T-BERD®/MTS-5800 Network Tester
Ethernet Layer 3 Traffic Generation

This document outlines how to use the T-BERD 5800 to generate IPv4 Unicast Traffic and measure Metro Ethernet key performance indicators (KPIs). A second T-BERD/MTS 5800 or compatible loopback device should be used at the far-end of the line under test for traffic loopback if you wish to measure KPIs.

Equipment Requirements:
- T-BERD/MTS-5800 equipped with the following:
  - BERT software release V27.1 or greater
  - Ethernet test options:
    - C510M1GE for 1 Gigabit or less
    - C510GELAN for 10 Gigabit Ethernet
    - C525GELAN for 25 Gigabit Ethernet
    - C540GELAN for 40 Gigabit Ethernet
    - C5100GELAN for 100 Gig Ethernet
  - SFP, QSFP, or CFP4 optical transceiver to match the line under test
- Patch Cables to match the T-BERD/MTS optics and the line under test
- 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 (10/100/1000BASE-T, 1000BASE-LX, 10GBASE-LR, 100GBASE-LR4, etc.)
- Auto Negotiation settings of the port under test
- VLAN ID, if VLAN tagging is used
- IP Address Parameters (DHCP or Static, Source IP, Default Gateway, Subnet Mask, and Destination IP)

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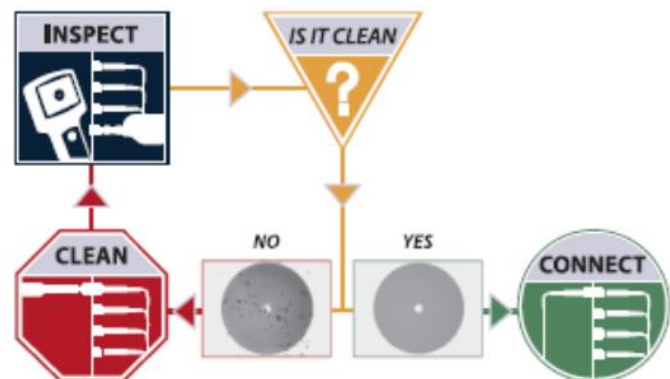

Figure 2: Inspect Before You Connect

Connect to Fiber Under Test (FUT):

1. For copper 10/100/1000BASE-T interface testing with the T-BERD/MTS 5800v2, connect the Port 1 10/100/1000 RJ-45 jack to the port under test using CAT 5E or better cable.
2. For copper 10/100/1000BASE-T interface testing with the T-BERD/MTS 5800-100G, insert a copper SFP into the Port 1 SFP+/SFP28 slot and connect to the port under test using CAT 5E or better cable.
3. For optical interfaces:
   - Insert SFP, QSFP, or CFP4 compatible with your physical interface into the Port 1 slot on the top of T-BERD.
   - Inspect and, if necessary, clean all fibers and bulkheads, as described on page 1.
   - Connect the SFP, QSFP, or CFP4 to the port under test using a Single Mode or Multimode jumper cable compatible with the interface under test.
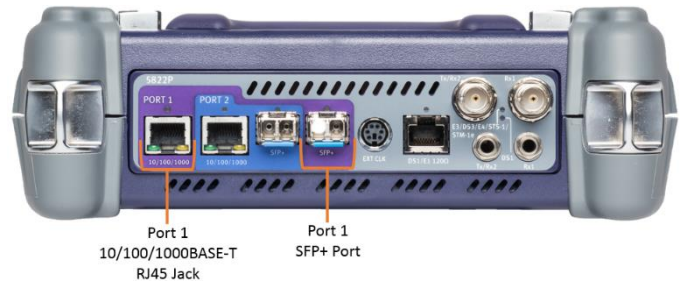

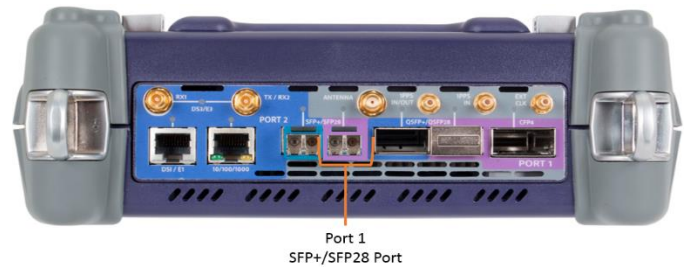*Figure 3: T-BERD 5800v2 Dual Port mainframe*

