



MEDIATEK

MT7986 QA Tool User Guide

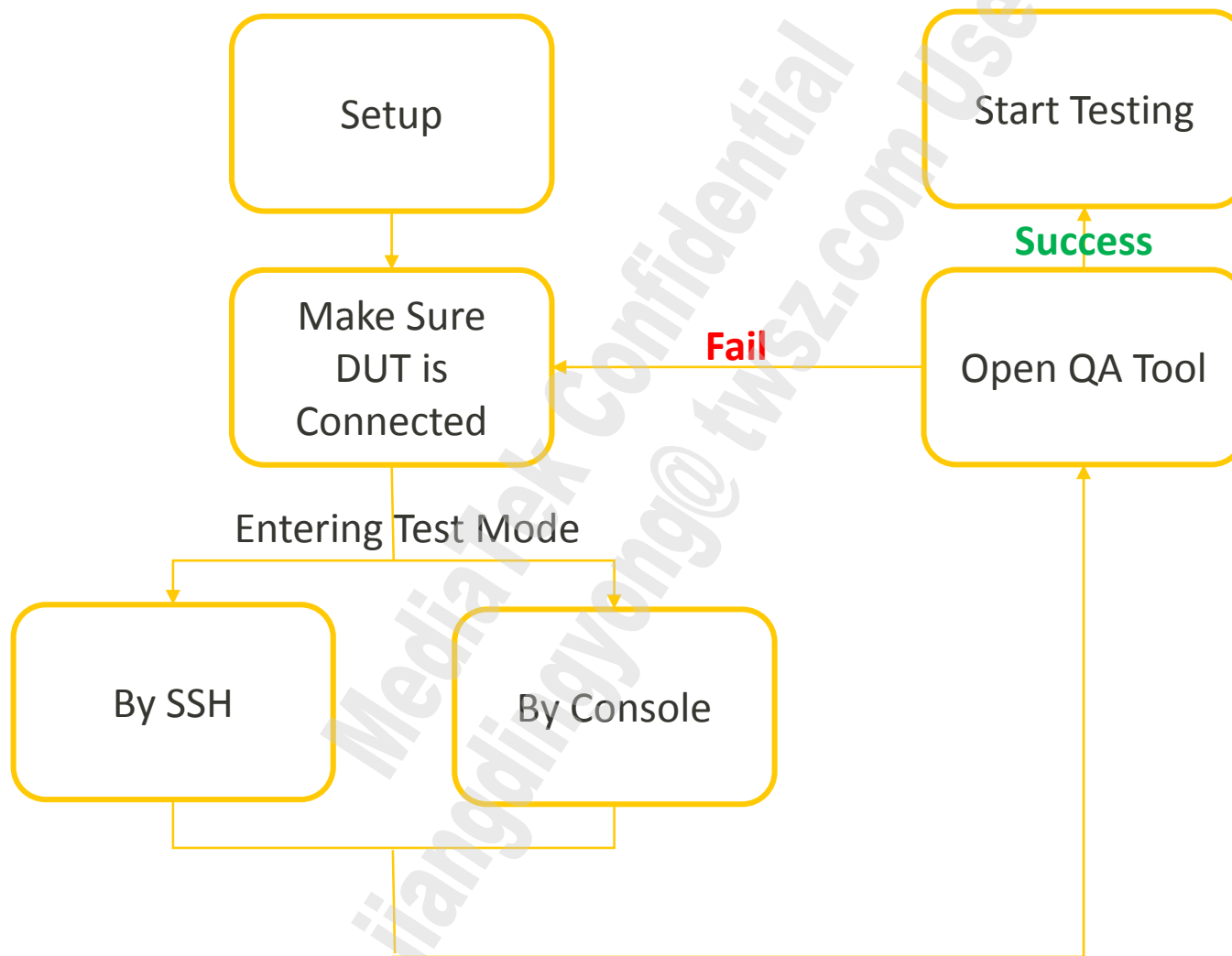
ICB/RSD/SA3

Kasper

Notes

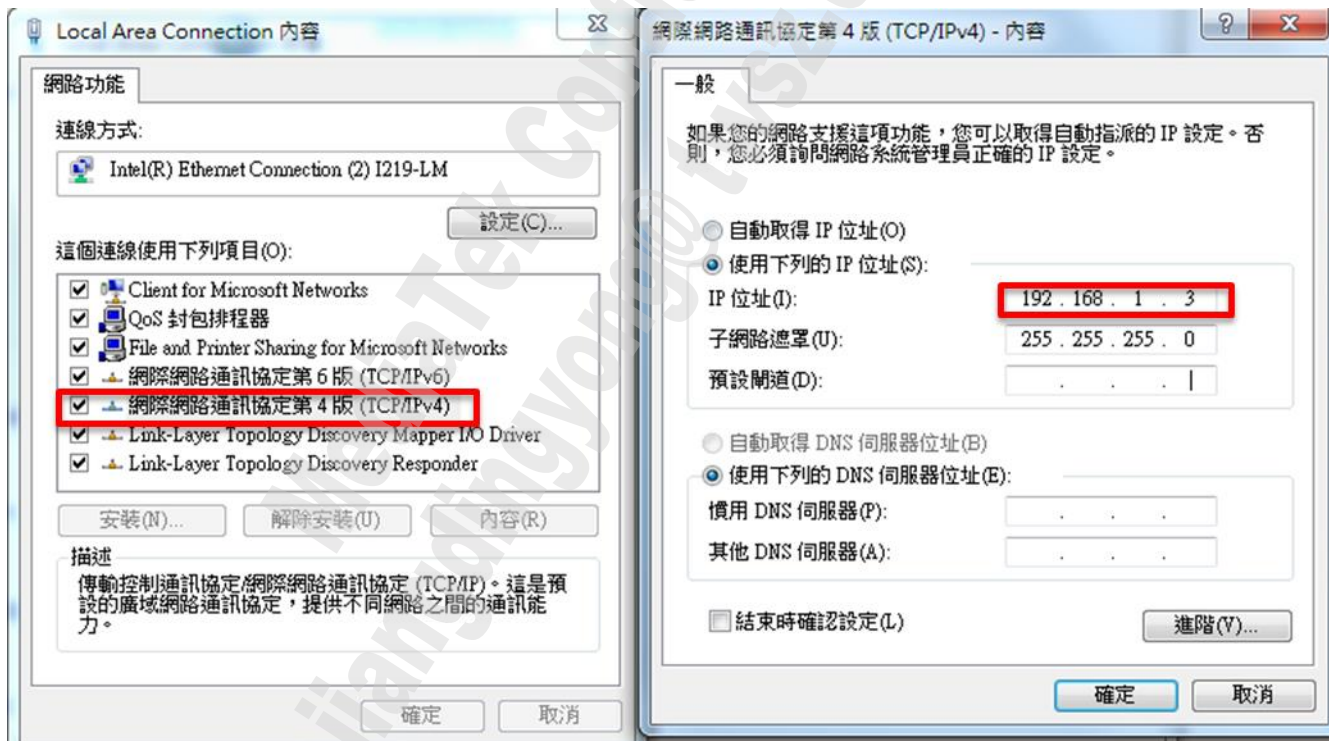
- * : Annotation
- ① : Essential steps
- ① : Function (optional)
- blue: noteworthy items

Flow



1. Setup

- 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.)



2. Make Sure DUT is Connected to Testing PC/notebook

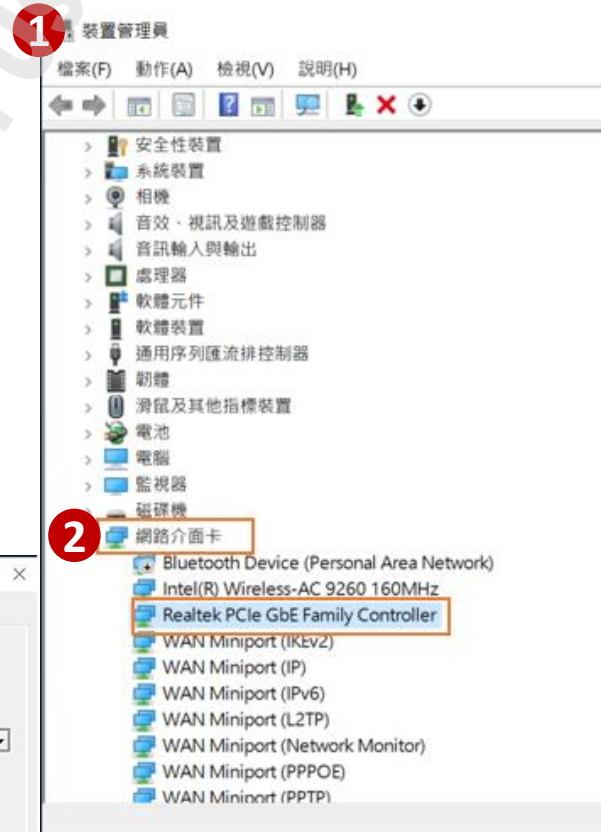
- Open command window.
- Key-in “**ping 192.168.1.1 -t**” to ping DUT continuously.

2. Make Sure DUT is Connected to Testing PC/notebook

- If “ping 192.168.1.1 -t” **fail**

1. Go to device manager
2. Find “Network Adapters”
 - ➔ choose the one connecting to DUT
 - ➔ right click, choose “properties”

3. Disable Energy-Efficient Ethernet



3. Entering Test Mode

1. By SSH (by Ethernet cable)

- Key-in “ssh root@192.168.1.1”.
- key-in “**ated**” right after “root@LEDE:~#” to enter test-mode.

2.By Console

- Select port, and baud rate set to 115200.
- Key-in “ated” right after “root@LEDE:/#” to enter test-mode.

```

root@OpenWrt: ~
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

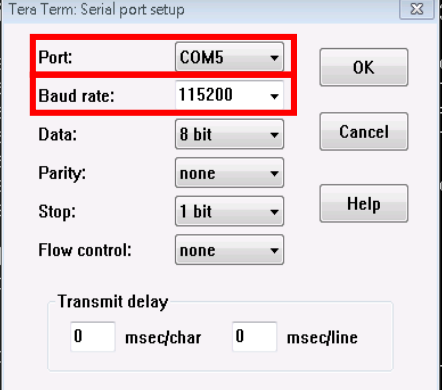
192.168.1.1 的 Ping 統計資料:
    封包: 已傳送 = 2, 已收到 = 2, 已遺失 = 0 (0% 遺失),
    大約的來回時間 (毫秒):
        最小值 = 0ms, 最大值 = 1ms, 平均 = 0ms
Control-C
^C
C:\>ssh root@192.168.1.1

BusyBox v1.33.1 (2021-08-11 20:12:26 UTC) built-in shell (ash)

  _   _   _   _   _   _   _   _   _   _   _   _   _   _   _   _   _   _   _
 | |   | |   | |   | |   | |   | |   | |   | |   | |   | |   | |   | |   | |
 | |_|  |_|  |_|  |_|  |_|  |_|  |_|  |_|  |_|  |_|  |_|  |_|  |_|  |_|  |_|
 |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|
OpenWrt 21.02-SNAPSHOT, r0+16268-750b966866

===== WARNING! =====
There is no root password defined on this device!
Use the "passwd" command to set up a new password
in order to prevent unauthorized SSH logins.
=====
root@OpenWrt:~#

