

# BQB bluetooth Test mode User Guide

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## Module port description

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The DUT module should connect to two uart for testing, one is UART0 and the other is UART1.

**UART0:** The default serial port for downloading bin files, printing, and receiving commands. The baud rate is 115200. Used Pins are TXD0, RXD0 and Pin TXD0 is connected to the USB serial port RXD.

**UART1:** HCI serial port for connecting to HCI host. When measuring BLE, UART1 is connected to the tester (Also you can use this tool to make DUT into BLE direct test mode). UART1 requires hardware flow-control, i.e. CTS and RTS signals are required.

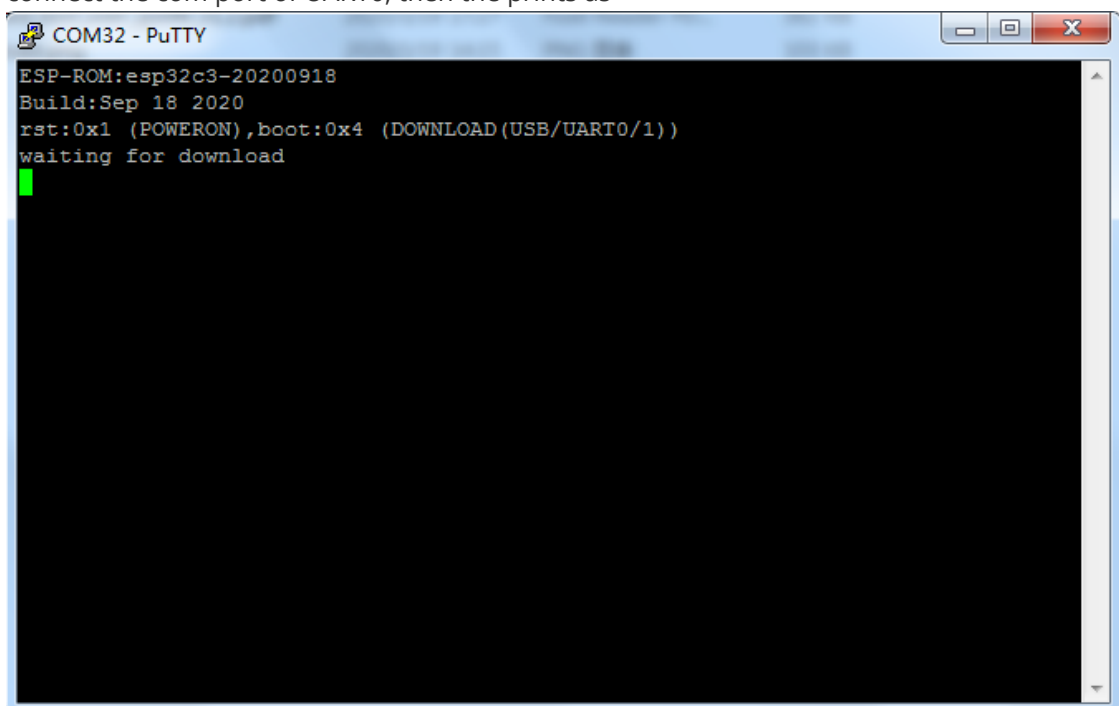
### Pin usage:

- Pin RXD0 : RXD of UART0
- Pin TXD0 : TXD of UART0
- Pin BOOT : Boot mode selection. Connect to GND in Download Mode and leave floating in working mode. Mode is switched after POWER SWITCH is turned off and then on.
- Pin G (IO4) : RXD of UART1, connected to the USB serial port TXD
- Pin WW (IO7) : TXD of UART1, connected to the USB serial port RXD
- Pin CW(IO10) : CTS of UART1, connected to the USB serial port RTS
- Pin IRR(IO18) : RTS of UART1, connected to the USB serial port CTS

## Download Bin Files

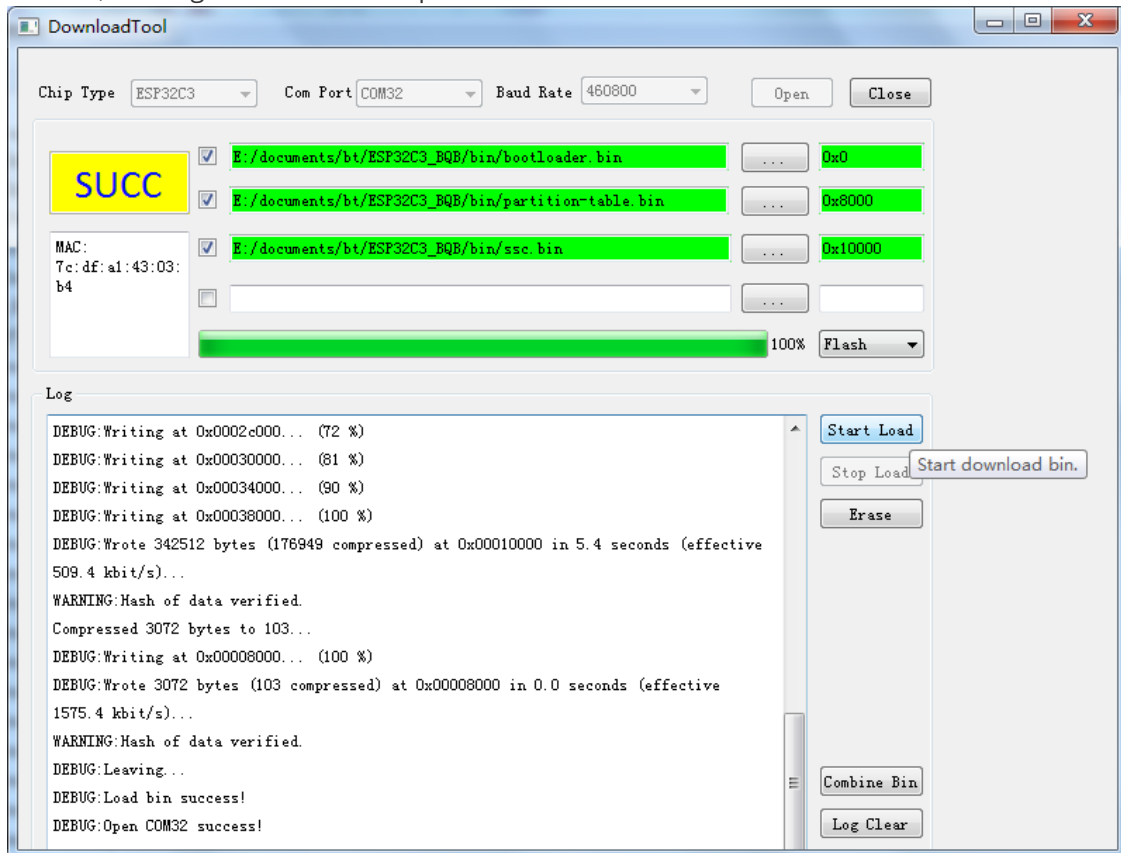
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1. Download the bin file
2. Pin BOOT is connected to GND, UART0 is connected to the computer, the POWER SWITCH is turned from OFF to ON. At this point the chip enters the download mode, use a UART tool to connect the com port of UART0, then the prints as



```
COM32 - PuTTY
ESP-ROM:esp32c3-20200918
Build:Sep 18 2020
rst:0x1 (POWERON),boot:0x4 (DOWNLOAD(USB/UART0/1))
waiting for download
█
```

