Regulatory Test with CyBluetool

Sample

There are two types of samples used in regulatory test--- conducted sample and radiated sample.

The conducted DUT with a SMA connector or cable is used for conducted test cases, such as output power, occupied bandwidth.

The radiated DUT with internal or external antenna is used for radiated test cases, such as receiver spurious emission.

For more information about quantities and other requirements of samples, please contact with the certification authority directly.

Tool

The version of CyBluetool is 0.1.82.0 or later. For config file, please contact with Cypress for support. Before contact with Cypress, please fill in below table and provide it to Cypress.

Main Chip	
Output Power needed	
External FEM Enable	TXEN
	RXEN
External 32K Crystal	Yes or No

Transport Setup

The WICED Dual-mode chips should be in the mode which support all HCI commands. The debug information on the HCI UART should be disabled.

1. Open **CyBluetool**, click **Select device**.

2. In the **Select Device** window:

> Choose the **UART** transport, select the appropriate **COM port**, set the **baud rate to 115200**, and verify that **CTS flow control** is selected.

> *If the device in the application mode,** the baud rate should be the same as the configuration of firmware.

> *If the device is in the HCI mode,** the baud rate should be the default 115200.
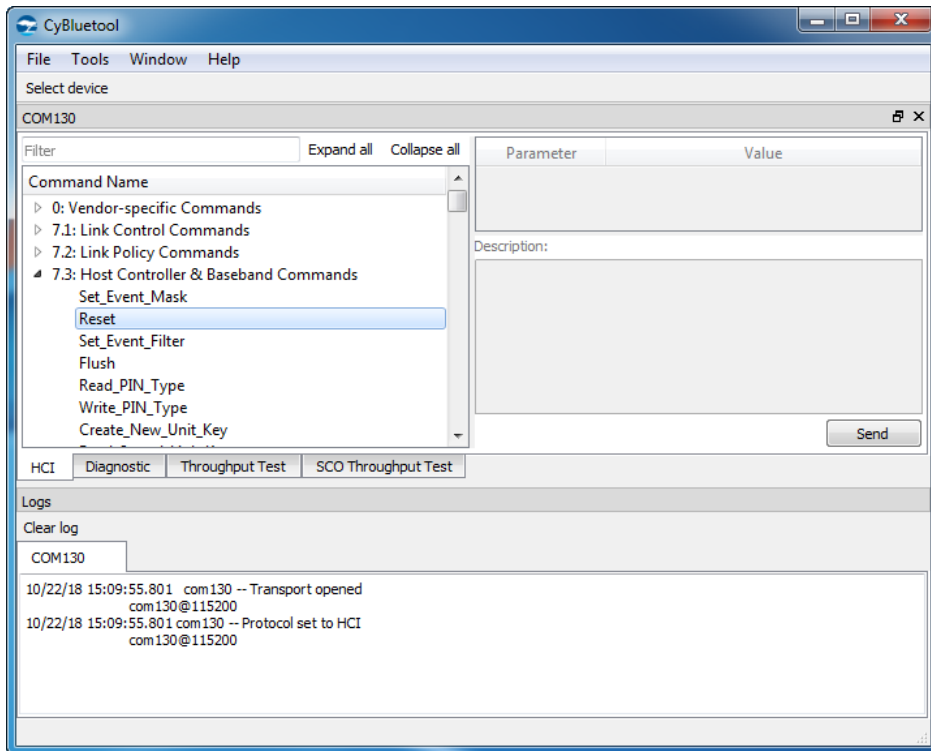
3. Click **Connect**.
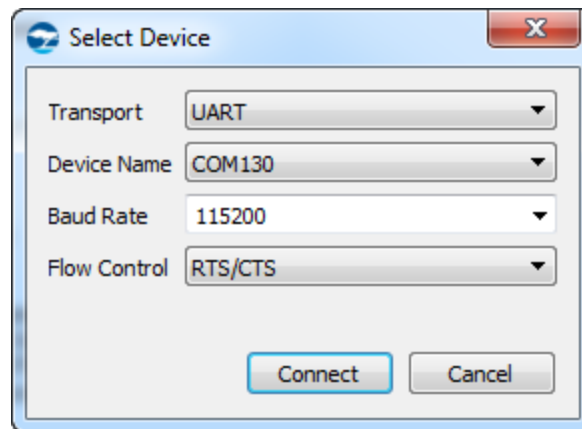
Reset the Device Under Test

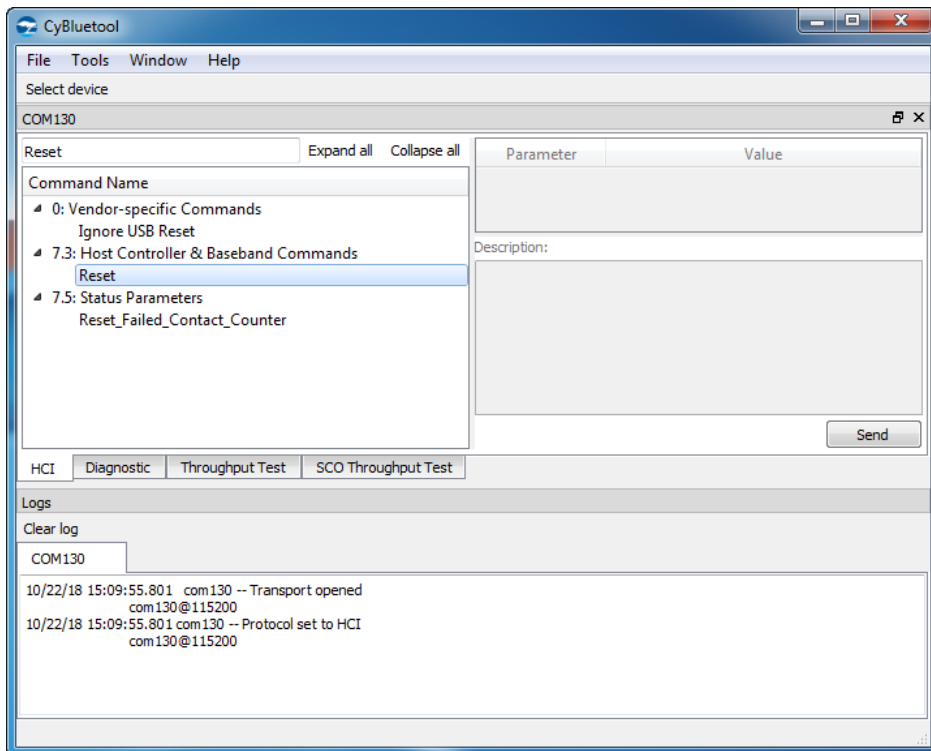The device under test (DUT) should be reset before each procedure.

