# FLX380 FlexTester*3*
## User Guide

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# Safety Information

⚠ **WARNING!** Use of procedures or adjustments other than those specified herein may result in hazardous radiation exposure.

| 1310/1550 nm OTDR/OLS port<br>1310/1490/1550 nm OTDR/OLS port<br>1310/1550/1625 nm OTDR/OLS port<br>1310/1550/1650 nm OTDR/OLS port | **This is a CLASS I LASER output**<br><br>⚠ CLASS 1 LASER PRODUCT |
| --- | --- |
| VFL port | **This is a CLASS II LASER output. Do not stare into beam**<br><br>LASER RADIATION<br>DO NOT STARE INTO BEAM<br>CLASS 2 LASER PRODUCT<br>WAVELENGTH: 610 to 690nm<br>MAX OUTPUT: 1.0mW<br>PULSE RATE: 2Hz, 50% DUTY<br>IEC 60825-1:2007-3 |

⚠ **WARNING!** Use only the specified AC adapter. Use of another type of AC adapter can damage the instrument and create the danger of fire and electrical shock.

⚠ **WARNING!** To avoid the danger of fire and electrical shock:

- Never use a voltage that is different from that for which the AC adapter is rated.
- Do not plug the unit into a power outlet that is shared by other devices.
- Never modify the power cord or excessively bend, twist, or pull it.
- Do not allow the power cord to become damaged. Do not place heavy objects on the power cord or expose it to heat.
- Never touch the AC adapter while your hands are wet.
- Should the power cord become seriously damaged (internal wiring exposed or shorted), contact the manufacturer to request servicing.

⚠ **CAUTION!** Do not run any tests or perform functions that activate an FLX380 laser unless fiber is attached to the corresponding OTDR port.

⚠ **CAUTION!** To avoid serious eye injury, never look directly into the optical outputs of fiber optic network equipment, test equipment, patch cords, or test jumpers. Refer to your company's safety procedures when working with optical systems.

**NOTICE:** An FLX380 contains no user serviceable parts. Except for changing batteries and cleaning optical ports, this instrument must be returned to NOYES or authorized agents for repair and calibration.

**IMPORTANT:** Proper care in handling should be taken when using any precision optical test equipment. Scratched or contaminated optical connectors can impact the performance of the instrument. It is important to keep the dust caps in place when the unit is not being used.

# General Information

This user's guide provides operating instructions for testing fiber optic networks with the FLX380 FlexTester*3* and assumes that you have basic knowledge about testing fiber optic networks. The purpose of this user's guide is to explain how to use and maintain your FLX380 FlexTester*3*. Please check our web site at www.AFLglobal.com, NOYES Test and Inspection for updates to this manual, software updates, and additional application information. If you have any questions about your FLX380 and recommended accessories, or if you need technical or sales support, please contact NOYES Customer Service.

## Contacting Customer Service

You may call NOYES Customer Service between 8 AM and 5 PM, United States Eastern Time.

Phone  800-321-5298

         603-528-7780

Fax     603-528-2025

Mail:   NOYESTechSupport@AFLglobal.com

## Recommended Accessories

Fiber optic test jumpers are required to connect an FLX380 to the fiber under test. Test jumpers must have the same core and cladding size as the fiber under test. The connector at one end of the test cable must mate with the appropriate optical port on the FLX380. The connector on the other end must mate with the fiber optic link under test.

Launch and Receive cables are required to measure the insertion loss and reflectance of the near-end and far-end connectors respectively, on the fiber link being tested. NOYES Fiber Rings may be used as Launch and Receive cables. Fiber Rings with a variety of lengths and connector styles are available from AFL. The table below helps in selecting the right test jumpers or cables for a test.

| To do the following | Use the following accessories to connect OTDR to the fiber under test | Use the following accessories to terminate far-end of the fiber under test |
|---|---|---|
| • Fault locate - find a break<br>• Measure link length | Test Jumper (1-2 m typical) | None |
| • Measure near-end connector loss<br>• Measure near-end connector reflectance | Launch cable * | None |
| • Measure both near-end connector loss and reflectance, and far-end connector loss and reflectance<br>• Measure end to end link loss and return loss | Launch cable * | Receive cable * |

* Such as NOYES 150 m Fiber Ring.

Minimum fiber ring length may be determined as follows:

• Determine the widest pulse width you expect to use for your testing application (e.g. 1 us).

• Divide the pulse width (in ns) by 10 ns/m, the approximate speed of light in glass fiber. This provides a length in meters.

• Multiply the length in meters by 3 to determine the minimum length of the launch fiber you should use.

# FLX380 FlexTester*3* Hardware Features

## Front Panel (Keys and Display)

The FLX380 front panel contains keys, indicator, and a display. The use of the [Power], [Menu], [Test], [Back], [Save], and [VFL] keys are fixed. The use of the soft function keys and arrow keys depends on which menu or editor submenu is displayed.

Function of each key is explained in the section titled 'Using FLX380 Keys'.

Display - Used to show the setup menus, test results, and saved files information

Arrow keys

Select key

Soft function keys

Back key

Test key

Menu key

Save key

Power key

VFL key

VFL Indicator - Illuminates when the VFL port is active

Left & Right Tab keys
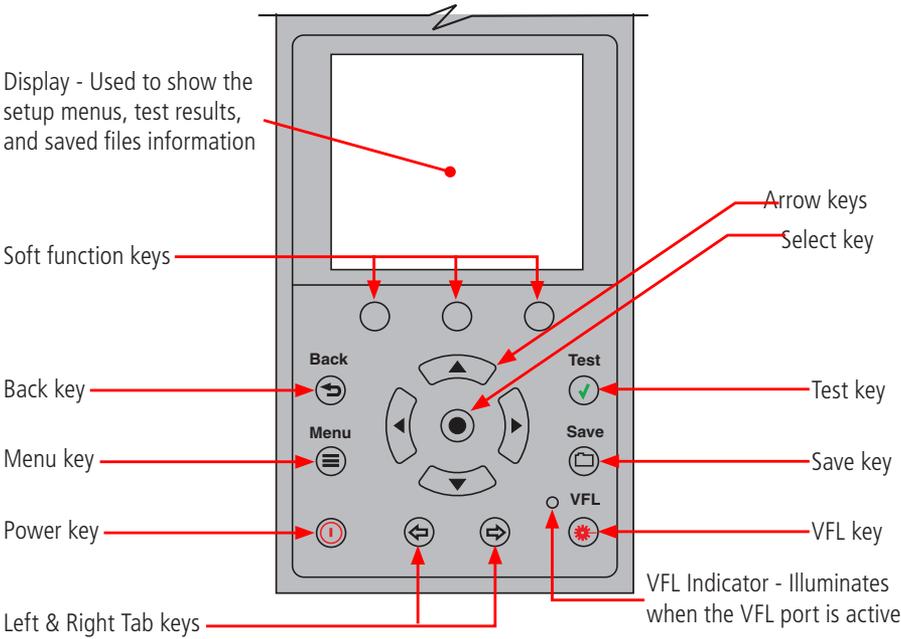
## Top Panel (Test Ports)

Red colored bar indicates the VFL test port

Blue colored bar indicates the OPM test port - Input for the standard optical power meter

OTDR/OLS test port
Silver bar - UPC ferrule
Green bar - APC ferrule

VFL      OPM      OTDR   OLS

OPM port
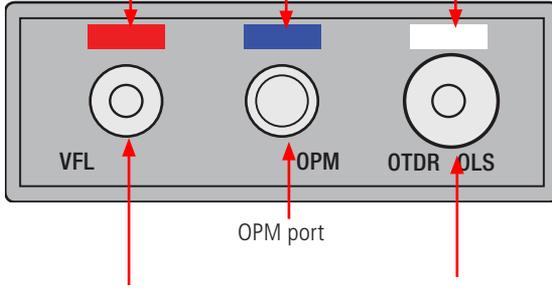
VFL port - This is a CLASS II LASER output.
Do not stare into beam!
The visual fault locator (VFL) port is a 650 nm (red) laser.

OTDR/OLS port
This is a CLASS I LASER output and input for FTTx PON meter (FLX380-303 and FLX380-304 models only)

## Side Panel (USB and Power Ports)

15V
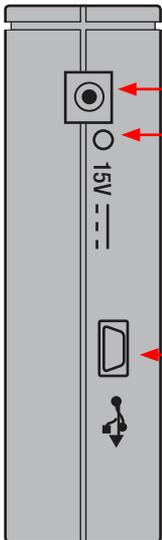
**Power port -** This is the interface for the AC power adapter/charger.

**AC/Charger indicator -** When ON, indicates that an AC adapter is connected to the FLX380.

- Red light - rechargeable battery is charging.
- Green light - rechargeable battery is fully charged.

**USB function port -** Allows connection to a PC for transferring stored test results.

# Front Panel Keys

The use of each key is summarized in the table below.

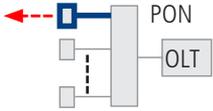| Key Symbol | Key Name | Key Function |
|---|---|---|
| ⏻ | **Power** | Press and hold (~1 second) to turn the FLX380 on or off. |
| ✳ | **VFL laser** | Visual Fault Locator (red laser)<br>ON - Press and hold (~1 second) LED will flash<br>ON - Press and hold (~1 second) LED will be solid<br>OFF - Press and hold (~1 second) LED should be OFF |
| ☰ | **Menu** | Press to access the Main Menu. |
| ⇦ ⇨ | **Left and Right Tab keys** | Press to display the next/previous available Menu Tab or Test View Tab. |
| (arrow keys) | **Arrow (Navigation) keys** | The arrow keys provide several functions:<br>• Main Menu: these keys are used to navigate menus and change setup parameters.<br>• Trace screen: in the Zoom mode these keys are used to adjust zoom. In the Move mode, Left and Right keys are used to move cursors. |
| ● | **Select** | This key provides several functions:<br>• Main Menu: press this key to display a submenu (if available).<br>• Trace screen: press this key to toggle the active cursor between A and B |
| ↩ | **Back** | Press once to return the previous screen.<br>Press one or more times, depending on which menu or editor submenu is displayed, to return to the Main Menu. |
| ✓ | **Test** | Press to start or stop a test. |
| 🗁 | **Save** | This key provides several functions:<br>• Save the currently displayed test results<br>• Set current folder<br>• Set current file name<br>• Review results |
| F1 | **Soft function keys (under display)** | The label shown in the display above each soft key (F1, F2 or F3) indicates the current function for that key. Press to select the indicated function. |

