MT7902

Test-Mode Software Application Note Part-1:

QA-Tool User Guideline

Document Revision History

Version	Date	Author	Change List
V0.1	20220205	Yi-Yan	Initial draft release.

Table of Contents

1 System overview

1.1 General Description

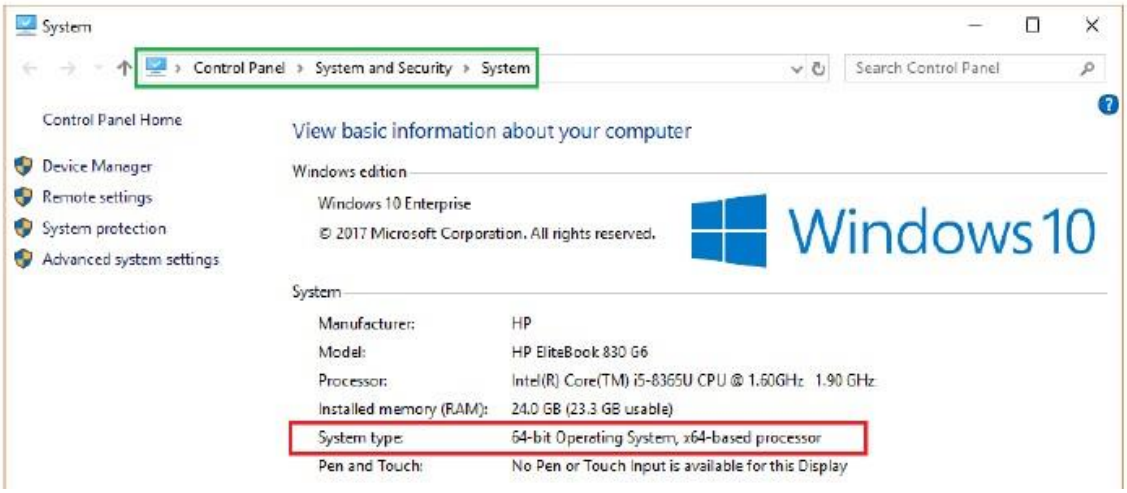
MT7902 chip is highly integrated single chip which have built in 1x1 wireless LAN and Bluetooth combo radio. It can be configured in test-mode for performance validation, production testing and regulatory certification. There are two software tools, QA-Tool and Combo-Tool responsible for evaluating WIFI and Bluetooth signal and performance testing. This document is introducing how to install and use Combo-Tool.

2 QA-Tool

Combo-Tool installation package include 2 major software:

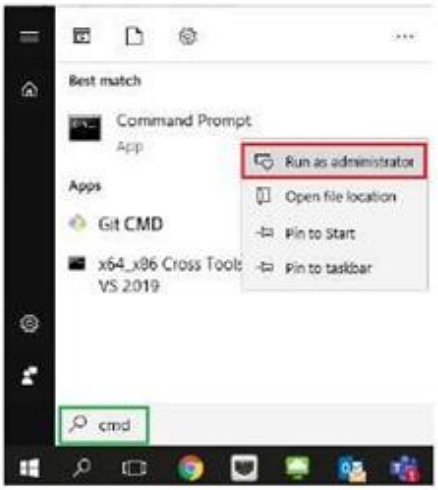
- BT driver
- Combo-Tool Windows installation package

Before doing installation, users should check computer system type by right-clicking Computer icon and selecting Properties to know OS type as following figures.

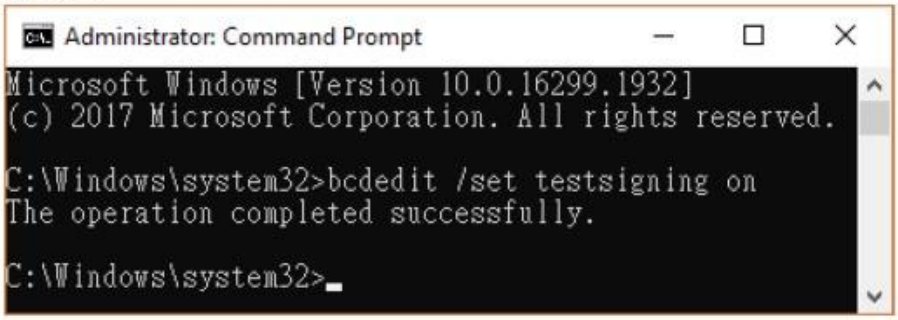


The **System type** MTK strongly recommends use Windows7 64-bit operating system. Users should set Windows7 64-bit OS under test mode according to following steps:

1. Right-click **"Command Prompt"** in Accessories and select **"Run as administrator."**



2. After command window pops out, entering command "**bcdedit /set testsigning on**" to enable test mode as following figure.