Method 1:

1. In the **Command Name**, expand **7.3: Host Controller & Baseband Commands**.

2. Then choose **Reset** and click **Send** to reset the DUT.

Method 2:

1. In the **Filter box**, type **Reset** and it will appear below.

2. Then choose **Reset** and click **Send** to reset the DUT.

All the commands can be found by the **Filter box**. This is a much faster way. Next the document will use this way to find all required commands.

Download Config File

1. From the CyBlueTool **Tools** menu, select **Firmware Download.**

2. In the Firmware **Download** window:

      a. Enable the **UART** option and choose the right COM port.

      b. Import the BTP file vendor provided in **BTP file**.

      c. Enable **Config file** and import the CGR file vendor provided.

      d. Enable **Send DL minidriver command**.
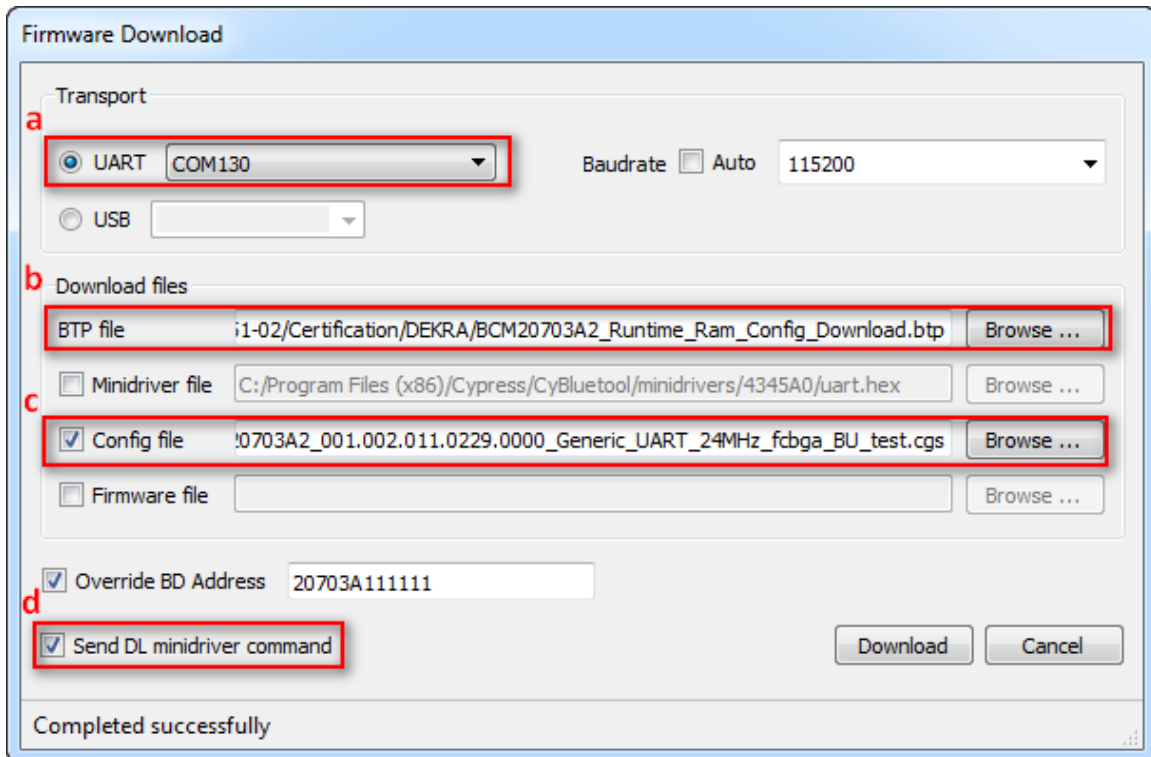
3. Click **Download** and wait for FW to download and complete.

4. Reset the device again.

Carrier

Carrier for frequency tolerance test

1. Reset the device.

2. Find command **Set_Tx_Carrier_Frequency_ARM**

3. In the right mini-window:

      a. From the **Carrier_Enable** shortcut menu, select **Carrier on**.

      b. In the **Carrier_Frequency…** field, enter the **desired output frequency (HEX or DEC)**.

| DEC	HEX
2402	0x962
2440	0x988
2480	0x9B0

      c. From the **Mode** shortcut menu, select **Unmodulated**.

      d. From the **Transmit_Power** shortcut menu, select **Specify Power Table index**.

      e. In the **Transmit_Power_Table_Index** field, enter **0** (Maximum).

