

QUICK CARD

Ethernet Layer 2 Traffic Generation



This document outlines how to set the T-BERD/MTS 5800 up as a Layer 2 Traffic Generator and measure Metro Ethernet key performance indicators (KPIs). Traffic may be generated head-to-head between two VIAVI Ethernet testers, or to a Loopback device.

- T-BERD/MTS 5800 equipped with the following:
 - Transport software release V31.2.1 or greater
 - C510M1GE test option for 10 Megabit to 1 Gigabit Ethernet
 - C510GELAN test option for 10 Gigabit Ethernet
 - C525GE test option for 25 Gigabit Ethernet
 - C540GE test option for 40 Gigabit Ethernet
 - C550GE test option for 50 Gigabit Ethernet
 - C5100GE test option for 100 Gigabit Ethernet
- Optical Transceiver supporting the line rate to be tested (SFP or QSFP)
- Cables to match the optical transceiver and the line under test
- Fiber optic inspection microscope (P5000i or FiberChek Probe)
- Fiber optic cleaning supplies



Figure 1: Equipment Requirements

LAUNCH TEST

1. Press the Power button  to turn on the T-BERD.
2. Tap the **Test** icon  at the top of the screen to display the **Launch Screen**.
3. Using the **Select Test** menu, Quick Launch menu, or Job Manager, launch the Ethernet Layer 2 Traffic test on Port 1 for the desired data rate. For example:
Ethernet ► 1GigE Optical ► Layer 2 Traffic ► P1 Terminate.

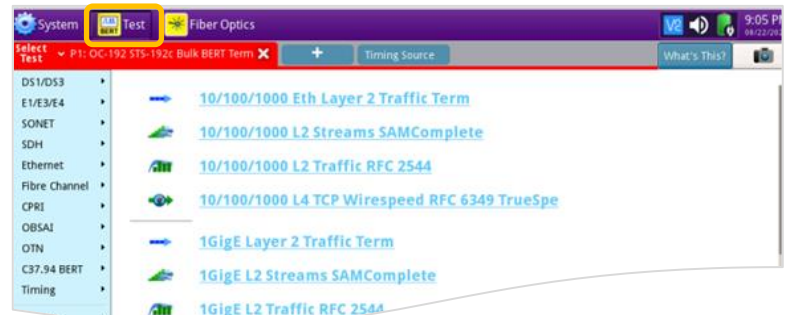

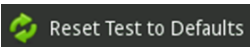



Figure 2: Launch Screen

4. Tap  to open the **Tools Panel** and select .
5. Tap  to continue.

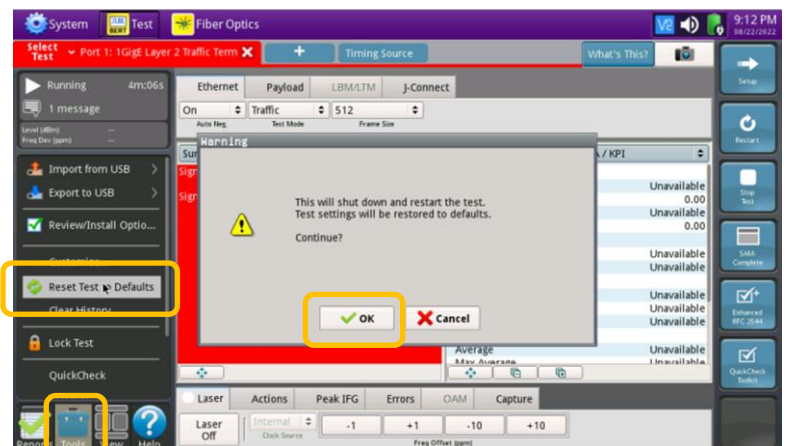



Figure 3: Tools Panel

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CONFIGURE TEST

- ▶ The following Information is needed to configure the test:
 - Physical Interface (10/100/1000BASE-T, 1000BASE-LX, 10GBASE-LR, 100GBASE-LR4, etc.)
 - Auto Negotiation settings of the port under test.

