

Quick Card

T-BERD[®]/MTS-2000 Modular Test Set E4100 Module FTTH OTDR

This quick card explains how to connect to a fiber under test, configure FTTH mode test setups, run tests, and analyze results with a VIAVI SmartOTDR or T-BERD/MTS-2000 and 4100-series OTDR module.

Equipment Requirements:

- SmartOTDR or T-BERD/MTS-2000 equipped with the following:
 - Fiber Optics Software Release V16.22 or greater
 - E4100 Series OTDR Module for T-BERD/MTS-2000
 - FTTH-SMARTLINK Mapper icon-based OTDR results option (**FTTH-SLM** license key required)
- Fiber optic cleaning and inspection tools
- 20-meter (or longer) fiber optic patch cord (Launch Cable)
- Optical Coupler to connect Launch Cable to Fiber Under Test



The following information is required to complete the test:

- Type of Connectors (SC UPC, SC APC, LC UPC, etc.)
- Distance unit (feet, meters, miles, kilometers)
- LOCATION: FTTH OTDR testing must be done from ONT to OLT direction. It can be either the Second Splitter, NAP or at the Customer Premise (ONT Location)

Fiber Inspection Guidelines:

Inspect and clean (if necessary) both sides of every connection being used (bulkhead connectors, patch cords, and OTDR port) prior to reconnection for each test. Using the P5000i or FiberChek Probe:

- Focus fiber on the screen. If dirty, clean the connector.
- If it appears clean, run inspection test.
- If it fails, clean fiber and re-run inspection test. Repeat until it passes.



Figure 1: FiberChek Probe



Figure 2: Image of Clean Fiber

Connect to Fiber Under Test (FUT):

All fibers and connectors should be inspected prior to connection, as described on page 1. The OTDR may be connected to the FUT via an optical patch panel (OPP) bulkhead or an optical coupler as follows:

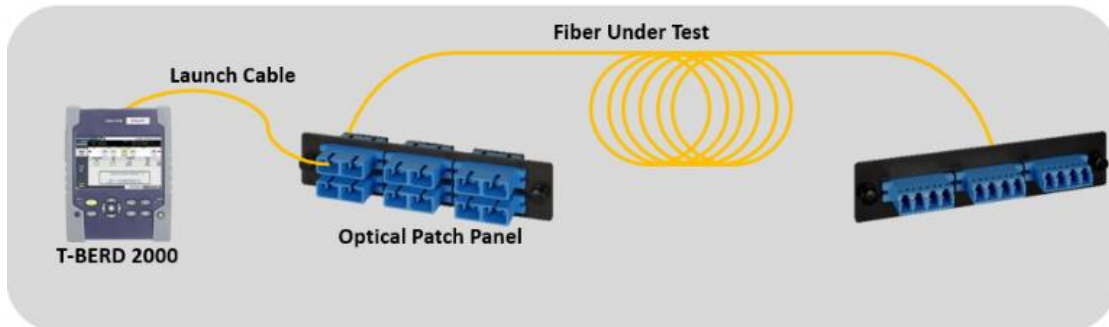




Figure 3: Connecting OTDR to FUT via Coupler or OPP

1. Inspect the OTDR port on top of the test set.
2. If the interface to the FUT is a patch cord, connect the patch cord to an optical coupler with the same connector type.
3. Inspect the FUT connected to the coupler or OPP.
4. Inspect the fiber end face of the Launch Cable.
5. Connect the Launch Cable to the OTDR port.
6. Inspect the other fiber end face of the Launch Cable.
7. Connect the Launch Cable to the coupler or OPP.

Launch and Configure Test:

1.  Press the **ON/OFF** button to turn on the test set.
2.  If files are to be saved, tap the **FILE** Button and tap the **results** folder. Otherwise, proceed to step 4.

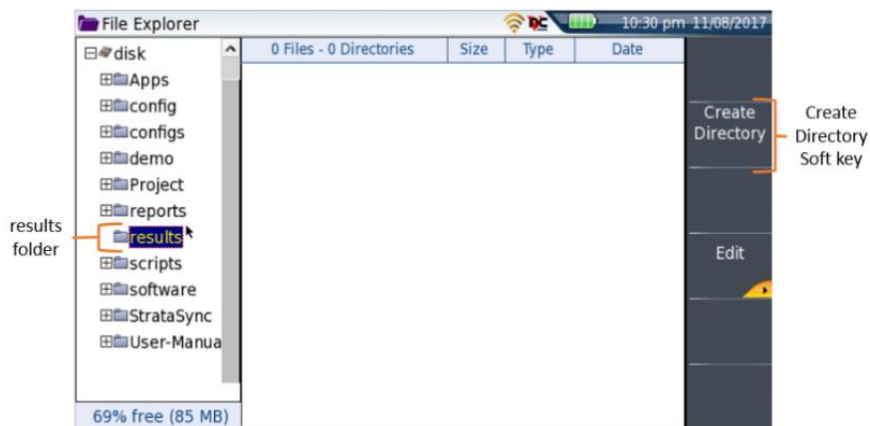
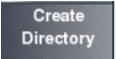



Figure 4: File Explorer

3.  Tap the **Create Directory** soft key, enter a name for your new folder, and tap the **Enter** key. All trace files will be saved to this directory.

