789	8%
Rest of Asia	179,375	3%	145,133	4%	137,500	4%
Total	$ 4,568,904	100%	$ 4,036,701	100%	$ 3,480,014	100%

The following is a summary of revenues by major products for the indicated periods:

	Year ended June 30,					
(Dollar amounts in thousands)	2019		2018		2017	
Revenues:						
Wafer Inspection	$ 1,657,753	36%	$ 1,731,809	43%	$ 1,600,889	46%
Patterning	1,134,409	25%	1,116,022	28%	917,178	26%
Specialty Semiconductor Process	129,854	3%	—	—%	—	—%
PCB, Display and Component Inspection	238,275	5%	85,836	2%	66,399	2%
Services	1,176,661	26%	876,030	22%	776,080	22%
Other	231,952	5%	227,004	5%	119,468	4%
Total	$ 4,568,904	100%	$ 4,036,701	100%	$ 3,480,014	100%

Wafer Inspection, and Patterning products are offered in Semiconductor Process Control segment. Services are offered in multiple segments. Other includes primarily refurbished systems, remanufactured legacy systems, and enhancements and upgrades for previous-generation products which are part of Semiconductor Process Control segment.

In the fiscal year ended June 30, 2019, one customer accounted for approximately 15% of total revenues. In the fiscal year ended June 30, 2018, one customer accounted for approximately 21% of total revenues. In the fiscal year ended June 30, 2017, two customers accounted for approximately 23% and 16% of total revenues.

Long-lived assets by geographic region as of the dates indicated below were as follows:

(In thousands)	As of June 30, 2019	2018
Long-lived assets:		
United States	$ 253,255	$ 187,352
Israel	66,082	26,980
Europe	62,027	12,924
Singapore	49,523	47,009
Rest of Asia	17,912	12,041
Total	$ 448,799	$ 286,306

NOTE 18 — RELATED PARTY TRANSACTIONS

During the fiscal years ended June 30, 2019, 2018 and 2017, we purchased from, or sold to, several entities, where one or more of our executive officers or members of our Board of Directors, or their immediate family members were, during the periods presented, an executive officer or a board member of a subsidiary, including Citrix Systems, Inc., Integrated Device Technology, Inc., Juniper Networks, Inc., Keysight Technologies, Inc., MetLife Insurance K.K., NetApp, Inc., and Proofpoint, Inc.

The following table provides the transactions with these parties for the indicated periods (for the portion of such period that they were considered related):

(In thousands)	Year ended June 30, 2019	2018	2017
Total revenues	$ 2,402	$ 474	$ 16
Total purchases[(1)]	$ 2,881	$ 14,723	$ 1,048

(1) During the fourth quarter of the fiscal year ended June 30, 2018, we acquired a product line from Keysight Technologies, Inc. ("Keysight") and entered into a transition services agreement pursuant to which Keysight provides certain manufacturing services to us. For additional details refer to Note 6, "Business Combinations". We recorded the manufacturing services fees under the transition services agreement with Keysight within cost of revenues, which was immaterial for the fiscal year ended June 30, 2019 and 2018.

Our receivable and payable balances from these parties were immaterial as ofJune 30, 2019 and June 30, 2018.

NOTE 19 — SUBSEQUENT EVENTS

On August 1, 2019, we announced that our Board of Directors had declared a quarterly cash dividend of$0.75 per share to be paid onSeptember 3, 2019 to stockholders of record as of the close of business on August 15, 2019.

NOTE 20 — QUARTERLY CONSOLIDATED RESULTS OF OPERATIONS (UNAUDITED)

The following is a summary of our quarterly consolidated results of operations (unaudited) for the fiscal years ended June 30,2019 and 2018.

(In thousands, except per share data)	First Quarter Ended September 30, 2018	Second Quarter Ended December 31, 2018	Third Quarter Ended March 31, 2019	Fourth Quarter Ended June 30, 2019
Total revenues[(1)(2)]	$ 1,093,260	$ 1,119,898	$ 1,097,311	$ 1,258,435
Gross margin	$ 711,873	$ 711,638	$ 610,366	$ 665,650
Net income attributable to KLA	$ 395,944	$ 369,100	$ 192,728	$ 217,845
Net income attributable to KLA per share:				
Basic[(4)]	$ 2.55	$ 2.43	$ 1.23	$ 1.36
Diluted[(4)]	$ 2.54	$ 2.42	$ 1.23	$ 1.35

(In thousands, except per share data)	First Quarter Ended September 30, 2017	Second Quarter Ended December 31, 2017	Third Quarter Ended March 31, 2018	Fourth Quarter Ended June 30, 2018
Total revenues	$ 969,581	$ 975,822	$ 1,021,294	$ 1,070,004
Gross margin	$ 616,464	$ 628,820	$ 652,938	$ 692,438
Net income (loss) attributable to KLA[3]	$ 280,936	$ (134,319)	$ 306,881	$ 348,767
Net income (loss) attributable to KLA per share:				
Basic[4]	$ 1.79	$ (0.86)	$ 1.96	$ 2.24
Diluted[4]	$ 1.78	$ (0.86)	$ 1.95	$ 2.22

(1) On July 1, 2018, we adopted ASC 606 using the modified retrospective transition approach. Results for reporting periods beginning after June 30, 2018 are presented under ASC 606, while prior period amounts are not adjusted and continue to be reported in accordance with the previous revenue guidance in ASC 605.

(2) On February 20, 2019, we completed the acquisition of Orbotech for total consideration of approximately$3.26 billion. The operating results of Orbotech have been included in our Consolidated financial statements for the fiscal year ended June 30, 2019 from the Acquisition Date. For additional details, refer to Note 6 “Business Combinations” to our Consolidated Financial Statements.

(3) We had a net loss of $134.3 million in the second quarter of the fiscal year endedJune 30, 2018, primarily as a result of the income tax effects from the enacted tax reform legislation through the Tax Cuts and Jobs Act, which was signed into law on December 22, 2017.

(4) Basic and diluted net income (loss) per share are computed independently for each of the quarters presented based on the weighted-average basic and fully diluted shares outstanding for each quarter. Therefore, the sum of quarterly basic and diluted net income (loss) per share information may not equal annual basic and diluted net income (loss) per share.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of KLA Corporation:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of KLA Corporation (formerly known as KLA-Tencor Corporation) and its subsidiaries (the "Company") as of June 30, 2019 and 2018, and the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended June 30, 2019, including the related notes and financial statement schedule listed in the index appearing under Item 15(a)(2) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of June 30, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of June 30, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended June 30, 2019 in conformity with accounting principles generally accepted in the United States of America. Also, in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of June 30, 2019, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the COSO.

Change in Accounting Principle

As discussed in Notes 1 and 2 to the consolidated financial statements, the Company changed the manner in which it accounts for revenues from contracts with customers in 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As described in Management's Report on Internal Control over Financial Reporting, management has excluded Orbotech, Ltd. from its assessment of internal control over financial reporting as of June 30, 2019 because it was acquired by the Company in a purchase business combination during 2019. We have also excluded Orbotech, Ltd. from our audit of internal control over financial reporting. Orbotech, Ltd. is a wholly-owned subsidiary whose total assets and total revenues excluded from management's assessment and our audit of internal control over financial reporting were $917.6 million and $388.9 million, respectively, of the related consolidated financial statement amounts as of and for the year ended June 30, 2019.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

Critical Audit Matters

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

Acquisition of Orbotech, Ltd. - Valuation of Intangible Assets

As described in Notes 1 and 6 to the consolidated financial statements, the Company completed the acquisition of Orbotech, Ltd. ("Orbotech") for consideration of approximately $3.26 billion in 2019, which resulted in approximately $1.55 billion of intangible assets being recorded. Management applied significant judgment in estimating the fair value of the intangible assets acquired, which involved the use of significant estimates and assumptions with respect to the revenue growth rates, technology migration curves, discount rates, royalty rates and customer attrition rates.

The principal considerations for our determination that performing procedures relating to the valuation of the intangible assets acquired in the acquisition of Orbotech is a critical audit matter are there was a high degree of auditor judgment and subjectivity in applying procedures relating to the fair value measurement of intangible assets acquired due to the significant amount of judgment by management when developing the estimate. Significant audit effort was required in performing procedures and evaluating the significant assumptions relating to the estimate, including the revenue growth rates and the technology migration curves; and the audit effort involved the use of professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained from these procedures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the acquisition accounting, including controls over management's valuation of intangible assets and controls over development of the assumptions related to the valuation of the intangible assets. These procedures also included, among others, reading the purchase agreement, and testing management's process for estimating the fair value of intangible assets. Testing management's process included evaluating the appropriateness of the valuation methods and the reasonableness of significant assumptions, including the revenue growth rates and the technology migration curves for the intangible assets, and using professionals with specialized skill and knowledge to assist with the evaluation. Evaluating the reasonableness of the revenue growth rates involved considering the past performance of the acquired business as well as economic and industry forecasts. The technology migration curves were evaluated by considering the revenue attribution between existing technology and in-process research and development based on the assessment of the separation of forecasted future revenue between developed products and new generation products together with the technology carryover rate.

Uncertain Tax Positions related to the Orbotech Acquisition

As described in Note 13 to the consolidated financial statements, the Company has recorded liabilities for gross uncertain tax positions of approximately $60.8 million at June 30, 2019 in connection with acquisitions completed by the Company. The majority of the uncertain tax positions were related to the Orbotech acquisition. The uncertain tax positions for the Orbotech acquisition relate to multiple jurisdictions, including Israel, which as further discussed in Note 13 is comprised principally of a liability for an uncertain tax position arising from the assessment Orbotech received from the Israel Tax Authority ("ITA") with respect to its fiscal years 2012 through 2014. The calculation of the Company's tax liabilities including liabilities associated with the Orbotech acquisition, involves dealing with uncertainties in the application of complex tax regulations. The evaluation is based on factors including, but not limited to, changes in facts or circumstances, changes in tax law, effectively settled issues under audit and new audit activity.

The principal considerations for our determination that performing procedures relating to the uncertain tax positions related to the Orbotech acquisition is a critical audit matter are there was significant judgment by management when evaluating uncertain tax positions, including a high degree of estimation uncertainty relative to the application of complex tax regulations and evaluation of factors including changes in facts or circumstances, changes in tax law, effectively settled issues under audit and new audit activity. This in turn led to significant auditor judgment and effort in performing procedures to evaluate the timely identification and accurate measurement of uncertain tax positions. Also, the evaluation of audit evidence available to support the tax liabilities for uncertain tax positions is complex and required significant auditor judgment as the nature of the evidence is often highly subjective, and the audit effort involved the use of professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained from these procedures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the identification and recognition of the liability for uncertain tax positions, and controls addressing completeness of the uncertain tax positions, as well as controls over measurement of the liability. These procedures also included, among others, (i) testing and evaluating the information used in the calculation of the liability for uncertain tax positions related to the Orbotech acquisition, including international filing positions, the related final tax returns and communications between the Company and the tax authorities; (ii) testing the calculation of the liability for uncertain tax positions by jurisdiction, including management's assessment of the technical merits of tax positions related to the Orbotech matters and estimates of the amount of tax benefit expected to be sustained for the matters; (iii) testing the completeness of management's assessment of both the identification of uncertain tax positions and possible outcomes of each uncertain tax position; and (iv) evaluating the status and results of income tax audits with other relevant tax authorities. Professionals with specialized skill and knowledge were used to assist in the evaluation of the completeness and measurement of the uncertain tax positions related to the Orbotech acquisition, including evaluating the reasonableness of management's assessment of whether tax positions are more-likely-than-not of being sustained, the amount of potential benefit to be realized, and the application of relevant tax laws.

/s/ PricewaterhouseCoopers LLP
San Jose, California
August 16, 2019

We have served as the Company's auditor since 1977.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) ("Disclosure Controls") as of the end of the period covered by this Annual Report on Form 10-K (this "Report") required by Exchange Act Rules 13a-15(b) or 15d-15(b). The controls evaluation was conducted under the supervision and with the participation of our management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"). Based on this evaluation, the CEO and CFO have concluded that as of the end of the period covered by this Report our Disclosure Controls were effective at a reasonable assurance level.

Attached as exhibits to this Report are certifications of the CEO and CFO, which are required in accordance with Rule 13a-14 of the Exchange Act. This Controls and Procedures section includes the information concerning the controls evaluation referred to in the certifications, and it should be read in conjunction with the certifications for a more complete understanding of the topics presented.

Definition of Disclosure Controls

Disclosure Controls are controls and procedures designed to reasonably assure that information required to be disclosed in our reports filed under the Exchange Act, such as this Report, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure Controls are also designed to reasonably assure that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate to allow timely decisions regarding required disclosure. Our Disclosure Controls include components of our internal control over financial reporting, which consists of control processes designed to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements in accordance with generally accepted accounting principles in the United States. To the extent that components of our internal control over financial reporting are included within our Disclosure Controls, they are included in the scope of our annual controls evaluation.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Under the supervision and with the participation of our management, including our CEO and CFO, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on criteria established in the framework in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, our management concluded that our internal control over financial reporting was effective as of June 30, 2019.

Management excluded Orbotech, Ltd ("Orbotech"), which was acquired by us on February 20, 2019, from its assessment of internal control over financial reporting as of June 30, 2019. Total assets and revenues of Orbotech excluded from our assessment of internal control over financial reporting, were $917.6 million as of June 30, 2019, and $388.9 million for the year ended June 30, 2019, respectively.

The effectiveness of our internal control over financial reporting as ofJune 30, 2019 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears in Item 8, "Financial Statements and Supplementary Data" in this Annual Report on Form 10-K.

Limitations on the Effectiveness of Controls

Our management, including the CEO and CFO, does not expect that our Disclosure Controls or internal control over financial reporting will prevent all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within the Company have been detected. These inherent limitations include the realities that judgments in decision making can be faulty and that breakdowns can occur because of simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving our stated goals under all potential future conditions. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the fourth quarter of the fiscal year ended June 30, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

For the information required by this Item, see "Information About the Directors and the Nominees," "Information About Executive Officers," "Security Ownership of Certain Beneficial Owners and Management—Section 16(a) Beneficial Ownership Reporting Compliance," "Our Corporate Governance Practices—Standards of Business Conduct; Whistleblower Hotline and Website" and "Information About the Board of Directors and Its Committees—Audit Committee" in the Proxy Statement, which is incorporated herein by reference.

ITEM 11. EXECUTIVE COMPENSATION

For the information required by this Item, see "Executive Compensation and Other Matters," "Director Compensation" and "Information About the Board of Directors and Its Committees—Compensation Committee—Risk Considerations in Our Compensation Programs" in the Proxy Statement, which is incorporated herein by reference.

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

For the information required by this Item, see "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information" in the Proxy Statement, which is incorporated herein by reference.

