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

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 27, 2020

OR

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

For the transition period from to

Commission File No. 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 No.)
600 Riverpark Drive, North Reading, Massachusetts (Address of Principal Executive Offices)	**01864** (Zip Code)

978-370-2700
(Registrant's Telephone Number, Including Area Code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.125 per share	TER	Nasdaq Stock Market LLC

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 the filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files) Yes ☒ No ☐

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Emerging growth company	☐
		Smaller reporting company	☐

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

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

The number of shares outstanding of the registrant’s only class of Common Stock as of October 26, 2020 was 166,055,827 shares.

TERADYNE, INC.

INDEX

PART I

Item 1: Financial Statements

TERADYNE, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS
(Unaudited)

	September 27, 2020	December 31, 2019
	(in thousands, except per share amount)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 945,180	$ 773,924
Marketable securities	287,789	137,303
Accounts receivable, less allowance for doubtful accounts of $1,891 and $1,736 at September 27, 2020 and December 31, 2019, respectively	587,243	362,368
Inventories, net	191,317	196,691
Prepayments and other current assets	232,103	188,598
Total current assets	2,243,632	1,658,884
Property, plant and equipment, net	386,170	320,216
Operating lease right-of-use assets, net	54,724	57,539
Marketable securities	108,254	104,490
Deferred tax assets	78,243	75,185
Retirement plans assets	14,915	18,457
Other assets	11,650	10,332
Acquired intangible assets, net	103,672	125,480
Goodwill	435,252	416,431
Total assets	$ 3,436,512	$ 2,787,014
LIABILITIES		
Current liabilities:		
Accounts payable	$ 150,427	$ 126,617
Accrued employees' compensation and withholdings	175,286	163,883
Deferred revenue and customer advances	129,438	104,876
Other accrued liabilities	117,108	70,871
Operating lease liabilities	20,311	19,476
Contingent consideration	—	9,106
Income taxes payable	79,270	44,200
Total current liabilities	671,840	539,029
Retirement plans liabilities	134,650	134,471
Long-term deferred revenue and customer advances	59,099	45,974
Long-term contingent consideration	22,531	30,599
Long-term other accrued liabilities	20,141	19,535
Deferred tax liabilities	11,462	14,070
Long-term operating lease liabilities	42,137	45,849
Long-term incomes taxes payable	74,930	82,642
Debt	406,178	394,687
Total liabilities	1,442,968	1,306,856
Commitments and contingencies (See Note R)		
SHAREHOLDERS' EQUITY		
Common stock, $0.125 par value, 1,000,000 shares authorized; 166,043 and 166,410 shares issued and outstanding at September 27, 2020 and December 31, 2019, respectively	20,755	20,801
Additional paid-in capital	1,756,831	1,720,129
Accumulated other comprehensive income (loss)	8,248	(18,854)
Retained earnings (accumulated deficit)	207,710	(241,918)
Total shareholders' equity	1,993,544	1,480,158
Total liabilities and shareholders' equity	$ 3,436,512	$ 2,787,014

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2019, are an integral part of the condensed consolidated financial statements.

TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
	(in thousands, except per share amount)			
Revenues:				
Products	$ 697,745	$ 488,170	$ 2,043,281	$ 1,339,123
Services	121,739	93,868	319,219	301,192
Total revenues	819,484	582,038	2,362,500	1,640,315
Cost of revenues:				
Cost of products	300,174	197,196	882,902	555,863
Cost of services	60,382	39,804	143,647	127,861
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	360,556	237,000	1,026,549	683,724
Gross profit	458,928	345,038	1,335,951	956,591
Operating expenses:				
Selling and administrative	115,840	109,166	340,488	319,990
Engineering and development	94,909	77,804	274,170	236,030
Acquired intangible assets amortization	6,219	9,647	25,052	30,363
Restructuring and other	(27,701)	(6,500)	1,915	(11,792)
Total operating expenses	189,267	190,117	641,625	574,591
Income from operations	269,661	154,921	694,326	382,000
Non-operating (income) expense:				
Interest income	(1,071)	(4,433)	(5,189)	(13,805)
Interest expense	6,237	5,463	17,831	16,846
Other (income) expense, net	764	2,158	3,595	2,070
Income before income taxes	263,731	151,733	678,089	376,889
Income tax provision	41,013	15,873	90,274	34,494
Net income	$ 222,718	$ 135,860	$ 587,815	$ 342,395
Net income per common share:				
Basic	$ 1.34	$ 0.80	$ 3.54	$ 2.00
Diluted	$ 1.21	$ 0.75	$ 3.23	$ 1.92
Weighted average common shares—basic	166,014	169,641	166,131	171,471
Weighted average common shares—diluted	184,338	180,494	181,777	178,685

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2019, are an integral part of the condensed consolidated financial statements.

TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited)

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
	(in thousands)			
Net income	$ 222,718	$ 135,860	$ 587,815	$ 342,395
Other comprehensive income (loss), net of tax:				
Foreign currency translation adjustment, net of tax of $0, $0, $0, $0, respectively	17,104	(18,002)	24,131	(17,019)
Available-for-sale marketable securities:				
Unrealized gains on debt securities arising during period, net of tax of $139, $507, $1,410, $1,762, respectively	335	1,754	5,165	6,391
Less: Reclassification adjustment for gains included in net income, net of tax of $(194), $(99), $(615), $(125), respectively	(689)	(345)	(2,188)	(442)
	(354)	1,409	2,977	5,949
Defined benefit retirement plans:				
Amortization of prior service credit, net of tax of $0, $(11), $(1), $(32), respectively	(2)	(37)	(6)	(111)
Other comprehensive income (loss)	16,748	(16,630)	27,102	(11,181)
Comprehensive income	$ 239,466	$ 119,230	$ 614,917	$ 331,214

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2019, are an integral part of the condensed consolidated financial statements.

Table of Contents

TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
(Unaudited)

	Common Stock Shares	Common Stock Par Value	Additional Paid-in Capital	Accumulated Other Comprehensive (Loss) Income	Retained Earnings (Accumulated Deficit)	Total Shareholders' Equity
			(in thousands)			
For the Three Months Ended September 27, 2020						
Balance, June 28, 2020	165,806	$ 20,725	$ 1,730,716	$ (8,500)	$ 1,610	$ 1,744,551
Net issuance of common stock under stock-based plans	237	30	13,515			13,545
Stock-based compensation expense			12,600			12,600
Cash dividends ($0.10 per share)					(16,618)	(16,618)
Net income					222,718	222,718
Other comprehensive income				16,748		16,748
Balance, September 27, 2020	166,043	$ 20,755	$ 1,756,831	$ 8,248	$ 207,710	$ 1,993,544
For the Three Months Ended September 29, 2019						
Balance, June 30, 2019	170,436	$ 21,305	$ 1,688,211	$ (7,591)	$ (222,513)	$ 1,479,412
Net issuance of common stock under stock-based plans	377	46	14,041			14,087
Stock-based compensation expense			9,933			9,933
Repurchase of common stock	(2,323)	(290)			(124,473)	(124,763)
Cash dividends ($0.09 per share)					(15,264)	(15,264)
Net income					135,860	135,860
Other comprehensive loss				(16,630)		(16,630)
Balance, September 29, 2019	168,490	$ 21,061	$ 1,712,185	$ (24,221)	$ (226,390)	$ 1,482,635
For the Nine Months Ended September 27, 2020						
Balance, December 31, 2019	166,410	$ 20,801	$ 1,720,129	$ (18,854)	$ (241,918)	$ 1,480,158
Net issuance of common stock under stock-based plans	1,150	144	3,019			3,163
Stock-based compensation expense			33,683			33,683
Repurchase of common stock	(1,517)	(190)			(88,275)	(88,465)
Cash dividends ($0.10 per share)					(49,912)	(49,912)
Net income					587,815	587,815
Other comprehensive income				27,102		27,102
Balance, September 27, 2020	166,043	$ 20,755	$ 1,756,831	$ 8,248	$ 207,710	$ 1,993,544
For the Nine Months Ended September 29, 2019						
Balance, December 31, 2018	175,522	$ 21,940	$ 1,671,645	$ (13,040)	$ (158,191)	$ 1,522,354
Net issuance of common stock under stock-based plans	1,762	220	14,511			14,731
Stock-based compensation expense			26,029			26,029
Repurchase of common stock	(8,794)	(1,099)			(364,287)	(365,386)
Cash dividends ($0.09 per share)					(46,307)	(46,307)
Net income					342,395	342,395
Other comprehensive loss				(11,181)		(11,181)
Balance, September 29, 2019	168,490	$ 21,061	$ 1,712,185	$ (24,221)	$ (226,390)	$ 1,482,635

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2019, are an integral part of the condensed consolidated financial statements.

TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

	For the Nine Months Ended	
	September 27, 2020	September 29, 2019
	(in thousands)	
Cash flows from operating activities:		
Net income	$ 587,815	$ 342,395
Adjustments to reconcile net income from operations to net cash provided by operating activities:		
Depreciation	58,111	51,508
Amortization	36,577	36,849
Stock-based compensation	33,028	28,822
Provision for excess and obsolete inventory	13,116	8,848
Contingent consideration adjustment	(7,967)	(16,460)
Deferred taxes	(4,547)	(2,977)
Gains on investments	(3,515)	(4,158)
Retirement plan actuarial losses	2,589	448
Other	750	610
Changes in operating assets and liabilities, net of businesses acquired:		
Accounts receivable	(222,015)	(66,789)
Inventories	16,998	(14,143)
Prepayments and other assets	(40,751)	(16,118)
Accounts payable and other liabilities	81,557	20,807
Deferred revenue and customer advances	36,589	27,779
Retirement plans contributions	(3,884)	(3,775)
Income taxes	24,060	(31,224)
Net cash provided by operating activities	608,511	362,422
Cash flows from investing activities:		
Purchases of property, plant and equipment	(146,872)	(96,048)
Purchases of marketable securities	(488,428)	(605,539)
Proceeds from maturities of marketable securities	309,407	393,472
Proceeds from sales of marketable securities	32,611	60,274
Proceeds from life insurance	546	2,912
Acquisition of businesses, net of cash acquired	149	(21,970)
Net cash used for investing activities	(292,587)	(266,899)
Cash flows from financing activities:		
Issuance of common stock under stock purchase and stock option plans	26,528	29,280
Repurchase of common stock	(88,465)	(368,782)
Dividend payments	(49,870)	(46,269)
Payments related to net settlement of employee stock compensation awards	(22,735)	(14,550)
Payments of contingent consideration	(8,852)	(27,615)
Net cash used for financing activities	(143,394)	(427,936)
Effects of exchange rate changes on cash and cash equivalents	(1,274)	(400)
Increase (decrease) in cash and cash equivalents	171,256	(332,813)
Cash and cash equivalents at beginning of period	773,924	926,752
Cash and cash equivalents at end of period	$ 945,180	$ 593,939
Supplemental cash flow disclosure		
Non-cash investing activities:		
Capital Expenditures incurred but not yet paid	$ 3,119	$ 2,922

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2019, are an integral part of the condensed consolidated financial statements.

TERADYNE, INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

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 robotic arms, autonomous mobile robots, and advanced robotic control software used by global manufacturing and light industrial customers to improve quality, increase manufacturing and material handling 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 and system level 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.

B. ACCOUNTING POLICIES

Basis of Presentation

The consolidated interim financial statements include the accounts of Teradyne and its wholly owned subsidiaries. All significant intercompany balances and transactions have been eliminated. These interim financial statements are unaudited and reflect all normal recurring adjustments that are, in the opinion of management, necessary for the fair statement of such interim financial statements. Certain prior year amounts were reclassified to conform to the current year presentation. The December 31, 2019 condensed consolidated balance sheet data was derived from audited financial statements but does not include all disclosures required by United States of America generally accepted accounting principles ("U.S. GAAP") for complete financial statements. The accompanying financial information should be read in conjunction with the consolidated financial statements and notes thereto contained in Teradyne's Annual Report on Form 10-K, filed with the U.S. Securities and Exchange Commission ("SEC") on March 2, 2020, for the year ended December 31, 2019.

Preparation of Financial Statements and Use of Estimates

The preparation of consolidated financial statements requires management to make estimates and judgments that affect the amounts reported in the financial statements. Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and our markets. Teradyne is not aware of any specific event or circumstance that would require an update to its estimates or judgments or a revision of the carrying value of its assets or liabilities as of November 2, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change, as new events occur and additional information is obtained. Actual results could differ significantly from these estimates under different assumptions or conditions.

Goodwill

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. Teradyne adopted this standard on January 1, 2020, on a prospective basis. The adoption of ASU 2017-04 did not have a material impact on the consolidated statement of operations, cash flows, or earnings per share. Teradyne assesses 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. Under ASU 2017-04, goodwill impairment will 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.

Credit Losses

In June 2016, the FASB issued ASU 2016-13, “Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments.” This standard introduced the expected credit losses methodology for the measurement of credit losses on financial assets that are not measured at fair value through net income and replaces the “incurred loss” model with an “expected credit loss” model that requires consideration of a broader range of information to estimate expected credit losses over the lifetime of the asset. Teradyne adopted this standard on January 1, 2020 on a modified retrospective basis. The adoption of ASU 2016-13 did not have a material impact on the consolidated statement of operations, balance sheets, cash flows, or earnings per share.

C. RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS

In August 2020, the FASB issued ASU 2020-06 – “Debt - Debt with Conversion and Other Options and Derivatives and Hedging - Contracts in Entity’s Own Equity,” which simplifies the accounting for convertible debt instruments by reducing the number of accounting models and the number of embedded conversion features that could be recognized separately from the primary contract. This ASU requires a convertible debt instrument to be accounted for as a single liability measured at its amortized cost, as long as no other features require bifurcation and recognition as derivatives. This ASU requires an entity to use the if-converted method in the diluted earnings per share calculation for convertible instruments. This ASU will be effective for Teradyne in on January 1, 2022, with early adoption permitted beginning on January 1, 2021. This ASU permits the use of either the modified retrospective or fully retrospective method of transition. Teradyne is evaluating the timing and effects of the adoption of this ASU on its financial statements.

D. ACQUISITIONS

AutoGuide LLC

On November 13, 2019, Teradyne acquired 100% of the membership interests of AutoGuide, LLC (“AutoGuide”), a maker of high-payload autonomous mobile robots (“AMRs”), based in Chelmsford, MA, an emerging and fast growing segment of the global forklift market. The total purchase price was approximately $81.6 million, which included cash paid of approximately $57.6 million and $24.0 million in fair value of contingent consideration payable upon achievement of certain performance targets, extending potentially through 2022. At September 27, 2020, the maximum contingent consideration that could be paid is $106.9 million.

The contingent consideration is payable upon achievement of certain thresholds and targets for revenue and earnings before interest and taxes for periods from January 1, 2019 to December 31, 2020, January 1, 2019 to December 31, 2021, and January 1, 2019 to December 31, 2022.

The valuation of the contingent consideration is dependent on the following assumptions: forecasted revenues, revenue volatility, earnings before interest and taxes, and discount rate. These assumptions were estimated based on a review of the historical and projected results.

The AutoGuide 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. AutoGuide’s AMRs are used for material transport of payloads up to 4,500 kg in manufacturing, warehouse and logistics applications. These products complement Mobile Industrial Robots Aps (“MiR”) lower payload products and expand the Industrial Automation segment, which is a key component of Teradyne’s growth strategy.

The allocation of the total purchase price to AutoGuide’s net tangible assets 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 assets in the amount of $41.2 million was allocated to goodwill, which is deductible for tax purposes. AutoGuide’s results have been included in Teradyne’s Industrial Automation segment from the date of acquisition.

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

	Purchase Price Allocation (in thousands)
Goodwill	$ 41,223
Intangible assets	37,660
Tangible assets acquired and liabilities assumed:	
Other current assets	3,661
Non-current assets	1,227
Accounts payable and current liabilities	(1,223)
Long-term other liabilities	(949)
Total purchase price	$ 81,599

Teradyne estimated the fair value of intangible assets using the income approach. Forecasted revenues is the key assumption for estimating the fair value. 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:

	Fair Value (in thousands)	Estimated Useful Life (in years)
Developed technology	$ 24,590	6.0
Customer relationships	7,360	6.0
Trademarks and tradenames	5,450	7.0
Backlog	260	0.3
Total intangible assets	$ 37,660	6.1

The following unaudited pro forma information gives effect to the acquisition of AutoGuide as if the acquisition occurred on January 1, 2018. 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:

	For the Three Months Ended September 29, 2019	For the Nine Months Ended September 29, 2019
	(in thousands)	
Revenue	$ 585,238	$ 1,646,815
Net income	134,911	338,149
Net income per common share:		
Basic	$ 0.80	$ 1.97
Diluted	$ 0.75	$ 1.89

Lemsys SA

On January 30, 2019, Teradyne acquired all of the issued and outstanding shares of Lemsys SA (“Lemsys”) for a total purchase price of approximately $9.1 million. Lemsys strengthens Teradyne’s position in the electrification trends of vehicles, solar and wind power, and industrial applications. The Lemsys acquisition was accounted for as a business combination and, accordingly, the results have been included in Teradyne’s Semiconductor Test segment from the date of acquisition. Teradyne’s final allocation of the purchase price was goodwill of $1.4 million, which is not deductible for tax purposes, acquired intangible assets of $4.6 million with an average estimated useful life of 5.2 years, and $3.1 million of net tangible assets. The acquisition was not material to Teradyne’s consolidated financial statements.

Table of Contents

E. REVENUE

Disaggregation of Revenue

The following table provides information about disaggregated revenue by timing of revenue recognition, primary geographical market, and major product lines.

