

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549**

**FORM 10-K  
ANNUAL REPORT  
PURSUANT TO SECTIONS 13 OR 15(d)  
OF THE SECURITIES EXCHANGE ACT OF 1934**

(MARK ONE)

**ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE  
SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2016

OR

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

Commission file number 001-06462

**TERADYNE, INC.**

(Exact Name of Registrant as Specified in Its Charter)

**MASSACHUSETTS**  
(State or Other Jurisdiction of  
Incorporation or Organization)

**04-2272148**  
(I.R.S. Employer  
Identification Number)

**600 RIVERPARK DRIVE**  
**NORTH READING, MASSACHUSETTS**  
(Address of Principal Executive Offices)

**01864**  
(Zip Code)

**Registrant's telephone number, including area code: (978) 370-2700**

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

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, par value \$0.125 per share	New York Stock Exchange

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 Exchange 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 web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes  No

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

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

Large accelerated filer  Accelerated filer  Non-accelerated filer  Smaller reporting company

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 stock held by non-affiliates of the registrant as of July 1, 2016 was approximately \$3.9 billion based upon the closing price of the registrant's Common Stock on the New York Stock Exchange on that date.

The number of shares outstanding of the registrant's only class of Common Stock as of February 24, 2017 was 200,302,178 shares.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's proxy statement in connection with its 2017 annual meeting of shareholders are incorporated by reference into Part III of this Form 10-K.

**TERADYNE, INC.**

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**TERADYNE, INC.**

**FORM 10-K**

**SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS**

This Annual Report on Form 10-K contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act and Section 21E of the Securities Exchange Act. When used herein, the words “will,” “would,” “believe,” “anticipate,” “plan,” “expect,” “estimate,” “project,” “intend,” “may,” “see,” “target” and other words and terms of similar meaning are intended to identify forward-looking statements although not all forward looking statements contain these identifying words. Forward looking statements involve risks and uncertainties, including, but not limited to, those discussed in the section entitled “Risk Factors” of this annual report on Form 10-K and elsewhere, and in other reports we file with the Securities and Exchange Commission. Readers are cautioned not to place undue reliance on these forward-looking statements which reflect management’s analysis only as of the date hereof and are subject to risks and uncertainties that could cause actual results to differ materially from those stated or implied. Teradyne assumes no obligation to update these forward-looking statements for any reason, except as may be required by law.

**PART I**

**Item 1: *Business***

Teradyne, Inc. (“Teradyne”) was founded in 1960 and is a leading global supplier of automation equipment for test and industrial applications.

We design, develop, manufacture and sell automatic test systems used to test semiconductors, wireless products, data storage and complex electronics systems in the consumer electronics, wireless, automotive, industrial, computing, communications, and aerospace and defense industries. Our industrial automation products include collaborative robots used by global manufacturing and light industrial customers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Our automatic test equipment and industrial automation products and services include:

- semiconductor test (“Semiconductor Test”) systems;
- defense/aerospace (“Defense/Aerospace”) test instrumentation and systems, storage test (“Storage Test”) systems, and circuit-board test and inspection (“Production Board Test”) systems (collectively these products represent “System Test”);
- industrial automation (“Industrial Automation”) products; and
- wireless test (“Wireless Test”) systems.

We have a broad customer base which includes integrated device manufacturers (“IDMs”), outsourced semiconductor assembly and test providers (“OSATs”), original equipment manufacturers (“OEMs”), wafer foundries, fabless companies that design, but contract with others for the manufacture of integrated circuits (“ICs”), developers of wireless devices and consumer electronics, manufacturers of circuit boards, automotive suppliers, wireless product manufacturers, storage device manufacturers, aerospace and military contractors, and distributors that sell collaborative robots.

In 2015, we acquired Universal Robots A/S (“Universal Robots”), the leading supplier of collaborative robots which are low-cost, easy-to-deploy and simple-to-program robots that work side by side with production workers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Universal Robots is a separate operating and reportable segment, Industrial Automation. The acquisition of Universal

Robots provides a growth engine to our business and complements our existing System Test and Wireless Test segments. The total purchase price for Universal Robots was approximately \$315 million, which included cash paid of approximately \$284 million and \$32 million in fair value of contingent consideration payable upon achievement of revenue and earnings targets through 2018. Contingent consideration paid for 2015 was \$15 million. The remaining maximum contingent consideration that could be paid is \$50 million.

In 2014, we acquired Avionics Interface Technologies LLC (“AIT”), a supplier of equipment for testing state-of-the-art data communication buses. The acquisition of AIT complements our Defense/Aerospace line of bus test instrumentation for commercial and defense avionics systems. AIT is included in our System Test segment. The total purchase price for AIT was approximately \$21 million, which included cash paid of approximately \$19 million and \$2 million in fair value of contingent consideration payable upon achievement of revenue and gross margin targets in 2015 and 2016. The total amount of contingent consideration paid was \$1.1 million.

In 2013, we acquired ZTEC Instruments Inc. (“ZTEC”), a supplier of modular wireless test instruments. The acquisition of ZTEC expands our Wireless Test segment into the design verification test of wireless components and chipsets. The total purchase price for ZTEC was approximately \$17 million, which included cash paid of approximately \$15 million and \$2 million in fair value of contingent consideration payable upon achievement of certain customer order and revenue targets through 2015. None of the contingent consideration was paid.

## **Investor Information**

We are a Massachusetts corporation incorporated on September 23, 1960. We are subject to the informational requirements of the Securities Exchange Act of 1934 (“Exchange Act”). We file periodic reports, proxy statements and other information with the Securities and Exchange Commission (“SEC”). Such reports, proxy statements and other information may be obtained by visiting the Public Reference Room of the SEC at 100 F Street, N.E., Washington, DC 20549 or by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains an internet site (<http://www.sec.gov>) that contains reports, proxy and information statements and other information regarding issuers that file documents electronically.

You can access financial and other information, including the charters of our Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee, our Corporate Governance Guidelines and Code of Conduct, by clicking the Investors link on our web site at [www.teradyne.com](http://www.teradyne.com). We make available, free of charge, copies of our filings with the SEC, including our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act through our web site as soon as reasonably practicable after filing such material electronically or otherwise furnishing it to the SEC.

## **Products**

### ***Semiconductor Test***

We design, manufacture, sell and support Semiconductor Test products and services on a worldwide basis. The test systems we provide are used both for wafer level and device package testing. These chips are used in automotive, industrial, communications, consumer, and computer and electronic game applications, among others. Semiconductor devices span a broad range of functionality, from very simple low-cost devices such as appliance microcontrollers, operational amplifiers or voltage regulators to complex digital signal processors and microprocessors as well as memory devices. Semiconductor Test products and services are sold to IDMs that integrate the fabrication of silicon wafers into their business, “Fabless” companies that outsource the manufacturing of silicon wafers, “Foundries” that cater to the processing and manufacturing of silicon wafers, and OSATs that provide test and assembly services for the final packaged devices to both Fabless companies and IDMs. Fabless companies perform the design of integrated circuits without manufacturing capabilities, and use

Foundries for wafer manufacturing and OSATs for test and assembly. These customers obtain the overall benefit of comprehensively testing devices and reducing the total costs associated with testing by using our Semiconductor Test systems to:

- improve and control product quality;
- measure and improve product performance;
- reduce time to market; and
- increase production yields.

Our FLEX Test Platform architecture advances our core technologies to produce test equipment that is designed for high efficiency multi-site testing. Multi-site testing involves the simultaneous testing of many devices in parallel. Leading semiconductor manufacturers are using multi-site testing to significantly improve their “Cost of Test” economics. The FLEX Test Platform architecture addresses customer requirements through the following key capabilities:

- A high efficiency multi-site architecture that reduces tester overhead such as instrument setup, synchronization and data movement, and signal processing;
- The IG-XL™ software operating system which provides fast program development, including instant conversion from single to multi-site test; and
- Broad technology coverage by instruments designed to cover the range of test parameters, coupled with a universal slot test head design that allows easy test system reconfiguration to address changing test needs.

FLEX Test Platform purchases are being made by IDMs, OSATs, Foundries and Fabless customers. The FLEX Test Platform has become a widely used test solution at OSATs by providing versatile testers that can handle the widest range of devices, allowing OSATs to leverage their capital investments. The broad consumer, automotive and broadband markets have historically driven most of the device volume growth in the semiconductor industry. These markets include smart phones, cell phones, tablets, set top boxes, HDTVs, game controllers, computer graphics, and automotive controllers to name a few. These end use markets continue to be drivers for the FLEX Test Platform family of products because they require a wide range of technologies and instrument coverage. The UltraFLEX-M tester extends the FLEX Test Platform into the High Speed DRAM testing market. The FLEX Test Platform has an installed base of more than 5,500 systems.

Our J750™ test system shares the IG-XL software environment with the family of FLEX Test Platform systems. The J750 is designed to address the highest volume semiconductor devices, such as microcontrollers, that are central to the functionality of almost every consumer electronics product, from small appliances to automobiles. J750 test systems combine compact packaging, high throughput and ease of production test. We extended the J750 platform technology to create the IP750 Image Sensor™ test system. The IP750 is focused on testing image sensor devices used in smart phones and other imaging products. We have continued to invest in the J750 platform with new instrument releases that bring new capabilities to existing market segments and expand the J750 platform to new devices that include high end microcontrollers and the latest generation of cameras. In 2013, we introduced the J750 Ex-HD which includes system enhancements and new high density instruments that enable the J750 test platform to provide higher test cell productivity. The J750 platform has an installed base of over 5,200 systems.

Our Magnum platform addresses the requirements of mass production test of memory devices such as flash memory and DRAM. Flash and DRAM memory are widely used core building blocks in modern electronic products finding wide application in consumer, industrial, and computing equipment. Magnum V, the newest member of the family, is a next generation memory test solution designed for parallel memory test in the flash, DRAM and multi-chip package markets. The Magnum platform has an installed base of over 2,100 systems.

Our ETS platform is used by semiconductor manufacturers and assembly and test subcontractors, primarily in the analog/mixed signal markets that cover more cost sensitive applications. Our proprietary SmartPin™ technology enables high efficiency multi-site testing, on an individual test system, permitting greater test throughput. Semiconductors tested by ETS platform systems are incorporated into a wide range of products in historically high-growth markets, including mobile devices, video/multimedia products, automotive electronics, computer peripherals, and notebook and desktop computers. In 2013, we introduced the ETS-88, a high performance multi-site production test system designed to test a wide variety of high volume commodity and precision devices. In 2015, we introduced the ETS-800, a high performance multi-site production test system to test high complexity power devices in automotive, industrial and consumer applications. The ETS platform has an installed base of over 4,100 systems.

### ***System Test***

Our System Test segment is comprised of three business units: Defense/Aerospace, Storage Test and Production Board Test.

#### ***Defense/Aerospace***

We are a leading provider of high performance test systems, subsystems, instruments and service for the defense and aerospace markets. Our test products are used to ensure the readiness of military and commercial aerospace electronics systems. New programs, such as tactical aircraft and missile systems, as well as upgrade programs, continue to fuel the demand for high performance test systems in this market. Our test products are well-suited to the demands of defense/aerospace electronics manufacturers and repair depots worldwide. Our leadership in this market is underscored by our success with major Department of Defense programs across all U.S. military service branches and many allied defense services worldwide. Our acquisition of AIT in 2014 complements our line of bus test instrumentation for commercial and defense avionics systems. AIT is a supplier of equipment for testing state-of-the-art data communication buses.

#### ***Storage Test***

The Storage Test business unit addresses the high throughput, automated manufacturing test requirements of hard disk drive (“HDD”) and solid state disk (“SSD”) manufacturers. Our products address the client and enterprise storage markets. The client market is driven by the needs of desktop, laptop, and external HDD and SSD storage products. The enterprise market is driven by the needs of data centers and cloud storage. Our products lead in addressing customer requirements related to factory density, throughput, thermal performance and vibration isolation.

#### ***Production Board Test***

Our test systems are used by electronics manufacturers worldwide to perform In-Circuit-Test (“ICT”) and device programming of printed circuit board assemblies. Fast, accurate and cost-effective test capabilities are hallmark features of our Test Station and Spectrum ICT product families. We offer the Test Station in off-line and automated in-line configurations. The automated in-line configurations address the growing requirements for automating production lines for high volume applications, such as automotive electronics.

#### ***Industrial Automation***

Universal Robots, which we acquired in June 2015, is the leading supplier of collaborative robots, which are low-cost, easy-to-deploy and simple-to-program robots that work side by side with production workers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Collaborative robots are designed to mimic the motion of a human arm and can be fitted with task specific grippers or fixtures to support a wide range of applications. Universal Robots offers three collaborative robot models, the UR3, UR5, and

UR10, each with different weight carrying capacity and arm reach. All models are easily integrated into existing production environments. Universal Robots' products are differentiated by their:

- easy programming using a graphical interface which allows users to program the collaborative robot in a few hours;
- flexibility and ease of use in allowing customers to change the task the collaborative robot is performing as their production demands dictate;
- safe operations as collaborative robots can assist workers in side by side production environments requiring no special safety enclosures or shielding to protect workers; and
- short payback period, on average less than 12 months.

Cumulatively, Universal Robots has sold over 12,000 collaborative robots in diverse production environments and applications.

### ***Wireless Test***

Our acquisition of LitePoint in 2011 and ZTEC in 2013 expanded our product offerings in the wireless test market. Under the LitePoint brand name, these products provide test solutions utilized in the development and manufacturing of wireless devices. The world's leading makers of smart phones, tablets, notebooks, laptops, peripherals, and Internet-of-Things (IoT) devices rely on LitePoint technology to ensure their products get into consumer hands with high quality and high efficiency.

LitePoint hardware and software wireless test solutions are used in test insertions that span design verification to high volume manufacturing and are deployed across the entire production eco-system from the wireless chipset suppliers to the consumer brands. Wireless devices are often tested at multiple points along the manufacturing process that include insertions at component, system-in-package ("SiP"), module, PCB, SMT and finished product stages.

Design verification is an important step in the development process for evaluating product performance prior to starting production. As end market unit volumes have increased, the quantity of units and the amount of data that must be analyzed for a successful product launch continues to grow. LitePoint products provide easy to use, domain specific tools for rapid analysis of product performance. This helps to speed time to market.

In high volume manufacturing, before products are packaged and shipped, wireless test enables the calibration of each individual product's wireless performance to improve range, data throughput and battery life. Testing also verifies product specifications for product quality control. As markets become increasingly competitive, product performance and quality provide brand differentiation.

Wireless standards can be thought of in two categories, connectivity and cellular. Connectivity covers many standards such as Wi-Fi, Bluetooth, and GPS. LitePoint's IQxel products cover emerging Wi-Fi standards such as 802.11ax and 802.11ad as well as the existing standards 802.11a/b/g/n and 11ac, and includes a variety of other standards such as Bluetooth Classic, Bluetooth 5.0 and Bluetooth low energy, Zigbee, Z-Wave, NFC, LoRa, GPS, GLONASS and others.

The IQxel product family's high-performance wireless and multi-device testing economics is aligned with the needs of networking equipment, Internet gateways, IoT products and embedded modules used in smartphones, tablets, and PCs. Another connectivity product, the IQnfc, addresses the growing use of NFC technology for payments with mobile devices.

Cellular standards include 2G, 3G, 4G and emerging 5G mobile phone technologies. LitePoint's IQxstream is a multi-device optimized solution for high-speed testing of GSM, EDGE, CDMA2000, TD-SCDMA, WCDMA, HSPA+, LTE-FDD, TD-LTE, and LTE-A technologies. It is used for calibration and verification of smartphones, tablets, small cell wireless gateways and embedded cellular modules.

An important component in all wireless systems is the analog RF front end. The performance of these components is continually pushed higher as device makers add more bands, channels, antennas and higher data rates. We offer the LitePoint zSeries of modular wireless test instruments for design verification test and production testing of these wireless components. The lab-in-a-box zSeries solution provides simple and fast design verification of RF power amplifier and smart device RF front end modules. It is capable of rapid analysis of the latest digital pre-distortion and envelope tracking technologies for both LTE and Wi-Fi standards. A ruggedized version of the product is designed for high volume testing of these same devices.

To complement the test systems, LitePoint offers turnkey test software for over 350 of the most popular wireless chipsets. These optimized solutions provide rapid development of high volume manufacturing solutions with a minimum of engineering effort by customers.

### ***Summary of Revenues by Reportable Segment***

Our four reportable segments accounted for the following percentages of consolidated revenues for each of the last three years:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Semiconductor Test .....	78%	73%	79%
System Test .....	11	13	10
Industrial Automation .....	6	3	—
Wireless Test .....	<u>5</u>	<u>11</u>	<u>11</u>
	<u>100%</u>	<u>100%</u>	<u>100%</u>

### **Sales and Distribution**

In 2016, revenues from Taiwan Semiconductor Manufacturing Company Ltd. and JA Mitsui Leasing, Ltd. accounted for 12% and 12%, respectively, of our consolidated revenues. Taiwan Semiconductor Manufacturing Company Ltd. and JA Mitsui Leasing, Ltd. are customers of our Semiconductor Test segment. In 2015, revenues from JA Mitsui Leasing, Ltd. accounted for 13% of our consolidated revenues. In 2014, no single customer accounted for more than 10% of our consolidated revenues. In each of the years, 2016, 2015 and 2014, our five largest customers in aggregate accounted for 36%, 34% and 30% of our consolidated revenues, respectively.

OSAT customers, such as Taiwan Semiconductor Manufacturing Company LTD., often purchase our test systems based upon recommendations from OEMs, IDMs and Fabless companies. In all cases when an OSAT customer purchases a test system from us, we consider the OSAT as the customer since credit risk, title and risk of loss, among other things, are between Teradyne and the OSAT. We estimate product demand driven by a single OEM customer, combining direct sales to that customer with sales to the customer's OSATs (which include Taiwan Semiconductor Manufacturing Company Ltd. and its leasing company, JA Mitsui Leasing, Ltd), accounted for approximately 25%, 23%, and 22% of our consolidated revenues in 2016, 2015, and 2014, respectively. The loss of, or significant decrease in demand from, this OEM customer, or any of our five largest direct customers, could have a material adverse effect on our business, results of operations and financial condition.

We have sales and service offices located throughout North America, Asia and Europe. We sell in these areas predominantly through a direct sales force, except for Industrial Automation segment products which are sold through distributors. Our manufacturing activities are primarily conducted through subcontractors and outsourced contract manufacturers with significant operations in China and Malaysia.

Sales to customers outside the United States were 87% of our consolidated revenues in 2016, 2015 and 2014. Sales are attributed to geographic areas based on the location of the customer site.



Sales to customers by country outside of the United States that accounted for 10% or more of our consolidated revenues in any of the previous three years were as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Taiwan .....	37%	27%	30%
China .....	10	16	18

See also “Item 1A: Risk Factors” and Note R: “Operating Segment, Geographic and Significant Customer Information” in Notes to Consolidated Financial Statements.

### Competition

We face significant competition throughout the world in each of our reportable segments. Competitors in the Semiconductor Test segment include, among others, Advantest Corporation and Xcerra Corporation.

Competitors in the System Test segment include, among others, Keysight Technologies, Inc., Astronics, Test Research, Inc. and SPEA S.p.A.

Competitors in our Wireless Test segment include, among others, Rohde & Schwarz GmbH & Co. KG, Anritsu Company, Keysight Technologies, Inc. and National Instruments Corporation.

Competitors in our Industrial Automation segment include manufacturers of traditional industrial robots such as KUKA Robotics Corporation, ABB, FANUC and Yaskawa Electric Corporation as well as emerging companies developing collaborative robots.

Some of our competitors have substantially greater financial and other resources to pursue engineering, manufacturing, marketing and distribution of their products. We also face competition from emerging Asian equipment companies and from internal suppliers at several of our customers. Some of our competitors have introduced or announced new products with certain performance characteristics which may be considered equal or superior to those we currently offer. We expect our competitors to continue to improve the performance of their current products and to introduce new products or new technologies that provide improved cost of ownership and performance characteristics. See also “Item 1A: Risk Factors.”

### Backlog

At December 31, 2016 and 2015, our backlog of unfilled orders in our four reportable segments was as follows:

	<u>2016</u>	<u>2015</u>
	<u>(in millions)</u>	
Semiconductor Test .....	\$575.7	\$472.9
System Test .....	117.8	108.8
Wireless Test .....	32.4	33.4
Industrial Automation .....	3.8	0.6
	<u>\$729.7</u>	<u>\$615.7</u>

Of the backlog at December 31, 2016, approximately 99% of the Semiconductor Test backlog, 97% of the System Test backlog, 50% of Wireless Test backlog and 100% of the Industrial Automation backlog, is expected to be delivered in 2017.

Customers may delay delivery of products or cancel orders suddenly and without advanced notice, subject to possible cancellation penalties. Due to possible customer changes in delivery schedules and cancellation of orders, our backlog at any particular date is not necessarily indicative of the actual sales for any succeeding period. Delays in delivery schedules or cancellations of backlog during any particular period could have a material adverse effect on our business, financial condition or results of operations.

## **Raw Materials**

Our products contain electronic and mechanical components that are provided by a wide range of suppliers. Some of these components are standard products, while others are manufactured to our specifications. We can experience occasional delays in obtaining timely delivery of certain items. While the majority of our components are available from multiple suppliers, certain items are obtained from sole sources. We may experience a temporary adverse impact if any of our sole source suppliers delay or cease to deliver products.

## **Intellectual Property and Licenses**

The development of our products, both hardware and software, is based in significant part on proprietary information, our brands and technology. We protect our rights in proprietary information, brands and technology through various methods, such as:

- patents;
- copyrights;
- trademarks;
- trade secrets;
- standards of business conduct and related business practices; and
- technology license agreements, software license agreements, non-disclosure agreements, employment agreements, and other agreements.

However, these protections might not be effective in all circumstances. Competitors might independently develop similar technology or exploit our proprietary information and our brands in countries where we lack enforceable intellectual property rights or where enforcement of such rights through the legal system provides an insufficient deterrent. Also, intellectual property protections can lapse or be invalidated through appropriate legal processes. We do not believe that any single piece of intellectual property or proprietary rights is essential to our business.

## **Employees**

As of December 31, 2016, we employed approximately 4,300 people. Since the inception of our business, we have experienced no work stoppages or other labor disturbances.

## **Engineering and Development Activities**

The highly technical nature of our products requires a large and continuing engineering and development effort. For the years ended December 31, 2016, 2015 and 2014, our engineering and development expenditures were \$291.0 million, \$292.3 million, and \$291.6 million, respectively. These expenditures accounted for approximately 16.6%, 17.8%, and 17.7%, of our consolidated revenues in 2016, 2015, and 2014, respectively.

## **Environmental Affairs**

We are subject to various federal, state, and local government laws and regulations relating to the protection of employee health and safety and the environment. We accrue for all known environmental liabilities when it becomes probable that we will incur cleanup costs and those costs can reasonably be estimated. Estimated environmental costs are not expected to materially affect the financial position or results of our operations in future periods. However, estimates of future costs are subject to change due to protracted cleanup periods and changing environmental remediation laws and regulations.

## OUR EXECUTIVE OFFICERS

Pursuant to General Instruction G(3) of Form 10-K, the following table is included in Part I of this Annual Report on Form 10-K in lieu of being included in the Proxy Statement for the Annual Meeting of Shareholders. The table sets forth the names of all of our executive officers and certain other information relating to their positions held with Teradyne and other business experience. Our executive officers do not have a specific term of office but rather serve at the discretion of the Board of Directors.

<u>Executive Officer</u>	<u>Age</u>	<u>Position</u>	<u>Business Experience For The Past 5 Years</u>
Mark E. Jagiela . . . . .	56	Chief Executive Officer and President	Chief Executive Officer since February 2014; President of Teradyne since January 2013; President of Semiconductor Test from 2003 to February 2016; Vice President of Teradyne from 2001 to 2013.
Gregory R. Beecher . . . . .	59	Vice President, Chief Financial Officer and Treasurer	Vice President and Chief Financial Officer of Teradyne since 2001; Treasurer of Teradyne from 2003 to 2005 and since 2006.
Charles J. Gray . . . . .	55	Vice President, General Counsel and Secretary	Vice President, General Counsel and Secretary of Teradyne since April 2009.
Bradford B. Robbins . . . . .	58	President of Wireless Test	President of Wireless Test since August 2014; Chief Operating Officer of LitePoint Corporation from 2012 to 2014; Vice President of Teradyne since 2001.
Gregory S. Smith . . . . .	53	President of Semiconductor Test	President of Semiconductor Test since February 2016; Vice President, SOC Business Group and Marketing Manager for Semiconductor Test Group from January 2014 to February 2016; Business Unit Manager, Complex SOC Business Unit from 2009 to January 2014.
Walter G. Vahey . . . . .	52	President of System Test	President of System Test since July 2012; Vice President of Teradyne since 2008; General Manager of Storage Test since 2008; General Manager of Production Board Test since April 2013; General Manager of Defense/Aerospace from 2004 to July 2012.

### **Item 1A: Risk Factors**

#### **Risks Associated with Our Business**

The risks described below are not the only risks that we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition and/or operating results.

***Our business is impacted by global and industry-specific economic cycles, which are difficult to predict, and actions we have taken or may take to offset these cycles may not be sufficient.***

Capital equipment providers in the electronics and semiconductor industries, such as Teradyne, have, in the past, been negatively impacted by both sudden slowdowns in the global economies and recurring cyclicality within those industries. These cycles have resulted in periods of over-supply; a trend we believe will continue to

occur for newer generations of electronic products. Our business and results of operations depend, in significant part, upon capital expenditures of manufacturers of semiconductors and other electronics, which in turn depend upon the current and anticipated market demand for those products. Disruption or deterioration in economic conditions may reduce customer purchases of our products, thereby reducing our revenues and earnings. In addition, such adverse changes in economic conditions, and resulting slowdowns in the market for our products, may, among other things, result in increased price competition for our products, increased risk of excess and obsolete inventories, increased risk in the collectability of our accounts receivable from our customers, potential reserves for doubtful accounts and write-offs of accounts receivable, increased risk of restructuring charges, and higher operating costs as a percentage of revenues, which, in each case and together, adversely affect our operating results. We are unable to predict the likely duration, frequency and severity of disruptions in financial markets, credit availability, and adverse economic conditions throughout the world, and we cannot ensure that the level of revenues or new orders for a fiscal quarter will be sustained in subsequent quarters. We have taken actions to address the effects of general economic variability and recurring industry cyclicality, including implementing cost control and reduction measures. We cannot predict whether these measures will be sufficient to offset global or market-specific disruptions that might affect our test businesses and we may need to take additional or different measures in the future.

***We are subject to intense competition.***

We face significant competition throughout the world in each of our reportable segments. Some of our competitors have substantial financial and other resources to pursue engineering, manufacturing, marketing and distribution of their products. We also face competition from emerging Asian equipment companies and internal development at several of our customers. Some of our competitors have introduced or announced new products with certain performance characteristics that may be considered equal or superior to those we currently offer. We expect our competitors to continue to improve the performance of their current products and to introduce new products or new technologies that provide improved cost of ownership and performance characteristics. New product introductions by competitors could cause a decline in revenues or loss of market acceptance of our products.

***The market for our products is concentrated, and our business depends, in part, on obtaining orders from a few significant customers.***

The market for our products is concentrated with a limited number of significant customers accounting for a substantial portion of the purchases of test equipment. In each of the years 2016, 2015 and 2014, our five largest customers in aggregate accounted for 36%, 34% and 30% of consolidated revenues, respectively. We estimate product demand driven by a single OEM customer, combining direct sales to that customer with sales to the customer's OSATs (which include Taiwan Semiconductor Manufacturing Company Ltd. and its leasing company, JA Mitsui Leasing, Ltd), accounted for approximately 25%, 23%, and 22% of our consolidated revenues in 2016, 2015, and 2014, respectively. In any one reporting period, a single customer or several customers may contribute even a larger percentage of our consolidated revenues. In addition, our ability to increase sales will depend, in part, on our ability to obtain orders from current or new significant customers. The opportunities to obtain orders from these customers may be limited, which may impair our ability to grow revenues. We expect that sales of our products will continue to be concentrated with a limited number of significant customers for the foreseeable future. The loss of a significant customer or any reduction in orders by these customers, including reductions due to market or competitive conditions, such as we experienced in our Wireless Test segment, would likely have a material adverse effect on our business, financial condition or results of operations.

***Our operating results are likely to fluctuate significantly.***

Our operating results are affected by a wide variety of factors that could materially adversely affect revenues or profitability. The following factors could impact future operations:

- a worldwide economic slowdown or disruption in the global financial markets;
- competitive pressures on selling prices;
- our ability to introduce, and the market acceptance of, new products;
- changes in product revenues mix resulting from changes in customer demand;
- the level of orders received which can be shipped in a quarter because of the tendency of customers to wait until late in a quarter to commit to purchase due to capital expenditure approvals and constraints occurring at the end of a quarter, or the hope of obtaining more favorable pricing from a competitor seeking the business;
- engineering and development investments relating to new product introductions, and the expansion of manufacturing, outsourcing and engineering operations in Asia;
- provisions for excess and obsolete inventory relating to the lack of demand for and the discontinuance of products;
- impairment charges for certain long-lived and intangible assets, and goodwill;
- an increase in the leasing of our products to customers;
- our ability to expand our global distribution channel for our collaborative robots;
- parallel or multi-site testing could lead to a decrease in the ultimate size of the market for our products; and
- the ability of our suppliers and subcontractors to meet product quality or delivery requirements needed to satisfy customer orders for our products, especially if product demand increases.

As a result of the foregoing and other factors, we have experienced and may continue to experience material fluctuations in future operating results on a quarterly or annual basis which could materially and adversely affect our business, financial condition, operating results or stock price.

***We are subject to risks of operating internationally.***

A significant portion of our total revenues is derived from customers outside the United States. Our international sales and operations are subject to significant risks and difficulties, including:

- unexpected changes in legal and regulatory requirements affecting international markets;
- changes in tariffs and exchange rates;
- social, political and economic instability, acts of terrorism and international conflicts;
- difficulties in protecting intellectual property;
- difficulties in accounts receivable collection;
- cultural differences in the conduct of business;
- difficulties in staffing and managing international operations;
- compliance with customs regulations; and
- compliance with international tax laws and regulations.

In addition, an increasing portion of our products and the products we purchase from our suppliers are sourced or manufactured in foreign locations, including China and Malaysia, and a large portion of the devices our products test are fabricated and tested by foundries and subcontractors in Taiwan, China, Singapore and other parts of Asia. As a result, we are subject to a number of economic and other risks, particularly during times of political or financial instability in these regions. Disruption of manufacturing or supply sources in these international locations could materially adversely impact our ability to fill customer orders and potentially result in lost business.

***If we fail to develop new technologies to adapt to our customers' needs and if our customers fail to accept our new products, our revenues will be adversely affected.***

We believe that our technological position depends primarily on the technical competence and creative ability of our engineers. In a rapidly evolving market, such as ours, the development or acquisition of new technologies, commercialization of those technologies into products and market acceptance and customer demand for those products are critical to our success. Successful product development or acquisition, introduction and acceptance depend upon a number of factors, including:

- new product selection;
- ability to meet customer requirements;
- development of competitive products by competitors;
- timely and efficient completion of product design;
- timely and efficient implementation of manufacturing and manufacturing processes;
- timely remediation of product performance issues, if any, identified during testing;
- assembly processes and product performance at customer locations;
- differentiation of our products from our competitors' products;
- management of customer expectations concerning product capabilities and product life cycles;
- transition of customers to new product platforms;
- ability to attract and retain technical talent; and
- innovation that does not infringe on the intellectual property rights of third parties.

***We may be subject to product recalls and warranty and product liability claims.***

We invest significant resources in the design, manufacture and testing of our products. However, we may discover design or manufacturing defects in our products after they have been shipped and, as a result, we may incur development and remediation costs and be required to settle warranty and product liability claims. In addition, if any of our products contain defects or have reliability, quality or safety issues, we may need to conduct a product recall which could result in significant repair or replacement costs and substantial delays in product shipments and may damage our reputation which could make it more difficult to sell our products. Any of these results could have a material adverse effect on our business, results of operations or financial condition.

***If our suppliers do not meet product or delivery requirements, we could have reduced revenues and earnings.***

Certain components, including semiconductor chips, may be in short supply from time to time because of high industry demand or the inability of some vendors to consistently meet our quality or delivery requirements. If any of our suppliers were to cancel contracts or commitments or fail to meet the quality or delivery requirements needed to satisfy customer orders for our products, we could lose time-sensitive customer orders, have significantly decreased revenues and earnings and be subject to contractual penalties, which would have a

material adverse effect on our business, results of operations and financial condition. In addition, we rely on contract manufacturers for certain subsystems used in our products, and our ability to meet customer orders for those products depends upon the timeliness and quality of the work performed by these subcontractors, over whom we do not exercise any control.

To a certain extent, we are dependent upon the ability of our suppliers and contractors to help meet increased product or delivery requirements. It may be difficult for certain suppliers to meet delivery requirements in a period of rapid growth, therefore impacting our ability to meet our customers' demands.

We rely on the financial strength of our suppliers. There can be no assurance that the loss of suppliers either as a result of financial viability, bankruptcy or otherwise will not have a material adverse effect on our business, results of operations or financial condition.

***Our operations may be adversely impacted if our outsourced contract manufacturers or service providers fail to perform.***

We depend on Flex Ltd. ("Flex") to manufacture and test our FLEX and J750 family of products from its facility in China and on other contract manufacturers to manufacture other products. If for any reason these contract manufacturers cannot provide us with these products in a timely fashion, or at all, we may not be able to sell these products to our customers until we enter a similar arrangement with an alternative contract manufacturer. If we experience a problem with our supply of products from Flex or our other contract manufacturers, it may take us significant time to either manufacture the product or find an alternate contract manufacturer, which could result in substantial expense and disruption to our business.

We have also outsourced a number of our general and administrative functions to reputable service providers, many of which are in foreign countries, sometimes impacting communication with them because of language and time differences. Their presence in foreign countries also increases the risk they could be exposed to political risk. Additionally, there may be difficulties encountered in coordinating the outsourced operations with existing functions and operations. If we fail in successfully coordinating and managing the outsourced service providers, it may cause an adverse effect on our operations which could have a material adverse effect on our business, results of operations or financial condition.

***We may not fully realize the benefits of our acquisitions or strategic alliances.***

In June 2015, we acquired Universal Robots. We may not be able to realize the benefit of acquiring Universal Robots or successfully grow Universal Robots' business. We may continue to acquire additional businesses, form strategic alliances or create joint ventures with third parties that we believe will complement or augment our existing businesses. We may not be able to realize the expected synergies and cost savings from the integration with our existing operations of other businesses or technologies that we may acquire. In addition, the integration process for our acquisitions may be complex, costly and time consuming and include unanticipated issues, expenses and liabilities. We may have difficulty in developing, manufacturing and marketing the products of a newly acquired company in a manner that enhances the performance of our combined businesses or product lines and allows us to realize value from expected synergies. Following an acquisition, we may not achieve the revenue or net income levels that justify the acquisition. Acquisitions may also result in one-time charges (such as acquisition-related expenses, write-offs or restructuring charges) or in the future, impairment of goodwill or acquired intangible assets that adversely affect our operating results. Additionally, we may fund acquisitions of new businesses, strategic alliances or joint ventures by utilizing our cash, incurring debt, issuing shares of our common stock, or by other means.

In the second quarter of 2016, we performed an interim goodwill impairment test and recorded a goodwill impairment loss of \$254.9 million and \$83.3 million intangible asset impairment in our Wireless Test segment as a result of a sharp decline in projected demand attributable to an estimated smaller future wireless test market.

The decrease in projected demand was due to lower forecasted buying from our largest Wireless Test segment customer (who has contributed between 51% and 73% of annual Wireless Test sales since the LitePoint acquisition in 2011 through 2015) as a result of the customer's numerous operational efficiencies; slower smartphone growth rates; and a slowdown of new wireless technology adoption.

In the fourth quarter of 2014, we performed our annual goodwill impairment test and recorded a goodwill impairment charge of \$98.9 million in our Wireless Test segment as a result of decreased projected demand attributable to an estimated smaller future wireless test market due to reuse of wireless test equipment, price competition and different testing techniques.

***We may incur significant liabilities if we fail to comply with environmental regulations.***

We are subject to both domestic and international environmental regulations and statutory strict liability relating to the use, storage, discharge, site cleanup and disposal of hazardous chemicals used in our manufacturing processes. If we fail to comply with present and future regulations, or are required to perform site remediation, we could be subject to future liabilities or cost, including penalties or the suspension of production. Present and future regulations may also:

- restrict our ability to expand facilities;
- restrict our ability to ship certain products;
- require us to modify our operations logistics;
- require us to acquire costly equipment; or
- require us to incur other significant costs and expenses.

Pursuant to present regulations and agreements, we are conducting groundwater and subsurface assessment and monitoring and are implementing remediation and corrective action plans for facilities located in Massachusetts and New Hampshire which are no longer conducting manufacturing operations. As of December 31, 2016, we have not incurred material costs as result of the monitoring and remediation steps taken at the Massachusetts and New Hampshire sites.

On January 27, 2003, the European Union adopted the following directives: (i) the directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (the "RoHS Directive"); and (ii) the directive on Waste Electrical and Electronic Equipment (the "WEEE Directive"). The WEEE Directive became effective August 13, 2005 and the RoHS Directive became effective on July 6, 2006. Both the RoHS Directive and the WEEE Directive alter the form and manner in which electronic equipment is imported, sold and handled in the European Union. Other jurisdictions, such as China, have followed the European Union's lead in enacting legislation with respect to hazardous substances and waste removal. Ensuring compliance with the RoHS Directive, the WEEE Directive and similar legislation in other jurisdictions, and integrating compliance activities with our suppliers and customers could result in additional costs and disruption to operations and logistics and thus, could have a negative impact on our business, operations or financial condition.

