Quick Card

T-BERD®/MTS-5800 Network Tester
Ethernet Capture/Decode in Optical SFP Through Mode

This document outlines how to use the T-BERD 5800 to capture and analyze live, in-service network traffic in pass-through mode on an optical interface.

Equipment Requirements:
- T-BERD/MTS-5800 equipped with the following:
  - BERT software release V29.0 or greater
  - Ethernet test options:
    - C510M1GE, C5LSCAPTURE, and C5DUALPORT for 1 Gigabit Optical.
    - C510GELAN, C510GCAPTURE, and C5DUAL10G for 10 Gigabit Ethernet.
  - SFP optical transceiver to match the line under test
- Patch Cables to match the optical transceiver and line under test (CAT5E, Single mode or Multimode fiber)
- Fiber optic inspection microscope (VIAVI P5000i or FiberChek Probe)
- Fiber Optic Cleaning supplies

Figure 1: Equipment Requirements

The following information is required to complete the test:
- Physical Interface (1000BASE-LX, 10GBASE-LR, etc.)
- Filtering criteria (VLAN ID, Destination MAC address, Source MAC address, EtherType)

Fiber Inspection Guidelines:
- All fiber end-faces must be clean and pass an inspection test prior to connection.
- Use the VIAVI P5000i or FiberChek Probe microscope to inspect both sides of every connection being used (SFP Port, bulkhead connectors, patch cables, etc.)
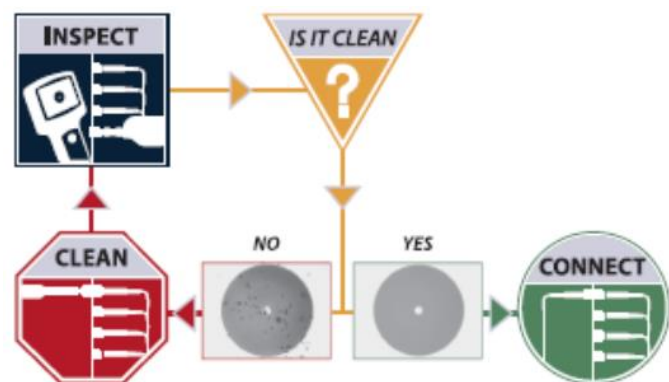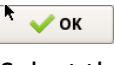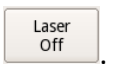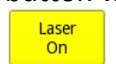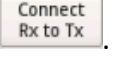

Figure 2: Inspect Before You Connect

Connect to Line Under Test:

1. Optical in-line Monitoring uses both ports in the T-BERD in "through" mode. Two transceivers and two tests are required to pass through bidirectional traffic.

2. For optical testing, packets received on each SFP/SFP+ are retransmitted on the transmit fiber of the same SFP/SFP+, as in figure 3.

Launch Test:

1. Press the Power button ⏻ to turn on the test set and view the startup screen.

2. Using the **Select Test** menu, **Quick Launch** menu, or **Job Manager**, launch an **Ethernet**, **Layer 2 Traffic, Thru** test on **Port 1** as follows:
   - For 1GigE Through mode:
     Ethernet►1GigE Optical►Layer 2 Traffic►P1 Monitor/Thru
   - For 10GigE Through mode:
     Ethernet►10GigE LAN►Layer 2 Traffic►P1 Monitor/Thru

3. Add a second test on **Port 2** using the **Select Test** menu:
   - For 1GigE: **Add Test►Ethernet► 1GigE Optical►Layer 2 Traffic► P2 Monitor/Thru**
   - For 10GigE: **Add Test►Ethernet► 10GigE LAN►Layer 2 Traffic► P2 Monitor/Thru**

4. Tap the **Port 1** folder at the top of the screen.

5. Tap Tools to display the T-BERD's **Tools Panel**. Tap Reset Test to Defaults and press ✓ OK to continue.

6. Select the **Laser** tab in the **Actions panel,** and press Laser Off. The button will turn yellow and be relabeled Laser On.

7. Select the **Actions** tab and press Connect Rx to Tx.

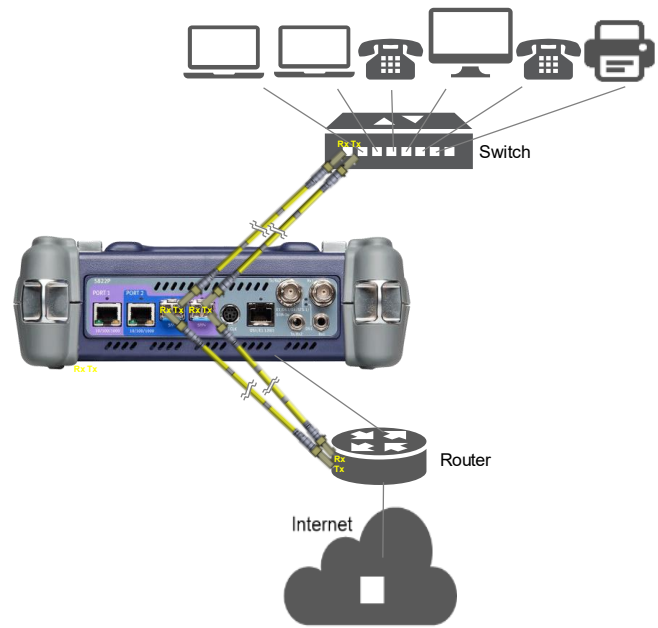8. Repeat steps 4 through 7 for **Port 2**.

