FTB-635 Wideband Copper and DSL Test Module

WIDEBAND COPPER AND ADSL2+/VDSL2 ADVANCED MULTIPLAY TESTING

EXFO Connect Compatible

smartR™

Preliminary

PRODUCT SHEET

Powerful, total tool kit for troubleshooting high-value multiplay services over FTTN/ADSL2+/VDSL2 and Ethernet

KEY FEATURES AND BENEFITS

- Complete FTTN troubleshooting tool kit, with optical, copper, DSL and Ethernet test features—all in one
- SmartR™ features automatically analyze metallic test results using plain language and graphics to identify and locate faults
- ADSL2+ and VDSL2 bonding allows service providers to recover and grow wireline revenues
- Ethernet interfaces up to 1 GB for qualifying FTTN services at the customer premises
- IPTV test suite with live video preview
- Full Web browser for complete service qualification
- Large, colorful touchscreen for clear and intuitive testing

PART OF THE
FTB COPPER ACCESS SERIES

FTB-610
Wideband Copper
Test Module

EXFO | Assessing Next-Gen Networks

überreicht durch:
Opternus

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A NEXT-GENERATION TOOL FOR BROADBAND DEPLOYMENTS

EXFO's FTB-635 Wideband Copper and DSL Tester is the perfect tool for any service provider deploying multiplay services over FTTN and hybrid networks. The all-in-one FTB-635 tests optical power, wideband copper, ADSL2+/VDSL2, 1 GB Ethernet and multiplay services, including live video preview. The large display of the FTB-635 makes it even more user-friendly, clear and intuitive, and when it comes to capturing and uploading results, it provides technicians with many connectivity options for uploading tests and compiling reports.

SmartR™ TECHNOLOGY

Equipped with SmartR technology, the FTB-635 enables technicians and engineers alike to work smarter—not harder. It is the next generation of telco cable testing that automatically identifies and locates common circuit faults and presents results using intuitive graphical displays and plain language. The Pair Detective feature automatically runs the most common line tests and provides graphical, color-coded, plain language results and pass/fail indications to detect conditions, including shorts, grounds, opens, battery, splits and imbalances. FaultMapper uses time-domain reflectometry (TDR) and frequency-domain reflectometry (FDR) technology to provide the additional capability of identifying the location of the service-affecting line faults, including bridged taps, shorts, grounds and opens. EXFO's unique SmartR draws an easy-to-understand graph of the wire pair, making copper troubleshooting easier than ever.

COMPLETE ADSL/VDSL2 SERVICE TESTING

Housed in EXFO's FTB-1 Platform, the FTB-635 is the most powerful DSL service troubleshooting tool for FTTN triple-play services. Whether for testing copper, ADSL2+, VDSL2, Ethernet or triple-play services, the FTB-635 is complete and provides technicians with many connectivity options for uploading tests and compiling reports. The FTB-635 combines multiple tools, ranging from a multimeter, wideband transmitter/receiver and noise meter, wideband impulse noise meter, balance, TDR, noise meter, RFL and SmartR technology, to allow effective troubleshooting of VDSL2 circuits. With an integrated modem supporting the newest capabilities, VDSL2 can be emulated up to 30 MHz, including improved performance with vectoring. DSL and Ethernet WAN (1 GB) and LAN interfaces enable testing on FTTH circuits and inside premises. Emulate a set-top box or VoIP calls inside or outside, to know where and when the service works. Test IPTV streams (multiple streams and live video preview) with the powerful test suite of the FTB-1 handheld modular platform.

ANNEX A AND B IN ONE CONFIGURATION

With a choice of modems, the FTB-635 supports testing services over Annex A up to profile 30a, as well as bonded circuits, or Annex A and Annex B up to profile 12a. Annex A and B together are convenient and economical for technicians troubleshooting both types of circuits, eliminating the need to swap modules or using a separate device.

SUPPORTING THE LATEST DSL TECHNOLOGIES: G.INP AND VECTORING

VDSL2 is revitalizing the copper plant with new methods that help achieve high-quality multiplay and take noise mitigation to the next level through G.INP (impulse noise protection and physical layer retransmission as defined by ITU-T G.998.4) and vectoring (ITU-T G.993.5). These techniques are supported by the FTB-635 to validate and ensure maximum performance of DSL circuits.

