

Quick Card

T-BERD[®]/MTS-5800 Network Tester

Enabling the GNSS/GPS Receiver for Sky Plot, One-Way Delay, and Sync Measurements

This document outlines how to set up a GPS/GNSS Receiver on a T-BERD/MTS-5800 test instrument.

Equipment Requirements:

- One of the following T-BERD/MTS-5800 models:
 - T-BERD 5800-100G equipped with GNSS Timing and Location option (VIAVI Part# C5GNSS)
 - T-BERD 5882 equipped with GNSS Timing and Location option (VIAVI Part# C5GNSS)
 - T-BERD/MTS-5800v2 equipped with Timing Expansion Module (VIAVI Part# C5TEM-R)
- BERT software release V27.0 or greater
- GNSS Antenna (Taoglas AA.171, VIAVI Part# C5ANTENNA)



Figure 1: Equipment Requirements



Figure 2: T-BERD/MTS-5882

Connect the GNSS Antenna:

1. Connect the male SMA connector on the end of the antenna cable to the female SMA connector on the T-BERD/MTS-5800 (labeled **Antenna**).
2. Tighten the connector until the antenna is securely attached.
3. Place the antenna in a location with minimum interference or blocking.

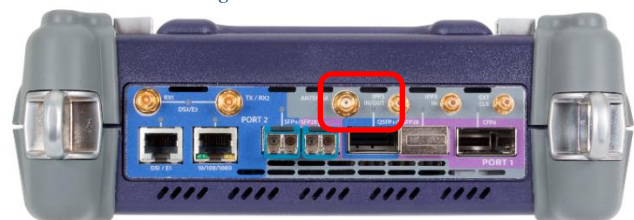




Figure 3: T-BERD 5800-100G


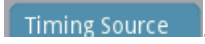


Figure 4: T-BERD 5800v2 with TEM

Enable GNSS Receiver and Complete Survey:

1. Press the Power button  to turn on the test set.

2. Tap the Test icon .

3. Tap the **Internal GNSS** tab  or the **Timing Source** tab .

4. Tap the **Setup** soft key .

5. Configure GNSS Settings as follows:

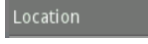
- **GNSS System:** GPS+GLAONASS+BSAS
- **Time Type:** GPS
- **Time Format:** 12-hour

- **Elevation Limit:** 15 deg recommended, 5 deg minimum. Using satellites near the horizon may degrade performance.

- **Minimum C/No:** 30 dB-Hz recommended, 9 dB-Hz minimum. Using satellites with a weak carrier to noise ratio may degrade performance.


- **Antenna Power:** 3.3 volts for VIAVI supplied Taoglas AA.171 antenna. If you are using a different antenna, enter the antenna power.


- **Antenna Time Bias:** 28 ms for VIAVI supplied Taoglas AA.171 antenna. If you are using a different antenna, enter the cumulative delay introduced by the antenna, the cables, and any in-line splitters or amplifiers.


6. Tap the **Location** settings tab .

7. Configure Location Settings as follows:

- **Survey mode:** **Typical (3 hours)** recommended for best accuracy. **Fast** or **Quick** may be used, but timing accuracy is reduced.

8. Tap the **Start Survey** button  to start a survey.

9. Tap the **Results** soft key  to view the Test Result screen.

10. If you are using a T-BERD 5800v2 and Timing Module (C5TEM-R), tap the **Rubidium Osc.** button  to turn on and tune the oscillator.