```



```

COM5:115200baud - Tera Term VT
File Edit Setup Control Window KanjiCode Help

[ 3585.135265] mt_engine_apply_ipg_param: ipg=50, slot_time=9, sifs_time=35, aif
sn=1, cw=0
[ 3585.143285] mt_engine_start_tx: per_round_pkt(s)=1
[ 3585.148074] mt_eng
ipg=50
[ 3585.249586] mt_op_s
[ 3585.255595] hqa_sta
[ 3585.262102] hqa_sta
[ 3585.268659] hqa_sta
[ 3585.274755] hqa_sta
[ 3588.151544] mt_op_s
[ 3588.157544] mt_op_s
d[0]=0
[ 3588.165252] MacTabl
[ 3588.176592] WextMbd

MSG REMOVE STA
[ 3588.278540] hqa_set
[ 3588.285102]
[ 3588.288422] hqa_set_ru_info: ru_segment[0][0xc0]: ru_idx:0
[ 3588.293921] rate:7, ldpc:1
[ 3588.296972] nss:2, mimo nss:2
[ 3588.300281] start spatial stream:0,
[ 3588.304210] mpmu l[]

```

Could NOT access by SSH

- **If Could NOT access by SSH**
 - Key-in “`ssh-keygen -R 192.168.1.1`” to remove RSA key.

```
C:\>ssh root@192.168.1.1
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@   WARNING: REMOTE HOST IDENTIFICATION HAS CHANGED!   @
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
IT IS POSSIBLE THAT SOMEONE IS DOING SOMETHING NASTY!
Someone could be eavesdropping on you right now (man-in-the-middle attack)!
It is also possible that a host key has just been changed.
The fingerprint for the RSA key sent by the remote host is
SHA256:z0m3p/i/reaEW04slcVctrYHTq8pPRTKgWNUjOds/Ns.
Please contact your system administrator.
Add correct host key in C:\Users\...\ssh\known_hosts to get rid of this message.
Offending RSA key in C:\Users\...\ssh\known_hosts:1
RSA host key for 192.168.1.1 has changed and you have requested strict checking.
Host key verification failed.

C:\>
```

- Then Key-in “ssh root@192.168.1.1”.

```
C:\>ssh-keygen -R 192.168.1.1  
# Host 192.168.1.1 found: line 1  
C:\Users\.ssh\known_hosts updated.  
Original contents retained as C:\Users\.ssh\known_hosts.old  
  
C:\>ssh root@192.168.1.1  
The authenticity of host '192.168.1.1 (192.168.1.1)' can't be established.  
RSA key fingerprint is SHA256:zUm3p/i/reaEW04slcVctryHtq8pPRTKqNujOds/Ms.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added '192.168.1.1' (RSA) to the list of known hosts.  
  
BusyBox v1.33.1 (2021-08-11 20:12:26 UTC) built-in shell (ash)  
  
[ ] [ ] [ ] [ ] [ ]  
[ ] [ ] [ ] [ ] [ ] W I R E L E S S F R E E D O M  
-----  
OpenWrt 21.02-SNAPSHOT, r0+16268-750b966866  
-----  
WARNING!  
There is no root password defined on this device!  
Use the "passwd" command to set up a new password  
in order to prevent unauthorized SSH logins.  
-----  
root@OpenWrt:~#
```


3. Open QA Tool

- Open “QATool_Dbg.exe”.

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

| | | | |
|------------------|--------------------|------|-----------|
| QA_7986_000a.ini | 2021/6/25 下午 05:57 | 組態設定 | 2 KB |
| QA_7986_000f.ini | 2021/6/25 下午 06:16 | 組態設定 | 2 KB |
| QA_7986_0007.ini | 2021/6/25 下午 05:56 | 組態設定 | 2 KB |
| QATool_Dbg.exe | 2021/8/10 下午 01:45 | 應用程式 | 10,411 KB |

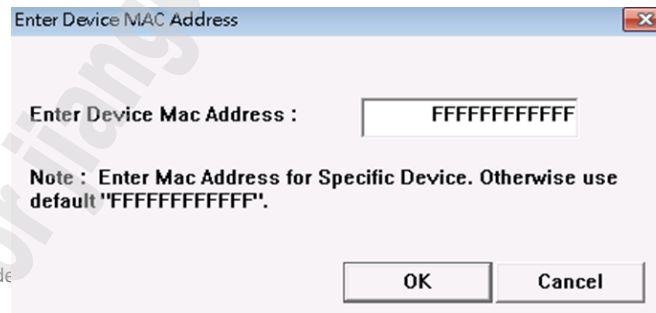
- Choose “APSOC”.



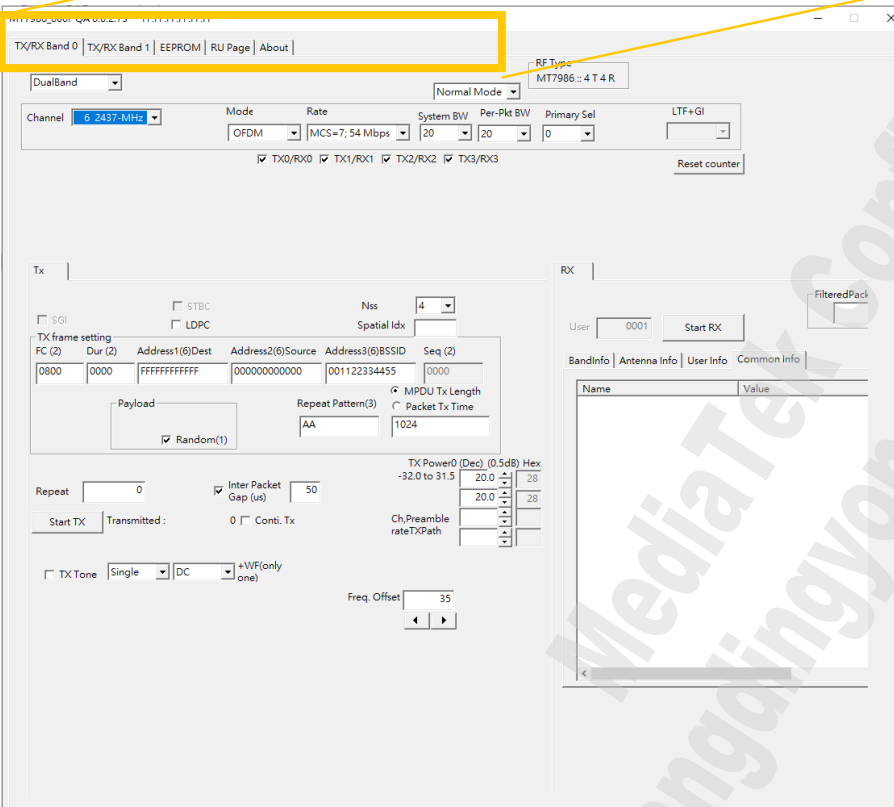
- Select corresponded network adapter (NT)



- Press OK



4. Start Using QA Tool



| Page | Usage |
|--------------|-----------------------------|
| TX/RX Band 0 | G Band TX/RX |
| TX/RX Band 1 | A Band TX/RX |
| EEPROM | Read/Write/Save EEPROM |
| RU Page | HE-MU/HE-TB Setting Details |

Note: For DBDC: TX/RX page separates into G band →TX/RX, and A band →TX/RX Band1

UI Introduction – Main Page

Page

MT7986_000F QA 0.0.2.73

FF-FF-FF-FF-FF-FF

TX/RX Band 0

TX/RX Band 1

EEPROM

RU Page

About

DualBand

Normal Mode

RF Type

MT7986 - 4 T 4 R

Channel

6 2437-MHz

Mode

COFDM

Rate

MCS=7; 54 Mbps

System BW

20

Per-Pkt BW

20

Primary Sel

0

LTF+GI

Channel and MCS

TX0/RX0

TX1/RX1

TX2/RX2

TX3/RX3

Reset counter

Tx

SGI

STBC

LDPC

Nss

4

Spatial Idx

TX frame setting

| FC (2) | Dur (2) | Address1(6)Dest | Address2(6)Source | Address3(6)BSSID | Seq (2) |
|--------|---------|-----------------|-------------------|------------------|---------|
| 0800 | 0000 | FFFFFFFFFFFF | 000000000000 | 001122334455 | 0000 |

MPDU Tx Length

Packet Tx Time

Repeat Pattern(3)

AA

1024

MPDU Tx Length

Packet Tx Time

Repeat

0

Inter Packet Gap (us)

50

Start TX

Transmitted :

0

Conti. Tx

TX Tone

Single

DC

+VVF(only one)

Freq. Offset

35

TX Power0 (Dec) (0.5dB) Hex

| | | |
|---------------|------|----|
| -32.0 to 31.5 | 20.0 | 28 |
| | 20.0 | 28 |

Ch.Preamble rate

TXPath

RX

FilteredPack

User

0001

Start RX

BandInfo

Antenna Info

User Info

Common Info

| Name | Value |
|------|-------|
| | |

TX

RX

UI Introduction – Main Page

Page

MT7986_000F QA 0.0.2.73

FF-FF-FF-FF-FF-FF

TX/RX Band 0

TX/RX Band 1

EEPROM

RU Page

About

DualBand

Normal Mode

RF Type

MT7986 :: 4 T 4 R

Channel

6 2437-MHz

Mode

OFDM

Rate

MCS=7; 54 Mbps

System BW

20

Per-Pkt BW

20

Primary Sel

0

LTF+GI

Channel and MCS

TX0/RX0

TX1/RX1

TX2/RX2

TX3/RX3

Reset counter

Tx

SGI

STBC

LDPC

Nss

4

Spatial Idx

TX frame setting

| FC (2) | Dur (2) | Address1(6)Dest | Address2(6)Source | Address3(6)BSSID | Seq (2) |
|--------|---------|-----------------|-------------------|------------------|---------|
| 0800 | 0000 | FFFFFFFFFFFF | 000000000000 | 001122334455 | 0000 |

MPDU Tx Length

Packet Tx Time

Repeat Pattern(3)

AA

1024

Payload

Random(1)

Repeat

0

Inter Packet Gap (us)

50

Start TX

Transmitted :

0

Conti. Tx

Ch.Preamble rateTXPath

TX Power0 (Dec) (0.5dB) Hex

| | | |
|---------------|------|----|
| -32.0 to 31.5 | 20.0 | 28 |
| | 20.0 | 28 |

TX Tone

Single

DC

+VWF(only one)

Freq. Offset

35

RX

FilteredPack

User

0001

Start RX

BandInfo

Antenna Info

User Info

Common Info

| Name | Value |
|------|-------|
| | |

TX

RX

Contents

| # | Category | Items |
|---------------------------|-------------|-------------------------------|
| <u>1</u> | TX | TX a/b/g/n/ac/ax-SU |
| <u>2</u> | | TX HE-MU |
| <u>3</u> | | TX HE-TB |
| <u>4</u> | RX | RX a/b/g/n/ac/ax-SU |
| <u>5</u> | | RX HE-MU |
| <u>6</u> | | RX HE-TB |
| <u>7</u> | Debug Tools | EEPROM |
| <u>10</u> | | DC Tone generate |
| <u>12</u> | | Duplicate Mode (For EMI test) |



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

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

DualBand

Channel 6 2437-MHz

Mode OFDM Rate MCS=7; 54 Mbps

System BW 20 Per-Pkt BW 20 Primary Sel 0

Normal Mode

RF Type MT7986 :: 4 T 4 R

LTF+GI

et counter

TX0/RX0 TX1/RX1 TX2/RX2 TX3/RX3

Nss 4

Spatial Idx

LDPC

TX frame setting

| FC (2) | Dur (2) | Address1(6)Dest | Address2(6)Source | Address3(6)BSSID | Seq (2) |
|--------|---------|-----------------|-------------------|------------------|---------|
| 0800 | 0000 | FFFFFFFFFFFF | 000000000000 | 001122334455 | 0000 |

