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.
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:

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.
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.


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:

1. Press the RESULTS button.

2. 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.

3. 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 soft key to toggle between the SmartLink Summary view and SmartLink Event View:

   a. **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.

   b. **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.

   c. **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.

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