![VeEX logo - The Verification Experts]

• FX82
• FX83
• FX84

# FX8x Series

# Contents

# 1.0   About This User Manual

This manual is suitable for novice, intermediate, and experienced users and is intended to help successfully use the features and capabilities of the FX82/83/84/85/86/87 family of optical testers. It is assumed that the user has basic computer experience and skills, and is familiar with optical fiber testing, telecommunication concepts, terminology, and safety.

Every effort was made to ensure that the information contained in this user manual is accurate. Information is subject to change without notice and we accept no responsibility for any errors or omissions. In case of discrepancy, the web version takes precedence over any printed literature. The content in this manual may vary from the software version installed in the unit.

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# 2.0  Safety Information



Safety precautions should be observed during all phases of operation of this instrument. The instrument has been designed to ensure safe operation; however, please observe all safety markings and instructions. Do not operate the instrument in the presence of flammable gases or fumes or any other combustible environment. VeEX Inc. assumes no liability for the customer's failure to comply with safety precautions and requirements.



**Optical Connectors**

The test platform displays a laser warning icon when the laser source is active to alert the user about a potentially dangerous situation. Make sure that optical sources are inactive before connecting fiber to the test set to avoid skin or eye damage, or damage to the unit. It is recommended to:

- Deactivate the laser before connecting or disconnecting optical cables or patchcords.

- Never look directly into an optical patchcord or an optical interface (e.g. CFP, CFP2, CFP4, QSFP+, SFP+, SFP, OTDR, LS, VFL) while the laser is enabled. Even though optical transceivers are typically fitted with Class 1 lasers, which are considered eye safe, optical radiation for an extended period can cause irreparable damage to the eyes.

- Never use a fiber microscope to check the optical connectors when the laser source is active.

**Electrical Connectors**

Telephone lines may carry dangerous voltages. Always connect the electrical test ports to known test interfaces which carry low level signals.

# 3.0  Introduction

The FX82/83/84/85/86/87 optical testers are a series of lightweight, handheld and rugged devices with wide functionality. They are used for installing and maintaining point-to-point or point-to-multipoint fiber networks.

The operator is assumed to have received basic training in fiber optics and related testing and measurement practices.

*For GPON measurements, please use the FX80 test unit (described in a separate manual).*

## 3.1  FX82/83/84/85/86/87 Features

Platform**:**

- High Contrast Monochrome LCD—visible outdoors and backlight for indoor or low light conditions
- Handheld, lightweight rugged design
- Protective rubber boot with tilt bail stand
- Splash and dust resistant design
- Non-volatile storage for saved test results
- Up to 1920 single wavelength records
- Up to 960 tri-wavelength PON records
- Date/Time Stamp of test results
- Programmable thresholds with Pass/Fail
- USB (wired) or optional Bluetooth (wireless) interface for test result transfer
- Rechargeable Li-Polymer battery pack
- Micro-USB, 5 Volt DC charger

Software support**:**

- LTSync PC software for offloading test results and basic pdf/csv report generation
- Fiberizer Desktop Plus and Cloud versions for transfer of saved results from PC for advanced post processing
- Fiberizer Mobile for USB tethering applications

## 3.2 FX82/83/84/85/86/87 Test Functions

**Optical Power Meter (OPM):**

- Wavelength range 800 to 1650 nm

- Wide dynamic range InGaAs detector

- WaveID auto wavelength recognition (when paired with compatible VeEX OLS)

- Universal connector adapters

**Optical Light Source (OLS):**

- Dual, Tri and Quad wavelength options

- Single-mode: 1310, 1490, 1550, and 1625nm

- Quad CWDM per ITU-T G.694.2 grid

- Tunable DWDM per ITU-T G.694.1 grid

- Modes: CW or Modulated (270/330/1000/2000 Hz)

**Visual Fault Locator (VFL):**

- 650 nm laser with 1 mW output

- Universal 2.5 mm ferrule

**Optical Talk Set (OTS):**

- Full duplex, digital communication over single fiber under test

- 2.5 mm headset with volume control
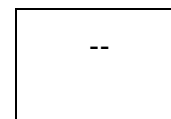
# 4.0  Overview

*Table 1 FX8x Product Series*

| Model | FX82 | FX83 | FX84 | FX85 | FX86 | FX87 |
|---|---|---|---|---|---|---|
| **Main Test Application** | OPM | OLS | Uni-directional OLTS | Bi-directional OLTS/ORL | CWDM OLS | DWDM TLS |
| **Fiber Type** | SM/MM | SM | SM | SM | SM | SM |
| **OPM** | (Included) | -- | (Included) | (Included) | -- | (Optional) |
| **OPM with LS** | -- | -- | (Included) | (Included) | -- | -- |
| **OPM with DWDM<** | -- | -- | -- | -- | -- | (Optional) |
| **Light Source** | -- | Up to 4 fixed λ | Up to 4 fixed λ | Up to 4 fixed λ | 4 fixed λ per G.694.2 | C-ban tunable in 50 GHz steps per G.694.1 |
| **VFL** | (Optional) | (Optional) | (Optional) | -- | -- | -- |
| **ORL** | -- | -- | -- | SM | -- | -- |
| **Talk Set** | -- | -- | -- | (Optional) | -- | -- |
| **Bluetooth** | (Optional) | -- | (Optional) | (Optional) | -- | (Optional) |
| **VeriPHY™ (not currently available)** | -- | -- | -- | Remote unit | -- | -- |

| | | | |
|---|---|---|---|
| (Green) | *Included* | (Yellow) | *Optional* |

| -- | *Not supported* |
|---|---|

## 4.1    Hardware Control Elements

*Colors, buttons, and screen fonts can insignificantly vary in different software and hardware versions.*

The FX8x series devices have the same front panel. The type and number of optical ports at the top depends on the modifications and functions. The FX82 test unit is shown below.

*FX82 front view*



### 4.1.1   Optical ports

Optical ports (up to 4) are located at the top of the device.

### 4.1.2   Front buttons

**|Power|:** Turn device ON/OFF. Press and hold the button for 3 seconds. The display will initially show the VeEX logo, current date and time, and current mode of operation.

**|MODE|:** Select the mode of operation, depending on the device.

**|Shift/Enter|:** Begin editing a parameter and confirm choice when setting up the device; execute the selected action.

**|Up|, |Down|:** Change the selected parameter.

### 4.1.3   Button combinations

**|Shift/Enter|+|Up|**: Save measurement results.

**|Shift/Enter|+|Down|**: Enter **Instrument Settings** mode.

**|Shift/Enter|+|Mode|**: Turn backlight ON/OFF.

**|F1|**, **|F2|**, **|F3|**: Context-defined, the function indicated at the screen bottom.


### 4.1.4   Service Ports

The micro-USB port located on the left side of the device is used for charging and communication with a PC using the LTSync software.

The headphone jack (3.5 mm) located on the left side of the device is used for Talk Set (optional for FX85 only).

# 5.0 Getting Started

Before using the device for the first time, fully charge the battery and set the local date and time.

## 5.1 Battery Charging

Every unit is equipped with a built-in, rechargeable Li-Polymer 3A, smart charge battery and it is partially charged upon delivery. However, VeEX recommends charging the battery to full capacity before using the test unit for the first time.

*The device can be operated with the AC/ DC adaptor plugged in.*

When the test unit is plugged into AC/DC power, the Plugged icon (⊕) appears on the top left corner of the display. When the device is operating on the internal battery, the Battery icon (▌) appears.

*It is recommended to charge the battery at room temperature to preserve its life and to obtain maximum charge.*

To charge the test unit, connect the AC/DC adaptor supplied with the unit to the micro-USB service port located on the left side of the device. The battery charging time depends on the battery condition and ambient temperature. Use only the cables provided with the device to charge the battery.

While the battery is charging, the LED indicator on the front panel will be orange. When the battery is fully charged, the LED indicator will be green provided the test unit is powered ON. The LED will turn off when the unit is powered OFF.

*The Li-Polymer battery is designed for maximum safety. However, the battery may explode, leak, or catch fire when:*

- *It is exposed to high temperatures or fire.*
- *It is opened or dismantled.*

An auto-off feature, configured in the **Settings** mode, powers down the unit on selected time: OFF, 15, 30, or 45 minutes.

### 5.1.1 Battery Replacement

Battery replacement in the field is not authorized or permitted. The unit must be returned to an authorized VeEX service center or partner for repair.
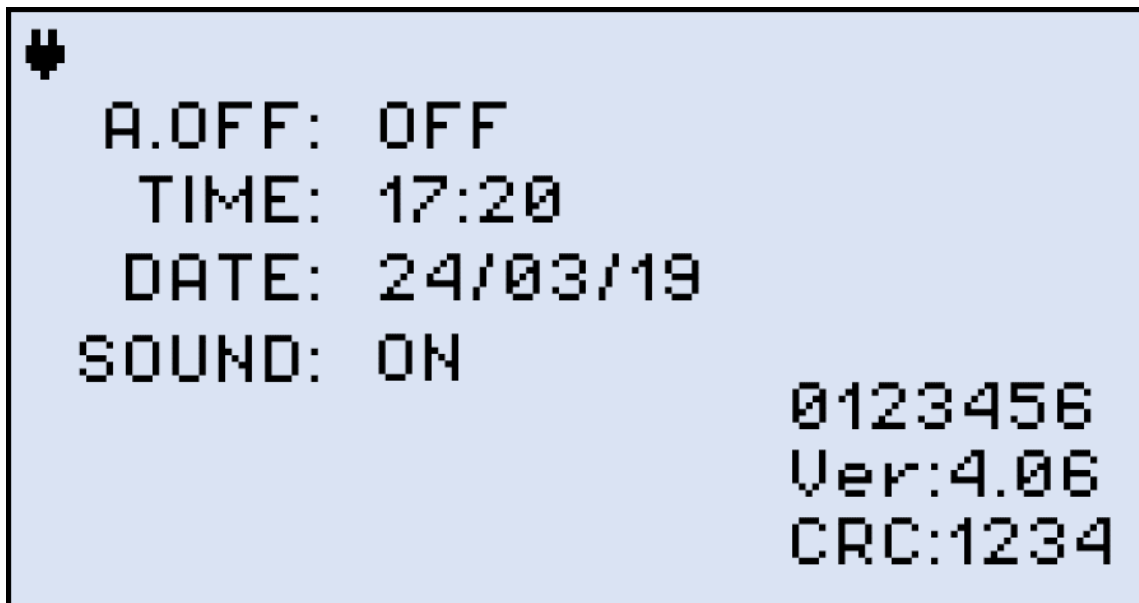
## 5.2    Setting Date and Time

Set the device date and time before attempting to save any measurement results:

To configure settings:

1.  Power ON the device by pressing and holding the **|Power|** button for 3 seconds;

2.  Press **|Shift/Enter|**+**|Down|** to enter the **Settings** mode. The following parameters can be set:

    *   Auto Shutdown mode
    *   Time
    *   Date

    The test parameter currently selected and available to edit will flash.

*Instrument Setting screen*



3.  Press **|Up|** and **|Down|** to select the parameter to edit.

4.  Press **|MODE|** to select the field to edit, then change the value, if necessary, by pressing **|Up|** and **|Down|**.

5.  Press **|Shift/Enter|** to save the date and time settings.

## 5.3    Resetting the Device

To reset the device:

1.  Disconnect external power supply from the device.

2.  With the device **OFF**, press the red **|Power|** button and hold it for at least 20 seconds.

    After the device reboots, set the date and time again (see Section ).

*As a result of the reset, the threshold values and reference values will be lost. These values must be reset. Also, ZERO level operation must be performed again. For more information, see Sections* 6.1. Setting ZERO Level *and* 6.2.1. Setting Power Reference Level*.*

*The reset DOES NOT erase any previously stored measurement data.*

# 6.0   Optical Power Measurement

This mode is available for FX82, FX84, FX85, and for FX87 as an option. The screenshots shown below are from FX82. The other devices are equipped with a Light Source controlled by the **|F2|** button which shows as **LASER** on their screens. The Broadband OPM is an InGaAs detector with a wavelength range from 850 to 1650nm. The displayed power readings can be absolute (dBm and watts) or relative (dB).

**PM (PM1, PM2, PM3):** use the OPM test mode to measure any incoming optical signal level (CW, 270, 330, 1000, or 2000 Hz) between the wavelength range of 850-1650 nm. Select a calibrated wavelength that matches the incoming source wavelength.