4. Click **Send**.
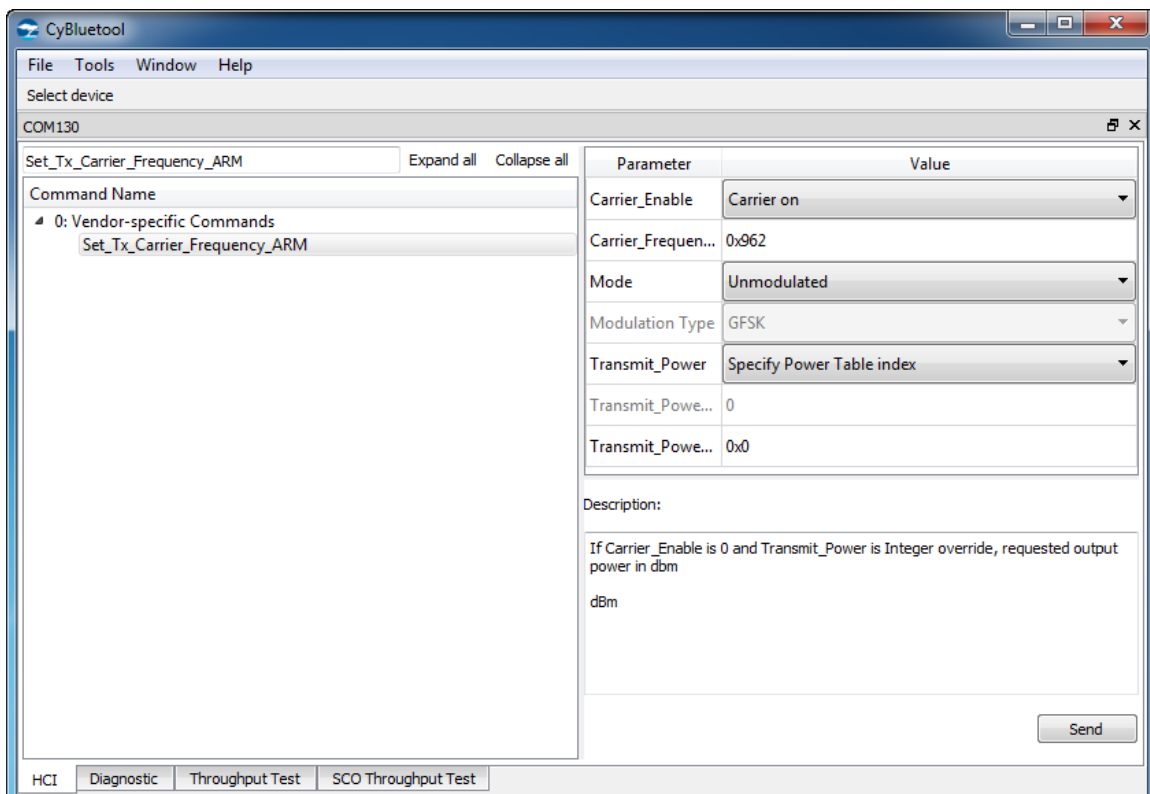
BLE

Receive Test---1M PHY

1. Reset the device.

2. Find command **LE_Receiver_Test_[v1]**.

3. In the right mini-window:

> a. In the **RX_Channel** field, enter the **channel number (k)** as indicated by RX_Channel (0-39; (F=2402+[k*2MHz])).
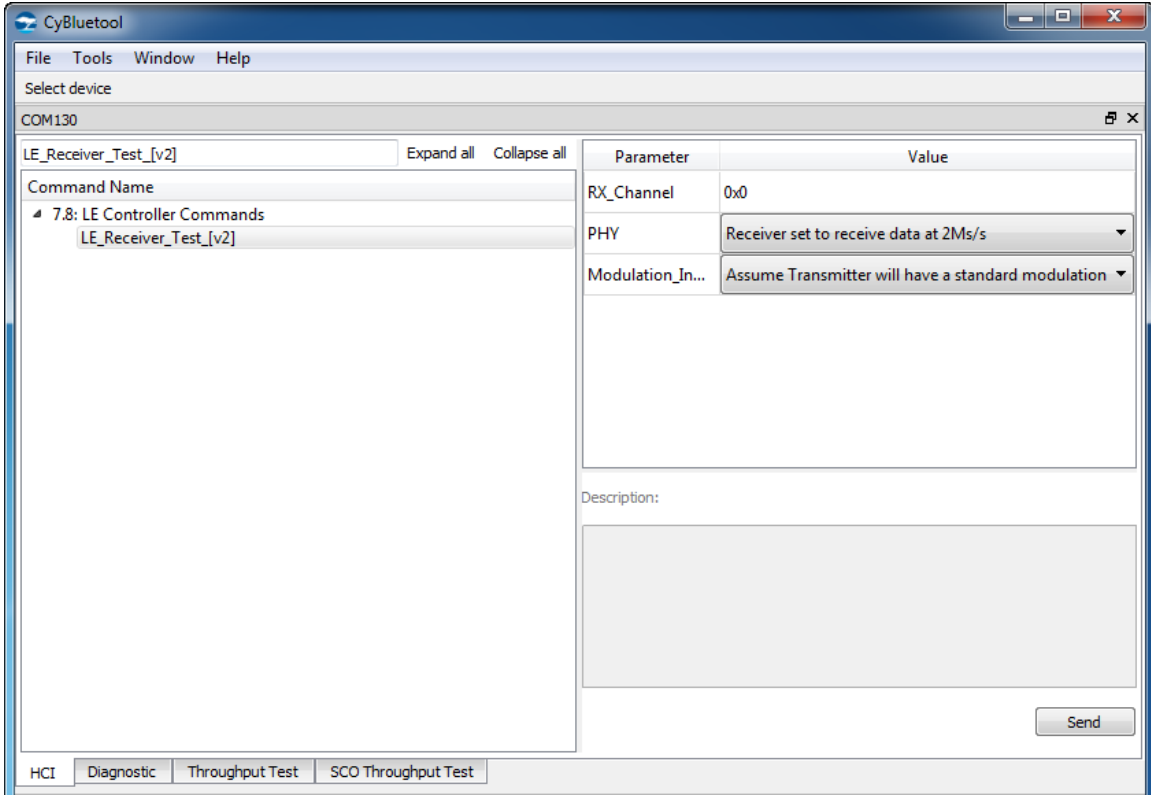
4. Click **Send**.
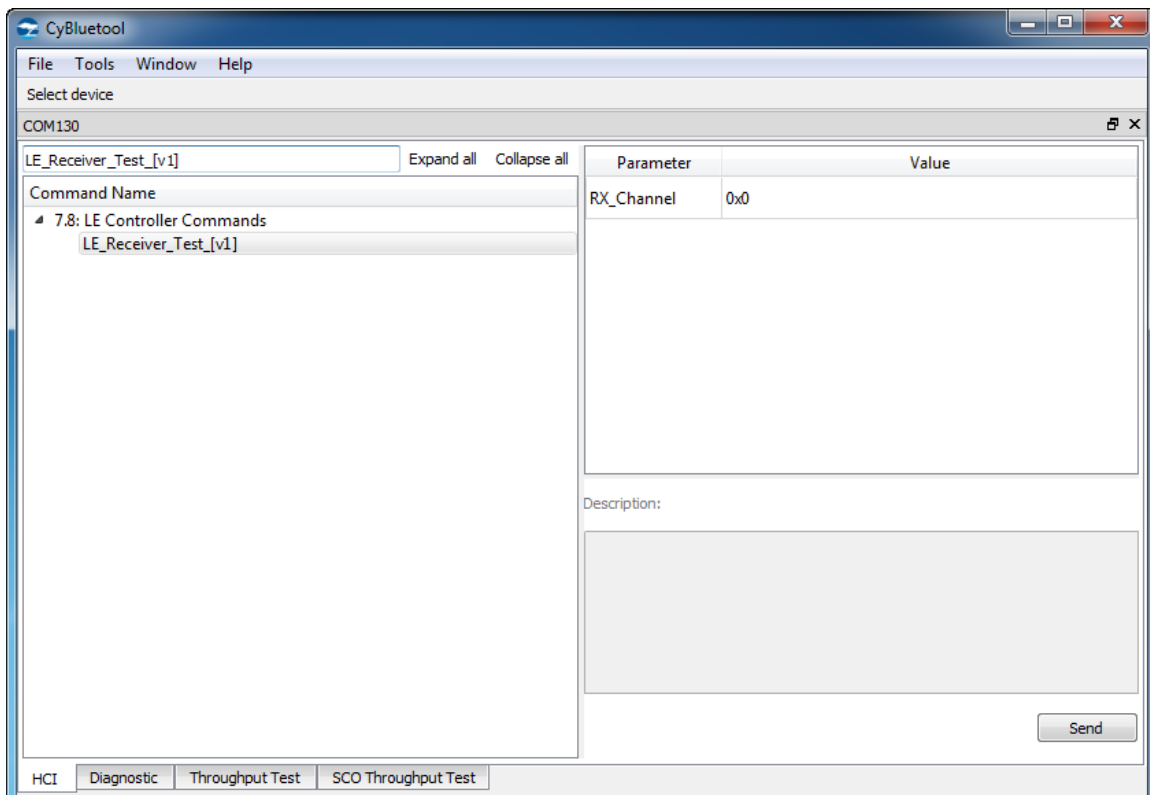
*Note: This test will fail if the device is running another test: use **LE_Test_End** or reset to put the chip in idle state before and after running this test.

