

## T-BERD/MTS-4000 Platform

### CWDM Optical Spectrum Analyzer Module COSA-4055



#### Key features

- Smallest and lightest full band CWDM OSA for field applications.
- Integrated SFP slots for CWDM transceivers (option)
- ITU-T G.695 and G.674.2 conform
- Full spectral range of 1260 to 1625 nm
- Graphical (real trace) and tabular display mode
- Zoom and marker functions
- Easy-to-use one-button operation with auto pass/fail analysis

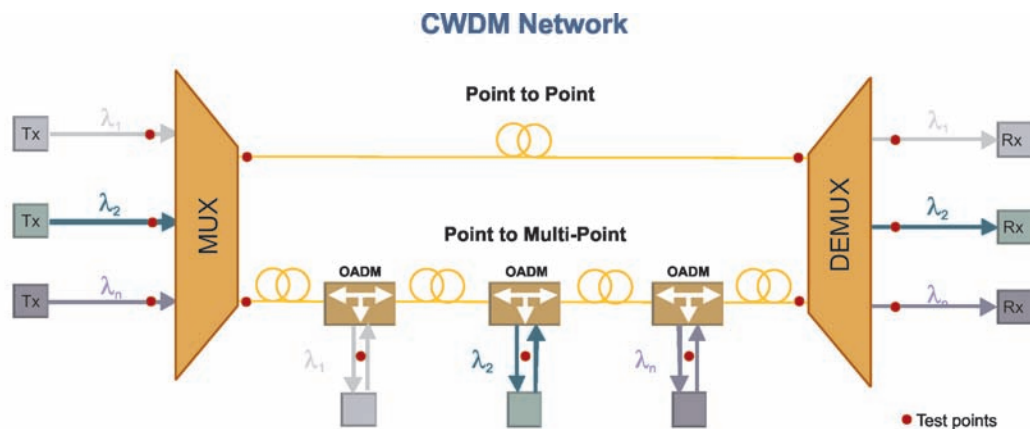
#### Applications

- Performance verification in Metro Access Networks
- Maintenance and troubleshooting of CWDM networks
- Upgrade of CWDM networks
- Spectral and drift testing of CWDM sources

#### Full band Optical Spectrum Analyzer for testing optical CWDM systems

The COSA-4055 is the new JDSU generation of CWDM analyzers. Until now either large and expensive OSAs have been used for precise testing of wavelength and power levels in CWDM networks or optical channel checkers were used to verify the presence of optical channels. With the new COSA-4055 JDSU is offering the functionality and speed of an optical spectrum analyzer in a handheld form factor at a fraction of the price of an OSA.

The JDSU T-BERD/MTS-4000 with COSA-4055 module is a battery operated handheld CWDM analyzer that is ideal for field service groups during installation, maintenance, and upgrade of CWDM systems.



#### CWDM explanation

Coarse wavelength division multiplexing (CWDM) is based on the same concept as DWDM using multiplexed wavelengths of light on a single fiber. The number of wavelengths is limited to 18 channels with an ITU standard spacing of 20 nm. The use of uncooled lasers, wide pass-band filters and non-amplified links enables CWDM systems to be used for cost-effective solutions in metropolitan transport networks.



**T-BERD/MTS 4000**  
COSA-4055

### Testing CWDM with a COSA-4055

#### CWDM multi vendor compatibility

ITU-T G.695 recommendation aims to promote vendor interoperability by specifying transmitter/multiplexer characteristics at one end of the CWDM link and the demultiplexer/receiver at the other end. ITU-T G.694.2 recommendation specifies the spectral grid for CWDM applications with 18 channels from 1271 nm to 1611 nm, with a 20 nm channel spacing. To guarantee multi-vendor compatibility it is important to verify the optical interface parameters according to these recommendations. The COSA-4055 is the ideal tool to check the critical parameters such as Tx output power and Rx input power and the central wavelengths during installation, commissioning, and troubleshooting of CWDM networks as well as to ensure compatibility of interfaces from different vendors.

#### Transmitter wavelength and output power

In CWDM network transmitter lasers are not equipped with a cooling system, thus temperature variations can cause a drift of the central wavelength and the power level. Every channel wavelength must be checked to verify any possible wavelength shift or power loss. The COSA-4055 allows to determine the compliance to the CWDM system specifications.

#### Mux/Demux/OADM

Transmitters with a wavelength offset can create additional attenuation in the multiplexers and demultiplexers. When test access points are available technicians can check a wavelength's presence and its associated power level to verify that all transmitted wavelengths have been correctly multiplexed with no excess power loss on one of the channels.

#### Receiver wavelength and input power

Similar tests like at the mux/demux must be performed to verify channel wavelengths and power levels. Since a wavelength drift in the transmitter can also create power drift which can cause bit errors it becomes important to monitor the evolution of channel power and wavelength over time.

#### Continuity

The pluggable SFP transceivers in the COSA can be used to test the link between the head-end and the end customer, when there is no system transceiver available. It is important to verify the link loss per wavelength and guarantee the continuity of the connection over multiplexers, demultiplexers, and OADMs.