> ***For best results, wait 15 minutes after the device is powered ON.*** *This is especially advisable in environments with extreme temperature changes.*
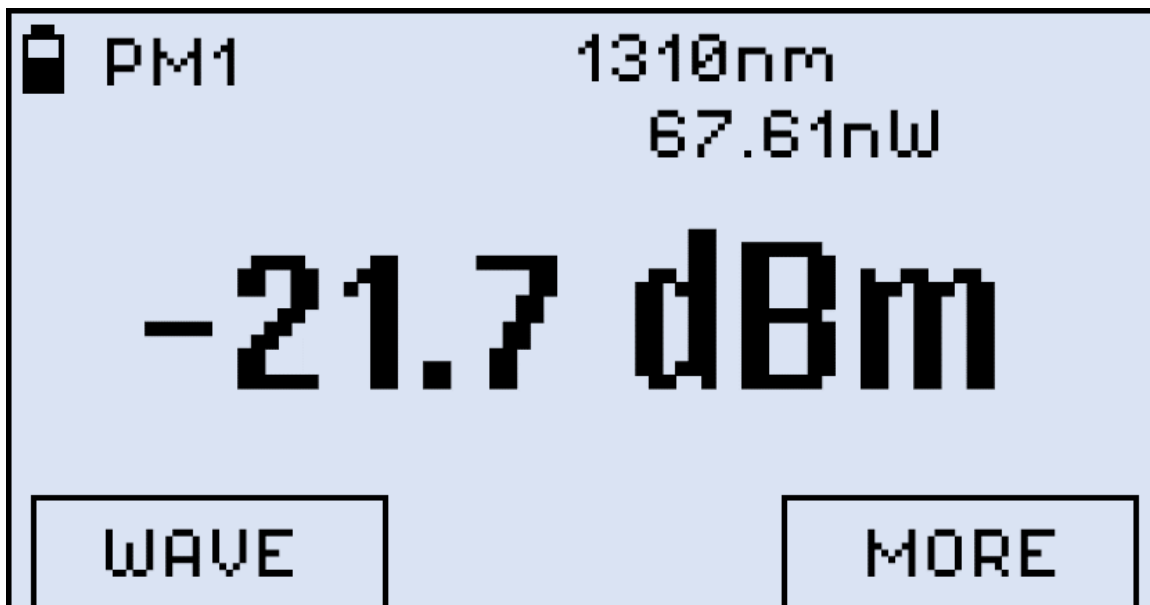
## 6.1   Setting ZERO Level

> ***The ZERO level MUST be set before first using the test unit for optical power measurements.*** *It is strongly advised to set the ZERO level BEFORE every new batch of measurements and AFTER measurement conditions have changed.*
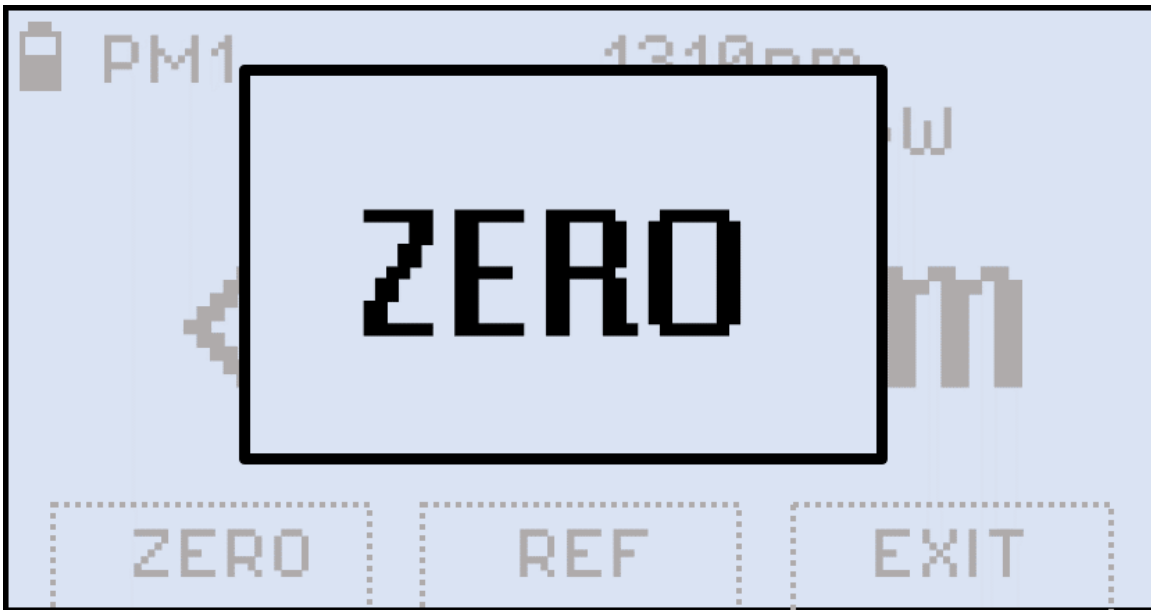
**To set the ZERO level:**

1. Press the **|MODE|** button until the **PM1** or **PM2** test mode appears at the upper left corner of the display, then press **|F3| (MORE)**. Make sure dust cap is closed.

*PM Test Mode*



PM1                1310nm
                   67.61nW

-21.7 dBm

WAVE                    MORE

2. Press **|F1| (ZERO)**. The **ZERO** notification shows briefly on the display.
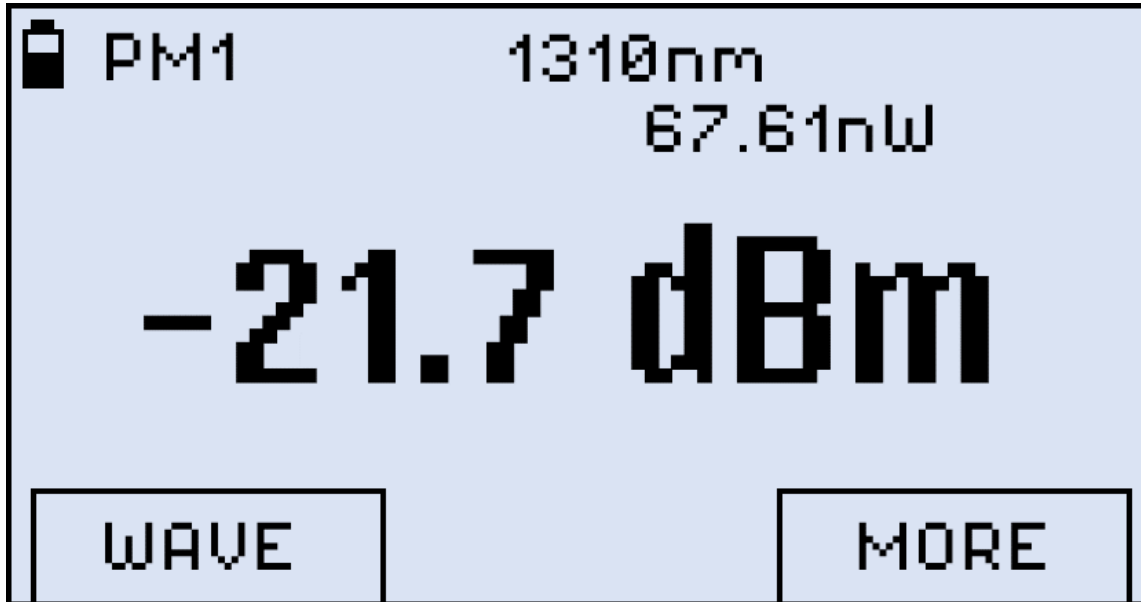
*Setting the ZERO level*



The test unit is now ready for measurements.

## 6.2   OPM measurement

To measure the optical power in a fiber, insert the test fiber on the OPM test port and press **|MODE|** until the PM1 or PM2 test mode appears at the upper left corner of the display.
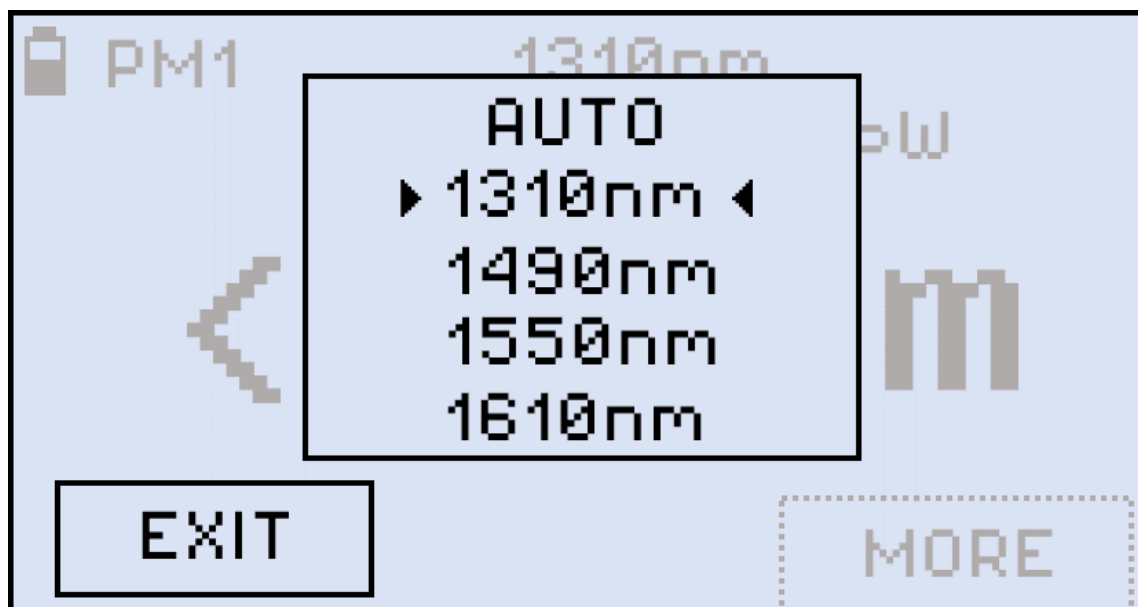
```
┌─────────────────────────────────────────┐
│  ▐█▌ PM1          1310nm                 │
│                     67.61nW              │
│                                          │
│     -21.7 dBm                            │
│                                          │
│  ┌──────────┐          ┌──────────┐      │
│  │  WAVE    │          │  MORE    │      │
│  └──────────┘          └──────────┘      │
└─────────────────────────────────────────┘
```

***ⓘ*** ***The fiber under test must have only one wavelength. If there are several wavelengths, the measurement results will NOT be valid.***

To change the wavelength, press the **|F1|** button **(WAVE)**. The resulting calibrated wavelength list is then shown below:

Select a wavelength by pressing the **|Up|** and **|Down|** buttons, then press the **|Shift/Enter|** button to confirm the choice. The new wavelength then appears in the top right corner of the display. For the previous wavelength to remain effective, select a wavelength and then press the **|F1| (EXIT)** button.

If the fiber under test carries a signal with WaveID details, select **[ AUTO]**. Then, the device (FX82, FX84, or FX85) determines the wavelength automatically.

> ⚠️ *If the [ AUTO] option for a signal without WaveID or modulated is selected, the λ value goes blank, and the measurement results are NOT valid.*

### 6.2.1  Setting Power Reference Level

To measure the fiber under test span loss, first set a reference level for each test wavelength. In the **PM1/PM2** mode, press the **|F3|** button **(MORE)** and then press **|F2| (REF)**.

*Selecting a reference option for PM measurement*
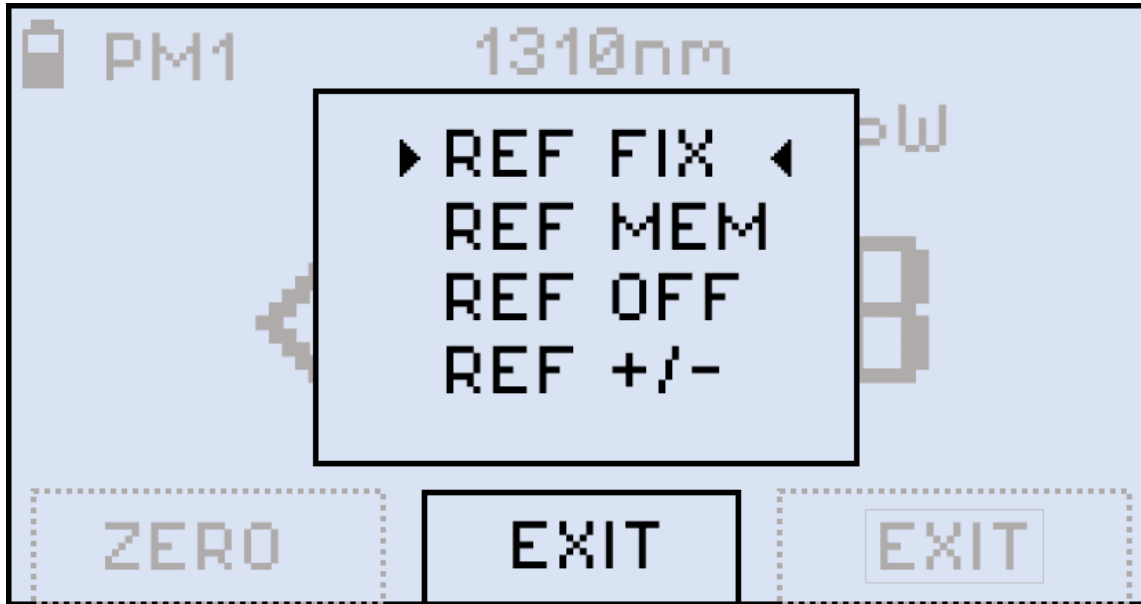


- **REF FIX** command: sets the current power value as the reference level. Select **REF FIX** with the cursor and press the **|Shift/Enter|** button. The value onscreen then changes to **-- -- dB.** The current reference level value is shown on the second row to the right (-6.86dBm in the example below).

