PSB3xxx Direct Test Mode

About this document

Scope and purpose

This document provides instructions for setting the PSB3xxx device to Direct Test Mode (DTM) using a Bluetooth® tester.

Intended audience

The following instructions assume familiarity with Bluetooth® tester operations.

Prerequisites

1. PSB3xxx board as Device Under Test (DUT)
2. Working knowledge of Bluetooth® test equipment, such as the CMW tester
3. Appropriate RF firmware loaded on the DUT

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1 Software

Download and install the AIROC™ Test and Debug Tool to perform TX and RX testing on the PSB3xxx.

2 Device setup

1. In device manager, under the **Ports** section, look for the Device KitProg3 USB-UART (COMxx). In this case, the port is COM125

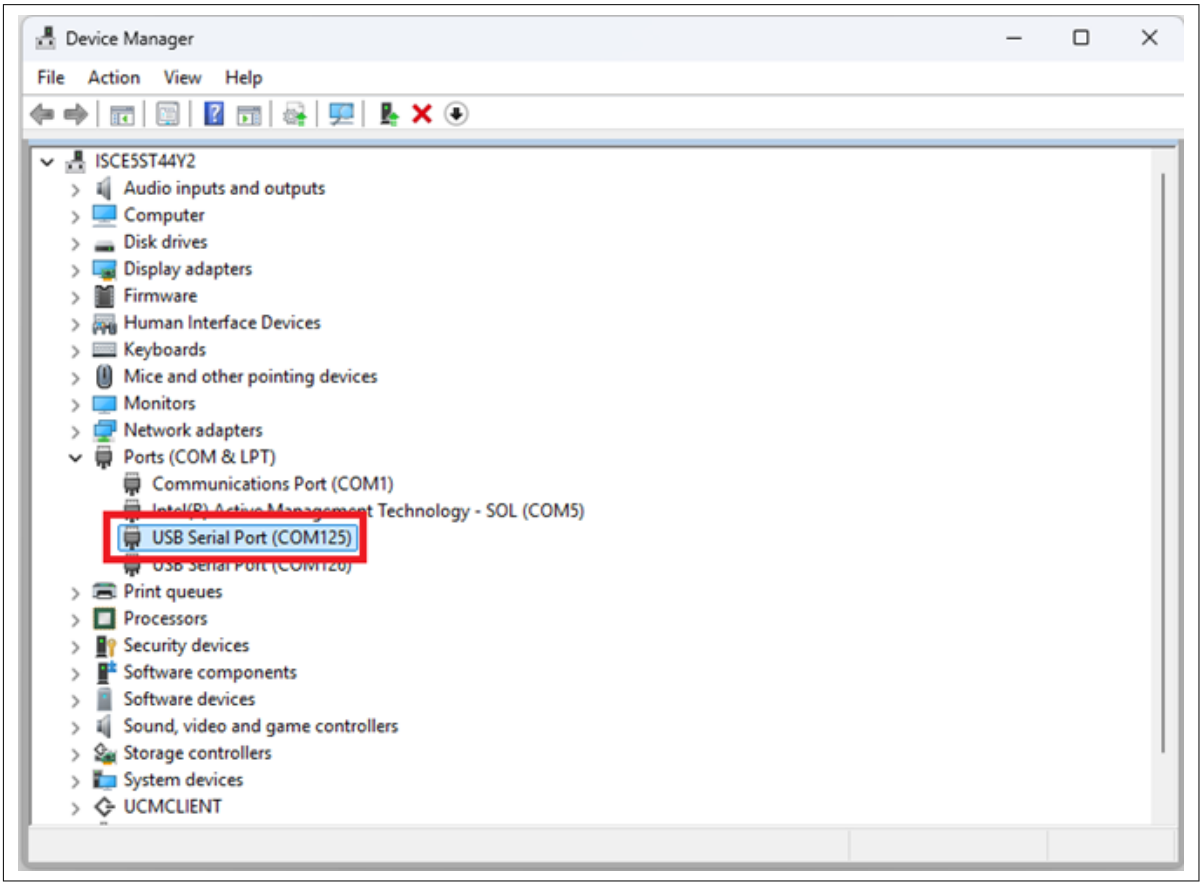

Figure 1 Device manager: USB-UART COM Port

2. Open AIROC™ Test and Debug Tool and click **Select Device**
3. A pop-up menu will appear, select the following:
   a. **Transport:** UART
   b. **Port name:** Select the port that matches the port shown in device manager (COM125)
   c. **Baud rate (bps):** 3000000
   d. **Flow control:** RTS/CTS
4. Once done, click **Open**

