EXFO FOT-922 Specs
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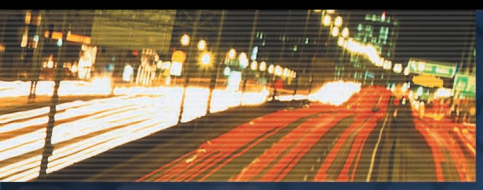
# Automated Loss Test Set

## FOT-920 MaxTester



- FasTesT—automated bidirectional loss testing
- Optical return loss testing
- Simultaneous talking, testing and locating
- Ultra-High-Power™ power meter

Fiber-optic T&M, monitoring, manufacturing and assembly solutions

EXFO

# Maximum Versatility

The FOT-920 MaxTester Automated Loss Test Set is the unit of choice for field technicians in network installation and maintenance. This unit integrates a fully automated bidirectional loss test set (OLTS), a light source and the Ultra-High-Power™ power meter with useful options, including a full-duplex digital talk set, visual fault locator and optical return loss test set, to create versatile combinations.

## High-Fiber-Count Installation

The FOT-920 gives you the edge when it comes to high-fiber-count installation. First, when doing a large volume of testing, the return on your investment takes less than a year. Second, the FOT-920 reduces the time you spend testing, training and in the field, making it ideal for outside plant applications.

## OC-48 and OC-192 Systems

Due to their high modulation rates, lasers used to transmit at OC-48 and OC-192 speeds are highly sensitive to backreflection. When installing networks designated to transmit at these speeds, measuring backreflection is a must to ensure proper stability of the lasers and their central wavelength.

**Maximize your testing capacity with the FOT-920 MaxTester.**

## Key Benefits

- Automated dual-wavelength bidirectional loss testing on one connector in less than 30 seconds
- Storage of up to 512 fiber records
- Message-exchange capability
- Backreflection capacity ideal for OC-48 and OC-192 systems
- Power meter with up to 35 dBm capability
- Three-way powering: NiMH and 9V batteries; AC adapter/charger

**Detector port**
Compatible with almost every connector on the market. Manually perform power and loss testing efficiently. Accurately measure power up to +35 dBm with the Ultra-High-Power™ models.

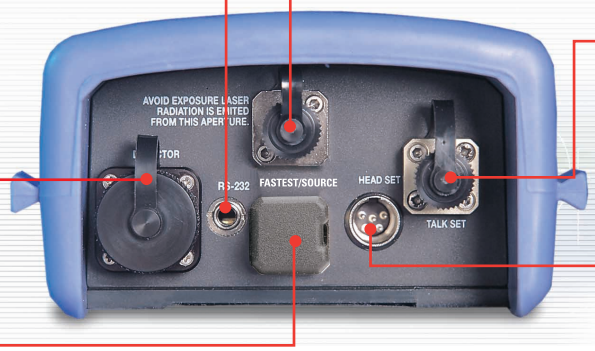
**FasTesT port**
Transmit one or two wavelengths through a single port. Also, use this port to perform ORL measurements, to send messages and to use the light source feature.

**RS-232 interface**
Transfer data to a PC or to a portable printer.

**VFL**
Built-in 650 nm visual fault location.

**Talk set port**
For full-duplex voice communication.

**Headset port**
For hands-free talk set operation.



# Step Up to the Ultra-High-Power™ Models (FOT-923X)

Networks today need high power. The networks of tomorrow will require even more. This growing demand for power is driven by the stress being placed on fiber-optic networks.

Directly measure the absolute power of high-output signals in the field with the FOT-923X's Ultra-High-Power™ capabilities. Accurately measure signals with power levels as high as +35 dBm, without neglecting those at the lower end of the dBm range. The Ultra-High-Power™ models are the complete solution for advanced networks.

### Leave Nothing to Chance

There is no substitute for practicing good laser safety. When handling high power, always take necessary precautions.

## The All-in-One Unit

### Bidirectional, Dual-Wavelength Testing and Professional Reports

EXFO understands that your time is valuable; that's why the FOT-920 features the patented FasTesT system. FasTesT automatically measures single-fiber loss in both directions, at two wavelengths, in less than 30 seconds. To speed up the reporting process, the FOT-920 stores all test results in its non-volatile memory; later, you can file test data according to your own cable identification scheme. Create more extensive reports, including user and test location information, with ToolBox 6 software (included). Download, print or store results on a computer hard drive.

