### MaxTester 940/945 Telco OLTS

FULLY AUTOMATED FASTEST™ BIDIRECTIONAL MEASUREMENTS FOR INSERTION LOSS, OPTICAL RETURN LOSS AND FIBER LENGTH



First tablet-inspired multifunction optical loss test set (OLTS) measuring insertion loss (IL), optical return loss (ORL) and fiber length at two wavelengths in 5 seconds via fully automated bidirectional FasTesT™ analysis.

#### **KEY FEATURES**

Unmatched FasTesT™ performances: 100 % automated bidirectional test at two wavelengths under 5 seconds

100 % automated fiber inspection: one-step process with pass/fail analysis at both fiber ends

On-board assistant and diagnosis to eliminate reference errors and negative loss

Improved short fiber measurement

On-board professional PDF reporting

Bright, 7-inch high resolution touchscreen display the biggest in the market

Optical return loss (ORL) meter

#### Best-in-class singlemode distance range of 200 km $\,$

EXFO Connect-ready for cloud-based test assets management

WiFi and Bluetooth connectivity (optional)

#### **APPLICATIONS**

FTTx construction

Telecommunications and outside plant networks testing

Data centers

Enterprise structured cabling

#### RELATED PRODUCTS



Fiber inspector probe

FIP-400B (WiFi or USB)



Data post-processing software FastReporter 2



Cleaning accessories



# THE NEXT GENERATION OF AUTOMATED OLTS: MORE FEATURES, GREATER PERFORMANCE

Ever since its introduction in 1996, the patented FasTesT™ technology revolutionized the industry by fully automating the test sequence, saving countless hours of testing and troubleshooting in the field. Proven in thousands of diverse network deployments across the globe, FasTesT™ truly enables CAPEX/OPEX savings.

The MaxTester 940/945 (MAX-940/945) boasts a 7-inch touchscreen, the largest and most user-friendly display in the industry to simplify tasks for the technician. The MAX-940/945 also allows for 100 % automated fiber inspection at both ends of the fiber link. Paired with the FIP-400B automated fiber inspection probes and powered by FasTesT™, this OLTS brings the latest and the best in innovation and automation at your fingertips.

#### THE BENEFITS

#### Trustworthy test results

#### Fully automated fiber inspection

Fiber inspection is at the heart of ensuring that accurate references and measurements can be made. The MAX-940/945 integrates EXFO's fully automated line of fiber inspection probes to assess and certify connector health within a few seconds. EXFO's FIP-430B (USB) and FIP-435B (wireless) rely on elaborate algorithms that do the hard work for you to automatically center, focus, capture and analyze the connector image. No user intervention needed: achieve repeatable and accurate inspection, 100 % of the time.

#### On-board step-by-step animated reference assistant

Accurate and repeatable test results starts with proper test cord referencing. Accurate referencing greatly reduces common mistakes often encountered in the field. Thanks to the reference assistant's animated and interactive interface this step of the testing sequence is now as simple and easy as it can be.



#### Test shorter links than ever before

Thanks to highly accurate optics, this OLTS can test with extreme precision short links with very low loss.

#### EXFO's patent-pending one-cord simplex reference method

Greatly reduces test uncertainty for greater test accuracy which is a key factor when testing short fiber links such as drop fibers in FTTH networks.



#### Test efficiency

- FasTesT™: acquisition time in five seconds
- · Online reporting-live from the field
- Maximum simplicity and fast-learning curve with on-board user assistance:
  - Port LED indicators: guide the user through the referencing and testing processes. LED indicators show the user on which optical port to connect the fiber and a beep indicates that the connection is established to confirm continuity.
  - On-board diagnosis: throughout the referencing and testing processes, the instrument delivers real-time information on the test cord health as well as pass/fail results according to pre-set or custom criteria. When performing testing, the instrument delivers diagnosis about the loss, length and can even identify the presence of a macrobend (refer to side picture).
  - Margin meters: indicate the result status as well as the margin according to preset thresholds.
- The MAX-940/945 includes a Test Again feature allowing the user to re-test bad fibers in three easy steps:
  - 1. Go back in test results
  - Quickly and correctly identify the bad fiber by looking at the pass/fail status
  - 3. Press Test Again

#### Optimized test sequence

- Real-time continuity feature: The main and remote
  units emit visual and audible signals to let the technicians
  on both ends know that a connection has been
  established on the specific fiber under test. This also
  allows the technicians to start the test right away, saving
  time on each fiber tested.
- Text messaging capabilities: Allows users to send text messages through the fiber under test faster than other test sets in the industry.

