



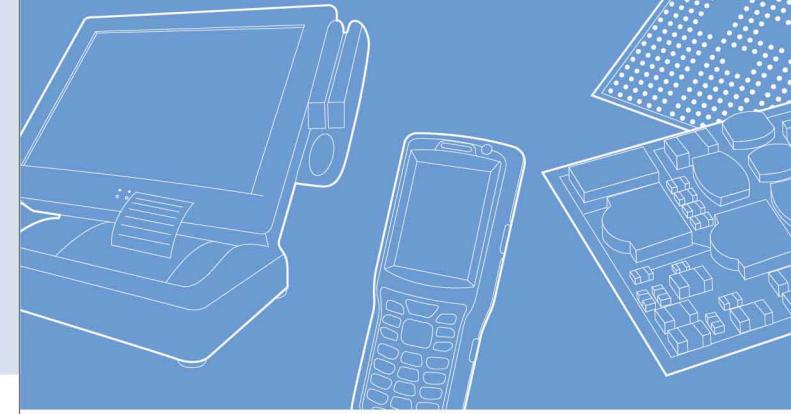
# **WM-BN-BM-22**

## **Module/EVB Quick guide**

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WSS2\WP1\TS

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# Headline

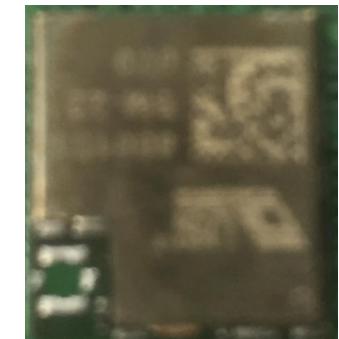
- **BM-22 Introduction**
- **BM-22 Block Diagram**
- **BM-22 Module Pinout**
- **BM-22 EVB introduction**
- **SW Package**
- **EVB Installation and Setup**
- **Demo –BT\_SmartBridge**

# USI BM-22 Introduction

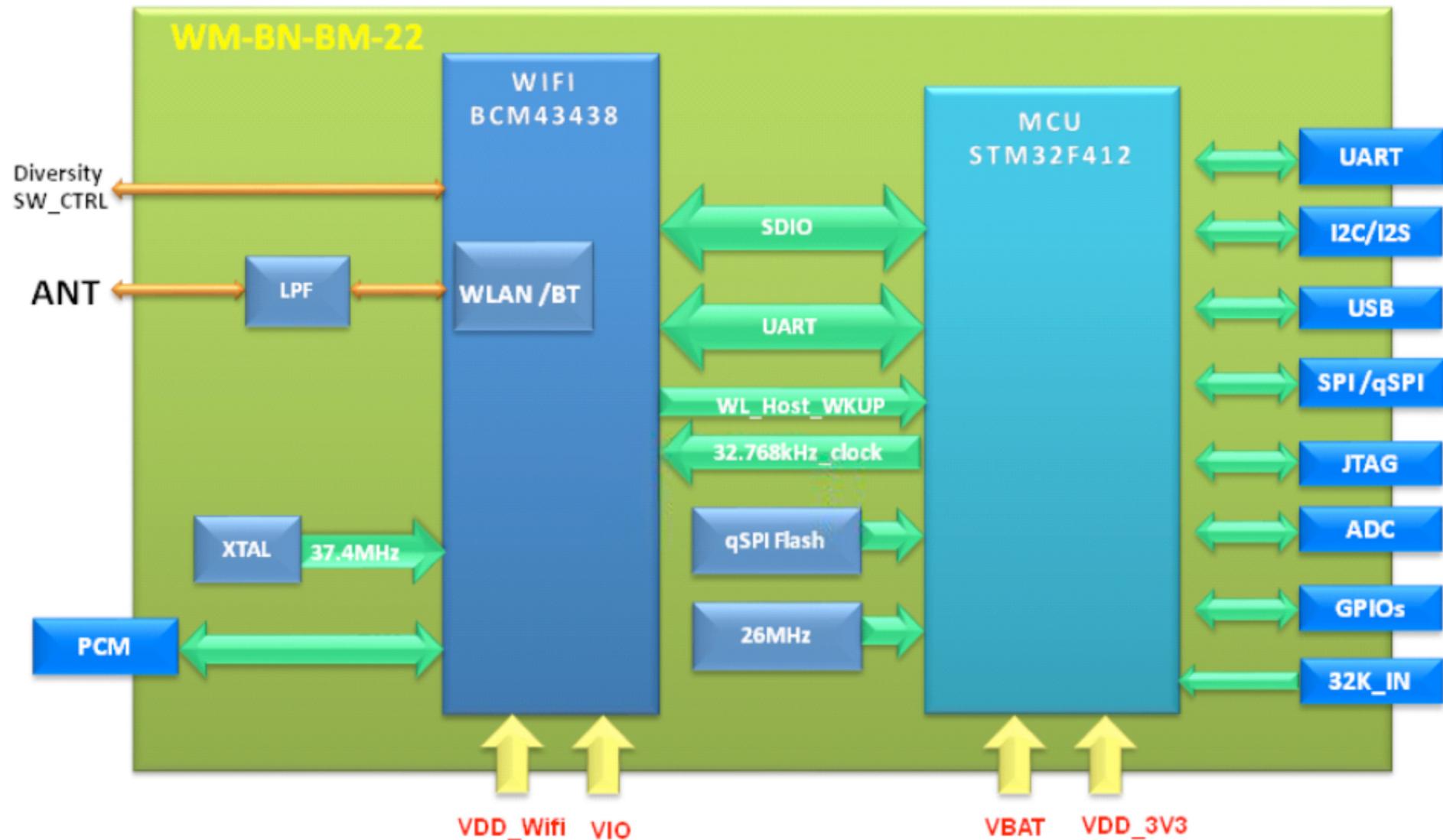
- WM-BN-BM-22 SiP module use MCU-STM32F412+WiFi/BT Combo Chip BCM43438
  - WiFi 802.11 b/g/n
    - ◆ Antenna diversity (Optional)
  - Bluetooth 4.1
    - ◆ BT 3.0 for Legacy BT
    - ◆ Bluetooth low energy modes
  - Various IO ; Generic SPI; UART ;USB &qSPI ..etc
  - LGA Package type(pin count 83 ; including GND)
    - ◆ Metal-Lid shielding
    - ◆ 12(L) x 11(W) x 1.3mm (H)(+/-0.1mm)