***We currently are, and in the future may be, subject to litigation or regulatory proceedings that could have an adverse effect on our business.***

From time to time, we may be subject to litigation or other administrative, regulatory or governmental proceedings, including tax audits and resulting claims that could require significant management time and resources and cause us to incur expenses and, in the event of an adverse decision, pay damages or incur costs in an amount that could have a material adverse effect on our financial position or results of operations.



***Third parties may claim we are infringing their intellectual property and we could suffer significant litigation costs, licensing expenses or be prevented from selling our products.***

We have been sued for patent infringement in the past and receive notifications from time to time that we may be in violation of patents held by others. An assertion of patent infringement against us, if successful, could have a material adverse effect on our ability to sell our products or it could force us to seek a license to the intellectual property rights of others or alter such products so that they no longer infringe the intellectual property rights of others. A license could be very expensive to obtain or may not be available at all. Similarly, changing our products or processes to avoid infringing the rights of others may be costly or impractical. Additionally, patent litigation could require a significant use of management resources and involve a lengthy and expensive defense, even if we eventually prevail. If we do not prevail, we might be forced to pay significant damages, obtain licenses, modify our products, or stop making our products; each of which could have a material adverse effect on our financial condition, operating results or cash flows.

***If we are unable to protect our intellectual property (“IP”), we may lose a valuable asset or may incur costly litigation to protect our rights.***

We protect the technology that is incorporated in our products in several ways, including through patent, copyright, trademark and trade secret protection and by contractual agreement. However, even with these protections, our IP may still be challenged, invalidated or subject to other infringement actions. While we believe that our IP has value in the aggregate, no single element of our IP is in itself essential. If a significant portion of our IP is invalidated or ineffective, our business could be materially adversely affected.

***We may incur higher tax rates than we expect and may have exposure to additional international tax liabilities and costs.***

We are subject to paying income taxes in the United States and various other countries where we operate. Our effective tax rate is dependent on where our earnings are generated and the tax regulations and the interpretation and judgment of administrative tax or revenue entities in the United States and other countries. We have pursued a global tax strategy which could adversely be affected by the mix of earnings and tax rates in the countries where we operate, changes to tax laws or an adverse tax ruling by administrative entities. We are also subject to tax audits in the countries where we operate. Any material assessment resulting from an audit from an administrative tax or revenue entity could also negatively affect our financial results.

As a multinational corporation, we are subject to income taxes as well as non-income based taxes, in both the United States and various foreign jurisdictions. In certain foreign jurisdictions, we qualify for tax incentives and tax holidays based on our ability to meet, on a continuing basis, various tests relating to our employment levels, research and development expenditures and other qualification requirements in a particular foreign jurisdiction. While we intend to operate in such a manner to maintain and maximize our tax incentives, no assurance can be given that we have so qualified or that we will so qualify for any particular year or jurisdiction. If we fail to qualify and to remain qualified for certain foreign tax incentives and tax holidays, we may be subject to further taxation or an increase in our effective tax rate which would adversely impact our financial results. In December 2015, Teradyne entered into an agreement with the Singapore Economic Development Board which extended our Singapore tax holiday under substantially similar terms to the agreement which expired on December 31, 2015. The new tax holiday is scheduled to expire on December 31, 2020. The tax savings attributable to the Singapore tax holiday for the years ended December 31, 2016, 2015 and 2014 were \$17.0 million or \$0.08 per diluted share, \$11.5 million or \$0.05 per diluted share and \$13.2 million or \$0.06 per diluted share, respectively.

In addition, we may incur additional costs, including headcount expenses, in order to maintain or obtain a foreign tax incentive in a particular foreign jurisdiction.

***We have significant guarantees, indemnification and customer confidentiality obligations.***

From time to time, we make guarantees to customers regarding the delivery, price and performance of our products and guarantee certain indebtedness, performance obligations or lease commitments of our subsidiary and affiliate companies. We also have agreed to provide indemnification to our officers, directors, employees and agents, to the extent permitted by law, arising from certain events or occurrences while the officer, director, employee or agent, is or was serving at our request in such capacity. Additionally, we have confidentiality obligations to certain customers and if breached would require the payment of significant penalties. If we become liable under any of these obligations, it could materially and adversely affect our business, financial condition or operating results. For additional information see Note K: “Commitments and Contingencies—Guarantees and Indemnification Obligations” in Notes to Consolidated Financial Statements.

***We may discontinue or reduce our quarterly cash dividend or share repurchase program.***

In January 2014, our Board of Directors initiated a quarterly cash dividend of \$0.06 per share. In January 2017, our Board of Directors increased our quarterly cash dividend to \$0.07 per share. In December 2016, our Board of Directors approved a new \$500 million share repurchase authorization that commenced on January 1, 2017. We intend to repurchase at least \$200 million in 2017. Our January 2015 stock repurchase program was terminated on December 31, 2016. In 2016 and 2015, we repurchased \$146 million and \$300 million of common stock, respectively. Holders of our common stock are only entitled to receive dividends when and if they are declared by our Board of Directors. Future cash dividends and share repurchases are subject to the discretion of our Board of Directors and will depend, among other things, upon our earnings, capital requirements and financial condition. While we have declared a quarterly cash dividend on our common stock and authorized a share repurchase program, we are not required to do either and may reduce or eliminate our cash dividend or share repurchase program in the future. The reduction or elimination of our cash dividend or our share repurchase program could adversely affect the market price of our common stock.

***We have incurred indebtedness and may incur additional indebtedness.***

On December 12, 2016, we completed a private offering of \$460.0 million aggregate principal amount of 1.25% convertible senior unsecured notes (the “Notes”) due December 15, 2023 and received net proceeds, after issuance costs, of approximately \$450.8 million, \$33.0 million of which was used to pay the net cost, after being partially offset by proceeds from the sale of the warrants, of the convertible note hedge transactions and \$50.1 million of which was used to repurchase 2 million shares of our common stock. Holders of the Notes may require us to repurchase the Notes upon the occurrence of certain fundamental changes involving us or the holders may elect to convert into shares of our common stock.

On April 27, 2015, we entered into a five-year, senior secured revolving credit facility of up to \$350.0 million. Subject to customary conditions, we may seek to obtain from existing or new lenders incremental commitments under the credit facility in an aggregate principal amount not to exceed \$150.0 million. We have not borrowed any funds under this credit facility. We could borrow funds under this credit facility at any time for general corporate purposes and working capital.

The issuance of the Notes and any additional indebtedness, among other things, could:

- make it difficult to make payments on this indebtedness and our other obligations;
- make it difficult to obtain any necessary future financing for working capital, capital expenditures, debt service requirements or other purposes;
- require the dedication of a substantial portion of any cash flow from operations to service for indebtedness, thereby reducing the amount of cash flow available for other purposes, including capital expenditures; and
- limit our flexibility in planning for, or reacting to, changes in our business and the industries in which we compete.

***Our convertible note hedge and warrant transactions could impact the value of our stock.***

Concurrent with the offering of the Notes, we entered into convertible note hedge transactions (the “Note Hedge Transactions”) with the initial purchasers or their affiliates (the “Option Counterparties”). The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, the number of shares of our common stock that underlie the Notes, with a strike price equal to the initial conversion price of the Notes of \$31.84. The Note Hedge Transactions cover, subject to customary antidilution adjustments, approximately 14.4 million shares of our common stock.

Separately and concurrent with the pricing of the Notes, we entered into warrant transactions with the Option Counterparties (the “Warrant Transactions”) in which we sold net-share-settled (or, at our election subject to certain conditions, cash-settled) warrants to the Option Counterparties. The Warrant Transactions cover, subject to customary antidilution adjustments, approximately 14.4 million shares of our common stock. The strike price of the warrants will initially be \$39.95 per share (subject to adjustment), which was approximately 60% above the closing sale price of our common stock on December 6, 2016. The Warrant Transactions could have a dilutive effect to our common stock to the extent that the market price per share of our common stock, as measured under the terms of the Warrant Transactions, exceeds the applicable strike price of the warrants.

The Note Hedge Transactions are expected to reduce the potential dilution to our common stock upon any conversion of the Notes. However, the Warrant Transactions could separately have a dilutive effect to the extent that the market value per share of our common stock exceeds the applicable strike price of the warrants. The net cost of the Note Hedge Transactions, after being partially offset by the proceeds from the sale of the warrants, was approximately \$33.0 million.

In connection with establishing their initial hedge of these convertible note hedge and warrant transactions, the Option Counterparties have entered into various derivative transactions with respect to our common stock and/or purchase shares of our common stock or other securities, including the Notes, concurrent with, or shortly after, the pricing of the Notes. In addition, the Option Counterparties may modify their hedge positions by entering into or unwinding various derivative transactions with respect to our common stock or by selling our common stock or other securities, including the Notes, in secondary market transactions (and may do so during any observation period related to the conversion of the Notes). These activities could adversely impact the value of our common stock and the Notes.

***We may not be able to pay our debt and other obligations.***

If our cash flow is inadequate to meet our obligations, we could face substantial liquidity problems. If we are unable to generate sufficient cash flow or otherwise obtain funds necessary to make required payments on the Notes or certain of our other obligations, we would be in default under the terms thereof, which would permit the holders of those obligations to accelerate their maturity and also could cause defaults under future indebtedness we may incur. Any such default could have a material adverse effect on our business, prospects, financial position and operating results. In addition, we cannot be certain that we would be able to repay amounts due on the Notes if those obligations were to be accelerated following the occurrence of any other event of default as defined in the instruments creating those obligations, or if the holders of the Notes require us to repurchase the Notes upon the occurrence of a fundamental change involving us. Moreover, we cannot be certain that we will have sufficient funds or will be able to arrange for financing to pay the principal amount due on the Notes at maturity.

***Restrictive covenants in the agreement governing our senior secured revolving credit facility may restrict our ability to pursue business strategies.***

The agreement governing our senior secured revolving credit facility limits our ability, among other things, to: incur additional secured indebtedness; sell, transfer, license or dispose of assets; consolidate or merge; enter into transactions with our affiliates; and incur liens. In addition, our senior secured revolving credit facility contains financial and other restrictive covenants that limit our ability to engage in activities that may be in our

long term best interest, such as, subject to permitted exceptions, making capital expenditures in excess of certain thresholds, making investments, loans and other advances, and prepaying any additional indebtedness while our indebtedness under our senior secured revolving credit facility is outstanding. Our failure to comply with financial and other restrictive covenants could result in an event of default, which if not cured or waived, could result in the lenders requiring immediate payment of all outstanding borrowings or foreclosing on collateral pledged to them to secure the indebtedness.

***Our business may suffer if we are unable to attract and retain key employees.***

Competition for employees with skills we require is intense in the high technology industry. Our success will depend on our ability to attract and retain key technical employees. The loss of one or more key or other employees, a decrease in our ability to attract additional qualified employees, or the delay in hiring key personnel could each have a material adverse effect on our business, results of operations or financial condition.

***Our operations, and the operations of our customers and suppliers, are subject to risks of natural catastrophic events, widespread health epidemics, acts of war, terrorist attacks and the threat of domestic and international terrorist attacks, any one of which could result in cancellation of orders, delays in deliveries or other business activities, or loss of customers and could negatively affect our business and results of operations.***

Our business is international in nature, with our sales, service and administrative personnel and our customers and suppliers located in numerous countries throughout the world. Our operations, and those of our customers and suppliers, are subject to disruption for a variety of reasons, including work stoppages, acts of war, terrorism, health epidemics, fires, earthquakes, hurricanes, volcanic eruptions, energy shortages, telecommunication failures, tsunamis, flooding or other natural disasters. Such disruption could materially increase our costs and expenses as well as 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. Any of these conditions could have a material adverse effect on our business, financial condition or results of operations.

In 2016, an earthquake in Japan damaged our building beyond repair and impacted our operations located in Kumamoto, Japan. We have temporarily transferred the manufacturing operations to other facilities so we do not expect the damage to have a significant impact on our ability to manufacture our products or sell products to our customers. However, the situation in Kumamoto remains uncertain so the events could have a short-term impact to our business in Japan. In addition, we may incur significant uninsured costs in order to rebuild our operations which could have an adverse effect on our financial condition and results of operations.

***A breach of our operational or security systems could negatively affect our business and results of operations.***

We rely on various information technology networks and systems, some of which are managed by third parties, to process, transmit and store electronic information, including confidential data, and to carry out and support a variety of business activities, including manufacturing, research and development, supply chain management, sales and accounting. A failure in or a breach of our operational or security systems or infrastructure, or those of our suppliers and other service providers, including as a result of cyber attacks, could disrupt our business, result in the disclosure or misuse of proprietary or confidential information, damage our reputation, cause losses and increase our costs.

***We may face risks associated with shareholder activism.***

Publicly traded companies have increasingly become subject to campaigns by shareholders advocating corporate actions such as financial restructuring, increased borrowing, special dividends, stock repurchases or divestitures. We may become subject in the future to such shareholder activity and demands. Such activities could interfere with our ability to execute our business plans, be costly and time-consuming, disrupt our operations, divert the attention of management or result in our initiating borrowing or increasing our share repurchase plan or dividend, any of which could have an adverse effect on our business or stock price.

**Provisions of our charter and by-laws and Massachusetts law make a takeover of Teradyne more difficult.**

There are provisions in our basic corporate documents and under Massachusetts law that could discourage, delay or prevent a change in control, even if a change in control may be regarded as beneficial to some or all of our stockholders.

**Item 1B: Unresolved Staff Comments**

None.

**Item 2: Properties**

The following table provides information as to our principal facilities:

<u>Location</u>	<u>Operating Segment</u>	<u>Major Activity(1)</u>	<u>Approximate Square Feet of Floor Space</u>
Properties owned:			
North Reading, Massachusetts . . . . .	Semiconductor Test & System Test	1-2-3-4-5	422,000
Agoura Hills, California . . . . .	Semiconductor Test	3-4	120,000
Kumamoto, Japan . . . . .	Semiconductor Test	2-3-4-5	79,000
			<u>621,000</u>
Properties leased:			
Cebu, Philippines . . . . .	Semiconductor Test	1-2-5	183,000
San Jose, California . . . . .	Semiconductor Test	2-3-4-5	128,000
Odense, Denmark . . . . .	Industrial Automation	2-3-4-5	130,000
Buffalo Grove, Illinois . . . . .	Semiconductor Test	2-3-4-5	95,000
Sunnyvale, California . . . . .	Wireless Test & Semiconductor Test	2-3-4-5	91,000
Shanghai, China . . . . .	Semiconductor Test, System Test, Wireless Test & Industrial Automation	3-4-5	75,000
Heredia, Costa Rica . . . . .	Semiconductor Test	1-5	63,000
Hsinchu, Taiwan . . . . .	Semiconductor Test & System Test	4	43,000
Singapore, Singapore . . . . .	Semiconductor Test & Industrial Automation	1-3-4	32,000
Seoul, Korea . . . . .	Semiconductor Test	4	30,000
			<u>870,000</u>

(1) Major activities have been separated into the following categories: 1. Corporate Administration, 2. Manufacturing, 3. Engineering, 4. Sales and Marketing, 5. Storage and Distribution.

**Item 3: Legal Proceedings**

We are subject to legal proceedings, claims and investigations that arise in the ordinary course of business such as, but not limited to, patent, employment, commercial and environmental matters. We believe that we have meritorious defenses against all pending claims and intend to vigorously contest them. While it is not possible to predict or determine the outcomes of any pending claims or to provide possible ranges of losses that may arise, we believe the potential losses associated with all of these actions are unlikely to have a material adverse effect on our results of operations, financial condition or cash flows.

**Item 4: Mine Safety Disclosure**

Not Applicable.

## PART II

### Item 5: *Market for Registrant's Common Equity, Related Shareholder Matters and Issuer Purchases of Equity Securities*

The following table shows the market range for our common stock based on reported sales price on the New York Stock Exchange and the dividends declared per share during such periods:

<u>Period</u>	<u>High</u>	<u>Low</u>	<u>Dividends</u>
2015			
First quarter . . . . .	\$20.15	\$17.60	\$0.06
Second quarter . . . . .	21.33	18.03	0.06
Third quarter . . . . .	20.00	16.06	0.06
Fourth quarter . . . . .	21.58	18.09	0.06
2016			
First quarter . . . . .	\$21.83	\$17.34	\$0.06
Second quarter . . . . .	21.84	18.07	0.06
Third quarter . . . . .	21.66	18.87	0.06
Fourth quarter . . . . .	26.59	20.22	0.06

The number of record holders of our common stock at February 24, 2017 was 1,737.

In January 2016, May 2016, August 2016 and November 2016, our Board of Directors declared a quarterly cash dividend of \$0.06 per share.

In January 2015, May 2015, August 2015 and November 2015, our Board of Directors declared a quarterly cash dividend of \$0.06 per share.

In January 2015, our Board of Directors cancelled the November 2010 stock repurchase program and authorized a new stock repurchase program for up to \$500 million of common stock. The cumulative repurchases as of December 31, 2016 totaled 22.5 million shares of common stock for \$446 million at an average price per share of \$19.87.

In December 2016, our Board of Directors approved a new \$500 million share repurchase authorization which commenced on January 1, 2017. We intend to repurchase at least \$200 million in 2017. Our January 2015 stock repurchase program was terminated on December 31, 2016.

In January 2017, our Board of Directors approved an increase to our quarterly cash dividend to \$0.07 per share.

See “Item 7: Management’s Discussion and Analysis of Financial Condition and Results of Operations,” for information on our equity compensation plans and our performance graph.

The following table includes information with respect to repurchases we made of our common stock during the quarter ended December 31, 2016 (in thousands except per share price):

<u>Period</u>	<u>(a) Total Number of Shares (or Units) Purchased</u>	<u>(b) Average Price Paid per Share (or Unit)</u>	<u>(c) Total Number of Shares (or Units) Purchased as Part of Publicly Announced Plans or Programs</u>	<u>(d) Maximum Number (or Approximate Dollar Value) of Shares (or Units) that may Yet Be Purchased Under the Plans or Programs</u>
October 3, 2016 – October 30, 2016 . . . . .	422	\$21.44	420	\$105,961
October 31, 2016 – November 27, 2016 . . . . .	99	22.75	95	\$103,803
November 28, 2016 – December 31, 2016 . . . .	<u>2,007</u>	24.97	<u>2,006</u>	\$ 53,721
	<u>2,528(1)</u>	24.29(1)	<u>2,521</u>	

(1) Includes approximately seven thousand shares at an average price of \$22.68 withheld from employees for the payment of taxes.

We satisfy U.S. federal and state minimum withholding tax obligations due upon the vesting and the conversion of restricted stock units into shares of our common stock, by automatically withholding from the shares being issued, a number of shares with an aggregate fair market value on the date of such vesting and conversion that would satisfy the minimum withholding amount due.

**Item 6: Selected Financial Data**

	Years Ended December 31,				
	2016	2015	2014	2013	2012
(dollars in thousands, except per share amounts)					
Consolidated Statements of Operations					
Data (1)(2)(3)(4)(5):					
Revenues .....	\$1,753,250	\$1,639,578	\$1,647,824	\$1,427,933	\$1,656,750
Net (loss) income .....	\$ (43,421)	\$ 206,477	\$ 81,272	\$ 164,947	\$ 217,049
Net (loss) income per common share—basic .....	\$ (0.21)	\$ 0.98	\$ 0.40	\$ 0.86	\$ 1.16
Net (loss) income per common share—diluted .....	\$ (0.21)	\$ 0.97	\$ 0.37	\$ 0.70	\$ 0.94
Cash dividend declared per common share .....	\$ 0.24	\$ 0.24	\$ 0.18	\$ —	\$ —
Consolidated Balance Sheets Data:					
Total assets .....	\$2,762,493	\$2,548,674	\$2,538,520	\$2,629,824	\$2,429,345
Short-term debt obligations .....	\$ —	\$ —	\$ —	\$ 186,663	\$ 2,328
Long-term debt obligations .....	\$ 352,669	\$ —	\$ —	\$ —	\$ 171,059

- (1) The Consolidated Statement of Operations Data for the year ended December 31, 2016 includes a \$254.9 million goodwill impairment charge and an \$83.3 million acquired intangible assets impairment charge related to the Wireless Test segment, and \$3.2 million of pension actuarial gains.
- (2) The Consolidated Statement of Operations Data for the year ended December 31, 2015 includes \$17.7 million of pension actuarial losses, a \$5.4 million gain from the sale of an equity investment and the results of operations of Universal Robots from June 12, 2015.
- (3) The Consolidated Statement of Operations Data for the year ended December 31, 2014 includes a \$98.9 million goodwill impairment charge related to the Wireless Test segment and \$46.6 million of pension actuarial losses.
- (4) The Consolidated Statement of Operations Data for the year ended December 31, 2013 includes a \$34.2 million gain from the sale of an equity investment and \$10.3 million of pension actuarial gains.
- (5) The Consolidated Statement of Operations Data for the year ended December 31, 2012 includes \$23.3 million of pension actuarial losses.

## **Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations**

### **Overview**

We are a leading global supplier of automation equipment for test and industrial applications. We design, develop, manufacture and sell automatic test systems used to test semiconductors, wireless products, data storage and complex electronics systems in the consumer electronics, wireless, automotive, industrial, computing, communications, and aerospace and defense industries. Our industrial automation products include collaborative robots used by global manufacturing and light industrial customers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Our automatic test equipment and industrial automation products and services include:

- semiconductor test ("Semiconductor Test") systems;
- defense/aerospace ("Defense/Aerospace") test instrumentation and systems, storage test ("Storage Test") systems, and circuit-board test and inspection ("Production Board Test") systems (collectively these products represent "System Test");
- industrial automation ("Industrial Automation") products; and
- wireless test ("Wireless Test") systems.

We have a broad customer base which includes integrated device manufacturers ("IDMs"), outsourced semiconductor assembly and test providers ("OSATs"), original equipment manufacturers ("OEMs"), wafer foundries, fabless companies that design, but contract with others for the manufacture of integrated circuits ("ICs"), developers of wireless devices and consumer electronics, manufacturers of circuit boards, automotive suppliers, wireless product manufacturers, storage device manufacturers, aerospace and military contractors, and distributors that sell collaborative robots.

In 2015, we acquired Universal Robots A/S ("Universal Robots"), the leading supplier of collaborative robots which are low-cost, easy-to-deploy and simple-to-program robots that work side by side with production workers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Universal Robots is a separate operating and reportable segment, Industrial Automation. The acquisition of Universal Robots provides a growth engine to our business and complements our existing System Test and Wireless Test segments. The total purchase price for Universal Robots was approximately \$315 million, which included cash paid of approximately \$284 million and \$32 million in fair value of contingent consideration payable upon achievement of revenue and earnings targets through 2018. Contingent consideration paid for 2015 was \$15 million. The maximum payment for each of the two remaining Universal Robots earn-outs is \$25.0 million.

In 2014, we acquired Avionics Interface Technologies, LLC ("AIT"), a supplier of equipment for testing state-of-the-art data communication buses. The acquisition of AIT complements our Defense/Aerospace line of bus test instrumentation for commercial and defense avionics systems. AIT is included in our System Test segment. The total purchase price for AIT was approximately \$21 million, which included cash paid of approximately \$19 million and \$2 million in fair value of contingent consideration payable upon achievement of revenue and gross margin targets in 2015 and 2016. The total amount of contingent consideration paid was \$1.1 million.

We believe our recent acquisitions have enhanced our opportunities for growth. We intend to continue to invest in our business, grow market share in our markets and expand further our addressable markets while tightly managing our costs.

The sales of our products and services are dependent, to a large degree, on customers who are subject to cyclical trends in the demand for their products. These cyclical periods have had, and will continue to have, a significant effect on our business since our customers often delay or accelerate purchases in reaction to changes in their businesses and to demand fluctuations in the semiconductor and electronics industries. Historically, these demand fluctuations have resulted in significant variations in our results of operations. The sharp swings in the semiconductor and electronics industries in recent years have generally affected the semiconductor and electronics test equipment and services industries more significantly than the overall capital equipment sector.



In recent years, this cyclical demand has become an even/odd year trend where demand has increased in even years and decreased in odd years due principally to demand swings in the mobility market of our Semiconductor Test business. We expect the even/odd year demand trend in the mobility market to most likely lessen in the future due to slower smart phone unit growth, along with rising device complexity and the reduced impact of parallel test in our Semiconductor Test business.

On April 16, 2016, an earthquake in Kumamoto, Japan damaged our main building at that location. The building, which was used for engineering, production, and support operations, was damaged beyond repair. With respect to the location, we have \$10 million of earthquake insurance with a deductible of approximately \$2.5 million. As a result, we impaired the building and recorded a charge of \$4.2 million and a charge of \$1.2 million for other earthquake related expenses. The \$5.4 million of total charges were offset by \$5.4 million of property insurance recovery. We have temporarily transferred some operations to other facilities in Japan and elsewhere while our Kumamoto operations are restored.

In the second quarter of 2016, the Wireless Test reporting unit (which is our Wireless Test operating and reportable segment) reduced headcount by 11% as a result of a sharp decline in projected demand attributable to an estimated smaller future wireless test market. The decrease in projected demand was due to lower forecasted buying from our largest Wireless Test segment customer (who has contributed between 51% and 73% of annual Wireless Test sales since the LitePoint acquisition in 2011 through 2015) as a result of the customer's numerous operational efficiencies; slower smartphone growth rates; and a slowdown of new wireless technology adoption. We considered the headcount reduction and sharp decline in projected demand to be a triggering event for an interim goodwill impairment test. Following the interim goodwill impairment test, we recorded a goodwill impairment charge of \$254.9 million, with approximately \$8.0 million of goodwill remaining, and \$83.3 million for the impairment of acquired intangible assets with approximately \$5.0 million of intangible assets remaining. In the third quarter of 2016, the Wireless Test reporting unit reduced headcount by an additional 14%.

In the fourth quarter of 2014, we performed our annual goodwill impairment test and recorded a goodwill impairment charge of \$98.9 million in our Wireless Test segment as a result of decreased projected demand attributable to an estimated smaller future wireless test market due to reuse of wireless test equipment, price competition and different testing techniques.

### **Critical Accounting Policies and Estimates**

We have identified the policies discussed below as critical to understanding our business and our results of operations and financial condition. The impact and any associated risks related to these policies on our business operations is discussed throughout Management's Discussion and Analysis of Financial Condition and Results of Operations where such policies affect our reported and expected financial results.

#### ***Revenue Recognition***

We recognize revenues, including revenues from distributors, when there is persuasive evidence of an arrangement, title and risk of loss have passed, delivery has occurred or the services have been rendered, the sales price is fixed or determinable and collection of the related receivable is reasonably assured. Title and risk of loss generally pass to our customers upon shipment or at delivery destination point. In circumstances where either title or risk of loss pass upon destination, acceptance or cash payment, we defer revenue recognition until such events occur except when title transfer is tied to cash payment outside the United States. Outside the United States, we recognize revenues upon shipment or at delivery destination point, even if we retain a form of title to products delivered to customers, provided the sole purpose is to enable us to recover the products in the event of customer payment default and the arrangement does not prohibit the customer's use or resale of the product in the ordinary course of business.

Our equipment has non-software and embedded software components that function together to deliver the equipment's essential functionality. Revenue is recognized upon shipment or at delivery destination point, provided that customer acceptance criteria can be demonstrated prior to shipment. Certain contracts require us to

perform tests of the product to ensure that performance meets the published product specifications or customer requested specifications, which are generally conducted prior to shipment. Where the criteria cannot be demonstrated prior to shipment, revenue is deferred until customer acceptance has been received. We also defer the portion of the sales price that is not due until acceptance, which represents deferred profit.

For multiple element arrangements, we allocate revenues to all deliverables based on their relative selling prices. In such circumstances, a hierarchy is used to determine the selling price for allocating revenues to deliverables as follows: (i) vendor-specific objective evidence of selling price (“VSOE”), (ii) third-party evidence of selling price (“TPE”), and (iii) best estimate of the selling price (“BESP”). For a delivered item to be considered a separate unit, the delivered item must have value to the customer on a standalone basis and the delivery or performance of the undelivered item must be considered probable and substantially in our control.

Our post-shipment obligations include installation, training services, one-year standard warranties, and extended warranties. Installation does not alter the product capabilities, does not require specialized skills or tools and can be performed by the customers or other vendors. Installation is typically provided within five days of product shipment and is completed within one to two days thereafter. Training services are optional and do not affect the customers’ ability to use the product. We defer revenues for the selling price of installation and training. Extended warranties constitute warranty obligations beyond one year and we defer revenues in accordance with Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) 605-20, “*Separately Priced Extended Warranty and Product Maintenance Contracts*” and ASC 605-25, “*Revenue Recognition Multiple-Element Arrangements.*” Service revenue is recognized over the contractual period or as services are performed.

Our products are generally subject to warranty and the related costs of the warranty are provided for in cost of revenues when product revenue is recognized. We classify shipping and handling costs in cost of revenues.

We do not provide our customers with contractual rights of return for any of our products.

### ***Translation of Non-U.S. Currencies***

The functional currency for all non-U.S. subsidiaries is the U.S. dollar, except for the Industrial Automation segment for which the local currency is its functional currency. All foreign currency denominated monetary assets and liabilities are remeasured on a monthly basis into the functional currency using exchange rates in effect at the end of the period. All foreign currency denominated non-monetary assets and liabilities are remeasured into the functional currency using historical exchange rates. Net foreign exchange gains and losses resulting from remeasurement are included in other (income) expense, net. For Industrial Automation, assets and liabilities are translated into U.S. dollars using exchange rates in effect at the end of the period. Revenues and expense amounts are translated using an average of exchange rates in effect during the period. Translation adjustments are recorded within accumulated other comprehensive income (loss).

### ***Retirement and Postretirement Plans***

We recognize net actuarial gains and losses and the change in the fair value of the plan assets in our operating results in the year in which they occur or upon any interim remeasurement of the plans. We calculate the expected return on plan assets using the fair value of the plan assets. Actuarial gains and losses are generally measured annually as of December 31 and, accordingly, recorded during the fourth quarter of each year or upon any interim remeasurement of the plans.

### ***Inventories***

Inventories are stated at the lower of cost (first-in, first-out basis) or net realizable value. On a quarterly basis, we use consistent methodologies to evaluate all inventories for net realizable value. We record a provision

for both excess and obsolete inventory when such write-downs or write-offs are identified through the quarterly review process. The inventory valuation is based upon assumptions about future demand, product mix, and possible alternative uses.

### ***Equity Incentive and Stock Purchase Plans***

Stock-based compensation expense is based on the grant-date fair value estimated in accordance with the provisions of ASC 718, “*Compensation—Stock Compensation*.” As required by ASC 718, we have made an estimate of expected forfeitures and are recognizing compensation costs only for those stock-based compensation awards expected to vest.

### ***Income Taxes***

Deferred tax assets and liabilities are determined based on differences between financial reporting and tax basis of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. The measurement of deferred tax assets is reduced by a valuation allowance if it is more likely than not that some or all of the deferred tax assets will not be realized. We performed the required assessment of positive and negative evidence regarding the realization of the net deferred tax assets in accordance with ASC 740, “*Accounting for Income Taxes*.” This assessment included the evaluation of scheduled reversals of deferred tax liabilities, estimates of projected future taxable income and tax-planning strategies. Although realization is not assured, based on our assessment, we concluded that it is more likely than not that such assets, net of the existing valuation allowance, will be realized. U.S. income taxes are not provided for on the earnings of non-U.S. subsidiaries which are expected to be reinvested indefinitely in operations outside the U.S. For intra-period tax allocations, we first utilize non-equity related tax attributes, such as net operating losses and credit carryforwards, and then equity-related tax attributes. We use the with-and-without method for calculating excess stock compensation deductions and do not take into account any indirect impacts of excess stock compensation deductions on our research and development tax credits, domestic production activities deduction, and other differences between financial reporting and tax reporting.

### ***Investments***

We account for our investments in debt and equity securities in accordance with the provisions of ASC 320-10, “*Investments—Debt and Equity Securities*.” On a quarterly basis, we review our investments to identify and evaluate those that have an indication of a potential other-than-temporary impairment. Factors considered in determining whether a loss is other-than-temporary include:

- The length of time and the extent to which the market value has been less than cost;
- The financial condition and near-term prospects of the issuer; and
- The intent and ability to retain the investment in the issuer for a period of time sufficient to allow for any anticipated recovery in market value.

### ***Goodwill, Intangible and Long-Lived Assets***

We assess goodwill for impairment at least annually in the fourth quarter, as of December 31, on a reporting unit basis, or more frequently, when events and circumstances occur indicating that the recorded goodwill may be impaired. If the book value of a reporting unit exceeds its fair value, the implied fair value of goodwill is compared with the carrying amount of goodwill. If the carrying amount of goodwill exceeds the implied fair value, an impairment charge is recorded in an amount equal to that excess.

In the second quarter of 2016, the Wireless Test reporting unit (which is our Wireless Test operating and reportable segment) reduced headcount by 11% as a result of a sharp decline in projected demand attributable to

an estimated smaller future wireless test market. The decrease in projected demand was due to lower forecasted buying from our largest Wireless Test segment customer (who has contributed between 51% and 73% of annual Wireless Test sales since the LitePoint acquisition in 2011 through 2015) as a result of the customer's numerous operational efficiencies; slower smartphone growth rates; and a slowdown of new wireless technology adoption. We considered the headcount reduction and sharp decline in projected demand to be a triggering event for an interim goodwill impairment test. Following the interim goodwill impairment test, we recorded a goodwill impairment charge of \$254.9 million, with approximately \$8.0 million of goodwill remaining. In the third quarter of 2016, the Wireless Test reporting unit reduced headcount by an additional 14%. No goodwill impairment was identified in the fourth quarter of 2016, as part of the annual goodwill impairment test.

No goodwill impairment was identified in 2015. In the fourth quarter of 2014, we performed our annual goodwill impairment test and recorded a goodwill impairment charge of \$98.9 million in our Wireless Test segment as a result of decreased projected demand attributable to an estimated smaller future wireless test market due to reuse of wireless test equipment, price competition and different testing techniques.

We assess the impairment of intangible and long-lived assets whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors we consider important in the determination of an impairment include significant underperformance relative to historical or projected future operating results, significant changes in the manner that we use the acquired asset and significant negative industry or economic trends.

As a result of the interim goodwill impairment test in the second quarter of 2016 described above, we performed an impairment test of the Wireless Test segment's intangible and long-lived assets based on the comparison of the estimated undiscounted cash flows to the recorded value of the assets and recorded an \$83.3 million acquired intangible assets impairment charge, with approximately \$5.0 million of intangible assets remaining. There were no events or circumstances indicating that the carrying value of acquired intangible and long-lived assets may not be recoverable in 2015, as such no impairment test was performed as of December 31, 2015. As a result of the Wireless Test segment goodwill impairment charge in the fourth quarter of 2014 described above, we also performed an impairment test of the Wireless Test segment's intangible and long-lived assets as of December 31, 2014, with no indication of impairment. When we determine that the carrying value of intangible and long-lived assets may not be recoverable based upon the existence of one or more of the above indicators of impairment, we measure any impairment based on a projected discounted cash flow method using a discount rate commensurate with the associated risks.

## Results of Operations

The following table sets forth the percentage of total net revenues included in our consolidated statements of operations:

	Years Ended December 31,		
	2016	2015	2014
Percentage of revenues:			
Revenues:			
Products .....	82.9%	81.8%	82.8%
Services .....	17.1	18.2	17.2
Total revenues .....	100.0	100.0	100.0
Cost of revenues:			
Cost of products .....	37.6	36.1	38.9
Cost of services .....	7.7	8.1	7.8
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below) .....	45.3	44.2	46.7
Gross profit .....	54.7	55.8	53.3
Operating expenses:			
Engineering and development .....	16.6	17.8	17.7
Selling and administrative .....	18.0	18.7	19.4
Acquired intangible assets amortization .....	3.0	4.2	4.3
Acquired intangible assets impairment .....	4.8	—	—
Goodwill impairment .....	14.5	—	6.0
Restructuring and other .....	1.3	0.3	0.1
Total operating expenses .....	58.2	41.0	47.5
(Loss) income from operations .....	(3.4)	14.8	5.9
Non-operating (income) expenses:			
Interest income .....	(0.5)	(0.4)	(0.4)
Interest expense .....	0.2	0.1	0.4
Other (income) expense, net .....	—	(0.3)	—
(Loss) income before income taxes .....	(3.1)	15.4	5.8
Income tax (benefit) provision .....	(0.7)	2.8	0.9
Net (loss) income .....	<u>(2.5)%</u>	<u>12.6%</u>	<u>4.9%</u>

## Book to Bill Ratio

Book to bill ratio is calculated as net bookings divided by net sales. Book to bill ratio by reportable segment was as follows:

	Three months ended December 31,		
	2016	2015	2014
Semiconductor Test .....	1.9	2.0	1.0
System Test .....	0.9	1.1	1.5
Industrial Automation .....	1.0	0.8	—
Wireless Test .....	0.9	0.9	1.0
Total Company .....	1.7	1.6	1.0

## Revenues

Revenues for our four reportable segments were as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2015-2016 Dollar Change</u>	<u>2014-2015 Dollar Change</u>
			(in millions)		
Semiconductor Test . . . . .	\$1,368.2	\$1,201.5	\$1,300.8	\$166.7	\$(99.3)
System Test . . . . .	189.8	211.6	162.5	(21.8)	49.1
Industrial Automation . . . . .	99.0	41.9	—	57.1	41.9
Wireless Test . . . . .	96.2	184.6	184.5	(88.4)	0.1
	<u>\$1,753.3</u>	<u>\$1,639.6</u>	<u>\$1,647.8</u>	<u>\$113.7</u>	<u>\$ (8.2)</u>

The increase in Semiconductor Test revenues of \$166.7 million, or 14%, from 2015 to 2016 was driven primarily by system-on-a-chip (“SOC”) product volume in the mobile application processor market. The decrease in Semiconductor Test revenues of \$99.3 million, or 8%, from 2014 to 2015 was primarily due to a decrease in SOC product volume, driven by smaller microcontroller, power management and radio frequency test markets.

