
Linux SDIO/UART Interface Fixed Frequency Test Documentation

wifi fixed frequency

1. TX

=====WIFI_TX=====

11b Mode

TX_11B

11b launch mode 5.5M=11, Bw=20MHz

ifconfig wlan0 up

rtwpriv wlan0 mp_start

(1) channel 1

rtwpriv wlan0 mp_channel 1

rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0

rtwpriv wlan0 mp_ant_tx a

rtwpriv wlan0 mp_txpower patha=44

rtwpriv wlan0 mp_rate 11

rtwpriv wlan0 mp_ctx count=%100,pkt

rtwpriv wlan0 mp_ctx stop

(2) channel 7

rtwpriv wlan0 mp_channel 7

rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0

rtwpriv wlan0 mp_ant_tx a

rtwpriv wlan0 mp_txpower patha=44

rtwpriv wlan0 mp_rate 11

rtwpriv wlan0 mp_ctx count=%100,pkt

rtwpriv wlan0 mp_ctx stop

(3) channel 13

rtwpriv wlan0 mp_channel 13

rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0

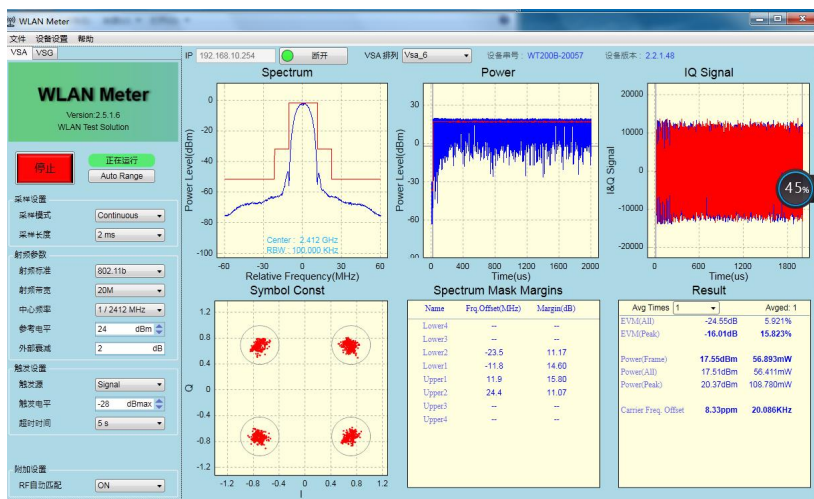
rtwpriv wlan0 mp_ant_tx a

rtwpriv wlan0 mp_txpower patha=44

rtwpriv wlan0 mp_rate 11

rtwpriv wlan0 mp_ctx count=%100,pkt

rtwpriv wlan0 mp_ctx stop



11g Mode

11g launch mode 54M=108, Bw=20MHz

```
ifconfig wlan0 up
```

```
rtwpriv wlan0 mp_start
```

(1)channel 1

```
rtwpriv wlan0 mp_channel 1
```

```
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
```

```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=44
```

```
rtwpriv wlan0 mp_rate 108
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```

(2)channel 7

```
rtwpriv wlan0 mp_channel 7
```

```
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
```

```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=44
```

```
rtwpriv wlan0 mp_rate 108
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```

(3)channel 13

```
rtwpriv wlan0 mp_channel 13
```

```
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
```