#### **ORL** meter

The ORL meter allows the user to perform a singleended ORL measurement of network components or of link section. This live meter shows the measurement fluctuation in real time.

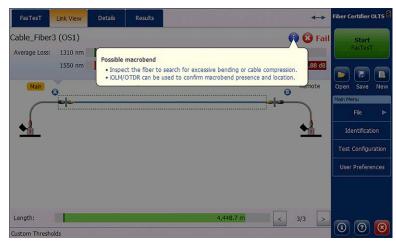


Figure 1. On-board diagnosis helps the technician take proper action

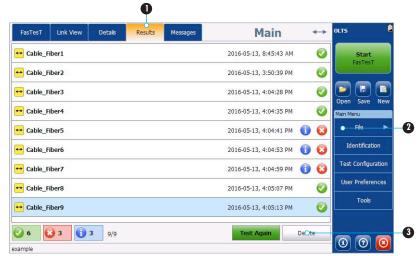


Figure 2. See results clearly and test again easily

- Results tab lists all the fibers tested in a cable
- 2 Pass/Fail status indicated under Results
- 3 Test Again button allows re-testing a "failed fiber" using the same settings



Figure 3. Continuity feature



# SMALL ENOUGH TO BE HANDHELD. LARGE ENOUGH FOR FULL-SCREEN VIEWING.

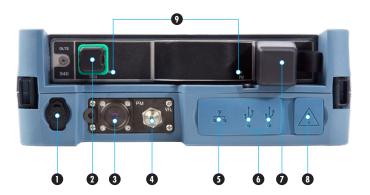
#### TABLET-INSPIRED DESIGN

With a 7-inch, high-resolution touchscreen—the most efficient display in the industry—the MAX-940/945 OLTS delivers an unprecedented user experience. It features integrated WiFi/Bluetooth connectivity and instant boot up. The MAX-940/945 OLTS also ensures a full day of field work with 12 hours of battery autonomy and its internal memory capacity for 150,000 test results.

#### PACKAGED FOR EFFICIENCY

- Stylus
- 2 FasTesT™ singlemode port
- 3 High-power power meter (optional)
- Visual fault locator (optional)
- 5 10/100 Mbit/s Ethernet port
- 6 Two USB 2.0 ports
- Standard power meter

- 8 AC adapter
- 9 LED indicators
- Home/switch application and screen capture (hold)
- Power on/off/stand by
- Battery LED status
- Built-in WiFi/Bluetooth (optional)
- Stand support









# KEEP YOUR CONNECTORS CLEAN. KEEP YOUR NETWORK RUNNING SMOOTHLY.

#### **AUTOMATION AT YOUR FINGERTIPS**

In combination with EXFO's automated fiber inspection probes and backed by FasTesT™, the MAX-940/945 OLTS allows for 100 % automated fiber inspection at both ends of the fiber link.

#### DISCOVER THE INDUSTRY'S FIRST FULLY AUTOMATED FIBER INSPECTION PROBE

Housing a unique automatic focus adjustment system, the FIP-400B automates each operation in the sequence of inspecting a connector endface. The result: fiber inspection is now a quick, one-step process that can be performed by technicians of all skill levels.

#### FIVE MODELS TO FIT YOUR BUDGET

- The FIP-430B: complete and fully automated feature set, includes the powerful fiber image-centering system, focus adjustment and optimization, and on-board pass/fail analysis.
- 100% Automated <sup>a</sup>

1-step

**57%**Shorter Test Time <sup>1</sup>

- The FIP-435B: go one step further with the wireless probe. Includes all FIP-430B features.
- The semi-automated FIP-420B: same features as the FIP-430B, without the automated focus adjustment.
- The semi-automated FIP-425B: wireless version of the semi-automated FIP-420B.
- The FIP-410B: all basic inspection features needed for manual inspection only.