# FLX380 FlexTester*3* Models

The FLX380 FlexTester*3* is available in four models as indicated below:

| AFL No. | Description |
|---|---|
| FLX380-300 | 1310/1550 OTDR with integrated 1310/1550 OLS, OPM and VFL |
| FLX380-302 | 1310/1490/1550 OTDR with integrated 1310/1490/1550 OLS, OPM and VFL |
| FLX380-303 | 1310/1550/1625 nm OTDR / Live PON OTDR with integrated 1310/1550/1625 OLS, OPM, VFL, ServiceSafe™ live PON detection and PON Power Meter (US Patent 8,411,259) |
| FLX380-304 | 1310/1550/1650 nm OTDR / Live PON OTDR with integrated 1310/1550/1650 OLS, OPM, VFL, ServiceSafe™ live PON detection and PON Power Meter (US Patent 8,411,259) |

# FLX380 FlexTester*3* Setup

## OTDR Modes

| Test Mode | Network | Applications | Setup |
|---|---|---|---|
| FTTx PON OTDR – Test Customer Fiber Only |  PON OLT | PON power meter Customer fiber fault location (fiber may be live or dark). | Auto or Semi-Auto |
| FTTx PON OTDR – Test Through Splitter |  PON | End-to-end length, loss, ORL Splitter loss Feeder fiber fault location | Semi-Auto |
| Full Auto (point-to-point) | Long-haul, Metro, Access  | Fault location End-to-end length, loss, ORL Connection loss & reflection Splice loss | Auto |
| Real Time | Any | Short range fault location First connector check Fusion splice check Mechanical splice tuning | Semi-Auto |
| Expert | Any | For experienced users | Manual or Semi-auto |
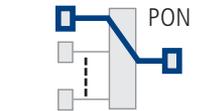
## Light Source and Power Meter Mode

| Test Mode | Application |
|---|---|
| SOURCE | Measure end-to-end loss or trace fibers using the tone feature and a NOYES Optical Fiber Identifier (OFI) |
| METER | Measure optical power or fiber loss |

# Main Menu

**Main Menu (FLX380-303/-304 model shown)**

**Notes:**

- FTTx PON OTDR combines functions of previous FTTx - In Service & FTTx - PON Construction modes
- FTTx PON Power Meter measures downstream PON power levels in live PONs
- Full Auto OTDR should only be used for point-to-point testing applications



Screen header.

Main Menu tabs.

Time.

Highlighted tab indicates the currently displayed Menu screen.

Battery icon.
- < 10%
- Fully charged

The currently highlighted Menu option.

Press USB to transfer saved results and download software upgrades (when OTDR is connected to a PC).

Press to open saved files.

Press to display the last OTDR trace viewed.

Soft key labels
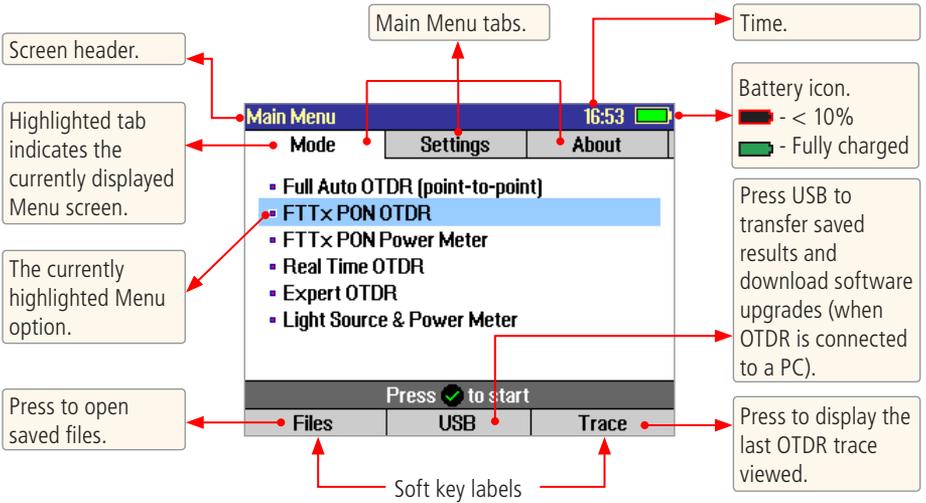
## Selecting a Test Mode

1. Press the Menu key to display the Main menu. The Mode menu screen (A) is displayed by default.

2. Use ▲▼ keys to highlight the desired Test Mode.

3. Press the Select - ⬤ key to display a settings submenu for the highlighted Test Mode. From this submenu:

Use ▲▼ keys to highlight the desired setup parameter.
Use ◀▶ keys to set/change the highlighted parameter.



Mode tab.

Highlighted test mode.

# General Settings

The General Settings screen contains [Language], [Date & Time], and [Distance Units] settings.

- [Language] - allows selecting a language from a list of available languages
- [Date & Time] - provides time & date setup functions
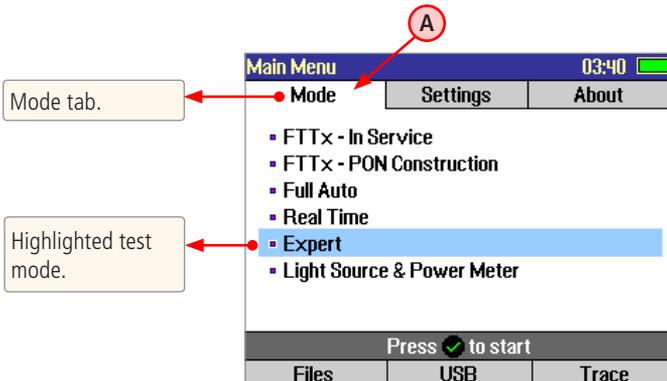- [Distance Units] - distance units of measurement setting impact how new and saved traces are displayed. Changes made to distance units will impact currently viewed results and future tests.

1. From the Main menu, display the Settings screen (**A**) using ⇦ ⇨ keys.
2. Using use ▲▼ keys navigate up/down the list to highlight the desired setup parameter.

Press ⏺ to display submenu.
Use ▲▼ to highlight the desired language.
Press Set or ⏺ when done.

Press ⏺ to display submenu.
Use ▲▼ to highlight the desired setup parameter.
Use ◄► keys to set/change date/time.
Press Set when done.

Use ◄► keys to change distance units.

Use ◄► keys to enable or disable launch quality check when an OTDR test is initiated.

Press [Select] to enable Bluetooth pairing and send files via Bluetooth (see section 'FLX380 FlexTester3 Bluetooth Interface' for details).

**A**

| Main Menu | | 16:51 |
|---|---|---|
| Mode | **Settings** | About |

- 🏳 Language...
- 🕐 Date & Time...
- 📐 Distance Units — Kilometers
- 📄 Launch Quality Check — **Enabled**
- 🔵 Bluetooth...

Press ✔ to start

| Files | USB | Trace |
|---|---|---|
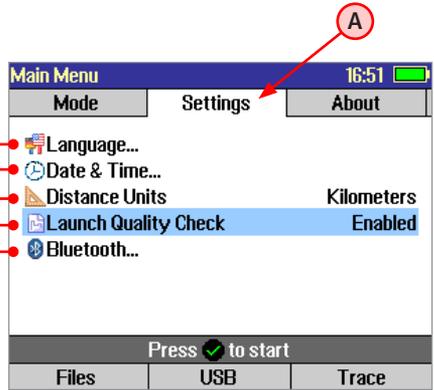
# Understanding OTDR Test Parameters

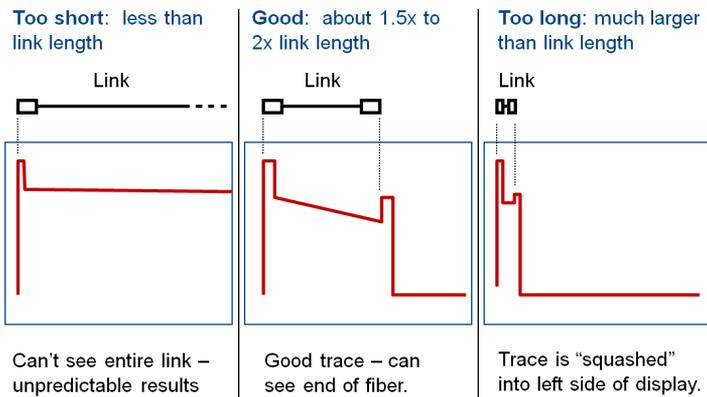| Parameter | Description |
|---|---|
| **Range** | The [Range] parameter determines the distance range of the full (unzoomed) trace. It also determines the distance between data points in the trace: the longer the range, the wider the data point spacing. We recommend selecting the shortest distance range that is longer than the fiber under test. For example, to test a fiber that is 1.5 km long, select the 3 km range.<br>Available [Range] values: 250 m, 500 m, 1, 1.5, 3, 6, 15, 30, 60, 120, 240 km. |
| **Pulse** | The FLX380 can operate using different pulse widths. Short pulse widths provide the shortest event and attenuation dead zones. Long pulse widths provide the range needed to test long fibers.<br>Available [Pulse] values: 5, 10, 30, 100, 300 ns, 1, 3, 10, 20 µs. |
| **Averaging** | The [Averaging] parameter determines the duration of a timed test and the number of trace averages performed. Longer averaging time produces a smoother trace.<br>Available [Averaging] values: 5, 10, 15, 30, 60, 90, 180 sec. |
| **Resolution** | Available: [Normal] or [High].<br>Set to [High] to see events that are close together; set to [Normal] for longer range. |

## Setting Test Parameters

### Range

Range should normally be set to a value longer than the known length of the fiber under test. Shorter values may be used to obtain a higher resolution trace of the initial portion of the fiber. If you do not know the length of the fiber, start with a quick scan using a long range to determine where the fiber end is, then re-scan with a more appropriate range setting.

**Note:** The FLX380 automatically determines the appropriate Range setting In Full Auto and FTTx PON OTDR – Test Customer Fiber Only modes.



Too short: less than link length — Link — Can't see entire link – unpredictable results

Good: about 1.5x to 2x link length — Link — Good trace – can see end of fiber.

Too long: much larger than link length — Link — Trace is "squashed" into left side of display.

