

Automotive Ethernet ECU Test Specifications Test Tool Package for Layers 1 to 7

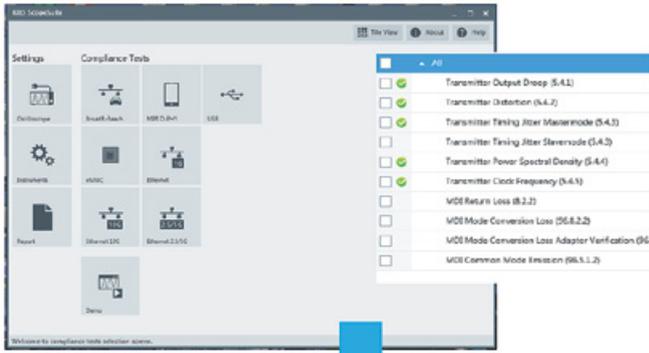
TC8 – OPEN ALLIANCE

ROHDE & SCHWARZ

Make ideas real



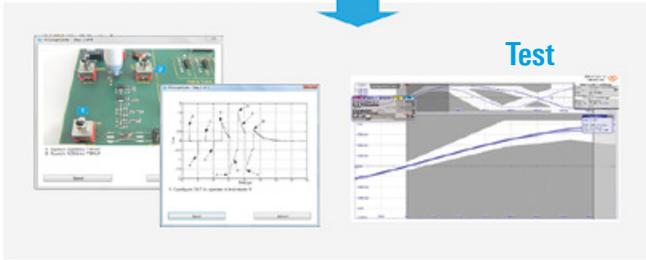
Test and reporting with R&S®ScopeSuite



Pass/fail results

Test	Description	Run	Result	Detail
<input type="checkbox"/>	Output Droop	1	✓	2/2
<input type="checkbox"/>	Transmitter Distortion No TX_TCLK No Disturber	1	✓	11/11
<input type="checkbox"/>	Transmitter Timing Jitter Mastermode	1	✓	1/1
<input type="checkbox"/>	Power Spectral Density	1	✗	0/1
<input type="checkbox"/>	Power Spectral Density	2	✓	1/1
<input type="checkbox"/>	Transmitter Clock Frequency	1	✓	1/1

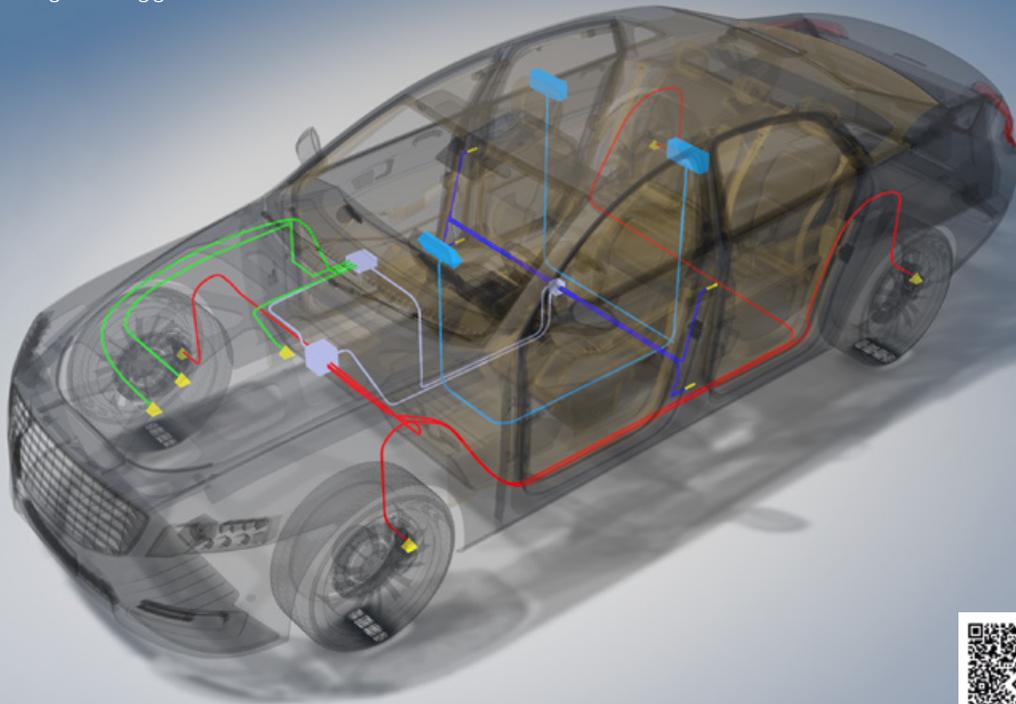
Report



If you are interested in related content, find more information here:



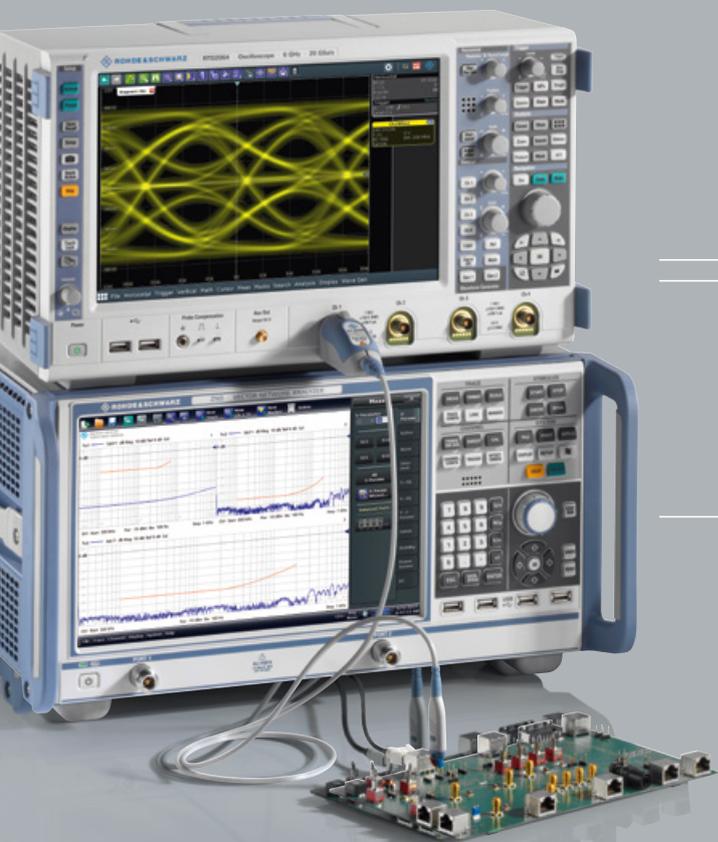
Debugging Automotive Ethernet using the trigger and decode



Automotive Ethernet compliance testing



OUR SOLUTION: 10/100/1000BASE-T1 AUTOMOTIVE ETHERNET TEST SOLUTION



TC8 PMA test cases supported:

- ▶ Transmitter output droop
- ▶ Transmitter timing jitter master mode and clock frequency
- ▶ Transmitter distortion
- ▶ Transmitter timing jitter slave mode
- ▶ Transmitter power spectral density and peak differential output
- ▶ MDI return loss
- ▶ MDI mode conversion
- ▶ MDI mode conversion adaptor verification
- ▶ MDI common mode emission

[R&S®ScopeSuite automation software](#)

[R&S®RTO oscilloscope](#)

[R&S®ZND two-port vector network analyzer](#)

R&S®RTO configuration:

- ▶ R&S®RTO min. 2 GHz
- ▶ R&S®RTO-B4 (OCXO 10MHz)
- ▶ R&S®RTO-B6 (Arbitrary Waveform and Pattern Generator 14-bit resolution)
- ▶ R&S®RTO-K24 (100BASE-T1/BroadR-Reach® Compliance test software)
- ▶ R&S®RTO-K87 (1000BASE-T1 Compliance test software)
- ▶ R&S®RTO-K17 (High Definition Vertical Resolution 16 bit)
- ▶ RTO-K89 (10BASE-T1S Compliance test software)
- ▶ RT-ZF8 (Automotive Ethernet compliance fixture for 10/100/1000BASE-T1)
- ▶ RT-ZF7/ZF7A (Automotive Ethernet trigger & decode fixture set)
- ▶ R&S®RT-ZD30 (Voltage probe 3.0 GHz, active, differential, 1 M Ω)