Receiver Test----2M or coded PHY

1. Reset the device.

2. Find command **LE_Receiver_Test_[v2]**.

3. In the right mini-window:

> a. In the **RX_Channel** field, enter the **channel number (k)** as indicated by RX_Channel (0-39; (F=2402+[k*2MHz])).

b. In the **PHY** field, select the **2M-PHY** or **coded PHY**.

c. In the **Modulation_Index** field, select the **standard** or **stable** modulation index.

4. Click **Send**.

*Note: This test will fail if the device is running another test: use **LE_Test_End** or reset to put the chip in idle state before and after running this test.
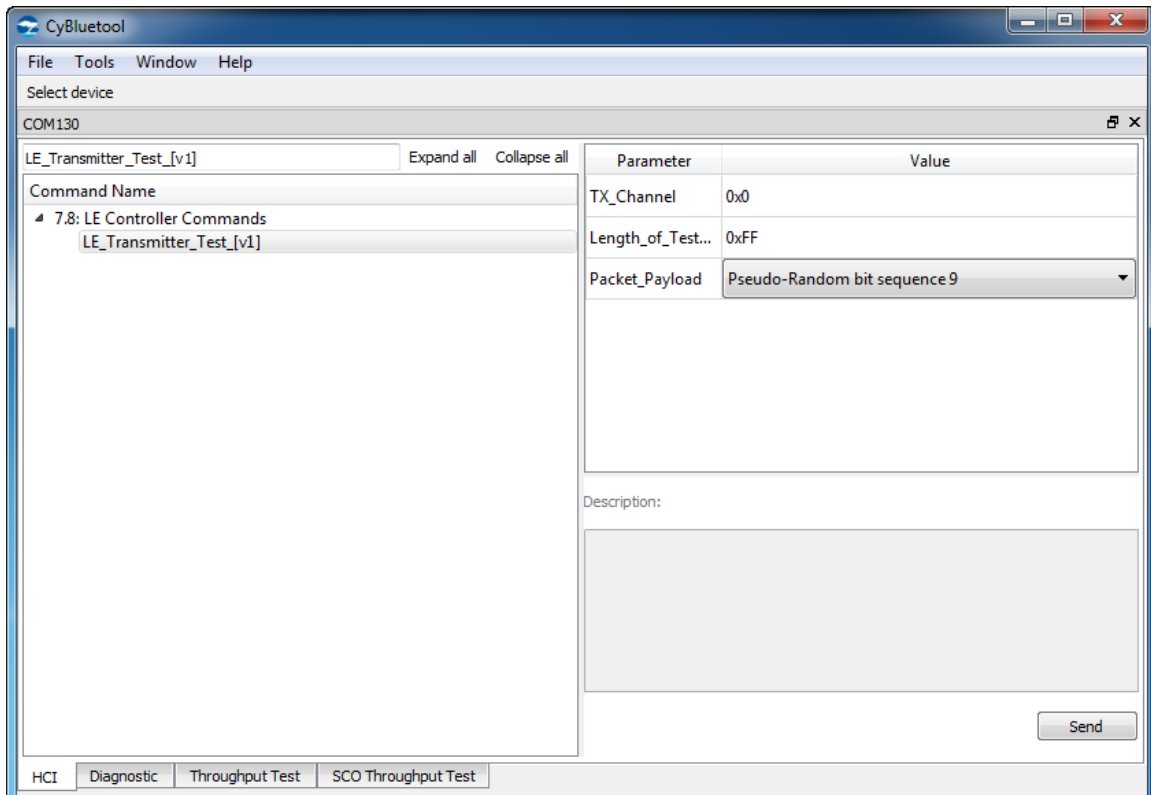
Transmit Test---1M PHY

