

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, 2020

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

(State or other jurisdiction of
incorporation or organization)

04-2564110

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

One Technology Drive, Milpitas, California

(Address of Principal Executive Offices)

95035

(Zip Code)

Registrant's Telephone Number, Including Area Code: (408) 875-3000

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

<u>Title of Each Class</u>	<u>Trading Symbol(s)</u>	<u>Name of Each Exchange on Which Registered</u>
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 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 ☒

Non-accelerated filer ☐

(Do not check if a smaller reporting company)

Accelerated filer ☐

Smaller reporting company ☐

Emerging growth company ☐

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

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, 2019, was approximately \$27.90 billion.

The registrant had 155,461,444 shares of common stock outstanding as of July 20, 2020.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the 2020 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, 2020, 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, the future impacts of the COVID-19 pandemic; 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 842 and 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, 2021. 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

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

The Company

KLA Corporation (“KLA” or the “Company” and also referred to as “we” or “our”) is a global leader in process control and a supplier of process-enabling solutions for a broad range of industries, including semiconductors, printed circuit boards (“PCBs”) and displays. We provide 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, flat and flexible panel displays, and general materials research, as well as providing contracted and comprehensive installation and maintenance services across our installed base.

KLA was formed as KLA-Tencor 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.

In February 2019, KLA completed the acquisition of Orbotech, Ltd. (“Orbotech”) and transformed its organizational structure into 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 help integrated circuit manufacturers achieve target yield throughout the entire semiconductor fabrication process—from research and development (“R&D”) to final volume production. KLA’s differentiated products and services are designed to provide comprehensive solutions to help 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, KLA 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.

In the PCB, Display and Component Inspection segment, KLA enables electronic device manufacturers to inspect, test and measure 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.

KLA’s suite of advanced products, coupled with its unique yield management software and 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 and improving their overall profitability and returns on investment.

Additional information about KLA is available at www.kla.com. The Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, are available free of charge on the website as soon as reasonably practicable after they are electronically filed with or furnished to the Securities and Exchange Commission (“SEC”). Information contained on KLA’s website is not part of this Annual Report on Form 10-K or KLA’s 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 KLA announces material financial information to investors using an investor relations website (ir.kla.com), including SEC filings, press releases, public earnings calls and conference webcasts. These channels are used to communicate with the public about the company, products, services and other matters.

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 and involves 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. The majority of chips consist of two main structures: the lower structure, typically consisting of transistors or capacitors which perform the “smart” functions; 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 then mounted onto PCBs for connection to the rest of the electronic system. 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 multiple growth drivers bolstered by demand for chips from leading edge foundry and logic manufacturers to support computational power and connectivity for markets such as artificial intelligence (“AI”) and 5G wireless technology. Growth of the virtual interaction driven by COVID-19 related travel restrictions and quarantines as well as work from home requirements, advances in healthcare and industrial application together with the increasing adoption of electrical vehicles and intelligence in automobiles are powering leading-edge node technology investments and capacity expansions. Intertwined in these areas, spurred by the requirements of big data, is the growth in demand for memory chips. Finally, China continues to emerge 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. China is currently seen as an important long-term growth region for the semiconductor capital equipment sector.

The semiconductor industry continually introduces numerous technology changes to support this multi-segmented market growth. KLA’s inspection, metrology and data analytics technologies play key roles in enabling our customers to develop and manufacture advanced semiconductor devices to support and innovate around 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. 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 advanced 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 semiconductors 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 \$10.00 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 and production of these new technologies at scale, KLA enables customers to better leverage increasingly expensive facilities and improve return on investment (“ROI”). Once customers’ production lines are operating at high volume, KLA’s systems monitor to ensure yields are stable and process excursions are identified for quick resolution. In addition, each new generation’s smaller design rules, coupled with new materials and device innovation, increased in-process variability, which requires a subsequent 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 they can identify and address the underlying process

problems. The ability to locate the source of defects and resolve the underlying process issues enables KLA customers to improve control over the manufacturing processes, increasing their yield of high-performance parts and delivering products to market faster—thus maximizing profits. With a broad portfolio of application-focused technologies and dedicated yield technology expertise, KLA is in position to be a key supplier of comprehensive yield management solutions for customers' next-generation products. KLA helps 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.

KLA's SPTS group, a semiconductor processing business from the Orbotech acquisition, 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 creates 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.

KLA provides a comprehensive portfolio of PCB 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, autonomous 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.

KLA also provides complete yield management solutions for the FPD market 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, 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 and electrical testing support customers in Printed Circuit Board Manufacturing and Flexible and Flat Panel Display Manufacturing. SPTS's wafer processing equipment supports customers in Advanced Packaging Manufacturing and manufacturing of semiconductor devices such as MEMS, high speed RF ICs, power semiconductors and LEDs. Some of the company's more significant products are described below and are 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 quality throughout wafer and chip fabrication processes. These offerings are designed 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 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 and reliability 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 can take quick corrective action, resulting in faster quality improvement and better time to market.

For patterned wafer optical inspection, we provide our 3920 Series, 3900 Series, 2930 Series, 2920 Series, 2910 Series and 2900 Series (high resolution broadband plasma defect inspection); the Voyager 1015 (laser scanning defect inspection); the Puma 9980 Series, Puma 9850 Series and Puma 9650 Series (laser scanning defect inspection); our 8 Series systems, including the 8930, introduced in the fiscal year ended June 30, 2020, (high productivity defect inspection); and our CIRCL cluster tool (defect inspection, review and metrology of all wafer surfaces – front side, edge and backside).

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

Our eSL10 electron-beam (“e-beam”) patterned wafer defect inspection system was launched during the fiscal year ending June 30, 2020. The eSL10 detects very small defects, including those at the bottom of deep trenches and contact holes, helping chipmakers accelerate development and ramp of advanced logic and memory devices.

For unpatterned wafer inspection, we provide our Surfscan SP7, Surfscan SP5 and Surfscan SP3 inspectors. These Surfscan Series systems find defects on bare wafers, smooth films and rough films. We also offer our SURFmonitor technology for surface quality measurements and capture of low-contrast defects. For wafer manufacturers, the Surfscan Series detects defects and assesses surface quality during the development and production of polished wafers, epi wafers and engineered substrates. These systems also play a critical role in determining outgoing substrate quality. For chip manufacturers, the Surfscan systems qualify incoming bare wafers, and qualify and monitor processes from development through production. For original equipment manufacturers (“OEMs”) and materials suppliers, the Surfscan Series support process development and process tool qualification.

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.

Metrology

KLA’s metrology solutions address 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 devices are becoming more complex with shrinking critical dimensions and narrowing film thicknesses.

The Archer Series of imaging-based overlay metrology systems enable characterization of overlay error on lithography process layers for advanced patterning technologies. These systems include the Archer 750, launched during the fiscal year ended June 30, 2020, which utilizes wavelength tunability to produce accurate overlay measurements. The ATL Series of scatterometry-based overlay metrology systems utilize tunable laser technology to accurately measure overlay error measurements in the presence of production process variations.

The SpectraShape optical CD and shape metrology systems characterize and monitor the critical dimensions (“CDs”) and 3D shapes of geometrically complex features incorporated by some IC manufacturers into their latest generation devices. These systems include the SpectraShape 11k metrology system, launched during the fiscal year ended June 30, 2020, which precisely measures the CDs and three-dimensional shapes of finFET, 3D NAND and other complex IC device structures at critical 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 used to predict device electrical performance earlier than end of line test.

The PWG3 and PWG2 patterned wafer geometry metrology systems measure stress-induced wafer shape, wafer shape-induced pattern overlay errors, wafer thickness variations and wafer dual-sided topography for a wide range of IC manufacturing 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, 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 can make up a standalone memory chip or are embedded into a 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.

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.

The OVALiS Software Suite joined our data analytics product portfolio through the acquisition of Qoniac GmbH during the fiscal year ending June 30, 2020. OVALiS supports on-product process optimization, diagnostics, monitoring and control for lithography and other patterning steps that are critical to IC manufacturing. 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.

In Situ Process Monitoring

KLA’s SensArray portfolio includes advanced wireless and wired wafers and reticles that enable in situ monitoring of the production process environment for many semiconductor, flat panel display and reticle fabrication processes, and fab-wide monitoring of automated wafer handling. Introduced in the fiscal year ended June 30, 2020, the EtchTemp-HD in situ wafer temperature measurement system enables across-wafer temperature monitoring that strongly correlates with CD uniformity control for conductor etch applications, while the MaskTemp 2 in situ reticle temperature measurement system is used by reticle manufacturers for qualification and monitoring of e-beam writers and high temperature reticle process steps.

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.

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 detects critical pattern and particle defects at high throughput for the development and qualification of leading-edge EUV and optical patterned reticles. Our reticle inspection portfolio also includes the Teron 600 Series for development and manufacturing of advanced optical and EUV reticles, 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 in 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.

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

Packaging Process Control on Wafer

The Kronos™ patterned wafer inspection 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. Zeta-5xx and Zeta-6xx optical surface profilers measure both wafers and panels for packaging metrology applications. These applications include bump height, under-bump metallization (“UBM”) step height, film thickness, and redistribution layer (“RDL”) height and width.

Packaging Process Control After Singulation

After wafer test and dicing, the detection of hairline cracks in bare dies or in fan-in wafer-level packages is achieved with the ICOS™ F160 die sorting and inspection system. Once the ICs are fully packaged, ICOS™ T3/T7/T8 series and MV series of component inspection systems provide automated inspection and metrology capabilities across all different types of packages for detection of issues that affect final package quality. Modular tool architecture allows for inspection solutions to be customized to meet the requirements of different package types with varying size and interconnect styles, while allowing for either tray or tape output. Component inspection capability includes 3D coplanarity inspection, measurement of the evenness of the contacts, component height and two-dimensional (“2D”) surface inspection.

Compound Semiconductor, Power Device, LED, MEMS and Data Storage Media/Head 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, WI-2280 inspection systems and KLA stylus and optical profilers. These products are used for the inspection and metrology of substrates, epitaxial layers and process films.

Leading power device manufacturers are targeting faster development and ramp times, higher product yields and lower device costs. To achieve these goals, they are implementing solutions for characterizing yield-limiting defects and processes including full-surface, high sensitivity defect inspection and profiler metrology systems that provide accurate process feedback, thus improving SiC substrate and epitaxy wafer quality and yield.

To support power device manufacturing, tools such as 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 Tencor 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 Tencor 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.

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. Offered under the KLA Instruments brand, the 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, or improve their manufacturing productivity, 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 semiconductor and microelectronic devices such as MEMS, high speed RF IC power semiconductors, and LEDs. 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 DSi-v, Rapier™, Synapse™, and ICP process modules. DSi-v and Rapier deep reactive ion etch (“DRIE”) modules etch large and small structures in silicon MEMS devices such as microphones, accelerometers and gyroscopes. The Rapier module is also used in advanced packaging to create through-silicon vias, and to rapidly etch Si wafers to a thickness of 5µm for very high density die stacking. The Synapse module etches strongly bonded materials such as silicon oxide and glass for photonics, SiC for next generation 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 silicon nitride, GaN and III-V semiconductors.

The Mosaic™ Plasma Dicing solution includes the Rapier-S series of process modules and uses a plasma etch process to singulate die on full thickness and taped-framed wafers. Because plasma dicing is not a physical process and not restricted by blade width, chip designers can place die much closer together, increasing die count per wafer. Unlike conventional dicing techniques, plasma dicing does not chip or crack die, does not generate localized hot-spots, and produces fewer defects. 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 high breakdown strength and 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.

PCB, Display and Component Inspection:

Printed Circuit Board 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 a photo-imageable layer which is coated over the conductive layer substrate either through a direct imaging ("DI") or masked based photolithographic process followed by a chemical development and etching removal process of excess conducting material, leaving the desired conducting metal pattern printed on the layer.

Because of the complexity of each step in the process of PCB manufacturing, sophisticated equipment is required in order to enable manufacturing, especially of high complexity boards where high accuracy is required. Dimensions of PCB boards change during the manufacturing process and digital printing is required in order to compensate for these changes and meet demand for high accuracy. 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 enabling designs with higher density and miniaturization at high yield.

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, rigid-flex and advanced multi-layer boards ("MLB") PCB 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 other BGA and CSP substrates. Orbotech Diamond is a high capacity, high throughput DI series for a wide variety of solder mask applications.

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, inkjet-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 mass production PCB legend and serialization needs.

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 meet small via shape quality and accuracy specifications. 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.

Computer Aided Engineering/Manufacturing

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.

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.

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, 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 electrical testing 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 (“AOF”)

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 testing systems detect, locate, quantify and characterize electrical, contamination and other defects in 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.

Software Platform - Orbotech OASIS (Orbotech Advanced Software Integrated Solution)

Orbotech OASIS is an artificial intelligence-driven software platform for increased operational efficiency and yield enhancement of panel display manufacturing. Orbotech OASIS™ delivers actionable manufacturing intelligence to customers, enabling them to make faster and smarter operational and process control decisions by leveraging advanced algorithms and machine learning of the data generated by their systems.

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 array of service options. Whether a manufacturing site is producing integrated circuits, wafers, reticles, ICs, display or PCB products, our highly trained 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 eSL10 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	eDR7xxx™ 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 microRSP® Series
		Magnetic Metrology	MicroSense PKMRAM, KerrMapper
		Surface Metrology	HRP® Series Tencor™ P Series Zeta™ Series
	Data Analytics		
		Inspection and Metrology Data Analysis	Klarity® product family 5D Analyzer® RDC FabVision® ProDATA™ Qoniac OVALiS
	In Situ Process Management		
		Lithography, Plasma Etch, Deposition, CMP, Ion Implant, Wet Processing, e-beam Mask Write, Reticle Processing, Wafer Handling	SensArray® product family
	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		
		Packaging Process Control on Wafer	CIRCL™-AP, Kronos™ Series, 8 Series, Zeta™-5xx/6xx, WI-2280
		Automated Optical Inspection	Ultra Fusion™ VeriFine™ Ultra Dimension™
		Data Analytics	Klarity® product family
		Packaging Process Control After Singulation	Kronos™ Series, ICOST™ F16x, ICOST™ T3/T7/T8 Series MV9xxx™ Series
	Compound Semiconductor HDD Manufacturing		
		LED, Photonics, RF Communications	8 Series, WI-2280, Candela® 8720, Zeta™-388, MicroXAM Series, Tencor™ P Series, HRP® Series, MicroSense UltraMap® Series
		Power Devices	8 Series, WI-2280, Candela® 8520, MicroXAM Series, Tencor™ P Series, HRP® Series
		MEMS	8 Series, Tencor™ 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, Tencor™ P-17 OF, Nano Indenter® G200X
		Data Storage Media Head Manufacturing	8 Series, Candela® 71xx, Candela® 63xx, HRP® Series, Tencor™ P Series, Zeta™-20, MicroXAM Series MicroSense Polar Kerr, DiskMapper
		Data Analytics	Klarity® product family
	General Purpose/Lab Applications		
		Surface Metrology: Stylus Profilometer	Tencor™ P Series, Alpha-Step® product family, HRP® Series
		Surface Metrology: Optical Profilometer	MicroXAM Series, Zeta™ Series, Filmetrics® Profil3D series
		Nanomechanical and Micromechanical Testers	Nano Indenter® G200X, T150 UTM, uNano™ iMicro, iNano®
		Thin Film Reflectometers	Filmetrics® F-series

SEGMENT	MARKETS	APPLICATIONS	PRODUCTS
Specialty Semiconductor Process			
	Semiconductor Manufacturing		
		Etch	Omega® Series Primaxx® Series Xactix® Series
		Plasma Dicing	Mosaic™ Series
		Deposition	Sigma® Series Delta™ Series MVD® Series
		Additive Printing	Magna™ JEText™
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
		Smart Factory/Industry 4.0	Orbotech Smart Factory
	Display		
		Inspection	Orbotech Quantum™ Series FPI-6000 Series
		Electrical Testing	Array Checker™ Series Accelon Series
		Repair	Orbotech Prism™ Series Array Saver™ Series
		Software Platform	Orbotech OASIS (Orbotech Advanced Software Integrated Solution)
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, 2020, 2019 and 2018, the following customers each accounted for more than 10% of total revenues primarily in Semiconductor Process Control segment:

Year ended June 30,		
2020	2019	2018
Taiwan Semiconductor Manufacturing Company Limited	Taiwan Semiconductor Manufacturing Company Limited	Samsung Electronics Co., Ltd.
Samsung Electronics Co., Ltd.		

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, semiconductor-related and electronic device manufacturers, and it is impacted by the investment patterns of such manufacturers in different global markets. Downturns in the semiconductor 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 deep long-term relationships with our customers. We focus on providing comprehensive resources for the full breadth of process control, process-enabling and yield management solutions for manufacturing and testing wafers and reticles, integrated circuits, 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, 2020, we employed approximately 4,020 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 89%, 87%, and 88% of our total revenues in the fiscal years ended June 30, 2020, 2019 and 2018, respectively. Additional information regarding our revenues from foreign operations for our last three fiscal years can be found in Note 19, "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 \$2.13 billion and \$1.84 billion as of June 30, 2020 and 2019, 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 cyclicity 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 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, 2020, we employed approximately 2,870 full-time research and development personnel.

Our key research and development activities during the fiscal year ended June 30, 2020 involved the development of process control and process-enabling solutions for a broad range of industries including semiconductors, printed circuit boards and displays. 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, 2020, we employed approximately 1,830 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 have many competitors, including companies such as Applied Materials, Inc., ASML Holding N.V., Hitachi High-Technologies Corporation, Onto Innovation, Inc. and Lasertec, 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 capabilities into their existing development and manufacturing processes to enhance productivity. Significant competitive factors in the market for process control and process-enabling 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 could 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 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, 2020, we employed approximately 10,600 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.
etching	A process step in which layers of material are removed from a semiconductor wafer in a specific pattern.
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.
finFET	A type of field-effect transistor (FET), often with source and drain geometries that resemble fins.
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.
geometry	The surface shape of an object, such as the 3D shape of a semiconductor device structure or the shape of base or patterned wafers
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.”
ingot	A piece of pure metal intended to be processed. In semiconductors, a silicon ingot is typically created in such a way that slicing cross-sections creates bare wafers.

interconnect	A highly conductive material, usually copper or aluminum, which carries electrical signals to different parts of a die.
internet of things (IoT)	A network of devices with the ability to transfer data without human interaction.
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.
photovoltaic	The property of semiconductor devices to create electric current through exposure to sunlight.
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/semiconductors-101/frequently asked questions/](https://www.semiconductors.org/semiconductors-101/frequently%20asked%20questions/).

