Realtek Bluetooth
MP UI User Guide

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High Performance · Low Power

A. Electrical Characteristics	
Working Frequency	**2·4GHz~2·5GHz** **4.9GHz~5.85GHz**
S.W.R.	**2.4GHz~2.5GHz <2.0** **4.9GHz~5.85GHz <2.0**
Antenna Gain	**Main port:2dBi** **Aux port:2dBi**
Antenna Type	**PCB**
Efficiency	**2.4GHz~2.5GHz >70%** **4.9GHz~5.85GHz >75%**
Impedance	**50 Ohm**
Polarization / Azimuth	**Linear / Omni-directional**
B. Mechanical Dimension	
Cable Length Of Main Ant	**L:340mm(BLACK)**
Cable Length Of Aux Ant	
C. Material	
Stamping Metal	**Copper antenna**
Coaxial Cable	**50 Ohm / O.D.1.13mm**
Mini Coaxial Connector	**IPEX PLUG**
D. Environmental	
Operation Temperature	**-40℃~ +85℃**
Storage Temperature	**-40℃~ +85℃**

Bluetooth MP Operation Flow

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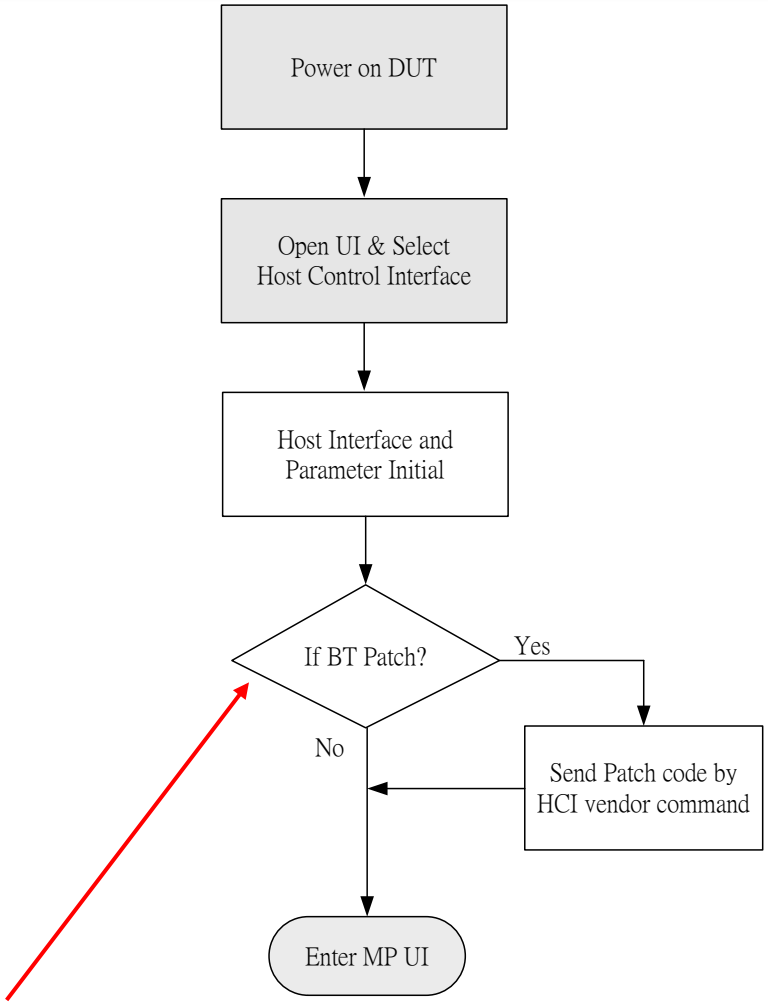
Host Interface: BT USB/UART/PCIe



Set "IsFirmwarePatchAtInit" in the HCISetup.ini, 0→Skip Patch, 1→Patch
The patch file is "patch.bin" (located the same directory with RTK_BT_MP.exe)

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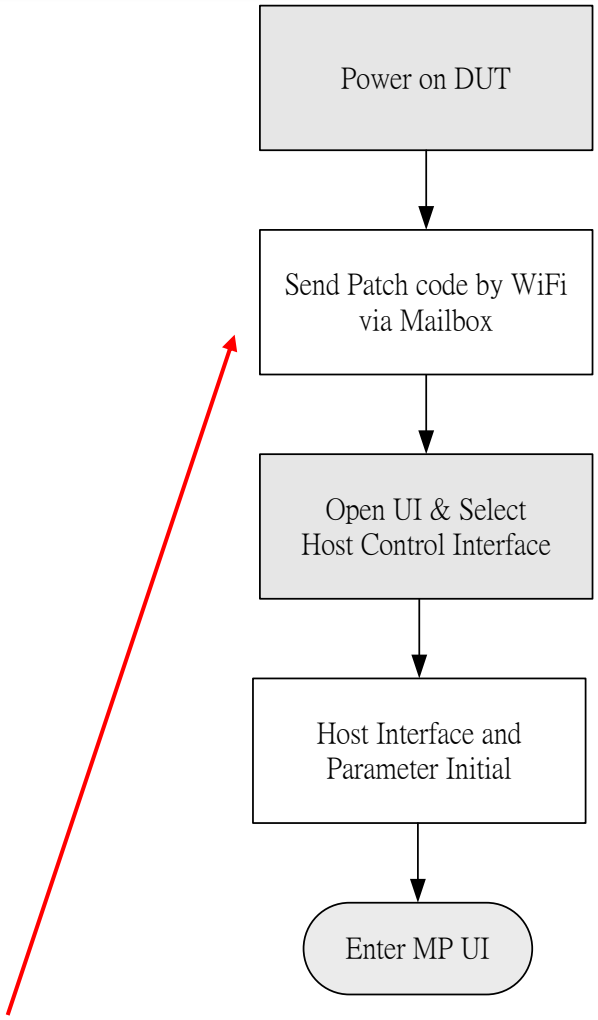
Host Interface: WiFi USB/UART/PCIe (Windows Platform)



The WiFi driver must download BT patch while DUT power on.

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Host Interface: Linux Platform

The WiFi in the DUT UI must be turned off after Power on. (no WLAN module exit in the system)

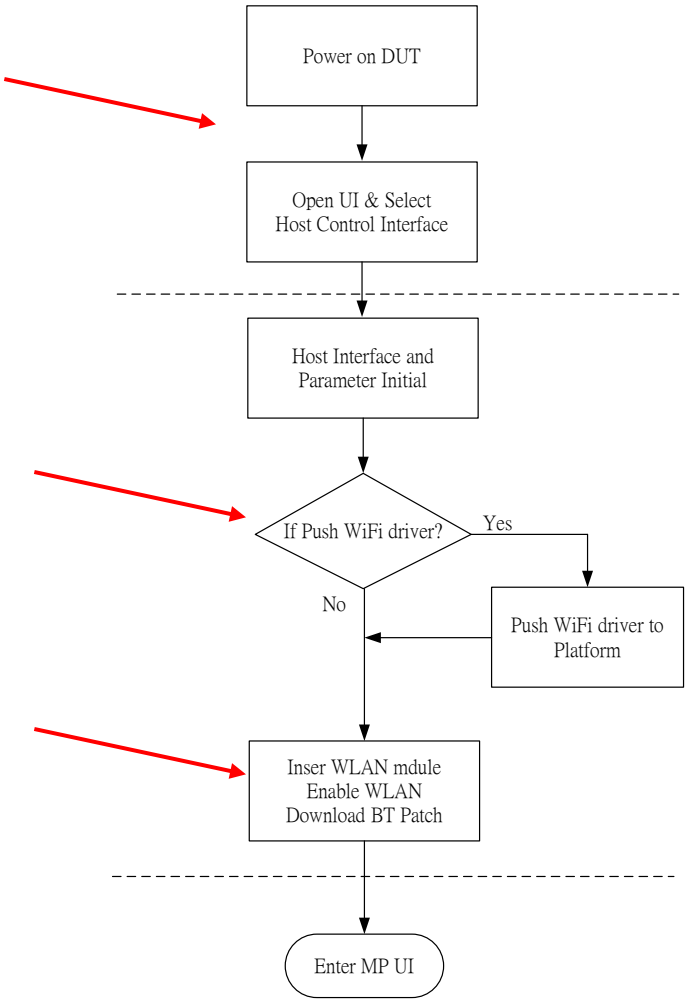
"IsPushMPDriver" in the HCISetup.ini defines: 0→ skip push, 1→push.

The MP driver filename is specified in the "ADBMPDriverFilename" of the HCISetup.ini It must place in the same directory with RTK_BT_MP.exe.

The push destination is defined in the "ADBMPDriverRoute" of the HCISetup.ini .

The insert WiFi module is specified by the "ADBMPDriverRoute" + "ADBMPDriverFilename" in the HCISetup.ini .

.



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Bluetooth MP UI Initial

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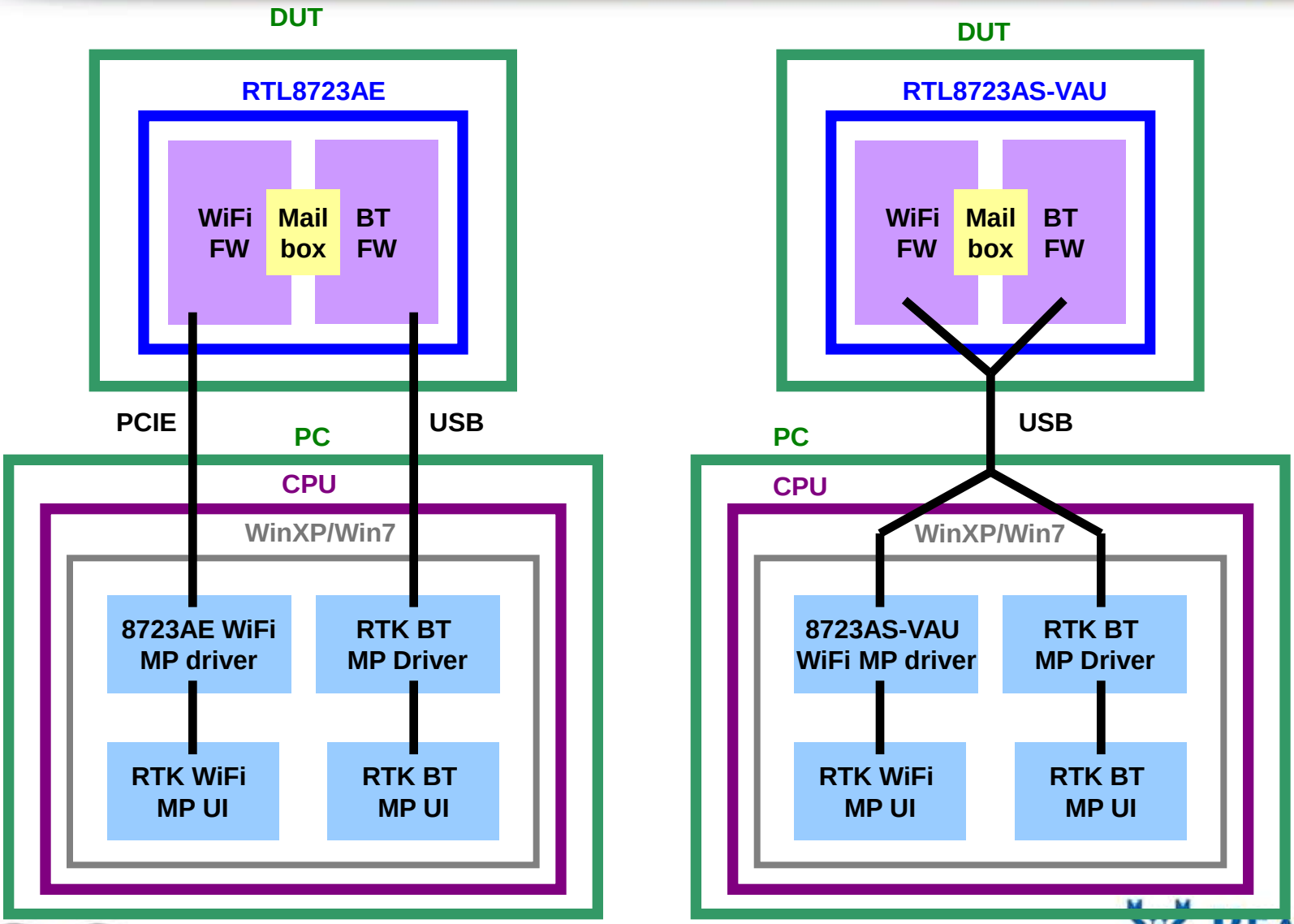
Host Interface: BT USB Port (8723AE,8723AE-VAU)



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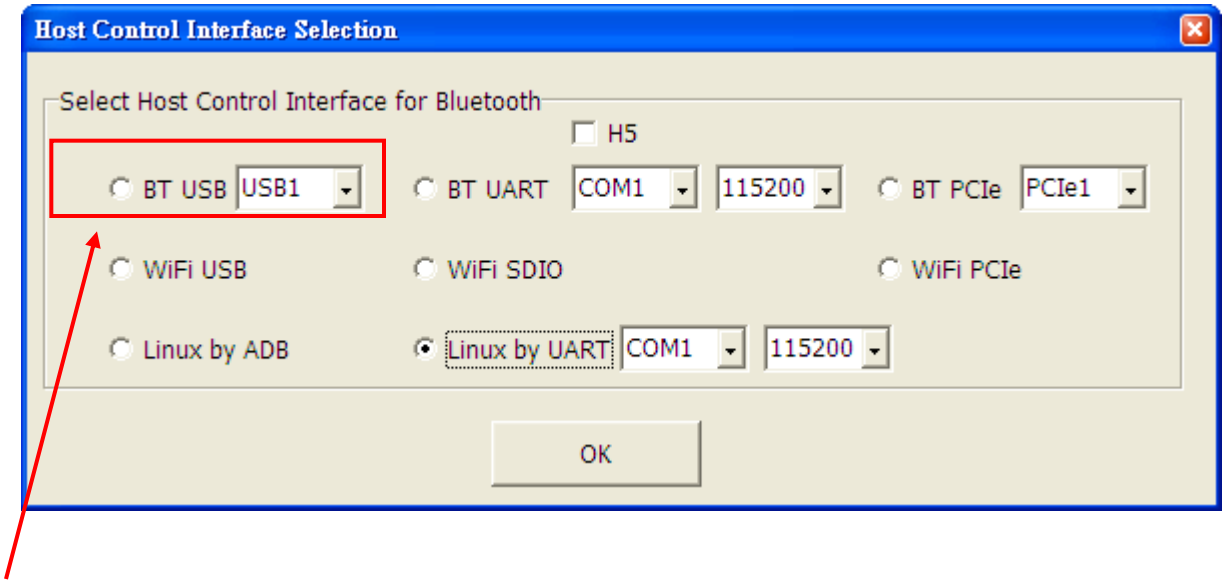
Host Interface: BT USB Port (8723AE,8723AE-VAU)



Select "BT USB" , Choose USB port number, and Press "OK" button to start the MP.