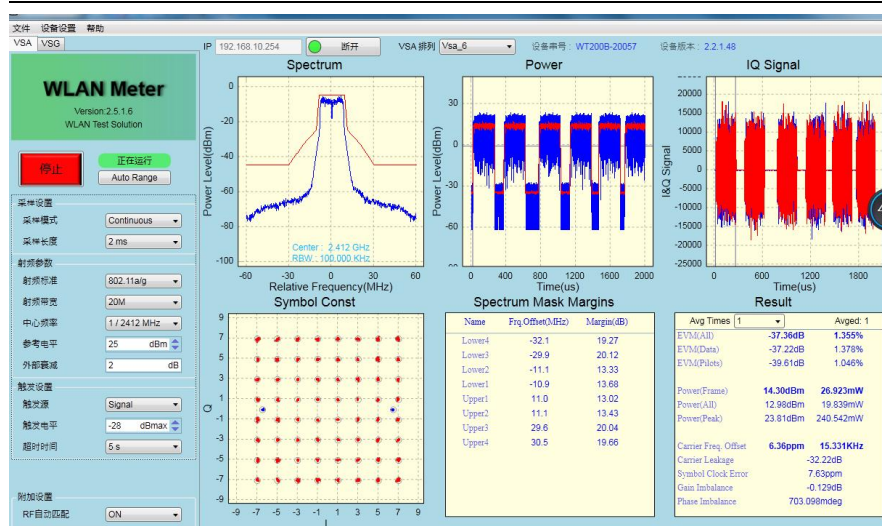
```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=44
```

```
rtwpriv wlan0 mp_rate 108
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```



11a Mode

11a launch mode 54M=108, Bw=20MHz

```
ifconfig wlan0 up
```

```
rtwpriv wlan0 mp_start
```

(1)channel 36

```
rtwpriv wlan0 mp_channel 36
```

```
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
```

```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=44
```

```
rtwpriv wlan0 mp_rate 108
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```

(2)channel 56

```
rtwpriv wlan0 mp_channel 56
```

```
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
```

```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=44
```

```
rtwpriv wlan0 mp_rate 108
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```

(3)channel 100

```
rtwpriv wlan0 mp_channel 100
```

```
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
```

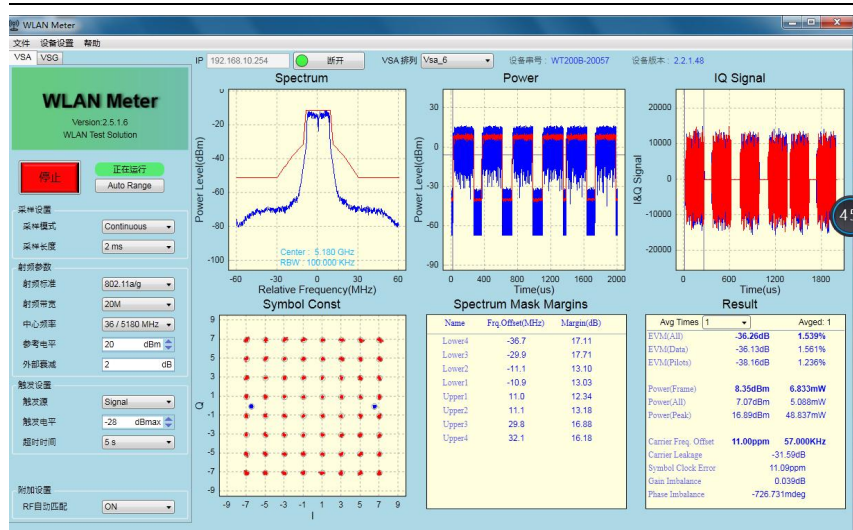
```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=44
```

```
rtwpriv wlan0 mp_rate 108
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```



11n Mode

11n launch mode MCS7=135

```
ifconfig wlan0 up
```

```
rtwpriv wlan0 mp_start
```

```
MCS7 11nMode 20M bandwidths
```

(1)channel 1

```
rtwpriv wlan0 mp_channel 1
```

```
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
```

```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=44
```

```
rtwpriv wlan0 mp_rate 135
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```

(2)channel 7

```
rtwpriv wlan0 mp_channel 7
```

```
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
```

```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=44
```

```
rtwpriv wlan0 mp_rate 135
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```

(3)channel 13

```
rtwpriv wlan0 mp_channel 13
```

```
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
```