1. Reset the device.

2. Find command **LE_Transmitter_Test_[v1]**.

3. In the right mini-window:

a. In the **Tx_Channel** field, enter the **channel number (k)** as indicated by TX_Channel (0-39; (F=2402+[k*2MHz])).

b. In the **Length_of_Test_Data** field, enter **number of bytes (HEX or DEC)** per packet.

DEC	HEX
37	0x25
255	0xFF

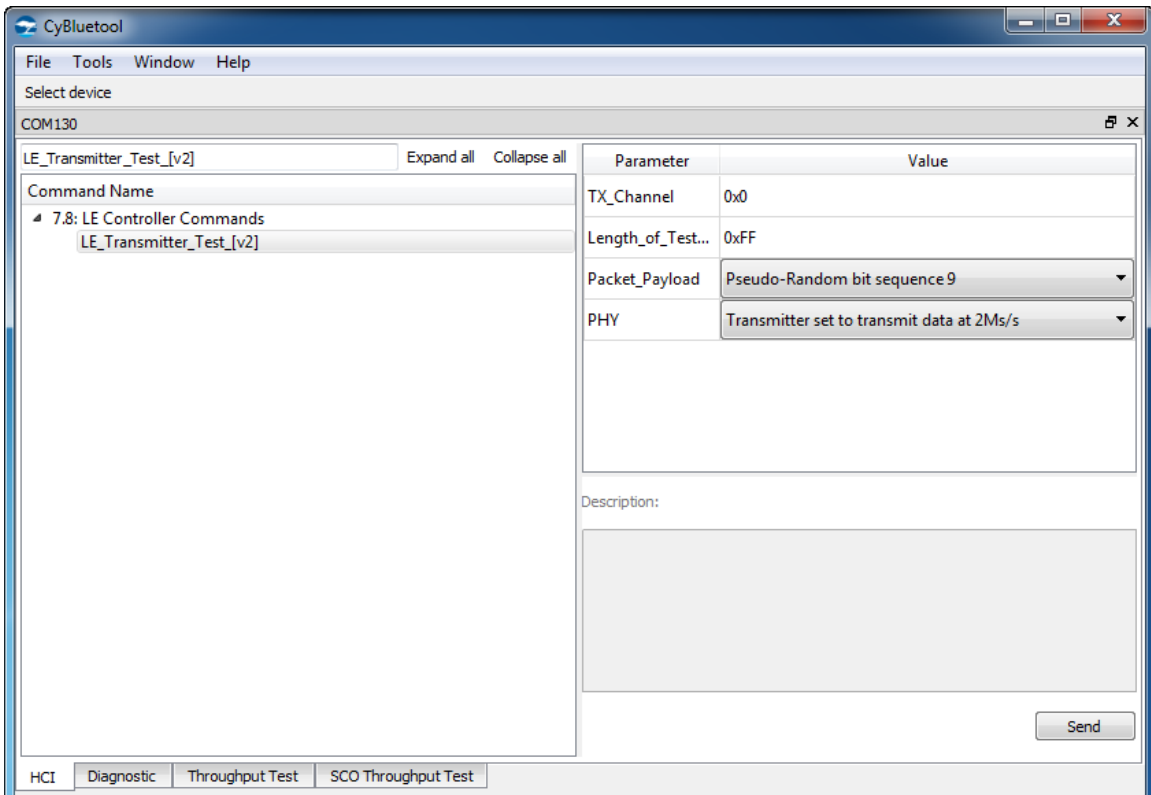c. In the **Packet_Payload** field, select the packet type **PBRS9**.

4. Click **Send**.

*Note: This test will fail if the device is running another test: use **LE_Test_End** or reset to put the chip in idle state before and after running this test.

Transmit Test---2M or Coded PHY

1. Reset the device.

2. Find command **LE_Transmitter_Test[v2]**.

3. In the right mini-window:

> a. In the **Tx_Channel** field, enter the **channel number (k)** as indicated by TX_Channel (0-39; (F=2402+[k*2MHz])).

> b. In the **Length_of_Test_Data** field, enter **number of bytes (HEX or DEC)** per packet.

> c. In the **Packet_Payload** field, select the packet type **PBRS9**.

> d. In the **PHY** field, select the **2M-PHY** or **Coded PHY(S=2/S=8)**.