3. Close the PC UART tool terminal corresponding to the UART0 of the board. Open EspRFTTestTool\_v2.6.2.3\_manual.exe
4. Select Tool -> Download Tool, and enter Download Tool interface
5. Select Chip Type "ESP32C3", set Com Port, set Baud Rate 460800, click "open", and in the log textbox, messages will show the operation status.



6. Click on the "RAM" option and select "Flash", in order to select to download bin files into flash.

Choose the three bin files provided to be downloaded, and set the download address.

- bootloader.bin: 0x0
- partition-table.bin: 0x8000
- ssc.bin: 0x10000

Download these bin files as your own absolute path, via the com port of UART0.

Click on "Start Load". When the log textbox shows "Connection....". Turn off and then on the POWER SWITCH, then the download procedure is started

7. After the downloading of the bin is finished successfully, close the Download Tool and EspRFTTestTool. Use a UART tool to connect the UART0 of the device, Let the Pin BOOT to be floating, turn off and then on the Power Switch, the chip is thus brought to working mode. And there will be initialization messages like below:

```
SSC: BQB init

SSC config : configs/ESP32C3/SSC_BQB

SSC version : cert/bqb_rf_esp32c3_20210225(ecf1a40b)

IDF version : cert/bqb_rf_esp32c3_20210225(c2806195)

WIFI LIB version : (头指针分离于 85ebe1f) (85ebe1fb)

BT LIB version : (头指针分离于 4bbfe7e) (4bbfe7e5)

!!!ready!!!
```

## Begin Test

1. Prerequisites: BIN files are downloaded. Pin BOOT is left floating, to bring the chip in working mode(Flash Boot mode).
2. UART0 is connected to PC.
3. UART1 is connected to tester, the default setting uses baudrate 921600 and enables hardware flow control. The setting can be modified using UART0 command.
4. Turn on the POWER SWITCH
5. After the initialization log printings are observed in PC, you need to send commands to UART0 before test. The last and mandatory command should be:

- bqb -z init

And You can expect the following printings:

```
I (28705) BTDM_INIT: BT controller compile version [9189227]

:>I (28715) coexist: coexist rom version 8459080
I (28725) phy_init: phy_version 300,ac247f9,Feb  8 2021,20:41:07
I (29095) system_api: Base MAC address is not set
I (29095) system_api: read default base MAC address from EFUSE
I (29095) BTDM_INIT: Bluetooth MAC: 7c:df:a1:43:03:b5
```

7. At this point the chip has entered test mode. You can start testing.

## Command Description of UART0

1. Set BLE TX power

**Command :** bqb -z set\_ble\_tx\_power -i [Power\_level\_index]

**Param:**

- **Power\_level\_index** : Range [0 ~ 15].

- 0 : -27dbm
- 1 : -24dbm
- 2 : -21dbm
- 3 : -18dbm
- 4 : -15dbm
- 5 : -12dbm

- 6 : -9dbm
- 7 : -6dbm
- 8 : -3dbm
- 9 : 0dbm
- 10 : +3dbm
- 11 : +6dbm
- 12 : +9dbm
- 13 : +12dbm
- 14 : +15dbm
- 15 : +18dbm

**Description** : Set BLE Tx power by power level index.

**Usage:** bqb -z set\_ble\_tx\_power -i 9

Set BLE TX power to 0dbm

## 2. Set UART1 Param (Baudrate and HW Flow control)

**Command** : bqb -z set\_uart\_param -f [enable] -b [baudrate]

**Param:**

- **enable** : 0 or 1
  - 0 : disable
  - 1 : enable
- **baudrate** : Two options are supported: 115200 or 921600.

**Description** : Set UART1 parameter, include baudrate and Hardware flow control.

**Usage:** bqb -z set\_uart\_param -f 0 -b 921600

Set UART1 baudrate to 921600 and disable hardware flow control