SAVITRI
TELECOM SERVICES

High-Performance Full-Band OSAs

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

Test xDWM networks and optical components with fullband, high-performance optical spectrum analyzers.

Targeted for advanced test solutions, OSA-500x modules represent high-performance VIAVI Solutions™ solutions use for full-band spectral testing. Their industryleading 0.038 nm optical resolution bandwidth makes these optical spectrum analyzers ideal for unmatched performance testing in ultradense 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 VIAVI 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 fullband measurement capability make VIAVI OSAs ideal portable solutions for testing wavelength division multiplexing (xWDM) systems during provisioning, maintenance, and upgrades.

BENEFITS

- Simple automated testing with pass/fail analysis at the push of a button.
- Get true OSNR results in seconds with the fastest in-band OSA (by 40%).
- Optimize service quality with accurate, reliable OSNR measurements.
- Eliminate wavelength calibration with a self-calibrating OSA that cuts maintenance costs in half.

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 100G polarization multiplexing channels OSNR on line measurement (without channel overlap).
- 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
- Installing and maintaining CWDM systems in CATV, Access, and Mobile Backhaul

Specifications

Spectral Measurement	
Wavelength range	1250 to 1650 nm
Resolution bandwidth(FWHM)[2]	0.038 nm
Abs. wavelength accuracy2	± 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 ratio2 (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 ratio2 (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/RZOOK, DB, PSBT, CSRZ, DPSK, BPSK, QPSK, and PM QPSK)	All formats supported
Scanning time (including WDM analysis) Full band C-band	<5 s 1 s
Measurement Modes	
Analysis	WDM, Drift, DFB, LED, FPL, EDFA in-band OSNR, ST, 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)	
-OSNR dynamic range	up to >30 dB
PMD tolerance8	up to 25 ps
Measurement accuracy9	±0.5 dB
Data signals10	up to 100 Gbps
Measurement time11	< 30 s
Optical Interfaces	
Optical port	universal SM-PC, universal SM-APC
Connectors	FC, SC, ST, LC, DIN
ORL12	>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

Description	Part Number
Standard OSA-500M	
OSA-500M, PC-version	2281/91.20
OSA-500M, APC-version	2281/91.30
Standard OSA-501M	
OSA-501M, PC-version	2281/91.23
High Dynamic Range OSA-500	
OSA-500, PC-version	2281/91.51
ROADM, In-Band OSNR OSA-500R	
OSA-500R, PC-version	2281/91.55
OSA-500R, APC-version	2281/91.65
ROADM, High-Speed In-Band OSNR OSA-500RS	
OSA-500RS, PC-version	2281/91.57
OSA-500RS, APC-version	2281/91.67
Application Software for Report Generation	
Optical fiber trace software	EOFS100
Optical fiber cable software	EOFS200

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