2 Device setup

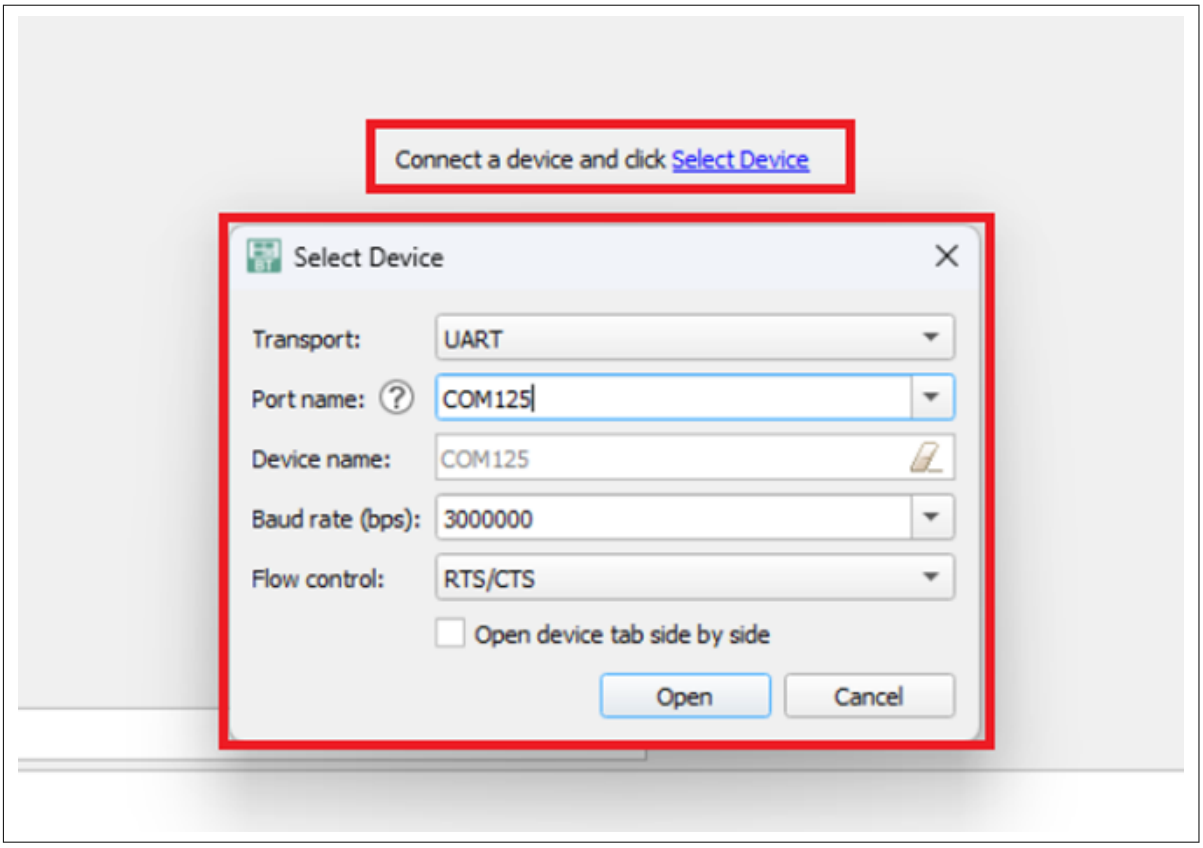

Figure 2 AIROC™ Tool Select Device Menu

3 HCI reset

1. Once the FW is running, perform a reset to ensure the PSB3xxx is functioning properly
2. The **Reset** command can be found under the Host Controller & Baseband Commands section, as shown in Figure 3
3. Double-click to send the command, and the return status is **`Status = 0x0 (0, Success)`**