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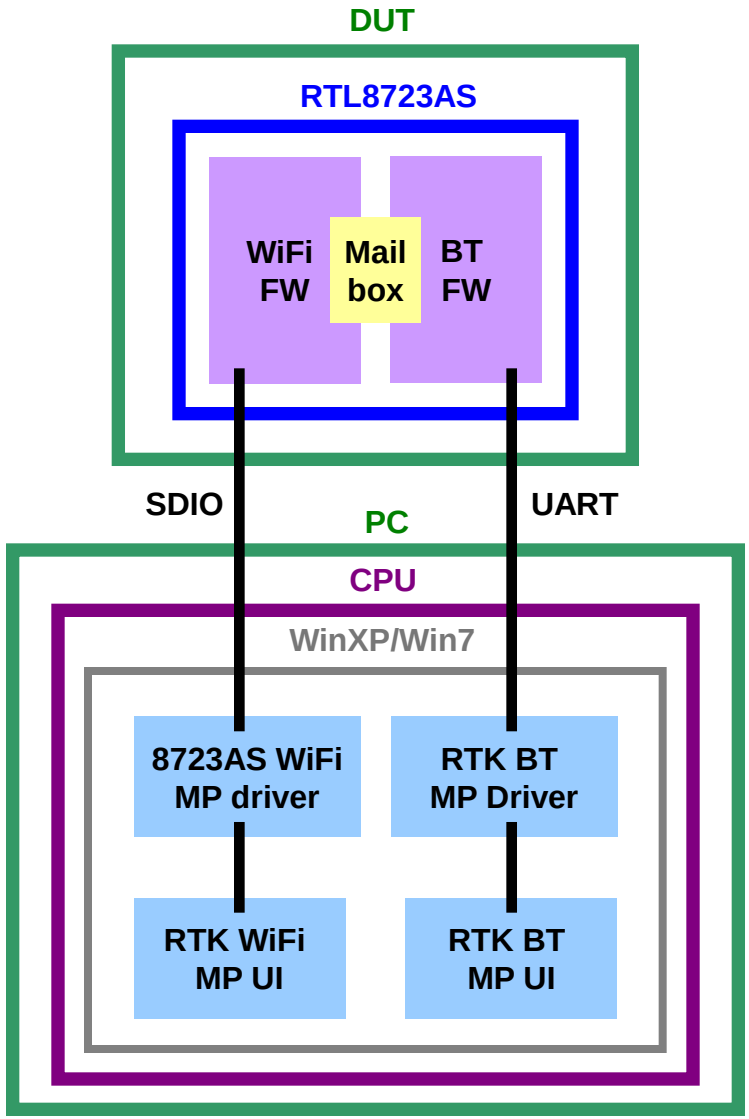
Host Interface: BT UART Port (8723AS)



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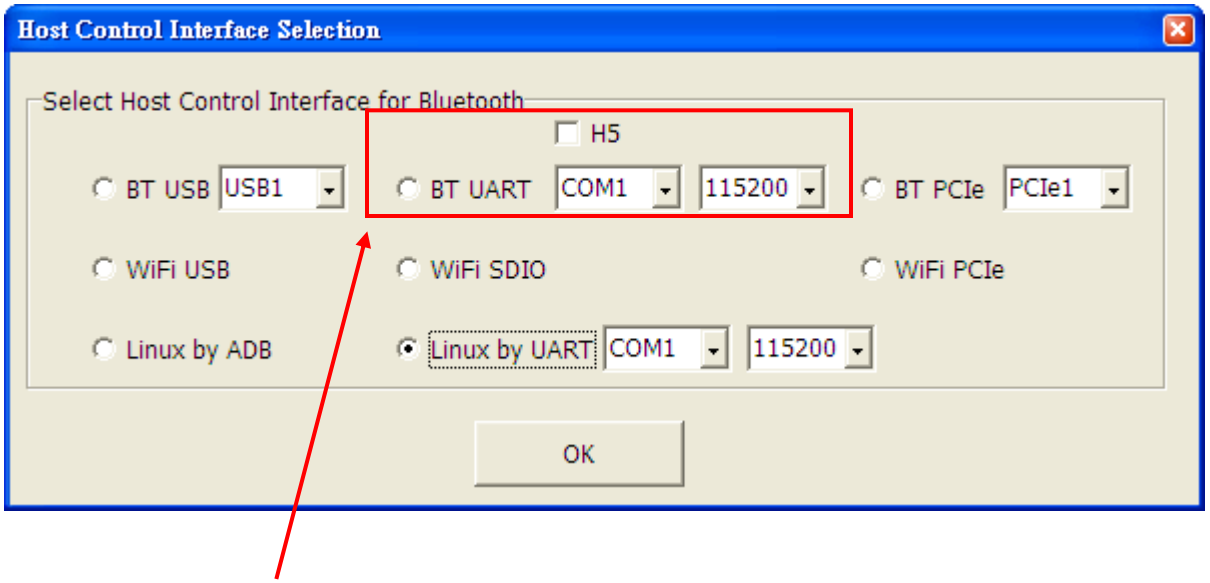
Host Interface: BT UART Port (8723AS)



Select "BT UART" , Choose COM port number and baud rate (default: 115200), and Press "OK" button to start the MP.

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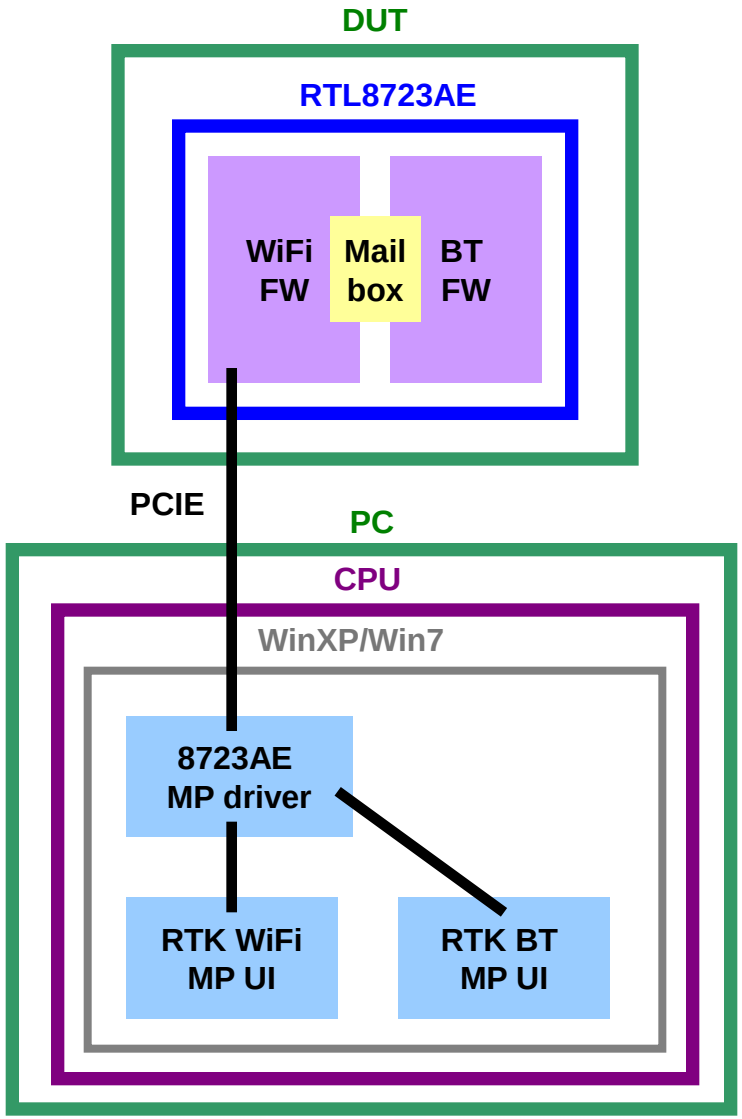
Host Interface: WiFi PCIe Port (8723AE)



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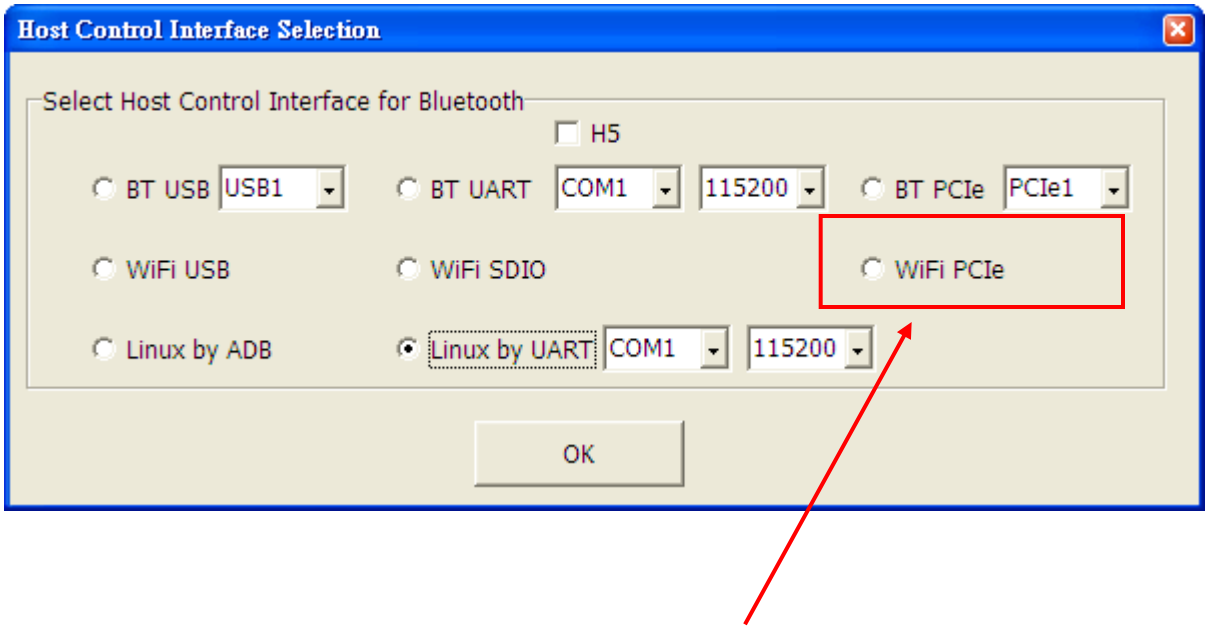
Host Interface: WiFi PCIe Port (8723AE)



Select "WiFi PCIe" , and Press "OK" button to start the MP.

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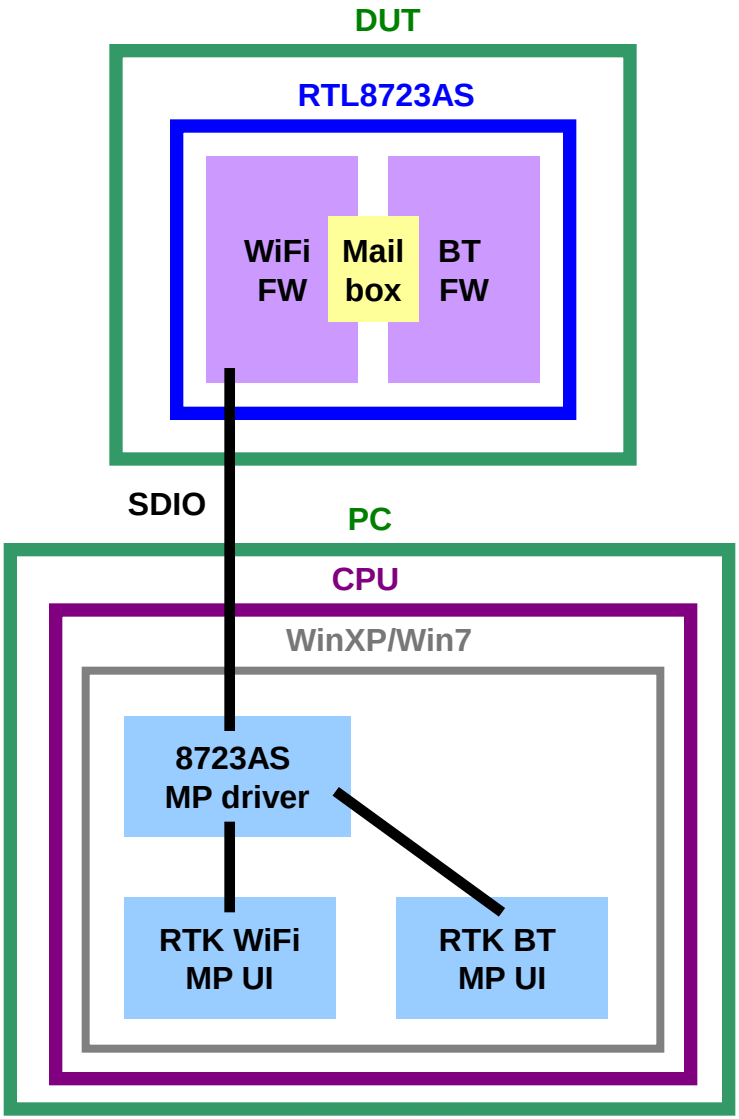
Host Interface: WiFi SDIO Port (8723AS)



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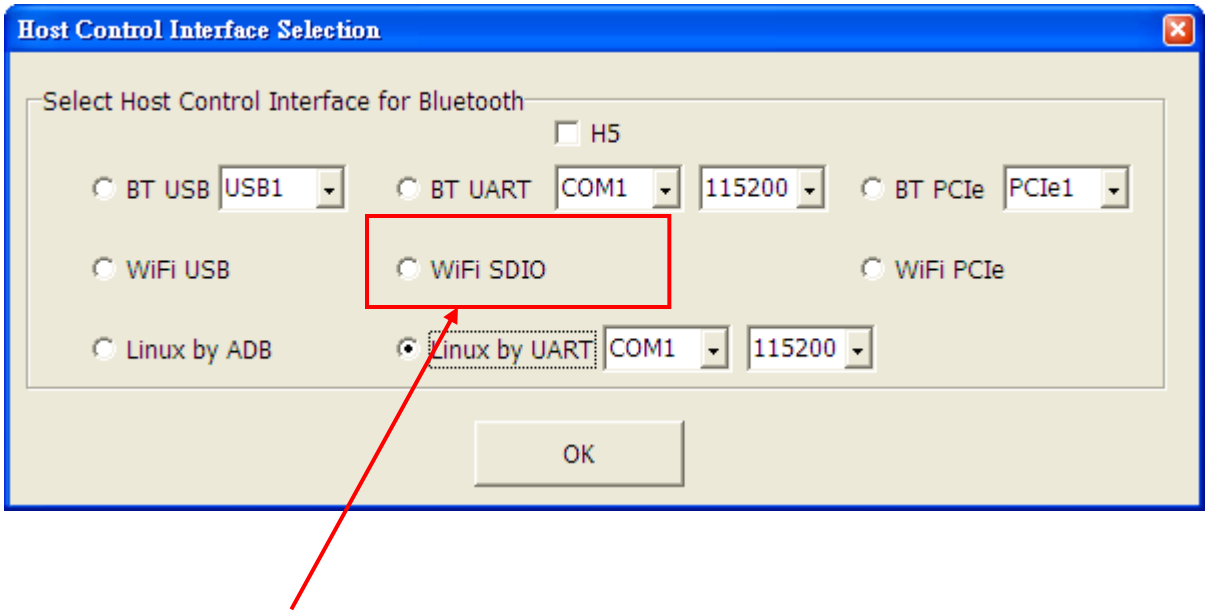
Host Interface: WiFi SDIO Port (8723AS)



Select "WiFi SDIO" , and Press "OK" button to start the MP.

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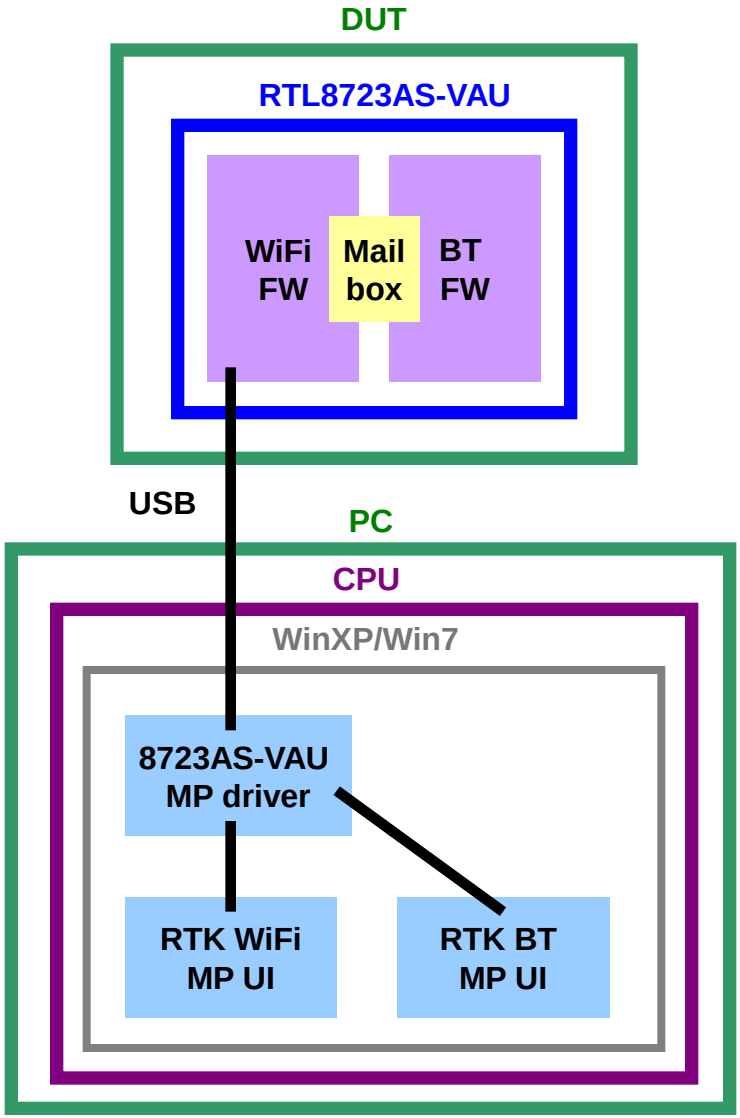
Host Interface: WiFi USB Port (8723AS-VAU)