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

For the information required by this Item, see "Certain Relationships and Related Transactions" and "Information About the Board of Directors and Its Committees —The Board of Directors" in the Proxy Statement, which is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

For the information required by this Item, see "Proposal Two: Ratification of Appointment of PricewaterhouseCoopers LLP as Our Independent Registered Public Accounting Firm for the Fiscal Year Ending June 30, 2020" in the Proxy Statement, which is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as part of this Annual Report on Form 10-K:

1. Financial Statements:

The following financial statements and schedules of the Registrant are contained in Item 8, “Financial Statements and Supplementary Data” of this Annual Report on Form 10-K:

2. Financial Statement Schedule:

The following financial statement schedule of the Registrant is filed as part of this Annual Report on Form 10-K and should be read in conjunction with the financial statements:

All other schedules are omitted because they are either not applicable or the required information is shown in the Consolidated Financial Statements or notes thereto.

3. Exhibits

The information required by this Item is set forth in the Exhibit Index following Schedule II included in this Annual Report.

SIGNATURES

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

KLA Corporation

August 16, 2019	By:	/S/ RICHARD P. WALLACE
(Date)		**Richard P. Wallace**
		President and Chief Executive Officer

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

Signature	Title	Date
/s/ RICHARD P. WALLACE **Richard P. Wallace**	President, Chief Executive Officer and Director (principal executive officer)	August 16, 2019
/s/ BREN D. HIGGINS **Bren D. Higgins**	Executive Vice President and Chief Financial Officer (principal financial officer)	August 16, 2019
/s/ VIRENDRA A. KIRLOSKAR **Virendra A. Kirloskar**	Senior Vice President and Chief Accounting Officer (principal accounting officer)	August 16, 2019
/s/ EDWARD W. BARNHOLT **Edward W. Barnholt**	Chairman of the Board and Director	August 15, 2019
/s/ ROBERT M. CALDERONI **Robert M. Calderoni**	Director	August 14, 2019
/s/ JOHN T. DICKSON **John T. Dickson**	Director	August 14, 2019
/s/ JENEANNE HANLEY **Jeneanne Hanley**	Director	August 15, 2019
/s/ EMIKO HIGASHI **Emiko Higashi**	Director	August 15, 2019
/s/ KEVIN J. KENNEDY **Kevin J. Kennedy**	Director	August 15, 2019
/s/ GARY B. MOORE **Gary B. Moore**	Director	August 15, 2019
/s/ KIRAN M. PATEL **Kiran M. Patel**	Director	August 14, 2019
Victor Peng	Director	
/s/ ANA G. PINCZUK **Ana G. Pinczuk**	Director	August 14, 2019
/s/ ROBERT A. RANGO **Robert A. Rango**	Director	August 15, 2019

SCHEDULE II

Valuation and Qualifying Accounts

(In thousands)	Balance at Beginning of Period	Charged to Expense	Deductions/ Adjustments	Balance at End of Period
Fiscal Year Ended June 30, 2017:				
Allowance for Doubtful Accounts	$ 21,672	$ —	$ (36)	$ 21,636
Allowance for Deferred Tax Assets	$ 104,968	$ —	$ 15,740	$ 120,708
Fiscal Year Ended June 30, 2018:				
Allowance for Doubtful Accounts	$ 21,636	$ —	$ (9,997)	$ 11,639
Allowance for Deferred Tax Assets	$ 120,708	$ 1,152	$ 41,710	$ 163,570
Fiscal Year Ended June 30, 2019:				
Allowance for Doubtful Accounts	$ 11,639	$ 364	$ (2)	$ 12,001
Allowance for Deferred Tax Assets	$ 163,570	$ —	$ 3,001	$ 166,571

KLA CORPORATION

EXHIBIT INDEX

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Form	File No.	Exhibit Number	Filing Date
3.1	Restated Certificate of Incorporation				
3.4	Amended and Restated Bylaws of the Company effective as of July 15, 2019	8-K	No. 000-09992	3.2	July 16, 2019
4.1	Indenture dated November 6, 2014 between KLA-Tencor Corporation and Wells Fargo Bank, National Association, as trustee	8-K	No. 000-09992	4.1	November 7, 2014
4.2	Form of Officer's Certificate setting forth the terms of the Notes (with form of Notes attached)	8-K	No. 000-09992	4.2	November 7, 2014
4.2	Form of Officer's Certificate setting forth the terms of the 4.100% Senior Notes due 2029 and 5.000% Senior Notes due 2049 (with form of Notes attached)	8-K	No. 000-09992	4.2	March 20, 2019
10.1	2004 Equity Incentive Plan (as amended and restated (as of November 7, 2018))*	S-8	No. 228283	10.1	November 8, 2018
10.2	Notice of Grant of Restricted Stock Units*	10-Q	No. 000-09992	10.18	May 4, 2006
10.3	Form of Restricted Stock Unit Award Notification (Performance-Vesting) (approved August 2014)*	8-K	No. 000-09992	10.49	August 12, 2014
10.4	Form of Restricted Stock Unit Award Notification (Service-Vesting) (approved August 2012)*	8-K	No. 000-09992	10.1	August 2, 2012
10.5	Form of Restricted Stock Unit Award Notification (Service-Vesting; 25% Annual Vesting) (approved August 2014)*	8-K	No. 000-09992	10.50	August 12, 2014
10.6	Form of Restricted Stock Unit Award Notification (Service-Vesting; 50% Vesting Year Two, 50% Vesting Year Four) (approved August 2014)*	8-K	No. 000-09992	10.51	August 12, 2014
10.7	Form of Restricted Stock Unit Agreement for U.S. Employees (with Dividend Equivalents) (approved August 2014)*	8-K	No. 000-09992	10.46	August 12, 2014
10.8	Form of Restricted Stock Unit Agreement for Non-U.S. Employees (with Dividend Equivalents) (approved August 2014)*	8-K	No. 000-09992	10.48	August 12, 2014
10.9	Executive Deferred Savings Plan (as amended and restated effective July 31, 2019)*				
10.10	Credit Agreement, dated as of November 30, 2017 among KLA-Tencor Corporation, the lenders from time to time and JPMorgan Chase Bank, N.A., as administrative agent	8-K	No. 000-09992	10.1	November 30, 2017
10.11	Amended and Restated Executive Severance Plan*	8-K	No. 000-09992	10.1	October 20, 2016
10.12	Amended and Restated 2010 Executive Severance Plan	10-Q	No. 000-09992	10.45	October 22, 2015
10.13	Calendar Year 2019 Executive Incentive Plan*+				
10.14	Equity Remuneration Plan for Key Employees of Orbotech Ltd. and its Affiliates and Subsidiaries*	S-8	No. 333-230112	10.1	March 7, 2019

Exhibit Number	Exhibit Description	Incorporated by Reference Form	File No.	Exhibit Number	Filing Date
10.15	Orbotech Ltd. 2010 Equity-Based Incentive Plan*	S-8	No. 333-230112	10.2	March 7, 2019
10.16	Orbotech Ltd. 2015 Equity-Based Incentive Plan*	S-8	No. 333-230112	10.3	March 7, 2019
10.17	Employment Agreement dated February 20, 2019 by and between Orbotech Ltd. and Amichai Steimberg*+	10-Q	No. 000-09992	10.1	May 8, 2019
10.18	Employment Agreement dated February 20, 2019 by and between Orbotech Ltd. and Asher Levy*+	10-Q	No. 000-0992	10.2	May 8, 2019
21.1	List of Subsidiaries				
23.1	Consent of Independent Registered Public Accounting Firm				
31.1	Certification of Chief Executive Officer under Rule 13a-14(a) of the Securities Exchange Act of 1934				
31.2	Certification of Chief Financial Officer under Rule 13a-14(a) of the Securities Exchange Act of 1934				
32	Certification of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. Section 1350				
101.INS	XBRL Instance Document				
101.SCH	XBRL Taxonomy Extension Schema Document				
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB	XBRL Taxonomy Extension Label Linkbase Document				
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document				

* Denotes a management contract, plan or arrangement.

\+ Confidential treatment has been requested as to a portion of this exhibit.

ITEM 16. FORM 10-K SUMMARY

None.

Exhibit 3.1

RESTATED CERTIFICATE OF INCORPORATION

OF

KLA CORPORATION

KLA Corporation, a corporation organized and existing under the laws of the State of Delaware, hereby certifies as follows:

1. The name of the corporation is KLA Corporation. The date of filing its original Certificate of Incorporation with the Secretary of State of the State of Delaware was July 9, 1975. The corporation was originally incorporated under the name KLA Corporation.

2. This Restated Certificate of Incorporation of the corporation attached hereto as Exhibit "1", which is incorporated herein by this reference, and which restates and integrates and does not further amend the provisions of the Certificate of Incorporation of this corporation as heretofore amended, supplemented and/or restated, has been duly adopted by the corporation's Board of Directors in accordance with Sections 242 and 245 of the General Corporation Law of the State of Delaware, with approval of the corporation's stockholders not being required under Section 245 of the General Corporation Law of the State of Delaware, and there is no discrepancy between those provisions and the provisions of this Restated Certificate of Incorporation.

IN WITNESS WHEREOF, the corporation has caused this Restated Certificate of Incorporation to be signed by its duly authorized officer and the foregoing facts stated herein are true and correct.

KLA CORPORATION

By: /s/ Richard P. Wallace
Name: Richard P. Wallace
Title: Chief Executive Officer

EXHIBIT “1”

RESTATED CERTIFICATE OF INCORPORATION

OF

KLA CORPORATION

1: The name of the corporation (hereinafter called the “corporation”) is KLA Corporation.

2: The address, including street, number, city and county, of the registered office of the corporation in the State of Delaware is 1209 Orange Street, City of Wilmington, County of New Castle 19801, and the name of the registered agent of the corporation in the State of Delaware at such address is The Corporation Trust Company.

3: The nature of the business and of the purposes to be conducted and promoted by the corporation is as follows:

To manufacture, purchase or otherwise acquire, import and export, invest in, own, mortgage, pledge, sell, assign, and transfer or otherwise dispose of, trade, deal in and deal with goods, wares, merchandise and personal property of every kind, nature and description, both on its own account and for others.

To render services of every kind, nature and description (including, but not limited to, consulting, financial, engineering, research and similar or related services) both on its own account and for others.

To develop, obtain, purchase or otherwise acquire, and to hold, own, use, sell, limit or otherwise dispose of processes, formulae, inventions and devices of every kind, nature and description, whether patented or not; and to apply for and obtain letters patent under the laws of the United States or of any foreign country.

To borrow or lend money, and to make and issue notes, bonds, debentures, obligations, and evidences of indebtedness of all kinds, whether secured by mortgage, pledge, or otherwise, without limit as to amount, and to secure the same by mortgage, pledge, or otherwise and generally to make and perform agreements and contracts of every kind and description.

To subscribe for, take, acquire, hold, sell, exchange and deal in shares, stock, bonds, obligations and securities of any corporation, government, authority or company; to form, promote, subsidize and assist companies, syndicates, or partnerships of all kinds, and to finance and refinance the same; and to guarantee the obligations of other persons, firms, or corporations.

In general, to do any act necessary or incidental to the conduct of said businesses and in the transaction thereof, to carry on any other business, whether manufacturing or otherwise, and to do any other thing permitted by all present and future laws of the State of Delaware applicable to business corporations.

4: The aggregate number of shares of stock which the corporation shall have authority to issue shall be 501,000,000 shares, with the par value of each of such shares being $0.001. These shares shall be divided into the following classes:

(1) 500,000,000 shares shall be designated as Common Stock; and

(2) 1,000,000 shares shall be designated as Preferred Stock.

The Board of Directors is authorized, subject to any limitations prescribed by law, to provide for the issuance of shares of Preferred Stock in series, and by filing a certificate pursuant to the applicable law of the State of Delaware, to establish from time to time the number of shares to be included in each such series, and to fix the designation, powers, preferences, and rights of the shares of each such series and any qualifications, limitations or restrictions thereof. The number of authorized shares of Preferred Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by the affirmative vote of the holders of a majority of the then outstanding shares of Common Stock, without a vote of the holders of the Preferred Stock, or of any series thereof, unless a vote of any such holders is required pursuant to the certificate or certificates establishing the series of Preferred Stock.

5: The corporation is to have perpetual existence.

6: Whenever a compromise or arrangement is proposed between this corporation and its creditors or any class of them and/or between this corporation and its stockholders or any class of them, any court of equitable jurisdiction with the State of Delaware may, on the application in a summary way of this corporation or of any creditor or stockholder thereof or on the application of any receiver or receivers appointed for this corporation under the provisions of Section 291 of Title 8 of the Delaware Code or on the application of trustees in dissolution or of any receiver or receivers appointed for this corporation under the provisions of Section 279 of Title 8 of the Delaware Code order a meeting of the creditors or class of creditors, and/or of the stockholders or class of stockholders of this corporation, as the case may be, to be summoned in such manner as the said court directs. If a majority in number representing three-fourths in value of the creditors or class of creditors and/or of the stockholders or class of stockholders of this corporation; as the case may be, agree to any compromise or arrangement and to any reorganization of this corporation as consequence of such compromise or arrangement, the said compromise or arrangement and the said reorganization shall, if sanctioned by the court to which the said application has been made, be binding on all the creditors or class of creditors, and/or on all the stockholders or class of stockholders, of this corporation, as the case may be, and also on this corporation.

7: For the management of the business and for the conduct of the affairs of the corporation, and in further definition, limitation and regulation of the powers of the corporation and of its directors and of its stockholders or any class thereof, as the case may be, it is further provided:

1. (%3) The business and affairs of the corporation shall be managed by or under the direction of the Board of Directors. In addition to the powers and authority expressly conferred upon them by the General Corporation Law of the State of Delaware or by this Certificate of Incorporation or the By-Laws of the corporation, the directors are hereby empowered to exercise all such powers and do all such acts and things as may be exercised or done by the corporation.

(a) The number of directors shall initially be 6 and, thereafter, shall be fixed from time to time exclusively by the Board of Directors pursuant to a resolution adopted by a majority of the total number of authorized directors (whether or not there exist any vacancies in previously authorized directorships at the time any such resolution is presented to the Board for adoption).

(b) Each director shall be elected to hold office for a one-year term expiring at the next annual meeting of stockholders; provided, however, no terms in effect prior to the effective date of this amendment (including the terms of the directors elected at the 2012 annual meeting of stockholders) shall be shortened. Notwithstanding the foregoing, however, subject to the rights of the holders of any series of Preferred Stock then outstanding, (i) at the 2013 annual meeting of stockholders, the directors whose terms expire at that meeting (i.e., the directors designated as Class III directors) shall be elected to hold office for one-year terms expiring at the 2014 annual meeting of stockholders, (ii) at the 2014 annual meeting of stockholders, the directors whose terms expire at that meeting (i.e., the directors designated as Class I and Class III directors) shall be elected to hold office for one-year terms expiring at the 2015 annual meeting of stockholders, and (iii) at the 2015 annual meeting of stockholders and each annual meeting of stockholders thereafter, all directors shall be elected to hold office for a one-year term expiring at the next annual meeting of stockholders. Each director shall hold office until his or her successor is duly elected and qualified, or until his or her death, resignation or removal.

(c) Subject to the rights of the holders of any series of Preferred Stock then outstanding, newly created directorships resulting from any increase in the authorized number of directors or any vacancies in the Board of Directors resulting from death, resignation, retirement, disqualification or other cause (other than removal from office by a vote of stockholders) may be filled only by a majority vote of the directors then in office, though less than a quorum, and directors so chosen shall hold office for the remainder of the full term of the class of directors in which such new directorship was created or such vacancy occurred and until such director's successor shall have been duly elected and qualified, or until his or her death, resignation or removal. No decrease in the number of directors constituting the Board of Directors shall shorten the term of any incumbent director.