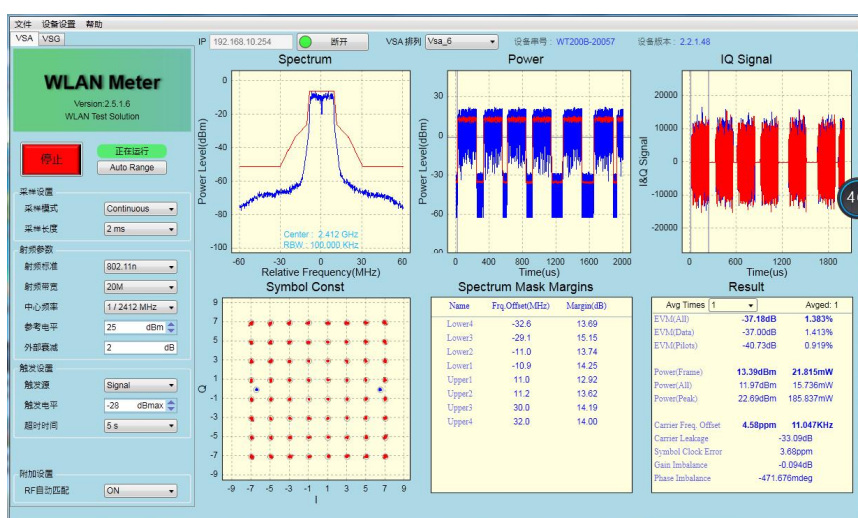
```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=44
```

```
rtwpriv wlan0 mp_rate 135
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```



MCS7 11nMode 40M bandwidths

(1)channel 3

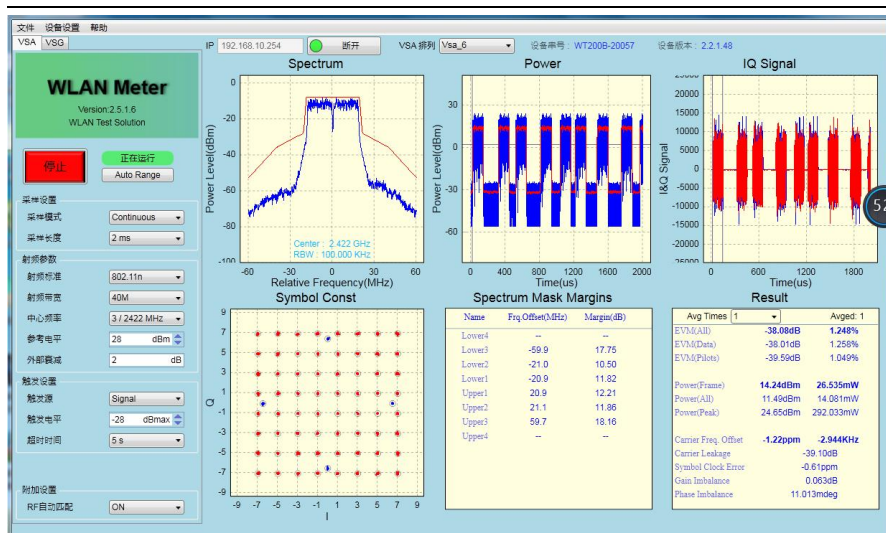
```
rtwpriv wlan0 mp_channel 3
rtwpriv wlan0 mp_bandwidth 40M=1,shortGI=0
rtwpriv wlan0 mp_ant_tx a
rtwpriv wlan0 mp_txpower patha=44
rtwpriv wlan0 mp_rate 135
rtwpriv wlan0 mp_ctx count=%100,pkt
rtwpriv wlan0 mp_ctx stop
```

(2)channel 6

```
rtwpriv wlan0 mp_channel 6
rtwpriv wlan0 mp_bandwidth 40M=1,shortGI=0
rtwpriv wlan0 mp_ant_tx a
rtwpriv wlan0 mp_txpower patha=44
rtwpriv wlan0 mp_rate 135
rtwpriv wlan0 mp_ctx count=%100,pkt
rtwpriv wlan0 mp_ctx stop
```

(3)channel 9