- ▶ For 10/100/1000 Electrical tests:
 1. Tap the **Ethernet** tab of the Quick Configuration menu and set **Auto Neg.** to the same value as the Ethernet port under test (**On** or **Off**).
 2. Tap the **Setup** soft key  on the top right side of the screen and proceed to page 3.


- ▶ For Optical Interfaces:
 1. Tap the **Setup** soft key  on the top right side of the screen.
 2. Select the **Interface/Connector** folder.
 3. Insert desired Optical Transceiver into the Port 1 SFP or QSFP slot on the top of the T-BERD/MTS.
 4. Review SFP information:
 - Verify that the SFP operates on the required wavelength (850nm, 1310nm or 1550nm).
 - Verify that the SFP supports the required data rate (1G, 10G LAN, etc).
 - Note the Min and Max Tx Levels (dBm) and Max Rx Level (dBm) to assess if optical attenuators are required.



Figure 4: Work Order

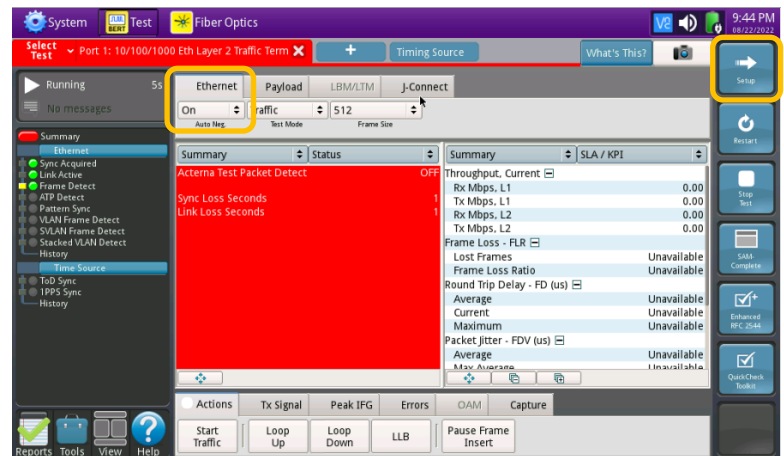


Figure 5: Quick Config, Auto Neg.

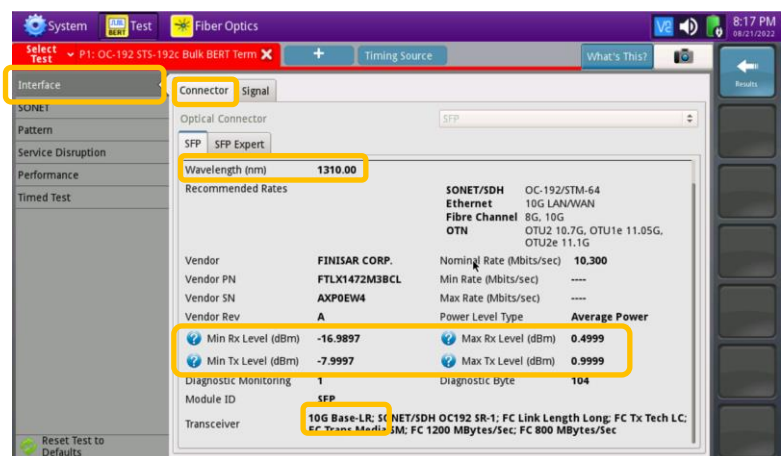


Figure 6: Setup, Interface/Connector

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CONFIGURE TEST (CONTINUED)

► Select the **Ethernet** settings tab.

1. If you are testing a VLAN, set **Encapsulation** to **VLAN**, tap the **VLAN** field and enter your **VLAN ID**.
2. If you are testing head-to-head with another T-BERD/MTS:
 - Tap the **SA** field to display the Factory Default Source MAC Address of your T-BERD/MTS. Provide this address to the operator of the other T-BERD/MTS, upon request.
 - Tap the **DA** field and enter the Source Address (SA) of the far-end T-BERD/MTS in the **Destination MAC** field.
3. If you wish to measure Bit Error Rate, tap the **Data** field, and set **Acterna Payload** to **BERT**.