2.1 How to install QA-tool

Users should follow the procedure listed in below to install Combo-Tool

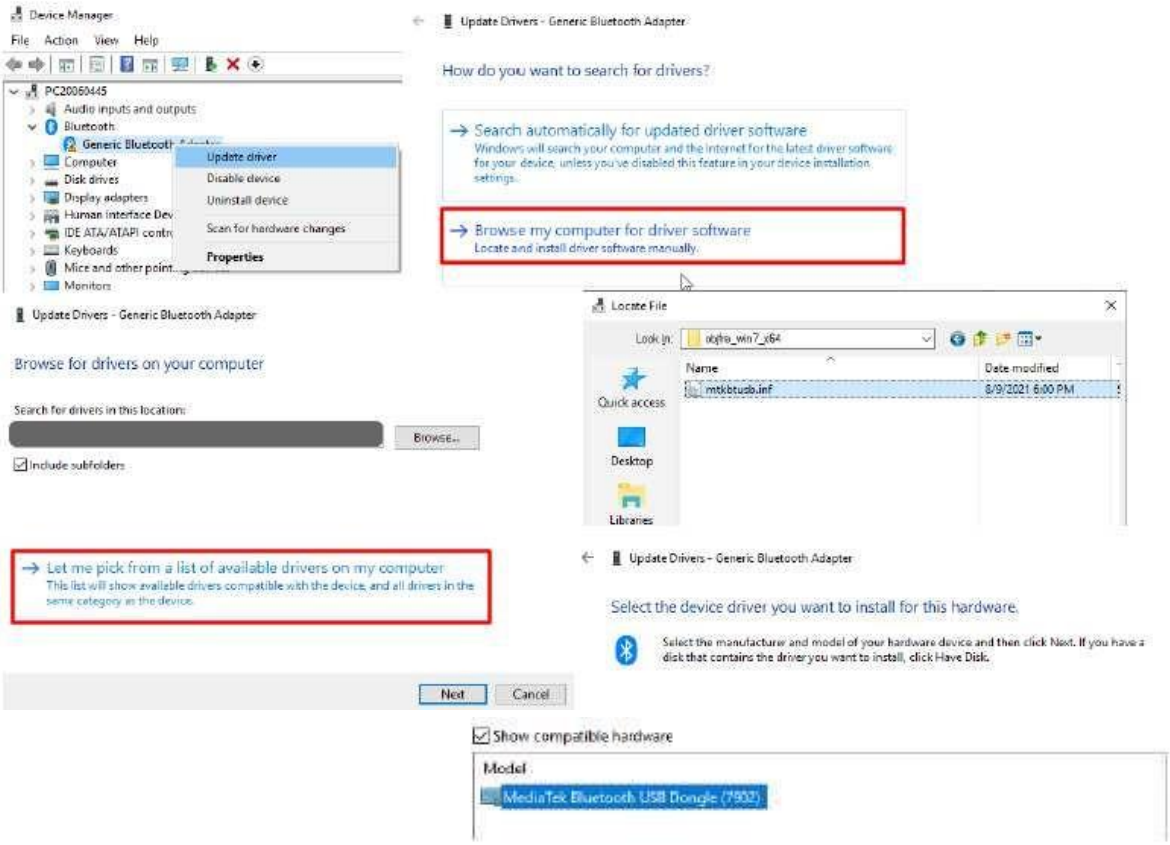
- 1st step: Install BT driver
- 2nd step: Install Combo-Tool