```
rtwpriv wlan0 mp_channel 9
rtwpriv wlan0 mp_bandwidth 40M=1,shortGI=0
rtwpriv wlan0 mp_ant_tx a
rtwpriv wlan0 mp_txpower patha=44
rtwpriv wlan0 mp_rate 135
rtwpriv wlan0 mp_ctx count=%100,pkt
rtwpriv wlan0 mp_ctx stop
```



11ac Mode

MCS7 11acMode 80M bandwidths

```
#ifconfig wlan0 up
```

```
#rtwpriv wlan0 mp_start
```

(1) channel 42

```
rtwpriv wlan0 mp_channel 42
```

```
rtwpriv wlan0 mp_bandwidth 40M=2,shortGI=0
```

```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=40
```

```
rtwpriv wlan0 mp_rate MCS9
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```

(2) channel 58

```
rtwpriv wlan0 mp_channel 58
```

```
rtwpriv wlan0 mp_bandwidth 40M=2,shortGI=0
```

```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=40
```

```
rtwpriv wlan0 mp_rate MCS9
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```

(3) channel 106

```
rtwpriv wlan0 mp_channel 106
```

```
rtwpriv wlan0 mp_bandwidth 40M=2,shortGI=0
```

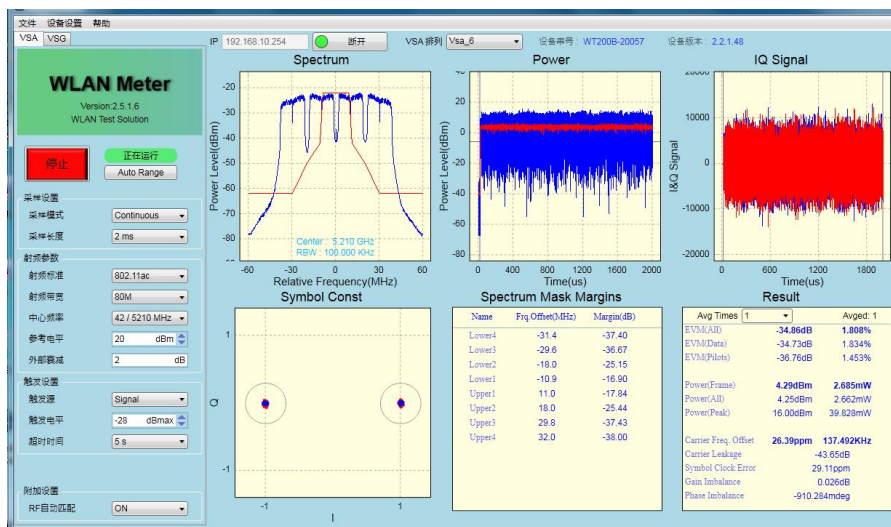
```
rtwpriv wlan0 mp_ant_tx a
```