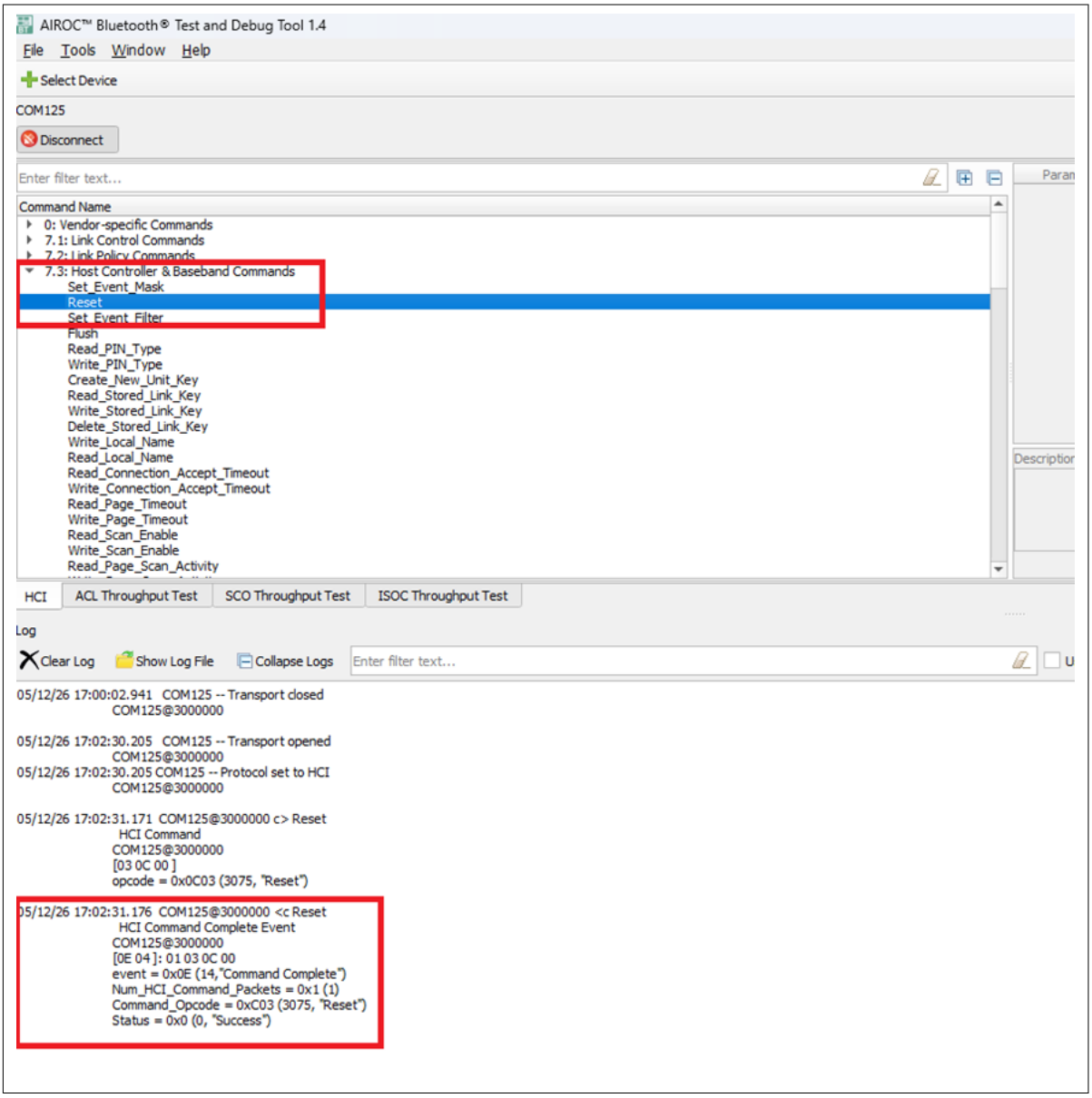

Figure 3 AIROC™ reset

4 TX test

1. Under the LE Controller Commands section, select the **`LE_Transmitter_Test_[v2]`** command to view the configurable parameters

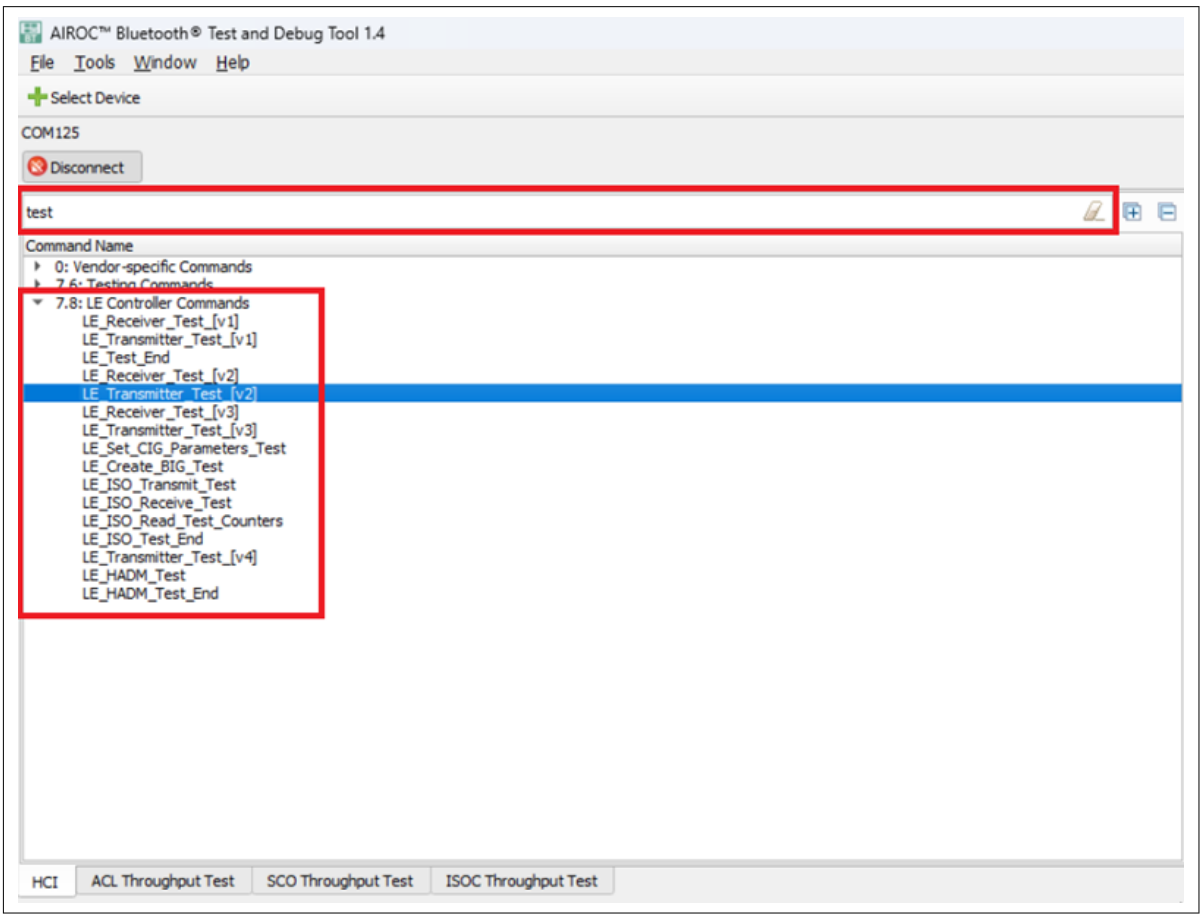

Figure 4 AIROC™ LE_Transmitter_Test [v2]

***Note**: Enter **test** in the search field to filter the test commands used throughout this document.*

2. The configurable parameters are:
   - **TX_Channel:** Enter a BLE channel value from 0 (0x0) to 39 (0x27). The value can be entered in either hexadecimal or decimal format
   - **Length_of_Test_Data:** Set to 37 (0x25)
   - **Packet_Payload:** Select one of the following options from the drop-down menu:
     - Pseudo-random bit sequence 9
     - Pattern of alternating bits '11110000'
     - Pattern of alternating bits '10101010'
   - **PHY:** Select the desired PHY from the drop-down menu:
     a. Transmitter set to transmit data at 1 Ms/s
     b. Transmitter set to transmit data at 2 Ms/s
     c. Transmitter set to use the coded PHY with S=8
     d. Transmitter set to use the coded PHY with S=2
3. Click **Send** to start transmission. Verify that a **Success** message is displayed in the log window with the selected parameter values

