High-Performance Full-Band OSAs

OSA-500/500M/501M/500R/500RS

T-BERD/MTS-8000 Platform

Key Benefits

- Simple automated testing with pass/fail analysis at the push of a button
- Get true OSNR results in seconds with an in-band OSA 40 percent faster than any other
- Optimize service quality with accurate, reliable OSNR measurements for all system test scenarios
- Eliminate wavelength calibration with a self-calibrating OSA that cuts maintenance costs in half
- Drive your network to its limits with a universal tester for all WDM systems with or without ROADMs

Key Features

- Portable lab technology for field use
- Full-band 1250–1650 nm for CWDM and DWDM networks
- Ultra-high 0.038 nm optical resolution bandwidth
- Industry-leading 0.01 nm wavelength accuracy
- Future-proof signal analysis for 40/100 G data rates, and next-generation modulation formats
- Channel drop function for single-channel isolation and tunable filter applications
- In-band option to measure true OSNR in ROADM and 40 G networks

Applications

- Provisioning and troubleshooting ROADM networks
- Deploying and maintaining DWDM Metro and Core networks
- Testing 40 G and 100 G interfaces and networks
- Spectral testing of optical components
- Installing and maintaining CWDM systems in CATV, Access, and Mobile Backhaul

Test xDWM networks and optical components with full-band, high-performance optical spectrum analyzers

Targeted for advanced test solutions, OSA-500x modules represent high-performance JDSU solutions use for full-band spectral testing. Their industry-leading 0.038 nm optical resolution bandwidth makes these optical spectrum analyzers ideal for unmatched performance testing in ultra-dense wavelength-division multiplexing (DWDM) networks with channel spacing down to 25 GHz.

All instruments include an internal wavelength calibrator that guarantees 0.010 nm unsurpassed wavelength accuracy without external recalibration. Here is the list of JDSU OSA modules and their core capabilities:

- OSA-500M — General-purpose high-performance OSA for use in installing and maintaining DWDM networks.
- OSA-501M — Provides a unique channel-drop function to isolate single DWDM channels from the spectrum during maintenance and troubleshooting.
- OSA-500 — Improves the optical-filter dynamic range for testing the highest DWDM system OSNR values.
- OSA-500R and OSA-500RS — Include a new technique to measure true in-band OSNR in ROADM-based and in 40 G systems with overlapping spectra.
  - The OSA-500R — The standard instrument for measuring in-band OSNR.
  - The OSA-500RS — The high-speed version that can complete measurements in less than 30 seconds.

Combining very high optical resolution using innovative free-space optics with full-band measurement capability make JDSU OSAs ideal portable solutions for testing wavelength-division multiplexing (xWDM) systems during provisioning, maintenance, and upgrades.

Specifications[1]

Spectral Measurement	
Wavelength range	1250 to 1650 nm
Resolution bandwidth(FWHM)[2]	0.038 nm
Abs. wavelength accuracy[2]	± 0.01 nm
Wavelength reference	internal, physical constant
Wavelength recalibration period	internal recalibration (no factory recalibration required)
Readout resolution	0.001 nm
Measurement samples	120,000
Power Measurement	
Dynamic range[3]	−70 to +23 dBm
Absolute accuracy[2,4]	±0.5 dB
Total safe power[5]	+23 dBm
Readout resolution	0.01 dB
Linearity[6]	±0.1 dB
Flatness[2]	±0.25 dB
WDM Measurement	
Optical rejection ratio[2] (OSA-500 only)	
At ±0.2 nm (for 50 GHz ch-spacing)	45 dBc
At ±0.4 nm (for 100 GHz ch-spacing)	50 dBc
Optical rejection ratio[2] (OSA-500M/501M/500R/500RS only)	
At ±0.2 nm (for 50 GHz ch-spacing)	40 dBc
At ±0.4 nm (for 100 GHz ch-spacing)	47 dBc
Channel spacing	25 to >200 GHz, CWDM
Number of optical channels	256
Data signals	up to 1 TBps
Modulation formats (Such as NRZ/RZ-OOK, DB, PSBT, CSRZ, DPSK, BPSK, QPSK, and PM QPSK)	All formats supported
Scanning time (including WDM analysis)	
Full band	<5 s
C-band	1 s
Measurement Modes	
Analysis	WDM, Drift, DFB, LED, FPL, EDFA in-band OSNR (OSA-500R/500RS only) ch-drop (OSA-501M only)
Display	Graph, WDM table, graph and table

Channel Drop Option (OSA-501M only)	
Wavelength range	1300 to 1650 nm
Data rates	up to 12.5 Gbps
Spectral filter bandwidth	>20 GHz
Insertion loss[7]	<12 dB
Tracking mode	auto wavelength control
In-band OSNR (OSA-500R, OSA-500RS only)	
I-OSNR dynamic range	up to >30 dB
PMD tolerance[8]	up to 25 ps
Measurement accuracy[9]	±0.5 dB
Data signals[10]	up to 100 Gbps
Measurement time[11]	< 30 s
Optical Interfaces	
Optical port	universal SM-PC, universal SM-APC
Connectors	FC, SC, ST, LC, DIN
ORL[12]	>35 dB
Dimensions	
Weight (module)	2.2 kg (4.6 lb)
Size (module)	50 x 250 x 305 mm (20 x 98 x 120 in)
Temperature	
Operating	+0 to +45°C (32 to 113°F)
Storage	−20 to +60°C (−4 to 140°F)
Relative humidity	0 to 95% noncondensing

Notes:
1. Unless otherwise specified, all specifications are based on a temperature of 23°C ±2°C with an FC/PC connector after warm-up
2. Typical for 1520 to 1565 nm at 18 to 28°C
3. Max. power per channel +15 dBm
4. At −10 dBm, including PDL
5. +20 dBm for OSA-500R
6. Signal power from -40 dBm to +10 dBm
7. Typical for 1520 to 1620 nm at 23°C
8. For data rates up to 10 Gbps
9. Typ ±0.5 dB for OSNR <25 dB, signal power >−25 dBm, PMD <25 ps
   Typ. ±1 dB for data rates ≥40 Gbps with ch-spacing ≥100 GHz
10. Except for dual pol-mux and fast polarization scrambled signals
11. For OSA-500RS 20 nm scan and 40 channels
12. At 1550 nm

Ordering Information

Part Number	Description
Standard OSA-500M	
2281/91.20	OSA-500M, PC-version
2281/91.30	OSA-500M, APC-version
Standard OSA-501M with 12.5 G Channel Drop	
2281/91.23	OSA-501M, PC-version
High Dynamic Range OSA-500	
2281/91.51	OSA-500, PC-version

Part Number	Description
ROADM, In-Band OSNR OSA-500R	
2281/91.55	OSA-500R, PC-version
2281/91.65	OSA-500R, APC-version
ROADM, High-Speed In-Band OSNR OSA-500RS	
2281/91.57	OSA-500RS, PC-version
2281/91.67	OSA-500RS, APC-version
Application Software for Report Generation	
EOFS100	Optical fiber trace software
EOFS200	Optical fiber cable software

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