New:A1

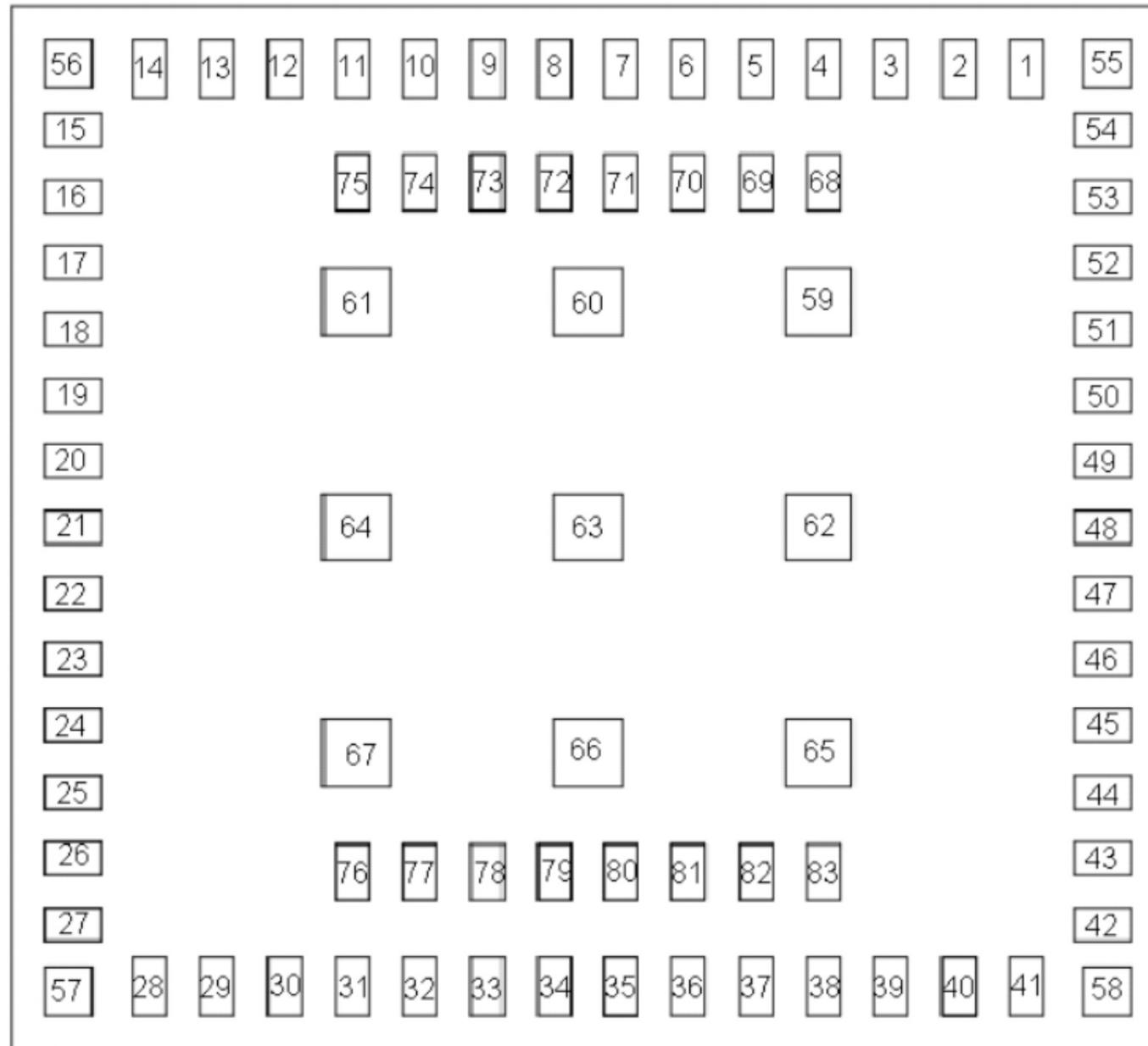
Old:A0



# BM-22 Block Diagram



# BM-22 Module Pinout TopView



## 1. Power

**Pin19/20:VDD\_WiFi**

**Pin28:Vbat MCU**

**Pin46/47:VDD\_3V3 MCU**

**Pin49: VDD\_IO\_WiFi**

## 2. Micro-JTAG for Programming

**Pin40~44**

## 3. UART

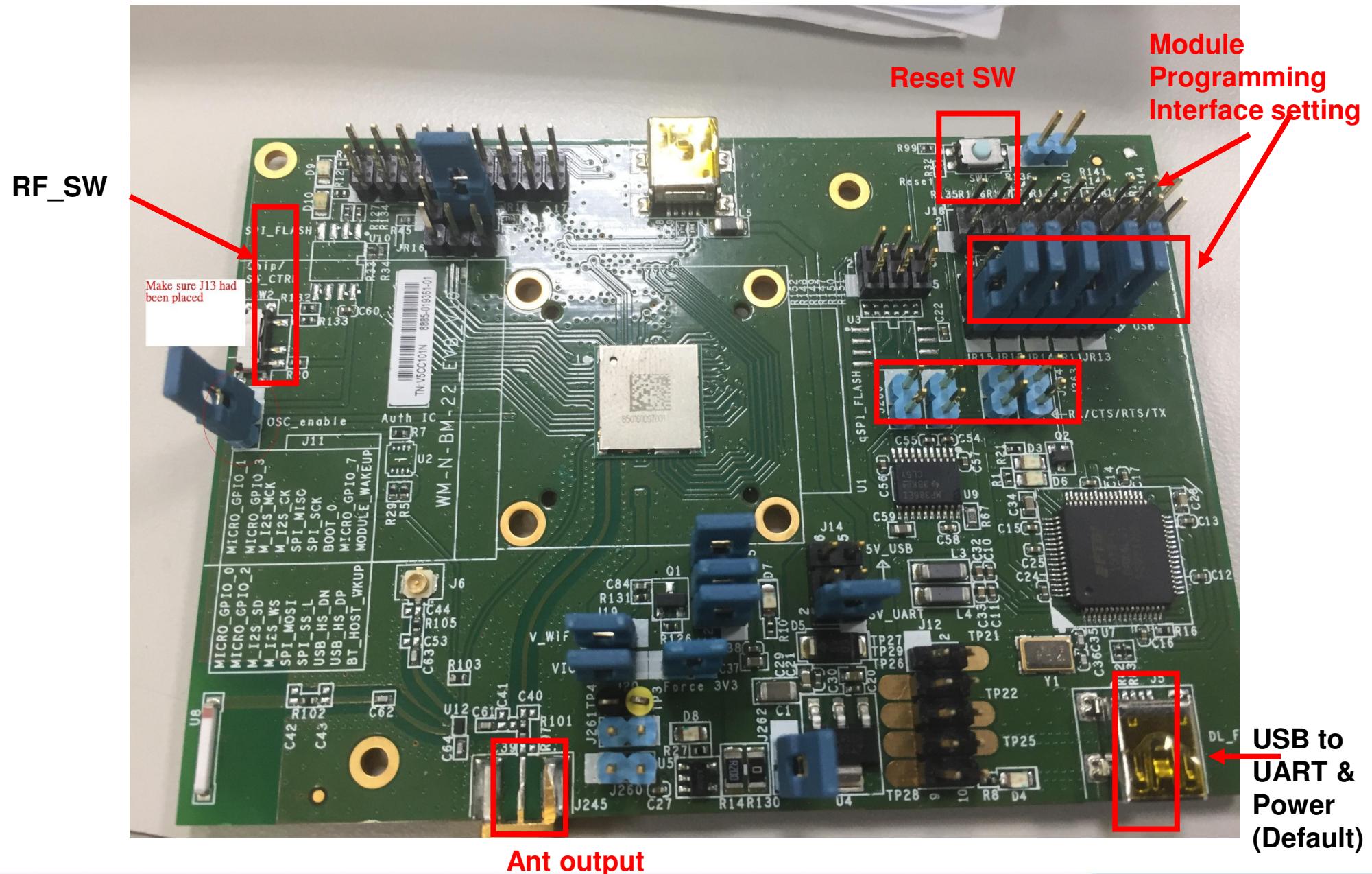
