

Testing Procedures

This procedure is used to determine the basic functionality of a four-channel TDOA Geometrix Wireless Location Sensor (WLS) after installation has been completed.

Equipment Required

One Laptop Computer (See Table 2 for description)
One Crossover Cable (See Table 2 for description)
One Loopback Connector (See Table 2 for description)

Initialization

The link between the computing device and the WLS needs to be established. The following steps will establish that connection.

Step 1. At the DeskTop, right click on the Network Neighborhood icon and select properties. Depending on the operating system, the keystrokes will differ slightly as to network setup.

Step 2. Select the TCP/IP NIC.

Step 3. Type the IP address of **10.1.1.200**, and a subnet mask of **255.255.255.0**.

If the GCS is in place and connected to the network, and the WLS is properly connected to the network, the green **online light** on the front of the unit will be illuminated a few minutes following power-up.

Step 4. Connect the WLS to a computing device via a crossover cable and plug into the **10-Base-T port on the rear panel of the WLS.**

Step 5. Power up the WLS.

Step 6. After the computing device has booted up, select the QvtTerm plus in the systems application menu.

Step 7. Open a session and enter an **IP address** of **10.1.1.1** in the address window of the WLS to be tested.

Step 8. Select **default** in the configuration window, and click the **OK** button. This will bring up the **login** prompt.

Step 9. Enter **root** and a # prompt will be displayed.

When power is applied and connectivity is established between the GCS and WLS, the green online LED will illuminate on the front panel. This will take roughly 1 minute. When this occurs the GCS will perform codecheck, which will determine if the software is up to date with the latest software. At this point the GCS will notice that the software is not up to the latest software and will begin downloading new versions of code to the WLS. After the code has been downloaded to the WLS, a reboot is issued and the online LED will go off. When the WLS boots up once again and establishes connectivity to the GCS the online LED will illuminate once again. These processes should be completed in roughly two minutes. If this process fails, login to the WLS as above and type the command **./stop_reboot**. If all indications are correct, proceed to Step 10.

- Step 10.** At the # prompt enter the command: **start** The program will go through a series of initializations and when the screen reads **started watchdog**, hit the enter key and a # prompt will appear.
- Step 11.** At the # prompt enter the command: **./stop_reboot** This will stop the unit from rebooting if the unit does not see a network connection.
- Step 12.** At the # prompt enter the command: **./stop_processes** .
- Step 13.** Type **pwd** on the command line.
- Step 14.** Hit enter to determine the directory structure, this should be **/ram/bpu/tester**.
- Step 15.** At the command line type: **testCtrl** This will bring up the TESTCTRL Main Menu.
- Step 16.** Select 2 backplane control menu. This is the area where tests from the backplane are run.

Test LED's on the front panel

- Step 1.** Select 3 to test Alarm LED.
- Step 2.** Select 1 to turn on the LED. (the LED should illuminate)
- Step 3.** Select 3 to test Alarm LED.
- Step 4.** Select 0 to turn off the LED. (the LED turn off)
- Step 5.** Select 4 to test Active LED.
- Step 6.** Select 1 to turn on the LED. (the LED should illuminate)
- Step 7.** Select 0 to turn off the LED. (the LED turn off)
- Step 8.** Select 5 to test Online LED.
- Step 9.** Select 1 to turn on the LED. (the LED should illuminate)
- Step 10.** Select 0 to turn off the LED. (the LED turn off)

Confirm Status Word

- Step 1.** Select 1 to read Status Word. Status Word should read as follows:

Backplane Status Word

BPU1 Fault:	OK
BPU2 Fault:	OK
39 MHz Reference Oscillator	Locked
10 MHz Reference Oscillator	Present
Over temperature (over 83d C)	False
Over 14d C (factory test)	True
+12V OK...	OK
+7V Supply	OK
-7V Supply	OK
10 MHz Reference	Enabled
Trigger Out Value	Logic 0
Supply Shutdown	Supply On
+5V Supply	OK
PLL Alarm Lockout	Disabled

If the data reads anything other than the above, contact engineering to determine the severity of the problem.

- Step 2.** Select 0 to go back to TESTCTRL main menu.
- Step 3.** Select 3 to go to Backplane SPROM Control Menu.
- Step 4.** Select 6 Read System Delay Data. Verify that a table exist, **disregard** the numbers in the table.
- Step 5.** Select 0 to go back to Backplane SPROM main menu.
- Step 6.** Select 0 to go back to testCtrl main menu.
- Step 7.** Select 0 to go back to # prompt.

