

MEDIATEK

MT7981 QA Tool User Guide

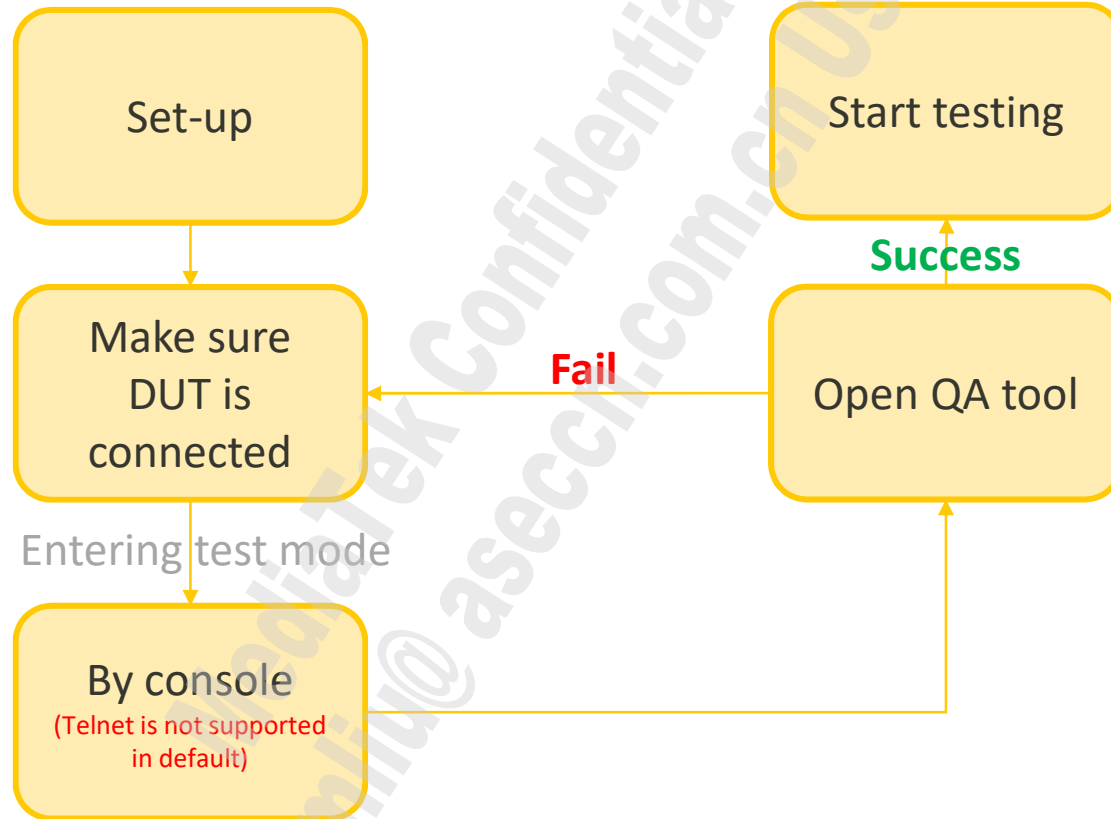
Outline

- **Before test** →
- **Static test**
 - TX →
 - RX →
- **Debug tool**
 - EEPROM →
 - DC tone(single, two) →
 - Duplicate mode(for EMI test) →