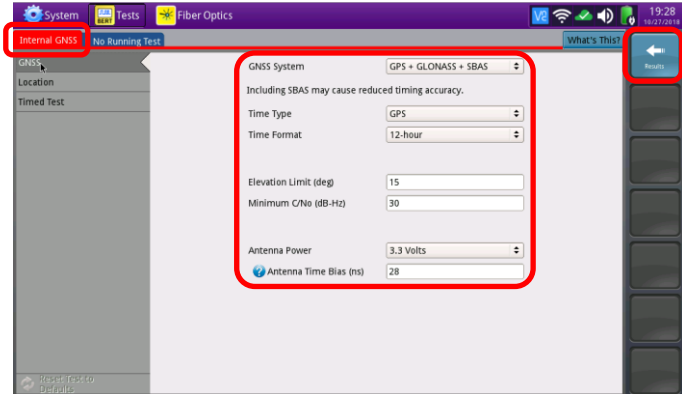


Figure 5: GNSS Setup

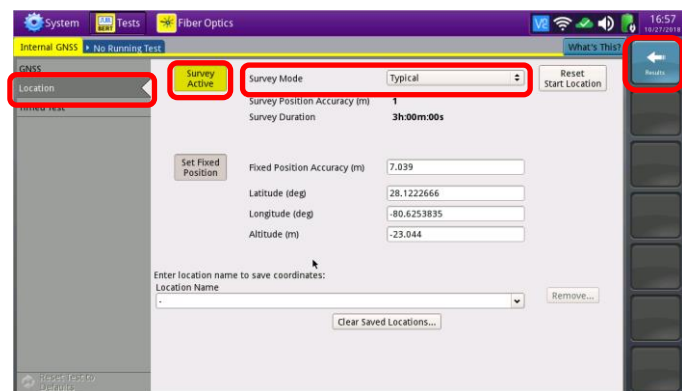


Figure 6: Location Setup

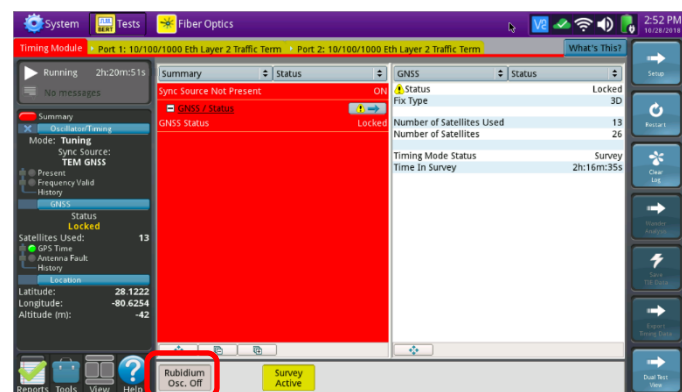


Figure 7: Test Results Screen, T-BERD 5800v2

11. Using the results group and category drop-down menus, change the right results display to the following:

- **Satellites/Sky Plot:** Displays the satellites that are identified using the GNSS receiver. Ensure at least 4 satellites are “Used”. Otherwise, relocate antenna to a less obstructed location.
- **Satellites/Signal Strength:** Displays the signal strength for each identified satellite. Ensure signal strength of used satellites exceeds **Minimum C/No** setting. Otherwise, reduce **Minimum C/No** setting.
- **GNSS/Status:** Displays general information concerning the GNSS Satellites. Ensure that **Status** progresses from “No Lock” to “Locked” to “Fixed Position” during the survey. Ensure that Timing Mode Status progresses from “Survey” to “Survey Done”.

Note: If you are using a T-BERD 5800v2 and Timing Module (C5TEM-R), the **Summary** LED and **Summary/Status** results display will remain red until the rubidium oscillator is tuned.

12. Once the survey is done (and the oscillator is tuned if using TEM), you are ready to perform timing tests using the attached antenna, including:

- One-way delay measurement
- IEEE 1588 Precision Time Protocol (PTP) Time Error, Asymmetry, and Packet Delay Variation (PDV) measurements.
- Wander analysis
- Timing and 1PPS Analysis

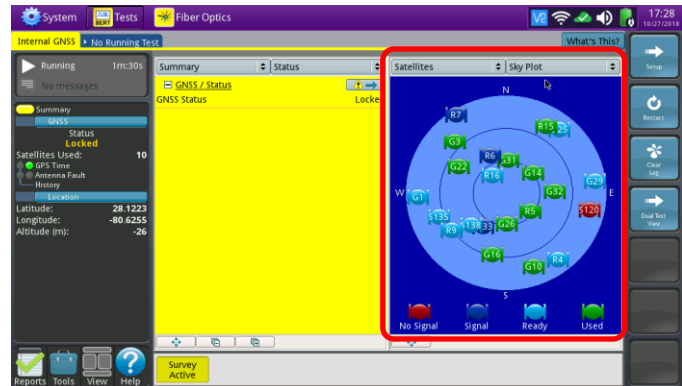


Figure 8: Satellites/Sky Plot results

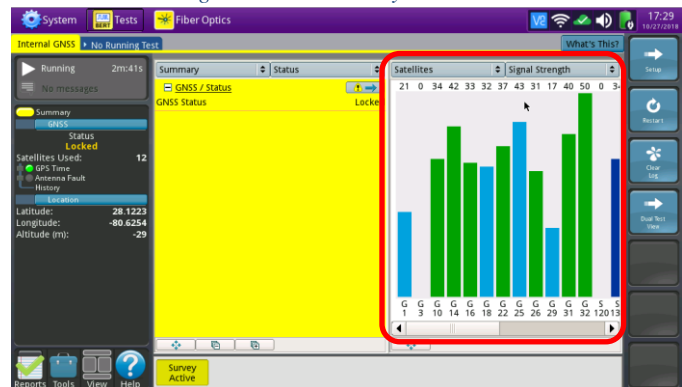


Figure 9: Satellites/Signal Strength results

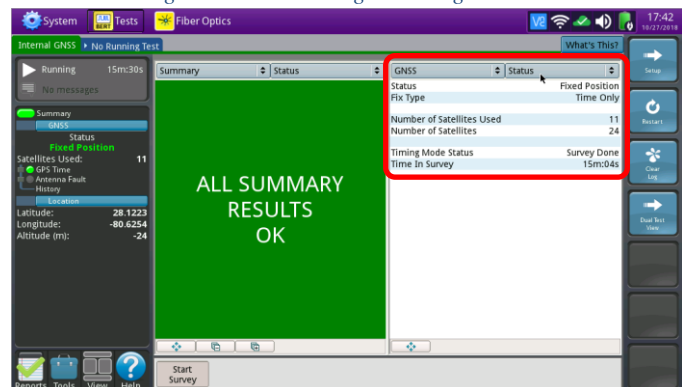


Figure 10: GNSS/Status after survey (Internal GNSS)

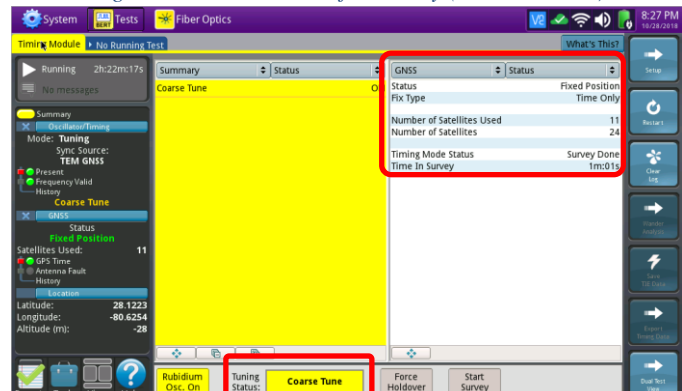


Figure 11: GNSS/Status after survey & course tune (Timing Module)