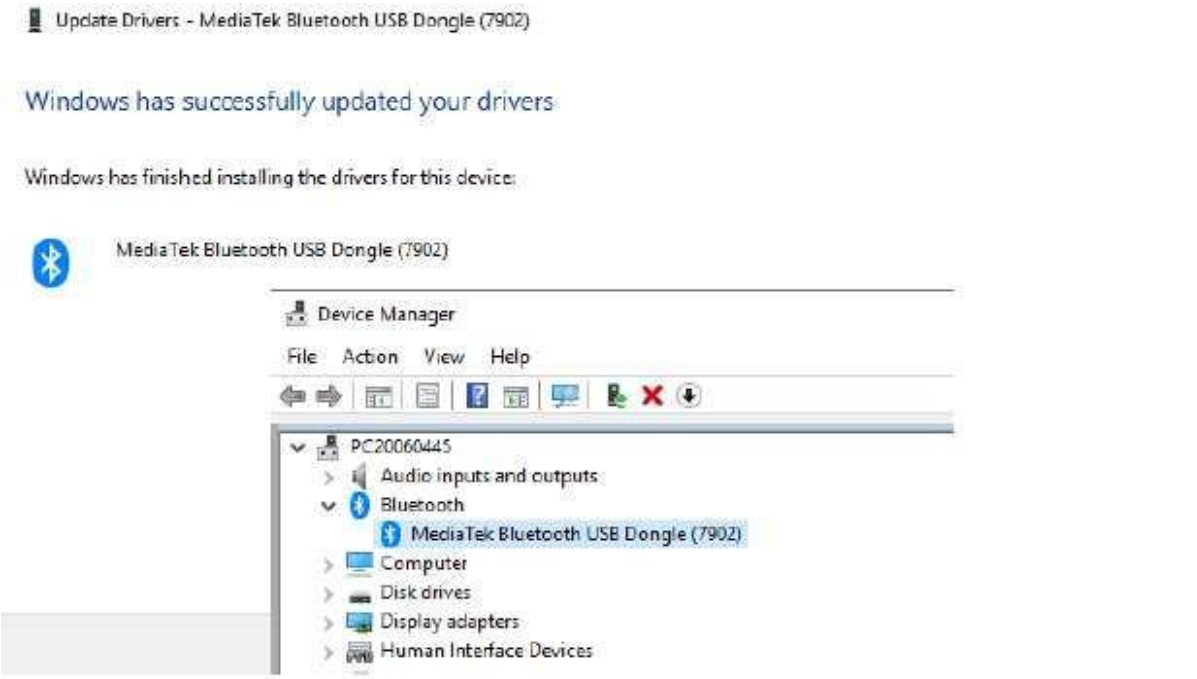
2.1.1 Install WinPcap

BT driver is necessary for Combo-Tool. This driver should be well installed to make Bluetooth device and Combo-Tool working smoothly. Users can refer to following steps to install this driver.

USB Interface:

1. In Window Device Manager, users can update driver software and select BT driver in the folder *...\MtkUsb_3.1.0.21\x64\objfre_win7_x64\mtkbtusb.inf*
2. Select model "*Mediatek Bluetooth USB Dongle (7902)*" and click Install. Device Manager will also show a device "*Mediatek Bluetooth USB Dongle (7902)*" in Bluetooth Radios if installation is completed.


Device Manager
File Action View Help
PC20060445
Audio inputs and outputs
Bluetooth
Generic Bluetooth Adapter
Computer
Disk drives
Display adapters
Human Interface Dev
IDE ATA/ATAPI contr
Keyboards
Mice and other point
Monitors
Update driver
Disable device
Uninstall device
Scan for hardware changes
Properties
Update Drivers - Generic Bluetooth Adapter
How do you want to search for drivers?
Search automatically for updated driver software
Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.
Browse my computer for driver software
Locate and install driver software manually.
Update Drivers - Generic Bluetooth Adapter
Browse for drivers on your computer
Search for drivers in this location:
Browse...
Include subfolders
Let me pick from a list of available drivers on my computer
This list will show available drivers compatible with the device, and all drivers in the same category as the device.
Next
Cancel
Locate File
Look in:
Name
Date modified
mtkbtusb.inf
8/9/2021 6:00 PM
Quick access
Desktop
Libraries
Update Drivers - Generic Bluetooth Adapter
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
MediaTek Bluetooth USB Dongle (7902)

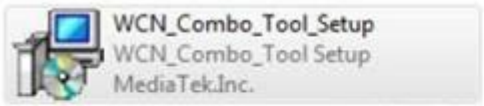

Update Drivers - MediaTek Bluetooth USB Dongle (7902)
Windows has successfully updated your drivers
Windows has finished installing the drivers for this device:
MediaTek Bluetooth USB Dongle (7902)
Device Manager
File Action View Help
PC20060445
Audio inputs and outputs
Bluetooth
MediaTek Bluetooth USB Dongle (7902)
Computer
Disk drives
Display adapters
Human Interface Devices

3. Right-click “MediaTek MT7902 QATest USB Driver” (network adapter) and select disable. User should shutdown NB to power off chip if WiFi adapter driver installed. (This driver will load BT firmware)

   NOTE: For Modern-Standby platform may need remove battery to force power off.

2.1.2 Windows 10 install note

Double-click **WCN_Combo_Tool_Setup** icon in "..\Combo_Tool\" and follow below steps to install Combo-Tool.