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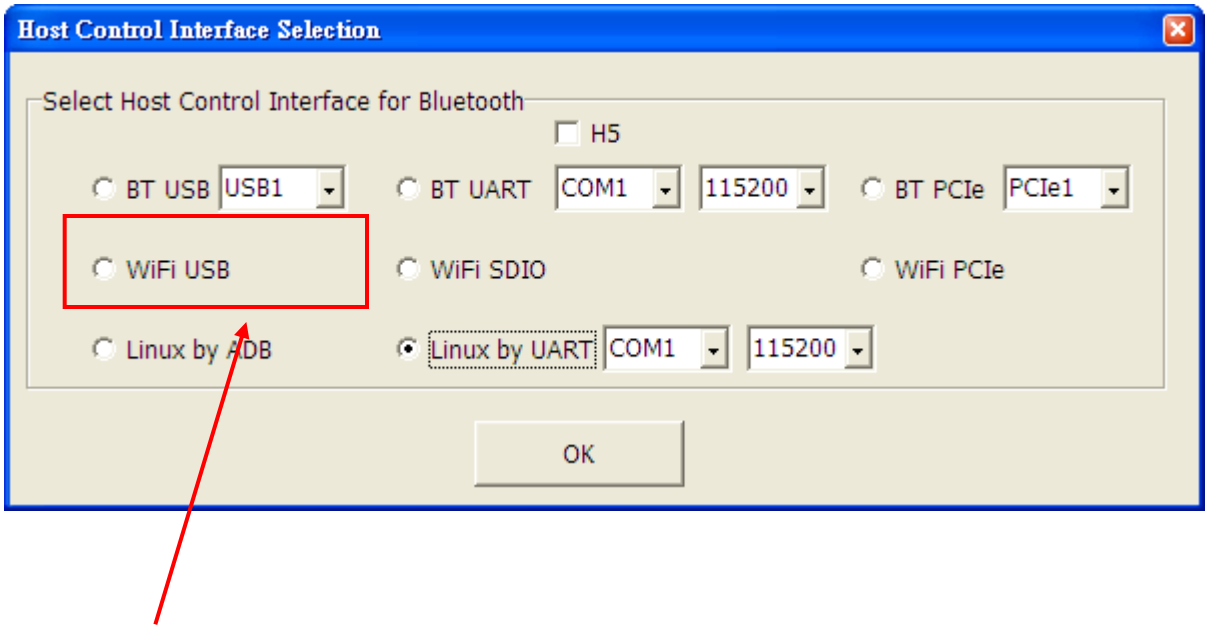
Host Interface: WiFi USB Port (8723AS-VAU)



Select "WiFi USB" , and Press "OK" button to start the MP.

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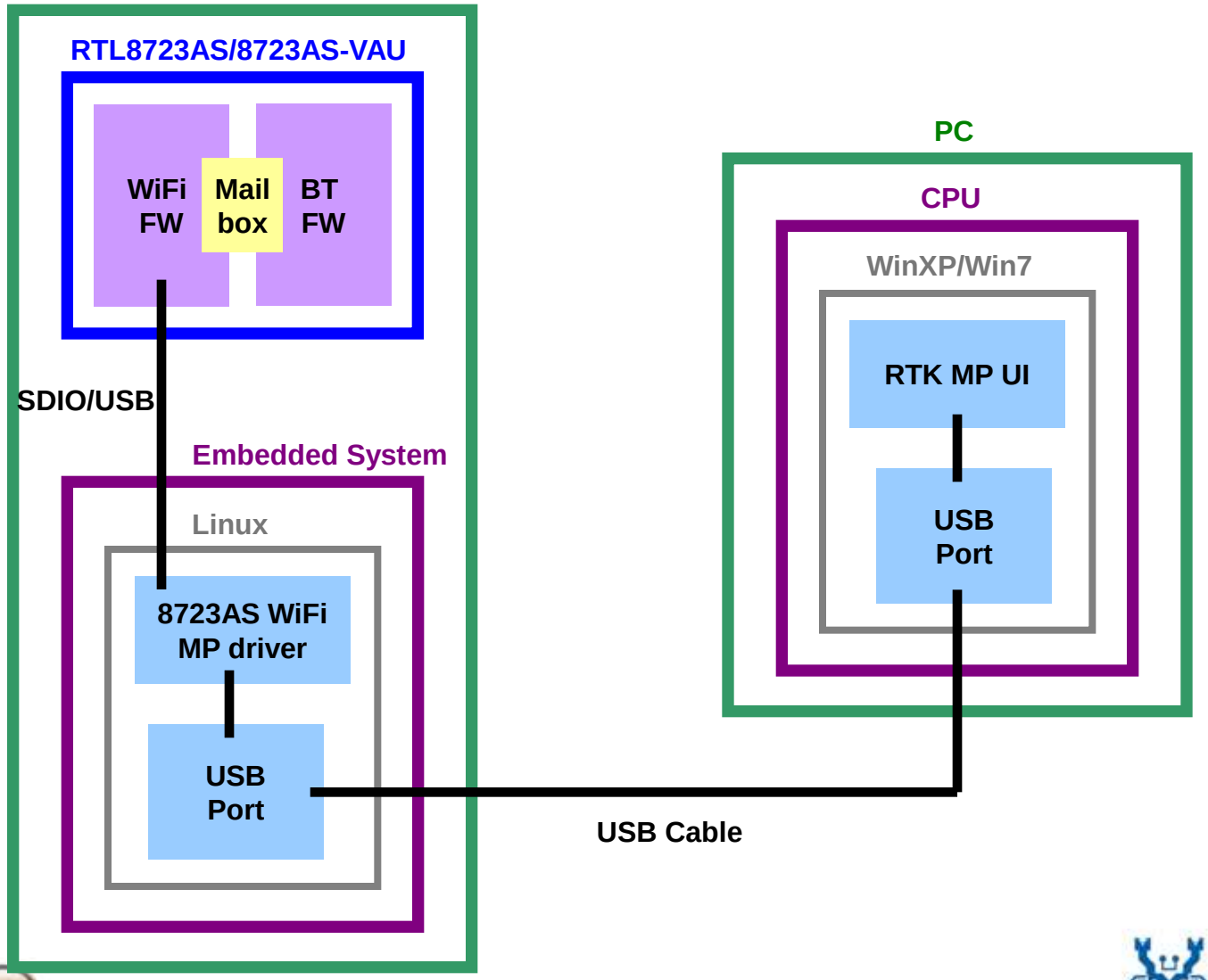
Host Interface: Linux USB Port (8723AS,8723AS-VAU)



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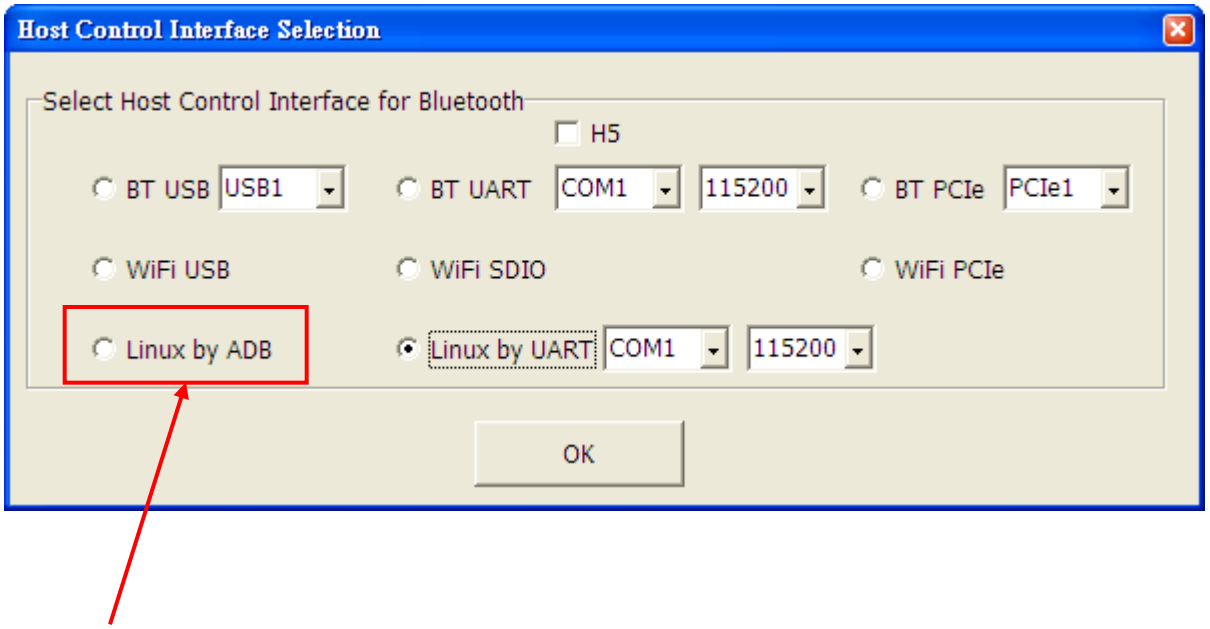
Host Interface: Linux USB Port (8723AS,8723AS-VAU)



Select "Linux by ADB" , and Press "OK" button to start the MP.

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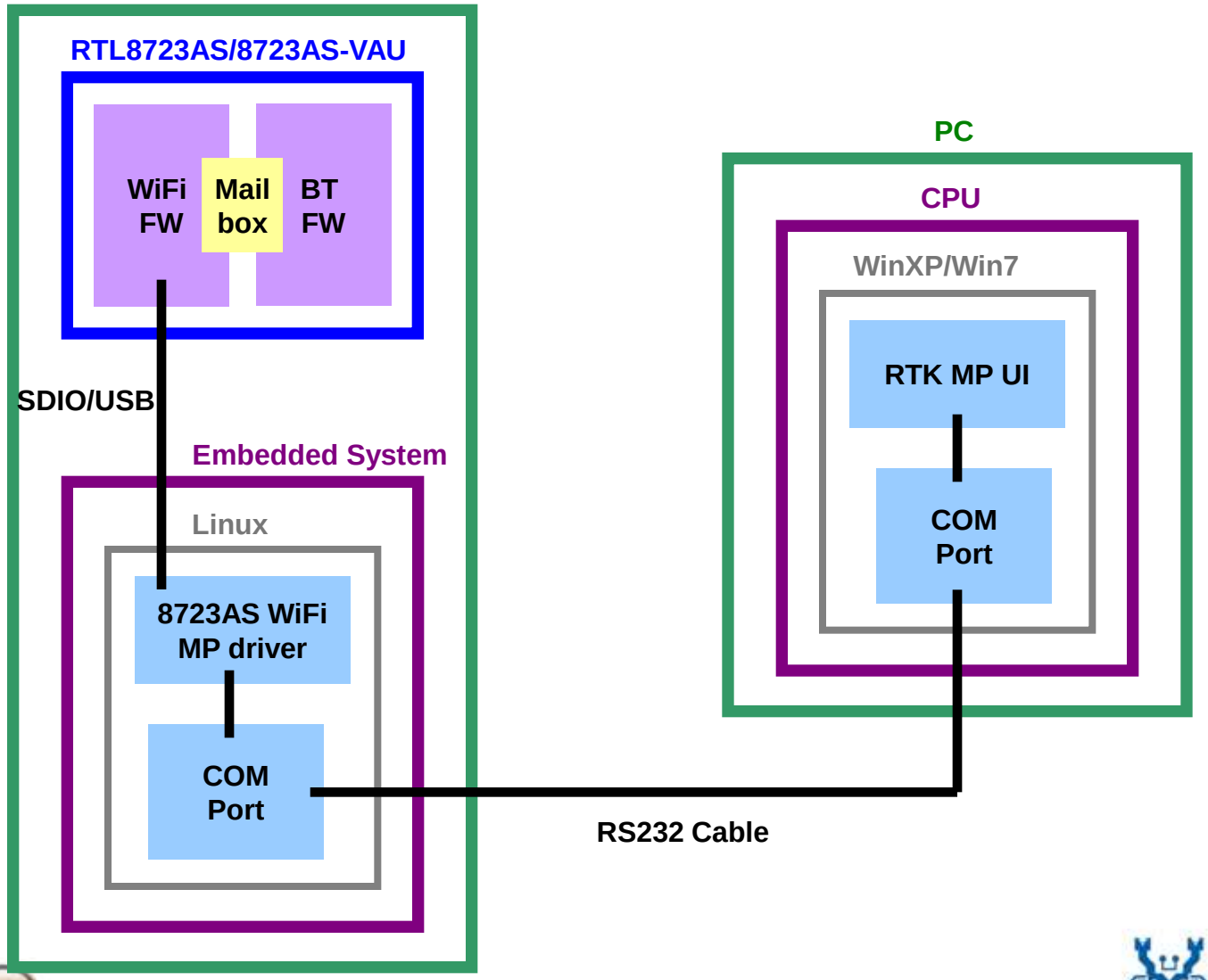
Host Interface: Linux COM Port (8723AS,8723AS-VAU)



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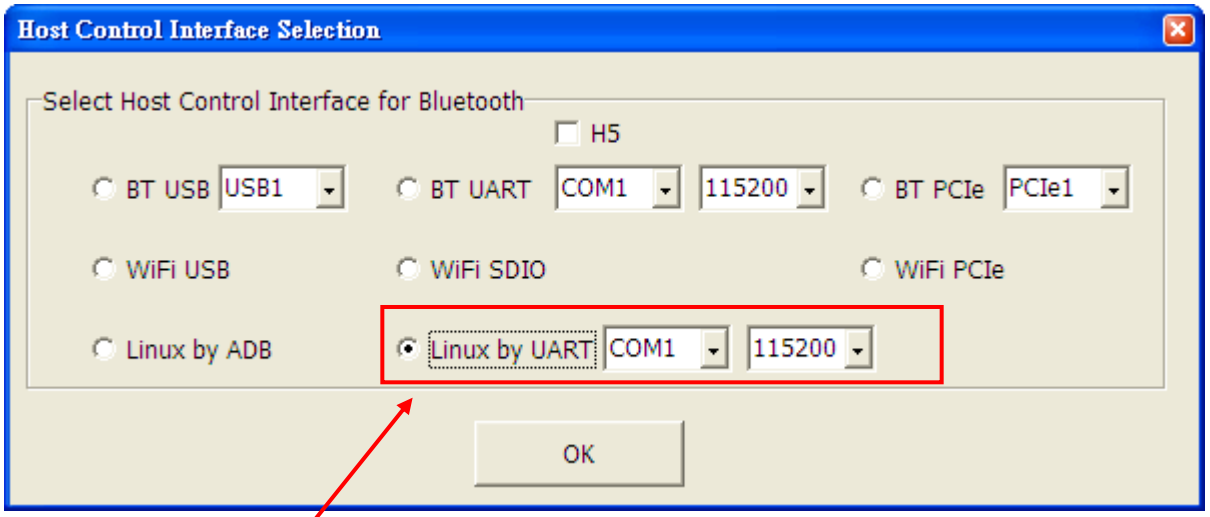
Select Host Control Interface



Select "Linux by UART" , Choose COM port number and baud rate (default: 115200), and Press "OK" button to start the MP.

Note: It is recommended to press the "OK" button after the system boot completely.