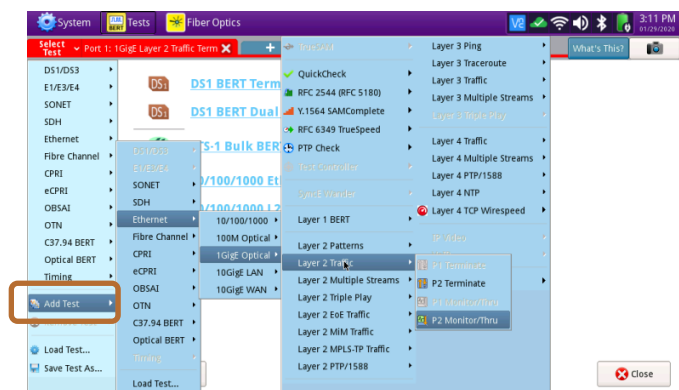*Figure 3: Optical Dual Thru mode connection*
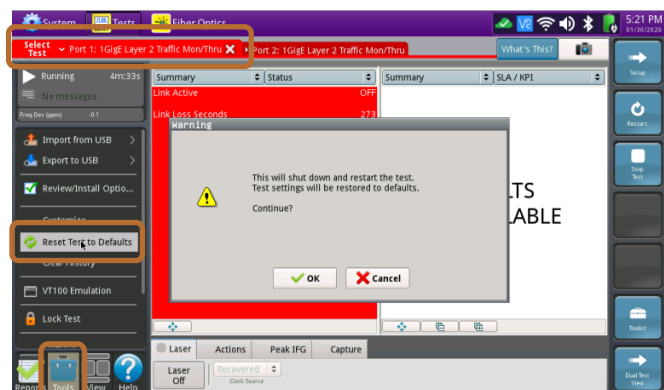

Figure 4: Adding an Optical Monitor/Thru test on Port 2

Figure 5: Reset Test to Defaults

Figure 6: Laser On

Figure 7: Connect Rx to Tx

Configure Test:

1. Tap the **Port 1** folder at the top of the screen.

2. Press the **Setup** soft key [Setup].

3. In the **Filters/Ethernet** settings, set desired encapsulation, MAC Address filter (DA or SA), VLAN filter, or Type filter.

4. In the **Filters/Rx/Payload** settings, set **Payload Analysis** to **Off.**

5. Press the **Results** soft key [Results] to return to the Results screen.

6. Press the **Restart** Soft Key [Restart] on the right side of the screen.

7. Check LEDs: a green **Signal Present** LED ● indicates the T-BERD is receiving an optical signal. Green **Sync Acquired** and **Link Active** LEDs indicate that the T-BERD has successfully connected to the network equipment.

8. Set the right Results Window to display **Ethernet/Capture** results.

9. Tap the **Port 2** folder at the top of the screen.
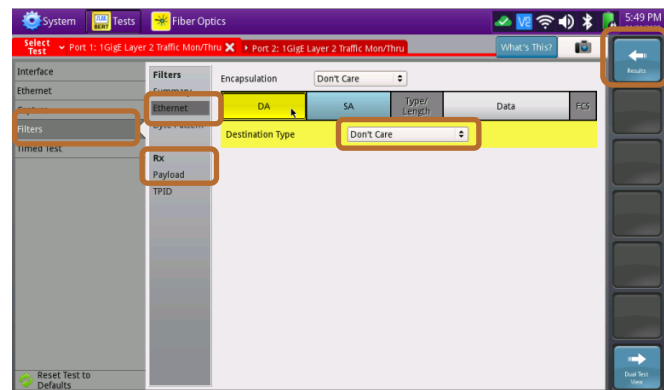
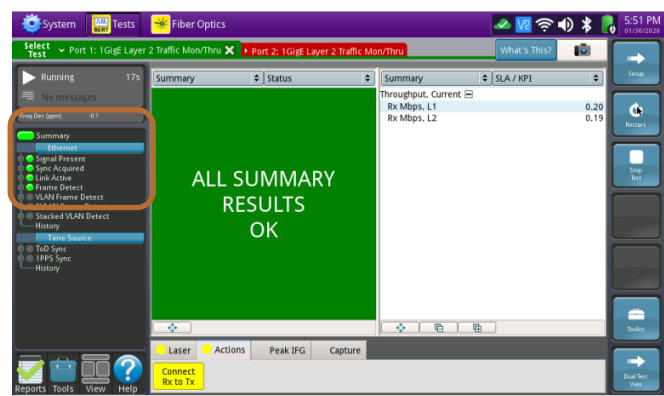10. Repeat steps 2 through 9 for **Port 2**.