*Current power value set as the reference level*
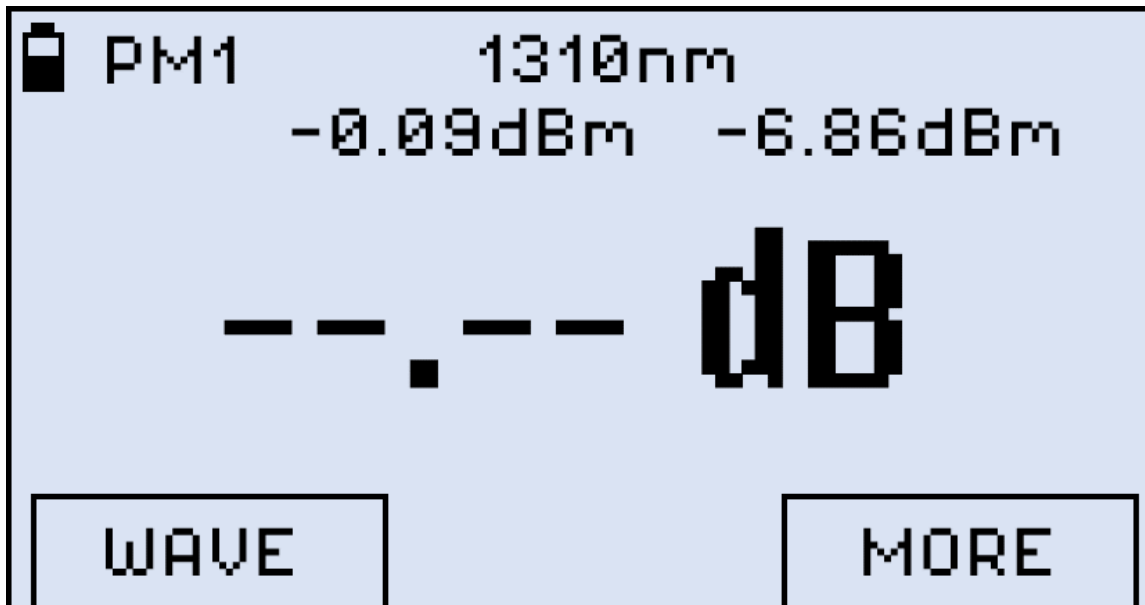


- **REF MEM** command: extracts the previous reference level.

- **REF OFF** command: makes the previously stored reference level inactive, return to normal absolute measurement.

- **REF +/-** command: finely adjusts the current reference level. Press the **|Up|** and **|Down|** buttons to change the reference level by 0.01. To set the adjusted level as reference, press **|Shift/Enter|**. To exit without setting, press **|F3| (EXIT)**.

*Broadband measurement taken against a reference level*
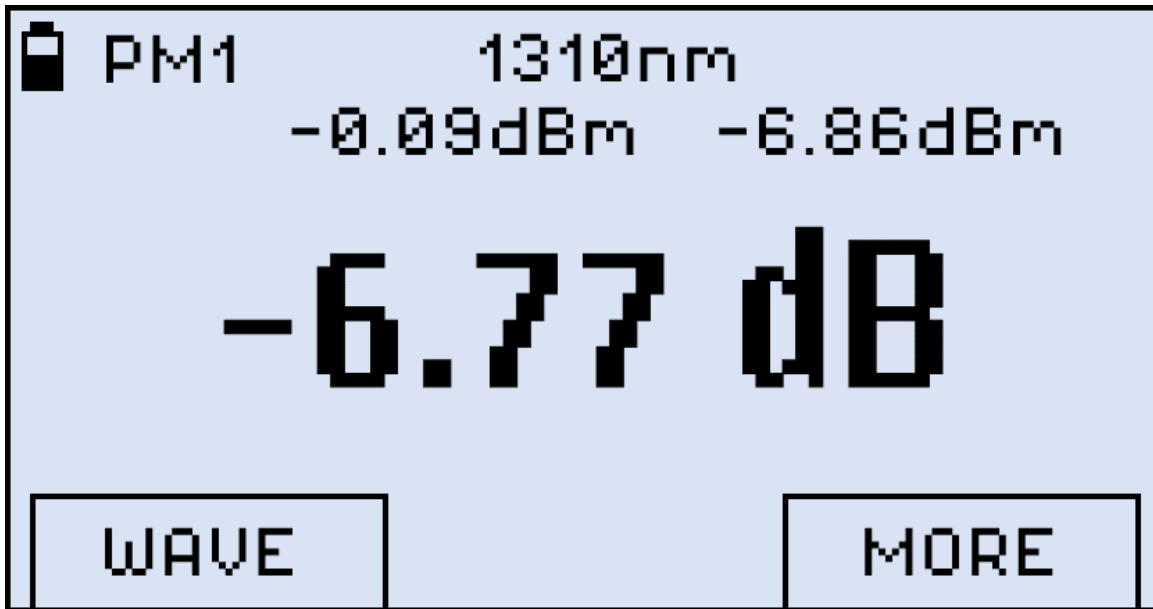
# 7.0  Optical Light Source

FX83 - 87 devices are equipped with Optical Light Source, so they can emit the calibrated laser light into the fiber under test (FUT), to be received by a measuring device on the other end. FX82 has no such functionality.

FX86 and FX87 employ CWDM and DWDM technologies respectively, and their Optical Light Source menus are different (see Sections 7.1. Optical Light Source for FX86 and 7.2. Optical Light Source for FX87 below).

To enter the Optical Light Source mode for FX83 – FX85:

1. Press the **|MODE|** button until the **LS** mode appears at the upper left corner of the display, then press **|F2| (LASER)**.
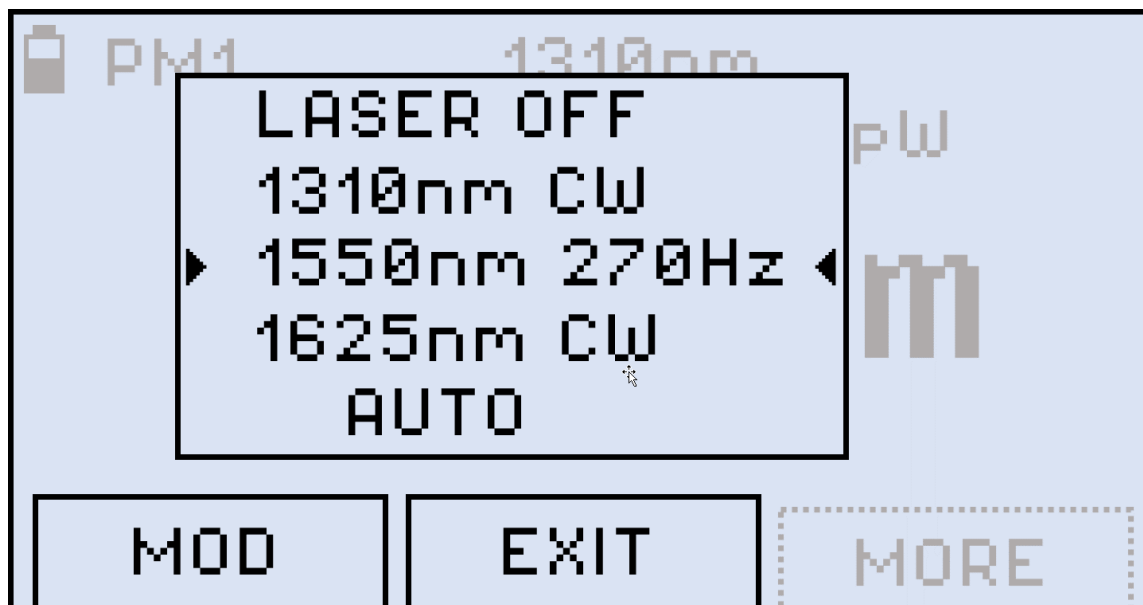
*Optical Light Source mode*



You can also enter the Optical Light Source mode from any PM mode:
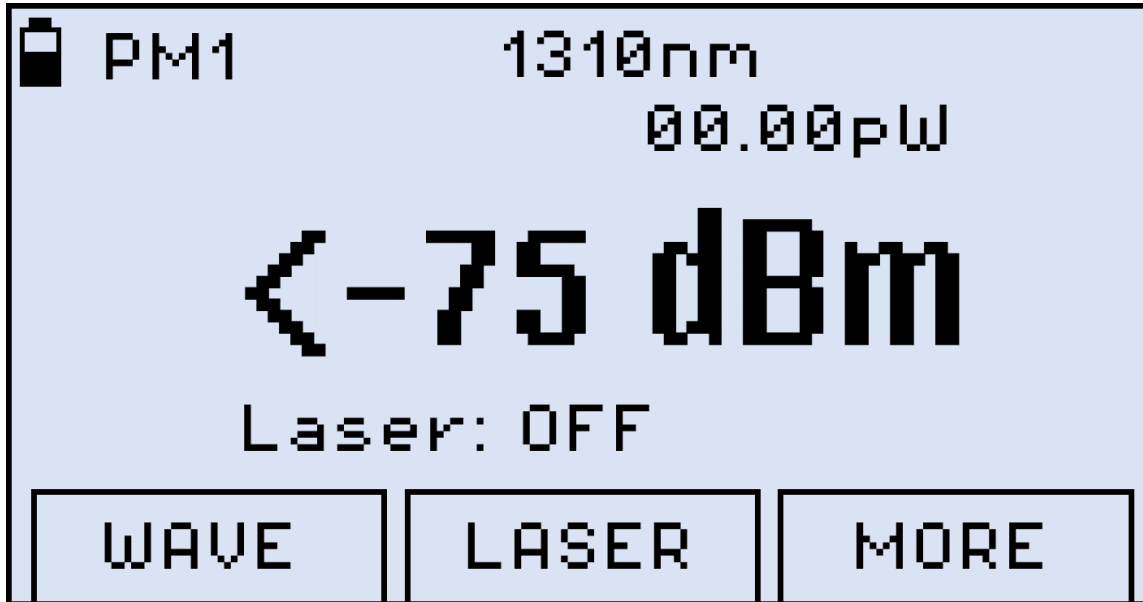
2. Press **|F2| (LASER)** button. The unit then shows the Optical Light Source menu:

*Setting wavelength and mode for Optical Light Source*



3. To select the necessary wavelength, press **|Up|** and **|Down|**.

4. To set the mode, press **|F1| (MOD)** repeatedly. You can choose from Continuous Wave (CW), 270 Hz, 330 Hz, 1000 Hz, and 2000 Hz.

5. To confirm the settings, press **|Shift/Enter|**.

## 7.1 Optical Light Source for FX86

FX86 employs Coarse Wavelength Division Multiplexing (CWDM) technology which is used for measurements of CWDM optical element parameters.

To set and use the Optical Light Source for FX86:

1. Switch on FX86, the initial screen is shown. Note that the port frequencies are different, and may need to be changed (see below):

*Initial Settings screen for FX86 Optical Light Source (example)*
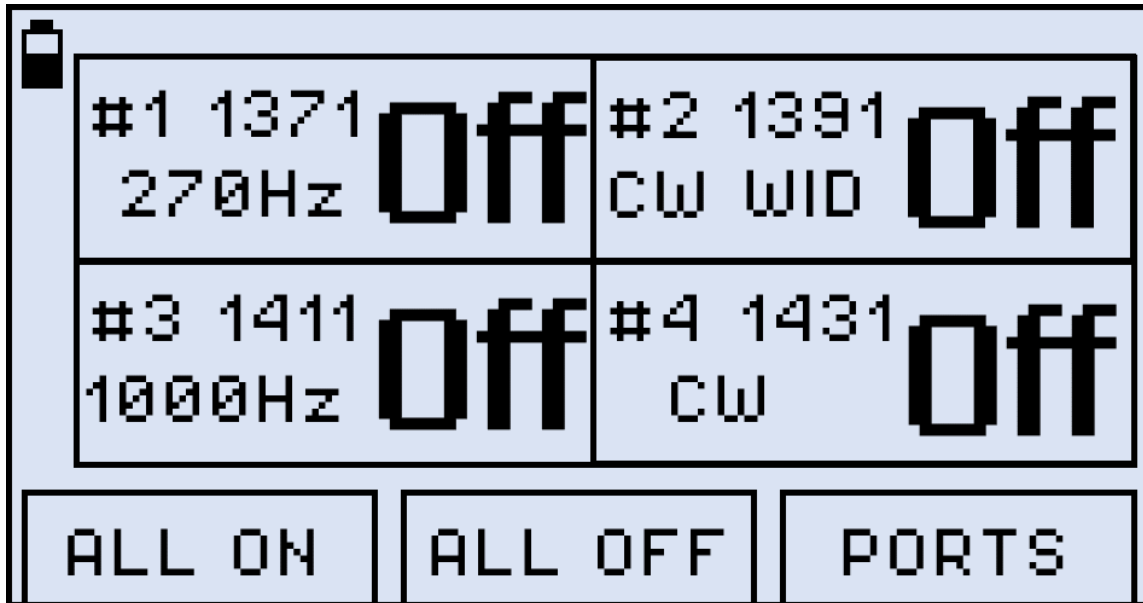


2. Press **|F1| (ALL ON)** to switch on all the ports with the frequencies shown onscreen. Press **|F2| (ALL OFF)** to switch all the ports off.

