FTBx-5245 Optical Spectrum Analyzers

100G

WDM AWARE™
TECHNOLOGY

EXFO TFv
Test Function Virtualization

EXFO Connect
Compatible

FROST & SULLIVAN
2016
BEST PRACTICES AWARD
GLOBAL PORTABLE FIBER OPTIC TEST EQUIPMENT MARKET LEADERSHIP AWARD

SPEC SHEET

Highly accurate, easy-to-use intelligent optical spectrum analyzers (OSAs) for analysis of CWDM and DWDM networks.

KEY FEATURES

Ideal for laboratory and manufacturing

Flexibility to analyze WDM, EDFA, drift, spectral transmittance, and Fabry-Perot and DFB laser

Wide range of measurements (SMSR, FWHM spectral width, 20 dB linewidth)

First third-party 40G/100G/200G Pol-Mux OSNR option on the market; compliant with the IEC 61282-12 standard

Intelligent in-band OSNR measurement for 40 Gbit/s and ROADM deployments

Compliant with recommendation ITU-T G.697

One-button operation for easy setup and automatic measurement

Fast and cost-effective in-service PMD analysis option

Complete spectral characterization of DWDM and CWDM devices

COMPATIBLE PLATFORM

Platform
LTB-8

EXFO

POWERFUL FEATURES FOR LAB AND MANUFACTURING

The FTBx-5245 is an easy-to-use OSA offering a wide range of measurement modes tailored to the needs of users working in R&D and manufacturing.

Favorites Button

The Favorites button enables direct access to your defined configuration list—right in the field.

Referencing

Deploy and commission your network right from day one. Then, as maintenance, upgrades and troubleshooting occur, compare the latest measurement with the original ones. Rapidly and directly see all changes, those made on purpose and otherwise.

SCPI Commands

It is possible to control the OSA remotely with SCPI commands for the WDM, Fabry-Perot, DFB and spectral transmittance modes.

Print to PDF

Generate a PDF report directly from the unit, making it much quicker and easier to convert reports into an e-mail-friendly format.

Drift Measurements

You can monitor power, wavelengths and OSNR over time. You can also visualize the current and historical status of all channels in a single interface called drift dashboard, which enables you to view the WDM trace of any acquisition that displays a change of state (i.e., when a threshold is crossed). You can also build a drift trace from a past DWDM acquisition.

Advanced EDFA Analysis

Since amplifiers are critical elements in all networks, it is crucial to ensure that they are optimized, that the gain is well-distributed and that the output power is flat. Now, you can further optimize EDFAs by measuring key parameters, such as gain per channel, noise figure, gain flatness and gain slope. More importantly, you can save and print this valuable information.

Accurate Spectral Transmittance

With the advent of larger spectral content through the implementation of 100G+ signals, knowing the bandwidth of a given filter is critical. The Spectral Transmittance software feature compares the filtered wavelength to the nominal one, showing insertion loss, channel isolation and bandwidth at different power levels.

Laser Analysis

Make sure that your transmitters are within specifications. With the DFB Laser Analysis feature, you can characterize a DFB laser source for central wavelength, peak power, bandwidth, SMSR, and much more. Automatically characterize Fabry-Perot lasers for central wavelength, RMS width and full-width half-max (FWHM).

LTB- 8
EIGHT-SLOT RACKMOUNT PLATFORM

WINDOWS ENVIRONMENT | BUILT-IN APPLICATIONS | THIRD-PARTY APPLICATIONS
SCALABLE | HOT-SWAPPABLE MODULES | WIRELESS CONNECTIVITY | USB | WIFI | BLUETOOTH

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OSNR MEASUREMENTS UP TO POL-MUX 40G/100G/200G

Optical signal-to-noise ratio (OSNR) has long been recognized as a key performance indicator in wavelength-division multiplexing (WDM) networks, because it provides a multichannel assessment of signal quality in a very short time. In addition, OSNR can predict bit error rate (BER) within just a few minutes, while typical BER tests must run for hours or days.

The IEC 61280-2-9 standard defines OSNR measurement as the power ratio between the signal power and the noise at half the distance between the peaks. However, in ROADM or 40 Gbit/s systems, this method may lead to incorrect results, because the noise level between the peaks is no longer directly correlated with the noise level at the channel wavelength. EXFO's in-band OSNR answers this challenge.

WDM AWARE™
POL-MUX TECHNOLOGY

For Pol-Mux signals at 40G, 100G and 200G, neither the IEC nor the in-band method work. This calls for a new measurement method: Pol-Mux OSNR.

