



CASE STUDY

PCBA Manufacturer Shifts Gears for Autonomous Driving with Keysight ICT

Leading printed circuit board assembly manufacturer tests 15 million boards with almost no downtime, exceeding target

When autonomous driving made headlines in 2014, one leading automotive electronics manufacturer saw the opportunity to gear up its production capacity for the printed circuit board assembly (PCBA) market shift.

The US-based company with a strong global presence in the automotive electronics market anticipated the need for a test solution — from bare printed circuit boards (PCBs) to final assembly — for emerging advanced driver assistance systems (ADAS).

The manufacturer's customers had stringent requirements for manufacturing first-generation PCBAs for ADAS. These boards had to be perfect for use in various safety-critical applications for autonomous driving technology.



Company

- Leading automotive PCBA manufacturer

Challenges

- Managing high-volume PCBAs manufacturing
- Coverage —24/7
- Higher yield without compromising quality

Solutions

- Keysight E9988EL i3070 2-module inline in-circuit system
- Shorter preventive maintenance frequency, from six to four months

Results

- Produced 15 million PCBAs with zero unplanned downtime
- Achieved greater than 99% first pass yield



Challenges

The manufacturer knew it needed an effective board test solution to handle high-volume PCBA manufacturing of PCBAs, but there were some challenges. First, the in-circuit test solution had to work 24/7 production shifts without any downtime. Secondly, the manufacturer needed to achieve the highest possible yield and PCBA performance, without comprising quality.

To achieve these objectives, the manufacturer wanted a touchless workflow with minimal human intervention. It required test equipment to boost its' test throughput with minimal disruptions from unplanned test equipment downtime.

Solutions

To address this challenge, the manufacturer installed its first Keysight E9988EL i3070 inline ICT in 2014 for initial prototyping of first-generation ADAS products and production ramp-up (Figure 1). Since that time, the manufacturer has further expanded its production capacity with 10 Keysight inline ICT systems — testing more than 15 million PCBAs over the past five years.

To minimize interruptions to production schedules, the manufacturer's test equipment maintenance team took the initiative to shorten the preventive maintenance frequency from six to four months. This pre-emptive maintenance schedule allowed the team to keep its inline in-circuit tester working so reliably that it was nicknamed the "Workhorse."



Figure 1: E9988EL inline ICT handler

Results

The manufacturing test team reported a very satisfactory performance of the E9988EL i3070 inline ICT handler with zero percent unplanned downtime. The tester reported first pass yield results of over 99%.

The customer's PCBA for ADAS applications has evolved to the fifth generation with denser components packed into smaller boards. Despite the increase in board test complexity, the inline ICT systems are keeping up with the line rate, running 24/7, to ensure all boards perform flawlessly in safety-critical functions.

Summary

The E9988EL i3070 inline in-circuit system successfully proved it is a reliable board test solution for the automotive electronics industry. The system produces stable and high yield results for PCBA test environments for critical ADAS applications. For more information, go to: www.keysight.com/find/i3070inline

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