The decrease in System Test revenues of \$21.8 million, or 10%, from 2015 to 2016 was primarily due to lower sales in Storage Test of 3.5” hard disk drive testers used for testing drives for cloud storage applications. The increase in System Test revenues of \$49.1 million, or 30%, from 2014 to 2015 was primarily due to higher sales in Storage Test of 3.5” hard disk drive testers used for testing drives for cloud storage applications.

The acquisition of Universal Robots, which is our Industrial Automation segment, completed in June 2015, added \$99.0 million of revenues in 2016 and \$41.9 million of revenues in 2015.

The decrease in Wireless Test revenues of \$88.4 million, or 48%, from 2015 to 2016 was driven by lower demand for connectivity and cellular test systems primarily from our largest Wireless Test segment customer. As a result of significant customer concentration in our Wireless Test segment, revenues in that segment are subject to significant fluctuations based on the segment’s largest customer’s order levels. Wireless Test revenues were approximately flat from 2014 to 2015 as an increase in cellular product volume was offset by lower connectivity product volume.

Our four reportable segments accounted for the following percentages of consolidated revenues:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Semiconductor Test . . . . .	78%	73%	79%
System Test . . . . .	11	13	10
Industrial Automation . . . . .	6	3	—
Wireless Test . . . . .	<u>5</u>	<u>11</u>	<u>11</u>
	<u>100%</u>	<u>100%</u>	<u>100%</u>

Revenues by country as a percentage of total revenues were as follows (1):

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Taiwan .....	37%	27%	30%
United States .....	13	13	13
China .....	10	16	18
Korea .....	8	7	9
Japan .....	8	8	4
Europe .....	7	7	7
Malaysia .....	6	5	5
Singapore .....	4	6	7
Philippines .....	3	6	4
Thailand .....	3	4	2
Rest of the World .....	1	1	1
	<u>100%</u>	<u>100%</u>	<u>100%</u>

(1) Revenues attributable to a country are based on the location of the customer site.

The breakout of product and service revenues was as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2015-2016</u> <u>Dollar</u> <u>Change</u>	<u>2014-2015</u> <u>Dollar</u> <u>Change</u>
			(in millions)		
Product revenues .....	\$1,453.2	\$1,340.6	\$1,364.0	\$112.6	\$(23.4)
Service revenues .....	300.0	299.0	283.8	1.0	15.2
	<u>\$1,753.3</u>	<u>\$1,639.6</u>	<u>\$1,647.8</u>	<u>\$113.7</u>	<u>\$ (8.2)</u>

Our product revenues increased \$112.6 million, or 8%, in 2016 from 2015 primarily due to higher volume in the mobile application processor market in Semiconductor Test and the addition of Universal Robots in June 2015. This increase was partially offset by decreases in Wireless Test revenues due to lower demand for connectivity and cellular test systems and lower sales in Storage Test of 3.5" hard disk drive testers for cloud storage. Service revenues, which are derived from the servicing of our installed base of products and include equipment maintenance contracts, repairs, extended warranties, parts sales, and applications support increased \$1.0 million.

Our product revenues decreased \$23.4 million, or 2%, in 2015 from 2014 primarily due to lower SOC product volume, driven by smaller microcontroller, power management and radio frequency test markets. This decrease was partially offset by higher sales in Storage Test of 3.5" hard disk drive testers for cloud storage and the addition of Universal Robots in 2015. Service revenues increased \$15.2 million or 5%.

In 2016, two customers each accounted for 12% of our consolidated revenues. In 2015, revenues from one customer accounted for 13% of our consolidated revenues. In 2014, no single customer accounted for more than 10% of our consolidated revenues. In each of the years, 2016, 2015 and 2014, our five largest customers in aggregate accounted for 36%, 34% and 30%, respectively, of our consolidated revenues. We estimate product demand driven by a single OEM customer, combining direct sales to that customer with sales to the customer's OSATs, accounted for approximately 25%, 23%, and 22% of our consolidated revenues in 2016, 2015, and 2014, respectively.

**Gross Profit**

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2015-2016 Dollar / Point Change</u>	<u>2014-2015 Dollar / Point Change</u>
	(dollars in millions)				
Gross profit . . . . .	\$959.6	\$915.6	\$878.8	\$44.0	\$36.8
Percent of total revenues . . . . .	54.7%	55.8%	53.3%	(1.1)	2.5

Gross profit as a percent of total revenues decreased from 2015 to 2016 by 1.1 points, of which a 2.5 point decrease was related to product mix and sales of previously leased testers in Semiconductor Test in 2015, and lower Wireless Test sales, partially offset by a 0.6 points increase due to lower pension expense related to actuarial gains in 2016 compared to actuarial losses in 2015, a 0.5 point increase due to higher product volume and a 0.3 point increase due to lower excess and obsolete inventory provisions.

Gross profit as a percent of total revenues increased from 2014 to 2015 by 2.5 points due to favorable Semiconductor Test product mix and sales of previously leased testers in Semiconductor Test.

The breakout of product and service gross profit was as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2015-2016 Dollar / Point Change</u>	<u>2014-2015 Dollar / Point Change</u>
	(dollars in millions)				
Product gross profit . . . . .	\$794.2	\$748.8	\$723.2	\$45.4	\$25.6
Percent of product revenues . . . . .	54.6%	55.9%	53.0%	(1.3)	2.9
Service gross profit . . . . .	\$165.4	\$166.8	\$155.6	\$(1.4)	\$11.2
Percent of service revenues . . . . .	55.1%	55.8%	54.8%	(0.7)	1.0

We assess the carrying value of our inventory on a quarterly basis by estimating future demand and comparing that demand against on-hand and on-order inventory positions. Forecasted revenue information is obtained from the sales and marketing groups and incorporates factors such as backlog and future product demand. This quarterly process identifies obsolete and excess inventory. Obsolete inventory, which represents items for which there is no demand, is fully reserved. Excess inventory, which represents inventory items that are not expected to be consumed during the next twelve quarters for our Semiconductor Test, System Test and Industrial Automation segments and next four quarters for our Wireless Test segment, is written-down to estimated net realizable value.

During the year ended December 31, 2016, we recorded an inventory provision of \$17.5 million included in cost of revenues, primarily due to downward revisions to previously forecasted demand levels. Of the \$17.5 million of total excess and obsolete provisions, \$9.7 million was in Semiconductor Test, \$7.2 million was in Wireless Test and \$0.6 million was related to System Test.

During the year ended December 31, 2015, we recorded an inventory provision of \$21.3 million included in cost of revenues, due to the following factors:

- A charge of \$15.3 million due to downward revisions to previously forecasted demand levels, of which \$8.2 million was for our 2.5” hard disk drive testers in Storage Test, \$4.5 million was in Semiconductor Test and \$2.5 million was in Wireless Test; and
- A \$6.0 million inventory write-down as a result of product transition in Semiconductor Test.



During the year ended December 31, 2014, we recorded an inventory provision of \$22.2 million included in cost of revenues, due to the following factors:

- A charge of \$15.4 million due to downward revisions to previously forecasted demand levels, of which \$8.1 million was in Semiconductor Test, \$5.2 million was in Wireless Test and \$2.1 million was in System Test; and
- A \$6.8 million inventory write-down as a result of product transition, of which \$6.3 million was in Semiconductor Test and \$0.5 million in Wireless Test.

During the years ended December 31, 2016, 2015 and 2014, we scrapped \$15.2 million, \$7.0 million and \$20.8 million of inventory, respectively, and sold \$10.0 million, \$7.9 million and \$13.1 million of previously written-down or written-off inventory, respectively. As of December 31, 2016, we had inventory related reserves for amounts which had been written-down or written-off totaling \$116.0 million. We have no pre-determined timeline to scrap the remaining inventory.

### Engineering and Development

Engineering and development expenses were as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2015-2016</u> <u>Change</u>	<u>2014-2015</u> <u>Change</u>
	(dollars in millions)				
Engineering and development .....	\$291.0	\$292.3	\$291.6	\$(1.3)	\$0.7
Percent of total revenues .....	16.6%	17.8%	17.7%		

The decrease of \$1.3 million in engineering and development expenses from 2015 to 2016 was due primarily to lower pension expense related to \$1.2 million actuarial gains in 2016 compared to \$4.7 million of actuarial losses in 2015, partially offset by additional costs as a result of the acquisition of Universal Robots in June 2015.

The increase of \$0.7 million in engineering and development expenses from 2014 to 2015 was due to \$3.9 million of higher variable compensation, \$2.6 million of additional costs related to Universal Robots and a \$1.8 million increase in spending primarily in Storage Test, partially offset by lower pension expense related to actuarial losses of \$4.7 million in 2015 compared to \$12.2 million in 2014.

### Selling and Administrative

Selling and administrative expenses were as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2015-2016</u> <u>Change</u>	<u>2014-2015</u> <u>Change</u>
	(dollars in millions)				
Selling and administrative .....	\$315.7	\$306.3	\$319.7	\$9.4	\$(13.4)
Percent of total revenues .....	18.0%	18.7%	19.4%		

The increase of \$9.4 million in selling and administrative expenses from 2015 to 2016 was due to \$22.6 million of additional costs as a result of the acquisition of Universal Robots in June 2015, partially offset by lower pension expense related to \$0.9 million of actuarial gains in 2016 as compared to actuarial losses of \$4.8 million in 2015, and lower variable compensation.

The decrease of \$13.4 million in selling and administrative expenses from 2014 to 2015 was due primarily to lower pension expense related to actuarial losses of \$4.8 million in 2015 compared to \$21.6 million in 2014, and a one-time \$6.6 million stock-based compensation charge in 2014 related to a retirement agreement entered into with our retired chief executive officer, partially offset by higher variable compensation.

## Acquired Intangible Assets Amortization

Acquired intangible assets amortization expense was as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2015-2016</u> <u>Change</u>	<u>2014-2015</u> <u>Change</u>
	(dollars in millions)				
Acquired intangible assets amortization . . . . .	\$52.6	\$69.0	\$70.8	\$(16.4)	\$(1.8)
Percent of total revenues . . . . .	3.0%	4.2%	4.3%		

Acquired intangible assets amortization expense decreased from 2015 to 2016 due to lower amortization expense in the Wireless Test segment due to the impairment of intangible assets in the second quarter of 2016, partially offset by increased amortization expense due to the Universal Robots acquisition in June 2015. Acquired intangible assets amortization expense decreased from 2014 to 2015 due to intangible assets that became fully amortized during the year, partially offset by increased amortization expense due to the Universal Robots acquisition.

## Goodwill Impairment

We assess goodwill for impairment at least annually, in the fourth quarter, as of December 31, or on an interim basis between annual tests when events or circumstances indicate that it is more-likely-than-not that the fair value of a reporting unit is less than its carrying value. In the second quarter of 2016, the Wireless Test reporting unit (which is our Wireless Test operating and reportable segment) reduced headcount by 11% as a result of a sharp decline in projected demand attributable to an estimated smaller future wireless test market. The decrease in projected demand was due to lower forecasted buying from our largest Wireless Test segment customer (who has contributed between 51% and 73% of annual Wireless Test sales since the LitePoint acquisition in 2011 through 2015) as a result of the customer's numerous operational efficiencies; slower smartphone growth rates; and a slowdown of new wireless technology adoption. We considered the headcount reduction and sharp decline in projected demand to be a triggering event for an interim goodwill impairment test. Following the interim goodwill impairment test, we recorded a goodwill impairment charge of \$254.9 million in the second quarter of 2016. The fourth quarter 2016 and 2015 goodwill impairment tests did not identify any goodwill impairments. In the fourth quarter of 2014, we performed our annual goodwill impairment test and recorded a goodwill impairment charge of \$98.9 million in our Wireless Test segment as a result of decreased projected demand attributable to an estimated smaller future wireless test market due to reuse of wireless test equipment, price competition and different testing techniques.

## Acquired Intangible Assets Impairment

We review long-lived 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 these assets are no longer appropriate. If undiscounted cash flows for the asset are less than the carrying amount, the asset is written down to its estimated fair value based on a discounted cash flow analysis. The cash flow estimates used to determine the impairment contain management's best estimates using appropriate assumptions and projections at that time. As a result of the Wireless Test segment goodwill impairment charge in the second quarter of 2016, we performed an impairment test of the Wireless Test segment's intangible and long-lived assets based on a comparison of the estimated undiscounted cash flows to the recorded value of the assets. As a result of the analysis, we recorded an \$83.3 million impairment charge in the second quarter of 2016 in acquired intangible assets impairment on the statements of operations.

## Restructuring and Other

### *Other*

During the year ended December 31, 2016, we recorded \$15.9 million of other charges of which \$15.3 million was for the increase in the fair value of the Universal Robots contingent consideration liability,

\$0.6 million for the increase in the fair value of the AIT contingent consideration liability, \$4.2 million for an impairment of fixed assets and \$1.2 million for expenses related to an earthquake in Kumamoto, Japan, partially offset by \$5.4 million of property insurance recovery related to the Japan earthquake.

During the year ended December 31, 2015, we recorded \$3.6 million of other charges, of which \$5.3 million was for the increase in the fair value of the Universal Robots contingent consideration liability and \$1.0 million for acquisition costs related to Universal Robots, partially offset by a \$2.9 million gain from fair value adjustments to decrease the acquisition contingent consideration liability related to ZTEC Instruments Inc. (“ZTEC”) (\$1.6 million) and AIT (\$1.3 million).

During the year ended December 31, 2014, we recorded a \$0.6 million gain from the fair value adjustment to decrease the ZTEC acquisition contingent consideration, partially offset by \$0.4 million of acquisition costs related to AIT.

### **Restructuring**

During the year ended December 31, 2016, we recorded \$6.0 million of severance charges related to headcount reductions of 146 people, of which 102 people were in Wireless Test and 44 people were in Semiconductor Test.

During the year ended December 31, 2015, we recorded \$1.5 million of severance charges related to headcount reductions of 23 people primarily in System Test and Semiconductor Test.

During the year ended December 31, 2014, we recorded \$1.6 million of severance charges related to headcount reductions of approximately 43 people, primarily in Semiconductor Test and Wireless Test.

The remaining accrual for severance of \$2.1 million is reflected in the accrued employees’ compensation and withholdings on the balance sheet and is expected to be paid by June 2017.

### **Interest and Other**

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2015-2016</u> <u>Change</u>	<u>2014-2015</u> <u>Change</u>
	(in millions)				
Interest income . . . . .	\$(9.3)	\$(7.2)	\$(6.3)	\$(2.1)	\$(0.9)
Interest expense . . . . .	3.6	1.9	6.9	1.7	(5.0)
Other (income) expense, net . . . . .	0.7	(4.8)	0.4	5.5	(5.2)

Interest income increased by \$2.1 million, from 2015 to 2016, due primarily to higher marketable securities balances and higher interest rates in 2016. Interest income increased by \$0.9 million from 2014 to 2015 due primarily to higher interest rates on marketable securities

Interest expense increased by \$1.7 million, from 2015 to 2016, due primarily to \$1.0 million of interest expense related to our convertible senior notes in 2016 and \$0.7 million due primarily to costs related to the revolving credit facility and realized losses on sales of marketable securities in 2016. Interest expense decreased by \$5.0 million, from 2014 to 2015, due primarily to the first quarter 2014 repayment of our previously issued convertible debt.

In 2015, other (income) expense, net included a \$5.4 million gain from the sale of an equity investment.

## (Loss) Income Before Income Taxes

	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2015-2016</u> <u>Change</u>	<u>2014-2015</u> <u>Change</u>
			(in millions)		
Semiconductor Test .....	\$ 311.9	\$260.2	\$ 255.8	\$ 51.7	\$ 4.4
System Test .....	28.9	25.1	12.1	3.8	13.0
Wireless Test .....	(371.4)	(13.8)	(116.2)	(357.6)	102.4
Industrial Automation .....	(16.8)	(7.6)	—	(9.2)	(7.6)
Corporate (1) .....	<u>(7.7)</u>	<u>(10.7)</u>	<u>(56.3)</u>	<u>3.0</u>	<u>45.5</u>
	<u>\$ (55.1)</u>	<u>\$253.1</u>	<u>\$ 95.4</u>	<u>\$(308.2)</u>	<u>\$157.7</u>

- (1) Included in Corporate are pension and postretirement plans actuarial gains and losses, contingent consideration adjustments, interest income and interest expense.

The decrease in income before income taxes from 2015 to 2016 was primarily due to a \$254.9 million goodwill impairment charge and an \$83.3 million acquired intangible assets impairment charge related to Wireless Test in 2016, and amortization of intangible assets related to our June 2015 acquisition of Universal Robots, which is our Industrial Automation segment, partially offset by higher revenues in Semiconductor Test application processor market and \$3.2 million of pension actuarial gains in 2016 as compared to actuarial losses of \$17.7 million in 2015.

The increase in income before income taxes from 2014 to 2015 was primarily due to a \$98.9 million goodwill impairment charge related to Wireless Test in 2014 and lower pension expense related to actuarial losses of \$17.7 million in 2015 as compared to \$46.6 million in 2014. Actuarial losses of \$46.6 million in 2014 were primarily related to increases in life expectancy in the U.S.

## Income Taxes

Income tax benefit for 2016 totaled \$11.6 million. Income tax expense for 2015 and 2014 totaled \$46.6 million and \$14.1 million, respectively. The effective tax rate for 2016, 2015 and 2014 was 21.1%, 18.4% and 14.8%, respectively.

The increase in the effective tax rate from 2015 to 2016 resulted from a shift in the geographic distribution of income which decreased income subject to taxation in the U.S. relative to lower tax rate jurisdictions, reductions in uncertain tax positions resulting from the expiration of statutes and the settlement of an audit, and an increase in non-taxable foreign exchange gains. These increases in the effective tax rate were partially offset by the effect of the non-deductible goodwill impairment charge, which reduced the benefit of the loss before income taxes in the U.S.

The increase in the effective tax rate from 2014 to 2015 resulted from a shift in the geographic distribution of income, which increased income subject to taxation in the U.S. relative to lower tax rate jurisdictions and a reduction in the benefit from U.S. research and development tax credits. These increases in the effective tax rate were partially offset by decreases associated with uncertain tax positions and a non-deductible goodwill impairment charge.

We qualify for a tax holiday in Singapore by fulfilling the requirements of an agreement with the Singapore Economic Development Board under which certain headcount and spending requirements must be met. The tax savings attributable to the tax holiday for the years ended December 31, 2016, 2015 and 2014 were \$17.0 million or \$0.08 per diluted share, \$11.5 million or \$0.05 per diluted share and \$13.2 million or \$0.06 per diluted share, respectively. The tax holiday is scheduled to expire on December 31, 2020.

## Contractual Obligations

The following table reflects our contractual obligations as of December 31, 2016:

	Payments Due by Period					Other
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years	
	(in thousands)					
Convertible debt . . . . .	\$ 460,000	\$ —	\$ —	\$ —	\$460,000	\$ —
Purchase obligations . . . . .	260,715	247,855	12,860	—	—	—
Retirement plans contributions . . . . .	110,872	5,912	8,104	8,392	88,464	—
Operating lease obligations . . . . .	72,111	16,467	28,991	16,523	10,130	—
Interest on long-term debt . . . . .	40,314	5,814	11,500	11,500	11,500	—
Fair value of contingent consideration . . . . .	38,332	1,050	37,282	—	—	—
Other long-term liabilities reflected on the balance sheet under GAAP (1) . . . . .	64,249	—	23,463	—	—	40,786
<b>Total . . . . .</b>	<b>\$1,046,593</b>	<b>\$277,098</b>	<b>\$122,200</b>	<b>\$36,415</b>	<b>\$570,094</b>	<b>\$40,786</b>

- (1) Included in other long-term liabilities are liabilities for customer advances, extended warranty, uncertain tax positions, deferred tax liabilities and other obligations. For certain long-term obligations, we are unable to provide a reasonably reliable estimate of the timing of future payments relating to these obligations and therefore we included these amounts in the column marked “Other.”

## Liquidity and Capital Resources

Our cash, cash equivalents and marketable securities balance increased \$604 million to \$1,613 million from 2015 to 2016.

In 2016, changes in operating assets and liabilities provided cash of \$40.8 million. This was due to a \$33.7 million decrease in operating assets and a \$7.1 million increase in operating liabilities.

The decrease in operating assets was due to an \$18.3 million decrease in accounts receivable due to increased collections and a \$34.3 million decrease in inventories, partially offset by an \$18.9 million increase in prepayments and other assets.

The increase in operating liabilities was due to a \$18.4 million increase in income taxes, a \$3.9 million increase in accounts payable and a \$7.6 million increase in other accrued liabilities, partially offset by a \$13.2 million decrease in accrued employee compensation due primarily to variable compensation and employee stock compensation awards’ payroll tax payments, \$6.0 million of retirement plans contributions and a \$3.6 million decrease in customer advance payments and deferred revenue.

Investing activities during 2016 used cash of \$640.5 million, due to \$1,656.3 million used for purchases of marketable securities, and \$85.3 million used for purchases of property, plant and equipment, partially offset by proceeds from maturities and sales of marketable securities of \$243.2 million and \$852.8 million, respectively, and proceeds from property insurance of \$5.1 million related to the Japan earthquake.

Financing activities during 2016 provided cash of \$237.8 million, due to \$450.8 million of proceeds from the issuance of senior convertible notes, net of issuance costs, \$67.9 million of proceeds from the issuance of warrants, \$20.5 million from the issuance of common stock under employee stock purchase and stock option plans and \$6.2 million from the tax benefit related to employee stock compensation awards, partially offset by \$146.3 million used for the repurchase of 6.8 million shares of common stock at an average price of \$21.39 per share, \$100.8 million used for the purchase of convertible note hedges, \$48.6 million used for dividend payments and \$11.7 million used for a payment related to the Universal Robots acquisition contingent consideration.

In 2015, changes in operating assets and liabilities, net of businesses acquired, provided cash of \$9.3 million. This was due to a \$38.7 million increase in operating assets and a \$48.0 million increase in operating liabilities.

The increase in operating assets was due to a \$57.3 million increase in accounts receivable due to an increase in sales during the last month of the fourth quarter of 2015 compared to 2014, partially offset by a \$15.6 million decrease in inventories and a \$3.0 million decrease in prepayments and other assets.

The increase in operating liabilities was due to a \$37.0 million increase in accounts payable as a result of our planned inventory increase in the fourth quarter of 2015 as we added material to maintain attractive lead times, a \$17.0 million increase in customer advance payments and deferred revenue and a \$11.3 million increase in other accrued liabilities, partially offset by \$12.1 million of retirement plans contributions and a \$5.2 million increase in income taxes.

Investing activities during 2015 used cash of \$113.7 million, due to \$1,424.0 million used for purchases of marketable securities, \$282.7 million used for the acquisition of Universal Robots, and \$89.9 million used for purchases of property, plant and equipment, partially offset by proceeds from maturities and sales of marketable securities of \$360.3 million and \$1,316.1 million, respectively, proceeds from the sale of an equity investment of \$5.4 million, and proceeds from life insurance of \$1.1 million related to the cash surrender value from the cancellation of Teradyne owned life insurance policies. The decrease in purchases of property, plant and equipment of \$79.1 million was primarily due to an increase in purchases of testers for customer leasing in 2014.

Financing activities during 2015 used cash of \$328.7 million, due to \$300.0 million used for the repurchase of 15.6 million shares of common stock at an average price of \$19.20 per share, \$50.7 million used for dividend payments, and \$2.3 million used for debt issuance costs related to our April 2015 revolving credit facility, partially offset by \$19.5 million from the issuance of common stock under employee stock purchase and stock option plans and \$4.7 million from the tax benefit related to employee stock compensation awards.

In 2014, changes in operating assets and liabilities, net of businesses acquired, provided cash of \$68.5 million. This was due to a \$101.4 million decrease in operating assets and a \$32.9 million decrease in operating liabilities.

The decrease in operating assets was due to a \$41.5 million decrease in prepayments and other assets primarily related to a reduction in prepayments to our contract manufacturers, a \$51.8 million decrease in inventories due to higher sales, and an \$8.1 million decrease in accounts receivable.

The decrease in operating liabilities was due to \$33.9 million of retirement plan contributions, a \$17.0 million decrease in other accrued liabilities, a \$16.9 million decrease in accounts payable, a \$7.3 million decrease in accrued employee compensation due primarily to employee stock awards payroll taxes and variable compensation payments, and a \$4.3 million convertible note interest payment, partially offset by a \$24.4 million increase in income taxes, and a \$22.0 million increase in customer advance payments and deferred revenue.

Investing activities during 2014 used cash of \$332.9 million, due to \$1,578.7 million used for purchases of marketable securities and \$169.0 million used for purchases of property, plant and equipment, and \$19.4 million used for the acquisition of AIT, completed in October 2014, partially offset by proceeds from sales and maturities of marketable securities that provided cash of \$859.7 million and \$570.4 million, respectively, and net proceeds from life insurance of \$4.2 million primarily related to the cash surrender value from the cancellation of Teradyne owned life insurance policies on its retired chief executive officer. The increase in purchase of property, plant and equipment of \$62.3 million in 2014 compared to the year ended December 31, 2013 is primarily due to testers used for customer leases.

Financing activities during 2014 used cash of \$206.6 million, due to \$191.0 million used for payments on long-term debt related to the convertible note and a loan in Japan and \$37.4 million used for dividend payments,

partially offset by \$21.3 million provided by the issuance of common stock under employee stock purchase and stock option plans and \$0.5 million from the tax benefit related to stock options and restricted stock units.

In January 2016, May 2016, August 2016 and November 2016, our Board of Directors declared a quarterly cash dividend of \$0.06 per share. Total dividend payments in 2016 were \$48.6 million.

In January 2015, May 2015, August 2015 and November 2015, our Board of Directors declared a quarterly cash dividend of \$0.06 per share. Total dividend payments in 2015 were \$50.7 million.

In January 2014, our Board of Directors declared an initial quarterly cash dividend of \$0.06 per share. In each of the second, third and fourth quarters of 2014, we paid a cash dividend of \$0.06 per share. Total dividend payments in 2014 were \$37.4 million.

In January 2017, our Board of Directors declared a quarterly cash dividend of \$0.07 per share to be paid on March 20, 2017 to shareholders of record as of February 24, 2017. Payment of future cash dividends are subject to the discretion of our Board of Directors and will depend, among other things, upon our earnings, capital requirements and financial condition.

In January 2015, our Board of Directors authorized the repurchase of up to \$500 million of common stock. In 2015, we repurchased 15.6 million shares of common stock at an average price of \$19.20, for a total cost of \$300.0 million. In 2016, we repurchased 6.8 million shares of common stock at an average price of \$21.39, for a total cost of \$146.3 million. The cumulative repurchases as of December 31, 2016 totaled 22.5 million shares of common stock for \$446.3 million at an average price per share of \$19.87.

In December 2016, our Board of Directors approved a new \$500 million share repurchase authorization which commenced on January 1, 2017. We intend to repurchase at least \$200 million in 2017. Our January 2015 stock repurchase program was terminated on December 31, 2016.

We believe our cash, cash equivalents and marketable securities balance will be sufficient to pay our quarterly dividend, execute our authorized share repurchase program and meet our working capital and expenditure needs for at least the next twelve months. The amount of cash, cash equivalents and marketable securities in the U.S. and our operations in the U.S. provide sufficient liquidity to fund our business activities in the U.S. We have approximately \$768 million of cash outside the U.S. that if repatriated would incur additional taxes. Determination of the additional taxes that would be incurred is not practicable due to uncertainty regarding the remittance structure, the mix of earnings and earnings and profit pools in the year of remittance, and overall complexity of the calculation. Inflation has not had a significant long-term impact on earnings.

## **Retirement Plans**

ASC 715-20, “*Compensation—Retirement Benefits—Defined Benefit Plans*,” requires an employer with defined benefit plans or other postretirement benefit plans to recognize an asset or a liability on its balance sheet for the overfunded or underfunded status of the plans as defined by ASC 715-20. The pension asset or liability represents the difference between the fair value of the pension plan’s assets and the projected benefit obligation as of December 31. For other postretirement benefit plans, the liability is the difference between the fair value of the plan’s assets and the accumulated postretirement benefit obligation as of December 31.

For the year ended December 31, 2016, our pension income, which includes the U.S. Qualified Pension Plan (“U.S. Plan”), certain qualified plans for non-U.S. subsidiaries, and a U.S. Supplemental Executive Defined Benefit Plan, was approximately \$(0.3) million. The largest portion of our 2016 pension income was \$(5.2) million for our U.S. Plan. Pension expense or income is calculated based upon a number of actuarial assumptions. Discount rate and expected return on assets are two assumptions which are important elements of pension plan expense (income) and asset/liability measurement. We evaluate our discount rate and expected rate

of return on assets assumptions annually on a plan and country specific basis. We evaluate other assumptions related to demographic factors, such as retirement age, mortality and turnover periodically, and update them to reflect our experience and expectations for the future. In the fourth quarter of 2014, we updated the mortality assumptions related to our U.S. retirement plans using the mortality tables published in October 2014 by the U.S. Society of Actuaries. The change in the mortality assumptions resulted in approximately \$39.0 million of actuarial losses in 2014 for the U.S. retirement plans.

In developing the expected return on U.S. Plan assets assumption, we evaluated input from our investment manager and pension consultants, including their forecast of asset class return expectations. We believe that 4.8% was an appropriate rate to use for 2016. The December 31, 2016 asset allocation for our U.S. Plan was 88% invested in fixed income securities, 10% invested in equity securities, and 2% invested in other securities. Our investment manager regularly reviews the actual asset allocation and periodically rebalances the portfolio to ensure alignment with our target allocations.

We recognize net actuarial gains and losses and the change in the fair value of plans assets in our operating results in the year in which they occur or upon any interim remeasurement of the plans. We calculate the expected return on plan assets using the fair value of the plan assets. Actuarial gains and losses are generally measured annually as of December 31 and, accordingly, recorded during the fourth quarter of each year or upon any interim remeasurement of the plans.

The discount rate that we utilized for determining future pension obligations for the U.S. Plan is based on the Citigroup Pension Index adjusted for the U.S. Plan's expected cash flows and was 3.9% at December 31, 2016, down from 4.0% at December 31, 2015. We estimate that in 2017 we will recognize approximately \$0.8 million of pension expense for the U.S. Plan. The U.S. Plan pension expense estimate for 2017 is based on a 3.9% discount rate and a 4.0% return on assets. Future pension expense or income will depend on future investment performance, changes in future discount rates and various other factors related to the employee population participating in our pension plans.

As of December 31, 2016, our pension plans had unrecognized pension prior service cost of \$0.1 million.

We performed a sensitivity analysis, which expresses the potential U.S. Plan (income) expense for the year ending December 31, 2017, which would result from changes to either the discount rate or the expected return on plan assets. The below estimates exclude the impact of any potential actuarial gains or losses. It is difficult to reliably forecast or predict whether there will be any actuarial gains or losses in 2017 as they are primarily driven by events and circumstances beyond our control, such as changes in interest rates and the performance of the financial markets.

<u>Return on Plan Assets</u>	<u>Discount Rate</u>		
	<u>3.4%</u>	<u>3.9%</u>	<u>4.4%</u>
	(in millions)		
3.5% .....	\$ 1.6	\$ 2.3	\$ 2.9
4.0% .....	0.1	0.8	1.4
4.5% .....	(1.4)	(0.7)	(0.1)

The assets of the U.S. Plan consist substantially of fixed income securities. U.S. Plan assets have increased from \$298.4 million at December 31, 2015 to \$307.3 million at December 31, 2016 while the U.S. Plan's liability increased from \$297.8 million at December 31, 2015 to \$299.6 million at December 31, 2016.

Our funding policy is to make contributions to our pension plans in accordance with local laws and to the extent that such contributions are tax deductible. During 2016, we made contributions of \$1.9 million to the U.S. Plan, \$2.6 million to the U.S. supplemental executive defined benefit pension plan and \$0.9 million to certain qualified plans for non-U.S. subsidiaries. In 2017, we expect to contribute approximately \$1.9 million to the U.S.



Plan and \$2.6 million to the U.S. supplemental executive defined benefit pension plan. Contributions to be made in 2017 to certain qualified plans for non-U.S. subsidiaries are based on local statutory requirements and are estimated at approximately \$0.8 million.

### Equity Compensation Plans

In addition to our 1996 Employee Stock Purchase Plan discussed in Note O: “Stock Based Compensation” in Notes to Consolidated Financial Statements, we have a 2006 Equity and Cash Compensation Incentive Plan (the “2006 Equity Plan”) under which equity securities are authorized for issuance. The 2006 Equity Plan was initially approved by stockholders on May 25, 2006.

At our annual meeting of stockholders held May 21, 2013, our stockholders approved an amendment to the 2006 Equity Plan to increase the number of shares issuable thereunder by 10.0 million, for an aggregate of 32.0 million shares issuable thereunder, and our stockholders also approved an amendment to our 1996 Employee Stock Purchase Plan to increase the number of shares issuable thereunder by 5.0 million, for an aggregate of 30.4 million shares issuable thereunder. At our annual meeting of stockholders held May 12, 2015, our stockholders approved an amendment to the 2006 Equity Plan to extend its term until May 12, 2025.

The following table presents information about these plans as of December 31, 2016 (share numbers in thousands):

<u>Plan category</u>	<u>Number of securities to be issued upon exercise of outstanding options, warrants and rights</u>	<u>Weighted-average exercise price of outstanding options, warrants and rights</u>	<u>Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column one)</u>
Equity plans approved by shareholders . . . .	4,336(1)	\$18.03	13,399(2)
Equity plans not approved by shareholders (3,4) . . . . .	<u>368</u>	2.71	<u>—</u>
Total . . . . .	<u>4,704</u>	11.93	<u>13,399</u>

- (1) Includes 3,777,628 shares of restricted stock units that are not included in the calculation of the weighted average exercise price.
- (2) Consists of 9,545,419 securities available for issuance under the 2006 Equity Plan and 3,853,638 of securities available for issuance under the Employee Stock Purchase Plan.
- (3) In connection with the 2008 acquisition of Eagle Test (the “Eagle Acquisition”), we assumed the options granted under the Eagle Test Systems, Inc. 2003 Stock Option and Grant Plan and the Eagle Test Systems, Inc. 2006 Stock Option and Incentive Plan (collectively, the “Eagle Plans”). Upon the consummation of the Eagle Acquisition, these options were converted automatically into options to purchase an aggregate of 3,594,916 shares of our common stock. No additional awards will be granted under the Eagle Plans. As of December 31, 2016, there were outstanding options exercisable for an aggregate of 57,928 shares of our common stock pursuant to the Eagle Plans, with a weighted average exercise price of \$3.54 per share.
- (4) In connection with the 2011 acquisition of LitePoint Corporation (the “LitePoint Acquisition”), we assumed the options granted under the LitePoint Corporation 2002 Stock Plan (the “LitePoint Plan”). Upon the consummation of the LitePoint Acquisition, these options were converted automatically into options to purchase an aggregate of 2,828,344 shares of our common stock. No additional awards will be granted under the LitePoint Plan. As of December 31, 2016, there were outstanding options exercisable for an aggregate of 310,437 shares of our common stock pursuant to the LitePoint Plan, with a weighted average exercise price of \$2.55 per share.

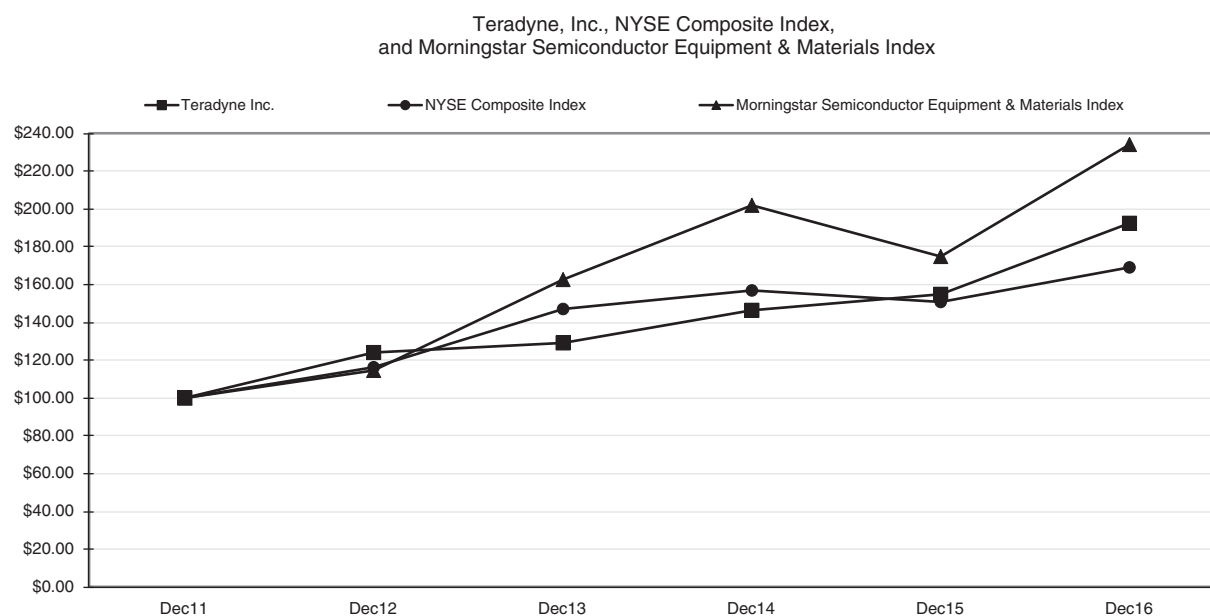
The purpose of the 2006 Equity Plan is to motivate employees, officers and directors by providing equity ownership and compensation opportunities in Teradyne. The aggregate number of shares available under the

2006 Equity Plan as of December 31, 2016 was 9,545,419 shares of our common stock. The 2006 Equity Plan authorizes the grant of stock-based awards in the form of (1) non-qualified and incentive stock options, (2) stock appreciation rights, (3) restricted stock awards and restricted stock unit awards, (4) phantom stock, and (5) other stock-based awards. Awards may be tied to time-based vesting schedules and/or performance-based vesting measured by reference to performance criteria chosen by the Compensation Committee of the Board of Directors, which administers the 2006 Equity Plan. Awards may be made to any employee, officer, consultant and advisor of Teradyne and our subsidiaries, as well as, to our directors. The maximum number of shares of stock-based awards that may be granted to one participant during any one fiscal year is 2,000,000 shares of common stock. The 2006 Equity Plan will expire on May 12, 2025.