4. Click **Send**.

*Note: This test will fail if the device is running another test: use **LE_Test_End** or reset to put the chip in idle state before and after running this test.
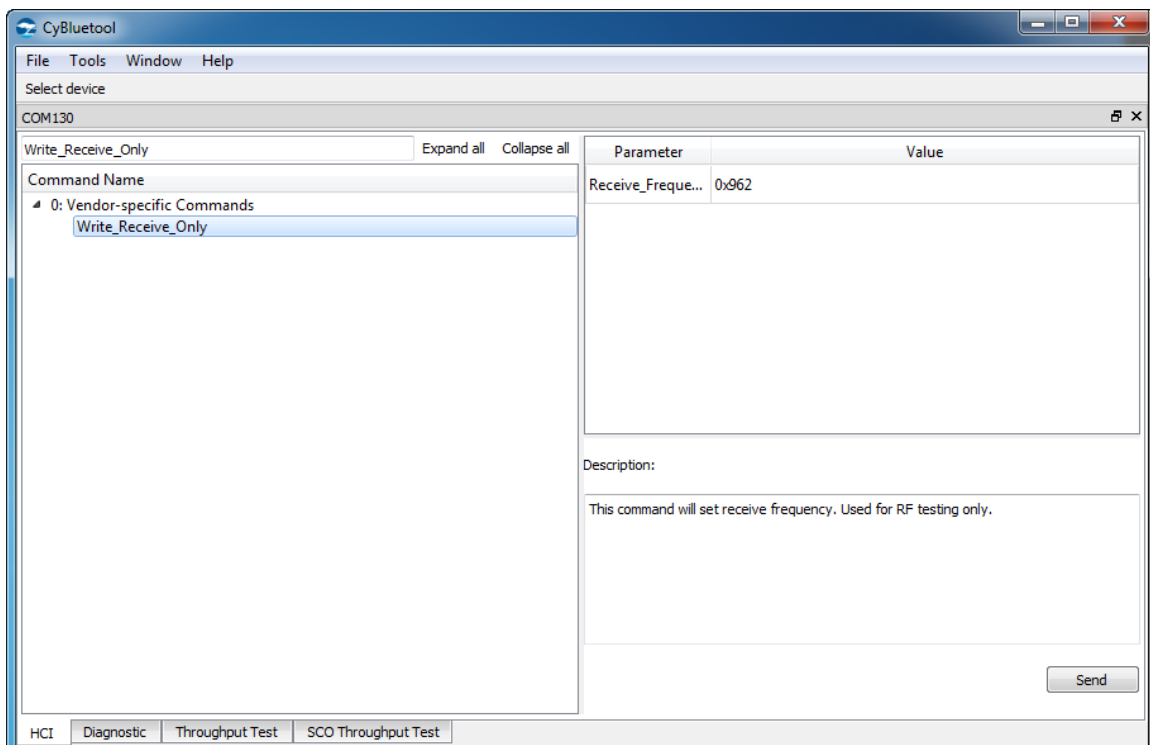
BT Classic

Receive Tests

This is a non-hopping, write receive only test.

To put the DUT in receive mode:

1. Reset the device.

2. Find command **Write_Receive_Only**.

3. In the right mini-window,

       a. In the **Receive_Frequency** field, enter the **desired frequency (HEX or DEC)**.
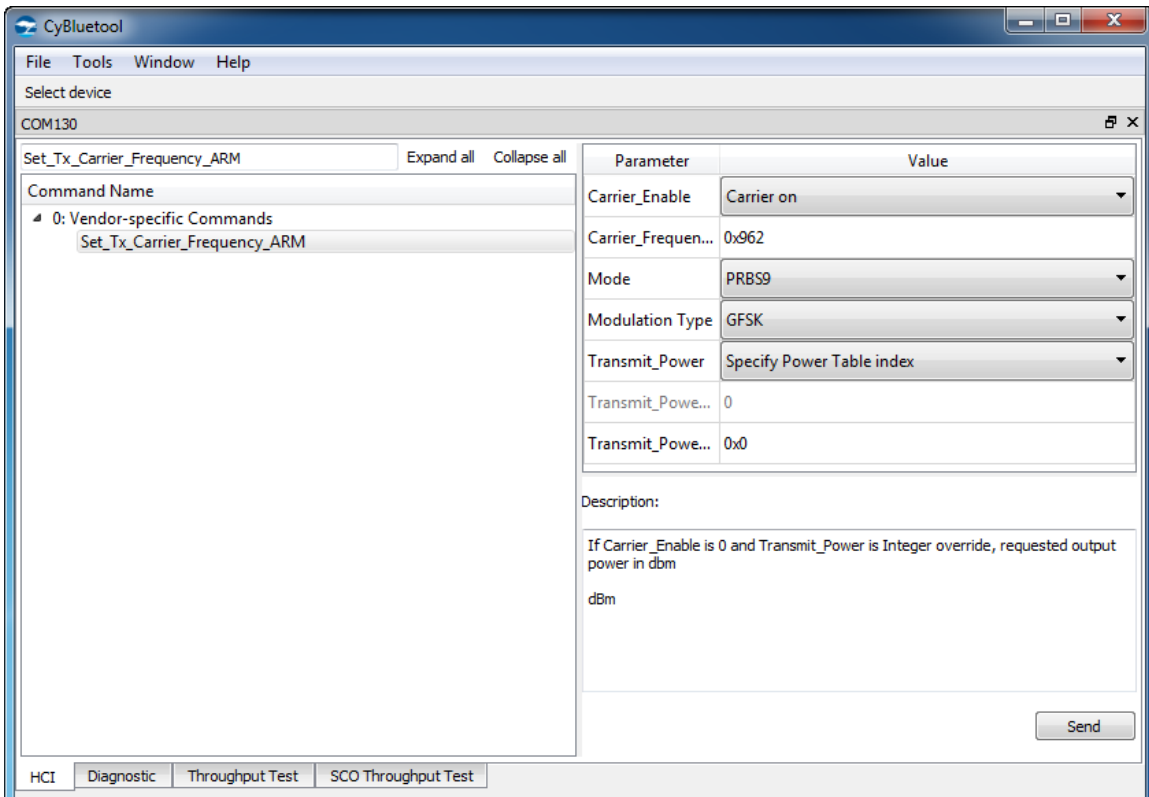
4. Click **Send**.