**ToolBox 6**

### Optical Return Loss (ORL)

With widespread use of OC-48 and OC-192 transmission systems, bandwidth is essential. Flawless operation of high-data-rate systems depends on measurement and control of backreflection or optical return loss (ORL).

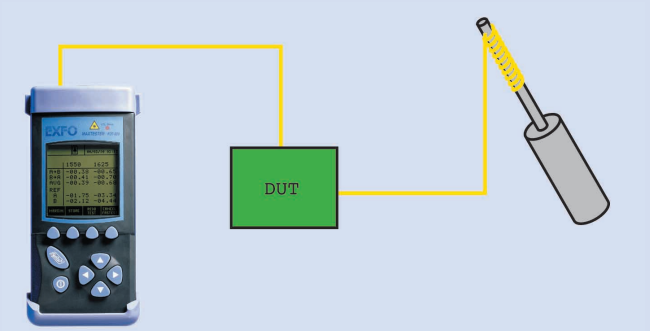
ORL can affect transmissions by
- Destabilizing DFB laser sources
- Interfering with high-frequency analog signals
- Increasing the bit error rate in high-frequency digital signals

Simply measure ORL with the FOT-920 using the optical continuous wave reflectometer (OCWR) method.

### Talk Set Communication and Visual Fault Location

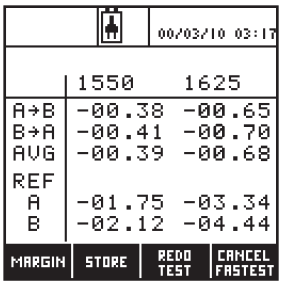
Coordinate end-to-end testing between remote sites with a fiber-optic talk set. The FOT-920 features an optional, full-duplex digital talk set for crystal-clear voice transmission. If the talk set cannot be used, the unit can send preset or preprogrammed messages via the fiber under test.

Perform end-to-end identification or pinpoint breaks, bends, faulty connectors, splices and other causes of signal loss over a distance of up to 5 km. At the exact fault location, the visual fault locator (VFL) emits a red glow that is visible through most yellow-jacketed fibers.



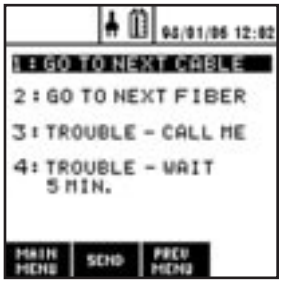
# Maximizing Testing Efficiency

The FOT-920 MaxTester is a compact, portable test tool that stands up to virtually any field environment. It features a splashproof casing, durable shoulder strap and long-life rechargeable battery. The backlit alphanumeric display quickly and easily shows you results and messages under any light conditions.

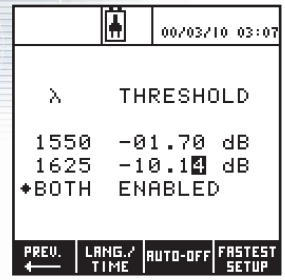



*With L-band transmission on the rise, testing at 1625 nm is now a must! (Testing at this wavelength provides worst-case attenuation for the L-band.)*

*Two languages are installed: English plus your choice of French, Spanish, German or Czech.*

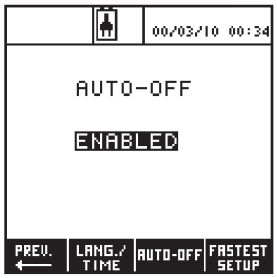



*To speed up testing procedures, choose from several preprogrammed messages to send to a test partner.*




*Configure Pass/Fail thresholds for each wavelength. If results exceed thresholds, an alarm and a highlighted value on the screen will notify you.*

*Organize test results using alphanumeric identifiers that directly reflect your cable and fiber identification system.*

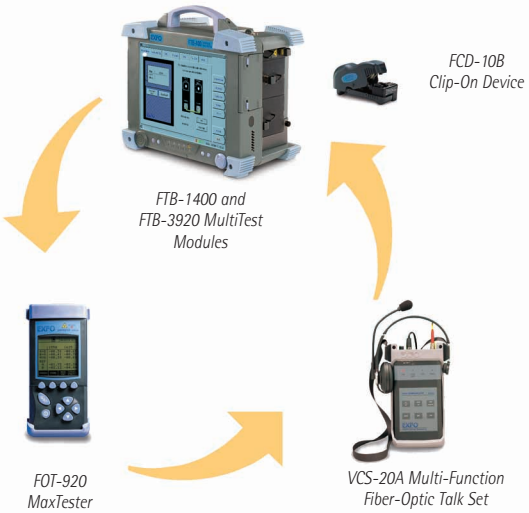



*Save battery operating time. The Auto-Off function shuts the unit down after 15 minutes of inactivity.*

