

# FTBx-5243-HWA

## HIGH WAVELENGTH ACCURACY OPTICAL SPECTRUM ANALYZER



Feature(s) of this product is/are protected by one or more of: US design patent D798,171 and equivalent(s) in other countries; and US design patent D842,144.

SPEC SHEET

### Optical spectrum analyzer (OSA) for DWDM, CWDM, and DWDM over CWDM networks

## KEY FEATURES

Best-in-class wavelength accuracy

Ideal for transceiver testing, in manufacturing and DWDM analysis

Replaces a wavelength meter and OSA combo by a single OSA with enhanced performance

Excellent wavelength accuracy in a small form factor

Perfect for system vendors and transceiver manufacturers

Slotted in the LTB-8 or FTB-4 Pro platforms

Lifetime automatic wavelength adjustment using gas cell reference

Remote control via SCPI commands

Pol-Mux OSNR option compliant with IEC 61282-12 standard

## COMPATIBLE PLATFORMS



Rackmount platform  
LTB-8



Platform  
FTB-4 Pro

**EXFO**

## PERFECT FOR PRODUCTION FLOOR AND LAB ENVIRONMENTS

EXFO's high wavelength accuracy OSA has been designed to fulfill the needs of manufacturing and lab users by offering best-in-class performance in a compact form factor, available in the rackmount LTB-8 chassis or the portable FTB-4 Pro platform.

## REPLACES THE WAVEMETER/OSA COMBO, REDUCING COST AND TESTING TIME

In transceiver manufacturing, a series of tests is typically performed to assess transceiver quality: central wavelength, side mode suppression ratio, power, and so forth. Those tests are often carried out with different types of instruments to get very accurate measurements of these various parameters. For instance, power and side mode suppression ratio will be measured with an OSA while the central wavelength will usually require a wavelength meter.

This is where the FTBx-5243-HWA is a game changer. Delivering a best-in-class wavelength uncertainty of  $\pm 10$  pm in the C-band, it replaces both a regular OSA and an entry-level wavelength meter. Being able to perform all the required spectral tests using a single device brings about significant savings in capital expenditures and faster testing time.

## BEST-IN-CLASS WAVELENGTH ACCURACY AMONG DIFFRACTION GRATING-BASED OSAS

The FTBx-5243-HWA has a typical wavelength uncertainty of  $\pm 4$  pm and a guaranteed wavelength uncertainty of  $\pm 10$  pm in the C-band. The test results of FTBx-5243-HWA production units plotted in the figure below show that almost all measurements are within less than  $\pm 4$  pm of the true wavelength. These measurements are traceable to the National Research Council of Canada. This level of accuracy is outstanding in a small form factor.