Transmit Tests

- **Single Frequency, Non-Hopping**

1. Reset the device.

2. Find command **Set_Tx_Carrier_Frequency_ARM.**

4. In the right mini-window:

       a. From the **Carrier_Enable** shortcut menu, select **Carrier on**.

       b. In the **Carrier_Frequency…** field, enter the **desired output frequency (HEX or DEC).**

c. From the **Mode** shortcut menu, select **PRBS9**.

d. From the **Modulation Type** shortcut menu, select **GFSK**, **8PSK**, or **QPSK.**

e. From the **Transmit_Power** shortcut menu, select **Specify Power Table index**.

f. In the **Transmit_Power_Table_Index Transmit_Power** field, enter **0** (Maximum).
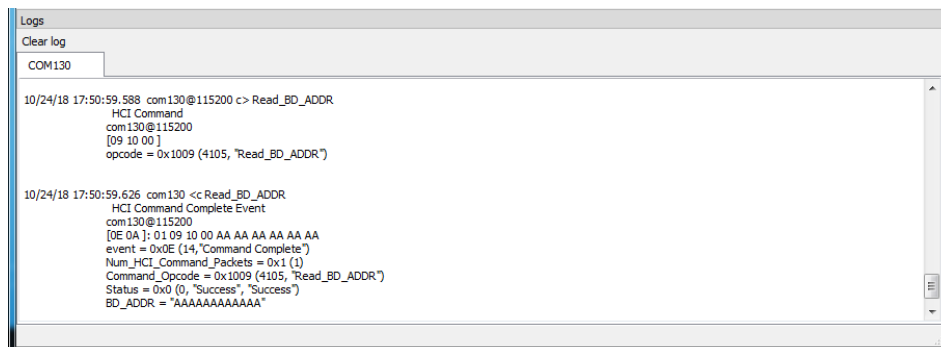
5. Click **Send**.

- **Frequency Hopping**

1. Reset the device.

2. Find command **Read_BD_ADDR** and click **Send**.

The last line of the **Logs** will contain the **Bluetooth device address** of the DUT.

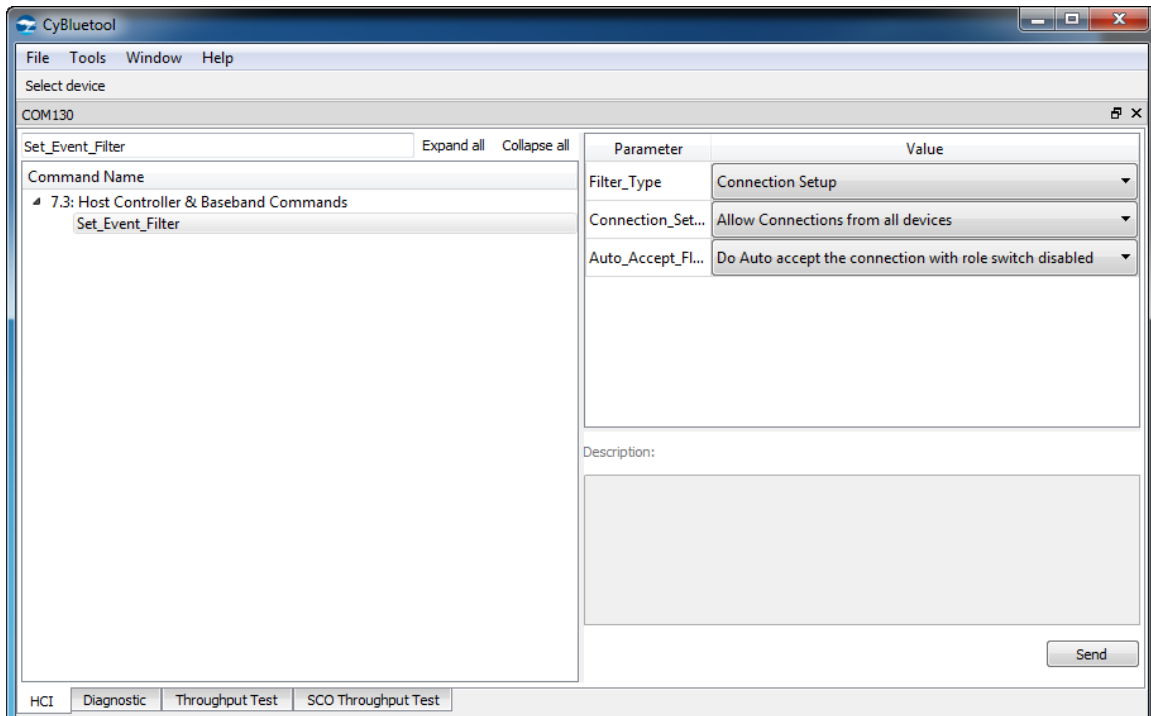4. Find command **Tx_Test**.

6. In the **HCI Command…** window

    a. From the **Local_Device_BD_ADDR** shortcut menu, select the **Bluetooth device address** of the DUT.

    b. From the **Hopping_Mode** shortcut menu, select **79 channel**.

    c. From the **Modulation_Type** shortcut menu, select **PRBS9 Pattern**.

    d. From the **Logical_Channel** shortcut menu, select **ACL Basic** or **ACL EDR**.

    e. From the **BB_Packet_Type** shortcut menu, select **DH5/3-DH5, DH3/3-DH3, or DH1/2-DH1** for **ACL Basic**, or **DH5/3-DH5 or DM5-2DH5** for **ACL EDR**.

    f. In the **BB_Packet_Length** field, enter **0xFFFF or 65535(HEX or DEC)**.

    g. From the **Tx_Power_Level** shortcut menu, select **Specify Power Table index**.