FEATURES	USB WIRED		WIRELESS		
	Basic FIP-410B	Semi-automated FIP-420B	Fully automated FIP-430B	Semi-automated FIP-425B	Fully automated FIP-435B
Three magnification levels	√	√	√	✓	✓
Image capture	√	√	√	✓	√
Five-megapixel CMOS capturing device	√	√	√	✓	✓
Automatic fiber image-centering function	X	√	√	✓	√
Automatic focus adjustment	X	X	√	X	✓
Onboard pass/fail analysis	X	√	√	✓	✓
Pass/fail LED indicator	X	√	√	✓	✓
WiFi connectivity	X	X	X	✓	✓

### POWERFUL CONNECTOR ENDFACE IMAGE VIEWING AND ANALYSIS SOFTWARE

- · Automatic pass/fail analysis of the connector endfaces
- · Lightning-fast results in seconds with simple one-touch operation
- · Complete test reports for future referencing
- · Stores images and results for recordkeeping

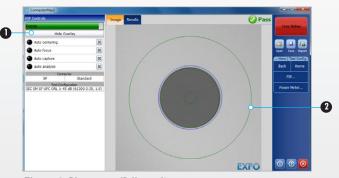


Figure 4. Clear pass/fail results







a. Models FIP-430B and FIP-435B.

# FAST TRACK DATA POST-PROCESSING WITH FASTREPORTER 2 (OPTIONAL)

#### ONE SOFTWARE DOES IT ALL

This powerful reporting software is the perfect complement to your MAX-940/945 OLTS. It allows creating and customizing reports to fully address your needs. Being able to rely on a single software to manage all your data and generate all your reports for your entire optical-layer test applications is your best option for maximum efficiency. FastReporter 2 was designed to handle everything for you.

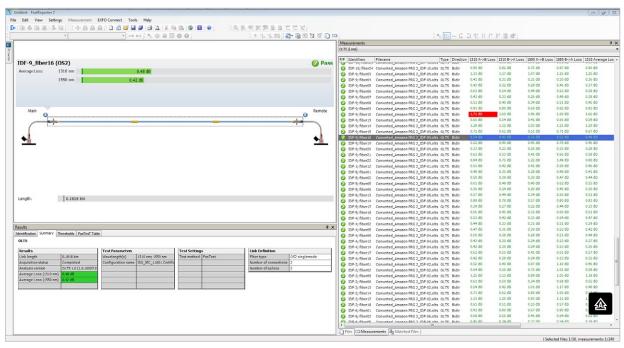


Figure 5. FastReporter 2 takes care of all the documenting and reporting for you

### NO. 1 EDITING MULTIPLE MEASUREMENT FILES

#### **Batch documenting**

- · Document an entire project/cable
- Manage separate measurements simultaneously

#### **Batch standardization**

- · Adjust cable and fiber parameters
- · Add/remove OTDR events
- · Adjust detection thresholds
- Perform manual measurements on OTDR files
- · Set pass/fail thresholds

### NO. 2

### ANALYZING MULTIPLE MEASUREMENT FILES

#### Specialized analysis tool to:

- Perform OTDR-iOLM bidirectional batch analysis
- · Detect duplicated measurements
- Easily identify results that don't meet network requirements
- Apply new configurations, threshold and/ or standards in batch

### NO. 3

### DOCUMENTING YOUR NETWORK

#### Flexibility

- Various report templates and formats (PDF, Excel, HTML)
- Report customization via Excel or Crystal Reports
- · Combined reports such as:
  - Fiber characterization (CD, PMD, OTDR and OLTS)
  - OTDR and fiber inspection (FIP)
  - iOLM and fiber inspection (FIP)



POWER METER SPECIFICATIONS a	
Detector type	GeX
Uncertainty <sup>b</sup>	±(5 % + 10 nW)
Measurement range (dBm)	25 to -50 °
Wavelengths range (nm)	850, 1300, 1310, 1490, 1550, 1577, 1625, 1650
Tone detection (Hz)	270/330/1000/2000

SOURCE SPECIFICATIONS a	
Output power (dBm) °	Multimode (850 nm/1300 nm): -25 SM1 (1310 nm/1550 nm): 2.5 SM3 (1310 nm/1550 nm/1625 nm): 1 / -1 / -5 SM4 (1310 nm/1490 nm/1550 nm): 1 / -5 / -1
Output power stability (dB)	±0.05 over 8 hours
Spectral width (FWHM) (nm)	850 nm: 30 to 60 1300 nm: 100 to 150