```
rtwpriv wlan0 mp_txpower patha=40
```

```
rtwpriv wlan0 mp_rate MCS9
```

```
rtwpriv wlan0 mp_ctx count=%100,pkt
```

```
rtwpriv wlan0 mp_ctx stop
```



2. RX

=====WIFI_RX=====

```
ifconfig wlan0 up
rtwpriv wlan0 mp_start
1) 20M bandwidths
rtwpriv wlan0 mp_channel 1
rtwpriv wlan0 mp_bandwidth 40M=0,shortGI=0
rtwpriv wlan0 mp_ant_rx a
rtwpriv wlan0 mp_arx start
rtwpriv wlan0 mp_query
rtwpriv wlan0 mp_arx stop
2) 40M bandwidths
rtwpriv wlan0 mp_channel 1
rtwpriv wlan0 mp_bandwidth 40M=1,shortGI=0
rtwpriv wlan0 mp_ant_rx a
rtwpriv wlan0 mp_arx start
rtwpriv wlan0 mp_query
rtwpriv wlan0 mp_arx stop
```

Bluetooth fixed frequency

===== BT =====

Bluetooth fixed frequency use of the fw file and config file have a corresponding, in particular, the fw file can not be used to use normal Bluetooth use.

	mp_rtl8703b_config	
	mp_rtl8723b_config	
	mp_rtl8723d_config	
mp_rtl8723b_config	mp_rtl8821a_config	
mp_rtl8723d_config	mp_rtl8821c_config	
mp_rtl8761a_config	mp_rtl8822b_config	
mp_rtl8821c_config	rtl8703as_config	
mp_rtl8822b_config	rtl8703cs_config	
rtl8723a_config	rtl8723as_config	
rtl8821a_config	rtl8761at_config	
	rtl8761aw8192eu_config	
mp_rtl8703b_fw	2018/3/26 15:02	
mp_rtl8723a_fw	2017/8/23 0:00	
mp_rtl8723d_fw	2018/3/26 14:11	
mp_rtl8761a_fw	2018/3/26 14:11	
mp_rtl8763a_fw	2017/8/23 0:00	
mp_rtl8821a_fw	2017/8/23 0:00	
mp_rtl8821c_fw	2018/3/26 14:11	
mp_rtl8822b_fw	2018/3/26 14:11	

2.1 Documentation and running environment setup for customers using linux systems

rtlbtmp:	fixed frequency application
mp_rtlxxx_fw:	Bluetooth chip specific firmware
mp_rtlxxx_config	Bluetooth chip specific firmware

The following is a table of names for the Bluetooth chip name, rtlxxx_config, and mp_rtlxxx_config:

蓝牙芯片名称	rtlxxx_config名称	拷贝后的名称
RTL8703AS	rtl8703a_config	mp_rtl8703a_config
RTL8703BS	rtl8703b_config	mp_rtl8703b_config
RTL8723AE	rtl8723a_config	mp_rtl8723a_config
RTL8723AS	rtl8723a_config	mp_rtl8723a_config
RTL8723AU	rtl8723a_config	mp_rtl8723a_config
RTL8723BE	rtl8723b_config	mp_rtl8723b_config
RTL8723BS	rtl8723b_config	mp_rtl8723b_config
RTL8723BU	rtl8723bu_config	mp_rtl8723b_config
RTL8723CS	rtl8723cs_xx_config	mp_rtl8723c_config
RTL8723DS	rtl8723d_config	mp_rtl8723d_config
RTL8723DU	rtl8723du_config	mp_rtl8723d_config
RTL8761AT	rtl8761at_config	mp_rtl8761a_config
RTL8761ATV	rtl8761a_config	mp_rtl8761a_config
RTL8761AU	rtl8761a_config	mp_rtl8761a_config
RTL8761AW + 8192EU	rtl8761aw_config	mp_rtl8761a_config
RTL8761AU + 8192EE	rtl8761a_config	mp_rtl8761a_config
RTL8761AU + 8812AE	rtl8761a_config	mp_rtl8761a_config
RTL8821AE	rtl8821a_config	mp_rtl8821a_config
RTL8821AS	rtl8821a_config	mp_rtl8821a_config
RTL8821AU	rtl8821a_config	mp_rtl8821a_config
RTL8821CS	rtl8821c_config	mp_rtl8821c_config
RTL8821CU	rtl8821cu_config	mp_rtl8821c_config
RTL8822BS	rtl8822b_config	mp_rtl8822b_config
RTL8822BU	rtl8822bu_config	mp_rtl8822b_config

注意：进入定频前一定要确保在 UI 界面已经关闭了蓝牙和 WiFi 图标，不关闭会导致如下的问题，无桌面环境请忽略。

2.2 Fixed frequency operation steps

1) exec the mp tool bin

