# Keysight Technologies

# Keysight Medalist VTEP v2.0 Powered!

## With Cover-Extend Technology

Keysight Technologies, Inc. Medalist VTEP v2.0 Powered! is a comprehensive suite of test tools designed to tackle today's test challenges.

Technological advances are putting tremendous pressures on manufacturing test. Nearly every segment of the electronics industry is affected by these trends:

- Shrinking geometries
- Diminishing test access
- Increasing PCBA density
- High Speed Signal Propagation (HSSP)

The VTEP v2.0 Powered! test suite comprises:

1. The original VTEP engine – with 4X better sensitivity and 5X better standard deviation
2. iVTEP – for testing ultra-small packages (e.g micro-BGAs, flip-chips)
3. Network parameter measurement – for testing power and ground pins (essential for HSSP)
4. Cover-Extend – The latest addition to the test suite which targets limited-access PCBAs

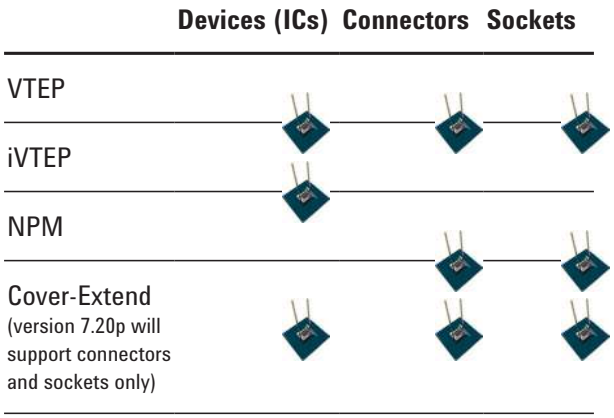


Table 1. Different technologies in the VTEP v2.0 Powered test suite

## What is Cover-Extend technology?

Cover-Extend technology is a hybrid between VTEP and boundary scan. It draws the best from what each technology offers and enhances the overall capability of Keysight in-circuit test systems. Here are the key contributions of the constituent technologies:

### VTEP

Simple, robust and fast measurement using VTEP sensors.

### Boundary scan

A world-wide standardized test methodology (IEEE 1149.x standard). Limited-access capability – ability to control the I/O functions of individual pins through the use of only four pins of the test access port (refer to Figure 1 overleaf).

## Key benefits of Cover-Extend

- Test coverage without test access
- Lower cost of test
- Improved board quality

### Test coverage without test access

Cover-Extend protects your investment in ICT as well as opens up opportunities for access-limited users who have not traditionally considered ICT as part of test strategy to do so now.

### Lower cost of test

With lesser need for physical test access*, there comes significant savings on operational cost like fixturing and ICT test resources.

For instance, you can now save on cost of test probes and associated cost like wiring and maintenance. Also, you can minimize your need for ICT pin cards required to test your PCBAs.

* On some types of boards, this could be as high as 50% of total test probes on a fixture.

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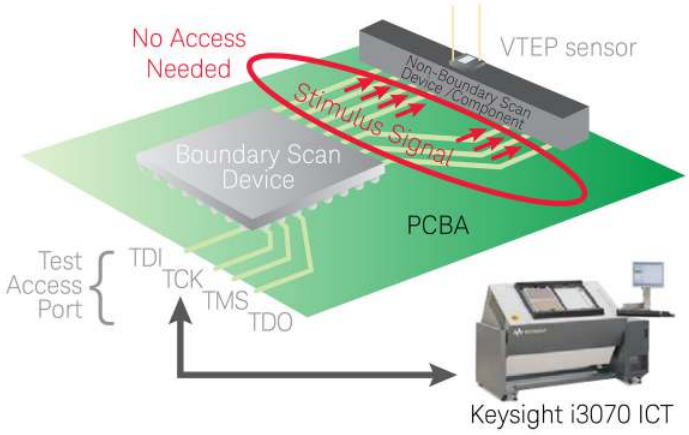



Figure 1. The Cover-Extend model

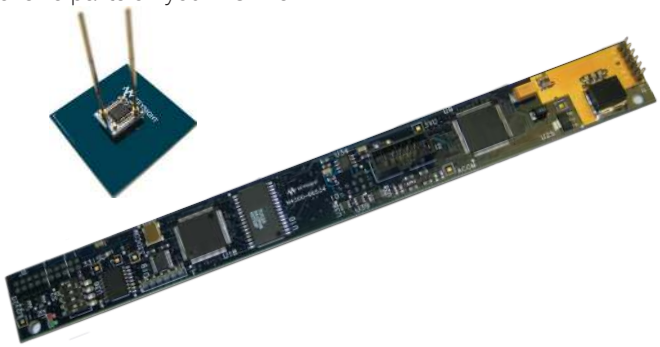
## How does it work?

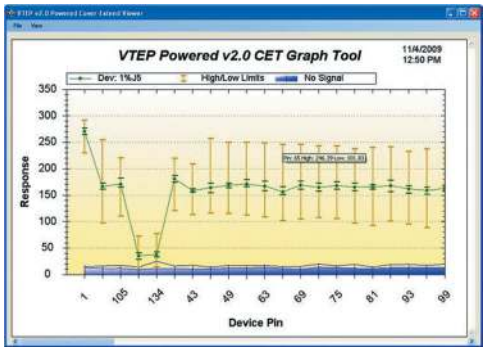
1. The VTEP sensor, which is able to capacitatively pick up stimulus signals, is placed on the component to be tested (e.g. a connector).
2. Traditional VTEP methodology required physical test access (i.e test probes) to deliver this stimulus signal. However, with Cover-Extend, the stimulus signal is delivered via a boundary scan device.
3. The boundary scan device **does not** require test probes on every pin.
4. As per the IEEE 1149.x standard, using only the test access port, users can deliver the necessary stimulus signal to the connector.
5. A defect (e.g. an open) on the path between the boundary scan device and the VTEP sensor will affect the stimulus signal that is bound for the sensor.
6. The result is captured and diagnosed by the ICT system and thus, the defect is detected!

## Key benefits of Cover-Extend (continued)

### Improved board quality

With fewer test probes under strain-sensitive packages (e.g micro BGAs), you can now reduce solder joint cracks due to excessive strain. These packages are usually one of the most expensive parts on your PCBAs.






### Hardware requirement

1. VTEP mux card and sensors
2. Cover-Extend signal conditioner card
3. USB interface kit

### Software requirement

1. i3070 software version 07.20p and above
2. Cover-Extend license

## Additional information

To learn more about Keysight Medalist VTEP v2.0 Powered! with Cover-Extend Technology, please visit **www.keysight.com/see/vtep**

Further information on Keysight's in-circuit test technology can be found at **www.keysight.com/find/ict**

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus

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