#### OSNR testing

CWDM networks are designed for shorter distance applications which do not require amplified links, thus enabling the use of a wider transmission window between 1270 nm and 1610 nm where no amplifiers are available. In non-amplified, passive CWDM links the OSNR will not change from the transmitter side to the receiver side, so no OSNR measurements are required.



COSA acquisition menu

**Easy to use**

With its direct access keys to easily jump from one main menu to another and its contextual soft keys for function selection, the T-BERD/MTS-4000 offers a friendly intuitive graphical user interface thanks to its touchscreen option. It allows novice and expert user to be quickly familiar with the product, without any advanced training. Furthermore, the large 7 inch TFT color display improves viewing under any conditions.

One-button auto-testing guarantees that technician needs no special training to carry out a CWDM test, making JDSU's instrument suitable for both novice and expert technicians. An Auto-Test mode automatically identifies WDM channels, selects the appropriate wavelength range, and provides auto scaling and system qualification according to pre-defined parameters.



Spectral measurement, trace and table are displayed

**Maximized for field use**

The T-BERD/MTS-4000 with a COSA module is a very lightweight and rugged device, with long battery life and back-lighted screen for field use

Its fast scanning speed (<4s) enhances in situ efficiency.



Automatic Pass/Fail function

**Flexible measurement capability**

In-depth analysis, featuring statistical, continue or single evaluation with automatic storage capabilities, is provided. Different measurement functions such as automatic channel detection, and pass/fail analysis against user-settable limits are available on the COSA-4055.

Furthermore, its tunable channel grid allows not only to measure according to the ITU-T G.694.2 CWDM wavelengths but also to use your own customized grid.



Drift power measurement

**High performance CWDM Testing**

Full wavelength range 1260 to 1625 nm (Full band CWDM tester)

Real spectral measurements with:

- Complete spectral trace
- Tabular results of power and wavelength
- Zoom and marker functions

**Drift measurement for wavelength and power**

For optical performance monitoring it is essential to measure the key parameters over time. The built-in drift test application provides the result of power and wavelength over a customer definable time in a graphical and numerical format. Drift measurements are important in CWDM networks with uncooled laser, which have a typical wavelength drift of 0.1nm/°C.

**SFP slot for CWDM transceivers**

The COSA-4055 SFP bay version 2301/02 provides an integrated SFP slot to host up to 2 SFP CWDM transceivers.

The transceivers can be used to simulate CWDM transmitters for testing insertion loss per wavelength, and end-to-end continuity of a link in CWDM networks with mux/demux and OADMs.



## Specifications

### Modes

Operating modes	CWDM, Drift
Display modes	Graph (trace + overview); CWDM table and graph + table
Measurement parameters	ch#, power, wavelength, drift

### Spectral measurement ranges

Wavelength range	1260 to 1625 nm
Wavelength accuracy <sup>(1)</sup>	± 0.5 nm
Readout resolution	0.001 nm
Resolution bandwidth FWHM <sup>(1)</sup>	typ. 4 nm
Minimum channel spacing <sup>(4)</sup>	8 nm

### Power measurement ranges

Dynamic range	-55 to +10 dBm
Noise floor RMS	-55 dBm
Absolute accuracy <sup>(2)</sup>	±0.5 dB
Linearity <sup>(3)</sup>	± 0.1 dB
Readout resolution	0.01 dB
Scanning time	< 4 s

### Optical ports (physical contact interfaces)

Input port	SM / PC
Interface	Universal connectors
Optical return loss	>35 dB
Total safe power	+15 dBm

### SFP bay (version 2301/02 only)

Can host up to 2 SFP transceivers (not included)

(1) At 23°C ± 5°C

(2) typ. at -6 dBm at CWDM wavelength grid including PDL

(3) -45 dBm to +5 dBm, at 23°C

(4) Two channels at same power levels

## General specifications

### Temperature

Operating	-5 to +50°C 23 to 122°F
Storage	-20 to +60°C -4 to 140°F

### Dimensions (module only)

Weight	0.35 kg / 0.7 lbs
Size	1 slot module for MTS/TB-4000 128 x 134 x 40 mm (5.04 x 5.28 x 1.57")

### Optical connectors

Standard single mode	FC/PC, SC, ST, DIN, LC
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## Ordering information

Order number	Instrument
2301/01	COSA-4055 CWDM analyzer
2301/02	COSA-4055 CWDM analyzer with SFP bay

### Application Software

EOFS100	Optical fiber trace for post-analysis
EOFS200	Optical fiber trace for cable acceptance report

### Adapters

2151/00.32	Universal Optical ST Adapter
2151/00.50	Universal Optical DIN Adapter
2151/00.51	Universal Optical FC/PC or FC/APC Adapter
2151/00.58	Universal Optical SC/PC or SC/APC Adapter
2151/00.59	Universal Optical LC Adapter

For more information on the T-BERD/MTS-4000 Multiple Test Platform, please refer to the separate datasheet and brochure.

## Test & Measurement Regional Sales

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