(d) Subject to the rights of the holders of any series of Preferred Stock then outstanding, (i) at or prior to the 2015 annual meeting of stockholders, any director or directors, or the entire Board of Directors, may be removed, but only for cause, by the holders of at least a majority of the voting power of all of the then outstanding shares of capital stock of the corporation then entitled to vote generally in the election of directors, voting together as a single class at a meeting of stockholders called for that purpose, and (ii) at any time after the 2015 annual meeting of stockholders, any director or directors, or the entire Board of Directors, may be removed, with or without cause, by the holders of at least a majority of the voting power of all of the then outstanding shares of capital stock of the corporation then entitled to vote generally in the election of directors, voting together as a single class at a meeting of stockholders called for that purpose. Vacancies in the Board of Directors resulting from such removal may be filled by (A) a majority of the directors then in office, though less than a quorum, or (B) the stockholders at a special meeting of the stockholders properly called for that purpose, by the vote of the holders of a majority of the shares entitled to vote at such special meeting. Directors so chosen in accordance with clause (A) of the preceding sentence shall hold office for the remainder of the full term of the class of directors in which such vacancy occurred and until such director's successor shall have been duly elected and qualified, or until his or her death, resignation or removal; directors so chosen in accordance with clause (B) of the preceding sentence shall hold office for a term expiring at the next annual meeting of stockholders immediately following such director's election to the Board of Directors.

2. After the original or other By-Laws of the corporation have been adopted, amended, or repealed, as the case may be, in accordance with the provisions of Section 109 of the General Corporation Law of the State of Delaware, and, after the corporation has received any payment for any of its stock, the power to adopt, amend, or repeal the By-Laws of the corporation may be exercised by the Board of Directors of the corporation.

3. Whenever the corporation shall be authorized to issue only one class of stock, each outstanding share shall entitle the holder thereof to notice of, and the right to vote at, any meeting of stockholders. Whenever the corporation shall be authorized to issue more than one class of stock, no outstanding share of any class of stock which is denied voting power under the provisions of the certificate of incorporation shall entitle the holder thereof to the right to vote, at any meeting of stockholders except as the provisions of paragraph (c)(2) of Section 242 of the General Corporation Law of the State of Delaware shall otherwise require; provided, that no share of any such class which is otherwise denied voting power shall entitle the holder thereof to vote upon the increase or decrease in the number of authorized shares of said class.

4. Any action required or permitted to be taken by the stockholders of the corporation must be effected at a duly called annual or special meeting of stockholders of the corporation and may not be effected by any consent in writing by such stockholders.

8: The corporation shall, to the fullest extent permitted by Section 145 of the General Corporation Law of the State of Delaware, as the same may be amended and supplemented, indemnify any and all persons whom it shall have power to indemnify under said section from and against any and all of the expenses, liabilities and other matters referred to in or covered by said section, and the indemnification provided for herein shall not be deemed exclusive of any other rights to which those indemnified may be entitled under any By-Law, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in his official capacity and as to action in another capacity while holding such office, and shall continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of the heirs, executors and administrators of such a person.

9: From time to time any of the provisions of this certificate of incorporation may be amended, altered or repealed, and other provisions authorized by the laws of the State of Delaware at the time in force may be added or inspected in the manner and at the time prescribed by said laws, and all rights at any time conferred upon the stockholders of the corporation by this certificate of incorporation are granted subject to the provisions of this Article NINTH.

10:

1. (%3) In addition to any affirmative vote required by law or this certificate of incorporation, and except as otherwise expressly provided in paragraph 2 of this Article TENTH:

(i) any merger or consolidation of the corporation or any Subsidiary (as hereinafter defined) with (a) any Interested Shareholder (as hereinafter defined) or (b) any other corporation (whether or not itself an Interested Shareholder) which is, or after such merger or consolidation would be, an Affiliate (as hereinafter defined) of an Interested Shareholder; or

(ii) any sale, lease, exchange, mortgage, pledge, transfer or other disposition (in one transaction of a series of transactions) to or with any Interested Shareholder or any Affiliate of any Interested Shareholder of any assets of the corporation or any Subsidiary having an aggregate fair market value of $1,000,000 or more; or

(iii) the issuance or transfer by the corporation or any Subsidiary (in one transaction or a series of transactions) of any securities of the corporation or any Subsidiary to any Interested Shareholder or any Affiliate of any Interested Shareholder in exchange for cash, securities or other property (or a combination thereof) having an aggregate fair market value of $1,000,000 or more; or

(iv) the adoption of any plan or proposal for the liquidation or dissolution of the corporation proposed by or on behalf of an Interested Shareholder or any Affiliate of any Interested Shareholder; or

(v) any reclassification of securities (including any reverse stock split), or recapitalization of the corporation, or any merger or consolidation of the corporation with any of its subsidiaries or any other transaction (whether or not with or into or otherwise involving an Interested Shareholder) which has the effect, directly or indirectly, of increasing the proportionate share of the outstanding shares of any class of equity or convertible securities of the corporation or any Subsidiary which is directly or indirectly owned by an Interested Shareholder or any Affiliate of any Interested Shareholder; shall require the affirmative vote of the holders of at least 80% of the then outstanding shares of capital stock of the corporation authorized to be issued from time to time under Article FOURTH of this certificate of incorporation (the "Voting Stock"), voting together as a single class. Such affirmative vote shall be required notwithstanding the fact that no vote may be required, or that a lesser percentage may be specified, by law or in any agreement with any national securities exchange or otherwise. Notwithstanding any other provision of this certificate of incorporation to the contrary, for purposes of this Article TENTH, each share of the Voting Stock shall have one vote.

(b) The term “Business Combination” as used in this Article TENTH shall mean any transaction which is referred to in any one or more of clauses (i) through (v) of subparagraph (a) of this paragraph 1.

2. The provisions of paragraph 1 of this Article TENTH shall not be applicable to any particular Business Combination, and such Business Combination shall require only such affirmative vote as if required by law and any other provision of this certificate of incorporation, if all of the conditions specified in the following subparagraph (a) are met:

(a) The Business Combination shall have been approved by a majority of the Continuing Directors (as hereinafter defined): provided, however, that such approval shall only be effective if obtained at a meeting at which a Continuing Director Quorum (as hereinafter defined) is present.

3. For the purposes of this Article TENTH:

(a) The term “person” shall mean any individual, firm, corporation or other entity.

(b) The term “Interested Shareholder” shall mean any person (other than the corporation or any Subsidiary and other than any profit-sharing, employee stock ownership or other employee benefit plan of the corporation or any Subsidiary or any trustee of or fiduciary with respect to any such plan when acting in such capacity) who or which:

(i) is the beneficial owner (as hereinafter defined) of more than five percent of the Voting Stock; or

(ii) is an Affiliate (as hereinafter defined) of the corporation and at any time within the two-year period immediately prior to the date in question was the beneficial owner of five percent or more of the Voting Stock; or

(iii) is an assignee of or has otherwise succeeded to any shares of Voting Stock which were at any time within the two-year period immediately prior to the date in question beneficially owned by any Interested Shareholder, if such assignment or succession shall have occurred in the course of a transaction or series of transactions not involving a public offering within the meaning of the Securities Act of 1933, as amended.

(c) A person shall be a “beneficial owner” of any Voting Stock:

(i) which such person or any of its Affiliates or Associates (as hereinafter defined) beneficially owns, directly or indirectly; or

(ii) which such person or any of its Affiliates or Associates has, directly or indirectly, (a) the right to acquire (whether such right is exercisable immediately or only after the passage of time), pursuant to any agreement, arrangement or understanding or upon the exercise of conversion rights, exchange rights, warrants or options, or otherwise, or (b) the right to vote pursuant to any agreement, arrangement or understanding; or

(iii) which are beneficially owned, directly or indirectly, by any other person with which such person or any of its Affiliates or Associates has any agreement, arrangement or understanding for the purpose of acquiring, holding, voting or disposing of any shares of Voting Stock.

(d) For the purposes of determining whether a person is an Interested Shareholder pursuant to subparagraph (b) of this paragraph 3, the number of shares of Voting Stock deemed to be outstanding shall include shares deemed owned through application of subparagraph (c) of this paragraph 3 may be issuable pursuant to any agreement, arrangement or understanding, or upon exercise of conversion rights, warrants or options, or otherwise.

(e) The terms "Affiliate" or "Associate" shall have the respective meanings ascribed to such terms in Rule 12b-2 of the General Rules and Regulations under the Securities Exchange Act of 1934, as in effect on January 1, 1984.

(f) The term "Subsidiary" means any corporation of which a majority of any class of equity security is owned, directly or indirectly, by the corporation; provided, however, that for the purposes of the definition of Interested Shareholder set forth in subparagraph (b) of this paragraph 3, the term "Subsidiary" shall mean only a corporation of which a majority of each class of equity security is owned**,** directly or indirectly, by the corporation.

(g) The term "Continuing Director" means any member of the Board of Directors of the corporation (the "Board") who is unaffiliated with the Interested Shareholder and was a member of the Board prior to the time that the Interested Shareholder became an Interested Shareholder, and any successor of a Continuing Director who is unaffiliated with the Interested Shareholder or is recommended or elected to succeed a Continuing Director by a majority of Continuing Directors, provided that such recommendation or election shall only be effective if made at a meeting at which a Continuing Director Quorum is present.

(h) The term "Continuing Director Quorum" means four Continuing Directors capable of exercising the powers conferred upon them under the provisions of the certificate of incorporation or By-Laws of the corporation or by law.

4. Notwithstanding any other provisions of this certificate of incorporation or the By-Laws of the corporation (and notwithstanding the fact that a lesser percentage may be specified by law, this certificate of incorporation or the By-Laws of the corporation), the affirmative vote of the holders of 80% or single class, shall be required to amend or repeal, or adopt any provisions inconsistent with, this Article TENTH.

<u>11:</u> A director of this corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith of which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the Delaware General Corporation Law, or (iv) for any transaction from which the director derived an improper personal benefit.

If the Delaware General Corporation Law is hereafter amended to authorize the further elimination or limitation of the liability of a director, then the liability of a director of the corporation shall be eliminated or limited to the fullest extent permitted by the Delaware General Corporation Law, as so amended.

Any repeal or modification of the foregoing provisions of this Article ELEVENTH by the stockholders of the corporation shall not adversely affect any right or protection of a director of the corporation existing at the time of such repeal or modification."

Exhibit 10.9

KLA
EXECUTIVE DEFERRED SAVINGS PLAN

AS AMENDED AND RESTATED EFFECTIVE JULY 31, 2019

APPENDIX I

SCHEDULE I

KLA EXECUTIVE DEFERRED SAVINGS PLAN
AS AMENDED AND RESTATED EFFECTIVE JULY 31, 2019

This KLA Executive Deferred Savings Plan was originally adopted effective October 1, 1997 to amend, restate and consolidate in their entirety the KLA Instruments Corporation Supplemental Executive Benefit Plan and the Tencor Instruments Amended and Restated Deferral Plan. The Plan was previously amended and restated, effective January 1, 2009, to conform the provisions of the Plan to the applicable requirements of Section 409A of the Internal Revenue Code and the Treasury Regulations issued thereunder and thereby bring the Plan into documentary compliance with those requirements. The Plan as so amended and restated has continued (and shall continue) to function solely as a so-called “top hat” plan of deferred compensation subject to the provisions of the Employee Retirement Income Security Act of 1974 (as amended from time to time) applicable to such a plan. The Plan was previously amended and restated, effective February 8, 2012, to clarify certain powers of the Committee. The Plan also was amended and restated, effective November 7, 2012, to clarify procedures in effect for the interaction between the Plan and the KLA-Tencor 401(k) Plan. Effective on or about July 31, 2019, the name of the Plan was changed from the KLA-Tencor Executive Deferred Savings Plan to the current name, the KLA Executive Deferred Savings Plan.

ARTICLE I
DEFINITIONS

Whenever used herein, the masculine pronoun shall be deemed to include the feminine, and the singular to include the plural, unless the context clearly indicates otherwise, and the following definitions shall govern the Plan:

1.1 “**Account**” shall mean the following accounts maintained for each Participant on the books and records of the Participating Employer to which there shall be credited the items of compensation deferred by such Participant under the Plan:

(a) The **Pre-2005 Deferred Account** to which there shall be credited the following items of compensation which were deferred and vested under the Plan as of December 31, 2004: the Participant’s Deferral Amounts pursuant to Article III, any Company Contributions and any Prior Plan Company Contributions. Such account shall be subject to adjustment from time to time to reflect the Credited Investment Return (Loss) determined under Article IV, any distributions made to Participant and any charges which may be imposed on such account pursuant to the terms of the Plan.

(b) The **2005-2007 Deferred Account** to which there shall be credited the following items of compensation which were deferred under the Plan after December 31, 2004 but prior to January 1, 2008 or which were deferred under the Plan prior to January 1, 2005 but were not vested as of December 31, 2004: the Participant’s Deferral Amounts pursuant to Article III and any Company Contributions. Such account shall be subject to adjustment from time to time to reflect the Credited Investment Return (Loss) determined under Article IV, any distributions made to Participant and any charges which may be imposed on such account pursuant to the terms of the Plan.

(c) The **Post-2007 Plan Year Account** which will be divided into a series of Deferral Election subaccounts (each, a "**Subaccount**"), one for each post-2007 Plan Year in which the Participant defers one or more of the following items of compensation earned for services rendered the Participating Employers after December 31, 2007: the Participant's Salary and Commission Deferral Amounts pursuant to Article III, any Bonuses attributable to Performance Periods commencing after December 31, 2007 and any Company Contributions.

Each Account or Subaccount shall be subject to adjustment from time to time to reflect the Credited Investment Return (Loss) determined for that Account or Subaccount pursuant to Article IV, any distributions made to the Participant from that Account or Subaccount and any charges which may be imposed on such Account or Subaccount pursuant to the terms of the Plan.

1.2 "**Affiliated Company**" shall mean (i) the Company and (ii) each member of the group of commonly controlled corporations or other businesses that include the Company, as determined in accordance with Sections 414(b) and (c) of the Code and the Treasury Regulations thereunder.

1.3 **"Beneficiary**" means any of the persons, trusts or other entities which a Participant shall, in his or her most recent written form of beneficiary designation filed with the Company, have designated as a beneficiary to receive benefits which may become payable hereunder following Participant's death, as provided under Articles V and VIII.

1.4 **"Board of Directors**" or "**Board"** means the Company's Board of Directors.

1.5 **"Bonus"** means the annual, semi-annual or quarterly bonus which the Participant may earn based on the attainment of performance objectives established for a designated Performance Period.

1.6 **"Code**" means the Internal Revenue Code of 1986, as amended from time to time.

1.7 **"Committee"** means an independent committee of two or more individuals appointed by the Board to administer this Plan, including the selection of Participants, the administration of the Deferral Election process and the designation of the available investment funds, and to take such other actions as may be specified herein.