1

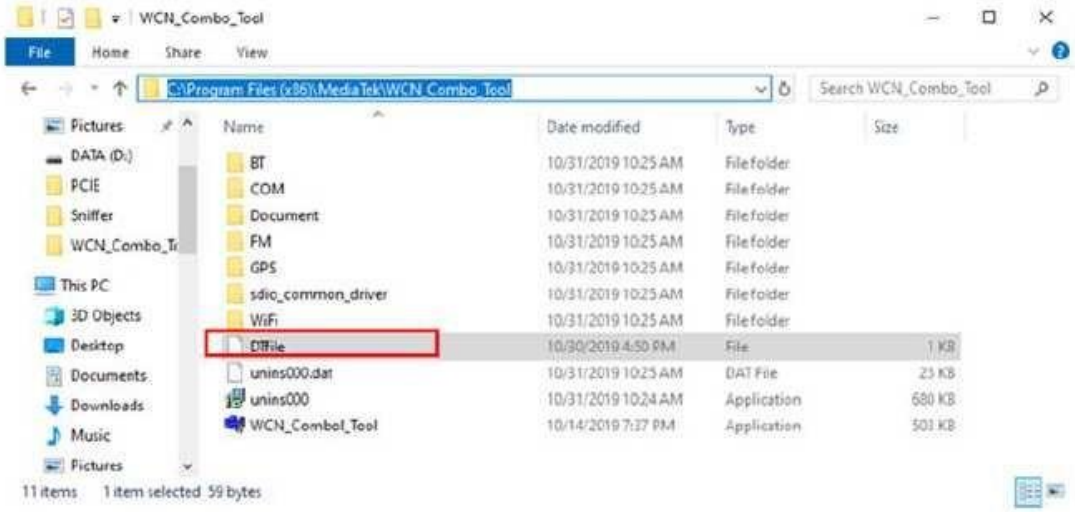
2

3

4

5

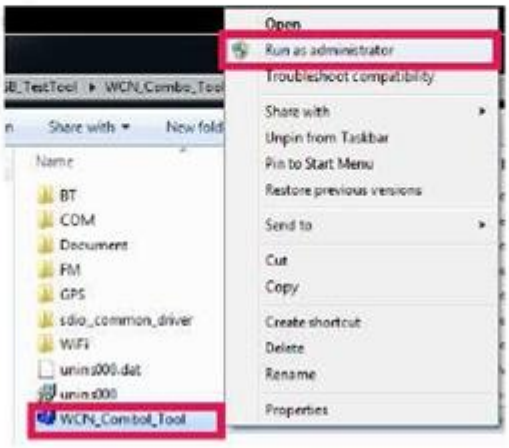
After installation finished, copy "DTFile" to "C:\Program Files (x86)\MediaTek\WCN_Combo_Tool" (as below screenshot).