Note

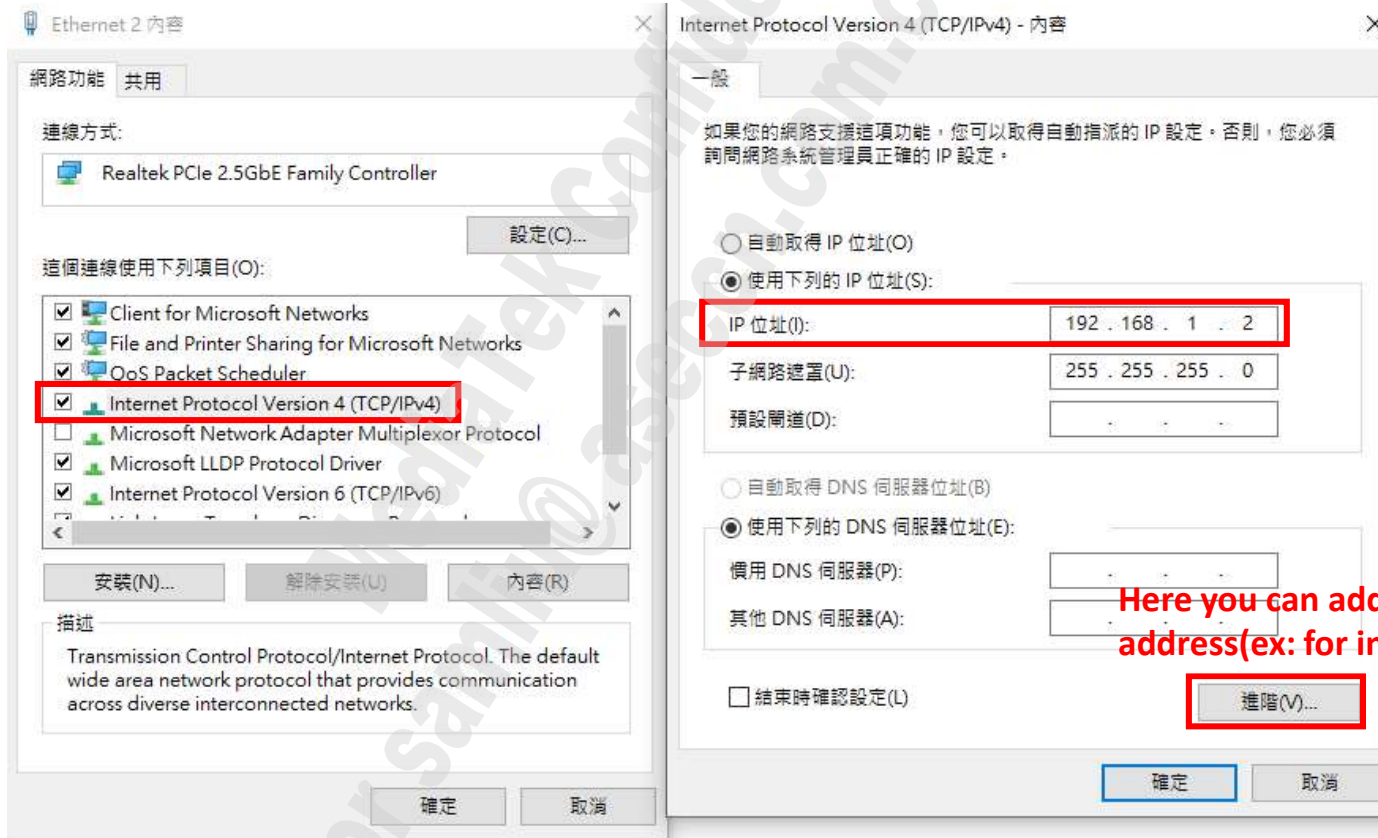
- * : Annotation
- ① : Essential steps
- ① : Function
- blue: noteworthy items

Flow



1. Set-up

- DUT Default IP: 192.168.1.1
- To connect to DUT, network IP should be set to same IP domain (ex: 192.168.1.2 or 192.168.1.3,...etc.)



Here you can add another IP address(ex: for instrument)

2. Make sure DUT is connected to testing PC/NB

- Open command window.
- Key-in “**ping 192.168.1.1 -t**” to ping DUT continuously.