1.8 **"Company"** means KLA Corporation, a Delaware corporation, and any successor or assignee corporation, whether by way of merger, acquisition or other reorganization.

1.9 **"Company Contribution**" means a contribution made on behalf of a Participant by the Company pursuant to Section 3.7 hereof.

1.10 **"Credited Investment Return (Loss)**" means the notional investment return credited to the Participant's Accounts or Deferral Election Subaccounts pursuant to Article IV.

1.11 **"Deferral Amount"** means the Salary and/or Commission Deferral Amount and the Bonus Deferral Amount which the Participant elects to contribute for Supplemental Executive Benefits pursuant to the Plan. For Participants who are non-employee Board members, the Deferral

Amount means the retainer and meeting fees earned for service as a Board member or a member of one or more Board committees which the Participant elects to contribute for Supplemental Executive Benefits pursuant to the Plan.

1.12 **"Deferral Election"** means the irrevocable election filed by the Participant under Article III pursuant to which a portion of his or her salary, commissions and Bonus for each Plan Year is to be deferred under the Plan.

1.13 **"Early Termination"** means, with respect to any Pre-2005 Deferred Account, the Participant's termination of Employee status other than pursuant to a Normal Termination.

1.14 **"Effective Date"** means, for this Amendment and Restatement, November 7, 2012.

1.15 "**Eligible Employee**" means any Employee who is either a highly compensated employee of his or her Participating Employer or part of its management personnel, as determined pursuant to guidelines established from time to time by the Committee. In no event shall any of the following individuals be deemed to be Eligible Employees:

(i) an Employee who is not on the United States payroll of a Participating Employer,

(ii) any individual classified as an independent contractor or consultant or as a temporary employee, or

(iii) any individual who has ceased Employee status or otherwise incurred a Separation from Service.

1.16 "**Employee**" means any person in the employ of one or more members of the Employer Group, subject to the control and direction of the employer entity as to both the work to be performed and the manner and method of performance. An individual shall be deemed to continue in Employee status for so long as he or she continues in the employee of at least one member of the Employer Group.

1.17 **"Employer Group**" means (i) the Company and (ii) each of the other members of the controlled group that includes the Company, as determined in accordance with Sections 414(b) and (c) of the Code, except that (A) in applying Sections 1563(1), (2) and (3) of the Code for purposes of determining the controlled group of corporations under Section 414(b), the phrase "at least 50 percent" shall be used instead of "at least 80 percent" each place the latter phrase appears in such sections and (B) in applying Section 1.414(c)-2 of the Treasury Regulations for purposes of determining trades or businesses that are under common control for purposes of Section 414(c), the phrase "at least 50 percent" shall be used instead of "at least 80 percent" each place the latter phrase appears in Section 1.4.14(c)-2 of the Treasury Regulations.

1.18 "**Extended Deferral Election**" shall mean a Participant's election, made in accordance with the terms and conditions of Section 8.1 of the Plan, to defer the distribution of any of his or her Post-2004 Accounts or Deferral Election Subaccounts for an additional period of at least five (5) years measured from the date or event on which that particular Account or Subaccount would otherwise first become due and payable under the Plan in the absence of such election.

1.19 "**<u>Hardship</u>**" means an "unforeseeable emergency," as defined in Section 1.409A-3(i)(3)(i) of the Treasury Regulations (as it may be amended from time to time), the text of which (as of the Effective Date) is set forth in Appendix I attached hereto.

1.20 "**<u>KLA Instruments</u>**" means KLA Instruments Corporation or any of its subsidiaries.

1.21 **"<u>Normal Termination</u>"** means, with respect to any Pre-2005 Deferred Account, the Participant's termination of Employee status on or after (i) the attainment of age fifty-five (55) and the completion of at least five (5) Years of Service or (ii) the completion of at least fifteen (15) Years of Service and means, with respect to any other Account or Subaccount, the Participant's Separation from Service on or after the attainment of age fifty-five (55) and the completion of at least five (5) Years of Service.

1.22 **"<u>Outside Director</u>"** means any member of the Board of Directors who is not an Employee.

1.23 **"<u>Participant</u>"** means (i) an Eligible Employee selected for participation in the Plan in accordance with the provisions of Section 2.1 or (ii) any Outside Director electing to participate in the Plan.

1.24 "**<u>Participating Employer</u>**" means, with respect to each Participant, the Affiliated Company employing that individual which has adopted the Plan as a deferred compensation program for one or more of its Employees. The Participating Employers for the 2007 Plan Year and as of the Effective Date are set forth in attached Schedule I. Any additional Affiliated Companies which may from time to time become Participating Employers shall be listed in revised Schedule I.

1.25 **"<u>Performance Period</u>"** means, with respect to any annual, semi-annual or quarterly Bonus that is tied to the attainment of performance objectives, the period over which those performance objectives are to be measured for purposes of determining the amount of such Bonus (if any) to be earned by the Participant for service during that period. Accordingly, the Performance Period may be coincident with the Company's fiscal year or with one or more semi-annual or quarterly periods within such fiscal year.

1.26 **"<u>Plan</u>"** means this KLA Executive Deferred Savings Plan, as it may be amended from time to time.

1.27 **"<u>Plan Year</u>"** means, effective January 1, 2005, the 12-month period coincidental with each calendar year.

1.28 **"<u>Prior Plans</u>"** means the KLA Instruments Corporation Supplemental Executive Benefit Plan and the Tencor Instruments Amended and Restated Deferral Plan.

1.29 **"<u>Prior Plan Company Contribution</u>"** means the amount, if any, which the Company contributed on behalf of Participants for Supplemental Executive Benefits under the Prior Plans. Any Prior Plan Company Contributions that were credited to Participant Accounts as of October 1, 1997 and had not already been forfeited as of such date became 100% vested on that date.

1.30 "**<u>Separation from Service</u>"** means the Participant's cessation of Employee status by reason of his or her death, retirement or termination of employment. The Participant shall be deemed to have terminated employment for such purpose at such time as the level of his or her bona fide services to be performed as an Employee (or non-employee consultant) permanently decreases to a level that is not more than twenty percent (20%) of the average level of services he or she rendered as an Employee during the immediately preceding thirty-six (36) months (or such shorter period for which he or she may have rendered such service). Any such determination as to Separation from Service, however, shall be made in accordance with the applicable standards of the Treasury Regulations issued under Code Section 409A. In addition to the foregoing, a Separation from Service will not be deemed to have occurred while an Employee is on military leave, sick leave or other bona fide leave of absence if the period of such leave does not exceed six (6) months or any longer period for which such Employee's right to reemployment with one or more members of the Employer Group is provided either by statute or contract; ***provided, however,*** that in the event of an Employee's leave of absence due to any medically determinable physical or mental impairment that can be expected to result in death or to last for a continuous period of not less than six (6) months and that causes such individual to be unable to perform his or her duties as an Employee, no Separation from Service shall be deemed to occur during the first twenty-nine (29) months of such leave. If the period of leave exceeds six (6) months (or twenty-nine (29) months in the event of disability as indicated above) and the Employee's right to reemployment is not provided either by statute or contract, then such Employee will be deemed to have a Separation from Service on the first day immediately following the expiration of such six (6)-month or twenty-nine (29)-month period.

1.31 **"<u>Specified Employee</u>**" means any individual who is, at any time during the twelve (12)-month period ending with the identification date specified below, a "key employee" (within the meaning of that term under Code Section 416(i)), as determined by the Committee in accordance with the applicable standards of Code Section 409A and the Treasury Regulations thereunder and applied on a consistent basis for all non-qualified deferred compensation plans of the Employer Group subject to Code Section 409A. The Specified Employees shall be identified by the Committee as of December 31 of each Plan Year and shall have that status for the twelve (12)-month period beginning on the April 1 subsequent to such determination by the Committee.

1.32 **"<u>Supplemental Executive Benefits</u>**" means the benefits payable to the Participant and/or his or her Beneficiary under this Plan.

1.33 **"<u>Tencor</u>"** means Tencor Instruments or any of its subsidiaries.

1.34 **"<u>Trust</u>"** means the legal entity created by the Trust Agreement.

1.35 **"<u>Trust Agreement</u>"** means that trust agreement entered into between the Company and Wells Fargo Bank.

1.36 **"Trustee"** means the original Trustee(s) named in the Trust Agreement and any duly appointed successor or successors thereto.

1.37 "**Year of Service**" means each twelve (12) consecutive month period of Employee service measured from the date on which the Participant initially became a Company, KLA Instruments or Tencor employee, and successive anniversaries thereof, during which the Participant continues in Employee status, including leaves of absence approved by the Company or other member of the Employer Group. Should the Participant cease Employee status and then return to such status, the following break in service provisions shall be in effect:

(i) The period of Employee service following such break shall be measured from the date of the Participant's return and shall be aggregated with the period of Employee service he or she rendered prior to the break to determine his or her total Years of Service.

(ii) The Participant shall not receive any Year of Service credit for the period of the break in service if the break is of a duration of twelve (12) months or more.

ARTICLE II
ELIGIBILITY

2.1 **Eligible Persons**. The Committee shall have absolute discretion in selecting the Eligible Employees who are to participate in the Plan for each Plan Year. An Eligible Employee selected for participation for any Plan Year must, in order to participate in the Plan for that year, file his or her Deferral Election on or before the last day of the immediately preceding Plan Year. However, an Eligible Employee who is first selected for participation in the Plan after the start of a Plan Year and who has not otherwise been eligible for participation in any other non-qualified elective account balance plan subject to Code Section 409A and maintained by one or more Affiliated Companies will have until the thirtieth (30th) day following the date he or she is so selected in which to file his or her Deferral Election for that Plan Year. Individuals who are selected for participation in the Plan shall be promptly notified by the Company of their eligibility to participate in the Plan. Outside Directors shall automatically be eligible to participate in the Plan and must make their Deferral Elections in accordance with the same requirements set forth above for Employee Participants. Notwithstanding the foregoing, Participants receiving benefits pursuant to the Executive Severance Plan, the 2010 Executive Severance Plan, the Employee Tier 1 Severance Benefits Plan, or the Employee Tier 2 Severance Benefits Plan are not eligible to participate in the Plan and are deemed to have ceased Employee status for Plan purposes.

2.2 **Continuation of Participation**. Every Eligible Employee who becomes a Participant may continue to file Deferral Elections under the Plan for one or more subsequent Plan Years until the ***earliest*** of (i) his or her exclusion from the Plan upon written notice from the Committee, (ii) his or her cessation of Eligible Employee status or (iii) the termination of the Plan. The Committee shall have complete discretion to exclude one or more Eligible Employees from Participant status for one or more Plan Years as the Committee deems appropriate. However, no such exclusion authorized by the Committee shall become effective until the first day of the first Plan Year coincident with or next following the date of the Committee's determination to exclude the individual from such participation. If any Eligible Employee is excluded from Participant status for one or more Plan Years, then such individual shall not be entitled to defer any part of his or her salary, Bonus or commissions for those Plan Years.

2.3 **Resumption of Participation Following Separation from Service.** If a Participant ceases to be an Eligible Employee or an Outside Director due to a Separation from Service and thereafter returns to service with the Company or any other Participating Employer, such individual will again become a Participant as of the first day the first Plan Year coincident with or next following the date on which he or she resumes Eligible Employee or Outside Director status, provided such individual files a timely a Deferral Election under Article III with respect to that Plan Year. However, a Participant who returns to Eligible Employee or Outside Director status after a Separation from Service of more than twenty-four (24) months during which he or she was not eligible to defer any compensation under this Plan or any other non-qualified elective account balance plan subject to Code Section 409A and maintained by one or more Affiliated Companies shall, upon resumption of such service, be permitted to make a Deferral Election under Article III in accordance with the requirements applicable to a newly-selected Participant. Notwithstanding the foregoing provisions of this Section 2.3, no returning Eligible Employee shall be eligible to participate in the Plan if the Committee determines to exclude such individual from participation on or before his or her resumption of service.

2.4 **Cessation or Resumption of Participation Following a Change in Status.** If any Participant continues in the service of the Employer Group but ceases to be an Eligible Employee or Outside Director, the individual will continue to be a Participant until the entire amount of his or her Accounts distributed. However, the individual will not be entitled to make any Deferral Elections with respect to compensation earned for the period that he or she is not an Eligible Employee or Outside Director. In the event that the individual subsequently resumes Eligible Employee or Outside Director status, he or she will again become a Participant as of the first day the first Plan Year coincident with or next following the date of his or her resumption of Eligible Employee or Outside Director status, provided such individual timely files a Deferral Election under Article III with respect to that Plan Year. However, an Eligible Employee shall not be eligible to participate in the Plan upon his or her resumption of Eligible Employee status if the Committee determines to exclude such individual from participation on or before such resumption of Eligible Employee status.

ARTICLE III
SALARY, COMMISSION AND BONUS REDUCTION CONTRIBUTIONS; COMPANY CONTRIBUTIONS

3.1 **Salary and Commission Deferrals**.

(a) Each Employee Participant shall have the right to file a Deferral Election to defer a portion of the salary and/or commissions earned by such Participant for service as an Employee during the Plan Year for which the Deferral Election is made. Each Deferral Election must be made by a written or electronic notice filed with the Committee or its designate in which the Participant shall indicate the percentage (up to one hundred percent (100%)) of the salary and/or commissions to be deferred. The notice must be filed on or before the last day of the calendar year immediately preceding the start of the Plan Year for which the salary and/or commissions subject to that election are to be earned. However, an Eligible Employee who is first selected for participation in the Plan after the start of a Plan Year and who has not otherwise been eligible for participation in any other non-qualified elective account balance plan subject to Code Section 409A and maintained by one or more Affiliated Companies must file his or her initial Deferral Election no later than thirty (30) days after the date he or she is so selected. Such Deferral Election shall only be effective for salary and/or commissions attributable to Employee service for the period commencing with the first day of the first calendar month next following the filing of such Deferral Election and ending with the close of such Plan Year.

(b) For purposes of determining the compensation which may be deferred pursuant to a Deferral Election under Section 3.1(a), the following provisions shall be in effect:

(i) The term "**salary**" shall mean the Participant's base salary, and the term "**commissions**" shall mean the Participant's sales commissions.

(ii) For any Deferral Election made with respect to commissions, the commissions will be deemed to be earned as a result of the Participant's service in the Plan Year in which the customer payments relating to the sales generating those particular commissions are made to the Participating Employer. Accordingly, such commissions shall only be deferred under the Plan to the extent the Participant has a Deferral Election covering commissions for that Plan Year.

(iii) For purposes of any Deferral Election made by an Outside Director, salary shall mean the compensation payable to the Outside Director for service as a member of the Board and any Board committee and/or for attendance at meetings of the Board or any Board committee on which such Outside Director serves.

(c) The salary and commissions deferred for each Plan Year shall be designated the "**Salary and Commission Deferral Amount**" for that Plan Year. The Salary and Commission Deferral Amount shall not be paid to the Participant, but shall be withheld from the Participant's salary and/or commissions, and an amount equal to the Salary and Commission Deferral Amount shall be credited to the Participant's Deferral Election Subaccount for the Plan Year within ten (10) business days following the date on which such deferred amount would otherwise have been paid to the Participant in the absence of the Deferral Election. The same procedure shall be utilized for crediting any fees which an Outside Director elects to defer under the Plan, except that the deferred fees shall be credited to his or her Deferral Election Subaccount within thirty (30) business days following the date on which those deferred fees would otherwise have been paid to the Outside Director in the absence of the Deferral Election.