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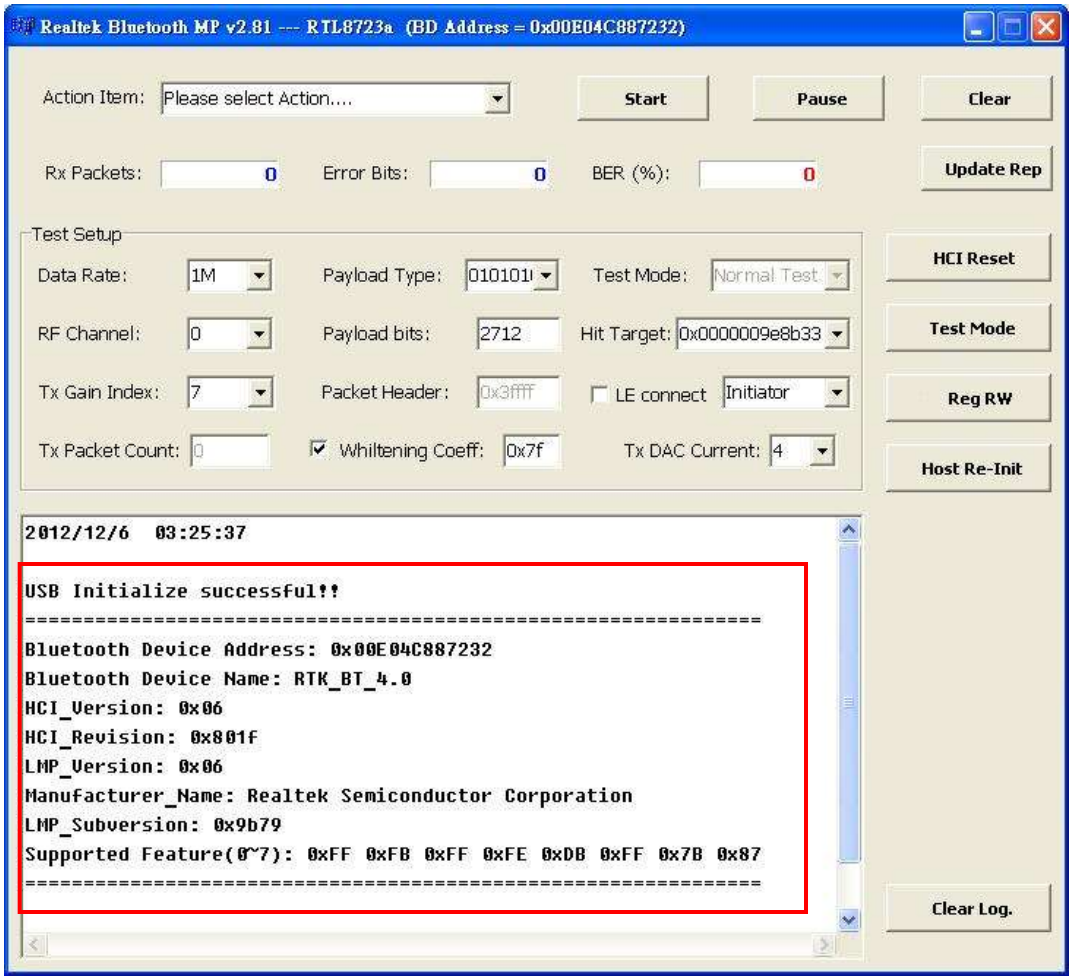
The Main UI (BT Host type)

If initial ok, memo show as below



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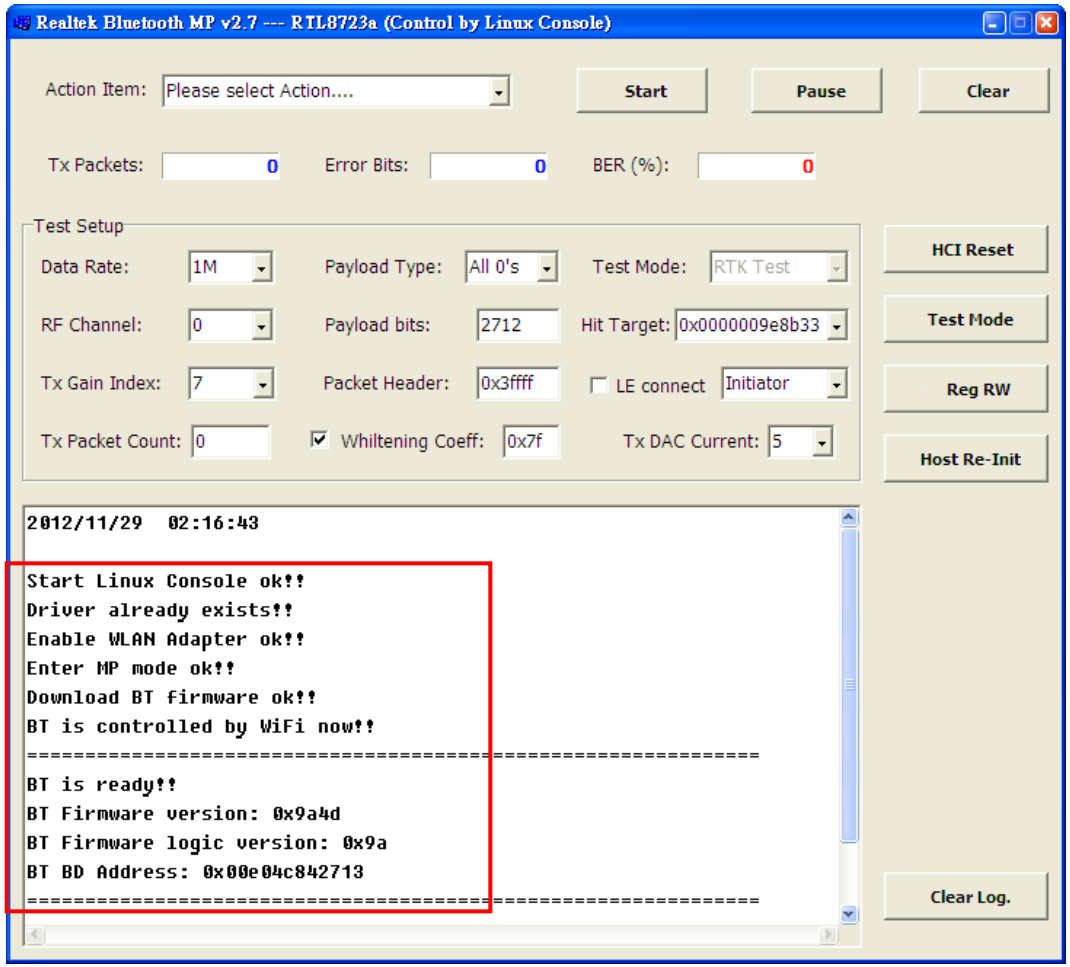
The Main UI (WiFi Host type)



If initial ok, memo show as below

If initial fail, Check those:

a. RS232/USB cable

b. UART setup /USB port

c. BT Module

d. BT MP driver

Note: If initial fail (ex: enable WLAN adapter fail), it may result from the boot is not completed during MP UI start. You can press "Host Re-Init" button or reopen the MP UI.

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Bluetooth DUT Test Mode

Setup & Test Procedure

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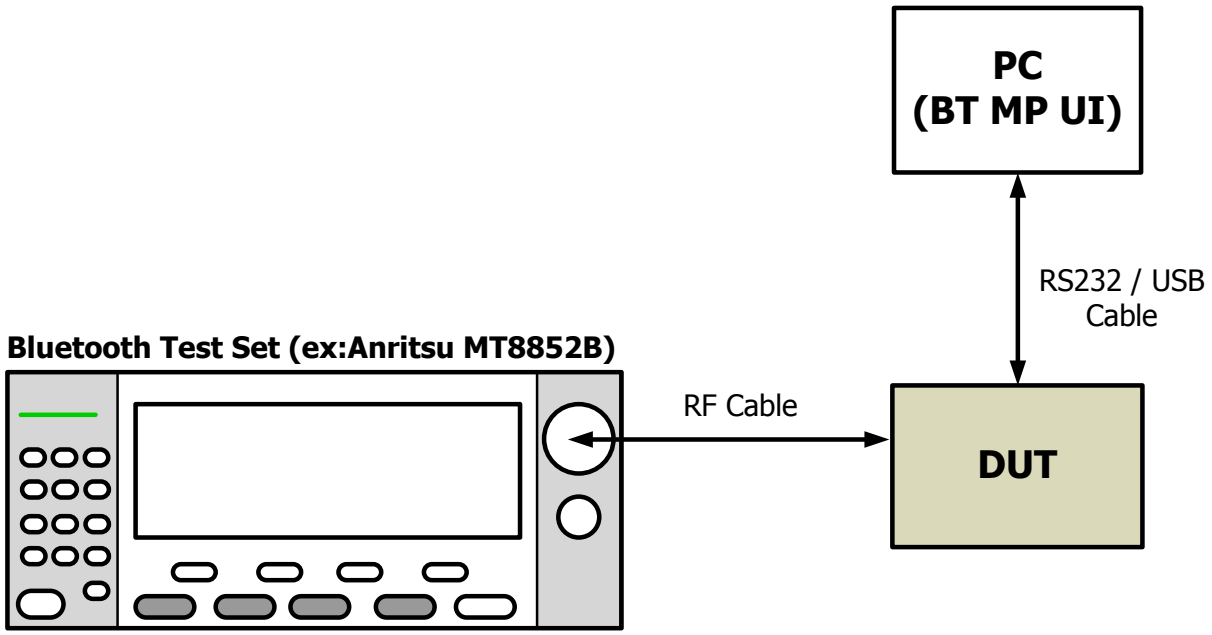
BT DUT Test Mode Test Topology

The BT MP sends BT HCI command to DUT. The DUT enable Inqr/Page scan and enter DUT test mode. The Bluetooth tester established a link with the DUT over the RF channel using the normal Bluetooth protocol.



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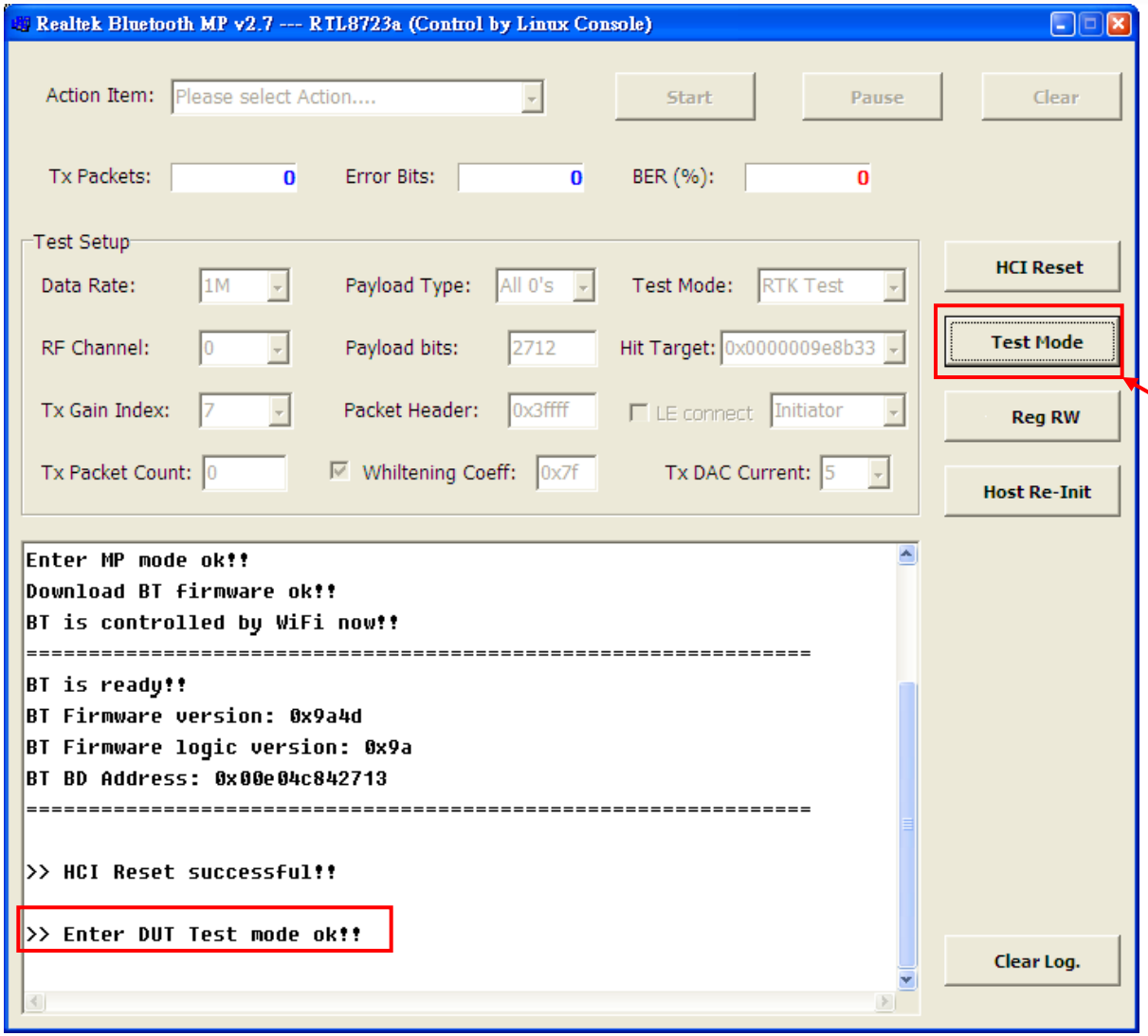
UI Setup Step-1: Enter DUT Test Mode



Press "Test Mode" button

To enter BT DUT test mode.

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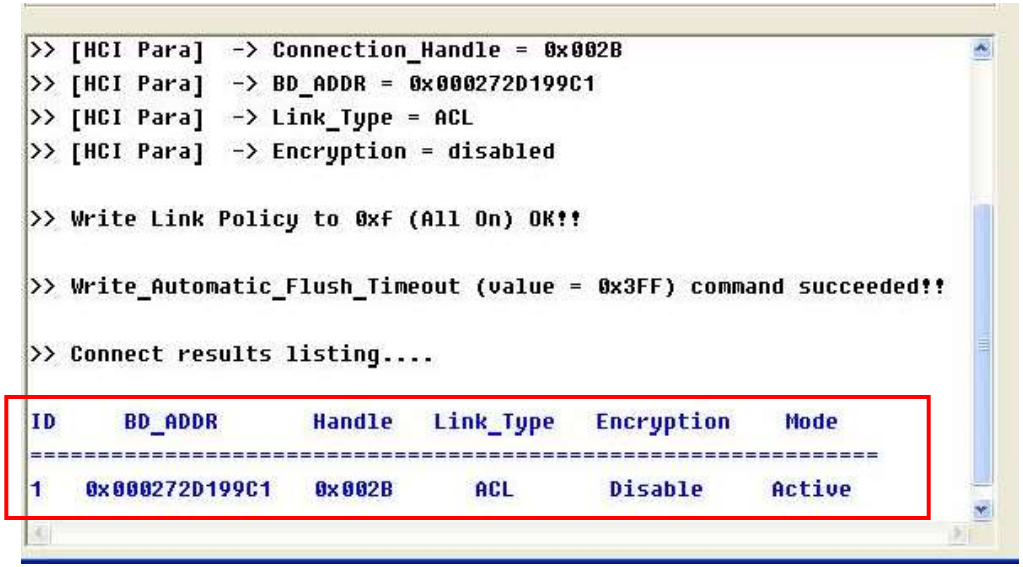
After UI Setup Step-1

After Bluetooth test set creates a connection with DUT, the BT MP UI will show message as below. The RF test can kick off.



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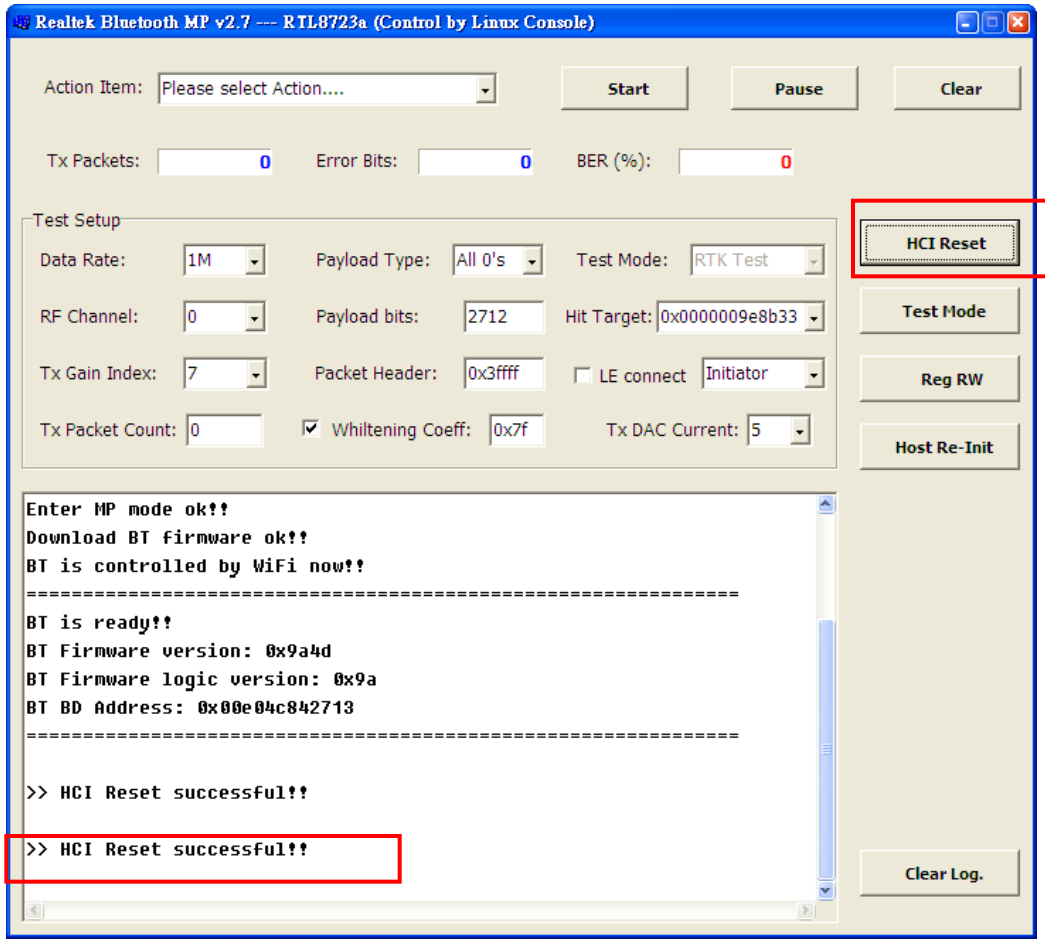
UI Setup Step-2: Exit DUT Test Mode (if required)

The connection can be disconnected by either BT test set or DUT. For DUT end, the connection will lost because of supervision timeout after HCI reset is executed.