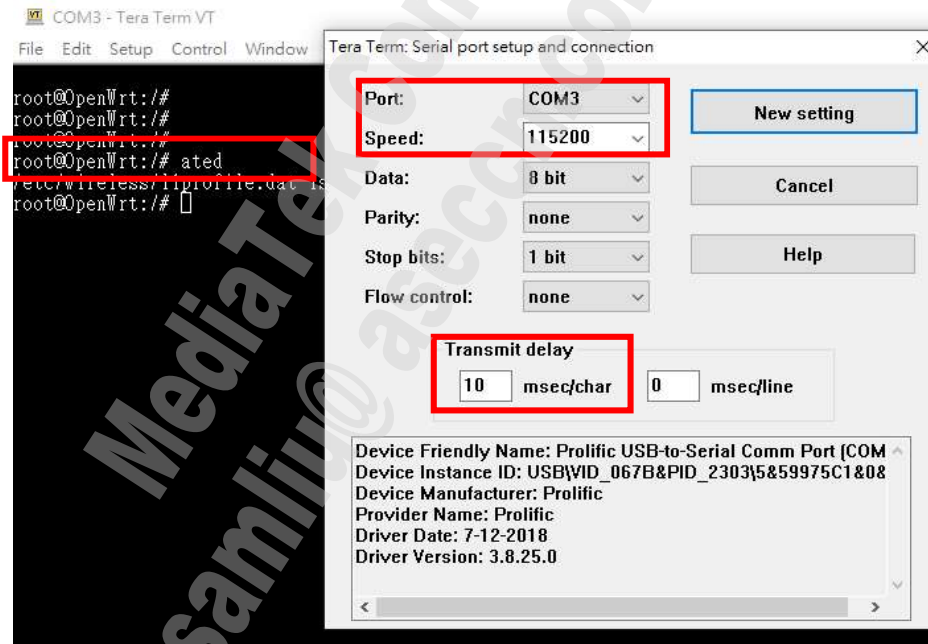


```
cmd 系統管理員: 命令提示字元 - ping 192.168.1.1 -t
Microsoft Windows [版本 10.0.17763.737]
(c) 2018 Microsoft Corporation. 著作權所有，並保留一切權利。
C:\Users\mtk23129_old>ping 192.168.1.1 -t

Ping 192.168.1.1 (使用 32 位元組的資料):
回覆自 192.168.1.1: 位元組=32 時間=1ms TTL=64
回覆自 192.168.1.1: 位元組=32 時間<1ms TTL=64
回覆自 192.168.1.1: 位元組=32 時間<1ms TTL=64
回覆自 192.168.1.1: 位元組=32 時間<1ms TTL=64
回覆自 192.168.1.1: 位元組=32 時間=1ms TTL=64
回覆自 192.168.1.1: 位元組=32 時間=1ms TTL=64
回覆自 192.168.1.1: 位元組=32 時間<1ms TTL=64
回覆自 192.168.1.1: 位元組=32 時間<1ms TTL=64
回覆自 192.168.1.1: 位元組=32 時間<1ms TTL=64
回覆自 192.168.1.1: 位元組=32 時間<1ms TTL=64
```

3. Entering test mode

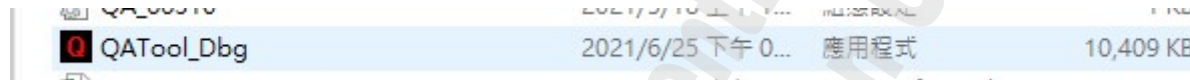
- **By Console (telnet is not supported)**
 - Select port, and baud rate(speed) set to 115200.
 - 10 ms transmit delay is recommended.
 - Key-in “ated” right after “root@LEDE:/#” to enter test-mode.



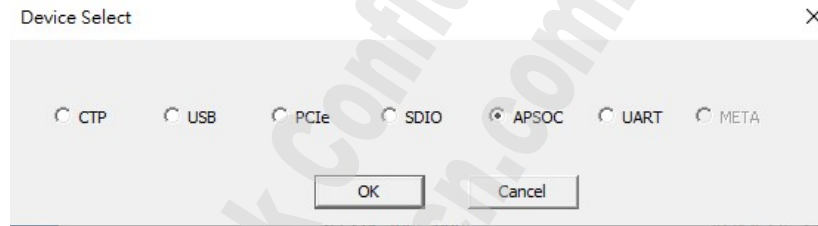
4. Open QA tool

- Open “QATool_Dbg.exe”.

*If you can't launch QA tool (popup can't find wpcap.dll message), please install WinPcap.



- Choose “APSOC”.