(d) The Deferral Election for a particular Plan Year shall become irrevocable as of the first day of that Plan Year (or any later day the Deferral Election for such Plan Year may be filed under Section 3.1(a) by a newly-eligible Participant), and no subsequent changes may be made to that Deferral Election once it becomes irrevocable.

3.2 **<u>Bonus Deferrals</u>**.

(a) The Committee shall determine the Bonuses eligible for deferral under the Plan. Each Employee Participant shall have the right to file a separate Deferral Election to defer a portion of each eligible Bonus earned by such Participant for any Performance Period commencing in the Plan Year for which the Deferral Election is made. Each Deferral Election must be made by a written or electronic notice filed with the Committee or its designate in which the Participant shall indicate the percentage (up to one hundred percent (100%)) of the Bonus to be deferred. The notice must be filed on or before the last day of the Plan Year immediately preceding the Plan Year in which the Performance Period for the Bonus subject to that election is to commence. However, the following special rules shall be in effect for any Deferral Elections with respect to such Bonuses:

(i) The Committee may allow a Deferral Election with respect to a Bonus which is based on a Performance Period of twelve (12) months or more and which qualifies as performance-based compensation in accordance with the standards and requirements set forth in Section 1.409A-1(e) of the Treasury Regulations to be made by a Participant after the start of the Performance Period to which that Bonus pertains but not later than by a designated date that is at least six (6) months prior to the end of that Performance Period; ***provided, however,*** that such Participant otherwise satisfies the applicable service requirements of Section 1.409A-2(a)(8) of the Treasury Regulations. Accordingly, for a Performance Period coincidental with the Company's July 1 to June 30 fiscal year, the Committee may, in accordance with the foregoing, allow a Deferral Election with respect to any performance-based Bonus earned over that period to be made not later than December 31 of the calendar year immediately preceding the calendar year in which that Performance Period will end.

(ii) An Eligible Employee who is first selected for participation in the Plan after the start of a Plan Year and who has not otherwise been eligible for participation in any other non-qualified elective account balance plan subject to Code Section 409A and maintained by one or more Affiliated Companies must, with respect to any Bonus to be covered by his or her initial Deferral Election, file that election no later than thirty (30) days after the date he or she is so selected. Such Deferral Election shall only be effective for the portion of such Bonus determined by multiplying the dollar amount of such Bonus by a fraction, the numerator of which is the number of days remaining in the Performance Period applicable to that Bonus following the close of the calendar month in which the Participant's Deferral Election as to such Bonus is filed and the denominator of which is the total number of days in that Performance Period; ***provided, however,*** that in the event any such Bonus qualifies as performance-based compensation, then the provisions of subparagraph (i) shall also be applicable in determining the amount of such Bonus that may be deferred.

(b) The amount of the Bonus or Bonuses deferred for each Plan Year shall be designated the "**<u>Bonus Deferral Amount</u>**" for that Plan Year. The Bonus Deferral Amount shall not be paid to the Participant, but shall be withheld from the Participant's Bonus or Bonuses subject to the Deferral Election, and an amount equal to the Bonus Deferral Amount shall be credited to the Participant's Deferral Election Subaccount within ten (10) business days following the date on which such deferred amount would otherwise have been paid to the Participant in the absence of the Deferral Election.

(c) The Deferral Election shall become irrevocable as of the first day of the Plan Year to which that election relates (or any later day the Deferral Election for such Bonus may be filed pursuant to the special provisions of Section 3.2(a)), and no subsequent changes may be made to that Deferral Election once it becomes irrevocable.

3.3 **Requirements for Deferral Elections**. The following requirements shall be in effect for each Deferral Election filed by a Participant for a Plan Year beginning after December 31, 2007 or a Fiscal Year beginning after June 30, 2007:

(a) The percentage of compensation which a Participant may elect to defer each Plan Year or Fiscal Year pursuant to his or her Deferral Election must comply with the following guidelines:

(i) To the extent the Participant's salary or commissions are the subject of the Deferral Election, the amount to be deferred pursuant to such election may be any multiple of one percent (1%) of the portion of such salary and commissions eligible for deferral for such Plan Year, but not less than five percent (5%) of such compensation.

(ii) To the extent the Participant's Bonus is the subject of the Deferral Election, the amount to be deferred pursuant to such election must be a multiple of five percent (5%), up to one hundred percent (100%) of the portion of such bonus eligible for deferral for such Plan Year or Fiscal Year.

(b) The Participant must also specify in the Deferral Election the date or event for the commencement of the distribution of the Deferral Election Subaccount attributable to that election. The following commencement dates or events shall be permissible:

- a date within the first sixty (60) days of any calendar year which is at least two (2) calendar years after the calendar year to which such Deferral Election relates,

- the Participant's Separation from Service, or

- the ***earlier*** of (i) a date within the first sixty (60) days of any calendar year which is at least two (2) calendar years after the calendar year to which the Deferral Election relates or (ii) the Participant's Separation from Service.

(c) The Participant shall also specify in the Deferral Election the manner in which the Deferral Election Subaccount attributable to that election shall be distributed. The following methods of distribution shall be permissible for a distribution tied to a specified date:

- lump sum payment, or

- substantially equal quarterly installments (subject to periodic adjustment for Credited Investment Returns (Losses)) over a five (5)-year term.

The following methods of distribution shall be permissible for a distribution tied to a Separation from Service:

- lump sum payment,

- substantially equal quarterly installments (subject to periodic adjustment for Credited Investment Returns (Losses)) over a five (5)-year term, or

- substantially equal quarterly installments (subject to periodic adjustment for Credited Investment Returns (Losses)) over a ten (10)-year term, ***provided, however,*** that any election of such a ten (10)-year payment stream shall only be effective if the Participant's Separation from Service is due to a Normal Termination; otherwise, such election shall automatically revert to a five (5)-year term.

For purposes of Section 8.1, an installment distribution shall be treated as a single aggregate payment, and not as a series of individual installment payments.

3.4 **Limitations on Deferrals**. In applying the Participant's Deferral Election to the salary, commissions or bonuses subject to that election, the percentage of such compensation to be deferred shall be determined based upon the Participant's gross compensation. Any payroll deductions to be made from the Participant's compensation for purposes of the Company's Employee Stock Purchase Plan ("**ESPP**") shall be calculated on the basis of the Executive's gross compensation prior to reduction for his or her Deferral Elections under the Plan. However, prior to the start of the Plan Year for which the Deferral Election is to be in effect, the amount of the Participant's compensation available for deferral hereunder shall be calculated by reducing the Participant's gross compensation by (a) the amount necessary to satisfy all federal, state and local income, employment and other payroll taxes (including FICA taxes) required to be withheld with respect to such items of compensation, (b) amounts deducted with respect to the Participant's elections regarding employee health and welfare benefits and (c) the amount of payroll deductions elected by the Participant in connection with the Company's ESPP (such reduced amount, the "**Available Deferral Amount**"). If those reductions would result in gross compensation less than the dollar amount of compensation requested to be deferred pursuant to Participant's Deferral Election for that Plan Year, then the actual dollar amount of compensation to be deferred pursuant to such Participant's Deferral Election shall be reduced, effective with the start of that Plan Year, to be equal to the Available Deferral Amount. In no event, however, may the Participant change the rate of payroll deduction in effect for him or her under the ESPP for a particular Plan Year at any time after the start of that Plan Year, if such change would otherwise affect the amount of compensation to be deferred under this Plan pursuant to his or her Deferral Election in effect for that Plan Year. Any changes to the Participant's elections regarding health and welfare benefits to be made after the start of the Plan Year for which his or her Deferral Election is in effect shall be effected in accordance with the requirements of Sections 1.409A-2(a)(10) and 1.409A-3(j)(6) of the Treasury Regulations. Any salary deferral elections made by the Participant under the Company's 401(k) Plan shall be calculated on the basis of the Executive's compensation after reduction for his or her Deferral Elections under the Plan.

3.5 **Deferral Election Subaccounts**. A separate Deferral Election Subaccount shall be established for each Plan Year for which the Participant defers a portion of his or her eligible compensation under the Plan. The Participant shall at all times be fully vested in the balance credited to each of his or her Deferral Election Subaccounts.

3.6 **Subsequent Distribution**. Each of the Participant's Deferral Election Subaccounts shall be distributed in accordance with the provisions of Articles VII and VIII of the Plan.

3.7 **Company Contributions**. The Company may, in its sole discretion, make a Company Contribution to an Account or Subaccount on behalf of a Participant, subject to such vesting and distribution conditions and limitations as the Company, in its sole discretion, shall impose at the time such contribution is made.

ARTICLE IV
CREDITED INVESTMENT RETURN (LOSS) ON DEFERRAL ACCOUNTS

4.1 **Accounts**. One or more Accounts and Subaccounts shall be established and maintained for each Participant in accordance with the provisions of Section 1.1. Each Account or Subaccount shall be charged with any distributions made therefrom pursuant to the Plan and any charges imposed thereon pursuant to the terms of the Plan. In addition, any Pre-2005 Deferred Account established for a Participant was credited, as of October 1, 1997, with the ending balance (if any) accrued by that Participant under the Prior Plans.

4.2 **Credited Investment Return (Loss)**.

(a) Each of the Participant's Accounts and Subaccounts shall be credited at least monthly with the Credited Investment Return (Loss) attributable to the balance credited to that Account or Subaccount. The Credited Investment Return (Loss) is the amount which the balance credited to the Account or Subaccount would have earned if that balance had in fact been invested in the Deemed Investment Options in accordance with the Participant's Investment Elections.

(b) The Committee shall, from time to time, designate the investment options available to Participants for the deemed investment of their Accounts or Subaccounts under the Plan (the "**Deemed Investment Options**"). The Committee shall specify the particular funds which shall constitute the Deemed Investment Options and may, in its sole discretion, change or add to the Deemed Investment Options; ***provided, however***, that the Committee shall notify the Participants of any such change prior to the effective date thereof.

4.3 **Deemed Investment Options**. Each Participant may select among the Deemed Investment Options and specify the manner in which his or her Accounts and Subaccounts shall be deemed to be invested (the "**Investment Election**") for purposes of determining the Credited Investment Return (Loss) on those Accounts and Subaccounts. The Committee shall establish and communicate the rules, procedures and deadlines for making and changing such Investment Elections. Each Participant may continue to make such Investment Election for so long as he or she has an outstanding balance credited to an Account or Subaccount, whether or not such Participant is in Employee status or active Participant status at the time.

ARTICLE V
DISTRIBUTION OF PRE-2005 DEFERRED ACCOUNT

The provisions of this Article V shall apply solely to the Participant's Pre-2005 Deferred Account for so long as that account remains exempt from the requirements of Code Section 409A by reason of the applicable effective date of those requirements.

5.1 **Distribution of Benefits upon Normal Termination**. The following provisions shall govern the distribution to be made with respect to a Participant who ceases Employee status through a Normal Termination:

(a) Unless the Participant otherwise elects pursuant to Section 5.1(b), the amount credited to his or her Pre-2005 Deferred Account shall be paid in sixty (60) substantially equal quarterly installments (subject to ongoing Credited Investment Returns (Losses)), with the first installment to be paid as soon as practicable following the first day of first calendar quarter following such Normal Termination.

(b) If the Participant has filed an appropriate distribution election with the Committee at least one (1) year prior to his or her Normal Termination, then the amount of his or her Pre-2005 Deferred Account shall be distributed in one of the following methods as the Participant may specify in that election:

(i) a single lump sum payment;

(ii) twenty (20) substantially equal (subject to ongoing Credited Investment Returns (Losses)) quarterly installments; or

(iii) forty (40) substantially equal (subject to ongoing Credited Investment Returns (Losses)) quarterly installments.

The applicable distribution shall commence as soon as practicable following the first day of the first calendar quarter following such Normal Termination.

5.2 **Distribution of Benefits upon Early Termination**. The following provisions shall govern the distribution to be made with respect to a Participant who ceases Employee status through an Early Termination:

(a) Unless the Participant otherwise elects a different form of distribution in accordance the requirements and limitations of Section 5.2(b) or 5.2(c), the amount credited to his or her Pre-2005 Deferred Account shall be distributed to the Participant in a single lump sum payment within a reasonable amount of time after such Early Termination event.

(b) If the Participant with an Early Termination has more than five (5) Years of Service, then he or she may file a distribution election at least one (1) year prior to the date of such Early Termination to have the amount credited to his or her Pre-2005 Deferred Account, to the extent vested, distributed in twenty (20) substantially equal quarterly installments (subject to ongoing Credited Investment Returns (Losses)). The elected distribution shall commence as soon as reasonably practicable following the Early Termination event. Such election, however, shall not be effective if the date of the Participant's Early Termination occurs within one (1) year after the filing date of that election.

(c) If the Participant with an Early Termination has at least ten (10) Years of Service, then he or she may file a distribution election at least one (1) year prior to the date of such Early Termination to have the amount credited to his or her Pre-2005 Deferred Account, to the extent vested, distributed in either twenty (20) or forty (40) substantially equal quarterly installments (subject to ongoing Credited Investment Returns (Losses)). The elected distribution shall commence as soon as reasonably practicable following the Early Termination event. Such election, however, shall not be effective if the date of the Participant's Early Termination occurs within one (1) year after the filing date of that election.

5.3 **Election of Form of Benefit Payment**. The Participant may file a distribution election permitted under Section 5.1 or 5.2 above with the Committee or its designate at any time which is more than one (1) year prior to the applicable Normal Termination or Early Termination date and may revoke or change such election at any time or times which is more than one (1) year prior to the then applicable Normal Termination or Early Termination date. Any distribution election which is filed within one (1) year of the applicable Normal Termination or Early Termination date shall be void and without effect, and the most recently effective distribution election shall control instead.

5.4 **Payment to Beneficiary**. In the event the Participant dies after installment payments have begun but before all of the installments are paid, the undistributed installments shall be paid to his or her Beneficiary as they become due.

5.5 **Early Withdrawals**.

(a) Notwithstanding any other provision of this Plan, the Participant may, upon thirty (30) days prior written notice, withdraw up to ninety-two percent (92%) of the balance credited to his or her Pre-2005 Deferred Account determined at the time of such withdrawal. Upon such withdrawal, eight percent (8%) of the amount requested from the Participant's Pre-2005 Deferred Account shall be forfeited, and the Participant shall have no further right thereto. The Participant shall be prohibited from making any compensation deferrals pursuant to this Plan for the Plan Year immediately following the Plan Year in which such withdrawal occurs and for a subsequent period of months equal to the number of months (rounded to the next whole month) that elapse between the date on which such withdrawal is effected and the last day of the Plan Year in which that withdrawal occurs. The Participant may only make a maximum of two (2) early withdrawals pursuant to this Section 5.5(a).