**Pin38/39 (Rx/Tx)**

## 4. I2C for HomeKit A-Chip

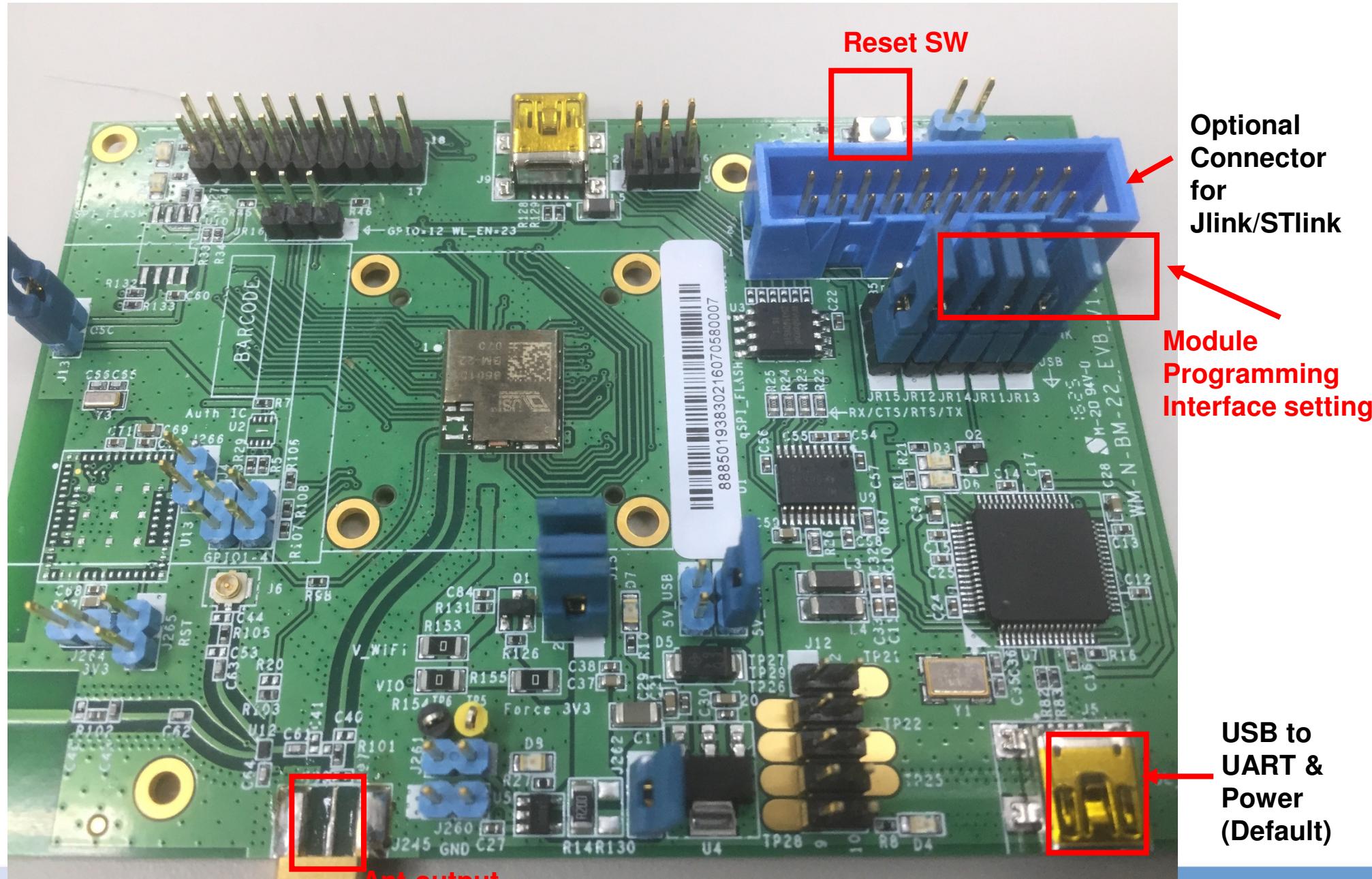
**Pin9~11**

## 5. Other IOs ; GPIO ; I2S;qSPI ; SPI;USB...etc ; please refer to DS and Application note for pin mapping

# BM-22 EVB Old Introduction



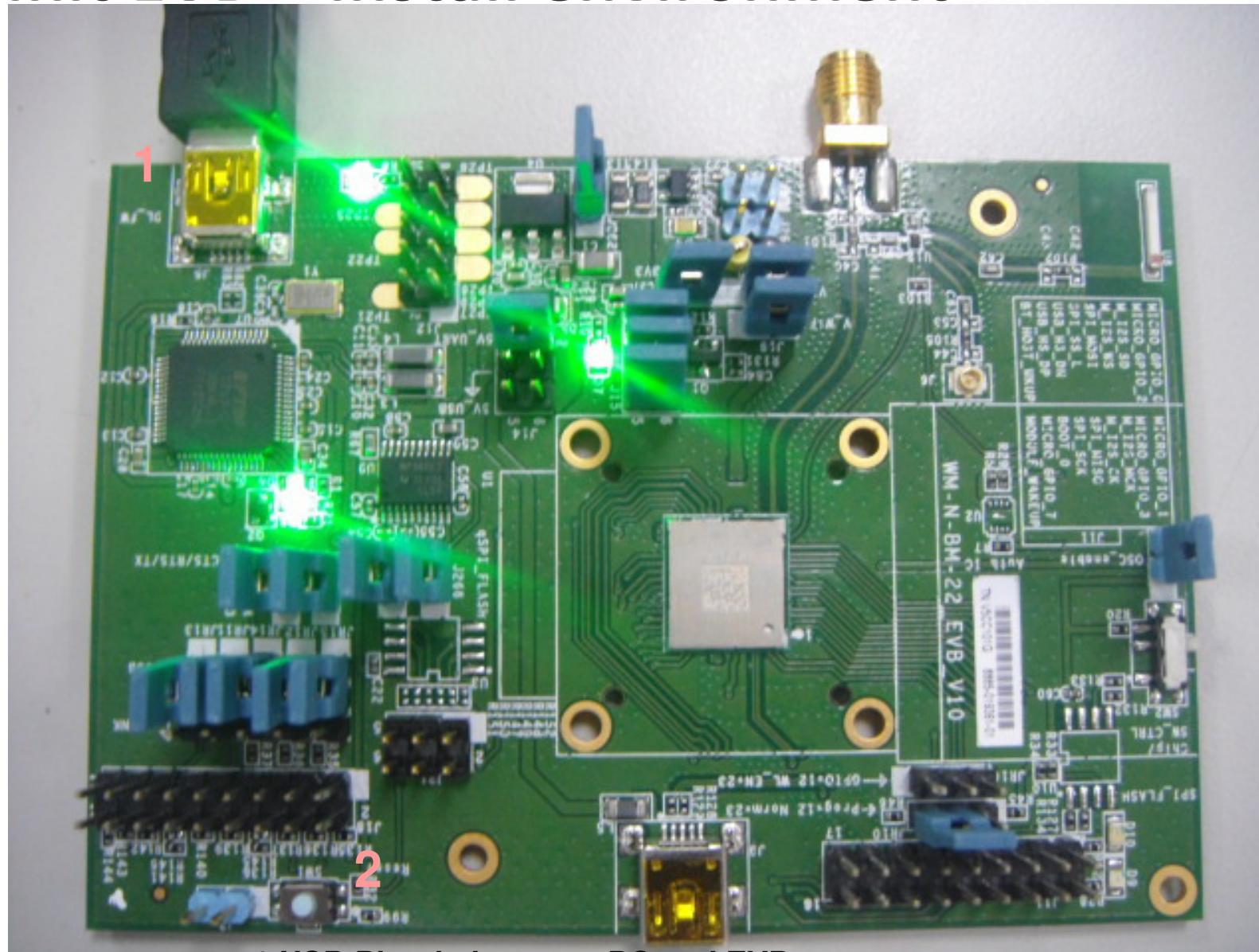
# BM-22 EVB New Introduction



# SW Package

- Get WiCED SDK from BRCM WiCED Forum V3.7.0 or Above
- Request USI to Release Platform patch for BM-22
- Build Any Demo Application or Customized Application Per the API/Example Code within \SDK\App\

