

# TERADYNE



**Mark E. Jagiela**  
Chief Executive Officer and President  
Teradyne, Inc.

## Fellow Shareholders,

2018 was another good year for Teradyne. Revenue exceeded \$2 billion for the second consecutive year, our non-GAAP earnings per share increased to \$2.37<sup>1</sup> and we returned \$891 million to shareholders through share repurchases and quarterly dividends. These capital returns were balanced with two acquisitions in the Industrial Automation (IA) space setting up more growth opportunities ahead. Notwithstanding a slowdown in smartphone related semiconductor test buying from our largest customer, our test businesses performed well during the year and strong growth continued in our expanding IA business.

Our focus at Teradyne is on more than one year's performance. Teradyne's long-term growth plan is to maintain our leadership in test while investing in emerging, advanced, industrial automation technologies that are transforming the workplace. Our IA investments are guided by the view that global industry is undergoing a fundamental structural change in production methods. This is driven by several factors including labor shortages, competitive cost pressures, increasing customization and higher product quality requirements. Teradyne's automation solutions address these trends by bringing the power of low-cost, easy to train, safe, human scale automation to companies of all sizes, in all parts of the world, enabling them to harness collaborative machines and human talent to drive business success.

We significantly strengthened our position in Industrial Automation in 2018. Building on the foundation of Universal Robots (UR), we acquired Mobile Industrial Robots (MiR) to extend our collaborative robotics reach to the autonomous mobile robot market. These mobile robots use sophisticated sensors to automatically map their environment and guide the movement of payloads from 100kg to 500kg. We also acquired Energid and its team of motion control software experts to extend UR's addressable market for robot arms. At Universal Robots, our UR+ open platform continued to expand from under 60 to over 130 certified plug-and-play applications that seamlessly work with UR cobots. These range from hand-like grippers to vision systems to automated welders and more. Finally, we expanded our product portfolio at both UR and MiR, substantially grew our global organizational capabilities and delivered another

year of attractive operating profits. Both UR and MiR are the market leaders in their respective segments of collaborative automation.

From a starting point of \$42 million in sales in 2015, IA delivered over a quarter of a billion dollars in sales in 2018. Although annual revenue of \$261 million was up 54% from 2017 – including MiR's and Energid's results – it was about \$20 million below our ambitious target for the year. Softness in China and in the European automotive sector moderated UR's growth rate to 38% from the 72% level achieved in 2017. MiR had a fantastic year, growing over 150% annually on a pro-forma basis to \$31 million. Between 2018 and 2022, we expect our IA revenue to grow between 30 and 40% annually on a compounded basis.

### Industrial Automation Revenue History (\$M)



Shifting to our test businesses, Semiconductor Test results for the year were mixed. Demand for test capacity for mobile devices from our largest customer dropped more than 50% from 2017, which pulled our overall Semiconductor Test revenues down 10% for the year. At a market level, the system on a chip (SoC) test market expanded in 2018 about 11%, indicating strong overall demand. In fact, Teradyne's analog shipments for the year grew nearly 40% to a new record level. In addition to the continued expansion of automotive and industrial applications, smarter consumer products are also boosting analog sales. Applications like smart speakers, internet-enabled appliances and home security, combined with the wireless connections they

	GAAP Revenue (\$M)	Operating Income (\$M)	Operating Margin	Net Income (\$M)	Earnings Per Share	Diluted Share Count (M)	Number of Employees
2018	2,101	529	25%	449	\$2.37	189	4,900
2017	2,137	565	26%	469	\$2.34	200	4,500
2016	1,753	350	20%	309	\$1.51	204	4,300

### Non-GAAP Operating Results<sup>1</sup>

require, all drive increased analog content and greater test demand.

In Memory Test, we grew sales 46% to \$274 million – the highest in our history. This growth reflects our strong position in the flash package test market combined with success of our newly introduced Magnum tester for the flash wafer test market. We'll continue to expand our market reach with a DRAM package tester later in 2019. While we expect the memory market to soften in 2019, we're bullish on its long-term outlook as both bit growth and higher interface speeds are driving healthy test demand.

At LitePoint, sales were up 18% in 2018 as our customers added tester capability to meet the early market demand for both new connectivity and cellular standards. We're encouraged by initial production test system buying for Wi-Fi 6. We've also achieved early success with our 5G millimeter wave test products in the development labs of leading silicon providers as they prepare for future production ramps. While we expect 5G millimeter wave enabled handset production is still a few years away, these early wins provide a solid foothold for future growth.

Our System Test division profitably grew sales 12% for the full year with the group – Defense and Aerospace, Production Board Test and Storage Test – delivering a non-

GAAP operating margin over 23%<sup>1</sup>, a 17 point improvement from 2017. Expanding defense budgets and our strong position in both new and legacy defense systems, combined with shares gains in automotive electronic test, as well as improved profitability in storage test, powered these results.

The results in 2018 are a reflection of the hard work and creative energy of over 4,900 Teradyne employees around the globe. Their determination and enthusiasm to solve our customers' test and automation problems – some immediate, some years in the future – speak to both the challenges of working in a fast-paced technology driven business, and the rewards of making the future a reality for consumers everywhere. I'm proud of their incredible work and look forward to the exciting future that lies ahead.

Thank you for your confidence in Teradyne,



Mark E. Jagiela  
Chief Executive Officer and President  
Teradyne, Inc.  
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<sup>1</sup>Non-GAAP financial measures. Please see the "Shareholder Letter Supplement" posted to our Investor Relations website – [investors.teradyne.com](http://investors.teradyne.com) – for explanations of why we use these Non-GAAP measures and the reconciliation to the most comparable GAAP financial measures.

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