R&S®ScopeSuite software

- ▶ R&S®RTO-K99 (ScopeSuite Automation for 10/100/1000BASE-T1)

R&S®ZND configuration

- ▶ R&S®ZND-K5 (full test set for base unit (4.5 GHz) support of bidirectional measurements)
- ▶ R&S®ZV-Z192 (50 Ω N-type to 3.5 mm cables DC to 18 GHz)
- ▶ R&S®ZN-Z51 (calibration unit 50 Ω , 100 kHz to 8.5 GHz, 2 ports, 3.5 mm(f))

For more information, visit:

www.rohde-schwarz.com/automotive/ethernet

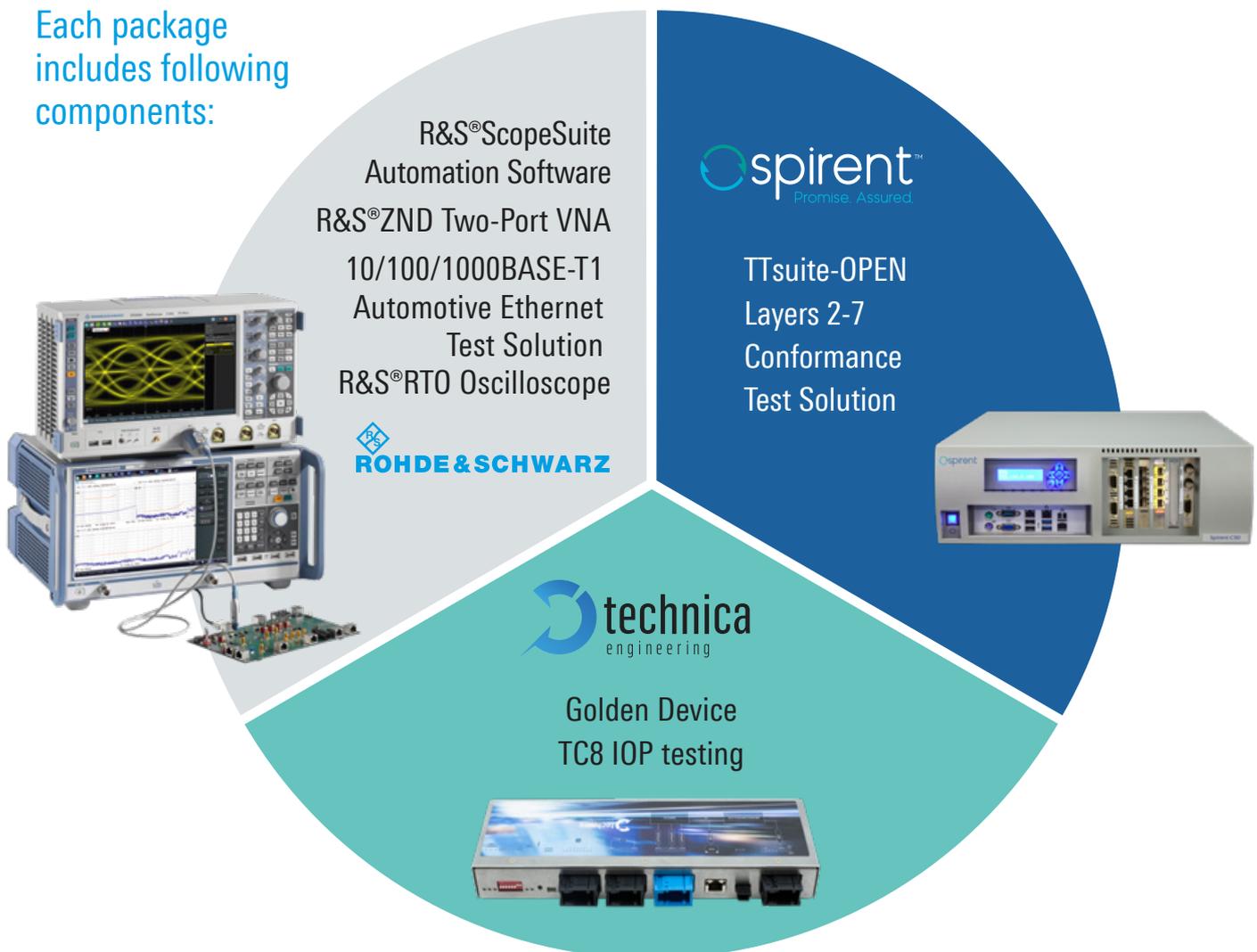
THE OPEN ALLIANCE'S TECHNICAL COMMITTEE 8 (TC8)