# Init EVB – Install environment

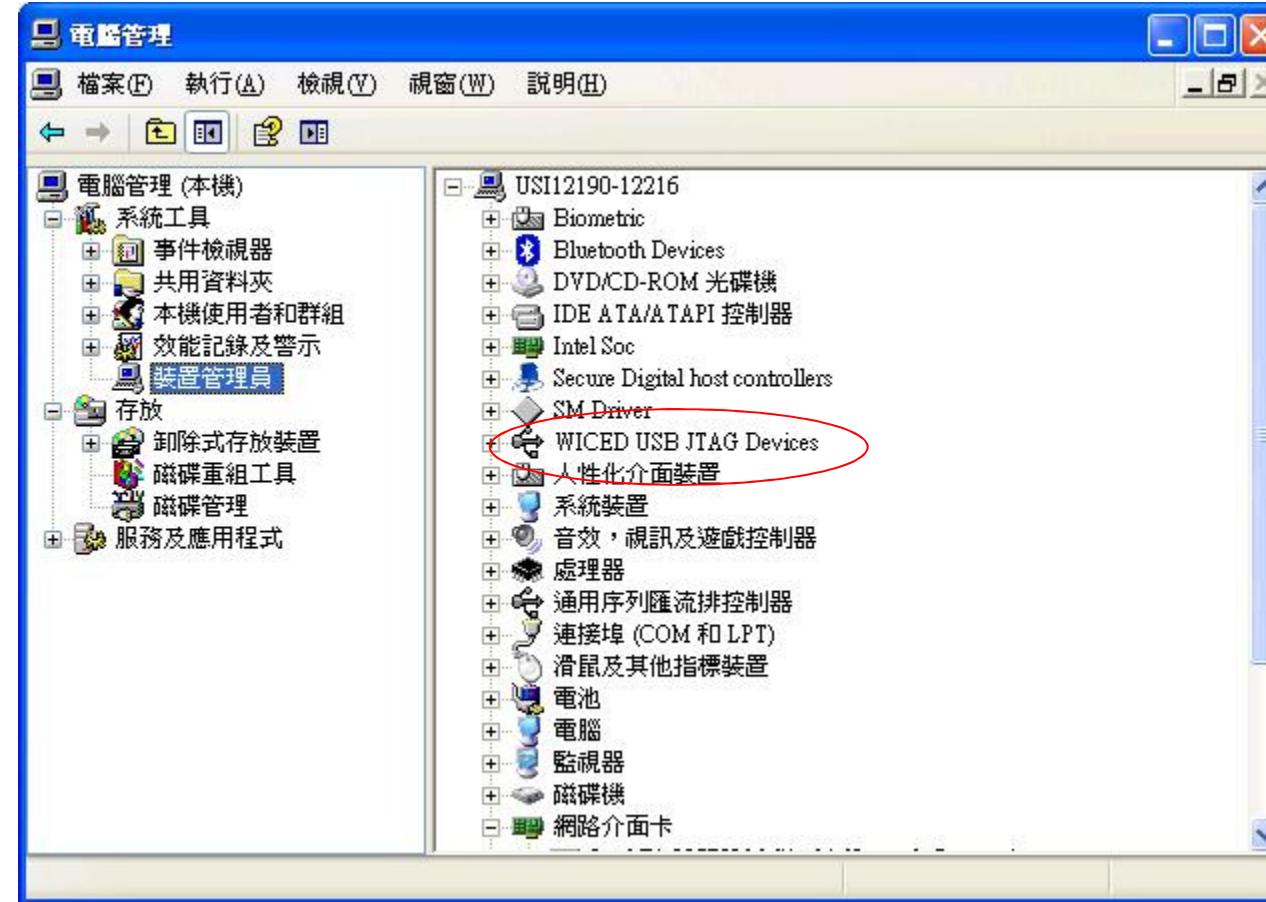


1.USB Plug-in between PC and EVB

2. Push Reset Button

3. Install driver where the folder **\SDK\tools\drivers\BCM9WCD1EVAL1**

# Init EVB – Install environment-Ready

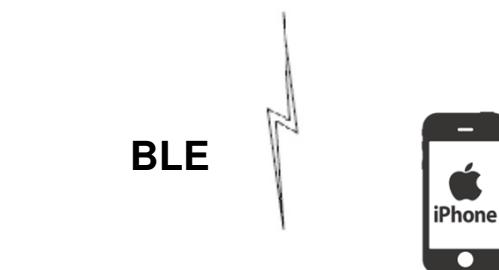
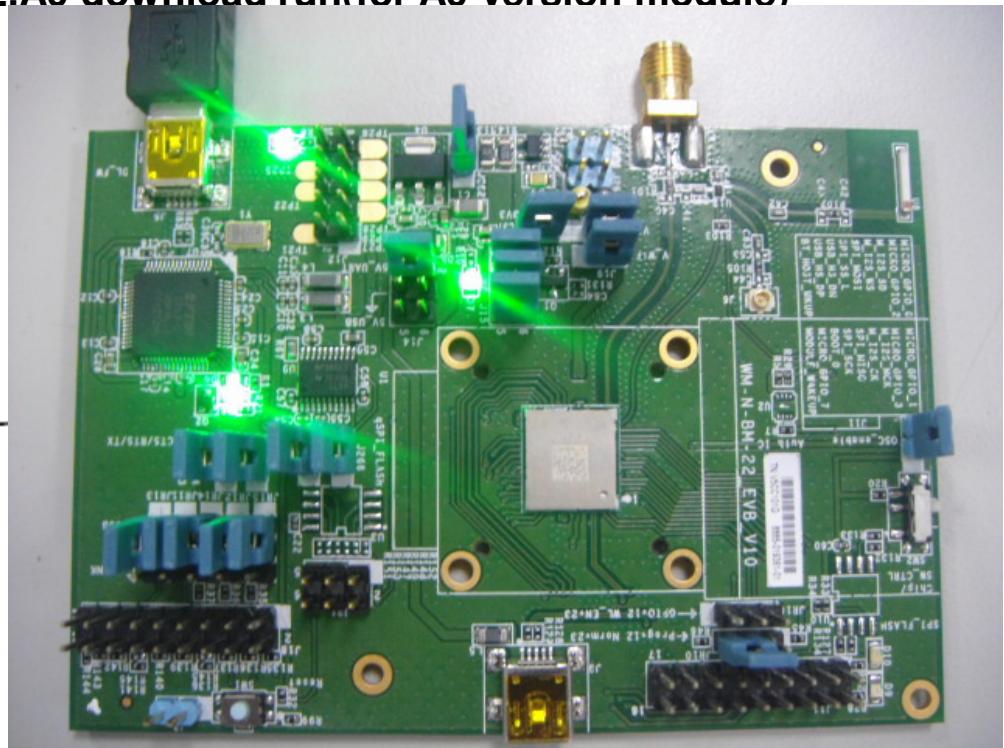
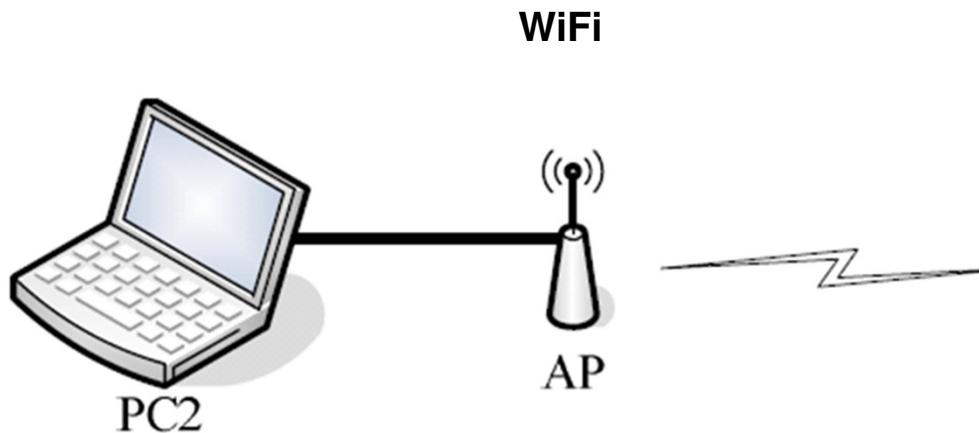