FIRST POL-MUX OSA IN THE MARKET

EXFO's Pol-Mux OSA is the first third-party instrument for Pol-Mux OSNR measurements that is not limited to any specific system vendor. The new commissioning assistant, which is the key feature of the new Pol-Mux OSA, is perfect for Pol-Mux OSNR measurements during turn-up. Based on the channel shutdown method, it provides highly accurate amplified spontaneous emission (ASE) OSNR measurements.

The commissioning assistant can be utilized after the user has first taken a measurement at the receiver with all of the channels turned on, and then acquired a series of traces, each taken with one channel turned off. The Pol-Mux OSA then performs the Pol-Mux OSNR calculations via a user-friendly wizard.

The commissioning assistant therefore greatly accelerates OSNR measurements based on the channel shutdown method, and drastically reduces potential human errors. In addition, two standards-compliant calculation approaches are available in the commissioning assistant: one compliant with the IEC-61282-12 standard, and the other compliant with the China Communications Standards Association (CCSA) method YD/T 2147-2010.

WDM-AWARE TECHNOLOGY

> Intelligent setup and analysis on a per-channel basis based on the bit rate, modulation scheme, as well as the network configuration experienced by the wavelength (ROADM, filters, etc.)

WDM AWARE™
IN-BAND TECHNOLOGY

> First time right: no guesswork, which eliminates truck rolls

> Training time is significantly reduced as this ready-to-go unit can be taken directly into the field for the live EXFO DWDM experience

> Most accurate and adaptive in-band method on the market

ANALYZE ANY WDM NETWORK

The FTBx-5245 OSA covers your DWDM applications and all channel spacings, from 25 GHz DWDM to CWDM. This is what we call "no-compromise performance," whatever your network specificities and testing requirements.

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POWERFUL PLATFORMS

The FTBx-5245 test module is housed in the LTB-8, a highly scalable platform for the lab. The platform's eight-slot configuration allows to simultaneously support eight modules (e.g., the FTBx-5245 OSA, optical power meters, variable optical attenuators, switches and the FTBx-88200NGE multiservice transport module). The LTB-8 offers hot swapping capability for the modules, multi-user sharing via web remote access, and several connectivity options (USB3, LAN, Sync and AMT port).

EXFO TFv
Test Function Virtualization

TIME-BASED SOFTWARE LICENSES WITH FTB OnDemand

Part of EXFO Test Function Virtualization—TFv, FTB OnDemand enables customers to activate a specific software option for a specific period of time, on a specific module. This flexibility is perfect for situations where a test function is only needed for a specific project or to try a software option before purchase. In-band OSNR, WDM Investigator, commissioning assistant and the advanced options are available through FTB OnDemand.

SOFTWARE TEST TOOLS

This series of platform-based software testing tools enhance the value of the LTB-8 Platform, providing additional testing capabilities without the need for additional modules or units.

SOFTWARE APPLICATIONS

ConnectorMax2

Providing lightning-fast results in the first step of fiber-link testing, ConnectorMax2 is the industry's first platform-based, automated inspection application; it delivers quick pass/fail assessment of connector endfaces and is specifically designed to save both time and money in the field.

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SPECIFICATIONS [a, b]

SPECTRAL MEASUREMENT

Wavelength range (nm)	1250 to 1650
Wavelength uncertainty (nm) [c]	±0.05 ±0.01 [d]
Reference	Internal [e]
Resolution bandwidth (RBW) (nm) [f]	0.065 [g]
Wavelength linearity (nm)	±0.01 [c]
Wavelength repeatability 2σ (nm)	±0.003 [h]
Analysis mode	WDM, EDFA, drift, spectral transmittance, DFB, FP

POWER MEASUREMENT

Dynamic range (dBm) (per channel) [c]	−75 [i] to 18
Maximum total safe power (dBm)	23
Absolute power uncertainty (dB) [j]	±0.5
Power repeatability 2σ (dB) [h]	±0.05

OPTICAL MEASUREMENT

Optical rejection ratio at 1550 nm (dB)
  at 0.2 nm (25 GHz)
  at 0.4 nm (50 GHz)
	
	40
	50

Channel spacing	25 to 200 GHz CWDM
PDL at 1550 nm (dB)	±0.08
ORL (dB)	≥40
Measurement time (s) [k] (includes scanning, analysis and display)	<1.2