*Set up your references from different sites by using the loopback reference method.*

# Wide-Ranging Compatibility

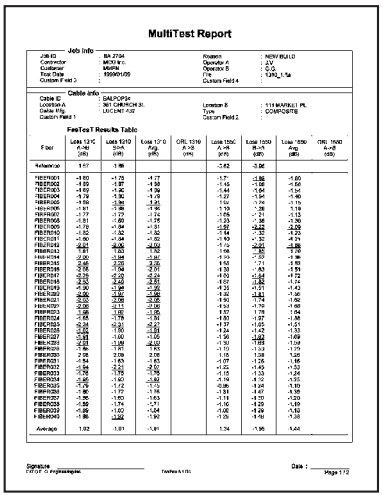
FasTesT, a rapid, automated dual-wavelength, bidirectional loss test, can be carried out with the following products: the FOT-920 MaxTester, an automated loss/return loss test set, and the FTB-3920 MultiTest Module. Obtain crystal-clear voice communication using any two of the following products: talk set options for the FOT-920 MaxTester, the FTB-1400 and the FTB-3920 MultiTest Modules, as well as the VCS-20A Multi-Function Fiber-Optic Talk Set. The FCD-10B Clip-On Device can be attached to a non-terminated fiber for communication between two talk sets.

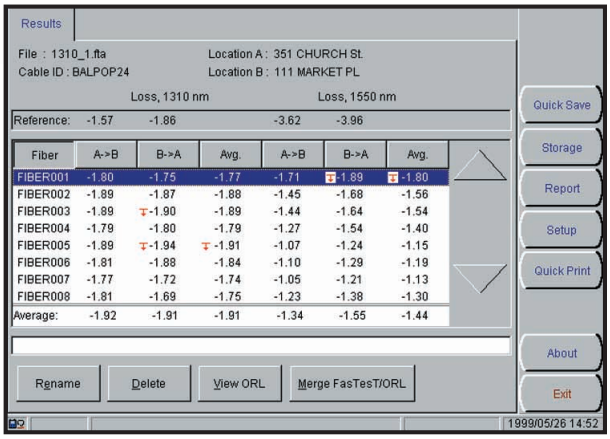



## Data Management

With increasing fiber deployment in Telco and CATV networks, busy fiber installation companies sometimes hire subcontractors to perform installation jobs. But subcontractors need to provide test documentation to show that a job meets specifications.

Now, subcontractors who use the FOT-920 can produce quality documentation efficiently. Thanks to the data logging and management features of the FOT-920, users can archive results and download information through the RS-232 port to a PC for professional analysis and report generation.




*Our ToolBox 6 software will automatically set up test data in an easy-to-read and well-organized table.*

*Once the data has been downloaded, it is possible to write up customized, detailed reports for any job.*

# The Complete Test Kit Solution

The FOT-920 MaxTester is part of EXFO's Test Kit series for all users of test and measurement instruments. These test kits are ideal for singlemode and multimode applications. All EXFO fiber-optic test kits contain accessories such as cleaning kits, AC adapters, test jumpers and fiber-optic adapters. Test equipment and accessories are stored in a convenient carrying case. Consult EXFO's Fiber-Optic Test Kit brochure for more information about the choice of test kits available.

## Key Test Tools

**Fiber-Optic Microscope (FOMS)**
Examine connector ferrule endfaces. Choose magnification of 200x or 400x.

**Visual Fault Locator (FLS-240 series)**
Check system continuity. The VFL emits a visible light (635 nm) through connection flaws and cracked cables.

**Live Fiber Detector (LFD-200)**
Check for traffic, optical tones and continuous signals without disrupting communication, and display power levels.