## Pulse width

Narrow pulse widths provide better resolution. That is, they may be used to detect events which are close together. However, narrower pulse widths inject less optical energy into the fiber-under-test, resulting in a noisier trace (lower dynamic range). If a narrow pulse width is used on a long fiber, the trace may reach the noise floor before the end of the fiber is reached.



| Too narrow: | About right: | Too wide: |
|---|---|---|
| Trace "disappears" into noise floor. | Events can be seen and trace is smooth. | Can't resolve events |
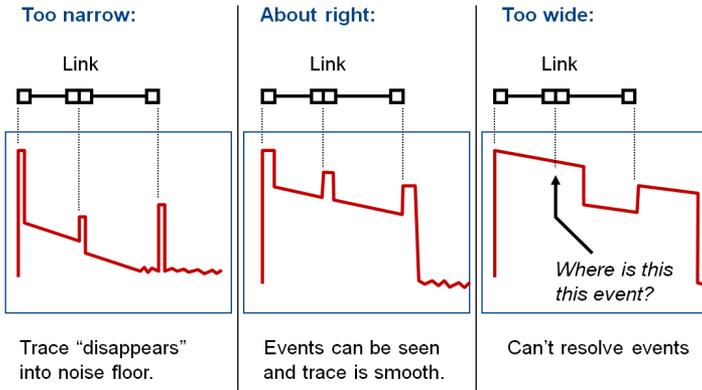
## Averaging

Longer averaging times improve dynamic range and can be used to compensate for some of the range lost when selecting a narrow pulse width. However, tests take longer to complete.



| Too few: | About right: | Too many |
|---|---|---|
| Trace is noisy – noise floor is too high. | Trace is smooth. | Trace is smooth but excessive test time. |
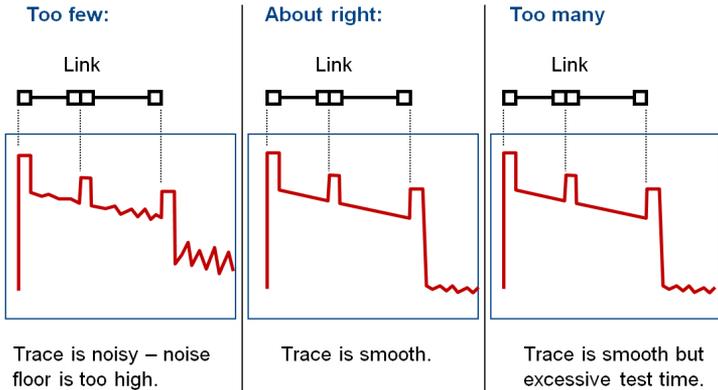
## Resolution

"Normal" resolution averages a higher number of traces than "High" resolution does in a given time frame by using a more coarse data-spacing. Events in the event table may be more precisely located using High resolution.

## FTTx PON Power Meter Settings (FLX380-303 and -304 only)

FLX380-303 and -304 support AFL's ServiceSafe™ capability (US patent 8,411,259), enabling both in-service and out-of-service OTDR testing and live PON power measurements to be made from a single port. In the FTTx PON Power Meter mode, the first screen displays received FTTx PON p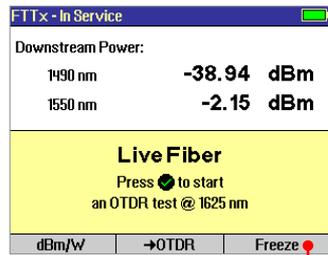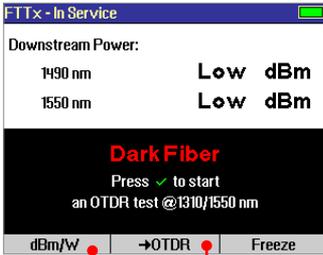ower at 1490 and 1550 nm. An OTDR test can be initiated from the PON Power Meter mode. On dark fibers, users can test at 1310/1550 nm. On live fibers, users can test at only 1625 or 1650 nm.



Press to toggle display of power in dBm or Watts (mW, uW, nW).

Press to display OTDR Test Settings screen.

[Freeze]/[Unfreeze] holds/resumes updating power readings continuously.

• If a live fiber is detected, the 'Live Fiber' screen is displayed (FLX380-303 or -304 only). Press the Test key to continue testing at 1625 or 1650 nm.

• If a live fiber is not detected, the OTDR will continue testing at the selected wavelengths.

In all other models, if users try to test a live fiber, a warning message is displayed and users are not allowed to continue the test.

### FTTx PON Power Meter Settings screen
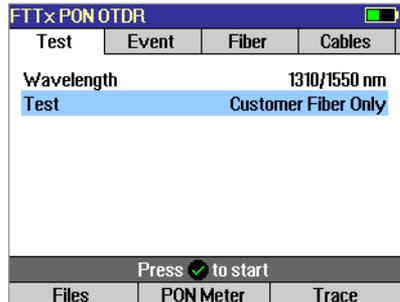


Press to display PON power meter screen.

This screen is used to configure the FTTx PON OTDR to:

• test the customer drop fiber only

• or test through the splitter

When Test **[Through Splitter]** is selected, the user must specify the PON split ratio. Available PON split ratio settings are 1x8, 1x16, 1x32, 1x64, and 1x128. If cascaded splitters are used and you wish to test through both, multiply together the larger numbers of the two cascaded splitters and use this value to select the PON split ratio.

Example: Cascaded 1x4 and 1x8: Multiply 4 and 8 = 32. Select PON split ratio of 1x32.

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## FTTx PON OTDR, Test Through Splitter Settings

In this test mode, the user may select the desired test wavelength(s) and set the [Range] and [PON] parameters.

From the Mode menu, display the FTTx PON OTDR screen.

Use ▲▼ keys to highlight the desired test setup parameter to set.

Use ◄► keys to set/change the highlighted parameter.

Use ◄► keys to select a single wavelength, dual or triple (if applicable) wavelengths.

Use ◄► keys to set the [Range] parameter to a value that is greater than the longest end-to-end distance in the PON from central office to a customer.

Use ◄► keys to set the [PON] parameter to a value that corresponds to the split ratio of the PON you are testing.
**Note:** Pulse width and averaging time are automatically set based on Wavelength, Range, and PON split ratio. Wider pulse widths provide a smoother trace. Selecting a longer range or higher PON split ratio will result in a wider pulse width.

| FTTx - PON Construction | | | |
|---|---|---|---|
| Test | Event | Fiber | Cables |

| | |
|---|---|
| Wavelength | 1550/1625 nm |
| Range | 30 km |
| PON | 1×64 |

Press ✓ to start

| Files | | Trace |
|---|---|---|

## Full Auto Test Mode Settings

Full Auto mode should be used only for testing point-to-point fibers. In this test mode, the user may select the desired test wavelength(s) while the [Range], [Pulse], [Averaging], and [Resolution] parameters are set by the FLX380.

1. From the Mode menu, display the Full Auto screen.

2. Use ◄► keys to select a single wavelength or dual or triple (if applicable) wavelengths.

Use ◄► keys to select the desired single wavelength or dual and triple (if applicable) wavelengths.

| Full Auto | | | |
|---|---|---|---|
| Test | Event | Fiber | Cables |

| | |
|---|---|
| Wavelength | 1310/1550 nm |

Press ✓ to start

| Files | | Trace |
|---|---|---|

## Real Time Test Mode Settings

In the Real Time test mode, the user may set the [Auto Setup] parameter to [Off] or [By Range].

- **[Off]:** Setting the [Auto Setup] parameter to [Off], allows the user to set the [Range], [Pulse], and [Resolution] parameters.

- **[By Range]:** Setting the [Auto Setup] option to [By Range], allows the user to set the [Range] and [Resolution] parameters while the [Pulse] parameter is set by FLX380.

1. From the Mode menu, display the Real Time screen.
2. Use ▲▼ keys to highlight the desired setup parameter.
3. Use ◀▶ keys to set/change the highlighted parameter.

Set the desired single test wavelength.

If set to [By Range], set [Range] and [Resolution] while the FLX380 sets the [Pulse] parameter.

If set to [Off], set [Range], [Pulse], and [Resolution] parameters.

| Real Time | | | |
|-----------|------|--------|---|
| **Test** | Fiber | Cables | |
| Wavelength | | | 1550 nm |
| Auto Setup | | | By Range |
| Range | | | 500 m |
| Pulse | | | 30 ns |
| Resolution | | | Normal |

Press ✓ to start

Files | | Trace

## Expert Test Mode Settings

In the Expert test mode, the user may set the [Auto Setup] parameter to [Off] or [By Range].

- **[Off]:** Setting the [Auto Setup] parameter to [Off], allows the user to set the [Range], [Pulse], [Averaging], and [Resolution] parameters.

- **[By Range]:** Setting the [Auto Setup] option to [By Range], allows the user to set the [Range] and [Resolution] parameters while the [Pulse] parameter is set by the FLX380.

1. From the Mode menu, display the Expert mode screen.
2. Use ▲▼ keys to highlight the desired test setup parameter.
3. Use ◀▶ keys to set/change the highlighted parameter.

Choose a single wavelength or dual or triple (if applicable) wavelengths.

If set to [By Range], set [Range] and [Resolution] while the FLX380 sets the [Pulse] parameter.

If set to [Off], set [Range], [Pulse], [Averaging], and [Resolution] parameters.

| Expert | | | |
|--------|-------|-------|--------|
| **Test** | Event | Fiber | Cables |
| Wavelength | | | 1310/1550/1625 nm |
| Auto Setup | | | By Range |
| Range | | | 120 km |
| Pulse | | | 3 us |
| Averaging | | | 60 sec |
| **Resolution** | | | **High** |

Press ✓ to start

Files | | Trace

## Event Threshold Settings

Event threshold settings may be modified in Full Auto, FTTx PON OTDR, and Expert OTDR test modes.
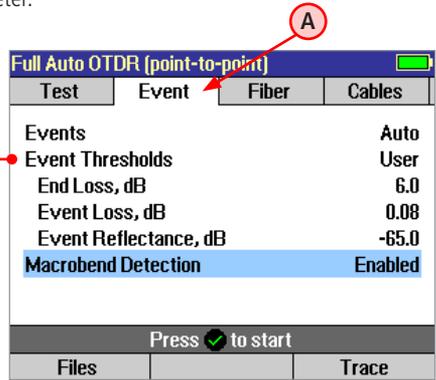
## Event Thresholds: Point-to-Point fiber tests

When [Events] is set to [Auto] in Full Auto, FTTx PON Construction – Test Customer Fiber Only, and Expert modes, [Event Thresholds] may be set to [Default] or [User].

1. From the Point-to-Point OTDR Test screen, display the Event menu (**A**) using ⇦ ⇨ keys.

2. Use ▲▼ keys to highlight the desired setup parameter.

3. Use ◀▶ keys to set/change the highlighted parameter.

When testing point-to-point fibers, Event Thresholds may be set to:
- [Default] – OTDR sets [End Loss], [Event Loss], and [Event Reflectance] thresholds to default values of 3.0 dB, 0.10 dB and -65.0 dB.
- [User] – User may increase or decrease end detection, loss detection and reflectance detection thresholds to more or less sensitive values.

| Full Auto OTDR (point-to-point) | | | |
|---|---|---|---|
| Test | Event | Fiber | Cables |

| | |
|---|---|
| Events | Auto |
| Event Thresholds | User |
| End Loss, dB | 6.0 |
| Event Loss, dB | 0.08 |
| Event Reflectance, dB | -65.0 |
| **Macrobend Detection** | **Enabled** |

Press ✓ to start

| Files | | Trace |
|---|---|---|

**Notes:**

- Event Loss and Reflectance threshold settings are used to determine whether or not a detected anomaly should be reported as an event and included in the event table, and if so how it should be classified by event type (e.g. as a reflective or non-reflective event).
- End Detection: Automatic event analysis declares the fiber end at the first event with event loss exceeding the [End Loss] threshold.
- Event Detection: A detected event is reported in the event table (see section titled 'Event Types') if measured event loss exceeds the [Event Loss] threshold, or measured event reflectance exceeds the [Event Reflectance] threshold. Types of events are described in section titled 'Event Types'.
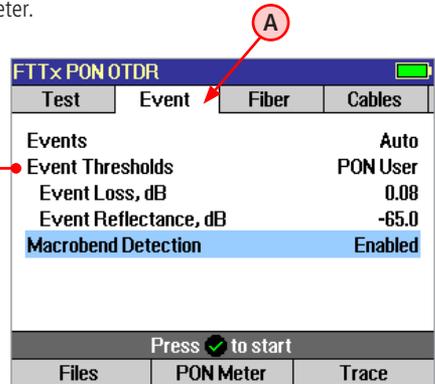
# Event Thresholds: Testing PON Through Splitter

When [Events] is set to [Auto] in Expert and FTTx PON Construction – Test Through Splitter modes, [Event Thresholds] may be set to [PON Default] or [PON User].