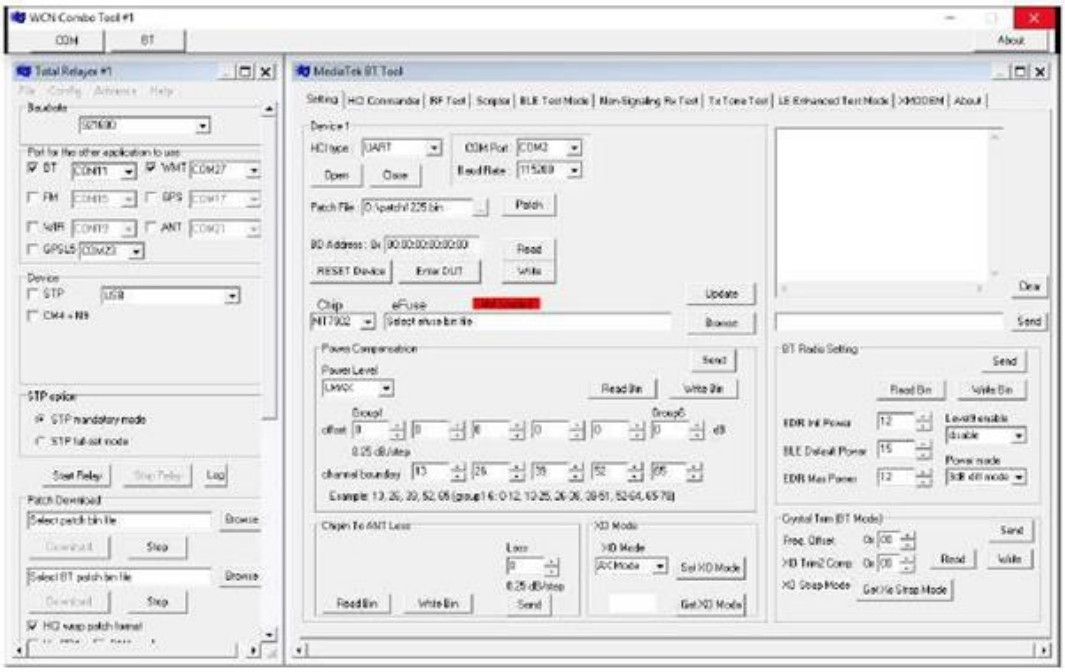


2.2 How to use Combo-Tool

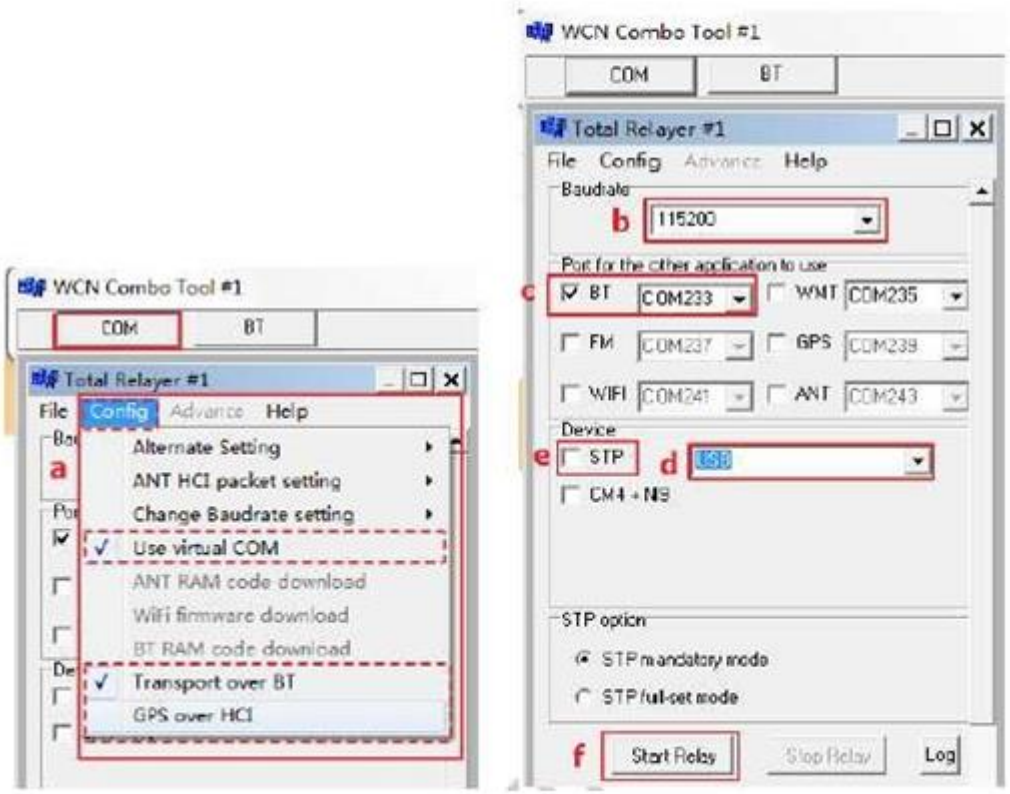
Users should follow the procedure listed in below to initiate DUT by Combo-Tool

1. Running WCN_Combo_Tool as administrator and the UI will pop out.





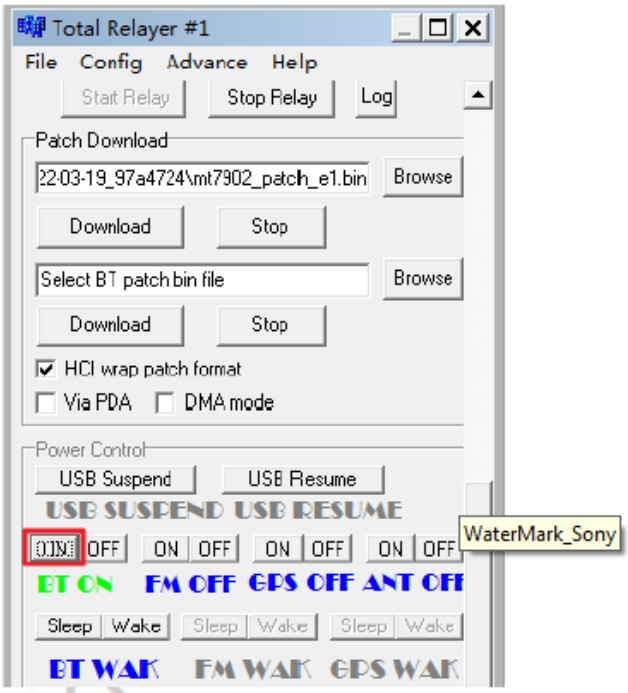
2. a. Select COM ➔ Config ➔ Enable "Transport over BT", Disable "GPS over HCI".
   b. Set Baud Rate = 115200.
   c. Select BT port number.
   d. Select Device Interface (USB/UART COM).
   e. Uncheck "STP".
   f. Click " Start Relay ".



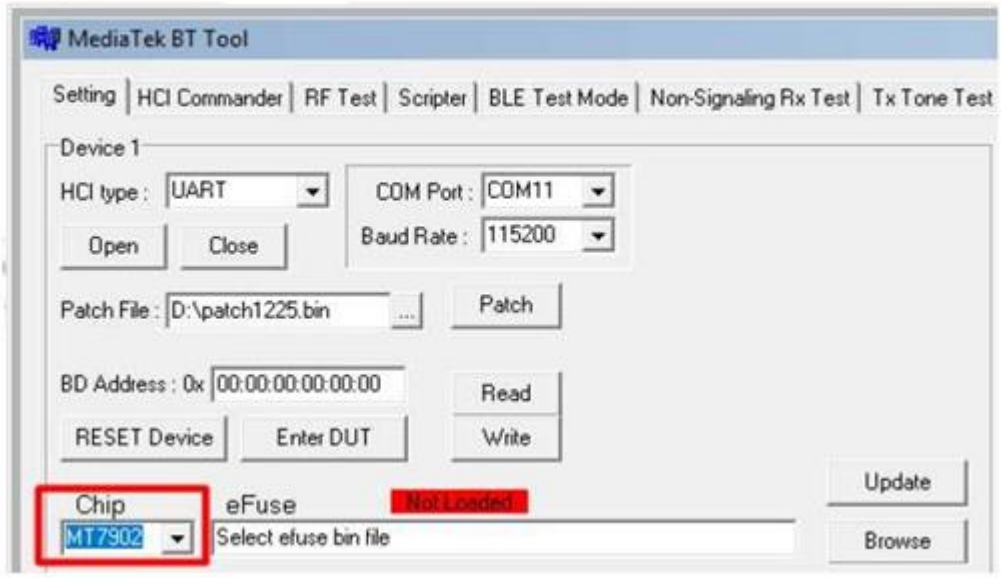
3. Click "**Browse**" and "**Download**" buttons to load BT patch in this step. Prompt box will pop up when download is completed.