As of December 31, 2016, total unrecognized compensation expense related to non-vested restricted stock units and options was \$40.6 million, and is expected to be recognized over a weighted average period of 2.3 years.

### Performance Graph

The following graph compares the change in our cumulative total shareholder return in our common stock with (i) the NYSE Composite Index and (ii) the Morningstar Semiconductor Equipment & Materials Industry Group (compiled by Morningstar, Inc.). The comparison assumes \$100.00 was invested on December 31, 2011 in our common stock and in each of the foregoing indices and assumes reinvestment of dividends, if any. Historic stock price performance is not necessarily indicative of future price performance.



### Recently Issued Accounting Pronouncements

On January 26, 2017, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) 2017-04, “Intangibles—Goodwill and Other (Topic 350): Simplifying the Accounting for Goodwill Impairment.” The new guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Goodwill impairment will now be the amount by which a reporting unit’s carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. All other goodwill impairment guidance will remain largely unchanged. Entities will continue to have the option to perform a qualitative assessment to determine if a quantitative impairment test is necessary. The same one-step impairment test will be applied to goodwill at all reporting units, even those with zero or negative carrying amounts. Entities

will be required to disclose the amount of goodwill at reporting units with zero or negative carrying amounts. The revised guidance will be applied prospectively, and is effective in 2020. Early adoption is permitted for any impairment tests performed after January 1, 2017. We are currently evaluating the impact of this ASU on our financial position, results of operations and statements of cash flows.

On October 24, 2016, the FASB issued ASU 2016-16, *“Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory.”* Under current Generally Accepted Accounting Principles (“GAAP”), the tax effects of intra-entity asset transfers are deferred until the transferred asset is sold to a third party or otherwise recovered through use. The new guidance requires recognition of the tax expense from the sale of the asset in the seller’s tax jurisdiction when the transfer occurs, even though the pre-tax effects of that transaction are eliminated in consolidation. Any deferred tax asset that arises in the buyer’s jurisdiction would also be recognized at the time of the transfer. The new guidance does not apply to intra-entity transfers of inventory. The income tax consequences from the sale of inventory from one member of a consolidated entity to another will continue to be deferred until the inventory is sold to a third party. The new guidance will be effective in fiscal years beginning after December 15, 2017. Early adoption is permitted. The modified retrospective approach will be required for transition to the new guidance, with a cumulative-effect adjustment recorded in retained earnings as of the beginning of the period of adoption. We do not expect this ASU to have a material impact on our financial position, results of operations and statements of cash flows.

On March 31, 2016, the FASB issued ASU 2016-09, *“Compensation-Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting.”* This ASU changes how companies account for certain aspects of share-based payment awards to employees, including the accounting for income taxes, forfeitures, and statutory tax withholding requirements, as well as classification in the statements of cash flows. This pronouncement is effective for annual periods beginning after December 15, 2016. Early adoption is permitted. Adoption of the new guidance will require recognition of excess tax benefits and tax deficiencies in the consolidated statements of operations on a prospective basis, with a cumulative effect adjustment to retained earnings for any prior year excess tax benefits or tax deficiencies not previously recorded. We expect the cumulative effect adjustment to increase retained earnings and deferred tax assets by approximately \$39 million. In the years ended December 31, 2016, 2015 and 2014, we recorded excess tax benefits of \$6.1 million, \$4.6 million, and \$0.2 million, respectively, as a component of additional paid-in capital. In accordance with this ASU, amounts for future periods related to the difference between the fair value of a restricted stock unit (“RSU”) on the grant date and the fair value on the vest date will be recorded as a discrete benefit or expense to the current income tax provision in the period in which the RSU vests. A majority of the future amounts will be recorded during the first quarter consistent with the vesting of a majority of our RSU grants.

In February 2016, the FASB issued ASU 2016-02, *“Leases (Topic 842).”* The guidance in this ASU supersedes the lease recognition requirements in Accounting Standards Codification (“ASC”) Topic 840, *“Leases.”* The new standard establishes a right-of-use (“ROU”) model that requires a lessee to record an ROU asset and a lease liability on the balance sheet for all leases with terms longer than twelve months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the statements of operation. The new standard is effective for annual periods beginning after December 15, 2018 with early adoption permitted. A modified retrospective transition approach is required for lessees for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. We are currently evaluating the impact of this ASU on our financial position and results of operations.

In January 2016, the FASB issued ASU 2016-01, *“Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities.”* This ASU provides guidance for the recognition, measurement, presentation, and disclosure of financial instruments. The new pronouncement revises accounting related to equity investments and the presentation of certain fair value changes for financial liabilities measured at fair value. Among other things, it amends the presentation and disclosure requirements of equity securities that do not result in consolidation and are not accounted for under the equity method. Changes

in the fair value of these equity securities will be recognized directly in net income. This pronouncement is effective for fiscal years beginning after December 15, 2017. We are currently evaluating the impact of this ASU on our financial position and results of operations.

In November 2015, the FASB issued ASU 2015-17, *“Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes.”* ASU 2015-17 simplifies the presentation of deferred income taxes by eliminating the separate classification of deferred income tax liabilities and assets into current and noncurrent amounts in the balance sheet. The new guidance requires that all deferred tax liabilities and assets be classified as noncurrent in the balance sheet. This ASU is effective for annual periods beginning after December 15, 2016, and may be applied either prospectively or retrospectively to all periods presented. Early adoption is permitted. We early adopted this ASU prospectively in the first quarter of 2016.

In April 2015, the FASB issued ASU 2015-03, *“Simplifying the Presentation of Debt Issuance Costs,”* which requires debt issuance costs to be presented in the balance sheet as a direct deduction from the carrying value of the associated debt liability, consistent with the presentation for debt discount. ASU 2015-03 does not specifically address requirements for the presentation or subsequent measurement of debt issuance costs related to line-of-credit arrangements. On August 8, 2015, the FASB issued ASU 2015-15, *“Interest—Imputation of Interest (Subtopic 835-30)”* clarifying that debt issuance costs related to line-of-credit arrangements could be presented as an asset and amortized over the term of the line-of-credit arrangement, regardless of whether there are any outstanding borrowings on the line-of-credit arrangement. We adopted this ASU in the first quarter of 2016. Adoption of this ASU did not have a material impact on our financial position and results of operations.

In August 2014, the FASB issued ASU 2014-15, *“Presentation of Financial Statements—Going Concern (Subtopic 205-40).”* ASU 2014-15 provides guidance on management’s responsibility in evaluating whether there is substantial doubt about an entity’s ability to continue as a going concern and to provide related footnote disclosures. This ASU is effective for annual periods ending after December 15, 2016. We do not expect this ASU to have a material impact on our consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, *“Revenue from Contracts with Customers (Topic 606),”* which will replace numerous requirements in U.S. GAAP, including industry-specific requirements, and provide companies with a single revenue recognition model for recognizing revenue from contracts with customers. The core principle of the new standard is that a company should recognize revenue to show the transfer of promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled to in exchange for those goods or services. In August 2015, FASB issued ASU 2015-14, which deferred the effective date of the new revenue standard by one year. For Teradyne, the standard will be effective in the first quarter of 2018. The two permitted transition methods under the new standard are the full retrospective method, in which case the standard would be applied to each prior reporting period presented, or the modified retrospective method, in which case the cumulative effect of applying the standard would be recognized at the date of initial application. We have selected the modified retrospective transition method. We are currently evaluating the impact of this ASU on our financial position and results of operations.

## **Item 7A: Quantitative and Qualitative Disclosures about Market Risks**

### **Concentration of Credit Risk**

Financial instruments which potentially subject us to concentrations of credit risk consist principally of cash equivalents, marketable securities, forward currency contracts and accounts receivable. Our cash equivalents consist primarily of money market funds invested in U.S. Treasuries and government agencies. Our fixed income available-for-sale marketable securities have a minimum rating of AA by one or more of the major credit rating agencies. We place forward currency contracts with high credit-quality financial institutions in order to minimize credit risk exposure. Concentrations of credit risk with respect to accounts receivable are limited due to the large number of geographically dispersed customers. We perform ongoing credit evaluations of our customers’ financial condition and from time to time may require customers to provide a letter of credit from a bank to

secure accounts receivable. There were no customers who accounted for more than 10% of our accounts receivable balance as of December 31, 2016. One customer accounted for more than 10% of our accounts receivable balance as of December 31, 2015.

### **Exchange Rate Risk Management**

We regularly enter into foreign currency forward contracts to hedge the value of our monetary assets and liabilities in Japanese Yen, British Pound, Korean Won, Taiwan Dollar, Singapore Dollar and Euro. These foreign currency forward contracts have maturities of approximately one month. These contracts are used to minimize the effect of exchange rate fluctuations associated with the remeasurement of monetary assets and liabilities. We do not engage in currency speculation.

We performed a sensitivity analysis assuming a hypothetical 10% fluctuation in foreign exchange rates to the hedging contracts and the underlying exposures described above. As of December 31, 2016, 2015 and 2014, the analysis indicated that these hypothetical market movements would not have a material effect on our consolidated financial position, results of operations or cash flows.

### **Interest Rate Risk Management**

We are exposed to potential losses due to changes in interest rates. Our interest rate exposure is primarily in the Netherlands, United States and Singapore related to short-term and long-term marketable securities.

In order to estimate the potential loss due to interest rate risk, a fluctuation in interest rates of 25 basis points was assumed. Market risk for the short and long-term marketable securities was estimated as the potential change in the fair value resulting from a hypothetical change in interest rates for securities contained in the investment portfolio. The potential change in the fair value from changes in interest rates is immaterial as of December 31, 2016 and 2015.

**Item 8: Financial Statements and Supplementary Data**

**Report of Independent Registered Public Accounting Firm**

To the Board of Directors and Shareholders of Teradyne, Inc.:

In our opinion, the consolidated financial statements listed in the index appearing under Item 15(a) (1) present fairly, in all material respects, the financial position of Teradyne, Inc. and its subsidiaries as of December 31, 2016 and 2015, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2016 in conformity with accounting principles generally accepted in the United States of America. In addition, in our opinion, the financial statement schedule listed in the index appearing under Item 15(a)(2) presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on criteria established in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these financial statements and financial statement schedule, 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 Annual Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on these financial statements, on the financial statement schedule, and on the Company's internal control over financial reporting based on our integrated audits. We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As discussed in Note C to the consolidated financial statements, the Company changed the manner in which it classifies deferred taxes in 2016.

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.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts

March 1, 2017

**TERADYNE, INC.**  
**CONSOLIDATED BALANCE SHEETS**

	December 31,	
	2016	2015
	(in thousands, except per share information)	
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 307,884	\$ 264,705
Marketable securities	871,024	477,696
Accounts receivable, less allowance for doubtful accounts of \$2,356 and \$2,407 in 2016 and 2015, respectively	192,444	211,293
Inventories, net	135,958	153,588
Deferred tax assets	—	54,973
Prepayments	108,454	91,519
Other current assets	8,039	6,194
Total current assets	1,623,803	1,259,968
Property, plant and equipment, net	253,821	273,414
Marketable securities	433,843	265,928
Deferred tax assets	107,405	7,404
Other assets	12,165	13,080
Retirement plans assets	7,712	636
Intangible assets, net	100,401	239,831
Goodwill	223,343	488,413
Total assets	\$2,762,493	\$2,548,674
<b>LIABILITIES</b>		
Current liabilities:		
Accounts payable	\$ 95,362	\$ 92,358
Accrued employees' compensation and withholdings	109,944	113,994
Deferred revenue and customer advances	84,478	85,527
Other accrued liabilities	51,382	43,727
Contingent consideration	1,050	15,500
Accrued income taxes	30,480	21,751
Total current liabilities	372,696	372,857
Retirement plans liabilities	106,938	103,531
Long-term deferred revenue and customer advances	23,463	25,745
Deferred tax liabilities	12,144	26,663
Long-term other accrued liabilities	28,642	32,156
Long-term contingent consideration	37,282	21,936
Long-term debt	352,669	—
Total liabilities	933,834	582,888
Commitments and contingencies (Note K)		
<b>SHAREHOLDERS' EQUITY</b>		
Common stock, \$0.125 par value, 1,000,000 shares authorized; 199,177 and 203,641 shares issued and outstanding at December 31, 2016 and 2015, respectively	24,897	25,455
Additional paid-in capital	1,593,684	1,480,647
Accumulated other comprehensive loss	(20,214)	(8,144)
Retained earnings	230,292	467,828
Total shareholders' equity	1,828,659	1,965,786
Total liabilities and shareholders' equity	\$2,762,493	\$2,548,674

The accompanying notes are an integral part of the consolidated financial statements.

**TERADYNE, INC.**  
**CONSOLIDATED STATEMENTS OF OPERATIONS**

	Years Ended December 31,		
	2016	2015	2014
	(in thousands, except per share amounts)		
Revenues:			
Products .....	\$1,453,248	\$1,340,566	\$1,364,024
Services .....	300,002	299,012	283,800
Total revenues .....	<u>1,753,250</u>	<u>1,639,578</u>	<u>1,647,824</u>
Cost of revenues:			
Cost of products .....	659,097	591,772	640,787
Cost of services .....	134,586	132,163	128,229
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below) .....	<u>793,683</u>	<u>723,935</u>	<u>769,016</u>
Gross profit .....	<u>959,567</u>	<u>915,643</u>	<u>878,808</u>
Operating expenses:			
Engineering and development .....	291,025	292,250	291,639
Selling and administrative .....	315,682	306,313	319,713
Acquired intangible assets amortization .....	52,648	69,031	70,771
Acquired intangible assets impairment .....	83,339	—	—
Goodwill impairment .....	254,946	—	98,897
Restructuring and other .....	21,942	5,080	1,365
Total operating expenses .....	<u>1,019,582</u>	<u>672,674</u>	<u>782,385</u>
(Loss) income from operations .....	(60,015)	242,969	96,423
Non-operating (income) expenses:			
Interest income .....	(9,296)	(7,214)	(6,259)
Interest expense .....	3,637	1,876	6,934
Other (income) expense, net .....	704	(4,817)	372
(Loss) income before income taxes .....	(55,060)	253,124	95,376
Income tax (benefit) provision .....	(11,639)	46,647	14,104
Net (loss) income .....	<u>\$ (43,421)</u>	<u>\$ 206,477</u>	<u>\$ 81,272</u>
Net (loss) income per common share:			
Basic .....	<u>\$ (0.21)</u>	<u>\$ 0.98</u>	<u>\$ 0.40</u>
Diluted .....	<u>\$ (0.21)</u>	<u>\$ 0.97</u>	<u>\$ 0.37</u>
Weighted average common shares—basic .....	<u>202,578</u>	<u>211,544</u>	<u>202,908</u>
Weighted average common shares—diluted .....	<u>202,578</u>	<u>213,321</u>	<u>222,550</u>
Cash dividend declared per common share .....	<u>\$ 0.24</u>	<u>\$ 0.24</u>	<u>\$ 0.18</u>

The accompanying notes are an integral part of the consolidated financial statements.



**TERADYNE, INC.**

**CONSOLIDATED STATEMENTS OF COMPREHENSIVE (LOSS) INCOME**

	Years Ended December 31,		
	2016	2015	2014
	(in thousands)		
Net (loss) income .....	\$(43,421)	\$206,477	\$81,272
Other comprehensive (loss) income, net of tax:			
Foreign currency translation adjustment, net of tax of \$0, \$0, \$0 .....	(13,162)	(8,759)	—
Available-for-sale marketable securities:			
Unrealized gains (losses) on marketable securities:			
Unrealized gains (losses) on marketable securities arising during period, net of tax of \$923, \$(1,667), \$1,449, respectively .....	2,037	(3,075)	2,417
Less: Reclassification adjustment for gains included in net (loss) income, net of tax of \$(255), \$(390), \$(645), respectively .....	(683)	(704)	(1,433)
	1,354	(3,779)	984
Defined benefit pension and post-retirement plans:			
Amortization of prior service (credit) cost included in net periodic pension and post-retirement expense/income, net of tax of \$(190), \$(169), \$(169), respectively .....	(321)	(295)	(295)
Prior service income arising during period, net of tax of \$34, \$0, \$0, respectively .....	59	—	—
	(262)	(295)	(295)
Other comprehensive (loss) income .....	(12,070)	(12,833)	689
Comprehensive (loss) income .....	\$(55,491)	\$193,644	\$81,961

The accompanying notes are an integral part of the consolidated financial statements.

**TERADYNE, INC.**  
**CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY**  
**Years Ended December 31, 2016, 2015 and 2014**

	Common Stock Shares Issued	Common Stock Par Value	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Retained Earnings	Total Shareholders' Equity
	(in thousands)					
Balance, December 31, 2013	191,731	\$23,966	\$1,390,896	\$ 4,000	\$ 566,232	\$1,985,094
Issuance of stock to employees under benefit plans, net of shares withheld for payroll tax of \$12,018	3,661	458	8,815			9,273
Warrant settlement	21,221	2,653	(2,653)			—
Stock-based compensation expense			39,868			39,868
Tax benefit related to stock options and restricted stock units			209			209
Cash dividends					(37,425)	(37,425)
Net income					81,272	81,272
Unrealized gains on marketable securities:						
Unrealized gains on marketable securities, net of tax of \$1,449				2,417		2,417
Less: reclassification adjustment for gains included in net income, net of tax of \$(645)				(1,433)		(1,433)
Amortization of prior service (credit) cost, net of tax of \$(169)				(295)		(295)
Balance, December 31, 2014	216,613	27,077	1,437,135	4,689	610,079	2,078,980
Issuance of stock to employees under benefit plans, net of shares withheld for payroll tax of \$10,597	2,649	331	8,602			8,933
Stock-based compensation expense			30,285			30,285
Repurchase of common stock	(15,621)	(1,953)			(297,996)	(299,949)
Tax benefit related to stock options and restricted stock units			4,625			4,625
Cash dividends					(50,732)	(50,732)
Net income					206,477	206,477
Foreign currency translation adjustment				(8,759)		(8,759)
Unrealized losses on marketable securities:						
Unrealized losses on marketable securities, net of tax of \$(1,667)				(3,075)		(3,075)
Less: reclassification adjustment for gains included in net income, net of tax of \$(390)				(704)		(704)
Amortization of prior service (credit) cost, net of tax of \$(169)				(295)		(295)
Balance, December 31, 2015	203,641	25,455	1,480,647	(8,144)	467,828	1,965,786
Issuance of stock to employees under benefit plans, net of shares withheld for payroll tax of \$9,808	2,377	297	10,368			10,665
Equity component of convertible notes			100,836			100,836
Equity component of convertible notes issuance cost			(2,017)			(2,017)
Purchase of convertible notes hedges			(100,834)			(100,834)
Proceeds from issuance of warrants			67,852			67,852
Stock-based compensation expense			30,745			30,745
Repurchase of common stock	(6,841)	(855)			(145,476)	(146,331)
Tax benefit related to stock options and restricted stock units			6,087			6,087
Cash dividends					(48,639)	(48,639)
Net loss					(43,421)	(43,421)
Foreign currency translation adjustment				(13,162)		(13,162)
Unrealized gains on marketable securities:						
Unrealized gains on marketable securities, net of tax of \$923				2,037		2,037
Less: reclassification adjustment for gains included in net income, net of tax of \$(255)				(683)		(683)
Amortization of prior service (credit) cost, net of tax of \$(190)				(321)		(321)
Prior service income arising during period, net of tax of \$34				59		59
Balance, December 31, 2016	199,177	\$24,897	\$1,593,684	\$(20,214)	\$ 230,292	\$1,828,659

The accompanying notes are an integral part of the consolidated financial statements.

**CONSOLIDATED STATEMENTS OF CASH FLOWS**  
**TERADYNE, INC.**

	Years Ended December 31,		
	2016	2015	2014
	(in thousands)		
Cash flows from operating activities:			
Net (loss) income	\$ (43,421)	\$ 206,477	\$ 81,272
Adjustments to reconcile net (loss) income from operations to net cash provided by operating activities:			
Depreciation	64,782	68,181	73,390
Amortization	55,227	72,592	79,154
Stock-based compensation	30,750	30,451	40,307
Provision for excess and obsolete inventory	17,493	21,332	22,193
Goodwill impairment	254,946	—	98,897
Acquired intangible assets impairment	83,339	—	—
Deferred taxes	(62,936)	(7,124)	(19,928)
Tax benefit related to employee stock compensation awards	(6,198)	(4,715)	(535)
Impairment of fixed assets	4,179	—	—
Property insurance recovery	(5,363)	—	—
Gain from the sale of an equity investment	—	(5,406)	—
Non-cash charge for the sale of inventories revalued at the date of acquisition	—	1,567	—
Retirement plans actuarial (gains) losses	(3,203)	17,732	46,564
Contingent consideration adjustment	15,896	2,489	(630)
Other	(448)	(34)	2,874
Changes in operating assets and liabilities, net of businesses acquired:			
Accounts receivable	18,325	(57,267)	8,060
Inventories	34,263	15,559	51,803
Prepayments and other assets	(18,882)	3,034	41,537
Accounts payable and other accrued expenses	(1,706)	48,213	(45,430)
Deferred revenue and customer advances	(3,634)	17,011	22,033
Retirement plan contributions	(6,044)	(12,095)	(33,916)
Income taxes	18,434	(5,156)	24,417
Net cash provided by operating activities	445,799	412,841	492,062
Cash flows from investing activities:			
Purchases of property, plant and equipment	(85,272)	(89,878)	(168,982)
Purchases of available-for-sale marketable securities	(1,656,267)	(1,424,002)	(1,578,743)
Proceeds from maturities of available-for-sale marketable securities	243,232	360,264	570,358
Proceeds from sales of available-for-sale marketable securities	852,794	1,316,131	859,729
Proceeds from property insurance	5,051	—	—
Acquisition of businesses, net of cash acquired	—	(282,741)	(19,419)
Proceeds from life insurance	—	1,098	4,184
Proceeds from the sale of an equity investment	—	5,406	—
Net cash used for investing activities	(640,462)	(113,722)	(332,873)
Cash flows from financing activities:			
Proceeds from issuance of convertible notes, net of issuance costs	450,800	—	—
Purchase of convertible note hedges	(100,834)	—	—
Proceeds from issuance of warrants	67,852	—	—
Issuance of common stock under stock option and stock purchase plans	20,473	19,530	21,291
Repurchase of common stock	(146,331)	(299,949)	—
Tax benefit related to employee stock compensation awards	6,198	4,715	535
Dividend payments	(48,619)	(50,713)	(37,425)
Payment of revolving credit facility costs	—	(2,253)	—
Payments of long-term debt	—	—	(190,972)
Payments of contingent consideration	(11,697)	—	—
Net cash provided by (used for) financing activities	237,842	(328,670)	(206,571)
Increase (decrease) in cash and cash equivalents	43,179	(29,551)	(47,382)
Cash and cash equivalents at beginning of year	264,705	294,256	341,638
Cash and cash equivalents at end of year	\$ 307,884	\$ 264,705	\$ 294,256
Supplementary disclosure of cash flow information:			
Cash paid for:			
Interest	\$ 446	\$ 301	\$ 4,294
Income taxes	\$ 40,424	\$ 35,218	\$ 25,893

The accompanying notes are an integral part of the consolidated financial statements.

## TERADYNE, INC.

### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

#### A. THE COMPANY

Teradyne, Inc. (“Teradyne”) is a leading global supplier of automation equipment for test and industrial applications. Teradyne designs, develops, manufactures and sells automatic test systems used to test semiconductors, wireless products, data storage and complex electronics systems in the consumer electronics, wireless, automotive, industrial, computing, communications, and aerospace and defense industries. Teradyne’s industrial automation products include collaborative robots used by global manufacturing and light industrial customers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Teradyne’s automatic test equipment and industrial automation products and services include:

- semiconductor test (“Semiconductor Test”) systems;
- defense/aerospace (“Defense/Aerospace”) test instrumentation and systems, storage test (“Storage Test”) systems, and circuit-board test and inspection (“Production Board Test”) systems (collectively these products represent “System Test”);
- industrial automation (“Industrial Automation”) products; and
- wireless test (“Wireless Test”) systems.

On June 11, 2015, Teradyne acquired Universal Robots A/S (“Universal Robots”) for approximately \$284 million of cash plus up to an additional \$65 million of cash if certain performance targets are met extending through 2018. Universal Robots is the leading supplier of collaborative robots which are low-cost, easy-to-deploy and simple-to-program robots that work side by side with production workers. Universal Robots is a separate operating and reportable segment, Industrial Automation.

#### B. ACCOUNTING POLICIES

The consolidated financial statements include the accounts of Teradyne and its wholly-owned subsidiaries. All significant intercompany balances and transactions are eliminated. Certain prior years’ amounts were reclassified to conform to the current year presentation.

##### **Preparation of Financial Statements and Use of Estimates**

The preparation of consolidated financial statements requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent liabilities. On an on-going basis, management evaluates its estimates, including those related to inventories, investments, goodwill, intangible and other long-lived assets, accounts receivable, income taxes, deferred tax assets and liabilities, pensions, warranties, and loss contingencies. Management bases its estimates on historical experience and on appropriate and customary assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ significantly from these estimates.

##### **Revenue Recognition**

Teradyne recognizes revenues, including revenues from distributors, when there is persuasive evidence of an arrangement, title and risk of loss have passed, delivery has occurred or the services have been rendered, the sales price is fixed or determinable and collection of the related receivable is reasonably assured. Title and risk of loss generally pass to Teradyne’s customers upon shipment or at delivery destination point. In circumstances where either title or risk of loss pass upon destination, acceptance or cash payment, Teradyne defers revenue

recognition until such events occur except when title transfer is tied to cash payment outside the United States. Outside the United States, Teradyne recognizes revenue upon shipment or at delivery destination point, even if Teradyne retains a form of title to products delivered to customers, provided the sole purpose is to enable Teradyne to recover the products in the event of customer payment default and the arrangement does not prohibit the customer's use or resale of the product in the ordinary course of business.

Teradyne's equipment has non-software and software components that function together to deliver the equipment's essential functionality. Revenue is recognized upon shipment or at delivery destination point, provided that customer acceptance criteria can be demonstrated prior to shipment. Certain contracts require Teradyne to perform tests of the product to ensure that performance meets the published product specifications or customer requested specifications, which are generally conducted prior to shipment. Where the criteria cannot be demonstrated prior to shipment, revenue is deferred until customer acceptance has been received. Teradyne also defers the portion of the sales price that is not due until acceptance, which represents deferred profit.

For multiple element arrangements, Teradyne allocates revenue to all deliverables based on their relative selling prices. In such circumstances, a hierarchy is used to determine the selling price for allocating revenue to deliverables as follows: (i) vendor-specific objective evidence of selling price ("VSOE"), (ii) third-party evidence of selling price ("TPE"), and (iii) best estimate of the selling price ("BESP"). For a delivered item to be considered a separate unit the delivered item must have value to the customer on a standalone basis and the delivery or performance of the undelivered item must be considered probable and substantially in Teradyne's control.

Teradyne's post-shipment obligations include installation, training services, one-year standard warranties, and extended warranties. Installation does not alter the product capabilities, does not require specialized skills or tools and can be performed by the customers or other vendors. Installation is typically provided within five days of product shipment and is completed within one to two days thereafter. Training services are optional and do not affect the customers' ability to use the product. Teradyne defers revenue for the selling price of installation and training. Extended warranties constitute warranty obligations beyond one year and Teradyne defers revenue in accordance with Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") 605-20, "*Separately Priced Extended Warranty and Product Maintenance Contracts*" and ASC 605-25, "*Revenue Recognition Multiple-Element Arrangements*." Service revenue is recognized over the contractual period or as services are performed.

Teradyne's products are generally subject to warranty and related costs of the warranty are provided for in cost of revenues when product revenue is recognized. Teradyne classifies shipping and handling costs in cost of revenue. Teradyne does not provide its customers with contractual rights of return for any of its products.

As of December 31, 2016 and 2015, deferred revenue and customer advances consisted of the following and are included in the short and long-term deferred revenue and customer advances:

	<u>2016</u>	<u>2015</u>
	<u>(in thousands)</u>	
Extended warranty . . . . .	\$ 46,753	\$ 46,499
Equipment maintenance and training . . . . .	39,037	30,616
Customer advances, undelivered elements and other . . . . .	<u>22,151</u>	<u>34,157</u>
Total deferred revenue and customer advances . . . . .	<u>\$107,941</u>	<u>\$111,272</u>

## Product Warranty

Teradyne generally provides a one-year warranty on its products, commencing upon installation, acceptance or shipment. A provision is recorded upon revenue recognition to cost of revenues for estimated warranty expense based on historical experience. Related costs are charged to the warranty accrual as incurred. The balance below is included in other accrued liabilities:

	<u>Amount</u> (in thousands)
Balance at December 31, 2013	\$ 6,660
Accruals for warranties issued during the period	15,406
Accruals related to pre-existing warranties	(2,008)
Settlements made during the period	<u>(11,116)</u>
Balance at December 31, 2014	8,942
Acquisition	409
Accruals for warranties issued during the period	11,539
Accruals related to pre-existing warranties	(3,159)
Settlements made during the period	<u>(10,806)</u>
Balance at December 31, 2015	6,925
Accruals for warranties issued during the period	14,291
Accruals related to pre-existing warranties	(1,354)
Settlements made during the period	<u>(12,659)</u>
Balance at December 31, 2016	<u>\$ 7,203</u>

When Teradyne receives revenue for extended warranties, beyond one year, it is deferred and recognized on a straight-line basis over the contract period. Related costs are expensed as incurred. The balance below is included in short and long-term deferred revenue and customer advances:

	<u>Amount</u> (in thousands)
Balance at December 31, 2013	\$ 34,909
Deferral of new extended warranty revenue	29,519
Recognition of extended warranty deferred revenue	<u>(21,128)</u>
Balance at December 31, 2014	43,300
Acquisition	870
Deferral of new extended warranty revenue	28,549
Recognition of extended warranty deferred revenue	<u>(26,220)</u>
Balance at December 31, 2015	46,499
Deferral of new extended warranty revenue	27,182
Recognition of extended warranty deferred revenue	<u>(26,928)</u>
Balance at December 31, 2016	<u>\$ 46,753</u>

## Accounts Receivable and Allowance for Doubtful Accounts

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The volatility of the industries that Teradyne serves can cause certain of its customers to experience shortages of cash flows, which can impact their ability to make required payments. Teradyne maintains allowances for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. Estimated allowances for doubtful accounts are reviewed periodically taking into account the customer's recent payment history, the customer's current financial statements and other information regarding the customer's credit worthiness. Account balances are written off against the allowance when it is determined the receivable will not be recovered.

## **Inventories**

Inventories are stated at the lower of cost (first-in, first-out basis) or net realizable value. On a quarterly basis, Teradyne uses consistent methodologies to evaluate all inventories for net realizable value. Teradyne records a provision for both excess and obsolete inventory when such write-downs or write-offs are identified through the quarterly review process. The inventory valuation is based upon assumptions about future demand, product mix and possible alternative uses.

## **Investments**

Teradyne accounts for its investments in debt and equity securities in accordance with the provisions of ASC 320-10, "*Investments—Debt and Equity Securities.*" ASC 320-10 requires that certain debt and equity securities be classified into one of three categories; trading, available-for-sale or held-to-maturity securities. On a quarterly basis, Teradyne reviews its investments to identify and evaluate those that have an indication of a potential other-than-temporary impairment. Factors considered in determining whether a loss is other-than-temporary include:

- The length of time and the extent to which the market value has been less than cost;
- The financial condition and near-term prospects of the issuer; and
- The intent and ability to retain the investment in the issuer for a period of time sufficient to allow for any anticipated recovery in market value.

As defined in ASC 820-10, "*Fair Value Measurements and Disclosures,*" fair value is the price that would be received from the sale of an asset or paid to transfer a liability in an orderly transaction between market participants. Teradyne uses the market and income approach techniques to value its financial instruments and there were no changes in valuation techniques during the years ended December 31, 2016, 2015 and 2014. ASC 820-10 requires that assets and liabilities carried at fair value be classified and disclosed in one of the following three categories:

Level 1: Quoted prices in active markets for identical assets as of the reporting date.

Level 2: Inputs other than Level 1, that are observable either directly or indirectly as of the reporting date. For example, a common approach for valuing fixed income securities is the use of matrix pricing. Matrix pricing is a mathematical technique used to value securities by relying on the securities' relationship to other benchmark quoted prices, and therefore is considered a Level 2 input.

Level 3: Unobservable inputs that are not supported by market data. Unobservable inputs are developed based on the best information available, which might include Teradyne's own data.

In accordance with ASC 820-10, Teradyne measures its debt and equity investments at fair value. Teradyne's debt and equity investments are primarily classified within Level 1 and 2. Acquisition-related contingent consideration is classified within Level 3. Teradyne determines the fair value of acquisition-related contingent consideration using a Monte Carlo simulation model. Assumptions utilized in the model include forecasted revenues, revenues volatility and discount rate.

## Prepayments

Prepayments consist of the following and are included in prepayments on the balance sheet:

	<u>2016</u>	<u>2015</u>
	(in thousands)	
Contract manufacturer prepayments . . . . .	\$ 77,017	\$66,283
Prepaid maintenance and other services . . . . .	7,676	8,481
Prepaid taxes . . . . .	4,664	3,781
Other prepayments . . . . .	19,097	12,974
Total prepayments . . . . .	<u>\$108,454</u>	<u>\$91,519</u>

## Retirement and Postretirement Plans

Teradyne recognizes net actuarial gains and losses and the change in the fair value of the plan assets in its operating results in the year in which they occur or upon any interim remeasurement of the plans. Teradyne calculates the expected return on plan assets using the fair value of the plan assets. Actuarial gains and losses are generally measured annually as of December 31 and, accordingly, recorded during the fourth quarter of each year or upon any interim remeasurement of the plans.

## Goodwill, Intangible and Long-Lived Assets

Teradyne accounts for goodwill and intangible assets in accordance with ASC 350-10, “*Intangibles-Goodwill and Other*.” Intangible assets are amortized over their estimated useful economic life and are carried at cost less accumulated amortization. Goodwill is assessed for impairment at least annually in the fourth quarter, as of December 31, on a reporting unit basis, or more frequently when events and circumstances occur indicating that the recorded goodwill may be impaired. In accordance with ASC 350-10, Teradyne has the option to perform a qualitative assessment to determine whether it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount. If Teradyne determines this is the case, Teradyne is required to perform the two-step goodwill impairment test to identify potential goodwill impairment and measure the amount of goodwill impairment loss to be recognized. If Teradyne determines that it is more-likely-than-not that the fair value of the reporting unit is greater than its carrying amounts, the two-step goodwill impairment test is not required.

In accordance with ASC 360-10, “*Impairment or Disposal of Long-Lived Assets*,” Teradyne reviews long-lived 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 these assets are no longer appropriate. Each impairment test is based on a comparison of the estimated undiscounted cash flows to the recorded value of the asset. If impairment is indicated, the asset is written down to its estimated fair value based on a discounted cash flow analysis. The cash flow estimates used to determine the impairment, if any, contain management’s best estimates using appropriate assumptions and projections at that time.

## Property, Plant and Equipment

Property, plant and equipment are stated at cost and depreciated over the estimated useful lives of the assets. Leasehold improvements and major renewals are capitalized and included in property, plant and equipment accounts while expenditures for maintenance and repairs and minor renewals are charged to expense. When assets are retired, the assets and related accumulated depreciation are removed from the accounts and any resulting gain or loss is reflected in the consolidated statements of operations.



Teradyne provides for depreciation of its assets principally on the straight-line method with the cost of the assets being charged to expense over their useful lives as follows:

Buildings	40 years
Building improvements	5 to 10 years
Leasehold improvements	Lesser of lease term or 10 years
Furniture and fixtures	10 years
Test systems manufactured internally	6 years
Machinery and equipment	3 to 5 years
Software	3 to 5 years

Test systems manufactured internally are used by Teradyne for customer evaluations and manufacturing and support of its customers. Teradyne depreciates the test systems manufactured internally over a six-year life to cost of revenues, engineering and development, and selling and administrative expenses. Teradyne often sells internally manufactured test equipment to customers. Upon the sale of an internally manufactured test system, the net book value of the system is transferred to inventory and expensed as cost of revenues. The net book value of internally manufactured test systems sold in the years ended December 31, 2016, 2015 and 2014 was \$11.4 million, \$50.7 million and \$9.7 million, respectively.

### **Engineering and Development Costs**

Teradyne’s products are highly technical in nature and require a large and continuing engineering and development effort. Software development costs incurred prior to the establishment of technological feasibility are charged to expense. Software development costs incurred subsequent to the establishment of technological feasibility are capitalized until the product is available for release to customers. To date, the period between achieving technological feasibility and general availability of the product has been short and software development costs eligible for capitalization have not been material. Engineering and development costs are expensed as incurred and consist primarily of salaries, contractor fees, including non-recurring engineering charges related to product design, allocated facility costs, depreciation, and tooling costs.

### **Stock Compensation Plans and Employee Stock Purchase Plan**

Stock-based compensation expense is based on the grant-date fair value estimated in accordance with the provisions of ASC 718-10, “*Compensation-Stock Compensation.*” As required by ASC 718-10, Teradyne has made an estimate of expected forfeitures and is recognizing compensation costs only for those stock-based compensation awards expected to vest.

Under its stock compensation plans, Teradyne has granted stock options, restricted stock units and performance-based restricted stock units, and employees are eligible to purchase Teradyne’s common stock through its Employee Stock Purchase Plan (“ESPP”).