	Semiconductor Test			Industrial Automation					
	System on a Chip	Memory	System Test	Universal Robots	Mobile Industrial Robots	AutoGuide	Wireless Test	Corporate and Other	Total
					(in thousands)				
For the Three Months Ended September 27, 2020 (1)									
Timing of Revenue Recognition									
Point in Time	$ 393,717	$137,929	$101,045	$ 51,523	$ 10,175	$ 4,076	$ 37,901	$ (41)	$ 736,325
Over Time	55,988	4,507	17,124	1,686	59	1,192	2,603	—	83,159
Total	$ 449,705	$142,436	$118,169	$ 53,209	$ 10,234	$ 5,268	$ 40,504	$ (41)	$ 819,484
Geographical Market									
Asia Pacific	$ 420,821	$137,286	$ 78,534	$ 14,471	$ 1,566	$ —	$ 33,865	$ —	$ 686,543
Americas	17,678	3,730	35,140	16,527	3,981	5,268	5,211	(41)	87,494
Europe, Middle East, and Africa	11,206	1,420	4,495	22,211	4,687	—	1,428	—	45,447
Total	$ 449,705	$142,436	$118,169	$ 53,209	$ 10,234	$ 5,268	$ 40,504	$ (41)	$ 819,484
For the Three Months Ended September 29, 2019 (1)									
Timing of Revenue Recognition									
Point in Time	$ 273,111	$ 68,510	$ 61,988	$ 57,426	$ 9,631	$ —	$ 39,948	$ (160)	$ 510,454
Over Time	51,366	4,750	11,317	1,835	—	—	2,316	—	71,584
Total	$ 324,477	$ 73,260	$ 73,305	$ 59,261	$ 9,631	$ —	$ 42,264	$ (160)	$ 582,038
Geographical Market									
Asia Pacific	$ 297,590	$ 68,646	$ 32,259	$ 15,855	$ 1,800	$ —	$ 34,652	$ —	$ 450,802
Americas	14,804	4,085	33,868	16,775	2,820	—	6,344	(160)	78,536
Europe, Middle East, and Africa	12,083	529	7,178	26,631	5,011	—	1,268	—	52,700
Total	$ 324,477	$ 73,260	$ 73,305	$ 59,261	$ 9,631	$ —	$ 42,264	$ (160)	$ 582,038
For the Nine Months Ended September 27, 2020 (2)									
Timing of Revenue Recognition									
Point in Time	$1,261,468	$298,150	$259,498	$140,829	$ 30,468	$ 8,608	$125,304	$ (294)	$2,124,031
Over Time	162,159	14,000	46,553	5,628	176	2,083	7,870	—	238,469
Total	$1,423,627	$312,150	$306,051	$146,457	$ 30,644	$ 10,691	$133,174	$ (294)	$2,362,500
Geographical Market									
Asia Pacific	$1,330,463	$296,679	$197,208	$ 39,665	$ 4,391	$ —	$113,576	$ —	$1,981,982
Americas	51,315	11,481	91,924	42,634	9,836	10,691	15,253	(294)	232,840
Europe, Middle East, and Africa	41,849	3,990	16,919	64,158	16,417	—	4,345	—	147,678
Total	$1,423,627	$312,150	$306,051	$146,457	$ 30,644	$ 10,691	$133,174	$ (294)	$2,362,500
For the Nine Months Ended September 29, 2019 (2)									
Timing of Revenue Recognition									
Point in Time	$ 776,589	$169,877	$167,500	$174,820	$ 29,243	$ —	$106,705	$ (402)	$1,424,332
Over Time	153,701	13,322	37,434	5,690	—	—	5,836	—	215,983
Total	$ 930,290	$183,199	$204,934	$180,510	$ 29,243	$ —	$112,541	$ (402)	$1,640,315
Geographical Market									
Asia Pacific	$ 840,564	$157,726	$ 94,736	$ 49,291	$ 6,208	$ —	$ 95,315	$ —	$1,243,840
Americas	46,594	21,728	90,591	50,557	9,152	—	14,511	(402)	232,731
Europe, Middle East, and Africa	43,132	3,745	19,607	80,662	13,883	—	2,715	—	163,744
Total	$ 930,290	$183,199	$204,934	$180,510	$ 29,243	$ —	$112,541	$ (402)	$1,640,315

(1) Includes $1.7 million and $1.5 million in 2020 and 2019, respectively, for leases of Teradyne's systems recognized outside Accounting Standards Codification ("ASC") 606 "*Revenue from Contracts with Customers.*"

(2) Includes $6.1 million and $4.9 million in 2020 and 2019, respectively, for leases of Teradyne's systems recognized outside ASC 606 "*Revenue from Contracts with Customers.*"

Contract Balances

During the three and nine months ended September 27, 2020, Teradyne recognized $17.6 million and $78.2 million, respectively, that was previously included within the deferred revenue and customer advances balances. During the three and nine months ended September 29, 2019, Teradyne recognized $14.2 million and $47.6 million, respectively, that was previously included within the deferred revenue and customer advances balances. This revenue primarily relates to undelivered hardware, extended warranties, training, application support, and post contract support. Each of these represents a distinct performance obligation. Teradyne expects to recognize 69% of the remaining performance obligation in the next 12 months, 28% in 1-3 years, and the remainder thereafter.

Accounts Receivable

Teradyne sells certain trade accounts receivables on a non-recourse basis to third-party financial institutions pursuant to factoring agreements. Teradyne accounts for these transactions as sales of receivables and presents cash proceeds as cash provided by operating activities in the consolidated statements of cash flows. Total trade accounts receivable sold under the factoring agreements were $16.5 million and $31.3 million for the three months ended September 27, 2020 and September 29, 2019, respectively and $113.5 million and $113.4 million for the nine months ended September 27, 2020 and September 29, 2019, respectively. Factoring fees for the sales of receivables were recorded in interest expense and were not material.

F. INVENTORIES

Inventories, net consisted of the following at September 27, 2020 and December 31, 2019:

	September 27, 2020	December 31, 2019
	(in thousands)	
Raw material	$ 117,500	$ 118,595
Work-in-process	28,406	32,695
Finished goods	45,411	45,401
	$ 191,317	$ 196,691

Inventory reserves at September 27, 2020 and December 31, 2019 were $108.7 million and $103.6 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 debt securities are classified as Level 2 and equity and debt mutual funds are classified as Level 1. 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.

During the three and nine months ended September 27, 2020 and September 29, 2019, there were no transfers in or out of Level 1, Level 2, or Level 3 financial instruments.

Realized gains recorded in the three and nine months ended September 27, 2020 were $1.1 million and $4.1 million, respectively. Realized losses recorded in the three and nine months ended September 27, 2020 were $0.1 million and $0.3 million, respectively. Realized gains recorded in the three and nine months ended September 29, 2019 were $0.5 million and $0.7 million, respectively. Realized losses recorded in the nine months ended September 29, 2019 were $0.2 million. Realized gains and losses are included in other (income) expense, net.

Unrealized gains on equity securities recorded in the three and nine months ended September 27, 2020 were $2.0 million and $5.7 million, respectively. Unrealized losses on equity securities recorded in the nine months ended September 27, 2020 were $6.0 million. Unrealized gains on equity securities recorded in the three and nine months ended September 29, 2019 were $0.1 million and $3.8 million, respectively. Unrealized losses on equity securities recorded in the three and nine months ended September 29, 2019 were $0.2 million. Unrealized gains and losses on equity securities are included in other (income) expense, net. Unrealized gains and losses on available-for-sale debt securities are included in accumulated other comprehensive income (loss).

The cost of securities sold is based on the first-in first-out method.

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 September 27, 2020 and December 31, 2019.

	September 27, 2020			
	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
	(in thousands)			
Assets				
Cash	$ 267,013	$ —	$ —	$ 267,013
Cash equivalents	663,301	14,866	—	678,167
Available-for-sale securities:				
U.S. Treasury securities	—	202,766	—	202,766
Commercial paper	—	102,149	—	102,149
Corporate debt securities	—	50,715	—	50,715
Debt mutual funds	6,852	—	—	6,852
U.S. government agency securities	—	4,346	—	4,346
Certificates of deposit and time deposits	—	2,416	—	2,416
Non-U.S. government securities	—	619	—	619
Equity securities:				
Mutual funds	26,180	—	—	26,180
	$ 963,346	$ 377,877	$ —	$ 1,341,223
Derivative assets	—	25	—	25
Total	$ 963,346	$ 377,902	$ —	$ 1,341,248
Liabilities				
Contingent consideration	$ —	$ —	$ 22,531	$ 22,531
Derivative liabilities	—	185	—	185
Total	$ —	$ 185	$ 22,531	$ 22,716

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
Assets				
Cash and cash equivalents	$930,314	$ 14,866	$ —	$ 945,180
Marketable securities	—	287,789	—	287,789
Long-term marketable securities	33,032	75,222	—	108,254
Prepayments and other current assets	—	25	—	25
Total	$963,346	$377,902	$ —	$1,341,248
Liabilities	.			
Other current liabilities	$ —	$ 185	$ —	$ 185
Long-term contingent consideration	—	—	22,531	22,531
Total	$ —	$ 185	$22,531	$ 22,716

	December 31, 2019			
	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
	(in thousands)			
Assets				
Cash	$ 311,975	$ —	$ —	$ 311,975
Cash equivalents	410,285	51,664	—	461,949
Available-for-sale securities:				
Corporate debt securities	—	97,307	—	97,307
Commercial paper	—	54,149	—	54,149
U.S. Treasury securities	—	42,382	—	42,382
U.S. government agency securities	—	9,952	—	9,952
Debt mutual funds	6,888	—	—	6,888
Certificates of deposit and time deposits	—	4,751	—	4,751
Non-U.S. government securities	—	592	—	592
Equity securities:				
Equity mutual funds	25,772	—	—	25,772
	$ 754,920	$ 260,797	$ —	$1,015,717
Derivative assets	—	528	—	528
Total	$ 754,920	$ 261,325	$ —	$1,016,245
Liabilities				
Contingent consideration	$ —	$ —	$ 39,705	$ 39,705
Derivative liabilities	—	203	—	203
Total	$ —	$ 203	$ 39,705	$ 39,908

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
Assets				
Cash and cash equivalents	$722,260	$ 51,664	$ —	$ 773,924
Marketable securities	—	137,303	—	137,303
Long-term marketable securities	32,660	71,830	—	104,490
Prepayments and other current assets	—	528	—	528
Total	$754,920	$261,325	$ —	$1,016,245
Liabilities				
Other accrued liabilities	$ —	$ 203	$ —	$ 203
Contingent consideration	—	—	9,106	9,106
Long-term contingent consideration	—	—	30,599	30,599
Total	$ —	$ 203	$39,705	$ 39,908

Changes in the fair value of Level 3 contingent consideration for the three and nine months ended September 27, 2020 and September 29, 2019 were as follows:

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
	(in thousands)			
Balance at beginning of period	$ 49,737	$ 26,847	$ 39,705	$ 70,543
Fair value adjustment (a)(b)(c)	(27,206)	(7,759)	(7,967)	(16,460)
Payments (d)(e)	—	—	(8,852)	(34,590)
Foreign currency impact	—	(1,008)	(355)	(1,413)
Balance at end of period	$ 22,531	$ 18,080	$ 22,531	$ 18,080

(a) In the three and nine months ended September 27, 2020, the fair value of contingent consideration for the earn-outs in connection with the acquisition of AutoGuide decreased by $27.2 million and $4.4 million, respectively, due to lower forecasted results. Teradyne has received a letter from the sellers of AutoGuide alleging non-compliance with the earn-out provisions of the AutoGuide acquisition agreement. Teradyne disputes the allegations of non-compliance. The ultimate amount of contingent consideration for the earn-outs in connection with the acquisition of AutoGuide may be affected by the outcome of the dispute.

(b) In the nine months ended September 27, 2020, the fair value of contingent consideration for the earn-outs in connection with the acquisition of MiR decreased by $3.5 million due to lower forecasted results.

(c) In the three and nine months ended September 29, 2019, the fair value of contingent consideration for the earn-out in connection with the acquisition of MiR decreased by $7.8 million and $16.5 million, respectively, primarily due to a decrease in the forecasted revenue, partially offset by impact from the modification of the earn-out structure in the three months ended September 29, 2019.

(d) In the nine months ended September 27, 2020, Teradyne paid $8.9 million of contingent consideration for the earn-out in connection with the acquisition of MiR.

(e) In the nine months ended September 29, 2019, Teradyne paid $30.8 million and $3.8 million of contingent consideration for the earn-outs in connection with the acquisition of MiR and Universal Robots A/S (“Universal Robots”), respectively.

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

Liability	September 27, 2020 Fair Value (in thousands)	Valuation Technique	Unobservable Inputs	Weighted Average
Contingent consideration (AutoGuide)	$ 22,531	Monte Carlo Simulation	Revenue volatility	17.5%
			Discount Rate	1.4%
Contingent consideration (MiR)	$ —	Monte Carlo Simulation	Revenue volatility	10.0%
			Discount Rate	0.8%

As of September 27, 2020, the significant unobservable inputs used in the Monte Carlo simulation to fair value the AutoGuide and MiR contingent consideration include forecasted revenues, revenue volatility, earnings before interest and taxes, and discount rate. Increases or decreases in the inputs would result in a higher or lower fair value measurement.

As of September 27, 2020, the maximum amount of contingent consideration that could be paid in connection with the acquisition of AutoGuide is $106.9 million. The earn-out periods end on December 31, 2020, December 31, 2021 and December 31, 2022.

As of September 27, 2020, the maximum amount of contingent consideration that could be paid in connection with the acquisition of MiR is $65.8 million. The remaining earn-out period ends on December 31, 2020.

The carrying amounts and fair values of Teradyne's financial instruments at September 27, 2020 and December 31, 2019 were as follows:

	September 27, 2020		December 31, 2019	
	Carrying Value	Fair Value	Carrying Value	Fair Value
	(in thousands)			
Assets				
Cash and cash equivalents	$ 945,180	$ 945,180	$ 773,924	$ 773,924
Marketable securities	396,043	396,043	241,793	241,793
Derivative assets	25	25	528	528
Liabilities				
Contingent consideration	22,531	22,531	39,705	39,705
Derivative liabilities	185	185	203	203
Convertible debt (1)	406,178	1,151,460	394,687	1,010,275

(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 value due to the short-term nature of these instruments.

The following table summarizes the composition of available-for-sale marketable securities at September 27, 2020:

	September 27, 2020				
	Available-for-Sale				
	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
U.S. Treasury securities	$201,193	$ 1,606	$ (33)	$ 202,766	$ 20,611
Commercial paper	102,141	8	—	102,149	500
Corporate debt securities	44,350	6,417	(52)	50,715	2,207
Debt mutual funds	6,661	191	—	6,852	—
U.S. government agency securities	4,288	60	(2)	4,346	1,113
Certificates of deposit and time deposits	2,414	2	—	2,416	—
Non-U.S. government securities	619	—	—	619	—
	$361,666	$ 8,284	$ (87)	$ 369,863	$ 24,431

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Marketable securities	$287,670	$ 128	$ (9)	$ 287,789	$ 18,953
Long-term marketable securities	73,996	8,156	(78)	82,074	5,478
	$361,666	$ 8,284	$ (87)	$ 369,863	$ 24,431

The following table summarizes the composition of available-for-sale marketable securities at December 31, 2019:

	December 31, 2019				
	Available-for-Sale				
	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Corporate debt securities	$ 93,267	$ 4,081	$ (41)	$ 97,307	$ 2,009
Commercial paper	54,124	26	(1)	54,149	1,391
U.S. Treasury securities	42,167	431	(216)	42,382	17,556
U.S. government agency securities	9,942	14	(4)	9,952	3,043
Debt mutual funds	6,753	135	—	6,888	—
Certificates of deposit and time deposits	4,751	—	—	4,751	—
Non-U.S. government securities	592	—	—	592	—
	$211,596	$ 4,687	$ (262)	$216,021	$ 23,999

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Marketable securities	$137,144	$ 160	$ (1)	$137,303	$ 2,922
Long-term marketable securities	74,452	4,527	(261)	78,718	21,077
	$211,596	$ 4,687	$ (262)	$216,021	$ 23,999

As of September 27, 2020 and December 31, 2019, the fair market value of investments with unrealized losses less than one year totaled $24.4 million and $23.6 million, respectively.

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 September 27, 2020 and December 31, 2019 were not other than temporary.

The contractual maturities of investments in available-for-sale securities held at September 27, 2020 were as follows:

	September 27, 2020	
	Cost	Fair Market Value
	(in thousands)	
Due within one year	$287,670	$ 287,789
Due after 1 year through 5 years	20,790	21,266
Due after 5 years through 10 years	13,021	14,211
Due after 10 years	33,524	39,745
Total	$355,005	$ 363,011

Contractual maturities of investments in available-for-sale securities held at September 27, 2020 exclude debt mutual funds with a fair market value of $6.9 million, as they do not have a contractual maturity date.

Table of Contents

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 monetary assets and liabilities denominated in foreign currencies.

The notional amount of foreign currency forward contracts at September 27, 2020 and December 31, 2019 was $111.5 million and $144.9 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 September 27, 2020 and December 31, 2019:

	Balance Sheet Location	September 27, 2020	December 31, 2019
		(in thousands)	
Derivatives not designated as hedging instruments:			
Foreign exchange contracts	Prepayments	$ 25	$ 528
Foreign exchange contracts	Other current liabilities	(185)	(203)
Total derivatives		$ (160)	$ 325

The following table summarizes the effect of derivative instruments recognized in the statement of operations for the three and nine months ended September 27, 2020 and September 29, 2019:

	Location of (Gains) Losses Recognized in Statement of Operations	For the Three Months Ended		For the Nine Months Ended	
		September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
		(in thousands)			
Derivatives not designated as hedging instruments:					
Foreign exchange contracts	Other (income) expense, net	$ (551)	$ 3,699	$ 3,930	$ 7,872

(1) The table does not reflect the corresponding gains and losses from the remeasurement of the monetary assets and liabilities denominated in foreign currencies.

(2) For the three months ended September 27, 2020, net losses from the remeasurement of monetary assets and liabilities denominated in foreign currencies were $1.2 million. For the nine months ended September 27, 2020, net gains from the remeasurement of monetary assets and liabilities denominated in foreign currencies were $0.4 million.

(3) For the three months ended September 29, 2019, net gains from the remeasurement of monetary assets and liabilities denominated in foreign currencies were $1.5 million. For the nine months ended September 29, 2019, net gains from the remeasurement of monetary assets and liabilities denominated in foreign currencies were $3.4 million.

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

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. 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 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. As of September 27, 2020, the conversion price was approximately $31.57 per share of Teradyne's common stock. The conversion rate is subject to adjustment under certain circumstances. As of November 2, 2020, fourteen holders exercised the option to convert twenty-nine thousand dollars' worth of Notes.

