Introspect Technology’s Ultra-Compact Test Module Addresses Need for At-Speed High-Volume Manufacturing Test of MIPI Devices

The SV4D solves legacy ATE test challenges and delivers unmatched reliability in production testing

MONTREAL (PRWEB) April 04, 2019 -- Introspect Technology, manufacturer of innovative products that address the entire multi-Gbps test and measurement instrument experience, officially released its SV4D Direct Attach MIPI Test Module to the public today. The SV4D is a high-performance, ultra-compact test module that enables at-speed production testing for MIPI® Alliance C-PHY® or D-PHY™ transmitter or receiver interfaces. Such interfaces find widespread use in image sensor, display driver, and system-on-a-chip (SoC) devices. With major MCU, ASSP, and display chip manufacturers already benefiting from the tool’s ability to perform wafer sort and final test, the SV4D promises to significantly alter the cost-of-test formula and improve product quality for customers manufacturing MIPI-based devices.

Arising Industry Trends Mean More Complex Test Standards and Added Challenges for Product Engineers

The semiconductor manufacturing process relies on automated test equipment (ATE) to ensure quality during the various stages of wafer fabrication and assembly. Within this domain, advances in interface technology are creating new challenges for testing high-speed protocols. For instance, the demand for higher performance by end users is pushing high-end MIPI technology for cameras, displays, and wireless interfaces from relatively low speeds into the multi-gigabit per second per lane regime. Coupled with MIPI’s complex multi-level signaling, sophisticated physical layer timing parameters, and extremely low voltage levels, this trend has severely limited the ability to use existing ATE solutions for achieving high fault coverage.

“Whereas we could use conventional ATE for DC parametric testing and a loop-back methodology for high-speed testing on our standard SerDes interfaces, we could not find a solution that could provide the necessary fault coverage for the MIPI ports on our devices,” said Ibrahim Aljabiri, Sr. Manager, Product & Test Engineering, Synaptics. “The SV4D’s strong MIPI features, high operating speed, and compact size allowed us to deploy a high-parallelism multi-site solution on our existing ATE,” he continued.

No Room for Error — Achieving Zero Defects

As more manufacturers use MIPI interfaces to power safety-critical applications, we are witnessing a nascent quest to achieve zero defects per million units shipped during HVM. To attain a near perfect level of quality in HVM, MIPI interfaces must be tested at speed and with stimulus waveforms that cover the entire gamut of protocol sophistication. A product with a zero defect goal calls on the automated test industry to essentially create a system test paradigm in which a system-oriented test methodology is utilized. As Dr. Mohamed Hafed, Chief Executive Officer of Introspect Technology, explained, “we found that product engineers all over the world were looking for mimicking system-level functionality as much as possible during wafer sort and final test. So, we set out to create a production test module that leveraged our unique monolithic MIPI physical layers to deliver exactly that. Not only is the SV4D able to perform structural testing using abbreviated device test modes, but it is also able to completely exercise the link and software layers of devices under test.”

Introspect Technology’s SV4D Addresses Need for New Production Testing Methods

Introspect Technology has designed the SV4D Test Module to satisfy the need for parallel, at-speed, system-oriented testing methodology on ATE that closely mimics the final application of the device under test.
Achieving a level of integration that is not fathomable using conventional equipment, it can be deployed to test:

- applications processors or AI co-processors containing MIPI DSI, DSI-2, or CSI interfaces;
- display driver ICs containing MIPI DSI or DSI-2 interfaces;
- image sensors containing MIPI CSI-2 interfaces;
- wireless and IoT devices containing MIPI D-PHY or C-PHY; and
- sLVDS links found in ISPs or infotainment chipsets.

The SV4D supports multi-site testing, can do both electrical test and protocol test, and uses a floating interconnect architecture that allows it to be used in wafer probe applications as well as final test applications.

With the scope of applications for MIPI interfaces expanding beyond mobile, the release of Introspect Technology’s SV4D could not be more timely for the automatic test industry, as the constraints of legacy ATE and obsolete testing methodologies are rendering it increasingly difficult to meet conformance standards. The SV4D promises to deliver an efficient functional test platform that not only supports legacy ATE functionality, but also addresses the latest MIPI testing requirements. At the end of the day, the cost of quality incurred by high-volume manufacturers of high-speed digital products is only rising, yet customers deploying the SV4D on their ATE have already seen a major improvement in test execution efficiency and cost. With the success of Introspect Technology’s SV4D, achieving zero defects per million units shipped might not be so far away after all.

The SV4D Direct Attach MIPI Test Module Tester is available for purchase from Introspect Technology or through one of its approved worldwide distributors.

About Introspect
Introspect Technology offers the most extensible measurement and optimization tools for high-speed digital product engineering teams worldwide. Our portable, software-defined instruments deliver unprecedented productivity enhancement throughout all stages of multi-GHz product development: from bring-up characterization to system-level integration and optimization. Our mission is to enhance competitiveness, product quality, and time-to-market for our customers.
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