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Announcing Kronos™ 1080 and ICOS™ F160 Inspection Systems: Expanding KLA-Tencor's IC Packaging Portfolio

MILPITAS, Calif., Aug. 30, 2018 /PRNewswire/ -- Today [KLA-Tencor Corporation](#) (NASDAQ: KLAC) announced two new defect inspection products designed to address a wide variety of integrated circuit (IC) packaging challenges. The **Kronos™ 1080** system offers production-worthy, high sensitivity wafer inspection for advanced packaging, providing key information for process control and material disposition. The **ICOS™ F160** system examines packages after wafers have been diced, delivering fast, accurate die sort based on detection of key defect types—including sidewall cracks, a new defect type affecting the yield of high-end packages. The two new inspection systems join KLA-Tencor's portfolio of defect inspection, metrology and data analysis systems that help accelerate packaging yield and increase die sort accuracy.



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"As chip scaling has slowed, advances in chip packaging technology have become instrumental in driving device performance," said Oreste Donzella, Senior Vice President and Chief Marketing Officer at KLA-Tencor. "Packaged chips need to achieve simultaneous targets for device performance, power consumption, form factor and cost for a variety of device applications. As a result, packaging design has become more diverse and complex, featuring a range of 2D and 3D structures that are more densely packed and shrinking in size with every generation. At the same time, the value of the packaged chip has grown substantially, along with electronics manufacturers' expectations for quality and reliability. To meet these expectations, packaging manufacturers, whether in the back end of a chip manufacturing fab or in an outsourced assembly and test (OSAT) facility, have demanded more sensitive, cost-effective inspection, metrology and data analysis—and more accurate identification of bad parts. Our engineering teams have developed the new Kronos 1080 and ICOS F160 systems to serve the electronics industry's growing needs for production-worthy

defect detection for a wide variety of packaging types."

The **Kronos 1080** system is designed to inspect advanced wafer-level packaging process steps, providing information on the full range of defect types for inline process control. Advanced packaging technology necessarily includes ever-smaller features, higher-density metal patterns, and multi-layer redistribution layers—all of which have increasing inspection requirements that demand innovative solutions. The Kronos system achieves its industry-leading performance through multi-mode optics and sensors and advanced defect detection algorithms. The Kronos system also introduces FlexPoint™, an advanced technology derived from KLA-Tencor's leading inspection solutions for IC chip manufacturing. FlexPoint focuses the inspection system on key areas within the die where defects would have highest impact. Flexible wafer handling enables the inspection of high-warp wafers, frequently encountered in a package type called fan-out wafer-level packaging—an established type for mobile applications and an emerging technology for networking and high-performance computing.

After wafer-level packages are tested and diced, the **ICOS F160** performs inspection and die sorting. Manufacturers of high-end packages, such as those used for mobile applications, will benefit from new capability to detect laser-groove, hairline and sidewall cracks. These cracks result from a change in the materials used to insulate the dense on-chip metal routing to facilitate increased speed and reduced power consumption. The new material is brittle, making it susceptible to cracks during wafer dicing. Sidewall cracks are notoriously difficult to detect, as they lie perpendicular to the top of the die and are not detectable using traditional visual inspection. Another major advantage of the ICOS F160 system, beneficial to many packaging types, is its flexibility: input and output modes can be wafer, tray or tape. The system is easily changed from one configuration to another. Its automatic calibrations and precision die pickup facilitate increased tool utilization in high volume manufacturing environments.

The **Kronos 1080** and **ICOS F160** systems are part of KLA-Tencor's portfolio of packaging solutions designed to address inspection, metrology, data analysis and die sorting needs for a variety of IC packaging types. This portfolio includes the [CIRCL™ -AP](#) all-surface wafer inspection system, [Zeta-580/680](#) 3D metrology system for wafers and panels, ICOS™ [T890](#), [T3 and T7 Series](#) component inspection and metrology systems, and [Klarity®](#) data analytics system. More information about the two new defect inspection systems and KLA-Tencor's full packaging solution portfolio can be found on the [packaging portfolio web page](#).

About KLA-Tencor:

KLA-Tencor Corporation, a leading provider of process control and yield management solutions, partners with customers around the world to develop state-of-the-art inspection and metrology technologies. These technologies serve the semiconductor and other related nanoelectronics industries. With a portfolio of industry-standard products and a team of world-class engineers and scientists, the company has created superior solutions for its customers more than 40 years. Headquartered in Milpitas, Calif., KLA-Tencor has dedicated customer operations and service centers around the world. Additional information may be found at www.kla-tencor.com (KLAC-P).

Forward Looking Statements:

Statements in this press release other than historical facts, such as statements regarding

the expected performance of the Kronos 1080 and ICOS F160 systems and the economic effects of improvements in defect reduction and die sort accuracy in packaging manufacturing facilities, are forward-looking statements, and are subject to the Safe Harbor provisions created by the Private Securities Litigation Reform Act of 1995. These forward-looking statements are based on current information and expectations, and involve a number of risks and uncertainties. Actual results may differ materially from those projected in such statements due to various factors, including delays in the adoption of new technologies (whether due to cost or performance issues or otherwise), the introduction of competing products by other companies or unanticipated technological challenges or limitations that affect the implementation, performance or use of KLA-Tencor's products.

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