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 conversion price of the Notes of $31.57. The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, approximately 14.6 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 anti-dilution adjustments, approximately 14.6 million shares of common stock. As of September 27, 2020, the strike price of the warrants was approximately $39.62 per share. The strike price is subject to adjustment under certain circumstances. 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 common stock and should be classified in stockholders' equity in its statements of financial position. The convertible note hedge is considered indexed to Teradyne's common 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 common 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 common 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 September 27, 2020, debt issuance costs were approximately $3.6 million.

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

	September 27, 2020	December 31, 2019
	(in thousands)	
Debt Principal	$ 459,973	$ 460,000
Unamortized discount	53,795	65,313
Net Carrying amount of convertible debt	$ 406,178	$ 394,687

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
	(in thousands)		(in thousands)	
Contractual interest expense on the coupon	$ 1,438	$ 1,438	$ 4,313	$ 4,313
Amortization of the discount component and debt issue fees recognized as interest expense	3,887	3,699	11,518	10,961
Total interest expense on the convertible debt	$ 5,325	$ 5,137	$ 15,831	$ 15,274

As of September 27, 2020, the remaining unamortized discount was $53.8 million, which will be amortized over 3.3 years using the effective interest rate method. The carrying amount of the equity component was $100.8 million. As of September 27, 2020, the if-converted value of the Notes was $1,132.4 million.

Revolving Credit Facility

On May 1, 2020, Teradyne entered into a credit agreement (the "Credit Agreement") with Truist Bank, as administrative agent and collateral agent, and the lenders party thereto. The Credit Agreement provides for a three-year, senior secured revolving credit facility of $400.0 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 $150.0 million.

Proceeds from the Credit Facility may be used for general corporate purposes and working capital. During the nine months ended September 27, 2020, Teradyne incurred $3.5 million in costs related to the revolving credit facility. These costs are being amortized over the three-year term of the revolving credit facility and are included in interest expense in the statement of operations. As of November 2, 2020, 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 0.50% to 1.25% per annum or LIBOR, a minimum of 0.75%, plus a margin ranging from 1.50% to 2.25% per annum, based on the consolidated leverage ratio of Teradyne. In addition, Teradyne will pay a commitment fee on the unused portion of the commitments under the Credit Facility ranging from 0.25% to 0.40% 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 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.

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.

As of November 2, 2020, Teradyne was in compliance with all covenants.

I. PREPAYMENTS

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

	September 27, 2020	December 31, 2019
	(in thousands)	
Contract manufacturer and supplier prepayments	$ 185,567	$ 143,392
Prepaid taxes	11,278	8,046
Prepaid maintenance and other services	10,064	8,503
Other prepayments	14,063	16,753
Total prepayments	$ 220,972	$ 176,694

J. DEFERRED REVENUE AND CUSTOMER ADVANCES

Deferred revenue and customer advances consist of the following and are included in short and long-term deferred revenue and customer advances on the balance sheet:

	September 27, 2020	December 31, 2019
	(in thousands)	
Maintenance, service and training	$ 71,362	$ 63,815
Customer advances, undelivered elements and other	68,472	56,358
Extended warranty	48,703	30,677
Total deferred revenue and customer advances	$ 188,537	$ 150,850

K. 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.

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
	(in thousands)			
Balance at beginning of period	$ 13,016	$ 8,133	$ 8,996	$ 7,909
Acquisition	—	—	—	14
Accruals for warranties issued during the period	8,255	3,508	19,522	10,008
Accruals related to pre-existing warranties	158	1,132	1,569	3,156
Settlements made during the period	(6,272)	(4,265)	(14,930)	(12,579)
Balance at end of period	$ 15,157	$ 8,508	$ 15,157	$ 8,508

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.

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
	(in thousands)			
Balance at beginning of period	$ 40,178	$ 28,716	$ 30,677	$ 27,422
Deferral of new extended warranty revenue	13,674	5,666	32,724	16,962
Recognition of extended warranty deferred revenue	(5,149)	(4,445)	(14,698)	(14,447)
Balance at end of period	$ 48,703	$ 29,937	$ 48,703	$ 29,937

L. STOCK-BASED COMPENSATION

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

Service-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 earlier of (a) the first anniversary of the grant date or (b) the date of the following year’s Annual Meeting of Shareholders. Teradyne expenses the cost of the restricted stock unit awards subject to service-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.

Performance-based restricted stock units (“PRSUs”) granted to Teradyne’s executive officers may have a performance metric based on relative total shareholder return (“TSR”). Teradyne’s three-year TSR performance is 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 0% to 200% of the target shares capped at four times the grant date value for grants prior to 2019. 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 shorter of the three-year service period or the period from the grant to the date described in the retirement provisions below. Compensation expense for executive officers meeting the retirement provisions prior to the grant date is recognized during the year following the grant. 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.

PRSUs granted to Teradyne’s executive officers may also have a performance metric based on three-year cumulative non-GAAP profit before interest and tax (“PBIT”) as a percent of Teradyne’s revenue. 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 0% to 200% 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 shorter of the three-year service period or the period from the grant date to the date described in the retirement provisions below. Compensation expense for executive officers meeting the retirement provisions prior to the grant date is recognized during the year following the grant. 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.

If a PRSU 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.

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.

During the nine months ended September 27, 2020 and September 29, 2019, Teradyne granted 0.4 million and 0.7 million of service-based restricted stock unit awards to employees at a weighted average grant date fair value of $70.76 and $36.85, respectively, and 0.1 million of service-based restricted stock unit awards to non-employee directors at a weighted average grant date fair value of $64.99 and $48.03, respectively.

During the nine months ended September 27, 2020 and September 29, 2019, Teradyne granted 0.1 million of PBIT PRSUs with a grant date fair value of $70.94 and $36.88, respectively.

During the nine months ended September 27, 2020 and September 29, 2019, Teradyne granted 0.1 million of TSR PRSUs, with a grant date fair value of $89.93 and $51.51, respectively. The fair value was estimated using the Monte Carlo simulation model with the following assumptions:

	For the Nine Months Ended	
	September 27, 2020	September 29, 2019
Risk-free interest rate	1.5%	2.6%
Teradyne volatility-historical	34.9%	31.9%
NYSE Composite Index volatility-historical	11.4%	11.9%
Dividend yield	0.6%	1.0%

Expected volatility was based on the historical volatility of Teradyne's stock and the NYSE Composite Index 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 was based upon an estimated annual dividend amount of $0.40 per share divided by Teradyne's stock price on the grant date of $72.10 for the 2020 grant and an estimated annual dividend amount of $0.36 per share divided by Teradyne's stock price on the grant date of $36.75 for the 2019 grant.

During the nine months ended September 27, 2020 and September 29, 2019, Teradyne granted 0.1 million of service-based stock options to executive officers at a weighted average grant date fair value of $20.67 and $10.61, respectively.

The fair value of stock options was estimated using the Black-Scholes option-pricing model with the following assumptions:

	For the Nine Months Ended	
	September 27, 2020	September 29, 2019
Expected life (years)	5.0	5.0
Risk-free interest rate	1.6%	2.5%
Volatility-historical	31.6%	30.1%
Dividend yield	0.6%	1.0%

Teradyne determined the stock options' expected life based upon historical exercise data for executive officers, the age of the executive officers and the terms of the stock option grant. Volatility was determined using historical volatility for a period equal to the expected life. The risk-free 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 $0.40 per share divided by Teradyne's stock price on the grant date of $72.10 for the 2020 grant and an estimated annual dividend amount of $0.36 per share divided by Teradyne's stock price on the grant date of $37.95 for the 2019 grant.

M. ACCUMULATED OTHER COMPREHENSIVE (LOSS) INCOME

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

	Foreign Currency Translation Adjustment	Unrealized Gains (Losses) on Marketable Securities	Retirement Plans Prior Service Credit	Total
		(in thousands)		
Nine Months Ended September 27, 2020				
Balance at December 31, 2019, net of tax of $0, $946, $(1,124), respectively	$ (23,514)	$ 3,480	$ 1,180	$(18,854)
Other comprehensive income before reclassifications, net of tax of $0, $1,410, $0, respectively	24,131	5,165	—	29,296
Amounts reclassified from accumulated other comprehensive income, net of tax of $0, $(615), $(1), respectively	—	(2,188)	(6)	(2,194)
Net current period other comprehensive income (loss), net of tax of $0, $795, $(1), respectively	24,131	2,977	(6)	27,102
Balance at September 27, 2020, net of tax of $0, $1,741, $(1,125), respectively	$ 617	$ 6,457	$ 1,174	$ 8,248
Nine Months Ended September 29, 2019				
Balance at December 31, 2018, net of tax of $0, $(521), $(1,081), respectively	$ (12,523)	$ (1,845)	$ 1,328	$(13,040)
Other comprehensive (loss) income before reclassifications, net of tax of $0, $1,762, $0, respectively	(17,019)	6,391	—	(10,628)
Amounts reclassified from accumulated other comprehensive income, net of tax of $0, $(125), $(32), respectively	—	(442)	(111)	(553)
Net current period other comprehensive (loss) income, net of tax of $0, $1,637, $(32), respectively	(17,019)	5,949	(111)	(11,181)
Balance at September 29, 2019, net of tax of $0, $1,116, $(1,113), respectively	$ (29,542)	$ 4,104	$ 1,217	$(24,221)

Reclassifications out of accumulated other comprehensive (loss) income to the statement of operations for the three and nine months ended September 27, 2020 and September 29, 2019 were as follows:

Details about Accumulated Other Comprehensive Income Components	For the Three Months Ended		For the Nine Months Ended		Affected Line Item in the Statements of Operations
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019	
		(in thousands)			
Available-for-sale marketable securities:					
Unrealized gains, net of tax of $194, $99, $615, $125, respectively	$ 689	$ 345	$ 2,188	$ 442	Interest income
Defined benefit retirement plans:					
Amortization of prior service credit, net of tax of $0, $11, $1, $32, respectively	2	37	6	111	(a)
Total reclassifications, net of tax of $194, $110, $616, $157, respectively	$ 691	$ 382	$ 2,194	$ 553	Net income

(a) The amortization of prior service credit is included in the computation of net periodic pension cost and postretirement benefit. See Note Q: "Retirement Plans."

N. GOODWILL AND ACQUIRED 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 impaired when the net book value of a reporting unit exceeds its estimated fair value.

The changes in the carrying amount of goodwill by reportable segments for the nine months ended September 27, 2020, were as follows:

	Industrial Automation	System Test	Wireless Test	Semiconductor Test	Total
			(in thousands)		
Balance at December 31, 2019					
Goodwill	$ 396,483	$ 158,699	$ 361,819	$ 261,996	$1,178,997
Accumulated impairment losses	—	(148,183)	(353,843)	(260,540)	(762,566)
	396,483	10,516	7,976	1,456	416,431
AutoGuide acquisition	(149)	—	—	—	(149)
Foreign currency translation adjustment	18,881	—	—	89	18,970
Balance at September 27, 2020					
Goodwill	415,215	158,699	361,819	262,085	1,197,818
Accumulated impairment losses	—	(148,183)	(353,843)	(260,540)	(762,566)
	$ 415,215	$ 10,516	$ 7,976	$ 1,545	$ 435,252

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.

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

	Gross Carrying Amount	Accumulated Amortization	Foreign Currency Translation Adjustment	Net Carrying Amount
		(in thousands)		
Balance at September 27, 2020				
Developed technology	$361,787	$ (295,801)	$ (3,806)	$ 62,180
Customer relationships	75,669	(63,107)	(42)	12,520
Tradenames and trademarks	70,120	(40,891)	(257)	28,972
Total intangible assets	$507,576	$ (399,799)	$ (4,105)	$103,672
Balance, December 31, 2019				
Developed technology	$361,787	$ (279,000)	$ (5,709)	$ 77,078
Customer relationships	75,669	(59,077)	(455)	16,137
Tradenames and trademarks	70,120	(36,671)	(1,184)	32,265
Backlog	260	(260)	—	—
Total intangible assets	$507,836	$ (375,008)	$ (7,348)	$125,480

Aggregate intangible asset amortization expense was $6.2 million and $25.1 million, respectively, for the three and nine months ended September 27, 2020 and $9.6 million and $30.4 million, respectively, for the three and nine months ended September 29, 2019.

Estimated intangible asset amortization expense for each of the five succeeding fiscal years is as follows:

Year	Amortization Expense (in thousands)
2020 (remainder)	5,721
2021	21,254
2022	20,361
2023	19,874
2024	19,565
Thereafter	16,897

O. NET INCOME PER COMMON SHARE

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

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
	(in thousands, except per share amounts)			
Net income for basic and diluted net income per share	$ 222,718	$ 135,860	$ 587,815	$ 342,395
Weighted average common shares-basic	166,014	169,641	166,131	171,471
Effect of dilutive potential common shares:				
Incremental shares from assumed conversion of convertible notes (1)	9,156	5,800	8,029	4,117
Convertible note hedge warrant shares (2)	7,775	3,580	6,364	1,786
Restricted stock units	1,237	1,313	1,104	1,112
Stock options	141	155	136	186
Employee stock purchase plan	15	5	13	13
Dilutive potential common shares	18,324	10,853	15,646	7,214
Weighted average common shares-diluted	184,338	180,494	181,777	178,685
Net income per common share-basic	$ 1.34	$ 0.80	$ 3.54	$ 2.00
Net income per common share-diluted	$ 1.21	$ 0.75	$ 3.23	$ 1.92

(1) Incremental shares from 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 $31.57, multiplied by 14.6 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 $39.62, multiplied by 14.6 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.

The computation of diluted net income per common share for the three and nine months ended September 27, 2020 excludes the effect of the potential vesting of 0.1 million and 0.2 million, respectively, of restricted stock units because the effect would have been anti-dilutive.

The computation of diluted net income per common share for the three and nine months ended September 29, 2019 excludes the effect of the potential vesting of 0.1 million of stock options, because the effect would have been anti-dilutive.

The computation of diluted net income per share for the nine months ended September 29, 2019 excludes the effect of the potential vesting of 0.2 million of restricted stock units, because the effect would have been anti-dilutive.

P. RESTRUCTURING AND OTHER

During the three months ended September 27, 2020, Teradyne recorded a $27.2 million gain for the decrease in the fair value of the AutoGuide contingent consideration liability, a $1.1 million gain for the decrease in acquisition related compensation liability, partially offset by $0.5 million recorded for employee severance charges primarily in Industrial Automation.

During the three months ended September 29, 2019, Teradyne recorded a $7.8 million gain for the decrease in the fair value of the MiR contingent consideration liability, partially offset by $0.5 million recorded for employee severance charges primarily in Industrial Automation and $0.5 million for acquisition related compensation and expenses.

During the nine months ended September 27, 2020, Teradyne recorded a $4.0 million contract termination settlement charge, $3.4 million of acquisition related compensation and expenses, $1.2 million of severance charges primarily in Industrial Automation, and $1.2 million of other expenses, partially offset by a $4.4 million gain for the decrease in the fair value of the AutoGuide contingent consideration liabilities, and a $3.5 million gain for the decrease in the fair value of the MiR contingent consideration liability.

During the nine months ended September 29, 2019, Teradyne recorded a $16.5 million gain for the decrease in the fair value of the MiR contingent consideration liability, partially offset by $2.1 million recorded for employee severance charges primarily in Semiconductor Test and Industrial Automation and $2.3 million for acquisition related expenses and compensation.

Q. RETIREMENT PLANS

ASC 715, *"Compensation—Retirement Benefits"* requires an employer with a defined benefit plan or other postretirement benefit plan to recognize an asset or a liability on its balance sheet for the overfunded or underfunded status of the plan. 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 these plans in accordance with local laws and to the extent that such contributions are tax deductible. The assets of the U.S. qualified pension plan consist primarily of fixed income and equity securities. In addition, Teradyne has unfunded qualified foreign plans as well as 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 ("IRC").

In the three months ended September 27, 2020, Teradyne purchased a group annuity contract for its retiree participants in the U.S. qualified pension plan. Under the group annuity, the accrued pension obligations for approximately 115 retiree participants were transferred to an insurance company. The reduction in the pension benefit obligation and pension assets was $24.4 million. In the three and nine months ended September 27, 2020, Teradyne recorded $2.2 million of pension actuarial loss and a settlement loss of $0.5 million from interim remeasurement of U.S. Pension Plan related to the retiree group annuity transaction.

In the nine months ended September 27, 2020, Teradyne contributed $2.2 million to the U.S. supplemental executive defined benefit pension plan and $0.7 million to certain qualified pension plans for non-U.S. subsidiaries.

For the three and nine months ended September 27, 2020 and September 29, 2019, Teradyne's net periodic pension cost was comprised of the following:

	For the Three Months Ended			
	September 27, 2020		September 29, 2019	
	United States	Foreign	United States	Foreign
	(in thousands)			
Service cost	$ 417	$ 216	$ 402	$ 183
Interest cost	1,460	123	1,797	168
Expected return on plan assets	(1,170)	(16)	(1,510)	(7)
Net actuarial loss	2,238	—	—	—
Settlement loss	450	—	—	—
Total net periodic pension cost	$ 3,395	$ 323	$ 689	$ 344

	For the Nine Months Ended			
	September 27, 2020		September 29, 2019	
	United States	Foreign	United States	Foreign
	(in thousands)			
Service cost	$ 1,283	$ 648	$ 1,206	$ 550
Interest cost	4,505	369	5,392	505
Expected return on plan assets	(3,634)	(47)	(4,531)	(21)
Net actuarial loss	2,418	—	252	—
Settlement loss	450	—	—	—
Total net periodic pension cost	$ 5,022	$ 970	$ 2,319	$ 1,034

Postretirement Benefit Plan

In addition to receiving pension benefits, Teradyne employees in the United States 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.

For the three and nine months ended September 27, 2020 and September 29, 2019, Teradyne's net periodic postretirement benefit cost (income) was comprised of the following:

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
	(in thousands)			
Service cost	$ 14	$ 10	$ 43	$ 31
Interest cost	60	87	180	260
Amortization of prior service credit	(2)	(48)	(7)	(143)
Net actuarial (gain) loss	—	—	(279)	196
Total net periodic postretirement benefit cost (credit)	$ 72	$ 49	$ (63)	$ 344

R. COMMITMENTS AND CONTINGENCIES

Purchase Commitments

As of September 27, 2020, Teradyne had entered into purchase commitments for certain components and materials. The purchase commitments covered by the agreements aggregate to approximately $669.3 million, of which $663.0 million is for less than one year.

Legal Claims

Teradyne is subject to various legal proceedings and claims which have arisen 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.