# Demo-BT-SmartBridge Apps-1

Build BT\_Smart\_Bridge\_App Image

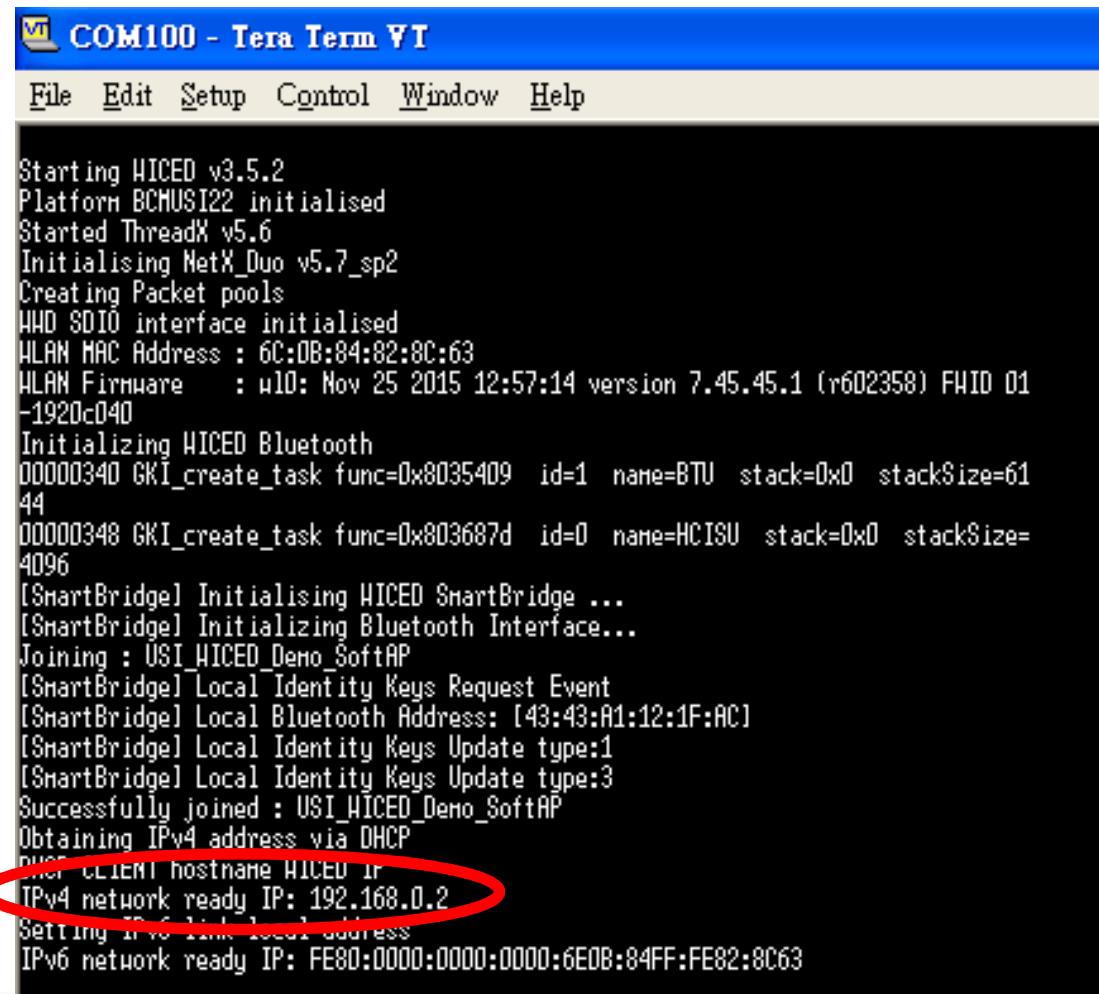
Ex : ~\SDK>make demo.bt\_smartbridge-BCMUSI22 download run(default for A1 version module)

Ex : ~\SDK>make demo.bt\_smartbridge-BCMUSI22.A0 download run(for A0 version module)



# Demo-BT\_SmartBridge-Apps-2

- Check EVB Console Output(USB to UART) if initied correctly and get IP of DUT

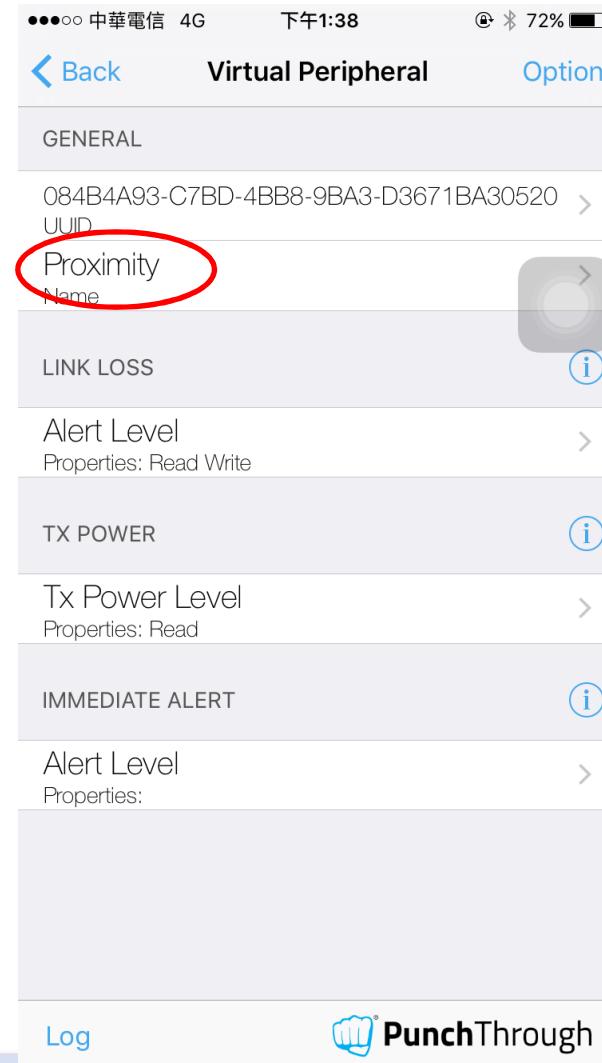


```
COM100 - Tera Term VT
File Edit Setup Control Window Help

Starting HICED v3.5.2
Platform BCMUSI22 initialised
Started ThreadX v5.6
Initialising NetX_Duo v5.7_sp2
Creating Packet pools
HWD SDIO interface initialised
HLAN MAC Address : 6C:0B:84:82:8C:63
HLAN Firmware : w10: Nov 25 2015 12:57:14 version 7.45.45.1 (r602358) FWID 01
-1920c040
Initializing HICED Bluetooth
00000340 GKI_create_task func=0x8035409 id=1 name=BTU stack=0x0 stackSize=61
44
00000348 GKI_create_task func=0x803687d id=0 name=HCISU stack=0x0 stackSize=
4096
[SmartBridge] Initialising HICED SmartBridge ...
[SmartBridge] Initializing Bluetooth Interface...
Joining : USI_HICED_Demo_SoftAP
[SmartBridge] Local Identity Keys Request Event
[SmartBridge] Local Bluetooth Address: [43:43:A1:12:1F:AC]
[SmartBridge] Local Identity Keys Update type:1
[SmartBridge] Local Identity Keys Update type:3
Successfully joined : USI_HICED_Demo_SoftAP
Obtaining IPv4 address via DHCP
DHCP CLIENT hostname HICED ir
IPv4 network ready IP: 192.168.0.2
Setting IPv6 link local address
IPv6 network ready IP: FE80:0000:0000:0000:6E0B:84FF:FE82:8C63
```