### **Income Taxes**

Deferred tax assets and liabilities are determined based on differences between financial reporting and tax basis of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. The measurement of deferred tax assets is reduced by a valuation allowance if it is more likely than not that some or all of the deferred tax assets will not be realized. Teradyne performed the required assessment of positive and negative evidence regarding the realization of the net deferred tax assets in accordance with ASC 740, “*Accounting for Income Taxes.*” This assessment included the evaluation of scheduled reversals of deferred tax liabilities, estimates of projected future taxable income and tax-planning strategies. Although realization is not assured, based on its assessment, Teradyne concluded that it is more likely than not that such assets, net of the existing valuation allowance, will be realized. U.S. income taxes are not

provided for on the earnings of non-U.S. subsidiaries which are expected to be reinvested indefinitely in operations outside the U.S. For intra-period tax allocations, Teradyne first utilizes non-equity related tax attributes, such as net operating losses and credit carryforwards and then equity-related tax attributes. Teradyne uses the with-and-without method for calculating excess stock compensation deductions and does not take into account any indirect impacts of excess stock compensation deductions on its research and development tax credits, domestic production activities deduction, and other differences between financial reporting and tax reporting.

### **Advertising Costs**

Teradyne expenses all advertising costs as incurred. Advertising costs were \$6.4 million, \$3.3 million and \$1.9 million in 2016, 2015 and 2014, respectively.

### **Translation of Non-U.S. Currencies**

The functional currency for all subsidiaries is the U.S. dollar, except for the Industrial Automation segment for which the local currency is its functional currency. All foreign currency denominated monetary assets and liabilities are remeasured on a monthly basis into the functional currency using exchange rates in effect at the end of the period. All foreign currency denominated non-monetary assets and liabilities are remeasured into the functional currency using historical exchange rates. Net foreign exchange gains and losses resulting from remeasurement are included in other (income) expense, net. For Industrial Automation, assets and liabilities are translated into U.S. dollars using exchange rates in effect at the end of the period. Revenue and expense amounts are translated using an average of exchange rates in effect during the period. Translation adjustments are recorded within accumulated other comprehensive income (loss).

Net foreign exchange gains and losses resulting from remeasurement are included in other (income) expense, net. For the years ended December 31, 2016 and 2015, gains from the remeasurement of the monetary assets and liabilities denominated in foreign currencies were \$8.0 million and \$2.5 million, respectively. For the year ended December 31, 2014, losses from the remeasurement of the monetary assets and liabilities denominated in foreign currencies were \$0.9 million.

These amounts do not reflect the corresponding gains (losses) from foreign exchange contracts. See Note G: "Financial Instruments" regarding foreign exchange contracts.

### **Net Income (Loss) per Common Share**

Basic net (loss) income per common share is calculated by dividing net (loss) income by the weighted average number of common shares outstanding during the period. Except where the result would be antidilutive, diluted net (loss) income per common share is calculated by dividing net (loss) income by the sum of the weighted average number of common shares plus common stock equivalents, if applicable.

For the year ended December 31, 2014, dilutive potential common shares included incremental shares from the assumed conversion of the convertible notes and the convertible notes hedge warrant shares. Incremental shares from the assumed conversion of the convertible notes were calculated using the difference between the average Teradyne stock price for the period and the conversion price of \$5.48, multiplied by 34.7 million shares. The result of this calculation, representing the total intrinsic value of the convertible debt, was divided by the average Teradyne stock price for the period. Convertible notes hedge warrant shares were calculated using the difference between the average Teradyne stock price for the period and the warrant price of \$7.67, multiplied by 34.7 million shares. The result of this calculation, representing the total intrinsic value of the warrant, was divided by the average Teradyne stock price for the period. Teradyne's call option for 34.7 million shares at an exercise price of \$5.48 was not used in the GAAP earnings per share calculation as its effect was anti-dilutive.

In 2014, Teradyne settled its conversion spread (i.e., the intrinsic value of the embedded option feature contained in the convertible debt) in shares. Teradyne accounted for its conversion spread using the treasury stock method. Teradyne determined that it had the ability and intent to settle the principal amount of the convertible debt in cash; accordingly, the principal amount was excluded from the determination of diluted earnings per share.

With respect to its convertible debt issued in 2016, Teradyne has determined that it has the ability and intent to settle the principal of the convertible debt in cash; accordingly, the principal amount is excluded from the determination of diluted earnings per share. As a result, Teradyne is accounting for the conversion spread using the treasury stock method.

### **Comprehensive Income (Loss)**

Comprehensive income (loss) includes net income, unrealized pension and postretirement prior service costs and benefits, unrealized gains and losses on investments in debt and equity marketable securities and foreign currency translation adjustment.

### **C. RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS**

On January 26, 2017, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) 2017-04, *“Intangibles—Goodwill and Other (Topic 350): Simplifying the Accounting for Goodwill Impairment.”* The new guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Goodwill impairment will now be the amount by which a reporting unit’s carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. All other goodwill impairment guidance will remain largely unchanged. Entities will continue to have the option to perform a qualitative assessment to determine if a quantitative impairment test is necessary. The same one-step impairment test will be applied to goodwill at all reporting units, even those with zero or negative carrying amounts. Entities will be required to disclose the amount of goodwill at reporting units with zero or negative carrying amounts. The revised guidance will be applied prospectively, and is effective in 2020. Early adoption is permitted for any impairment tests performed after January 1, 2017. Teradyne is currently evaluating the impact of this ASU on its financial position, results of operations and statements of cash flows.

On October 24, 2016, the FASB issued ASU 2016-16, *“Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory.”* Under current Generally Accepted Accounting Principles (“GAAP”), the tax effects of intra-entity asset transfers are deferred until the transferred asset is sold to a third party or otherwise recovered through use. The new guidance requires recognition of the tax expense from the sale of the asset in the seller’s tax jurisdiction when the transfer occurs, even though the pre-tax effects of that transaction are eliminated in consolidation. Any deferred tax asset that arises in the buyer’s jurisdiction would also be recognized at the time of the transfer. The new guidance does not apply to intra-entity transfers of inventory. The income tax consequences from the sale of inventory from one member of a consolidated entity to another will continue to be deferred until the inventory is sold to a third party. The new guidance will be effective in fiscal years beginning after December 15, 2017. Early adoption is permitted. The modified retrospective approach will be required for transition to the new guidance, with a cumulative-effect adjustment recorded in retained earnings as of the beginning of the period of adoption. Teradyne does not expect this ASU to have a material impact on its financial position, results of operations and statements of cash flows.

On March 31, 2016, the FASB issued ASU 2016-09, *“Compensation-Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting.”* This ASU changes how companies account for certain aspects of share-based payment awards to employees, including the accounting for income taxes, forfeitures, and statutory tax withholding requirements, as well as classification in the statements of cash flows. This pronouncement is effective for annual periods beginning after December 15, 2016. Early adoption is permitted. Adoption of the new guidance will require recognition of excess tax benefits and tax deficiencies in

the consolidated statements of operations on a prospective basis, with a cumulative effect adjustment to retained earnings for any prior year excess tax benefits or tax deficiencies not previously recorded. Teradyne expects the cumulative effect adjustment to increase retained earnings and deferred tax assets by approximately \$39 million. In the years ended December 31, 2016, 2015 and 2014, Teradyne recorded excess tax benefits of \$6.1 million, \$4.6 million, and \$0.2 million, respectively, as a component of additional paid-in capital. In accordance with this ASU, amounts for future periods related to the difference between the fair value of a restricted stock unit (“RSU”) on the grant date and the fair value on the vest date will be recorded as a discrete benefit or expense to the current income tax provision in the period in which the RSU vests. A majority of the future amounts will be recorded during the first quarter consistent with the vesting of a majority of Teradyne’s RSU grants.

In February 2016, the FASB issued ASU 2016-02, *“Leases (Topic 842).”* The guidance in this ASU supersedes the lease recognition requirements in Accounting Standards Codification (“ASC”) Topic 840, *“Leases.”* The new standard establishes a right-of-use (“ROU”) model that requires a lessee to record an ROU asset and a lease liability on the balance sheet for all leases with terms longer than twelve months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the consolidated statements of operations. The new standard is effective for annual periods beginning after December 15, 2018, including interim periods within those years, with early adoption permitted. A modified retrospective transition approach is required for lessees for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. Teradyne is currently evaluating the impact of this ASU on its financial position and results of operations.

In January 2016, the FASB issued ASU 2016-01, *“Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities.”* This ASU provides guidance for the recognition, measurement, presentation, and disclosure of financial instruments. The new pronouncement revises accounting related to equity investments and the presentation of certain fair value changes for financial liabilities measured at fair value. Among other things, it amends the presentation and disclosure requirements of equity securities that do not result in consolidation and are not accounted for under the equity method. Changes in the fair value of these equity securities will be recognized directly in net income. This pronouncement is effective for fiscal years and interim periods within those years beginning after December 15, 2017. Teradyne is currently evaluating the impact of this ASU on its financial position and results of operations.

In November 2015, the FASB issued ASU 2015-17, *“Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes.”* ASU 2015-17 simplifies the presentation of deferred income taxes by eliminating the separate classification of deferred income tax liabilities and assets into current and noncurrent amounts in the balance sheet. The new guidance requires that all deferred tax liabilities and assets be classified as noncurrent in the balance sheet. This ASU is effective for annual periods beginning after December 15, 2016, and may be applied either prospectively or retrospectively to all periods presented. Early adoption is permitted. Teradyne early adopted this ASU prospectively in the first quarter of 2016.

In April, 2015, the FASB issued ASU 2015-03, *“Simplifying the Presentation of Debt Issuance Costs,”* which requires debt issuance costs to be presented in the balance sheet as a direct deduction from the carrying value of the associated debt liability, consistent with the presentation for debt discount. ASU 2015-03 does not specifically address requirements for the presentation or subsequent measurement of debt issuance costs related to line-of-credit arrangements. On August 8, 2015, the FASB issued ASU 2015-15, *“Interest—Imputation of Interest (Subtopic 835-30)”* clarifying that debt issuance costs related to line-of-credit arrangements could be presented as an asset and amortized over the term of the line-of-credit arrangement, regardless of whether there are any outstanding borrowings on the line-of-credit arrangement. Teradyne adopted this ASU in the first quarter of 2016. Adoption of this ASU did not have a material impact on Teradyne’s financial position and results of operations.

In August 2014, the FASB issued ASU 2014-15, *“Presentation of Financial Statements—Going Concern (Subtopic 205-40).”* ASU 2014-15 provides guidance on management’s responsibility in evaluating whether there

is substantial doubt about an entity's ability to continue as a going concern and to provide related footnote disclosures. This ASU is effective for annual periods ending after December 15, 2016. Teradyne does not expect this ASU to have a material impact on its consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, "*Revenue from Contracts with Customers (Topic 606)*," which will replace numerous requirements in U.S. GAAP, including industry-specific requirements, and provide companies with a single revenue recognition model for recognizing revenue from contracts with customers. The core principle of the new standard is that a company should recognize revenue to show the transfer of promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled to in exchange for those goods or services. In August 2015, FASB issued ASU 2015-14, which deferred the effective date of the new revenue standard by one year. For Teradyne, the standard will be effective in the first quarter of 2018. The two permitted transition methods under the new standard are the full retrospective method, in which case the standard would be applied to each prior reporting period presented, or the modified retrospective method, in which case the cumulative effect of applying the standard would be recognized at the date of initial application. Teradyne has selected a modified retrospective transition method. Teradyne is currently evaluating the impact of this ASU on its financial position and results of operations.

## **D. ACQUISITIONS**

### **Business**

#### ***Universal Robots***

On June 11, 2015, Teradyne acquired all of the outstanding equity of Universal Robots A/S ("Universal Robots") located in Odense, Denmark. Universal Robots is the leading supplier of collaborative robots which are low-cost, easy-to-deploy and simple-to-program robots that work side by side with production workers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. Universal Robots is a separate operating and reportable segment, Industrial Automation. The total purchase price of \$315.4 million consisted of \$283.8 million of cash paid and \$31.6 million of contingent consideration, measured at fair value. The contingent consideration was valued using a Monte Carlo simulation based on the following key inputs: (1) forecasted revenue (2) forecasted EBITDA (3) revenue volatility (4) EBITDA volatility; and (5) discount rate. The contingent consideration is payable upon the achievement of certain thresholds and targets for earnings before income taxes, depreciation and amortization ("EBITDA") for calendar year 2015, revenue for the period from July 1, 2015 to December 31, 2017 and revenue for the period from July 1, 2015 to December 31, 2018. The maximum amount of contingent consideration that could be paid is \$65 million. Based on Universal Robots' calendar 2015 EBITDA results, Teradyne paid \$15 million or 100% of the eligible EBITDA contingent consideration amount in the first quarter of 2016. The maximum payment for each of the two remaining Universal Robots earn-outs is \$25.0 million.

The Universal Robots acquisition was accounted for as a business combination and, accordingly, the results have been included in Teradyne's consolidated results of operations from the date of acquisition. The allocation of the total purchase price to Universal Robots' net tangible liabilities and identifiable intangible assets was based on their estimated fair values as of the acquisition date. The excess of the purchase price over the identifiable intangible assets and net tangible liabilities in the amount of \$221.1 million was allocated to goodwill, which is not deductible for tax purposes.

The following table represents the final allocation of the purchase price:

	<u>Purchase Price Allocation</u> (in thousands)
Goodwill .....	\$221,128
Intangible assets .....	121,590
Tangible assets acquired and liabilities assumed:	
Current assets .....	10,853
Non-current assets .....	3,415
Accounts payable and current liabilities .....	(11,976)
Long-term deferred tax liabilities .....	(26,653)
Long-term other liabilities .....	(2,920)
Total purchase price .....	<u>\$315,437</u>

Teradyne estimated the fair value of intangible assets using the income and cost approaches. Acquired intangible assets are amortized on a straight-line basis over their estimated useful lives. Components of these intangible assets and their estimated useful lives at the acquisition date are as follows:

	<u>Fair Value</u> (in thousands)	<u>Estimated Useful Life</u> (in years)
Developed technology .....	\$ 89,240	4.9
Trademarks and tradenames .....	22,920	10.0
Customer relationships .....	9,430	2.0
Total intangible assets .....	<u>\$121,590</u>	5.6

For the period from June 12, 2015 to December 31, 2015, Universal Robots contributed \$41.9 million of revenues and had a \$7.6 million loss before income taxes.

The following unaudited pro forma information gives effect to the acquisition of Universal Robots as if the acquisition occurred on January 1, 2014. The unaudited pro forma results are not necessarily indicative of what actually would have occurred had the acquisition been in effect for the periods presented:

	<u>For the Years Ended</u>	
	<u>December 31,</u> <u>2015</u>	<u>December 31,</u> <u>2014</u>
	(in thousands, except per share amounts)	
Revenue .....	\$1,657,626	\$1,686,689
Net income .....	\$ 199,784	\$ 61,078
Net income per common share:		
Basic .....	<u>\$ 0.94</u>	<u>\$ 0.30</u>
Diluted .....	<u>\$ 0.94</u>	<u>\$ 0.27</u>

Pro forma results for the year ended December 31, 2015 were adjusted to exclude \$1.6 million of non-recurring expense related to the fair value adjustment to acquisition-date inventory and \$1.0 million of acquisition related costs incurred in 2015.

Pro forma results for the year ended December 31, 2014 were adjusted to include \$1.6 million of non-recurring expense related to the fair value adjustment to acquisition-date inventory and \$1.0 million of acquisition related costs.

***Avionics Interface Technologies, LLC.***

On October 31, 2014, Teradyne acquired all of the assets and liabilities of Avionics Interface Technologies, LLC (“AIT”) located in Omaha, Nebraska and Dayton, Ohio. AIT is a supplier of equipment for testing state-of-the-art data communication buses. The acquisition of AIT complements Teradyne’s Defense/Aerospace line of bus test instrumentation for commercial and defense avionics systems. AIT is included in Teradyne’s System Test segment.

The total purchase price of \$21.2 million consisted of \$19.4 million of cash paid to acquire AIT’s assets and liabilities and \$1.8 million in fair value of contingent consideration payable upon the achievement of certain revenue and gross margin targets in 2015 and 2016. The total amount of contingent consideration paid was \$1.1 million, which was paid in January 2017.

The valuation of the contingent consideration utilized the following assumptions: (1) probability of meeting each target; (2) expected timing of meeting each target; and (3) discount rate reflecting the risk associated with the expected payments. The probabilities and timing for each target were estimated based on a review of the historical and projected results. A discount rate of 4.7 percent was selected based on the cost of debt for the business. A significant portion of the risk in achieving the contingent consideration was captured in the probabilities assigned to meeting each target.

The AIT acquisition was accounted for as a business combination and, accordingly, the results have been included in Teradyne’s consolidated results of operations from the date of acquisition. The allocation of the total purchase price of AIT’s net tangible and identifiable intangible assets was based on their estimated fair values as of the acquisition date. The excess of the purchase price over the identifiable intangible and net tangible assets in the amount of \$10.5 million was allocated to goodwill, which is deductible for tax purposes.

The following represents the final allocation of the purchase price:

	<b>Purchase Price Allocation</b>
	<b>(in thousands)</b>
Goodwill .....	\$10,516
Intangible assets .....	9,080
Tangible assets acquired and liabilities assumed:	
Current assets .....	2,452
Non-current assets .....	359
Accounts payable and current liabilities .....	<u>(1,164)</u>
Total purchase price .....	<u>\$21,243</u>

Teradyne estimated the fair value of intangible assets using the income approach. Acquired intangible assets are amortized on a straight-line basis over their estimated useful lives. Components of these intangible assets and their estimated useful lives at the acquisition date are as follows:

	<b>Fair Value</b>	<b>Estimated Useful</b>
	<b>(in thousands)</b>	<b>Life</b>
		<b>(in years)</b>
Customer relationships .....	\$5,630	5.0
Developed technology .....	2,580	4.8
Trademarks and tradenames .....	380	5.0
Non-compete agreement .....	320	4.0
Customer order backlog .....	<u>170</u>	0.3
Total intangible assets .....	<u>\$9,080</u>	4.8

For the period from October 31, 2014 to December 31, 2014, AIT contributed \$0.6 million of revenues and had a \$0.8 million loss before income taxes.

The following unaudited pro forma information gives effect to the acquisition of AIT as if the acquisition occurred on January 1, 2013. The unaudited pro forma results are not necessarily indicative of what actually would have occurred had the acquisition been in effect for the periods presented:

	<u>For the Year Ended</u> <u>December 31,</u> <u>2014</u>
	(in thousands, except per share amounts)
Revenues .....	\$1,655,038
Net income .....	\$ 82,169
Income per common share:	
Basic .....	<u>\$ 0.40</u>
Diluted .....	<u>\$ 0.37</u>

#### E. INVENTORIES

Inventories, net consisted of the following at December 31, 2016 and 2015:

	<u>2016</u>	<u>2015</u>
	(in thousands)	
Raw material .....	\$ 58,530	\$ 73,117
Work-in-process .....	22,946	32,825
Finished goods .....	<u>54,482</u>	<u>47,646</u>
	<u>\$135,958</u>	<u>\$153,588</u>

Inventory reserves for the years ended December 31, 2016 and 2015 were \$116.0 million and \$119.4 million, respectively.

#### F. PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment, net consisted of the following at December 31, 2016 and 2015:

	<u>2016</u>	<u>2015</u>
	(in thousands)	
Land .....	\$ 16,561	\$ 16,561
Buildings .....	98,031	108,797
Machinery and equipment .....	601,835	595,445
Furniture and fixtures, and software .....	82,897	82,612
Leasehold improvements .....	46,612	43,328
Construction in progress .....	<u>3,032</u>	<u>2,630</u>
	848,968	849,373
Less: accumulated depreciation .....	<u>595,147</u>	<u>575,959</u>
	<u>\$253,821</u>	<u>\$273,414</u>

Depreciation of property, plant and equipment for the years ended December 31, 2016, 2015 and 2014 was \$64.8 million, \$68.2 million and \$73.4 million, respectively. As of December 31, 2016 and 2015, the gross book value included in machinery and equipment for internally manufactured test systems being leased by customers was \$19.4 million and \$20.4 million, respectively. As of December 31, 2016 and 2015, the accumulated depreciation on these test systems was \$10.5 million and \$8.5 million, respectively.



## G. FINANCIAL INSTRUMENTS

### Cash Equivalents

Teradyne considers all highly liquid investments with maturities of three months or less at the date of acquisition to be cash equivalents.

### Marketable Securities

Teradyne's available-for-sale securities are classified as Level 1 and Level 2. Contingent consideration is classified as Level 3. The vast majority of Level 2 securities are fixed income securities priced by third party pricing vendors. These pricing vendors utilize the most recent observable market information in pricing these securities or, if specific prices are not available, use other observable inputs like market transactions involving identical or comparable securities.

Realized gains recorded in 2016, 2015 and 2014 were \$1.6 million, \$1.7 million and \$2.4 million, respectively. Realized losses recorded in 2016 and 2015 were \$0.5 million and \$0.4 million, respectively. There were no realized losses recorded in 2014. Realized gains are included in interest income, and realized losses are included in interest expense. Unrealized gains and losses are included in accumulated other comprehensive income (loss). The cost of securities sold is based on the specific identification method.

During the years ended December 31, 2016 and 2015, there were no transfers in or out of Level 1, Level 2 or Level 3 financial instruments.

The following table sets forth by fair value hierarchy Teradyne's financial assets and liabilities that were measured at fair value on a recurring basis as of December 31, 2016 and 2015:

	December 31, 2016			Total
	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
	(in thousands)			
<b>Assets</b>				
Cash	\$214,722	\$ —	\$ —	\$ 214,722
Cash equivalents	37,458	55,704	—	93,162
Available-for-sale securities:				
U.S. Treasury securities	—	900,038	—	900,038
Commercial paper	—	161,630	—	161,630
Corporate debt securities	—	100,153	—	100,153
Certificates of deposit and time deposits	—	82,133	—	82,133
U.S. government agency securities	—	42,014	—	42,014
Equity and debt mutual funds	18,171	—	—	18,171
Non-U.S. government securities	—	728	—	728
<b>Total</b>	<b>\$270,351</b>	<b>\$1,342,400</b>	<b>\$ —</b>	<b>\$1,612,751</b>
Derivative assets	—	1	—	1
<b>Total</b>	<b>\$270,351</b>	<b>\$1,342,401</b>	<b>\$ —</b>	<b>\$1,612,752</b>
<b>Liabilities</b>				
Contingent consideration	\$ —	\$ —	\$38,332	\$ 38,332
Derivative liabilities	—	131	—	131
<b>Total</b>	<b>\$ —</b>	<b>\$ 131</b>	<b>\$38,332</b>	<b>\$ 38,463</b>

Reported as follows:

	<u>(Level 1)</u>	<u>(Level 2)</u>	<u>(Level 3)</u>	<u>Total</u>
	(in thousands)			
<b>Assets</b>				
Cash and cash equivalents . . . . .	\$252,180	\$ 55,704	\$ —	\$ 307,884
Marketable securities . . . . .	—	871,024	—	871,024
Long-term marketable securities . . . . .	18,171	415,672	—	433,843
Prepayments . . . . .	—	1	—	1
	<u>\$270,351</u>	<u>\$1,342,401</u>	<u>\$ —</u>	<u>\$1,612,752</u>
<b>Liabilities</b>				
Other current liabilities . . . . .	\$ —	\$ 131	\$ —	\$ 131
Contingent consideration . . . . .	—	—	1,050	1,050
Long-term contingent consideration . . . . .	—	—	37,282	37,282
	<u>\$ —</u>	<u>\$ 131</u>	<u>\$38,332</u>	<u>\$ 38,463</u>

	<b>December 31, 2015</b>			
	<b>Quoted Prices in Active Markets for Identical Instruments (Level 1)</b>	<b>Significant Other Observable Inputs (Level 2)</b>	<b>Significant Unobservable Inputs (Level 3)</b>	<b>Total</b>
	(in thousands)			
<b>Assets</b>				
Cash . . . . .	\$213,336	\$ —	\$ —	\$ 213,336
Cash equivalents . . . . .	49,241	2,128	—	51,369
Available-for-sale securities:				
U.S. Treasury securities . . . . .	—	419,958	—	419,958
Corporate debt securities . . . . .	—	161,634	—	161,634
U.S. government agency securities . . . . .	—	83,952	—	83,952
Certificates of deposit and time deposits . . . . .	—	43,394	—	43,394
Commercial paper . . . . .	—	20,308	—	20,308
Equity and debt mutual funds . . . . .	13,954	—	—	13,954
Non-U.S. government securities . . . . .	—	424	—	424
Total . . . . .	<u>\$276,531</u>	<u>\$731,798</u>	<u>\$ —</u>	<u>\$1,008,329</u>
Derivative assets . . . . .	—	109	—	109
Total . . . . .	<u>\$276,531</u>	<u>\$731,907</u>	<u>\$ —</u>	<u>\$1,008,438</u>
<b>Liabilities</b>				
Contingent consideration . . . . .	\$ —	\$ —	\$37,436	\$ 37,436
Derivative liabilities . . . . .	—	146	—	146
Total . . . . .	<u>\$ —</u>	<u>\$ 146</u>	<u>\$37,436</u>	<u>\$ 37,582</u>

Reported as follows:

	<u>(Level 1)</u>	<u>(Level 2)</u>	<u>(Level 3)</u>	<u>Total</u>
	(in thousands)			
<b>Assets</b>				
Cash and cash equivalents	\$262,577	\$ 2,128	\$ —	\$ 264,705
Marketable securities	—	477,696	—	477,696
Long-term marketable securities	13,954	251,974	—	265,928
Prepayments	—	109	—	109
	<u>\$276,531</u>	<u>\$731,907</u>	<u>\$ —</u>	<u>\$1,008,438</u>
<b>Liabilities</b>				
Other current liabilities	\$ —	\$ 146	\$ —	\$ 146
Contingent consideration	—	—	15,500	15,500
Long-term contingent consideration	—	—	21,936	21,936
	<u>\$ —</u>	<u>\$ 146</u>	<u>\$37,436</u>	<u>\$ 37,582</u>

Changes in the fair value of Level 3 contingent consideration for the years ended December 31, 2016 and 2015 were as follows:

	<u>Contingent Consideration</u>
	(in thousands)
Balance at December 31, 2014	\$ 3,350
Acquisition of Universal Robots	31,597
Fair value adjustment of Universal Robots (1)	5,339
Fair value adjustment of AIT (2)	(1,250)
Fair value adjustment of ZTEC (3)	(1,600)
Balance at December 31, 2015	37,436
Payments (4)	(15,000)
Fair value adjustment of AIT (5)	550
Fair value adjustment of Universal Robots (5)	15,346
Balance at December 31, 2016	<u>\$ 38,332</u>

- (1) During the year ended December 31, 2015, the fair value of contingent consideration for the earn-out in connection with the acquisition of Universal Robots was increased by \$5.3 million primarily due to an increase in forecasted revenues.
- (2) During the year ended December 31, 2015, the fair value of contingent consideration for the earn-out in connection with the acquisition of AIT was reduced by \$1.3 million due to a decrease in the forecasted revenues.
- (3) During the year ended December 31, 2015, the fair value measurement of the contingent consideration for the earn-out in connection with the acquisition of ZTEC Instruments, Inc. ("ZTEC") was reduced by \$1.6 million, to \$0, because Teradyne and the Securityholder Representative, on behalf of the ZTEC securityholders, agreed to terminate the earn-out prior to the end of the December 31, 2015 earn-out period, with no payout in connection with the resolution of indemnity claims asserted by both Teradyne and the Securityholder Representative.
- (4) During the year ended December 31, 2016, based on Universal Robots' calendar year 2015 EBITDA results, Teradyne paid \$15 million or 100% of the eligible EBITDA contingent consideration amount.
- (5) During the year ended December 31, 2016, the fair value of contingent consideration for the earn-out in connection with the acquisition of Universal Robots was increased by \$15.3 million primarily due to an increase in forecasted revenues and a decrease in the discount rate. During the year ended 2016, the fair value of contingent consideration for the earn-out in connection with the acquisition of AIT was increased by \$0.6 million due to an increase in forecasted revenues. The AIT contingent consideration in the amount of \$1.1 million was paid in January 2017.

The following table provides quantitative information associated with the fair value measurement of Teradyne's Level 3 financial instrument:

Liability	December 31, 2016 Fair Value	Valuation Technique	Unobservable Inputs	Weighted Average
	(in thousands)			
Contingent consideration (Universal Robots)	\$ 21,301	Monte Carlo simulation	Revenues for the period July 1, 2015—December 31, 2017 volatility Discount Rate	10.8%  3.3%
	\$15,981	Monte Carlo simulation	Revenues for the period July 1, 2015—December 31, 2018 volatility Discount Rate	10.8%  3.3%
Contingent consideration (AIT)	\$1,050(1)			

(1) Teradyne paid this amount in January 2017.

As of December 31, 2016, the significant unobservable inputs used in the Monte Carlo simulation to fair value the Universal Robots contingent consideration include forecasted revenues, revenue volatility and discount rate. Increases or decreases in the inputs would result in a higher or lower fair value measurement. The maximum payment for each of the two remaining Universal Robots earn-outs is \$25.0 million.

The carrying amounts and fair values of financial instruments at December 31, 2016 and 2015 were as follows:

	December 31, 2016		December 31, 2015	
	Carrying Value	Fair Value	Carrying Value	Fair Value
	(in thousands)			
<b>Assets</b>				
Cash and cash equivalents	\$ 307,884	\$ 307,884	\$264,705	\$264,705
Marketable securities	1,304,867	1,304,867	743,624	743,624
Derivative assets	1	1	109	109
<b>Liabilities</b>				
Contingent consideration	38,332	38,332	37,436	37,436
Derivative liabilities	131	131	146	146
Convertible debt (1)	352,669	486,754	—	—

(1) The carrying value represents the bifurcated debt component only, while the fair value is based on quoted market prices for the convertible note which includes the equity conversion features.

The fair values of accounts receivable, net and accounts payable approximate the carrying amount due to the short term nature of these instruments.

The following tables summarize the composition of available for sale marketable securities at December 31, 2016 and 2015:

December 31, 2016					
	Available-for-Sale			Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	Cost	Unrealized Gain	Unrealized (Loss)		
(in thousands)					
U.S. Treasury securities . . . . .	\$ 901,975	\$ 97	\$(2,034)	\$ 900,038	\$572,284
Commercial paper . . . . .	161,672	24	(66)	161,630	84,034
Corporate debt securities . . . . .	99,708	1,065	(620)	100,153	53,642
Certificates of deposit and time deposits . . . . .	82,080	54	(1)	82,133	7,760
U.S. government agency securities . . . . .	42,026	7	(19)	42,014	13,461
Equity and debt mutual funds . . . . .	16,505	1,724	(58)	18,171	1,661
Non-U.S. government securities . . . . .	745	6	(23)	728	137
	<u>\$1,304,711</u>	<u>\$2,977</u>	<u>\$(2,821)</u>	<u>\$1,304,867</u>	<u>\$732,979</u>

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Marketable securities . . . . .	\$ 871,321	\$ 134	\$ (431)	\$ 871,024	\$423,128
Long-term marketable securities . . . . .	433,390	2,843	(2,390)	433,843	309,851
	<u>\$1,304,711</u>	<u>\$2,977</u>	<u>\$(2,821)</u>	<u>\$1,304,867</u>	<u>\$732,979</u>

December 31, 2015					
	Available-for-Sale			Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	Cost	Unrealized Gain	Unrealized (Loss)		
(in thousands)					
U.S. Treasury securities . . . . .	\$421,060	\$ 65	\$(1,167)	\$419,958	\$379,434
Corporate debt securities . . . . .	163,297	902	(2,565)	161,634	145,373
U.S. government agency securities . . . . .	84,032	42	(122)	83,952	55,120
Certificates of deposit and time deposits . . . . .	43,391	6	(3)	43,394	10,527
Commercial paper . . . . .	20,298	11	(1)	20,308	8,646
Equity and debt mutual funds . . . . .	12,996	1,119	(161)	13,954	2,560
Non-U.S. government securities . . . . .	424	—	—	424	—
	<u>\$745,498</u>	<u>\$2,145</u>	<u>\$(4,019)</u>	<u>\$743,624</u>	<u>\$601,660</u>

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Marketable securities . . . . .	\$478,306	\$ 38	\$ (648)	\$477,696	\$374,785
Long-term marketable securities . . . . .	267,192	2,107	(3,371)	265,928	226,875
	<u>\$745,498</u>	<u>\$2,145</u>	<u>\$(4,019)</u>	<u>\$743,624</u>	<u>\$601,660</u>

As of December 31, 2016, the fair market value of investments with unrealized losses totaled \$733.0 million. Of this value, \$2.9 million had unrealized losses of \$0.3 million greater than one year and \$730.1 million had unrealized losses of \$2.5 million for less than one year.

As of December 31, 2015, the fair market value of investments with unrealized losses totaled \$601.7 million. Of this value, \$0.9 million had unrealized losses of \$0.5 million greater than one year and \$600.8 million had unrealized losses of \$3.6 million for less than one year.

Teradyne reviews its investments to identify and evaluate investments that have an indication of possible impairment. Based on this review, Teradyne determined that the unrealized losses related to these investments, at December 31, 2016 and 2015, were temporary.

The contractual maturities of investments held at December 31, 2016 were as follows:

	<u>Cost</u>	<u>Fair Value</u>
	(in thousands)	
Due within one year .....	\$ 871,321	\$ 871,024
Due after 1 year through 5 years .....	365,873	365,451
Due after 5 years through 10 years .....	12,839	12,309
Due after 10 years .....	38,173	37,912
Total .....	<u>\$1,288,206</u>	<u>\$1,286,696</u>

Contractual maturities of investments held at December 31, 2016, exclude \$18 million of equity and debt mutual funds as they do not have a contractual maturity date.

The following table sets forth by fair value hierarchy Teradyne's non-financial assets that were measured at fair value on a non-recurring basis as of July 3, 2016:

	Quoted Prices in Active Markets for Identical Assets (Level 1)	<u>July 3, 2016</u>			Total	Total Losses
		Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)			
						(in thousands)
Goodwill (1) .....	\$—	\$—	\$ 7,976	\$ 7,976	\$254,946	
Definite lived intangible assets (2) .....	—	—	5,750	5,750	83,339	
	<u>\$—</u>	<u>\$—</u>	<u>\$13,726</u>	<u>\$13,726</u>	<u>\$338,285</u>	

- (1) In accordance with the provisions of ASC 350-20, "Goodwill" goodwill in the Wireless Test reporting unit with a carrying amount of \$262.9 million was written down in the second quarter of 2016 to its implied fair value of \$8.0 million, resulting in an impairment charge of \$254.9 million. See Note J: "Goodwill and Intangible Assets" regarding goodwill impairment.
- (2) In accordance with the provisions of ASC 360-10, "Property, Plant and Equipment," definite lived intangible assets in the Wireless Test reporting unit with a carrying amount of \$89.2 million were written down in the second quarter of 2016 to their implied fair value of \$5.8 million, resulting in an impairment charge of \$83.3 million. See Note J: "Goodwill and Intangible Assets" regarding definite lived intangible assets impairment.

## Derivatives

Teradyne conducts business in a number of foreign countries, with certain transactions denominated in local currencies. The purpose of Teradyne's foreign currency management is to minimize the effect of exchange rate

fluctuations on certain foreign currency denominated monetary assets and liabilities. Teradyne does not use derivative financial instruments for trading or speculative purposes.

To minimize the effect of exchange rate fluctuations associated with the remeasurement of monetary assets and liabilities denominated in foreign currencies, Teradyne enters into foreign currency forward contracts. The change in fair value of these derivatives is recorded directly in earnings, and is used to offset the change in value of the monetary assets and liabilities denominated in foreign currencies.

At December 31, 2016 and 2015, Teradyne had the following contracts to buy and sell non-U.S. currencies for U.S. dollars and other non-U.S. currencies with the following notional amounts:

	December 31, 2016			December 31, 2015		
	Buy Position	Sell Position	Net Total	Buy Position	Sell Position	Net Total
	(in millions)					
Japanese Yen	\$(17.7)	\$ —	\$(17.7)	\$(51.9)	\$ —	\$(51.9)
Korean Won	(8.8)	—	(8.8)	(5.5)	—	(5.5)
Taiwan Dollar	(6.9)	—	(6.9)	(5.0)	—	(5.0)
British Pound Sterling	(1.3)	—	(1.3)	(9.5)	—	(9.5)
Euro	—	25.2	25.2	—	27.2	27.2
Singapore Dollar	—	24.0	24.0	—	15.0	15.0
Total	<u>\$(34.7)</u>	<u>\$49.2</u>	<u>\$ 14.5</u>	<u>\$(71.9)</u>	<u>\$42.2</u>	<u>\$(29.7)</u>

The fair value of the outstanding contracts was a loss of \$0.1 million and \$0.0 million, at December 31, 2016 and 2015, respectively.

In 2016, 2015 and 2014, Teradyne recorded net realized losses related to foreign currency forward contracts hedging net monetary assets and liabilities of \$8.7 million, \$3.0 million and \$0.2 million, respectively.

Gains and losses on foreign currency forward contracts and foreign currency remeasurement gains and losses on monetary assets and liabilities are included in other (income) expense, net.

The following table summarizes the fair value of derivative instruments as of December 31, 2016 and 2015:

	Balance Sheet Location	December 31,	December 31,
		2016	2015
(in thousands)			
Derivatives not designated as hedging instruments:			
Foreign exchange contracts	Prepayments	\$ 1	\$ 109
Foreign exchange contracts	Other current liabilities	(131)	(146)
Total derivatives		<u>\$(130)</u>	<u>\$ (37)</u>

The following table summarizes the effect of derivative instruments in statements of operations recognized for the years ended December 31, 2016, 2015 and 2014. The table does not reflect the corresponding gains and losses from the remeasurement of the monetary assets and liabilities denominated in foreign currencies. For the years ended December 31, 2016 and 2015, gains from the remeasurement of the monetary assets and liabilities denominated in foreign currencies were \$8.0 million and \$2.5 million, respectively. For the year ended December 31, 2014, losses from the remeasurement of the monetary assets and liabilities denominated in foreign currencies were \$0.9 million.

