

ONT Platforms

Optical Spectrum Analyzer Modules



ONT-50 platform



ONT-506/512 platform

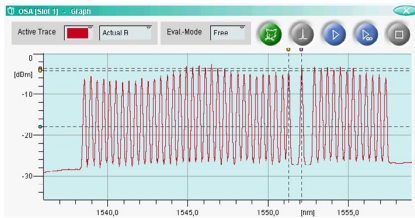
Key Features

- **Full-band optical spectrum analyzers**
Cover wavelengths of 1250 to 1650 nm for DWDM and CWDM (metro) testing
- **High-resolution monochromator design** with lab optical performance makes JDSU's OSAs ready for the next generation of ultra dense WDM systems
- **Best-in-class wavelength accuracy of 10 pm** with a lifetime guarantee based on an internal reference (requires no external calibration)
- **Channel drop function** for single channel isolation and tuneable filter applications.
- **Built-in test applications** for optical component testing of lasers, LEDs, and optical amplifiers
- **Easy-to-use expert analysis** offering one-button "FOX" operation for optimized instrument settings and auto pass/fail analysis
- **Future-proof signal analysis** to handle ultra high data rates of 40G/43G and next-generation modulation formats
- **Increased durability** due to a maintenance-free and shock-proof mechanical design
- **Patented dual-port capability** for measurement of two fibers simultaneously

Full-band and high-performance OSAs for testing optical systems and components

Targeted at providing advanced test solutions, the OSA-160, OSA-161, and OSA-201, JDSU's field-ready full-band DWDM analyzer modules, use a new grating-based monochromator design (JDSU patents). These analyzers offer high optical selectivity and high measurement speed for accurate measurement of wavelength, power, and optical signal-to-noise ratio (OSNR) in the presence of multiple channels.

JDSU's OSA-300, OSA-301, and OSA-303 are high-performance DWDM analyzer modules in the family of grating-based spectrum analyzers that are designed for ultra dense WDM applications (UDWDM) with high channel counts and tight channel spacing.



46 channel DWDM spectrum

Channel No.	Wavelength (nm)	Power (dBm)	OSNR (dB)	Pass/Fail
1	1540.00	-10.00	20.00	Pass
2	1540.10	-10.00	20.00	Pass
3	1540.20	-10.00	20.00	Pass
4	1540.30	-10.00	20.00	Pass
5	1540.40	-10.00	20.00	Pass
6	1540.50	-10.00	20.00	Pass
7	1540.60	-10.00	20.00	Pass
8	1540.70	-10.00	20.00	Pass
9	1540.80	-10.00	20.00	Pass
10	1540.90	-10.00	20.00	Pass
11	1541.00	-10.00	20.00	Pass
12	1541.10	-10.00	20.00	Pass
13	1541.20	-10.00	20.00	Pass
14	1541.30	-10.00	20.00	Pass
15	1541.40	-10.00	20.00	Pass
16	1541.50	-10.00	20.00	Pass
17	1541.60	-10.00	20.00	Pass
18	1541.70	-10.00	20.00	Pass
19	1541.80	-10.00	20.00	Pass
20	1541.90	-10.00	20.00	Pass
21	1542.00	-10.00	20.00	Pass
22	1542.10	-10.00	20.00	Pass
23	1542.20	-10.00	20.00	Pass
24	1542.30	-10.00	20.00	Pass
25	1542.40	-10.00	20.00	Pass
26	1542.50	-10.00	20.00	Pass
27	1542.60	-10.00	20.00	Pass
28	1542.70	-10.00	20.00	Pass
29	1542.80	-10.00	20.00	Pass
30	1542.90	-10.00	20.00	Pass
31	1543.00	-10.00	20.00	Pass
32	1543.10	-10.00	20.00	Pass
33	1543.20	-10.00	20.00	Pass
34	1543.30	-10.00	20.00	Pass
35	1543.40	-10.00	20.00	Pass
36	1543.50	-10.00	20.00	Pass
37	1543.60	-10.00	20.00	Pass
38	1543.70	-10.00	20.00	Pass
39	1543.80	-10.00	20.00	Pass
40	1543.90	-10.00	20.00	Pass
41	1544.00	-10.00	20.00	Pass
42	1544.10	-10.00	20.00	Pass
43	1544.20	-10.00	20.00	Pass
44	1544.30	-10.00	20.00	Pass
45	1544.40	-10.00	20.00	Pass
46	1544.50	-10.00	20.00	Pass

Graphical and tabular display showing pass/fail indicators and out-of-range values

Parameter	Actual Value	Unit	Pass/Fail
Number of Channels	5		Pass
Min. Channel Power	-9.00	dBm	Fail
Max. Channel Power	2.52	dBm	Pass
Max. Ch. Power Delta	2.60	dB	Pass
Min. OSNR	28.51	dB	Fail
Max. OSNR	28.64	dB	Pass
Max. OSNR Delta	2.61	dB	Pass
Max. Channel Offset	0.04	GHz	Pass
Compos. Power	9.71	dBm	Pass
Channel Spacing	200	GHz	Pass