4 TX test

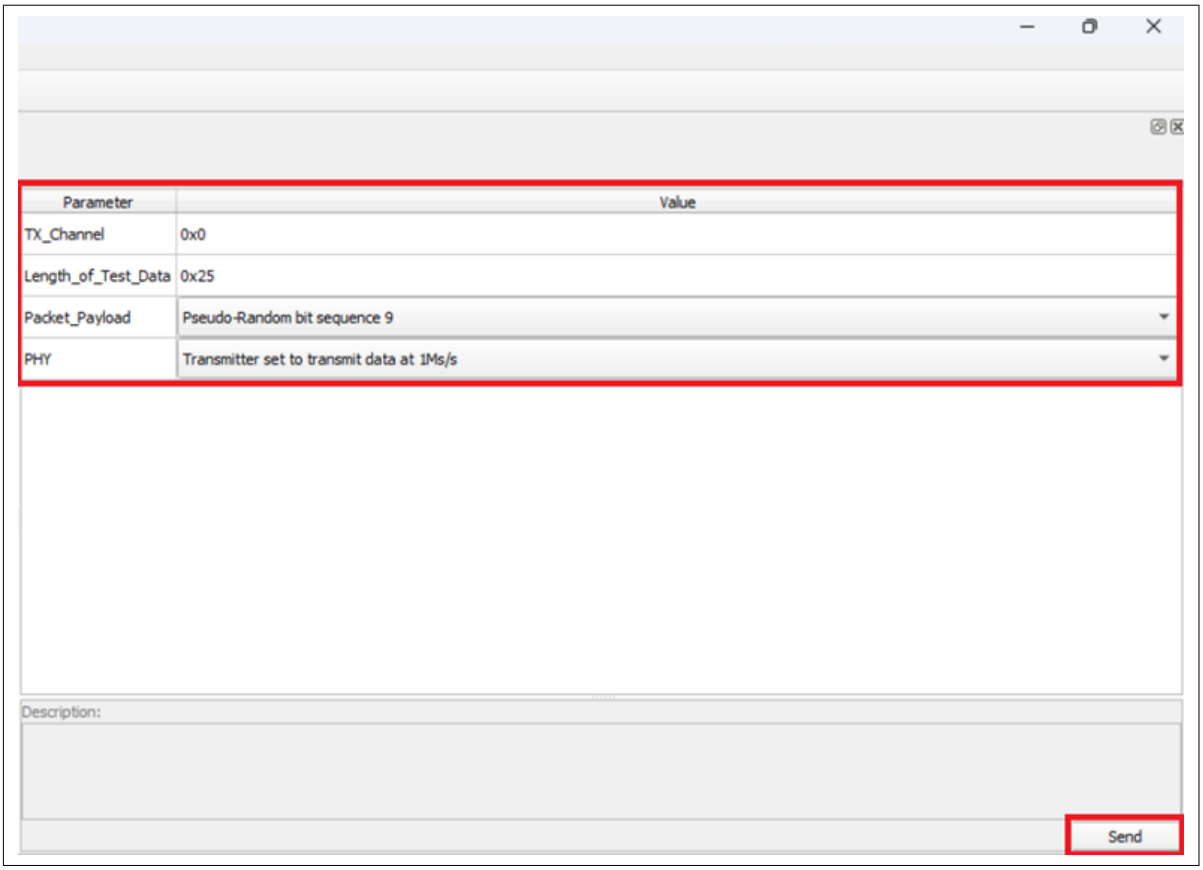

Figure 5 LE_Transmitter_Test [v2] configurable parameters

4 TX test

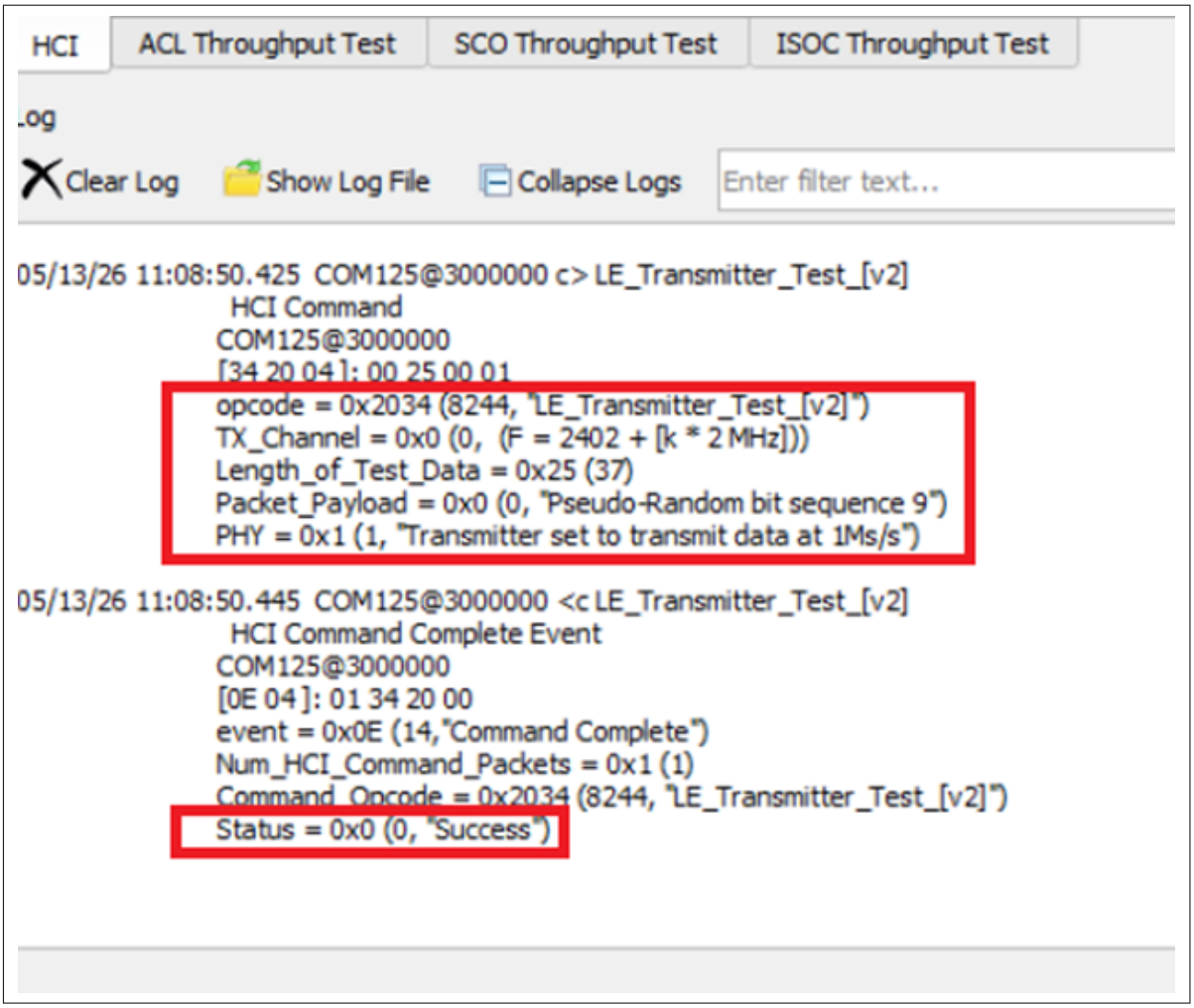

Figure 6 AIROC™ log: Transmit success

5 Test end

1. To test a different PHY or modify any test parameter, terminate the current test by sending the **`LE_Test_End`** command