ITEM 1A. RISK FACTORS

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

Risks Related to the COVID-19 Pandemic

The current COVID-19 pandemic and the potential aftereffects from it could materially harm our business, financial condition and results of operations.

The COVID-19 pandemic has caused substantial global disruptions, including in the jurisdictions where we conduct business and may cause additional disruptions in the future, which are impossible to predict. Local, regional and national authorities in numerous jurisdictions have implemented a variety of measures designed to slow the spread of the virus, including social distancing guidelines, quarantines, banning of non-essential travel and requiring the cessation of non-essential activities on the premises of businesses.

Some of the risks associated with the pandemic or a worsening of the pandemic in the future include:

- cancellation or reduction of routes available from common carriers, which may cause delays in our ability to deliver or service our products or receive components from suppliers necessary to manufacture or service our products;
- travel bans or the requirement to quarantine for a lengthy period after entering a jurisdiction, which may delay our ability to install the products we sell or service those products following installation;
- governmental orders or employee exposure requiring us, our customers or our suppliers to discontinue manufacturing products at our respective facilities for a period of time;
- reduced demand for our products, push-out of deliveries or cancellation of orders by our customers caused by a global recession resulting from the pandemic and the measures implemented by authorities to slow the spread of COVID-19;
- increased costs or inability to acquire components necessary for the manufacture of our products due to reduced availability;
- absence of liquidity at customers and suppliers caused by disruptions from the pandemic, which may hamper the ability of customers to pay for the products they purchase on time or at all, or hamper the ability of our suppliers to continue to supply components to us in a timely manner or at all; and
- loss of efficiencies due to remote working requirements for our employees.

If any of the foregoing risks occur or intensify during this pandemic, our business, financial condition and results of operations could be materially adversely affected.

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 a 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. Cyclicity 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 cyclicity 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, 2020, we had \$3.50 billion aggregate principal amount of outstanding indebtedness, consisting of \$3.45 billion aggregate principal amount of senior, unsecured long-term notes and \$50.0 million borrowed under our Revolving Credit Facility, and an additional \$950.0 million in unfunded commitments. 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 \$3.00 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 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,” in the Notes to 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 the 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 and may do so again in the future, which could have a material negative impact on our results of operations.

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.

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 but not limited to declines in our operating cash flows, declines in our stock price or market capitalization, declines in our market share, and declines in revenues or profits. 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:

- global trade issues and changes in and uncertainties with respect to trade policies, including the ability to obtain required import and export licenses, trade sanctions, tariffs, and international trade disputes;
- political and social attitudes, laws, rules, regulations and policies within countries that favor domestic companies over non-domestic companies, including customer- or government-supported efforts to promote the development and growth of local competitors;
- ineffective or inadequate legal protection of intellectual property rights in certain countries;
- 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;
- existing and potentially new tariffs or other trade restrictions and barriers (including those applied to our products, spare parts, and services 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;
- receiving prepayments for certain of our products and services sold in certain jurisdictions. These prepayments increase our cash flows for the quarter in which they are received. If our practice of requiring prepayments in those jurisdictions changes or deteriorates, our cash flows would be harmed.
- 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 restrict our ability to import or export our products and services or increase the cost of our operations through the imposition of tariffs, new controls, outright bans, or otherwise, could harm our business. For example, the United States Department of Commerce has added numerous China-based entities to the U.S. Entity List, including Fujian Jinhua Integrated Circuit Company, Ltd. ("JHICC") and certain Huawei entities, restricting our ability to provide products and services to such entities without a license. In addition, the U.S. Department of Commerce has imposed new export licensing requirements on China-based customers engaged in military end uses, as well as requiring our customers to obtain an export license when they use certain semiconductor capital equipment based on U.S. technology to manufacture custom products for Huawei or its affiliates.

To date, these new rules have not significantly impacted our operations, but we are continually monitoring their impact.. Similar actions by the U.S. government or another country could impact our ability to provide our products and services to existing and potential customers.

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 of such investments, 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. In addition, current or future immigration laws, policies or regulations may limit our ability to attract, hire and retain 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 and pandemics, 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 of 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 14 “Income Taxes” in the Notes to the 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. 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 Tax Cuts and Jobs 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.

ITEM 2. PROPERTIES

Our headquarters are located in Milpitas, California. As of June 30, 2020, 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 January 4, 2037, 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 9 “Leases” 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, 2020 is set forth below:

(Square Feet)	United States	Other Countries	Total
Owned ⁽¹⁾	727,302	695,048	1,422,350
Leased	414,378	1,612,319	2,026,697
Total	1,141,680	2,307,367	3,449,047

(1) Includes 248,155 square feet of property owned at our 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 3, 2020, we announced that our Board of Directors had approved an increase in the quarterly cash dividend level to \$0.90 per share. On August 6, 2020, we announced that our Board of Directors had declared a quarterly cash dividend of \$0.90 per share to be paid on September 1, 2020 to stockholders of record as of the close of business on August 17, 2020.

As of July 20, 2020, there were 393 holders of record of our common stock.

Equity Repurchase Plans


Our Board of Directors has authorized a program which permits us to repurchase up to \$3.00 billion of our common stock, reflecting an increase of \$1.00 billion authorized by our Board of Directors during the fiscal year ended June 30, 2020. These repurchases may be effected through various different repurchase transaction structures, including isolated open market transactions or systematic repurchase plans, in all cases, subject to compliance with applicable law. This repurchase program has no termination date and may be suspended or discontinued at any time. We did not repurchase any shares under this authorization in the fourth quarter of fiscal year ended June 30, 2020. As of June 30, 2020, we have approximately \$1.04 billion that may yet be purchased under this authorization.

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, 2015 to June 30, 2020.

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	June 2015	June 2016	June 2017	June 2018	June 2019	June 2020
KLA Corporation	\$100.00	\$134.78	\$172.89	\$198.49	\$235.36	\$395.31
S&P 500	\$100.00	\$103.99	\$122.60	\$140.23	\$154.83	\$166.45
PHLX Semiconductor	\$100.00	\$103.77	\$157.95	\$203.93	\$231.07	\$321.96

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.

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,				
	2020	2019	2018	2017	2016
Consolidated Statements of Operations⁽¹⁾⁽²⁾:					
Total revenues	\$ 5,806,424	\$ 4,568,904	\$ 4,036,701	\$ 3,480,014	\$ 2,984,493
Net income attributable to KLA ⁽³⁾	\$ 1,216,785	\$ 1,175,617	\$ 802,265	\$ 926,076	\$ 704,422
Cash dividends declared per share	\$ 3.30	\$ 3.00	\$ 2.52	\$ 2.14	\$ 2.08
Net income per share attributable to KLA:					
Basic	\$ 7.76	\$ 7.53	\$ 5.13	\$ 5.92	\$ 4.52
Diluted	\$ 7.70	\$ 7.49	\$ 5.10	\$ 5.88	\$ 4.49

	As of June 30,				
	2020	2019	2018	2017	2016
Consolidated Balance Sheets⁽¹⁾⁽²⁾:					
Cash, cash equivalents and marketable securities	\$ 1,980,472	\$ 1,739,385	\$ 2,880,318	\$ 3,016,740	\$ 2,491,294
Working capital ⁽⁴⁾⁽⁵⁾	\$ 3,023,759	\$ 2,546,589	\$ 3,334,730	\$ 3,102,094	\$ 2,868,062
Total assets	\$ 9,279,960	\$ 9,008,516	\$ 5,638,619	\$ 5,550,334	\$ 4,977,076
Long-term debt ⁽⁶⁾	\$ 3,469,670	\$ 3,173,383	\$ 2,237,402	\$ 2,680,474	\$ 3,057,936
Total KLA stockholders’ equity ⁽⁶⁾	\$ 2,665,424	\$ 2,659,108	\$ 1,620,511	\$ 1,326,417	\$ 689,114

- (1) On July 1, 2018, we adopted Accounting Standards Codification (“ASC”) 606, Revenue from Contracts with Customers (“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 purchase consideration of approximately \$3.26 billion. The operating results of Orbotech have been included in our Consolidated Financial Statements from the Acquisition Date in 2019. 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.
- (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 non-current. No prior periods were retrospectively adjusted.
- (5) On July 1, 2019, we adopted ASC 842, Leases (“ASC 842”) on a prospective basis. The adoption of ASC 842 resulted in the balance sheet recognition of additional lease assets and lease liabilities of \$110.7 million and \$108.7 million, respectively. Refer to Note 1 “Description of Business and Summary of Significant Accounting Policies” to our Consolidated Financial Statements for additional details.
- (6) Our long-term debt increased to \$3.47 billion at the end of fiscal year ended June 30, 2020 because we issued \$750.0 million aggregate principal amount of senior, unsecured long-term notes and prepaid \$500.0 million of senior notes including payment of accrued interest and other costs. 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.

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 2019 to fiscal year 2018 have been omitted. Such omitted discussion can be found under Item 7 of our Form 10-K for the fiscal year ended June 30, 2019, filed with the SEC.

EXECUTIVE SUMMARY

We are a global leader in process control and a supplier of process-enabling solutions and services for the data era.

We are a leading supplier of process control and yield management solutions and services for the semiconductor, PCB and Display markets. 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 services 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, PCB and Display 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 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. The Data Era is creating multiple drivers for growth, with increased demand for advanced and lower cost chips for Artificial Intelligence ("AI"), 5G connectivity, virtual interaction, electric cars, advanced driver assistance automotive systems ("ADAS"), Internet of Things ("IoT") and mobile devices.

The semiconductor and electronics industries have also been characterized by constant technological innovation. 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.

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 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.

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,		
	2020	2019	2018
Total revenues	\$ 5,806,424	\$ 4,568,904	\$ 4,036,701
Costs of revenues	\$ 2,449,561	\$ 1,869,377	\$ 1,446,041
Gross margin percentage	58 %	59 %	64 %
Net income attributable to KLA ⁽²⁾	\$ 1,216,785	\$ 1,175,617	\$ 802,265
Diluted net income per share attributable to KLA	\$ 7.70	\$ 7.49	\$ 5.10

- (1) 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 Condensed Consolidated Financial Statements from the Acquisition Date. For additional details, refer to Note 6 "Business Combinations" in the Notes to our Consolidated Financial Statements.
- (2) Our net income attributable to KLA for the year ended June 30, 2020 includes a pre-tax goodwill impairment charge of \$256.6 million and a pre-tax charge of \$22.5 million as a result of the extinguishment of debt. For additional details, refer to Note 7 "Goodwill and Purchased Intangible Assets" and Note 8 "Debt" in the Notes to our Consolidated Financial Statements.

Impact of COVID-19

Events surrounding the ongoing COVID-19 pandemic have resulted in a reduction in economic activity across the globe. The severity and duration of these economic repercussions remain largely unknown and ultimately will depend on many factors, including the speed and effectiveness of the containment efforts throughout the world. The extent to which the COVID-19 pandemic will impact demand for our products depends on future developments, which are highly uncertain and very difficult to predict, including new information that may emerge concerning the severity of the virus and actions to contain and treat its impacts. While all of our global sites are currently operational, our facilities could be required to temporarily curtail production levels or temporarily cease operations based on government mandates.

From the start of the COVID-19 pandemic, we proactively implemented preventative protocols intended to safeguard our employees, contractors, suppliers, customers, and communities, and ensure business continuity in the event government restrictions or severe outbreaks impact our operations at certain sites. We remain committed to the health and safety of our employees, contractors, suppliers, customers, and communities, and are following government policies and recommendations designed to slow the spread of COVID-19.

Our efforts to respond to the COVID-19 pandemic include the following:

- We have put health screenings in place, required social distancing, and have established employee separation protocols at our facilities. We have also suspended non-essential business travel and require team members to work from home to the extent possible. Where work from home is not possible, all on-site team members must pass through thermal scanning equipment to ensure they do not have an elevated body temperature and must wear a mask at all times.
- We have developed strategies to address our responsiveness and ability to send engineers into customer facilities to provide support services.
- We have evaluated our supply chain and communicated with our suppliers to identify supply gaps and taken steps to ensure continuity. We continue to monitor the supply chain and work with our suppliers to identify and mitigate potential gaps to ensure continuity of supply.
- We are evaluating all our construction projects across our global operations and enacting protocols to enhance the safety of our employees, suppliers, and contractors.
- We have developed strategies and are implementing measures to respond to a variety of potential economic scenarios, such as limitations on new hiring and reductions in discretionary spending.
- We are working with government authorities in the jurisdictions where we operate, and continuing to monitor our operations in an effort to ensure we follow government requirements, relevant regulations, industry standards, and best practices to help safeguard our team members, while safely continuing operations to the extent possible at our sites across the globe.

We believe these actions are appropriate and prudent to safeguard our employees, contractors, suppliers, customers, and communities, while allowing us to safely continue operations, but we cannot predict how the steps we, our team members, government entities, suppliers, or customers take in response to the COVID-19 pandemic will impact our business, outlook, or results of operations.

We will continue to actively monitor the situation and may take further actions altering our business operations that we determine are in the best interests of our employees, customers, partners, suppliers, and stakeholders, or as required by federal, state, or local authorities. The COVID-19 pandemic has resulted in an increase in freight costs due in large part to reduced air traffic, which impacts gross margin, as well as decreases in travel costs which reduce our cost structure. As of the date of this report, we cannot predict with certainty any other effects the COVID-19 pandemic may have on our business, including the effects on our customers, employees, or on our financial results for the remainder of calendar 2020.

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 portfolio also includes yield enhancement and production solutions used by manufacturers of printed circuit boards, flat panel displays, advanced packaging, microelectromechanical systems and other electronic components. 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. 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 software products. 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. 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 for most of our products. 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 accounts 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.

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 share-based awards in accordance with the provisions of the authoritative accounting guidance, which requires the measurement and recognition of compensation expense for all share-based payment awards made to our employees and directors. 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 fair value model requires the use of highly subjective and complex assumptions, including the award's expected life, the price volatility of the underlying stock, as well as the potential outcomes of the market condition on the grant date of each award.

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 incurred to defend or settle asserted and unasserted claims existing as of the balance sheet date. See Note 16 "Commitments and Contingencies" and Note 15 "Litigation and Other Legal Matters" to our Consolidated Financial Statements for additional details.

Goodwill and Purchased Intangible Assets - Impairment Assessments. We review goodwill for impairment annually during our third fiscal quarter as well as whenever events or changes in circumstances indicate the carrying value may not be fully recoverable. Pursuant to the authoritative guidance, we make certain judgments and assumptions to determine our reporting units and in allocating shared assets and liabilities to those reporting units, which determines the carrying values for each reporting unit. When assessing goodwill for impairment, an initial assessment of qualitative factors determines whether the existence of events and circumstances indicate it is more likely than not that the fair value of a reporting unit is less than its carrying value. Judgments related to qualitative factors include macroeconomic conditions; industry and market considerations; cost factors; overall financial performance; relevant entity-specific events; a sustained decrease in share price; and other events affecting the reporting units. If we determine it is more likely than not that the fair value of a reporting unit is less than its carrying value, a quantitative test is then performed by estimating the fair value of the reporting unit and comparing it to its carrying value including goodwill. If the former is lower, goodwill is written down by the excess amount, limited to the amount of goodwill allocated to that reporting unit. See Note 7 "Goodwill and Other Intangible Assets" of the Consolidated Financial Statements for additional information.

We determine the fair value of a reporting unit using the market approach when deemed appropriate and the necessary information is available, or the income approach which uses discounted cash flow ("DCF") analysis, or a combination of both. If multiple valuation methodologies are used, the results are weighted. Determining fair value requires the exercise of significant judgment, including judgments about appropriate discount rates, revenue growth rates and the amount and timing of expected future cash flows. Discount rates are based on a weighted average cost of capital ("WACC"), which represents the average rate a business must pay its providers of debt and equity, plus a risk premium. The WACC used to test goodwill is derived from a group of comparable companies. The cash flows employed in the DCF analysis are derived from internal forecasts and external market forecasts. The market approach estimates the fair value of the reporting unit by utilizing the market comparable method which is based on revenue and earnings multiples from comparable companies.

We review purchased finite-lived intangible assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of the assets are no longer appropriate. We determine whether finite-lived intangible assets are recoverable based on the forecasted undiscounted future cash flows that are expected to be generated by the lowest-level associated asset grouping. Assumptions and estimates about future values and remaining useful lives of our intangible assets are complex and subjective. If the undiscounted cash flows used in the recoverability test are less than the long-lived assets' carrying value, we recognize an impairment loss for the amount that the carrying value exceeds the fair value.

We review indefinite-lived intangible assets for impairment whenever events or changes in business circumstances indicate that the carrying value of the assets may not be fully recoverable. The authoritative accounting guidance allows a qualitative approach for testing indefinite-lived intangible assets for impairment, similar to the impairment testing guidance for goodwill. It allows the option to first assess qualitative factors (events and circumstances) that could have affected the significant inputs used in determining the fair value of the indefinite-lived intangible asset. The qualitative factors assist in determining whether it is more-likely-than-not that the indefinite-lived intangible asset is impaired. An organization may choose to bypass the qualitative assessment for any indefinite-lived intangible asset in any period and proceed directly to

calculating its fair value. Our indefinite-lived intangible assets are in-process research and development ("IPR&D") intangible assets.

Any impairment charges could have a material adverse effect on our operating results and net asset value in the quarter in which we recognize the impairment charge. See Note 7 "Goodwill and Other Intangible Assets" of the Consolidated Financial Statements for additional information.

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.

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

(Dollar amounts in thousands)	Year ended June 30,			FY20 vs. FY19		FY19 vs. FY18	
	2020	2019	2018				
Revenues:							
Product	\$ 4,328,725	\$ 3,392,243	\$ 3,160,671	\$ 936,482	28 %	\$ 231,572	7 %
Service	1,477,699	1,176,661	876,030	301,038	26 %	300,631	34 %
Total revenues	\$ 5,806,424	\$ 4,568,904	\$ 4,036,701	\$ 1,237,520	27 %	\$ 532,203	13 %
Costs of revenues	\$ 2,449,561	\$ 1,869,377	\$ 1,446,041	\$ 580,184	31 %	\$ 423,336	29 %
Gross margin percentage	58%	59%	64%	(1)%		(5)%	

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 28% in the fiscal year ended June 30, 2020 compared to the prior year is primarily attributable to product revenue from our newly acquired Orbotech business and increased investments from our foundry and logic customers, 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 26% in the fiscal year ended June 30, 2020 compared to the prior year is primarily attributable to service revenues from our newly acquired Orbotech business and an increase in the number of customers requesting installations.