3. To set up a separate port, press **|F3| (PORTS)**. The screen shown below appears:
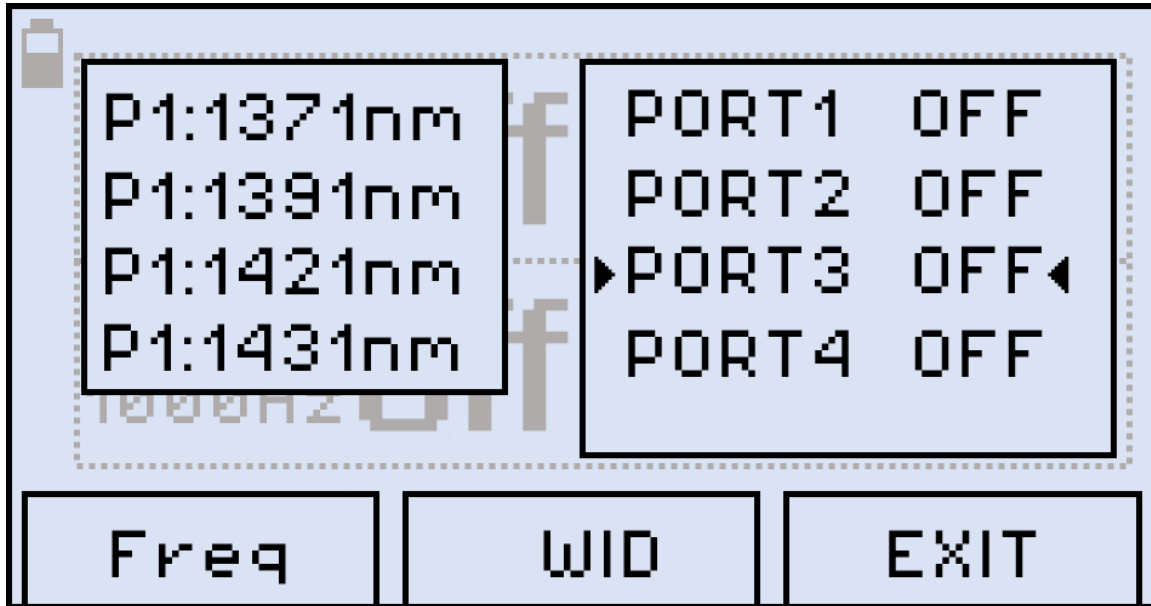
4.  Select the necessary port by pressing **|Up|** and **|Down|**.

5.  To switch the selected port ON/OFF, press **|Shift/Enter|**.

6.  To set up the selected port frequency, press **|F1| (Freq)**. The screen shown below appears:
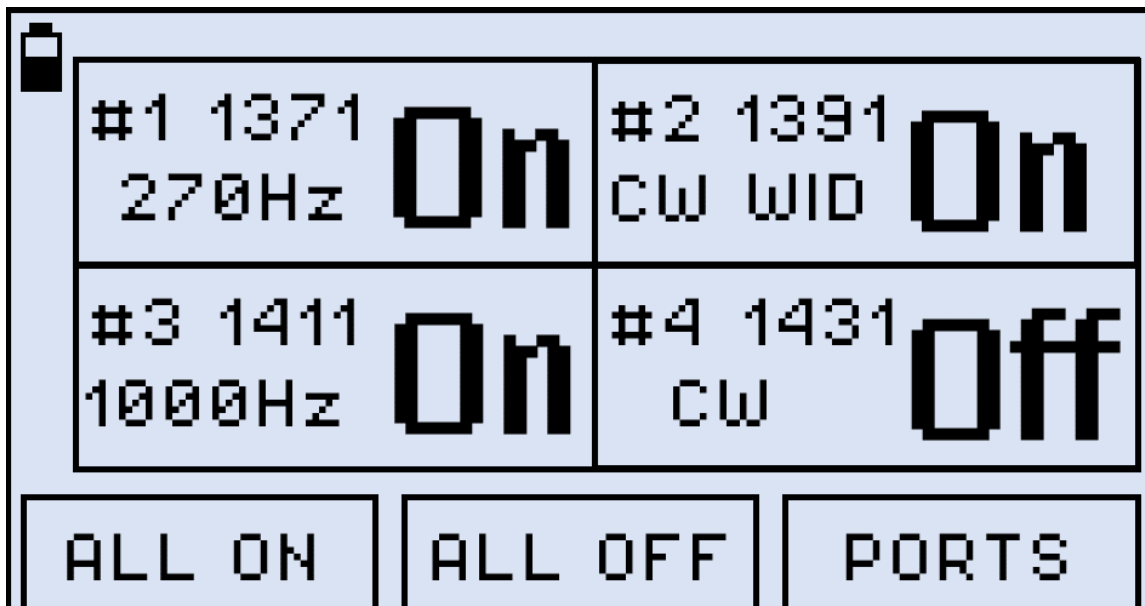
*Setting up a separate port*
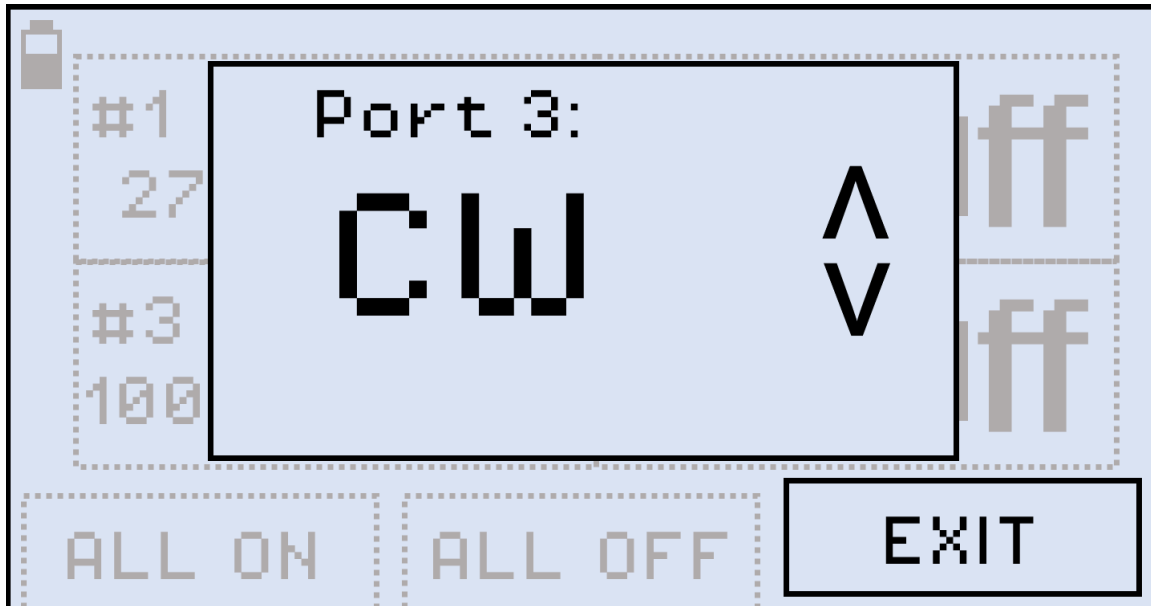


7.  Select the necessary frequency by pressing **|Up|** and **|Down|**.

8.  To turn on the WaveID function for the selected port, press **|F2| (WID)**. Note that turning on the WaveID function automatically selects the Continuous Wave frequency for this port.

9. To finalize the settings, press **|F3| (EXIT)**.

*Every port can have separate settings*

```
┌──────────────────────────────────────────┐
│ ▮                                          │
│   ┌──────────────────┬──────────────────┐ │
│   │ #1 1371          │ #2 1391          │ │
│   │        On        │         On       │ │
│   │   270Hz          │ CW WID           │ │
│   ├──────────────────┼──────────────────┤ │
│   │ #3 1411          │ #4 1431          │ │
│   │        On        │        Off       │ │
│   │ 1000Hz           │    CW            │ │
│   └──────────────────┴──────────────────┘ │
│   ┌────────┐ ┌──────────┐ ┌──────────┐     │
│   │ ALL ON │ │ ALL OFF  │ │  PORTS   │     │
│   └────────┘ └──────────┘ └──────────┘     │
└──────────────────────────────────────────┘
```

Now the ports are emitting/not emitting laser light according to the settings.

## 7.2 Optical Light Source for FX87

FX87 employs Dense Wavelength Division Multiplexing (DWDM) technology which permits inserting up to 45 wavelengths into one fiber.

*It is possible first set the Optical Light Source parameters and then connect the fiber under test (FUT), or vice versa. The order does not matter.*
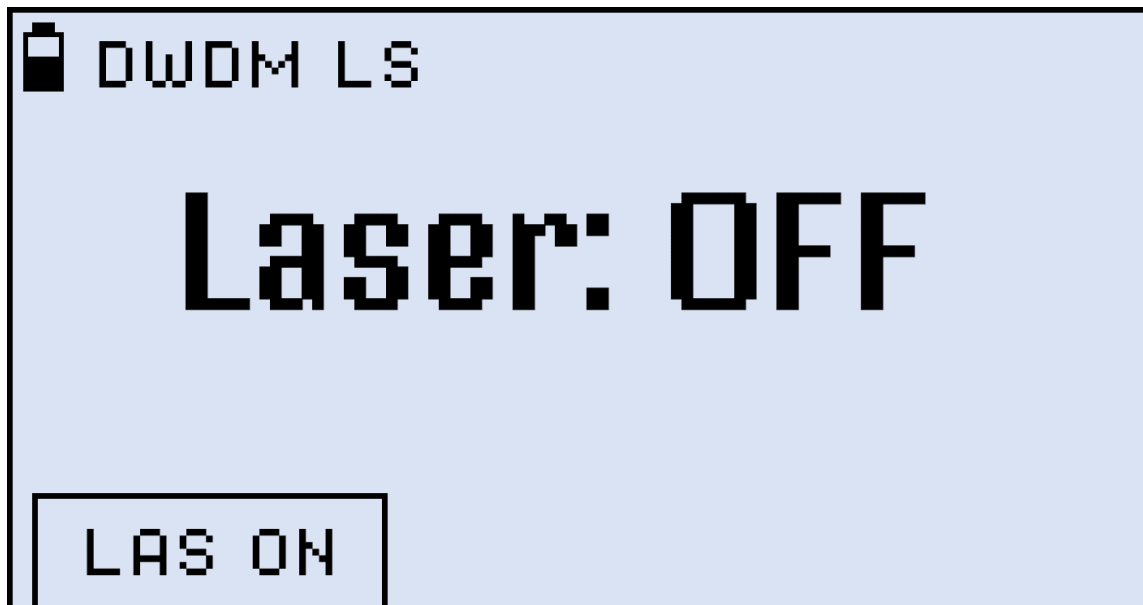
*The optical port used for the DWDM Light Source is always located on the left.*
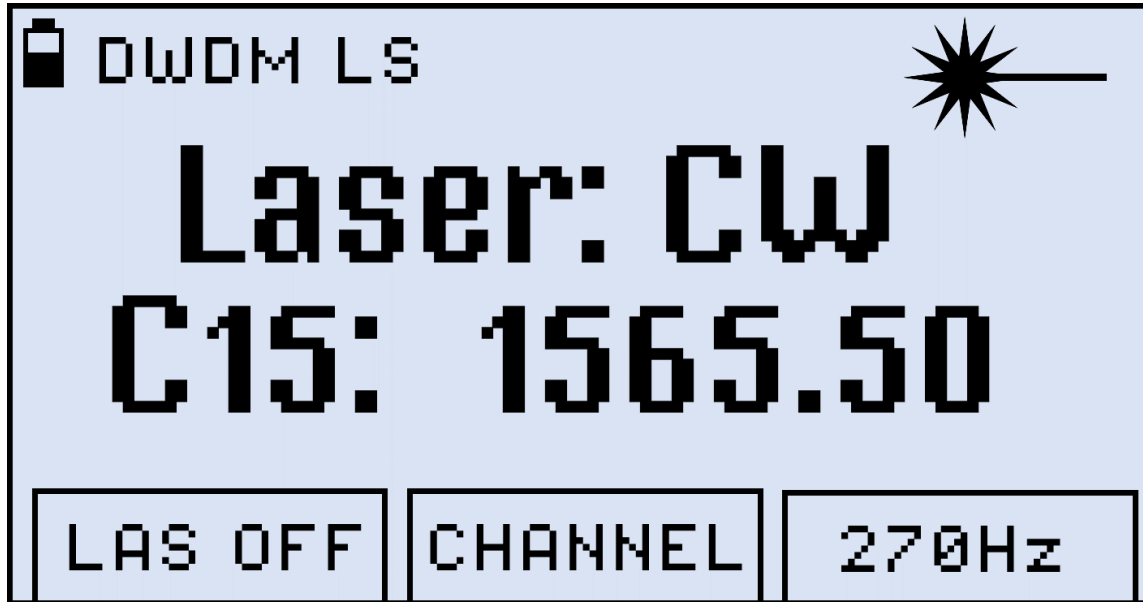
To set and use the Optical Light Source for FX87:

1. Switch on FX87, the initial screen is shown (see below):

**DWDM Light Source mode**



2. To turn the Laser on, press **|F1| (LAS ON)**. The setting screen shown below appears:
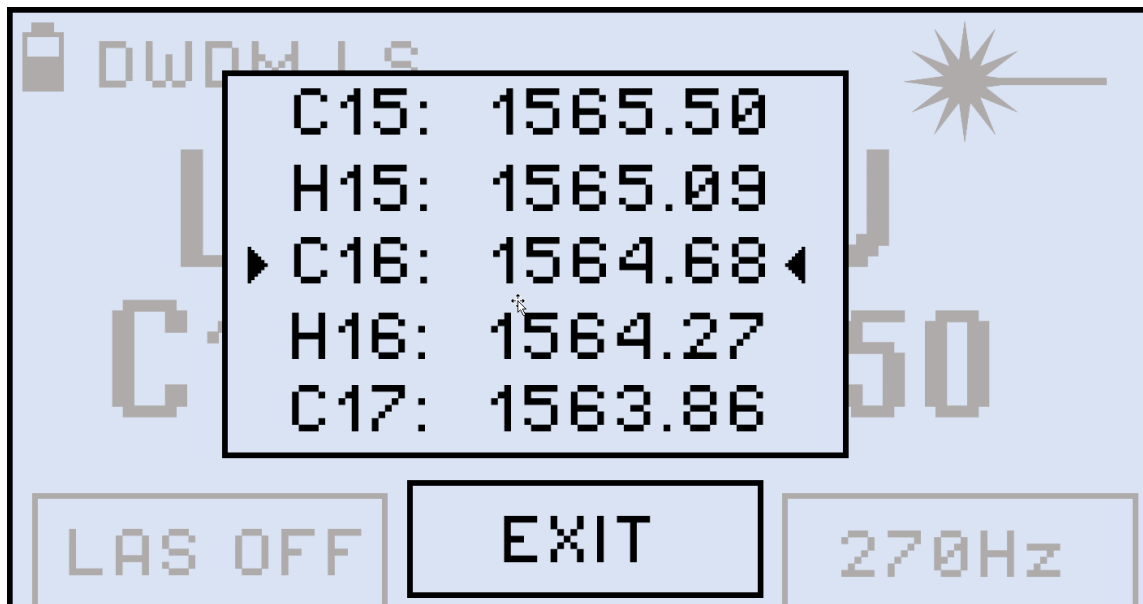
*The setting screen for DWDM Light Source*



```
[BATT] DWDM LS                    ☀
         Laser: CW
         C15: 1565.50

  [ LAS OFF ][ CHANNEL ][ 270Hz ]
```

The ☀ symbol in the top-right corner is flashing while the laser wavelength is being set.
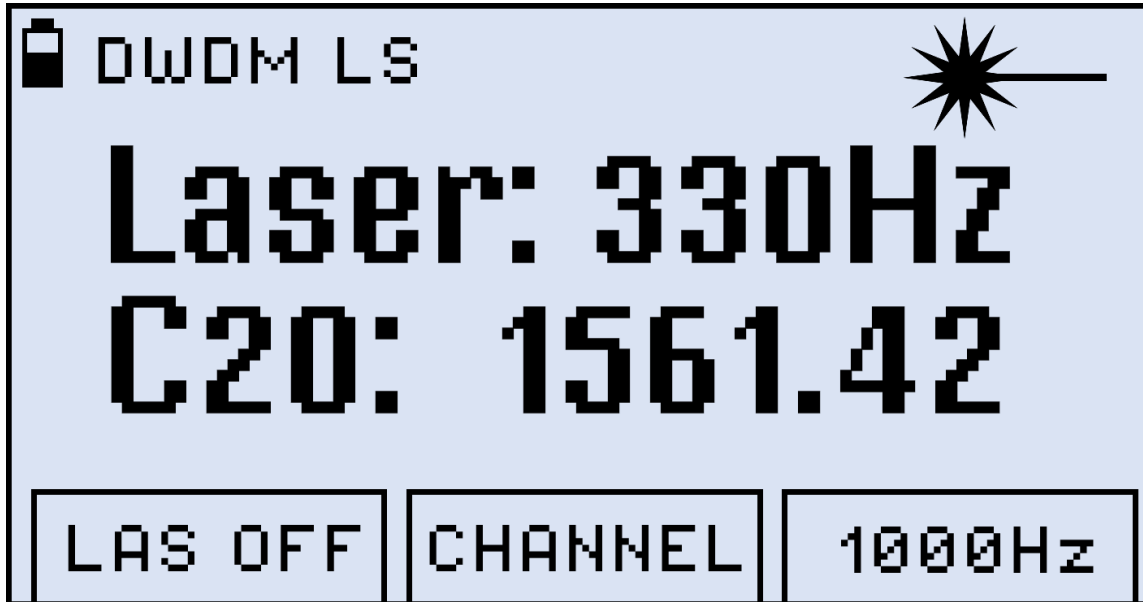
3. To set the Channel, press **|F2| (CHANNEL)**. Then select the Channel by pressing **|Up|** and **|Down|**. To confirm the setting, press **|Shift/Enter|**.

*Selecting wavelength for DWDM Light Source*



```
[BATT] DWDM LS                    ☀
    ┌────────────────────────┐
    │   C15:  1565.50        │
    │   H15:  1565.09        │
    │ ▸ C16:  1564.68 ◂      │
    │   H16:  1564.27        │
    │   C17:  1563.86        │
    └────────────────────────┘
  [ LAS OFF ][   EXIT   ][ 270Hz ]
```

4. To set the mode, press the **|F3|** button repeatedly. You can choose from Continuous Wave (CW), 270 Hz, 330 Hz, 1000 Hz, and 2000 Hz, the selected value is shown onscreen in the **Laser** field (see below):

```
🔋 DWDM LS                    ✴━

 Laser: 330Hz
 C20:  1561.42

┌──────────┐┌──────────┐┌──────────┐
│ LAS OFF  ││ CHANNEL  ││  1000Hz  │
└──────────┘└──────────┘└──────────┘
```
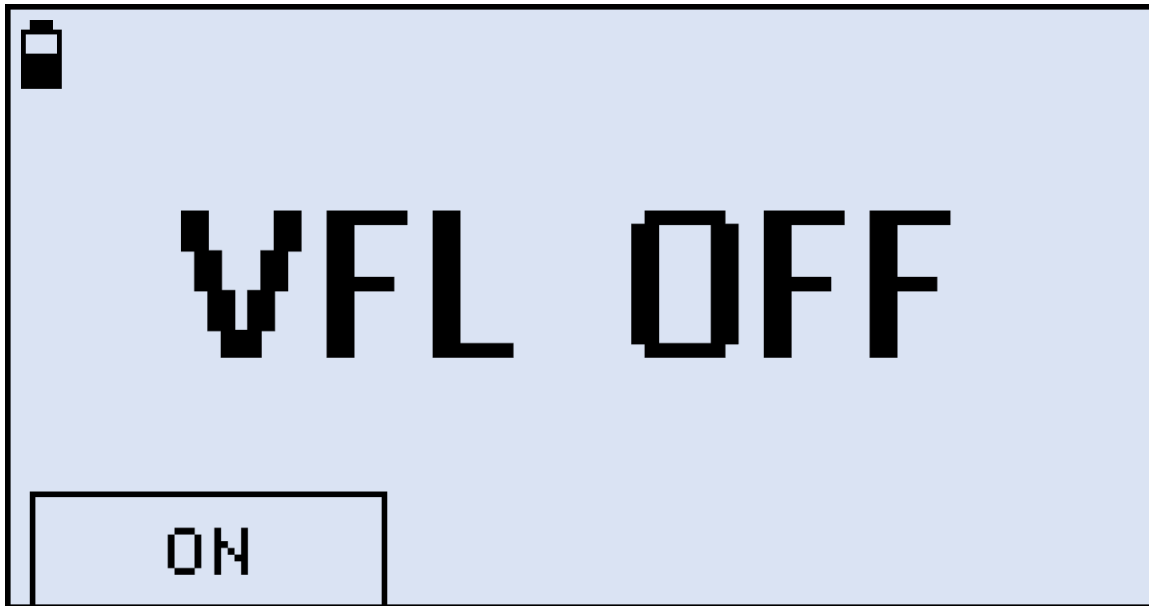
## 8.0   Visual Fault Locator (VFL)

The FX82, FX83, and FX84 can be equipped with a Visual Fault Locator (VFL).

**To test a fiber line for continuity:**

1.   Connect the fiber to the VFL port.

2.   Press the **|MODE|** button until get the VFL mode appears (see the Figure below).
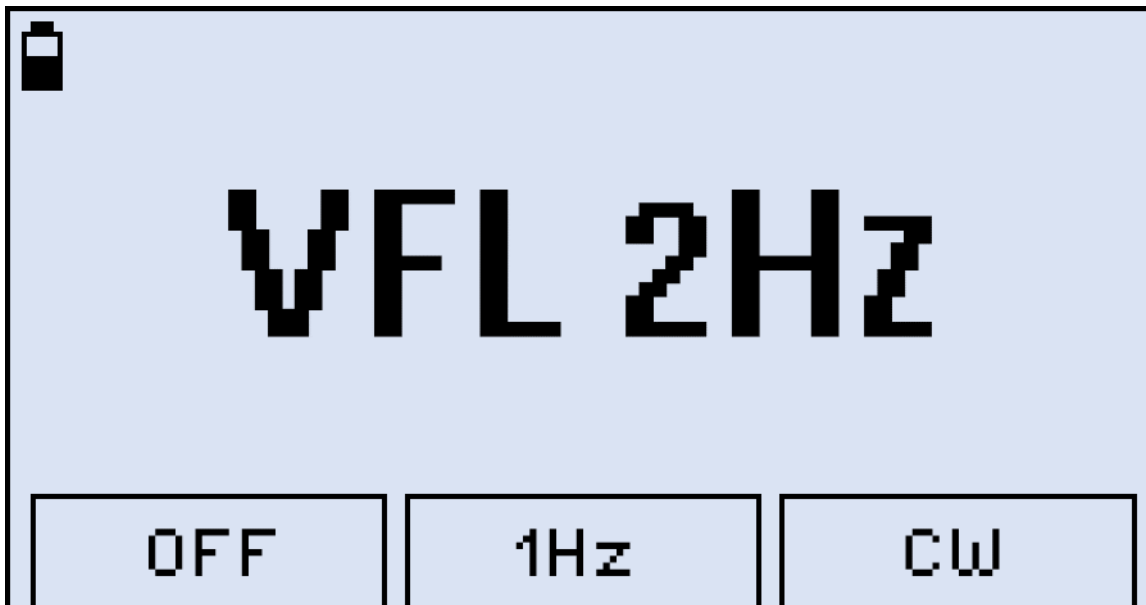
*Starting VFL mode*



3.   Press the **|F1| (ON)** button to begin the test.

*Starting VFL testing, continuous light*

```
VFL ON
OFF   1Hz   2Hz
```

4.  To modulate the light (1 or 2 Hz), press **|F2| (1Hz)** or **|F3| (2Hz)** respectively. The pressed button then changes to **CW**, and you can press it to return to continuous light (see an example below).

*VFL testing, modulated light*

```
VFL 2Hz
OFF   1Hz   CW
```

5.  To switch from the VFL mode to another mode, press the **|MODE|** button.

# 9.0  Optical Return Loss Measurement

One of the lasers generates an optical signal, which is inserted into the fiber under test (FUT) via an optical splitter. The reflected signal from the FUT comes back to the optical port, and via the optical splitter it is directed to the Optical Power Meter. The incoming signal level is compared to the calibration values, and the Return Loss is shown onscreen.