MPDU Tx Length 1024

Packet Tx Time

TX Power0 (Dec) (0.5dB) Hex -32.0 to 31.5 20.0 28

Repeat 0 Inter Packet Gap (us) 50

Start TX Transmitted: 0 Conti. Tx

TX Tone Single DC +WF(only one)

Freq. Offset 35

- 1 NSS
- 2 RF path
- 3 Mode & rate
- 4 BW & location
- 5 LTF+GI
- 6 LDPC or BCC(\leq RU242)
(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

*LDPC/BCC annotation on next page



HE MCS index Combination

V: mandatory support

V: optional support

V: MTK proprietary support

X: un-support

| Parameter | RU26 | RU52 | RU106 | RU242 (BW20) | RU484 (BW40) | RU996 (BW80) | RU996x2 (BW80+80) |
|-----------|------|------|-------|-----------------|-----------------|-----------------|----------------------|
| MU-MIMO | X | X | V | V | V | V | V |
| BCC | V | V | V | V | X | X | X |
| LDPC | V | V | V | V | V | V | V |
| 1024QAM | V | V | V | V | V | V | V |
| 256QAM | V | V | V | V | V | V | V |

AX Support TABLE

| RU26 | 1ss M0~7 | 1ss M8~9 | 1ss M10 | 1ss M11 | 2ss M0~7 | 2ss M8~9 | 2ss M10 | 2ss M11 | 3ss M0~7 | 3ss M8~9 | 3ss M10 | 3ss M11 | 4ss M0~7 | 4ss M8~9 | 4ss M10 | 4ss M11 |
|---------|----------|----------|---------|---------|----------|----------|---------|---------|----------|----------|---------|---------|----------|----------|---------|---------|
| BCC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| LDPC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| RU52 | 1ss M0~7 | 1ss M8~9 | 1ss M10 | 1ss M11 | 2ss M0~7 | 2ss M8~9 | 2ss M10 | 2ss M11 | 3ss M0~7 | 3ss M8~9 | 3ss M10 | 3ss M11 | 4ss M0~7 | 4ss M8~9 | 4ss M10 | 4ss M11 |
| BCC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| LDPC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| RU106 | 1ss M0~7 | 1ss M8~9 | 1ss M10 | 1ss M11 | 2ss M0~7 | 2ss M8~9 | 2ss M10 | 2ss M11 | 3ss M0~7 | 3ss M8~9 | 3ss M10 | 3ss M11 | 4ss M0~7 | 4ss M8~9 | 4ss M10 | 4ss M11 |
| BCC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| LDPC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| RU242 | 1ss M0~7 | 1ss M8~9 | 1ss M10 | 1ss M11 | 2ss M0~7 | 2ss M8~9 | 2ss M10 | 2ss M11 | 3ss M0~7 | 3ss M8~9 | 3ss M10 | 3ss M11 | 4ss M0~7 | 4ss M8~9 | 4ss M10 | 4ss M11 |
| BCC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| LDPC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| RU484 | 1ss M0~7 | 1ss M8~9 | 1ss M10 | 1ss M11 | 2ss M0~7 | 2ss M8~9 | 2ss M10 | 2ss M11 | 3ss M0~7 | 3ss M8~9 | 3ss M10 | 3ss M11 | 4ss M0~7 | 4ss M8~9 | 4ss M10 | 4ss M11 |
| BCC | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| LDPC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| RU996 | 1ss M0~7 | 1ss M8~9 | 1ss M10 | 1ss M11 | 2ss M0~7 | 2ss M8~9 | 2ss M10 | 2ss M11 | 3ss M0~7 | 3ss M8~9 | 3ss M10 | 3ss M11 | 4ss M0~7 | 4ss M8~9 | 4ss M10 | 4ss M11 |
| BCC | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| LDPC | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |
| RU996*2 | 1ss M0~7 | 1ss M8~9 | 1ss M10 | 1ss M11 | 2ss M0~7 | 2ss M8~9 | 2ss M10 | 2ss M11 | 3ss M0~7 | 3ss M8~9 | 3ss M10 | 3ss M11 | 4ss M0~7 | 4ss M8~9 | 4ss M10 | 4ss M11 |
| BCC | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| LDPC | V | V | V | V | V | V | V | V | X | X | X | X | X | X | X | X |

*1.BCC only support RU size ≤ 242

[illegible]



TX- HE MU

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

DualBand **1** [] **2** [] Normal Mode [] MT7986:: 4 T 4 R []

Channel 6 2437-MHz Mode HE_MU Rate MCS0=0; System BW 20 Per-Pkt BW 20 Primary Sel 0 LTF+GI 0:4x+0.8u

☒ TX0/RX0 ☒ TX1/RX1 ☒ TX2/RX2 ☒ TX3/RX3

Reset counter Tx PE: 16 us Get

Tx | RX |

☐ SGI ☐ STBC ☐ LDPC Nss 4 Spatial Idx []

TX frame setting

| FC (2) | Dur (2) | Address1(6)Dest | Address2(6)Source | Address3(6)BSSID | Seq (2) |
|--------|---------|-----------------|-------------------|------------------|---------|
| 0800 | 0000 | FFFFFFFF | 000000000000 | 001122334455 | 0000 |

MPDU Tx Length Packet Tx Time

Repeat Pattern(3) AA 1024

☒ Random(1)

Repeat 0 ☒ Inter Packet Gap (us) 50

Start TX Transmitted: 0 ☐ Conti. Tx

☐ TX Tone Single DC +VWF(only one)

TX Power0 (Dec) (0.5dB) Hex

| -32.0 to 31.5 | 20.0 | 28 |
|---------------|------|----|
| 20.0 | 28 | |

Ch.Preamble rateTXPath

Freq. Offset 35

RU Settings Block

Sta ID [] RU Arrange [] PFD Info [] Get

1 Select HE-MU
2 Select BW
3 Go to RU Page



RU Page (TX HE-MU)

4 Select Band: 0 for G band, 1 for A band*

Note: select Band =0 for G band, and select Band =1 for A band

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

RU **4**

Select Band: 0

5

- Choose RU Category for every BW20
- Those rows are enable only after setting relevant BW in TX/RX page.
- Each row represent BW20 waveform.

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

RU

Select Band: 0

5 Category:

- 0: Disable
- 0: Disable
- 1: 26 * 9
- 2: 26 * 7 + Single 52
- 3: 26 * 5 + 52 * 2
- 4: 26 * 3 + 52 * 3
- 5: Single 26 + 52 * 4
- 6: 52 * 4
- 7: 26 * 5 + 106
- 8: Single 26 + 106 * 2
- 9: 52 * 2 + 106
- 10: 26 * 1 + 52 * 2 + 106
- 11: 26 * 3 + 52 + 106
- 12: 106 + 106
- 13: 242 * 1
- 14: 484 * 1

Allocation: Sta ID: RU Index: MCS:

Segment 1:

| Allocat... | Sta ID | RU Index | Rates | LDPC | Category |
|------------|--------|----------|-------|------|----------|
|------------|--------|----------|-------|------|----------|

RU Page (TX HE-MU)

6 Allocation (BW20, $26 \times 5 + 52 \times 2$ for example)*

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

RU

Select Band: 0

Category: 3: $26 \times 5 + 52 \times 2$

Allocation: 11

Sta ID: 0

RU Index: 0

MCS: MCS5=5

PwrBoost Factor: 0

MU Nss: 1

LDPC: ☐

Nss: 4

Stream Idx: 1

Length: 512

0: Disable

0: Disable

0: Disable

0: Disable

0: Disable

*Check t

| 8 bits indices | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 | |
|---|-----------------------|----|----|-----------------------|----|-----|----|----|----|---|
| 00000000 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 00101y ₂ y ₁ y ₀ |
| 00000001 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 52 | | 00110y ₂ y ₁ y ₀ |
| 00000010 | 26 | 26 | 26 | 26 | 26 | 52 | 26 | 26 | | 00111y ₂ y ₁ y ₀ |
| 11 00000011 | 26 | 26 | 26 | 26 | 26 | 52 | 52 | | | 01000y ₂ y ₁ y ₀ |
| 00000100 | 26 | 26 | 52 | 26 | 26 | 26 | 26 | 26 | | 01001y ₂ y ₁ y ₀ |
| 101 00000101 | 26 | 26 | 52 | 26 | 26 | 26 | 52 | | | 01010y ₂ y ₁ y ₀ |
| 110 00000110 | 26 | 26 | 52 | 26 | 52 | 26 | 26 | | | 01011y ₂ y ₁ y ₀ |
| 00000111 | 26 | 26 | 52 | 26 | 52 | 52 | | | | 0110y ₁ y ₀ z ₁ z ₀ |
| 00001000 | 52 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | | 01110000 |
| 1001 00001001 | 52 | 26 | 26 | 26 | 26 | 26 | 52 | | | 01110001 |
| 1010 00001010 | 52 | 26 | 26 | 26 | 52 | 26 | 26 | | | 01110010 |
| 00001011 | 52 | 26 | 26 | 26 | 52 | 52 | | | | 01110011 |
| 1100 00001100 | 52 | 52 | 26 | 26 | 26 | 26 | 26 | | | 10y ₂ y ₁ y ₀ z ₂ z ₁ z ₀ |
| 00001101 | 52 | 52 | 26 | 26 | 26 | 52 | 26 | 26 | | 11000y ₂ y ₁ y ₀ |
| 00001110 | 52 | 52 | 26 | 26 | 52 | 52 | 26 | 52 | | 11001y ₂ y ₁ y ₀ |
| 00001111 | 52 | 52 | 26 | 26 | 52 | 52 | 52 | 52 | | 11010y ₂ y ₁ y ₀ |
| 00010y ₂ y ₁ y ₀ | 52 | 52 | - | 106 (number of users) | 52 | 52 | | | | 11011y ₂ y ₁ y ₀ |
| 00011y ₂ y ₁ y ₀ | 106 (number of users) | - | 52 | 52 | | | | | | 2*996 |
| 00100y ₂ y ₁ y ₀ | 26 | 26 | 26 | 26 | 26 | 106 | | | | |

RU Page (TX HE-MU)

7 Select RU Index (BW20, $26 \times 5 + 52 \times 2$, allocation:1001 for example)*

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

RU

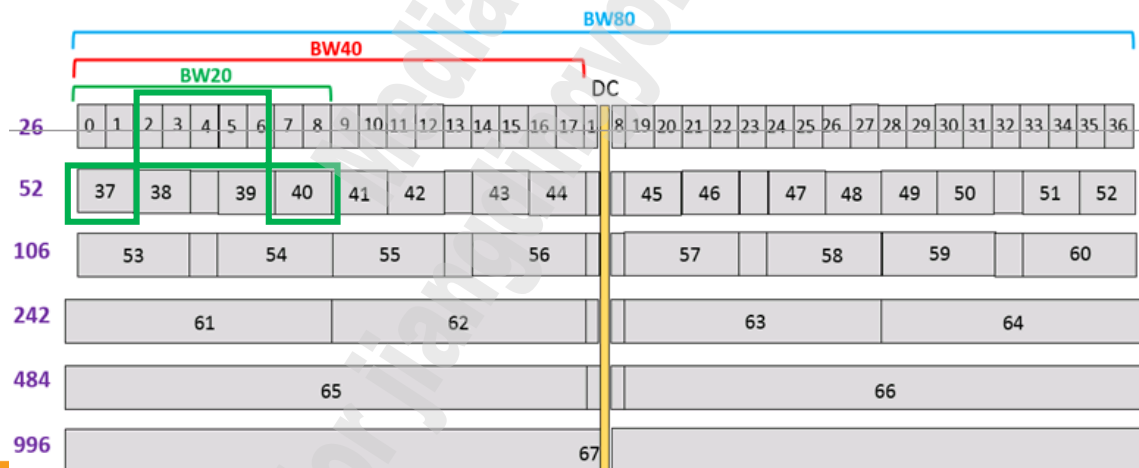
Select Band: 0

Category: Allocation: Sta ID: RU Index: MCS: PwrBoost Factor MU Nss LDPC Nss Stream Idx Length

| | | | | | | | | | | |
|--------------------------------|------|--|----|--------|---|---|--------------------------|---|---|------|
| 3: $26 \times 5 + 52 \times 2$ | 1001 | | 37 | MCS5=5 | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 512 |
| 0: Disable | | | 38 | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |
| 0: Disable | | | 39 | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |
| 0: Disable | | | 40 | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |
| 0: Disable | | | 41 | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |

1001 → 52 26 26 26 26 26 26 52

*Check the RU Index form below (BW20, $26 \times 5 + 52 \times 2$ for example)



RU Page (TX HE-MU)

RU

Select Band: 0

Category: 1: 26 * 9

Allocation: 0

Sta ID:

RU Index: 0

MCS: MCS5=5

PwrBoost Factor: 0

MU Nss: 1

LDPC: ☐

Nss: 2

Stream Idx: 1

Length: 128

8 Select detail settings*

8 Select details:

1. MCS rate
2. Power Boost Factor(range:-6~+6dB)
 - Resolution: 1/32 dB
 - Example: 1dB → PowerBoost Factor=32
 - -1dB → PowerBoost Factor=-32
3. MU NSS: Antenna number
4. LDPC: check for LDPC, non-check for BCC
5. Stream Idx: select 1
6. Length settings: (see next page*)

RU Page (TX HE-MU)

RU Select Band: 0

Category: Allocation: Sta ID: RU Index: MCS: PwrBoost Factor MU Nss LDPC Nss Stream Idx Length

1: 26 * 9 0 MCS5=5; 0 1 2 1 128

8 Select detail settings*

*Examples

| Examples | User | MU NSS (antenna number) | NSS | Stream Idx |
|-------------------|-------------------|----------------------------|-----|------------|
| 106+26+106 | user1 user2 user3 | 4 | 4 | 1 |
| 4ss 4ss 4ss | User1~4 | | | |
| 106+26+106 | User1 | 4 | 2 | 1* |
| user1 user3 user4 | User2 | 4 | 2 | 3* |
| 2ss | User3 | 4 | 4 | 1 |
| user2 4ss 4ss | User4 | 4 | 4 | 1 |
| 2ss | | | | |
| 106+26+106 | User1 | 4 | 1 | 1 |
| user1 user3 user4 | User2 | 4 | 3 | 2 |
| 1ss | User3 | 4 | 4 | 1 |
| user2 4ss 4ss | User4 | 4 | 4 | 1 |
| 3ss | | | | |

*Stands for 1&2
*user1: 1&2
user2 starts from 3



8 * MPDU TX Length Setting in HQA

- The table shown below is implemented in QATool already.
→ choose wanted RUs, directly shows corresponding length.
- Users are able to modify the PSDU length manually.

For NSS=1/2

PSDU Length : Short

| RU size | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| 26 | 32 | 64 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 |
| 52 | 64 | 128 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 |
| 106 | 128 | 256 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 |
| 242 | 256 | 512 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 |
| 484 | 512 | 1024 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 |
| 996 | 1024 | 2048 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 |
| 996*2 | 2048 | 4096 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 |

For NSS=3/4

PSDU Length : long

| RU size | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| 26 | 128 | 256 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 |
| 52 | 256 | 512 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 |
| 106 | 512 | 1024 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 |
| 242 | 1024 | 2048 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 |
| 484 | 2048 | 4096 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 |
| 996 | 4096 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 |
| 996*2 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 |

RU Page (HE-MU)

11 After MU waveform set, go back to TX/RX page

9 Add RU*

10 Press SET when all wanted RUs are added.

The screenshot shows the 'RU Page' in the MediaTek software. At the top, there are tabs for 'TX/RX Band 0', 'TX/RX Band 1', 'EEPROM', 'RU Page', and 'About'. The 'RU Page' is selected. Below the tabs, there's a 'Select Band:' dropdown set to '0'. A table lists various RU configurations with columns: Category, Allocation, Sta ID, RU Index, MCS, PwrBoost Factor, MU Nss, LDPC, Nss, Stream Idx, and Length. The first row is selected, showing Category '3: 26 * 5 + 52 * 2', Allocation '1001', RU Index '40', MCS 'MCSS=5', PwrBoost Factor '0', MU Nss '1', LDPC '0', Nss '4', Stream Idx '1', and Length '512'. Below this table, there's a section for 'Add RU*' with two segments: 'Segment 0' and 'Segment 1'. 'Segment 0' contains a table with columns: Category, Allocat..., Sta ID, RU Index, Rates, and LDPC. It lists several RUs with their respective parameters. An 'ADD' button is highlighted with a red box and the number 9. Below the 'ADD' button is a 'Remove' button. At the bottom, there's a 'SET' button highlighted with a red box and the number 10, along with 'Save to File', 'Load from File', and 'Clear All' buttons.

| Category | Allocat... | Sta ID | RU Index | Rates | LDPC |
|--------------------|------------|--------|----------|-------|------|
| 3: 26 * 5 + 52 * 2 | 1001 | 37 | 5 | 0 | 0 |
| 3: 26 * 5 + 52 * 2 | 1001 | 2 | 5 | 0 | 0 |
| 3: 26 * 5 + 52 * 2 | 1001 | 3 | 5 | 0 | 0 |
| 3: 26 * 5 + 52 * 2 | 1001 | 4 | 5 | 0 | 0 |
| 3: 26 * 5 + 52 * 2 | 1001 | 5 | 5 | 0 | 0 |
| 3: 26 * 5 + 52 * 2 | 1001 | 6 | 5 | 0 | 0 |
| 3: 26 * 5 + 52 * 2 | 1001 | 40 | 5 | 0 | 0 |

TX- HE MU(TX/RX Page)

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

DualBand

Channel: 6 2437-MHz

Mode: HE_MU Rate: MCS0=0 System BW: 20 Per-Pkt BW: 20 Primary Sel: 0 LTF+GI: 0.4x+0.8u

☒ TX0/RX0 ☒ TX1/RX1 ☒ TX2/RX2 ☒ TX3/RX3

Reset counter Tx PE: 16 us Get

Tx

☐ SGI ☐ STBC ☐ LDPC Nss: 4 Spatial Idx: 0

TX frame setting

| FC (2) | Dur (2) | Address1(6)Dest | Address2(6)Source | Address3(6)BSSID | Seq (2) |
|--------|---------|-----------------|-------------------|------------------|---------|
| 0800 | 0000 | FFFFFFFFFFFF | 000000000000 | 001122334455 | 0000 |

Payload: ☒ Random(1)

Repeat Pattern(3): AA

MPDU Tx Length: 1024

Packet Tx Time

Repeat: 0 ☒ Inter Packet Gap (us): 50

Start TX Transmitted: 0 Conti. Tx

TX Power0 (Dec) (0.5dB) Hex: 20.0 28

Ch.Preamble rateTXPath

TX Tone: Single DC +WF(only one)

Freq. Offset: 35

RX

User: 0001 Start RX

FilteredPack

BandInfo | Antenna Info | User Info | Common Info

| Name | Value |
|------|-------|
|------|-------|

RU Settings Block

Sta ID: RU Arrange: PFD Info: Get

TX HE-TB

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

TX/RX Band 0 TX/RX Band 1 EEPROM **RU Page** About

RF Type MT7986 :: 4 T 4 R

L-SIG Len: 0

LDPC Extra Sym: 0

PE Disamp: 0

A Factor: 0

Tx PE: 16 us

Reset counter

Get Set

Channel 100 5500-MHz

1 Mode HE_TB

Rate MCS=7; 54 Mbps

2 System BW 20 Per-Pkt BW 20

Primary Sel 0

☒ TX0/RX0 ☒ TX1/RX1 ☒ TX2/RX2 ☒ TX3/RX3

Normal Mode

LTF+GI 2:4x+3.2u

LDPC Extra Sym: 0

PE Disamp: 0

A Factor: 0

Tx PE: 16 us

Reset counter

Get Set

Tx

☐ SGI ☐ STBC ☐ LDPC

Nss 4

Spatial Idx

TX frame setting

| FC (2) | Dur (2) | Address1(6)Dest | Address2(6)Source | Address3(6)BSSID | Seq (2) |
|--------|---------|-----------------|-------------------|------------------|---------|
| 0800 | 0000 | FFFFFFFFFFFF | 000000000000 | 001122334455 | 0000 |

Payload

Repeat Pattern(3) AA

MPDU Tx Length 1024

Packet Tx Time

☒ Random(1)

Repeat 0

☒ Inter Packet Gap (us) 50

Start TX Transmitted: 0 ☐ Conti. Tx

☐ TX Tone Single DC +WF(only one)

Freq. Offset 2C

TX Power0 (Dec) (0.5dB) Hex

| -32.0 to 31.5 | 19.0 | 26 |
|---------------|------|----|
| | 20.0 | 28 |

Ch.Preamble rateTXPath

FilteredPack

PFD Info

Get

1 Select HE_TB

2 Select BW

3 Go to "RU Page"

RU Page (TX HE-TB)

4 Select Band: 0 for G band, 1 for A band*

Note: select Band =0 for G band, and select Band =1 for A band

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

RU **4**

Select Band: 0

5 Choose RU Category for every BW20

- Those rows are enable only after setting relevant BW in TX/RX page.
- Each row represent BW20 waveform.

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

RU

Select Band: 0

5

Category :

- 0: Disable
- 0: Disable
- 1: 26 * 9
- 2: 26 * 7 + Single 52
- 3: 26 * 5 + 52 * 2
- 4: 26 * 3 + 52 * 3
- 5: Single 26 + 52 * 4
- 6: 52 * 4
- 7: 26 * 5 + 106
- 8: Single 26 + 106 * 2
- 9: 52 * 2 + 106
- 10: 26 * 1 + 52 * 2 + 106
- 11: 26 * 3 + 52 + 106
- 12: 106 + 106
- 13: 242 * 1
- 14: 484 * 1

Allocation : Sta ID : RU Index : MCS :

Segment 1:

| Allocat... | Sta ID | RU Index | Rates | LDPC | Category |
|------------|--------|----------|-------|------|----------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

RU Page (TX HE-TB)