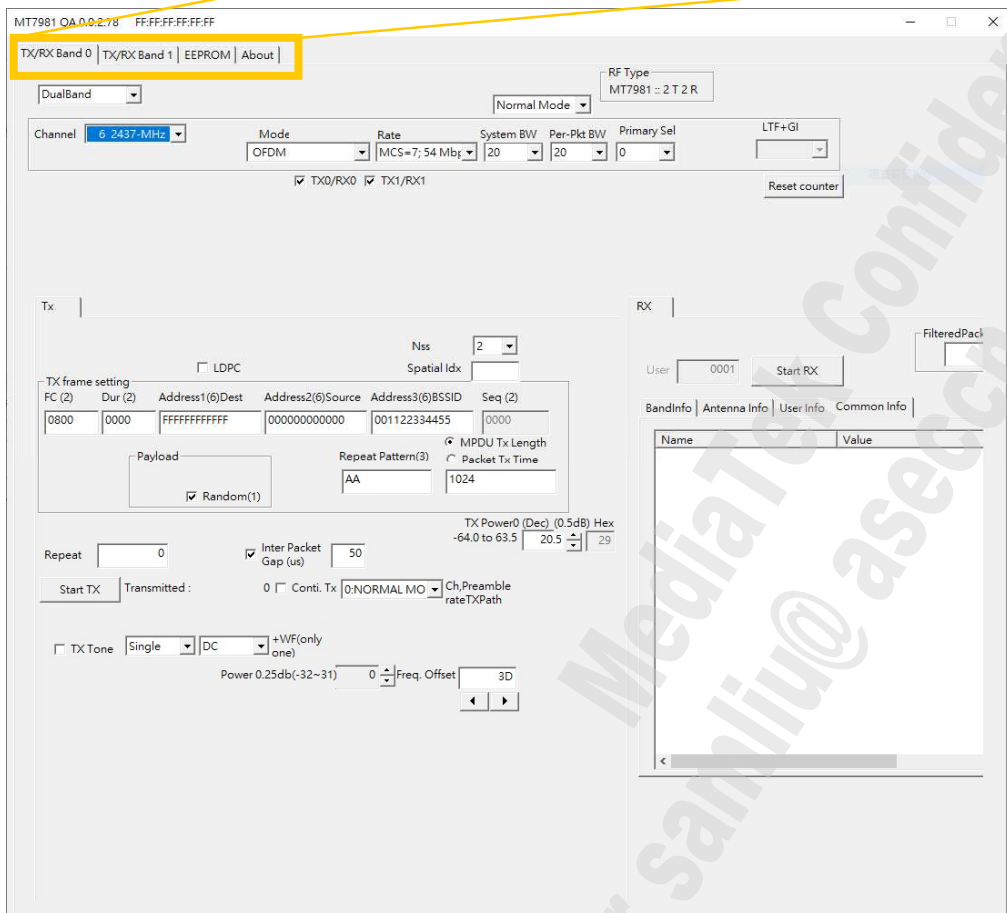


- Select corresponded net (IT)



- Press OK

5. Start using QA Tool



Page	Usage
TX/RX Band0 *	(PHY0) G Band TX/RX
TX/RX Band1 *	(PHY1) A Band TX/RX
EEPROM	Read/Write/Save EEPROM

*For DBDC: TX/RX pages are separated into:
 G band → TX/RX Band0
 A band → TX/RX Band1

TX 11a/b/g/n/ac/ax-SU

The screenshot shows the TX configuration window for MT7981. The interface includes several sections:

- 0** Tx tab
- 1** NSS & Spatial Idx (Nss: 2, Spatial Idx: 0)
- 2** RF path (TX0/RX0, TX1/RX1)
- 3** BW & location (Normal Mode)
- 4** Mode & Rate (OFDM, MCS=7, 54 Mbps)
- 5** LTF+GI
- 6** LDPC or BCC (LDPC checkbox)
- 7** TX length/Package time (MPDU Tx Length: 1024)
- 8** Power DAC (Dec/Hex, 0.5dB) (TX Power0: 20.5)
- 9** Select Channel (6 2437-MHz)
- 10** Frequency Offset (3D)
- 11** Start TX button
- 12** Reset counter button

- 0** TX page
- 1** NSS & Spatial Idx
- 2** RF path
- 3** BW & location
- 4** Mode & Rate
- 5** LTF+GI
- 6** LDPC or BCC
(check: LDPC/non-check: BCC)*
- 7** TX length/Package time
- 8** Power DAC (Dec/Hex, 0.5dB)
- 9** Select Channel
(Remember to stop TX before switching channel)
- 10** Frequency Offset
(Default from EEPROM)
- 11** Start TX
- 12** Reset TX/RX counter

RX 11a/b/g/n/ac/ax-SU

The screenshot shows a software interface for configuring and monitoring RX 11a/b/g/n/ac/ax-SU. The interface is divided into several sections:

- Top Section:** Contains tabs for TX/RX Band 0, TX/RX Band 1, EEPROM, and About. It includes a DualBand dropdown, RF Type (MT7981 :: 2 T 2 R), Normal Mode dropdown, and a Channel dropdown (6 2437-MHz).
- Mode and Rate Section:** Includes Mode (OFDM), Rate (MCS=7; 54 Mbit/s), System BW (20), Per-Pkt BW (20), and Primary Sel (0).
- Stream Selection:** Features checkboxes for TX0/RX0 and TX1/RX1, with a "Select RX stream" callout (1).
- Bandwidth Selection:** Includes System BW and Per-Pkt BW dropdowns, with a "Select bandwidth" callout (2).
- Channel Selection:** Includes a Channel dropdown, with a "Switch channel" callout (4).
- TX Section:** Contains TX frame setting (LDPC, Spatial Idx), TX Power0 (Dec) (0.5dB) Hex (-64.0 to 63.5), and other transmission parameters.
- RX Section:** Includes a "Start RX" button and a "BandInfo" table.
- BandInfo Table:**

Name	Value
PER	0.0 %
RXOK	0
RXOK/Sec	0
CCK PD Count	0
OFDM PD Count	0
CCK FCS Error	0
OFDM FCS Error	0
- Successful Received Packets:** A callout (5) states: "Successful received packets number would be shown at 'RX OK' area".

RX 11a/b/g/n/ac/ax-SU

BandInfo | Antenna Info | User Info | Common Info

6

Name	Value
PER	0.0 %
RXOK	1000
RXOK/Sec	609
CCK PD Count	2
OFDM PD Count	1007
CCK FCS Error	0
OFDM FCS Error	0

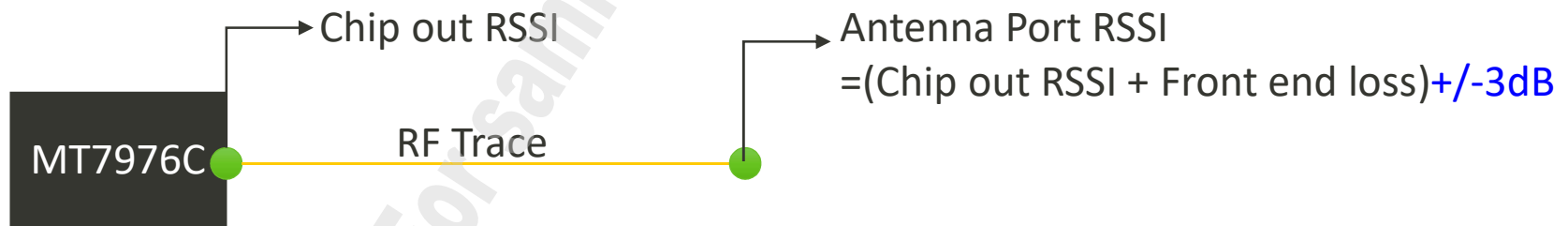
BandInfo | Antenna Info | User Info | Common Info

7

Name	Value
RSSI 0	-48
RSSI 1	-127

*RSSI: MAC layer in-band chip-out RSSI (final value)

7 RSSI means **chip-out RSSI** in QATool.



EEPROM

MT7981 QA 0.0.2.78 FF:FF:FF:FF:FF:FF

TX/RX Band 0 | TX/RX Band 1 | EEPROM | About

EEPROM Type: Flash

Write Back Done: FLASH_MODE

Single Read/Write
Mode: READ (selected) | WRITE
Offset: 0000
Value: 00
Length: 0000
R/W

EEPROM contents

00000000	81 79 00 00 00 0C 43 26 60 00 00 00 00 00 00 00	.y...Cs...
00000010	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000020	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000030	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000040	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000050	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000060	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000070	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000080	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000090	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
000000A0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
000000B0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
000000C0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
000000D0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
000000E0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
000000F0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000100	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000110	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000120	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000130	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000140	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000150	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000160	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000170	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
00000180	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....

FreeBlock: 0 / 30

Read ALL

Load File

Save As...