1. From the PON OTDR test screen, display the Event menu (A) using ⟵ ⟶ keys.

2. Use ▲▼ keys to highlight the desired setup parameter.

3. Use ◀▶ keys to set/change the highlighted parameter.

When testing PON through a splitter, Event Thresholds may be set to:
• [PON Default] – FLX380 sets [End Loss], [Event Loss], and [Event Reflectance] thresholds to default values of Auto, 0.10 dB and -65.0 dB.
• [PON User] –User may increase or decrease loss and reflectance detection thresholds to more or less sensitive values.

**FTTx PON OTDR**

| Test | Event | Fiber | Cables |
|------|-------|-------|--------|

| Events | Auto |
| Event Thresholds | PON User |
| Event Loss, dB | 0.08 |
| Event Reflectance, dB | -65.0 |
| **Macrobend Detection** | **Enabled** |

Press ✓ to start

| Files | PON Meter | Trace |
|-------|-----------|-------|

**Notes:**

• Event Loss and Reflectance threshold settings are used to determine whether or not a detected anomaly should be reported as an event and included in the event table, and if so how it should be classified by event type (e.g. as a reflective or non-reflective event).

• End Detection: Automatic event analysis declares the fiber end at the first event with event loss exceeding the [End Loss] threshold.

• Event Detection: A detected event is reported in the event table (see section titled 'Event Types') if measured event loss exceeds the [Event Loss] threshold, or measured event reflectance exceeds the [Event Reflectance] threshold. Types of events are described in section titled 'Event Types'.

• Macrobend Detection: When macrobend detection is [Enabled], a detected non-reflective event is reported as a macrobend if its loss at a long wavelength (e.g. 1550, 1625 or 1650 nm) exceeds its loss at a short wavelength (e.g. 1310 or 1490 nm).

## Fiber Menu Settings

The Fiber menu screen allows selecting the Fiber Type between default - [SMF-28e] and [User]

• [SMF-28e] - sets the default Index (Group Index of Refraction) and BC (Backscatter Coefficient) values to those of SMF-28e type fiber

• [User] - allows entering user selectable Index (Group Index of Refraction) and BC (Backscatter Coefficient) values

**Notes:**

• Using the default Index and BC values is generally recommended.

• Enter the [User] Index and BC values only if you know the specifications of the particular fiber you are testing and these specifications are significantly different from the default SMF-28e numbers.

**To Set Fiber Parameters**

1. From the current OTDR test mode menu, use ⇦ ⇨ keys to display the Fiber menu screen (A).

2. Use ▲▼ keys to highlight the desired parameter to set.

3. Use ◀▶ keys to change the highlighted parameter.

# Cables Menu Settings

**Note:** Launch and Receive cables are required to measure the insertion loss and reflectance of the near-end and far-end connectors respectively, on the fiber link being tested. See section titled "Recommended Accessories" for details and recommended launch and receive cable lengths.

**Launch Cable (Launch Cord)** - A test cable used to connect an OTDR to the near end of the link under test. To accurately measure the loss of the first connection to the fiber-under-test, determine the widest pulse width you expect to use (in ns), divide this by 10 ns/m to convert pulse width to its equivalent fiber length, then multiply by 3 to determine the minimum recommended launch fiber length.

**Receive Cable (Tail Cord) -** A test cable used to terminate the far end of the link under test. To accurately measure the loss of the last connection, use a receive cable at least as long as the recommended launch cable length.

To set Launch/Receive Cable parameter:

1. From the current OTDR test mode menu, use ⬅ ➡ keys to display the Cables menu screen Ⓐ.

2. Use ▲▼ keys to highlight the desired setup parameter.

3. Use ◀▶ keys to set/change the highlighted parameter.

This parameter may be set to the following options:
**None**
**Default 1**: 150 m fiber ring
**Default 2**: 500 m fiber ring
**Default 3**: 1000 m fiber ring
**Default 4**: 2000 m fiber ring
**User**: Adjust Launch / Receive Length parameter to match the length of the user-provided launch and/or receive cable(s).

| Test | Event | Fiber | Cables |
|------|-------|-------|--------|

| | |
|---|---|
| Launch Cable | User |
| Launch Length | 100.0 m |
| Receive Cable | Default 1 |
| Receive Length | 150.0 m |

Press ✓ to start

| λ | | Range |
|---|---|-------|

# Running OTDR Tests and Viewing Results

## To Start a Test

- Press the ✓ - Test key.

**Note:** After an OTDR test is started, it may take several seconds for the first results to appear and depending on setup, tens of seconds or even several minutes for tests to complete.

### To Stop a Test

- Press the ✓ - Test key. If pressed after a trace appears, it will stop the test, generate the event table (see Section titled Event Types) and show the partially completed trace.
- Press the ↩ Back key. The FLX380 stops the test and displays the setup menu.

### How can I tell if a test is running?

The FLX380 screen header will display the Test in Progress icon.

Test in Progress icon
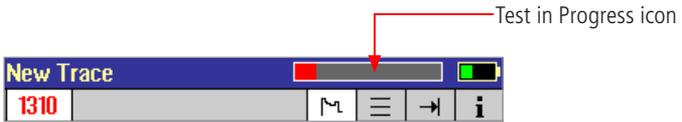


To display the desired Screen for viewing, use Left and Right Tab keys ⇦ ⇨

## Test Viewer Screens Description

| Icon | Name | Description |
|------|------|-------------|
| ⌐ı | Trace | Displays OTDR trace, A/B cursors, Loss and Distance between A and B cursors, and max reflectance between A and B locations. |
| ≡ | Event | Displays OTDR trace and for each detected event: location (in current distance units), type, reflectance (dB), and insertion loss (dB). Press ▲▼ to jump to next / previous event. |
| →| | Summary | Displays end-to-end link summary (length, loss, and ORL). |
| i | Information | Displays test settings, test cable lengths, fiber parameters, and event thresholds. |

# Launch Quality Check

The FlexTester*3* OTDR features an optional launch quality check when an OTDR test is initiated.

To perform the launch quality check:

1. From the Main menu, display the Settings screen (A) using ⇐ ⇒ keys.

2. Using ▲▼ keys navigate up/down the list to highlight the Launch Quality Check parameter (B).

3. If set to [Disabled], use ◄► keys to enable - display [Enabled].

4. With the launch quality check option enabled, press the Test (✓) key to start an OTDR test.

5. The FLX380 will assess the loss and reflectance at the OTDR's connection to the launch ring or fiber-under-test.

6. If excess loss or reflectance is detected, the OTDR displays the 'Poor Launch Quality' screen (C).

7. From the 'Poor Launch Quality' screen (C) the user may chose to perform one of the following:

   – Cancel a test by pressing Cancel (D) soft key or Back key (⤺).

   – Clean connectors, then repeat the launch quality check by pressing Re-check soft key (E) or Enter key (●).

   – Continue testing without checking and cleaning the connection by pressing Test soft key (F) or Test (✓) key.
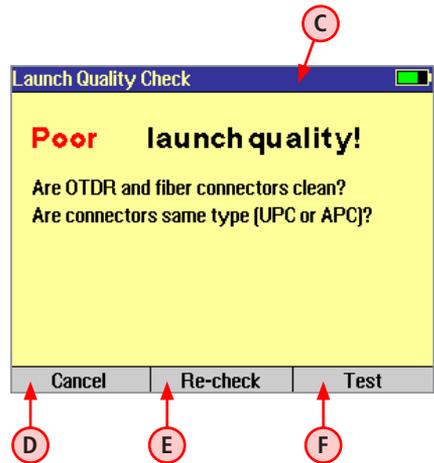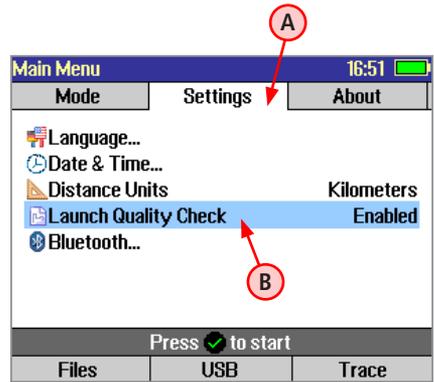
# Trace Screen Features

The illustration below and table on the next screen describe the Trace screen features (example trace below includes a launch and receive cable).

Trace Screen displays OTDR trace, A/B cursors, Loss, Distance, and max reflectance between A and B cursors.

Event Table displays OTDR event measurements.

Summary screen displays end-to-end link measurements.

File name (cable name + fiber number), or "New Trace" if file has not been saved.

Information screen displays OTDR setup parameters, launch and receive cable data, and event thresholds.

Test Wavelengths (RED is current).

Grid units display dB/div on vertical axis and distance/div on horizontal axis.



C001-001
1310 1550 1625
13.1 dB, 510 m /div
A  -0.0434  B  1.6698  A→B  1.7132  km
Reflectance  -51.403  Loss  1.044  dB
Wave  ☐ Zoom  Rezoom

A and B cursors.

Fiber under test

Trace graph (RED is current).

Launch cable
**Note**: this region is only present if the network was defined (in the Cables screen) to include a Launch cable. The width of the shaded region is based on the length of the launch cable specified in the Cables screen.

Receive cable
**Note:** this region is only present if the network was defined (in the Cables screen) to include a Receive cable. The width of the shaded receive region is based on the length of the receive cable specified in the Cables screen.



C001-002
1310 1550 1625
6.5 dB, 510 m /div
A  0.0006  B  1.5223  A→B  1.5217  km
Reflectance  -52.584  Loss  1.496  dB
Wave  ⊠ Zoom  Unzoom

Soft key labels

B cursor location (active cursor is highlighted).

A cursor location.

Maximum Reflectance between A and B cursor.

For multi-wavelength tests, press to toggle active trace.

Distance between A and B cursor.

2-point Loss between A and B cursor.

Press to Unzoom or Rezoom.