S. INCOME TAXES

A reconciliation of the United States federal statutory corporate tax rate to Teradyne's effective tax rate was as follows:

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
US statutory federal tax rate	21.0%	21.0%	21.0%	21.0%
International provisions of the U.S. Tax Cuts and Jobs Act of 2017	3.6	1.2	0.7	1.0
Foreign taxes	(6.9)	(5.1)	(5.8)	(4.9)
Tax credits	(1.1)	(1.8)	(1.4)	(2.2)
Discrete (benefit) expense related to the international provisions of the U.S. Tax Cuts and Jobs Act of 2017	(0.6)	(4.0)	(0.2)	2.3
Discrete (benefit) expense related to release of reserves for uncertain tax positions	(0.5)	0.1	(0.2)	(6.9)
Discrete benefit related to equity compensation	(0.4)	(0.7)	(1.4)	(1.5)
Other, net	0.5	(0.2)	0.6	0.4
Effective tax rate	15.6%	10.5%	13.3%	9.2%

On a quarterly basis, Teradyne evaluates the realizability of the deferred tax assets by jurisdiction and assesses the need for a valuation allowance. As of September 27, 2020, Teradyne believes that it will ultimately realize the deferred tax assets recorded on the condensed consolidated balance sheet. However, should Teradyne believe that it is more-likely-than-not that the deferred tax assets would not be realized, the tax provision would increase in the period in which Teradyne determined that the realizability was not likely. Teradyne considers the probability of future taxable income and historical profitability, among other factors, in assessing the realizability of the deferred tax assets.

As of September 27, 2020 and December 31, 2019, Teradyne had $17.6 million and $21.2 million, respectively, of reserves for uncertain tax positions. The $3.6 million net decrease in reserves for uncertain tax positions is primarily related to U.S. state research and development credits generated in prior years, as well as inventory cost capitalization and equity compensation in prior years.

As of September 27, 2020, Teradyne does not anticipate a material change in the balance of unrecognized tax benefits during the next twelve months.

Teradyne recognizes interest and penalties related to income tax matters in income tax expense. As of September 27, 2020 and December 31, 2019, $1.4 million and $1.4 million, respectively, of interest and penalties were accrued for uncertain tax positions. For the nine months ended September 27, 2020 and September 29, 2019, expense of $0.0 million and $0.2 million, respectively, was recorded for interest and penalties related to income tax items.

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 due to the tax holiday for the nine months ended September 27, 2020 was $24.9 million, or $0.14 per diluted share. The tax savings due to the tax holiday for the nine months ended September 29, 2019 was $12.0 million, or $0.07 per diluted share. The tax holiday is scheduled to expire on December 31, 2020. Teradyne is currently in discussion with the Singapore Economic Development Board with respect to extension of the tax holiday for periods after December 31, 2020.

T. SEGMENT INFORMATION

Teradyne has four reportable segments (Semiconductor Test, System Test, Industrial Automation and Wireless Test). Each of the Semiconductor Test, System Test, and Wireless Test segments is also an individual operating segment. The Industrial Automation reportable segment consists of operating segments with discrete financial information, which have been combined into one reportable segment as they share similar economic characteristics, types of products, production processes and distribution channels. On September 15, 2020, Teradyne announced the appointment of Gregory Smith as President of Teradyne's Industrial Automation reportable segment effective October 1, 2020. With the appointment of Gregory Smith, the Industrial Automation reportable segment will become an individual operating segment. 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 and system level test, and circuit-board test. The Industrial Automation segment includes operations related to the design, manufacturing and marketing of collaborative robotic arms, autonomous mobile robots and advanced robotic control software. The Wireless Test segment includes operations related to the design, manufacturing and marketing of wireless test products and services.

Teradyne evaluates performance based on several factors, of which the primary financial measure is business segment income (loss) before income taxes. The accounting policies of the business segments in effect are described in Note B: "Accounting Policies" in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2019.

Segment information for the three and nine months ended September 27, 2020 and September 29, 2019 is as follows:

	Semiconductor Test	System Test	Industrial Automation	Wireless Test	Corporate and Other	Consolidated
			(in thousands)			
Three Months Ended September 27, 2020						
Revenues	$ 592,141	$118,169	$ 68,711	$ 40,504	$ (41)	$ 819,484
Income (loss) before income taxes (1)(2)	189,116	47,368	(5,302)	10,938	21,611	263,731
Total assets (3)	1,069,830	155,642	667,132	108,671	1,435,237	3,436,512
Three Months Ended September 29, 2019						
Revenues	$ 397,737	$ 73,305	$ 68,892	$ 42,264	$ (160)	$ 582,038
Income (loss) before income taxes (1)(2)	116,633	24,381	(1,645)	11,182	1,182	151,733
Total assets (3)	757,422	126,452	580,635	94,789	1,139,493	2,698,791
Nine Months Ended September 27, 2020						
Revenues	$ 1,735,777	$306,051	$ 187,792	$133,174	$ (294)	$2,362,500
Income (loss) before income taxes (1)(2)	571,719	114,968	(32,041)	35,640	(12,197)	678,089
Total assets (3)	1,069,830	155,642	667,132	108,671	1,435,237	3,436,512
Nine Months Ended September 29, 2019						
Revenues	$ 1,113,489	$204,934	$ 209,753	$112,541	$ (402)	$1,640,315
Income (loss) before income taxes (1)(2)	291,037	63,254	(10,670)	25,740	7,528	376,889
Total assets (3)	757,422	126,452	580,635	94,789	1,139,493	2,698,791

(1) Included in Corporate and Other are: contingent consideration adjustments, employee severance charges, interest (income) and expense, net foreign exchange (gains) and losses, pension and postretirement plan actuarial (gains) and losses and settlement charges, intercompany eliminations, and certain acquisition related charges and compensation.
(2) Included in income (loss) before taxes are charges and credits related to restructuring and other, and inventory charges.
(3) Total assets are attributable to each segment. Corporate assets consist of cash and cash equivalents, marketable securities and certain other assets.

Included in each segment are charges and credits in the following line items in the statements of operations:

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
	(in thousands)			
Semiconductor Test:				
Cost of revenues - inventory charge	$ 1,131	$ 1,867	$ 7,956	$ 5,319
Restructuring and other - contract termination settlement fee	—	—	4,000	—
Restructuring and other - employee severance	—	—	—	1,009
Wireless:				
Cost of revenues - inventory charge	$ 1,802	$ 724	$ 3,957	$ 1,892
Restructuring and other - employee severance	—	—	—	566
Industrial Automation:				
Cost of revenues - inventory charge	$ —	$ —	$ 505	$ 508
Restructuring and other - acquisition related compensation and expenses	—	—	790	1,330
Restructuring and other - employee severance	—	—	664	604
System Test:				
Cost of revenues - inventory charge	$ —	$ —	$ 698	$ 1,129
Corporate and Other:				
Restructuring and other - AutoGuide contingent consideration adjustment	$ (27,206)	$ —	$ (4,421)	$ —
Restructuring and other - acquisition related compensation and expenses	(1,086)	816	2,629	928
Restructuring and other - MiR contingent consideration adjustment	—	(7,759)	(3,546)	(16,427)
Selling and administrative - equity modification charge	—	2,108	—	2,108

U. SHAREHOLDERS' EQUITY

Stock Repurchase Program

In January 2020, Teradyne's Board of Directors authorized a new stock repurchase program for up to $1.0 billion of common stock. Effective April 1, 2020, Teradyne suspended its share repurchase program.

During the nine months ended September 27, 2020, Teradyne repurchased 1.5 million shares of common stock for $88.5 million at an average price of $58.33 per share. During the nine months ended September 29, 2019, Teradyne repurchased 8.8 million shares of common stock for $368.8 million at an average price of $41.93 per share.

The total price includes commissions and is recorded as a reduction to retained earnings.

Dividend

Holders of Teradyne's common stock are entitled to receive dividends when they are declared by Teradyne's Board of Directors.

In January 2020, May 2020 and August 2020, Teradyne's Board of Directors declared a quarterly cash dividend of $0.10 per share. Dividend payments for the three and nine months ended September 27, 2020 were $16.6 million and $49.9 million, respectively.

In January 2019, May 2019 and August 2019, Teradyne's Board of Directors declared a quarterly cash dividend of $0.09 per share. Dividend payments for the three and nine months ended September 29, 2019 were $15.3 million and $46.3 million, respectively.

While Teradyne declared a quarterly cash dividend and has suspended its share repurchase program, it may reduce or eliminate the cash dividend and may implement a new 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.

Table of Contents

Item 2: Management’s Discussion and Analysis of Financial Condition and Results of Operations

Statements in this Quarterly Report on Form 10-Q which are not historical facts, so called “forward-looking statements,” are made pursuant to the safe harbor provisions of Section 21E of the Securities Exchange Act of 1934, as amended. Investors are cautioned that all forward-looking statements involve risks and uncertainties, including those detailed in our filings with the Securities and Exchange Commission. See also Part II, Item 1A of this Quarterly Report on Form 10-Q and Part I, Item 1A “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2019. Readers are cautioned not to place undue reliance on these forward-looking statements which reflect management’s analysis only as of the date hereof. We assume no obligation to update these forward-looking statements to reflect actual results or changes in factors or assumptions affecting forward-looking statements, except as may be required by law.

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 robotic arms, autonomous mobile robots and advanced robotic control software used by global manufacturing and light industrial customers to improve quality, increase manufacturing and material handling 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 and system level 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 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, autonomous mobile robots and wireless test systems.

The sales of our products and services are dependent, to a large degree, on these 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 because our customers often delay or accelerate purchases in reaction to changes in their businesses and to demand fluctuations in the semiconductor, electronics and industrial automation industries. Historically, these demand fluctuations have resulted in significant variations in our results of operations.

The market for our test products is concentrated with a limited number of significant customers accounting for a substantial portion of the purchases of test equipment. A few customers drive significant demand for our products both through direct sales and sales to the customers’ supply partners. We expect that sales of our test products will continue to be concentrated with a limited number of significant customers for the foreseeable future.

On January 30, 2019, we acquired all of the issued and outstanding shares of Lemsys SA (“Lemsys”) for a total purchase price of approximately $9.1 million. Lemsys strengthens our position in the electrification trends of vehicles, solar, wind, and industrial applications. Lemsys is included in our Semiconductor Test segment.

On November 13, 2019, we acquired 100% of the membership interests of AutoGuide, LLC (“AutoGuide”), a maker of high payload AMRs, an emerging and fast-growing segment of the global forklift market. The total purchase price was approximately $81.6 million, which included cash paid of approximately $57.6 million and $24.0 million in fair value of contingent consideration payable upon achievement of certain performance targets, extending potentially through 2022. The maximum contingent consideration that could be paid is $106.9 million. AutoGuide’s AMRs are used for material transport of payloads up to 4,500 kg in manufacturing, warehouse and logistics applications. These products complement MiR’s lower payload products. AutoGuide is included in our Industrial Automation segment.

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.

Impact of the COVID-19 Pandemic on our Business

The novel coronavirus (COVID-19) pandemic has resulted in government authorities implementing numerous measures in an effort to contain the spread of the virus, such as travel bans and restrictions, limitations on gatherings or social distancing requirements, quarantines, shelter-in-place orders, and business limitations and shutdowns. These measures have impacted our day-to-day operations and could disrupt our business, workforce and operations, as well as the operations of our customers, contract manufacturers and suppliers for an uncertain period of time. We are continuing to monitor the rapidly evolving situation regarding the COVID-19 pandemic and its impact on our business, results of operations, financial condition, liquidity and cash flows. However, despite careful tracking, we are unable to accurately predict the full impact of COVID-19, which will depend on future developments that are highly uncertain and cannot be predicted with accuracy, including, but not limited to, the duration and continued spread of the outbreak, its severity, the actions to contain the virus or treat its impact, and how quickly and to what extent normal economic and operating conditions can resume.

Health and Safety

In response to the COVID-19 pandemic, we have taken proactive, aggressive action to protect the health and safety of our employees, customers, contract manufacturers and suppliers and we have complied with all government orders around the globe. The spread of COVID-19 has caused us to modify our business practices, including implementing social distancing protocols, suspending employee travel, requiring most employees to work remotely, cancelling physical participation in meetings, and extensively and frequently disinfecting our workspaces. Around the world, the majority of our employees are working from home. However, some of our engineering, operations, supply line and customer support teams must be on-site at our or our customers' facilities. We are providing those on-site employees with the necessary protective resources and procedures to minimize their exposure risk. We may take further actions as may be required or recommended by government authorities or that we determine are in the best interests of our employees, customers, contract manufacturers and suppliers.

Operations

We believe the COVID-19 pandemic, and the numerous measures implemented by authorities in response, has adversely impacted our results of operations, including by increasing costs and decreasing demand in our Industrial Automation businesses, but we cannot accurately estimate the amount of the impact to our third quarter 2020 financial results or to our future financial results. In addition, restrictions on our access to manufacturing facilities or on our support operations or workforce, or similar limitations for our contract manufacturers and suppliers, and restrictions or disruptions affecting transportation, such as reduced availability of transportation and increased border controls or closures, could limit our capacity to meet customer demand which could have a material adverse effect on our financial condition and results of operations. These measures have impacted and may further impact our workforce and operations, as well as those of our customers, contract manufacturers and suppliers. The constraints and limits imposed on our operations may slow or diminish our production and research and development activities as well as application support projects with our customers. At this time, application support projects are largely on track with employees assisting customers on-site where necessary but with the use of enhanced safety protocols. Research and development projects are, with minor exceptions, on schedule despite the rapid shift of a significant number of our engineers working remotely. While governmental measures may be modified or extended, we expect that our manufacturing and research and development facilities will remain operational, at sufficient capacity to support production demand. We are monitoring our operations closely in an effort to avoid any potential productivity loss caused by responses to the COVID-19 pandemic.

Supply

We have not yet experienced any significant impacts or interruptions to our supply chain as a result of the COVID-19 pandemic. However, our suppliers have faced and may continue to face difficulties maintaining operations in light of government-ordered restrictions, including social distancing requirements and shelter-in-place mandates. Our supply chain team, and our suppliers, overcame numerous supply, production, and logistics obstacles in 2020, but there is no assurance we or they will be able to do so in the future. Although we regularly monitor the financial health of companies in our supply chain, financial hardship on our suppliers or sub-suppliers caused by the COVID-19 pandemic could disrupt our ability to obtain components required to manufacture our products, adversely affecting our operations. To mitigate the risk of any potential supply interruptions, we may choose to increase certain inventory levels during the quarter. Additionally, restrictions or disruptions affecting transportation, such as reduced availability of air transport, port closures and increased border controls or closures, have led in some instances to higher costs and delays, both for obtaining components and shipping finished goods to customers, which could harm our profitability, make our products less competitive, or cause our customers to seek alternative suppliers.

Demand

The COVID-19 pandemic has significantly increased economic uncertainty in our markets, which could result in a significant decrease in demand for our products for an uncertain period of time. Demand for our Test products was strong throughout the third quarter and into the fourth quarter. While there is incremental softening in the automotive sector, there is strengthening demand in mobility, 5G, and memory test. Our Industrial Automation business, however, experienced a significant decline in demand through first half of 2020 due to COVID-19 related shutdowns affecting global manufacturing but demand recovered in the third quarter from the low point in the second quarter. We anticipate that the COVID-19 pandemic could cause further global economic disruption that could cause demand for our products to decline, which would adversely affect our business.

Liquidity

Although there is uncertainty related to the anticipated impact of the COVID-19 pandemic on our future results, we believe our business model, our current cash reserves and the recent steps we have taken to manage our cash flow, such as suspending our stock repurchase program, leave us well-positioned to manage our business through this crisis as it continues to unfold. We have a strong balance sheet as well as an operating model that can flex up and down with extreme demand swings and still remain profitable. Based on our analysis, we believe our existing balances of cash and cash equivalents and our currently anticipated operating cash flows will be sufficient to meet our working capital needs and other capital and liquidity requirements for the next twelve months. However, due to the uncertainty related to the future impact of the COVID-19 pandemic, in order to bolster our liquidity position, on May 1, 2020 we entered into a credit agreement providing for a three-year, senior secured revolving credit facility of $400 million as further described in Note H: "Debt." As of November 2, 2020, we have not borrowed any funds under the credit facility. While test demand remained strong at the beginning of our fourth quarter and our balance sheet has over $1 billion in available cash and marketable securities with no short-term debt as of November 2, 2020, the impact of the COVID-19 pandemic on short-term Test and Industrial Automation demand remain uncertain.

We are continuing to monitor the rapidly evolving situation regarding the COVID-19 pandemic and guidance from government authorities around the world, including federal, state and local public health authorities and may take additional actions based on their recommendations. In these circumstances, there may be developments outside our control requiring us to adjust our operating plan. As a result, given the uncertain nature of this situation, we are not able to accurately predict the full extent of the impact of COVID-19 on our business, financial condition, results of operations, liquidity, or cash flows in the future. In addition, see Part II—Item 1A, "Risk Factors," included herein for updates to our risk factors regarding risks associated with the COVID-19 pandemic.

Critical Accounting Policies and Estimates

We have identified the policies which are critical to understanding our business and our results of operations. There have been no significant changes during the nine months ended September 27, 2020 to the items disclosed as our critical accounting policies and estimates in Management's Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, except as noted below.

Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and our markets. We are not aware of any specific event or circumstance that would require an update to our estimates or judgments or a revision of the carrying value of our assets or liabilities as of November 2, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change, as new events occur and additional information is obtained. Actual results could differ significantly from these estimates under different assumptions or conditions.

Goodwill

On January 26, 2017, the Financial Accounting Standards Board ("FASB") issued 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. We adopted this standard on January 1, 2020, on a prospective basis. The adoption of ASU 2017-04 did not have a material impact on the consolidated statement of operations, cash flows, or earnings per share. 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. Under ASU 2017-04, goodwill impairment will 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.

Credit Losses

In June 2016, the FASB issued ASU 2016-13, "Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments." This standard introduced the expected credit losses methodology for the measurement of credit losses on financial assets that are not measured at fair value through net income and replaces the "incurred loss" model with an "expected credit loss" model that requires consideration of a broader range of information to estimate expected credit losses over the lifetime of the asset. We adopted this standard on January 1, 2020 on a modified retrospective basis. The adoption of ASU 2016-13 did not have a material impact on our consolidated statement of operations, balance sheets, cash flows, or earnings per share.

