

Quick Card

T-BERD®/MTS-2000 Modular Test Set FTTA OTDR, Cell Tower Maintenance

This quick card explains how to connect to a fiber under test, configure Fiber to the Antenna (FTTA) OTDR test setups, run tests, and analyze results with a VIAVI T-BERD/MTS-2000 equipped with a 4100-series OTDR module to troubleshoot cabling component problems such as fiber breaks or high loss and reflective defects (dirty connectors, fiber mismatches, misalignment, macro-bends/kinks, etc.)

Equipment Requirements:

- T-BERD/MTS-2000 equipped with the following:
 - Fiber Optics Software Release V16.22 or greater
 - E4100 Series OTDR Module
 - Software options for FTTA OTDR and SmartLink Mapper (SLM) icon-based OTDR results
- Fiber optic cleaning and inspection tools
- 20-meter fiber optic patch cord (Launch Cable) with connectors that match the OTDR Port and Fiber Under Test (SC UPC, SC APC, LC UPC, etc.)
- Optical Coupler to connect Launch Cable to BBU Jumper Cable or Trunk Cable



The following information is required to complete the procedure:

- Type of Fiber (Multimode or Single Mode)
- Type of Connectors (SC UPC, SC APC, LC UPC, etc.)
- Tower architecture:
 - Is there a BBU jumper cable?
 - Is there an RRU jumper cable?
- RRU and BBU/Base Station IDs
- Fiber Code (1-Rx, 1-Tx, ..., 24-Tx)
- Distance unit (feet or meters)

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 pass fiber inspection prior to connection, as described on page 1. The OTDR may be connected to the FUT as follows:

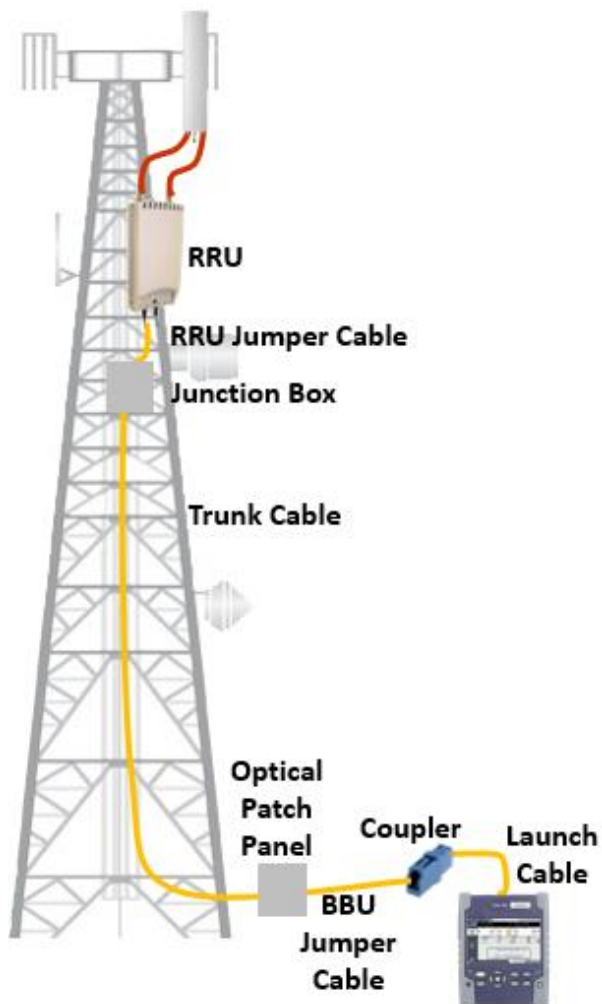


Figure 3: Tower Architecture with BBU Jumper

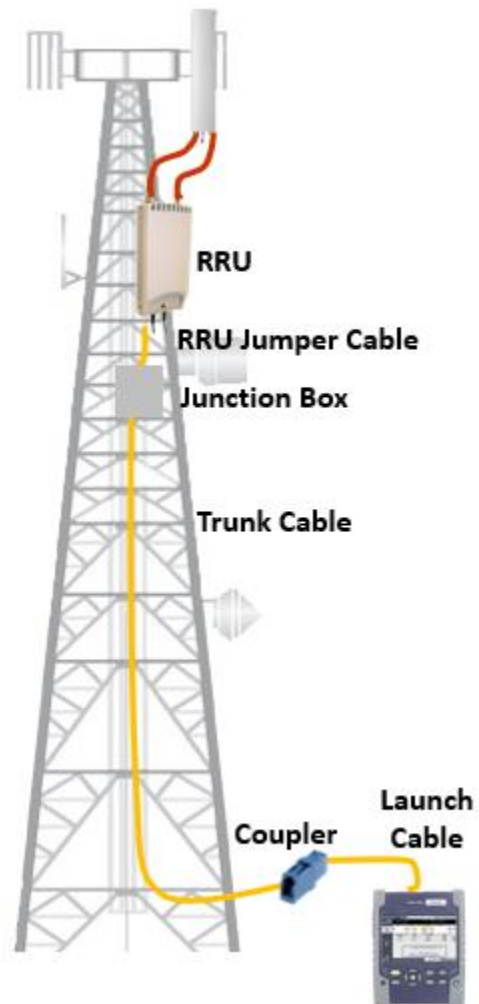


Figure 4: Tower Architecture, no BBU Jumper

1. Inspect and clean the OTDR port on top of the test set.
2. If the interface to the FUT is the BBU Jumper or Trunk Cable, connect the cable to an optical coupler with the same connector type.
3. Inspect and clean the FUT connected to the coupler or OPP.
4. Inspect and clean fiber end face of the Launch Cable.
5. Connect the Launch Cable to the OTDR port.
6. Inspect and clean the other fiber end face of the Launch Cable.
7. Connect the Launch Cable to coupler or OPP leading to the RRU.