(b) Notwithstanding any other provision of this Plan, the Participant may request to withdraw any or all of the balance credited to his or her Pre-2005 Deferred Account in the event of a Hardship. The Committee shall, in its sole discretion, determine whether or not to approve such a withdrawal request. The Participant shall be required to demonstrate to the Committee's satisfaction that the financial burden imposed by the Hardship cannot reasonably be satisfied out of his or her other financial resources. Withdrawals pursuant to a Hardship request shall only be permitted, if at all, to the extent reasonably required to satisfy the Participant's need.

(c) Notwithstanding any other provision of this Plan, a Participant may schedule an in-service distribution of any portion of the balance credited to his or her Pre-2005 Deferred Account by submitting a distribution election form (or by scheduling an in-service distribution in his or her initial enrollment election) to the Committee at least two (2) years prior to the desired distribution date. Such distribution shall be paid in a lump-sum; provided, however, that if (i) the Participant elects such form of distribution on the distribution election or initial enrollment form and (ii) the distribution commences after five (5) or more Years of Service with the Company, the distribution shall be made in twenty (20) equal quarterly installments, payable on the first day of each calendar quarter. Any Credited Investment Return (Loss) with respect to the portion of the Participant's Pre-2005 Deferred Account scheduled for an in-service installment distribution that is to be credited on and after the date of the initial in-service distribution shall be credited to the remaining portion of the Participant's Pre-2005 Deferred Account. The Participant may postpone a scheduled in-service distribution date by submitting a new distribution election form to the Committee at least one (1) year prior to the otherwise scheduled in-service distribution date. Any in-service distribution election form which is filed within one (1) year of the scheduled in-service distribution date shall be void and without effect. Once an in-service installment distribution commences, such distribution shall continue over the applicable installment period, whether or not the Participant continues in Employee status. However, if the Participant has an Early Termination or a Normal Termination prior to the first scheduled in-service distribution, then his or her in-service distribution election shall become void and without effect, and the distribution provisions relating to such Participant's Early Termination or Normal Termination, as applicable, shall control the distribution of the Participant's Pre-2005 Deferred Account.

5.6 **Automatic Lump-Sum Distribution for Accounts below $25,000**. Notwithstanding any other provisions of this Plan or the provisions of a Participant's distribution election with respect to his or her Pre-2005 Deferred Account, in the event such Participant has less than twenty-five thousand dollars ($25,000) credited to his or her Pre-2005 Deferred Account as of the date of his or her cessation of Employee status, then 100% of that Account shall be distributed to him or her in a single lump-sum payment within a reasonable amount of time following the date of such cessation of Employee status.

5.7 **Valuation**. The amount to be distributed from the Participant's Pre-2005 Deferred Account shall be determined on the basis of the balance credited to that Account as of the most recent practicable valuation date (as determined by the Committee or its designate) preceding the date of the actual distribution. For a Participant who has elected an installment distribution from his or her Pre-2005 Deferred Account (or any portion thereof), such distribution shall be effected through a series of substantially equal payments (as adjusted for Credited Investment Returns

(Losses)), and the amount of each such installment shall accordingly be determined by dividing the balance credited to that Account (or applicable portion) as of the most recent practicable valuation date (as determined by the Committee) preceding the date of the actual distribution of that installment by the number of installments (including the current installment) remaining in the applicable distribution period.

5.8 **Tax Withholding**. Each payment made from the Participant's Pre-2005 Deferred Account shall be subject to the Participating Employer's collection of all applicable federal, state and local income and employment/payroll taxes, and each payment shall be net of such applicable withholding taxes.

5.9 **Outside Directors**. As applied to an Outside Director, for all purposes under the Plan, the terms "service," "employed" and "employment" shall mean the time during which the Outside Director serves on the Board of Directors, and the terms "retirement" and "termination" shall mean the time at which the Outside Director ceases to serve on the Board of Directors.

ARTICLE VI
DISTRIBUTION OF 2005-2007 DEFERRED ACCOUNT

The provisions of this Article VI shall apply solely to the Participant's 2005-2007 Deferred Account.

6.1 **Special Distribution Election**. Each Participant may, prior to December 31, 2007, make a new payment election under this Article VI with respect to the commencement date and form of payment to be in effect for his or her 2005-2007 Deferred Account (the "**Special Distribution Election**"). Any such Special Distribution Election made by the Participant shall constitute a new payment election under Q&A 19(c) of Notice 2005-1, as modified by the Preamble to the proposed Treasury Regulations under Code Section 409A and Notice 2006-79. However, any Special Distribution Election submitted during the 2007 calendar year can only apply to amounts not otherwise payable in that calendar year, and the election may not cause any amount to be paid in the 2007 calendar year that would not otherwise be payable in that year.

6.2 **Commencement Date**. In the Special Distribution Election, the Participant must specify the date or event for the commencement of the distribution of his or her 2005-2007 Deferred Account. The following commencement dates or events shall be permissible:

- a date within the first sixty (60) days of any calendar year after the 2008 calendar year,
- the Participant's Separation from Service, or
- the ***earlier*** of (i) a date within the first sixty (60) days of any post-2008 calendar year or (ii) the Participant's Separation from Service.

6.3 **<u>Method of Distribution</u>**. The Participant must specify in the Special Distribution Election the method by which his or her 2005-2007 Deferred Account shall be distributed. The following methods of distribution shall be permissible for a distribution tied to a specified date:

- lump sum payment, or

- substantially equal quarterly installments (subject to periodic adjustment for Credited Investment Returns (Losses)) over a five (5)-year term.

The following methods of distribution shall be permissible for a distribution tied to a Separation from Service:

- lump sum payment,

- substantially equal quarterly installments (subject to periodic adjustment for Credited Investment Returns (Losses)) over a five (5)-year term,

- substantially equal quarterly installments (subject to periodic adjustment for Credited Investment Returns (Losses)) over a ten (10)-year term, or

- substantially equal quarterly installments (subject to periodic adjustment for Credited Investment Returns (Losses)) over a fifteen (15)-year term; ***provided, however,*** that any election of such a fifteen (15)-year payment stream shall only be effective if the Participant's Separation from Service due to a Normal Termination; otherwise, such election shall automatically revert to a ten (10)-year term.

For purposes of Section 8.1, an installment distribution shall be treated as a single aggregate payment, and not as a series of individual installment payments.

6.4 **<u>Continuing Elections</u>**. Should the Participant not file a Special Distribution Election on a timely basis in accordance with Section 6.1, then each of the separate distribution elections he or she initially made with respect to the compensation deferred under the Plan for each of the 2005, 2006 and 2007 Plan Years shall continue in full force and effect and may not be subsequently changed except in accordance with the requirements of Section 7.3 or 8.1.

6.5 **<u>Tax Withholding</u>**. Each payment made from the Participant's 2005-2007 Deferred Account shall be subject to the Participating Employer's collection of all applicable federal, state and local income and employment/payroll taxes, and each payment shall be net of such applicable withholding taxes.

ARTICLE VII
DISTRIBUTION OF POST-2007 DEFERRAL ELECTION SUBACCOUNTS

The provisions of this Article VII shall apply to each of the Participant's Deferral Election Subaccounts attributable to a Plan Year beginning after December 31, 2007 or a Company fiscal year (a "**<u>Fiscal Year</u>**") beginning after June 30, 2007.

7.1 **Normal Distribution**. The Participant's Deferral Election Subaccount for a particular Plan Year or Fiscal Year shall become due and payable in accordance with the commencement date and method of distribution designated by the Participant in his or her Deferral Election for that Plan Year or Fiscal Year. Such distribution shall begin on the designated commencement date or event as soon as administratively practicable thereafter, but in no event later than the ***later*** of (i) the close of the calendar year in which the designated commencement date or event occurs or (ii) the fifteenth (15th) day of the third (3rd) calendar month following the occurrence of such commencement date or event.

7.2 **Tax Withholding**. Each payment made from a Deferral Election Subaccount shall be subject to the Participating Employer's collection of all applicable federal, state and local income and employment/payroll taxes, and each payment shall be net of such applicable withholding taxes.

7.3 **Special Distribution Election**. Notwithstanding the provisions of Sections 3.3, 6.1 and 7.1 of the Plan, each Participant may, prior to December 31, 2008, make a new payment election under this Article VII with respect to the commencement date and form of payment to be in effect for his or her 2005-2007 Deferred Account and/or his or her Deferral Election Subaccount for the 2008 Plan Year (the " **2008 Special Distribution Election**"). Any such 2008 Special Distribution Election made by the Participant shall constitute a new payment election under Q&A 19(c) of Notice 2005-1, as modified by the Preamble to the proposed Treasury Regulations under Code Section 409A and Notice 2006-79, and shall not be treated as an Extended Deferral Election for purposes of Section 8.1 of the Plan. However, the 2008 Special Distribution Election can only apply to amounts not otherwise payable in that calendar year, and the election may not cause any amount to be paid in the 2008 calendar year that would not otherwise be payable in that year. The 2008 Special Distribution Election must be made on or before December 31, 2008 in order to be effective.

ARTICLE VIII
PROVISIONS APPLICABLE TO 2005-2007 DEFERRED ACCOUNTS AND POST-2007 DEFERRAL ELECTION SUBACCOUNTS

The provisions of this Article VIII shall apply to the Participant's 2005-2007 Deferred Account and each of his or her Deferral Election Subaccounts attributable to a Plan Year beginning after December 31, 2007. Each such Account or Subaccount shall, for purposes of this Article VIII, be designated a "**Post-2004 Account**."

8.1 **Extended Deferral Election**. A Participant may make an Extended Deferral Election with respect to any Post 2004 Account maintained for him or her under the Plan, provided the Participant remains at the time of such election a highly compensated Employee or member of the management group of a Participating Employer (as determined pursuant to guidelines established by the Committee). The Extended Deferral Election must be made by filing an appropriate election form with the Committee at least twelve (12) months prior to the date the Post-2004 Account subject to such election is scheduled to become payable pursuant to the applicable provisions of Article VI or Article VII, and the Extended Deferral Election for that Account shall in no event become effective or otherwise have any force or applicability until the expiration of the twelve (12)-month period measured from the date such election is filed with the Committee. The Extended Deferral Election must specify a commencement date in a Plan Year which is at least five (5) Plan Years later than the Plan Year in which the distribution of that Post-2004 Account would have otherwise been made or commenced in the absence of the Extended Deferral Election. As part of the Extended Deferral Election, the Participant may also elect a different method of distribution, provided the selected method complies with one of the forms of distribution permissible for that Account in accordance with the provisions of the Plan. Once the Extended Deferral Election becomes effective in accordance with the foregoing provisions of this Section 8.1, such election shall remain in effect, whether or not the Participant continues in Employee status; ***provided, however,*** that in the event of the Participant's death, the provisions of Section 8.4 shall apply. Notwithstanding anything to the contrary in the foregoing provisions of this Section 8.1, neither the Special Distribution Election under Section 6.1 nor the 2008 Special Distribution Election under Section 7.3 shall be deemed to be an Extended Deferral Election or otherwise be subject to the requirements of this Section 8.1

8.2 **Distribution Commencement Date**. The distribution of any Post-2004 Account shall be made or commence on the distribution date or event applicable to that Account or as soon thereafter as administratively practicable, but in no event later than the later of (i) the end of the calendar year in which that distribution date or event occurs or (ii) the fifteenth (15th) day of the third (3rd) calendar month following such distribution date or event.

8.3 **Hardship Withdrawal**. If a Participant incurs a Hardship and does not have any other resources available, whether through reimbursement or compensation (by insurance or otherwise), liquidation of existing assets (to the extent such liquidation would not itself result in financial hardship) or cancellation of his or her existing Deferral Election(s) under the Plan, to satisfy such financial emergency, then the Participant may apply to the Committee for an immediate distribution from one or more of his or her Post-2004 Accounts in an amount necessary to satisfy such Hardship and the tax liability attributable to such distribution. The Committee shall have complete discretion to accept or reject the request and shall in no event authorize a distribution in an amount in excess of that reasonably required to meet such Hardship and the tax liability attributable to that distribution. Further, if a Participant makes a hardship withdrawal under the Company's 401(k) Plan, the Participant will not be eligible to make any Deferral Elections under the Plan for the Plan Year following the Plan Year during which the Participant made such hardship withdrawal under the Company's 401(k) Plan.

8.4 **Death Before Full Distribution**. If the Participant dies before the entire aggregate balance of his or her Post-2004 Accounts is distributed, then the unpaid balance shall be paid in a lump sum to his or her designated Beneficiary under the Plan. Such payment shall be made as soon as administratively practical following the Participant's death, but in no event later than the ***later*** of (i) the end of the calendar year in which the Participant's death occurs or (ii) the fifteenth (15th) day of the third (3rd) calendar month following the date of the Participant's death. Should the Participant die without a valid Beneficiary designation in effect or after the death of his or her designated Beneficiary, then any amounts due him or her from his or her Post-2004 Accounts shall be paid to his or her estate.

8.5 **Valuation**. The amount to be distributed from any Post-2004 Account shall be determined on the basis of the balance credited to that Account as of the most recent practicable valuation date (as determined by the Committee or its designate) preceding the date of the actual distribution. For a Participant who has elected an installment distribution for any Post-2004 Account, such distribution shall be effected through a series of substantially equal payments (as adjusted for Credited Investment Returns (Losses)), and the amount of each such installment shall accordingly be determined by dividing the balance credited to that Account as of the most recent practicable valuation date (as determined by the Committee) preceding the date of the actual distribution of that installment by the number of installments (including the current installment) remaining in the applicable distribution period.

8.6 **Small Account Balances**. If the aggregate balance of the Participant's Post-2004 Accounts is not greater than the applicable dollar amount in effect under Code Section 402(g)(1)(B) at the time of the Participant's Separation from Service (note: as of the Effective Date, such amount is $16,500 and is scheduled to increase to $17,000 effective January 1, 2012) and the Participant is not otherwise at that time participating in any other non-qualified elective account balance plan subject to Code Section 409A and maintained by one or more Affiliated Companies, then that balance shall be distributed to the Participant in a lump sum distribution as soon as administratively practical following such Separation from Service, whether or not the Participant elected that form of distribution or distribution event, but in no event later than the ***later*** of (i) the end of the calendar year in which such Separation from Service occurs or (ii) the fifteenth (15th) day of the third (3rd) calendar month following the date of such Separation from Service.

8.7 **Mandatory Deferral of Distribution.** Notwithstanding any provision to the contrary in this Article VIII or any other article in the Plan, no distribution which becomes due and payable from any of the Participant's Post-2004 Accounts by reason of his or her Separation from Service shall be made to such Participant prior to the ***earlier*** of (i) the first day of the seventh (7th) month following the date of such Separation from Service or (ii) the date of his or her death, if the Participant is deemed at the time of such Separation from Service to be a Specified Employee ***and*** such delayed commencement is otherwise required in order to avoid a prohibited distribution under Code Section 409A(a)(2). Upon the expiration of such deferral period, all payments deferred pursuant to this Section 8.7 (whether they would have otherwise been payable in a single sum or in installments in the absence of such deferral) shall be paid in a lump sum to the Participant, and any remaining payments due under the Plan shall be paid in accordance with the normal payment dates specified for them herein. During such deferral period, the Participant's Account shall continue to be subject to the investment return provisions of Article IV.