Preparation of Financial Statements and Use of Estimates

The preparation of consolidated financial statements requires management to make estimates and judgments that affect the amounts reported in the financial statements. Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and our markets. Teradyne is not aware of any specific event or circumstance that would require an update to its estimates or judgments or a revision of the carrying value of its assets or liabilities as of November 2, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change, as new events occur and additional information is obtained. Actual results may differ significantly from these estimates under different assumptions or conditions.

SELECTED RELATIONSHIPS WITHIN THE CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

	For the Three Months Ended		For the Nine Months Ended	
	September 27, 2020	September 29, 2019	September 27, 2020	September 29, 2019
Percentage of revenues:				
Revenues:				
Products	85%	84%	86%	82%
Services	15	16	14	18
Total revenues	100	100	100	100
Cost of revenues:				
Cost of products	37	34	37	34
Cost of services	7	7	6	8
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	44	41	43	42
Gross profit	56	59	57	58
Operating expenses:				
Selling and administrative	14	19	14	20
Engineering and development	12	13	12	14
Acquired intangible assets amortization	1	2	1	2
Restructuring and other	(3)	(1)	—	(1)
Total operating expenses	23	33	27	35
Income from operations	33	27	29	23
Non-operating (income) expense:				
Interest income	—	(1)	—	(1)
Interest expense	1	1	1	1
Other (income) expense, net	—	—	—	—
Income before income taxes	32	26	29	23
Income tax provision	5	3	4	2
Net income	27%	23%	25%	21%

Table of Contents

Results of Operations

Third Quarter 2020 Compared to Third Quarter 2019

Revenues

Revenues by our reportable segments were as follows:

	For the Three Months Ended		
	September 27, 2020	September 29, 2019	Dollar Change
	(in millions)		
Semiconductor Test	$ 592.1	$ 397.7	$194.4
System Test	118.2	73.3	44.9
Industrial Automation	68.7	68.9	(0.2)
Wireless Test	40.5	42.3	(1.8)
Corporate and Other	—	(0.2)	0.2
	$ 819.5	$ 582.0	$237.5

The increase in Semiconductor Test revenues of $194.4 million, or 48.9%, was driven primarily by an increase in semiconductor mobility test sales resulting from increased complexity of cell phone silicon which drives demand for testers, and an increase in memory test sales of flash and DRAM memory testers. The increase in System Test revenues of $44.9 million, or 61.3%, was primarily due to higher sales in Storage Test of system level and hard disk drive testers, and higher sales in Defense/Aerospace of test instrumentation and systems, partially offset by lower sales in Production Board Test due to lower automotive electronics demand. The decrease in Wireless Test revenues of $1.8 million, or 4.3%, was primarily due to lower demand for millimeter wave test products, partially offset by higher sales in connectivity test products.

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

	For the Three Months Ended	
	September 27, 2020	September 29, 2019
Taiwan	37%	21%
Korea	16	10
China	15	31
United States	10	14
Europe	6	9
Thailand	5	4
Japan	2	4
Singapore	2	3
Philippines	2	2
Malaysia	2	2
Rest of World	3	—
	100%	100%

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

Gross Profit

Our gross profit was as follows:

	For the Three Months Ended		
	September 27, 2020	September 29, 2019	Dollar/Point Change
		(in millions)	
Gross profit	$ 458.9	$ 345.0	$ 113.9
Percent of total revenues	56.0%	59.3%	(3.3)

Gross profit as a percent of the revenue decreased by 3.3 points, primarily due to product mix in Semiconductor Test and higher logistic and operations costs due to the COVID-19 pandemic.

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 sales and marketing groups and incorporates factors such as backlog and future revenue 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 the next four quarters for our Wireless Test segment, is written-down to estimated net realizable value.

During the three months ended September 27, 2020, we recorded an inventory provision of $3.5 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels, of which $1.8 million was related to Wireless Test and $1.1 million was related to Semiconductor Test.

During the three months ended September 29, 2019, we recorded an inventory provision of $3.0 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels, of which $1.9 million was related to Semiconductor Test, $0.7 million was related to Wireless Test and $0.4 million was related to System Test.

During the three months ended September 27, 2020 and September 29, 2019, we scrapped $2.4 million and $3.4 million of inventory, respectively. During the three months ended September 27, 2020 and September 29, 2019, we sold $0.3 million and $0.8 million of previously written-down or written-off inventory, respectively. As of September 27, 2020, we had reserves for inventory, which had been written-down or written-off totaling $108.7 million. We have no pre-determined timeline to scrap the remaining inventory.

Selling and Administrative

Selling and administrative expenses were as follows:

	For the Three Months Ended		
	September 27, 2020	September 29, 2019	Dollar Change
		(in millions)	
Selling and administrative	$ 115.8	$ 109.2	$ 6.7
Percent of total revenues	14.1%	18.8%	

The increase of $6.7 million in selling and administrative expenses was primarily due to higher variable compensation.

Engineering and Development

Engineering and development expenses were as follows:

	For the Three Months Ended		
	September 27, 2020	September 29, 2019	Dollar Change
	(in millions)		
Engineering and development	$ 94.9	$ 77.8	$ 17.1
Percent of total revenues	11.6%	13.4%	

The increase of $17.1 million in engineering and development expenses was primarily due to higher variable compensation and higher spending across all segments.

Restructuring and Other

During the three months ended September 27, 2020, we recorded a $27.2 million gain for the decrease in the fair value of the AutoGuide contingent consideration liability, a $1.1 million gain for the decrease in acquisition related compensation liability, partially offset by $0.5 million recorded for employee severance charges primarily in Industrial Automation.

During the three months ended September 29, 2019, we recorded a $7.8 million gain for the decrease in the fair value of the MiR contingent consideration liability, partially offset by $0.5 million recorded for employee severance charges primarily in Industrial Automation and $0.5 million for acquisition related compensation and expenses.

Interest and Other

	For the Three Months Ended		
	September 27, 2020	September 29, 2019	Dollar Change
	(in millions)		
Interest income	$ (1.1)	$ (4.4)	$ 3.4
Interest expense	6.2	5.5	0.8
Other (income) expense, net	0.8	2.2	(1.4)

Interest income decreased by $3.4 million primarily due to lower interest rates in 2020 compared to 2019. Other (income) expense, net decreased by $1.4 million, primarily due to changes in unrealized gains/losses on equity securities, and lower foreign exchange losses, partially offset by higher pension actuarial losses in 2020.

Income (Loss) Before Income Taxes

	For the Three Months Ended		
	September 27, 2020	September 29, 2019	Dollar Change
	(in millions)		
Semiconductor Test	$ 189.1	$ 116.6	$ 72.5
System Test	47.4	24.4	23.0
Wireless Test	10.9	11.2	(0.2)
Industrial Automation	(5.3)	(1.6)	(3.6)
Corporate and Other (1)	21.6	1.2	20.4
	$ 263.7	$ 151.7	$112.0

(1) Included in Corporate and Other are: contingent consideration adjustments, employee severance charges, interest (income) and expense, net foreign exchange (gains) and losses, pension and postretirement plan actuarial (gains) and losses and settlement charges, intercompany eliminations, and certain acquisition related charges and compensation.

The increase in income before income taxes in Semiconductor Test was driven primarily by an increase in semiconductor mobility test sales resulting from increased complexity of cell phone silicon which drives demand for testers, and an increase in memory test sales of flash and DRAM memory testers. The increase in income before income taxes in System Test was primarily due to higher sales in Storage Test of system level and hard disk drive testers, and higher sales in Defense/Aerospace of test instrumentation and systems, partially offset by lower sales in Production Board Test due to lower automotive electronics demand. The decrease in income before income taxes in Industrial Automation was primarily due to higher engineering and development spending, partially offset by lower intangible assets amortization.

Income Taxes

The effective tax rate for the three months ended September 27, 2020 and September 29, 2019 was 15.6% and 10.5%, respectively. The increase in the effective tax rate from the three months ended September 29, 2019 to the three months ended September 27, 2020 was primarily attributable to an increase in expense related to the international provisions of the U.S. Tax Cuts and Jobs Act of 2017.

Nine Months 2020 Compared to Nine Months 2019

Revenues

Revenues by our four reportable segments were as follows:

	For the Nine Months Ended		
	September 27, 2020	**September 29, 2019**	**Dollar Change**
		(in millions)	
Semiconductor Test	$ 1,735.8	$ 1,113.5	$ 622.3
System Test	306.1	204.9	101.2
Industrial Automation	187.8	209.8	(22.0)
Wireless Test	133.2	112.5	20.7
Corporate and Other	(0.3)	(0.4)	0.1
	$ 2,362.5	$ 1,640.3	$ 722.2

The increase in Semiconductor Test revenues of $622.3 million, or 55.9%, was driven primarily by an increase in semiconductor mobility test sales resulting from increased complexity of cell phone silicon which drives demand for testers, and an increase in memory test sales of flash and DRAM testers. The increase in System Test revenues of $101.2 million, or 49.4%, was primarily due to higher sales in Storage Test of system level and hard disk drive testers, and higher sales in Defense/Aerospace test instrumentation and systems, partially offset by lower sales in Production Board Test due to lower automotive electronics demand. The decrease in Industrial Automation revenues of $22.0 million, or 10.5%, was primarily due to lower demand for collaborative robotic arms in the automotive and manufacturing markets amplified by the impacts of COVID-19. The increase in Wireless Test revenues of $20.7 million, or 18.4%, was primarily due to increased sales of 5G and WiFi 6 testers.

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

	For the Nine Months Ended	
	September 27, 2020	September 29, 2019
Taiwan	40%	22%
China	15	23
Korea	12	10
United States	9	14
Europe	6	10
Japan	5	7
Thailand	4	4
Singapore	2	4
Malaysia	2	3
Philippines	2	3
Rest of World	3	—
	100%	100%

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

Gross Profit

Our gross profit was as follows:

	For the Nine Months Ended		
	September 27, 2020	September 29, 2019	Dollar/Point Change
		(in millions)	
Gross profit	$ 1,336.0	$ 956.6	$ 379.4
Percent of total revenues	56.5%	58.3%	(1.8)

Gross profit as a percent of revenue decreased by 1.8 point, primarily due to product mix in Semiconductor Test.

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 sales and marketing groups and incorporates factors such as backlog and future revenue 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 the next four quarters for our Wireless Test segment, is written-down to estimated net realizable value.

During the nine months ended September 27, 2020, we recorded an inventory provision of $13.1 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels, of which $8.0 million was related to Semiconductor Test, $4.0 million was related to Wireless Test, $0.7 million was related to System Test, and $0.5 million was related to Industrial Automation.

During the nine months ended September 29, 2019, we recorded an inventory provision of $8.8 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels, of which $5.3 million was related to Semiconductor Test, $1.9 million was related to Wireless Test, $1.1 million was related to System Test, and $0.5 million was related to Industrial Automation.

During the nine months ended September 27, 2020 and September 29, 2019, we scrapped $5.4 million and $6.4 million of inventory, respectively. During the nine months ended September 27, 2020 and September 29, 2019, we sold $1.7 million and $2.0 million of previously written-down or written-off inventory, respectively. As of September 27, 2020, we had inventory related reserves for inventory, which had been written-down or written-off totaling $108.7 million. We have no pre-determined timeline to scrap the remaining inventory.

Selling and Administrative

Selling and administrative expenses were as follows:

	For the Nine Months Ended		
	September 27, 2020	September 29, 2019	Dollar Change
	(in millions)		
Selling and administrative	$ 340.5	$ 320.0	$ 20.5
Percent of total revenues	14.4%	19.5%	

The increase of $20.5 million in selling and administrative expenses was primarily due to higher variable compensation.

Engineering and Development

Engineering and development expenses were as follows:

	For the Nine Months Ended		
	September 27, 2020	September 29, 2019	Dollar Change
	(in millions)		
Engineering and development	$ 274.2	$ 236.0	$ 38.1
Percent of total revenues	11.6%	14.4%	

The increase of $38.1 million in engineering and development expenses was primarily due to higher variable compensation and higher spending across all segments.

Restructuring and Other

During the nine months ended September 27, 2020, we recorded a $4.0 million contract termination settlement charge, $3.4 million of acquisition related compensation and expenses, $1.2 million of severance charges primarily in Industrial Automation, and $1.2 million of other expenses, partially offset by a $4.4 million gain for the decrease in the fair value of the AutoGuide contingent consideration liabilities, and a $3.5 million gain for the decrease in the fair value of the MiR contingent consideration liability.

During the nine months ended September 29, 2019, we recorded a $16.5 million gain for the decrease in the fair value of the MiR contingent consideration liability, partially offset by $2.1 million recorded for employee severance charges primarily in Semiconductor Test and Industrial Automation and $2.3 million for acquisition related expenses and compensation.

Interest and Other

	For the Nine Months Ended		
	September 27, 2020	September 29, 2019	Dollar Change
	(in millions)		
Interest income	$ (5.2)	$ (13.8)	$ 8.6
Interest expense	17.8	16.8	1.0
Other (income) expense, net	3.6	2.1	1.5

Interest income decreased by $8.6 million primarily due to lower interest rates in 2020 compared to 2019. Other (income) expense, net increased by $1.5 million primarily due to the change in unrealized gains/losses on equity securities and pension actuarial losses, partially offset by higher realized gains on sales of marketable securities and lower foreign exchange losses.

Income (Loss) Before Income Taxes

	For the Nine Months Ended		
	September 27, 2020	September 29, 2019	Dollar Change
	(in millions)		
Semiconductor Test	$ 571.7	$ 291.0	$ 280.7
System Test	115.0	63.3	51.7
Wireless Test	35.6	25.7	9.9
Industrial Automation	(32.0)	(10.7)	(21.3)
Corporate and Other (1)	(12.2)	7.5	(19.8)
	$ 678.1	$ 376.9	$ 301.2

(1) Included in Corporate and Other are: contingent consideration adjustments, employee severance charges, interest (income) and expense, net foreign exchange (gains) and losses, pension and postretirement plan actuarial (gains) and losses and settlement charges, intercompany eliminations, and certain acquisition related charges and compensation.

The increase in income before income taxes in Semiconductor Test was driven primarily by an increase in semiconductor mobility test sales resulting from increased complexity of cell phone silicon which drives demand for testers, and an increase in memory test sales of flash and DRAM testers. The increase in income before income taxes in System Test was primarily due to higher sales in Storage Test of system level and hard disk drive testers, and higher sales in Defense/Aerospace test of instrumentation and systems, partially offset by lower sales in Production Board Test due to lower automotive electronics demand. The increase in Wireless Test income before income taxes was primarily due to increased sales of 5G and WiFi 6 testers. The decrease in income before income taxes in Industrial Automation was primarily due to lower demand for collaborative robotic arms in the automotive and manufacturing markets amplified by the impacts of COVID-19.

Income Taxes

The effective tax rate for the nine months ended September 27, 2020 and September 29, 2019 was 13.3% and 9.2%, respectively. The increase in the effective tax rate from the nine months ended September 29, 2019 to the nine months ended September 27, 2020 was primarily attributable to a reduction in discrete benefit related to the release of reserves for uncertain tax positions partially offset by an increase in discrete benefit related to the international provisions of the U.S. Tax Cuts and Jobs Act of 2017.

Contractual Obligations

The following table reflects our contractual obligations as of September 27, 2020:

	Payments Due by Period					
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years	Other
	(in thousands)					
Purchase obligations	$ 669,317	$663,007	$ 6,310	$ —	$ —	$ —
Convertible debt	459,973	—	—	459,973	—	—
Retirement plans contributions	134,650	5,322	10,422	10,384	108,522	—
Transition tax payable (1)	82,819	7,889	15,795	34,539	24,596	—
Operating lease obligations	69,629	22,856	27,627	12,353	6,793	—
Interest on long-term debt	20,125	5,750	11,500	2,875	—	—
Fair value of contingent consideration	22,531	—	22,531	—	—	—
Other long-term liabilities reflected on the balance sheet under GAAP (2)	90,702	—	51,944	6,717	438	31,603
Total	$1,549,746	$704,824	$146,129	$526,841	$140,349	$31,603

(1) Represents the transition tax liability associated with our accumulated foreign earnings as a result of enactment of the Tax Reform Act on December 22, 2017.

(2) 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 balances increased by $325.5 million in the nine months ended September 27, 2020 to $1,341.2 million.

Operating activities during the nine months ended September 27, 2020 provided cash of $608.5 million. Changes in operating assets and liabilities used cash of $107.4 million. This was due to a $245.8 million increase in operating assets and a $138.3 million increase in operating liabilities.

The increase in operating assets was due to a $222.0 million increase in accounts receivable due to increased sales, a $40.8 million increase in prepayments and other assets, partially offset by a $17.0 million decrease in inventories.

The increase in operating liabilities was due to a $47.3 million increase in other accrued liabilities, a $36.6 million increase in deferred revenue and customer advance payments, a $24.1 million increase in income taxes, a $23.8 million increase in accounts payable, and a $10.5 million increase in accrued employee compensation, partially offset by $3.9 million of retirement plan contributions.

Investing activities during the nine months ended September 27, 2020 used cash of $292.6 million, due to $488.4 million used for purchases of marketable securities, and $146.9 million used for purchases of property, plant and equipment, partially offset by $309.4 million and $32.6 million in proceeds from maturities and sales of marketable securities, respectively, and proceeds from life insurance of $0.5 million related to the cash surrender value from the cancellation of a Teradyne owned life insurance policy.

Financing activities during the nine months ended September 27, 2020 used cash of $143.4 million, due to $88.5 million used for the repurchase of 1.5 million shares of common stock at an average price of $58.33 per share, $49.9 million used for dividend payments, $22.7 million used for payments related to net settlements of employee stock compensation awards, and $8.9 million used for a payment related to MiR acquisition contingent consideration, partially offset by $26.5 million from the issuance of common stock under employee stock purchase and stock option plans.

Operating activities during the nine months ended September 29, 2019 provided cash of $362.4 million. Changes in operating assets and liabilities used cash of $83.5 million due to a $97.1 million increase in operating assets and a $13.6 million increase in operating liabilities.

The increase in operating assets was primarily due to a $66.8 million increase in accounts receivable due to increased sales, a $16.1 million increase in prepayments and other assets, and a $14.1 million increase in inventories.