**Reel Cleaner (FCC-02R)**
Clean connector endfaces.

**OC-KIT-100**
- FOT-920: high-power germanium detector, and return loss option, 1310/1550 nm source, universal adapter
- FLS-240 (635 nm model)
- FOMS Microscope (200x or 400x)
- LFD-200 Live Fiber Detector
- Connector cleaner

**OC-KIT-134**
- FOT-920: high-power germanium detector, and return loss option, 1550/1625 nm source, universal adapter
- FLS-240 (635 nm model)
- FOMS Microscope (200x or 400x)
- LFD-200 Live Fiber Detector
- Connector cleaner

**OC-KIT-200**
- FOT-920: high-power germanium detector, and return loss option, 1310/1550 nm source, talk set1310 nm, VFL
- FLS-240 (635 nm model)
- FOMS Microscope (400x)
- LFD-200 Live Fiber Detector
- Connector cleaner

**OC-KIT-400**
- Two FOT-920 high-power germanium detectors, and return loss option, 1550/1625 nm source, universal adapter (talk set 1550 nm, VFL)

# Specifications [1]

| Power Meter | FOT-922 | FOT-922X | FOT-923 | FOT-923X | |
|---|---|---|---|---|---|
| Detector type | Ge (2mm) | GeX (2mm) | InGaAs (2mm) | InGaAs Ultra-High-Power | |
| Power level | – | – | – | P1 | P2 |
| Measurement range[2] (dBm) | 10 to –68 | 21 to –60 | 4 to –70 | 28 to –45 | 35 to –45 |
| Uncertainty[3, 4] (%) | ± 5 | ± 5 | ± 5 | ± 6[5] | ± 6.5[5, 6] |
| Wavelength range (nm) | 780 to 1625 | 780 to 1625 | 840 to 1650 | 980 to 1625 | 980 to 1625 |
| Resolution[3] (dB) | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Linearity[2, 3, 4] (dB) | ± 0.06 | ± 0.06 | ± 0.06 | ± 0.1[7] | ± 0.1[7] |

| FasTesT/Source/ORL[4] | -12C | -12D | -23B | -23BL | -34BL | -BR23BL | -BR34BL |
|---|---|---|---|---|---|---|---|
| Emitter type | LED | LED | LED | laser | laser | laser | laser |
| Wavelengths (nm) | 850 ± 30/ 1300 ± 30 | 850 ± 30/ 1300 ± 30 | 1310 ± 25/ 1550 ± 25 | 1310 ± 25/ 1550 ± 25 | 1550 ± 25/ 1625 ± 25 | 1310 ± 25/ 1550 ± 25 | 1550 ± 25/ 1625 ± 25 |
| Output power (dBm) | ≥ -23/-19 | ≥ -20/-21 | ≥ –25/–30 | ≥ –3.5/–5.5 | ≥ –5.5/–5.5 | ≥ –5/–7 | ≥ –7/–7 |
| Spectral width[8] (nm) | ≤ 50/80 | ≤ 50/80 | ≤ 80/80 | ≤ 5/5 | ≤ 5/10 | ≤ 5/5 | ≤ 5/10 |
| Stability (8 hours)[4, 11] (dB) | ± 0.15/± 0.15 | ± 0.15/± 0.15 | ± 0.1/± 0.1 | ± 0.1/± 0.1 | ± 0.1/± 0.1 | ± 0.1/± 0.1 | ± 0.1/± 0.1 |
| FasTesT range (dB) | 41 | 44 | 39 | 60 | 60 | 60 | 60 |
| Maximum deviation[9] (dB) | ± 0.5/± 0.5 | ± 0.5/± 0.5 | ± 0.35/± 0.5 | ± 0.35/± 0.5 | ± 0.35/± 0.5 | ± 0.35/± 0.5 | ± 0.35/± 0.5 |
| ORL range[10] (dB) | – | – | – | – | – | 65 | 65 |
| ORL uncertainty[3, 4, 10] (dB) | – | – | – | – | – | ± 0.4 | ± 0.4 |

| Talk Set Option[4] | -T02C | -T02BL | -T03BL |
|---|---|---|---|
| Emitter type | LED | laser | laser |
| Wavelength (nm) | 1300 ± 25 | 1310 ± 25 | 1550 ± 25 |
| Dynamic range (dB) | 30 | 45 | 45 |

| VFL Option[4] | |
|---|---|
| Emitter type | laser |
| Wavelength (nm) | 650 ± 10 |
| Output power (dBm) (typical) | –1 |