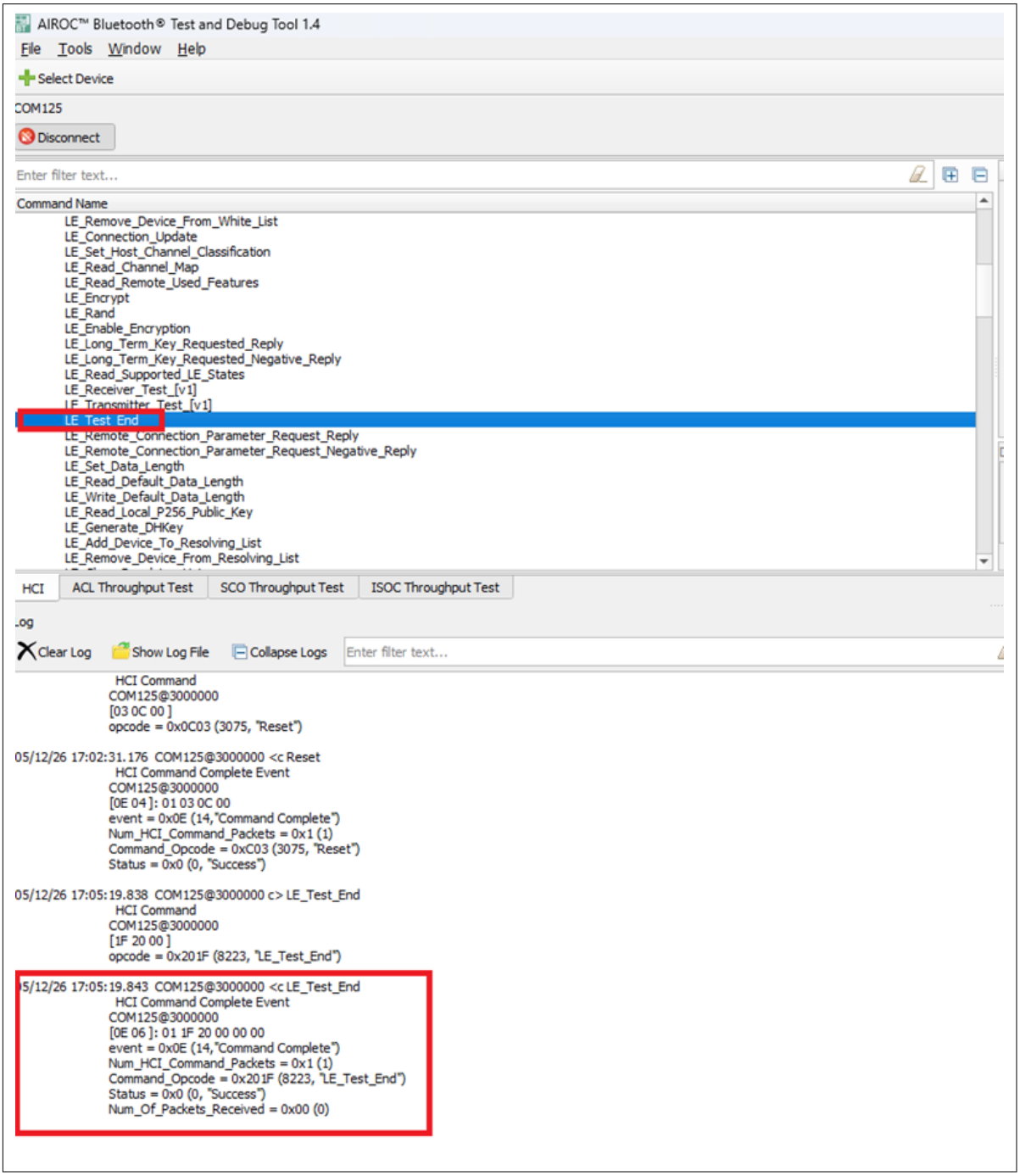

Figure 7 LE_Test_End command line and success log

6 RX test

1. Select the `LE_Receiver_Test_[v2]` command

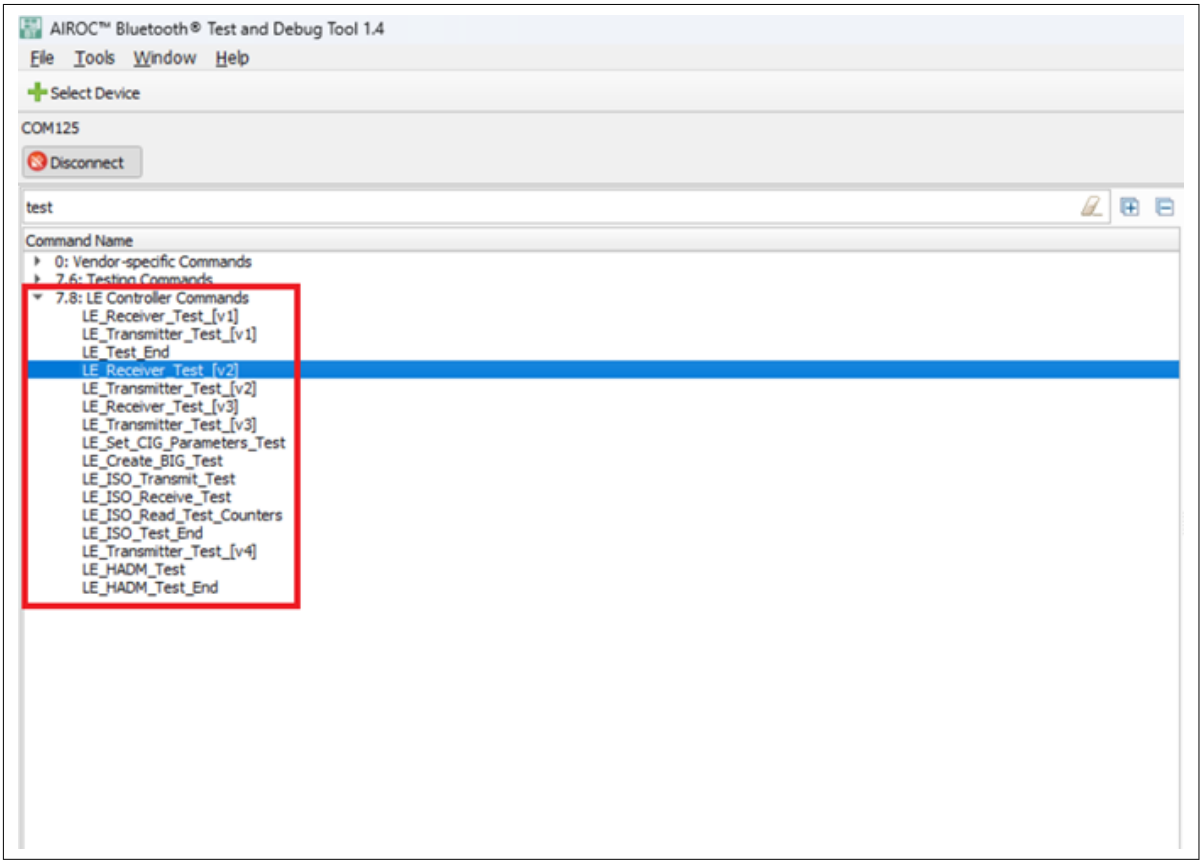

Figure 8 LE_Receiver_Test [v2]

2. Enter the desired **RX_Channel** from 0 (0x0) to 39 (0x27)
3. Select the desired **PHY** for the test:
   - Receive data at 1 Ms/s
   - Receive data at 2 Ms/s
   - Use the coded PHY
4. For **Modulation_Index**, select one of the following options:
   - Assume that the transmitter uses a standard modulation index
   - Assume that the transmitter uses a stable modulation index

   ***Note**: Standard modulation index should be the default for most cases. Do NOT use a stable modulation index unless appropriate and necessary.*