	<u>Location of Losses Recognized in Statements of Operations</u>	<u>December 31, 2016</u>	<u>December 31, 2015</u> (in thousands)	<u>December 31, 2014</u>
Derivatives not designated as hedging instruments:				
Foreign exchange contracts . . . . .	Other (income) expense, net	\$8,671	\$3,047	\$237

See Note H: "Debt" regarding derivatives related to the convertible senior notes.

### Concentration of Credit Risk

Financial instruments which potentially subject Teradyne to concentrations of credit risk consist principally of cash equivalents, marketable securities, forward currency contracts and accounts receivable. Teradyne's cash equivalents consist primarily of money market funds invested in U.S. Treasuries and government agencies. Teradyne's fixed income available-for-sale marketable securities have a minimum rating of AA by one or more of the major credit rating agencies. Teradyne places foreign currency forward contracts with high credit-quality financial institutions in order to minimize credit risk exposure. Concentrations of credit risk with respect to accounts receivable are limited due to the large number of geographically dispersed customers. Teradyne performs ongoing credit evaluations of its customers' financial condition and from time to time may require customers to provide a letter of credit from a bank to secure accounts receivable. There were no customers who accounted for more than 10% of Teradyne's accounts receivable balance as of December 31, 2016. One customer accounted for more than 10% of Teradyne's accounts receivable balance as of December 31, 2015.

### Equity Interest

On November 1, 2013, in connection with the acquisition of Empirix, Inc. by Thoma Bravo LLC, Teradyne sold its equity interest in Empirix, Inc., a private company, and received cash proceeds of \$34.2 million which was recorded as a gain in other (income) expense, net in the fourth quarter of 2013. An additional \$5.4 million of cash proceeds that was held in escrow for 15 months, for potential indemnifications to the buyer, was paid to Teradyne in February 2015 and it was recorded as a gain in other (income) expense, net in the first quarter of 2015.

## H. DEBT

### Convertible Senior Notes

On December 12, 2016, Teradyne completed a private offering of \$460.0 million aggregate principal amount of 1.25% convertible senior unsecured notes (the "Notes") due December 15, 2023 and received net proceeds, after issuance costs, of approximately \$450.8 million, \$33.0 million of which was used to pay the net cost of the convertible note hedge transactions and \$50.1 million of which was used to repurchase 2.0 million shares of Teradyne's common stock under its existing stock repurchase program from purchasers of the Notes in privately negotiated transactions effected through one of the initial purchasers or its affiliates conducted concurrently with the pricing of the Note offering. The Notes will mature on December 15, 2023, unless earlier repurchased or converted. The Notes bear interest from December 12, 2016 at a rate of 1.25% per year payable



semiannually in arrears on June 15 and December 15 of each year, beginning on June 15, 2017. The Notes will be convertible at the option of the noteholders at any time prior to the close of business on the business day immediately preceding September 15, 2023, only under the following circumstances: (1) during any calendar quarter beginning after March 31, 2017 (and only during such calendar quarter), if the closing sale price of the Teradyne's common stock, for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than 130% of the conversion price on each applicable trading day; (2) during the five business day period after any five consecutive trading day period (the "measurement period") in which the trading price (as defined in the Indenture) per \$1,000 principal amount of Notes for each trading day of the measurement period was less than 98% of the product of the closing sale price of the Teradyne's common stock and the conversion rate on each such trading day; and (3) upon the occurrence of specified corporate events. On or after September 15, 2023 until the close of business on the second scheduled trading day immediately preceding the maturity date, holders may convert their Notes at any time, regardless of the foregoing circumstances. Teradyne may satisfy its conversion obligation by paying or delivering cash, shares of its common stock or a combination of cash and shares of its common stock, at Teradyne's election. The conversion rate for the Notes will initially be 31.4102 shares per \$1,000 principal amount, which is equivalent to an initial conversion price of approximately \$31.84 per share of Teradyne's common stock. The conversion rate is subject to adjustment under certain circumstances.

Concurrent with the offering of the Notes, Teradyne entered into convertible note hedge transactions (the "Note Hedge Transactions") with the initial purchasers or their affiliates (the "Option Counterparties"). The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, the number of shares of the common stock that underlie the Notes, with a strike price equal to the initial conversion price of the Notes of \$31.84. The Note Hedge Transactions cover, subject to customary antidilution adjustments, approximately 14.4 million shares of Teradyne's common stock.

Separately and concurrent with the pricing of the Notes, Teradyne entered into warrant transactions with the Option Counterparties (the "Warrant Transactions") in which it sold net-share-settled (or, at its election subject to certain conditions, cash-settled) warrants to the Option Counterparties. The Warrant Transactions cover, subject to customary antidilution adjustments, approximately 14.4 million shares of common stock. The strike price of the warrants will initially be \$39.95 per share (subject to adjustment). The Warrant Transactions could have a dilutive effect to Teradyne's common stock to the extent that the market price per share of Teradyne's common stock, as measured under the terms of the Warrant Transactions, exceeds the applicable strike price of the warrants.

The Note Hedge Transactions are expected to reduce the potential dilution to Teradyne's common stock upon any conversion of the Notes. However, the Warrant Transactions could separately have a dilutive effect to the extent that the market value per share of Teradyne's common stock exceeds the applicable strike price of the warrant. The net cost of the Note Hedge Transactions, after being partially offset by the proceeds from the sale of the warrants, was approximately \$33.0 million.

In connection with establishing their initial hedge of these convertible note hedge and warrant transactions, the Option Counterparties have entered into various derivative transactions with respect to Teradyne's common stock and/or purchased shares of Teradyne's common stock or other securities, including the Notes, concurrent with, or shortly after, the pricing of the Notes. In addition, the Option Counterparties may modify their hedge positions by entering into or unwinding various derivative transactions with respect to Teradyne's common stock or by selling Teradyne's common stock or other securities, including the Notes, in secondary market transactions (and may do so during any observation period related to the conversion of the Notes). These activities could adversely affect the value of Teradyne's common stock and the Notes.

Teradyne considered the guidance of ASC 815-40, "*Derivatives and Hedging—Contracts in Entity's Own Equity*," and concluded that the convertible note hedge is both indexed to Teradyne's stock and should be classified in stockholders' equity in its statements of financial position. The convertible note hedge is considered indexed to Teradyne's stock as the terms of the Note Hedge Transactions do not contain an exercise contingency

and the settlement amount equals the difference between the fair value of a fixed number of Teradyne's shares and a fixed strike price. Because the only variable that can affect the settlement amount is Teradyne's stock price, which is an input to the fair value of a fixed-for-fixed option contract, the convertible note hedge is considered indexed to Teradyne's stock.

Teradyne assessed whether the convertible note hedge should be classified as equity under ASC 815-40. In the Note Hedge Transactions contract the settlement terms permit net cash settlement or net share settlement, at the option of Teradyne. Therefore, the criteria as set forth in ASC 815-40 were evaluated by Teradyne. In reviewing the criteria, Teradyne noted the following: (1) the convertible note hedge does not require Teradyne to issue shares; (2) there is no requirement to net cash settle the convertible note hedge for failure to make timely filings with the SEC; (3) in the case of termination, the convertible note hedge is settled in the same consideration as the holders of the underlying stock; (4) the counterparty does not have rights that rank higher than those of a shareholder of the stock underlying the convertible note hedge; and (5) there is no requirement to post collateral. Based on its analysis of those criteria, Teradyne concluded that the convertible note hedge should be recorded in equity and no further adjustment should be made in future periods to adjust the value of the convertible note hedge.

Teradyne analyzed the Warrant Transactions under ASC 815-40, "*Derivatives and Hedging—Contracts in Entity's Own Equity*," and other relevant literature, and determined that it met the criteria for classification as an equity transaction and is considered indexed to Teradyne's stock. As a result, Teradyne recorded the proceeds from the warrants as an increase to additional paid-in capital. Teradyne does not recognize subsequent changes in fair value of the warrants in its financial statements.

The provisions of ASC 470-20, "*Debt with Conversion and Other Options*," are applicable to the Notes. ASC 470-20 requires Teradyne to separately account for the liability (debt) and equity (conversion feature) components of the Notes in a manner that reflects Teradyne's nonconvertible debt borrowing rate at the date of issuance when interest cost is recognized in subsequent periods. Teradyne allocated \$100.8 million of the \$460.0 million principal amount of the Notes to the equity component, which represents a discount to the debt and will be amortized to interest expense using the effective interest method through December 2023. Accordingly, Teradyne's effective annual interest rate on the Notes will be approximately 5.0%. The Notes are classified as long-term debt in the balance sheet based on their December 15, 2023 maturity date. Debt issuance costs of approximately \$7.2 million are being amortized to interest expense using the effective interest method over the seven year term of the Notes. As of December 31, 2016, debt issuance costs were approximately \$7.1 million.

The below tables represents the key components of Teradyne's convertible senior notes:

	<b>December 31, 2016</b>
	<b>(in thousands)</b>
Debt principal .....	\$460,000
Unamortized discount including debt issuance cost .....	107,331
Net carrying amount of convertible debt .....	<u>\$352,669</u>
	<b>For the year ended December 31, 2016</b>
	<b>(in thousands)</b>
Contractual interest expense on the coupon .....	\$303
Amortization of the discount component and debt issue fees recognized as interest expense ...	688
Total interest expense on the convertible debt .....	<u>\$991</u>

As of December 31, 2016, the unamortized discount was \$107.3 million, which will be amortized over seven years using the effective interest rate method. The carrying amount of the equity component was \$100.8 million. As of December 31, 2016, the conversion rate was equal to the initial conversion price of approximately \$31.84 per share.

## **Revolving Credit Facility**

On April 27, 2015, Teradyne entered into a Credit Agreement (the “Credit Agreement”) with Barclays Bank PLC, as administrative agent and collateral agent, and the lenders party thereto. The Credit Agreement provides for a five-year, senior secured revolving credit facility of up to \$350 million (the “Credit Facility”). The Credit Agreement further provides that, subject to customary conditions, Teradyne may seek to obtain from existing or new lenders incremental commitments under the Credit Facility in an aggregate principal amount not to exceed \$150 million.

Proceeds from the Credit Facility may be used for general corporate purposes and working capital. Teradyne incurred \$2.3 million in costs related to the revolving credit facility. These costs are being amortized over the five-year term of the revolving credit facility and are included in interest expense in the statements of operations. As of March 1, 2017, Teradyne has not borrowed any funds under the Credit Facility.

The interest rates applicable to loans under the Credit Facility are, at Teradyne’s option, equal to either a base rate plus a margin ranging from 0.00% to 1.00% per annum or LIBOR plus a margin ranging from 1.00% to 2.00% per annum, based on the Consolidated Leverage Ratio of Teradyne and its Restricted Subsidiaries. In addition, Teradyne will pay a commitment fee on the unused portion of the commitments under the Credit Facility ranging from 0.125% to 0.350% per annum, based on the then applicable Consolidated Leverage Ratio.

Teradyne is not required to repay any loans under the Credit Facility prior to maturity, subject to certain customary exceptions. Teradyne is permitted to prepay all or any portion of the loans under the Credit Facility prior to maturity without premium or penalty, other than customary LIBOR breakage costs.

The Credit Agreement contains customary events of default, representations, warranties and affirmative and negative covenants that, among other things, limit Teradyne’s and its Restricted Subsidiaries’ ability to sell assets, grant liens on assets, incur other secured indebtedness and make certain investments and restricted payments, all subject to exceptions set forth in the Credit Agreement. The Credit Agreement also requires Teradyne to satisfy two financial ratios measured as of the end of each fiscal quarter: a consolidated leverage ratio and an interest coverage ratio. As of December 31, 2016, Teradyne was in compliance with all covenants.

The Credit Facility is guaranteed by certain of Teradyne’s domestic subsidiaries and collateralized by assets of Teradyne and such subsidiaries, including a pledge of 65% of the capital stock of certain foreign subsidiaries.

## I. ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

Changes in accumulated other comprehensive income (loss), which is presented net of tax, consists of the following:

	Foreign Currency Translation Adjustment	Unrealized Gains (Losses) on Marketable Securities	Retirement Plans Prior Service Credit	Total
	(in thousands)			
Balance at December 31, 2014, net of tax of \$1,598, \$(453) . . . .	\$ —	\$ 2,365	\$2,324	\$ 4,689
Other comprehensive loss before reclassifications, net of tax of \$0, \$(1,667) . . . . .	(8,759)	(3,075)	—	(11,834)
Amounts reclassified from accumulated other comprehensive income, net of tax of \$(390), \$(169) . . . .	—	(704)	(295)	(999)
Net current period other comprehensive loss, net of tax of \$0, \$(2,057), \$(169) . . . . .	(8,759)	(3,779)	(295)	(12,833)
Balance at December 31, 2015, net of tax of \$0, \$(459), \$(622) . . . . .	\$ (8,759)	\$(1,414)	\$2,029	\$ (8,144)
Other comprehensive (loss) income before reclassifications, net of tax of \$0, \$923, \$34 . . . . .	(13,162)	2,037	59	(11,125)
Amounts reclassified from accumulated other comprehensive income, net of tax of \$(255), \$(190) . . . .	—	(683)	(321)	(945)
Net current period other comprehensive (loss) income, net of tax of \$0, \$668, \$(156) . . . . .	(13,162)	1,354	(262)	(12,070)
Balance at December 31, 2016, net of tax of \$0, \$209, \$(778) . .	\$(21,921)	\$ (60)	\$1,767	\$(20,214)

Reclassifications out of accumulated other comprehensive income to the statements of operations for the years ended December 31, 2016, 2015 and 2014, were as follows:

<u>Details about Accumulated Other Comprehensive Income Components</u>	<u>For the year ended</u>			<u>Affected Line Item in the Statements of Operations</u>
	<u>December 31, 2016</u>	<u>December 31, 2015</u>	<u>December 31, 2014</u>	
	(in thousands)			
Available-for-sale marketable securities:				
Unrealized gains, net of tax of \$255, \$390, \$645 . . . . .	\$683	\$704	\$1,433	Interest income
Defined benefit pension and postretirement plans:				
Amortization of prior service credit, net of tax of \$190, \$169, \$169 . . . . .	321	295	295	(1)
Prior service income arising during period, net of tax of \$(34), \$0, \$0 . . . . .	(59)	—	—	
	<u>262</u>	<u>295</u>	<u>295</u>	
Total reclassifications, net of tax of \$411, \$559, \$814 . . . . .	<u>\$945</u>	<u>\$999</u>	<u>\$1,728</u>	Net income

(1) The amortization of prior service credit is included in the computation of net periodic pension cost and postretirement benefit; see Note N: "Retirement Plans."

## J. GOODWILL AND INTANGIBLE ASSETS

### Goodwill

Teradyne performs its annual goodwill impairment test as required under the provisions of ASC 350-10, “Intangibles—Goodwill and Other,” on December 31 of each fiscal year unless interim indicators of impairment exist. Goodwill is considered to be impaired when the net book value of a reporting unit exceeds its estimated fair value.

Teradyne has the option to perform a qualitative assessment (“Step zero”) to determine whether it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount. If Teradyne determines this is the case, Teradyne is required to perform the two-step goodwill impairment test to identify potential goodwill impairment and measure the amount of goodwill impairment loss to be recognized. If Teradyne determines that it is more-likely-than-not that the fair value of the reporting unit is greater than its carrying amounts, the two-step goodwill impairment test is not required. When performing the two-step process, the first step involves a comparison of the estimated fair value of a reporting unit to its carrying amount, including goodwill. In performing the first step, Teradyne determines the fair value of a reporting unit using the results derived from an income approach and a market approach. The income approach is estimated through the discounted cash flow (“DCF”) analysis. Determining fair value requires the exercise of significant judgment, including judgments about appropriate discount rates, perpetual 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. If the estimated fair value of a reporting unit exceeds its carrying amount, goodwill of the reporting unit is not impaired and the second step of the impairment test is not necessary. If the carrying amount of a reporting unit exceeds its estimated fair value, then the second step of the goodwill impairment test must be performed. The second step of the goodwill impairment test compares the implied fair value of the reporting unit’s goodwill with its carrying amount of goodwill to measure the amount of impairment loss, if any. The implied fair value of goodwill is determined in the same manner as the amount of goodwill recognized in a business combination, whereby the estimated fair value of the reporting unit is allocated to all of the assets and liabilities of that unit (including any unrecognized intangible assets) as if the reporting unit had been acquired in a business combination and the fair value of the reporting unit was the purchase price paid. If the carrying amount of the reporting unit’s goodwill exceeds the implied fair value of that goodwill, an impairment loss is recognized in an amount equal to that excess.

In the second quarter of 2016, the Wireless Test reporting unit (which is Teradyne’s Wireless Test operating and reportable segment) reduced headcount by 11% as a result of a sharp decline in projected demand attributable to an estimated smaller future wireless test market. The decrease in projected demand was due to lower forecasted buying from Teradyne’s largest Wireless Test segment customer (who has contributed between 51% and 73% of annual Wireless Test sales since the LitePoint acquisition in 2011 through 2015) as a result of the customer’s numerous operational efficiencies; slower smartphone growth rates; and a slowdown of new wireless technology adoption. Teradyne considered the headcount reduction and sharp decline in projected demand to be a triggering event for an interim goodwill impairment test.

Teradyne allocated the fair value of the Wireless Test reporting unit to all of its assets and liabilities (including unrecognized intangible assets). The net book value of raw materials inventory was estimated as an approximation of current replacement costs. The fair value of finished goods inventory was estimated at the present value of selling price less direct selling costs and profit on the selling effort. The selling price used in the inventory fair values was based upon the product gross margins included in Teradyne’s forecast. The fair value of the deferred revenue liability was estimated by assessing the costs required to service the obligation plus a reasonable profit margin. The fair value for personal property assets, which consisted of furniture and fixtures,

machinery and equipment, computer equipment, software and leasehold improvements, was estimated using the replacement cost approach, which approximated carrying value. The fair value of intangible assets was estimated using the income approach and, in particular, developed technology and trademarks/trade names were valued using the relief-from-royalty method and customer relationships and customer backlog were valued using the discounted cash flow method. Royalty rates were estimated using rates applicable to wireless testing equipment and other similar technologies. Based upon this allocation, Teradyne determined that the Wireless Test reporting unit goodwill is valued at \$8.0 million and recorded an impairment loss of \$254.9 million in the second quarter of 2016.

In the fourth quarter of 2016, Teradyne performed the annual goodwill impairment test. Teradyne completed step one of the two-step impairment test for the Industrial Automation, Wireless Test and Defense/Aerospace reporting units. There was no impairment as a result of the annual test performed in the fourth quarter of 2016.

In 2015, Teradyne performed step one of the two-step impairment test for the Wireless Test and Defense/Aerospace reporting units and the step zero assessment for the Industrial Automation reporting unit. In 2015, there was no impairment.

In 2014, as a result of decreased projected demand attributable to an estimated smaller future wireless test market due to reuse of wireless test equipment, price competition and different testing techniques, Teradyne determined that for its Wireless Test reporting unit, the carrying amount of its net assets exceeded its respective fair value, indicating that a potential impairment existed. After completing the second step of the goodwill impairment test, Teradyne recorded a \$98.9 million goodwill impairment charge in the fourth quarter of 2014.

The fourth quarter 2014 goodwill impairment test of Teradyne's Defense/Aerospace reporting unit, which is included in Teradyne's System Test reportable segment, did not identify any goodwill impairment.

The changes in the carrying amount of goodwill by reportable segments for the years ended December 31, 2016 and 2015 are as follows:

	<u>Industrial Automation</u>	<u>System Test</u>	<u>Wireless Test</u>	<u>Semiconductor Test</u>	<u>Total</u>
	(in thousands)				
Balance at December 31, 2014:					
Goodwill . . . . .	\$ —	\$ 158,699	\$ 361,819	\$ 260,540	\$ 781,058
Accumulated impairment losses . . . . .	—	(148,183)	(98,897)	(260,540)	(507,620)
	—	10,516	262,922	—	273,438
Universal Robots acquisition . . . . .	221,128	—	—	—	221,128
Foreign currency translation adjustment . . . . .	(6,153)	—	—	—	(6,153)
Balance at December 31, 2015:					
Goodwill . . . . .	214,975	158,699	361,819	260,540	996,033
Accumulated impairment losses . . . . .	—	(148,183)	(98,897)	(260,540)	(507,620)
	214,975	10,516	262,922	—	488,413
Foreign currency translation adjustment . . . . .	(10,124)	—	—	—	(10,124)
Goodwill impairment losses . . . . .	—	—	(254,946)	—	(254,946)
Balance at December 31, 2016:					
Goodwill . . . . .	204,851	158,699	361,819	260,540	985,909
Accumulated impairment losses . . . . .	—	(148,183)	(353,843)	(260,540)	(762,566)
	<u>\$204,851</u>	<u>\$ 10,516</u>	<u>\$ 7,976</u>	<u>\$ —</u>	<u>\$ 223,343</u>

## Intangible Assets

Teradyne reviews long-lived 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 these assets are no longer appropriate. As a result of the Wireless Test segment goodwill impairment review in the second quarter of 2016, Teradyne performed an impairment test of the Wireless Test segment's intangible and long-lived assets. The impairment test is based on a comparison of the estimated undiscounted cash flows to the carrying value of the asset group. If undiscounted cash flows for the asset group are less than the carrying amount, the asset group is written down to its estimated fair value based on a discounted cash flow analysis. The cash flow estimates used to determine the impairment contain management's best estimates using appropriate assumptions and projections at that time. The fair value of intangible assets was estimated using the income approach and, in particular, developed technology and trademarks/trade names were valued using the relief-from-royalty method and customer relationships were valued using the discounted cash flow method. Royalty rates were estimated using rates applicable to wireless testing equipment and other similar technologies. As a result of the analysis, Teradyne recorded an \$83.3 million impairment charge in the second quarter of 2016 in acquired intangible assets impairment on the statements of operations, resulting in a remaining intangible assets balance of \$5.0 million for the Wireless Test segment.

There were no events or circumstances indicating that the carrying value of intangible and long-lived assets may not be recoverable in 2015. In 2014, as a result of the Wireless Test segment goodwill impairment charge in the fourth quarter of 2014, Teradyne performed an impairment test of the Wireless Test segment's intangible and long-lived assets based on a comparison of the estimated undiscounted cash flows to the recorded value of the assets and there was no indication of impairment.

Amortizable intangible assets consist of the following and are included in intangible assets, net on the balance sheets:

	December 31, 2016				
	Gross Carrying Amount (1)	Accumulated Amortization (1)(2)	Foreign Currency Translation Adjustment	Net Carrying Amount	Weighted Average Useful Life
	(in thousands)				
Developed technology . . . . .	\$270,877	\$206,376	\$(5,093)	\$ 59,408	6.0 years
Customer relationships . . . . .	92,741	76,707	(538)	15,496	7.9 years
Tradenames and trademarks . . . . .	50,100	23,435	(1,308)	25,357	9.5 years
Non-compete agreement . . . . .	320	180	—	140	4.0 years
Customer backlog . . . . .	170	170	—	—	0.3 years
Total intangible assets . . . . .	<u>\$414,208</u>	<u>\$306,868</u>	<u>\$(6,939)</u>	<u>\$100,401</u>	6.8 years

- (1) During the year ended December 31, 2016, Teradyne recorded an \$83.3 million impairment of Wireless Test amortizable intangible assets. The impairment assets have been eliminated from the gross carrying amount and accumulated amortization.
- (2) In 2016, \$48.1 million of amortizable intangible assets became fully amortized and has been eliminated from the gross carrying amount and accumulated amortization.

December 31, 2015					
	<u>Gross Carrying Amount</u>	<u>Accumulated Amortization (1)(2)</u>	<u>Foreign Currency Translation Adjustment</u>	<u>Net Carrying Amount</u>	<u>Weighted Average Useful Life</u>
	(in thousands)				
Developed technology .....	\$382,262	\$220,346	\$(2,444)	\$159,472	6.0 years
Customer relationships .....	110,602	63,722	(258)	46,622	7.9 years
Tradenames and trademarks .....	53,034	18,889	(628)	33,517	9.5 years
Non-compete agreement .....	320	100	—	220	4.0 years
Customer backlog .....	170	170	—	—	0.3 years
Total intangible assets .....	<u>\$546,388</u>	<u>\$303,227</u>	<u>\$(3,330)</u>	<u>\$239,831</u>	<u>6.7 years</u>

- (1) During the year ended December 31, 2015, Teradyne recorded intangible assets in the amount of \$121.6 million related to its Universal Robots acquisition.
- (2) During the year ended December 31, 2015, Teradyne wrote off \$98.2 million of fully amortized intangible assets.

Aggregate intangible assets amortization expense for the years ended December 31, 2016, 2015 and 2014 was \$52.6 million, \$69.0 million, and \$70.8 million, respectively. Estimated intangible assets amortization expense for each of the five succeeding fiscal years is as follows:

<u>Year</u>	<u>Amortization Expense</u>
	(in thousands)
2017 .....	\$28,986
2018 .....	26,848
2019 .....	23,037
2020 .....	10,042
2021 .....	3,435
Thereafter .....	8,053

## K. COMMITMENTS AND CONTINGENCIES

### Purchase Commitments

As of December 31, 2016, Teradyne had entered into non-cancelable purchase commitments for certain components and materials. The purchase commitments covered by the agreements aggregate to approximately \$260.7 million, of which \$247.9 million is for less than one year.

### Commitments

Teradyne leases certain of its office buildings and other facilities under various operating lease arrangements that include renewal options and escalation clauses for adjusting rent payments to reflect changes in price indices. Rental expense for leases with fixed escalation clauses is recognized on a straight line basis over the lease term.

Rental expense for the years ended December 31, 2016, 2015 and 2014 was \$18.8 million, \$15.9 million and \$16.0 million, respectively.



The following table reflects Teradyne's non-cancelable operating lease commitments:

	<b>Non-cancelable Lease Commitments</b>
	<b>(in thousands)</b>
2017 .....	\$16,467
2018 .....	15,258
2019 .....	13,733
2020 .....	9,374
2021 .....	7,149
Beyond 2022 .....	<u>10,130</u>
Total .....	<u>\$72,111</u>

### Legal Claims

Teradyne is subject to legal proceedings, claims and investigations that arise in the ordinary course of business such as, but not limited to, patent, employment, commercial and environmental matters. Teradyne believes that it has meritorious defenses against all pending claims and intends to vigorously contest them. While it is not possible to predict or determine the outcomes of any pending claims or to provide possible ranges of losses that may arise, Teradyne believes the potential losses associated with all of these actions are unlikely to have a material adverse effect on its business, financial position or results of operations.

### Guarantees and Indemnification Obligations

Teradyne provides indemnification, to the extent permitted by law, to its officers, directors, employees and agents for liabilities arising from certain events or occurrences while the officer, director, employee, or agent, is or was serving, at Teradyne's request in such capacity. Teradyne has entered into indemnification agreements with certain of its officers and directors. With respect to acquisitions, Teradyne provides indemnifications to or assumes indemnification obligations for the current and former directors, officers and employees of the acquired companies in accordance with the acquired companies' by-laws and charter. As a matter of practice, Teradyne has maintained directors' and officers' liability insurance coverage including coverage for directors and officers of acquired companies.

Teradyne enters into agreements in the ordinary course of business with customers, resellers, distributors, integrators and suppliers. Most of these agreements require Teradyne to defend and/or indemnify the other party against intellectual property infringement claims brought by a third party with respect to Teradyne's products. From time to time, Teradyne also indemnifies customers and business partners for damages, losses and liabilities they may suffer or incur relating to personal injury, personal property damage, product liability, breach of confidentiality obligations and environmental claims relating to the use of Teradyne's products and services or resulting from the acts or omissions of Teradyne, its employees, authorized agents or subcontractors. On occasion, Teradyne has also provided guarantees to customers regarding the delivery and performance of its products in addition to the warranty described below.

As a matter of ordinary business course, Teradyne warrants that its products will substantially perform in accordance with its standard published specifications in effect at the time of delivery. Most warranties have a one-year duration commencing from installation. A provision is recorded upon revenue recognition to cost of revenue for estimated warranty expense based upon historical experience. When Teradyne receives revenue for extended warranties beyond the standard duration, it is deferred and recognized on a straight line basis over the contract period. Related costs are expensed as incurred. As of December 31, 2016 and 2015, Teradyne had a product warranty accrual of \$7.2 million and \$6.9 million, respectively, included in other accrued liabilities, and revenue deferrals related to extended warranties of \$46.8 million and \$46.5 million, respectively, included in short and long-term deferred revenue and customer advances.

In addition, and in the ordinary course of business, Teradyne provides minimum purchase guarantees to certain vendors to ensure continuity of supply against the market demand. Although some of these guarantees provide penalties for cancellations and/or modifications to the purchase commitments as the market demand decreases, most of the guarantees do not. Therefore, as the market demand decreases, Teradyne re-evaluates these guarantees and determines what charges, if any, should be recorded.

With respect to its agreements covering product, business or entity divestitures and acquisitions, Teradyne provides certain representations, warranties and covenants to purchasers and agrees to indemnify and hold such purchasers harmless against breaches of such representations, warranties and covenants. Many of the indemnification claims have a definite expiration date while some remain in force indefinitely. With respect to its acquisitions, Teradyne may, from time to time, assume the liability for certain events or occurrences that took place prior to the date of acquisition.

As a matter of ordinary course of business, Teradyne occasionally guarantees certain indebtedness obligations of its subsidiary companies, limited to the borrowings from financial institutions, purchase commitments to certain vendors, and lease commitments to landlords.

Based on historical experience and information known as of December 31, 2016 and 2015, except for product warranty, Teradyne has not recorded any liabilities for these guarantees and obligations because the amount would be immaterial.

#### L. NET (LOSS) INCOME PER COMMON SHARE

The following table sets forth the computation of basic and diluted net (loss) income per common share:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	<i>(in thousands, except per share amounts)</i>		
Net (loss) income for basic and diluted net income per share . . . . .	\$ (43,421)	\$ 206,477	\$ 81,272
Weighted average common shares-basic . . . . .	202,578	211,544	202,908
Effect of dilutive potential common shares:			
Incremental shares from assumed conversion of convertible notes (1) . . . . .	—	—	5,013
Convertible note hedge warrant shares (2) . . . . .	—	—	12,562
Restricted stock units . . . . .	—	1,130	1,092
Stock options . . . . .	—	606	944
Employee stock purchase rights . . . . .	—	41	31
	<u>—</u>	<u>1,777</u>	<u>19,642</u>
Weighted average common shares-diluted . . . . .	<u>202,578</u>	<u>213,321</u>	<u>222,550</u>
Net (loss) income per common share-basic . . . . .	<u>\$ (0.21)</u>	<u>\$ 0.98</u>	<u>\$ 0.40</u>
Net (loss) income per common share-diluted . . . . .	<u>\$ (0.21)</u>	<u>\$ 0.97</u>	<u>\$ 0.37</u>

(1) Incremental shares from the assumed conversion of the convertible notes was calculated using the difference between the average Teradyne stock price for the period and the conversion price of \$5.48, multiplied by 34.7 million shares. The result of this calculation, representing the total intrinsic value of the convertible debt, was divided by the average Teradyne stock price for the period.

(2) Convertible notes hedge warrant shares were calculated using the difference between the average Teradyne stock price for the period and the warrant price of \$7.67, multiplied by 34.7 million shares. The result of this calculation, representing the total intrinsic value of the warrant, was divided by the average Teradyne stock price for the period. Teradyne's call option on its common stock (convertible note hedge transaction) was excluded from the calculation of diluted shares because the effect was anti-dilutive.

The computation of diluted net loss per common share for 2016 excludes the effect of the potential exercise of all outstanding stock options and restricted stock units because Teradyne had a net loss and inclusion would be anti-dilutive.

The computation of diluted net income per common share for 2015 excludes the effect of the potential exercise of stock options to purchase approximately 0.2 million shares because the effect would have been anti-dilutive.

The computation of diluted net income per common share for 2014 excludes the effect of the potential exercise of stock options to purchase approximately 0.3 million shares because the effect would have been anti-dilutive.

## **M. RESTRUCTURING AND OTHER**

### **Other**

During the year ended December 31, 2016, Teradyne recorded \$15.9 million of other charges of which \$15.3 million was for the increase in the fair value of the Universal Robots contingent consideration liability, \$0.6 million for the increase in the fair value of the AIT contingent consideration liability, \$4.2 million for an impairment of fixed assets and \$1.2 million for expenses related to an earthquake in Kumamoto, Japan, partially offset by \$5.4 million of property insurance recovery related to the Japan earthquake.

During the year ended December 31, 2015, Teradyne recorded \$3.6 million of other charges, of which \$5.3 million was for the increase in the fair value of the Universal Robots contingent consideration liability and \$1.0 million for acquisition costs related to Universal Robots, partially offset by a \$2.9 million gain from fair value adjustments to decrease the acquisition contingent consideration liability related to ZTEC, \$1.6 million, and AIT, \$1.3 million.

During the year ended December 31, 2014, Teradyne recorded a \$0.6 million gain from the fair value adjustment to decrease the ZTEC acquisition contingent consideration, partially offset by \$0.4 million of acquisition costs related to AIT.

### **Restructuring**

During the year ended December 31, 2016, Teradyne recorded \$6.0 million of severance charges related to headcount reductions of 146 people, of which 102 people were in Wireless Test and 44 people were in Semiconductor Test.

During the year ended December 31, 2015, Teradyne recorded \$1.5 million of severance charges related to headcount reductions of 23 people primarily in System Test and Semiconductor Test.

During the year ended December 31, 2014, Teradyne recorded \$1.6 million of severance charges related to headcount reductions of approximately 43 people, primarily in Semiconductor Test and Wireless Test.

The remaining accrual for severance of \$2.1 million is reflected in the accrued employees' compensation and withholdings on the balance sheet and is expected to be paid by June 2017.

## **N. RETIREMENT PLANS**

ASC 715, "*Compensation—Retirement Benefits*," requires an employer with defined benefit plans or other postretirement benefit plans to recognize an asset or a liability on its balance sheet for the overfunded or underfunded status of the plans as defined by ASC 715. The pension asset or liability represents a difference between the fair value of the pension plan's assets and the projected benefit obligation at December 31. Teradyne uses a December 31 measurement date for all of its plans.

## Defined Benefit Pension Plans

Teradyne has defined benefit pension plans covering a portion of domestic employees and employees of certain non-U.S. subsidiaries. Benefits under these plans are based on employees' years of service and compensation. Teradyne's funding policy is to make contributions to the plans in accordance with local laws and to the extent that such contributions are tax deductible. The assets of these plans consist primarily of fixed income and equity securities. In addition, Teradyne has an unfunded supplemental executive defined benefit plan in the United States to provide retirement benefits in excess of levels allowed by the Employment Retirement Income Security Act ("ERISA") and the Internal Revenue Code (the "IRC"), as well as unfunded qualified foreign plans.

The December 31 balances of these defined benefit pension plans assets and obligations are shown below:

	2016		2015	
	United States	Foreign	United States	Foreign
	(in thousands)			
<b>Assets and Obligations</b>				
<b>Change in benefit obligation:</b>				
Projected benefit obligation:				
Beginning of year	\$351,117	\$ 62,290	\$367,619	\$ 58,210
Service cost	2,302	761	2,462	1,006
Interest cost	13,630	1,185	13,142	1,444
Actuarial gain (loss)	6,053	5,621	(13,221)	7,498
Benefits paid	(19,486)	(1,385)	(18,885)	(859)
Curtailement	—	—	—	(634)
Plan participants' contributions	—	—	—	64
Expenses paid	—	(609)	—	—
Non-U.S. currency movement	—	(7,125)	—	(4,439)
End of year	<u>353,616</u>	<u>60,738</u>	<u>351,117</u>	<u>62,290</u>
<b>Change in plan assets:</b>				
Fair value of plan assets:				
Beginning of year	298,404	28,141	316,072	29,511
Company contributions	4,489	867	10,517	808
Plan participants' contributions	—	—	—	64
Actual return on plan assets	23,897	5,142	(9,300)	(136)
Benefits paid	(19,486)	(1,148)	(18,885)	(859)
Settlements	—	—	—	—
Expenses paid	—	(609)	—	(43)
Non-U.S. currency movement	—	(4,822)	—	(1,204)
End of year	<u>307,304</u>	<u>27,571</u>	<u>298,404</u>	<u>28,141</u>
Funded status	<u>\$ (46,312)</u>	<u>\$ (33,167)</u>	<u>\$ (52,713)</u>	<u>\$ (34,149)</u>

The following table provides amounts recorded within the account line items of the statements of financial position as of December 31:

	2016		2015	
	United States	Foreign	United States	Foreign
	(in thousands)			
Retirement plans assets . . . . .	\$ 7,712	\$ —	\$ 636	\$ —
Accrued employees' compensation and withholdings . . . . .	(2,591)	(772)	(2,564)	(695)
Retirement plans liabilities . . . . .	(51,433)	(32,395)	(50,785)	(33,454)
Funded status . . . . .	<u>\$(46,312)</u>	<u>\$(33,167)</u>	<u>\$(52,713)</u>	<u>\$(34,149)</u>

The following table provides amounts recognized in accumulated other comprehensive income as of December 31:

	2016		2015	
	United States	Foreign	United States	Foreign
	(in thousands)			
Prior service cost, before tax . . . . .	\$127	\$—	\$224	\$—
Deferred taxes . . . . .	514	—	479	—
Total recognized in other comprehensive income, net of tax . . . . .	<u>\$641</u>	<u>\$—</u>	<u>\$703</u>	<u>\$—</u>

The estimated portion of prior service cost remaining in accumulated other comprehensive income that is expected to be recognized as a component of net periodic pension cost in 2017 is \$0.1 million.

The accumulated benefit obligation for the United States defined benefit pension plans was \$342.9 million and \$340.1 million at December 31, 2016 and 2015, respectively. The accumulated benefit obligation for foreign defined benefit pension plans was \$56.6 million at December 31, 2016 and 2015.

