

MaxTester 940/945 Telco OLTS

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



Connect^{or}Max2

EXFO | Connect

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

Best-in-class singlemode distance range of 200 km

EXFO Connect-ready for cloud-based test assets management

Wi-Fi and Bluetooth connectivity (optional)

APPLICATIONS

FTTx construction

Telecommunications and outside plant networks testing

Data centers

Enterprise structured cabling

COMPLEMENTARY PRODUCTS



Fiber Inspection Probe
FIP-400R (Wi-Fi or USB)



Cleaning
Accessories



Data Post-Processing Software
FastReporter 2



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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
2. 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.

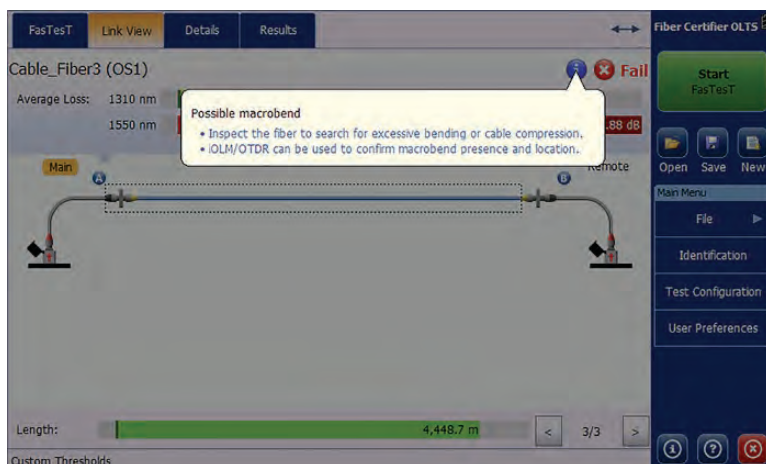


Figure 1. On-board diagnosis helps the technician take proper action

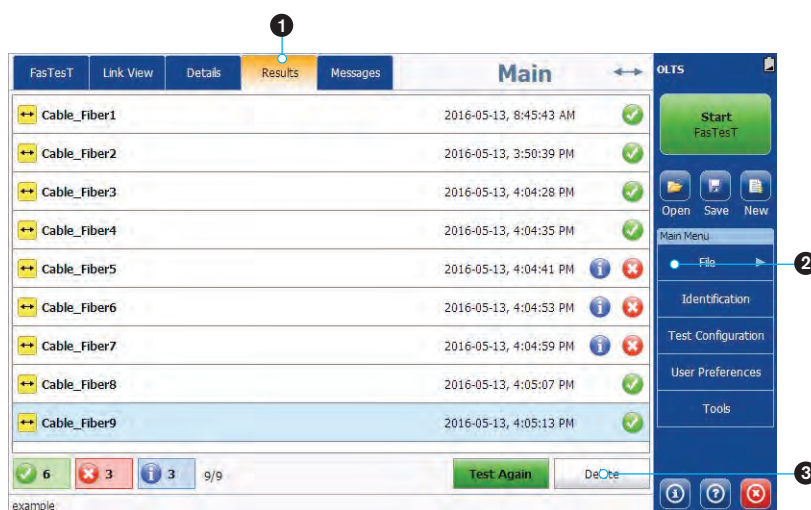


Figure 2. See results clearly and test again easily

- 1 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

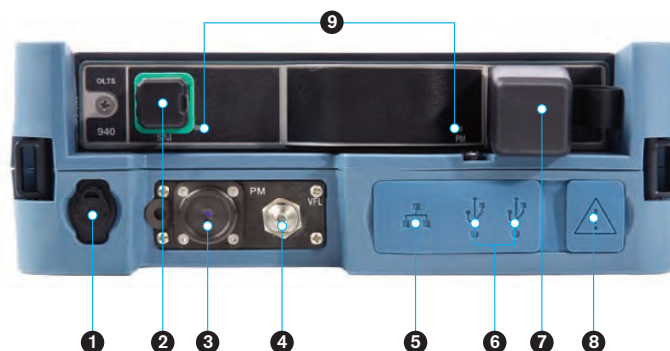
SMALL ENOUGH TO BE HANDHELD. LARGE ENOUGH FOR FULL-SCREEN VIEWING.

