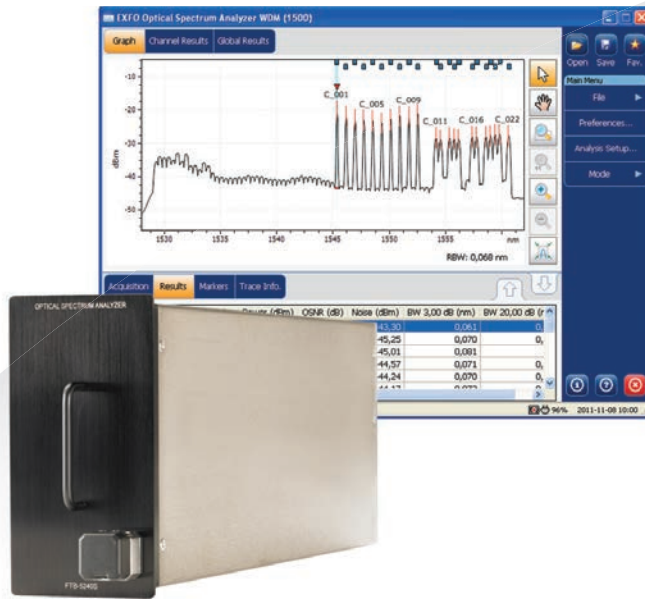


FTB-5240S/BP Optical Spectrum Analyzers



Highly accurate, easy-to-use intelligent OSAs for current and next-generation networks.

KEY FEATURES

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

WDM-Aware technology: Per-channel optimized setup for accurate results, all the time

One-button operation for easy setup and automatic measurement

Truly portable spectral characterization for DWDM network commissioning

Over 90 dB dynamic range per scan

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

High-power option, ideal for multiservice operators and CATV operators



FTB-5240S-BP is protected by US patent 6,636,306 and equivalents in several other countries, as well as published pending application US 2010129074 and equivalents pending in several other countries.

COMPLEMENTARY PRODUCTS



Platform
FTB-500



Compact Platform
FTB-200

WDM AWARE™
TECHNOLOGY

EXFO | Assessing
Next-Gen Networks

überreicht durch:

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SOLUTION FOR NEXT-GENERATION NETWORKS

Consumers and companies around the world require more bandwidth than ever before for data-hungry applications such as video on demand, voice over IP (VoIP), videoconferencing, etc. Accordingly, service providers need to deploy faster and more reliable networks, using novel technologies such as reconfigurable optical add-drop multiplexers (ROADM) or 40G/100G networks.

Reducing downtime in any type of network calls for an accurate measurement of optical signal-to-noise ratio (OSNR), but ROADM and 40 Gbits/s networks present a unique challenge as the existing OSNR measurement methods yield incorrect results. EXFO's WDM Aware technology is the answer to this challenge, providing reliable in-band OSNR measurement.

The IEC subsystem test procedure 61280-2-9 defines the OSNR measurement as the power ratio between the peak power and the noise at half the distance between the peaks. Using this method in ROADM or 40 Gbit/s systems, this method may lead to incorrect results since the noise level between the peaks is no longer directly correlated with the noise level at the channel wavelength. However, the built-in WDM-Aware technology of EXFO's FTB-5240S-P and FTB-5240BP OSAs enables you to achieve accurate in-band OSNR measurements of a ROADM or 40 Gbit/s system directly and automatically.

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 lambda (ROADM, filters, etc.)
- > First time right: no guesswork 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

CHOICE WITHOUT COMPROMISE

The FTB-5240S and FTB-5240BP Optical Spectrum Analyzer (OSA) series 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.



NIMBLE OSA MEETS SUPERTech PLATFORMS

The FTB-5240S OSA test module, housed in either the FTB-500 Platform or the FTB-200 Compact Platform, is purpose-built for fast and accurate dense wavelength-division multiplexing (DWDM) network commissioning and high-speed networking up to 40 Gbit/s.

Housing the FTB-5240S in the FTB-200 platform makes it the smallest, high-performance, portable solution for spectral characterization of next-generation networks on the market. When equipped with in-band OSNR measurement capabilities, this versatile OSA can also be combined with the FTB-8140 Transport Blazer 40/43 Gigabit SONET/SDH/OTN Test Module to create a unique test solution for commissioning reconfigurable optical add/drop multiplexers (ROADMs), packet optical transport platforms (POT-Ps) and 40 Gbit/s systems.

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POWERFUL FEATURES FOR SIMPLE NETWORK TESTING

The application software of the FTB-5240S/BP OSAs has been designed to optimize all testing operations—boosting productivity.



Favorites Button

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

i-InBand

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 lambda (ROADM filters, etc.)