ARTICLE IX
BENEFICIARIES

9.1 **Designation of Beneficiary**. Executive shall have the right to designate on such form as may be prescribed by the Committee a Beneficiary to receive any Supplemental Executive Benefits due to the Participant's deferrals of compensation under the Plan which remain unpaid at the time of his or her death. The Participant shall have the right at any time to revoke such designation and to substitute another such Beneficiary.

9.2 **No Designated Beneficiary**. If, upon the Participant's death, there is no valid designation of Beneficiary, the Beneficiary shall be the Participant's estate.

ARTICLE X
OBLIGATION TO PAY SUPPLEMENTAL EXECUTIVE BENEFITS

10.1 **Benefits Paid from Trust**. All benefits payable to the Participant hereunder shall be paid by the Trustee, to the extent of the assets held in the Trust by the Trustee, and by the Company to the extent the assets in the Trust are insufficient to pay the Participant the Supplemental Executive Benefits to which he or she is entitled under this Plan.

10.2 **Trustee Investment Discretion**. The Deemed Investment Options shall be for the sole purpose of determining the Credited Investment Return (Loss), and neither the Trustee nor the Company shall have any obligation to invest the Participant's Deferral Amounts in the Deemed Investment Options or in any other investment.

10.3 **No Secured Interest**. Except as otherwise provided by the Trust Agreement, the assets of the Trust shall be subject to the claims of creditors of the Company, and no Participant or Beneficiary shall have any legal or equitable interest in such assets or policies or any other asset of the Company. The Participant shall be a general unsecured creditor of the Company with respect to the promises of the Company made herein, except as otherwise expressly provided by the Trust Agreement.

ARTICLE XI
ADMINISTRATION

11.1 **Administration of the Plan.** The Plan shall be administered by the Committee. The Committee shall have full power and discretionary authority to administer, construe and interpret the Plan, to establish procedures for administering the Plan, to prescribe forms, and take any and all necessary or desirable actions in connection with the Plan. The Committee's interpretation and construction of the Plan shall be conclusive and binding on all persons having an interest in the Plan, including (without limitation) all decisions relating to an individual's eligibility for participation in the Plan, his or her entitlement to benefits hereunder and the amount of any such benefit entitlement. The power and authority granted to the Committee herein includes (without limitation) the full authority, in the Committee's sole discretion, to take any action with respect to the Plan or any Participant (including former Participants) that the Committee deems necessary or advisable in order to ensure the compliance of the Plan and each Participant with all applicable laws, rules, regulations, requirements and guidelines. The Committee may appoint a committee or any other agent and delegate to them such powers and duties in connection with the administration of the Plan as the Committee may from time to time prescribe.

11.2 **Indemnification**. The Committee and each of its members shall be indemnified by the Company against any and all liabilities incurred by reason of any action taken in good faith pursuant to the provisions of the Plan.

ARTICLE XII
MISCELLANEOUS

12.1 **No Employment Right**. Neither the action of the Company or the Participating Employer in establishing or maintaining the Plan, nor any action taken under the Plan by the Committee, nor any provision of the Plan itself shall be construed so as to grant any person the right to remain in the employ of the Participating Employer or any other Affiliated Company for any period of specific duration, and the Participant may be discharged at any time, with or without cause.

12.2 **Amendment/Termination**.

(a) The Committee may at any time amend the provisions of the Plan to any extent and in any manner the Committee may deem advisable, and such amendment shall become effective at the time of such Committee action. Without limiting the generality of the foregoing, the Committee may amend the Plan to impose such restrictions upon (i) the timing, filing and effectiveness of Deferral Elections or Extended Deferral Elections and (ii) the distribution provisions of the Plan which the Committee deems appropriate or advisable in order to avoid the current income taxation of amounts deferred under the Plan which might otherwise occur as a result of changes to the tax laws and regulations governing deferred compensation arrangements such as the Plan. The Committee may also at any time terminate the Plan in whole or in part. Except for (i) such modifications, limitations or restrictions as may otherwise be required to avoid current income taxation or other adverse tax consequences to Participants as a result of changes to the tax laws and regulations applicable to the Plan or (ii) as otherwise provided in Sections 12.2(b), (c) and (d) below with respect to the distribution of Participant Accounts, no such plan amendment or plan termination authorized by the Committee shall adversely affect the benefits of Participants accrued to date under the Plan or otherwise reduce the then outstanding balances credited to their Accounts or Deferral Election Subaccounts or otherwise adversely affect the distribution provisions in effect for those Accounts or Subaccounts, and all amounts deferred prior to the date of any such plan amendment or termination shall, subject to the foregoing exception, continue to become due and payable in accordance with the distribution provisions of the Plan as in effect immediately prior to such amendment or termination.

(b) Except as otherwise provided in Sections 12.2(c) and (d) below, in the event of a termination of the Plan, the Participant Accounts may, in the Company's discretion, be distributed within the period beginning twelve (12) months after the date the Plan is terminated and ending twenty-four (24) months after the date of such plan termination, or pursuant to Articles VI, VII and VIII of the Plan, if earlier. If the Plan is terminated and Accounts are distributed, the Company and the other Participating Employers shall also terminate and liquidate all other non-qualified elective account balance deferred compensation plans maintained by them and shall not adopt a new non-qualified elective account balance deferred compensation plan for at least three (3) years after the date the Plan is terminated.

(c) The Company and the other Participating Employers may terminate the Plan thirty (30) days prior to or within twelve (12) months following a Change of Control and distribute, within the twelve (12)-month period following the termination of the Plan, the Accounts of the Participants affected by such Change in Control If the Plan is terminated and Accounts are distributed, the Company and the other Participating Employers shall also terminate all other non-qualified elective account balance deferred compensation plans sponsored by them in which such Participants participate, and all of the benefits accrued under those terminated plans by such Participants shall be distributed to them within twelve (12) months following the termination of such plans.

(d) The Company may terminate the Plan upon a corporate dissolution of the Company that is taxed under Section 331 of the Code or with the approval of a bankruptcy court pursuant to 11 U.S.C. Section 503(b)(1)(A), provided that the Participant Accounts are distributed and included in the gross income of the Participants by the later of (i) the Plan Year in which the Plan terminates or (ii) the first Plan Year in which payment of the Accounts is administratively practicable.

(e) Notwithstanding the foregoing provisions of this Section 12.2 or any other provision in this Plan to the contrary, should the Plan be terminated, then all benefits attributable to the Participant's Pre-2005 Deferred Account shall be paid pursuant to the provisions of Section 5.2 as if such Participant had voluntarily ceased Employee status on the date of such Plan termination.

(f) All amounts remaining in the Trust after all benefits have been paid in connection with the termination of the Plan shall revert to the Company.

12.3 **Applicable Law**. The Plan is intended to constitute an unfunded deferred compensation arrangement for a select group of management and other highly compensated persons, and all rights hereunder shall be construed, administered and governed in all respects in accordance with the provisions of the Employee Retirement Income Security Act of 1974 (as amended from time to time) applicable to such an arrangement and, to the extent not pre-empted thereby, by the laws of the State of California without resort to its conflict-of-laws provisions. If any provision of this Plan shall be held by a court of competent jurisdiction to be invalid or unenforceable, the remaining provisions of the Plan shall continue in full force and effect.

12.4 **Satisfaction of Claims**. Any payment made to a Participant or his or her legal representative or beneficiary in accordance with the terms of this Plan shall to the extent thereof be in full satisfaction of all claims with respect to that payment which such person may have against the Plan, the Committee (or its designate), the Company, the Participating Employer and all other Affiliated Companies, any of whom may require the Participant or his or her legal representative or Beneficiary, as a condition precedent to such payment, to execute a receipt and release in such form as shall be determined by the Committee.

12.5 **Alienation of Benefits**. No person entitled to any benefits under the Plan shall have the right to alienate, pledge, hypothecate or otherwise encumber his or her interest in such benefits, and those benefits shall not, to the maximum extent permissible by law, be subject to claim of his or her creditors or liable to attachment, execution or other process of law. Notwithstanding the foregoing, any benefits otherwise due and payable to the Participant shall instead be distributed to one or more third parties (including, without limitation, the Participant's former spouse) to the extent such distribution is required by a domestic relations order or other order or directive of a court with jurisdiction over the Participant and his or her benefits hereunder, and the Participant shall cease to have any right, interest or entitlement to any benefits to be distributed pursuant to such order or directive.

12.6 **Expenses**. The Accounts and Subaccounts of each Participant shall be charged with its allocable share of all other costs and expenses incurred in the operation and administration of the Plan, except to the extent one or more Participating Employers elect in their sole discretion to pay all or a portion of those costs and expenses.

12.7 **Successors and Assigns**. The obligation of each Participating Employer to make the payments required hereunder shall be binding upon the successors and assigns of that Participating Employer, whether by merger, consolidation, acquisition or other reorganization. Except for such modifications, limitations or restrictions as may otherwise be required to avoid current income taxation or other adverse tax consequences to Participants as a result of changes to the tax laws and regulations applicable to the Plan, no amendment or termination of the Plan by any such successor or assign shall adversely affect or otherwise impair the rights of Participants to receive benefit payments hereunder, to the extent attributable to amounts deferred prior to the date of such amendment or termination, in accordance with the applicable distribution provisions of the Plan as in effect immediately prior to such amendment or termination.

12.8 **Reimbursement of Costs.** If the Company, the Participant, any Beneficiary or a successor in interest to any of the foregoing brings legal action to enforce any of the provisions of this Plan, the prevailing party in such legal action shall be entitled to reimbursed by the other party for the prevailing party's costs of such legal action, including (without limitation) reasonable fees of attorneys, accountants and similar advisors and expert witnesses.

12.9 **Arbitration.** Any dispute or claim relating to or arising from the Plan that cannot be resolved within thirty (30) days of the dispute or controversy through good-faith negotiation or non-binding mediation between the Participant and the Company shall be subject to binding arbitration in Santa Clara, California before the American Arbitration Association under its National Rules for the Resolution of Employment Disputes, supplemented by the California Rules of Civil Procedure. The Company and the Participant shall each bear their own respective costs and attorneys' fees incurred in connection with the arbitration; and the Company shall pay the arbitrator's fees, unless law applicable at the time of the arbitration hearing requires otherwise. The arbitrator shall issue a written decision that sets forth the essential findings of fact and conclusions of law on which the award is based. The arbitrator's decision shall be final and binding to the fullest extent permitted by law and enforceable by any court having jurisdiction thereof.

12.10 **Entire Agreement.** This Plan and any applicable deferral election and beneficiary forms constitute the entire understanding and agreement with respect to the Plan, and there are no agreements, understandings, restrictions, representations or warranties among the Participant, the Company and the Participating Employers other than those as set forth or provided for therein.

ARTICLE XIII
BENEFIT CLAIMS

13.1 **Claims Procedure**. No application is required for the payment of benefits under the Plan. However, if any Participant (or beneficiary) believes he or she is entitled to a benefit from the Plan which differs from the benefit determined by the Committee, then such individual may file a written claim for benefits with the Committee. Each claim shall be acted upon and approved or disapproved within ninety (90) days following receipt by the Committee.

13.2 **Denial of Benefits**. In the event any claim for benefits is denied, in whole or in part, the Committee shall notify the claimant in writing of such denial and of his or her right to a review by the Committee and shall set forth, in a manner calculated to be understood by the claimant, specific reasons for such denial, specific references to pertinent provisions of the Plan on which the denial is based, a description of any additional material or information necessary to perfect the claim, an explanation of why such material or information is necessary, and an explanation of the review procedure.

13.3 **Review**.

(a) Any person whose claim for benefits is denied in whole or in part may appeal to the Committee for a full and fair review of the decision by submitting to the Committee, within ninety (90) days after receiving written notice from the Committee of such denial, a written statement:

(i) requesting a review by the Committee of his or her claim for benefits;

(ii) setting forth all of the grounds upon which the request for review is based and any facts in support thereof; and

(iii) setting forth any issues or comments which the claimant deems pertinent to his or her claim.

(b) The Committee shall act upon each such appeal within sixty (60) days after receipt of the claimant's request for review by the Committee, unless special circumstances require an extension of time for processing. If such an extension is required, written notice of the extension shall be furnished to the claimant within the initial sixty (60)-day period, and a decision shall be rendered as soon as possible, but not later than one hundred twenty (120) days after receipt of the initial request for review. The Committee shall make a full and fair review of each such appeal and any written materials submitted by the claimant or the Participating Employer in connection therewith and may require the Participating Employer or the claimant to submit such additional facts, documents or other evidence as the Committee may, in its sole discretion, deem necessary or advisable in making such a review. On the basis of its review, the Committee shall make an independent determination of the claimant's eligibility for benefits under the Plan. The decision of the Committee on any benefit claim shall be final and conclusive upon all persons.

13.4 **Denial of Appeal.** Should the Committee deny an appeal in whole or in part, the Committee shall give written notice of such decision to the claimant, setting forth in a manner calculated to be understood by the claimant the specific reasons for such denial and specific reference to the pertinent Plan provisions on which the decision was based.

IN WITNESS WHEREOF, the Company has caused this amended and restated Plan to be executed by a duly authorized officer effective as of the Effective Date.

KLA CORPORATION

By: /s/ Teri Little
Name: Teri Little
Title: Executive Vice President and Chief Legal Officer
Dated: July 31, 2019

APPENDIX I

TEXT OF SECTION 1.409A-3(i)(3)(i) OF THE TREASURY REGULATIONS
(AS OF THE EFFECTIVE DATE)

(3) *Unforeseeable emergency* —(i) *Definition.* For purposes of §§1.409A–1 and 1.409A–2, this section, and §§1.409A–4 through 1.409A–6, an *unforeseeable emergency* is a severe financial hardship to the service provider resulting from an illness or accident of the service provider, the service provider's spouse, the service provider's beneficiary, or the service provider's dependent (as defined in section 152, without regard to section 152(b)(1), (b)(2), and (d)(1)(B)); loss of the service provider's property due to casualty (including the need to rebuild a home following damage to a home not otherwise covered by insurance, for example, not as a result of a natural disaster); or other similar extraordinary and unforeseeable circumstances arising as a result of events beyond the control of the service provider. For example, the imminent foreclosure of or eviction from the service provider's primary residence may constitute an unforeseeable emergency. In addition, the need to pay for medical expenses, including non-refundable deductibles, as well as for the costs of prescription drug medication, may constitute an unforeseeable emergency. Finally, the need to pay for the funeral expenses of a spouse, a beneficiary, or a dependent (as defined in section 152, without regard to section 152(b)(1), (b)(2), and (d)(1)(B)) may also constitute an unforeseeable emergency. Except as otherwise provided in this paragraph (i)(3)(i), the purchase of a home and the payment of college tuition are not unforeseeable emergencies. Whether a service provider is faced with an unforeseeable emergency permitting a distribution under this paragraph (i)(3)(i) is to be determined based on the relevant facts and circumstances of each case, but, in any case, a distribution on account of unforeseeable emergency may not be made to the extent that such emergency is or may be relieved through reimbursement or compensation from insurance or otherwise, by liquidation of the service provider's assets, to the extent the liquidation of such assets would not cause severe financial hardship, or by cessation of deferrals under the plan. A plan may provide for a payment upon a specific type or types of unforeseeable emergency, without providing for payment upon all unforeseeable emergencies, provided that any event upon which a payment may be made qualifies as an unforeseeable emergency.