Revenues by segment⁽¹⁾

(Dollar amounts in thousands)	Year ended June 30,			FY20 vs. FY19		FY19 vs. FY18	
	2020	2019	2018				
Revenues:							
Semiconductor Process Control	\$ 4,745,446	\$ 4,080,822	\$ 3,944,015	\$ 664,624	16 %	\$ 136,807	3 %
Specialty Semiconductor Process	329,700	151,164	—	178,536	118 %	151,164	(3)
PCB, Display and Component Inspection ⁽²⁾	727,451	332,810	92,516	394,641	119 %	240,294	(3)
Other	3,614	4,676	—	(1,062)	(23)%	4,676	(3)
Total revenues	\$ 5,806,211	\$ 4,569,472	\$ 4,036,531	\$ 1,236,739	27 %	\$ 532,941	13 %

(1) Segment revenues exclude corporate allocation and the effects of foreign exchange rates. For additional details, refer to Note 19 “Segment Reporting and Geographic Information” to our Consolidated Financial Statements.

(2) Segment revenues for the fiscal year ended June 30, 2018 includes the component inspection business only.

(3) Orbotech was acquired on February 20, 2019.

Fiscal Year 2020 compared with Fiscal Year 2019

Revenue from our Semiconductor Process Control segment increased by 16% primarily due to a strong demand from our foundry and logic customers, and growth in service revenues. The increase in revenues from our Specialty Semiconductor Process, PCB, Display and Component Inspection and Other segments is primarily driven by full year results for the year-ended June 30, 2020 compared to partial year results for the year-ended June 30, 2019 and relates to the Orbotech business which was acquired in February of 2019.

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,		
2020	2019	2018
Taiwan Semiconductor Manufacturing Company Limited	Taiwan Semiconductor Manufacturing Company Limited	Samsung Electronics Co., Ltd.
Samsung Electronics Co., Ltd.		

Revenues by region

Revenues by region for the periods indicated were as follows:

(Dollar amounts in thousands)	Year ended June 30,					
	2020		2019		2018	
Taiwan	\$	1,566,823	27 %	\$	1,105,726	24 %
China		1,457,579	25 %		1,215,807	27 %
Korea		982,171	17 %		584,091	13 %
Japan		670,287	12 %		581,529	13 %
United States		657,550	11 %		596,452	13 %
Europe and Israel		318,483	5 %		305,924	7 %
Rest of Asia		153,531	3 %		179,375	3 %
Total	\$	5,806,424	100 %	\$	4,568,904	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, 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 %
Revenue volume of products and services	1.5 %
Mix of products and services sold	(0.8) %
Manufacturing labor, overhead and efficiencies	0.5 %
Intangible Amortization	(1.6) %
Other service and manufacturing costs	(0.8) %
Fiscal year ended June 30, 2020	57.9 %

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 average customer pricing, customer revenue deferrals associated with volume purchase agreements and the effect of fluctuations in foreign exchange rates. 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 from 59.1% to 57.9% during the fiscal year ended June 30, 2020 is primarily attributable to an increase in amortization of intangibles related to the acquisition of Orbotech, unfavorable mix of products and services sold, and an increase in service and manufacturing costs. These decreases were partially offset by a favorable impact from higher revenue volume of products and services.

Segment gross margin⁽¹⁾

(Dollar amounts in thousands)	Year ended June 30,			FY20 vs. FY19		FY19 vs. FY18	
	2020	2019	2018				
Segment gross margin:							
Semiconductor Process Control	\$ 3,028,167	\$ 2,590,434	\$ 2,554,223	\$ 437,733	17 %	\$ 36,211	1 %
Specialty Semiconductor Process	183,641	78,800	—	104,841	133 %	78,800	(3)
PCB, Display and Component Inspection ⁽²⁾	315,723	155,765	38,428	159,958	103 %	117,337	(3)
Other	(63)	1,102	—	(1,165)	(106)%	1,102	(3)
	<u>\$ 3,527,468</u>	<u>\$ 2,826,101</u>	<u>\$ 2,592,651</u>	<u>\$ 701,367</u>	<u>25 %</u>	<u>\$ 233,450</u>	<u>9 %</u>

(1) Segment gross margin is calculated as segment revenues less segment cost of revenues and excludes corporate allocations 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 19 "Segment Reporting and Geographic Information" to our Consolidated Financial Statements.

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

(3) Orbotech was acquired on February 20, 2019.

Fiscal Year 2020 compared with Fiscal Year 2019

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.

Research and Development (“R&D”)

(Dollar amounts in thousands)	Year ended June 30,			FY20 vs. FY19		FY19 vs. FY18	
	2020	2019	2018				
R&D expenses	\$ 863,864	\$ 711,030	\$ 608,531	\$ 152,834	21 %	\$ 102,499	17 %
R&D expenses as a percentage of total revenues	15 %	16 %	15 %	(1)%		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, 2020 were higher compared to the fiscal year ended June 30, 2019, primarily due to an increase in employee-related expenses of \$50.2 million as a result of additional engineering headcount, higher employee benefit costs and higher variable compensation and an increase of \$100.2 million of expenses from the Orbotech business, partially offset by a decrease in travel and entertainment expense of \$4.3 million.

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,			FY20 vs. FY19		FY19 vs. FY18	
	2020	2019	2018				
SG&A expenses	\$ 734,149	\$ 599,124	\$ 442,304	\$ 135,025	23 %	\$ 156,820	35 %
SG&A expenses as a percentage of total revenues	13 %	13 %	11 %	— %		2 %	

SG&A expenses during the fiscal year ended June 30, 2020 were higher compared to the fiscal year ended June 30, 2019, primarily due to an increase in employee-related expenses of \$33.7 million as a result of additional headcount, higher employee benefit costs and variable compensation, an increase in depreciation expense of \$12.5 million and expenses related to the Orbotech business of \$115.6 million, which includes an increase in amortization expense for purchased intangible assets of \$30.8 million. These increases were partially offset by a decrease in acquisition-related expenses of \$29.1 million, lower travel-related expenses of \$11.6 million, and \$10.9 million of stock-based compensation expense from acceleration of certain equity awards for Orbotech employees recorded in the three months ended March 31, 2019.

Goodwill Impairment

We performed our annual impairment assessment of goodwill as of February 28, 2020 and concluded that there was no impairment of goodwill for the Wafer Inspection and Patterning, Global Service and Support, and Component Inspection reporting units.

However, due to the downward revision of financial outlook for the Specialty Semiconductor Process and PCB and Display reporting units as well as the impact of elevated risk and macroeconomic slowdown driven by the COVID-19 pandemic, we performed a quantitative goodwill impairment assessment for these reporting units. As a result, we recorded \$144.2 million and \$112.5 million in impairment charges in the Specialty Semiconductor Process and PCB and Display reporting units, respectively, in the three months ended March 31, 2020.

For our fiscal year ended June 30, 2019, we performed our annual qualitative assessment of goodwill during the third quarter and concluded that there was no impairment.

Restructuring Charges

In September 2019, management approved a plan to streamline our organization and business processes that included the reduction of workforce, which is expected to be completed in the second half of our fiscal year 2021, primarily in our PCB, Display and Component Inspection segment. Restructuring charges were \$7.7 million for the year ended June 30, 2020, and the accrual for restructuring charges was \$5.7 million at June 30, 2020.

We expect to incur additional restructuring charges in future periods in connection with the completion of our workforce reduction. For additional information refer to Note 20 “Restructuring Charges” in the Notes to the Condensed Consolidated Financial Statements.

Interest Expense and Other Expense (Income), Net

(Dollar amounts in thousands)	Year ended June 30,		
	2020	2019	2018
Interest expense	\$ 160,274	\$ 124,604	\$ 114,376
Other expense (income), net	\$ 2,678	\$ (31,462)	\$ (30,482)
Interest expense as a percentage of total revenues	3 %	3 %	3 %
Other expense (income), net as a percentage of total revenues	— %	1 %	1 %

The increase in interest expense during the fiscal year ended June 30, 2020 compared to the fiscal year ended June 30, 2019, 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 decrease in other expense (income), net during the fiscal year ended June 30, 2020 compared to the fiscal year ended June 30, 2019 was primarily due to a decrease in interest income of \$17.2 million, other impairments of \$8.8 million, and foreign exchange losses of \$4.6 million. In addition, during the fourth quarter of fiscal 2020, we entered into an Asset Purchase Agreement to sell certain core assets of our non-strategic solar energy business. This transaction resulted in a loss of \$1.9 million, which was included in other expense (income) in our Consolidated Statement of Operations for fiscal 2020.

Loss on Extinguishment of Debt

For the fiscal year ended June 30, 2020, loss on extinguishment of debt reflected a pre-tax net loss of \$22.5 million associated with the redemption of our \$500.0 million of the Senior Notes due 2021, including associated redemption premiums, accrued interest and other fees and expenses. We had no loss on extinguishment of debt in the year ended June 30, 2019.

Provision for Income Taxes

The following table provides details of income taxes:

(Dollar amounts in thousands)	Year ended June 30,		
	2020	2019	2018
Income before income taxes	\$ 1,316,711	\$ 1,296,231	\$ 1,455,931
Provision for income taxes	\$ 101,686	\$ 121,214	\$ 653,666
Effective tax rate	7.7 %	9.4 %	44.9 %

Tax expense was lower as a percentage of income before taxes during the fiscal year ended June 30, 2020 compared to the fiscal year ended June 30, 2019 primarily due to the impact of the following items:

- Tax expense decreased by \$13.7 million relating to an increase in the Foreign Derived Intangible Income deduction during the fiscal year ended June 30, 2020;
- Tax expense decreased by \$6.9 million relating to a decrease in the Global Intangible Low Taxed Income during the fiscal year ended June 30, 2020;
- Tax expense decreased by \$23.6 million relating to the impact of an increase in the proportion of KLA's earnings +generated in jurisdictions with tax rates lower than the U.S. statutory rate during the fiscal year ended June 30, 2020; and
- Tax expense decreased by \$34.3 million relating to the impact of an internal restructuring during the fiscal year ended June 30, 2020; partially offset by
- Tax expense increased by \$53.9 million relating to a \$256.6 million goodwill impairment charge, which is non-deductible for income tax.

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. The following items are the tax impact as a result of the Act:

- Tax expense decreased by \$50.9 million relating to the reduction of the U.S. federal corporate tax rate from 35.0% to 28.1% for the fiscal year ended June 30, 2018 and tax expense decreased by \$49.9 million relating to the reduction of the U.S. federal corporate tax rate from 28.1% to 21.0% for the fiscal year ended June 30, 2019. The Act reduced 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 increased by \$339.6 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;
- Tax expense increased 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%; and
- Tax expense decreased by \$19.3 million relating to the transition tax liability during the fiscal year ended June 30, 2019.

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, 2017 and are under United States income tax examination for the fiscal year ended June 30, 2018. We are subject to state income tax examinations for all years beginning from the fiscal year ended June 30, 2016. 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. We are also under audit in Israel related to KLA for the fiscal years ended June 30, 2017 to June 30, 2019. 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 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, after offsetting all net operating losses ("NOLs") available through the end of 2014, of approximately NIS 229.0 million (equivalent to approximately \$66.0 million which includes related interest and linkage differentials to the Israeli consumer price index as of date of the issuance of the Tax Decrees).

On August 31, 2018, Orbotech filed an objection in respect of the tax assessment (the "Objection"). The ITA completed the second stage of the audit, in which the claims Orbotech raised in the Objection were examined by different personnel at the ITA. In addition, the ITA examined additional items during this second stage of the audit. As Orbotech and the ITA did not reach an agreement during the second stage, the ITA issued Tax Decrees to Orbotech on August 28, 2019 ("Tax Decrees") for an aggregate amount of tax, after offsetting all NOLs available through the end of 2014, of approximately NIS 257 million.

(equivalent to approximately \$74 million which includes related interest and linkage differentials to the Israeli consumer price index as of the date of the issuance of the Tax Decrees). These Tax Decrees replaced the Assessment. We believe that our recorded unrecognized tax benefits are sufficient to cover the resolution of these Tax Decrees.

Orbotech filed a notice of appeal with respect to the above Tax Decrees with the District Court of Tel Aviv on September 26, 2019. On February 27, 2020 the ITA filed its arguments in support of the Tax Decrees. Orbotech filed the grounds of appeal with respect to the above Tax Decrees on July 30, 2020. The ITA and Orbotech are continuing discussions in an effort to resolve this matter in a mutually agreeable manner.

In connection with the above, there is an ongoing criminal investigation in Israel against Orbotech, 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. On October 27, 2019, we received a request for additional information from the District Attorney’s Office. We will continue to monitor the progress of the District Attorney’s Office investigation; however, we 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.

On March 27, 2020, The Coronavirus Aid, Relief, and Economic Security (CARES) Act was signed into law which included several tax relief provisions. As a result of the CARES Act, we have deferred payment of certain payroll taxes to the federal government through December 31, 2022 and accelerated the tax deduction of qualified improvement property. The provisions of the CARES Act do not have a material impact to our liquidity and we are not expecting a material tax refund.

Liquidity and Capital Resources

<u>(Dollar amounts in thousands)</u>	As of June 30,		
	2020	2019	2018
Cash and cash equivalents	\$ 1,234,409	\$ 1,015,994	\$ 1,404,382
Marketable securities	746,063	723,391	1,475,936
Total cash, cash equivalents and marketable securities	\$ 1,980,472	\$ 1,739,385	\$ 2,880,318
Percentage of total assets	21 %	19 %	51 %

<u>(In thousands)</u>	Year ended June 30,		
	2020	2019	2018
Cash flows:			
Net cash provided by operating activities	\$ 1,778,850	\$ 1,152,632	\$ 1,229,120
Net cash (used in) provided by investing activities	(258,874)	(1,180,982)	291,618
Net cash used in financing activities	(1,299,635)	(360,005)	(1,270,103)
Effect of exchange rate changes on cash and cash equivalents	(1,926)	(33)	696
Net (decrease) increase in cash and cash equivalents	\$ 218,415	\$ (388,388)	\$ 251,331

Cash and Cash Equivalents and Marketable Securities:

As of June 30, 2020, our cash, cash equivalents and marketable securities totaled \$1.98 billion, which represents an increase of \$0.24 billion from June 30, 2019. The increase is mainly due to net proceeds from our 2020 Senior Notes of \$0.74 billion, net proceeds from our revolving credit facility of \$0.45 billion and cash generated from operations of \$1.78 billion, partially offset by repayments of debt of \$1.17 billion, payments of dividends and dividend equivalents of \$0.52 billion, stock repurchases of \$0.83 billion and capital expenditures of \$0.15 billion. As of June 30, 2020, \$0.82 billion of our \$1.98 billion of cash, cash equivalents, and marketable securities were held by our foreign subsidiaries and branch offices. We currently intend to indefinitely reinvest \$0.53 billion 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 \$0.29 billion of the \$0.82

billion 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 amounts of regular quarterly cash dividends and dividends equivalents paid during the fiscal years ended June 30, 2020, 2019 and 2018 were \$522.4 million, \$469.4 million and \$395.6 million, respectively. The increase in the amount of regular quarterly cash dividends and dividends equivalents paid during the fiscal year ended June 30, 2020 reflected the increase in the level of our regular quarterly cash dividend from \$0.75 to \$0.85 per share that was instituted during the three months ended December 31, 2019. The amounts of accrued dividend equivalents payable for regular quarterly cash dividends on unvested restricted stock units ("RSUs") with dividend equivalent rights were \$8.3 million and \$7.3 million as of June 30, 2020 and 2019, respectively. These amounts will be paid upon vesting of the underlying unvested RSUs as described in Note 10 "Equity, Long-term Incentive Compensation Plans and Non-Controlling Interest" to our Consolidated Financial Statements.

On August 6, 2020, we announced that our Board of Directors had declared a quarterly cash dividend of \$0.90 per share. Refer to Note 21 "Subsequent Events" to the Consolidated Financial Statements for additional information regarding the declaration of our quarterly cash dividend announced subsequent to June 30, 2020.

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 to be paid when such underlying unvested RSUs vest. Payments of the special cash dividend with respect to vested restricted stock units during the fiscal years ended June 30, 2019 and 2018 were \$2.9 million and \$6.4 million, respectively, and by the end of the second quarter of fiscal 2019 all of the special cash dividend accrued with respect to outstanding RSUs had vested and been paid in full. Other than the special cash dividend declared during the three months ended December 31, 2014, we historically have not declared any special cash dividends.

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, 2020 and 2019. 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 2020 Compared to Fiscal Year 2019

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, 2020 increased by \$0.63 billion compared to the fiscal year ended June 30, 2019, from \$1.15 billion to \$1.78 billion, primarily as a result of the following factors:

- An increase in collections of approximately \$1.67 billion mainly driven by higher shipments and inclusion of Orbotech during the entire 2020 fiscal year;
- Lower merger and acquisition costs of approximately \$29.0 million; partially offset by the following:
- A decrease in interest income of approximately \$16.0 million mainly due to lower average cash balances and interest rates;
- An increase in accounts payable payments of approximately \$619.0 million mainly due to the inclusion of Orbotech during the entire 2020 fiscal year;
- An increase in employee-related payments of approximately \$391.0 million mainly due to the inclusion of Orbotech during the entire 2020 fiscal year;
- An increase of debt interest payments of approximately \$47.0 million related to Senior Notes issued in March 2019 for the Orbotech acquisition and early redemption of 2021 Senior Notes.

Cash Flows from Investing Activities:

Net cash used in investing activities during the fiscal year ended June 30, 2020 was \$0.26 billion compared to net cash used by investing activities of \$1.18 billion during the fiscal year ended June 30, 2019. This decrease was mainly due to a

decrease in cash paid for business acquisitions of \$1.73 billion, partially offset by higher net purchases of marketable securities of \$0.79 billion.

Cash Flows from Financing Activities:

Net cash used in financing activities during the fiscal year ended June 30, 2020 increased compared to the fiscal year ended June 30, 2019, from \$0.36 billion to \$1.30 billion. This change was mainly impacted by lower net proceeds from borrowings of \$1.16 billion, partially offset by a decrease in cash used for common stock repurchases of \$0.27 billion.