Press "HCU Reset" button

To exit BT DUT test mode.

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Bluetooth Non-Link Mode

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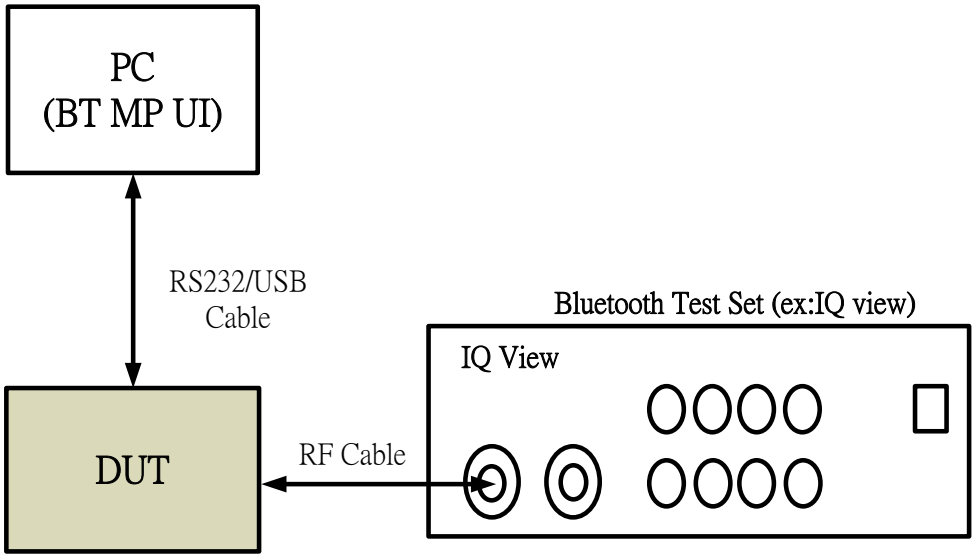
Non-Link Mode Test Topology

For non-link mode test, the tester communicates with DUT over a cable via HCI with the DUT in a special test. The tester doesn't have to establish a protocol link with the DUT. The non-link mode of the 8723 series chip support "Packet-Tx", "Continue-Tx", and "Packet-Rx" for various RF performance test.



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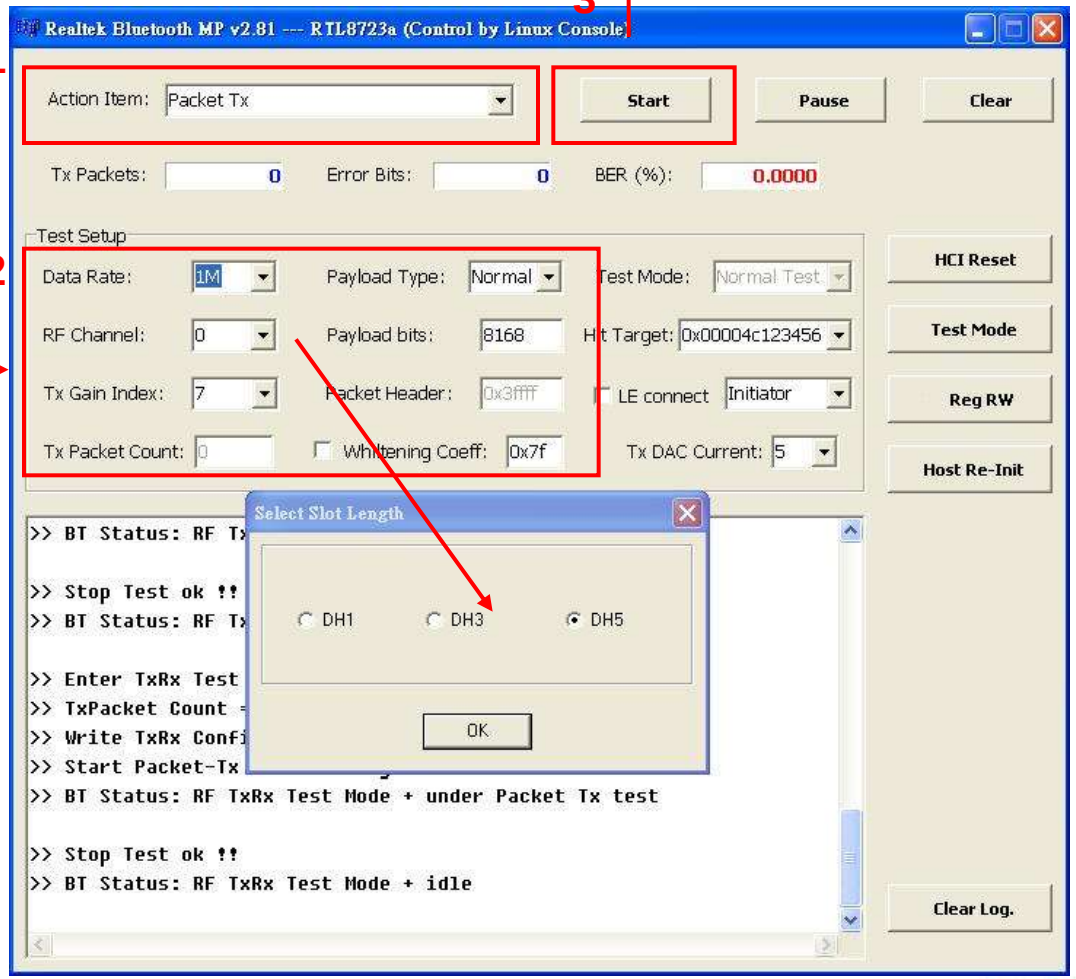
Packet-Tx Setup

Press “Start” button

Select “Packet-Tx”

Select “Data Rate”, “RF Channel”, “Tx Gain Index”, “Payload Type”, “Payload bits”, “Whitening Coeff”



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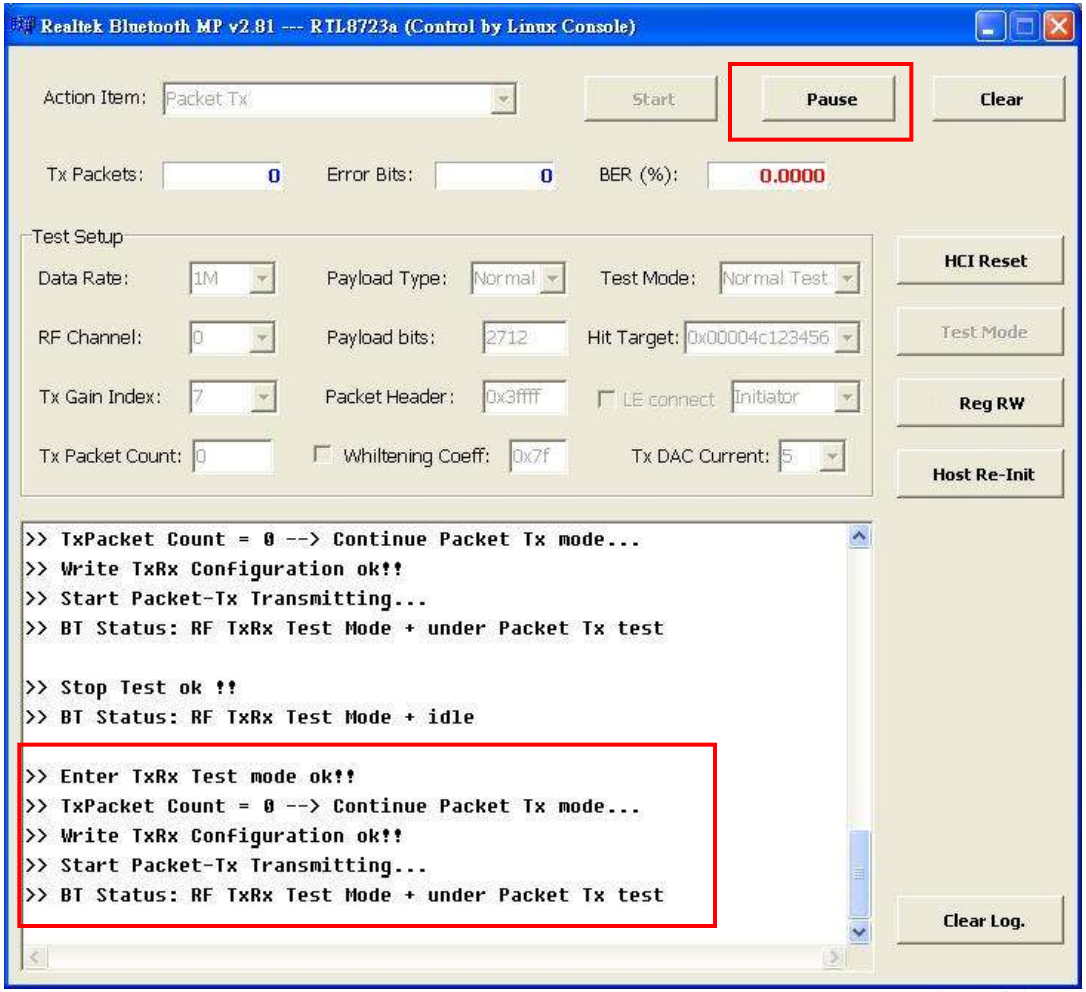
Packet-Tx Run



if "Packet-Tx" ok, the message is shown as memo

"Packet-Tx" will stop after press "Pause" button

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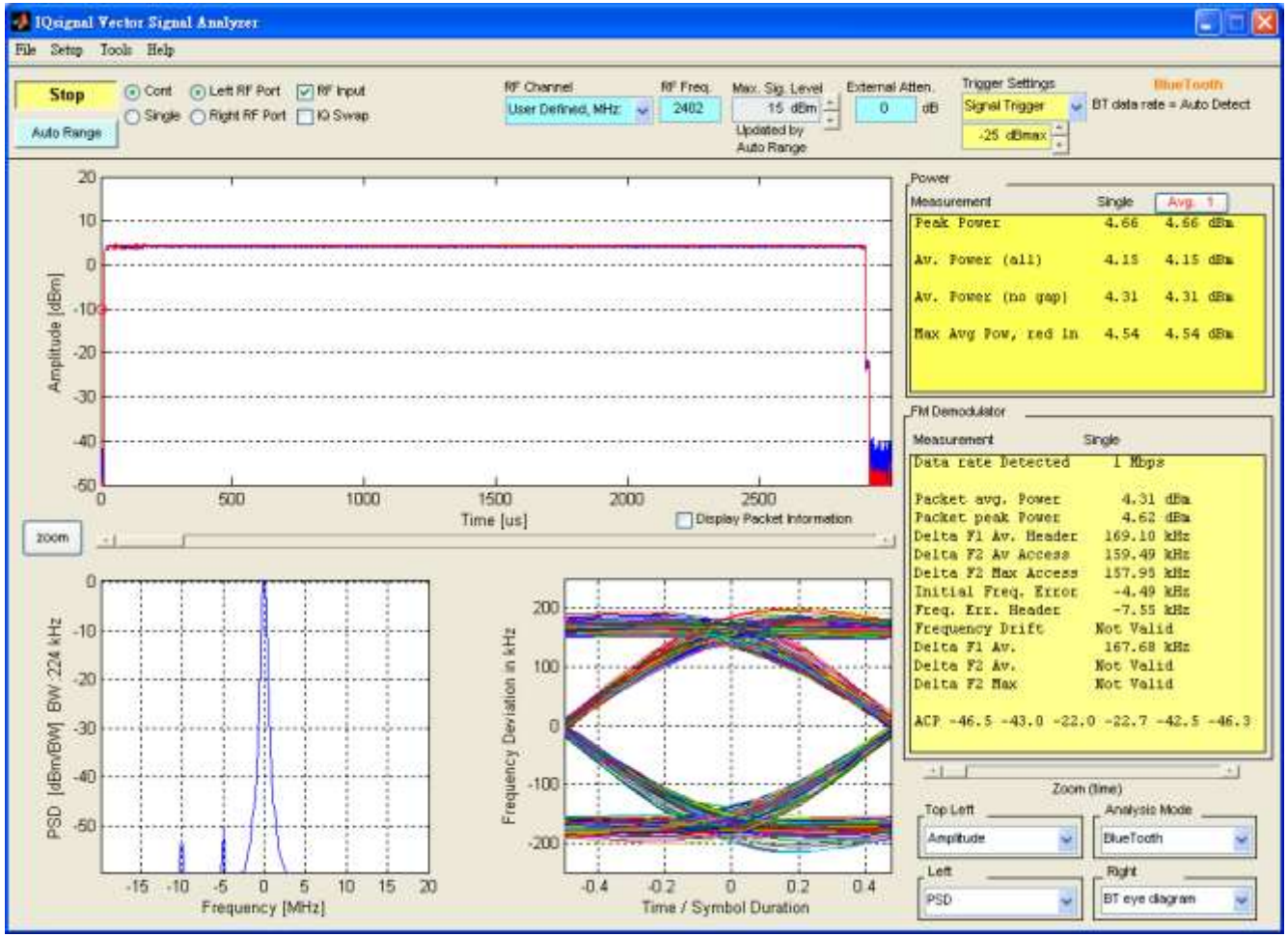
Packet-Tx Measurement form IQ view

Date Rate: 1M/DH5, RF Channel: 0, Payload Length:2712 bits, Payload Type: 11110000, Whitening: Off



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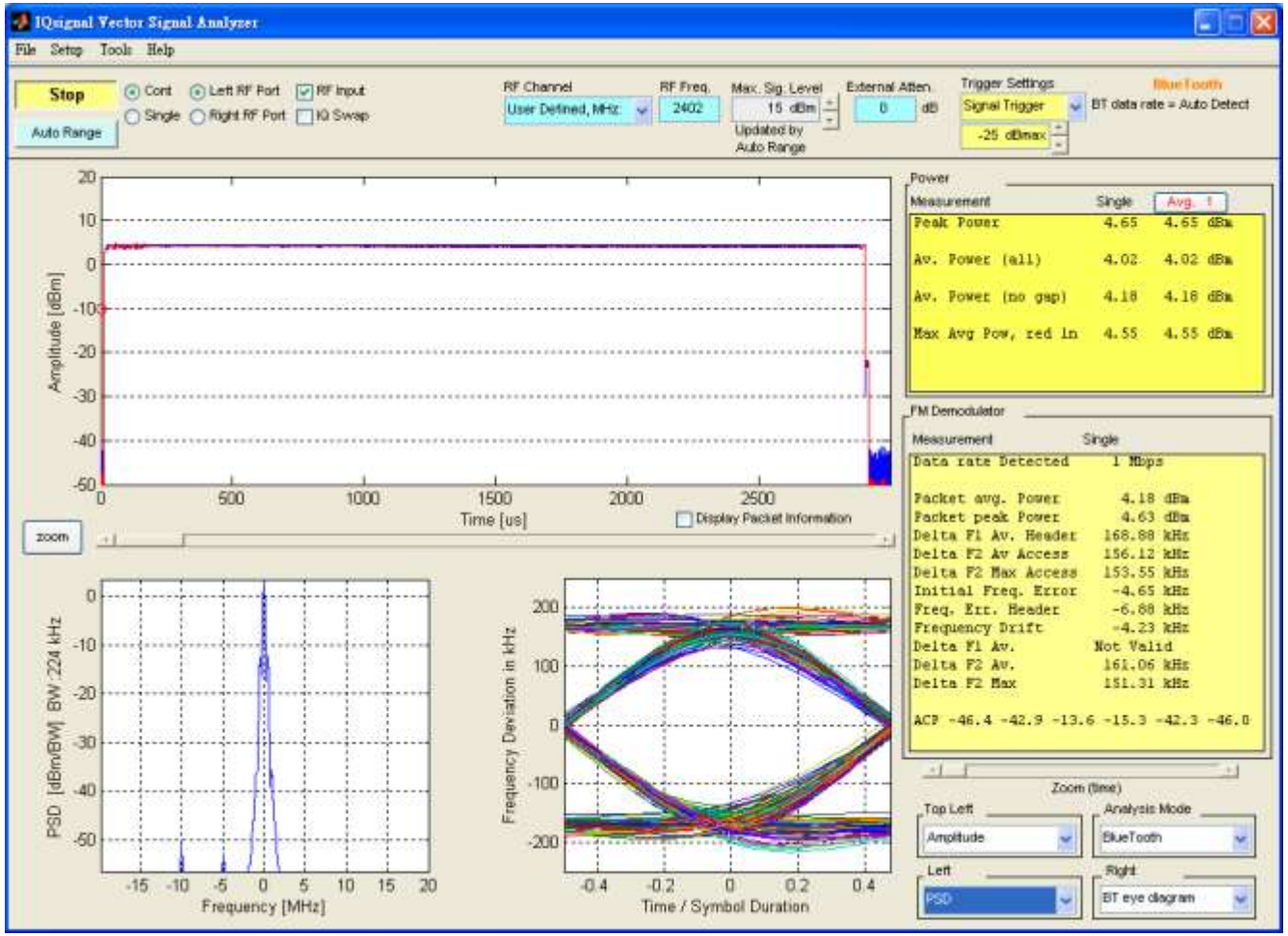
Packet-Tx Measurement form IQ view