Referencing

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



General and Specific

Have all of the DWDM results as well as manual specific information supplied by up to four markers, directly available on a single screen. No more toggling between pages to perform full analysis.

SCPI Commands

It is now possible to control the OSA remotely with a full-featured WDM mode SCPI command set.

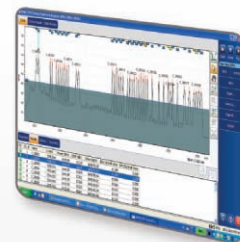


Print to PDF

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

Intuitive On-Graph Peak Detection Threshold

Clearly see and differentiate between the signal and the noise. Analyze only what deserves to be analyzed, no more false-peak analysis or low-power peaks ignored.



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Drift Measurements

You can now monitor power, wavelengths and OSNR over time. Follow the evolution of these critical parameters, set relative or absolute thresholds and get alarm notifications when they are crossed. You can also view the current and historical status of all channels in a single view called the dashboard 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 historical 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, gain slope, etc. More importantly, you can save and print this valuable information.



Accurate Spectral Transmittance

With the advent of larger spectral content through the implementation of 40G and 100G, knowing the bandwidth of any given filter as well as the residual network bandwidth guarantees proper transmission. The new Spectral Transmittance software feature now 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 now 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, full width half-max (FWHM).



FASTER IS ALWAYS BETTER

Testing speed is critical, which is why EXFO's FTB-5240S and FTB-5240BP OSAs can complete a scan and display the results in less than one second—that's fast enough for highly efficient network element adjustments on the go.

HIGH-POWER OPTION

With today's high-power signals making their way into the DWDM space, it is critical to have an OSA that can measure these signals accurately without risking damage to your test equipment. The FTB-5240S matches this need, offering a high-power option (FTB-5240S-HPW), allowing up to +23 dBm input power per channel. The option is available with or without the in-band capability.



FTB-200
THE INTELLIGENT
PLATFORM BUILT
FOR THE SUPERTech



FTB-500
BOUNDLESS.
CAPABILITIES.
TESTING UNLIMITED.

| WINDOWS ENVIRONMENT | MODULARITY | BUILT-IN APPLICATIONS | THIRD-PARTY APPLICATIONS |
| TOUCHSCREEN | FIELD-MINDED RUGGEDNESS | WIRELESS CONNECTIVITY | USB | WI-FI | BLUETOOTH |



SPECIFICATIONS ^a

SPECTRAL MEASUREMENT

	FTB-5240S and FTB-5240S-P	FTB-5240BP
Wavelength range (nm)	1250 to 1650	1250 to 1650
Wavelength uncertainty (nm) ^b	±0.05 ±0.01 ^{c,d}	±0.03 ±0.01 ^{c,d}
Reference	Internal ^e	Internal
Resolution bandwidth (FWHM) (nm) ^f	0.065 ^{b,d}	0.033 ^{b,d}
Wavelength linearity (nm)	±0.01 ^{b,d}	±0.01 ^{b,d}
Wavelength repeatability 2σ (nm)	±0.003 ^g	±0.002 ^g

POWER MEASUREMENT

	FTB-5240S and FTB-5240S-P	FTB-5240BP	HPW Option
Dynamic range (dBm) (per channel) ^b	-80 ^h to +18	-80 ^h to +18	-70 ^h to +23
Maximum total safe power (dBm)	+23	+23	+29
Absolute power uncertainty (dB) ⁱ	±0.5	±0.5	±0.5
Power repeatability 2σ (dB) ^{d,g}	±0.05	±0.04	±0.05

OPTICAL MEASUREMENT

	FTB-5240S and FTB-5240S-P	FTB-5240BP	HPW Option
Optical rejection ratio at 1550 nm (dB) at 0.2 nm (25 GHz) at 0.4 nm (50 GHz)	35 (40 typical) 45 (50 typical)	45 (50 typical) 50 (55 typical)	35 (40 typical) 45 (50 typical)
Channel spacing	50 to 200 GHz CWDM	12.5 to 200 GHz CWDM	50 to 200 GHz CWDM
PDL at 1550 nm (dB)	±0.08 ^d	±0.06 ^d	
ORL (dB)	≥40	≥40	
Measurement time (s) ^{d,j} (includes scanning, analysis and display)	<1 (with the FTB-500 Platform)	<1 (with the FTB-500 Platform)	

IN-BAND OSNR MEASUREMENT ^{d,k}

	FTB-5240S-P only	FTB-5240BP
OSNR dynamic range (dB)	>35 ^l	>35 ^l
OSNR measurement uncertainty (dB)	±0.5 ^m	±0.5 ^m
Repeatability (dB)	±0.2 ⁿ	±0.2 ⁿ
Data signals	Up to 100 Gbit/s ^o	Up to 100 Gbit/s ^o
Measurement time (s) ^{d,j} (includes scanning, analysis and display)	<6 (eight scans)	<6 (eight scans)
Analysis modes	WDM, EDFA, drift, spectral transmittance, DFB	WDM, EDFA, drift, spectral transmittance, DFB