6 Allocation (BW20, 26*3+52*3 for example)

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

RU

Select Band: 1

Category: 4: 26 * 3 + 52 * 3

Allocation: 111

Sta ID: 0

RU Index: MCS5=5

PwrBoost Factor: 0

MU Nss: 1

LDPC: 4

Nss: 1

Stream Idx: 1

Length: 512

0: Disable

0: Disable

0: Disable

0: Disable

*Check the allocation form below (BW20, 26*3+52*3 for example)

| 8 bits indices | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 |
|----------------|--|----|-----|-----------------------|----|-----|----|-----|----|
| 00000000 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| 00000001 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 52 | |
| 00000010 | 26 | 26 | 26 | 26 | 26 | 52 | 26 | 26 | |
| 00000011 | 26 | 26 | 26 | 26 | 26 | 52 | 52 | 52 | |
| 00000100 | 26 | 26 | 52 | 26 | 26 | 26 | 26 | 26 | 26 |
| 00000101 | 26 | 26 | 52 | 26 | 26 | 26 | 52 | 52 | |
| 00000110 | 26 | 26 | 52 | 26 | 52 | 26 | 26 | 26 | 26 |
| 111 00000111 | 26 | 26 | 52 | 26 | 52 | 52 | 52 | 52 | |
| 00001000 | 52 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| 00001001 | 52 | 26 | 26 | 26 | 26 | 26 | 52 | 52 | |
| 00001010 | 52 | 26 | 26 | 26 | 52 | 26 | 26 | 26 | 26 |
| 1011 00001011 | 52 | 26 | 26 | 26 | 52 | 52 | 52 | 52 | |
| 00001100 | 52 | 52 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| 1101 00001101 | 52 | 52 | 26 | 26 | 26 | 26 | 52 | 52 | |
| 1110 00001110 | 52 | 52 | 26 | 52 | 26 | 26 | 26 | 26 | |
| 00001111 | 52 | 52 | 26 | 52 | 52 | 52 | 52 | 52 | |
| 00010y2y1y0 | 52 | 52 | - | 106 (number of users) | | | | | |
| 00011y2y1y0 | 106 (number of users) | - | 52 | 52 | | | | | |
| 00100y2y1y0 | 26 | 26 | 26 | 26 | 26 | 106 | | | |
| 00101y2y1y0 | 26 | 26 | 52 | 26 | 26 | 26 | 26 | 106 | |
| 00110y2y1y0 | 52 | 26 | 26 | 26 | 26 | 26 | 26 | 106 | |
| 00111y2y1y0 | 52 | 26 | 26 | 26 | 26 | 26 | 26 | 106 | |
| 01000y2y1y0 | 106 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| 01001y2y1y0 | 106 | 26 | 26 | 26 | 26 | 52 | | | |
| 01010y2y1y0 | 106 | 26 | 52 | 26 | 26 | | | | |
| 01011y2y1y0 | 106 | 26 | 52 | 52 | 52 | | | | |
| 0110y1y0z1z0 | 106 | - | 106 | | | | | | |
| 01110000 | 52 | 52 | - | 52 | 52 | | | | |
| 01110001 | 242-tone RU empty | | | | | | | | |
| 01110010 | 484-tone RU with zero HE-SIG-B User Specific field in the corresponding HE-SIG-B Content Channel | | | | | | | | |
| 01110011 | 996-tone RU with zero HE-SIG-B User Specific field in the corresponding HE-SIG-B Content Channel | | | | | | | | |
| 10y2y1y0z2z1z0 | 106 | 26 | 106 | | | | | | |
| 11000y2y1y0 | 242 | | | | | | | | |
| 11001y2y1y0 | 484 | | | | | | | | |
| 11010y2y1y0 | 996 | | | | | | | | |
| 11011y2y1y0 | 2*996 | | | | | | | | |

RU Page(TX HE-TB)

7 Select RU Index ($26 \times 3 + 52 \times 3$, allocation 1011, for example)

- 1011 →

| | | | | | |
|----|----|----|----|----|----|
| 52 | 26 | 26 | 26 | 52 | 52 |
|----|----|----|----|----|----|

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

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

RU

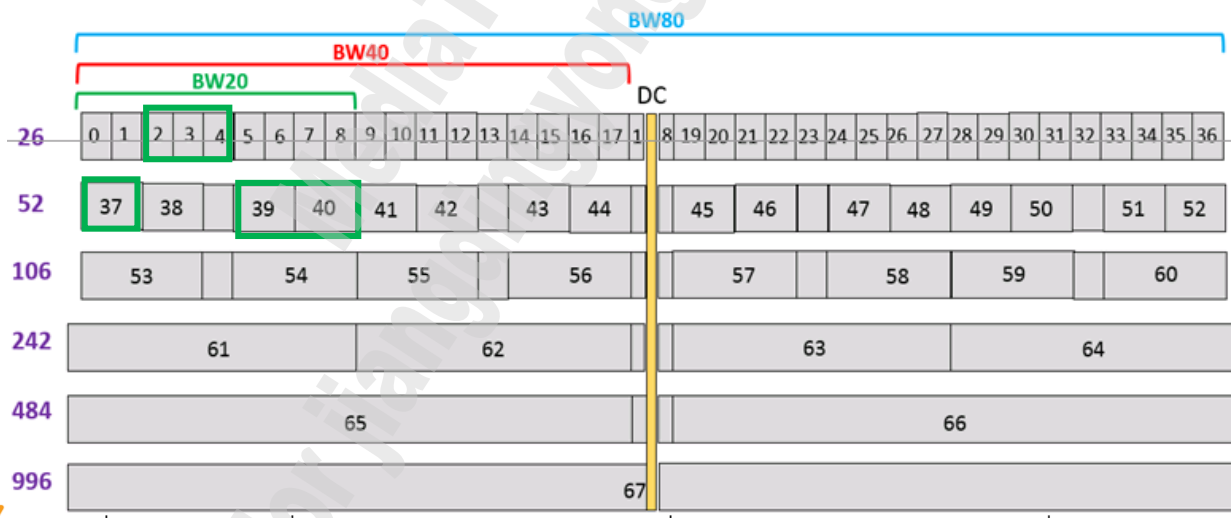
Select Band: 1

Category: 4: $26 \times 3 + 52 \times 3$ Allocation: 1011

RU Index: 37 MCS: MCS5=5; PwrBoost Factor: 0 MU Nss: 1 LDPC: ☐ Nss: 4 Stream Idx: 1 Length: 512

0: Disable ☐ 0: Disable ☐ 0: Disable ☐ 0: Disable ☐ 0: Disable ☐

- Select 37/2/3/4/39/40(refer to the RU Index form below)



RU Page(TX HE-TB)

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

TX/RX Band 0 TX/RX Band 1 EEPROM RU Page About

RU

Select Band: 1

Category: Allocation: Sta ID: RU Index MCS: PwrBoost Factor MU Nss LDPC Nss Stream Idx Length

| | | | | | | | | | | |
|--------------------|------|--|----|---------|---|---|--------------------------|---|---|------|
| 4: 26 * 3 + 52 * 3 | 1011 | | 37 | MCS5=5; | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 512 |
| 0: Disable | | | | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |
| 0: Disable | | | | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |
| 0: Disable | | | | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |
| 0: Disable | | | | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |

8 Select details

1. MCS rate
2. MU NSS: antenna number
3. LDPC: check for LDPC, non-check for BCC
4. NSS
5. Stream Idx: select 1
6. Length*

8 * MPDU TX Length Setting in HQA

- The table shown below is implemented in QATool already.
→ choose wanted RUs, directly shows corresponding length.
- Users are able to modify the PSDU length manually.

For NSS=1/2

PSDU Length : Short

| RU size | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| 26 | 32 | 64 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 |
| 52 | 64 | 128 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 | 256 |
| 106 | 128 | 256 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 |
| 242 | 256 | 512 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 |
| 484 | 512 | 1024 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 |
| 996 | 1024 | 2048 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 |
| 996*2 | 2048 | 4096 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 |

For NSS=3/4

PSDU Length : long

| RU size | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| 26 | 128 | 256 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 | 512 |
| 52 | 256 | 512 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 | 1024 |
| 106 | 512 | 1024 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 | 2048 |
| 242 | 1024 | 2048 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 | 4096 |
| 484 | 2048 | 4096 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 |
| 996 | 4096 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 |
| 996*2 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 | 8192 |

RU Page (TX HE-TB)

11 After TB waveform set, go back to TX/RX page

7986 000F 0A 07 2033 FF FF FF FF FF FF

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

RU

Select Band: 1

Category: Allocation: Sta ID: RU Index: MCS: PwrBoost Factor MU Nss LDPC Nss Stream Idx Length

| | | | | | | | | | | |
|--------------------|------|--|----|--------|---|---|--------------------------|---|---|------|
| 4: 26 * 3 + 52 * 3 | 1011 | | 37 | MCS5=5 | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 512 |
| 0: Disable | | | | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |
| 0: Disable | | | | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |
| 0: Disable | | | | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |
| 0: Disable | | | | | 0 | 1 | <input type="checkbox"/> | 4 | 1 | 1024 |

9 Add RU

Segment 0:

| Category | Allocat... | Sta ID | RU Index | Rates | LDPC |
|--------------------|------------|--------|----------|-------|------|
| 4: 26 * 3 + 52 * 3 | 1011 | | 37 | 5 | 0 |

Segment 1:

| Category | Allocat... | Sta ID | RU Index | Rates | LDPC |
|----------|------------|--------|----------|-------|------|
|----------|------------|--------|----------|-------|------|

10 Press SET when wanted RU is added.

SET Save to File Load from File Clear All

TX Page(TX HE-TB)

MT7986_TX QA 0.0.2.73 FF:FF:FF:FF:FF:FF

Tx/RX Band 0 Tx/RX Band 1 EEPROM RU Page About

Normal Mode RF Type MT7986 :: 4 T 4 R

Channel 41 5205-MHz Mode HE_TB Rate MCS=7; 54 Mbps System BW 20 Per-Pkt BW 20 Primary Sel 0

☒ TX0/RX0 ☒ TX1/RX1 ☒ TX2/RX2 ☒ TX3/RX3

LTF+GI 2:4x+3.2u L-SIG Len: 121 LDPC Extra Sym: 1 PE Disamp: 0 A Factor: 1 Tx PE: 4 us

Get Set

12 Select LTF+GI

13 Select Channel

14 Start TX

15 press "Get" to get information, and set on VSA*

14 Start TX Transmitted: 0

TX frame setting

| FC (2) | Dur (2) | Address1(6)Dest | Address2(6)Source | Address3(6)BSSID | Seq (2) |
|--------|---------|-----------------|-------------------|------------------|---------|
| 0800 | 0000 | FFFFFFFFFFFF | 000000000000 | 001122334455 | 0000 |

Payload: ☒ Random(1)

Repeat Pattern(3) AA

MPDU Tx Length 1024

Packet Tx Time

TX Power0 (Dec) (0.5dB) Hex

| -32.0 to 31.5 | 19.0 | 26 |
|---------------|------|----|
| 20.0 | 28 | |

Ch.Preamble rateTXPath

Repeat 0 ☒ Inter Packet Gap (us) 50

Start TX Transmitted: 0 ☐ Conti. Tx

TX Tone Single DC +WF(only one)

Freq. Offset 2C

PFD Info

Get

HT-TB M2W Settings

16 Open Litepoint MW Web page select VSA Setting RU info.

1. LTF+GI
2. LDPC sym.: 1=Orange light;
0=Gray light
3. PE Disamb.: 1=Orange light;
0=Gray light
4. A Factor:
 1. QA=0, litepont=4
 2. QA=1, litepont=1
 3. QA=2, litepont=2
 4. QA=3, litepont=3
5. Stream: 1 or 2
6. MCS rate setting: (RU-page).
7. RU idx: example: 0
8. Coding: LDPC or BCC

Signal Base

| Signal Base | Value | Unit |
|--------------------|--------|------|
| Power | 14.30 | dBm |
| Peak Power | 25.25 | dBm |
| Phase Error | 0.07 | deg |
| Frequency Error | -33.41 | kHz |
| Symbol Clock Error | -15.49 | ppm |
| LO Leakage | -43.90 | dB |
| Ampl. Imbalance | 0.00 | dB |
| Phase Imbalance | 0.10 | deg |
| Delay Imbalance | 0.00 | msec |

Stream Base

| Stream Base | Value | U... |
|-------------|--------|------|
| EVM | -47.10 | dB |
| EVM (%) | 0.44 | % |
| EVM Data | -46.93 | dB |
| EVM Pilot | -49.72 | dB |
| EVM User: 1 | -47.10 | dB |