Date Rate: 1M/DH5, RF Channel: 0, Payload Length:2712 bits, Payload Type: 10101010, Whitening: Off



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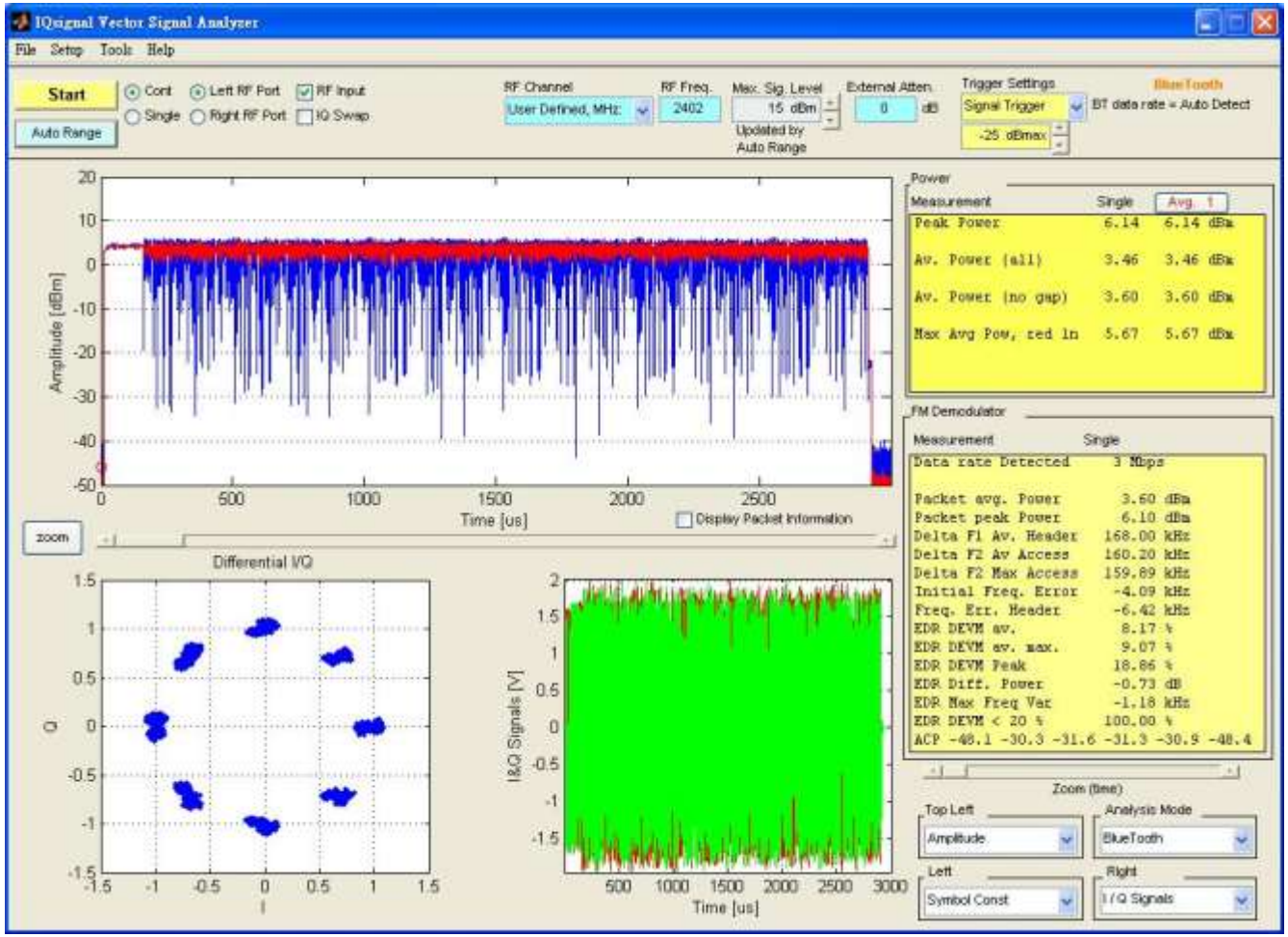
Packet-Tx Measurement form IQ view

Date Rate: 3M/3DH5, RF Channel: 0, Payload Length:8168 bits, Payload Type: Normal, Whitening: On



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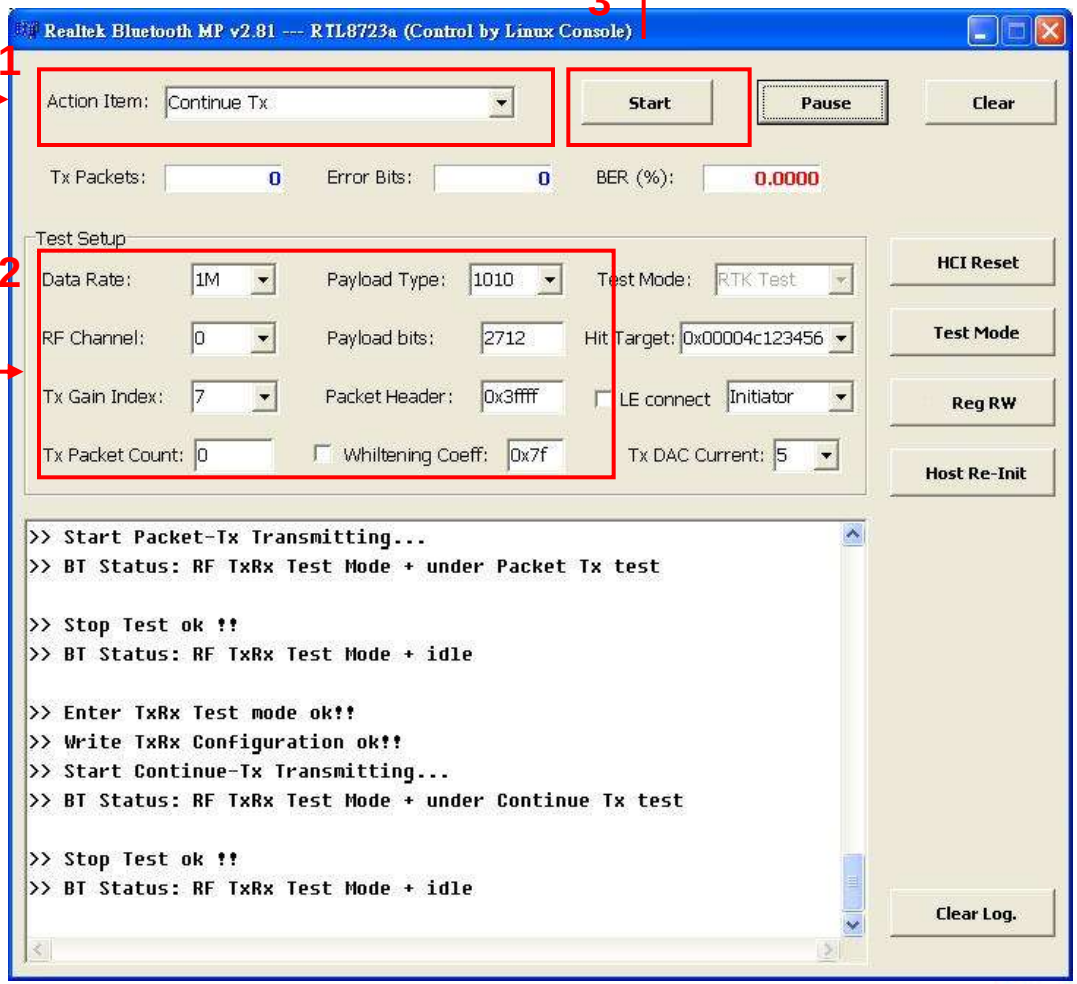
Continue-Tx Setup

Press “Start” button

Select “Continue-Tx”

Select “Data Rate”, “RF Channel”, “Tx Gain Index”, “Payload Type”



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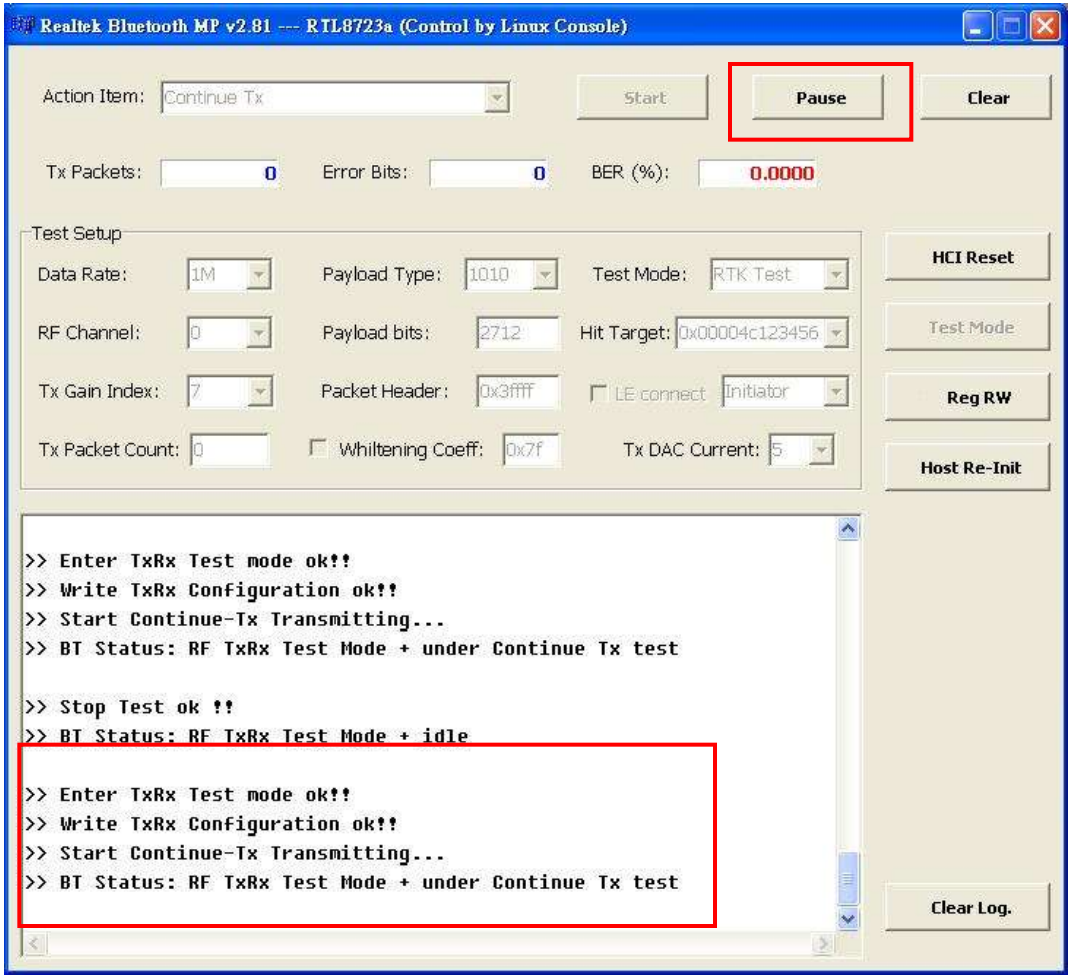
Continue-Tx Run



if "Continue-Tx" ok, the message is shown as memo

"Continue-Tx" will stop after press "Pause" button

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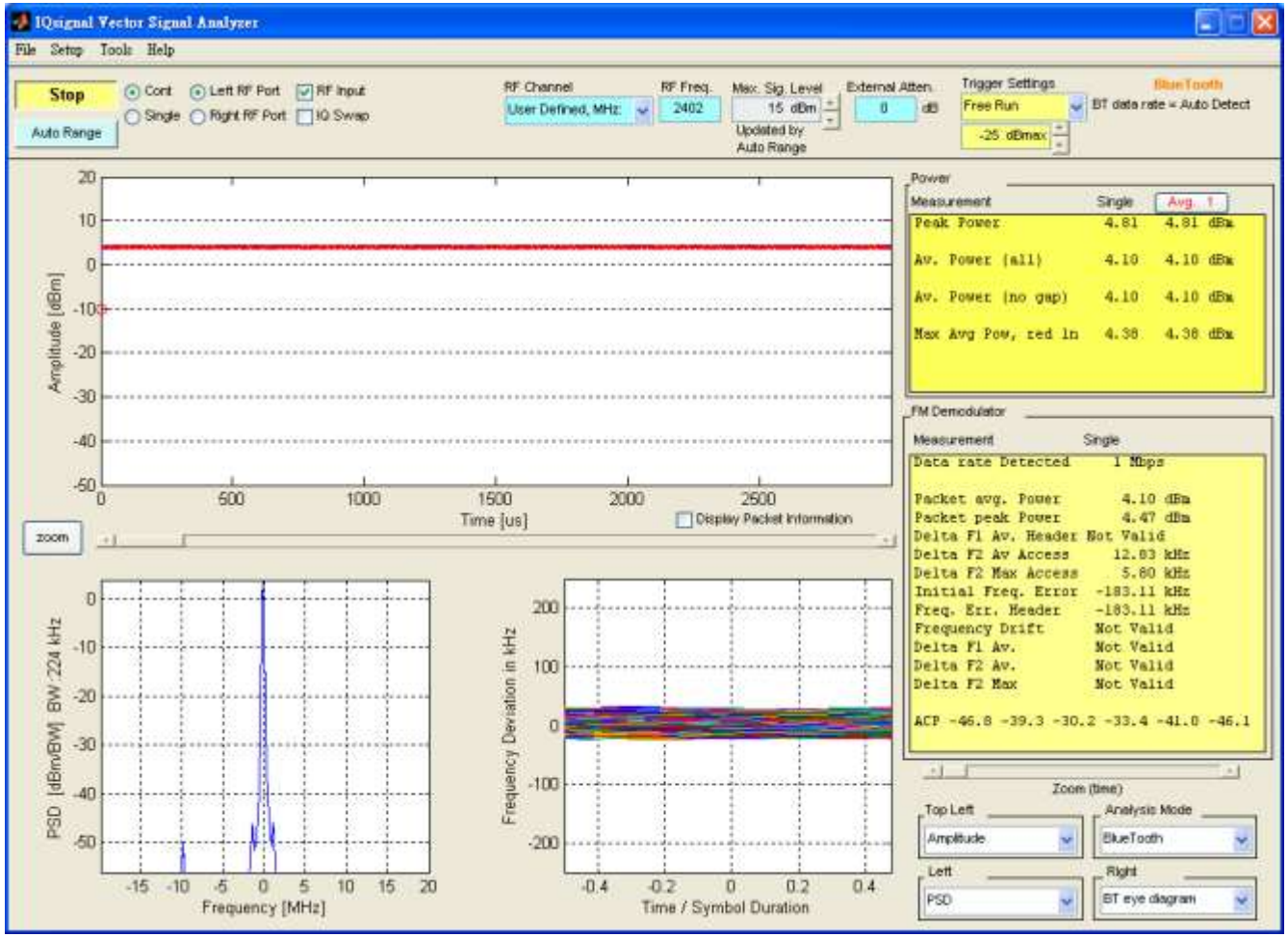
Continue-Tx Measurement form IQ view

“Continue-Tx” is used for Tx power measurement.