C001-002
1310 1550 1625
6.5 dB, 510 m /div
A  0.0006  B  1.5223  A→B  1.5217  km
Reflectance  -52.584  Loss  1.496  dB
Wave  ⊠ Zoom  Unzoom

Press to toggle Zoom and Move mode. In Move mode, the key label will be displayed as [ ☐ Zoom]. In Zoom mode, the key label will be displayed as [ ☒ Zoom].

## Event Table Screen Features

Event Table is automatically generated when the [Events] are set to [Auto] in the OTDR Event settings display.

Trace Graph.

Event Table displays: event location in user selected units, event type, reflectance and loss in (dB), and loss/distance (dB/km).

For multi-wavelength tests, press to toggle active trace.

| C001-002 | | | | | | |
|---|---|---|---|---|---|---|
| 1310 | 1550 | 1625 | | 〽 | ≡ | → i |

| No | Location km | Type | Refl. dB | Loss dB | Fiber dB/km |
|---|---|---|---|---|---|
| 1 | 0.0021 | ⊢ | -52.6 | 0.342 | -- |
| 2 | 0.6000 | ⌐ | -- | 0.728 | -- |
| 3 | 0.9160 | ⌐ | -61.4 | 0.066 | -- |
| 4 | 1.5248 | →| | -59.6 | -- | -- |

● Wave | ☐ Zoom |

## Event Types

| Icon | Event Type | Description |
|---|---|---|
| ⊢ | Start | The start of the fiber under test. |
| →| | End | The end of the fiber under test. |
| ＼ | Non-reflective Loss Event | An event with measurable loss but very small or unmeasurable reflectance, typically caused by a fusion splice, fiber break, or macrobend (with macrobend detection disabled). |
| ／ | Non-reflective Gainer Event | An event with 'negative loss,' which can occur in OTDR traces where two fibers with very different backscatter coefficients are spliced or connected. A gainer will be seen as a normal (positive loss) event when tested from the other end of the fiber. The true loss of the event is approximately equal to the average of its loss measured from each end of the fiber under test. |
| ⌐ | Reflective Event | An event with measurable loss and reflectance, typically caused by a connection or mechanical splice. |
| ∩ | Macrobend | A non-reflective loss event with significantly higher loss at longer wavelengths (1550, 1625, 1650 nm) than seen at shorter wavelengths (1310, 1490 nm). Typically caused by a sharp bend in the fiber. |
| ⟫ | Splitter | PON splitters are detected only when Event thresholds are set to PON Default or PON User and a high loss event (> 6 dB) is detected which is determined not to be the end of the fiber. |
| ▮▯▯ | Group Start Event | First event in multiple event group. Reports loss of entire group. Reports reflectance of first event in group if reflectance of next event can be independently measured. Reports max reflectance of grouped events if next reflectance cannot be independently measured. |
| ▯▮▯ | Group Middle Event | Grouped events may contain zero, one, or more middle events. Loss of middle events is included in group loss reported in the group start event. Reports reflectance if it can be independently measured. |
| ▯▯▮ | Group End Event | Last event in a multiple event group. Loss of last event is included in group loss reported in group start event. Reports reflectance if it can be independently measured. |

# Summary Screen Features

Summary screen displays:
trace graph, fiber under test [Length] in user selected units, [Loss] and [ORL] in (dB)

For multiple-wavelength tests, press to toggle the wavelength and display [Length], [Loss] and [ORL] test results for that wavelength
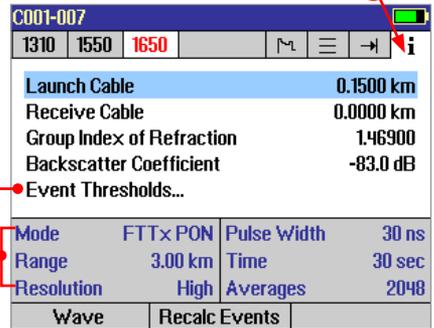
**C001-002**

| 1310 | 1550 | 1625 |

**Length: 1.5226 km**

| Loss | 1.447 dB |
|------|----------|
| ORL | 51.8 dB |

Wave
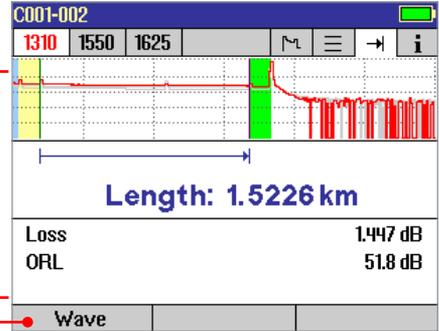
# Information Screen Features

The information screen displays how the test was created.

- From the test viewer, use ⇐ ⇒ keys to display Information screen **(A)**.
- Use ▲▼ keys to highlight the desired setup parameter.
- Use ◀▶ keys to change the highlighted setup parameter (except [Event Thresholds…] parameter. You may change these parameters to correct locations in the Event Table after the test is complete
- When done, press [Recalc Events] to recalculate the Event Table.

**(A)**

- Press ⦿ key to display submenu **(B)**
- Use ▲▼ keys to highlight the desired parameter
- Use ◀▶ keys to change the highlighted parameter
- When done, press [Recalc Events] to recalculate the Event Table

These fields show the current test data

**C001-007**

| 1310 | 1550 | 1650 |

| Launch Cable | 0.1500 km |
|--------------|-----------|
| Receive Cable | 0.0000 km |
| Group Index of Refraction | 1.46900 |
| Backscatter Coefficient | -83.0 dB |
| Event Thresholds... | |

| Mode | FTTx PON | Pulse Width | 30 ns |
|------|----------|-------------|-------|
| Range | 3.00 km | Time | 30 sec |
| Resolution | High | Averages | 2048 |

Wave | Recalc Events

**(B)**

Event thresholds can be adjusted and macrobend detection enabled or disabled before recalculating events.

**Event Thresholds**

| Group | User |
|-------|------|
| End Loss [dB] | 3.0 |
| Event Loss [dB] | 0.10 |
| Event Reflectance [dB] | -65.0 |
| Macrobend Detection | Enabled |

Recalc Events
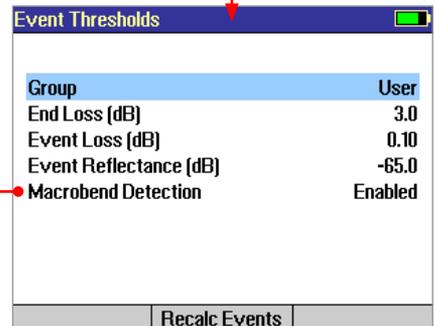
# Light Source and Power Meter Operation

### Light Source Operation

After enabling the Light Source & Optical Power Meter test mode or turning the [Laser] option On, let the laser stabilize for approximately five minutes.

1. Use ▲▼ keys to highlight the desired light source setup parameter.
2. Use ◀▶ keys to change the highlighted parameter.

**Laser:** Turn the current light source laser on or off.

**Mode:** Set up the light source for CW (continuous wave), 1 kHz, 2 kHz, 270 Hz, or 330 Hz tone, or Wave ID operation.
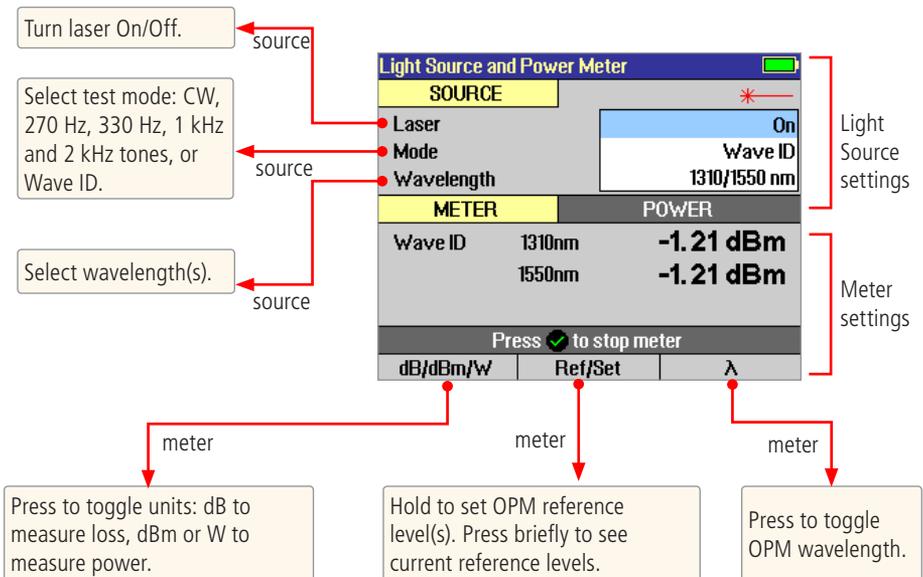
**Wavelength:** Set up the light source for the desired wavelength operation.

### Optical Power Meter Operation

1. Press the [Ref/Set] soft key to see the Reference value (in dBm) for several seconds, then display will return to dB mode.
2. To set a new OPM reference level, hold the [Ref/Set] key until you see REFERENCE [SAVED]. This takes about one second.
3. When you release the [Ref/Set] soft key, the unit should display a loss value of about 0.0 dB.
4. You can sample and hold live POWER or LOSS readings by pressing the Test key. While a held value is shown you will see POWER [ STOPPED] or LOSS [STOPPED].
5. Press the Test key again to return to the live data view.

Use ▲▼ to navigate source menu
Use ◀▶ to change source menu items

Turn laser On/Off.

source

Select test mode: CW, 270 Hz, 330 Hz, 1 kHz and 2 kHz tones, or Wave ID.

source

Select wavelength(s).

source

**Light Source and Power Meter**

| SOURCE | |
|---|---|
| Laser | On |
| Mode | Wave ID |
| Wavelength | 1310/1550 nm |

| METER | POWER |
|---|---|
| Wave ID  1310nm | **-1.21 dBm** |
| 1550nm | **-1.21 dBm** |

Press ✓ to stop meter

| dB/dBm/W | Ref/Set | λ |

Light Source settings

Meter settings

meter

meter

meter

Press to toggle units: dB to measure loss, dBm or W to measure power.

Hold to set OPM reference level(s). Press briefly to see current reference levels.

Press to toggle OPM wavelength.

**Wave ID Mode Feature**

Wave ID is a powerful feature which cuts multi-wavelength insertion loss test time by 80% and eliminates user setup errors.

1. When Source Mode is set to Wave ID and a single source wavelength is selected, the wavelength is transmitted with a wavelength indicator. A Wave ID-compatible Power Meter will detect and synchronize its wavelength calibration factor to the transmitted wavelength, eliminating the need for Source and Power Meter users to coordinate their wavelength settings.

2. When Wave ID is enabled with two or three wavelengths selected, the Source alternately sends each wavelength with its wavelength indicator. A Wave ID-compatible Power Meter detects and synchronizes to each wavelength in turn, enabling simultaneous, multi-wavelength measurements, cutting test time in half or more, eliminating the need for Source and Power Meter users to coordinate their wavelength settings, and avoiding measurement errors due to mismatched Source and Power Meter wavelength settings.