Result 1

TxQuality Info OFDM

| Measurement | Value | User: 1 | Value |
|-----------------------|--------|---------------------|----------|
| # Analyzed Signals | 1 | # of Streams | 1 |
| Space-Time Streams | 1 | Mod. Coding Scheme | 11 |
| Has Multi-User | NO | Coding Type | LDPC |
| # of Users | 1 | Coding Rate | 5/6 |
| Symbols | 12 | Data Rate (Mbps) | 12.50 |
| Tones | 256 | Modulation Type | 1024-QAM |
| Guard Interval | Long | PSDU Length (Bytes) | 268 |
| HE-SIG CRC | Passed | PSDU CRC | Passed |
| L-SIG Parity | Passed | HE-SIG-B CRC | -- |
| L-STF Periods | 10 | RU Index | 0 |
| HE LTF Size | 4 | RU Size | 26 |
| A-factor | 1 | DCM | 0 |
| Guard Interval (us) | 3.20 | Station ID | 0 |
| Packet Extension (us) | 4.00 | Beamforming Bits | 0 |

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

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

Tx/RX Band 0 | Tx/RX Band 1 | EEPROM | RU Page | About |

DualBand

Channel: 6 2437-MHz

Mode: OFDM Rate: MCS=7; 54 Mbps

System BW: 20 Per-Pkt BW: 20

Primary Sel: 0 LTF+GI: 0

RF Type: MT7986::4 T 4 R

Reset counter

1 Select RX stream

2 Select bandwidth

☒ TX0/RX0 ☒ TX1/RX1 ☒ TX2/RX2 ☒ TX3/RX3

3 Start RX

4 Successful received packets number would be shown at "RX OK" area

Tx

☐ SGI ☐ STBC ☐ LDPC

Nss: 4 Spatial Idx: 0

TX frame setting

| FC (2) | Dur (2) | Address1(6)Dest | Address2(6)Source | Address3(6)BSSID | Seq (2) |
|--------|---------|-----------------|-------------------|------------------|---------|
| 0800 | 0000 | FFFFFFFFFFFF | 000000000000 | 001122334455 | 0000 |

MPDU Tx Length: 1024

Repeat Pattern(3): AA

Inter Packet Gap (us): 50

TX Power0 (Dec) (0.5dB): 20.0

Ch,Preamble rateTXPath

Repeat: 0

Start TX Transmitted: 0

TX Tone: Single DC +VWF(only one)

Freq. Offset: 35

RX

User: 0000

FilteredPack

BandInfo | Antenna Info | User Info | Common Info

| Name | Value |
|------|-------|
|------|-------|

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

| BandInfo | Antenna Info | User Info | Common Info |
|----------------|--------------|-----------|-------------|
| 5 | | | |
| Name | Value | | |
| PER | 0.0 % | | |
| RXOK | 39414 | | |
| RXOKSec | 2333 | | |
| CCK PD Count | 0 | | |
| OFDM PD Count | 37465 | | |
| CCK FCS Error | 0 | | |
| OFDM FCS Error | 0 | | |

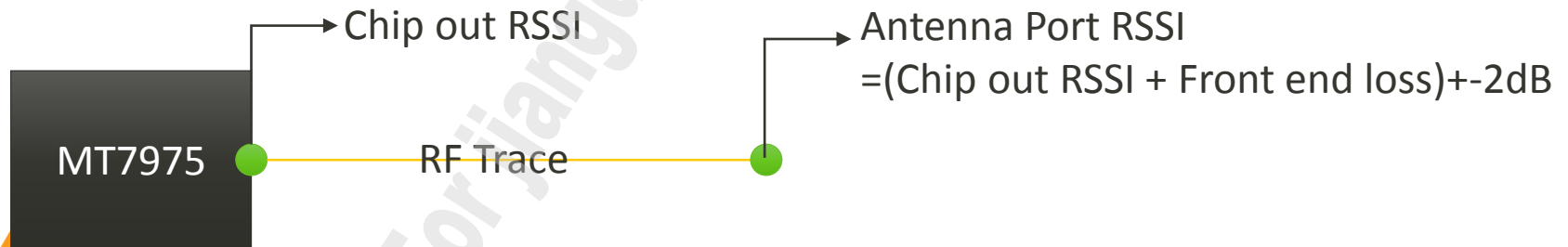
| BandInfo | Antenna Info | User Info | Common Info |
|----------------|--------------|-----------|-------------|
| 6 | | | |
| Name | Value | | |
| RSSI 0 | -60 | | |
| Inst RSSI WB 0 | -57 | | |
| Inst RSSI IB 0 | -62 | | |
| RSSI 1 | -127 | | |
| Inst RSSI WB 1 | -125 | | |
| Inst RSSI IB 1 | -125 | | |
| RSSI 2 | -127 | | |
| Inst RSSI WB 2 | -125 | | |
| Inst RSSI IB 2 | -125 | | |
| RSSI 3 | -127 | | |
| Inst RSSI WB 3 | -125 | | |
| Inst RSSI IB 3 | -125 | | |

*Inst RSSI WB0: wide-band chip-out RSSI
 *Inst RSSI IB0: in-band chip-out RSSI

| BandInfo | Antenna Info | User Info | Common Info |
|-----------------------|--------------|-----------|-------------|
| 8 | | | |
| Name | Value | | |
| Freq Offset from RX 0 | -31122 | | |
| SNR 0 | 33 | | |
| PER 0 | 0.0 % | | |
| Freq Offset from RX 1 | 0 | | |
| SNR 1 | 0 | | |
| PER 1 | 0.0 % | | |
| Freq Offset from RX 2 | 0 | | |
| SNR 2 | 0 | | |
| PER 2 | 0.0 % | | |
| Freq Offset from RX 3 | 0 | | |
| SNR 3 | 0 | | |
| PER 3 | 0.0 % | | |
| Freq Offset from RX 4 | 0 | | |
| SNR 4 | 0 | | |
| PER 4 | 0.0 % | | |
| Freq Offset from RX 5 | 0 | | |
| SNR 5 | 0 | | |
| PER 5 | 0.0 % | | |
| Freq Offset from RX 6 | 0 | | |
| SNR 6 | 0 | | |
| PER 6 | 0.0 % | | |

For MU

7 Inst RSSI WB/IB means **chip-out RSSI** in QATool.



RSSI Display

The screenshot displays the MediaTek WaveGen software interface, divided into several sections:

- Hardware:** VSG1
- Results:** (Empty)
- Settings:** (Active tab)
- WaveGen:** (Empty)

VSG Settings:

- Frequency: 5500 MHz
- Power Level: -60 dBm / dBv (highlighted with a blue box and a green arrow pointing to the RX RSSI list)
- Sampling Rate: 80 MHz

DPD Settings: (Collapsed)

Waveforms:

- Loaded Wave: /user/WiFi_11AX_HE20_S1_MCS11.iqvsg

Tx Settings:

- TX frame setting: FC (2), Dur (2), Address1(6)Dest, Address2(6)Source, Address3(6)BSSID, Seq (2)
- Repeat Pattern(3): AA
- MPDU Tx Length: 1024
- TX Power0 (Dec) (0.5dB): 19.0
- TX Power0 (Hex): 26
- TX Tone: Single, DC
- Freq. Offset: 2C

RX Settings:

- User: 0001
- Stop RX
- BandInfo, Antenna Info, User Info, Common Info
- RSSI List:

| Name | Value |
|----------------|-------|
| RSSI 0 | -60 |
| Inst RSSI WB 0 | -57 |
| Inst RSSI IB 0 | -62 |
| RSSI 1 | -125 |
| Inst RSSI WB 1 | -125 |
| Inst RSSI IB 1 | -125 |
| RSSI 2 | -127 |
| Inst RSSI WB 2 | -125 |
| Inst RSSI IB 2 | -125 |
| RSSI 3 | -127 |
| Inst RSSI WB 3 | -125 |
| Inst RSSI IB 3 | -125 |

RX HE-MU

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

Tx/RX Band 0 Tx/RX Band 1 EEPROM RU Page About

RF Type MT7986:: 4T4R

Channel 100 5500-MHz

Mode HE_MU Rate MCS0=0; System BW 20 Per-Pkt BW 20 Primary Sel 0 LTF+GI 0:4x+0.8u

☒ TX0/RX0 ☐ TX1/RX1 ☐ TX2/RX2 ☐ TX3/RX3

Reset counter Tx PE: 16 us Get

Tx

☐ SGI ☐ STBC ☐ LDPC Nss 4 Spatial Idx

TX frame setting

| FC (2) | Dur (2) | Address1 (6) Dest | Address2 (6) Source | Address3 (6) BSSID | Seq (2) |
|--------|---------|-------------------|---------------------|--------------------|---------|
| 0800 | 0000 | FFFFFFFFFFFF | 000000000000 | 001122334455 | 0000 |

Payload

☒ Random(1)

Repeat Pattern(3) AA MPDU Tx Length 1024 Packet Tx Time

Repeat 0 Inter Packet Gap (us) 50

Start TX Transmitted: 0 ☐ Conti. Tx

☐ TX Tone Single DC +WF(only one)

TX Power0 (Dec) (0.5dB) Hex

| -32.0 to 31.5 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 | 25.0 | 26.0 | 27.0 | 28.0 | 29.0 | 30.0 | 31.5 |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | | | | | | | | | | | | |

Ch.Preamble rateTXPath

Freq. Offset 2C

RX

User 0001 Start RX FilteredPack

BandInfo Antenna Info User Info Common Info

| Name | Value |
|----------------|-------|
| PER | 0.0 % |
| RXOK | 84047 |
| RXOK/Sec | 2358 |
| CCK PD Count | 0 |
| OFDM PD Count | 65535 |
| CCK FCS Error | 0 |
| OFDM FCS Error | 0 |

RU Settings Block

Sta ID 888 RU Arrange PFD Info

Get

Testing: 888*

4

RX HE-MU

RX

FilteredPack

User

0001

Start RX

BandInfo

Antenna Info

User Info

Common Info

| Name | Value |
|----------------|-------|
| PER | 0.0 % |
| RXOK | 84047 |
| RXOK/Sec | 2358 |
| CCK PD Count | 0 |
| OFDM PD Count | 65535 |
| CCK FCS Error | 0 |
| OFDM FCS Error | 0 |

RU Settings Block

4

Sta ID

888

RU Arrange

PFD Info

Get

For example:

Wanted Station ID=888, other RUs starting from 100,101,102,....



Key-in "888" for identifying wanted Station ID

RX HE-TB

- From 802.11ax:

A STA that transmits an HE TB PPDU compensates for carrier frequency offset (CFO) error and symbol clock error. After compensation, the absolute value of residual CFO error with respect to the PPDU carrying the soliciting Trigger frame **shall not exceed 350 Hz** for data subcarriers when measured as the 10% point of the complementary cumulative distribution function (CCDF) of CFO errors in AWGN at a received power of -60 dBm in the primary 20 MHz. The residual CFO error measurement shall be made on the HE TB PPDU following the HE-SIG-A field. The symbol clock error shall be compensated by the same ppm amount as CFO error.

- As AP in test-mode, RX HE-TB should consider frequency offset within 350Hz.
- In manual test, rough frequency offset should be calibrated in DUT first (Use TX and VSA to check and adjust Freq. offset). Then, accurate frequency adjustment should be set on VSG.