Senior Notes:

In February 2020, March 2019 and November 2014, we issued \$750.0 million, \$1.20 billion and \$2.50 billion, respectively (each a "2020 Senior Notes", a "2019 Senior Notes", a "2014 Senior Notes", and collectively the "Senior Notes"), aggregate principal amount of senior, unsecured long-term notes. In February 2020 and October 2019, we repaid \$500.0 million and \$250.0 million of Senior Notes, respectively.

In February 2020, S&P upgraded its credit rating of the Company to "BBB+" and revised its outlook to stable, which permanently removed interest rate adjustments and the interest rate on the 2014 Senior Notes became fixed. The interest rate for each series of the 2020 Senior Notes and 2019 Senior Notes are not subject to adjustments.

In January 2020, we entered into a series of forward contracts ("2020 Rate Lock Agreements") to lock the 30-year treasury rate ("benchmark rate") on a portion of the 2020 Senior Notes. The 2020 Rate Lock Agreements had a notional amount of \$350.0 million in aggregate and matured in the same quarter. The 2020 Rate Lock Agreements were terminated on the date of the pricing of the \$750.0 million of 3.300% Senior Notes due in 2050 and we recorded the fair value of \$21.5 million as a loss within Accumulated Other Comprehensive Income (Loss) ("OCI") as of March 31, 2020, which will be amortized over the life of the debt. During the fiscal year 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" of the Notes to the Consolidated Financial Statements.

The original discounts on the 2020 Senior Notes, the 2019 Senior Notes and the 2014 Senior Notes amounted to \$0.3 million, \$6.7 million and \$4.0 million, respectively, and are being amortized over the life of the debt. Interest is payable as follows: semi-annually on March 1 and September 1 of each year for the 2020 Senior Notes; semi-annually on March 15 and September 15 of each year for the 2019 Senior Notes; and semi-annually on May 1 and November 1 of each year for the 2014 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, 2020, 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 fiscal year ended June 30, 2020, we borrowed \$450.0 million from the Revolving Credit Facility and made a principal payment of \$400.0 million. As of June 30, 2020, we had outstanding \$50.0 million aggregate principal amount of 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, 2020, we elected to pay interest on the borrowed amount under the Revolving Credit Facility at LIBOR plus a spread of 112.5 bps and 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, 2020, our maximum allowed leverage ratio was 3.50 to 1.00.

We were in compliance with all covenants under the Credit Agreement as of June 30, 2020 (the interest expense coverage ratio was 13.97 to 1.00 and the leverage ratio was 1.56 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, 2021.

Contractual Obligations

The following is a schedule summarizing our significant obligations to make future payments under contractual obligations as of June 30, 2020:

(In thousands)	Fiscal year ending June 30,							
	Total	2021	2022	2023	2024	2025	2026 and thereafter	Others
Debt obligations ⁽¹⁾	\$ 3,500,000	\$ —	\$ —	\$ —	\$ 50,000	\$ 1,250,000	\$ 2,200,000	\$ —
Interest payments associated with all debt obligations ⁽²⁾	2,087,338	151,118	151,067	150,331	149,800	120,738	1,364,284	—
Purchase commitments ⁽³⁾	896,928	887,851	8,397	453	227	—	—	—
Income taxes payable ⁽⁴⁾	172,674	—	—	—	—	—	—	172,674
Operating leases	105,743	30,628	22,750	15,410	10,221	8,508	18,226	—
Cash long-term incentive program ⁽⁵⁾	197,116	78,404	56,573	41,039	21,100	—	—	—
Pension obligations ⁽⁶⁾	42,482	3,014	2,955	3,047	4,317	3,758	25,391	—
Executive Deferred Savings Plan ⁽⁷⁾	215,167	—	—	—	—	—	—	215,167
Transition tax payable ⁽⁸⁾	274,498	26,143	26,143	26,143	49,018	65,357	81,694	—
Liability for employee rights upon retirement ⁽⁹⁾	52,898	—	—	—	—	—	—	52,898
Other ⁽¹⁰⁾	8,310	3,287	2,600	1,612	811	—	—	—
Total obligations	\$ 7,553,154	\$ 1,180,445	\$ 270,485	\$ 238,035	\$ 285,494	\$ 1,448,361	\$ 3,689,595	\$ 440,739

- (1) Represents \$3.45 billion aggregate principal amount of Senior Notes due from fiscal year 2025 to fiscal year 2050 and \$50.0 million principal amount of Revolving Credit Facility due in fiscal year 2024.

- (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 \$160.2 million.
- (6) Represents an estimate of expected benefit payments up to fiscal year 2030 that was actuarially determined and excludes the minimum cash required to contribute to the plan. As of June 30, 2020, 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 10 "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 10 "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:

(In thousands)	Year ended June 30,		
	2020	2019	2018
Receivables sold under factoring agreements	\$ 293,006	\$ 193,089	\$ 217,462
Proceeds from sales of LCs	\$ 59,036	\$ 95,436	\$ 5,511

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 \$81.7 million, of which \$68.7 million had been issued as of June 30, 2020, 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 \$3.02 billion as of June 30, 2020, which represents an increase of \$477.2 million compared to our working capital as of June 30, 2019. As of June 30, 2020, our principal sources of liquidity consisted of \$1.98 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, 2020 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, 2020, 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 16 "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, 2020. Actual results may differ materially.

As of June 30, 2020, we had an investment portfolio of fixed income securities of \$717.5 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, 2020, the fair value of the portfolio would have declined by \$4.7 million.

In February 2020, March 2019 and November 2014, we issued \$750.0 million, \$1.20 billion and \$2.50 billion, respectively, (each, a “2020 Senior Notes”, “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, 2020, the fair value and the book value of our Senior Notes were \$4.01 billion and \$3.45 billion, respectively, due in various fiscal years ranging from 2024 to 2050. The interest expense for the 2014 Senior Notes was subject to interest rate adjustments following downgrade of our credit ratings below investment grade by the credit rating agencies. In February 2020, S&P upgraded its credit rating of the Company to “BBB+” and revised its outlook to stable, which permanently removed interest rate adjustments and the interest rate on the 2014 Senior Notes became fixed. Unlike the 2014 Senior Notes, the interest rate for each series of the 2019 Senior Notes are not 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, 2020, we had outstanding \$50.0 million aggregate principal amount of borrowings under the Revolving Credit Facility. As of June 30, 2020, we elected to pay interest on the borrowed amount under the Revolving Credit Facility at the London Interbank Offered Rate (“LIBOR”) plus a spread. The spread ranges from 100 bps to 175 bps based on the adjusted credit rating. The fair value of the borrowings under the Revolving Credit Facility is subject to interest rate risk only to the extent of the fixed spread portion of the interest rates which does not fluctuate with changes in interest rates. We are also 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, 2020, if LIBOR-based interest rates increased by 100 bps, the change would increase our annual interest expense annually by approximately \$0.5 million as it relates to our borrowings under the Revolving Credit Facility. Additionally as of June 30, 2020, 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 \$0.9 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, 2020.

As of June 30, 2020, we had net forward and option contracts to sell \$89.4 million in foreign currency in order to hedge certain currency exposures (see Note 17 “Derivative Instruments and Hedging Activities” to our Consolidated Financial Statements for additional details). If we had entered into these contracts on June 30, 2020, the U.S. dollar equivalent would have been \$88.7 million. A 10% adverse move in all currency exchange rates affecting the contracts would decrease the fair value of the contracts by \$39.0 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

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KLA CORPORATION
Consolidated Balance Sheets

(In thousands, except par value)	As of June 30,	
	2020	2019
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 1,234,409	\$ 1,015,994
Marketable securities	746,063	723,391
Accounts receivable, net	1,107,413	990,113
Inventories	1,310,985	1,262,500
Other current assets	324,675	323,077
Total current assets	4,723,545	4,315,075
Land, property and equipment, net	519,824	448,799
Goodwill	2,045,402	2,211,858
Deferred income taxes	236,797	206,141
Purchased intangible assets, net	1,391,413	1,560,670
Other non-current assets	362,979	265,973
Total assets	\$ 9,279,960	\$ 9,008,516
LIABILITIES, NON-CONTROLLING INTEREST AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 264,280	\$ 202,416
Deferred system revenue	336,237	282,348
Deferred service revenue	233,493	206,669
Current portion of long-term debt	—	249,999
Other current liabilities	865,776	827,054
Total current liabilities	1,699,786	1,768,486
Non-current liabilities:		
Long-term debt	3,469,670	3,173,383
Deferred tax liabilities	660,885	702,285
Deferred service revenue	96,325	98,772
Other non-current liabilities	672,284	587,897
Total liabilities	6,598,950	6,330,823
Commitments and contingencies (Notes 9, 15 and 16)		
Stockholders' equity:		
Preferred stock, \$0.001 par value, 1,000 shares authorized, none outstanding	—	—
Common stock, \$0.001 par value, 500,000 shares authorized, 277,526 and 276,202 shares issued, 155,461 and 159,475 shares outstanding, as of June 30, 2020 and June 30, 2019, respectively	155	159
Capital in excess of par value	2,090,113	2,017,153
Retained earnings	654,930	714,825
Accumulated other comprehensive income (loss)	(79,774)	(73,029)
Total KLA stockholders' equity	2,665,424	2,659,108
Non-controlling interest in consolidated subsidiaries	15,586	18,585
Total stockholders' equity	2,681,010	2,677,693
Total liabilities and stockholders' equity	\$ 9,279,960	\$ 9,008,516

See accompanying notes to Consolidated Financial Statements.

KLA CORPORATION
Consolidated Statements of Operations

(In thousands, except per share amounts)	Year ended June 30,		
	2020	2019	2018
Revenues:			
Product	\$ 4,328,725	\$ 3,392,243	\$ 3,160,671
Service	1,477,699	1,176,661	876,030
Total revenues	5,806,424	4,568,904	4,036,701
Costs and expenses:			
Costs of revenues	2,449,561	1,869,377	1,446,041
Research and development	863,864	711,030	608,531
Selling, general and administrative	734,149	599,124	442,304
Goodwill impairment	256,649	—	—
Interest expense	160,274	124,604	114,376
Loss on extinguishment of debt	22,538	—	—
Other expense (income), net	2,678	(31,462)	(30,482)
Income before income taxes	1,316,711	1,296,231	1,455,931
Provision for income taxes	101,686	121,214	653,666
Net income	1,215,025	1,175,017	802,265
Less: Net loss attributable to non-controlling interest	(1,760)	(600)	—
Net income attributable to KLA	\$ 1,216,785	\$ 1,175,617	\$ 802,265
Net income per share attributable to KLA			
Basic	\$ 7.76	\$ 7.53	\$ 5.13
Diluted	\$ 7.70	\$ 7.49	\$ 5.10
Weighted-average number of shares:			
Basic	156,797	156,053	156,346
Diluted	158,005	156,949	157,378

See accompanying notes to Consolidated Financial Statements.

KLA CORPORATION
Consolidated Statements of Comprehensive Income

<i>(In thousands)</i>	Year ended June 30,		
	2020	2019	2018
Net income	\$ 1,215,025	\$ 1,175,017	\$ 802,265
Other comprehensive income (loss):			
Currency translation adjustments:			
Cumulative currency translation adjustments	(26)	(5,190)	1,358
Income tax (provision) benefit	110	117	(678)
Net change related to currency translation adjustments	84	(5,073)	680
Cash flow hedges:			
Net unrealized gains (losses) arising during the period	(16,739)	(9,119)	(1,934)
Reclassification adjustments for net (gains) losses included in net income	(2,072)	(4,018)	(3,846)
Income tax (provision) benefit	4,286	2,033	2,491
Net change related to cash flow hedges	(14,525)	(11,104)	(3,289)
Net change related to unrecognized losses and transition obligations in connection with defined benefit plans	2,397	(1,824)	7,162
Available-for-sale securities:			
Net unrealized gains (losses) arising during the period	6,029	11,664	(9,697)
Reclassification adjustments for net (gains) losses included in net income	(297)	1,294	209
Income tax (provision) benefit	(433)	(3,208)	2,325
Net change related to available-for-sale securities	5,299	9,750	(7,163)
Other comprehensive income (loss)	(6,745)	(8,251)	(2,610)
Less: Comprehensive loss attributable to non-controlling interest	(1,760)	(600)	—
Total comprehensive income attributable to KLA	\$ 1,210,040	\$ 1,167,366	\$ 799,655

See accompanying notes to Consolidated Financial Statements.

KLA CORPORATION
Consolidated Statements of Stockholders' Equity

(In thousands, except per share amounts)	Common Stock and Capital in Excess of Par Value		Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total KLA Stockholders' Equity	Non- Controlling Interest	Total Stockholders' Equity
	Shares	Amount					
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
Net income attributable to KLA	—	—	1,216,785	—	1,216,785	—	1,216,785
Other comprehensive income	—	—	—	(6,745)	(6,745)	—	(6,745)
Net loss attributable to non-controlling interest	—	—	—	—	—	(1,760)	(1,760)
Net issuance under employee stock plans	1,313	29,374	—	—	29,374	—	29,374
Repurchase of common stock	(5,327)	(67,799)	(753,284)	—	(821,083)	—	(821,083)
Cash dividends (\$3.30 per share) and dividend equivalents declared	—	—	(523,396)	—	(523,396)	—	(523,396)
Dividend to non-controlling interest	—	—	—	—	—	(1,239)	(1,239)
Stock-based compensation expense	—	111,381	—	—	111,381	—	111,381
Balances as of June 30, 2020	155,461	\$ 2,090,268	\$ 654,930	\$ (79,774)	\$ 2,665,424	\$ 15,586	\$ 2,681,010

See accompanying notes to Consolidated Financial Statements.

KLA CORPORATION
Consolidated Statements of Cash Flows

(In thousands)	Year Ended June 30,		
	2020	2019	2018
Cash flows from operating activities:			
Net income	\$ 1,215,025	\$ 1,175,017	\$ 802,265
Adjustments to reconcile net income to net cash provided by operating activities:			
Goodwill impairment	256,649	—	—
Depreciation and amortization	348,049	233,224	62,684
Loss on extinguishment of debt	22,538	—	—
Loss on unrealized foreign exchange and other	13,860	3,830	9,886
Other impairment charges	13,341	221	—
Stock-based compensation expense	111,381	94,194	62,784
Deferred income taxes	(93,110)	(27,511)	98,760
Changes in assets and liabilities, net of assets acquired and liabilities assumed in business acquisitions:			
Accounts receivable	(118,362)	(146,151)	(76,033)
Inventories	(74,817)	(59,561)	(179,605)
Other assets	(11,147)	(47,123)	(41,748)
Accounts payable	61,144	(21,627)	21,778
Deferred system revenue	57,687	(15,674)	—
Deferred service revenue	22,779	15,064	—
Deferred system profit	—	—	99,457
Other liabilities	(24,649)	(51,271)	368,892
Settlement of treasury lock agreement	(21,518)	—	—
Net cash provided by operating activities	1,778,850	1,152,632	1,229,120
Cash flows from investing activities:			
Acquisition of non-marketable securities	—	(630)	(3,377)
Business acquisitions, net of cash acquired	(90,143)	(1,818,283)	(17,403)
Capital expenditures	(152,675)	(130,498)	(66,947)
Proceeds from disposition of non-marketable securities	1,086	—	—
Purchases of available-for-sale securities	(798,493)	(81,533)	(466,330)
Proceeds from sale of available-for-sale securities	148,969	256,395	233,259
Proceeds from maturity of available-for-sale securities	626,943	589,324	608,446
Purchases of trading securities	(110,241)	(81,022)	(77,922)
Proceeds from sale of trading securities	115,680	85,265	81,892
Net cash (used in) provided by investing activities	(258,874)	(1,180,982)	291,618
Cash flows from financing activities:			
Proceeds from issuance of debt, net of issuance costs	741,832	1,183,785	—
Proceeds from revolving credit facility, net of costs	450,000	900,000	248,693
Repayment of debt	(1,171,033)	(902,474)	(946,250)
Common stock repurchases	(829,084)	(1,095,202)	(203,169)
Payment of dividends to stockholders	(522,421)	(472,263)	(402,065)
Payment of dividends to subsidiary's non-controlling interest holders	(1,239)	—	—
Issuance of common stock	75,634	64,828	61,444
Tax withholding payments related to vested and released restricted stock units	(46,260)	(37,517)	(28,756)
Contingent consideration payable and other, net	2,936	(1,162)	—
Net cash used in financing activities	(1,299,635)	(360,005)	(1,270,103)
Effect of exchange rate changes on cash and cash equivalents	(1,926)	(33)	696
Net (decrease) increase in cash and cash equivalents	218,415	(388,388)	251,331
Cash and cash equivalents at beginning of period	1,015,994	1,404,382	1,153,051
Cash and cash equivalents at end of period	\$ 1,234,409	\$ 1,015,994	\$ 1,404,382
Supplemental cash flow disclosures:			
Income taxes paid, net	\$ 194,583	\$ 180,470	\$ 253,128
Interest paid	\$ 152,651	\$ 107,073	\$ 114,238
Non-cash activities:			
Issuance of common stock for the acquisition of Orbotech - financing activities	\$ —	\$ 1,330,786	\$ —
Contingent consideration payable - financing activities	\$ 5,326	\$ 6,905	\$ —
Dividends payable - financing activities	\$ 5,978	\$ 7,340	\$ 9,571
Business acquisition holdback amounts - investing activities	\$ —	\$ 440	\$ —
Unsettled common stock repurchase - financing activities	\$ —	\$ 8,000	\$ —
Accrued purchase of land, property and equipment - investing activities	\$ 15,843	\$ 6,353	\$ 7,418

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. 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.”

Comparability. Effective on the first day of fiscal 2020, we adopted Accounting Standards Codification (“ASC”) 842, Leases (“ASC 842”). Prior periods were not retrospectively restated, and accordingly the Consolidated Balance Sheet as of June 30, 2019 and the Consolidated Statements of Operations for the years ended June 30, 2019 and 2018 were prepared using accounting standards that were different than those in effect for the year ended June 30, 2020.

Effective on the first day of fiscal 2019, we adopted ASC 606, Revenue from Contracts with Customers (“ASC 606”). Prior periods were not retrospectively restated, and accordingly the Consolidated Statement of Operations for the year ended June 30, 2018 was prepared using accounting standards that were different from those in effect for the years ended June 30, 2019 and 2020.