## General specifications

| | | | |
|---|---|---|---|
| Size (H x W x D) | | 22.7 cm x 11.1 cm x 6.4 cm | (8 7/8 in x 4 3/8 in x 2 1/2 in) |
| Weight | | 1 kg | (2.2 lb) |
| Temperature | operating | –10 °C to 50 °C | (14 °F to 122 °F) |
| | storage | –20 °C to 60 °C | (–4 °F to 140 °F) |
| Storage capacity | | 512 fibers | |
| Relative humidity | | 0 % to 95 % non-condensing | |
| Power | | - NiMH battery 8 hours (for light source and talk set)<br>- 6 hours to fully recharge when unit is off | |

## Standard accessories

User guide, AC adapter/charger, built-in NiMH batteries, 9 V alkaline battery, shoulder strap, Certificate of Calibration.

### Notes

1. At 23 °C ± 1 °C with FC/PC connector unless otherwise specified, with an offset nulling for the power meter.
2. At 1310 nm for FOT-922, FOT-922X, FOT-923; at 1550 nm for FOT-923X models.
3. Resolution, uncertainty and linearity are functions of input power; uncertainty is valid at calibration conditions.
4. After a warmup time of 20 minutes.
5. At all calibrated wavelengths except 1625 nm.
6. When exposed to an input power higher than 28 dBm, uncertainty is valid for a maximum period of 15 minutes.
7. Between –30 dBm and 0 dBm; ± 0.15 dB between 0 dBm and 28 dBm; ± 0.3 dB between 28 dBm and 35 dBm (for FOT-923X-P2 only); always referenced at 0 dBm.
8. As defined by Telcordia TR-TSY-000887, rms for lasers and FWHM for LEDs.
9. Maximum deviation between FasTesT and manual measurement, when loopback/side-by-side reference is taken. Maximum deviation is ± 0.45 dB/± 0.5 dB with Ultra-High-Power power meter models.
10. Specifications with FC/APC connector.
11. The stability is expressed as ± half the difference between the maximum and minimum values measured during this period.

## Ordering Information

FOT-92XXXX-XXXXXX-XXXXX-XXXXXXXX-XXXX

**Detector**
2 = Ge
2X = GeX
3 = InGaAs
3XP1 = InGaAs +28dBm
3XP2 = InGaAs +35dBm

**Source**
12C = 850/1300nm LED 50/125
12D = 850/1300nm LED 62.5/125
23B = 1310/1550nm LED
23BL = 1310/1550nm laser
34BL = 1550/1625nm laser
BR23BL = 1310/1550nm laser + ORL option
BR34BL = 1550/1625nm laser + ORL option
04BL = 1625nm laser
BR04BL = 1625nm laser + ORL option

**Connector**
EI-EUI-28 = UPC/DIN 47256
EI-EUI-76 = UPC/HMS
EI-EUI-89 = UPC/FC narrow key
EI-EUI-90 = UPC/ST
EI-EUI-91 = UPC/SC
EI-EUI-95 = UPC/E2
EA-EUI-28 = APC/DIN 47256
EA-EUI-89 = APC/FC
EA-EUI-91 = APC/SC
EA-EUI-95 = APC/E2

**Power Meter Adapter**
FOA-12 = Biconic
FOA-22 = FC/UPC or FC/APC
FOA-28 = DIN
FOA-32 = ST
FOA-54 = SC/UPC or SC/APC
FOA-96B = E-2000
FOA-97 = LX.5
FOA-98 = LC
FOA-99 = MU

**Options**
T02C = 1300nm LED Talk set
T02BL= 1310nm Talk set laser
T03BL = 1550nm Talk set laser
T02C/VFL = 1300nm LED Talk set + VFL
T02BL/VFL =1310nm Talk set laser +VFL
T03BL/VFL = 1310nm Talk set laser + VFL
NONE = none

*The type of connector selected on the fastest port will determine the power meter adapter type.
*Other connector adapters available upon request

**Example:** FOT-922-BR23BL-EI-EUI-89-T02BL-VFL-EI-EUI-89-FOA-22

## Safety

All emitters used for backreflection, FasTesT, light source and talk set comply with 21 CFR 1040.10, 1040.11 and IEC 60825-1:1993+A1:1997.
CLASS 1 LASER PRODUCT
CLASS 1 LED PRODUCT for IEC 60825 only
The FOT-920's VFL option is a Class 2 laser product. Actual output power level may be lower than specified on label. Refer to specifications for output power and wavelength combinations.

| | | | |
|---|---|---|---|
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