

# Quick Card

# T-BERD<sup>®</sup>/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
  - $\odot$  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

# 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.)

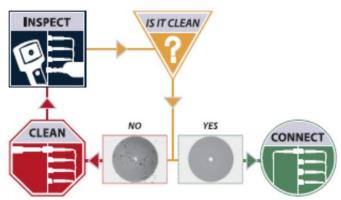


Figure 2: Inspect Before You Connect

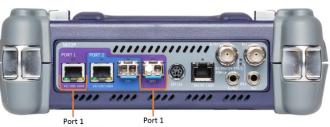


Figure 1: Equipment Requirements



## Connect to Fiber Under Test (FUT):

- 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.
- 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.



10/100/1000BASE-T SFP+ Port RJ45 Jack 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.
- 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.

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DS1/DS3 E1/E3/E4 SONET SDH Ethernet OTN C27.94 BERT Optical BERT	1 10/100/1000 → 100M Optical → 10GigE Optical → 10GigE LAN → 10GigE WAN →	<ul> <li>Cable Diagnostics</li> <li>QuickCheck</li> <li>RFC 2544 (RFC 5180)</li> <li>Y.1564 SAMComplete</li> <li>RFC 6349 TrueSpeed</li> <li>Test Controller</li> <li>Layer 2 Traffic</li> <li>Layer 2 Multiple Streams</li> </ul>	• • • • •	) Layer 4 TCP Wirespeed	ipe		
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Figure 5: Startup Screen



- 3. If the test is not in the default settings, tap the Tools icon and select Reset Test to Defaults
   Tap A wait for test to reconfigure.
- 4. Tap the **Setup** Soft Key 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.

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ilters		Options						
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	Source IP Type	Static	\$	Source IP	192.168.1.22			
	Default Gateway	192.168	.1.1	Subnet Mask	255.255.255.0			
	Destination IP	192.168	.1.100	Ping				

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, **Letter** 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.



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SVLAN Frame Detect History	Tx Mbps, L2 Rx Mbps, L3	0.00
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		QuickCheck Toolkit
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Reports Tools View Help	Start         Loop         Loop         Lund         Pause Frame           Traffic         Up         Down         LLB         Pause Frame	

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 to loop up the far end device.

- 16. Tap the **Restart** Soft Key , 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.

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Summary Ethernet	Summary 🗢 Status 🗢 Summary 🗢 SLA / KPI 🗢	Restart
Sync Acquires     Link Active     Frame Detect     PIP Packet Detect     VLAN Frame Detect     VLAN Frame Detect     History	ALL SUMMARY         Throughput, Current ⊟           RX Mbps, L1         9999.90           TX Mbps, L1         9999.90           RX Mbps, L2         761.83           TX Mbps, L2         761.83           TX Mbps, L3         476.14           RESULTS         0K           OK         Frame Loss - FLR ⊟           Lost Frames         0           Round Trip Delay - FD (us) ⊟         Average           Average         6.042           Current         6.043           Maximum         6.715	Stop Test SAAI- Complete Enhanced RFC 2544
	Actions Tx Signal Peak IFG Errors Capture	Toolkit
Reports Tools View Help	Traffic Start 1 Up Loop LLB   Pause Frame Insert	

Figure 8: All Summary Results OK

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