To enter the Optical Return Loss mode, press **|MODE|** until **ORL** is indicated in the top left corner:
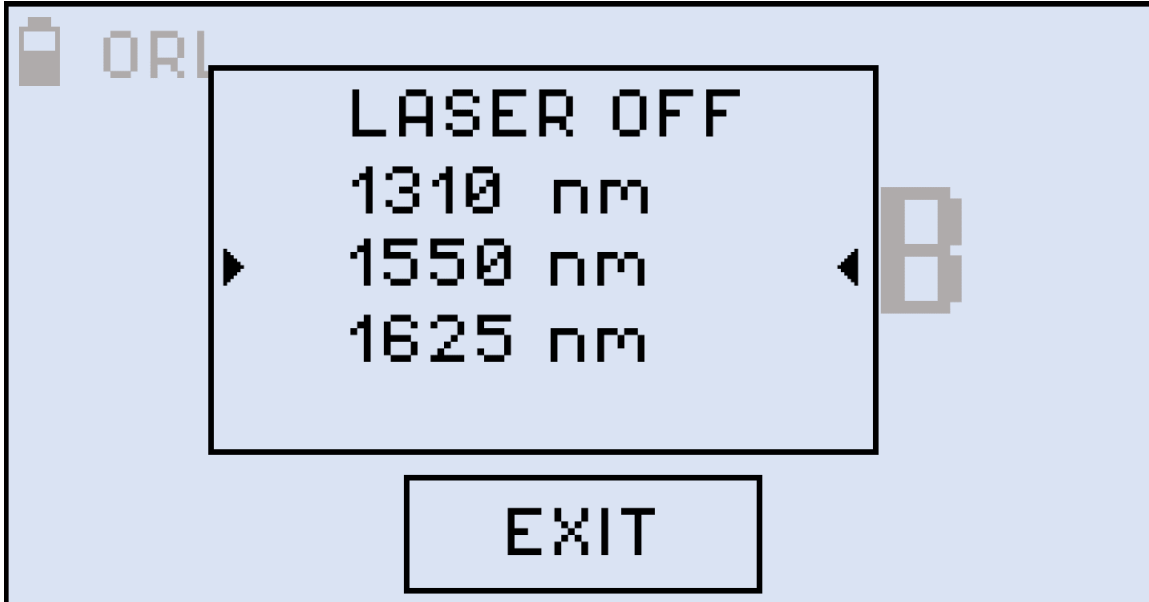
*ORL mode*
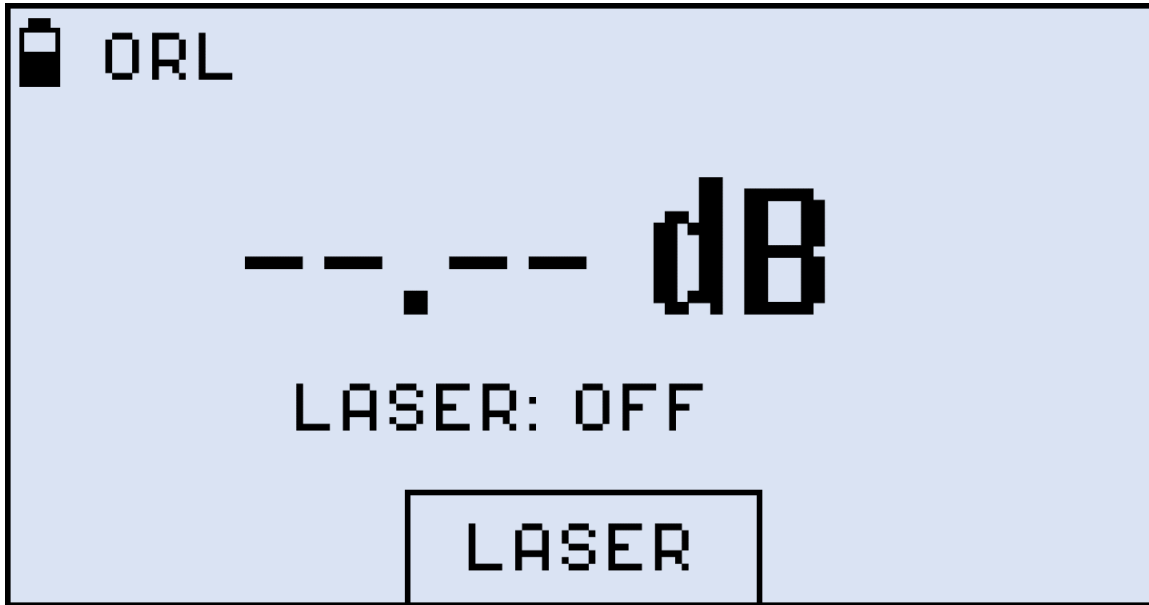


## 9.1  Calibration before ORL measurement
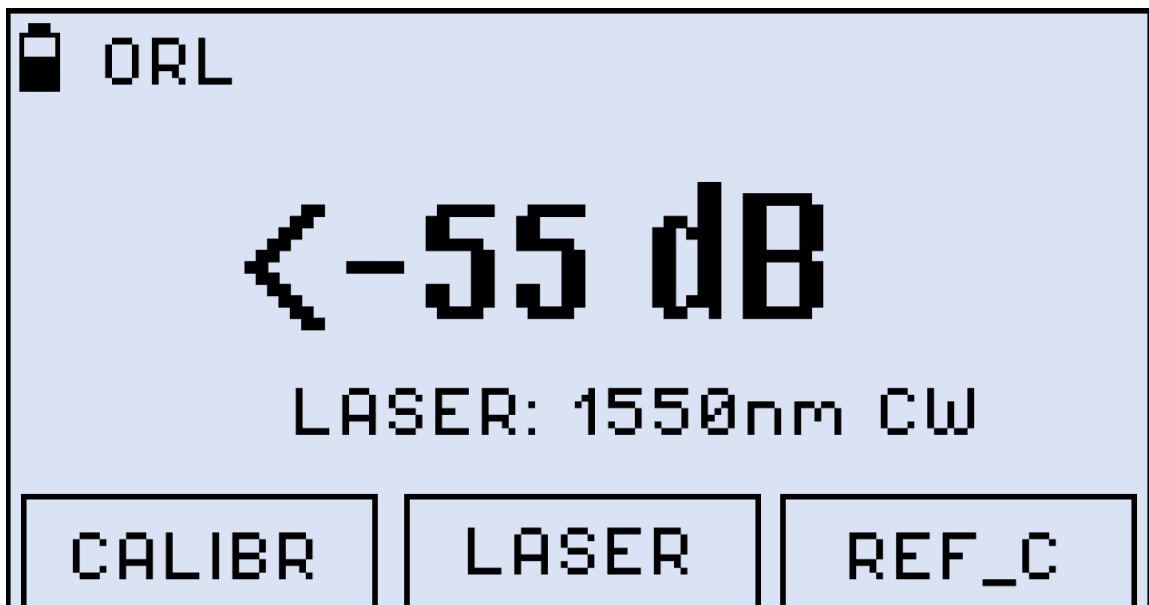
Before ORL measurement, calibrate the test unit:

1.  Press **|F2| (LASER)**, to get the Laser submenu onscreen:

*ORL laser submenu*



2. Select the necessary wavelength by pressing **|Up|** and **|Down|**. Confirm your selection by pressing **|Shift/Enter|**. The screen like the one shown below appears:

*ORL wavelength selected*



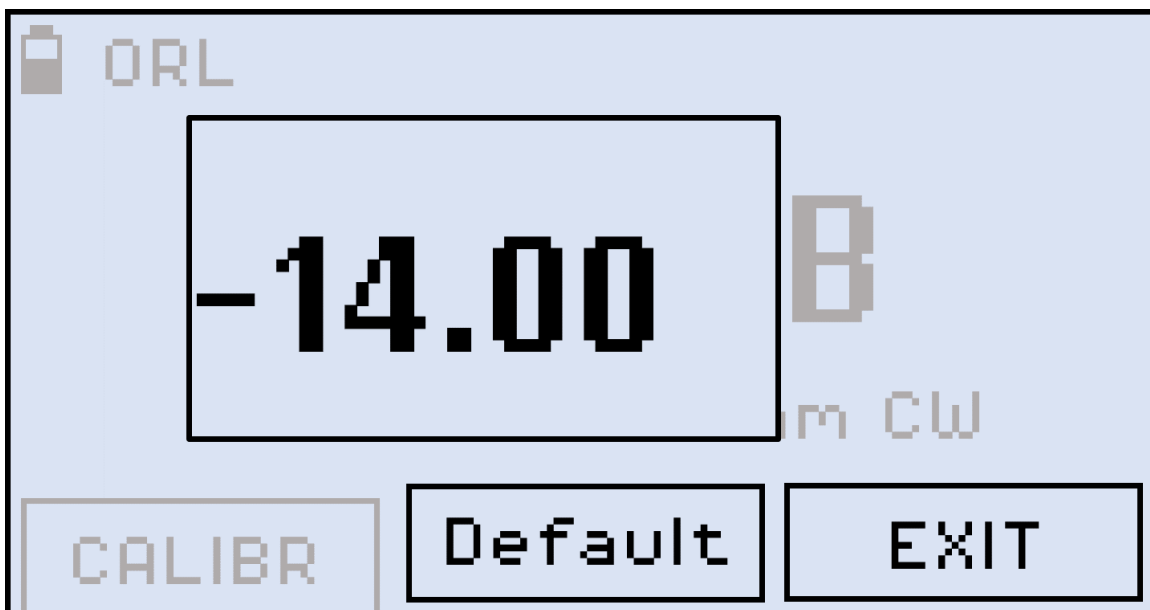⚠️ *Make sure the optical port is tightly capped during calibration.*

3. Press **|F1| (CALIBR)**. The **CALIBRATION** notification is then shown onscreen for several seconds:

4. Connect the reference cable to the ORL port. The reference cable is provided with the device.

5. Press **|F3| (REF_C)**, then set the -14.00 value by pressing **|Up|** and **|Down|**.

*Setting ORL reference value*



6. After setting the **-14.00** value press **|Shift/Enter|**. The reference value is then saved to the device memory.

7. Disconnect the reference cable and press **|F1| (CALIBR)** again. The **CALIBRATION** notification is shown onscreen for several seconds again.

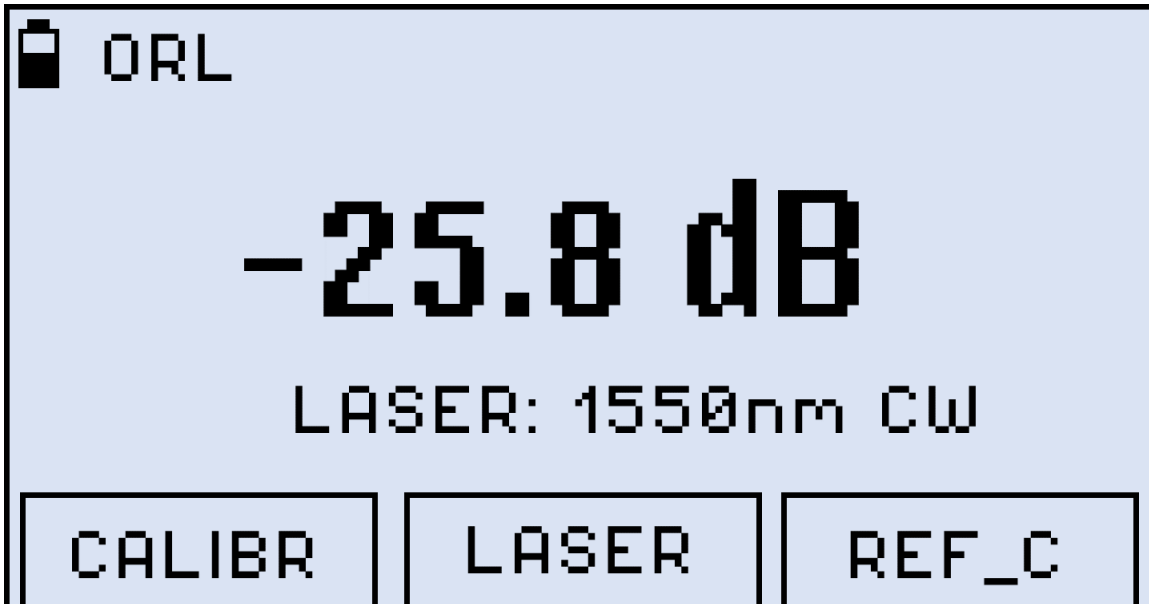Now the device is ready for ORL measurement.

## 9.2 Measuring ORL

To measure ORL:

1.  While in the ORL mode, connect the fiber under test (FUT) to the optical port. The measurement result is then shown onscreen (see an example below):

*ORL measurement result*



To save the current measurement result, press **|Shift/Enter|+|Up|**. The **Saved** notification appears for several seconds, and the result is saved in the device memory.

*Current ORL measurement result saved to device memory*

# 10.0 Talk Set

FX85 can be optionally equipped with a Talk Set, which allows technicians to exchange voice information over the fiber under test (FUT). To use this functionality:

1. Press the |MODE| button until the **VOICE** mode appears at the upper left corner of the display:

*Entering VOICE mode*



2. To place a call, press |F1| (CALL):

*Placing a call in VOICE mode*



⚠ *When the VOICE mode is on, measurements **cannot** be performed.*

⚠️ *The technician on the other end of the FUT **must also have their unit in the VOICE mode**. Otherwise, the incoming call will not get through.*

3. The technician on the other end of the FUT gets the **Incoming Call** notification on their unit:

*Receiving a call in VOICE mode*



To accept a call, the technician on the other end of the FUT must press **|F2| (ANSWER)**:

4. To terminate the call, any of the technicians must press **|F3| (CANCEL)**.

*Button for terminating the call*

# 11.0 Viewing Measurement Results

To view measurement results, press the **|MODE|** button until the **Read** mode appears at the upper left corner of the display and the results are shown:

```
▌Read Free:30672bytes      ⁎

02.01.19  15:20  WEST WING
02.01.19 ▶16:45◀ COMMENT 00
03.01.19  16:24  COMMENT 01


┌──────────┬──────────┬──────────┐
│  PG UP   │ PG DOWN  │   MORE   │
└──────────┴──────────┴──────────┘
```

*The FX82 can be optionally equipped with Bluetooth. If so, the Bluetooth sign appears in the top right corner in the **Read** mode.*

## 11.1  Editing Notes to Measurement Results

By default, every measurement is appended with the 'COMMENT###' note, where ### is the number incremented by "1" with every measurement. This is convenient when measuring several fibers within one batch or one splitter.

The note can be edited as described below, then the updated text applies to the next measurement.