Information for pension plans with an accumulated benefit obligation in excess of plan assets as of December 31:

	2016		2015	
	United States	Foreign	United States	Foreign
	(in millions)			
Projected benefit obligation . . . . .	\$54.0	\$34.3	\$53.3	\$35.2
Accumulated benefit obligation . . . . .	48.0	30.1	47.3	29.5
Fair value of plan assets . . . . .	—	1.1	—	1.0

## Expense

For the years ended December 31, 2016, 2015 and 2014, Teradyne's net periodic pension (income) cost was comprised of the following:

	2016		2015		2014	
	United States	Foreign	United States	Foreign	United States	Foreign
	(in thousands)					
<b>Components of Net Periodic Pension (Income) Cost:</b>						
Service cost	\$ 2,302	\$ 761	\$ 2,462	\$ 1,006	\$ 2,218	\$ 897
Interest cost	13,630	1,185	13,142	1,444	12,875	1,837
Expected return on plan assets	(13,830)	(443)	(14,517)	(781)	(12,500)	(868)
Amortization of prior service cost	96	—	134	—	135	—
Net actuarial (gain) loss	(4,013)	815	10,596	8,415	43,168	4,651
Curtailment	—	—	—	(634)	—	—
Total net periodic pension (income) cost	<u>\$ (1,815)</u>	<u>\$ 2,318</u>	<u>\$ 11,817</u>	<u>\$ 9,450</u>	<u>\$ 45,896</u>	<u>\$ 6,517</u>
<b>Changes in Plan Assets and Benefit Obligations</b>						
<b>Recognized in Other Comprehensive Income:</b>						
Reversal of amortization items:						
Prior service cost	(96)	—	(134)	—	(135)	—
Total recognized in other comprehensive income	<u>(96)</u>	<u>—</u>	<u>(134)</u>	<u>—</u>	<u>(135)</u>	<u>—</u>
Total recognized in net periodic pension (income) cost and other comprehensive income	<u>\$ (1,911)</u>	<u>\$ 2,318</u>	<u>\$ 11,683</u>	<u>\$ 9,450</u>	<u>\$ 45,761</u>	<u>\$ 6,517</u>

### Weighted Average Assumptions to Determine Net Periodic Pension Cost at January 1:

	2016		2015		2014	
	United States	Foreign	United States	Foreign	United States	Foreign
Discount rate	4.0%	2.3%	3.7%	2.6%	4.5%	3.8%
Expected return on plan assets	4.8	2.0	4.8	2.6	5.0	3.4
Salary progression rate	2.7	3.2	2.9	3.2	3.0	3.5

### Weighted Average Assumptions to Determine Pension Obligations at December 31 :

	2016		2015	
	United States	Foreign	United States	Foreign
Discount rate	3.9%	1.8%	4.0%	2.3%
Salary progression rate	2.6	2.7	2.7	3.2

In developing the expected return on plan assets assumption, Teradyne evaluates input from its investment manager and pension consultants, including their forecast of asset class return expectations. Teradyne believes that 4.8% was an appropriate rate to use for fiscal 2016 for the U.S. Qualified Pension Plan ("U.S. Plan").

Teradyne recognizes net actuarial gains and losses and the change in the fair value of the plan assets in its operating results in the year in which they occur or upon any interim remeasurement of the plans. Teradyne calculates the expected return on plan assets using the fair value of the plan assets. Actuarial gains and losses are generally measured annually as of December 31 and, accordingly, recorded during the fourth quarter of each year or upon any interim remeasurement of the plans.

The discount rate utilized to determine future pension obligations for the U.S. Plan is based on Citigroup Pension Index adjusted for the plan's expected cash flows and was 3.9% at December 31, 2016, down from 4.0% at December 31, 2015.

**Plan Assets**

As of December 31, 2016, the fair value of Teradyne's pension plans' assets totaled \$334.9 million of which \$307.3 million was related to the U.S. Plan, \$26.5 million was related to the U.K. defined benefit pension plan, and \$1.1 million was related to the Taiwan defined benefit pension plan. Substantially all Teradyne's pension plans' assets are held in individual trusts, which were established for the investment of assets of Teradyne's sponsored retirement plans.

The following table provides weighted average pension asset allocation by asset category at December 31, 2016 and 2015:

	2016		2015	
	United States	Foreign	United States	Foreign
Fixed income securities	88.1%	— %	88.6%	— %
Equity securities	9.9	—	9.8	—
Other	2.0	100.0	1.6	100.0
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

The assets of the U.S. Plan are overseen by the Teradyne Fiduciary Committee which is comprised of members of senior management drawn from appropriate diversified levels of the management team. The Fiduciary Committee is responsible for setting the policy that provides the framework for management of the U.S. Plan assets. In accordance with its responsibilities, the Fiduciary Committee meets on a regular basis to review the performance of the U.S. Plan assets and compliance with the investment policy. The policy sets forth an investment structure for managing U.S. Plan assets, including setting the asset allocation ranges, which are expected to provide an appropriate level of overall diversification required to maximize the long-term return on plan assets for a prudent and reasonable level of risk given prevailing market conditions, total investment return over the long term, and preservation of capital, while maintaining sufficient liquidity to pay the benefits of the U.S. Plan. The investment portfolio will not, at any time, have a direct investment in Teradyne stock. It may have indirect investment in Teradyne stock, if one of the funds selected by the investment manager invests in Teradyne stock. In developing the asset allocation ranges, third party asset allocation studies are periodically performed that consider the current and expected positions of the plan assets and funded status. Based on this study and other appropriate information, the Fiduciary Committee establishes asset allocation ranges taking into account acceptable risk targets and associated returns. The investment return objectives are to avoid excessive volatility and produce a rate of return that at least matches the Policy Index identified below. The manager's investment performance is reviewed at least annually. Results for the total portfolio and for each major category of assets are evaluated in comparison with appropriate market indices and the Policy Index.

The target asset allocation and the index for each asset category for the U.S. Plan, per the investment policy, are as follows:

<u>Asset Category:</u>	<u>Policy Index:</u>	<u>Target Allocation</u>
U.S. corporate fixed income	Barclays U.S. Corporate A or Better Index	76%
Global equity	MSCI World Minimum Volatility Index	10
U.S. government fixed income	Barclays U.S. Long Government Bond Index	8
High yield fixed income	Barclays U.S. Corporate High Yield 2% Issuer Cap Index	5
Cash	Citigroup Three Month U.S. Treasury Bill Index	1

Teradyne's U.S. Plan invests primarily in common trust funds. Units held in the common trust funds are valued at the unit price as reported by the investment manager based on the asset value of the underlying investments; underlying investments in equity securities are valued at the last reported sales price, and underlying investments in fixed-income securities are generally valued using methods based upon market transactions for comparable securities.

In the fourth quarter of 2015, the Trustees of the U.K. defined benefit pension plan purchased group annuity insurance contracts. The cash flows from the contracts are intended to match the plan's obligations.

During the years ended December 31, 2016 and 2015, there were no transfers of pension assets in or out of Level 1, Level 2 or Level 3.

The fair value of pension plan assets by asset category and by level at December 31, 2016 and December 31, 2015 were as follows:

	December 31, 2016							
	United States				Foreign			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
	(in thousands)							
Fixed income securities:								
Corporate debt securities . . . . .	\$ —	\$246,528	\$ —	\$246,528	\$—	\$ —	\$ —	\$ —
U.S. government securities . . . . .	—	24,322	—	24,322	—	—	—	—
Global equity . . . . .	—	30,360	—	30,360	—	—	—	—
Group annuity insurance contracts . . . . .	—	—	3,071	3,071	—	—	26,385	26,385
Other . . . . .	—	—	—	—	—	1,124	—	1,124
Cash and cash equivalents . . . . .	3,023	—	—	3,023	62	—	—	62
Total . . . . .	<u>\$3,023</u>	<u>\$301,210</u>	<u>\$3,071</u>	<u>\$307,304</u>	<u>\$ 62</u>	<u>\$1,124</u>	<u>\$26,385</u>	<u>\$27,571</u>
	December 31, 2015							
	United States				Foreign			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
	(in thousands)							
Fixed income securities:								
Corporate debt securities . . . . .	\$ —	\$240,695	\$ —	\$240,695	\$—	\$ —	\$ —	\$ —
U.S. government securities . . . . .	—	23,761	—	23,761	—	—	—	—
Global equity . . . . .	—	29,193	—	29,193	—	—	—	—
Group annuity insurance contracts . . . . .	—	—	2,982	2,982	—	—	26,410	26,410
Other . . . . .	—	—	—	—	—	1,029	—	1,029
Cash and cash equivalents . . . . .	1,773	—	—	1,773	702	—	—	702
Total . . . . .	<u>\$1,773</u>	<u>\$293,649</u>	<u>\$2,982</u>	<u>\$298,404</u>	<u>\$702</u>	<u>\$1,029</u>	<u>\$26,410</u>	<u>\$28,141</u>

The pension plan assets identified as Level 3 above are related to group annuity insurance contracts held by the U.K. defined benefit pension plan and the U.S. Plan. The fair value of these assets was calculated using the present value of future pension payments due under the group annuity insurance contracts.



Changes in the fair value of Level 3 group annuity insurance contracts for the years ended December 31, 2016 and 2015 were as follows:

	<u>Group Annuity Insurance Contracts</u> (in thousands)
Balance at December 31, 2014 .....	\$ 2,990
Purchases of group annuity insurance contracts .....	27,313
Interest and market value adjustments .....	(825)
Benefits paid .....	(67)
Other .....	(19)
Balance at December 31, 2015 .....	29,392
Purchases of group annuity insurance contracts .....	709
Interest and market value adjustments .....	5,308
Benefits paid .....	(611)
Other .....	(634)
Non-U.S. currency movement .....	(4,708)
Balance at December 31, 2016 .....	<u>\$29,456</u>

### **Contributions**

Teradyne's funding policy is to make contributions to the plans in accordance with local laws and to the extent that such contributions are tax deductible. During 2016, Teradyne contributed \$1.9 million to the U.S. Plan, \$2.6 million to the U.S. supplemental executive defined benefit pension plan and \$0.9 million to certain qualified plans for non-U.S. subsidiaries. During 2015, Teradyne contributed \$8.0 million to the U.S. Plan, \$2.5 million to the U.S. supplemental executive defined benefit pension plan and \$0.8 million to certain qualified plans for non-U.S. subsidiaries. In 2017, contributions to the U.S. supplemental executive defined benefit pension plan, U.S. Plan and certain qualified plans from non-U.S. subsidiaries will be approximately \$2.6 million, \$1.9 million and \$0.8 million, respectively.

### **Expected Future Pension Benefit Payments**

Future benefit payments are expected to be paid as follows:

	<u>United States</u>	<u>Foreign</u>
	(in thousands)	
2017 .....	\$ 19,205	\$ 788
2018 .....	18,568	754
2019 .....	19,046	780
2020 .....	19,768	1,054
2021 .....	20,390	882
2022-2026 .....	111,334	5,209

### **Postretirement Benefit Plans**

In addition to receiving pension benefits, U.S. Teradyne employees who meet early retirement eligibility requirements as of their termination dates may participate in Teradyne's Welfare Plan, which includes medical and dental benefits up to age 65. Death benefits provide a fixed sum to retirees' survivors and are available to all retirees. Substantially all of Teradyne's current U.S. employees could become eligible for these benefits, and the existing benefit obligation relates primarily to those employees.

The December 31 balances of the postretirement assets and obligations are shown below:

	<u>2016</u>	<u>2015</u>
	(in thousands)	
<b>Assets and Obligations</b>		
<b>Change in benefit obligation:</b>		
Projected benefit obligation:		
Beginning of year . . . . .	\$ 6,030	\$ 7,162
Service cost . . . . .	37	48
Interest cost . . . . .	218	237
Plan amendments . . . . .	(93)	—
Actuarial loss (gain) . . . . .	5	(648)
Benefits paid . . . . .	<u>(687)</u>	<u>(769)</u>
End of year . . . . .	<u>5,510</u>	<u>6,030</u>
<b>Change in plan assets:</b>		
Fair value of plan assets:		
Beginning of year . . . . .	—	—
Company contributions . . . . .	687	769
Benefits paid . . . . .	<u>(687)</u>	<u>(769)</u>
End of year . . . . .	<u>—</u>	<u>—</u>
Funded status . . . . .	<u><u>\$(5,510)</u></u>	<u><u>\$(6,030)</u></u>

The following table provides amounts recorded within the account line items of financial position as of December 31:

	<u>2016</u>	<u>2015</u>
	(in thousands)	
Accrued employees' compensation and withholdings . . . . .	\$ (571)	\$ (692)
Retirement plans liability . . . . .	<u>(4,939)</u>	<u>(5,338)</u>
Funded status . . . . .	<u><u>\$(5,510)</u></u>	<u><u>\$(6,030)</u></u>

The following table provides amounts recognized in accumulated other comprehensive income as of December 31:

	<u>2016</u>	<u>2015</u>
	(in thousands)	
Prior service credit, before tax . . . . .	\$(1,118)	\$(1,632)
Deferred taxes . . . . .	<u>(1,292)</u>	<u>(1,100)</u>
Total recognized in other comprehensive income, net of tax . . . . .	<u><u>\$(2,410)</u></u>	<u><u>\$(2,732)</u></u>

The estimated portion of prior service credit remaining in accumulated other comprehensive income that is expected to be recognized as a component of net periodic postretirement benefit income in 2017 is \$(0.5) million.

**Expense**

For the years ended December 31, 2016, 2015 and 2014, Teradyne's net periodic postretirement benefit income was comprised of the following:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(in thousands)		
<b>Components of Net Periodic Postretirement Benefit Income:</b>			
Service cost .....	\$ 37	\$ 48	\$ 59
Interest cost .....	218	237	335
Amortization of prior service credit .....	(607)	(598)	(598)
Net actuarial loss (gain) .....	<u>5</u>	<u>(648)</u>	<u>(1,255)</u>
Total net periodic postretirement benefit income .....	<u>(347)</u>	<u>(961)</u>	<u>(1,459)</u>
<b>Changes in Plan Assets and Benefit Obligations Recognized in Other Comprehensive Income:</b>			
Prior service benefit .....	(93)	—	—
Reversal of amortization items:			
Prior service credit .....	<u>607</u>	<u>598</u>	<u>598</u>
Total recognized in other comprehensive income .....	<u>514</u>	<u>598</u>	<u>598</u>
Total recognized in net periodic postretirement cost (income) and other comprehensive income .....	<u>\$ 167</u>	<u>\$(363)</u>	<u>\$ (861)</u>

**Weighted Average Assumptions to Determine Net Periodic Postretirement Benefit Income as of January 1:**

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Discount rate .....	3.9%	3.5%	4.1%
Initial health care cost trend rate .....	7.5	7.5	8.0
Ultimate health care cost trend rate .....	5.0	5.0	5.0
Year in which ultimate health care cost trend rate is reached .....	2023	2022	2020

**Weighted Average Assumptions to Determine Postretirement Benefit Obligation as of December 31:**

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Discount rate .....	3.9%	3.9%	3.5%
Initial medical trend .....	7.3	7.5	7.5
Ultimate health care trend .....	5.0	5.0	5.0
Medical cost trend rate decrease to ultimate rate in year .....	2023	2023	2022

Assumed health care trend rates could have a significant effect on the amounts reported for health care plans. A one percentage point change in the assumed health care cost trend rates for the year ended December 31, 2016 would have the following effects:

	<u>1 Percentage Point Increase</u>	<u>1 Percentage Point Decrease</u>
	(in thousands)	
Effect on total service and interest cost components .....	\$ 2	\$ (2)
Effect on postretirement benefit obligations .....	44	(42)

### ***Expected Future Benefit Payments***

Future benefit payments are expected to be paid as follows:

	<b><u>Benefit Payments</u></b> <b>(in thousands)</b>
2017 .....	\$ 571
2018 .....	529
2019 .....	456
2020 .....	409
2021 .....	367
2022-2026 .....	1,536

## **O. STOCK-BASED COMPENSATION**

### **Stock Compensation Plans**

Under Teradyne's stock compensation plans, Teradyne grants stock options, restricted stock units and performance-based restricted stock units, and employees are eligible to purchase Teradyne's common stock through its Employee Stock Purchase Plan ("ESPP").

Stock options to purchase Teradyne's common stock at 100% of the fair market value on the grant date vest in equal annual installments over four years from the grant date and have a maximum term of seven years.

Time-based restricted stock unit awards granted to employees vest in equal annual installments over four years. Restricted stock unit awards granted to non-employee directors vest after a one year period, with 100% of the award vesting on the first anniversary of the grant date. Teradyne expenses the cost of the restricted stock unit awards subject to time-based vesting, which is determined to be the fair market value of the shares at the date of grant, ratably over the period during which the restrictions lapse.

Commencing in January 2014, Teradyne granted performance-based restricted stock units ("PRsUs") to its executive officers with a performance metric based on relative total shareholder return ("TSR"). For TSR grants issued in 2014 and 2015, Teradyne's three-year TSR performance is measured against the Philadelphia Semiconductor Index. For TSR grants issued in January 2016, Teradyne's three-year TSR performance will be measured against the New York Stock Exchange ("NYSE") Composite Index. The final number of TSR PRsUs that vest will vary based upon the level of performance achieved from 200% to 0% of the target shares. The TSR PRsUs will vest upon the three-year anniversary of the grant date. The TSR PRsUs are valued using a Monte Carlo simulation model. The number of units expected to be earned, based upon the achievement of the TSR market condition, is factored into the grant date Monte Carlo valuation. Compensation expense is recognized on a straight-line basis over the three-year service period. Compensation expense is recognized regardless of the eventual number of units that are earned based upon the market condition, provided the executive officer remains an employee at the end of the three-year period. Compensation expense is reversed if at any time during the three-year service period the executive officer is no longer an employee, subject to the retirement and termination eligibility provisions noted below.

In January 2016, Teradyne granted PRsUs to its executive officers with a performance metric based on three-year cumulative non-GAAP profit before interest and tax ("PBIT"). Non-GAAP PBIT is a financial measure equal to GAAP income from operations less restructuring and other, net; amortization of acquired intangible assets; acquisition and divestiture related charges or credits; pension actuarial gains and losses; non-cash convertible debt interest expense; and other non-recurring gains and charges. The final number of PBIT PRsUs that vest will vary based upon the level of performance achieved from 200% to 0% of the target shares. The PBIT PRsUs will vest upon the three-year anniversary of the grant date. Compensation expense is recognized on a straight-line basis over the three-year service period. Compensation expense is recognized based

on the number of units that are earned based upon the three-year Teradyne PBIT as a percent of Teradyne's revenue, provided the executive officer remains an employee at the end of the three-year period subject to the retirement and termination eligibility provisions noted below.

Beginning with PRSUs granted in January 2014, if the recipient's employment ends prior to the determination of the performance percentage due to (1) permanent disability or death or (2) retirement or termination other than for cause, after attaining both at least age sixty and at least ten years of service, then all or a portion of the recipient's PRSUs (based on the actual performance percentage achieved on the determination date) will vest on the date the performance percentage is determined. Except as set forth in the preceding sentence, no PRSUs will vest if the executive officer is no longer an employee at the end of the three-year period.

The TSR PRSUs are valued using a Monte Carlo simulation model. During 2016, 2015 and 2014 Teradyne granted 0.1 million, 0.2 million and 0.1 million TSR PRSUs, respectively, with a grant date fair value of \$20.29, \$18.21 and \$22.06, respectively. The fair value was estimated using the Monte Carlo simulation model with the following assumptions:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Risk-free interest rate . . . . .	0.97%	0.77%	0.75%
Teradyne volatility-historical . . . . .	27.0%	28.2%	36.1%
NYSE Composite Index volatility-historical . . . . .	13.1%	— %	— %
Philadelphia Semiconductor Index volatility-historical . . . . .	— %	19.7%	24.6%
Dividend yield . . . . .	1.24%	1.33%	1.25%

Expected volatility was based on the historical volatility of Teradyne's stock and the NYSE Composite Index for the 2016 grant and Philadelphia Semiconductor Index for the 2015 and 2014 grants, over the most recent three-year period. The risk-free interest rate was determined using the U.S. Treasury yield curve in effect at the time of grant. Dividend yield for 2016, 2015 and 2014 was based upon an estimated annual dividend amount of \$0.24 per share divided by Teradyne's stock price on the grant date of \$19.43 for the 2016 grants, \$18.10 for the 2015 grants, and \$19.16 for the 2014 grants.

*Stock Options Valuation Assumptions:*

The total number of stock options granted in 2016, 2015 and 2014 were 0.1 million, 0.1 million and 0.1 million, respectively, at the weighted average grant date fair value of \$5.30, \$4.43 and \$5.49 per share, respectively. The fair value of the stock options at grant date was estimated using the Black-Scholes option-pricing model with the following assumptions:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Expected life (years) . . . . .	5.0	4.0	4.0
Risk-free interest rate . . . . .	1.4%	1.1%	1.2%
Volatility-historical . . . . .	32.9%	33.4%	38.8%
Dividend yield . . . . .	1.24%	1.33%	1.25%

Teradyne determined the stock option's expected life based upon historical exercise data for executive officers, the age of executives and the terms of the stock option award. Volatility was determined using historical volatility for a period equal to the expected life. The interest rate was determined using the U.S. Treasury yield curve in effect at the time of grant. Dividend yield was based upon an estimated annual dividend amount of \$0.24 per share divided by Teradyne's stock price on the grant date of \$19.43 for the 2016 grants, \$18.10 for the 2015 grants, and \$19.16 for the 2014 grants.

Stock compensation plan activity for the years 2016, 2015 and 2014 follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(in thousands)		
Restricted Stock Units:			
Non-vested at January 1	4,070	4,352	4,636
Awarded	1,471	1,681	1,870
Vested	(1,530)	(1,679)	(1,965)
Forfeited	(233)	(284)	(189)
Non-vested at December 31	<u>3,778</u>	<u>4,070</u>	<u>4,352</u>
Stock Options:			
Outstanding at January 1	1,121	1,507	2,706
Granted	130	132	89
Exercised	(324)	(518)	(1,248)
Forfeited	—	—	(38)
Expired	(2)	—	(2)
Outstanding at December 31	<u>926</u>	<u>1,121</u>	<u>1,507</u>
Vested and expected to vest at December 31	<u>926</u>	<u>1,121</u>	<u>1,507</u>
Exercisable at December 31	<u>598</u>	<u>779</u>	<u>1,089</u>

Total shares available for the years 2016, 2015 and 2014:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(in thousands)		
Shares available:			
Available for grant at January 1	10,914	12,443	14,213
Options granted	(130)	(132)	(89)
Restricted stock units awarded	(1,471)	(1,681)	(1,870)
Restricted stock units forfeited	233	284	189
Available for grant at December 31	<u>9,546</u>	<u>10,914</u>	<u>12,443</u>

Weighted average restricted stock unit award date fair value information for the years 2016, 2015 and 2014 follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Non-vested at January 1	\$17.46	\$17.24	\$15.60
Awarded	18.68	17.36	18.41
Vested	17.21	16.85	14.38
Forfeited	17.57	17.08	16.97
Non-vested at December 31	\$18.03	\$17.46	\$17.24

Restricted stock unit awards aggregate intrinsic value information at December 31 for the years 2016, 2015 and 2014 follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(in thousands)		
Vested	\$30,008	\$32,200	\$37,160
Outstanding	95,952	84,129	86,113
Expected to vest	91,871	79,611	81,582

Restricted stock units weighted average remaining contractual terms (in years) information at December 31, for the years 2016, 2015 and 2014 follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Outstanding .....	1.04	1.09	1.11
Expected to vest .....	1.03	1.08	1.10

Weighted average stock options exercise price information for the year ended December 31, 2016 follows:

	<u>2016</u>
Outstanding at January 1 .....	\$10.21
Options granted .....	19.43
Options exercised .....	9.06
Options expired .....	3.07
Outstanding at December 31 .....	11.93
Exercisable at December 31 .....	8.32

The total cash received from employees as a result of employee stock options exercises during the years ended December 31, 2016, 2015 and 2014, was \$2.9 million, \$2.8 million and \$6.7 million, respectively. In connection with these exercises, the tax benefit realized by Teradyne for the years ended December 31, 2016, 2015 and 2014, was \$0.8 million, \$2.1 million and \$5.7 million, respectively.

Stock option aggregate intrinsic value information for the years ended December 31, 2016, 2015 and 2014 follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(in thousands)		
Exercised .....	\$ 3,729	\$ 7,255	\$17,847
Outstanding .....	12,468	11,729	17,936
Vested and expected to vest .....	12,468	11,729	17,936
Exercisable .....	10,217	10,716	16,101

Stock options weighted average remaining contractual terms (in years) information at December 31, for the years 2016, 2015 and 2014 follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Outstanding .....	3.9	4.2	4.5
Vested and expected to vest .....	3.9	4.2	4.5
Exercisable .....	3.2	3.9	4.2

Significant option groups outstanding at December 31, 2016 and related weighted average price and remaining contractual life information follow:

<u>Range Of Exercise Prices</u>	<u>Options Outstanding</u>		<u>Options Exercisable</u>		
	<u>Weighted- Average Remaining Contractual Life (Years)</u>	<u>Shares</u>	<u>Weighted- Average Exercise Price</u>	<u>Shares</u>	<u>Weighted- Average Exercise Price</u>
		(shares in thousands)			
\$1.48 – \$2.67 .....	3.74	294	\$ 2.31	294	\$ 2.31
\$3.23 – \$7.71 .....	1.77	75	4.26	75	4.26
\$16.23 – \$18.10 .....	3.51	338	17.18	185	16.87
\$19.16 – \$19.43 .....	5.26	219	19.32	44	19.16
		<u>926</u>	11.93	<u>598</u>	8.32

As of December 31, 2016, total unrecognized expense related to non-vested restricted stock unit awards and stock options was \$40.6 million, and is expected to be recognized over a weighted average period of 2.3 years.

Effective January 31, 2014, Michael Bradley retired as Chief Executive Officer of Teradyne. On January 22, 2014, Teradyne entered into an agreement (the “Retirement Agreement”) with Mr. Bradley. Under the Retirement Agreement, Mr. Bradley’s unvested restricted stock units and stock options granted prior to his retirement date will continue to vest in accordance with their terms through January 31, 2017; and any vested options or options that vest during that period may be exercised for the remainder of the applicable option term. In the Retirement Agreement, Mr. Bradley agreed to be bound by non-competition and non-solicitation restrictions through January 31, 2017. In January 2014, Teradyne recorded a one-time charge to stock-based compensation expense of \$6.6 million related to the Retirement Agreement.

**Employee Stock Purchase Plan**

Under the Teradyne 1996 Employee Stock Purchase Plan (“ESPP”), eligible employees may purchase shares of common stock through regular payroll deductions of up to 10% of their compensation, to a maximum of shares with a fair market value of \$25,000 per calendar year, not to exceed 6,000 shares. Under the plan, the price paid for the common stock is equal to 85% of the stock price on the last business day of the six-month purchase period.

In July 2016, 0.5 million shares of common stock were issued to employees who participated in the plan during the first half of 2016, at the price of \$16.74 per share. In January 2017, Teradyne issued 0.4 million shares of common stock to employees who participated in the plan during the second half of 2016, at the price of \$21.59 per share.

In July 2015, 0.5 million shares of common stock were issued to employees who participated in the plan during the first half of 2015, at the price of \$16.40 per share. In January 2016, Teradyne issued 0.5 million shares of common stock to employees who participated in the plan during the second half of 2015, at the price of \$17.57 per share.

In July 2014, 0.5 million shares of common stock were issued to employees who participated in the plan during the first half of 2014, at the price of \$16.66 per share. In January 2015, Teradyne issued 0.5 million shares of common stock to employees who participated in the plan during the second half of 2014, at the price of \$16.82 per share.

As of December 31, 2016, there were 3.9 million shares available for grant under the ESPP.

The effect to income from operations for recording stock-based compensation for the years ended December 31 was as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(in thousands)		
Cost of revenues . . . . .	\$ 3,153	\$ 3,065	\$ 3,675
Engineering and development . . . . .	9,458	9,362	10,146
Selling and administrative . . . . .	<u>18,139</u>	<u>18,024</u>	<u>26,486</u>
Stock-based compensation . . . . .	30,750	30,451	40,307
Income tax benefit . . . . .	<u>(8,752)</u>	<u>(8,528)</u>	<u>(11,537)</u>
Total stock-based compensation expense after income taxes . . . . .	<u>\$21,998</u>	<u>\$21,923</u>	<u>\$ 28,770</u>

**P. SAVINGS PLAN**

Teradyne sponsors a defined contribution employee retirement savings plan (“Savings Plan”) covering substantially all U.S. employees. Under the Savings Plan, employees may contribute up to 20% of their



compensation (subject to Internal Revenue Service limitations). The Savings Plan provides for a discretionary employer match that is determined each year. In 2016, 2015 and 2014, Teradyne matched 100% of eligible employee contributions up to 4% of their compensation for employees not accruing benefits in the U.S. Qualified Pension Plan. There was no match for employees still actively accruing benefits in the U.S. Qualified Pension Plan. Teradyne's contributions vest 25% per year for the first four years of employment, and contributions for those employees with four years of service vest immediately.

In addition, Teradyne established an unfunded U.S. Supplemental Savings Plan to provide savings benefits in excess of those allowed by Employee Retirement Income Security Act of 1974 and the Internal Revenue Code. The provisions of this plan are the same as the Savings Plan. Teradyne also established defined contribution savings plans for its foreign employees. Under Teradyne's savings plans, amounts charged to the statements of operations for the years ended December 31, 2016, 2015 and 2014 were \$14.5 million, \$13.5 million and \$12.8 million, respectively.

## Q. INCOME TAXES

The components of (loss) income before income taxes and the (benefit) provision for income taxes as shown in the consolidated statements of operations were as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(in thousands)		
(Loss) income before income taxes:			
U.S. ....	\$(341,018)	\$ 56,270	\$(151,889)
Non-U.S. ....	285,958	196,854	247,265
	<u>\$ (55,060)</u>	<u>\$253,124</u>	<u>\$ 95,376</u>
(Benefit) provision for income taxes:			
Current:			
U.S. Federal .....	\$ 7,750	\$ 16,635	\$ 5,197
Non-U.S. ....	41,579	35,707	28,157
State .....	1,968	1,429	678
	<u>51,297</u>	<u>53,771</u>	<u>34,032</u>
Deferred:			
U.S. Federal .....	(51,482)	(574)	(20,449)
Non-U.S. ....	(9,240)	(7,761)	(404)
State .....	(2,214)	1,211	925
	<u>(62,936)</u>	<u>(7,124)</u>	<u>(19,928)</u>
Total (benefit) provision for income taxes: .....	<u>\$ (11,639)</u>	<u>\$ 46,647</u>	<u>\$ 14,104</u>

Income tax benefit for 2016 totaled \$11.6 million. Income tax expense for 2015 and 2014 totaled \$46.6 million and \$14.1 million, respectively. The effective tax rate for 2016, 2015 and 2014 was 21.1%, 18.4% and 14.8%, respectively.

The increase in the effective tax rate from 2015 to 2016 resulted from a shift in the geographic distribution of income which decreased income subject to taxation in the U.S. relative to lower tax rate jurisdictions, reductions in uncertain tax positions resulting from the expiration of statutes and the settlement of an audit, and an increase in non-taxable foreign exchange gains. These increases in the effective tax rate were partially offset by the effect of the non-deductible goodwill impairment charge, which reduced the benefit of the loss before income taxes in the U.S.

The increase in the effective tax rate from 2014 to 2015 resulted from a shift in the geographic distribution of income which increased income subject to taxation in the U.S. relative to lower tax rate jurisdictions and a

reduction in the benefit from U.S. research and development tax credits. These increases in the effective tax rate were partially offset by decreases associated with uncertain tax positions and a non-deductible goodwill impairment charge.

A reconciliation of the effective tax rate for the years 2016, 2015 and 2014 follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
U.S. statutory federal tax rate . . . . .	35.0%	35.0%	35.0%
Foreign taxes . . . . .	127.1	(16.5)	(58.1)
U.S. research and development credit . . . . .	15.8	(3.0)	(7.9)
Domestic production activities deduction . . . . .	2.3	(1.0)	(0.5)
State income taxes, net of federal tax benefit . . . . .	2.3	0.4	(0.1)
Equity compensation . . . . .	(2.7)	0.6	(1.8)
Uncertain tax positions . . . . .	(2.6)	2.2	7.9
Goodwill impairment . . . . .	(162.1)	—	36.3
Other, net . . . . .	6.0	0.7	4.0
	<u>21.1%</u>	<u>18.4%</u>	<u>14.8%</u>

Teradyne qualifies for a tax holiday in Singapore by fulfilling the requirements of an agreement with the Singapore Economic Development Board under which certain headcount and spending requirements must be met. The tax savings attributable to the tax holiday for the years ended December 31, 2016, 2015 and 2014 were \$17.0 million or \$0.08 per diluted share, \$11.5 million or \$0.05 per diluted share and \$13.2 million or \$0.06 per diluted share, respectively. The tax holiday is scheduled to expire on December 31, 2020.

Significant components of Teradyne's deferred tax assets (liabilities) as of December 31, 2016 and 2015 were as follows:

	<u>2016</u>	<u>2015</u>
	(in thousands)	
Deferred tax assets:		
Tax credits . . . . .	\$ 57,313	\$ 44,684
Pension liabilities . . . . .	31,581	31,742
Inventory valuations . . . . .	31,227	29,445
Accruals . . . . .	27,247	26,563
Deferred revenue . . . . .	12,806	10,232
Equity compensation . . . . .	9,922	9,674
Vacation accrual . . . . .	7,874	7,354
Net operating loss carryforwards . . . . .	5,244	7,989
Other . . . . .	630	502
Gross deferred tax assets . . . . .	183,844	168,185
Less: valuation allowance . . . . .	(48,369)	(43,039)
Total deferred tax assets . . . . .	<u>\$135,475</u>	<u>\$125,146</u>
Deferred tax liabilities:		
Intangible assets . . . . .	\$ (22,887)	\$ (68,433)
Depreciation . . . . .	(17,117)	(20,541)
Marketable securities . . . . .	(210)	(458)
Total deferred tax liabilities . . . . .	<u>\$ (40,214)</u>	<u>\$ (89,432)</u>
Net deferred assets . . . . .	<u>\$ 95,261</u>	<u>\$ 35,714</u>

During 2016, Teradyne's valuation allowance increased by \$5.3 million primarily due to the increase in the deferred tax assets related to state tax credits generated in 2016.

As of December 31, 2016 and 2015, Teradyne evaluated the likelihood that it would realize the deferred income taxes to offset future taxable income and concluded that it is more likely than not that a substantial majority of its deferred tax assets will be realized through consideration of both the positive and negative evidence. At December 31, 2016 and 2015, Teradyne maintained a valuation allowance for certain deferred tax assets of \$48.4 million and \$43.0 million, respectively, primarily related to state net operating losses and state tax credit carryforwards, due to the uncertainty regarding their realization. Adjustments could be required in the future if Teradyne estimates that the amount of deferred tax assets to be realized is more or less than the net amount recorded.

At December 31, 2016, Teradyne had operating loss carryforwards that expire in the following years:

	<u>State Operating Loss Carryforwards</u>	<u>Foreign Operating Loss Carryforwards</u>
	(in thousands)	
2017 .....	\$10,245	\$ —
2018 .....	8,562	—
2019 .....	983	—
2020 .....	1,248	—
2021 .....	3,549	—
2022-2026 .....	18,044	—
2027-2031 .....	38,498	—
Beyond 2031 .....	5,464	129
Non-expiring .....	—	6,400
Total .....	<u>\$86,593</u>	<u>\$6,529</u>

The operating loss carryforwards do not include any excess tax deduction related to stock-based compensation, which has not been recognized for financial statements purposes.

Teradyne has approximately \$134.6 million of tax credit carryforwards including federal business tax credits of approximately \$45.3 million which expire in the years 2017 through 2036, alternative minimum tax credits of approximately \$8.7 million which do not expire, and state tax credits of \$80.6 million, of which \$47.4 million do not expire and the remainder expires in the years 2017 through 2031.

Teradyne has federal tax credits of \$39.1 million, that are attributable to stock-based compensation deductions, which will be recorded as an increase to retained earnings and deferred tax assets upon adoption, in the first quarter of 2017, of ASU 2016-09, “*Compensation-Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting.*”

Teradyne’s gross unrecognized tax benefits for the years ended December 31, 2016, 2015 and 2014 were as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(in thousands)		
Beginning balance as of January 1 .....	\$36,792	\$30,418	\$21,203
Additions:			
Tax positions for current year .....	9,766	6,626	8,414
Tax positions for prior years .....	187	792	3,781
Reductions:			
Expiration of statutes .....	(3,532)	—	—
Settlements with tax authorities .....	(2,295)	(336)	(500)
Tax positions for prior years .....	(1,960)	(708)	(2,480)
Ending balance as of December 31 .....	<u>\$38,958</u>	<u>\$36,792</u>	<u>\$30,418</u>

Current year and prior year additions include assessment of potential transfer pricing issues worldwide, federal and state tax credits and incentives, capitalization rules, and domestic production activities deductions. Reductions for tax positions for prior years primarily relate to statute expiration and the settlement tax audits. Of the \$39.0 million of unrecognized tax benefits as of December 31, 2016, \$27.6 million would impact the consolidated income tax rate if ultimately recognized. The remaining \$11.4 million would impact deferred taxes if recognized. Teradyne estimates that it is reasonably possible that the balance of unrecognized tax benefits as of December 31, 2016 may decrease approximately \$0.8 million in the next twelve months, as a result of a lapse of statutes of limitation. The estimated decrease is composed primarily of reserves relating to the U.S. research and development credits.

Teradyne records all interest and penalties related to income taxes as a component of income tax expense. Accrued interest and penalties related to income tax items at December 31, 2016 and 2015 amounted to \$0.4 million and \$0.5 million respectively. For the years ended December 31, 2016, 2015 and 2014, benefit of \$0.1 million, benefit of \$0.2 million and expense of \$0.2 million respectively, was recorded for interest and penalties related to income tax items.