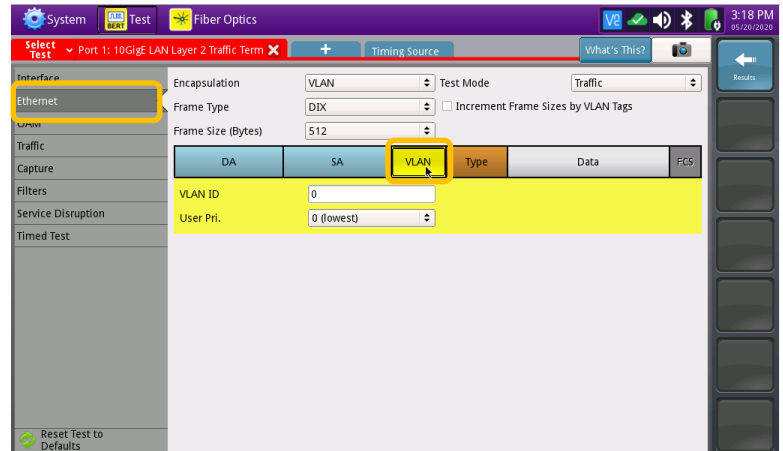


Figure 7: Setup, Ethernet/VLAN

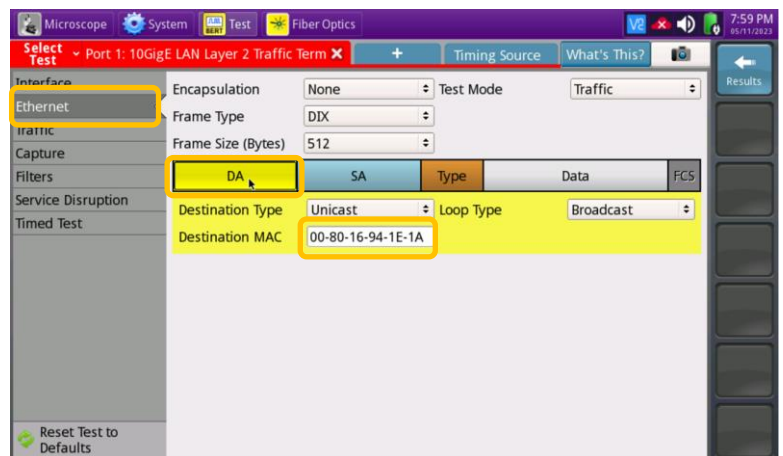


Figure 8: Setup, Ethernet/DA

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

- Tap the **Results** soft key .

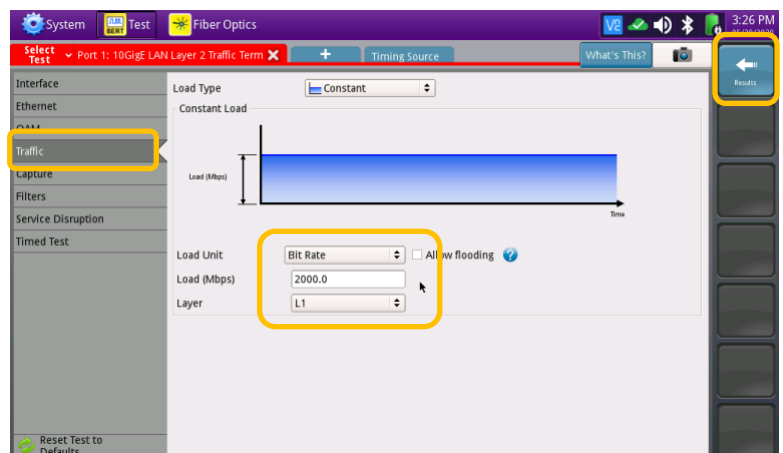


Figure 9: Setup, Traffic

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CONNECT TO LINE UNDER TEST

► For Optical Interfaces:

- Use the VIAVI P5000i or FiberChek Probe microscope to inspect both sides of every connection being used (SFP, attenuators, patch cables, bulkheads)
 - Focus the fiber on the screen.
 - If it appears dirty, clean the fiber end-face and re-inspect.
 - If it appears clean, run the inspection test.
 - If it fails, clean the fiber and re-run the inspection test. Repeat until it passes.
- If necessary, insert optical attenuators into the SFP TX and/or RX ports.
- Connect the SFP to the port under test using a jumper cable compatible with the line under test.
- Select the **Laser** tab in the **Actions** panel.
- Tap . The button will turn yellow and be relabeled .
- Tap the **Restart** soft key .
- Verify the following:
 - Summary** LED is yellow or green.
 - Signal Present** LED is green.
 - Sync Acquired** LED is green.
 - Link Active** LED is green.

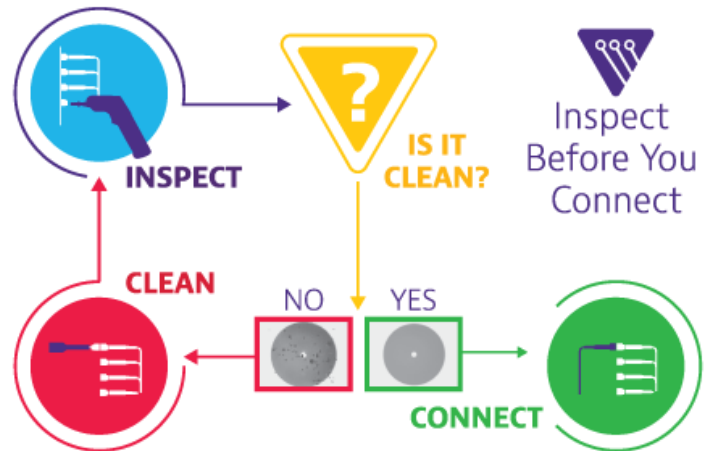


Figure 10: Inspect Before You Connect

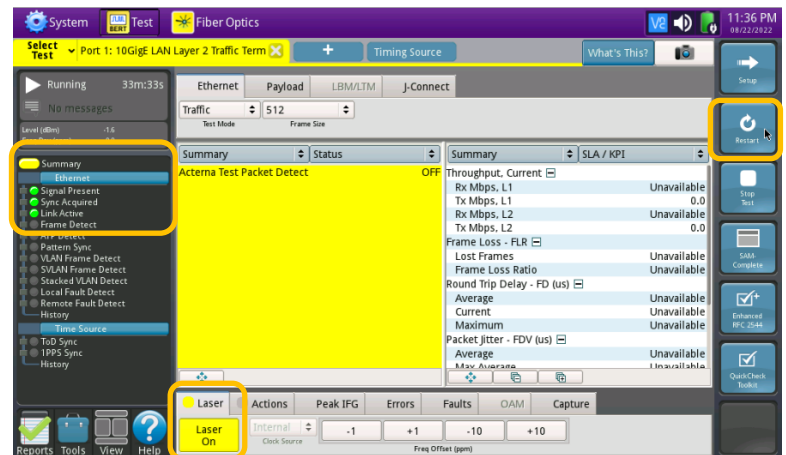


Figure 11: Optical Interface Results

► For Copper 10/100/1000BASE-T interfaces:

- Connect the 10/100/1000 RJ-45 jack to the port under test using CAT 5E or better cable.
- Tap the **Restart** soft key .
- Verify the following:
 - Summary** LED is yellow or green.
 - Sync Acquired** LED is green.
 - Link Active** LED is green.