The increase in operating liabilities was due to a $27.8 million increase in deferred revenue and customer advance payments, a $23.7 million increase in other accrued liabilities, and a $17.5 million increase in accounts payable, partially offset by a $31.2 million decrease in income taxes, a $20.4 million decrease in accrued employee compensation due primarily to first quarter payments related to variable compensation, and $3.8 million of retirement plan contributions.

Investing activities during the nine months ended September 29, 2019 used cash of $266.9 million, due to $605.5 million used for purchases of marketable securities, $96.0 million used for purchases of property, plant and equipment, $15.0 million used for an investment in RealWear, and $7.0 million, net of cash acquired, used for the acquisition of Lemsys, partially offset by $393.5 million and $60.3 million in proceeds from maturities and sales of marketable securities, respectively, and proceeds from life insurance of $2.9 million related to the cash surrender value from the cancellation of Teradyne owned life insurance policies.

Financing activities during the nine months ended September 29, 2019 used cash of $427.9 million, due to $368.8 million used for the repurchase of 8.8 million shares of common stock at an average price of $41.93 per share, $46.3 million used for dividend payments, $27.6 million used for payments related to MiR and Universal Robots acquisition contingent consideration, and $14.5 million used for payments related to net settlements of employee stock compensation awards, partially offset by $29.3 million from the issuance of common stock under employee stock purchase and stock option plans.

In January 2020, May 2020 and August 2020, our Board of Directors declared a quarterly cash dividend of $0.10 per share. Dividend payments for the nine months ended September 27, 2020 were $49.9 million.

In January 2019, May 2019 and August 2019, our Board of Directors declared a quarterly cash dividend of $0.09 per share. Dividend payments for the nine months ended September 29, 2019 were $46.3 million.

In January 2020, our Board of Directors cancelled the January 2018 stock repurchase program and approved a new stock repurchase program for up to $1.0 billion of common stock. On April 1, 2020, we suspended the share repurchase program. During the nine months ended September 27, 2020, we repurchased 1.5 million shares of common stock for $88.5 million at an average price of $58.33 per share. During the nine months ended September 29, 2019, we repurchased 8.8 million shares of common stock for $368.8 million at an average price of $41.93 per share.

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

On May 1, 2020, we entered into a credit agreement providing for a three-year, senior secured revolving credit facility of $400 million. As of November 2, 2020, we have not borrowed any funds under the credit facility.

We believe our cash, cash equivalents and marketable securities balance will be sufficient to pay our quarterly dividend and meet our working capital and expenditure needs for at least the next twelve months. Inflation has not had a significant long-term impact on earnings. At this time, the COVID-19 pandemic has not had an impact on our liquidity, but there is no assurance that continued impacts resulting from the pandemic will not have an adverse effect in the future.

Equity Compensation Plans

As discussed in Note L: “Stock Based Compensation” in our 2019 Annual Report on Form 10-K, we have a 1996 Employee Stock Purchase Plan and a 2006 Equity and Cash Compensation Incentive Plan (the “2006 Equity Plan”).

The purpose of the 1996 Employee Stock Purchase Plan is to encourage stock ownership by all eligible employees of Teradyne. The purpose of the 2006 Equity Plan is to provide equity ownership and compensation opportunities in Teradyne to our employees, officers, directors, consultants and/or advisors. Both plans were approved by our shareholders.

Recently Issued Accounting Pronouncements

In August 2020, the FASB issued ASU 2020-06 – “Debt—Debt with Conversion and Other Options and Derivatives and Hedging - Contracts in Entity’s Own Equity,” which simplifies the accounting for convertible debt instruments by reducing the number of accounting models and the number of embedded conversion features that could be recognized separately from the primary contract. This ASU requires a convertible debt instrument to be accounted for as a single liability measured at its amortized cost, as long as no other features require bifurcation and recognition as derivatives. This ASU requires an entity to use the if-converted method in the diluted earnings per share calculation for convertible instruments. This ASU will be effective for Teradyne in on January 1, 2022, with early adoption permitted beginning on January 1, 2021. This ASU permits the use of either the modified retrospective or fully retrospective method of transition. We are evaluating the timing and effects of the adoption of this ASU on our financial statements.

Item 3: Quantitative and Qualitative Disclosures about Market Risks

For “Quantitative and Qualitative Disclosures about Market Risk” affecting Teradyne, see Part 2 Item 7A, “Quantitative and Qualitative Disclosures about Market Risks,” in our Annual Report on Form 10-K filed with the SEC on March 2, 2020. There were no material changes in our exposure to market risk from those set forth in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019.

In addition to market risks described in our Annual Report on Form 10-K, we have an equity price risk related to the fair value of our convertible senior unsecured notes issued in December 2016. In December 2016, Teradyne issued $460 million aggregate principal amount of 1.25% convertible senior unsecured notes (the “Notes”) due December 15, 2023. As of September 27, 2020, the Notes had a fair value of $1,151.5 million. The table below provides a sensitivity analysis of hypothetical 10% changes of Teradyne’s stock price as of the end of the third quarter of 2020 and the estimated impact on the fair value of the Notes. The selected scenarios are not predictions of future events, but rather are intended to illustrate the effect such event may have on the fair value of the Notes. The fair value of the Notes is subject to equity price risk due to the convertible feature. The fair value of the Notes will generally increase as Teradyne’s common stock price increases and will generally decrease as the common stock price declines in value. The change in stock price affects the fair value of the convertible senior notes, but does not impact Teradyne’s financial position, cash flows or results of operations due to the fixed nature of the debt obligation. Additionally, we carry the Notes at face value less unamortized discount on our balance sheet, and we present the fair value for required disclosure purposes only. In connection with the offering of the Notes we also sold warrants to the option counterparties. These transactions have been accounted for as an adjustment to our shareholders' equity. The convertible note hedge transactions are expected to reduce the potential equity dilution upon conversion of the Notes. The warrants along with any shares issuable upon conversion of the Notes will have a dilutive effect on our earnings per share to the extent that the average market price of our common stock for a given reporting period exceeds the applicable strike price or conversion price of the warrants or Notes, respectively.

Hypothetical Change in Teradyne Stock Price	Fair Value	Estimated change in fair value	Hypothetical percentage increase (decrease) in fair value
10% Increase	$1,258,430	$ 106,970	9.3%
No Change	1,151,460	—	—
10% Decrease	1,046,260	(105,200)	(9.1)

Item 4: Controls and Procedures

As of the end of the period covered by this report, our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15(b) or Rule 15d-15(f) promulgated under the Exchange Act. Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of the end of the period covered by this report, our disclosure controls and procedures were effective in ensuring that material information required to be disclosed 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 Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

PART II. OTHER INFORMATION

Item 1: Legal Proceedings

We are subject to various legal proceedings and claims which have arisen 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 business, financial position or results of operations.

Item 1A: Risk Factors

In addition to other information set forth in this Form 10-Q, including the risk discussed below, you should carefully consider the factors discussed in Part I, "Item 1A: Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2019, which could materially affect our business, financial condition or future results. The risk factors described in our Annual Report on Form 10-K remain applicable to our business and many of these risks could be further increased due to the COVID-19 pandemic.

The risks described in our Annual Report on Form 10-K 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.

The novel coronavirus (COVID-19) pandemic has impacted our business and could materially adversely affect our results of operations, financial condition, liquidity or cash flows.

The global outbreak of the novel strain of the coronavirus (COVID-19) has resulted in government authorities implementing numerous measures in an effort to contain the spread of the virus, such as travel bans and restrictions, limitations on gatherings or social distancing requirements, quarantines, shelter-in-place orders, and business limitations and shutdowns. These measures have impacted our day-to-day operations and could disrupt our business, workforce and operations, as well as the operations of our customers, contract manufacturers and suppliers for an uncertain period of time. The COVID-19 pandemic, and the numerous measures implemented by authorities in response, has adversely impacted our results of operations, including by increasing costs company-wide and decreasing demand in our Industrial Automation businesses, but we cannot accurately estimate the full extent of the impact to our 2020 financial results or to our future financial results.

The COVID-19 pandemic has significantly increased economic uncertainty in our markets, which could result in a significant decrease in demand for our products for an uncertain period of time. In addition, restrictions on our access to manufacturing facilities or on our support operations or workforce, or similar limitations for our contract manufacturers and suppliers, and restrictions or disruptions affecting transportation, such as reduced availability of transportation and increased border controls or closures, could limit our capacity to meet customer demand, which could have a material adverse effect on our financial condition and results of operations. The spread of COVID-19 has caused us to modify our business practices, including implementing social distancing protocols, suspending employee travel, requiring most employees to work remotely, canceling physical participation in meetings, events and conferences, and extensively and frequently disinfecting our workspaces, and we may take further actions as may be required by government authorities or that we determine are in the best interests of our employees, customers, contract manufacturers and suppliers. These measures may not be sufficient to mitigate the risks posed by the virus, and our ability to perform critical functions could be harmed. Due to the uncertainty regarding the duration, severity and business impact of the COVID-19 pandemic, as of April 1, 2020, we have suspended our stock repurchase program announced in January 2020. At this time, we do not know whether or when we will authorize future stock repurchase programs.

We are continuing to monitor the rapidly evolving situation regarding the COVID-19 pandemic and its impact on our business, results of operations, financial condition, liquidity and cash flows. However, despite careful tracking, we are unable to accurately predict the full impact of COVID-19, which will depend on future developments that are highly uncertain and cannot be predicted with accuracy, including, but not limited to, the duration and continued spread of the outbreak, its severity, the actions to contain the virus or treat its impact, and how quickly and to what extent normal economic and operating conditions can resume.

Trade regulations and restrictions could impact our ability to sell products to and support certain customers, which may materially adversely affect our sales and results of operations.

We are subject to U.S. laws and regulations that limit and restrict the export of some of our products and services and may restrict our transactions with certain customers, business partners and other persons. In certain circumstances, export control and economic sanctions regulations may prohibit the export of certain products, services and technologies, and in other circumstances we may be required to obtain an export license before exporting the controlled item. We must also comply with export restrictions and laws imposed by other countries affecting trade and investments. We maintain an export compliance program but there are risks that the compliance controls could be circumvented, exposing us to legal liabilities. Compliance with these laws has not significantly limited our sales but could significantly limit them in the future. Changes in, and responses to, U.S. trade policy could reduce the competitiveness of our products and cause our sales to drop, which could have a material adverse effect on our business, financial condition or results of operations.

The U.S. government from time to time has issued export restrictions that prohibit U.S. companies from exporting U.S. manufactured products, foreign manufactured products with more than 25% controlled U.S. content, as well as U.S. origin technology. For example, the U.S. Department of Commerce has restricted the access of U.S. origin technologies to certain Chinese companies by adding those companies to the Entity List under U.S. Export Administration Regulations (“EAR”).

On May 16, 2019, Huawei and 68 of its affiliates, including HiSilicon, were added to the U.S. Department of Commerce Entity List under the EAR. This action by the U.S. Department of Commerce imposes new export licensing requirements on exports, re-exports, and in-country transfers of all U.S. regulated products, software and technology to the designated Huawei entities. While most of our products are not subject to the EAR and therefore not affected by the Entity List restrictions, certain of our products are currently manufactured in the U.S. and thus subject to the Entity List restrictions. Compliance with the Entity List restrictions has not significantly impacted our sales. In addition, the prohibition on transfers of U.S. origin technology to Huawei could significantly limit our ability to service certain of our products sold to Huawei and our ability to engage in product development activities with Huawei and, therefore, could have a material adverse effect on our business, financial condition or results of operations. Furthermore, Huawei’s inability to obtain products from other companies in its supply chain may adversely impact Huawei’s demand for our products. Huawei or other foreign customers affected by future U.S. government sanctions or threats of sanctions may respond by developing their own solutions to replace our products or by adopting our foreign competitors’ solutions. Also, our controls related to Entity List compliance could be circumvented, exposing us to legal liabilities. Even if such restrictions are lifted, any financial or other penalties or continuing export restrictions imposed on Huawei could have a material adverse effect on our business, financial condition or results of operations.

On August 17, 2020, the U.S. Department of Commerce published final regulations expanding the scope of the U.S. EAR to include additional products that would become subject to export restrictions relating to Huawei entities including HiSilicon. These new regulations restrict the sale to Huawei and the designated Huawei entities of certain non-U.S. made items, such as semiconductor devices, manufactured for or sold to Huawei entities including HiSilicon under specific, detailed conditions set forth in the new regulations. The new regulations also restrict our sales to Huawei, HiSilicon and their suppliers. Because the impact of these new regulations on Huawei's business is both fluid and uncertain, at this time, we do not know the potential extent of the impact of the new regulations on our business with Huawei entities including HiSilicon and their suppliers. We are taking appropriate actions, including filing for licenses with the U.S. Department of Commerce and working with the U.S. regulators to understand the intended scope of the restrictions. However, we cannot be certain that the actions we take will mitigate all of the risks associated with the new export controls that may impact our business. It is possible that these new regulations and any other additional regulations that may be implemented by the U.S. Department of Commerce or other government agency could have a material impact on our business and financial results.

On April 28, 2020, the U.S. Department of Commerce published new export control regulations for certain U.S. products and technology sold to military end users or for military end-use in China, Russia and Venezuela. The definition of military end user is broad. The regulations went into effect on June 29, 2020. We do not expect that compliance with the new export controls will significantly impact our ability to sell products to our customers in China or to manufacture products in China. The new export controls, however, could disrupt our supply chain, increase our compliance costs and impact the demand for our products in China and, thus, have a material adverse impact on our business, financial condition or results of operations. In addition, while we maintain an export compliance program, our compliance controls could be circumvented, exposing us to legal liabilities. We will continue to assess the potential impact of the new export controls on our business and operations and take appropriate actions, including filing for licenses with the U.S. Department of Commerce, to minimize any disruption. However, we cannot be certain that the actions we take will mitigate all of the risks associated with the new export controls that may impact our business.

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 2.0 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 May 1, 2020, we entered into a three-year, senior secured revolving credit facility of up to $400.0 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.

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.

Item 2: Unregistered Sales of Equity Securities and Use of Proceeds

In January 2020, our Board of Directors cancelled the January 2018 stock repurchase program and authorized a new stock repurchase program for up to $1.0 billion of common stock. On April 1, 2020, we suspended the stock repurchase program. During the nine months ended September 27, 2020, we repurchased 1.5 million shares of common stock for $88.5 million at an average price of $58.33 per share. During the nine months ended September 29, 2019, we repurchased 8.8 million shares of common stock for $368.8 million at an average price of $41.93 per share.

The following table includes information with respect to repurchases we made of our common stock during the three months ended September 27, 2020 (in thousands except per share price):

Period	(a) Total Number of Shares (or Units) Purchased	(b) Average Price Paid per Share (or Unit)	(c) Total Number of Shares (or Units) Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Number (or Approximate Dollar Value) of Shares (or Units) that may Yet Be Purchased Under the Plans or Programs
June 29, 2020 - July 26, 2020	1	$ 85.60	—	$ 911,535
July 27, 2020 – August 23, 2020	1	$ 90.26	—	$ 911,535
August 24, 2020 – September 27, 2020	1	$ 82.55	—	$ 911,535
	3(1)	$ 85.00(1)	—	

(1) Includes approximately three thousand shares at an average price of $85.00 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 4: Mine Safety Disclosures

Not Applicable

Table of Contents

Item 6: Exhibits

Exhibit Number	Description
10.1	Executive Officer Change in Control Agreement dated October 1, 2020 between Teradyne, Inc. and Richard Burns (filed herewith)
10.2	Employment Agreement dated October 1, 2020 between Teradyne, Inc. and Richard Burns (filed herewith)
31.1	Certification of Principal Executive Officer, pursuant to Rule 13a-14(a) of Securities and Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
31.2	Certification of Principal Financial Officer, pursuant to Rule 13a-14(a) of Securities and Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
32.1	Certification of Principal Executive Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith)
32.2	Certification of Principal Financial Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (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
104	Cover Page Interactive Data File (formatted as Inline XBRL, and contained in Exhibit 101)

SIGNATURES

Pursuant to the requirements 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.

TERADYNE, INC.
Registrant

/s/ SANJAY MEHTA

Sanjay Mehta
Vice President,
Chief Financial Officer and Treasurer
(Duly Authorized Officer
and Principal Financial Officer)
November 2, 2020

EXECUTIVE OFFICER CHANGE IN CONTROL AGREEMENT

EXECUTIVE OFFICER CHANGE IN CONTROL AGREEMENT entered into this 1st day of October 2020 by and between Teradyne, Inc. (including its subsidiaries, "Teradyne"), and the undersigned executive officer Teradyne ("Employee").

WITNESSETH:

WHEREAS, Teradyne and Employee desire to set forth certain terms and conditions relating to the termination of Employee's employment upon the occurrence of a Change in Control (as hereinafter defined) of Teradyne.

NOW THEREFORE, in consideration of the premises and of the mutual covenants and agreements hereinafter set forth, the parties hereto hereby agree as follows:

1. Entitlements Upon a Termination Event. If, within twenty-four (24) months following a Change in Control or in contemplation of a Change in Control, there is a Termination Event, and subject to the conditions set forth herein and the performance by Employee of the undertakings and duties set forth herein, Employee shall be entitled to the rights, payments and other benefits set forth below:

(a) Treatment of Awards. Equity Awards that are not subject to Performance Criteria shall be governed by Section 1(b) below, and Cash Awards and Equity Awards that are subject to Performance Criteria shall be governed by Section 1(c) below. The parties hereto acknowledge that, except as otherwise provided herein, the terms of this Agreement are intended to modify the terms of Employee's existing Cash Award and Equity Award agreements and to be a supplement to Cash Award and Equity Award agreements granted on or subsequent to the date hereof.

(b) Acceleration of Equity Awards. All of Employee's unvested or unexercisable Equity Awards or Equity Awards subject to restrictions on transfer imposed by Teradyne or repurchase rights in favor of Teradyne, as applicable, granted prior to, on, or after the date hereof (but only (I) such Equity Awards as have been granted to Employee by Teradyne as of the date of the Change in Control or (II) such Equity Awards as have been assumed by an acquiring company at the time of a Change in Control or such new cash and equity awards that have been substituted by an acquiring company for Equity Awards existing at the time of a Change in Control, each pursuant to the terms of any Teradyne incentive plan) shall automatically become fully vested, exercisable or free of restrictions on transfer imposed by Teradyne or repurchase rights in favor of Teradyne, as applicable, as of the date of such Termination Event, and all Equity Awards granted on or after the date hereof shall, to the extent applicable, remain exercisable for the remainder of the generally applicable term of such Equity Award.