   UnCheck "DMA mode"=> Select "mt7902_patch_e1.bin"=> Click "Download" button

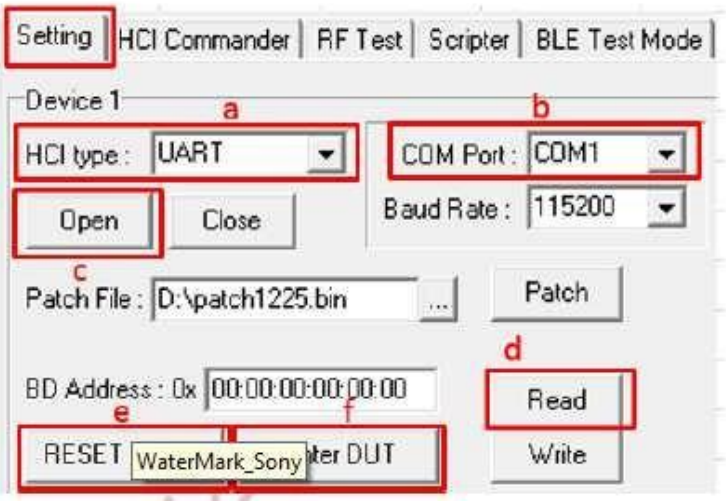
4. After patch download pops out "Download bin file ok!", click " ON " button to set BT ON as following figure.



5. Select Chip ID.



6. On **Setting** page:
   a. Select HCI type : UART
   b. Select COM Port and Baud Rate identical to step-2
   c. Click "Open" button to open BT COM port; ("Close" button can also close BT COM port.)
   d. Click "Read" button. If users can get BD address, your DUT initiation is successful.
   e. Click "RESET Device" after Open is clicked.
   f. Click "Enter DUT" button, the device is entering Bluetooth test mode (signaling mode).



2.2.1 BDR/EDR Signaling Test Mode

If uses can read BD Address successful on **Setting** page, the DUT is entering Bluetooth signaling test mode automatically. Users can use R&S® CBT Bluetooth Tester to create connection with DUT directly and perform testing. Users could have detailed information of this Bluetooth tester from this URL: https://www.rohde-schwarz.com/en/product/cbt_cbt32-productstartpage_63493-7927.html

2.2.8 BLE Enhanced TX Test Mode

"LE Enhanced Test Mode" support part of BT5 LE feature test.
This BT5.0 testing can be executed with equipment likes R&S® CMW270/500 which support BT5.0 feature.
As CMW270/500, users could have detailed information of this Bluetooth tester from this URL: https://www.rohde-schwarz.com/product/cmw270-productstartpage_63493-9552.html

BT Buffer Mode

BT buffer mode with EEPROM.bin

a. Open BT COM.
b. Select chip ID(MT7902).
c. Select EEPROM.bin file.

Set Power Compensation

d. Select Cal Power Level (default LMAX, don't change)
e. Set Power compensation value by Groups (0.25dB/step. -3~+3dB).
f. Set Boundary channel number.
g. Update to EEPROM.bin file.

Set Chip in to ANT loss

h. Set loss (0.25dB/step, 0~5dB).
i. Update to EEPROM.bin file.

Set BT Radio Setting

j. Set EDR init power(-32~12dBm)/BLE default power(-29~20dBm)/EDR max power(-32~12dBm).
k. Set Level9 (BDR 20dBm) enable or disable(default disable Lv9).
l. Set Power mode(0dB diff or 3dB diff).
m. Update to EEPROM.bin file.