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 Wi-Fi/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

- | | |
|-------------------------------------|--|
| 1 Stylus | 8 AC adapter |
| 2 FasTesT™ singlemode port | 9 LED indicators |
| 3 High-power power meter (optional) | 10 Home/switch application and screen capture (hold) |
| 4 Visual fault locator (optional) | 11 Power on/off/stand by |
| 5 10/100 Mbit/s Ethernet port | 12 Battery LED status |
| 6 Two USB 2.0 ports | 13 Built-in Wi-Fi/Bluetooth (optional) |
| 7 Standard power meter | 14 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.
- › **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.

100%
Automated^a

1-step
Process^a

57%
Shorter Test Time^b



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	✗	✓	✓	✓	✓
Automatic focus adjustment	✗	✗	✓	✗	✓
Onboard pass/fail analysis	✗	✓	✓	✓	✓
Pass/fail LED indicator	✗	✓	✓	✓	✓
Wi-Fi connectivity	✗	✗	✗	✓	✓

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

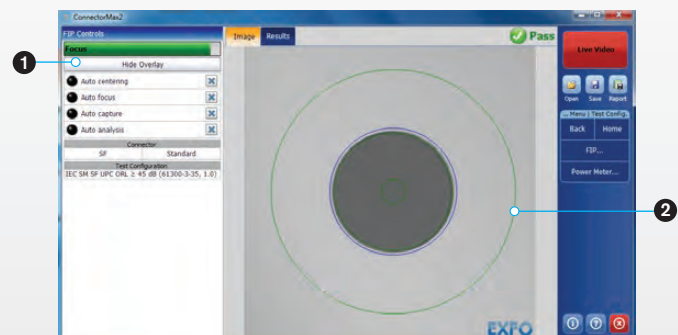


Figure 4. Clear pass/fail results

1 Inspection Controls

2 Fiber Inspection Area

Notes

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



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.



CHALLENGE 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)

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

POWER METER SPECIFICATIONS ^a

	Standard	Optional high power
Detector type	InGaAs	GeX
Uncertainty ^b	±(5 % + 32 pW)	±(5 % + 10 nW)
Measurement range (dBm)	5 to -75	25 to -50 ^c
Wavelengths range (nm)	850, 1270, 1290, 1300, 1310, 1330, 1350, 1370, 1383, 1390, 1410, 1430, 1450, 1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610, 1625, 1650	850, 1300, 1310, 1490, 1550, 1625, 1650
Tone detection (Hz)	270/330/1000/2000	270/330/1000/2000

SOURCE SPECIFICATIONS ^a

Output power (dBm) ^c	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

FASTEST™ SPECIFICATIONS ^a

Testing speed ^c	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) ^c	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) ^e	Multimode: 20 Singlemode Simplex: 45 Singlemode Duplex: 50	
Length measurement range (km) ^f	Multimode: 20 Singlemode: 200	
Length measurement uncertainty ^c	Duplex: ±(0.5 m + 0.5 % x length) Simplex: ±(1 m + 0.5 % x length)	
ORL measurement range (dB) ^{c, g}	50	
ORL measurement uncertainty (dB) ^{c, g, h}	±1	

Notes

a. All specifications valid at 23 °C ± 1 °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.

VISUAL FAULT LOCATOR (VFL) (OPTIONAL)

Laser, 650 nm ± 10 nm

CW/Modulate 1 Hz

Typical P_{out} in 62.5/125 µm: > -1.5 dBm (0.7 mW)

Laser safety: Class 2

LASER SAFETY



ENVIRONMENTAL SPECIFICATIONS

Temperature	Operating Storage	–10 °C to 50 °C (14 °F to 122 °F) –30 °C to 70 °C (–22 °F to 158 °F) ^a
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 Wi-Fi/Bluetooth
Storage	2 GB internal memory (150 000 test results, typical)
Battery ^b	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

Notes

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

Model

MAX-940 = OLTS

Optical configuration

SM1 = Singlemode 1310/1550 nm, IL

Connector

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

VFL and power meter

00 = Without VFL and power meter

VFL = With VFL

PM2X = With power meter; GeX detector

VPM2X = With VFL and power meter; GeX detector

Wi-Fi and Bluetooth

00 = Without RF components

RF = With RF capability (Wi-Fi and Bluetooth)