(c) Satisfaction of Performance Criteria. All of Employee's Cash Awards and Equity Awards that are subject to Performance Criteria shall be settled and paid in the following manner: Employee shall be deemed to have satisfied the necessary percentage of the Performance Criteria to which such Cash Awards and Equity Awards are subject as of the date of the Termination Event, that will provide Employee with the target level of such Cash Awards and Equity Awards; and Employee shall be entitled to receive that portion of each Cash Award and Equity Award payable, at the target level. For purposes of the Cash Awards, the payment shall be multiplied by a fraction, the numerator of which shall be the number of calendar months that have passed during the period in which the Performance Criteria are to be measured (treating the month in which the Termination Event occurs as a full calendar month) and the denominator of which shall be the total number of calendar months in such period. For purposes of this Agreement, "target level" is that percentage of the Performance Criteria established at the beginning of each calendar year in order for the Employee to achieve Model Compensation. Unless otherwise required under Section 1(e) below, such Cash Awards and Equity Awards shall be paid to Employee or the restrictions on transfer removed not later than 10 days following the Termination Event.

(d) Salary Continuation. Unless otherwise required under Section 1 (e) below, Teradyne shall pay Employee monthly an amount equal to 1/12th of Employee's current annual Model Compensation as of the Termination Event for a period of 24 months following the date of the Termination Event (the "Salary Continuation Period"). In the event a Termination Event constitutes termination for Good Reason on account of a material reduction in Model Compensation, the payment obligation pursuant to this Section 1(d) shall be calculated without giving effect to any such reductions in Model Compensation. All such continued payments shall be made in accordance with Teradyne's customary pay practices. Subject to Section 1(e)(i) of this Agreement but notwithstanding any other provision of this Agreement to the contrary, the continued payments to Employee contemplated by this Section 1(d) and any benefits provided to Employee that are subject to Section 409A of the Code shall commence on the 60th day following the Termination Event provided Employee has complied with the requirements of Section 1(g) of this Agreement and the release of claims has become irrevocable under applicable law no later than on the 60th day following his Termination Event.

(e) Deferred Compensation/Section 409A.

(i) Notwithstanding any other provision of this Agreement, if the Employee is a " specified employee" at the time of the Employee's "separation from service" as defined in Section 409A of the Code , all payments, benefits, or removal of restrictions on the transfer of equity under this Agreement with respect to the Employee's "separation from service" that constitute compensation deferred under a nonqualified deferred compensation plan as defined in Section 409A of the Code to which such specified employee would otherwise be entitled during the first six months following the date of separation from service shall be made on the first day of the seventh month after the date of separation from service (or, if earlier, the date of death of the Employee).

(ii) For purposes of this Agreement, each amount to be paid or benefit to be provided shall be construed as a separate identified payment for purposes of Section 409A, and any payments that are due within the "short term deferral period" as defined in Section 409A or payments that are made under separation pay plans as described in Treasury Regulation Section 1.409A-1(b)(9)(ii), (iii) or (iv), shall not be treated as deferred compensation unless applicable law requires otherwise. Neither Teradyne nor the Employee shall have the right to accelerate or defer the delivery of any payments or benefits under this Agreement except to the extent specifically permitted or required by Section 409A.

(iii) This Agreement is intended to comply with the provisions of Section 409A and the Agreement shall, to the extent practicable, be construed in accordance therewith. Terms defined in the Agreement shall have the meanings given such terms under Section 409A if and to the extent required to comply with Section 409A. In any event, Teradyne makes no representations or warranty and shall have no liability to Employee or any other person if any provisions of or payments under this Agreement are determined to constitute deferred compensation subject to Code Section 409A but not to satisfy the conditions of that section.

(iv) If any amount is payable under the provisions of paragraph (f), below, as a reimbursement of Employee's expenses, under the provisions of Section 2 and 13, or any other provision of this Agreement that constitutes a reimbursement of expenses under Section 409A then, notwithstanding the other provisions of this Agreement with respect to the payment of such reimbursement, the following limitations shall apply; (A) the expenses eligible for reimbursement may not affect the expenses eligible for reimbursement in any other taxable year; (B) such reimbursement must be made on or before the last day of the year following the year in which the expenses are incurred; (C) the right to reimbursement is not subject to liquidation or exchange for another benefit; and (D) in connection with reimbursements under Section 13 the period during which such expenses can be incurred extends to the end of the period permitted for such claims under the applicable statute of limitations.

(f) Benefit Continuation. During the Salary Continuation Period, Teradyne shall arrange or provide for continued health, dental and vision insurance plan coverage for the Employee at the same levels of coverage in existence prior to the Termination Event subject to Teradyne and Employee each contributing to the applicable insurance premium payments on the same basis and in the same proportions as in existence at the date of the Termination Event. If the Employee is not eligible for continued health, dental and vision insurance plan coverage for any portion of the twenty-four (24) month period defined herein, Teradyne shall provide or reimburse Employee for comparable individual insurance and, if such provision or reimbursement constitutes taxable income to the Employee, such additional amount as is necessary to place the Employee in substantially the same after tax position as he was while an employee of Teradyne with respect to such insurance plan coverages. All other benefits, including but not limited to flex/vacation time accrual, short and long term disability insurance, life insurance, contributions (including company matches) into savings plan and "savings plan plus", profit sharing payments and participation in the Employee stock purchase plan shall cease as of the date of the Termination Event.

To the extent that amounts paid by Teradyne to provide the benefits under this paragraph (f) are deemed to be deferred compensation subject to Section 409A, then such payments shall be made monthly and any payment to preserve the Employee's after tax position shall be made within 60 days after the end of each calendar year in which the taxable provision or reimbursement occurs.

(g) Release. Notwithstanding any other provision of this Agreement to the contrary, no payment, benefit or removal of restriction on the transfer of equity provided for under or by virtue of the provisions of this Agreement shall be paid or otherwise made available unless Teradyne shall have first received from Employee a valid, binding and irrevocable general release, in the form of Attachment A to this Agreement within twenty-one (21) days of the date of the Termination Event. Employee shall sign such release within twenty-one (21) days of a Termination Event subsequent to a Change in Control. Teradyne agrees to provide Employee an estimate relating to payments to be made under this Agreement upon Employee's written request. All rights, benefits, payments and other entitlements contemplated to be provided or paid to Employee under this Agreement shall be forfeited as of the 60th day following Employee's Termination Event if Employee has not provided Teradyne with a valid, irrevocable release of claims as of such 60th day.

(h) Certain Definitions. For purposes of this Agreement, the following terms shall have the following meanings:

"Cash Awards" shall mean any cash-based bonus, cash incentive or other cash awards provided by Teradyne to Employee pursuant to incentive plans that Teradyne maintains, including but not limited to its 2006 Equity and Cash Compensation Incentive Plan.

"Cause" shall mean conduct involving one or more of the following: (i) the substantial and continuing failure of Employee, after notice thereof, to render services to Teradyne in accordance with the terms or requirements of his or her employment as established by the Teradyne Board of Directors from time to time and communicated to the Employee; (ii) Employee's disloyalty, gross negligence, willful misconduct, dishonesty, fraud or breach of fiduciary duty to Teradyne, each in connection with Employee's employment by Teradyne; (iii) Employee's deliberate disregard of the rules or policies of, or breach of an agreement with, Teradyne which results in direct or indirect material loss, damage or injury to Teradyne; (iv) the intentional unauthorized disclosure by Employee of any trade secret or confidential information of Teradyne; (v) the commission by Employee of an act which constitutes unfair competition with Teradyne; or (vi) the conviction of, or the entry of a plea of guilty or nolo contendere by the Employee, to any crime involving moral turpitude or any felony. In the event that Teradyne determines that Cause may exist pursuant to clauses (i), (iii) and (v) above, Teradyne shall give Employee written notice of the facts constituting such Cause and Employee shall have 30 days following receipt of such notice to remedy such Cause.

A "Change in Control" shall be deemed to have occurred upon the occurrence of any of the following events: (i) any consolidation, cash tender offer, reorganization, recapitalization, merger or plan of share exchange following which the capital stock of Teradyne outstanding immediately prior to such transaction constitutes less than a majority of the combined voting power of the then-outstanding securities of the combined corporation or person immediately after such transaction; (ii) any sale, lease, exchange or other transfer of all or substantially all of Teradyne's assets; (iii) the adoption by the Board of Directors of Teradyne of any plan or proposal for the liquidation or dissolution of Teradyne; (iv) a change in the majority of the Board of Directors of Teradyne through one or more contested elections occurring within a three-year period; or (v) any person (as that term is used in Section 13(d)(3) or

Section 14(d)(2) of the Securities Exchange Act of 1934, as amended) becomes beneficial owner of 30% or more of the combined voting power of Teradyne's outstanding voting securities, other than (A) as a result of a consolidation, reorganization, recapitalization, merger or plan of share exchange following which the capital stock of Teradyne outstanding immediately prior to such transaction constitutes at least a majority of combined voting power of the then-outstanding securities of the combined corporation or person immediately after such transaction, (B) by any trustee or other fiduciary holding securities under an employee benefit plan of Teradyne, or (C) by a person temporarily acquiring beneficial ownership in its capacity as an underwriter (as defined pursuant to Section 2(a)(11) of the Securities Act of 1933, as amended) in connection with a public offering of Teradyne securities.

"Equity Awards" shall mean the equity ownership, participation or appreciation opportunities provided by Teradyne to Employee pursuant to incentive plans that Teradyne maintains, including but not limited to its 2006 Equity and Cash Compensation Incentive Plan, the Teradyne, Inc. 1991 Employee Stock Option Plan and the Teradyne, Inc. 1997 Employee Stock Option Plan, and any stock options, restricted stock units, restricted stock, stock appreciation rights, phantom stock and other stock-based awards granted thereunder.

"Good Reason" shall mean any one or more of the following: (i) any material reduction of Employee's responsibilities (other than for Cause or as a result of death or disability) as they shall exist on the date of the consummation of the Change in Control; (ii) any material reduction in Employee's Model Compensation as in effect on the date of the consummation of the Change in Control, or as the same may be increased from time to time, or any failure by Teradyne to pay to Employee any bonus accrued, but not yet paid, upon written notice by Employee to Teradyne, within 45 days; (iii) a material reduction in the value of Employee's benefit package from the value of Employee's benefit package on the date of the consummation of the Change in Control; or (iv) a requirement that Employee be based at an office that is greater than 50 miles from the location of Employee's office immediately prior to the Change in Control except for required travel on Teradyne's business to an extent substantially consistent with the business travel obligations which Employee undertook on behalf of Teradyne prior to the date of the consummation of the Change in Control. In the event of a Termination Event in contemplation of a Change in Control, the applicable baseline measurement date shall be six months prior to such Termination Event and not the date of the consummation of the Change in Control.

"Model Compensation" shall mean Employee's annual "Model Compensation" as determined by Teradyne's Compensation Committee or Board of Directors, which consists of (i) a fixed annual salary and (ii) a target annual variable amount.

"Performance Criteria" shall have the meaning ascribed to that term in the Teradyne, Inc. 2006 Equity and Cash Compensation Incentive Plan.

"Termination Event" shall mean (i) any termination of Employee by Teradyne without Cause or (ii) any voluntary termination by Employee for Good Reason; provided, that it shall not be a Termination Event merely because Employee ceases to be employed by Teradyne and becomes employed by a successor to Teradyne involved in the Change in Control that assumes or is otherwise bound by this Agreement as provided in Section 7(a). It is expressly understood that no Termination Event shall be deemed to have occurred merely because, upon the occurrence of a Change in Control, Employee ceases to be employed by Teradyne and does not become employed by a successor to Teradyne after the Change in Control if the successor makes an offer to employ Employee on terms and conditions which, if imposed by Teradyne, would not give Employee a basis on which to terminate employment for Good Reason.

(i) Termination in Contemplation of a Change in Control. For purposes of this Agreement, including without limitation, this Section 1, a Termination Event occurring "in contemplation of a Change in Control" means a Termination Event occurring within 3 months prior to an actual Change in Control at the request or direction of a person who enters or has entered into an agreement the consummation of which would cause a Change in Control or who conditions the entry into such an agreement on the Employee's termination whether or not such person actually enters into such an agreement. A termination by the Employee for Good Reason shall constitute a Termination Event in contemplation of a Change in Control if the actions constituting Good Reason were taken at the request or direction of a person who has entered into an agreement the consummation of which would cause a Change in Control.

2. Reduction of Payments

(a) Notwithstanding any other provision of this Agreement, in the event that the Company undergoes a Change in Ownership or Control (as defined below), the Company shall not be obligated to provide to the Executive a portion of any "Contingent Compensation Payments" (as defined below) that the Executive would otherwise be entitled to receive to the extent necessary to eliminate any "excess parachute payments" (as defined in Section 280G(b)(1) of the Internal Revenue Code of 1986, as amended (the "Code")) for the Executive. For purposes of this Section 2, the Contingent Compensation Payments so eliminated shall be referred to as the "Eliminated Payments" and the aggregate amount (determined in accordance with Treasury Regulation Section 1.280G-1, Q/A-30 or any successor provision) of the Contingent Compensation Payments so eliminated shall be referred to as the "Eliminated Amount."

(b) For purposes of this Section 2, the following terms shall have the following respective meanings:

(i) "Change in Ownership or Control" shall mean a change in the ownership or effective control of the Company or in the ownership of a substantial portion of the assets of the Company determined in accordance with Section 280G(b)(2) of the Code.

(ii) "Contingent Compensation Payment" shall mean any payment (or benefit) in the nature of compensation that is made or made available (under this Agreement or otherwise) to a "disqualified individual" (as defined in Section 280G(c) of the Code) and that is contingent (within the meaning of Section 280G (b)(2)(A)(i) of the Code) on a Change in Ownership or Control of the Company.

(c) If and to the extent that any Contingent Compensation Payments are required to be treated as Eliminated Payments pursuant to this Section 2, then the Payments shall be reduced or eliminated, as determined by the Company, in the following order (i) any cash payments, (ii) any taxable benefits, (iii) any nontaxable benefits and (iv) any vesting of equity awards, in each case in reverse order beginning with the payments or benefits that are to be paid the farthest in time from the date that triggers the applicability of the excise tax, to the extent necessary to maximize the Eliminated Payments.

3. (a) Non-Competition and Non-Solicitation. From the Termination Event through the end of the Salary Continuation Period, Employee shall not directly or indirectly:

(i) Engage in any business or enterprise (whether as an owner, partner, officer, employee, director, investor, lender, consultant, independent contractor or otherwise, except as the holder of not more than 1% of the combined voting power of the outstanding stock of a publicly held company) that is competitive with Teradyne (including but not limited to, any business or enterprise that develops, designs, produces, markets, sells or renders any product or service competitive with any product or service developed, produced, marketed, sold or rendered by Teradyne while Employee was employed by Teradyne);

(ii) Either alone or in association with others, recruit, solicit, hire or engage as an independent contractor, any person who was employed by Teradyne at any time during the period of Employee's employment with Teradyne, except for an individual whose employment with Teradyne has been terminated for a period of six months or longer; and

(iii) Either alone or in association with others, solicit, divert or take away, or attempt to divert or to take away, the business or patronage of any client or customer or entity that was a prospective client or customer of Teradyne during the Employee's employment.

(b) If any restriction set forth in this Section 3 is found by any court of competent jurisdiction to be unenforceable because it extends for too long a period of time or over too great a range of activities or in too broad a geographic area, it shall be interpreted to extend only over the maximum period of time, range of activities or geographic area as to which it may be enforceable.

(c) Employee acknowledges that the restrictions contained in this Section 3 are necessary for the protection of the business and goodwill of Teradyne and are considered by Employee to be reasonable for such purpose. Employee agrees that any breach of this Section 3 will cause Teradyne irreparable harm and therefore, in the event of any such breach, in addition to such other remedies that may be available, Teradyne shall have the right to seek equitable and/or injunctive relief.

(d) The geographic scope of this Section 3 shall extend to anywhere Teradyne or any of its subsidiaries is doing business, has done business or has plans to do business.

(e) Employee agrees that during the Salary Continuation Period, he will make reasonable good faith efforts to give verbal notice to Teradyne of each new business activity he plans to undertake, at least (5) business days prior to beginning any such activity.

(f) If Employee violates the provisions of this Section 3, Teradyne shall be entitled to suspend and recoup any salary continuation payment made per Section 1 (d) above and Employee shall continue to be bound by the restrictions set forth in this Section 3 for an additional period of time equal to the duration of the violation, such additional period not to exceed 24 months.

3A. <u>No Obligation of Employment</u>. Employee understands that the employment relationship between Employee and Teradyne will be “at will” and Employee understands that, prior to any Change in Control, Teradyne may terminate Employee with or without “Cause” at any time, including in contemplation of a Change in Control. Following any Change in Control, Teradyne may also terminate Employee with or without “Cause” at any time subject to Employee’s rights and Teradyne’s obligations specified in this Agreement.

4. <u>Governing Law</u>. This Agreement shall be governed by and construed in accordance with the internal laws of the Commonwealth of Massachusetts and this Agreement shall be deemed to be performable in Massachusetts.

5. <u>Severability</u>. In case any one or more of the provisions contained in this Agreement for any reason shall be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this Agreement and this Agreement shall be construed to the maximum extent permitted by law.

6. <u>Waivers and Modifications</u>. This Agreement may be modified, and the rights, remedies and obligations contained in any provision hereof may be waived, only in accordance with this Section 6. No waiver by either party of any breach by the other or any provision hereof shall be deemed to be a waiver of any later or other breach thereof or as a waiver of any other provision of this Agreement. This Agreement may not be waived, changed, discharged or terminated orally or by any course of dealing between the parties, but only by an instrument in writing signed by the party against whom any waiver, change, discharge or termination is sought.