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Packet-Rx Setup

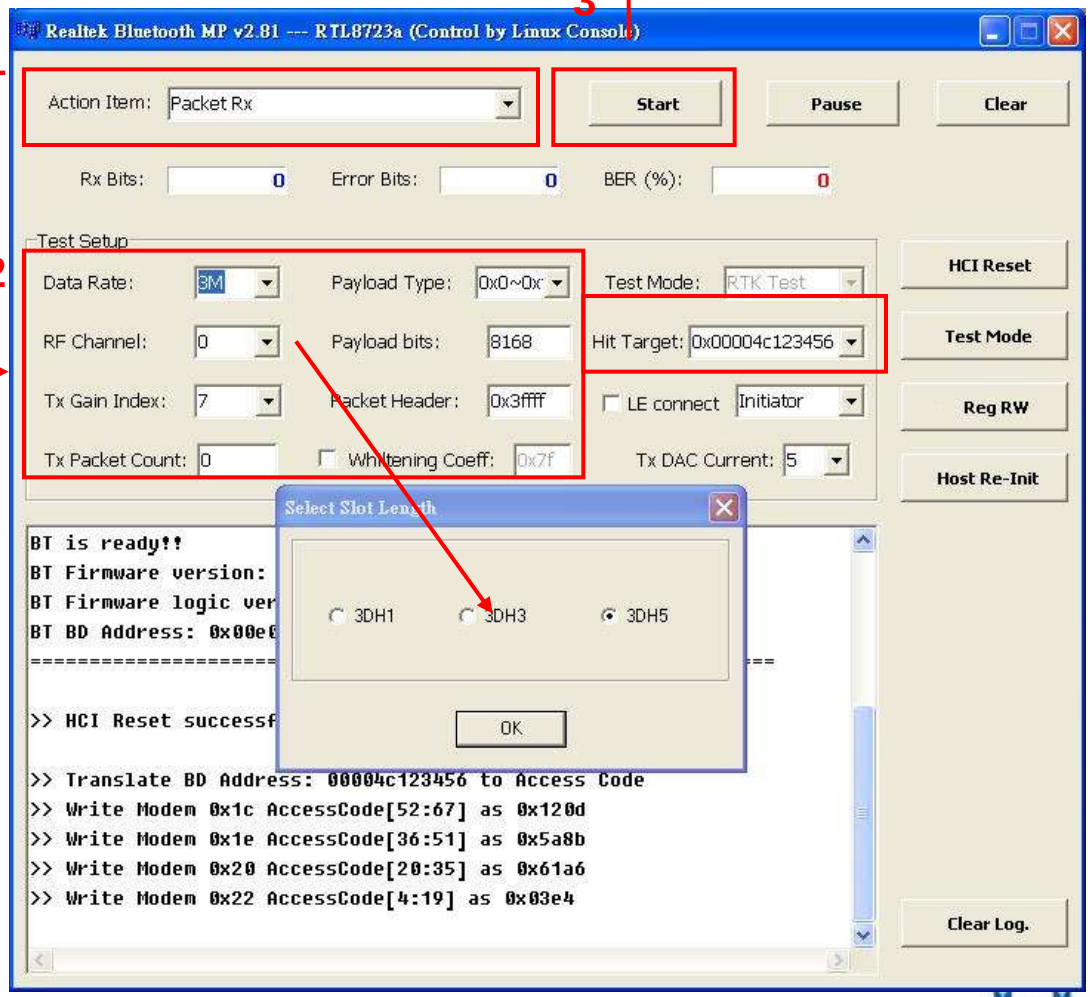
Press “Start” button

Select “Packet-Rx”

Select “Data Rate”, “RF Channel”, “Tx Gain Index”, “Payload Type”, “Payload bits”, “Whitening Coeff”, “Hit Target”

“Hit Target” is BD address that the BT tester used it to generate the access code of the test pattern.

These parameters must meet with the BT tester’s pattern.



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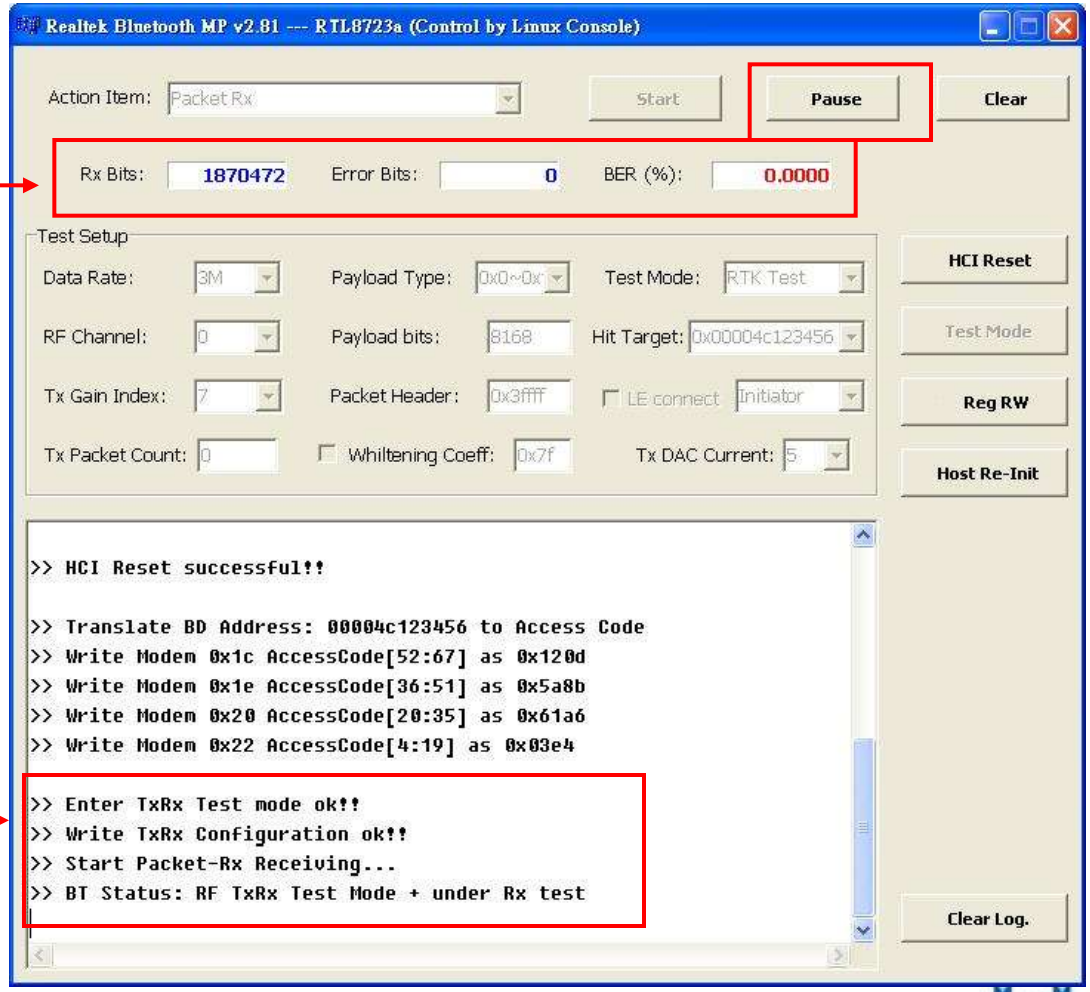
Packet-Rx Run

"Packet-Rx" test result



if "Packet-Rx" ok, the message is shown as memo

"Packet-Rx" will stop after press "Pause" button

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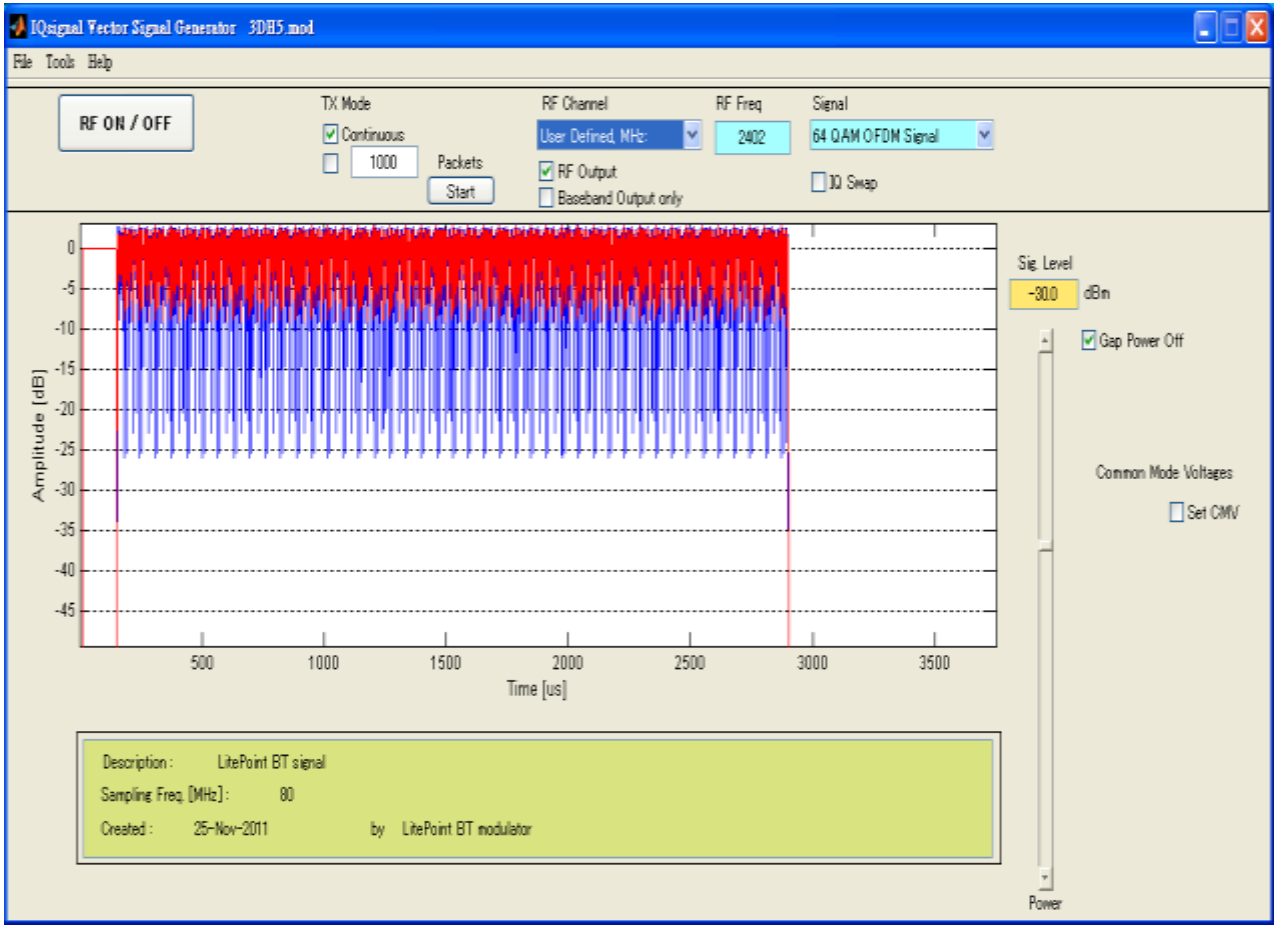
IQ view Vector Signal Generator

Used the IQ view Vector Signal Generator to generate test pattern (*.mod)



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Bluetooth BT 4.0 LE

Direct Test Mode Setup

For RF/PHY Testing

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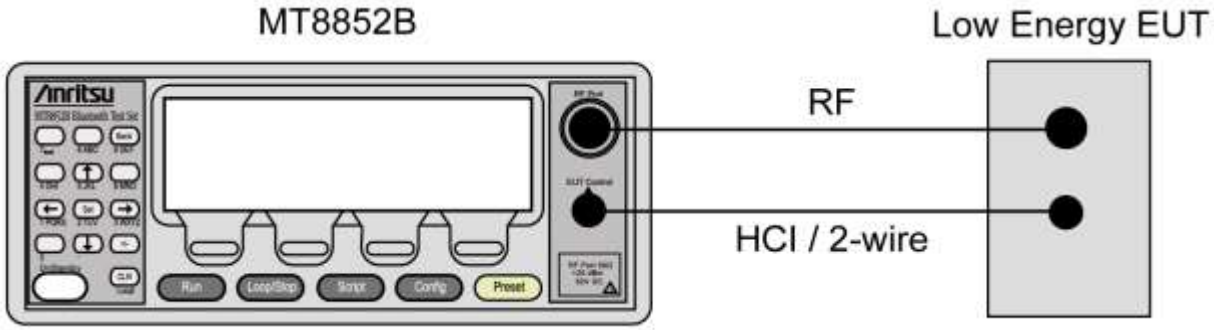
Most BT testers support host control port (USB,UART) that can be as a "upper tester" defined in the direct test mode of BT specifications. The diagram shown as below is the MT8852B test configuration for LE RF/PHY test.

The BT MP also supports Tx and Rx test when the BT tester can not be a "upper tester" (no host control port, ex: IQ view).



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Tx Test Setup:

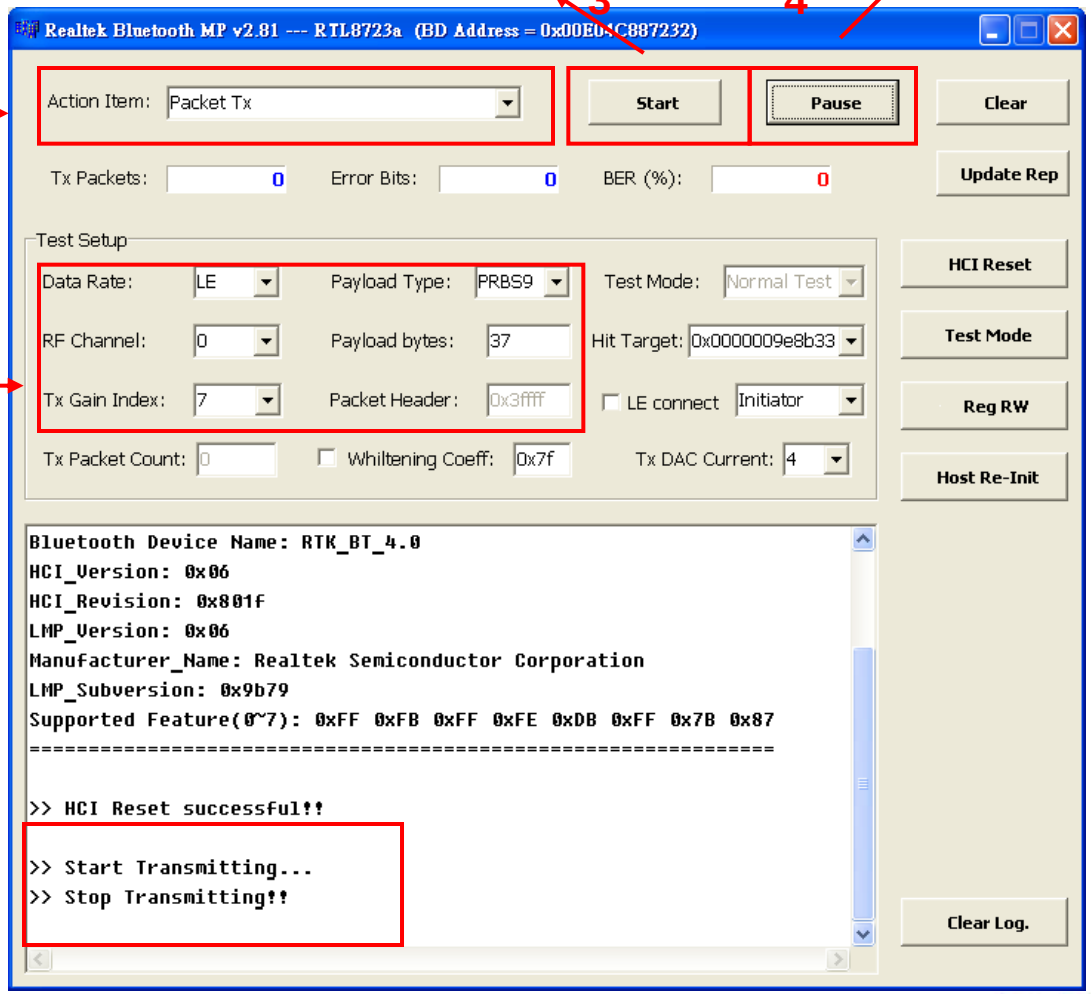
Press "Start" to start Tx and BT tester can start measurement.

Press "Stop" to stop Tx.