4.  Press the **HOME** button to display the Home Screen.

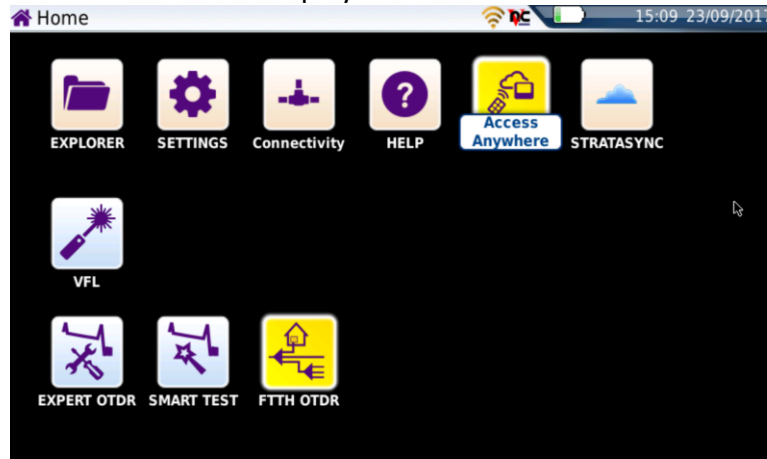



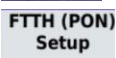


Figure 5: Home Screen

5.  Tap the **FTTH OTDR** icon until it is selected and highlighted in yellow.
6.  Press the **RESULTS** button to show the **Results view**.
7.  Press the **SETUP** button.
8.  Tap the **FTTH (PON) Setup** soft key to configure your GPON testing Scenario:

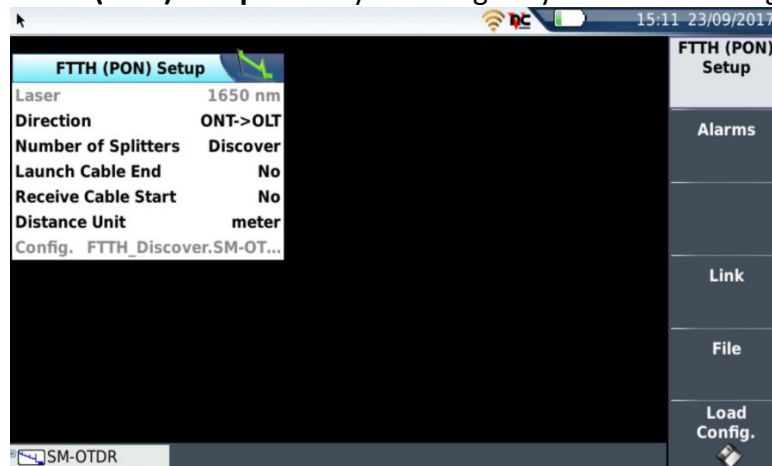


Figure 6: FTTH (PON) Setup Screen

- a) **Laser**
- i) For **GPON Network Construction**: Select **1310/1550nm** or **ALL**.
 - ii) For **GPON Live Network Testing (Live)**: Select **1625nm (LIVE)** (or 1650nm if available). 1625nm and 1650nm wavelengths allow for live network testing without interfering with the live traffic between the OLT and ONT.
- b) **Direction**: Always select **ONT to OLT**.

- c) **Number of Splitters:** Select one of the following modes:
 - i) **1 / 2 / 3:** If you know the topology of your network under test, select **1** if you don't have cascaded splitters; select **2** or **3** if you have a cascaded splitter topology.
 - ii) **Discover:** If you do not know the network topology, select **Discover**. The OTDR will automatically detect how many splitters you have in your network and try to detect the type of splitter. Note: Pass/Fail analysis is disabled. The measurement is based on the attenuation values and the distances between splitters: If two splitters are within the specified Splitter Dead Zone (SDZ), the OTDR may show the two splitters as one single event.
- d) **Launch Cable End and Receive Cable Start:** Select **Length** if you want to see the Launch cable as a dedicated event with no measurements. After selecting Length, specify the length of your Launch or Receive Cable. Otherwise, select **No**.
- e) **Distance Unit:** Select between meter, km, feet, kfeet, miles or inches.