① Use TX and VSA to check rough frequency offset

M2W

VSA1 VSG1 CHAN1 Offset: 0 Count: 1 Wide 80+80 MHz Tx MPS

Hardware Results Settings VSA1

VSA Settings

Frequency: 5180 MHz

Reference Level: 30 dBm/dBv

AGC Interval: 5 ms

Sampling Rate: 240 MHz

Capture Length: 1 ms

Low Distortion Port: RF1

Packet Info Type: 802.11a/g Format: Non-HT Chan BW: 20MHz

| Signal Base | Value | Unit | Stream Base | Value | U... |
|---------------------|--------|------|--------------------------|--------|------|
| Power | 18.93 | dBm | EVM | -38.28 | dB |
| Peak Power | 27.80 | dBm | EVM (%) | 1.22 | % |
| Phase Error | 0.18 | deg | EVM Data | -38.18 | dB |
| Frequency Error | 1.27 | kHz | EVM Pilot | -39.70 | dB |
| Symbol Clock Error | 0.18 | ppm | EVM User: 1 | -38.28 | dB |
| LO Leakage | -48.68 | dB | Trigger Test Return Time | 134.3 | us |
| Amplitude Imbalance | 0.06 | dB | | | |
| Phase Imbalance | 0.06 | deg | | | |
| Baseband Imbalance | 0.06 | deg | | | |

Adjust Freq Offset value on QATool until symbol clock error close to 0 ppm

QATool

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

TX/RX Band 0 TX/RX Band 1 EEPROM RU Page About

DualBand

Channel: 6 2437-MHz Mode: OFDM Rate: MCS=7, 54 Mbps System BW: 20 Per-Pkt BW: 20 Primary Sel: 0 LTF+GI

TX0/RX0 TX1/RX1 TX2/RX2 TX3/RX3

Reset counter

Tx

SGI STBC LDPC Nss: 4 Spatial Idx: 4

TX frame setting

| FC (2) | Dur (2) | Address1(6)Dest | Address2(6)Source | Address3(6)SSID | Seq (2) |
|--------|---------|-----------------|-------------------|-----------------|---------|
| 0800 | 0000 | FFFFFFFFFFFF | 000000000000 | 001122334455 | 0000 |

MPDU Tx Length: 1024

Packet Tx Time

Repeat: 0 Inter Packet Gap (us): 50

Start TX Transmitted: 0 Cont. Tx

TX Tone: Single DC +WF(only one)

TX Power0 (Dec) (0.5dB) Hex: -32.0 to 31.5 20.0 28

Ch.Preamble rateTXPath

Freq Offset: 35

RX

User: 0001 Start RX

BandInfo Antenna Info User Info Common Info

| Name | Value |
|------|-------|
| | |

RX HE-TB

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

TX/RX Band 0 TX/RX Band 1 EEPROM RU Page About

RF Type MT7986 :: 4 T 4 R

Normal Mode

Channel 100 5500-MHz

Mode HE_TB

Rate MCS0=0

System BW 20

Per-Pkt BW 20

Primary Sel 0

LTF+GI 2.4x+3.2u

L-DPC Extra Sym: 0

PE Disamp: 0

A Factor: 0

Tx PE: 16 us

Reset counter

Get Set

4 For HE-TB, please remember to set LTF+GI to the same as waveform generated by instrument.

RU Page (RX HE-TB)

RU

Select Band: 0

7 Category: 8 Allocation: 9 Sta ID: RU Index: MCS: PwrBoost Factor MU Nss LDPC Nss Stream Idx Length

1: 26 * 9 0 0 0 MCS5=5; 0 1 2 1 128

7 8 :see next page*

9 Station ID

- Starting from 100, 101, 102,....

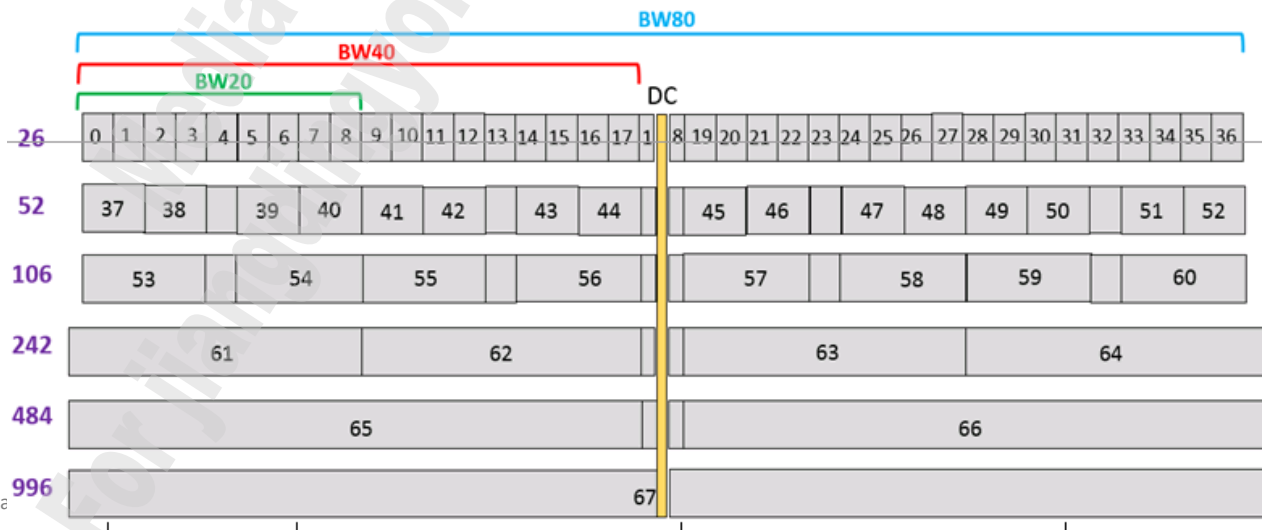


RU Page (RX HE-TB)

- Allocation

| 8 bits indices | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 |
|---|--|----|-----|-----------------------|----|-----|----|----|----|
| 00000000 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| 00000001 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 52 | |
| 00000010 | 26 | 26 | 26 | 26 | 26 | 52 | 26 | 26 | |
| 00000011 | 26 | 26 | 26 | 26 | 26 | 52 | 52 | | |
| 00000100 | 26 | 26 | 52 | 26 | 26 | 26 | 26 | 26 | |
| 00000101 | 26 | 26 | 52 | 26 | 26 | 26 | 52 | | |
| 00000110 | 26 | 26 | 52 | 26 | 52 | 26 | 26 | | |
| 00000111 | 26 | 26 | 52 | 26 | 52 | 52 | | | |
| 00001000 | 52 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | |
| 00001001 | 52 | 26 | 26 | 26 | 26 | 26 | 52 | | |
| 00001010 | 52 | 26 | 26 | 26 | 52 | 26 | 26 | | |
| 00001011 | 52 | 26 | 26 | 26 | 52 | 52 | | | |
| 00001100 | 52 | 52 | 26 | 26 | 26 | 26 | 26 | | |
| 00001101 | 52 | 52 | 26 | 26 | 26 | 26 | 52 | | |
| 00001110 | 52 | 52 | 26 | 52 | 26 | 26 | 26 | | |
| 00001111 | 52 | 52 | 26 | 52 | 52 | | 52 | | |
| 00010y ₂ y ₁ y ₀ | 52 | 52 | - | 106 (number of users) | | | | | |
| 00011y ₂ y ₁ y ₀ | 106 (number of users) | - | 52 | 52 | | | | | |
| 00100y ₂ y ₁ y ₀ | 26 | 26 | 26 | 26 | 26 | 106 | | | |
| 00101y ₂ y ₁ y ₀ | 26 | 26 | 52 | 26 | 26 | 106 | | | |
| 00110y ₂ y ₁ y ₀ | 52 | 26 | 26 | 26 | 26 | 106 | | | |
| 00111y ₂ y ₁ y ₀ | 52 | 52 | 26 | 26 | 26 | 106 | | | |
| 01000y ₂ y ₁ y ₀ | 106 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | |
| 01001y ₂ y ₁ y ₀ | 106 | 26 | 26 | 26 | 52 | | | | |
| 01010y ₂ y ₁ y ₀ | 106 | 26 | 52 | 26 | 26 | | | | |
| 01011y ₂ y ₁ y ₀ | 106 | 26 | 52 | 52 | | | | | |
| 0110y ₁ y ₀ z ₁ z ₀ | 106 | - | 106 | | | | | | |
| 01110000 | 52 | 52 | - | 52 | 52 | | | | |
| 01110001 | 242-tone RU empty | | | | | | | | |
| 01110010 | 484-tone RU with zero HE-SIG-B User Specific field in the corresponding HE-SIG-B Content Channel | | | | | | | | |
| 01110011 | 996-tone RU with zero HE-SIG-B User Specific field in the corresponding HE-SIG-B Content Channel | | | | | | | | |
| 10y ₂ y ₁ y ₀ z ₂ z ₁ z ₀ | 106 | 26 | 106 | | | | | | |
| 11000y ₂ y ₁ y ₀ | 242 | | | | | | | | |
| 11001y ₂ y ₁ y ₀ | 484 | | | | | | | | |
| 11010y ₂ y ₁ y ₀ | 996 | | | | | | | | |
| 11011y ₂ y ₁ y ₀ | 2*996 | | | | | | | | |

- RU Index



RU Page (RX HE-TB)

RU

Select Band:

Category: Allocation: Sta ID: RU Index: MCS: PwrBoost Factor: MU Nss: LDPC: ☐ Nss: Stream Idx: Length:

10* MU NSS, NSS, Stream Idx

| Examples | User | MU NSS (antenna number) | NSS | Stream Idx | | | | | | | | | |
|---|-------|----------------------------|-------|------------|-----|-----|---------|-----|----------------------------------|------------------|------------------|--------------------|---------------------|
| 106+26+106 <table><tr><td>user1</td><td>user2</td><td>user3</td></tr><tr><td>4ss</td><td>4ss</td><td>4ss</td></tr></table> | user1 | user2 | user3 | 4ss | 4ss | 4ss | User1~3 | 4 | 4 | 1 | | | |
| user1 | user2 | user3 | | | | | | | | | | | |
| 4ss | 4ss | 4ss | | | | | | | | | | | |
| 106+26+106 <table><tr><td>user1</td><td>user3</td><td>user4</td></tr><tr><td>2ss</td><td rowspan="3">4ss</td><td rowspan="3">4ss</td></tr><tr><td>user2</td></tr><tr><td>2ss</td></tr></table> | user1 | user3 | user4 | 2ss | 4ss | 4ss | user2 | 2ss | User1 User2 User3 User4 | 4 4 4 4 | 2 2 4 4 | 1* 3* 1 1 | *Sta *use use |
| user1 | user3 | user4 | | | | | | | | | | | |
| 2ss | 4ss | 4ss | | | | | | | | | | | |
| user2 | | | | | | | | | | | | | |
| 2ss | | | | | | | | | | | | | |
| 106+26+106 <table><tr><td>user1</td><td>user3</td><td>user4</td></tr><tr><td>1ss</td><td rowspan="3">4ss</td><td rowspan="3">4ss</td></tr><tr><td>user2</td></tr><tr><td>3ss</td></tr></table> | user1 | user3 | user4 | 1ss | 4ss | 4ss | user2 | 3ss | User1 User2 User3 User4 | 4 4 4 4 | 1 3 4 4 | 1 2 1 1 | |
| user1 | user3 | user4 | | | | | | | | | | | |
| 1ss | 4ss | 4ss | | | | | | | | | | | |
| user2 | | | | | | | | | | | | | |
| 3ss | | | | | | | | | | | | | |

*Stands for 1&2
 *user1: 1&2
 user2 starts from 3

RX HE-TB

11 User number

User number limit:

- Single band:16, DBDC: 8 for each band

| | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

For example

- user #1 only: 0000 0000 0000 0001 → 0001
- user #2 only: 0000 0000 0000 0010 → 0002
- 16 users: 1111 1111 1111 1111 → FFFF

Band Info/User Info

- “Band Info” → average PER (MAC)
- “User Info” → all users’ PER separately (PHY)