SCHEDULE I

LIST OF PARTICIPATING EMPLOYERS AS OF THE EFFECTIVE DATE

KLA Corporation

VLSI Standards, Inc.

LIST OF PARTICIPATING EMPLOYERS AS OF OCTOBER 1, 2008

KLA-Tencor Corporation

KLA-Tencor Technologies Corporation

VLSI Standards, Inc.

ADE Technologies, Inc.

Exhibit 10.13

CY19 EXECUTIVE INCENTIVE PLAN

(Annual Executive Bonus)

as amended effective July 15, 2019

Plan Summary

This KLA Executive Incentive Plan (the "Plan") is intended to motivate senior executives to achieve short-term and long-term corporate objectives by providing a competitive bonus for target performance and potential upside for outstanding performance.

Plan Period

This Plan is effective for the calendar year period from January 1, 2019 through December 31, 2019 (the "**Plan Period**"). Newly eligible employees (e.g., employees promoted to an incentive-eligible position under this Plan for the first time or a new hire) must be in an eligible position on or before October 1, 2019 as recorded in the HR system in order to qualify for participation in this Plan Period.

Eligible Positions

The Chief Executive Officer ("**CEO**") of KLA Corporation (the "**Company**") and employees of the Company and designated Company subsidiaries (as identified in Addendum A hereto) holding a position at the X2 or F2 level and above (collectively, with the CEO, "**Executives**") are eligible to participate in the Plan.

Program Payments

Bonus payments, based on performance during the Plan Period, will be paid within 90 days following December 31, 2019. Bonus calculations shall be based on paid base salary for the applicable Plan Period. Paid base salary includes base salary and seasonal bonuses paid in some countries if the seasonal bonus is considered a component of the employee's annual salary. Paid base salary does not include relocation allowances and reimbursements, tuition reimbursements, car/transportation allowances, expatriate allowances, commissions, long-term disability payments, or bonuses paid during the Plan Period. A participant must be a regular, active employee of the Company on the date of the payout in order to receive payment. Employees who are promoted or hired into an eligible position during the Plan Period (on or before October 1, 2019) will have their payouts calculated on paid salary from the effective date of the promotion or hire, as recorded in the HR system. If an employee's target bonus changes during the year, the payout will be prorated.

Target Bonus

A target bonus is established as a percent of base salary for each Plan participant.

Funding Threshold

Total available funding for the Plan will be determined by performance against a threshold level as measured by Balanced Scorecard and Operating Margin ("OM")* performance for the Plan Period. The Plan will be fully funded (equivalent to the dollar sum, for all Plan participants in the aggregate, of 2 times the product of each Plan participant's target bonus percentage and paid base salary during the Plan Period) upon achievement of OM Performance of $[**]. This fully funded amount represents the maximum bonus opportunity for all Plan participants in the aggregate and the maximum total cost of the Plan.

Performance Matrix and Determination of Funding Available for Bonus Payments
The level of funding available for payment to participating Executives will be based on performance as measured against the Corporate Balanced Scorecard and OM performance, as provided in the **CY19 Executive Bonus Funding Table** below. Amounts in the table represent the applicable funding multiples. The total level of funding available will be equivalent to the dollar sum, for all Plan participants in the aggregate, of the product of each Plan participant's target bonus percentage and paid base salary during the Plan period multiplied by the funding multiple.

CY19 Executive Bonus Funding Table									
Balanced Scorecard Performance		**Operating Margin ($M) Performance**							
		<[**]	[**]	[**]	[**]	[**]	[**]	[**]	[**]
Exceptional	5	0%	[**]	[**]	[**]	[**]	[**]	[**]	[**]
	4+	0%	[**]	[**]	[**]	[**]	[**]	[**]	[**]
	4	0%	[**]	[**]	[**]	[**]	[**]	[**]	[**]
	3+	0%	[**]	[**]	[**]	[**]	[**]	[**]	[**]
Primarily Meets Expectations	3	0%	[**]	[**]	[**]	[**]	[**]	[**]	[**]
	2+	0%	[**]	[**]	[**]	[**]	[**]	[**]	[**]
	2	0%	[**]	[**]	[**]	[**]	[**]	[**]	[**]
	1+	0%	[**]	[**]	[**]	[**]	[**]	[**]	[**]
Opportunity for Improvement	1	0%	[**]	[**]	[**]	[**]	[**]	[**]	[**]

CY19 Target BSc and Non-GAAP Operating Margin Performance

Multiple cannot exceed 200% regardless of performance

Individual Performance and Determination of Executive Bonus Payments
The actual bonus payment amount for each individual Executive (other than the CEO) will be based on the CEO's assessment of the Executive's performance for the Plan Period and determination of the Executive's bonus achievement as a percentage of the Executive's bonus target. Each Executive's performance will be evaluated based on how effectively that Executive led his or her organization as demonstrated against the key Balanced Scorecard measures and objectives for the Executive's respective organization. The bonus achievement percentage and resultant bonus payment for each Plan participant who is an executive officer of the Company for purposes of Section 16 of the Securities Exchange Act of 1934, as amended, with the exception of the CEO, will be recommended by the CEO and reviewed and approved by the Compensation Committee. The bonus achievement percentage and resultant bonus payment for the CEO will be determined and approved by the Company's Board of Directors (with the CEO recusing himself). The bonus achievement percentage and final bonus payment for all other Plan participants will be reviewed and approved by the CEO.

Bonus Calculation
The formula for a participant's bonus calculation is:

Participant's paid base salary for the Plan Period
x Participant's target bonus percentage

x Participant’s bonus achievement percentage

In no event shall a bonus payment to a participant exceed 2 times such participant’s target bonus (i.e., 2 times the product of the participant’s paid base salary for the Plan Period multiplied by the participant’s target bonus percentage).

General Provisions
The Compensation Committee (or the independent members of the Company’s Board of Directors (the “Independent Directors”)) shall be the Plan Administrator. The Compensation Committee (or the Independent Directors) shall make such rules, regulations, interpretations and computations and shall take such other action to administer the Plan as it may deem appropriate. The establishment of the Plan shall not confer any legal rights upon any employee or other person for a continuation of employment, nor shall it interfere with the rights of the Company to discharge any employee and to treat him or her without regard to the effect which that treatment might have upon him or her as a participant in the Plan.

This Plan shall be construed, administered and enforced by the Compensation Committee (or the Independent Directors), in its sole discretion. The laws of the State of California will govern any legal dispute involving the Plan. The Compensation Committee (or the Independent Directors) may at any time alter, amend or terminate the Plan in its sole discretion.

This Plan is adopted pursuant to the KLA Performance Bonus Plan and sets forth the terms and conditions for the calendar year 2019 annual incentive program for Executives.

* References in this Plan to Operating Margin refer to the Company’s calculation of non-GAAP Operating Margin

ADDENDUM A

Designated Subsidiaries List

1. KLA-Tencor (Singapore) Pte Ltd
2. KLA-Tencor Korea Inc.

Exhibit 21.1

KLA Corporation
List of Subsidiaries as of June 30, 2019

Name	State or Other Jurisdiction of Incorporation / Organization
DOMESTIC SUBSIDIARIES	
International Sales & Business, Inc.	California
KLA-Tencor China Corporation	California
KLA-Tencor International Corporation	California
VLSI Standards, Inc.	California
ADE International Corporation	Delaware
Belize Holdings, LLC	Delaware
KLA-Tencor Asia-Pac Distribution Corporation	Delaware
KT Venture Group, L.L.C.	Delaware
KT Venture Group II, L.L.C.	Delaware
Dino Acquisition Technology L.L.C.	Delaware
Zeta Instruments, Inc.	Delaware
KT Recreation Association, LLC	Delaware
Whiskey Holding Sub, LLC	Tennessee
Capres, Inc.	Delaware
ADE Technologies, Inc.	Massachusetts
Microsense, LLC	Delaware
Nanomechanics Inc.	Tennessee
Filmetrics, Inc.	California
Orbotech, Inc.	Delaware
Photon Dynamics, Inc.	California
Photon Dynamics Solar Corporation	Delaware
Orbotech LT Solar, LLC	Delaware
SPTS Technologies, Inc.	California
Primaxx, Inc.	Delaware
Xactix, Inc.	Pennsylvania
INTERNATIONAL SUBSIDIARIES	
ICOS Vision Systems Corporation BVBA	Belgium
ICOS Vision Systems NV	Belgium
Lee Ta Technologies (BVI), Inc.	British Virgin Islands
KLA-Tencor Corporation (Cayman) Limited, I	Cayman Islands
KLA-Tencor Corporation (Cayman) Limited, III	Cayman Islands
KLA-Tencor Corporation (Cayman) Limited, IV	Cayman Islands
KLA-Tencor Corporation (Cayman) Limited, V	Cayman Islands
ICOS Vision Systems (Shenzhen) Co. Ltd.	China
KLA-Tencor International Trading (Shanghai) Co., Ltd.	China
KLA-Tencor Semiconductor Equipment Technology (Shanghai) Co., Ltd.	China
Zeta Instruments (Shanghai) Co., Ltd.	China
KLA-Tencor France SARL	France
KLA-Tencor GmbH	Germany
KLA-Tencor MIE GmbH	Germany
KLA-Tencor MIE Holdings GmbH & Co. KG	Germany
KLA-Tencor MIE Holdings Verwaltungs GmbH	Germany

Name	State or Other Jurisdiction of Incorporation / Organization
ICOS Vision Systems Ltd.	Hong Kong
KLA-Tencor Software India Private Limited	India
KLA-Tencor Ireland Ltd.	Ireland
Optical Metrology Patents Limited	Ireland
KLA-Tencor Corporation (Israel)	Israel
KLA-Tencor Corporation Holding (1987) Ltd.	Israel
KLA-Tencor Corporation (1992) Ltd.	Israel
KLA-Tencor Integrated Metrology (Israel) (2002) Ltd.	Israel
Tiburon-Sub Technologies Ltd.	Israel
KLA-Tencor Italy S.R.L.	Italy
KLA-Tencor Japan, Ltd.	Japan
KLA-Tencor Korea, Inc.	Korea
KLA-Tencor MIE Holdings S.à r.l.	Luxembourg
KLA-Tencor (Malaysia) Sdn Bhd	Malaysia
KLA-Tencor (Singapore) Pte. Ltd.	Singapore
KLA-Tencor Singapore Holding Co. Pte. Ltd.	Singapore
KLA-Tencor Singapore Holding Co. Pte II Ltd.	Singapore
KLA Instruments S.A.	Switzerland
KLA-Tencor (Thailand) Limited	Thailand
KLA-Tencor Limited	United Kingdom
Lakers Holding Company APS	Denmark
Capres A/S	Denmark
Filmetric Europe Gmbh	Germany
Filmetrics Korea Ltd	South Korea
Orbotech Ltd	Israel
Orbograph Ltd.	Israel
Frontline P.C.B. Solutions (1998) Ltd.	Israel
Frontline P.C.B. Solutions LP	Israel
Orbot Systems Ltd.	Israel
Laser Imaging Systems GmbH	Germany
New System SRL	Italy
Orbotech Deutschland GmbH	Germany
Orbotech S.A.	Belgium
Orbotech Pacific Ltd.	Hong Kong
Orbotech Electronics (Shenzhen) Co., Ltd	China
Orbotech Electronics (Suzhou) Co Ltd	China
Orbotech Trading (Shanghai) Co., Ltd	China
Orbotech Japan Ltd	Japan
Orbotech Asia Ltd	Hong Kong
Orbotech Singapore Corporation Pte Ltd	Singapore
Orbotech Korea Ltd	Korea
Orbotech Logistics Ltd	Hong Kong
SPTS Technologies GmbH	Germany
SPTS Technologies SAS	France
SPTS Technologies Limited	UK
SPTS Technologies Ltd	Taiwan
SPTS Technologies Pte Ltd.	Singapore

Name	State or Other Jurisdiction of Incorporation / Organization
SPTS Technologies (Shanghai) Co. Ltd.	China
Orbotech Holding UK Ltd.	UK
PixCell Medical Technologies Ltd.	Israel
SPTS Technologies Group Ltd.	UK
SPTS Technologies Holdings Ltd.	UK
SPTS Technologies Investment Ltd	UK
SPTS Technologies Sapphire Ltd	UK
SPTS Technologies UK Ltd	UK
SPTS Technologies ET Ltd	UK
SPTS Technologies Overseas Holdings Ltd.	UK
Orbotech Technology Ventures Ltd.	Israel
Orbotech Technology Ventures LP	Israel
Orbotech Holding GmbH	Germany
Orbot Europe S.A	Belgium
Orbotech B.V.	Netherlands
Orbotech Caribbean Ltd.	British Virgin Islands

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-222827), Form S-4 (No. 333-224982, No. 333-229462) and Form S-8 (No. 033-88662, No. 333-03003, No. 333-22939, No. 333-22941, No. 333-26681, No. 333-32537, No. 333-45271, No. 333-60887, No. 333-60883, No. 333-68415, No. 333-68423, No. 333-85123, No. 333-85121, No. 333-49828, No. 333-60864, No. 333-75944, No. 333-100166, No. 333-113358, No. 333-120218, No. 333-121637, No. 333-129868, No. 333-140743, No. 333-144003, No. 333-147434, No. 333-147437, No. 333-152864, No. 333-159017, No. 333-162887, No. 333-168618, No. 333-192167, No. 333-198006, No. 333-219734, No. 333-228283, No. 333-230112) of KLA Corporation of our report dated August 16, 2019 relating to the financial statements and financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
San Jose, California
August 16, 2019

EXHIBIT 31.1

Certification of Chief Executive Officer
Pursuant to Exchange Act Rule 13a-14(a)/15d-14(a) As Adopted
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Richard P. Wallace, certify that:

1. I have reviewed this Annual Report on Form 10-K of KLA Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

August 16, 2019	/s/ RICHARD P. WALLACE
(Date)	**Richard P. Wallace** **President and Chief Executive Officer** **(Principal Executive Officer)**

EXHIBIT 31.2

Certification of Chief Financial Officer
Pursuant to Exchange Act Rule 13a-14(a)/15d-14(a) As Adopted
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Bren D. Higgins, certify that:

1. I have reviewed this Annual Report on Form 10-K of KLA Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

August 16, 2019	/s/ BREN D. HIGGINS
(Date)	**Bren D. Higgins** **Executive Vice President and Chief Financial Officer** **(Principal Financial Officer)**

Exhibit 32

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

I, Richard P. Wallace, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of KLA Corporation on Form 10-K for the fiscal year ended June 30, 2019 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of KLA Corporation.

August 16, 2019	By:	/s/ RICHARD P. WALLACE
(Date)	**Name:**	**Richard P. Wallace**
	Title:	**President and Chief Executive Officer**

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

I, Bren D. Higgins, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of KLA Corporation on Form 10-K for the fiscal year ended June 30, 2019 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of KLA Corporation.

August 16, 2019	By:	/s/ BREN D. HIGGINS
(Date)	**Name:**	**Bren D. Higgins**
	Title:	**Executive Vice President and Chief Financial Officer**