1. Press **|F3| (MORE)**, then press **|F1| (NOTE)**. The screen shown below then appears.

*Editing comments to future measurement results*
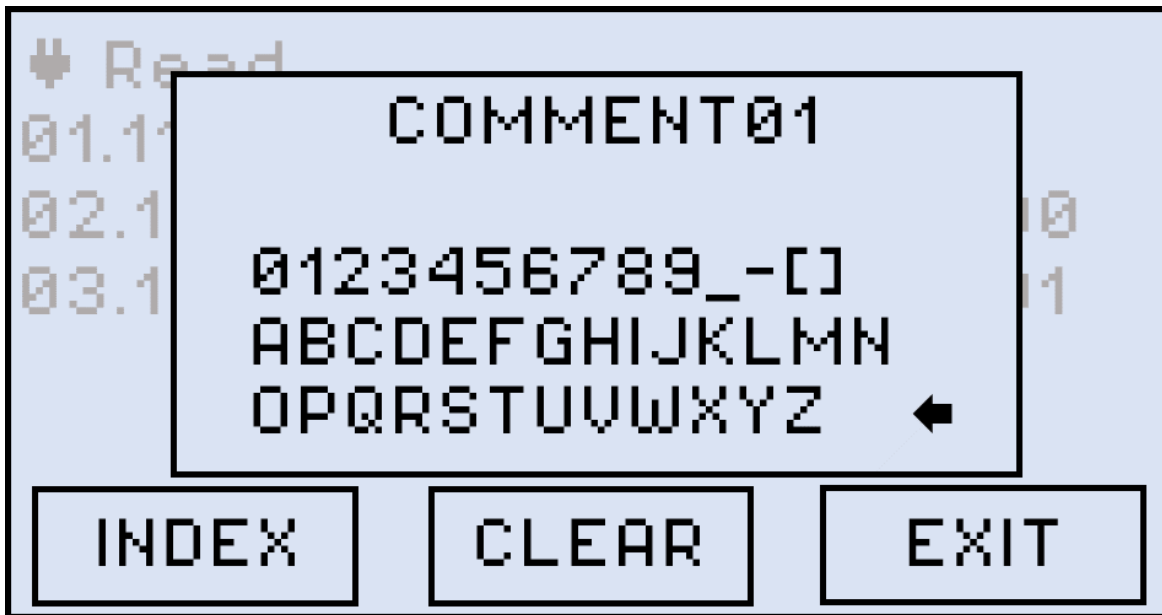


2. Press **|F1| (INDEX/COMMENT)** until the cursor starts flashing in the INDEX field or in the COMMENT field.

3. Then use the **|Up|** and **|Down|** buttons to position the cursor in the set of symbols. The active symbol then gets flashing. Use the **|Up|** and **|Down|** buttons to select another symbol if necessary.

4. Press the **|Shift/Enter|** button to insert the selected symbol from the list at the end of the selected field.

*The comment can include up to 10 symbols (including 3 symbols of the Index).*

5. To erase the last symbol of the top line, place the cursor after that symbol, then select the left arrow in the set of symbols (←) and execute the command by pressing the **|Shift/Enter|** button.

6. To save the note for the next measurement and exit the **NOTE** mode, press the **|F3| (EXIT)** button.

**To save the current measurement results with the current note:**

- Press the **|Shift/Enter|+|Up|** button combination **(Save)**. The **Saved** notification is then briefly shown onscreen, and current measurement results with the current note are saved in the device memory.

*Once the note is saved with measurement results, it cannot be edited.*

# 12.0 Downloading Measurement Results to PC

Test result are transferred from the FX82 device to a PC via the supplied micro USB cable. A Bluetooth option for the FX82 can also be optionally ordered to be included for wireless transfer.

To transfer test results and create a measurement report, first install the **LTSync** PC software.

## 12.1 Installing the USB Driver for wired transfer

For a PC to work with the FX82 device, install the USB driver:

1. Plug in the FX82 device to the PC via the supplied micro USB cable. Check the Windows Device Manager to see the FX82 item in the **Other devices** list. The FX82 item is shown with the exclamation mark sign meaning that the driver for the device is <u>not</u> installed.

2. Download the driver from the VeEX web site at www.veexinc.com.

3. Go to Windows Device Manager, right-click the FX82 item, and then click **Update driver** (see an example below). The **Browse my computer for driver software** window appears.

*Installing the driver for FX82*
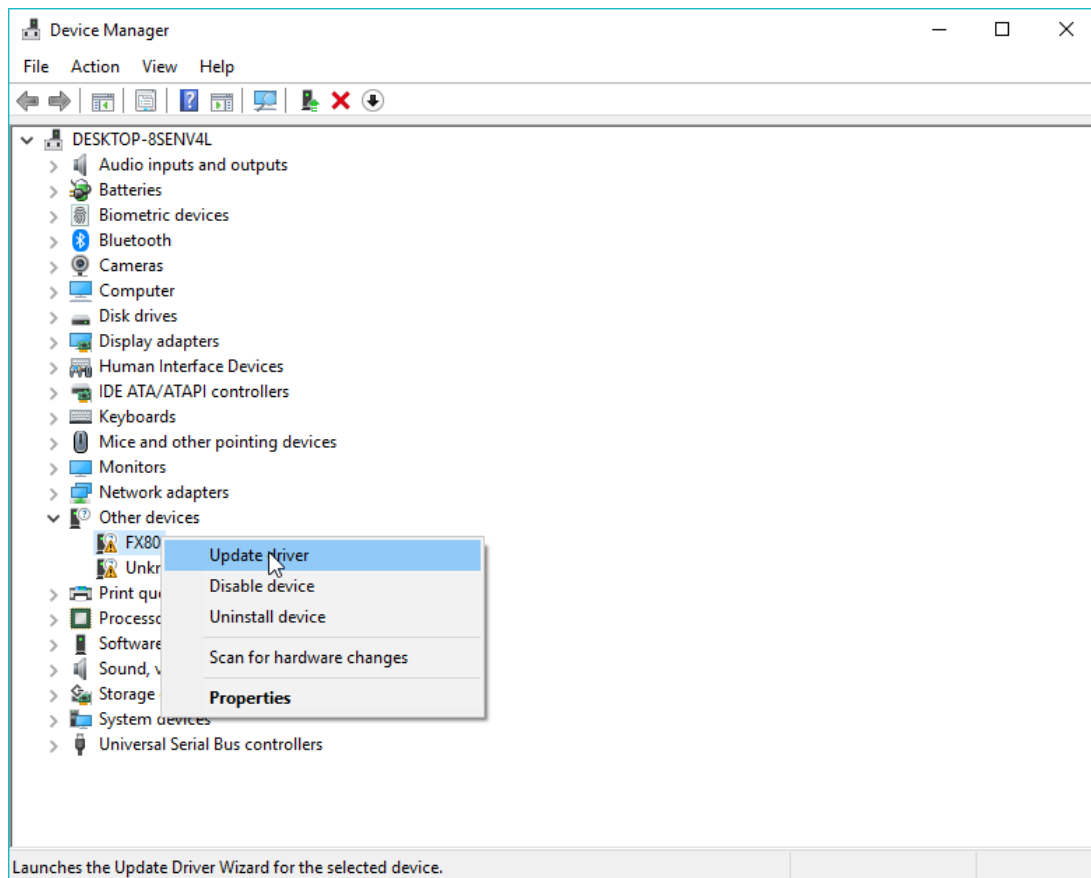
4. Define the path to the previously saved downloaded driver and click **[ Next]**. The driver installation starts. After the installation is complete, a window appears indicating the driver has been installed successfully (see below). Press **Close**.

*The driver for FX82 successfully installed*
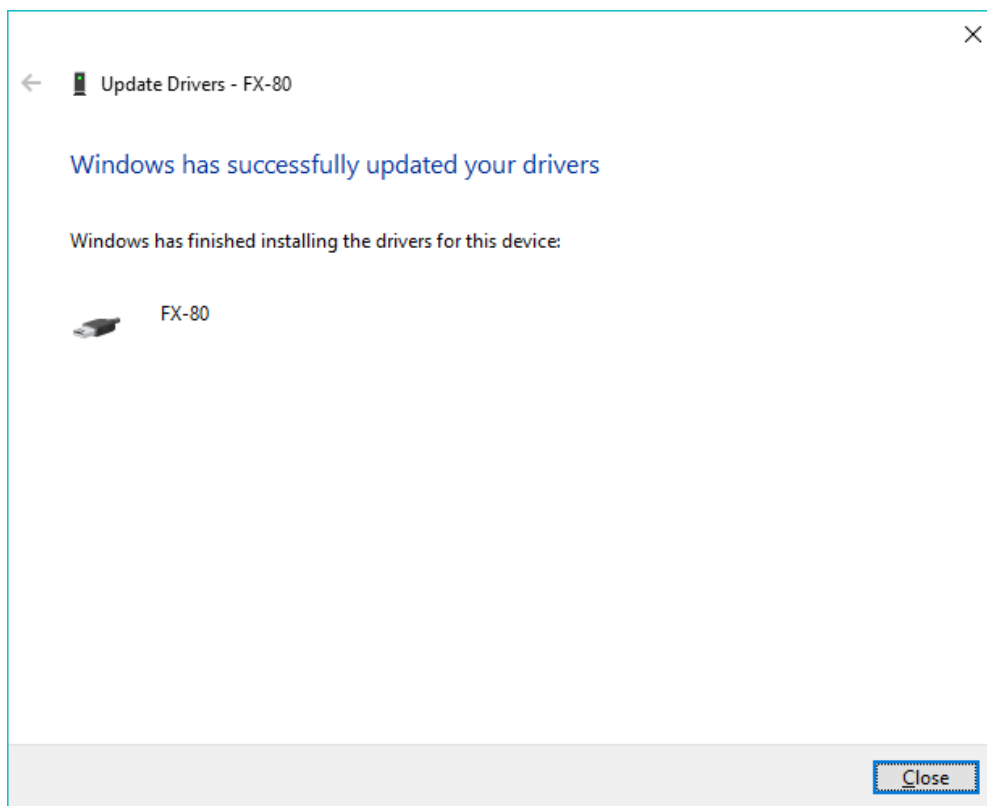
## 12.2  Transferring Measurement Results Via Cable

**To transfer measurement results to the PC:**

1. Launch **LTSync** and connect the FX82 to the PC via the micro-USB cable provided. The **FX-Series devices** window appears (example shown below), with the device and its serial number recognized by the program.

*FX82 is connected to PC in LTSync, its serial number is recognized by the program*
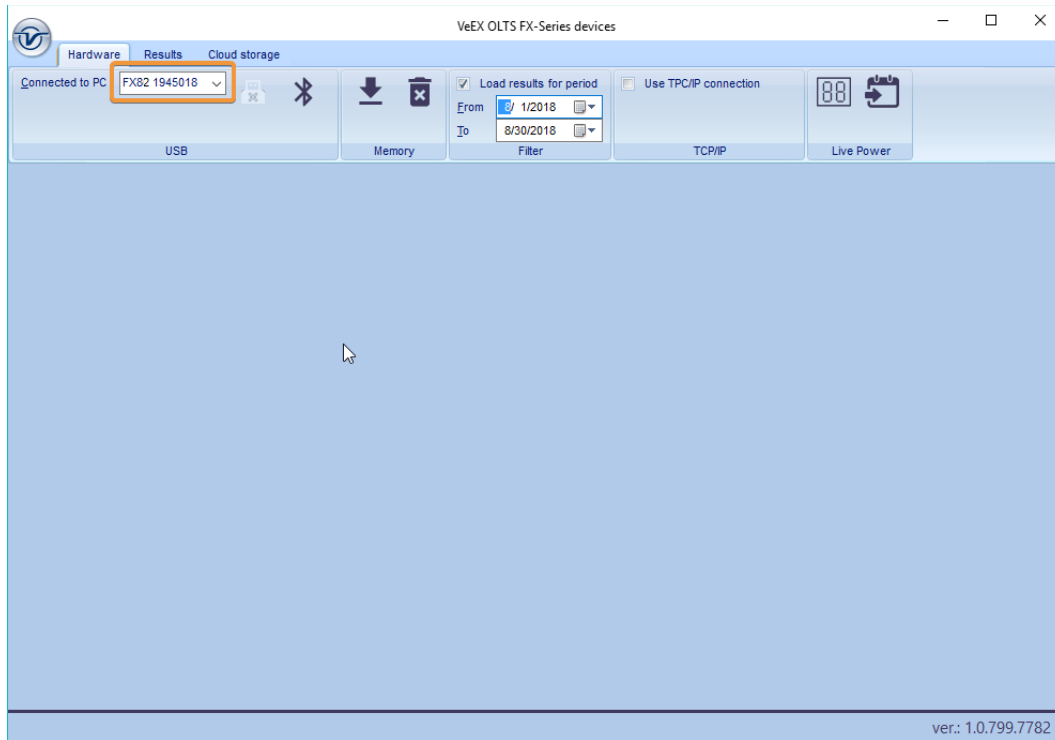


2. To view the measurement results on the PC, click the **[ Download]** button ⬇. (example below). The measurement results are presented in a table. Use the scroll bar to view all results.

*Measurement results table*



## 12.3 Preparing Measurement Results for Report

Enter the pertinent information into the fields in the **Attributes** section (see example above). Filter the results by test group and/or wavelength by selecting the results to work with in the main viewing area.

To download results for a specific time period, select the **Hardware** tab, and then select the **[ Load results for period]** checkbox. The **Filter** box appears (see below).

*Filtering measurement results by time*



To delete a row(s) of results, select the checkbox next to the row(s) and then click the **[ Delete row]** button .

To move a row to another group, highlight the row by clicking it. The border around the row turns orange. Drag-and-drop the row to another group. Alternatively, highlight the row, click the **[ Move row ]** button , and then highlight the desired group. Only one row at a time can be moved. Move a row to another group only if there is no measurement with that wavelength in the group.

To save the measurement results to a PC, click the **[ Save to PC]** button .

To erase all test results from the FX-8x memory, select the **Hardware** tab and click the **[ Erase all memory]** button ⊠.