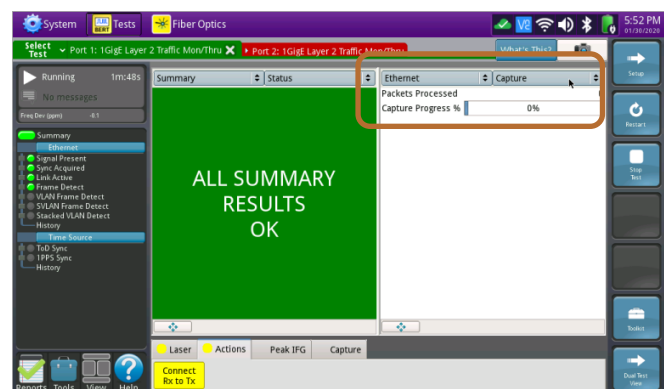
Figure 8: Setup

Figure 9: Check LEDs

Figure 10: Ethernet/Capture Results

Packet Capture/Decode:

1. Tap the **Port 1** folder at the top of the screen.
2. Select the **Capture** tab in the **Actions panel,** and press [Start Capture]. The button will turn yellow and be relabeled [Capture Started].
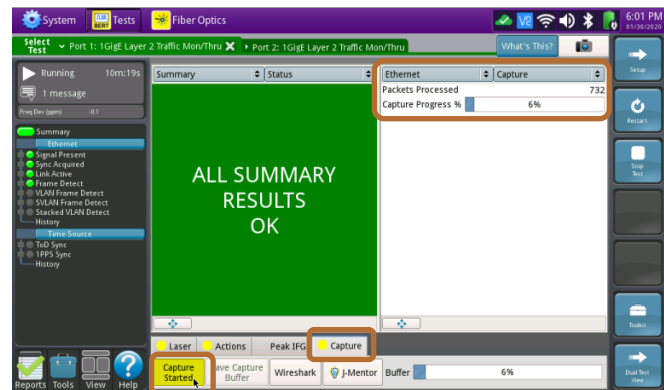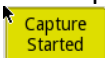3. Repeat Steps 1 and 2 for **Port 2**.

Figure 11: Start Capture

4. Tap the **Port 1** folder at the top of the screen.
5. When the desired number of packets have been processed, press [Capture Started] to stop packet capture. The button will turn gray and be relabeled [Start Capture].
6. Repeat Steps 4 and 5 for **Port 2**.
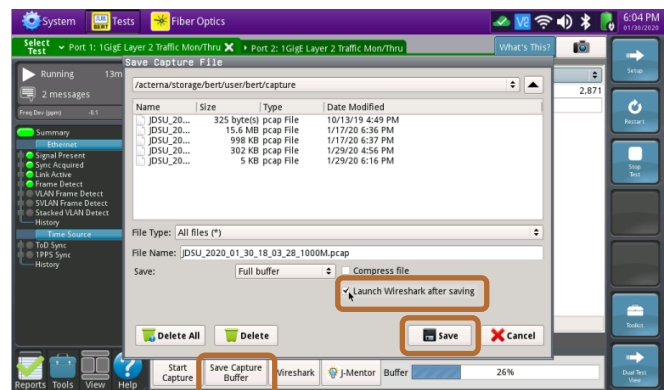
Figure 12: Save Capture Buffer

7. Tap the **Port 1** folder at the top of the screen.
8. Press [Save Capture Buffer]. Ensure "Launch Wireshark after saving" is checked and press [Save] to save the **PCAP** (**P**acket **CAP**ture) file to the /bert/capture folder of the T-BERD's hard drive.
9. View and analyze the packet capture using WireShark.
10. Tap **File** and **Quit** to exit WireShark.
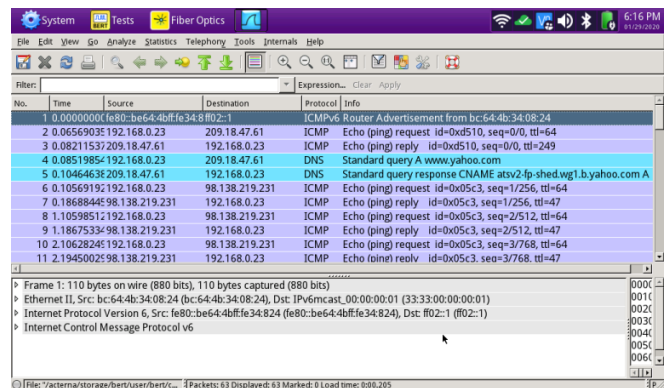11. Repeat steps 7 through 10 for **Port 2**.

Note: Go to https://www.wireshark.org/ for information and tutorials on WireShark.

Figure 13: Wireshark