11 User 0001 Start RX FFT

BandInfo Antenna Info User Info Common Info

| Name | Value |
|----------------|-------|
| FAGC RSSI WB 0 | 0 |
| FAGC RSSI IB 0 | 0 |
| RCPI 0 | 0 |
| RSSI 0 | 0 |
| Inst RSSI WB 0 | -128 |
| Inst RSSI IB 0 | -128 |
| FAGC RSSI WB 1 | 0 |
| FAGC RSSI IB 1 | 0 |
| RCPI 1 | 0 |
| RSSI 1 | 0 |
| Inst RSSI WB 1 | -128 |
| Inst RSSI IB 1 | -128 |

BandInfo Antenna Info User Info Common Info

| Name | Value |
|----------------|-------|
| PER | 0.0 % |
| RXOK | 0 |
| MAC Mdrdy | 0 |
| FCS err | 0 |
| CCK PD Count | 0 |
| CCK SIG Error | 0 |
| OFDM PD Count | 0 |
| OFDM TAQ Error | 0 |
| CCK SFD Error | 0 |
| OFDM SIG Error | 0 |
| CCK FCS Error | 0 |
| OFDM FCS Error | 0 |
| CCK MDRDY | 0 |
| OFDM MDRDY | 0 |

BandInfo Antenna Info User Info Common Info

| Name | Value |
|-----------------------|-------|
| Freq Offset from RX 0 | 0 |
| SNR 0 | 0 |
| ECR Error Cnt 0 | 0 |
| PER 0 | 0.0 % |
| Freq Offset from RX 1 | 0 |
| SNR 1 | 0 |
| ECR Error Cnt 1 | 0 |
| PER 1 | 0.0 % |
| Freq Offset from RX 2 | 0 |
| SNR 2 | 0 |
| ECR Error Cnt 2 | 0 |
| PER 2 | 0.0 % |
| Freq Offset from RX 3 | 0 |
| SNR 3 | 0 |
| ECR Error Cnt 3 | 0 |
| PER 3 | 0.0 % |

RX HE-TB, M2W Setup

- 12** Adjust frequency more accurate by change VSG Settings' "Frequency" according to "Freq Offset from RX" in QATool

M2W

VSG1 Settings Unit: MHz

Frequency: 5180.0085 MHz

Power Level: -80 dBm/dBv

Sampling Rate: 80 MHz

Low Distortion ☐ Port: RF1

Waveforms

Loaded Wave: user/Waveform_1SSTB_BW20MCS0GILTF2LDP

☒ Count: 1000

CW Wave RF(off) RF(on)

QATool

User: 0001 Start RX FFT FilteredPacket Length: 1000 Disable

BandInfo Antenna Info User Info Common Info

| Name | Value |
|-----------------------|--------|
| Freq Offset from RX 0 | -153 |
| SNR 0 | 14 |
| FCR Error Cnt 0 | 252 |
| PER 0 | 55.0 % |
| Freq Offset from RX 1 | 135 |
| SNR 1 | 16 |
| FCR Error Cnt 1 | 0 |
| PER 1 | 0.0 % |
| Freq Offset from RX 2 | -450 |
| SNR 2 | 15 |
| FCR Error Cnt 2 | 0 |
| PER 2 | 0.0 % |

Unit: Hz

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EEPROM

MT7986_000F QA 0.0.2.73 FF:FF:FF:FF:FF:FF

TX/RX Band 0 | TX/RX Band 1 | **EEPROM** | RU Page | About

EEPROM Type: Flash

Single Read/Write Mode: ☒ READ ☐ WRITE

Offset: 0000
Value: 00
Length: 0000

R/W

Write Back Done

FLASH_MODE

LED Behavior

EEPROM contents

00000000 86 79 06 00 00 0C 43 26 60 18 00 0C 43 26 60 19 .y...Cs`...
00000010 00 0C 43 26 60 1A 00 0C 43 26 60 1B 00 00 00 00 ..Cs`...Cs`...
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 01 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 08 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

Keep Current Tx Power

Save As...

NVM Type: EEPROM

☐ EEPROM Buffer Mode

☐ Disable Write Warning

☐ eFuse Mode

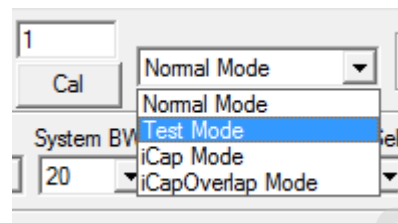
Remember to write back to flash, become effective after rebooting DUT

Load a new EEPROM bin file to replace current contents

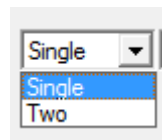
Save EEPROM current contents to a file

DC tone

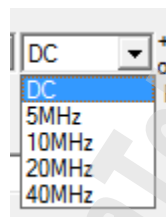
- Choose test mode



- Choose type



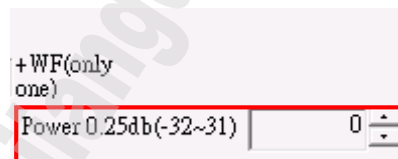
- Choose freq



- Check TX tone



- Adjust power level



Duplicate Mode (For EMI test)

The screenshot shows the MT7986 Q1.0.0.0 GUI with the following configurations and annotations:

- 1** TX/RX Band 0 (highlighted in red)
- 2** Channel 6 2437-MHz (highlighted in red)
- 3** Nss 1 (highlighted in red)
- 4** Spatial Idx 24 (highlighted in red)
- 5** TX Power0 (Dec) (0.5dB) Hex 28 (highlighted in red)
- 6** Start TX (highlighted in red)

The GUI also shows the following settings:

- RF Type: MT7986 :: 4 T 4 R
- Mode: Normal Mode
- Rate: MCS=7; 54 Mbps
- System BW: 20
- Per-Pkt BW: 20
- Primary SSI: 0
- LTF+GI: (empty)
- TX frame setting: FC (2) 0800, Dur (2) 0000, Address1(6)Dest FFFFFFFF, Address2(6)Source 000000000000, Address3(6)BSSID 001122334455, Seq (2) 0000
- MPDU Tx Length: 1024
- Packet Tx Time: (empty)
- Repeat Pattern(3): AA
- Inter Packet Gap (us): 50
- TX Tone: Single, DC
- Freq. Offset: 35

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

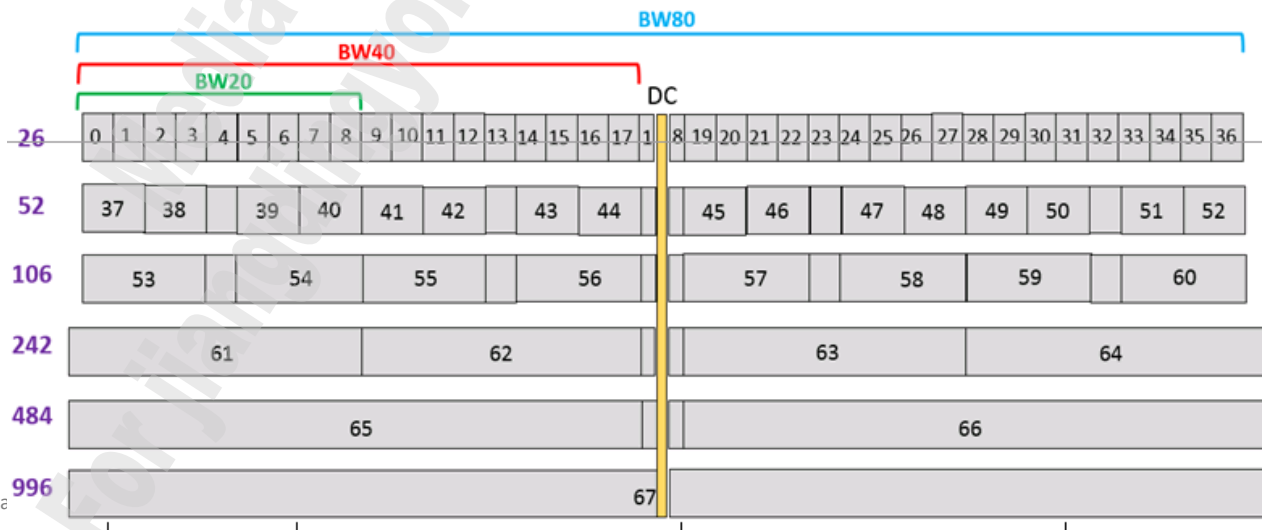
Appendix

RU Page (HE-MU)

- Allocation

| 8 bits indices | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 |
|---|--|----|-----|-----------------------|----|----|-----|-------|-----|
| 00000000 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| 00000001 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 52 | |
| 00000010 | 26 | 26 | 26 | 26 | 26 | 52 | 26 | 26 | |
| 00000011 | 26 | 26 | 26 | 26 | 26 | 52 | | 52 | |
| 00000100 | 26 | 26 | 52 | | 26 | 26 | 26 | 26 | 26 |
| 00000101 | 26 | 26 | 52 | | 26 | 26 | | 52 | |
| 00000110 | 26 | 26 | 52 | | 26 | 52 | 26 | 26 | |
| 00000111 | 26 | 26 | 52 | | 26 | 52 | | 52 | |
| 00001000 | 52 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| 00001001 | 52 | 26 | 26 | 26 | 26 | 26 | | 52 | |
| 00001010 | 52 | 26 | 26 | 26 | 52 | 26 | 26 | 26 | |
| 00001011 | 52 | 26 | 26 | 26 | 52 | | | 52 | |
| 00001100 | 52 | 52 | 26 | 26 | 26 | 26 | 26 | 26 | |
| 00001101 | 52 | 52 | 26 | 26 | 26 | 26 | | 52 | |
| 00001110 | 52 | 52 | 26 | | 52 | 26 | 26 | 26 | |
| 00001111 | 52 | 52 | 26 | | 52 | | | 52 | |
| 00010y ₂ y ₁ y ₀ | 52 | 52 | - | 106 (number of users) | | | | | |
| 00011y ₂ y ₁ y ₀ | 106 (number of users) | - | 52 | | 52 | | | | |
| 00100y ₂ y ₁ y ₀ | 26 | 26 | 26 | 26 | 26 | | 106 | | |
| 00101y ₂ y ₁ y ₀ | 26 | 26 | | | | 52 | | | 106 |
| 00110y ₂ y ₁ y ₀ | | 52 | | | | 26 | 26 | 26 | 26 |
| 00111y ₂ y ₁ y ₀ | | 52 | | | | 26 | 26 | | 52 |
| 01000y ₂ y ₁ y ₀ | | | 106 | | | 26 | 26 | 26 | 26 |
| 01001y ₂ y ₁ y ₀ | | | 106 | | | 26 | 26 | 26 | 52 |
| 01010y ₂ y ₁ y ₀ | | | 106 | | | 26 | 52 | 26 | 26 |
| 01011y ₂ y ₁ y ₀ | | | 106 | | | 26 | 52 | | 52 |
| 0110y ₁ y ₀ z ₁ z ₀ | | | 106 | | - | | | 106 | |
| 01110000 | 52 | | 52 | | - | 52 | | 52 | |
| 01110001 | 242-tone RU empty | | | | | | | | |
| 01110010 | 484-tone RU with zero HE-SIG-B User Specific field in the corresponding HE-SIG-B Content Channel | | | | | | | | |
| 01110011 | 996-tone RU with zero HE-SIG-B User Specific field in the corresponding HE-SIG-B Content Channel | | | | | | | | |
| 10y ₂ y ₁ y ₀ z ₂ z ₁ z ₀ | | | 106 | | 26 | | | 106 | |
| 11000y ₂ y ₁ y ₀ | | | | | | | | 242 | |
| 11001y ₂ y ₁ y ₀ | | | | | | | | 484 | |
| 11010y ₂ y ₁ y ₀ | | | | | | | | 996 | |
| 11011y ₂ y ₁ y ₀ | | | | | | | | 2*996 | |

- RU Index



MEDIATEK

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