

# Automotive Ethernet testing

## Keysight Automotive Ethernet compliance testing

### Conformance to standards

There are four different standards governing the Automotive Ethernet platform; BroadR-Reach, IEEE 100BASE-T1, IEEE1000BASE-T1 and the OPEN alliance ECU specifications. Keysight now offers an easy-to-use test platform that enables you to validate all four, including the MDI mode conversion loss and Common Mode emission tests set by OPEN Alliance Automotive Ethernet TC8 ECU test specification.

### Backplane of the future

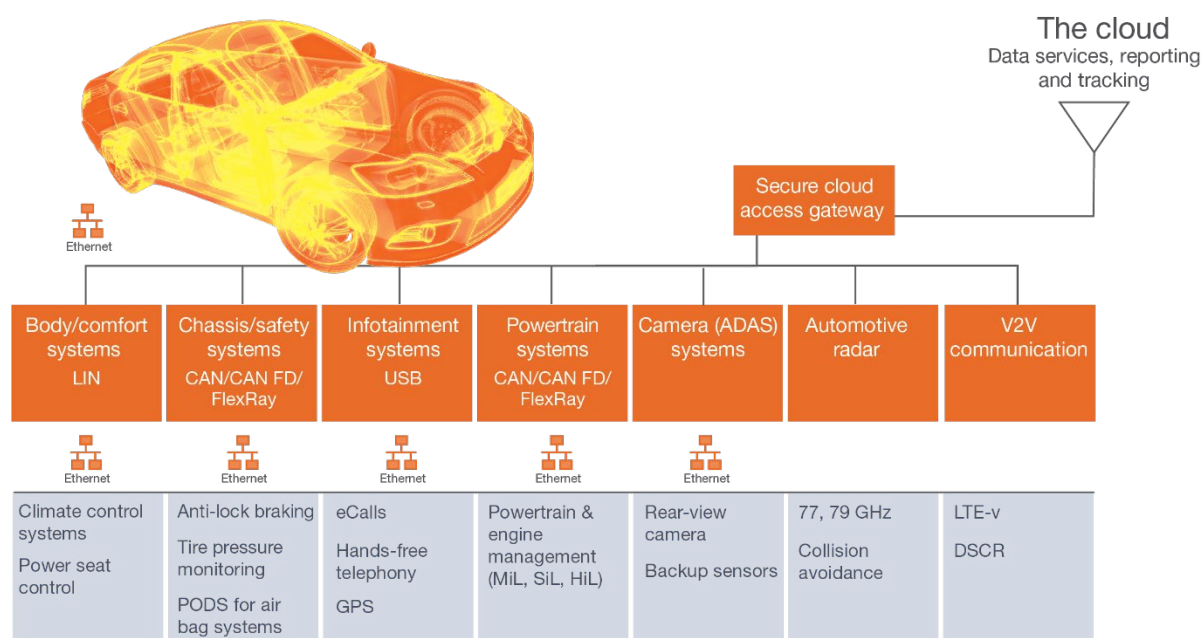
Autonomous vehicles promise to change the nature of commercial and passenger transportation over the roadways. Inside those new vehicles, the requirements for data speed and bandwidth are increasing. Unlike the slower speed backplanes of CAN and LIN 100BASE-T1 Automotive Ethernet requires rigorous compliance testing.

Keysight's full suite of automotive Ethernet solutions automate testing and validation across Tx, Rx and link segment for 100 Mb/s and 1000 Mb/s automotive Ethernet.



### Enable your ADAS systems.

Automotive Ethernet enables faster data communication to meet the demands of today's vehicles and the connected vehicles of the future. Unlike the slower speed backplanes of CAN and LIN 100BASE-T1 Automotive Ethernet requires rigorous compliance testing.



## Simplify validation of automotive Ethernet designs

The Keysight Automotive Ethernet TC8 ECU transmit compliance application, compliant to OPEN alliance specification offers the below features to make the validation of automotive Ethernet designs less time consuming.

- Setup wizard for quick configuration and test
- Wide range of 100BASE-T1 tests enabling standards conformance
- MDI mode conversion loss and common mode emission tests are new and specific for 100BASE-T1 ECU compliance testing
- Accurate and repeatable results with Keysight Infiniium oscilloscopes
- Detailed information of each test that has been run, including automated reporting in a comprehensive pass/fail HTML format with margin analysis

### Comparing the tests

Test name	IEEE 100BASE-T1 BroadR-Reach	OPEN Alliance ECU	IEEE 1000BASE-T1
Transmitter output droop	96.5.4.1	96.5.4.1 2.2 OABR_PMA_TX_01	97.5.3.1
Transmitter distortion	96.5.4.2	96.5.4.2 2.2 OABR_PMA_TX_08	97.5.3.1
Transmitter timing jitter	96.5.4.3/ 96.5.4.5	96.5.4.3/ 96.5.4.5 2.2 OABR_PMA_TX_02	97.5.3.3
Transmitter power spectral density	96.5.4.4	96.5.4.4 2.2 OABR_PMA_TX_04	97.5.3.4
Transmitter peak differential	96.5.6 (IEEE test only)	N/A	97.5.3.5
Transmit clock frequency	96.5.4.5	96.5.4.5 2.2 OABR_PMA_TX_03	97.5.3.6 97.5.2
MDI return loss	96.8.2.2	96.8.2.2 2.2 OABR_PMA_TX_05	97.7.2.1
MDI mode conversion	N/A	2.2 OABR_PMA_TX_06	N/A
MDI common mode emission	N/A	2.2 OABR_PMA_TX_07	N/A

Note: Transmitter peak differential is in the 100BASE-T1 IEEE specifications but not in BroadR-Reach. OPEN Alliance specifications reference the IEEE standard listed

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