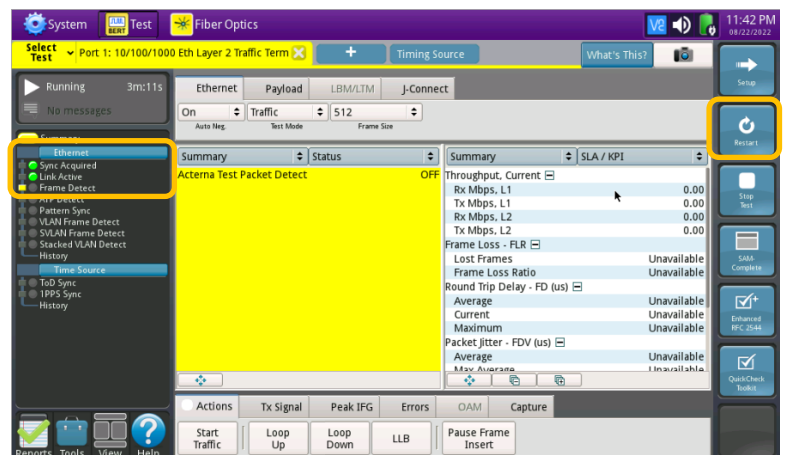






Figure 12: Copper Interface Results

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LOOP UP AND RUN TEST

1. Select the **Actions** tab in the **Actions** Panel.
 - ▶ If you are testing head-to-head, to a hard loop, or if the loopback device is already in Local Loop Back (LLB) mode, proceed to step 2.
 - ▶ If the Loopback device is a T-BERD/MTS or another VIAVI compatible loopback device, tap  to loop up the far end device.
2. Tap . The button will turn yellow and be relabeled .
3. Press 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 Committed Information Rate.
 - ✓ The Right Results window shows Lost Frames = 0.
4. Allow the Test to run for the desired duration. Verify that the Left Result window displays “**ALL SUMMARY RESULTS OK**” throughout the test.

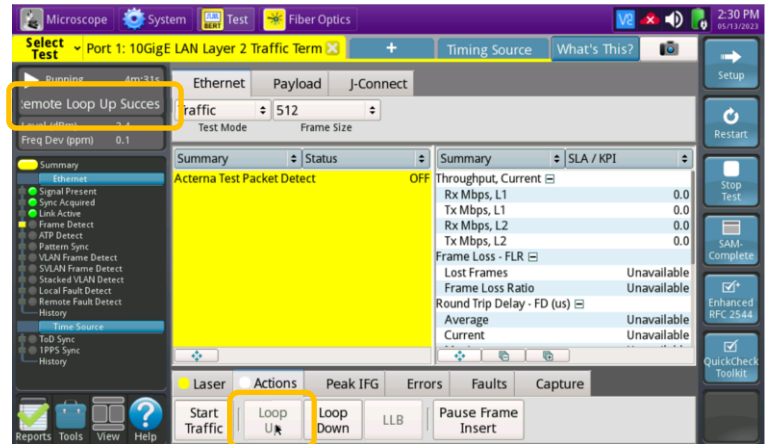


Figure 13: Loop Up

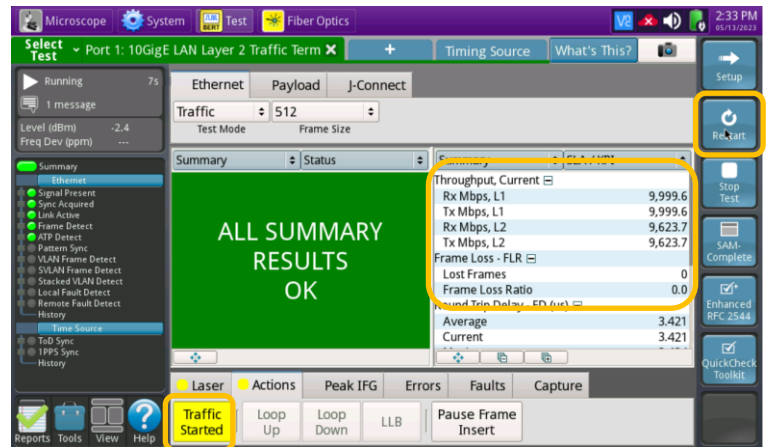


Figure 14: Start Traffic