NVM Type: EEPROM

EEPROM Buffer Mode

Disable Write Warning

eFuse Mode

Remember to write back to flash, become effective after rebooting DUT

Load a new EEPROM bin file to replace current contents

Save EEPROM current contents to a file

DC tone

The screenshot shows the MT7981 QA software interface with the following configuration:

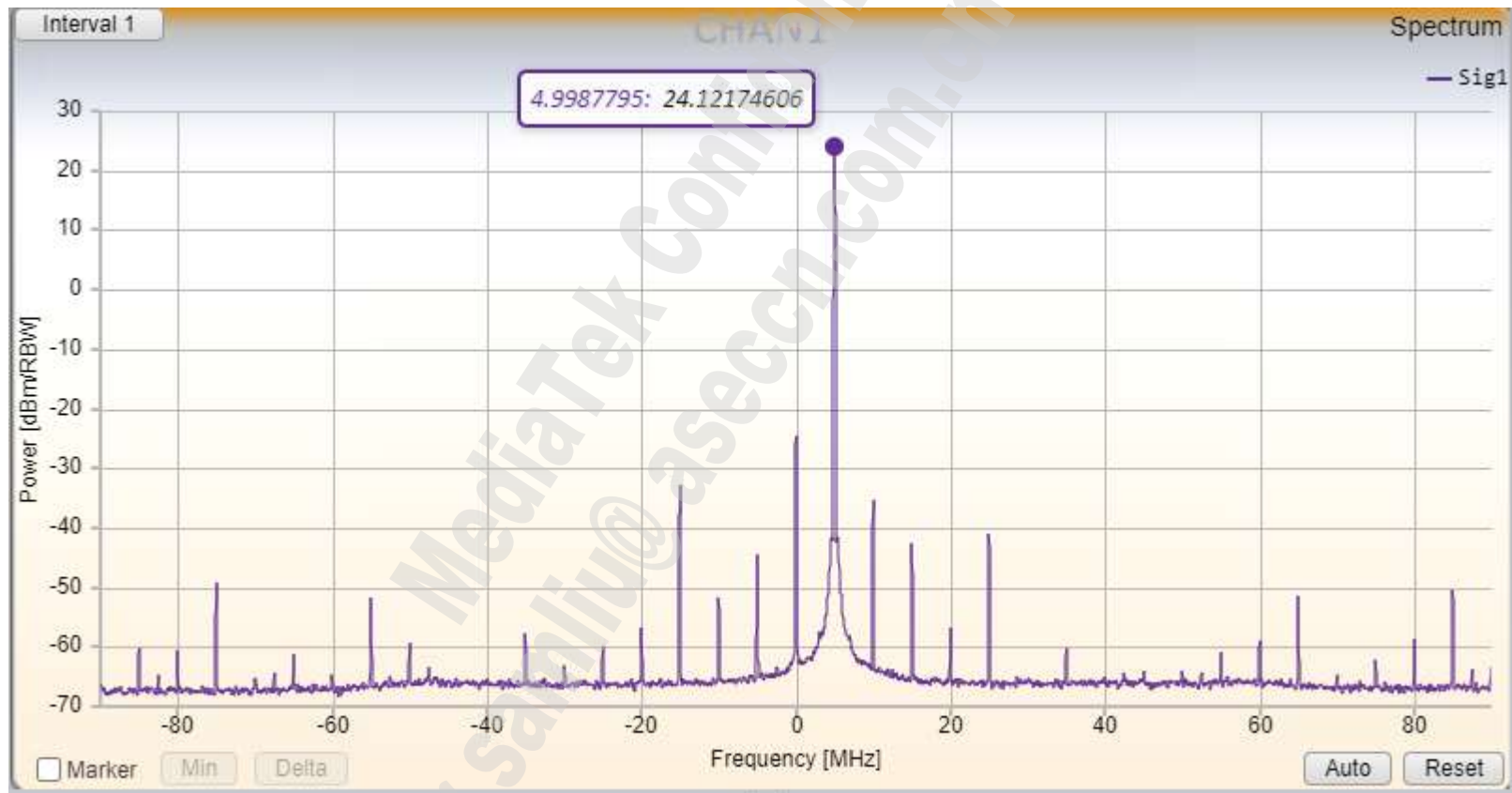
- 1. Choose test mode:** The 'Test Mode' dropdown menu is highlighted with a red box.
- 2. Choose tone type:** The 'TX Tone' dropdown menu is set to 'Single' and highlighted with a red box.
- 3. Choose frequency offset:** The 'freq. Offset' dropdown menu is set to 'DC' and highlighted with a red box.
- 4. Click TX Tone:** The 'TX Tone' checkbox is checked.
- 5. Adjust power:** The 'Power 0.25db(-32~31)' spinner is set to '0' and highlighted with a red box.