Notes

- All specifications are for a temperature of 23 °C ± 2 °C with an FC/UPC connector unless otherwise specified, after warm-up.
- From 1520 to 1610 nm.
- After user calibration in the same test session within 10 nm from each calibration point.
- Typical.
- Integrated and wavelength-independent self-adjustment.
- Full width at half maximum.
- Over one minute in continuous acquisition mode.
- With averaging.
- At 1550 nm, -10 dBm input.
- 45 nm span, full resolution, 20 peak analysis.
- In-band OSNR measurement performed with 64 scans.
- For an optical noise level of > -60 dBm.
- 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.
- Repeatability specification is valid for OSNR ≤ 25 dB.
- Except for pol-mux and fast polarization scrambled signals.



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GENERAL SPECIFICATIONS

Temperature	operating	0 °C to 40 °C (32 °F to 104 °F)
	storage	-20 °C to 50 °C (-4 °F to 120 °F)
Relative humidity		0 % to 95 % non-condensing
Battery life (hours)		5 (with the FTB-500 Platform)
Connectors		EI (EXFO UPC Universal Interface) EA (EXFO APC Universal Interface)
Size (H x W x D)	FTB-5240S module	96 mm x 51 mm x 260 mm (3 3/4 in x 2 in x 10 1/4 in)
	FTB-5240BP module	96 mm x 76 mm x 260 mm (3 3/4 in x 3 in x 10 1/4 in)
Weight	FTB-5240S module	1.5 kg (3.3 lb)
	FTB-5240BP module	1.7 kg (3.8 lb)

SELECTION GUIDE

OSA Module	CWDM	DWDM (100 GHz spacing)	DWDM (50 GHz spacing)	ROADM + 40 Gbit/s network
FTB-5240S	X	X	X	
FTB-5240S-P	X	X	X	X
FTB-5240BP	X	X	X	X

LASER SAFETY

21 CFR 1040.10 AND IEC 60825-1
CLASS 1 LASER PRODUCT



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ORDERING INFORMATION

FTB-5240S-XX-XX-XX

Model

FTB-5240S = Optical spectrum analyzer
 FTB-5240S-P = Optical spectrum analyzer with polarization controller
 FTB-5240S-HPW = Optical spectrum analyzer with high-power option
 FTB-5240S-P-HPW = Optical spectrum analyzer with polarization controller and high-power option

Connector adapter *

EI-EUI-28 = UPC/DIN 47256
 EI-EUI-76 = UPC/HMS-10/AG
 EI-EUI-89 = UPC/FC narrow key
 EI-EUI-90 = UPC/ST
 EI-EUI-91 = UPC/SC
 EI-EUI-95 = UPC/E-2000
 EA-EUI-28 = APC/DIN 47256
 EA-EUI-89 = APC/FC narrow key
 EA-EUI-91 = APC/SC
 EA-EUI-95 = APC/E-2000

Software option *

00 = Without software option
 InB = With WDM Aware technology

Example: FTB-5240S-P-HPW-EI-EUI-89-InB

* EXFO Universal Interface is protected by US patent 6,612,750.

FTB-5240BP-XX

Model

FTB-5240BP = High resolution optical spectrum analyzer

Connector adapter *

EI-EUI-28 = UPC/DIN 47256
 EI-EUI-76 = UPC/HMS-10/AG
 EI-EUI-89 = UPC/FC narrow key
 EI-EUI-90 = UPC/ST
 EI-EUI-91 = UPC/SC
 EI-EUI-95 = UPC/E-2000
 EA-EUI-28 = APC/DIN 47256
 EA-EUI-89 = APC/FC narrow key
 EA-EUI-91 = APC/SC
 EA-EUI-95 = APC/E-2000

Example: FTB-5240BP-EI-EUI-89

Note

a. Available with FTB-5240S-P and FTB-5240S-P-HPW only; available with FTB-200 Compact Platform only.

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EXFO is certified ISO 9001 and attests to the quality of these products. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. EXFO has made every effort to ensure that the information contained in this specification sheet is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics and products at any time without obligation. Units of measurement in this document conform to SI standards and practices. In addition, all of EXFO's manufactured products are compliant with the European Union's WEEE directive. For more information, please visit www.EXFO.com/recycle. Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.

For the most recent version of this spec sheet, please go to the EXFO website at www.EXFO.com/specs.

In case of discrepancy, the Web version takes precedence over any printed literature.

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