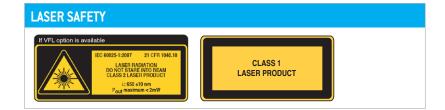
FASTTEST™ SPECIFICATIONS a		
Testing speed <sup>c</sup>	FasTesT™ Simplex: 3 seconds (two wavelengths, bidirectional, automated, IL + fiber length) FasTesT™ Simplex: 6 seconds (three wavelengths, bidirectional, automated, IL + ORL + fiber length)	
Wavelengths (nm) °	Multimode (LED) 850 ± 20 1300 ± 20	Singlemode (laser) 1310 ± 20 1490 ± 10 1550 ± 20 1625 ± 10
Launch condition d	Encircled Flux (EF) compliancy guaranteed at 50/125 μm multimode source port.	
	Within TIA-526-14-B, ISO/IEC 14763-3 and IEC 61280-4-1 EF template limits at the end of an EXFO reference-grade 50/125 µm test cord.	
Loss range (dB) <sup>e</sup>	Multimode: 20 Singlemode simplex: 45 Singlemode duplex: 50	
Length measurement range (km) <sup>f</sup>	Multimode: 20 Singlemode: 200	
Length measurement uncertainty °	Duplex: ±(0.5 m + 0.5 % Simplex: ±(1 m + 0.5 %	
ORL measurement range (dB) c, g	50	
ORL measurement uncertainty (dB) c, g, h	±1	

ORL METER a, g	
	All singlemode wavelengths
ORL range (APC/UPC link) (dB) c, i, j	65/55
ORL uncertainty (dB) c, i, k	±0.5
Resolution (dB)	0.01

- a. All specifications valid at 23  $^{\circ}$ C  $\pm$  1  $^{\circ}$ C and 1550 nm, on batteries and after 15 minutes of warm up, unless otherwise specified.
- b. Uncertainty is valid at calibration conditions.
- c. Typical.
- d. Measured at 850 nm with SC connector.
- e. Typical value, at 850 nm for multimode and 1550 nm for singlemode.
- f. At 1300 nm for multimode and 1550 nm for singlemode.
- g. ORL measurement available on MAX-945 singlemode wavelengths only.
- h. No discrete reflectance greater than -65 dB. Up to 45 dB.
- i. After a manual reference and zero. Measurement made with 2-m reference patchcord with SC/APC connectors (all discrete reflectances  $\leq$  -65 dB).
- j. After a manual reference and zero. Measurement made with 2-m reference patchcord which has one SC/UPC connector on the fiber under test side (all discrete reflectances ≤ -55 dB).
- k. Up to 45 dB.



# VISUAL FAULT LOCATOR (VFL) (optional) Laser, $650 \text{ nm} \pm 10 \text{ nm}$ CW/Modulate 1 Hz Typical $P_{out}$ in $62.5/125 \text{ } \mu\text{m}$ : > -1.5 dBm (0.7 mW) Laser safety: Class 2



#### **ENVIRONMENTAL SPECIFICATIONS**

Temperature Operating -10 °C to 50 °C (14 °F to 122 °F) Storage -30 °C to 70 °C (-22 °F to 158 °F) <sup>a</sup>

Relative humidity 0 % to 95 % non-condensing

GENERAL SPECIFICATIONS	
Display	7-in (178-mm) outdoor-enhanced touchscreen, 800 x 480 TFT
Size (H x W x D)	166 mm x 200 mm x 68 mm (6 9/16 in x 7 7/8 in x 2 3/4 in)
Weight (with battery)	1.5 kg (3.3 lb)
Interfaces	Two USB 2.0 ports RJ45 LAN 10/100 Mbit/s Optional WiFi/Bluetooth
Storage	6 GB internal memory (150 000 test results, typical)
Battery <sup>b</sup>	Rechargeable lithium-polymer battery 12 hours of operation
Power supply	Power supply AC/DC adapter, input 100-240 VAC, 50-60 Hz
Warranty	Three (3) years
Recommended recalibration period	Three (3) years

a. -20 °C to 60 °C (-4 °F to 140 °F) with the battery pack.



b. Typical.