3. When Ref Set is pressed and held in Wave ID mode, references are set at each of the Wave ID wavelengths.
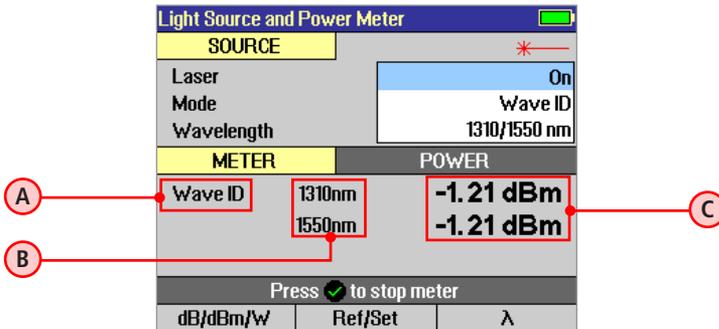


**A**

**Modulation indicator** automatically detects and reports modulation on the received optical signal, as follows:
**Wave ID**: Indicates single or multi-wavelength Wave ID signal received. The displayed wavelength(s) are determined from the received Wave ID signal.
**270 Hz**: Indicates received optical signal is a 270 Hz fiber-identifying tone.
**330 Hz**: Indicates received optical signal is a 330 Hz fiber-identifying tone.
**1 kHz**: Indicates received optical signal is a 1 kHz fiber-identifying tone.
**2 kHz**: Indicates received optical signal is a 2 kHz fiber-identifying tone.
**Blank**: Received optical signal is live traffic or an unrecognized test signal.

**B**

**Wavelength**
Wave ID detected or user-selected Power Meter wavelength calibration factor. When Wave ID is detected, the user may not change the wavelength value.

**C**

**Power or Loss Measurement**
Displays measured power in dBm or Watts, or displays loss relative to the previously set reference level. When the Power Meter detects multi-wavelength Wave ID, wavelength and measured power or loss is displayed simultaneously at each of the received wavelengths.

# Saving and Reviewing Test Results

## File Manager System

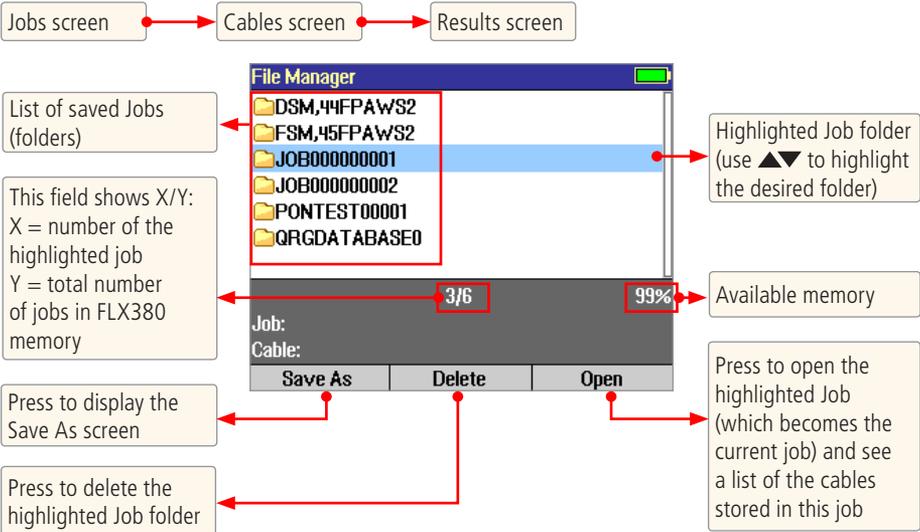The FLX380 File Manager system consists of four screens as follows:

| Screen | Description |
|--------|-------------|
| **Jobs** | Lists the Jobs (folders) stored in the FLX380 internal memory. Use to open or delete the highlighted job folder. |
| **Cables** | Lists the Cables (folders) in the currently open Job folder. Use to open or delete the highlighted cable folder. |
| **Results** | Lists the OTDR trace (.SOR) files and OPM results (.ATD) files in the currently open Cable folder. Use to open (view) or delete the highlighted results file. |
| **Save As** | Lists the current job, the current cable, and the fiber number that will be used the next time a group of traces is saved. Use to save the 'new' results created by the most recent test, or the results most recently opened (recalled from memory). |

To display File Manager, press the [Files] soft key on the Main Menu screen or when it appears.

## File Manager – Jobs Screen

Depending on the prior settings, the File Manager may be displayed as [Jobs], [Cables], or [Results] screen. To display [Jobs] screen (top level menu screen in the FLX380 File Manager):
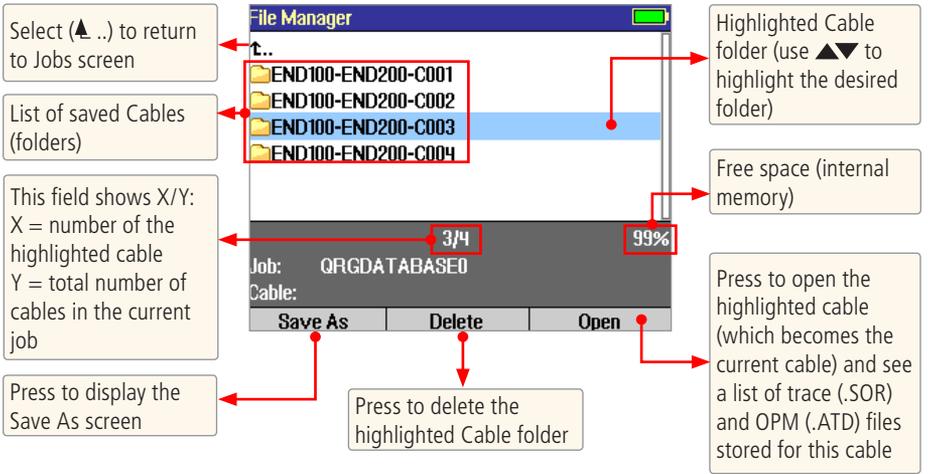
• Press the [Files] soft key.

• If the [Cables]/[Results] screen is displayed, highlight the (⬆ **..**) symbol at the top of the [Cables]/ [Results] screen.

• Press the [Select] soft key - ⦿ to display [Jobs] screen.



Jobs screen → Cables screen → Results screen

List of saved Jobs (folders)

This field shows X/Y:
X = number of the highlighted job
Y = total number of jobs in FLX380 memory

Press to display the Save As screen

Press to delete the highlighted Job folder

Highlighted Job folder (use ▲▼ to highlight the desired folder)

Available memory

Press to open the highlighted Job (which becomes the current job) and see a list of the cables stored in this job

## File Manager – Cables Screen

Depending on the prior settings, the File Manager may be displayed as [Jobs], [Cables], or [Results] screen. To display [Cables] screen perform the following.
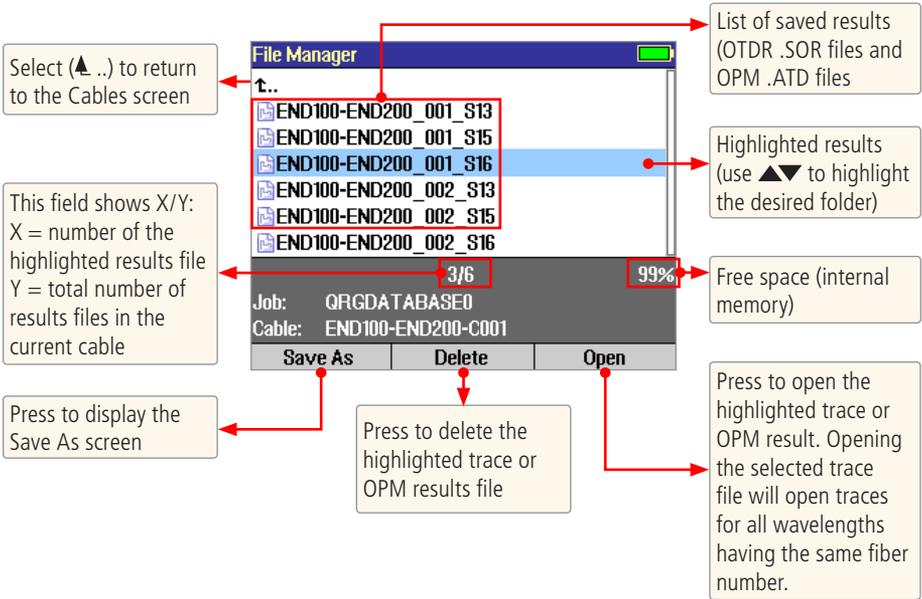
- Press the [Files] soft key.
- If the [Jobs] screen is displayed, highlight the desired job, and then press [Select] - ◉ to display the [Cables] screen.
- If the [Results] screen is displayed, highlight the (⬆ **..**) symbol at the top of the [Results] screen, and then press [Select] - ◉ to display the [Cables] screen.

Select (⬆ ..) to return to Jobs screen

List of saved Cables (folders)

This field shows X/Y:
X = number of the highlighted cable
Y = total number of cables in the current job

Press to display the Save As screen

Press to delete the highlighted Cable folder

Highlighted Cable folder (use ▲▼ to highlight the desired folder)

Free space (internal memory)

Press to open the highlighted cable (which becomes the current cable) and see a list of trace (.SOR) and OPM (.ATD) files stored for this cable

**File Manager**

⬆..

📁 END100-END200-C001
📁 END100-END200-C002
📁 **END100-END200-C003**
📁 END100-END200-C004

3/4          99%

Job:      QRGDATABASE0
Cable:

| Save As | Delete | Open |

## File Manager – Results Screen

Depending on the prior settings, the File Manager may be displayed as [Jobs], [Cables] or [Results] screen.

• Press the [Files] soft key.

• If the [Jobs] screen is displayed, highlight the desired job, and then press [Select] - ⬤ to display the [Cables] screen.

• From the [Cables] screen, highlight the desired cable, and then press [Select] – ⬤ to display the results files for the selected cable.

