

Pluggable Coherent Interoperability Verification

- Methodology Implemented at the OIF Plugfest -

400G Ethernet Analyzer MT1040A

Optical Spectrum Analyzer MS9740B

Background

Generally, pluggable coherent transceivers comply with standards such as 400ZR and OpenZR+, so users can freely select them based on their priorities, such as price, functionality, and support. Although multi-vendor combinations are also possible, establishing methods and indicators for users to grasp the interoperability has been an issue.

Optical Internetworking Forum (OIF) held Plugfest in February 2024 to verify the interoperability of 14 types of OpenZR+ transceivers, with Anritsu contributing by providing a measurement system for the rOSNR indicator.

This system and indicator are not just for multi-vendor users. Even single-vendor users can use it to verify the connectivity of transceivers with different revisions and to quantitatively evaluate the transmission capability of each transmission channel.

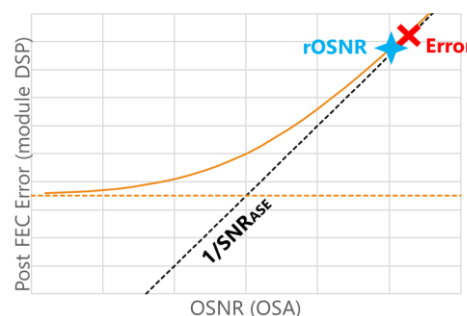
To ensure safe and high-quality networks using pluggable coherent transceivers, please introduce this system.

rOSNR Measurement System

rOSNR was defined at the plugfest as the minimum received OSNR that can maintain an error-free state in the transmitted data. In the system, an ASE light source is used as the noise source, and the amount of noise is adjusted using a variable optical attenuator. At this time, rOSNR is measured by monitoring the Post FEC Error value from the transceiver inserted in MT1040A 400G Ethernet Analyzer and the OSNR value received by MS9740B Optical Spectrum Analyzer.

In order to achieve a reproducible rOSNR, an automatic system that adjusts the optical attenuator while monitoring the values of two testers is effective.

Anritsu website provides an automated system (SLN file) that runs on a PC and an operation manual, so you can easily set up this system by simply purchasing the necessary measuring instruments.

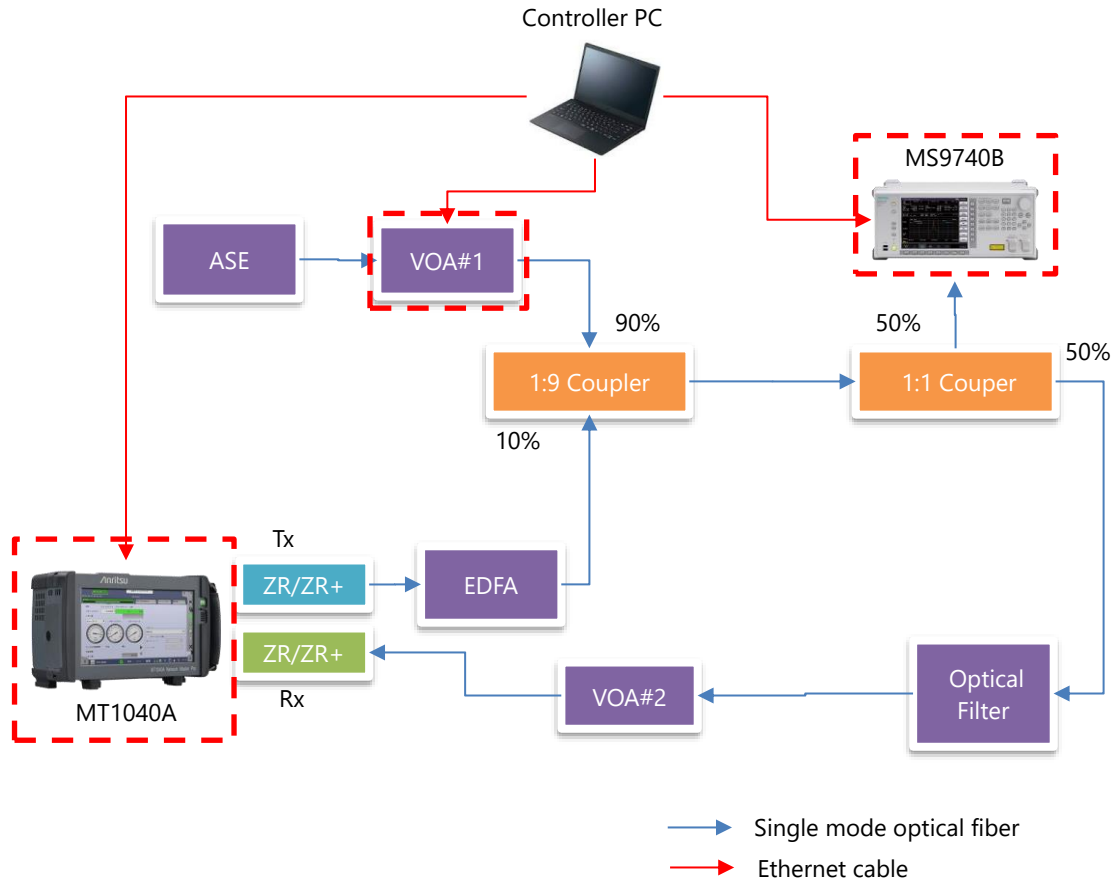


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rOSNR Measurement System Overview



Measurement Flow

1. Set Channel, Tx Power, etc on the transceiver, and confirm error-free transmission.
2. Control VOA#1 to worsen the OSNR until errors occur on the MT1040A
3. Control VOA#1 in 0.1 step increments until 30 seconds of error-free communication is ensured on the MT1040A
4. The OSNR observed on the MS9740B at this time is taken as rOSNR

Product Information



MT1040A 400G Ethernet Analyzer

- Supports testing from 10 Mbps to 400 Gbps
- Remote control over cloud and automated tests for standalone
- Supports multiple port testing



MS9740B Optical Spectrum Analyzer

- Wavelength sweeping time <0.35 s
- Dynamic range >58 dB
- 30 pm minimum resolution