7. <u>Assignment</u>. (a) Teradyne shall require any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business or assets of Teradyne expressly to assume and agree to perform under the terms of this Agreement in the same manner and to the same extent that Teradyne and its affiliates would be required to perform it if no such succession had taken place (provided that such a requirement to perform which arises by operation of law shall be deemed to satisfy the requirements for such an express assumption and agreement), and in such event Teradyne (as constituted prior to such succession)

shall have no further obligation under or with respect to this Agreement. Failure of Teradyne to obtain such assumption and agreement with respect to Employee prior to the effectiveness of any such succession shall be a breach of the terms of this Agreement with respect to Employee and shall entitle Employee to compensation from Teradyne (as constituted prior to such succession) in the same amount and on the same terms as Employee would be entitled to hereunder were Employee's employment terminated for Good Reason following a Change in Control, except that for purposes of implementing the foregoing, the date on which any such succession becomes effective shall be deemed the date of the Termination Event. As used in this Agreement, "Teradyne" shall mean Teradyne as hereinbefore defined and any successor to its business or assets as aforesaid which assumes and agrees (or is otherwise required) to perform this Agreement. Nothing in this Section 7(a) shall be deemed to cause any event or condition which would otherwise constitute a Change in Control not to constitute a Change in Control.

(b) Notwithstanding Section 7(a), Teradyne shall remain liable to Employee upon a Termination Event after a Change in Control if Employee is not offered continuing employment by a successor to Teradyne or is offered continuing employment by a successor to Teradyne only on a basis which would constitute Good Reason for termination of employment hereunder.

(c) This Agreement, and Employee's and Teradyne's rights and obligations hereunder, may not be assigned by Employee or, except as provided in Section 7(a), Teradyne, respectively; any purported assignment by Employee or Teradyne in violation hereof shall be null and void.

(d) The terms of this Agreement shall inure to the benefit of and be enforceable by the personal or legal representatives, executors, administrators, permitted successors, heirs, distributees, devisees and legatees of Employee. If Employee shall die while an amount would still be payable to Employee hereunder if they had continued to live, all such amounts, unless otherwise provided herein, shall be paid in accordance with the terms of this Agreement to Employee's devisee, legatee or other designee or, if there is no such designee, Employee's estate.

8. Entire Agreement. This Agreement constitutes the entire understanding of the parties relating to the subject matter hereof and supersedes and cancels all agreements, written or oral, made prior to the date hereof between Employee and Teradyne relating to the subject matter hereof; provided, however, that Employee's existing Cash Award and Equity Award agreements, as modified hereby, shall remain in effect. This Agreement shall not limit any right of Employee to receive any payments or benefits under an employee benefit or Employee compensation plan of Teradyne, initially adopted as of or after the date hereof, which are expressly contingent thereunder upon the occurrence of a Change in Control (including, but not limited to, the acceleration of any rights or benefits thereunder); provided that in no event shall Employee be entitled to any payment or benefit under this Agreement which duplicates a payment or benefit received or receivable by Employee under any severance or similar plan or policy of Teradyne, and in any such case Employee shall only be entitled to receive the greater of the two payments.

9. Notices. All notices hereunder shall be in writing and shall be delivered in person or mailed by certified or registered mail, return receipt requested, addressed as follows:

If to Teradyne, to: Teradyne, Inc.
600 Riverpark Drive
MS NR600-2-2 (Legal Department)
North Reading, MA 01864
Attention: General Counsel

If to Employee, at Employee's address in his employment file on record with the Human Resources Department.

10. Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument.

11. Section Headings. The descriptive section headings herein have been inserted for convenience only and shall not be deemed to define, limit, or otherwise affect the construction of any provision hereof.

12. Term. The term of this Agreement (the "Term") shall commence upon the Effective Date hereof and terminate upon the earlier of (i) twenty-four (24) months following any Change in Control of Teradyne, (ii) the date prior to any Change in Control of Teradyne that Employee for any reason ceases to be an employee of Teradyne (other than a Termination Event in contemplation of a Change in Control) and (iii) the date following any Change in Control of Teradyne that Employee is terminated for Cause or voluntary terminates his employment (other than for Good Reason).

13. Expenses. All reasonable legal fees and expenses incurred in a legal proceeding by Employee in seeking to obtain or enforce any right or benefit provided by this Agreement against a successor to Teradyne shall be the responsibility of and paid for by the successor to Teradyne (but not Teradyne as constituted prior to such succession). Such payments are to be made within twenty (20) days after Employee's request for payment accompanied with such evidence of fees and expenses incurred as Teradyne's successor reasonably may require; provided that if Employee institutes a proceeding and the judge or other decision-maker presiding over the proceeding affirmatively finds that Employee has failed to prevail substantially, Employee shall pay Employee's own costs and expenses (and, if applicable, return any amounts theretofore paid on Employee's behalf under this Section 13).

14. Payments. Any payments hereunder shall be made out of the general assets of Teradyne. The Employee shall have the status of general unsecured creditor of Teradyne, and this Agreement constitutes a mere promise by Teradyne to make payments under this Agreement in the future as and to the extent provided herein. Unless otherwise determined by Teradyne in an applicable plan or arrangement, no amounts payable hereunder upon a Termination Event shall be deemed salary or compensation for the purpose of computing benefits under any employee benefit plan or other arrangement of Teradyne for the benefit of its employees. Teradyne shall be entitled to withhold from any payments or deemed payments any amount of tax withholding required by law.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

TERADYNE, INC.

By: /s/ Charles J. Gray
Name: Charles J. Gray
Title: Vice President and General Counsel

EMPLOYEE

/s/ Richard Burns
Name: Richard Burns

ATTACHMENT A

Release

In consideration of the payments and benefits described in the Executive Officer Change in Control Agreement dated October 1, 2020 between me and Teradyne, Inc. (the "Company"), all of which I acknowledge I would not otherwise be entitled to receive, I hereby fully, forever, irrevocably and unconditionally release, remise and discharge the Company, its successors and assigns and their respective officers, directors, stockholders, corporate affiliates, subsidiaries, parent companies, agents and employees (each in their individual and corporate capacities) (hereinafter, the "Released Parties") from any and all claims, charges, complaints, demands, actions, causes of action, suits, rights, debts, sums of money, costs, accounts, reckonings, covenants, contracts, agreements, promises, doings, omissions, damages, executions, obligations, liabilities, and expenses (including attorneys' fees and costs), of every kind and nature which I ever had or now have against the Released Parties arising out of my employment with and/or termination or separation from the Company or relating to my relationship as an officer or in any other capacity for the Company, including, but not limited to, all employment discrimination claims under Title VII of the Civil Rights Act of 1964, 42 U.S.C. § 2000e et seq., the Age Discrimination in Employment Act, 29 U.S.C. § 621 et seq., the Americans With Disabilities Act of 1990, 42 U.S.C. § 12101 et seq., the Family and Medical Leave Act, 29 U.S.C. § 2601 et seq., and the Worker Adjustment and Retraining Notification Act ("WARN"), 29 U.S.C. § 2101 et seq., all as amended, the Employee Retirement Income Security Act of 1974 ("ERISA"), 29 U.S.C. § 1001 et seq., the Massachusetts Wage Payment Statute, G.L. c. 149, § 148 et seq., the Massachusetts Sexual Harassment Statute, G.L. c. 214 § 1C, the Massachusetts Consumer Protection Act, G.L. c. 93A, the Massachusetts Equal Rights Act, G.L. c. 93, the Massachusetts Fair Employment Practices Act, M.G.L. c. 151B, § 1 et seq., the Massachusetts Civil Rights Act, M.G.L. c. 12, §§ 11H and 11I, the Massachusetts Equal Rights Act, M.G.L. c. 93, § 102 and M.G.L. c. 214, § 1C, the Massachusetts Labor and Industries Act, M.G.L. c. 149, § 1 et seq., the Massachusetts Privacy Act, M.G.L. c. 214, § 1B, and the Massachusetts Maternity Leave Act , M.G.L. c. 149, § 105D, all as amended; all common law claims including, but not limited to, actions in tort, defamation and breach of contract; all claims to any non-vested ownership interest in the Company, contractual or otherwise, including but not limited to claims to stock or stock options; and any claim or damage arising out of my employment with, termination or separation from the Company (including a claim for retaliation) under any common law theory or any federal, state or local statute or ordinance not expressly referenced above; provided, however, that notwithstanding the foregoing, the Company agrees and hereby acknowledges that this Release Agreement is not intended to and does not (i) apply to any claims Executive may bring to enforce the terms of the Executive Officer Change in Control Agreement, (ii) release the Company of any obligation it may have pursuant to a written agreement, the Company's articles of organization or bylaws, or as mandated by statute to indemnify me as an officer of the Company; and (iii) release the Company of any obligation to provide and/or pay benefits to me or my estate, conservator or designated beneficiary(ies) under and in accordance with the terms of any applicable Company benefit plan and/or program; provided further, that nothing in this Release Agreement prevents me from filing, cooperating with, or participating in any proceeding before the EEOC or a state Fair Employment Practices Agency (except that I acknowledge that I may not be able to recover any monetary benefits in connection with any such claim, charge or proceeding).

Waiver of Rights and Claims Under the Age Discrimination in Employment Act of 1967: Since I am 40 years of age or older, I have been informed that I have or may have specific rights and/or claims under the Age Discrimination in Employment Act of 1967 (ADEA) and I agree that:

in consideration for the payments and benefits described in the Executive Officer Change in Control Agreement, which I am not otherwise entitled to receive, I specifically and voluntarily waive such rights and/or claims under the ADEA I might have against the Released Parties to the extent such rights and/or claims arose prior to the date this Release Agreement was executed;

I understand that rights or claims under the ADEA which may arise after the date this Release Agreement is executed are not waived by me;

I was advised that I have at least 21 days within which to consider the terms of this Release Agreement and to consult with or seek advice from an attorney of my choice or any other person of your choosing prior to executing this Release Agreement;

I have carefully read and fully understand all of the provisions of this Release Agreement, and I knowingly and voluntarily agree to all of the terms set forth in this Release Agreement; and in entering into this Release Agreement I am not relying on any representation, promise or inducement made by the Company or its attorneys with the exception of those promises described in this document.

<u>Period for Review and Consideration of Agreement:</u>

I acknowledge that I was informed and understand that I have twenty-one (21) days to review this Release Agreement and consider its terms before signing it.

The 21-day review period will not be affected or extended by any revisions, whether material or immaterial, that might be made to this Agreement.

Accord and Satisfaction: The amounts set forth in the Executive Officer Change in Control Agreement shall be complete and unconditional payment, settlement, accord and/or satisfaction with respect to all obligations and liabilities of the Released Parties to me, including, without limitation, all claims for back wages, salary, vacation pay, draws, incentive pay, bonuses, cash awards, equity awards, commissions, severance pay, reimbursement of expenses, any and all other forms of compensation or benefits, attorney’s fees, or other costs or sums.

Revocation Period: I may revoke this Release Agreement at any time during the seven-day period immediately following my execution hereof. As a result, this Release Agreement shall not become effective or enforceable and the Company shall have no obligation to make any payments or provide any benefits described herein until the seven-day revocation period has expired.

Name: Richard Burns Date

Witness Date

IF YOU DO NOT WISH TO USE THE 21-DAY PERIOD,
PLEASE CAREFULLY REVIEW AND SIGN THIS DOCUMENT

I, Richard Burns, acknowledge that I was informed and understand that I have 21 days within which to consider the attached Release Agreement, have been advised of my right to consult with an attorney regarding such Agreement and have considered carefully every provision of the Agreement, and that after having engaged in those actions, I prefer to and have requested that I enter into the Agreement prior to the expiration of the 21 day period.

Dated:______________________________

Name: Richard Burns

Dated:______________________________

Witness

TERADYNE

Employee Agreement

In consideration of and as a condition of my promotion to President, Semiconductor Test by Teradyne, Inc., a Massachusetts corporation (hereinafter referred to as "the Company"), effective October 1, 2020 and in consideration of the mutual covenants contained in this agreement between the Company and me (the "Agreement"), the receipt and sufficiency of which is hereby acknowledged, I, the undersigned individual, agree as follows:

1. Invention Assignment. I assign any and all rights that I have, may have or may acquire, in any and all Inventions and Work Product (as defined below), including all intellectual property rights, to the Company or its assigns without further compensation. All Inventions and Work Product, including all intellectual property rights, shall immediately become the sole property of the Company or its assigns. I shall promptly disclose to the Company each Invention and Work Product and shall assist the Company in every proper way to obtain and enforce patents, copyrights or other rights or registrations relating to any Inventions and Work Product. For the purposes of this Agreement, the term "Invention and Work Product" means any invention, modification, discovery, design, development, improvement, process, method, software program, work of authorship, work product, documentation, formulae, data, technique, or know-how that I (either alone or jointly with others) make, conceive, create, discover, invent or reduce to practice during my employment that (i) pertains to the business of the Company, (ii) pertains to any of the products or services developed, manufactured or sold by the Company, (iii) results from tasks assigned to me by the Company, or (iv) results from the use of premises, personal property or intellectual property owned, leased, or contracted for by the Company.

2. Confidential Information. I agree that I will not, during or after the period of my employment with the Company, directly or indirectly, use, make available, sell, disclose or otherwise communicate to any third party, other than in my assigned duties and except as required or permitted by law, any confidential information concerning the Company's or its customers' or suppliers' intellectual property, trade secrets, organization, finances or business that I learn during the period of my employment. I will observe all government agency rules and regulations relating to the safeguarding of classified information which may be disclosed or entrusted to me in connection with any contract between the Company and a government or any contractor with a government. I acknowledge that I shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret that—(A) is made—(i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation of law; or (B) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. Accordingly, I have the right to disclose in confidence trade secrets to Federal, State, and local government officials, or to an attorney, for the sole purpose of reporting or investigating a suspected violation of law. I also have the right to disclose trade secrets in a document filed in a lawsuit or other proceeding, but only if the filing is made under seal and protected from public disclosure. Nothing in this Agreement is intended to conflict with 18 U.S.C. § 1833(b) or create liability for disclosures of trade secrets that are expressly allowed by 18 U.S.C. § 1833(b). Upon request or when my employment with the Company terminates, I will immediately deliver to the Company all copies of any and all materials and writings received from, created for, or belonging to the Company including, but not limited to, those which relate to or contain confidential information.

outside employment in which I am engaged during the period of my employment with the Company.

4. Non-Solicitation. During my employment, and for a period of one (1) year following the termination of employment with the Company for any reason, I (a) shall not call on, solicit or serve any customer, client, supplier, distributor, licensee, licensor, franchisee or other business relation with whom I had had contact or communication in the course of my employment with the Company in the two (2) years immediately prior to my termination or resignation, in order to induce or attempt to induce such person or entity to cease or reduce its business with the Company or any of its affiliates, or in any way interfere with the business relationship between the Company or its affiliates and any such person or entity, or (b) will not solicit, induce, recruit or hire any of the Company's employees either for myself or for any other person or entity, or encourage any such employees to leave their employment with the Company.

5. At-Will Employment. This Agreement in no way alters my status as an at-will employee.

6. No Conflict. I represent that I am not bound by any agreement preventing me from being employed by and performing my job at the Company or any of its affiliates.

7. Code of Conduct. I agree to comply with Teradyne's Code of Conduct as posted on the Company's web site and as modified from time to time.

8. Equitable Relief. I agree that any breach of this Agreement by me will cause irreparable damage to the Company and that, in the event of such breach, the Company shall have, in addition to any and all remedies of law, the right to an injunction, specific performance or other equitable relief to prevent the violation of my obligations under this Agreement.

9. Entire Agreement. This Agreement supersedes all previous agreements between me and the Company relating to the subject matter hereof. Any amendment to, waiver of, or modification of this Agreement shall be in writing signed by an officer of the Company.

10. Severability and Construction. I agree that each provision of this Agreement shall be treated as a separate and independent clause, and the unenforceability of any one clause shall in no way impair the enforceability of any of the other clauses herein. If one or more of the provisions contained in this Agreement shall for any reason be held to be excessively broad as to scope, activity, subject or otherwise so as to be unenforceable at law, such provision or provisions shall be construed by the appropriate judicial body by limiting or reducing it or them, so as to be enforceable to the maximum extent compatible with applicable law.

11. Assignment. The term "Company" includes any of its parents, subsidiaries, subdivisions, or affiliates. The Company shall have the right to assign this Agreement to its successors and assigns, and all covenants and agreements hereunder shall inure to the benefit of and be enforceable by its successors or assigns.

12. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, without giving effect to conflict of laws provisions. Jurisdiction shall be exclusively in the state and federal courts of the Commonwealth of Massachusetts.

13. Employee Acknowledgement. I acknowledge that I have had the opportunity to consult legal counsel in regard to this Agreement, that I have read and understand this Agreement, that I am fully aware of its legal effect, and that I have entered into it voluntarily and based on my own judgment and not on any representations or promises other than those contained in this Agreement.

Signed: /s/ Richard Burns Date: Sept 12, 2020
Employee Name: Richard Burns

Accepted on behalf of Teradyne, Inc.
by: /s/ Charles J. Gray

3. <u>Non-Competition</u>. I agree that I will not, during the period of my employment by the Company, directly or indirectly enter the employment of, or render any professional services, except such as are rendered at the request of the Company, to any individual, partnership, association or corporation who or which is a competitor of the Company without the prior permission in writing of the Company. I further agree that I will notify the Company of any

Exhibit 31.1

CERTIFICATIONS

I, Mark E. Jagiela, certify that:

1. I have reviewed this quarterly report on Form 10-Q 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 officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

5. The registrant's other certifying officer 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 function):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 2, 2020

By: /S/ MARK E. JAGIELA

Mark E. Jagiela
Chief Executive Officer

Exhibit 31.2

CERTIFICATIONS

I, Sanjay Mehta, certify that:

1. I have reviewed this quarterly report on Form 10-Q 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 officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

5. The registrant's other certifying officer 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 function):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 2, 2020

By: /S/ SANJAY MEHTA

Sanjay Mehta
Chief Financial Officer

Exhibit 32.1

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 Quarterly Report of Teradyne, Inc. (the “Company”) on Form 10-Q for the period ended September 27, 2020 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 (S) 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 as of the dates and for the periods expressed in the Report.

/S/ MARK E. JAGIELA

Mark E. Jagiela
Chief Executive Officer
November 2, 2020

Exhibit 32.2

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 Quarterly Report of Teradyne, Inc. (the “Company”) on Form 10-Q for the period ended September 27, 2020 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Sanjay Mehta, Chief Financial Officer of the Company, certify pursuant to 18 U.S.C (S) 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 as of the dates and for the periods expressed in the Report.

/S/ SANJAY MEHTA

Sanjay Mehta
Chief Financial Officer
November 2, 2020