Tabular display showing summary failed

Ch. No.	Wavelength (nm)	Signal IN (dBm)	Noise IN (dBm)	Signal OUT (dBm)	Noise OUT (dBm)	Gain (dB)	NF (dB)
1	1543.32	-11.61	-45.00	2.81	-39.86	15.80	6.62
2	1543.43	-11.70	-44.81	2.86	-39.60	16.47	7.31
3	1543.54	-11.80	-45.21	2.88	-39.18	16.48	7.41
4	1543.78	-12.12	-43.00	2.22	-32.20	18.24	7.18
5	1543.80	-12.21	-42.80	2.20	-32.84	18.61	6.97

EDFA test application

Advanced optical performance

JDSU’s OSA modules offer the full wavelength range of 1250 nm to 1650 nm for DWDM and CWDM (metro) applications, combining outstanding wavelength accuracy and high dynamic range. All instruments are equipped with an internal wavelength reference for on-line calibration without requiring disruption of in-progress measurements. The internal wavelength calibrator is based on a physical constant reference that guarantees unsurpassed wavelength accuracy over the instrument’s lifetime without the need of external recalibration (JDSU patents).

Rugged and fast mechanical design

JDSU’s OSA modules have a new opto-mechanical design based on a maintenance-free, fast galvanometer drive, providing the highest measurement speed and unsurpassed ruggedness for field and lab applications and for continuous operation and monitoring (JDSU patents).

Easy to use

One-button “FOX” (Fiber Optic eXpert) testing guarantees that technicians need no special training to carry out a DWDM test, making JDSU’s instruments 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.

Powerful pass/fail link manager

Graphical and tabular display formats can be selected to assist in the installation, verification, and troubleshooting of multi-channel DWDM systems. Built-in test functions deliver automatic pass/fail evaluations based on pre-defined alarms, saving time and providing technicians with a quick and intuitive overview of the complete set of results.

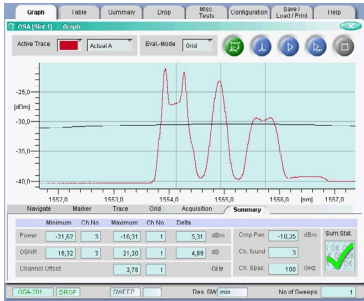
Flexible measurement capability

In-depth analysis, featuring statistical evaluation, long-term monitoring, and automatic storage capabilities, is provided. This allows for DWDM system performance verification, including the variation of optical system parameters (wavelength, power, and OSNR) as well as a series of measurements over a defined period of time. Resulting reports are provided with average, minimum, maximum, and standard deviation values of the measured parameters over time.

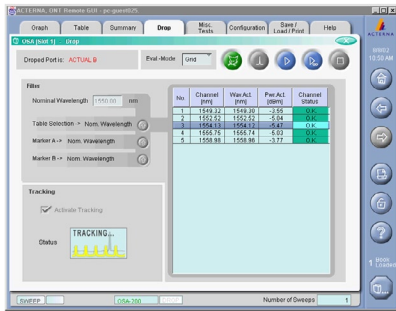
Built-in test applications

Test applications for optical amplifiers (EDFA), laser sources (DFB and FP), and LEDs facilitate network component verification.

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40 Gb/s modulation with CS-RZ, PSBT-NRZ, and DPSK-RZ modulation schemes



Channel drop/isolation function

Ready for next-generation networks

With new signal analysis capabilities, all of JDSU's OSAs are designed for high-precision measurements of power, wavelength, and OSNR in ultra high-speed networks with data rates up to 40G/43G and new modulation formats, such as RZ, CS-RZ, DPSK, and QPSK.

Channel isolation (drop) and dual-port options

A unique channel isolation option is provided to extract a single DWDM channel from the entire spectrum for further analysis with a SONET/SDH or Ethernet analyzer at data rates up to 12.5 Gb/s. The built-in tracking function provides wavelength locking to the peak of the selected channel in order to avoid channel frequency drift problems during long-term measurements. The dual-port option (JDSU patents) provides simultaneous measurement of two optical signals, measuring the input and output of an optical amplifier at the same time, for example.

PMD test options

With the PMD option, the OSA can measure the differential group delay (DGD) for PMD characterization of optical fibers and systems. The measurement is based on the fixed analyzer method (TIA/EIA FOTP-113) together with a broadband source and a variable polarizer.

OSA Selection Guide

A comprehensive portfolio to better match your application requirements.

Product	Applications
OSA-30x	<ul style="list-style-type: none"> DWDM system turn-up, verification, and maintenance (including channel isolation for BER testing) Component qualification (DFB, FP, LED, or EDFA) Very high ORR values
OSA-16x OSA-201	<ul style="list-style-type: none"> DWDM/CWDM system turn-up, verification, and maintenance (including channel isolation for BER testing) Network element verification (EDFA) High ORR values

NOTE:

All OSA modules are available for JDSU's field/outside plant and central office/lab and manufacturing platforms. Modules cannot be switched between the ONT and MTS/T-BERD mainframes.