Figure 4: T-BERD 5800-100G mainframe

Launch and Configure 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 3 Traffic, IPv4, Terminate** test on port 1 for the desire physical interface. For example: **Ethernet▶10/100/1000▶Layer 3 Traffic▶IPv4▶P1 Terminate**.
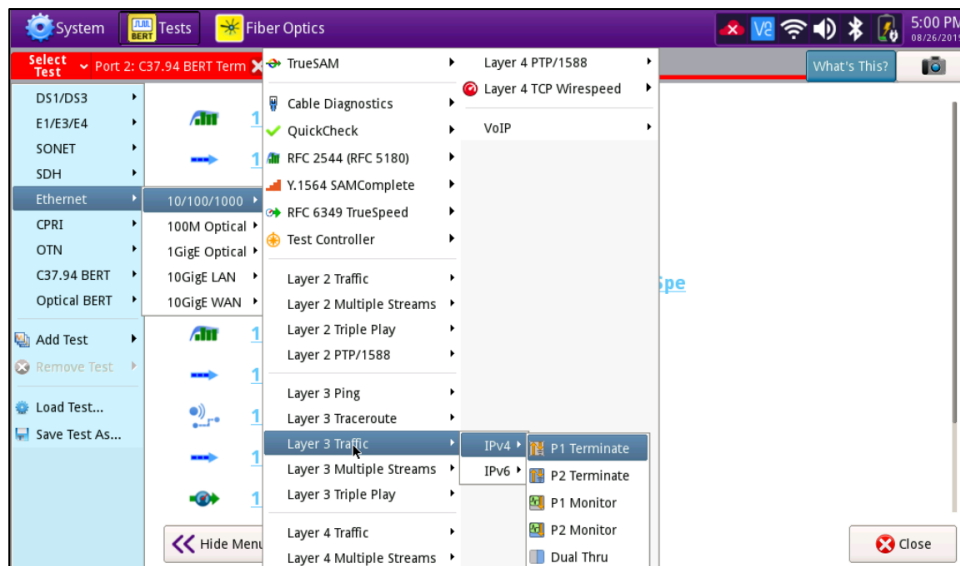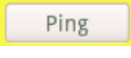

Figure 5: Startup Screen

3. If the test is not in the default settings, tap the **Tools icon** [Tools] and select [Reset Test to Defaults].
Tap [✔ OK] and wait for test to reconfigure.

4. Tap the **Setup** Soft Key [Setup] to display the **Interface** settings tab**.**

5. If you are testing a **10/100/1000** Electrical or **1GigE** Optical tests with auto negotiation disabled, select the **Physical Layer** tab and configure settings to match the Ethernet port under test.

6. If the network under test uses VLAN tagging, select the **Ethernet** settings tab, set **Encapsulation** to **VLAN,** tap **[VLAN]** and enter your **VLAN ID**.

7. Select the **IP** settings tab.

8. Select the desired packet size in the **Packet Length (bytes)** setting.

9. Select the **Source/Destination Addresses** field.
   a. Enter the **Source IP**, **Default Gateway** and **Subnet Mask** values.
   b. Set **Destination IP** to the desired IP Address.
   c. The T-BERD/MTS will resolve the destination IP address using the Address Resolution Protocol (ARP). Once resolved, the [Ping] button becomes available and you can use it to verify connectivity to the far-end loopback device.
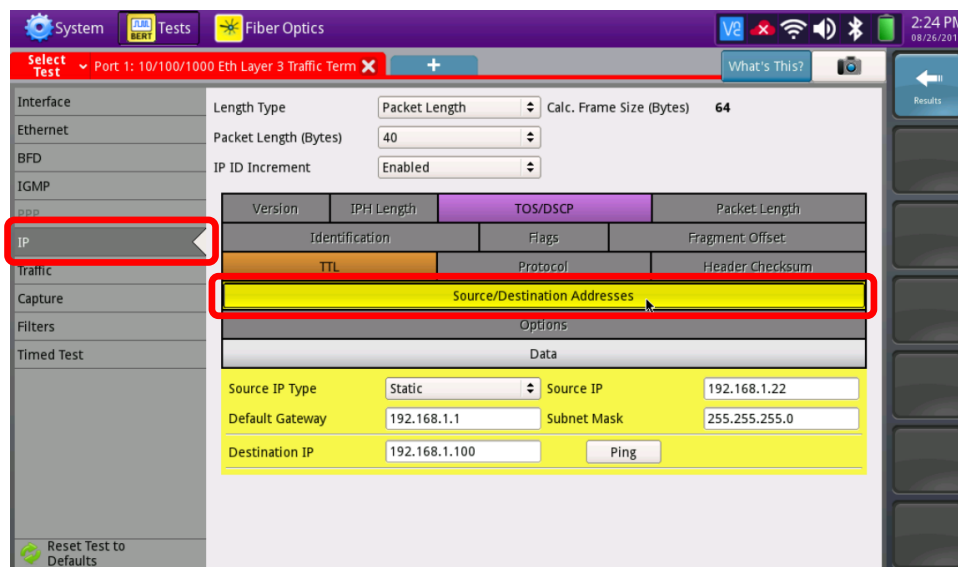

Figure 6: IP Settings

10. Select the **Traffic** settings tab. Set **Load Unit** to **Bit Rate** and set **Load** to the desired traffic rate or Committed Information Rate (CIR).