The interface also shows various other settings such as Channel (6 2437-MHz), Mode (OFDM), Rate (MCS=7; 54 Mb/s), System BW (20), Per-Pkt BW (20), Primary Sel (0), LTF+GI, TX0/RX0, TX1/RX1, TX frame setting, and a table of BandInfo.

Name	Value
PER	0.0 %
RXOK	0
RXOK/Sec	0
CCK PD Count	0
OFDM PD Count	0
CCK FCS Error	0
OFDM FCS Error	0

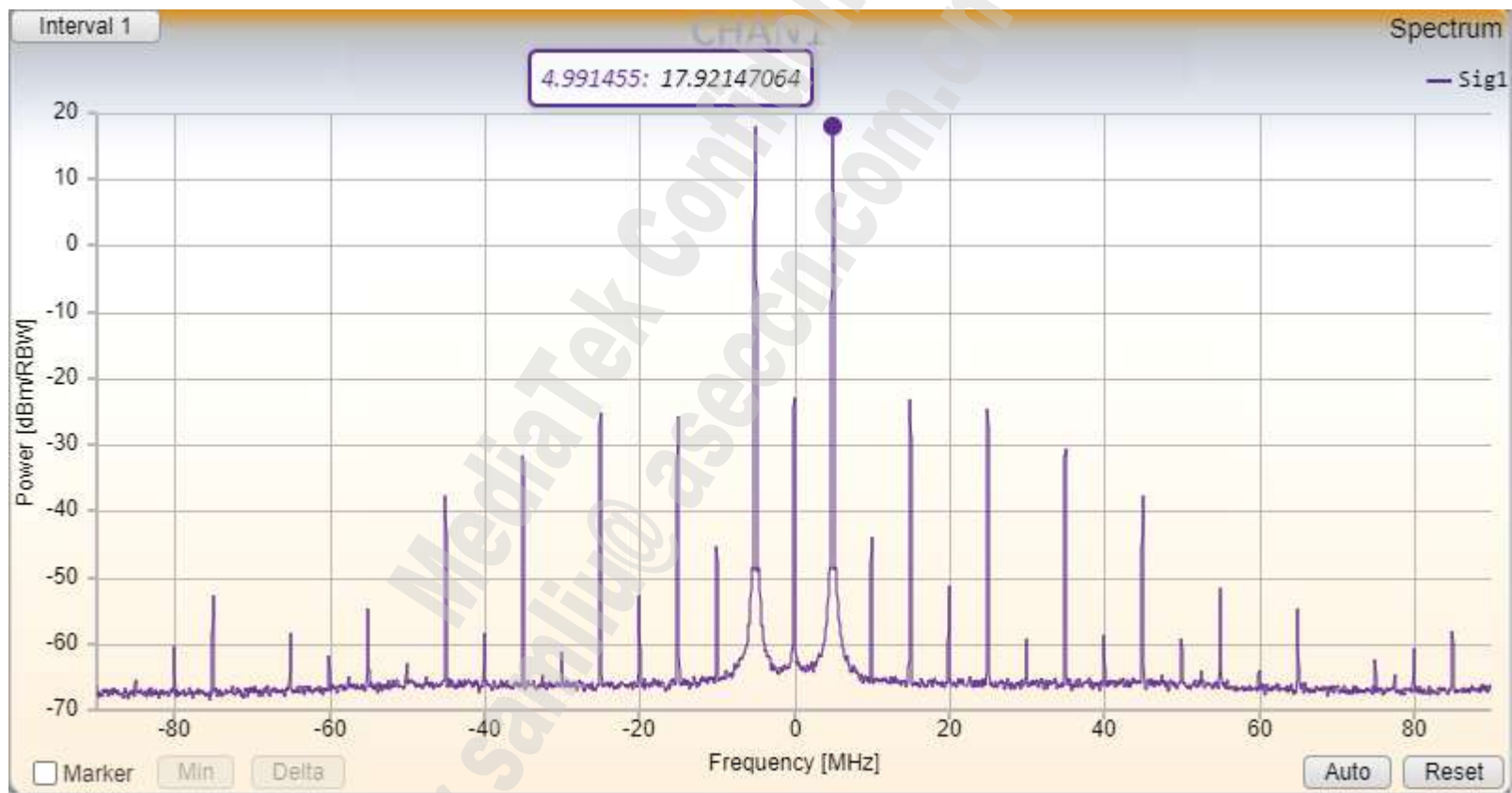
Single tone