Testing the WAN & COMM Ports

The following tests require loopback connectors for the **WAN & COMM** ports. The loopback connectors **MUST** be installed **prior** to running the tests.

If the **ONLINE** light on the front panel is on, the **WAN** connection is present. Proceed to Step 4 for the **COMM** port test. If **not** proceed to step 1.

- Step 1.** Install the 25 pin loopback connector for the **WAN** test. See Diagram 4, page 47 for pin connections.
- Step 2.** When at the # prompt, type the command: **testWAN**. Watch for pass/fail reply. (Loopback Succeeded).

- Step 3.** Remove the loopback connector.
- Step 4.** Install the 9 pin loopback connector for the **COMM** test. See Diagram 5, page 47 for pin connections.
- Step 5.** When at the # prompt, type the command: **testCOM**. Watch for pass/fail reply. (Loopback Succeeded)
- Step 6.** Remove the loopback connector.

If the data reads anything other than the above, contact engineering to determine the severity of the problem.

Testing The BPU Board

- Step 1.** Change directory with the command: **cd /ram/bpu/qnx/bin**.
- Step 2.** When at the # prompt, type the command: **btest-b0**. This will test bpu0. All tests should say **passed or skipped**. The end of the test should read **btest ok**.
- Step 3.** When at the # prompt, type the command: **btest-b1**. This will test bpu1. All tests should say **passed or skipped**. The end of the test should read **btest ok**.

NOTE: The **bpu.ini** file in the **/ram/bpu/qnx/config** directory needs to be activated for the 2nd bpu tray before it will show up as OK in the status word function of the testCtrl test.

If the data reads anything other than the above, contact engineering to determine the severity of the problem.

Testing The Mezzanine Board (For CDMA Only)

- Step 1.** Change directory with the command: **cd /ram/bpu/tester**.
- Step 2.** Type the command: **/unzip_mcs_files &**.
- Step 3.** When at the # prompt, type the command: **mztest**. Watch for **pass/fail** reply.
- Step 4.** Select 4 to perform **Sim Data** tests.
- Step 5.** Select 3 to run both tests. Confirm test passed.
- Step 6.** Select 0 to exit sim data test menu.
- Step 7.** Select 0 to exit mztest test menu.

If the data reads anything other than the above, contact engineering to determine the severity of the problem.

Spectrum Plot

- Step 1.** When at the # prompt, type the command: **start**.
- Step 2.** When at the # prompt, type the command: **./stop_reboot**.
- Step 3.** When at the # prompt type the command: **menu**. This will be the **main menu**.
- Step 4.** Select 1 Collect signal Info. This brings up the **collect menu**.

At this point data needs to be entered in certain fields, so the system can make data collects.

- Step 5.** Select 4 to enter the face of the antenna array. This will test all three faces receiving different frequencies.
- Step 6.** Select an antenna face 1-4.
- Step 7.** Select 14 to enter protocol.
- Step 8.** Select 5 to enter wide protocol.

The computing device must now be readied to reveal the spectrum plot:

- Step 9.** On the desktop select the icon **spect**. This will launch the spectrum plot application.
- Step 10.** When the graphic comes up, there will appear a rectangular box. The box at the upper left requires the IP address of the unit under test. Enter the IP address for the unit under test.
- Step 11.** After the IP address is entered, select the connect button next to the address box. The green LED next to the connect button will blink green when connection is made.
- Step 12.** Select 10 in the collect menu on the QvtTerm terminal. This is the command that performs the collect.
- Step 13.** Click on the **Frequency Domain window**.
- Step 14.** Select **A** to autoscale. Look for cellular activity. The autoscale feature works only on Windows 2000 and Windows NT.

The autoscale feature allows the plots to show the center frequency, and the associated time domain selected so that the data can be analyzed. The frequency domain will display 2 channels, channel 0 = red, and channel 1 = blue. If either of the channels flat line, suspect problems at the cable level.

If the data reads anything other than the above, contact engineering to determine the severity of the problem.

Testing The GPS

- Step 1.** When at the # prompt, type the command: **start**. This starts the WLS software.
- Step 2.** When at the # prompt, type the command: **./stop_reboot**.

- Step 3.** When at the # prompt, type the command: **menu**.
- Step 4.** Select 2 and verify that Year, Month, and Time update as well as Long. & Lat.
- Step 5.** Verify that a number of satellites are present.
- Step 6.** Return to main menu by selection 0.
- Step 7.** After all testing procedures have been performed, and all of the above tests pass, at the # prompt type **shutdown -f**. This will reboot the WLS and make it ready for the GCS to download the operating software.

If the data reads anything other than the above, contact engineering to determine the severity of the problem.