## 12.4  Transferring Measurement Results Via Bluetooth

*To be able to wirelessly transfer measurement results to the PC, the FX82 must have Bluetooth option.*

**To transfer results via Bluetooth:**

1.  Pair the devices with the standard Bluetooth pairing procedure. If paired, the FX82 should appear in the **Bluetooth & Other Devices** list in the Windows X **Device Manager**. See the icon example below, taken in Win10:

*FX-82 listed as a mobile device in the Bluetooth & other devices list*

FX-8x_ #1897618
Paired

*Please note that in the list above every FX8x series device (FX80, FX82, FX84, FX85, etc.) are shown as FX8x; however, their serial numbers are different.*
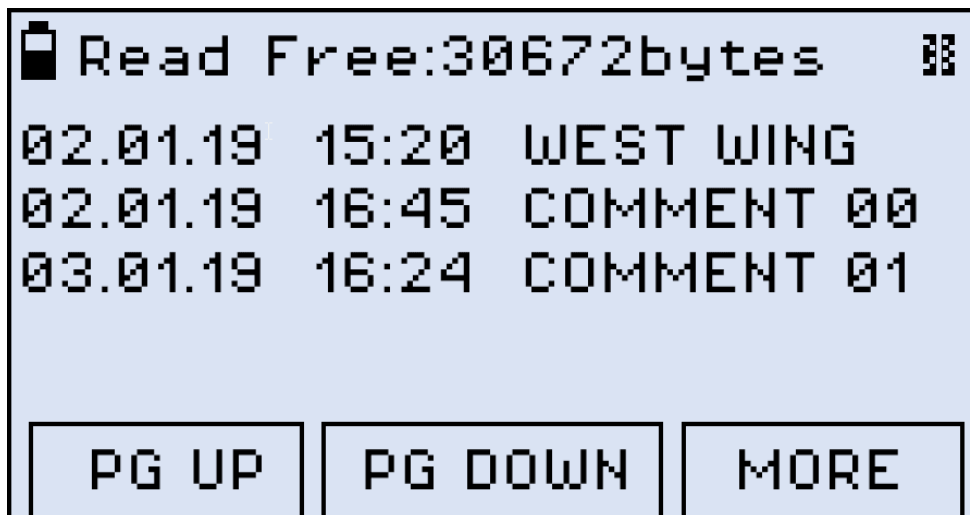
2.  Launch **LTSync** on the PC.
3.  Power on the FX-82 and enter the **[Read]** mode. The Bluetooth sign appears at the top right corner of the screen (see below).

*Read mode with Bluetooth*

```
🔋 Read Free:30672bytes        ✳

02.01.19  15:20  WEST WING
02.01.19 ▸16:45◂ COMMENT 00
03.01.19  16:24  COMMENT 01


┌──────────┐┌──────────┐┌──────────┐
│  PG UP   ││ PG DOWN  ││  MORE    │
└──────────┘└──────────┘└──────────┘
```
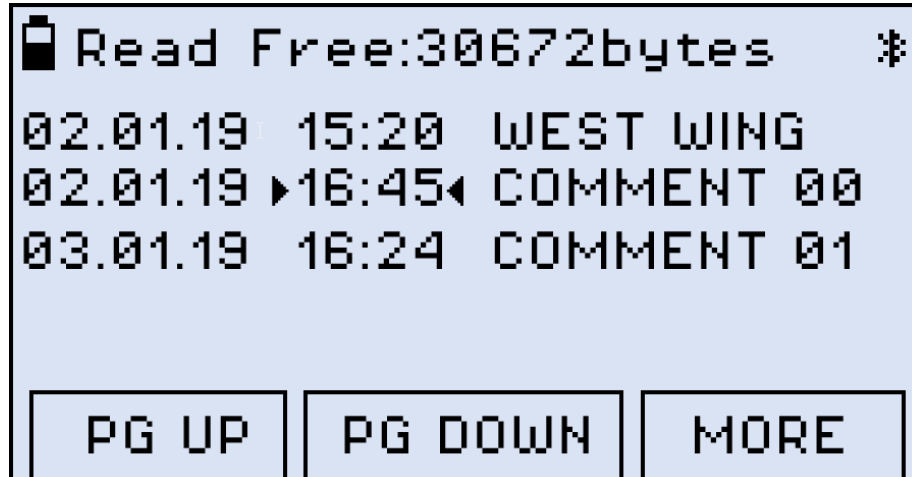
4.  In **LTSync**, select the **Hardware** tab and click the **Bluetooth** button ✳. The FX82 serial number appears in the **[Connected to PC]** field. If there are several devices connected to the PC via Bluetooth, select the desired device in the drop-down list. After the FX82 and PC are connected, the Bluetooth sign inverts its colors (see below).

*FX82 and PC connected, shows Bluetooth sign with inverted colors*

```
🔋 Read Free:30672bytes        ▦

02.01.19  15:20  WEST WING
02.01.19  16:45  COMMENT 00
03.01.19  16:24  COMMENT 01


┌──────────┐┌──────────┐┌──────────┐
│  PG UP   ││ PG DOWN  ││  MORE    │
└──────────┘└──────────┘└──────────┘
```

5.  To transfer measurement results from FX82 to your PC, click **[ Download]** ⬇ in the **Memory** section of LTSync.


The time it takes to transfer results is dependent on the amount of data. To prepare results reports from the downloaded measurements, see Section 12.3 Preparing Measurement Results for Report.

# 13.0 Uploading Measurement Results to Fiberizer™ Cloud

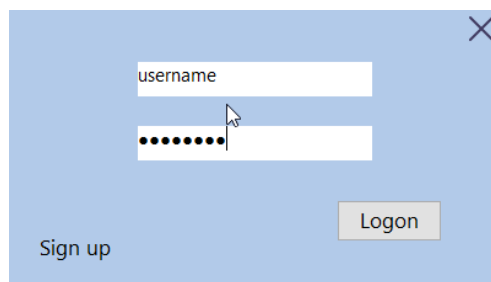**To access a Fiberizer Cloud account within the LTSync program:**

1. Select the **Cloud storage** tab, and then click the **Sign in to Fiberizer Cloud** button, and then enter the correct credentials in the resulting form.

*Signing in to Fiberizer Cloud*
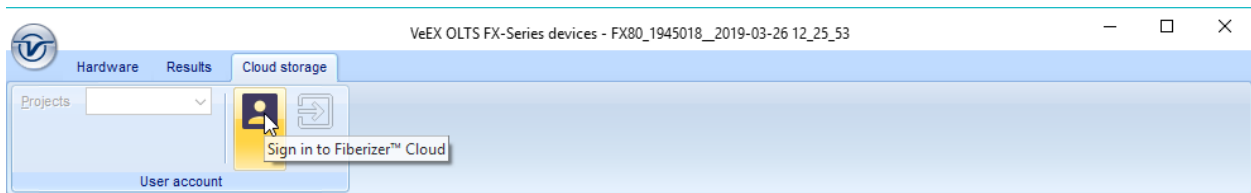


2. Enter the user credentials in the resulting form.

*Fiberizer Cloud Login screen*



To register for a Fiberizer Cloud account, on the **Cloud Storage** tab, click the **Register in Fiberizer  Cloud** button. Alternatively, click the **Sign up** link on the **Login** screen.
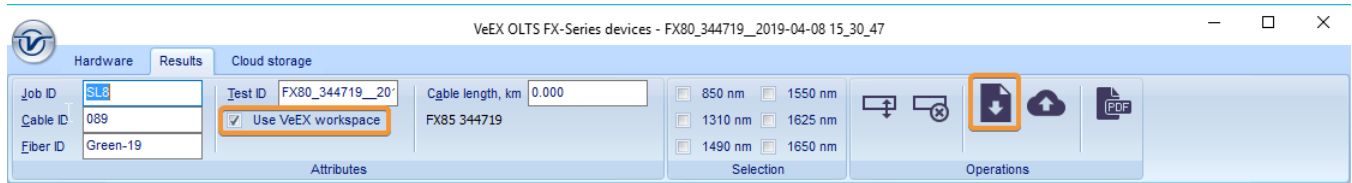
**To upload measurement results:**

1. On the **Cloud Storage** tab, select a project from the Fiberizer Cloud account (see below).

*Selecting a Fiberizer Cloud account for upload*
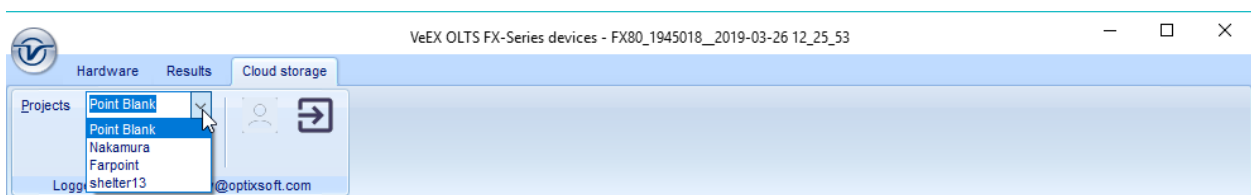
2. In the **Results** tab, select the **Use VeEX workspace** checkbox. This ensures that the measurement results are uploaded to a dedicated VeEX folder in the Fiberizer Cloud account. To upload results to Fiberizer Cloud folder in the root directory, leave the **Use VeEX workspace** checkbox unselected.

*Saving to Fiberizer Cloud*



3. Click the **[Upload to Fiberizer Cloud]** button to upload the measurement. **LTSync** creates a folder in the Fiberizer™ Cloud account named after the connected device (for example, **FX82 7654321**) to which it uploads the results. The results saved in the Fiberizer Cloud account will be accessible to other compatible VeEX devices.

- *The status bar at the bottom left shows the status of the current operation.*
- *The measurement results are saved as an .oxtls file.*

To log out from Fiberizer Cloud, on the **Cloud Storage** tab, click the **[ Log out from Fiberizer Cloud]** button .

*For more information on using LTSync, see the LTSync User Manual at www.veexinc.com.*

# 14.0 Warranty and Software

**Warranty Period:** The warranty period for hardware, software and firmware is one (1) year from the date of shipment to the customer. The warranty period for battery pack, LCD, LCD touch panel, LCD protective cover, and accessories (including, but not limited to patch cords, AC adaptor, SFP, USB adaptors, carrying case, carrying pouch) is limited to one (1) year.

**Hardware Coverage:** VeEX Inc. warrants hardware products against defects in materials and workmanship. During the warranty period, VeEX Inc. will, at its sole discretion, either

- Repair the products

- Replace hardware which prove to be defective

provided that the products that the customer elects to replace are returned to VeEX Inc. by the customer, along with Proof of Purchase, within thirty (30) days of the request by the customer, freight prepaid.

**Software Coverage:** VeEX Inc. warrants software and firmware materials against defects in materials and workmanship. During the warranty period, VeEX Inc. will, at its sole discretion, either

- Repair the products

- Replace software and/or firmware which prove to be defective

provided that the products that the customer elects to replace are returned to VeEX Inc. by the customer, along with proof of purchase, within thirty (30) days of the request by the customer, freight prepaid.

Additionally, during the warranty period, VeEX Inc. will provide, without charge to the customer, all fixes, patches and enhancements to the purchased software, firmware and software options. VeEX Inc. does not warrant that all software or firmware defects will be corrected. New enhancements attached to a software option require the option to be purchased (at the time of order or the time of upgrade) in order to benefit from such enhancements.

**Limitations:** The warranty is only for the benefit of the customer and not for the benefit of any subsequent purchaser or licensee of any merchandise (hardware, software, firmware and/or accessories).

**Revoking the warranty:** VeEX Inc. does not guarantee or warrant that the operation of the hardware, software or firmware will be uninterrupted or error-free. The warranty will not apply in any of the following cases:

- Improper or inadequate maintenance by the customer

- Damage due to software installed by the customer on the unit without prior authorization (written) from VeEX Inc.

- Unauthorized alteration or misuse

- Damage occurred from operating the unit outside of the environmental specifications for the product

- Improper installation by the customer

# 15.0 Product Specifications

The most recent product specifications can be found on the VeEX web site at www.veexinc.com.

# 16.0 Certifications and Declarations

**What is CE?**

The CE marking is a mandatory European marking for certain product groups to indicate conformity with the essential health and safety requirements set out in European Directives. To permit the use of a CE mark on a product, proof that the item meets the relevant requirements must be documented.

Use of this logo implies that the unit conforms to requirements of European Union and European Free Trade Association (EFTA). EN61010-1

For a copy of the CE Declaration of Conformity relating to VeEX products, please contact VeEX customer service.

**What is RoHS?**

RoHS is the acronym for Restriction of Hazardous Substances. Also known as Directive 2002/95/EC, it originated in the European Union and restricts the use of specific hazardous materials found in electrical and electronic products. All applicable products imported into the EU market after July 1, 2006 must pass RoHS compliance.

Click here for more information about RoHS compliance as it relates to VeEX products or go to www.veexinc.com.

# 17.0 About VeEX

VeEX Inc., an innovative, customer-focused communications test and measurement company, develops next-generation test and monitoring solutions for telecommunication networks and services. With a blend of advanced technologies and vast technical expertise, VeEX has developed products that diligently address all stages of network deployment, maintenance, and field service turn-up and integrate service verification features across DSL, fiber optics, CATV/DOCSIS, mobile backhaul and fronthaul (CPRI/OBSAI), next-generation transport network, fiber channel, carrier and metro Ethernet technologies, WLAN, and synchronization.

Visit us online at www.veexinc.com for the latest updates and additional documentation.

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