List of saved results (OTDR .SOR files and OPM .ATD files

Select (▲ ..) to return to the Cables screen

**File Manager**

↟..
END100-END200_001_S13
END100-END200_001_S15
END100-END200_001_S16
END100-END200_002_S13
END100-END200_002_S15
END100-END200_002_S16

3/6    99%

Job:     QRGDATABASE0
Cable:   END100-END200-C001

Save As          Delete          Open

Highlighted results (use ▲▼ to highlight the desired folder)

This field shows X/Y:
X = number of the highlighted results file
Y = total number of results files in the current cable

Free space (internal memory)

Press to display the Save As screen

Press to delete the highlighted trace or OPM results file

Press to open the highlighted trace or OPM result. Opening the selected trace file will open traces for all wavelengths having the same fiber number.
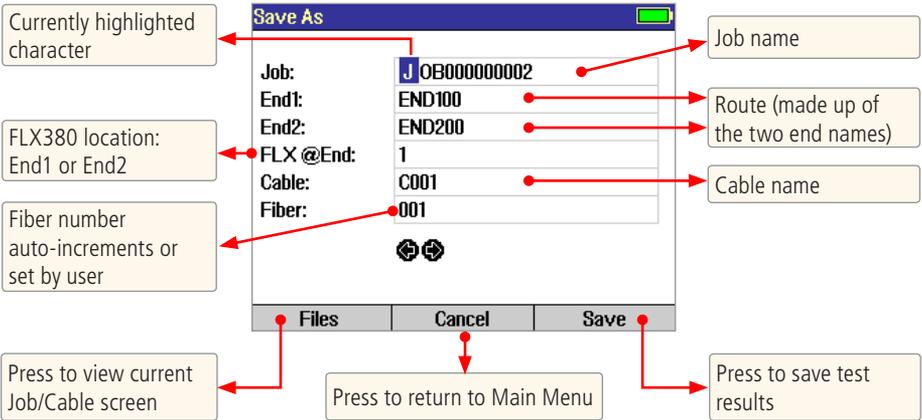
# File Manager – Save As Screen

The [Save As] screen allows the user to save current test results and create new Jobs/Cables as needed. This screen allows the user to review and change test IDs each time test results are saved.

**To save test results**

1. Display the [Save As] screen by pressing the [Save] key or the [Save As] soft key when it appears.
2. When the [Save As] screen is displayed, edit Job, End1, End2, Cable ID and Fiber number as needed:
   - Use ◀▶ keys to highlight any character position within the Job/End1/End2/Cable name fields and Fiber number field.
   - Use ▲▼ keys to change the highlighted character.
   - Use the ⇦ ⇨ keys to select the previous or next field.
3. If the Folder name is edited to a name that already exists, then pressing the [Save] (soft or hard) key will save the current test results in this folder and make this folder current.
4. If the Job/End1/End2/Cable name and Fiber number are edited to the name and number that already exist in the current folder, then pressing the [Save] key will cause the FLX380 to display "Overwrite file?".
5. If the Job/End1/End2/Cable name is edited to a new name, then pressing the [Save] key will cause the FLX380 to create a new folder of this name.
6. When done, press the [Save] soft key.

**Note:** This is the only way to create new folders!

| | |
|---|---|
| Currently highlighted character | Job name |
| FLX380 location: End1 or End2 | Route (made up of the two end names) |
| Fiber number auto-increments or set by user | Cable name |

**Save As**

| Job: | JOB000000002 |
|---|---|
| End1: | END100 |
| End2: | END200 |
| FLX @End: | 1 |
| Cable: | C001 |
| Fiber: | 001 |

Files    Cancel    Save

Press to view current Job/Cable screen

Press to return to Main Menu

Press to save test results

## Creating New Cables (folders) Using the Save As Screen

New Folders are created in the File Manager - [Save As] screen.
See section above 'File Manager - Save As screen'.

## Selecting a Cable as the Current Cable (folder)

1. Access the File Manager - [Cables] screen.

2. Use ▲▼ keys to highlight the desired cable.

3. Press either [Select] key or [Open] soft key to make the highlighted cable current.

## Saving Test Results

Test results are stored on the FLX380 Internal Drive. Saved test results can be viewed, printed and analyzed on a PC using TRM® (Test Results Manager) software supplied with the FLX380.

• OTDR results are saved as industry standard .SOR files

• OPM Results are saved in .ATD file format and may be merged with OTDR results using TRM.

### Save Results to an Existing Job/Cable

To save the currently displayed test results to an existing job/cable, perform the following steps:

1. Once a test is complete, press the [Save] key. The [Save As] screen will be displayed.

2. From the displayed [Save As] screen, press the [Save] key to save test results with the currently displayed Job/End1/End2/Cable name and Fiber number.

### Saving Results to a New Job/Cable

To save test results to a new job/cable, use the File Manager - [Save As] screen.

1. Once a test is complete, press the [Save] key to display the [Save As] screen.

2. As needed, edit Job/End1/End2/Cable name and Fiber number as described in the section titled 'File Manager - Save As Screen'.

3. When done, press either soft or hard [Save] key.

## Opening Files (Reviewing Saved Results)

1. Access the File Manager - [Files] screen by pressing the [Files - F1] soft key.

2. Use ▲▼ keys to highlight the desired file.

   – OPM results are labeled with "OPM" icon

   – OTDR results are labeled with "OTDR" icon

3. Press the [Open - F3] soft key to display test results.

## Deleting Jobs/Cables/Results

1. Access the File Manager.
2. Use ▲▼ keys to highlight the desired job/cable/results file.
3. Press the [Delete] soft key to delete the highlighted job/cable/results file.

## Transferring Files to a PC via USB

To transfer files from your FLX380 to a PC using a USB cable, perform the following:

1. Connect your FLX380 to a PC using the supplied mini-USB to USB cable. Make sure the mini-plug is fully seated in your FLX380.
2. Press the USB soft key on the FLX380's main menu.
3. On your PC, open My Computer. A new removable drive named [FLX X:] will appear, where 'X:' is the drive letter assigned to your FLX380.
4. Under [FLX X:] you should see two folders: [RESULTS] and [SOFTWARE].
5. Copy the [RESULTS] folder to your PC.
6. Under [RESULTS] you will see: [TRACES]
7. Under [TRACES] you will see all of the folders containing OTDR traces or OPM results.

**Note:**

Before removing the USB cable connecting your FLX380 to your PC, or pressing the [Cancel] soft key on the USB screen, left click the Safely Remove Hardware icon in the Start bar of your PC, then left click the [Safely remove USB Mass Storage Device – Drive (X:)] message, where 'X' is the drive letter assigned to your FLX380.

# FLX380 FlexTester*3* Bluetooth Interface

FlexTester*3* series include a Bluetooth interface, which can be used to transfer files to a PC, mobile phone, tablet, or other Bluetooth-enabled device. To transfer files, the FLX380 must first be "paired" to the device to which it will send files.
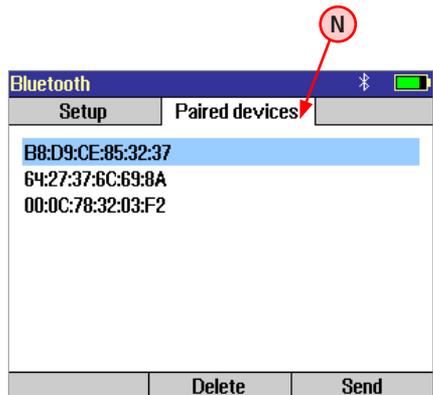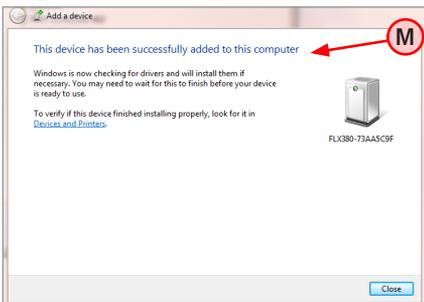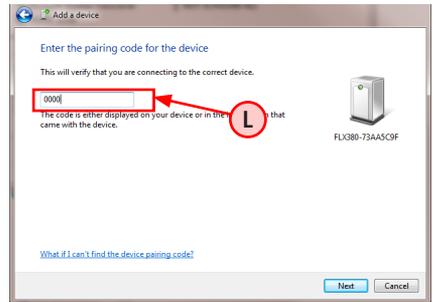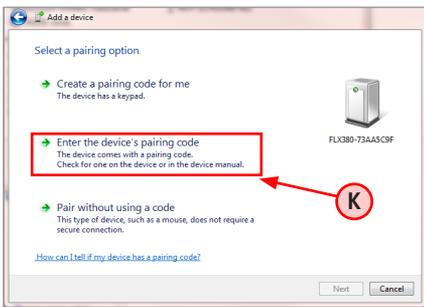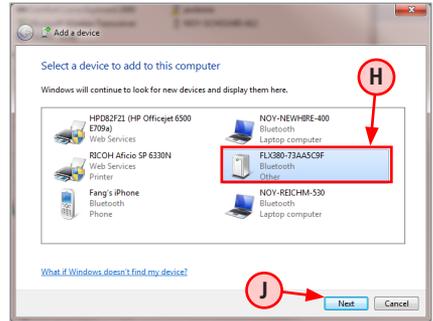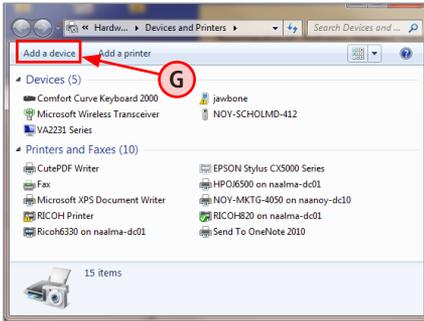
## Pairing FLX380 to Another Bluetooth Device

To pair the FLX380 to another Bluetooth device and send files:

1. From the Main menu, display the Settings screen (A) using ⇦ ⇨ keys.
2. Use ▲▼ keys to navigate up/down the list and highlight the Bluetooth parameter (B).
3. Press Enter key (●) to display the Setup screen (C).
4. If Bluetooth interface is [Off] (D1), use ▲▼ keys to highlight the [Bluetooth] option, then use ◄► keys to change the [Bluetooth] option to [On] (D2).
5. [Visibility] option is used to make device discoverable by other Bluetooth devices for pairing.
6. If Bluetooth [Visibility] is set to [Hidden] (E), use ◄► keys to change to [Shown to all] (F). Switch it back to Hidden after pairing is complete.
7. When [Bluetooth] is set to [On] and [Visibility] is set to [Shown to all], device is ready for Bluetooth pairing.
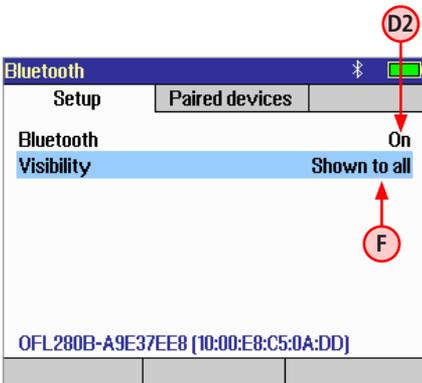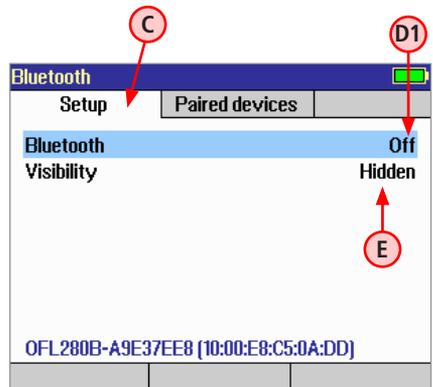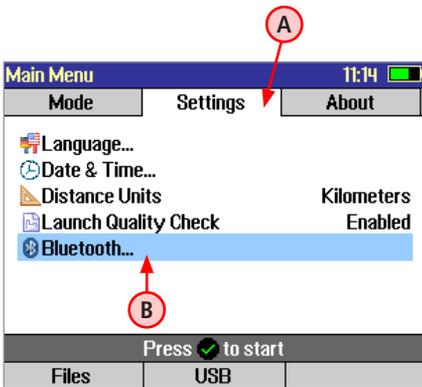
8. Using mobile phone or PC/laptop, search for FLX380. On a Windows PC (Windows 7 in examples below), select Start key, then Devices and printers, then select [Add a device] **G**.