Select "Packet-Tx"

Select "Data Rate", "RF Channel", "Tx Gain Index", "Payload Type", "Payload bytes"

"Date Rate" = [LE]



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Rx Test Setup:

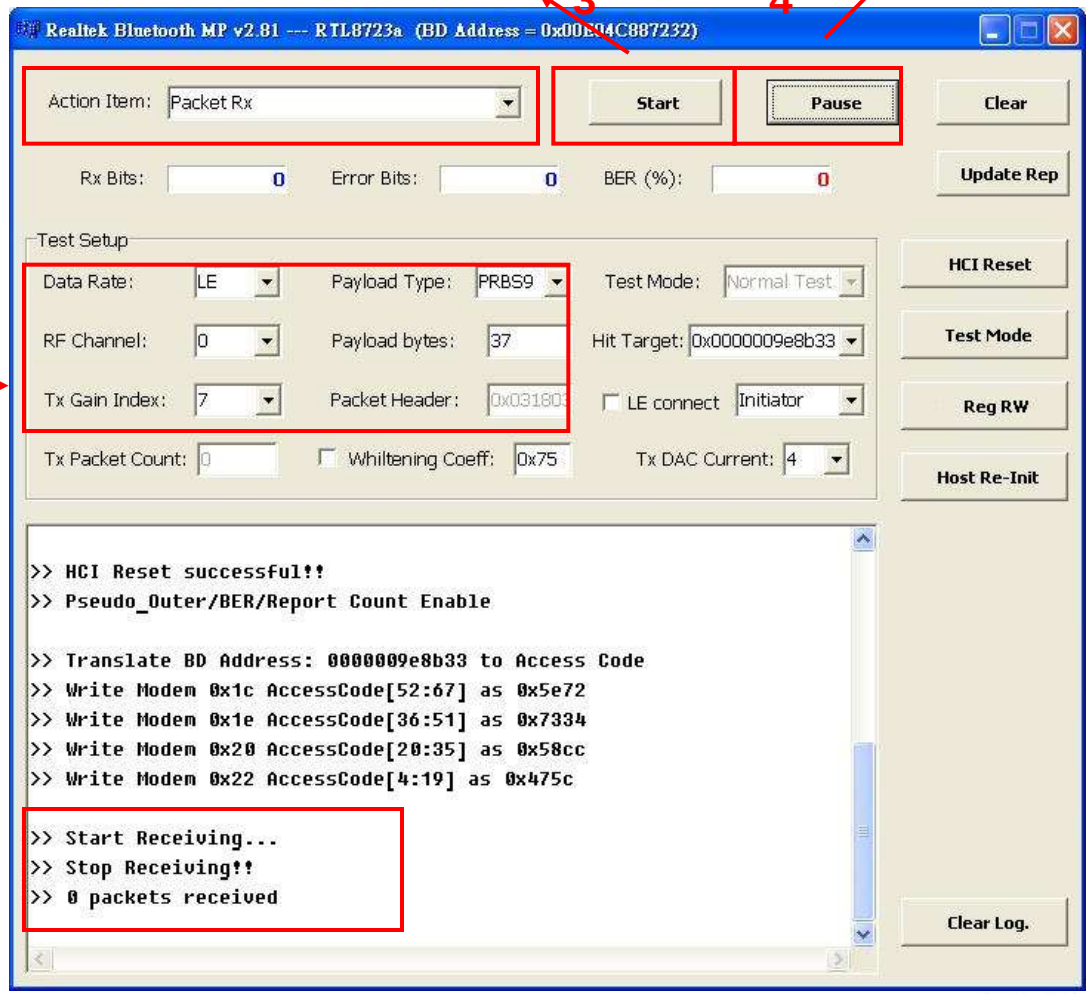
Press "Start" to start Rx and BT tester can start sending packet.

Press "Stop" to stop Rx.

Select "Packet-Rx"

Select "Data Rate", "RF Channel", "Payload Type", "Payload bytes"

"Date Rate" = [LE]



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BT 4.0 LE Setup

For FCC AFH Measurement

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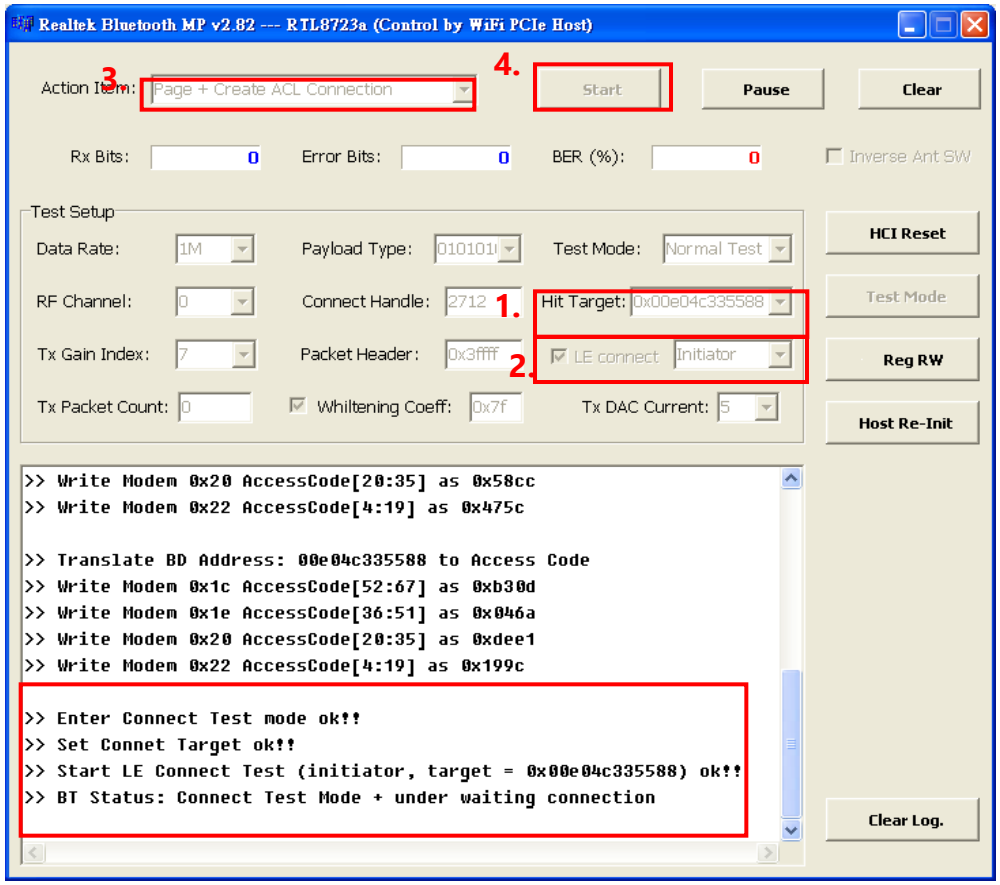
Step 1: Create LE connection (Initiator)

1. Checked [LE connect] and select “Initiator”.
2. Key in the Target BD Address in the [Hit Target] and press “Enter” key
3. In the Action Items, select “Page + Create ACL connection”
4. press [Start] button



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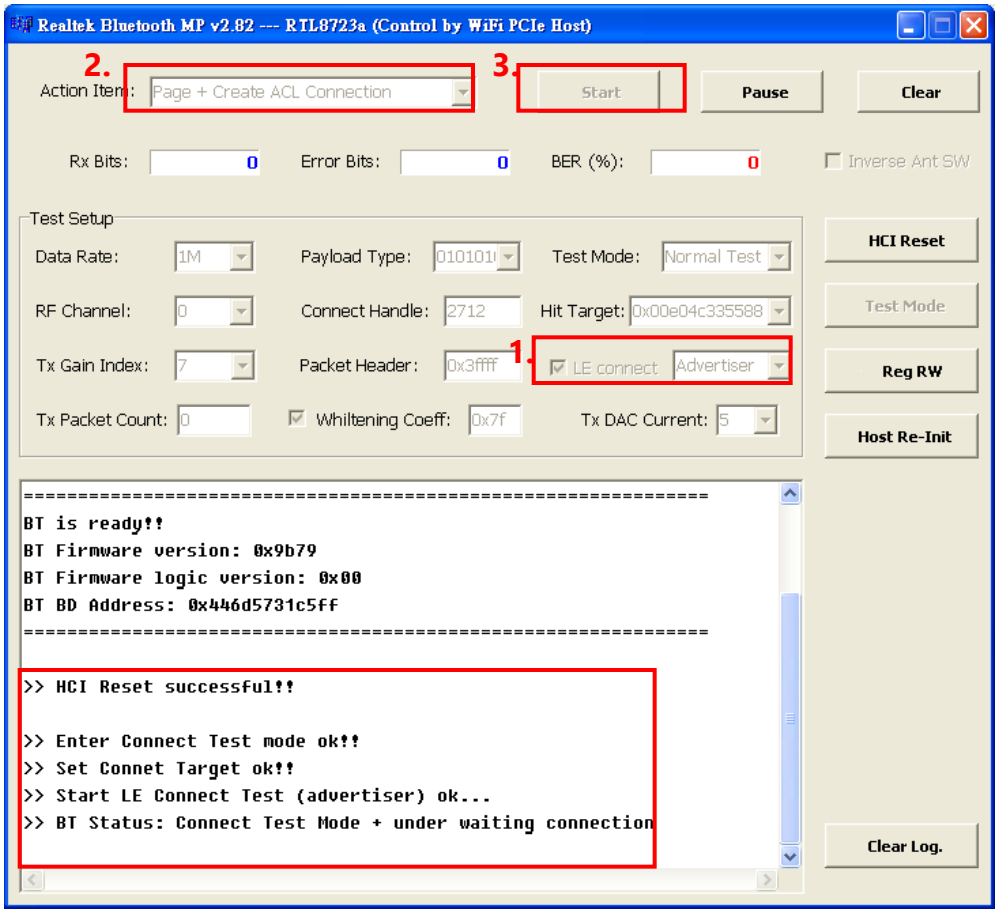
Step 2: Create LE connection (Advertiser)

1. Checked [LE connect] and select “Advertiser”.
2. In the Action Items, select “Page + Create ACL connection”
3. press [Start] button



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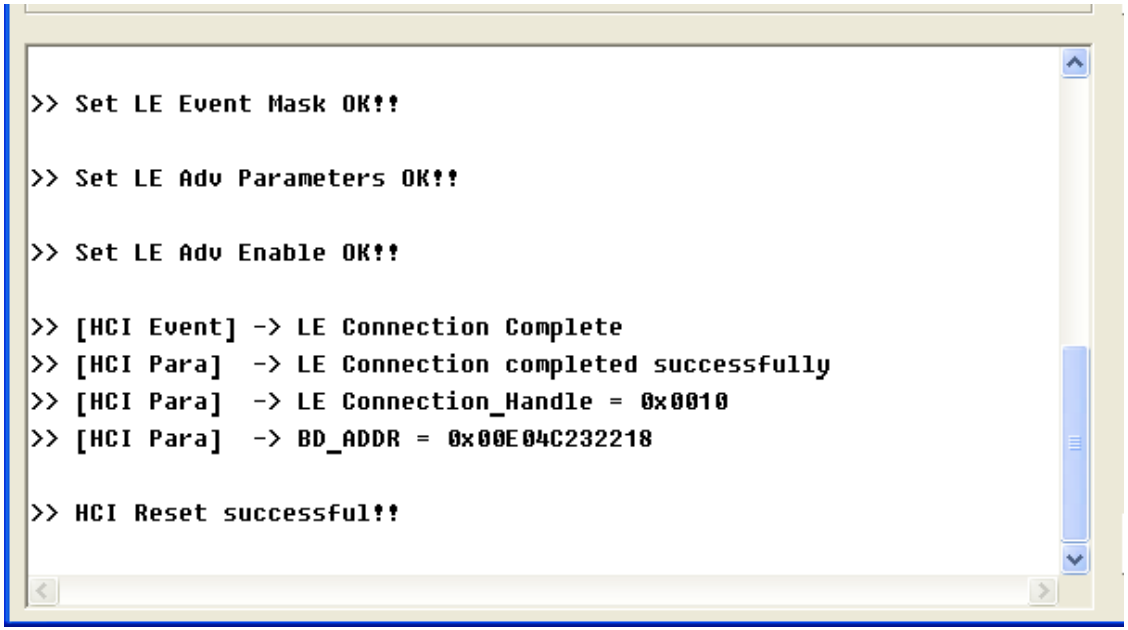
Step 3: Create LE connection

Initiator will create LE connection with Advertiser and AFH start running.



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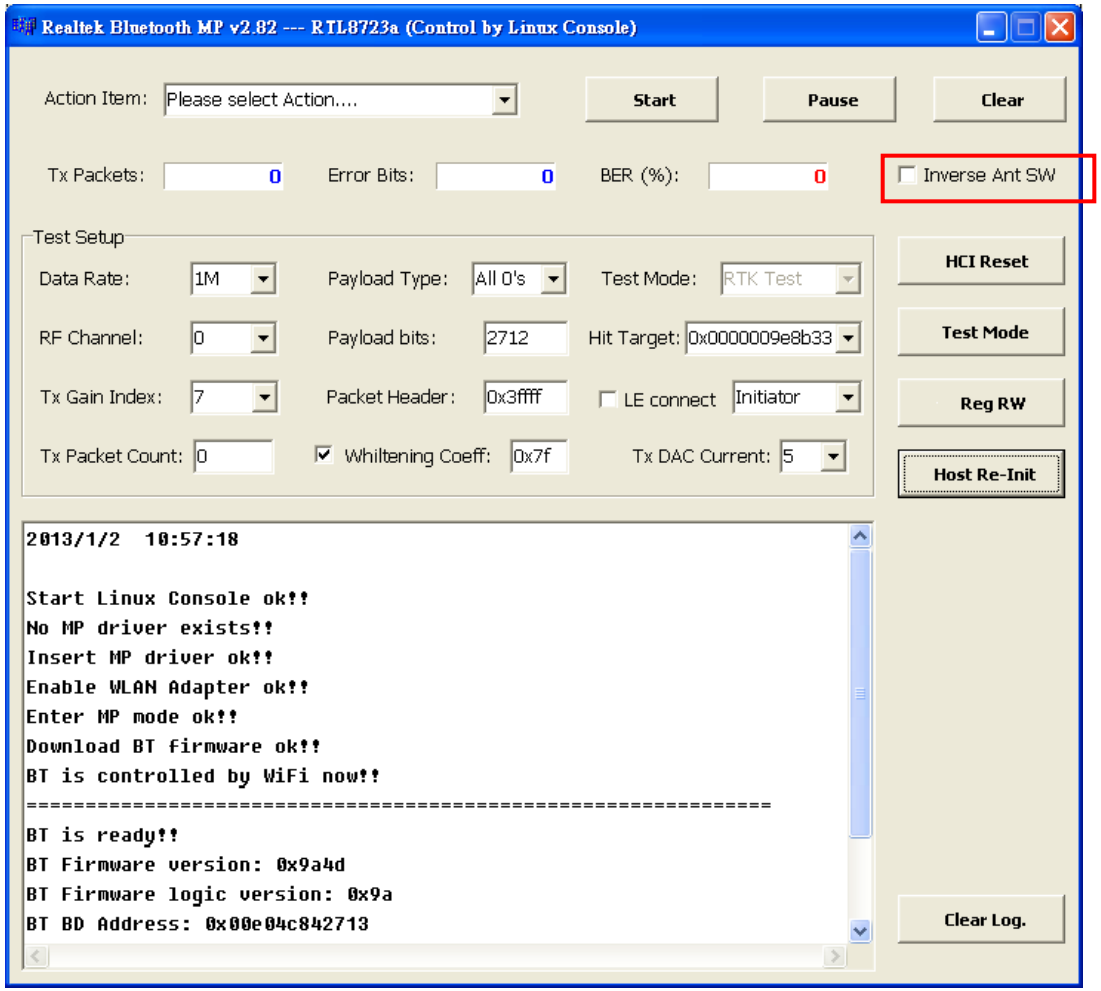
Setup Antenna Switch (support after v2.82)



If Checked: Main → WiFi

else Main → BT

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FCC Warning Statement

Changes or modifications not expressly approved by the party responsible for complia nce could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digi tal device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This eq uipment generates uses and can radiate radio frequency energy and, if not installed an d used in accordance with the instructions, may cause harmful interference to radio co mmunications. However, there is no guarantee that interference will not occur in a par ticular installation. If this equipment does cause harmful interference to radio or televi sion reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measu res: - Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product which integrates this module.
The final end product must be labeled in a visible area with the following" Contains TX FCC ID: 2AC23-WT4XR1210".
The FCC part 15.19 statement below has to also be available on the label: This device complies with Part 15 of FCC rules.
Operation is subject to the following two conditions: (1) this device may not cause harmful interference and
(2) this device must accept any interference received, including interference that may cause undesired operation.
The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.