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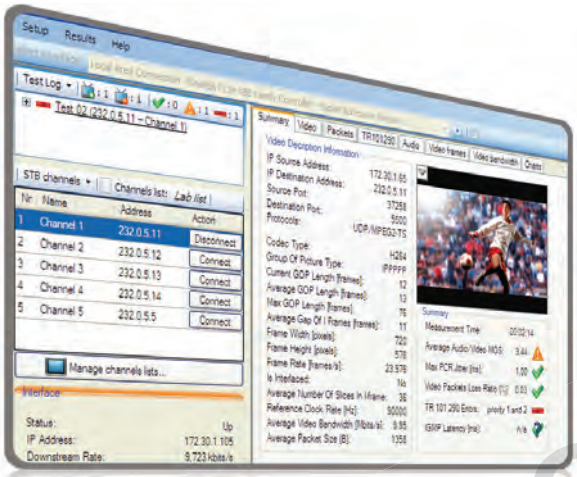
POWERFUL ON-BOARD TRIPLE-PLAY TESTING

The on-board EXFO EXpert application options on the FTB-1 Platform provide the power to test and troubleshoot your triple-play services–whether via Ethernet on the platform (for FTTH circuits and in-premises connections) or DSL on the test interfaces of the FTB-635 (for fiber-to-the-cab and other DSL circuits). Whether outside or inside, the FTB-635 is ready. The VoIP analysis includes call emulation for common codecs; in-depth IP analysis and tests to analyze data delivery and network connection issues, and in-depth IPTV testing to include a live video preview. For FTTH, test form the platform 1G Ethernet interface, and use the applications to test inside or outside via the DSL module interfaces (DSL WAN or Ethernet LAN).



FULL COLOR WEB BROWSER AND THIRD-PARTY APPLICATIONS

The Windows-based FTB-1 Platform provides a fully functional Internet Explorer Web browser, enabling full access to the provider portals and clear, independent, visual proof to end customers of properly provisioned Internet services. What's more, selected third-party applications are also on board, such as Net Stumbler to check Wi-Fi signals in the premises, or Wireshark to capture and analyze IP packets to isolate service-delivery problems at the Ethernet/IP layer.

Preliminary

KEY DSL APPLICATIONS

- Ensures that customers have the required bandwidth (downstream and upstream rates) for delivering triple-play services over single-pair or bonded ADSL2+ and VDSL2
- Validates that the IPTV and data services can operate on the circuit with the required QoS
- Provides in-depth view of link quality at all layers
- Isolates service issues outside and inside on FTTC and FTTH networks

KEY COPPER APPLICATIONS

- Every tool needed for troubleshooting FTTN circuits from the cab to the set-top box: optical power measurement, VFL, fiber assessment, ADSL/VDSL2 testing and wideband copper testing–uniquely combined for simultaneous use
- Complete suite of manual and automated advanced metallic tests **for any service**, from multimeter to TDR to wideband impulse noise
- 30 MHz wideband spectrum analysis for analyzing any circuit cable service qualification, up to VDSL2 band plan (12, 17, 30 MHz)
- High-power isolation for finding those highly resistive faults and insulation failures on long circuits
- Unmatched short- and long-range wireless connectivity to capture, upload, analyze and leverage captured measurements

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ALL THE RIGHT FEATURES

IPTV Testing

To boost their revenues, many service providers are using DSL to deliver new multiplay services on their existing networks. Among these services, video (IPTV) is one of the fastest growing and is getting a high level of focus and investment. Knowing that customers are very sensitive when it comes to IPTV QoS (i.e., picture quality due to packet loss, zap time, etc.), technicians must be sufficiently equipped to find and resolve complex IPTV issues, to restore service and meet customers' QoS expectations. With this in mind, the FTB-635 offers a powerful, optional Expert IPTV test suite to test the depth of IPTV services across multiple streams and types in an efficient yet in-depth manner. What's more, the FTB-635 can replace a set-top box and show a real-time video preview, enabling to validate to the customer that the service had been restored.

Advanced Noise Testing

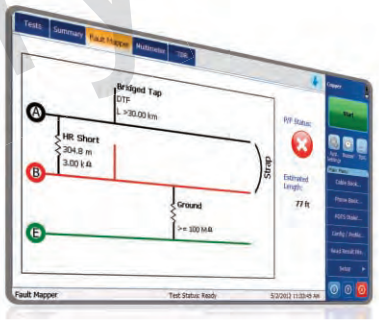
IPTV and video services over VDSL2 are sensitive to noise levels and frequencies that were of no concern before. Conventional voice-band testers simply do not see higher frequency disturbers, which often lead to complaints and many repeats on newer, high-value services. The FTB-635 incorporates high-frequency wideband noise analysis to identify and understand the constant and impusle noise environment to include repetitive electrical impulse noise (REIN).

High-Voltage Testing

High-voltage isolation tests, from 50 V to 500 V (optionally) enable engineers to test insulation breakdown on lengthy and power span circuits.

Graphical Fault Location

The unique FaultMapper test automatically runs appropriate tests, including TDR and FDR to identify faults. Instead of presenting a simple signal return line, FaultMapper analyzes and locates faults. FaultMapper even names faults using plain language, thereby eliminating the guesswork, and making fault location easier than ever. To pinpoint faults, use a complement of the RFL functions, such as single pair, second pair and K-Test methods—to view accurate results on a large, graphical display.