IN-BAND OSNR MEASUREMENT

	FTBx-5245-P only
OSNR dynamic range (dB)	>35 [l]
OSNR measurement uncertainty (dB)	±0.5 [m]
Repeatability (dB)	±0.2 [n]
Data signals	Up to 100 Gbit/s [o]

Notes

a. All specifications are for a temperature of 23 °C ± 2 °C with an FC/UPC connector unless otherwise specified, after warm-up.
b. Typical.
c. From 1520 to 1610 nm.
d. After user calibration in the same test session within 10 nm from each calibration point.
e. Integrated and wavelength-independent self-adjustment.
f. Full width at half maximum.
g. From 1280 to 1610 nm.
h. Over one minute in continuous acquisition mode.
i. With averaging.
j. At 1550 nm, −10 dBm input.

k. 45 nm span, full resolution, 20 peak analysis.
l. For an optical noise level of > −60 dBm.
m. With PMD ≤15 ps and no crosstalk, uncertainty specification is valid for OSNR ≤ 25 dB. With PMD ≤15 ps and crosstalk, uncertainty specification is valid for OSNR ≤ 20 dB.
n. Repeatability specification is valid for OSNR ≤ 25 dB.
o. Except for Pol-Mux and fast polarization scrambled signals.

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POL-MUX OSNR MEASUREMENT [a]

	Commissioning assistant [b]
Modulation formats	Any, including all coherent/Pol-Mux formats like DP-QPSK, DP-BPSK, DP-8-QAM, DP-16-QAM, DP-64-QAM
Data signals	Up to 400 Gbit/s
Measurements time [a, c]	1 min and 40 s (100 scans) for trace with all channels on. <5 s for traces with a single channel off.

GENERAL SPECIFICATIONS [a]

Temperature	operating storage	0 °C to 40 °C (32 °F to 104 °F) −20 °C to 50 °C (−4 °F to 120 °F)
Relative humidity		0 % to 95 % noncondensing
Connectors		EI (EXFO UPC Universal Interface) EA (EXFO APC Universal Interface)
Size (H x W x D)		51 mm x 159 mm x 185 mm (2 $\frac{1}{16}$ in x 6 $\frac{5}{16}$ in x 7 $\frac{5}{16}$ in)
Weight		1.2 kg (2.6 lb)

SELECTION GUIDE

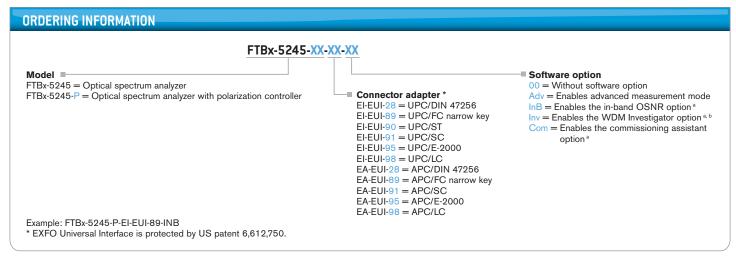| OSA Module	CWDM	DWDM (100 GHz spacing)	DWDM (50 GHz spacing)	ROADM + 40 Gbit/s network
FTBx-5245	X	X	X	
FTBx-5245-P	X	X	X	X

LASER SAFETY

Class 1 laser product

Notes

a. Typical.

b. Data acquisition and analysis available on LTB-8.

c. 1525 nm to 1570 nm.

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ORDERING INFORMATION

FTBx-5245-XX-XX-XX

Model
FTBx-5245 = Optical spectrum analyzer
FTBx-5245-P = Optical spectrum analyzer with polarization controller

Connector adapter *
EI-EUI-28 = UPC/DIN 47256
EI-EUI-89 = UPC/FC narrow key
EI-EUI-90 = UPC/ST
EI-EUI-91 = UPC/SC
EI-EUI-95 = UPC/E-2000
EI-EUI-98 = UPC/LC
EA-EUI-28 = APC/DIN 47256
EA-EUI-89 = APC/FC narrow key
EA-EUI-91 = APC/SC
EA-EUI-95 = APC/E-2000
EA-EUI-98 = APC/LC

Software option
00 = Without software option
Adv = Enables advanced measurement mode
InB = Enables the in-band OSNR option [a]
Inv = Enables the WDM Investigator option [a, b]
Com = Enables the commissioning assistant option [a]

Example: FTBx-5245-P-EI-EUI-89-INB
* EXFO Universal Interface is protected by US patent 6,612,750.

Notes
a. Available with FTBx-5245-P only.
b. Available only if InB is enabled.

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