    h. In the **Transmit_Power_Table_Index** field, enter **0**.
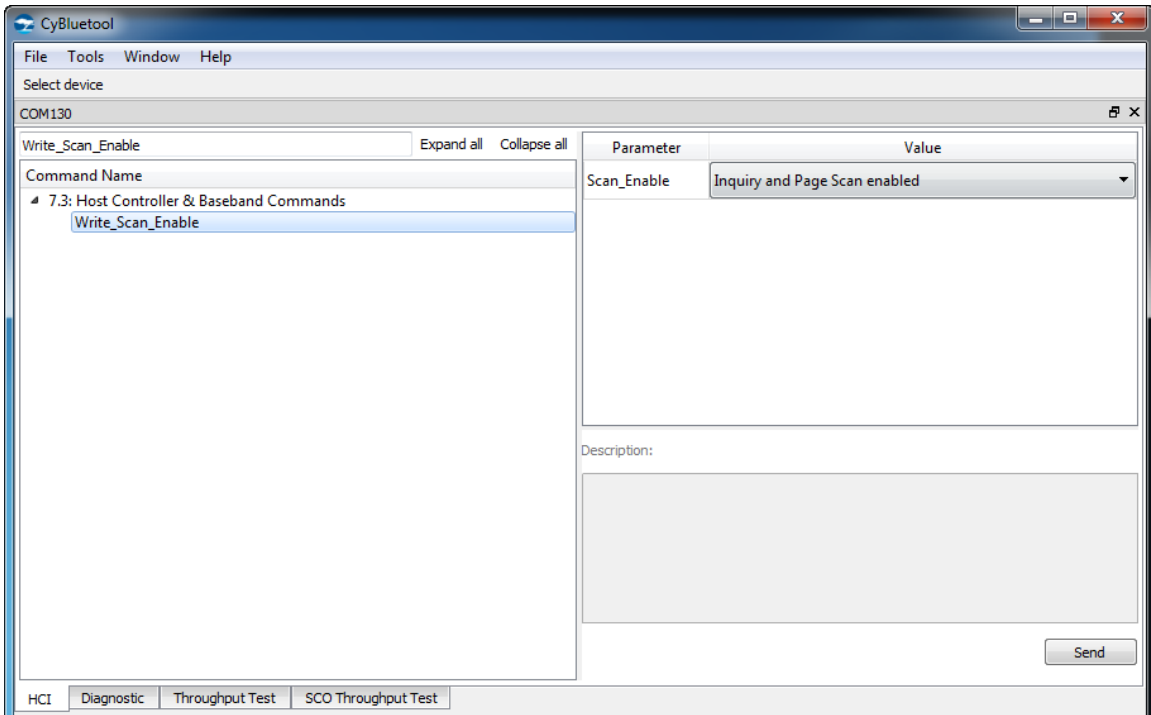
7. Click **Send**.
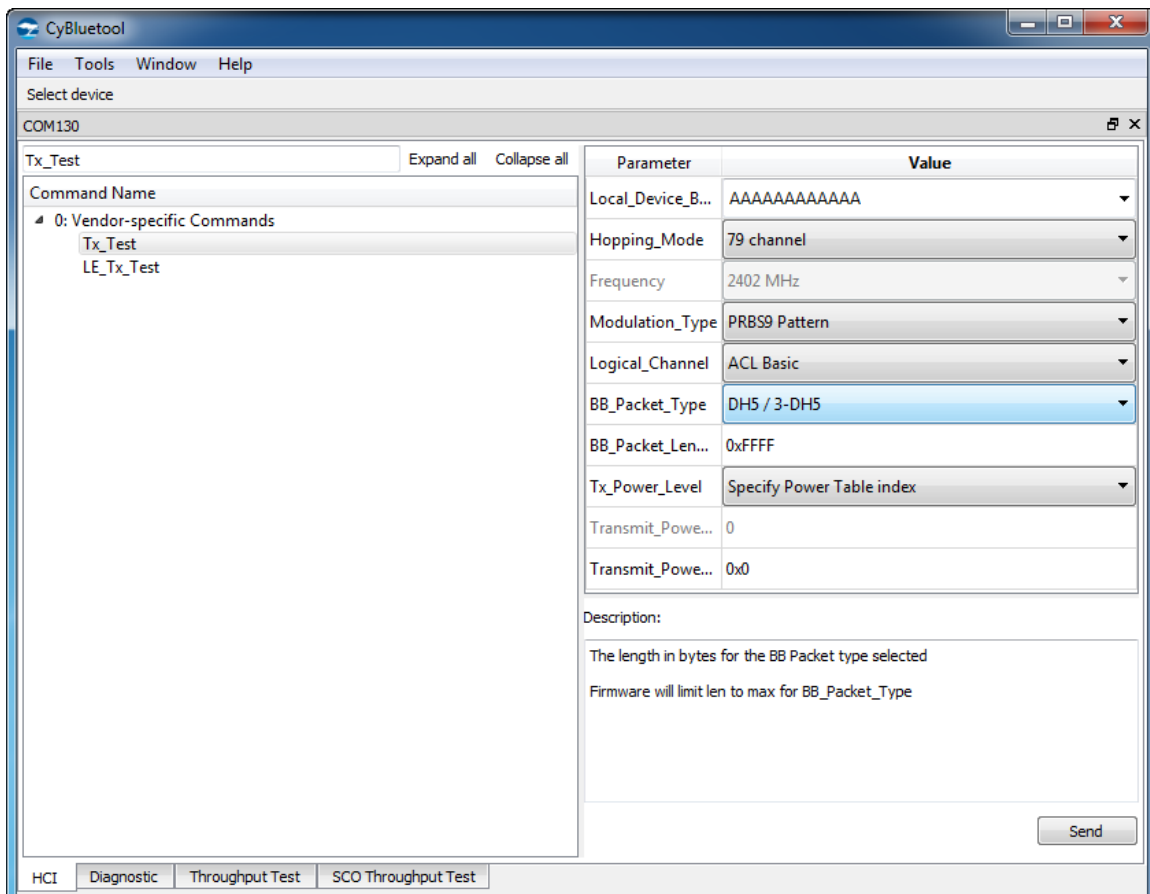
Test Mode Setup

1. Reset the device.

2. Find command **Set_Event_Filter**. In the right mini-window, select the following settings, and then click **Send**.

       a. Filter_Type: **Connection Setup**

       b. Correction_Setup_Filter_Condition_Type: **Allow Connections from all devices**

       c. Auto_Accept_Flag: **Do Auto accept the connection with role switch disabled**

3. Find command **Write_Scan_Enable**. In the right mini-window, open the **Scan Enable** list, select **Inquiry and Page Scan enabled**, and then click **Send**.

8. Find command **Enable_Device_Under_Test_Mode** and click **Send**. The Bluetooth device is now ready to be connected to a Bluetooth tester.