Inspection probe model

00 = Without inspection probe

FP410B = Digital video inspection probe
Triple magnificationFP420B = Analysis digital video inspection probe
Automated pass/fail analysis
Triple magnification
AutocenteringFP425B = Wireless digital video inspection probe^c
Automated pass/fail analysis
Triple magnification
AutocenteringFP430B = Automated analysis digital video inspection probe
Automated focus
Automated pass/fail analysis
Triple magnification
AutocenteringFP435B = Wireless analysis digital video inspection probe^c
Automated focus
Automated pass/fail analysis
Triple magnification
Autocentering**Extra FIPT-400B tips^d****Bulkhead tips**

FIPT-400-FC-APC = FC/APC tip for bulkhead adapter
 FIPT-400-FC-SC = FC and SC tip for bulkhead adapter^e
 FIPT-400-LC = LC tip for bulkhead adapters
 FIPT-400-LC-APC = LC/APC tip for bulkhead adapter
 FIPT-400-MU = MU tip for bulkhead adapters
 FIPT-400-SC-APC = SC/APC tip for bulkhead adapter^f
 FIPT-400-SC-UPC = SC/UPC tip for bulkhead adapter
 FIPT-400-ST = ST tip for bulkhead adapter

Patchcord tips

FIPT-400-U12M = Universal patchcord tip for 1.25 mm ferrules
 FIPT-400-U12MA = Universal patchcord tip for 1.25 mm ferrules APC
 FIPT-400-U16M = Universal patchcord tip for 1.6 mm ferrules
 FIPT-400-U20M2 = Universal patchcord tip for 2.0 mm ferrules (D4, Lemo)
 FIPT-400-U25M = Universal patchcord tip for 2.5 mm ferrules^g
 FIPT-400-U25MA = Universal patchcord tip for 2.5 mm ferrules APC^f

Multifiber tips^g

FIPT-400-MTP2 = MTP/MPO UPC tip for bulkhead adapter
 FIPT-400-MTPA2 = MTP/MPO APC tip for bulkhead adapter
 FIPT-400-MTP-MTR = MTP/MPO multirow UPC tip for bulkhead adapter
 FIPT-400-MTP-MTRA = MTP/MPO multirow APC tip for bulkhead adapter

Tip kits

FIPT-400-LC-K = LC tip kit including:

FIPT-400-LC: LC tip for bulkhead adapters,
 FIPT-400-LC-APC: LC/APC tip for bulkhead adapter,
 FIPT-400-U12M: Universal patchcord tip for 1.25 mm ferrules,
 FIPT-400-U12MA: Universal patchcord tip for 1.25 mm ferrules APC

FIPT-400-LC-K-APC = LC tip kit including:

FIPT-400-LC-APC: LC/APC tip for bulkhead adapter,
 FIPT-400-U12MA: Universal patchcord tip for 1.25 mm ferrules APC

FIPT-400-LC-K-UPC = LC tip kit including:

FIPT-400-LC: LC tip for bulkhead adapters,
 FIPT-400-U12M: Universal patchcord tip for 1.25 mm ferrules

FIPT-400-MTP-MTR-K = MTP/MPO multirow APC and UPC tip for bulkhead adapter^g**Base tips**

APC = Includes FIPT-400-U25MA and FIPT-400-SC-APC

UPC = Includes FIPT-400-U25M and FIPT-400-FC-SC

Example: MAX-940-SM1-EI-EUI-89-VFL-RF-FP435B-UPC

Notes

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.

ORDERING INFORMATION

MAX-945-XX-XX-XX-XX-XX-XX-XX

Model ^a

MAX-945 = OLTS

Optical configuration ^a

SM1 = Singlemode 1310/1550 nm, IL and ORL

SM3 = Singlemode 1310/1550/1625 nm, IL and ORL

SM4 = Singlemode 1310/1490/1550 nm, IL and ORL

ICERT-Q1-QUAD = Quad

Port 1: 850/1300 nm IL and

length measurement

Port 2: 1310/1550 nm IL,

length and ORL measurement

Connector ^a

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

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FIPT-400-LC-APC = LC/APC tip for bulkhead adapter

FIPT-400-MU = MU tip for bulkhead adapters

FIPT-400-SC-APC = SC/APC tip for bulkhead adapter ^f

FIPT-400-SC-UPC = SC/UPC tip for bulkhead adapter

FIPT-400-ST = ST tip for bulkhead adapter

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UPC = Includes FIPT-400-U25M and FIPT-400-FC-SC

Example: MAX-945-SM1-EI-EUI-89-VFL-RF-FP435B-UPC

Notes

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

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