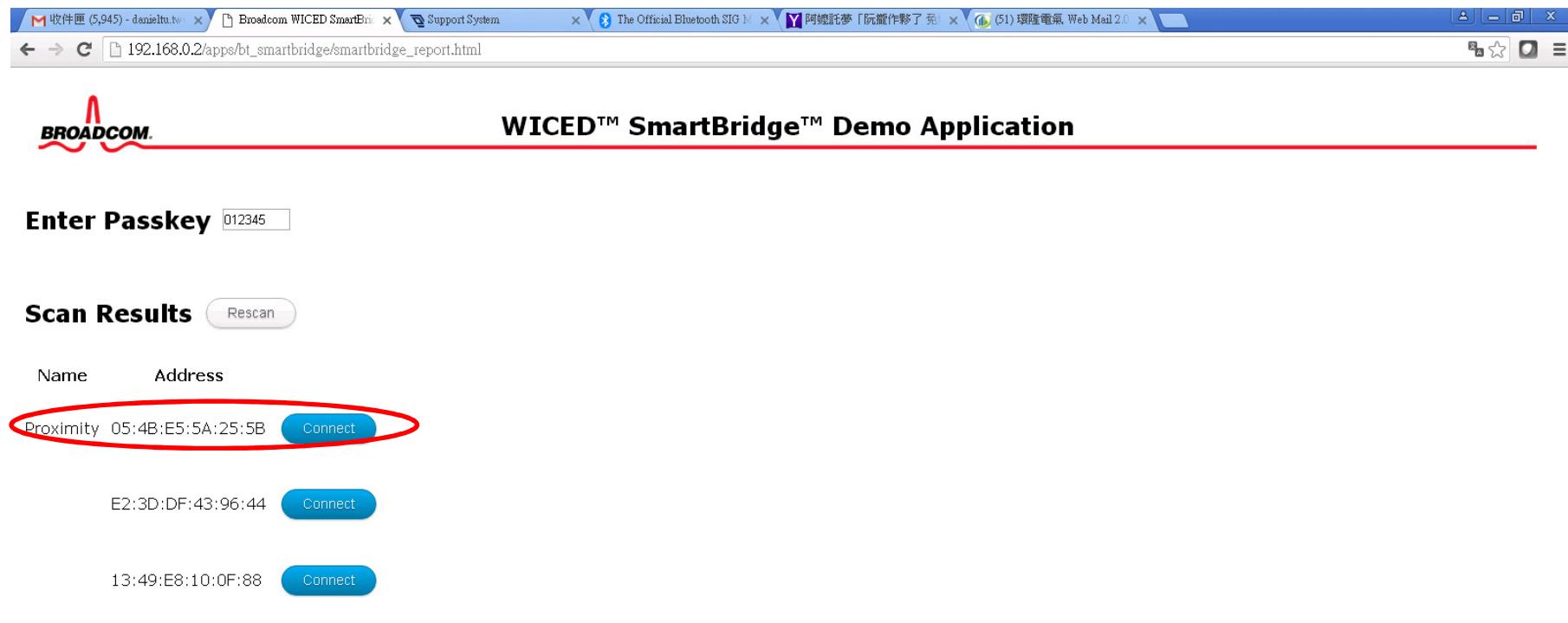
# Demo-BT\_SmartBridge-Apps-3

## Simulate BLE Peripheral Device from iPhone ;App “LightBlue”



# Demo-BT\_SmartBridge-Apps-4

## Open PC Web-Browser



The screenshot shows a web browser window with multiple tabs open. The active tab is titled "192.168.0.2/apps/bt\_smartbridge/smartbridge\_report.html". The page content is the "WICED™ SmartBridge™ Demo Application". It features a "Enter Passkey" field with the value "012345". Below it is a "Scan Results" section with a "Rescan" button. A table lists nearby devices:

Name	Address	Action
Proximity	05:4B:E5:5A:25:5B	<button>Connect</button>
	E2:3D:DF:43:96:44	<button>Connect</button>
	13:49:E8:10:0F:88	<button>Connect</button>

Below this is a "Connection List" section with a "Clear Pairing Info" button. The status message "No device connected" is displayed.



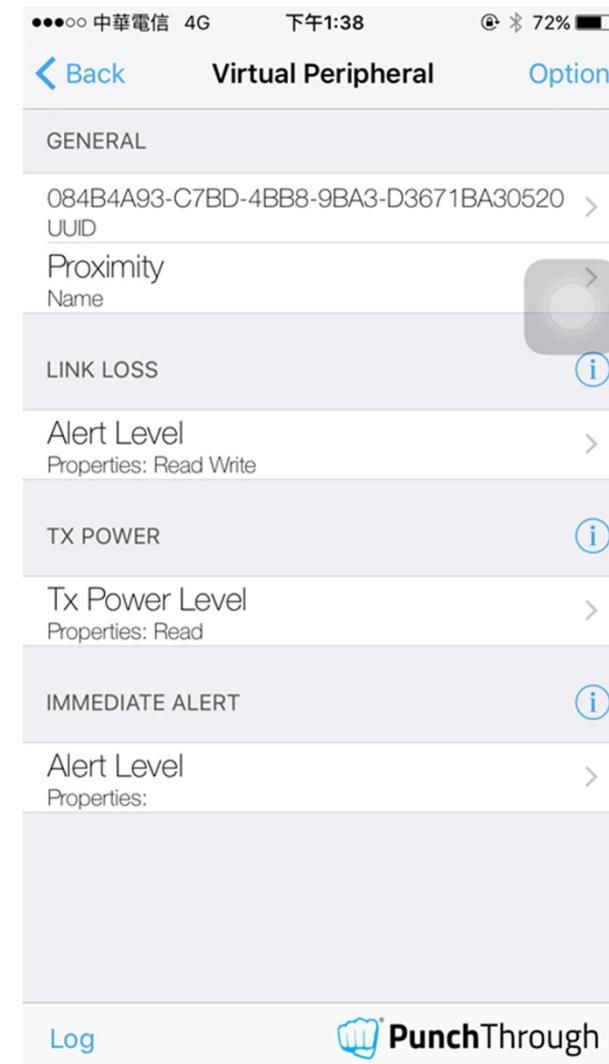
# Demo-BT\_SmartBridge-Apps-4.1(for SDK370)