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 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 its adequacy.

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:

<u>Asset Category</u>	<u>Range of Useful Lives</u>
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, 2020, 2019 and 2018 was \$101.4 million, \$72.6 million and \$53.3 million, respectively.

Leases. Under ASC 842, a contract is or contains a lease when we have the right to control the use of an identified asset for a period of time. We determine if an arrangement is a lease at inception of the contract, which is the date on which the terms of the contract are agreed to, and the agreement creates enforceable rights and obligations. The commencement date of the lease is the date that the lessor makes an underlying asset available for our use. On the commencement date leases are evaluated for classification and assets and liabilities are recognized based on the present value of lease payments over the lease term.

The lease term used to calculate the lease liability includes options to extend or terminate the lease when it is reasonably certain that the option will be exercised. The right-of-use ("ROU") asset is initially measured as the amount of lease liability, adjusted for any initial lease costs, prepaid lease payments and any lease incentives. Variable lease payments, consisting primarily of reimbursement of costs incurred by lessors for common area maintenance, real estate taxes, and insurance are not included in the lease liability and are recognized as they are incurred.

As most of our leases do not provide an implicit rate, we use our incremental borrowing rate at lease commencement to measure ROU assets and lease liabilities. The incremental borrowing rate used by us is based on baseline rates and adjusted by the credit spreads commensurate with our secured borrowing rate, over a similar term. We used the incremental borrowing rate on June 30, 2019 for all leases that commenced on or prior to that date. Operating lease expense is generally recognized on a straight-line basis over the lease term.

We have elected the practical expedient to account for the lease and non-lease components as a single lease component for the majority of our asset classes. For leases with a term of one year or less, we have elected not to record the ROU asset or liability.

Goodwill, Purchased Intangible Assets and Impairment Assessment. Purchased intangible assets that are not considered to have an indefinite useful life are amortized over their estimated useful lives, which generally range from six months to nine years. The carrying values of our intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying value may not be fully recoverable. Recoverability of finite-lived intangible assets is measured by comparison of the carrying value of the asset to the future undiscounted cash flows the asset is expected to generate. Recoverability of indefinite-lived intangible assets is measured by comparison of the carrying value of the asset to its fair value. If the asset is considered to be impaired, the amount of any impairment is measured as the difference between the carrying value and the fair value.

Goodwill represents the excess of the purchase price in a business combination over the fair value of the net tangible and intangible assets acquired. We assess goodwill for impairment annually during our third fiscal quarter and whenever events or changes in circumstances indicate the carrying value may not be fully recoverable. We have the option to perform an assessment of qualitative factors of impairment prior to necessitating a quantitative impairment test. The former 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. In the qualitative assessment, if we determine that it is more likely than not that the fair value of a reporting unit is less than the carrying value, a quantitative test is then performed, which involves a comparison of the estimated fair value of a reporting unit to its carrying value including goodwill. We determine the fair value of a reporting unit using the income approach which uses discounted cash flow ("DCF") analysis, the market approach when deemed appropriate and the necessary information is available, or a combination of both. If the fair value of a reporting unit is less than its carrying value, a goodwill impairment charge is recorded for the difference. See Note 7 "Goodwill and Other Intangible Assets" for additional information. Any further impairment charges could have a material adverse effect on our operating results and net asset value in the quarter in which we recognize the impairment charge.

Impairment of Long-Lived Assets. We evaluate the carrying value of our long-lived assets whenever events or changes in business 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, we limit 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 little to 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,		
2020	2019	2018
Taiwan Semiconductor Manufacturing Company Limited	Taiwan Semiconductor Manufacturing Company Limited	Samsung Electronics Co., Ltd.
Samsung Electronics Co., Ltd.		

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

As of June 30,	
2020	2019
Taiwan Semiconductor Manufacturing Company Limited	Taiwan Semiconductor Manufacturing Company Limited
Samsung Electronics Co., Ltd.	

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, microelectromechanical 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 software products. 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. 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 for most of our products. 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 receivables 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.

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 \$13.3 million, \$13.6 million and \$19.9 million for the fiscal years ended June 30, 2020, 2019 and

2018, 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 \$13.9 million, \$14.7 million and \$19.5 million for the fiscal years ended June 30, 2020, 2019 and 2018, 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.

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. 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 to defend or settle asserted and unasserted claims existing as of the balance sheet date. See Note 16 "Commitments and Contingencies" and Note 15 "Litigation and Other Legal Matters" for additional details.

Recent Accounting Pronouncements

Recently Adopted

In February 2016, the Financial Accounting Standards Board ("FASB") issued ASC 842 which supersedes the lease recognition requirements in ASC 840, Leases, ("ASC 840"). The most prominent of the changes in ASC 842 is the recognition of right of use ("ROU") assets and lease liabilities by lessees for those leases classified as operating leases.

Consistent with ASC 840, leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the Consolidated Statements of Operations. In July 2018, the FASB issued an accounting standard update which amended ASC 842 and offered an additional (and optional) transition method by which entities could elect not to recast the comparative periods presented in financial statements in the period of adoption.

We adopted the new standard on July 1, 2019, the first day of fiscal 2020, using the optional adoption method whereby we did not adjust comparative period financial statements. Consequently, prior period balances and disclosures have not been restated. We elected certain practical expedients, which among other things, allowed us to carry forward prior conclusions about lease identification and classification. The adoption of ASC 842 resulted in the balance sheet recognition of additional lease assets and lease liabilities of \$110.7 million and \$108.7 million, respectively, related primarily to facilities, vehicles and other equipment. The adoption of ASC 842 did not have a material impact on beginning retained earnings, the Consolidated Statement of Operations, Cash Flows, or earnings per share. Additionally, the adoption of ASC 842 did not have a material impact on the Consolidated Financial Statements for arrangements in which we are the lessor. For additional information regarding our leases, see Note 9 "Leases" in the Notes to the Condensed Consolidated Financial Statements.

Updates Not Yet Effective

In June 2016, the FASB issued an accounting standard update which replaces existing incurred loss impairment guidance and requires an entity to measure expected credit losses for certain financial instruments and financial assets including trade receivables. This new standard also modifies the impairment models for available-for-sale debt securities. This new standard is effective for us beginning in the first quarter of our fiscal year ending June 30, 2021. We plan to adopt the standard in the first quarter of fiscal 2021 using the modified retrospective transition method. We do not currently believe the adoption will have a material impact on our Consolidated Balance Sheets and Consolidated Statements of Operations, pending further evaluation of potential economic recession and disruption associated with the current COVID-19 pandemic.

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 do not expect a material impact on our Consolidated Financial Statements upon adoption of this accounting standard update.

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 do not expect a material impact on our Consolidated Financial Statements upon adoption of this accounting standard update.

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 do not expect a material impact on our Consolidated Financial Statements upon adoption of this accounting standard update.

In December 2019, the FASB issued an accounting standard update to simplify the accounting for income taxes in ASC 740, Income Taxes, ("ASC 740"). This amendment removes certain exceptions and improves consistent application of accounting principles for certain areas in ASC 740. The update is effective for us beginning in the first quarter of our fiscal year ending June 30, 2022, and early adoption is permitted. We are currently evaluating the impact of this accounting standard update on our Consolidated Financial Statements.

NOTE 2 — REVENUE

Contract Balances

The following table represents the opening and closing balances of accounts receivable, contract assets and contract liabilities for the indicated periods.

(In thousands, except for percentage)	As of June 30, 2020	As of June 30, 2019	As of July 1, 2018	Change in Fiscal 2020		Change in Fiscal 2019	
Accounts receivable, net	\$ 1,107,413	\$ 990,113	\$ 635,878	\$ 117,300	12 %	\$ 354,235	56 %
Contract assets	\$ 99,876	\$ 94,015	\$ 14,727	\$ 5,861	6 %	\$ 79,288	538 %
Contract liabilities	\$ 666,055	\$ 587,789	\$ 556,691	\$ 78,266	13 %	\$ 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. Contract assets are included in other current asset and contract liabilities are included in current and non-current liabilities on our Consolidated Balance Sheets.

The change in contract assets during the fiscal year ended June 30, 2020 was mainly due to \$70.9 million of contract assets reclassified to net accounts receivable as our right to consideration for these contract assets became unconditional, partially offset by \$71.4 million of revenue recognized for which the payment is subject to conditions other than the passage of time.

During the fiscal year ended June 30, 2020, we recognized revenue of \$456.0 million that was included in contract liabilities as of June 30, 2019. This was partially offset by the value of products and services billed to customers for which control of the products and service has not transferred to the customers.

Remaining Performance Obligations

As of June 30, 2020, we had \$2.13 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.

Practical expedients

- We account for shipping and handling costs as activities to fulfill the promise to transfer 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 we transfer 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.

Refer to Note 19 “Segment Reporting and Geographic Information” for information related to revenue by geographic region as well as significant product and service offerings.

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. 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, 2020, 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 and certain U.S. Treasury 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, 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 follows:

As of June 30, 2020 (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	\$ —	\$ —	\$ —	\$ —
Money market funds and other	694,950	694,950	—	—
U.S. Government agency securities	—	—	—	—
U.S. Treasury securities	—	—	—	—
Marketable securities:				
Corporate debt securities	381,957	—	381,957	—
Municipal securities	29,110	—	29,110	—
Sovereign securities	2,017	—	2,017	—
U.S. Government agency securities	106,336	106,336	—	—
U.S. Treasury securities	181,193	151,210	29,983	—
Total cash equivalents and marketable securities ⁽¹⁾	1,395,563	952,496	443,067	—
Other current assets:				
Derivative assets	2,077	—	2,077	—
Other non-current assets:				
Executive Deferred Savings Plan	213,487	166,000	47,487	—
Total financial assets⁽¹⁾	\$ 1,611,127	\$ 1,118,496	\$ 492,631	\$ —
Liabilities				
Derivative liabilities	\$ (1,410)	\$ —	\$ (1,410)	\$ —
Deferred payments	(6,750)	—	—	(6,750)
Contingent consideration payable	(15,513)	—	—	(15,513)
Total financial liabilities	\$ (23,673)	\$ —	\$ (1,410)	\$ (22,263)

(1) Excludes cash of \$460.8 million held in operating accounts and time deposits of \$78.7 million as of June 30, 2020.

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, 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.

There were no transfers between Level 1 and Level 2 fair value measurements during the fiscal years ended June 30, 2020 or 2019. 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,	
	2020	2019
Accounts receivable, net:		
Accounts receivable, gross	\$ 1,119,235	\$ 1,002,114
Allowance for doubtful accounts	(11,822)	(12,001)
	<u>\$ 1,107,413</u>	<u>\$ 990,113</u>
Inventories:		
Customer service parts	\$ 338,608	\$ 328,515
Raw materials	478,594	444,627
Work-in-process	334,965	285,191
Finished goods	158,818	204,167
	<u>\$ 1,310,985</u>	<u>\$ 1,262,500</u>
Other current assets:		
Contract assets	\$ 99,876	\$ 94,015
Deferred costs of revenue	77,219	70,721
Prepaid expenses	74,955	88,387
Prepaid income and other taxes	56,809	51,889
Other current assets	15,816	18,065
	<u>\$ 324,675</u>	<u>\$ 323,077</u>
Land, property and equipment, net:		
Land	\$ 67,858	\$ 67,883
Buildings and leasehold improvements	405,238	402,678
Machinery and equipment	677,627	669,316
Office furniture and fixtures	29,964	28,282
Construction-in-process	93,736	26,029
	<u>1,274,423</u>	<u>1,194,188</u>
Less: accumulated depreciation	<u>(754,599)</u>	<u>(745,389)</u>
	<u>\$ 519,824</u>	<u>\$ 448,799</u>
Other non-current assets:		
Executive Deferred Savings Plan	\$ 213,487	\$ 207,581
Operating lease right of use assets	100,790	—
Other non-current assets	48,702	58,392
	<u>\$ 362,979</u>	<u>\$ 265,973</u>
Other current liabilities:		
Executive Deferred Savings Plan	\$ 215,167	\$ 208,926
Compensation and benefits	251,379	226,462
Other accrued expenses	183,435	202,647
Customer credits and advances	114,896	133,677
Income taxes payable	35,640	23,350
Interest payable	36,265	31,992
Operating lease liabilities	28,994	—
	<u>\$ 865,776</u>	<u>\$ 827,054</u>
Other non-current liabilities:		
Pension liabilities	\$ 78,911	\$ 79,622
Income taxes payable	383,447	392,266
Operating lease liabilities	70,885	—
Other non-current liabilities	139,041	116,009
	<u>\$ 672,284</u>	<u>\$ 587,897</u>

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, 2020	\$ (43,957)	\$ 3,683	\$ (23,250)	\$ (16,250)	\$ (79,774)
Balance as of June 30, 2019	\$ (44,041)	\$ (1,616)	\$ (8,725)	\$ (18,647)	\$ (73,029)

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,	
		2020	2019
Unrealized gains (losses) on cash flow hedges from foreign exchange and interest rate contracts ⁽¹⁾	Revenues	\$ 4,086	\$ 4,329
	Costs of revenues and operating expenses	(1,377)	(739)
	Interest expense	(637)	424
	Other expense (income), net	—	4
	Net gains reclassified from accumulated OCI	\$ 2,072	\$ 4,018
Unrealized gains (losses) on available-for-sale securities	Other expense (income), net	\$ 297	\$ (1,294)

(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 17 "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, 2020 and 2019 were \$1.2 million and \$1.1 million, respectively. For additional details, refer to Note 13 "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,		
	2020	2019	2018
Other expense (income), net:			
Interest income	\$ (21,646)	\$ (40,367)	\$ (36,869)
Foreign exchange (gains) losses, net	4,236	(322)	708
Net realized losses (gains) on sale of investments	(297)	1,294	209
Other	20,385	7,933	5,470
	\$ 2,678	\$ (31,462)	\$ (30,482)

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, 2020 (In thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Corporate debt securities	\$ 379,334	\$ 2,673	\$ (50)	\$ 381,957
Money market funds and other	694,950	—	—	694,950
Municipal securities	28,859	251	—	29,110
Sovereign securities	2,009	8	—	2,017
U.S. Government agency securities	106,091	252	(7)	106,336
U.S. Treasury securities	179,631	1,564	(2)	181,193
Subtotal	1,390,874	4,748	(59)	1,395,563
Add: Time deposits ⁽¹⁾	124,153	—	—	124,153
Less: Cash equivalents	773,653	—	—	773,653
Marketable securities	\$ 741,374	\$ 4,748	\$ (59)	\$ 746,063

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

(1) Time deposits excluded from fair value measurements.

Our investment portfolio consists of both corporate and government securities that have a maximum maturity of three 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, 2020, we had 40 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, none of which were in a continuous loss position for 12 months or more:

As of June 30, 2020 (In thousands)	Fair Value	Gross Unrealized Losses
Corporate debt securities	\$ 44,429	\$ (50)
Municipal securities	870	0
Sovereign securities	—	—
U.S. Government agency securities	9,951	(7)
U.S. Treasury securities	19,010	(2)
Total	\$ 74,260	\$ (59)

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:

<u>As of June 30, 2020 (In thousands)</u>	<u>Amortized Cost</u>	<u>Fair Value</u>
Due within one year	\$ 415,915	\$ 418,169
Due after one year through three years	325,459	327,894
	<u>\$ 741,374</u>	<u>\$ 746,063</u>

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, 2020, 2019 and 2018. 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, 2020 and June 30, 2018.

NOTE 6 - BUSINESS COMBINATIONS

Fiscal 2020 Acquisitions

On April 24, 2020, we acquired a product line from a public company for total purchase consideration of \$11.4 million, of which \$2.2 million was allocated to goodwill. Goodwill recognized was assigned to the Wafer Inspection and Patterning reporting unit, and was deductible for income tax purposes.

On August 22, 2019, we acquired the outstanding shares of a privately held company, primarily to expand our products and services offerings, for a total purchase consideration of \$94.0 million inclusive of measurement period adjustments of \$0.2 million as well as the fair value of the promise to pay an additional consideration up to \$60.0 million contingent on the achievement of certain revenue milestones. As of June 30, 2020, the estimated fair value of the additional consideration was \$8.9 million, which was classified as a non-current liability on the Consolidated Balance Sheet.

The purchase price of this acquisition was allocated as follows:

<u>(In thousands)</u>	<u>Fair Value</u>
Net tangible assets (including Cash and cash equivalents of \$6.6 million)	\$ 7,196
Deferred tax liabilities	(15,265)
Identifiable intangible assets	47,931
Goodwill	54,168
Total	<u>\$ 94,030</u>

The \$54.2 million of goodwill was assigned to the Wafer Inspection and Patterning reporting unit and was not deductible for income tax purposes.

We have included the financial results of the fiscal 2020 acquisitions in our Consolidated Financial Statements from their respective acquisition dates, and these results were not material to our Consolidated Financial Statements.

Fiscal 2019 Acquisitions

Orbotech Acquisition

On February 20, 2019, we completed the acquisition of Orbotech, a global supplier of yield-enhancing and process-enabling solutions for the manufacture of electronics products. We 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.

The total purchase price for Orbotech was approximately \$3.26 billion, which consisted of (1) approximately \$1.7 billion in cash net of \$215.6 million cash acquired; (2) 12.3 billion shares of KLA's common stock valued at approximately \$1.3 billion and (3) \$13.3 million for the fair values of stock options and RSUs assumed. The Orbotech Acquisition was accounted for as a business combination and we have included the financial results of Orbotech in our Consolidated Financial Statements since the Acquisition Date. Our Consolidated Statements of Operations include revenue of \$388.9 million and a net loss of \$61.6 million from Orbotech for the year ended June 30, 2019.

During the quarter ended December 31, 2019, we finalized the allocation of the purchase price to the estimated fair value of the assets acquired and liabilities assumed. Since the Acquisition, we have 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 recorded during the fourth quarter of the fiscal year ended June 30, 2019; the valuation of individually insignificant net tangible assets of \$2.1 million recorded during the first quarter of the fiscal year ended June 30, 2020; and the additional reserves for uncertain tax positions of \$16.9 million and other individually insignificant items of \$10.4 million with related impacts on the deferred income tax liabilities of \$8.8 million recorded in the second quarter of the fiscal year ended June 30, 2020. These adjustments resulted in the corresponding increase to goodwill of \$34.0 million and \$38.2 million in the fiscal years ended June 30, 2020 and 2019, respectively. The purchase price was allocated to tangible and identified intangible assets acquired and liabilities assumed based on their estimated fair values, which were determined using generally accepted valuation techniques on the basis of inputs and assumptions made by management at the time of the Orbotech Acquisition.