5. Click **Send** to start the RX test

6 RX test

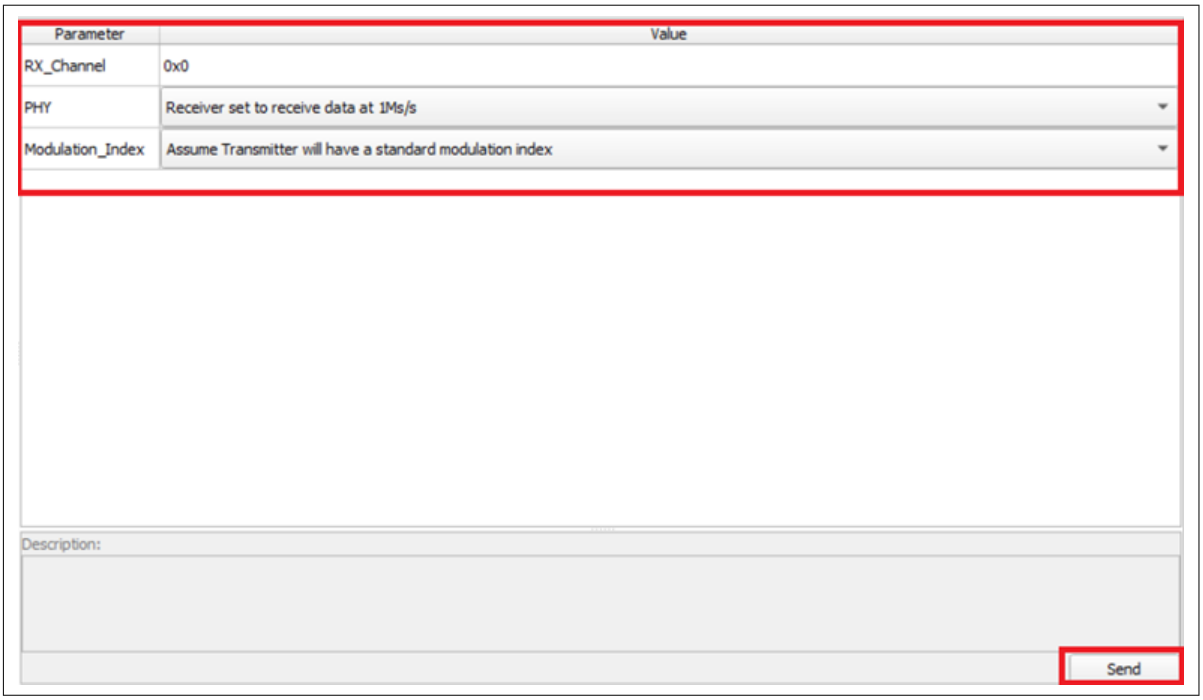

Figure 9 LE_Receiver_Test [v2] configurable parameters

6. Ensure that the log displays a **Success** message with the selected RX test parameters

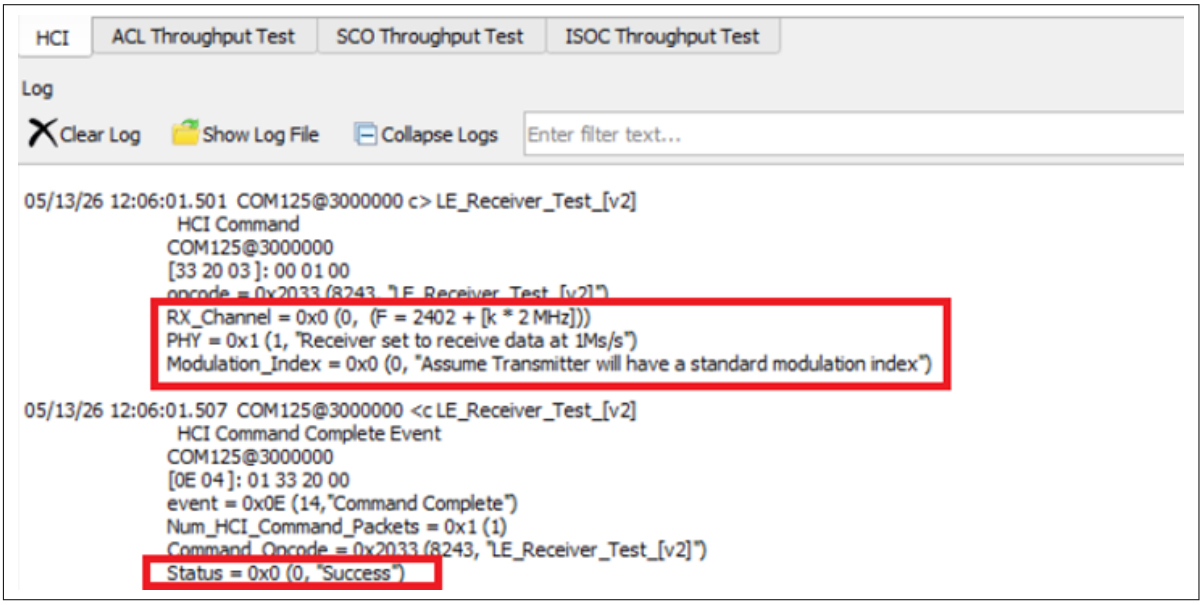

Figure 10 LE Receiver test success log

7. Send the `LE_Test_End` command. The log window reports the **`Num_Of_Packets_Received`** value from the Bluetooth® tester