Set Crystal Trim(BT mode)

3 General Information & Integration Instructions

3.1 General Description of MT7902

Product	1TX 11ax (WiFi6E) BW160 + BT/BLE Combo Card
Brand	acer
Model	MT7902
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	GFSK, π/4-DQPSK, 8DPSK CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, BPSK, QPSK for OFDM 1024QAM for OFDM in 11ax mode only 1024QAM for OFDMA in 11ax mode only
Modulation Technology	**BT EDR:** FHSS **BT LE:** GFSK **WLAN:** DSSS, OFDM, OFDMA
Transfer Rate	**BT EDR:** up to 3 Mbps **BT LE:** up to 2 Mbps 2.4GHz, 5GHz: 802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n: up to 150 Mbps VHT20/40: up to 200 Mbps 802.11ax: up to 286.8 Mbps 802.11a: up to 54 Mbps 802.11n: up to 150 Mbps 802.11ac: up to 866.7 Mbps 802.11ax: up to 1201.0 Mbps 5.9G 802.11a: up to 54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps 6GHz 802.11a: up to 54 Mbps 802.11ax: up to 1201.0 Mbps
Operating Frequency	**BT EDR:** 2402MHz ~ 2480MHz **BT LE:** 2402MHz ~ 2480MHz **2.4GHz:** 2.412 ~ 2.472GHz **5GHz:** 5.18~5.32GHz, 5.50~5.72GHz, 5.745 ~ 5.825GHz, 5845~5885GHz **6GHz:** 5.955~6.415GHz, 6.435~6.525GHz, 6.525~6.875GHz, 6.875~7.115GHz
Number of Channel	**BT EDR:** 79 **BT LE:** 40 **2.4GHz:** 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 13 802.11n (HT40), VHT40, 802.11ax (HE40): 9 **5GHz:** 5.18~5.32GHz, 5.50~5.72GHz, 5.745 ~ 5.825GHz 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 25 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 12 802.11ac (VHT80), 802.11ax (HE80): 6 802.11ac (VHT160), 802.11ax (HE160): 2 **5GHz: 5845~5885GHz** 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 3

	802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80):1 802.11ac (VHT160), 802.11ax (HE160): 1 **6GHz:** 802.11a/ax (HE20): 59 802.11ax (HE40): 29 802.11ax (HE80): 14 802.11ax (HE160): 7

3.2 Antenna information

The antennas mentioned below are covered in the certification scope and the HOST can only be used with the following antennas:

Ant. Set	RF Chain No.	Brand	Model	Ant. Net Gain (dBi)	Freq. Range (GHz)	Ant. Type	Connector Type	Cable Length(mm)
1	Chain0	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
	Chain1 (only Diversity sample)	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
2	Chain0	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
	Chain1 (only Diversity sample)	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
3	Chain0	PSA	RFMTA421230IMMB701	-13.92 -13.91 -13.91 -14.46	5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX	300
	Chain1	PSA	RFMTA421230IMMB701	-13.92 -13.91 -13.91 -14.46	5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX	300

Note1: Use of other antenna types or the same type of antenna with higher gain than listed above must performed additional testing and appropriate permissive change approval.
Note2: In the 5.925-7.125GHz band, use of other similar type antennas and the antenna gain not higher/lower than listed above may only require a C1PC without any additional testing/submission.
Note3: Additional testing/submission (C2PC) will required if device not met the antenna and RF exposure requirements.
Note4: Contact MTK for additional guidance, if choose to use different antenna types or higher/lower gain antennas in the end system.
IMPORTANT: The final host product must have an integral antenna which is not removable by the end-user.

Contact info for above certified antennas:
Company/Dept.: Walsin Technology Corp./ Antenna Business Dept.
Contact window: Andrew Lin
Tel: +886-3-475-8711 # 8172

Cell phone: +886-938-286-596
Email address: andrewlin@passivecomponent.com
URL link: http://www.passivecomponent.com/zh-hant/products/antenna/

3.3 Host Integration instructions

The product is designed to be used with "NGFF (Next Generation Form Factor) M.2 2230" PCIE Bus, please install module into a M.2 2230 PCIE slot.

3.4 Host product testing guidance

HOST must follow the specific restrictions listed in "3.5 Regulatory notes" section below and section 3 of KDB996369 D04 V02 Module Integration Guide v01, to verify that the host product meets all the applicable rules.

Federal Communication Commission Interference Statement

This device complies with Part 15 of the 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.

This equipment has been tested and found to comply with the limits for a Class B digital 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 equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

FCC regulations restrict the operation of this device to indoor use only.
The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet. Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This module is intended for OEM integrators only. Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

KDB 996369 D03 OEM Manual v01 rule sections:

2.2 List of applicable FCC rules

This module has been tested for compliance to FCC Part 15 Subpart C (15.247) and Subpart E (15.407).

2.3 Summarize the specific operational use conditions

The module is tested for standalone mobile RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) will need a separate reassessment through a class II permissive change application or new certification.
This module is authorized for Low Power Indoor Client applications only; final host product must be for indoor operations only.

Further operation restrictions on the host product include:
*Prohibited for control of or Communications with unmanned aircraft systems.

2.4 Limited module procedures

Not applicable.

2.5 Trace antenna designs

Not applicable.

2.6 RF exposure considerations

This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. A separate SAR/Power Density evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

This device was tested for typical body-worn operations. To comply with RF exposure requirements, a minimum separation distance of 5 mm must be maintained between the user's body and the handset, including the antenna. Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components. Body-worn accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided.

2.7 Antennas

The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module except for operations within the 5.925~7.125GHz band.