The allocation of the purchase price to the estimated fair value of the assets acquired and liabilities assumed at the Acquisition date, including all measurement period adjustments, is as follows:

(In thousands)	Purchase Price Allocation
Assets	
Accounts receivable, net	\$ 197,873
Inventories	330,325
Contract assets	63,181
Other current assets	70,622
Property, plant, and equipment, net	97,664
Intangible assets	1,553,570
Other non-current assets	73,179
Total assets acquired	\$ 2,386,414
Liabilities	
Accounts payable	\$ 53,015
Accrued liabilities	173,507
Other current liabilities	73,057
Deferred tax liabilities	786,671
Other non-current liabilities	86,789
Non-controlling interest	19,185
Total liabilities assumed	\$ 1,192,224
Total identifiable net assets acquired	\$ 1,194,190
Goodwill	1,845,728
Total purchase price	\$ 3,039,918

On December 24, 2018, Orbotech acquired the remaining 50% of the shares of Frontline for \$85.0 million in cash 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. As of June 30, 2020, the estimated fair market values of the four-year cash payment and the earn-out were \$6.7 million and \$3.3 million, respectively, and these amounts have been included in current and non-current liabilities at \$2.5 million and \$7.5 million, respectively.

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 acquisition of Orbotech 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".

We believe the amounts of purchased intangible assets represent the fair values of and approximate the amounts a market participant would pay for these intangible assets as of the Acquisition Date.

Other Fiscal 2019 Acquisitions

During the fiscal year ended June 30, 2019, we acquired five privately held companies primarily to expand our products and services offerings. These acquisitions were not individually significant. We have included the financial results of the acquired companies in our Consolidated Financial Statements from their respective acquisition dates, and the results from each of these companies were not individually material to our consolidated financial statements.

In the aggregate, the total purchase price for these acquisitions was approximately \$133.7 million, including a post-closing working capital adjustment, and the fair value of the promise to pay additional consideration of up to \$19.0 million contingent on the achievement of certain milestones. As of June 30, 2020, the estimated fair value of the additional consideration was \$3.2 million, which was classified as a non-current liability on the Consolidated Balance Sheets.

Based on their estimated fair values, we recorded \$13.2 million of net tangible assets, \$75.1 million of identifiable intangible assets and \$45.4 million of goodwill related to our other fiscal 2019 acquisitions, \$26.3 million of which was allocated to Wafer Inspection and Patterning reporting unit, \$17.9 million was allocated to GSS reporting unit and \$1.2 million was allocated to Component Inspection reporting unit.

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.

Fiscal 2018 Acquisitions

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.

Acquisition-related Costs

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. KLA incurred insignificant acquisition-related costs for the fiscal 2020 and fiscal 2018 acquisitions.

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. Two of the fiscal 2019 acquisitions and the fiscal 2020 acquisitions do not have material impact on our consolidated financial statements; therefore, the pro forma financial information has not been presented for these acquisitions.

The table below reflects the impact of material and nonrecurring adjustments to the unaudited pro forma results for the indicated periods that are directly attributable to the acquisitions:

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

NOTE 7 — GOODWILL AND PURCHASED INTANGIBLE ASSETS

Goodwill

Following an update of the organizational structure during the fiscal year 2019, we have four reportable segments and six operating segments. The operating segments are determined to be the same as reporting units. The following table presents goodwill carrying value and the movements by reporting unit during the fiscal years ended June 30, 2020 and 2019⁽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, 2018	\$ 281,005	\$ 53,255	\$ 8,039	\$ 12,399	\$ —	\$ —	\$ —	\$ —	\$ 354,698
Acquired goodwill	—	26,362	17,869	1,176	—	796,442	977,102	—	1,818,951
Goodwill adjustments	—	—	—	—	—	25,400	12,816	—	38,216
Reallocation due to change in segments	(281,005)	(79,617)	—	(13,575)	360,622	—	—	13,575	—
Foreign currency adjustment	—	—	—	—	(7)	—	—	—	(7)
Balance as of June 30, 2019	—	—	25,908	—	360,615	821,842	989,918	13,575	2,211,858
Acquired goodwill	—	—	—	—	56,180	—	—	—	56,180
Goodwill adjustments	—	—	—	—	166	4,195	29,773	—	34,134
Goodwill impairment	—	—	—	—	—	(144,179)	(112,470)	—	(256,649)
Foreign currency adjustment	—	—	—	—	(121)	—	—	—	(121)
Balance as of June 30, 2020	\$ —	\$ —	\$ 25,908	\$ —	\$ 416,840	\$ 681,858	\$ 907,221	\$ 13,575	\$ 2,045,402

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

Goodwill is not subject to amortization but is tested for impairment annually during the third fiscal quarter as well as whenever events or changes in circumstances indicate that the carrying value may not be recoverable. We performed the required annual goodwill impairment test as of February 28, 2020. We completed qualitative assessments for all reporting units and concluded that goodwill was not impaired for the Wafer Inspection and Patterning, Global Service and Support, and Component Inspection reporting units. However, due to the downward revision of the financial outlook for the Specialty Semiconductor Process and PCB and Display reporting units as well as the impact of elevated risk and macroeconomic slowdown driven by the COVID-19 pandemic, we performed a quantitative goodwill impairment assessment for these two reporting units. As a result of the assessment, we recorded \$144.2 million and \$112.5 million in impairment charges in the Specialty Semiconductor Process and PCB and Display reporting units, respectively, during the quarter ended March 31, 2020.

We determined the fair values of these reporting units using the results derived from income and market valuation approaches and applied a weighting of 75 percent and 25 percent, respectively. The income approach is estimated through discounted cash flow analysis. The estimated fair value of each reporting unit was computed by adding the present value of the estimated annual discounted cash flows over a discrete projection period to the residual value of the business at the end of the projection period. This valuation technique requires us to use significant estimates and assumptions, including long-term growth rates, discounts rates and other inputs. The estimated growth rates for the projection period are based on our internal forecasts of anticipated future performance of the business. The residual value is estimated based on a perpetual nominal growth rate, which is based on projected long-range inflation and long-term industry projections. Discount rates are based on a weighted average cost of capital ("WACC"), which represents the average rate a business must pay its providers of debt and equity, plus a risk premium. The WACC used to test goodwill is derived from a group of comparable peer companies. The market approach estimates the fair value of the reporting unit by utilizing the market comparable method, which is based on revenue and earnings multiples from comparable companies. There can be no assurance that these estimates and assumptions

will prove to be an accurate prediction of the future, and a downward revision of these estimates and/or assumptions would decrease the fair value of our reporting units, which could result in additional impairment charges in the future.

Goodwill as of June 30, 2020 is net of accumulated impairment losses of \$534.2 million. \$277.6 million was included in the Wafer Inspection and Patterning reporting unit, \$144.2 million was included in the Specialty Semiconductor Process reporting unit, and \$112.5 million was included in the PCB and Display reporting unit.

Goodwill as of June 30, 2019 and 2018 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, 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.

There have been no significant events or circumstances affecting the valuation of goodwill subsequent to the assessment performed in the third quarter of the fiscal year ended June 30, 2020. 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, 2021.

Purchased Intangible Assets

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

<u>(In thousands)</u>		As of June 30, 2020			As of June 30, 2019		
<u>Category</u>	<u>Range of Useful Lives (in years)</u>	<u>Gross Carrying Amount</u>	<u>Accumulated Amortization and Impairment</u>	<u>Net Amount</u>	<u>Gross Carrying Amount</u>	<u>Accumulated Amortization and Impairment</u>	<u>Net Amount</u>
Existing technology	4-8	\$ 1,269,883	\$ 342,623	\$ 927,260	\$ 1,224,629	\$ 196,582	\$ 1,028,047
Customer relationships	4-9	305,817	98,754	207,063	297,250	66,471	230,779
Trade name/trademark	4-7	117,383	39,216	78,167	114,573	25,052	89,521
Backlog and other	<1-9	50,404	47,215	3,189	43,969	19,146	24,823
Intangible assets subject to amortization		1,743,487	527,808	1,215,679	1,680,421	307,251	1,373,170
In-process research and development		175,834	100	175,734	187,500	—	187,500
Total		\$ 1,919,321	\$ 527,908	\$ 1,391,413	\$ 1,867,921	\$ 307,251	\$ 1,560,670

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 fully recoverable. The impairment indicator primarily includes the declines in our operating cash flows from the use of these assets. If the impairment indicators are present, we are required to perform a recoverability test by comparing the sum of the estimated undiscounted future cash flows attributable to these long-lived assets to their carrying value.

As of February 28, 2020, no impairment indicator was present except for intangible assets acquired from Orbotech acquisition due to the downward revision of its financial outlook and the impact of elevated risk and macroeconomic slowdown driven by the COVID-19 pandemic. We performed the required recoverability test and concluded that there was no impairment based on the assessment.

To perform a recoverability test, we are required to group long-lived assets and liabilities at the lowest levels for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. For the intangible assets acquired from Orbotech, the asset group levels at which we performed the recoverability test were the Specialty Semiconductor Process and PCB and Display business level.

The change in the gross carrying amounts of intangible assets is due to the acquisition of certain 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:

(In thousands)	Year ended June 30,	
	2020	2019
Amortization expense- Cost of revenues	\$ 145,823	\$ 52,387
Amortization expense- Selling, general and administrative	74,532	34,992
Amortization expense- Research and development	224	13
Total	<u>\$ 220,579</u>	<u>\$ 87,392</u>

Based on the purchased intangible assets' gross carrying value recorded as of June 30, 2020, the remaining estimated annual amortization expense is expected to be as follows:

Fiscal year ending June 30:	Amortization (In thousands)
2021	\$ 197,817
2022	195,239
2023	194,147
2024	191,630
2025	179,421
Thereafter	257,425
Total	<u>\$ 1,215,679</u>

NOTE 8 — DEBT

The following table summarizes our debt as of June 30, 2020 and June 30, 2019:

	As of June 30, 2020		As of June 30, 2019	
	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 %
Fixed-rate 4.125% Senior Notes due on November 1, 2021	—	— %	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 %	800,000	4.159 %
Fixed-rate 5.000% Senior Notes due on March 15, 2049	400,000	5.047 %	400,000	5.047 %
Fixed-rate 3.300% Senior notes due on March 1, 2050	750,000	3.302 %	—	— %
Revolving Credit Facility	50,000	1.310 %	—	— %
Total	<u>3,500,000</u>		<u>3,450,000</u>	
Unamortized discount	(8,167)		(8,738)	
Unamortized debt issuance costs	(22,163)		(17,880)	
Total	<u>\$ 3,469,670</u>		<u>\$ 3,423,382</u>	
Reported as:				
Current portion of long-term debt	—		249,999	
Long-term debt	3,469,670		3,173,383	
Total	<u>\$ 3,469,670</u>		<u>\$ 3,423,382</u>	

As of June 30, 2020, future principal payments for the long-term debt are \$50.0 million in fiscal year 2024, \$1.25 billion in fiscal year 2025 and \$2.20 billion after fiscal year 2025.

Senior Notes:

In February 2020, we issued \$750 million ("2020 Senior Notes") aggregate principal amount of senior, unsecured long-term notes under which the proceeds were used to redeem \$500.0 million of Senior Notes due 2021, including associated redemption premiums, accrued interest and other fees and expenses, to repay borrowings of \$200.0 million under the Revolving

Credit Facility, and for other general corporate purposes. The redemption resulted in a pre-tax net loss on extinguishment of debt of \$22.5 million for the fiscal year ended June 30, 2020.

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. In October 2019, we repaid \$250.0 million of Senior Notes.

In February 2020, S&P upgraded its credit rating of the Company to “BBB+” and revised its outlook to stable, which permanently removed interest rate adjustments and the interest rate on the 2014 Senior Notes became fixed. The interest rate for each series of the 2020 Senior Notes and 2019 Senior Notes are not subject to adjustments.

In January 2020, we entered into a series of forward contracts (“2020 Rate Lock Agreements”) to lock the 30-year treasury rate (“benchmark rate”) on a portion of the 2020 Senior Notes. The 2020 Rate Lock Agreements had a notional amount of \$350.0 million in aggregate and matured in the same quarter. The 2020 Rate Lock Agreements were terminated on the date of the pricing of the \$750.0 million of 3.300% Senior Notes due in 2050 and we recorded the fair value of \$21.5 million as a loss within Accumulated Other Comprehensive Income (Loss) (“OCI”) as of March 31, 2020, which will be amortized over the life of the debt. During the fiscal year 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 2020 Senior Notes, the 2019 Senior Notes and the 2014 Senior Notes amounted to \$0.3 million, \$6.7 million and \$4.0 million, respectively and are being amortized over the life of the debt. Interest is payable as follows: semi-annually on March 1 and September 1 of each year for the 2020 Senior Notes; semi-annually on March 15 and September 15 of each year for the 2019 Senior Notes; and semi-annually on May 1 and November 1 of each year for the 2014 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, 2020 and June 30, 2019 was approximately \$4.01 billion and \$3.70 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, 2020, 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 fiscal year ended June 30, 2020, we borrowed \$450.0 million from the Revolving Credit Facility and made a principal payment of \$400.0 million. As of June 30, 2020, we had outstanding \$50.0 million aggregate principal amount of 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, 2020, we elected to pay interest on the borrowed amount under the Revolving Credit Facility at LIBOR plus a spread of 112.5 bps, and 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, 2020, our maximum allowed leverage ratio to 3.50 to 1.00.

We were in compliance with all covenants under the Credit Agreement as of June 30, 2020.

Note 9 — LEASES

We have operating leases for facilities, vehicles and other equipment. Our facility leases are primarily used for administrative functions, research and development, manufacturing, and storage and distribution. Our finance leases are not material.

Our existing leases do not contain significant restrictive provisions or residual value guarantees; however, certain leases contain provisions for payment of maintenance, real estate taxes, or insurance costs by us. Our leases have remaining lease terms ranging from less than one year to sixteen years, including periods covered by options to extend the lease when it is reasonably certain that the option will be exercised.

Lease expense for the fiscal year ended June 30, 2020 was \$35.1 million. Expense related to short-term leases, which are not recorded on the Consolidated Balance Sheets, was not material for the fiscal year ended June 30, 2020. At June 30, 2020, the weighted average remaining lease term and weighted average discount rate for operating leases was 5.1 years and 1.99%, respectively.

Supplemental cash flow information related to leases was as follows:

<u>Fiscal year ending June 30:</u>	Amount (In thousands)
Operating cash outflows from operating leases	\$ 34,702
ROU assets obtained in exchange for new operating lease liabilities	\$ 24,549

Maturities of lease liabilities as of June 30, 2020 were as follows:

<u>Fiscal year ending June 30:</u>	Amount (In thousands)
2021	\$ 30,628
2022	22,750
2023	15,410
2024	10,221
2025	8,508
2026 and thereafter	18,226
Total lease payments	105,743
Less imputed interest	(5,864)
Total	\$ 99,879

As of June 30, 2020, we did not have material leases that had not yet commenced.

As of June 30, 2019, future minimum lease payments as defined under the previous lease accounting guidance of ASC 840 under noncancelable operating leases were as follows:

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

Facilities rent expense under the previous lease accounting guidance of ASC 840 was \$13.5 million and \$10.4 million for the fiscal years ended June 30, 2019 and 2018.

NOTE 10 — EQUITY, LONG-TERM INCENTIVE COMPENSATION PLANS AND NON-CONTROLLING INTEREST

Equity Incentive Program

As of June 30, 2020, 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 10.8 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 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 Orbotech 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 is being 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 being recorded as stock-based compensation over the remaining vesting period.

A total of 14,558 and 518,971 shares of our common stock underlie the Assumed Options and RSUs and had an estimated weighted average fair value at the Acquisition Date of \$53.3 and \$104.5 per share, respectively. During the fiscal year ended June 30, 2020, there were 14,558 Assumed Options exercised with a weighted-average exercise price of \$54.00. As of June 30, 2020, there were 226,587 shares of our common stock underlying the outstanding Assumed RSUs under the Assumed Equity Plans.

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, 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
Restricted stock units granted ⁽²⁾	(1,174)
Restricted stock units granted adjustment ⁽⁴⁾	103
Restricted stock units canceled	218
Balances as of June 30, 2020	10,760

- (1) The number of RSUs reflects the application of the award multiplier of 2.0x as described above.
- (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, 2020, 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 (0.4 million shares, 0.7 million shares and 0.3 million shares for the fiscal years ended June 30, 2020, 2019 and 2018, respectively, reflects the application of the 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 fiscal years ended June 30, 2020, 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:

(In thousands)	Year ended June 30,		
	2020	2019 ⁽¹⁾	2018
Stock-based compensation expense by:			
Costs of revenues	\$ 14,680	\$ 10,384	\$ 8,062
Research and development	23,530	16,225	11,249
Selling, general and administrative	73,171	67,585	43,473
Total stock-based compensation expense	\$ 111,381	\$ 94,194	\$ 62,784

(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:

(In thousands)	As of June 30,	
	2020	2019
Inventory	\$ 6,752	\$ 4,819

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, 2020:

	Shares (In thousands) ⁽¹⁾	Weighted-Average Grant Date Fair Value
Outstanding restricted stock units as of June 30, 2019 ⁽²⁾	2,902	\$ 91.84
Granted ⁽²⁾	587	\$ 146.94
Granted adjustments ⁽³⁾	(52)	\$ 111.41
Vested and released	(738)	\$ 87.30
Withheld for taxes	(313)	\$ 87.30
Forfeited	(133)	\$ 101.10
Outstanding restricted stock units as of June 30, 2020 ⁽²⁾	2,253	\$ 107.33

(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 2.0x to calculate the impact of the award on the share reserve under the 2004 Plan.

(2) Includes performance-based RSUs. As of June 30, 2020, it had not yet been determined the extent to which (if at all) the performance-based criteria had been satisfied. Therefore, this line item includes all such RSUs, reported at the maximum possible number of shares (i.e., 0.2 million shares for the fiscal year ended June 30, 2020) that may ultimately be issuable if all applicable performance-based criteria are achieved at their maximum.

(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, 2020.