Full-band DWDM analyzers
technical specifications (typical at 25 °C)

Spectral measurement ranges

Wavelength range	1250 to 1650 nm
No. of optical channels	512
Wavelength calibration ⁽¹⁾	internal, on-line
Wavelength accuracy ⁽²⁾	± 20 pm
Readout resolution	0.001 nm
Resolution bandwidth (FWHM) ⁽³⁾	typ. 75 pm
Wavelength linearity (over 10 nm)	± 10 pm

Power measurement ranges

Dynamic range ⁽⁴⁾	–75 to +23 dBm
Noise floor RMS (with averaging) ⁽³⁾	–75 dBm
Absolute accuracy ^(3,5)	±0.4 dB
Linearity ⁽⁶⁾	± 0.05 dB
Readout resolution	0.01 dB
Scanning time (1250 to 1650 nm) ⁽⁷⁾	<1.5 s
Optical rejection ratio ⁽³⁾ at ±25 GHz (±0.2 nm)	typ 35 dBc
at ±50 GHz (±0.4 nm)	typ 45 dBc
PDL ⁽³⁾	± 0.1 dB
Flatness ⁽³⁾	± 0.2 dB
Level reproducibility ⁽⁸⁾	± 0.05 dB
Wavelength range	1250 to 1650 nm
Data rates	up to 10.7 Gb/s
Spectral filter bandwidth	typ. 220 pm
Insertion loss	typ. <10 dB
Tracking mode	auto wavelength control

Optical ports (physical contact interfaces)

Input ports	
OSA-160/161	1 × SM
OSA-201	2 × SM
Output port (drop port) (OSA-161/201)	1 × SM
Interface	Universal connectors
Optical return loss	>35 dB
Total safe power	+23 dBm

High-performance DWDM analyzers
technical specifications (typical at 25 °C)

Spectral measurement ranges

Wavelength range	1250 to 1650 nm
No. of optical channels	512
Wavelength calibration ⁽¹⁾	internal, online.
Wavelength accuracy ⁽²⁾	typ. ± 10 pm
Readout resolution	0.001 nm
Resolution bandwidth (FWHM) ⁽³⁾	typ. 60 pm
Wavelength linearity (over 10 nm)	± 10 pm

Power measurement ranges

Dynamic range ⁽⁴⁾	–75 to +23 dBm
noise floor RMS (with averaging) ⁽³⁾	–75 dBm
Absolute accuracy ^(3,5)	± 0.4 dB
Linearity ⁽⁶⁾	± 0.05 dB
Readout resolution	0.01 dB
Scanning time (1250 to 1650 nm) ⁽⁷⁾	<1.5 s
Optical rejection ratio ⁽³⁾ at ±25 GHz (±0.2 nm)	typ. 45 dBc
at ±50 GHz (±0.4 nm)	typ. 48 dBc
PDL ⁽³⁾	± 0.1 dB
Flatness ⁽³⁾	± 0.2 dB
Level reproducibility ⁽⁸⁾	± 0.05 dB
Wavelength range	1250 to 1650 nm
Data rates	up to 10.7 Gb/s
Spectral filter bandwidth	typ. 175 pm
Insertion loss	typ. <10 dB
Tracking mode	auto wavelength control

Optical ports (physical contact interfaces)

Input ports	
OSA-300/301	1 × SM
OSA-303	2 × SM
Output port (drop port) (OSA-301/303)	1 × SM
Interface	universal
Optical return loss	>35 dB
Total safe power	+23 dBm

- (1) Built-in, physical constant wavelength calibrator, needs no re-calibration
- (2) At 1520 to 1565 nm at 23 °C
- (3) 1520 to 1565 nm at 18 to 28 °C
- (4) Max. power per channel +15 dBm, total power +23 dBm
- (5) At –10 dBm
- (6) –45 dBm to +10 dBm, at 23 °C
- (7) Full span 400 nm, 4000 measurement samples, incl. WDM table analysis
- (8) 1 min, stable signal, const. temperature

Ordering information
OSA modules
Full-band DWDM analyzer
ONT-50 platform

3070/91.01	OSA-160 Single port
3070/91.12	OSA-161 Single port with drop 10.7G
3070/91.14	OSA-201 Dual port with drop 10.7G

ONT-506/512 platform

3061/91.01	OSA-160 Single port
3061/91.12	OSA-161 Single port with drop 10.7G
3061/91.14	OSA-201 Dual port with drop 10.7G

High-performance DWDM analyzer
ONT-50 platform

3070/91.31	OSA-300 Single port
3070/91.32	OSA-301 Single port with drop 10.7G
3070/91.34	OSA-303 Dual port with drop 10.7G

ONT-506/512 platform

3061/91.31	OSA-300 Single port
3061/91.32	OSA-301 Single port with drop 10.7G
3061/91.34	OSA-303 Dual port with drop 10.7G

PMD test option

3070/91.11	PMD test kit includes PMD evaluation software plus:
2267/01	OBS-15 Optical Broadband Source plus
2271/01	OVP-15 Optical Variable Polarizer

Optical connectors
Standard singlemode
FC/PC, SC, ST, DIN, LC, E-2000

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