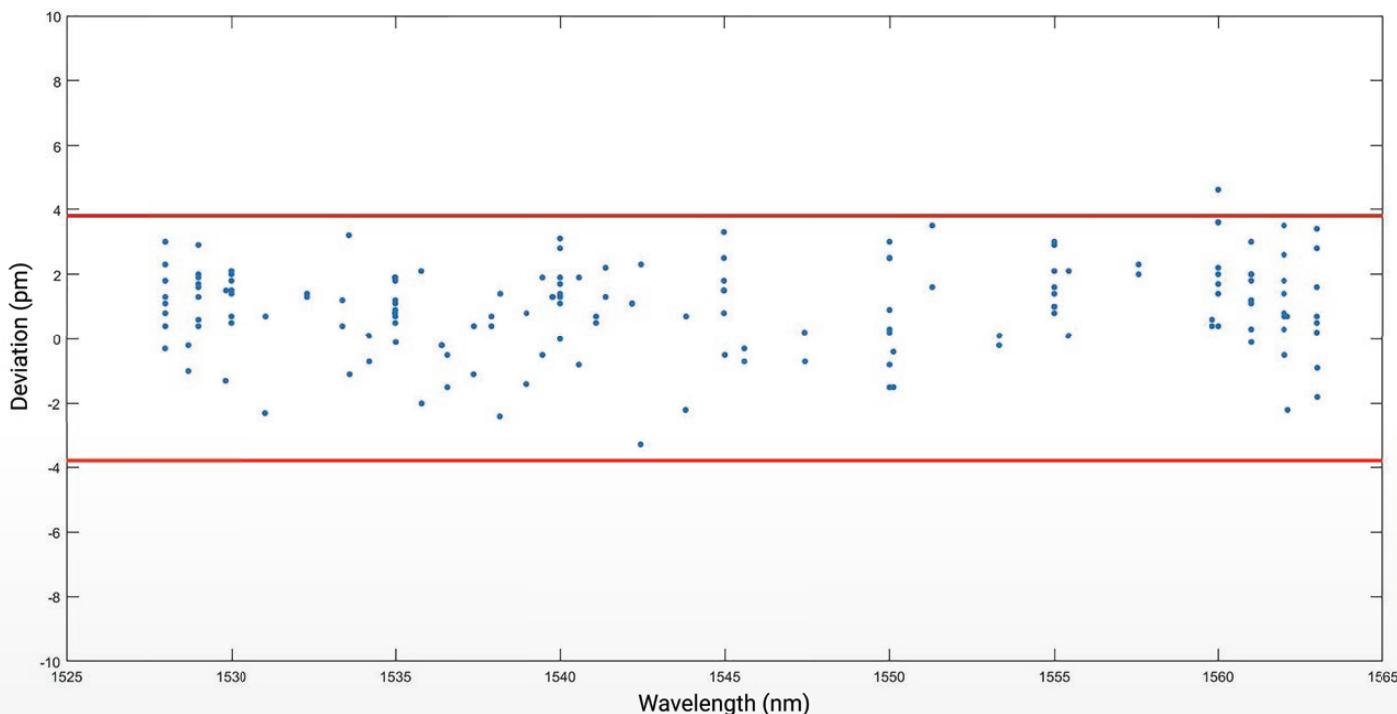


Figure 1. Measurement results from EXFO production units

Thanks to an integrated gas cell standard, the FTBx-5243-HWA automatically performs periodic absolute wavelength adjustment calibrations—ensuring best-in-class wavelength accuracy without any user intervention.

## FULL REMOTE CONTROL

The FTBx-5243-HWA features an extensive library of SCPI commands for remote control, which can be accessed via Ethernet or USB ports.

## POWERFUL FEATURES FOR LAB AND MANUFACTURING

The FTBx-5243-HWA 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 provides direct access to your defined configuration list—right in the field.

### Trace comparison

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 deliberately and otherwise.



### Print to PDF

Generate a PDF report directly from the unit, making it much quicker and easier to convert reports into an email-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 any value that displays a change in 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).



WINDOWS ENVIRONMENT | BUILT-IN APPLICATIONS | THIRD-PARTY APPLICATIONS  
SCALABLE | HOT-SWAPPABLE MODULES | USB

## LTB-8 EIGHT-SLOT RACKMOUNT PLATFORM

## POL-MUX OSA FOR 100G/200G/400G SIGNALS

The commissioning assistant, which is the key feature of the 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, the commissioning assistant complies with two standards: the IEC-61282-12 standard and the China Communications Standards Association (CCSA) method YD/T 2147-2010.



## SPECIFICATIONS<sup>a</sup>

SPECTRAL MEASUREMENT	
Wavelength range (nm)	1250 to 1650
Wavelength uncertainty (pm)	$\pm 10^b$ $\pm 25^d$ $\pm 4^{b,c}$ $\pm 10^{c,d}$
Reference	Internal gas cell
Resolution bandwidth (FWHM) <sup>e</sup> (nm)	0.05 <sup>c,f</sup>
Wavelength linearity (nm)	$\pm 0.003^{c,f}$
Wavelength repeatability (nm)	<0.001 <sup>c,g</sup>
Analysis modes	WDM, EDFA, drift, spectral transmittance, FP, DFB

POWER MEASUREMENT	
Dynamic range (dBm) (per channel) <sup>d</sup>	-80 <sup>h</sup> to 18
Maximum total safe power (dBm)	23
Absolute power uncertainty (dB) <sup>i</sup>	$\pm 0.5$
Power repeatability (dB) <sup>c,g</sup>	$\pm 0.02$

OPTICAL MEASUREMENT	
Optical rejection ratio at 1550 nm (dB)	
at 0.2 nm (25 GHz)	35 (40 typical)
at 0.4 nm (50 GHz)	45 (50 typical)
Channel spacing	12.5 to 200 GHz, CWDM
PDL at 1550 nm (dB)	$\pm 0.06^{c,j}$
ORL (dB)	$\geq 40$
Measurement time (s) <sup>c,k</sup> (includes scanning, analysis and display)	<1

POL-MUX OSNR MEASUREMENT	
Commissioning assistant	
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 <sup>c,l</sup>	1 min and 40 s (100 scans) for trace with all channels on. <5 s for traces with a single channel off.

### Notes

- a. All specifications are for a temperature of 23 °C  $\pm 2$  °C with an FC/UPC connector unless otherwise specified, after warm-up.
- b. From 1528 to 1563 nm.
- c. Typical.
- d. From 1520 to 1610 nm.
- e. Full width half maximum.
- f. From 1525 to 1565 nm.
- g. At 1550 nm, in drift mode. Single scan every 2 seconds, over 2 minutes. With DFB laser.
- h. With averaging. In single scan: -75 dBm typical.
- i. At 1550 nm, -10 dBm input power.
- j. At 1550 nm, with narrow monochromatic light source.
- k. 45 nm span, full resolution, 20 peaks, on FTB-4 Pro.
- l. From 1525 to 1570 nm. On the FTB-4 Pro platform.

GENERAL SPECIFICATIONS <sup>a</sup>

Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating	-40 °C to 50 °C (-40 °F to 122 °F)
Storage	
Connectors	EI (EXFO UPC universal interface) EA (EXFO APC universal interface)
Size (H x W x D)	75 mm x 159 mm x 185 mm (3 in x 6 1/4 in x 7 5/16 in)
Weight	1.4 kg (3.1 lb)

## Note

a. Typical.

## LASER SAFETY

CLASS 1  
LASER PRODUCT

## ORDERING INFORMATION

FTBx-5243-HWA-XX-XX

**Model** FTBx-5243-HWA = High wavelength accuracy OSA

**Software option**  
COM = Enables the commissioning assistant option

**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

Example: FTBx-5243-HWA-EI-EUI-89-COM

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