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:

(In thousands, except for weighted-average grant date fair value)	Year ended June 30,		
	2020	2019	2018
Weighted-average grant date fair value per unit	\$ 146.94	\$ 99.53	\$ 95.95
Weighted-average fair value per unit assumed upon Orbotech Acquisition	\$ —	\$ 104.49	\$ —
Grant date fair value of vested restricted stock units	\$ 91,812	\$ 60,749	\$ 49,606
Tax benefits realized by us in connection with vested and released restricted stock units	\$ 21,960	\$ 15,053	\$ 16,615

As of June 30, 2020, the unrecognized stock-based compensation expense balance related to RSUs was \$152.4 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 1.5 years. The intrinsic value of outstanding RSUs as of June 30, 2020 was \$438.1 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, 2020 and 2019, we approved Cash LTI awards of \$94 million and \$85.2 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, 2020, 2019 and 2018, we recognized \$64.0 million, \$55.5 million and \$52.4 million, respectively, in compensation expense under the Cash LTI Plan. As of June 30, 2020, the unrecognized compensation balance (excluding the impact of estimated forfeitures) related to the Cash LTI Plan was \$191.0 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,		
	2020	2019	2018
Stock purchase plan:			
Expected stock price volatility	34.3 %	33.2 %	28.7 %
Risk-free interest rate	2.1 %	2.1 %	1.1 %
Dividend yield	2.2 %	3.1 %	2.5 %
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,		
	2020	2019	2018
(In thousands, except for weighted-average fair value per share)			
Total cash received from employees for the issuance of shares under the ESPP	\$ 74,849	\$ 64,828	\$ 61,452
Number of shares purchased by employees through the ESPP	561	843	733
Tax benefits realized by us in connection with the disqualifying dispositions of shares purchased under the ESPP	\$ 3,237	\$ 1,133	\$ 1,664
Weighted-average fair value per share based on Black-Scholes model	\$ 36.61	\$ 21.72	\$ 21.95

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, 2020, a total of 2.1 million shares were reserved and available for issuance under the ESPP.

Quarterly cash dividends

On May 7, 2020, our Board of Directors declared a regular quarterly cash dividend of \$0.85 per share on the outstanding shares of our common stock, which was paid on June 2, 2020 to the stockholders of record as of the close of business on May 18, 2020. The total amount of regular quarterly cash dividends and dividend equivalents paid during the fiscal years ended June 30, 2020 and 2019 was \$522.4 million and \$469.4 million, respectively. The amount of accrued dividends equivalents payable related to unvested RSUs with dividend equivalent rights was \$8.3 million and \$7.3 million as of June 30, 2020 and 2019, respectively. These amounts will be paid upon vesting of the underlying RSUs. Refer to Note 21 "Subsequent Events" to the Consolidated Financial Statements for additional information regarding the declaration of our quarterly cash dividend announced subsequent to June 30, 2020.

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. Payments of the special cash dividend with respect to vested restricted stock units during the fiscal year ended June 30, 2019 were \$2.9 million, and by the end of the second quarter of fiscal 2019 all of the special cash dividends accrued with respect to outstanding RSUs had vested and been paid in full. Other than the special cash dividend declared during the three months ended December 31, 2014, we historically have not declared any special cash dividends.

Non-controlling Interest

We have consolidated the results of Orbotech LT Solar, LLC (“OLTS”) and Orbograph Ltd. (“Orbograph”), in which we own approximately 84% 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 11 — STOCK REPURCHASE PROGRAM

Our Board of Directors has authorized a program which permits us to repurchase up to \$3.00 billion of our common stock, reflecting an increase of \$1.00 billion authorized by our Board of Directors during fiscal year ended June 30, 2020. 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, 2020, an aggregate of approximately \$1.04 billion 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:

(In thousands)	Year ended June 30,		
	2020	2019	2018
Number of shares of common stock repurchased	5,327	10,207	1,960
Total cost of repurchases	\$ 821,083	\$ 1,103,202	\$ 203,169

NOTE 12 — 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:

(In thousands, except per share amounts)	Year ended June 30,		
	2020	2019	2018
Numerator:			
Net income attributable to KLA	\$ 1,216,785	\$ 1,175,617	\$ 802,265
Denominator:			
Weighted-average shares-basic, excluding unvested restricted stock units	156,797	156,053	156,346
Effect of dilutive restricted stock units and options	1,208	896	1,032
Weighted-average shares-diluted	158,005	156,949	157,378
Basic net income per share attributable to KLA	\$ 7.76	\$ 7.53	\$ 5.13
Diluted net income per share attributable to KLA	\$ 7.70	\$ 7.49	\$ 5.10
Anti-dilutive securities excluded from the computation of diluted net income per share	22	227	—

NOTE 13 — EMPLOYEE BENEFIT PLANS

We have a profit sharing program for eligible employees, which distributes a percentage of our pre-tax profits on a quarterly basis. 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 until January 1, 2019, when the employer match was changed to the greater of 50% of the first \$8,000 of an eligible employee's contributions or 50% of the first 5% of eligible compensation contributed plus 25% of the next 5% of compensation contributed.

The total expenses under the profit sharing and 401(k) programs aggregated \$24.6 million, \$18.6 million, and \$16.0 million in the fiscal years ended June 30, 2020, 2019 and 2018, 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 are held with insurance companies, with third-party trustees or in government-managed accounts. 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, 2020 and 2019.

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

(In thousands)	Year ended June 30,	
	2020	2019
Change in projected benefit obligation:		
Projected benefit obligation as of the beginning of the fiscal year	\$ 115,490	\$ 96,682
Service cost	4,823	4,220
Interest cost	1,084	1,132
Contributions by plan participants	78	69
Actuarial (gain) loss	(496)	4,187
Benefit payments	(3,119)	(1,755)
Assumed benefit obligation from acquisition	—	11,095
Foreign currency exchange rate changes and others, net	2,010	(140)
Projected benefit obligation as of the end of the fiscal year	\$ 119,870	\$ 115,490

(In thousands)	Year ended June 30,	
	2020	2019
Change in fair value of plan assets:		
Fair value of plan assets as of the beginning of the fiscal year	\$ 33,555	\$ 27,932
Actual return on plan assets	1,264	854
Employer contributions	5,271	3,587
Benefit and expense payments	(3,115)	(1,752)
Assumed plan assets from acquisition	—	3,424
Foreign currency exchange rate changes and others, net	953	(490)
Fair value of plan assets as of the end of the fiscal year	\$ 37,928	\$ 33,555

(In thousands)	As of June 30,	
	2020	2019
Underfunded status	\$ 81,942	\$ 81,935

(In thousands)	As of June 30,	
	2020	2019
Plans with accumulated benefit obligations in excess of plan assets:		
Accumulated benefit obligation	\$ 75,550	\$ 72,508
Projected benefit obligation	\$ 119,870	\$ 115,490
Plan assets at fair value	\$ 37,928	\$ 33,555

	Year ended June 30,		
	2020	2019	2018
Weighted-average assumptions ⁽¹⁾ :			
Discount rate	0.6%-1.7%	0.3%-1.7%	0.5%-2.3%
Expected rate of return on assets	0.8%-2.9%	1.0%-2.9%	1.3%-2.9%
Rate of compensation increases	1.8%-4.5%	1.8%-4.5%	3.0%-4.5%

(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,	
	2020	2019
Unrecognized transition obligation	\$ 310	\$ 242
Unrecognized prior service cost	—	4
Unrealized net loss	23,157	25,721
Amount of losses recognized	\$ 23,467	\$ 25,967

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, 2021 are as follows:

(In thousands)	
Unrecognized prior service cost	\$ —
Unrealized net loss	1,050
Amount of losses expected to be recognized	\$ 1,050

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

(In thousands)	Year ended June 30,		
	2020	2019	2018
Components of net periodic pension cost:			
Service cost ⁽¹⁾	\$ 4,823	\$ 4,220	\$ 4,127
Interest cost	1,086	1,132	1,302
Return on plan assets	(475)	(476)	(428)
Amortization of transitional obligation	—	—	—
Amortization of prior service cost	3	21	26
Amortization of net loss	1,214	1,047	1,731
Net periodic pension cost	\$ 6,651	\$ 5,944	\$ 6,758

(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 do we 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, 2020 and 2019.

The expected aggregate employer contribution for the foreign plans during the fiscal year ending June 30, 2021 is \$4.3 million.

The total benefits to be paid from the foreign pension plans are not expected to exceed \$5.1 million in any year through the fiscal year ending June 30, 2030.

Foreign plan assets measured at fair value on a recurring basis consisted of the following investment categories as of June 30, 2020 and 2019, respectively:

As of June 30, 2020 (In thousands)	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)
Cash and cash equivalents	\$ 21,420	\$ 21,420	\$ —
Bonds, equity securities and other investments	16,508	—	16,508
Total assets measured at fair value	\$ 37,928	\$ 21,420	\$ 16,508

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

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, 2020, we did not have concentrations of plan asset investment risk in any single entity, manager, counterparty, sector, industry or country.

NOTE 14 — INCOME TAXES

The components of income before income taxes were as follows:

(In thousands)	Year ended June 30,		
	2020	2019	2018
Domestic income before income taxes	\$ 752,844	\$ 545,401	\$ 716,015
Foreign income before income taxes	563,867	750,830	739,916
Total income before income taxes	\$ 1,316,711	\$ 1,296,231	\$ 1,455,931

The provision for income taxes was comprised of the following:

(In thousands)	Year ended June 30,		
	2020	2019	2018
Current:			
Federal	\$ 108,136	\$ 82,460	\$ 504,758
State	518	5,665	6,422
Foreign	86,374	59,274	41,414
	195,028	147,399	552,594
Deferred:			
Federal	(26,743)	1,636	98,702
State	(1,174)	2,118	1,526
Foreign	(65,425)	(29,939)	844
	(93,342)	(26,185)	101,072
Provision for income taxes	\$ 101,686	\$ 121,214	\$ 653,666

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

(In thousands)	As of June 30,	
	2020	2019
Deferred tax assets:		
Tax credits and net operating losses	\$ 214,305	\$ 208,572
Employee benefits accrual	67,729	65,065
Stock-based compensation	8,871	9,432
Inventory reserves	73,939	67,249
Non-deductible reserves	20,526	21,633
Unearned revenue	15,786	16,126
Unrealized loss on investments	5,345	1,492
Other	66,667	55,518
Gross deferred tax assets	473,168	445,087
Valuation allowance	(181,846)	(166,571)
Net deferred tax assets	\$ 291,322	\$ 278,516
Deferred tax liabilities:		
Unremitted earnings of foreign subsidiaries not indefinitely reinvested	\$ (257,757)	\$ (243,491)
Deferred profit	(18,111)	(15,718)
Depreciation and amortization	(439,685)	(515,643)
Total deferred tax liabilities	(715,553)	(774,852)
Total net deferred tax assets (liabilities)	\$ (424,231)	\$ (496,336)

The provision for income taxes and the significant components of deferred income tax assets and liabilities for the year ended June 30, 2020 includes the tax impact of the acquisition of Orbotech.

As of June 30, 2020, we, excluding Orbotech, had U.S. federal, state and foreign net operating loss ("NOL") carry-forwards of approximately \$16.3 million, \$24.7 million and \$19.6 million, respectively. Orbotech had U.S. federal, state, and foreign NOLs of approximately \$51.0 million, \$26.6 million and \$76.2 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 began to expire in 2020. Foreign NOLs and capital loss carry-forwards will be carried forward indefinitely. State credits of \$245.3 million for us including Orbotech, will also be carried forward indefinitely.

The net deferred tax asset valuation allowance was \$181.8 million and \$166.6 million as of June 30, 2020 and June 30, 2019, 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, 2020, 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, 2020, \$181.8 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, 2020, we intend to indefinitely reinvest \$3.03 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 \$111.9 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, 2020. The net impact of these tax holidays was to decrease our tax expense by approximately \$33.3 million, \$31.6 million and \$39.7 million in the fiscal years ended June 30, 2020, 2019 and 2018, respectively. The benefits of the tax holidays on diluted net income per share were \$0.21, \$0.20 and \$0.25 for the fiscal years ended June 30, 2020, 2019 and 2018, respectively.

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

	Year ended June 30,		
	2020	2019	2018
Federal statutory rate	21.0 %	21.0 %	28.1 %
State income taxes, net of federal benefit	0.2 %	0.5 %	0.5 %
Effect of foreign operations taxed at various rates	(12.1)%	(10.5)%	(11.0)%
Tax Cuts and Jobs Act of 2017 - Transition tax and deferred tax effects	— %	(1.5)%	30.3 %
Global intangible low-taxed income	3.0 %	3.5 %	— %
Foreign derived intangible income	(5.0)%	(4.0)%	— %
Research and development tax credit	(1.8)%	(1.8)%	(1.4)%
Net change in tax reserves	1.5 %	1.4 %	(0.4)%
Domestic manufacturing benefit	— %	— %	(1.1)%
Non-deductible impairment of goodwill	4.1 %	— %	— %
Effect of stock-based compensation	(0.3)%	0.4 %	(0.1)%
Restructuring	(2.6)%	— %	— %
Other	(0.3)%	0.4 %	— %
Effective income tax rate	7.7 %	9.4 %	44.9 %

A reconciliation of gross unrecognized tax benefits was as follows:

(In thousands)	Year ended June 30,		
	2020	2019	2018
Unrecognized tax benefits at the beginning of the year	\$ 146,426	\$ 63,994	\$ 68,439
Increases for tax positions from acquisitions	—	60,753	—
Increases for tax positions taken in prior years	6,826	13,001	4,642
Decreases for tax positions taken in prior years	(518)	(1,304)	(6,045)
Increases for tax positions taken in current year	34,278	26,178	16,812
Decreases for settlements with taxing authorities	—	—	(9,666)
Decreases for lapsing of statutes of limitations	(14,569)	(16,196)	(10,188)
Unrecognized tax benefits at the end of the year	\$ 172,443	\$ 146,426	\$ 63,994

The amount of unrecognized tax benefits that would impact the effective tax rate was \$161.5 million, \$136.1 million and \$57.9 million as of June 30, 2020, 2019 and 2018, respectively. The amount of interest and penalties recognized during the years ended June 30, 2020, 2019 and 2018 was expense of \$4.6 million, expense of \$2.9 million, and income of \$0.1 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, 2020 and 2019 was approximately \$37.6 million and \$21.8 million, respectively.

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, 2017 and are under United States federal income tax examination for the fiscal year ended June 30, 2018. We are subject to state income tax examinations for all years beginning from the fiscal year ended June 30, 2016. 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. We are also under audit in Israel related to KLA for the fiscal years ended June 30, 2017 to June 30, 2019.

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, after offsetting all net operating losses ("NOLs") available through the end of 2014, of approximately NIS 229.0 million (equivalent to approximately \$66.0 million which amount includes related interest and linkage differentials to the Israeli consumer price index as of date of issuance of the Tax Decrees). 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"). The ITA completed the second stage of the audit, in which the claims Orbotech raised in the Objection were examined by different personnel at the

ITA. In addition, the ITA examined additional items during this second stage of the audit. As Orbotech and the ITA did not reach an agreement during the second stage, the ITA issued Tax Decrees to Orbotech on August 28, 2019 (“Tax Decrees”) for an aggregate amount of tax, after offsetting all NOLs available through the end of 2014, of approximately NIS 257 million (equivalent to approximately \$74 million which includes related interest and linkage differentials to the Israeli consumer price indexes as of the date of the issuance of the Tax Decrees). These Tax Decrees replaced the Assessment. We believe that our recorded unrecognized tax benefits are sufficient to cover the resolution of these Tax Decrees.

Orbotech filed a notice of appeal with respect to the above Tax Decrees with the District Court of Tel Aviv on September 26, 2019. On February 27, 2020 the ITA filed its arguments in support of the Tax Decrees. Orbotech filed the grounds of appeal with respect to the above Tax Decrees on July 30, 2020. The ITA and Orbotech are continuing discussions in an effort to resolve this matter in a mutually agreeable manner.

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. On October 27, 2019, we received a request for additional information from the District Attorney’s Office. We will continue to monitor the progress of the District Attorney’s Office investigation; however, we 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 \$10.5 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 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 — 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:

(In thousands)	Year ended June 30,		
	2020	2019	2018
Receivables sold under factoring agreements	\$ 293,006	\$ 193,089	\$ 217,462
Proceeds from sales of LCs	\$ 59,036	\$ 95,436	\$ 5,511

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.

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 material, services, supplies and asset purchases is approximately \$896.9 million as of June 30, 2020, 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, 2020, we have committed \$197.1 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 be 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 \$81.7 million, of which \$68.7 million had been issued as of June 30, 2020, 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 agree 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 17 — 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 January 2020, we entered into a series of forward contracts (“2020 Rate Lock Agreements”) to lock the benchmark interest rate on a portion of the \$750.0 million of 3.300% Senior Notes due in 2050 (the “2020 Senior Notes”). The 2020 Rate Lock Agreements had a notional amount of \$350.0 million in aggregate which matured in the same quarter. The 2020 Rate Lock Agreements were terminated on the date of the pricing of the 2020 Senior Notes and we recorded the fair value of \$21.5 million as a loss within accumulated other comprehensive income (loss) (“OCI”) as of March 31, 2020, which will be amortized over the life of the debt. We recognized \$0.2 million for the year ended June 30, 2020, for the amortization of the loss recognized in accumulated other comprehensive income (loss), which increased the interest expense. As of June 30, 2020, the unamortized portion of the fair value of the forward contracts for the Rate Lock Agreements was \$21.3 million.

During the fiscal year 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 \$1.2 million and \$0.3 million for the fiscal years ended June 30, 2020 and 2019, respectively, for the amortization of the loss recognized in AOCI, which amounts increased our interest expense. As of June 30, 2020, the unamortized portion of the fair value of the 2018 Rate Lock Agreements was \$12.1 million.