11. Tap the **Results** Soft Key**,** [Results] to view the Results screen.

12. If using the optical test port on T-BERD/MTS press the **Laser Off** button at the bottom of the screen to turn on the port laser. The button will turn yellow and be relabeled **Laser On**.

13. **Sync Acquired** and **Link Active** LEDs are green. A green **Signal Present** LED ● indicates the T-BERD/MTS is receiving an optical signal from the port under test. Green **Sync Acquired** and **Link Active** LEDs indicate that the T-BERD/MTS has successfully connected to the port under test and the link is active.
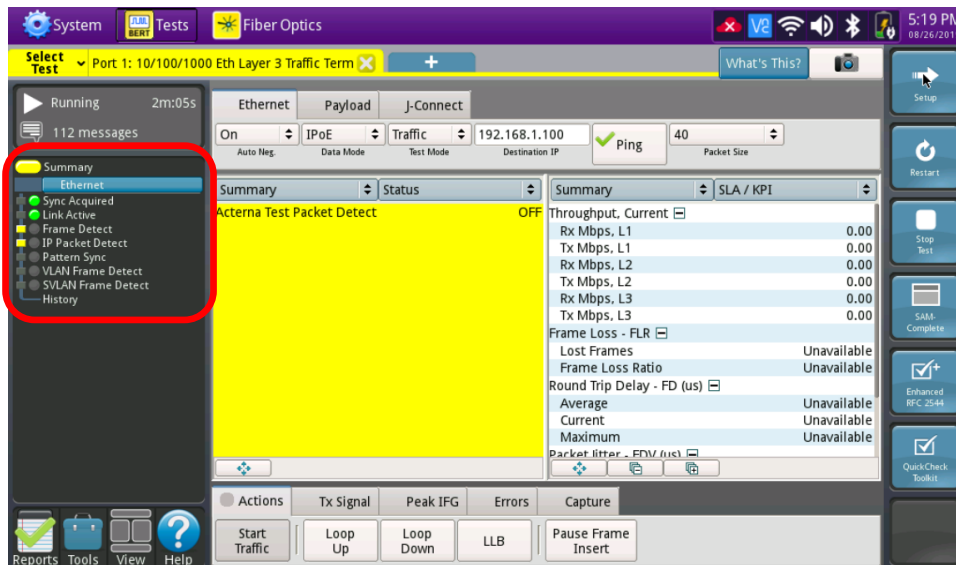
Figure 7: Results Screen

14. If you are testing head-to-head or if the loopback device is already in Local Loop Back (LLB) mode, proceed to step 15.

    Otherwise, Select the **Actions** tab in the **Actions Panel** and tap [Loop Up] to loop up the far end device.

15. Tap [Start Traffic]. The button will turn yellow and be relabeled [Traffic Started].

16. Tap the **Restart** Soft Key [Restart], on the right side of the screen.   Verify that:
    - The Right Results window shows "Rx Mbps, L1" is approximately equal to the CIR.
    - The Right Results window shows Lost Frames = 0.

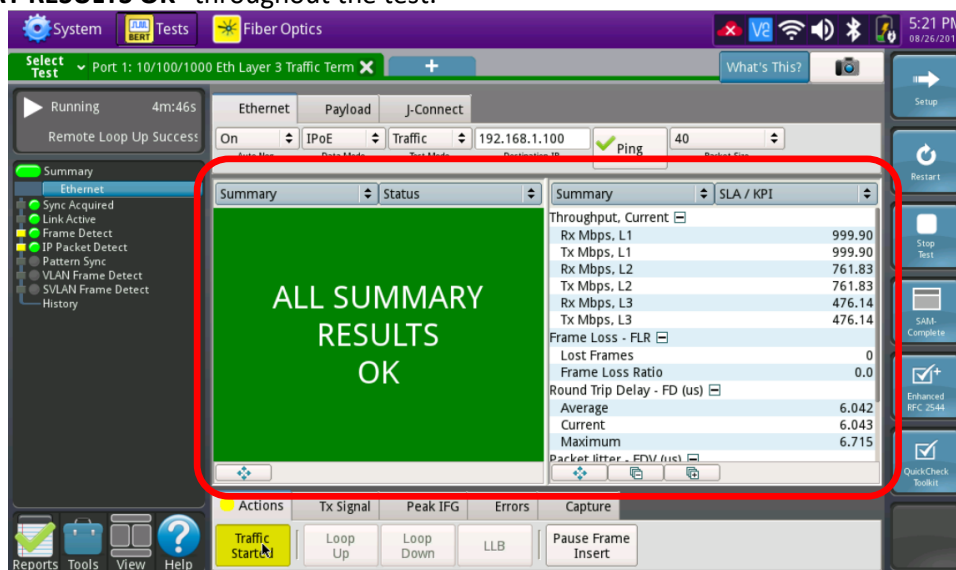17. Allow the Test to run for the desired duration. Verify that the Left Result window displays "**ALL SUMMARY RESULTS OK**" throughout the test.

Figure 8: All Summary Results OK