- 5M single tone for IRR

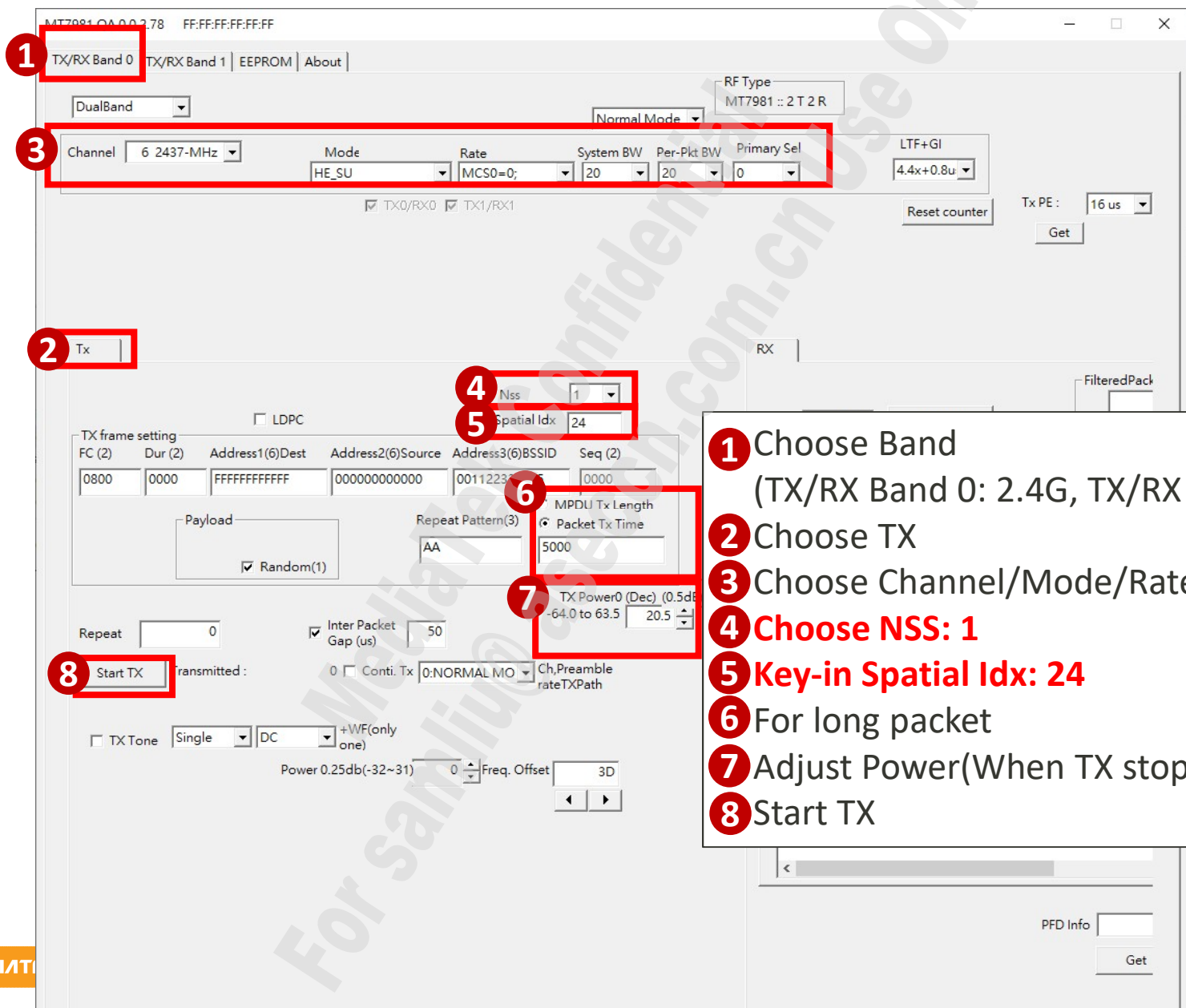


Two tone

- 5M two tone for IM3



Duplicate Mode (For EMI test)



- 1 Choose Band
(TX/RX Band 0: 2.4G, TX/RX Band1: 5G)
- 2 Choose TX
- 3 Choose Channel/Mode/Rate/BW
- 4 Choose NSS: 1
- 5 Key-in Spatial Idx: 24
- 6 For long packet
- 7 Adjust Power(When TX stop)
- 8 Start TX

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