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, 2020, 2019 and 2018, for the amortization of the gain recognized in accumulated other comprehensive income (loss), which amount reduced the interest expense. As of June 30, 2020, the unamortized portion of the fair value of the forward contracts for the rate lock agreements was \$3.3 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 is 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 is 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:

(In thousands)	Year ended June 30,	
	2020	2019
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	\$ (16,649)	\$ (358)
Amounts excluded from the assessment of effectiveness	\$ (90)	\$ (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:

(In thousands)	Year ended June 30,							
	2020				2019			
	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	\$ 5,806,424	\$ 2,449,561	\$ 160,274	\$ 2,678	\$ 4,568,904	\$ 1,869,377	\$ 124,604	\$ (31,462)
Gains (losses) on Derivatives Designated as Hedging Instruments:								
Rate lock agreements:								
Amount of gains (losses) reclassified from accumulated OCI to earnings	\$ —	\$ —	\$ (637)	\$ —	\$ —	\$ —	\$ 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	\$ 4,473	\$ (1,377)	\$ —	\$ —	\$ 4,329	\$ (739)	\$ —	\$ —
Amount excluded from the assessment of effectiveness recognized in earnings based on an amortization approach	\$ (387)	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
Amount excluded from the assessment of effectiveness	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ (323)
Gains (losses) on Derivatives Not Designated as Hedging Instruments:								
Amount of gains (losses) recognized in earnings	\$ —	\$ —	\$ —	\$ 1,990	\$ —	\$ —	\$ —	\$ (23)

The U.S. dollar equivalent of all outstanding notional amounts of foreign currency hedge contracts, with maximum remaining maturities of approximately seven months as of June 30, 2020 and 2019, were as follows:

(In thousands)	As of June 30, 2020	As of June 30, 2019
Cash flow hedge contracts- foreign currency		
Purchase	\$ 10,705	\$ 31,108
Sell	\$ 71,431	\$ 113,226
Other foreign currency hedge contracts		
Purchase	\$ 329,310	\$ 257,614
Sell	\$ 357,939	\$ 273,061

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

(In thousands)	Asset Derivatives			Liability Derivatives		
	Balance Sheet Location	As of June 30, 2020	As of June 30, 2019	Balance Sheet Location	As of June 30, 2020	As of June 30, 2019
		Fair Value			Fair Value	
Derivatives designated as hedging instruments						
Rate lock contracts	Other current assets	\$ —	\$ —	Other current liabilities	\$ —	\$ —
Foreign exchange contracts	Other current assets	680	397	Other current liabilities	45	2,097
Total derivatives designated as hedging instruments		\$ 680	\$ 397		\$ 45	\$ 2,097
Derivatives not designated as hedging instruments						
Foreign exchange contracts	Other current assets	\$ 1,397	\$ 2,160	Other current liabilities	\$ 1,365	\$ 1,237
Total derivatives not designated as hedging instruments		\$ 1,397	\$ 2,160		\$ 1,365	\$ 1,237
Total derivatives		\$ 2,077	\$ 2,557		\$ 1,410	\$ 3,334

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

(In thousands)	Year ended June 30,	
	2020	2019
Beginning balance	\$ (10,791)	\$ 2,346
Amount reclassified to earnings	(2,072)	(4,018)
Net change in unrealized gains or losses	(16,739)	(9,119)
Ending balance	\$ (29,602)	\$ (10,791)

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, 2020				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	\$ 2,077	\$ —	\$ 2,077	\$ (1,020)	\$ —	\$ 1,057
Derivatives - liabilities	\$ (1,410)	\$ —	\$ (1,410)	\$ 1,020	\$ —	\$ (390)

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)

NOTE 18 — RELATED PARTY TRANSACTIONS

During the fiscal years ended June 30, 2020, 2019 and 2018, 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 Anaplan, Inc., Ansys, Inc., Citrix Systems, Inc., HP Inc., Integrated Device Technology, Inc., Keysight Technologies, Inc., Logmein Inc., 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,		
	2020	2019	2018
Total revenues	\$ 4,237	\$ 2,402	\$ 474
Total purchases ⁽¹⁾	\$ 2,414	\$ 2,881	\$ 14,723

(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, 2020 and 2019.

Our receivable balance was \$2.4 million and payable balance was immaterial from these parties as of June 30, 2020. Our receivable and payable balances from these parties were immaterial as of June 30, 2019 and June 30, 2018.

NOTE 19 — 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.

We have four 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, Wafer Inspection and Patterning and GSS.

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, PCB and Display and Component Inspection.

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. During the fourth quarter of fiscal 2020, we entered into an Asset Purchase Agreement to sell certain core assets of our non-strategic solar energy business, which is included in our Other reportable segment, for a total consideration of \$1.7 million.

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:

(In thousands)	Year ended June 30,		
	2020	2019	2018
Semiconductor Process Control:			
Revenue	\$ 4,745,446	\$ 4,080,822	\$ 3,944,015
Segment gross margin	\$ 3,028,167	\$ 2,590,434	\$ 2,554,223
Specialty Semiconductor Process:			
Revenue	\$ 329,700	\$ 151,164	\$ —
Segment gross margin	\$ 183,641	\$ 78,800	\$ —
PCB, Display and Component Inspection:			
Revenue	\$ 727,451	\$ 332,810	\$ 92,516
Segment gross margin	\$ 315,723	\$ 155,765	\$ 38,428
Other:			
Revenue	\$ 3,614	\$ 4,676	\$ —
Segment gross margin	\$ (63)	\$ 1,102	\$ —
Totals:			
Revenue	\$ 5,806,211	\$ 4,569,472	\$ 4,036,531
Segment gross margin	\$ 3,527,468	\$ 2,826,101	\$ 2,592,651

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

(In thousands)	Year ended June 30,		
	2020	2019	2018
Total revenue for reportable segments	\$ 5,806,211	\$ 4,569,472	\$ 4,036,531
Corporate allocations and effects of foreign exchange rates	213	(568)	170
Total revenue	\$ 5,806,424	\$ 4,568,904	\$ 4,036,701

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

(In thousands)	Year ended June 30,		
	2020	2019	2018
Total segment gross margin	\$ 3,527,468	\$ 2,826,101	\$ 2,592,651
Acquisition-related charges, corporate allocations and effects of foreign exchange rates ⁽¹⁾	170,605	126,574	1,991
Research and development	863,864	711,030	608,531
Selling, general and administrative	734,149	599,124	442,304
Goodwill impairment	256,649	—	—
Interest expense	160,274	124,604	114,376
Loss on extinguishment of debt	22,538	—	—
Other expense (income), net	2,678	(31,462)	(30,482)
Income before income taxes	\$ 1,316,711	\$ 1,296,231	\$ 1,455,931

(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.

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:

(Dollar amounts in thousands)	Year ended June 30,								
	2020		2019		2018				
Revenues:									
Taiwan	\$	1,566,823	27 %	\$	1,105,726	24 %	\$	636,363	16 %
China		1,457,579	25 %		1,215,807	27 %		643,033	16 %
Korea		982,171	17 %		584,091	13 %		1,178,601	29 %
Japan		670,287	12 %		581,529	13 %		638,358	16 %
United States		657,550	11 %		596,452	13 %		494,330	12 %
Europe and Israel		318,483	5 %		305,924	7 %		300,883	7 %
Rest of Asia		153,531	3 %		179,375	3 %		145,133	4 %
Total	\$	5,806,424	100 %	\$	4,568,904	100 %	\$	4,036,701	100 %

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

(Dollar amounts in thousands)	Year ended June 30,								
	2020		2019		2018				
Revenues:									
Wafer Inspection	\$	2,080,484	36 %	\$	1,630,899	36 %	\$	1,714,421	42 %
Patterning		1,278,382	22 %		1,161,263	25 %		1,133,410	29 %
Specialty Semiconductor Process		269,667	5 %		129,854	3 %		—	— %
PCB, Display and Component Inspection		497,026	9 %		238,275	5 %		85,836	2 %
Services		1,477,699	25 %		1,176,661	26 %		876,030	22 %
Other		203,166	3 %		231,952	5 %		227,004	5 %
Total	\$	5,806,424	100 %	\$	4,568,904	100 %	\$	4,036,701	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 that are part of Semiconductor Process Control segment.

In the fiscal year ended June 30, 2020, two customers accounted for approximately 20% and 14% of total revenues. 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.

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

(In thousands)	As of June 30,	
	2020	2019
Long-lived assets:		
United States	\$ 329,558	\$ 253,255
Israel	59,162	66,082
Europe	58,065	62,027
Singapore	54,946	49,523
Rest of Asia	18,093	17,912
Total	<u>\$ 519,824</u>	<u>\$ 448,799</u>

NOTE 20 — RESTRUCTURING CHARGES

In September 2019, management approved a plan to streamline our organization and business processes that included the reduction of workforce, which is expected to be completed in the second half of our fiscal year 2021, primarily in our PCB, Display and Component Inspection segment. Restructuring charges were \$7.7 million for fiscal year ended June 30, 2020. As of June 30, 2020, the accrual for restructuring charges was \$5.7 million.

We expect to incur additional restructuring charges, including additional severance costs and other related costs in future periods in connection with the completion of our workforce reduction.

NOTE 21 — SUBSEQUENT EVENTS

On August 3, 2020, we announced that our Board of Directors had approved an increase in the quarterly cash dividend level to \$0.90 per share. On August 6, 2020, we announced that our Board of Directors had declared a quarterly cash dividend of \$0.90 per share to be paid on September 1, 2020 to stockholders of record as of the close of business on August 17, 2020.

NOTE 22 — 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, 2020 and 2019.

(In thousands, except per share data)	First Quarter Ended September 30, 2019	Second Quarter Ended December 31, 2019	Third Quarter Ended March 31, 2020	Fourth Quarter Ended June 30, 2020
Total revenues	\$ 1,413,414	\$ 1,509,453	\$ 1,423,964	\$ 1,459,593
Gross margin	\$ 809,173	\$ 875,835	\$ 833,806	\$ 838,049
Net income attributable to KLA	\$ 346,525	\$ 380,555	\$ 78,452	\$ 411,253
Net income attributable to KLA per share:				
Basic ⁽²⁾	\$ 2.18	\$ 2.42	\$ 0.50	\$ 2.65
Diluted ⁽²⁾	\$ 2.16	\$ 2.40	\$ 0.50	\$ 2.63

	First Quarter Ended September 30, 2018	Second Quarter Ended December 31, 2018	Third Quarter Ended March 31, 2019	Fourth Quarter Ended June 30, 2019
<u>(In thousands, except per share data)</u>				
Total revenues ⁽¹⁾	\$ 1,093,260	\$ 1,119,898	\$ 1,097,311	\$ 1,258,435
Gross margin	\$ 711,873	\$ 711,638	\$ 610,366	\$ 665,650
Net income (loss) attributable to KLA ⁽³⁾	\$ 395,944	\$ 369,100	\$ 192,728	\$ 217,845
Net income (loss) attributable to KLA per share:				
Basic ⁽²⁾	\$ 2.55	\$ 2.43	\$ 1.23	\$ 1.36
Diluted ⁽²⁾	\$ 2.54	\$ 2.42	\$ 1.23	\$ 1.35

- (1) 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”.
- (2) Basic and diluted net income (loss) per share were 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 and its subsidiaries (the “Company”) as of June 30, 2020 and 2019, 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, 2020, 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, 2020, 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, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended June 30, 2020 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, 2020, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Changes in Accounting Principles

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2020 and the manner in which it accounts for revenue 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.

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.

Quantitative Goodwill Impairment Assessment - Specialty Semiconductor Process and PCB and Display Reporting Units

As described in Notes 1 and 7 to the consolidated financial statements, the Company's consolidated goodwill balance was \$2.0 billion as of June 30, 2020, and the goodwill associated with the Specialty Semiconductor Process ("SSP") and PCB and Display reporting units was \$681.9 million and \$907.2 million, respectively. Management recorded charges of \$144.2 million and \$112.5 million for the impairment of goodwill related to the SSP and PCB and Display reporting units, respectively, during the quarter ended March 31, 2020. Management tests goodwill for impairment annually during the third fiscal quarter as well as whenever events or changes in circumstances indicate that the carrying value may not be recoverable. To determine the fair value of the reporting units, management utilized the results derived from income and market valuation approaches and applied a weighting of 75 percent and 25 percent, respectively. The income approach is estimated through a discounted cash flow analysis. The estimated fair value of each reporting unit was computed by adding the present value of the estimated annual discounted cash flows over a discrete projection period to the residual value of the business at the end of the projection period. This valuation technique requires management to use significant estimates and assumptions, including long-term growth rates, discount rates and other inputs. The market approach estimates the fair value of the reporting unit by utilizing the market comparable method which is based on revenue and earnings multiples from comparable companies.

The principal considerations for our determination that performing procedures relating to the quantitative goodwill impairment assessment for the SSP and PCB and Display reporting units is a critical audit matter are the significant judgment by management when determining the fair value of the reporting units, which in turn led to significant auditor judgment, subjectivity and effort in performing procedures and evaluating management's significant assumptions related to the long-term growth rates and discount rates. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained.

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 management's quantitative goodwill impairment assessment, including controls over the determination of the fair value of the reporting units and controls over development of the related assumptions. These procedures also included, among others, (i) testing management's process for determining the fair value of the reporting units, (ii) evaluating the appropriateness of the income and market approaches, (iii) testing the completeness, accuracy, and relevance of underlying data used in the estimate, and (iv) evaluating the significant assumptions related to the long-term growth rates and the discount rates. Evaluating management's assumptions related to the long-term growth rates involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the reporting units, (ii) the consistency with external market and industry data, and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the long-term growth rates and discount rates assumptions.

Uncertain Tax Positions Related to the Ongoing Israeli Tax Authority Matter

As described in Notes 1 and 14 to the consolidated financial statements, the Company has recorded liabilities for uncertain tax positions arising from a tax assessment and subsequent Tax Decrees received from the Israel Tax Authority (“ITA”). The calculation of the Company’s tax liabilities associated with the ongoing ITA matter involves dealing with the application of complex tax regulations. Management recognizes 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. Management re-evaluates uncertain tax positions on a quarterly basis and 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.

The principal considerations for our determination that performing procedures relating to the uncertain tax positions related to the ongoing ITA matter is a critical audit matter are the significant judgment by management when evaluating uncertain tax positions and the application of complex tax regulations, which in turn led to significant audit 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 liability for uncertain tax positions is complex as the nature of the evidence is often 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 the information used in the calculation of the liability for uncertain tax positions related to the ongoing ITA matter, including evaluating 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 ITA matter and estimates of the amount of tax benefit expected to be sustained for the matter; and (iii) testing the completeness of management’s assessment of both the identification of uncertain tax positions and possible outcomes of each uncertain tax position. Professionals with specialized skill and knowledge were used to assist in the evaluation of the completeness and measurement of the liability for uncertain tax positions related to the ITA matter, 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 7, 2020

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 evaluation of our disclosure controls and procedures 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 June 30, 2020, 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 or submitted 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, 2020.

The effectiveness of our internal control over financial reporting as of June 30, 2020 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, 2020 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—Delinquent Section 16(a) Reports 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, 2021” 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:

Consolidated Balance Sheets as of June 30, 2020 and June 30, 2019	61
Consolidated Statements of Operations for each of the three years in the period ended June 30, 2020	62
Consolidated Statements of Comprehensive Income for each of the three years in the period ended June 30, 2020	63
Consolidated Statements of Stockholders' Equity for each of the three years in the period ended June 30, 2020	64
Consolidated Statements of Cash Flows for each of the three years in the period ended June 30, 2020	65
Notes to Consolidated Financial Statements	67
Report of Independent Registered Public Accounting Firm	114

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:

Schedule II—Valuation and Qualifying Accounts for the years ended June 30, 2020, 2019 and 2018	122
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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 6, 2020

(Date)

By:

/s/ RICHARD P. WALLACE

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.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ RICHARD P. WALLACE</u> Richard P. Wallace	President, Chief Executive Officer and Director (principal executive officer)	August 6, 2020
<u>/s/ BREN D. HIGGINS</u> Bren D. Higgins	Executive Vice President and Chief Financial Officer (principal financial officer)	August 6, 2020
<u>/s/ VIRENDRA A. KIRLOSKAR</u> Virendra A. Kirloskar	Senior Vice President and Chief Accounting Officer (principal accounting officer)	August 6, 2020
<u>/s/ EDWARD W. BARNHOLT</u> Edward W. Barnholt	Chairman of the Board and Director	August 6, 2020
<u>/s/ ROBERT M. CALDERONI</u> Robert M. Calderoni	Director	August 6, 2020
<u>/s/ JENEANNE HANLEY</u> Jeneanne Hanley	Director	August 6, 2020
<u>/s/ EMIKO HIGASHI</u> Emiko Higashi	Director	August 6, 2020
<u>/s/ KEVIN J. KENNEDY</u> Kevin J. Kennedy	Director	August 6, 2020
<u>/s/ GARY B. MOORE</u> Gary B. Moore	Director	August 6, 2020
<u>/s/ MARIE MYERS</u> Marie Myers	Director	August 6, 2020
<u>/s/ KIRAN M. PATEL</u> Kiran M. Patel	Director	August 6, 2020
<u>/s/ VICTOR PENG</u> Victor Peng	Director	August 6, 2020
<u>/s/ ROBERT A. RANGO</u> Robert A. Rango	Director	August 6, 2020

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, 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
Fiscal Year Ended June 30, 2020:				
Allowance for Doubtful Accounts	\$ 12,001	\$ (189)	\$ 10	\$ 11,822
Allowance for Deferred Tax Assets	\$ 166,571	\$ —	\$ 15,275	\$ 181,846

KLA CORPORATION

EXHIBIT INDEX

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Form	File No.	Exhibit Number	Filing Date
3.1	Restated Certificate of Incorporation	10-K	No. 000-09992	3.1	August 16, 2019
3.2	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
4.3	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
4.4	Form of Officer's Certificate setting forth the terms of the 3.300% Senior Notes due 2050 (with form of Notes attached)	8-K	No. 000-09992	4.2	March 3, 2020
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-K	No. 000-09992	10.9	August 16, 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 2020 Executive Incentive Plan*+ 	10-Q	No. 000-09992	10.1	May 6, 2020

Exhibit Number	Exhibit Description	Incorporated by Reference			
		Form	File No.	Exhibit Number	Filing Date
10.14	Incremental Facility, Extension and Amendment Agreement, dated as of November 2, 2018 by and among the registrant, the subsidiary guarantors party thereto, the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent	8-K	No. 000-09992	10.1	November 8, 2018
10.15	Consulting Agreement dated September 23, 2019 between the registrant and Jeneanne Hanley, as amended on April 16, 2020				
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 - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL 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.

+ Certain portions of this document that constitute confidential information have been redacted in accordance with Regulation S-K, Item 601(b)(10).

ITEM 16. FORM 10-K SUMMARY

None.