Quick Card

T-BERD®/MTS-5800 Network Tester
One Way Delay (OWD) Measurement

This document outlines how to set T-BERD/MTS 5800’s to measure One Way Delay on Ethernet datalinks at rates up to 100Gbps.

Equipment Requirements:
- Two T-BERD/MTS-5800’s equipped with the following:
  - BERT software release V27.0 or greater
  - Ethernet and One Way Delay:
    - C510M1GE and C5OWD for 1Gigabit or less
    - C510GE/LAN and C5OWD for 10Gig
    - C525GE and C5100GOWD for 25Gig
    - C540GE and C5100GOWD for 40Gig
    - C5100GE and C5100GOWD for 100Gigabit Ethernet
  - GNSS/GPS (VIAVI Part# C5GNSS)
- GNSS Antenna (Taoglas AA.171, VIAVI Part# C5ANTENNA)
- SFP, QSFP, or CFP4 optical transceiver to match the line under test
- Jumper Cables to match the optical transceiver and the line under test
- Fiber optic inspection microscope (VIAVI P5000i or FiberChek Probe)
- Fiber Optic Cleaning supplies

The following information is required 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
- VLAN ID (if encapsulation = VLAN)

Fiber Inspection Guidelines:
- Use the VIAVI P5000i or FiberChek Probe microscope to inspect the jumper cable or loopback plug before connection to the optical transceiver.
- Focus the fiber on the screen. If dirty, clean the connector.
- If it appears clean, run inspection test.
- If it fails, clean the fiber and re-run inspection test.
- Repeat until it passes.
Connect Each T-BERD to Port Under Test:
1. For copper 10/100/1000BASE-T interface testing with the T-BERD/MTS 5800v2 or T-BERD/MTS 5882, 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 desired SFP, QSFP, or CFP4 into the Port 1 slot on the top of the T-BERD/MTS.
   • Inspect and, if necessary, clean all SFPs, fibers, and bulkheads, as described on page 1.
4. 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.

Launch and Configure Tests:
1. Press the Power button to turn on the test set.
2. Enable the Timing Expansion Module (TEM) or Internal GNSS Receiver and complete a survey, as documented in “T-BERD®/MTS-5800 Network Tester, Enabling the GNSS/GPS Receiver for Sky Plot, One-Way Delay, and Sync Measurements” Quick Card.
3. Using the Select Test menu, Quick Launch menu, or Job Manager, launch an Ethernet, Layer 2 Traffic, Terminate test on port 1 for the desire physical interface. For example: Ethernet►10/100/1000►Layer 2 Traffic►P1 Terminate.
4. If the test is not in the default settings, tap the Tools icon, and select Reset Test to Defaults. Press OK to continue.
5. Verify that the ToD Sync and 1 PPS Sync LEDs are both green. If they are not green, check your TEM or GNSS Receiver Setup.

6. Press the Setup Soft Key, to display the Interface settings tab.

7. 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.

8. Select the GPS/CDMA tab and tap (check) the checkbox to Enable GPS Receiver.

9. Select the Ethernet tab to configure Ethernet settings.
   - Tap [DA] to display the Destination MAC Address. Enter the MAC Address of the T-BERD/MTS at the far end of the line under test.
   - Tap [SA] 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.
   - If you are testing a port that requires VLAN encapsulation, set Encapsulation to VLAN, tap [VLAN] and enter your VLAN ID.
   - If you wish to measure Bit Error Rate, tap [Data] and set Acterna Payload to BERT.
10. Select the **Traffic** tab to configure Traffic settings.
   - Set **Load Unit** to **Bit Rate**.
   - Set **Load** to the desired traffic rate or Committed Information Rate (CIR).

11. Press the **Results** Soft Key, , to view the Results screen.

12. For **1GigE** to **100GigE** optical tests, select the **Laser** tab in the Action panel, and press . The button will turn yellow and be relabeled **Laser On**.

13. 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 the T-BERD/MTS has successfully connected to the port under test and the link is active.

14. Tap the **Actions** tab and tap the **Start Traffic** button . The button will turn yellow and be relabeled **Traffic Started**.

15. Instruct the operator of the other T-BERD/MTS to also **Start Traffic**.

16. 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 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.

18. Swipe up or scroll down in the Right Results Display to display **One Way Delay** results.