Launch Test:



Figure 5: Home View

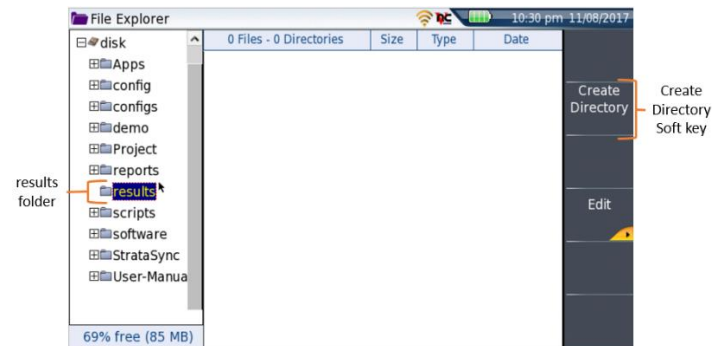












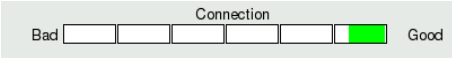


Figure 6: File Explorer

1.  Press the **ON/OFF** button to turn on the test set.
2.  If files are to be saved, press the **FILE** Button and tap the **results** folder. Otherwise, proceed to step 4.
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.
5.  Tap the desired (Multimode or Single Mode) **FTTA OTDR** icon until it is selected and highlighted yellow.
6.  Press the **SETUP** button. If an **FTTA_RRU_Maintenance** configuration file has already been loaded, proceed to step 9.
7.  Tap the **Load Config** soft key. Select **FTTA_RRU_Maintenance.SM-OTDR** for single mode fiber, or **FTTA_RRU_Maintenance.MM-OTDR** for multimode fiber.
8.  Tap the **Load as FTTA Config** soft key.
9.  Tap the **Analysis** soft key:
 - Set **BBU Jumper** to **Yes** if there is a BBU Jumper Cable between the Launch Cable and OPP; Set **BBU Jumper** to **No** if the Launch Cable is directly connected to the OPP.
 - Set **RRU Jumper** to **Yes** if there is a Junction Box/OPP at the top of the tower between the Trunk Cable and RRU; Set **RRU Jumper** to **No** if there is no Junction Box or no RRU Jumper.
 - Leave other settings at default values.
 - Tap the **Analysis** title bar to display the **Link** soft key.
10.  Tap the **Link** soft key:
 - Set Base **Station ID** to the Base Station or BBU Identifier.
 - Set **RRU ID** to the RRU Identifier or sector (Alpha, Beta, Gamma).
 - Set **Fiber Code** to the fiber number and polarity using the right (<) and left (>) arrow buttons.
 - Set **Change Fiber Nbr** to **Increment**.
 - Set **Distance Unit** to **Feet** or **Meters**.

Run Test:


-  Press the **RESULTS** button.
-  Press 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.







- The OTDR will perform acquisitions at two wavelengths and the trace file will be saved to disk. Results may be displayed in 3 different formats: Trace view, SmartLink Summary View, or SmartLink Event View.

Tap the **Trace/SmartLink** soft key , to toggle between **Trace view** and **SmartLink views**.

Tap the **Event View** soft key  to toggle between the **SmartLink Summary view** and **SmartLink Event View**:

- Trace view:** Results for each wavelength are shown in different colors in the top section of the display. Each event is listed in the lower section of the display. Any events that violate pass/fail thresholds for loss or reflectance are shown in **RED**. Use the right and left arrow button to Toggle between results for each wavelength. Tap the **Zoom** soft key , to enable zoom controls with the following buttons:

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

- SmartLink Summary view:** The FUT is displayed as a series of icons representing events (connectors, splices, 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.

- SmartLink Event view:** The FUT is displayed as a series of labels icons representing each event in the trace:

- BBU:** Connection (coupler) between launch cable and BBU Jumper Cable
- BOT TWR:** Optical Patch Panel at bottom of tower
- TOP TWR:** Junction Box/Patch Panel at Top of tower
- RRU:** End of RRU Jumper Cable

Any events that violate pass/fail thresholds for loss or reflectance are shown in **RED**. Tap on any event to display details in the lower display.



Figure 3: Trace view

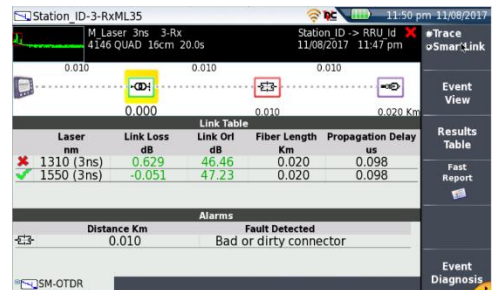


Figure 4: SmartLink Summary View

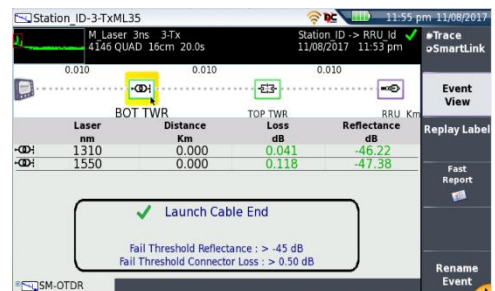


Figure 5: SmartLink Event View

- Repeat steps 2 and 3 for all Fibers under test.