9. FLX380 device with Bluetooth interface should be displayed. Highlight this device **H** and click Next **J**.

10. Select 'Enter the device pairing code' **K** and click Next.

11. Enter "0000" 4-digit pairing code **L**, click Next and verify the device is successfully added **M**.

12. If device is paired successfully you should see its MAC address on the paired devices list on the FLX380 Paired devices screen **N**, which is accessed from the Setup screen **C** by pressing ⟨⟨ ⟩⟩ keys.

### Sending Files from FLX380 to Paired Bluetooth Device

Once your FLX380 has been "paired" to the device to which it will send files or from which it will receive files, you may proceed with transferring files.

1. From the Bluetooth Setup screen (see section 'Pairing FLX380 to Another Bluetooth Device' for details), display the Paired devices screen (**A**) using ⇦ ⇨ keys.
2. Use ▲▼ keys to navigate up/down the list and Select MAC address of the receiving device in FLX380 Paired devices list.
3. Press Send (**B**).
4. After initiating file transmission, "File Sending…" (**C**) message is shown.
5. If file transmission was successful "File sent" (**D**) is shown. Press OK.
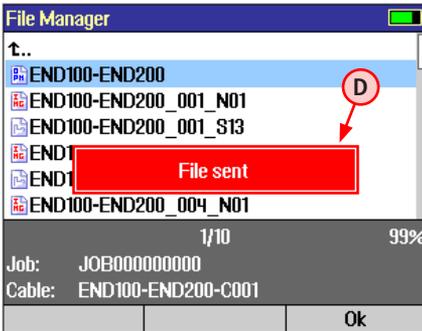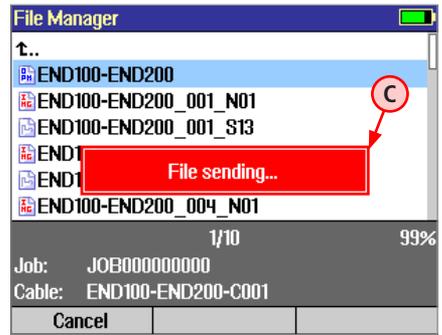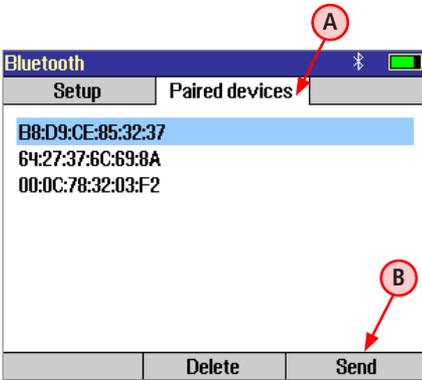
# Maintenance Tips

## Dust Caps

**To open dust cap**
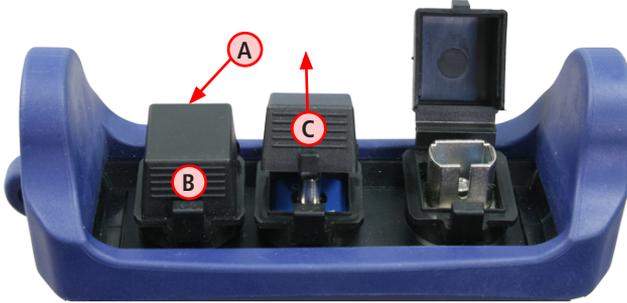


- Place your middle finger on the back side of the dust cap you need to open - (A).
- Place your thumb in the middle section of the dust cap front - (B) .
- Press your thumb in upward direction to open the dust cap - (C).

**Caution:** do not twist the dust cover trying to open it: this will make an adapter to come loose. Verify that connector adapter is tight.

# Clean Test Cables and Fiber-under-Test (FUT)

It is important to keep connector end-faces on the launch and receive cables and those on the Fiber Under Test (FUT) clean, to ensure accurate measurements and operation.

**IMPORTANT!** Inspect optical connectors after cleaning to ensure cleaning was successful and to verify the end-face is not damaged (cracked, pitted, etc.).

**CAUTION!** Never view a live fiber. Laser radiation is harmful to eyes.

Follow your company's approved cleaning procedures.

# Clean Optical Ports

**CAUTION!** Before conducting the following procedures be sure to have the OTDR turned OFF.

## Cleaning the OTDR/OLS and VFL optical ports without removing adapters

### AFL One-Click Cleaner method

- Remove the protective dust cover from the tip of the One-Click Cleaner.
- Insert the tip of the One-Click Cleaner into the optical port adapter and gently press the body of the One-Click Cleaner until an audible "click" is heard.
- Remove the One-Click Cleaner.

### AFL FCC2 fluid and CCT stick method

- Lean a can of FCC2 back (30°), press the button on FCC2 to fill the well.
- Dip a CCT stick into the well of the FCC2 to dampen the tip with optical cleaning fluid.
- Place the damp tip over the ferrule to be cleaned.
- Rotate the tip clockwise 10 revolutions while applying varying pressure to create a gentle pumping action where the tip contacts the ferrule.
- Discard the CCT stick after using both tips.

## Cleaning the optical ports with adapters removed

### To access the OTDR Port

- Rotate the adapter base counterclockwise approximately four times.
- Pull the adapter directly out away from the universal adapter mount to expose the ferrule.

### To access the VFL Port

- Unscrew the adapter counterclockwise and pull the adapter straight out to expose the ferrule.

### To access the OPM Port

- Unscrew the adapter cap from the adapter cap mount.

### Cleaning the Exposed Ferrule or the OPM port

Use lint-free optical cleaning wipes such as AFL FiberWipes and optical quality cleaning fluid such as AFL FCC2 connector cleaning fluid.

**Note:** if using isopropyl alcohol (IPA), be sure to use 99% pure IPA that has not been contaminated.

1. Dampen a portion of the wipe with the cleaning fluid.
2. Gently wipe the exposed ferrule (OPM port) starting with the wet section of the wipe and pulling it to the dry section.

**Note:** Starting with the wet cleaning and finishing in the dry improves cleaning action, reduces static buildup, and finishes with the end-face dry.

**Cleaning the adapters**

**Method 1:**

1. Insert a Cletop adapter cleaning stick into the sleeve of the adapter and rotate 10 times.

2. Remove.

3. After cleaning the adapter, replace the adapter over the ferrule; centering it onto the alignment pin.

4. Tighten the adapter base.

**Method 2:**

1. Use a can of filtered compressed air (held vertically), blow out any contaminates from the adapter.

2. After cleaning the adapter, replace the adapter over the ferrule; centering it onto the alignment pin.

3. Tighten the adapter base.

# Recharging Batteries

You may charge the batteries while the FLX380 is switched on or off by attaching an AC power adapter.

• Plug the AC adapter/charger into a standard wall outlet.

• Connect the AC adapter/charger to the Power port located on the FLX380 side panel.

• The [AC/Charger] indicator on the side panel will turn on - Red.

• Charge batteries until the [AC/Charger] indicator turns Green.

# Repair and Calibration

## Prepaid Calibration Plans

AFL recommends annual calibrations on NOYES Test and Inspection products. ISO certification also requires calibrations. Annual calibrations performed at NOYES calibration facilities ensure that you are getting the most out of your test equipment and that your equipment is operating at NOYES specifications.

### Cal Plans

Cal plans save you money by offering two annual calibrations at a discounted price. In addition to the annual calibrations, Cal plans offer a convenient calibration expiration email service that notifies you when your equipment is due for calibration. Express calibration services get your equipment back to you quickly to minimize downtime. Prepaid Cal plans include access to the NOYES product knowledge base, which gives you access to white papers and answers to frequently asked questions. Get additional savings with access to preferred customer promotions on NOYES products.

### Cal Plus Plans

Cal Plus plans offer the same services as the Cal plans with the addition of a two year extended warranty. If your test equipment is found defective NOYES will repair or replace your test equipment at no additional charge. All repairs are done with genuine NOYES specified parts by a trained NOYES repair technician. Save money with free return shipping from the repair facility back to you on all extended warranty repairs. Also, save money with free replacement of worn accessories (limited to adapter caps, power cords and batteries).

Please contact customer service for a return authorization number prior to sending your NOYES test equipment in for repair or calibration.

### USA Repair and Calibration services

Please contact NOYES customer service for a return authorization number prior to sending your NOYES test equipment in for repair or calibration.

AFL, NOYES Test and Inspection Division
16 Eastgate Park Road
Belmont, NH 03220
603-528-7780 or 800-321-5298

### Europe Repair and Calibration services

Fujikura Europe Ltd. is an Authorized European Repair and Calibration facility for NOYES Test and Inspection products from AFL and should be contacted directly for service.

Fujikura Europe Ltd.
C51 Barwell Business Park
Leatherhead Road
Chessington, Surrey, KT9 2NY
+44 (0) 208 240 2020

## How to View Version Information

From the Main Menu, use [⇦ ⇨] keys to open the [About…] menu and display the FLX380 software version number.

**Note:** It is helpful to have the FLX380 version number if you need to contact NOYES Customer Service or Technical Support.

# Warranty

### Warranty Terms and Conditions

All NOYES Test and Inspection products are warranted against defective material and workmanship for a period of (1) one year from the date of delivery to the end user. Extended Warranty starts at the end of the standard (1) one year warranty period. Any product that is found defective within the warranty period, will (at the discretion of NOYES) be repaired or replaced. Warranty will be voided if the product has been repaired or altered by other than an authorized NOYES repair facility or which have been subject to misuse, negligence, or accident. In no case shall NOYES liabilities exceed the original purchase price.

### Standards Compliance Information

The FLX380 has been designed and tested to comply with the relevant sections of any applicable specifications including full compliance with all essential requirements of the applicable EU Directives.

### Returning Equipment

To return equipment, please contact NOYES to obtain additional information and a Service Request (S.R.) number. To allow us to serve you more efficiently, please include a brief description specifying the reasons for the return of the equipment.

AFL, NOYES Test and Inspection Division
16 Eastgate Park Road
Belmont, NH 03220
800-321-5298 or 603-528-7780

**Thank you for choosing NOYES Test and Inspection**