- Check Paring Key on the DUT's Console Port ; then Input @ BLE Emulator

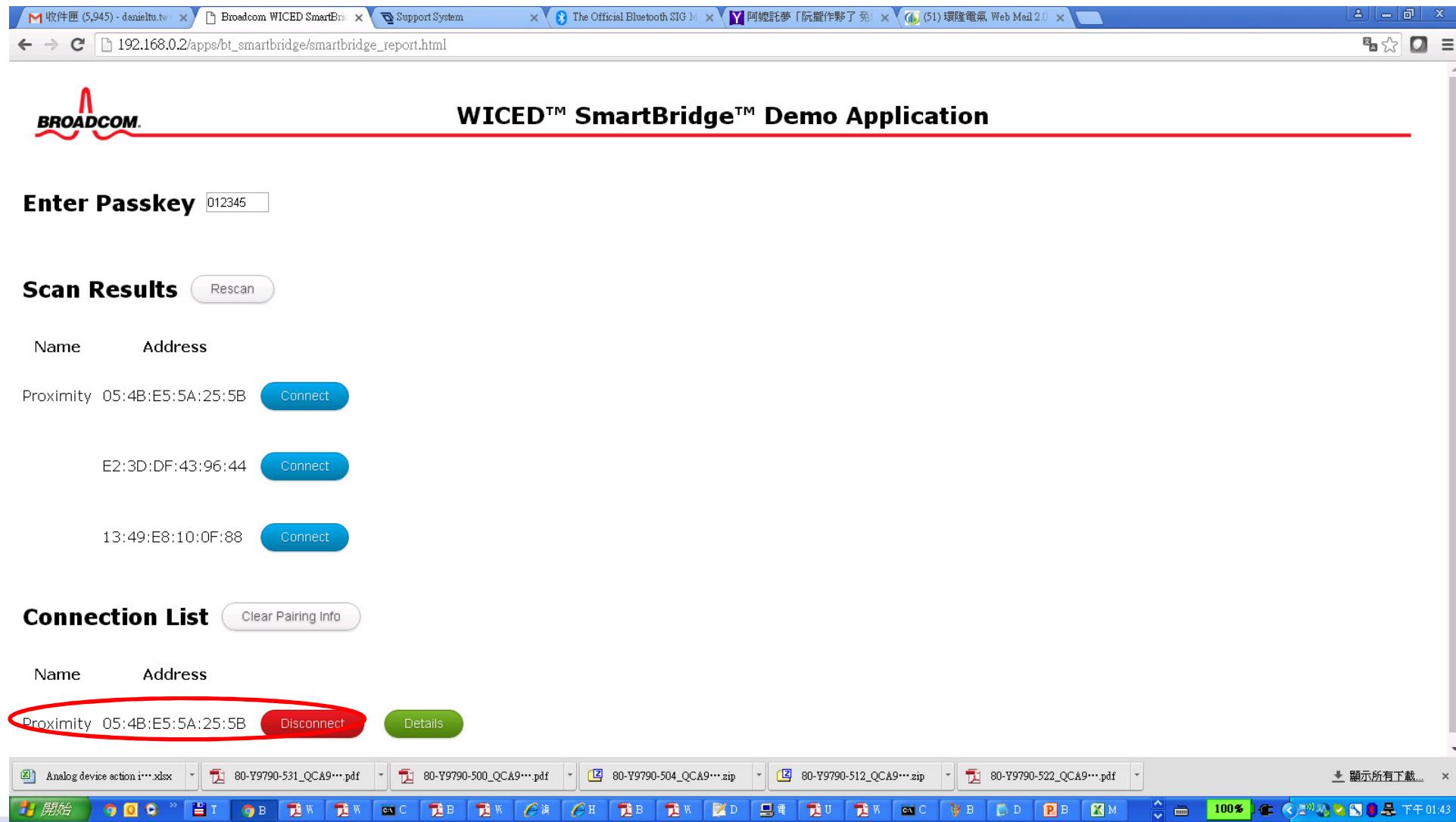
COM132 - Tera Term VT

```
[App] Scan complete
[App] Trying to Connect to HICED Proximity ...
[Smartbridge] connect()...socket things are okay
[SmartBridge] Enable Pairing with Pin: 12345
[SmartBridge] Paired Device Link Keys Request Event
[SmartBridge] Paired Device Link Keys Request Event
[Smartbridge] LE-connect, result:D
[Smartbridge] GATT connection was SUCCESS
[SmartBridge] Pairing I/O capabilities Request Event
Getting local I/O capabilities
[SmartBridge] Passkey Notification event! PassKey generated is: 175694
[SmartBridge] encryption status = 0
[SmartBridge] encryption status = 0
[SmartBridge] GENERATING ATT CACHE ...
[SmartBridge] Discover all Primary Services
[SmartBridge] Paired Device Link Keys Update Event
[SmartBridge] Bond-Info updated result: 0
[SmartBridge] Paired Device Link Keys Update Event
[SmartBridge] Bond-Info updated result: 0
[SmartBridge] Service [Start 1 - End 5] uuid:1800 list-count:1
[SmartBridge] Service [Start 6 - End 9] uuid:1801 list-count:2
[SmartBridge] Paired Device Link Keys Update Event
[SmartBridge] Bond-Info updated result: 0
[SmartBridge] Paired Device Link Keys Update Event
```



# Demo-BT\_SmartBridge-Apps-5

## Open PC Web-Browser – BLE connected



The screenshot shows a Microsoft Internet Explorer browser window with the following details:

- Address Bar:** 192.168.0.2/apps/bt\_smartbridge/smartbridge\_report.html
- Content Area:**
  - BROADCOM Logo:** On the left.
  - WICED™ SmartBridge™ Demo Application:** Title bar at the top of the page.
  - Enter Passkey:** A text input field containing "012345".
  - Scan Results:** A table with columns "Name" and "Address". It lists three devices:
    - Proximity 05:4B:E5:5A:25:5B (with a "Connect" button)
    - E2:3D:DF:43:96:44 (with a "Connect" button)
    - 13:49:E8:10:0F:88 (with a "Connect" button)
  - Connection List:** A table with columns "Name" and "Address". It lists the same three devices from the scan results, with the first row ("Proximity 05:4B:E5:5A:25:5B") circled in red.
    - Proximity 05:4B:E5:5A:25:5B (with a "Disconnect" button and a green "Details" button)
    - 80-Y9790-531\_QCA9...pdf
    - 80-Y9790-500\_QCA9...pdf
    - 80-Y9790-504\_QCA9...zip
    - 80-Y9790-512\_QCA9...zip
    - 80-Y9790-522\_QCA9...pdf

# Demo-BT\_SmartBridge-Apps-6

## Open PC Web-Browser- BLE connected-Detail

**BROADCOM.**

**WICED™ SmartBridge™ Demo Application**

Connected to : Proximity ( 05:4B:E5:5A:25:5B )

Current Time : 00:10:40 UTC  
Current Date : 1970-01-01 UTC

Primary Service : 1800  
Characteristic [Value] : 2A00 [ 69 50 68 6F 6E 65 ]  
Characteristic [Value] : 2A01 [ 40 00 ]

Primary Service : 1801  
Characteristic [Value] : 2A05

Primary Service : 00A500F8-0048-0079-0010-00AE00430066  
Characteristic [Value] : 008400ED-0054-00EE-0027-00D900000049

Primary Service : 1803  
Characteristic [Value] : 2A06

Primary Service : 1804  
Characteristic [Value] : 2A07



# Thank You

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