#### ORDERING INFORMATION MAX-940-XX-XX-XX-XX-XX-XX Extra FIP-400B tips d Model ■ MAX-940 = OLTS**Bulkhead tips** FIPT-400-FC-APC = FC/APC tip for bulkhead adapter Optical configuration FIPT-400-FC-SC = FC and SC tip for bulkhead adapter e M1 = Singlemode 1310/1550 nm, IL FIPT-400-LC = LC tip for bulkhead adapters FIPT-400-LC-APC = LC/APC tip for bulkhead adapter Connector a ■ FIPT-400-MU = MU tip for bulkhead adapters EI-EUI-28 = UPC/DIN 47256 FIPT-400-SC-APC = SC/APC tip for bulkhead adapter fIPT-400-SC-UPC = SC/UPC tip for bulkhead adapter EI-EUI-89 = UPC/FC narrow key EI-EUI-90 = UPC/ST FIPT-400-ST = ST tip for bulkhead adapter EI-EUI-91 = UPC/SC EI-EUI-95 = UPC/E-2000Patchcord tips EI-EUI-98 = UPC/LC FIPT-400-U12M = Universal patchcord tip for 1.25 mm ferrules EA-EUI-28 = APC/DIN 47256 FIPT-400-U12MA = Universal patchcord tip for 1.25 mm ferrules APC EA-EUI-89 = APC/FC narrow key FIPT-400-U16M = Universal patchcord tip for 1.6 mm ferrules EA-EUI-91 = APC/SCFIPT-400-U20M2 = Universal patchcord tip for 2.0 mm ferrules (D4, Lemo) EA-EUI-95 = APC/E-2000FIPT-400-U25M = Universal patchcord tip for 2.5 mm ferrules EA-EUI-98 = APC/LC FIPT-400-U25MA = Universal patchcord tip for 2.5 mm ferrules APC f VFL and power meter■ FIPT-400-MTP2 = MTP/MPO UPC tip for bulkhead adapter 00 = Without VFL and power meter VFL = With VFL FIPT-400-MTPA2 = MTP/MPO APC tip for bulkhead adapter FIPT-400-MTP-MTR = MTP/MPO multirow UPC tip for bulkhead adapter PM2X = With power meter; GeX detector VPM2X = With VFL and power meter; GeX detector FIPT-400-MTP-MTRA = MTP/MPO multirow APC tip for bulkhead adapter WiFi and Bluetooth ■ Tip kits FIPT-400-LC-K = LC tip kit including: 00 = Without RF components RF = With RF capability (WiFi and Bluetooth) FIPT-400-LC: LC tip for bulkhead adapters, FIPT-400-LC-APC: LC/APC tip for bulkhead adapter, Inspection probe model b FIPT-400-U12M: Universal patchcord tip for 1.25 mm ferrules, 00 = Without inspection probe FIPT-400-U12MA: Universal patchcord tip for 1.25 mm ferrules APC FP410B = Digital video inspection probe FIPT-400-LC-K-APC = LC tip kit including: Triple magnification FIPT-400-LC-APC: LC/APC tip for bulkhead adapter, FIPT-400-U12MA: Universal patchcord tip for 1.25 mm ferrules APC FP420B = Analysis digital video inspection probe FIPT-400-LC-K-UPC = LC tip kit including: Automated pass/fail analysis FIPT-400-LC: LC tip for bulkhead adapters, Triple magnification FIPT-400-U12M: Universal patchcord tip for 1.25 mm ferrules Autocentering FIPT-400-MTP-MTR-K = MTP/MPO multirow APC and UPC tip for bulkhead adapter <sup>g</sup> FP425B = Wireless digital video inspection probe c Base tips Automated pass/fail analysis APC = Includes FIPT-400-U25MA and FIPT-400-SC-APC Triple magnification UPC = Includes FIPT-400-U25M and FIPT-400-FC-SC Autocentering FP430B = Automated analysis digital video inspection probe Automated focus Automated pass/fail analysis Triple magnification Autocentering FP435B = Wireless analysis digital video inspection probe c Automated focus Automated pass/fail analysis Triple magnification Autocentering Example: MAX-940-SM1-EI-EUI-89-VFL-RF-FP435B-UPC

- a. Power meter connector type is the same as the EUI connector type.
- b. Includes ConnectorMax2 software.
- c. RF option mandatory and included with this model
- d. This list represents a selection of fiber inspection tips that covers the most common connectors and applications but does not reflect all the tips available. EXFO offers a wide range of inspection tips, bulkhead adaptors and kits to cover many more connector types and different applications. Please contact your local EXFO sales representative or visit www.EXFO.com/FIPtips for more information.
- e. Included when UPC base tips are selected.
- f. Included when APC base tips are selected.
- g. Includes a bulkhead adapter for patchcord inspection.



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- a. Connector adapters are the same on singlemode source ports, multimode source ports and power meter ports. Multimode connectors are always UPC.
- b. Includes ConnectorMax2 software
- c. RF option mandatory and included with this model.
- d. This list represents a selection of fiber inspection tips that covers the most common connectors and applications but does not reflect all the tips available. EXFO offers a wide range of inspection tips, bulkhead adaptors and kits to cover many more connector types and different applications. Please contact your local EXFO sales representative or visit www.EXFO.com/FIPtips for more information.
- e. Included when UPC base tips are selected.
- f. Included when APC base tips are selected.
- g. Includes a bulkhead adapter for patch cord inspection.

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