6 RX test

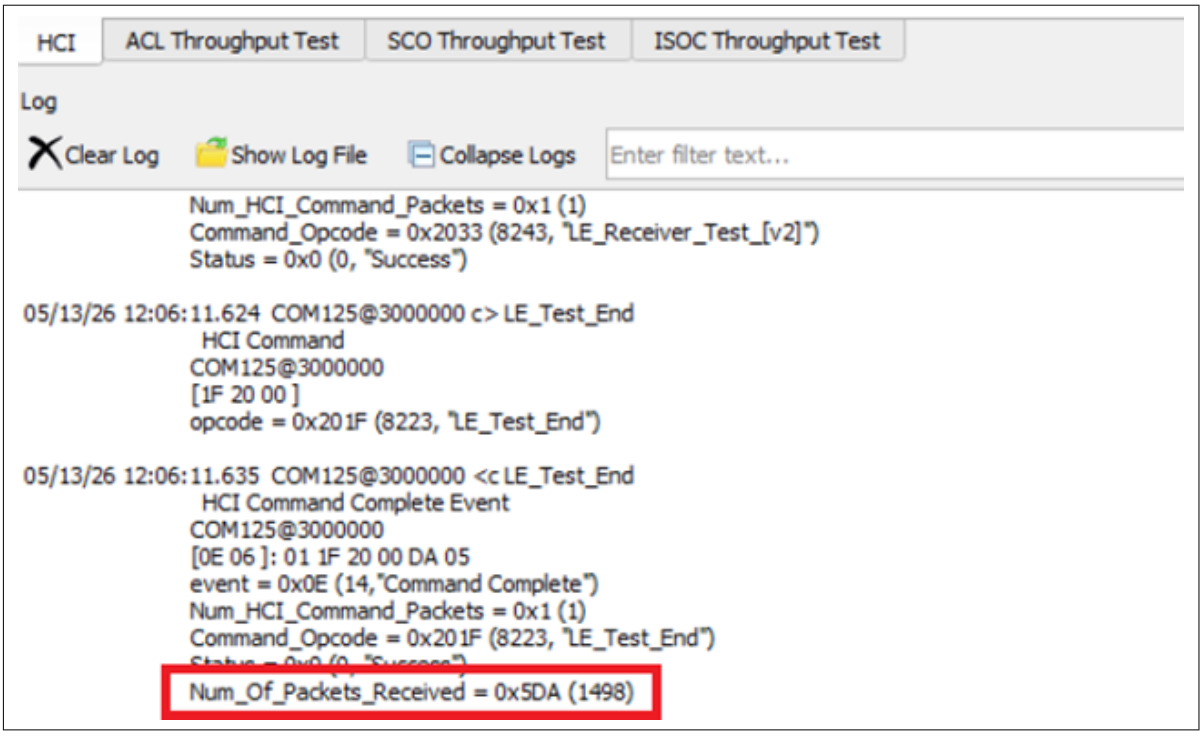

Figure 11 LE_Test_End: Number of packets received for RX test

7 Command disallowed

1. If the log displays **`status = 0xC (12, "Command Disallowed")`**, a test command was likely issued before the previous test was terminated. Send the **`LE_Test_End`** command to terminate the active test and clear the command disallowed condition

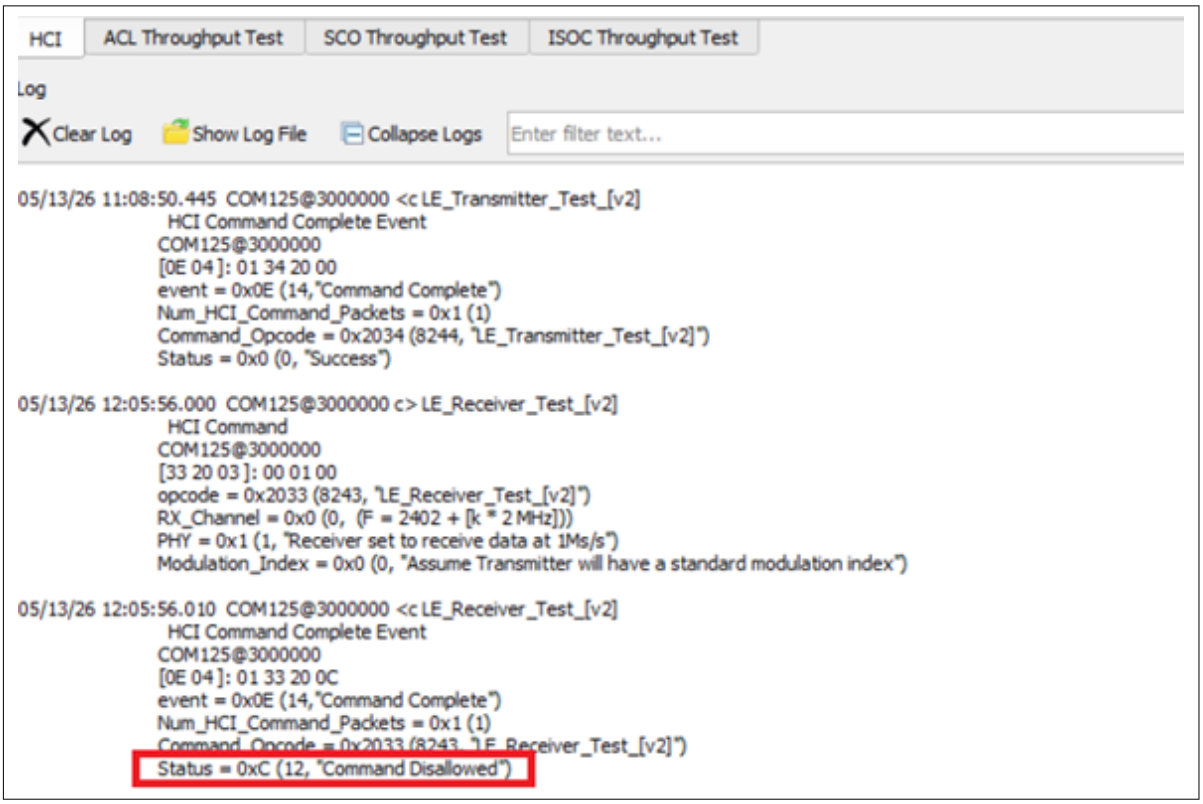

Figure 12 Command disallowed log

Revision history

Document revision	Date	Description of changes
**	2026-08-05	Initial release

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