Teradyne is subject to U.S. federal income tax, as well as income tax in multiple state, local and foreign jurisdictions. As of December 31, 2016, all material state and local income tax matters have been concluded through 2008, all material federal income tax matters have been concluded through 2012 and all material foreign income tax matters have been concluded through 2009. However, in some jurisdictions, including the United States, operating losses and tax credits may be subject to adjustment until such time as they are utilized and the year of utilization is closed to adjustment.

As of December 31, 2016, a deferred tax liability has not been established for approximately \$1,020 million of cumulative undistributed earnings of non-U.S. subsidiaries, which are expected to be reinvested indefinitely in operations outside the U.S. except for instances where Teradyne can remit such earnings to the U.S. without an associated net tax cost. Determination of the unrecognized deferred tax liability on unremitted earnings is not practicable due to uncertainty regarding the remittance structure, the mix of earnings and earnings and profit pools in the year of remittance, and overall complexity of the calculation.

## **R. OPERATING SEGMENT, GEOGRAPHIC AND SIGNIFICANT CUSTOMER INFORMATION**

Teradyne has four operating segments (Semiconductor Test, System Test, Industrial Automation, and Wireless Test), which are its reportable segments. The Semiconductor Test segment includes operations related to the design, manufacturing and marketing of semiconductor test products and services. The System Test segment includes operations related to the design, manufacturing and marketing of products and services for defense/aerospace instrumentation test, storage test and circuit-board test. The Industrial Automation segment includes operations related to the design, manufacturing and marketing of collaborative robots. The Wireless Test segment includes operations related to the design, manufacturing and marketing of wireless test products and services. Each operating segment has a segment manager who is directly accountable to and maintains regular contact with Teradyne's chief operating decision maker (Teradyne's chief executive officer) to discuss operating activities, financial results, forecasts, and plans for the segment.

Teradyne evaluates performance using several factors, of which the primary financial measure is business segment income (loss) from operations before taxes. The accounting policies of the business segments are the same as those described in Note B: "Accounting Policies."

Segment information for the years ended December 31, 2016, 2015 and 2014 is as follows:

	Semiconductor Test	System Test	Industrial Automation	Wireless Test	Corporate And Eliminations	Consolidated
	(in thousands)					
<b>2016</b>						
Revenues .....	\$1,368,169	\$189,846	\$ 99,031	\$ 96,204	\$ —	\$1,753,250
Income (loss) before taxes (1)(2) ...	311,939	28,916	(16,783)	(371,409)	(7,723)	(55,060)
Total assets (3) .....	557,546	110,361	317,635	62,366	1,714,585	2,762,493
Property additions .....	70,543	3,788	6,755	4,186	—	85,272
Depreciation and amortization expense .....	58,087	6,551	26,869	25,921	2,581	120,009
<b>2015</b>						
Revenues .....	\$1,201,530	\$211,584	\$ 41,892	\$ 184,572	\$ —	\$1,639,578
Income (loss) before taxes (1)(2) ...	260,154	25,101	(7,574)	(13,830)	(10,727)	253,124
Total assets (3) .....	610,869	102,547	344,260	427,880	1,063,118	2,548,674
Property additions .....	79,052	6,228	1,465	3,133	—	89,878
Depreciation and amortization expense .....	64,415	4,391	14,500	53,440	4,027	140,773
<b>2014</b>						
Revenues .....	\$1,300,790	\$162,499	\$ —	\$ 184,535	\$ —	\$1,647,824
Income (loss) before taxes (1)(2) ...	255,803	12,116	—	(116,196)	(56,347)	95,376
Total assets (3) .....	580,501	95,105	—	478,974	1,383,940	2,538,520
Property additions .....	159,783	5,469	—	3,730	—	168,982
Depreciation and amortization expense .....	84,990	5,399	—	53,308	8,847	152,544

- (1) Interest income, interest expense, other (income) expense, net, contingent consideration adjustments and pension and postretirement plans actuarial gains and losses are included in Corporate and Eliminations.
- (2) Included in income (loss) before taxes are charges and credits related to restructuring and other, inventory charges, goodwill impairment charges and acquired intangible assets impairment charge.
- (3) Total business assets are directly attributable to each business. Corporate assets consist of cash and cash equivalents, marketable securities and certain other assets.

Included in the Semiconductor Test segment are charges in the following accounts:

	For the Years Ended December 31,		
	2016	2015	2014
	(in thousands)		
Cost of revenues—inventory charge .....	\$9,656	\$10,508	\$14,389
Restructuring and other .....	2,860	499	490

Included in the System Test segment are charges in the following accounts:

	For the Years Ended December 31,		
	2016	2015	2014
	(in thousands)		
Cost of revenues—inventory charge .....	\$630	\$8,324	\$2,125
Restructuring and other .....	(49)	1,037	742

Included in the Industrial Automation segment are charges in the following accounts:

	<b>For the Years Ended December 31,</b>		
	<b>2016</b>	<b>2015</b>	<b>2014</b>
	(in thousands)		
Restructuring and other .....	\$585	\$ —	\$—
Cost of revenues-inventory step-up (1) .....	—	1,567	—

- (1) Included in the cost of revenues for the year ended December 31, 2015 is the cost for purchase accounting inventory step-up.

Included in the Wireless Test segment are charges in the following accounts:

	<b>For the Years Ended December 31,</b>		
	<b>2016</b>	<b>2015</b>	<b>2014</b>
	(in thousands)		
Goodwill impairment charge .....	\$254,946	\$ —	\$98,897
Acquired intangible assets impairment charge .....	83,339	—	—
Cost of revenues—inventory charge .....	7,207	2,500	5,679
Restructuring and other .....	2,650	—	565

Included in the Corporate and Eliminations segment are charges and credits in the following accounts:

	<b>For the Years Ended December 31,</b>		
	<b>2016</b>	<b>2015</b>	<b>2014</b>
	(in thousands)		
Restructuring and other—Universal Robots contingent consideration adjustment .....	\$15,346	\$ 5,339	\$ —
Restructuring and other—Impairment of fixed assets and expenses related to Japan Earthquake .....	5,363	—	—
Restructuring and other—Property insurance recovery .....	(5,363)	—	—
Restructuring and other—ZTEC contingent consideration adjustment .....	—	(1,600)	(630)
Restructuring and other—AIT contingent consideration adjustment .....	550	(1,250)	—
Restructuring and other—Acquisition costs .....	—	1,104	372
Restructuring and other .....	—	—	198
Other (income) expense, net—Gain from the sale of an equity investment ....	—	(5,406)	—
Selling and administrative—Stock based compensation expense (1) .....	—	—	6,598
Total .....	<u>\$15,896</u>	<u>\$(1,813)</u>	<u>\$6,538</u>

- (1) Expense related to the January 2014 retirement of Teradyne’s former chief executive officer; see Note O: “Stock-Based Compensation.”

Information as to Teradyne's revenues by country is as follows:

	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(in thousands)		
Revenues from customers (1):			
Taiwan .....	\$ 653,076	\$ 436,389	\$ 495,942
United States .....	221,948	217,386	213,104
China .....	174,876	264,898	292,145
Korea .....	147,882	120,224	145,608
Japan .....	135,978	128,228	63,761
Europe .....	117,671	111,903	111,043
Malaysia .....	103,472	76,707	83,910
Singapore .....	73,172	105,216	119,421
Philippines .....	54,705	96,103	68,662
Thailand .....	43,097	59,104	44,117
Rest of the World .....	27,373	23,420	10,111
	<u>\$1,753,250</u>	<u>\$1,639,578</u>	<u>\$1,647,824</u>

(1) Revenues attributable to a country are based on location of customer site.

In 2016, two customers of Teradyne's Semiconductor Test segment each accounted for 12% of total consolidated revenues. In 2015, one customer of Teradyne's Semiconductor Test segment accounted for 13% of total consolidated revenues. In 2014, no single customer accounted for more than 10% of total consolidated revenues. Teradyne estimates product demand driven by a single OEM customer, combining direct sales to that customer with sales to the customer's outsourced semiconductor assembly and test providers ("OSATs"), accounted for approximately 25%, 23%, and 22% of Teradyne's consolidated revenues in 2016, 2015 and 2014, respectively.

Long-lived assets by geographic area:

	<u>United States</u>	<u>Foreign(1)</u>	<u>Total</u>
	(in thousands)		
December 31, 2016 .....	\$189,195	\$64,626	\$253,821
December 31, 2015 .....	\$198,424	\$74,990	\$273,414

(1) As of December 31, 2016 and 2015, long-lived assets attributable to Singapore were \$31.5 million and \$39.9 million, respectively.

## S. STOCK REPURCHASE PROGRAM

In January 2015, the Board of Directors cancelled the November 2010 stock repurchase program and authorized a new stock repurchase program for up to \$500 million of common stock. The cumulative repurchases as of December 31, 2016 totaled 22.5 million shares of common stock for \$446 million at an average price per share of \$19.87. The total price includes commissions and is recorded as a reduction to retained earnings.

In December 2016, the Board of Directors approved a new \$500 million share repurchase authorization which commenced on January 1, 2017. Teradyne intends to repurchase at least \$200 million in 2017. Teradyne's January 2015 stock repurchase program was terminated on December 31, 2016.

## T. SUBSEQUENT EVENTS

In January 2017, Teradyne's Board of Directors declared a quarterly cash dividend of \$0.07 per share to be paid on March 20, 2017 to shareholders of record as of February 24, 2017.

While Teradyne declared a quarterly cash dividend and authorized a share repurchase program, it may reduce or eliminate the cash dividend or share repurchase program in the future. Future cash dividends and stock repurchases are subject to the discretion of Teradyne's Board of Directors which will consider, among other things, Teradyne's earnings, capital requirements and financial condition.

**SUPPLEMENTARY INFORMATION**  
**(Unaudited)**

The following sets forth certain unaudited consolidated quarterly statements of operations data for each of Teradyne's last eight quarters. In management's opinion, this quarterly information reflects all adjustments, consisting only of normal recurring adjustments, necessary for a fair statement for the periods presented. Such quarterly results are not necessarily indicative of future results of operations and should be read in conjunction with the audited consolidated financial statements of Teradyne and the notes thereto included elsewhere herein.

	2016			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
	(1)(5)	(2)(5)	(3)(5)	(4)(5)
	(in thousands, except per share amounts)			
Revenues:				
Products . . . . .	\$358,139	\$ 456,832	\$334,610	\$303,667
Services . . . . .	72,855	74,960	75,865	76,322
Total revenues . . . . .	430,994	531,792	410,475	379,989
Cost of revenues:				
Cost of products . . . . .	167,555	215,795	148,266	127,481
Cost of services . . . . .	33,107	33,127	34,850	33,502
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below) . . . . .	200,662	248,922	183,116	160,983
Gross profit . . . . .	230,332	282,870	227,359	219,006
Operating expenses:				
Engineering and development . . . . .	73,464	76,109	71,400	70,052
Selling and administrative . . . . .	79,174	81,425	78,794	76,289
Acquired intangible assets amortization . . . . .	19,994	16,244	8,487	7,923
Acquired intangible assets impairment . . . . .	—	83,339	—	—
Goodwill impairment . . . . .	—	254,946	—	—
Restructuring and other . . . . .	1,587	2,608	12,177	5,570
Total operating expenses . . . . .	174,219	514,671	170,858	159,834
Income (loss) from operations . . . . .	56,113	(231,801)	56,501	59,172
Non-operating (income) expense:				
Interest income . . . . .	(1,642)	(1,666)	(2,892)	(3,095)
Interest expense . . . . .	710	691	633	1,604
Other (income) expense, net . . . . .	(147)	(9)	(921)	1,779
Income (loss) before income taxes . . . . .	57,192	(230,817)	59,681	58,884
Income tax provision (benefit) . . . . .	7,206	(7,271)	(4,113)	(7,461)
Net income (loss) . . . . .	\$ 49,986	\$(223,546)	\$ 63,794	\$ 66,345
Net income (loss) per common share—basic . . . . .	\$ 0.24	\$ (1.10)	\$ 0.32	\$ 0.33
Net income (loss) per common share—diluted . . . . .	\$ 0.24	\$ (1.10)	\$ 0.31	\$ 0.33
Cash dividend declared per common share . . . . .	\$ 0.06	\$ 0.06	\$ 0.06	\$ 0.06

- (1) Restructuring and other includes a \$1.2 million fair value adjustment to increase the Universal Robots acquisition contingent consideration.
- (2) Restructuring and other includes \$4.2 million for an impairment of fixed assets, \$0.9 million for expenses related to an earthquake in Kumamoto, Japan, and \$1.4 million for the increase in the fair value of



contingent consideration liability of which \$0.8 million related to Universal Robots, and \$0.6 million related to AIT, partially offset by \$5.1 million of property insurance recovery related to the Japan earthquake.

- (3) Restructuring and other includes an \$8.0 million fair value adjustment to increase the Universal Robots acquisition contingent consideration.
- (4) Restructuring and other includes a \$5.4 million fair value adjustment to increase the Universal Robots acquisition contingent consideration.
- (5) Teradyne recorded pension and post retirement net actuarial (gains) losses of \$(1.2) million, \$(0.7) million, \$0.7 million and \$(2.0) million for the first, second, third and fourth quarter in 2016, respectively. See Note B: "Accounting Policies" for a discussion of Teradyne's accounting policy.

	2015			
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
	(3)		(4)	(1)(2)
	(in thousands, except per share amounts)			
Revenues:				
Products .....	\$272,325	\$437,243	\$386,488	\$244,510
Services .....	70,076	75,496	79,506	73,934
Total revenues .....	342,401	512,739	465,994	318,444
Cost of revenues:				
Cost of products .....	118,996	181,491	170,963	120,322
Cost of services .....	30,982	32,680	36,405	32,096
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below) .....	149,978	214,171	207,368	152,418
Gross profit .....	192,423	298,568	258,626	166,026
Operating expenses:				
Engineering and development .....	71,450	75,832	74,027	70,941
Selling and administrative .....	72,041	77,073	77,481	79,718
Acquired intangible assets amortization .....	13,808	15,258	20,053	19,911
Restructuring and other .....	—	(385)	261	5,204
Total operating expenses .....	157,299	167,778	171,822	175,774
Income (loss) from operations .....	35,124	130,790	86,804	(9,748)
Non-operating (income) expense:				
Interest income .....	(1,816)	(1,674)	(1,708)	(2,017)
Interest expense .....	162	444	508	762
Other (income) expense, net .....	(5,660)	(116)	596	364
Income (loss) before income taxes .....	42,438	132,136	87,408	(8,857)
Income tax provision (benefit) .....	9,651	29,257	15,955	(8,216)
Net income (loss) .....	\$ 32,787	\$102,879	\$ 71,453	\$ (641)
Net income (loss) per common share—basic .....	\$ 0.15	\$ 0.48	\$ 0.34	\$ (0.00)
Net income (loss) per common share—diluted .....	\$ 0.15	\$ 0.48	\$ 0.34	\$ (0.00)
Cash dividend declared per common share .....	\$ 0.06	\$ 0.06	\$ 0.06	\$ 0.06

- (1) Restructuring and other includes a \$5.3 million fair value adjustment to increase the Universal Robots acquisition contingent consideration, and a \$(0.3) million fair value adjustment to decrease the AIT acquisition contingent consideration.
- (2) In the fourth quarter ended December 31, 2015, Teradyne recorded pension and post retirement net actuarial losses of \$17.7 million. See Note B: "Accounting Policies" for a discussion of Teradyne's accounting policy.

- (3) Restructuring and other includes a \$(1.6) million fair value adjustment to decrease the ZTEC acquisition contingent consideration.
- (4) Restructuring and other includes a \$(1.0) million fair value adjustment to decrease the AIT acquisition contingent consideration.

**Item 9: *Changes in and disagreements with accountants on accounting and financial disclosure***

None.

**Item 9A: *Controls and procedures***

**Disclosure Controls and Procedures**

As of the end of the period covered by this report, our management, with the participation of our CEO and CFO, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15(b) promulgated under the Exchange Act. Based upon that evaluation, our CEO and CFO concluded that, as of the end of the period covered by this report, our disclosure controls and procedures were effective in ensuring that material information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, including ensuring that such material information is accumulated and communicated to our management, including our CEO and CFO, as appropriate to allow timely decisions regarding required disclosure.

**Changes in Internal Control Over Financial Reporting**

There was no change in our internal control over financial reporting during the fourth fiscal quarter ended December 31, 2016 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

**Management's Annual Report on Internal Control over Financial Reporting**

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). 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 the framework in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation under the framework in *Internal Control—Integrated Framework* (2013), our management concluded that our internal control over financial reporting was effective as of December 31, 2016.

The effectiveness of our internal control over financial reporting as of December 31, 2016 has been audited by PricewaterhouseCoopers LLP, our independent registered public accounting firm, as stated in their report which is included under Item 8 of this Annual Report.

**Inherent Limitations on Effectiveness of Controls**

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.

**Item 9B: *Other Information***

None.

### PART III

**Item 10: *Directors, Executive Officers and Corporate Governance***

Certain information relating to our directors and executive officers, committee information, reports and charters, executive compensation, security ownership of certain beneficial owners and management and related stockholder matters, and certain relationships and related transactions is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held on May 9, 2017. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Compensation Committee Report included in such proxy statement is specifically not incorporated herein. Also see “Item 1: Business—Our Executive Officers.”

**Item 11: *Executive Compensation***

Certain information relating to our directors and executive officers, executive compensation, security ownership of certain beneficial owners and management and related stockholder matters, and certain relationships and related transactions is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held on May 9, 2017. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Compensation Committee Report included in such proxy statement is specifically not incorporated herein.

**Item 12: *Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters***

Certain information relating to our directors and executive officers, executive compensation, security ownership of certain beneficial owners and management and related stockholder matters, and certain relationships and related transactions is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held May 9, 2017. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Compensation Committee Report included in such proxy statement is specifically not incorporated herein. Also see “Item 7: Management’s Discussion and Analysis of Financial Condition and Results of Operations—Equity Compensation Plans.”

**Item 13: *Certain Relationships and Related Transactions, and Director Independence***

Certain information relating to our directors and executive officers, executive compensation, security ownership of certain beneficial owners and management and related stockholder matters, and certain relationships and related transactions is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held on May 9, 2017. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Compensation Committee Report included in such proxy statement is specifically not incorporated herein.

**Item 14: *Principal Accountant Fees and Services***

Certain information relating to audit fees and other of Teradyne’s independent registered public accounting firm is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held on May 9, 2017. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Audit Committee Report included in such proxy statement is specifically not incorporated herein.

**PART IV**

**Item 15: Exhibits and Financial Statement Schedules.**

**15(a)(1) Financial Statements**

The following consolidated financial statements are included in Item 8:

	<u>Page</u>
Report of Independent Registered Public Accounting Firm . . . . .	44
Consolidated Balance Sheets as of December 31, 2016 and 2015 . . . . .	45
Consolidated Statements of Operations for the years ended December 31, 2016, 2015 and 2014 . . . . .	46
Consolidated Statements of Comprehensive (Loss) Income for the years ended December 31, 2016, 2015 and 2014 . . . . .	47
Consolidated Statements of Shareholders' Equity for the years ended December 31, 2016, 2015 and 2014 . . . . .	48
Consolidated Statements of Cash Flows for the years ended December 31, 2016, 2015 and 2014 . . . . .	49

**15(a)(2) Financial Statement Schedule**

The following consolidated financial statement schedule is included in Item 15(c):

Schedule II—Valuation and Qualifying Accounts

Schedules other than those listed above have been omitted since they are either not required or information is otherwise included.

**15(a)(3) Listing of Exhibits**

The Exhibits which are filed with this report or which are incorporated by reference herein are set forth in the Exhibit Index.

**15(c) Financial Statement Schedules**

TERADYNE, INC.

SCHEDULE II—VALUATION AND QUALIFYING ACCOUNTS

<u>Column A</u>	<u>Column B</u>	<u>Column C</u>	<u>Column D</u>	<u>Column E</u>	<u>Column F</u>
<u>Description</u>	<u>Balance at Beginning of Period</u>	<u>Additions Charged to Cost and Expenses</u>	<u>Other</u>	<u>Deductions</u>	<u>Balance at End of Period</u>
	(in thousands)				
Valuation reserve deducted in the balance sheet from the asset to which it applies:					
Accounts receivable:					
2016 Allowance for doubtful accounts . . . .	\$2,407	\$—	\$—	\$ 51	\$2,356
2015 Allowance for doubtful accounts . . . .	\$2,491	\$—	\$—	\$ 84	\$2,407
2014 Allowance for doubtful accounts . . . .	\$2,912	\$ 55	\$—	\$476	\$2,491

<u>Column A</u>	<u>Column B</u>	<u>Column C</u>	<u>Column D</u>	<u>Column E</u>	<u>Column F</u>
<u>Description</u>	<u>Balance at Beginning of Period</u>	<u>Additions Charged to Cost and Expenses</u>	<u>Other</u>	<u>Deductions</u>	<u>Balance at End of Period</u>
	(in thousands)				
Valuation reserve deducted in the balance sheet from the asset to which it applies:					
Inventory:					
2016 Inventory reserve . . . . .	\$119,376	\$17,493	\$4,417	\$25,270	\$116,016
2015 Inventory reserve . . . . .	\$111,252	\$21,332	\$1,680	\$14,888	\$119,376
2014 Inventory reserve . . . . .	\$115,857	\$22,193	\$7,064	\$33,862	\$111,252

<u>Column A</u>	<u>Column B</u>	<u>Column C</u>	<u>Column D</u>	<u>Column E</u>	<u>Column F</u>
<u>Description</u>	<u>Balance at Beginning of Period</u>	<u>Additions Charged to Cost and Expenses</u>	<u>Other</u>	<u>Deductions</u>	<u>Balance at End of Period</u>
	(in thousands)				
Valuation reserve deducted in the balance sheet from the asset to which it applies:					
Deferred taxes:					
2016 Valuation allowance . . . . .	\$43,039	\$5,413	\$—	\$83	\$48,369
2015 Valuation allowance . . . . .	\$41,737	\$1,322	\$—	\$20	\$43,039
2014 Valuation allowance . . . . .	\$40,386	\$1,380	\$—	\$29	\$41,737

**Item 16: Form 10-K Summary**

Not applicable.

## EXHIBIT INDEX

The following designated exhibits are, as indicated below, either filed herewith or have heretofore been filed with the Securities and Exchange Commission and are referred to and incorporated by reference to such filings.

Exhibit No.	Description	SEC Document Reference
2.1	Share Sale and Purchase Agreement by and among Teradyne Holdings Denmark ApS, Teradyne Inc. and the shareholders of Universal Robots A/S dated May 13, 2015.	Exhibit 2.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended July 5, 2015.
3.1	Restated Articles of Organization, as amended.	Exhibit 3.01 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended July 2, 2000.
3.2	Amended and Restated By-laws, as amended.	Exhibit 3.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 30, 2007.
4.1	Indenture dated as of December 12, 2016, between Teradyne Inc and Wilmington Trust, National Association, as trustee	Exhibit 4.1 to Teradyne's Current Report on Form 8-K filed on December 12, 2016
10.1†	Standard Manufacturing Agreement entered into as of November 24, 2003 by and between Teradyne and Solectron.	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 30, 2007.
10.2†	Amendment 1 to Standard Manufacturing Agreement, dated as of January 18, 2007, by and between Teradyne and Solectron.	Exhibit 10.2 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 30, 2007.
10.3†	Second Amendment to Standard Manufacturing Agreement, dated as of August 27, 2007, by and between Teradyne and Solectron.	Exhibit 10.3 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 30, 2007.
10.4	Fifth Amendment to Standard Manufacturing Agreement, dated as of July 17, 2009, by and between Teradyne and Flextronics Corporation.	Exhibit 10.4 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2009.
10.5†	Sixth Amendment to Standard Manufacturing Agreement, dated as of July 27, 2009, by and between Teradyne and Flextronics Corporation.	Exhibit 10.5 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2009.
10.6	Addendum to Standard Manufacturing Agreement (Authorized Purchase Agreement)—Revised July 1, 2010.	Exhibit 10.6 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2010.
10.7	Eighth Amendment to Standard Manufacturing Agreement, dated as of April 13, 2012, by and between Teradyne and Flextronics Sales & Marketing North Asia (L) LTD.	Exhibit 10.7 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.

<u>Exhibit No.</u>	<u>Description</u>	<u>SEC Document Reference</u>
10.8†	Ninth Amendment to Standard Manufacturing Agreement, dated as of September 17, 2012, by and between Teradyne and Flextronics Sales & Marketing North Asia (L) LTD.	Exhibit 10.8 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.9	2006 Equity and Cash Compensation Incentive Plan, as amended.*	Filed herewith.
10.10	Form of Performance-Based Restricted Stock Unit Agreement for Executive Officers under 2006 Equity and Cash Compensation Incentive Plan.*	Filed herewith.
10.11	Form of Time-Based Restricted Stock Unit Agreement for Executive Officers under 2006 Equity and Cash Compensation Incentive Plan.*	Filed herewith.
10.12	Form of Restricted Stock Unit Agreement for Directors under 2006 Equity and Cash Compensation Incentive Plan.*	Filed herewith.
10.13	1996 Employee Stock Purchase Plan, as amended.*	Appendix B to Teradyne's Notice and Proxy Statement on Schedule 14A filed April 11, 2013.
10.14	Form of Executive Officer Stock Option Agreement under 2006 Equity and Cash Compensation Incentive Plan, as amended.*	Filed herewith.
10.15	Deferral Plan for Non-Employee Directors, as amended.*	Exhibit 10.2 to Teradyne's Quarterly Report on form 10-Q for the quarter ended September 28, 2008.
10.16	Supplemental Savings Plan, as amended and restated.*	Exhibit 10.18 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2008.
10.17	Supplemental Executive Retirement Plan, as restated.*	Exhibit 10.19 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2008.
10.18	Agreement Regarding Termination Benefits dated January 22, 2014 between Teradyne and Mark Jagiela.*	Exhibit 10.24 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2013.
10.19	Employment Agreement dated August 9, 2004 between Teradyne and Gregory R. Beecher.*	Exhibit 10.40 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended July 4, 2004.
10.20	Employment Agreement dated May 7, 2004 between Teradyne and Mark Jagiela.*	Exhibit 10.37 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended July 4, 2004.

<b>Exhibit No.</b>	<b>Description</b>	<b>SEC Document Reference</b>
10.21	Amended and Restated Executive Officer Change in Control Agreement dated December 30, 2008 between Teradyne and Gregory R. Beecher, as amended.*	Exhibit 10.28 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.22	Executive Officer Change in Control Agreement dated January 22, 2014 between Teradyne and Mark Jagiela, as amended.*	Exhibit 10.29 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2013.
10.23	Amended and Restated Executive Officer Change in Control Agreement dated May 26, 2009 between Teradyne and Charles J. Gray, as amended.*	Exhibit 10.30 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.24	Employment Agreement dated July 24, 2009 between Teradyne and Charles J. Gray.*	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended April 4, 2010.
10.25	Amended and Restated Executive Officer Change in Control Agreement dated June 30, 2012 between Teradyne and Walter G. Vahey, as amended.*	Exhibit 10.32 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.26	Employment Agreement dated February 6, 2013 between Teradyne and Walter G. Vahey.*	Exhibit 10.33 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.27	Executive Officer Change in Control Agreement dated September 1, 2014 between Teradyne, Inc. and Bradford Robbins.*	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 28, 2014.
10.28	Employment Agreement dated September 1, 2014 between Teradyne, Inc. and Bradford Robbins.*	Exhibit 10.2 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 28, 2014.
10.29	Executive Change in Control Agreement dated February 8, 2016 between Teradyne, Inc. and Greg Smith.	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended April 13, 2016.
10.30	Employment Agreement dated February 8, 2016 between Teradyne, Inc. and Greg Smith.	Exhibit 10.2 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended April 13, 2016.
10.31	Form of Indemnification Agreement.*	Exhibit 10.24 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2006.
10.32	Nextest Systems Corporation 1998 Equity Incentive Plan, as amended.	Exhibit 10.33 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2008.
10.33	Nextest Systems Corporation 2006 Equity Incentive Plan.	Exhibit 10.34 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2008.



<u>Exhibit No.</u>	<u>Description</u>	<u>SEC Document Reference</u>
10.34	Eagle Test Systems, Inc. 2003 Stock Option and Grant Plan.	Exhibit 10.35 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2008.
10.35	Eagle Test Systems, Inc. 2006 Stock Option and Incentive Plan.	Exhibit 10.36 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2008.
10.36	LitePoint Corporation 2002 Stock Plan.	Exhibit 10.42 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2011.
10.37	Credit Agreement among Teradyne, Inc., Barclays Bank PLC, as the administrative agent and collateral agent, and the lenders party thereto dated April 27, 2015.	Exhibit 10.1 to Teradyne's Current Report on Form 8-K filed May 1, 2015.
10.38	Amendment No. 1 to Credit Agreement dated as of May 19, 2015 among Teradyne Inc., Barclays Bank PLC, as the administrative agent, and the lenders party thereto.	Exhibit 10.2 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended July 5, 2015.
10.39	Letter Agreement, dated December 6, 2016, between Barclays Bank PLC and Teradyne, Inc., regarding the Base Warrants.	Exhibit 10.1 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.40	Letter Agreement, dated December 6, 2016, between Bank of America, N.A., and Teradyne, Inc. regarding the Base Warrants.	Exhibit 10.2 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.41	Letter Agreement, dated December 6, 2016, between Wells Fargo Bank, National Association and Teradyne, Inc. regarding the Base Warrants.	Exhibit 10.3 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.42	Letter Agreement, dated December 6, 2016, between Barclays Bank PLC and Teradyne, Inc. regarding the Base Call Option Transaction.	Exhibit 10.4 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.43	Letter Agreement, dated December 6, 2016, between Bank of America, N.A. and Teradyne, Inc. regarding the Base Call Option Transaction.	Exhibit 10.5 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.44	Letter Agreement, dated December 6, 2016, between Wells Fargo Bank, National Association and Teradyne, Inc. regarding the Base Call Option Transaction.	Exhibit 10.6 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.45	Letter Agreement, dated December 9, 2016, between Barclays Bank PLC and Teradyne, Inc., regarding the Additional Warrants	Exhibit 10.7 to Teradyne's Current Report on Form 8-K filed December 12, 2016.

<b>Exhibit No.</b>	<b>Description</b>	<b>SEC Document Reference</b>
10.46	Letter Agreement, dated December 9, 2016, between Bank of America, N.A., and Teradyne, Inc. regarding the Additional Warrants.	Exhibit 10.8 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.47	Letter Agreement, dated December 9, 2016, between Wells Fargo Bank, National Association and Teradyne, Inc. regarding the Additional Warrants.	Exhibit 10.9 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.48	Letter Agreement, dated December 9, 2016, between Barclays Bank PLC and Teradyne, Inc. regarding the Additional Call Option Transaction.	Exhibit 10.10 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.49	Letter Agreement, dated December 9, 2016, between Bank of America, N.A. and Teradyne, Inc. regarding the Additional Call Option Transaction	Exhibit 10.11 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.50	Letter Agreement, dated December 9, 2016, between Wells Fargo Bank, National Association and Teradyne, Inc. regarding the Additional Call Option Transaction.	Exhibit 10.12 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
21.1	Subsidiaries of Teradyne.	Filed herewith.
23.1	Consent of PricewaterhouseCoopers LLP.	Filed herewith.
31.1	Rule 13a-14(a) Certification of Principal Executive Officer.	Filed herewith.
31.2	Rule 13a-14(a) Certification of Principal Financial Officer.	Filed herewith.
32.1	Section 1350 Certification of Principal Executive Officer.	Furnished herewith.
32.2	Section 1350 Certification of Principal Financial Officer.	Furnished herewith.
101.INS	XBRL Instance Document	
101.SCH	XBRL Taxonomy Extension Schema Document	
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	
101.LAB	XBRL Taxonomy Extension Label Linkbase Document	
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	

† -Confidential treatment granted.

\* -Management contract or compensatory plan.

## 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 this 1st day of March, 2017.

TERADYNE, INC.

By:           /s/ GREGORY R. BEECHER            
**Gregory R. Beecher,**  
**Vice President, Chief Financial Officer and**  
**Treasurer**

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/ ROY A. VALLEE          </u> <b>Roy A. Vallee</b>	Chair of the Board	March 1, 2017
<u>          /s/ MARK E. JAGIELA          </u> <b>Mark E. Jagiela</b>	Chief Executive Officer (Principal Executive Officer)	March 1, 2017
<u>          /s/ GREGORY R. BEECHER          </u> <b>Gregory R. Beecher</b>	Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	March 1, 2017
<u>          /s/ MICHAEL A. BRADLEY          </u> <b>Michael A. Bradley</b>	Director	March 1, 2017
<u>          /s/ DANIEL W. CHRISTMAN          </u> <b>Daniel W. Christman</b>	Director	March 1, 2017
<u>          /s/ EDWIN J. GILLIS          </u> <b>Edwin J. Gillis</b>	Director	March 1, 2017
<u>          /s/ TIMOTHY E. GUERTIN          </u> <b>Timothy E. Guertin</b>	Director	March 1, 2017
<u>          /s/ MERCEDES JOHNSON          </u> <b>Mercedes Johnson</b>	Director	March 1, 2017
<u>          /s/ PAUL J. TUFANO          </u> <b>Paul J. Tufano</b>	Director	March 1, 2017

## Present Subsidiaries

Entity Name:	State or Jurisdiction Of Incorporation	Percentage of Voting Securities Owned
Teradyne (Asia) Pte., Ltd. . . . .	Singapore	100%*
Teradyne Canada Limited . . . . .	Canada	100%
Teradyne de Costa Rica S.A. . . . .	Costa Rica	100%
Teradyne GmbH . . . . .	Germany	100%*
Teradyne Holdings Denmark ApS . . . . .	Denmark	100%*
Teradyne (India) Engineering Private Ltd. . . . .	India	100%*
Teradyne International Holdings B.V. . . . .	The Netherlands	100%
Teradyne Italia SrL . . . . .	Italy	100%*
Teradyne K.K. . . . .	Japan	100%
Teradyne Korea Ltd. . . . .	Republic of Korea	100%*
Teradyne Limited . . . . .	United Kingdom	100%*
Teradyne Malaysia Sdn. Bhd. . . . .	Malaysia	100%*
Teradyne Philippines Limited . . . . .	Delaware	100%*
Teradyne SAS . . . . .	France	100%
Teradyne (Shanghai) Co., Ltd . . . . .	Peoples Republic of China	100%*
Teradyne Taiwan LLC . . . . .	Delaware	100%*
Teradyne Thailand Ltd. . . . .	Delaware	100%*
GenRad, LLC . . . . .	Delaware	100%
Herco Technology Corp. . . . .	California	100%
P.L.S.T., Inc. (f/k/a Perception Laminates, Inc.) . . . . .	California	100%
Eagle Test Systems, Inc. . . . .	Delaware	100%
Eagle Test Systems (Philippines) LLC . . . . .	Delaware	100%*
Nextest Systems Corporation . . . . .	Delaware	100%
Nextest Systems (Philippines) Corp. . . . .	Philippines	99.9%*
LitePoint Corporation . . . . .	Delaware	100%
LitePoint Europe A/S . . . . .	Denmark	100%*
LitePoint Technology Limited . . . . .	Hong Kong	100%*
LitePoint Technology (Shanghai) Company Ltd. . . . .	Peoples Republic of China	100%*
LitePoint Japan K.K. . . . .	Japan	100%*
LitePoint Design Test, LLC . . . . .	New Mexico	100%*
LitePoint Vietnam Limited . . . . .	Socialist Republic of Vietnam	100%*
Universal Robots A/S . . . . .	Denmark	100%*
Universal Robots (Spain) S.L. . . . .	Spain	100%*
Universal Robots (Singapore) Pte. Ltd. . . . .	Singapore	100%*
Universal Robots (India) Pte. Ltd. . . . .	India	100%*
Universal Robots (Shanghai) Co. Ltd. . . . .	Peoples Republic of China	100%*
Universal Robots (USA), Inc. . . . .	Delaware	100%
Universal Robots GmbH . . . . .	Germany	100%*

\* Indirect subsidiaries whose voting securities are 100% controlled by Teradyne, Inc.

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-188824; 333-177246; 333-159723; 333-155564; 333-149017; 333-143231; 333-134519; 333-116632; 333-101983; 333-68074; 333-56373; 333-32547; and 333-07177) of Teradyne, Inc. of our report dated March 1, 2017 relating to the consolidated financial statements, financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts  
March 1, 2017

CERTIFICATIONS

I, Mark E. Jagiela, certify that:

1. I have reviewed this annual report on Form 10-K of Teradyne, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by this report based on such evaluation; and
  - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 1, 2017

By:                   /s/ MARK E. JAGIELA                    
                  **Mark E. Jagiela**  
                  **Chief Executive Officer**

I, Gregory R. Beecher, certify that:

1. I have reviewed this annual report on Form 10-K of Teradyne, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 1, 2017

By:           /s/ GREGORY R. BEECHER          

**Gregory R. Beecher**  
**Chief Financial Officer**

**CERTIFICATION PURSUANT TO  
18 U.S.C SECTION 1350,  
AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of Teradyne, Inc. (the “Company”) on Form 10-K for the period ending December 31, 2016 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Mark E. Jagiela, Chief Executive Officer of the Company, certify pursuant to 18 U.S.C Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ MARK E. JAGIELA

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**Mark E. Jagiela**  
**Chief Executive Officer**

March 1, 2017



**CERTIFICATION PURSUANT TO  
18 U.S.C SECTION 1350,  
AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of Teradyne, Inc. (the “Company”) on Form 10-K for the period ending December 31, 2016 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Gregory R. Beecher, Chief Financial Officer of the Company, certify pursuant to 18 U.S.C Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ GREGORY R. BEECHER

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**Gregory R. Beecher**  
**Chief Financial Officer**

March 1, 2017