is responsible for defining test processes within that standardization body. It enables test houses to perform ECU testing by establishing regular audits of the test specifications and the requirements to increase communication quality of the Ethernet ECUs and networks in an

automotive system. Rohde&Schwarz, Spirent Communications & Technica Engineering bring together a complete package solution covering all the mandatory testing as described in the TC8 ECU Open Alliance document for both physical and protocol layers.

www.rohde-schwarz.com/openalliance

Each package includes following components:



- ▶ Rohde&Schwarz 10/100/1000BASE-T1 Automotive Ethernet test solution (incl. R&S®ScopeSuite automation software, R&S®RTO oscilloscope and R&S®ZND two-port VNA)
- ▶ SPIRENT Automotive Ethernet C1 or C50 TestCenter Appliance
- ▶ SPIRENT TTsuite-OPEN incl. TTworkbench Express Software (for test scope TCP/IP protocol family & test scope Automotive protocols)
- ▶ TECHNICA ENGINEERING Golden Device for IOP (Interoperability)
- ▶ ANDi Tool software package

SPIRENT AUTOMOTIVE C50 LAYER 2-7 SYSTEM:



AUTOMOTIVE C50 Full Automotive Ethernet PROMO PACK
This package is based on the **SPIRENT AUTOMOTIVE C50 Test Appliance with 12 Port BroadR-Reach® + 4 Port 1G SFP** (for 100BASE-T1, 1000BASE-T1 or classical Ethernet).

The Spirent automotive C50 offers the power of Spirent's award-winning Layer 2-7 router, switch, application and security test solutions in a 3U form factor delivering the best total cost of ownership in its class. With support for line-rate 10/100 BroadR-Reach® (100BASE-T1), 1000BASE-T1, NBASE-T (100M/1/2.5/5/10G), 1G and 10G Ethernet test ports, the C50 offers the power of

a professional test tool for deterministic testing of automotive Ethernet products and solutions. A complete Layer 2 to Layer 7 test tool, delivering the perfect blend of realism, scalability and performance.

For more information, visit:
www.spirent.com/openalliance

TECHNICA ENGINEERING GOLDEN DEVICE FOR OPEN ALLIANCE TC8 IOP (INTEROPERABILITY) TESTS:



Golden Device Art.-Nr.: TE-1455
ANDi Test automation software Art.-Nr.: TE-1700
ANDi GD Add-on Art.-Nr.: TE-1910

Based on the original OPEN Alliance "Golden Device" (Alliance TC8 v.1.0 release) from Technica Engineering. Execute the Physical Layer IOP tests of OA TC8 v.1.0 and v.2.0 using the components from Rohde&Schwarz (RTO-B6 Signal generator board + RT-ZF7 Automotive Ethernet probing fixture). Automated test execution via ANDi Add-On software tool (runs on R&S®RTO oscilloscope).

For more information, visit:
www.technica-engineering.de/openalliance

Service that adds value

- ▶ Worldwide
- ▶ Local und personalized
- ▶ Customized and flexibel
- ▶ Uncompromising quality
- ▶ Long-term dependability

Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, monitoring and network testing. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

Sustainable product design

- ▶ Environmental compatibility and eco-footprint
- ▶ Energy efficiency and low emissions
- ▶ Longevity and optimized total cost of ownership

Certified Quality Management

ISO 9001

Certified Environmental Management

ISO 14001

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TC8 – OPEN Alliance | Subject to change
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