Use of other antenna types or the same type of antenna with higher gain than listed above must performed additional testing and appropriate permissive change approval.
Note2: In the 5.925-7.125GHz band, use of other similar type antennas and the antenna gain not higher/lower than listed above may only require a C1PC without any additional testing/submission.
Note3: Additional testing/submission (C2PC) will required if device not met the antenna and RF exposure requirements.
Note4: If choose to use different antenna types or higher/lower gain antennas in the end system.
IMPORTANT: The final host product must have an integral antenna which is not removable by the end-user.

Ant. Set	RF Chain No.	Brand	Model	Ant. Net Gain (dBi)	Freq. Range (GHz)	Ant. Type	Connector Type	Cable Length(mm)
1	Chain0	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
	Chain1 (only Diversity sample)	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
2	Chain0	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
	Chain1 (only Diversity sample)	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
3	Chain0	PSA	RFMTA421230IMMB701	-13.92 -13.91 -13.91 -14.46	5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX	300
	Chain1	PSA	RFMTA421230IMMB701	-13.92 -13.91 -13.91 -14.46	5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX	300

IMPORTANT: The final host product must have an integral antenna which is not removable by the end-user.

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following: “Contains FCC ID: HLZMT7902”. The grantee's FCC ID can be used only when all FCC compliance requirements are met.

2.9 Information on test modes and additional testing requirements

This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) class II permissive change re-evaluation or new certification.

2.10 Additional testing, Part 15 Subpart B disclaimer

This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rule requirements if applicable.

As long as all conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

OEM/Host manufacturer responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment.

Modules: extended to host manufacturers by integration instructions.

Industry Canada statement:

This device complies with ISED's licence-exempt RSSs. 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.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Radiation Exposure Statement:
This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with greater than 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:
Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 20 cm entre le radiateur et votre corps.

This device is intended only for OEM integrators under the following conditions: (For module device use)

1) The antenna must be installed and operated with greater than 20cm between the antenna and users, and
2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as **2** conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: (Pour utilisation de dispositif module)

1) L'antenne doit être installé et exploité avec plus de 20 cm entre l'antenne et les utilisateurs, et

2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Tant que les **2** conditions ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

IMPORTANT NOTE:
In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

IMPORTANTENOTE
Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

End Product Labeling
This transmitter module is authorized only for use in device where the antenna may be installed and operated with greater than 20cm between the antenna and users. The final end product must be labeled in a visible area with the following: “Contains IC:1754F-MT7902”.

Plaque signalétique du produit final

Ce module émetteur est autorisé uniquement pour une utilisation dans un appareil où l’antenne peut être installée et utilisée à plus de 20 cm entre l’antenne et les utilisateurs. Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 1754F-MT7902

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user’s manual of the end product which integrates this module.
The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.
Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

Caution :

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

(ii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

(iii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate;

(iv) where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

Avertissement:

Le guide d'utilisation des dispositifs pour réseaux locaux doit inclure des instructions précises sur les restrictions susmentionnées, notamment :

(i) les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

(ii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5 250 à 5 350 MHz et de 5 470 à 5 725 MHz doit être conforme à la limite de la p.i.r.e;

(iii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5 725 à 5 850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée, selon le cas;

(iv) lorsqu'il y a lieu, les types d'antennes (s'il y en a plusieurs), les numéros de modèle de l'antenne et les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, énoncée à la section 6.2.2.3, doivent être clairement indiqués

DETACHABLE ANTENNA USAGE

This radio transmitter (IC: 1754F-MT7902 / Model: MT7902 has been approved by ISED to operate with the antenna type listed below with maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 1754F-MT7902 / Model: MT7902) a été approuvé par ISED pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Approved antenna(s) list

Ant. Set	RF Chain No.	Brand	Model	Ant. Net Gain (dBi)	Freq. Range (GHz)	Ant. Type	Connector Type	Cable Length(mm)
1	Chain0	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
	Chain1 (only Diversity sample)	PSA	RFMTA340718EMLB302	3.18 4.92	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	200
2	Chain0	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
	Chain1 (only Diversity sample)	PSA	RFMTA311020EMMB301	1.71 4.82 4.76 4.29 4.61 4.09	2.4~2.4835 5.15~5.85 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	i-pex(MHF)	200
3	Chain0	PSA	RFMTA421230IMMB701	-13.92 -13.91 -13.91 -14.46	5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX	300
	Chain1	PSA	RFMTA421230IMMB701	-13.92 -13.91 -13.91 -14.46	5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	PIFA	IPEX	300

IMPORTANT: The final host product must have an integral antenna which is not removable by the end-user.

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使
用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，

應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，

指依電信管理法規定作業之無線電通信。

低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

本模組於取得認證後將依規定於模組本體標示審驗合格標籤。

系統廠商應於平台上標示「本產品內含射頻模組：  XXXyyyLPDzzzz-x」字樣

應避免影響附近雷達系統之操作。

高增益指向性天線只得應用於固定式點對點系統。