Easy to Use

The FTB-635's next-generation user interface is up-to-date, taking full advantage of the seven-inch color touchscreen to create a user experience that many will find familiar. The large display makes use of colored icons and graphics for easy configuration and operation, and is simple, intuitive and quick for experienced and novice users alike.

Results and Tester Management

Test results are simply too valuable to leave in the field: operators that collect and analyze (data mine) results can improve their processes, increase compliance and reduce OPEX. Through EXFO Connect, compatible with the FTB-1, collecting and uploading data is easy for post processing and analysis. EXFO Connect also makes it easy to manage the fleet of test equipment in the field, ensuring standardization of processes, firmware revision and tester profiles on a per-unit basis. With full visibility and accountability into each test set, leverage EXFO Connect on the FTB-600 series to maximize the effectiveness of technicians and test equipment in the field.

EXFO Connect

EXFO Connect

AUTOMATE ASSET MANAGEMENT. PUSH TEST DATA IN THE CLOUD. GET CONNECTED.

EXFO Connect stores and pushes test equipment and test data content automatically in the cloud, allowing you to streamline test operations from build-out to maintenance.

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ADDITIONAL FEATURES

- Full multimeter, including series resistance detection
- Expansive TDR with Dual-Trace and XTALK modes
- Choice of Annex A modem supporting VDSL2 30a profile (and optionally bonding), or Annex A and B combined
- Vectoring and G.INP
- Timed and continuous DSL tests
- Profiles and results reporting and exporting
- Live video preview on the tester

DESIGNED FOR EFFICIENCY

1. DSL port
2. Ethernet port
3. Copper Connectors
4. Power meter and VFL
5. Stylus
6. Two USB 2.0 ports
7. 1 GigE port
8. Head set
9. Fiber inspection probe video port
10. AC adapter
11. Back stand
12. Speaker out
13. Brightness
14. Keyboard/screen capture
15. Switch application
16. Power on/off
17. Battery LED
18. Module compartment
19. Battery

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TECHNICAL SPECIFICATIONS

Display	Color touchscreen, 800 x 480 TFT, 178 mm (7 in)
Interfaces	Two USB 2.0 ports RJ45 LAN 10/100/1000 Mbit/s Fiber inspection probe connector port (video) Built-in Bluetooth and Wi-Fi (hardware option)
Storage	8 GB internal memory (flash) 16 GB internal memory (flash), optional
Batteries	Rechargeable lithium-ion batteries 8 hours of operation as per Telcordia* (Bellcore) TR-NWT-001138
Power supply	AC/DC adapter, input 100-240 VAC, 50-60 Hz, 1.6 A max, output 24 VDC, 3.75 A
Computer	Intel ATOM processor Windows-embedded standard operating system

GENERAL SPECIFICATIONS

Size (H x W x D)	190 mm x 252 mm x 66 mm (7 1/2 in x 9 15/16 in x 2 5/8 in)
Weight (with battery)	1.5 kg (3.3 lb)
Temperature operating storage	 0 °C to 50 °C (32 °F to 122 °F) –40 °C to 70 °C (–40 °F to 158 °F)**
Relative humidity	0 % to 95 % non-condensing

* With optional extended-life battery.

** –20 °C to 60 °C (–4 °F to 140 °F) with the battery pack.

PM-1 BUILT-IN POWER METER SPECIFICATIONS [a]

Calibrated wavelengths (nm)	850, 1300, 1310, 1490, 1550, 1625, 1650
Optional CWDM calibrated wavelengths (nm)	1270, 1290, 1310, 1330, 1350, 1370, 1390, 1410, 1430, 1450, 1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610, 1383, 1625
Power range (dBm)	10 to –86 (InGaAs) 26 to –64 (GeX)
Uncertainty (%) [b]	±5 % ± 3 pW (InGaAs) ±5 % ± 0.4 nW (GeX)
Display resolution (dB)	
InGaAs	0.01 = max to –76 dBm 0.1 = –76 dBm to –86 dBm 1 = –86 dBm to min
GeX	0.01 = max to –54 dBm 0.1 = –50 dBm to –60 dBm 1 = –60 dBm to min
Automatic offset nulling range [c]	Max power to –63 dBm for InGaAs Max power to –40 dBm for GeX
Tone detection (Hz)	270/1000/2000

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VISUAL FAULT LOCATOR (VFL) (OPTIONAL)

Laser, 650 nm ±10 nm
CW
Typical P_{out} in 62.5/125 µm: 3 dBm (2 mW)

LASER SAFETY

21 CFR 1040.10 AND IEC 60825-1:2007
CLASS 3R WITH VFL OPTION

Notes

a. At 23 °C ±1 °C, 1550 nm and FC connector. With modules in Idle mode. Battery-operated.

b. Up to 5 dBm.

c. For ±0.05 dB, from 18 °C to 28 °C.

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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.**

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