9. **Alarms**

ALARMS Menu: Tap the **Alarms** soft key to configure any alarm thresholds: Selections available are: ITU or IEEE G.PON Standards based alarms, TIA/ISO-IEC Structured Cabling Alarms or User Defined Alarms.

Alarms			
Threshold	None	None	Default
		TIA-568.3	ISO/IEC 11801
		G.697/G.98x PON	G.697/IEEE PON
		ISO/IEC 14763-3	User

Figure 7: Alarms Setup



10. **Link**

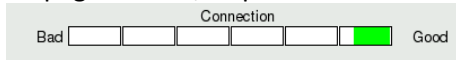
Link Menu: Tap the **Link** soft key to change your Labeling and Fiber Increment configurations, in order to automate file naming when saving reports.

Link Description				
Test Point				
OLT Id	OLT			
ONT Id	ONT			
Distribution Id				
Feeder Id				
Fiber Number	1			
Change Fiber Nbr	Increment	No	Increment	Decrement
Technician Id		User defined		
Comment				



Figure 8: Link Setup

Run Test:


-  Tap the **RESULTS** button.
-  Tap the **START/STOP** button to start the test. After auto-configuration, the OTDR will perform a connection check to ensure that the connection is **Good**. If the Connection is **Bad**, repeat steps 1 through 7 on page 2. Also, inspect and clean the fiber end faces in any patch panels or connectors near the OTDR.




- The OTDR will perform acquisitions at the configured wavelengths. Results may be displayed in 3 different formats: Trace view with Summary, Trace view with events, or Smartlink view.


-  Tap the **Trace/Smartlink** soft key to toggle between **Trace** views and **SmartLink** view.
-  Tap the Enter button in the center of the arrow buttons to toggle between the **Trace view with Summary** and **Trace view with Events**:



- Trace view with Summary:** Results for each wavelength are shown in different colors in the upper results display. Fiber length and link loss are shown in the lower display.



-  Use the right and left arrow buttons to toggle between results for each wavelength.


- Trace view with Events:** Results for each wavelength are shown in different colors in the top of the display. Each event is listed in the lower display. Events that violate pass/fail alarm thresholds are shown in **RED**.

-  Use the right and left arrow keys to toggle between results for each wavelength.

-  Tap the **Zoom** soft key to enable the following controls:

-  Toggle between auto zoom and full trace view.
-  Expand and contract trace.

- SmartLink view:** The FUT is displayed as a series of icons representing each event (connectors, splices, splitters, bends, etc.). The center of the display shows summary results per wavelength for the entire span. Acquisitions for which all events are acceptable are marked with a green check . Acquisitions with events that exceed pass/fail thresholds for loss or reflectance are marked with a red . The lower display shows each event that exceeds thresholds.

-  Tap an event icon and tap the **Event View** soft key to show detailed results for the event.

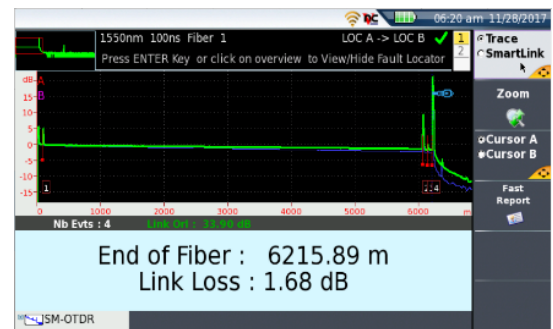


Figure 9: Trace view with Summary

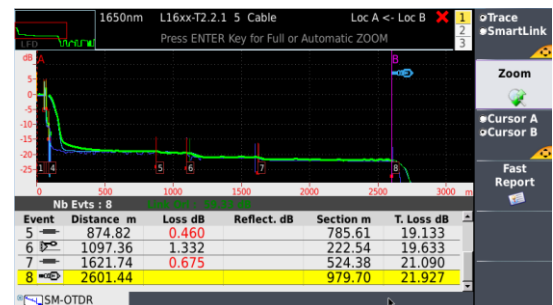


Figure 10: Trace view with Events

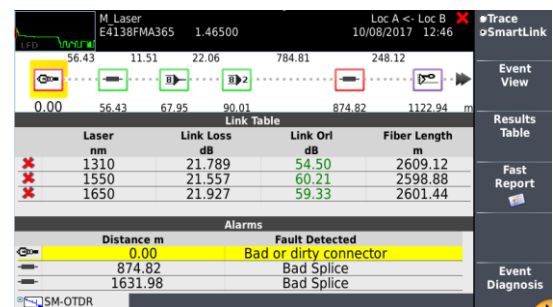


Figure 11: SmartLink View