```
rtlbtmp
```

2) enable mp tool stack

```
enable usb:/dev/rtk_btusb //This is for the USB interface
```

```
enable uart:/dev/ttyS4 //This is for the UART interface
```

```
root@rockpis:/home/rock/rtl8723ds# rtlbtmp
::::::::::::::::::::::::::::::::::::::::::
::::::::: Bluetooth MP Test Tool Starting 20191129 ::::::::::
> enable uart:/dev/ttyS4
[ 9737.611526] [BT_RFKILL]: bt shut off power
[ 9737.812983] [BT_RFKILL]: rfkill_rk_set_power: set bt wake_host pin output high!
[ 9737.883553] [BT_RFKILL]: rfkill_rk_set_power: set bt wake_host pin input!
[ 9737.884299] [BT_RFKILL]: ENABLE UART_RTS
[ 9737.987548] [BT_RFKILL]: DISABLE UART_RTS
[ 9737.988076] [BT_RFKILL]: bt turn on power
> > enable[Success:0]
□
```

2.3 Bluetooth Fixed Frequency Command (8723ds example)

Switching channels:

```
bt_mp_SetParam 1,0; //channel 0
```

Switching Mode:

```
bt_mp_SetParam 2,0; //mode DH1
```

Acquiring power table:

bt_mp_Exec 5

bt_mp_Exec 6

4.1 Hopping Test Mode (frequency-hopping Mode)

bt_mp_Exec 5

bt_mp_Exec 6

bt_mp_SetParam 1,0;2,1; 6, 0xFF;10,1;

bt_mp_Exec 21

bt_mp_Exec 0 //reset

Note:

INDEX	VALUE
2	PacketType
10	HoppingFixChannel (0 or 1)
1	ChannelNumber (0~78)
6	WhiteningCoeffValue

Step 2: bt_mp_Exec(HOPPING_DWELL_TIME = 21)

Step 3: bt_mp_Exec(HCI_RESET = 0) to disable hopping mode.

PS. If HoppingFixChannel = 1, it enable fix channel that is controlled by "ChannelNumber" .

If HoppingFixChannel = 0, "ChannelNumber" is useless

4.2 DUT Single Tone TX Mode (single carrier mode)

bt_mp_Exec 5

bt_mp_Exec 6

SetParam 1,39;2,0x08;3,0x00;4,0x00;6,0xFF;7,0x07;9,0x3FFFF;11,0x000000c6967e;

bt_mp_Exec 15

bt_mp_Exec 17

bt_mp_Exec 0 //reset

Note:

INDEX	VALUE
1	ChannelNumber
2	PacketType
3	PayloadType
6	WhiteningCoeffValue
7	TxGainIndex
9	PacketHeader
11	HitTarget

SetParam 1 2 3 6 7 9 11

CONTINUE_TX_START = 15 or FW_CONTINUE_TX_START=34

Step 3: Stop Single-Tone Tx.

CONTINUE_TX_STOP = 17 or FW_CONTINUE_TX_STOP=35

4.3 DUT TX Mode(MP)··· (fixed frequency Mode)

```

bt_mp_Exec 5
bt_mp_Exec 6
SetParam
SetParam 1,39;2,0x08;3,0x00;4,0x00;6,0xFF;7,0x07;9,0x3FFFF;11,0x000000c6967e;
bt_mp_Exec 12
bt_mp_Exec 14 //Stop launching
bt_mp_Exec 0 //reset
    
```

Note:

INDEX	VALUE
1	ChannelNumber
2	PacketType
3	PayloadType
4	TxPacketCount
6	WhiteningCoeffValue
7	TxGainIndex
9	PacketHeader
11	HitTarget

SetParam 1 2 3 4 6 7 9 11

Step2: bt_mp_Exec(PACKET_TX_START =12) or (FW_PACKET_TX_START=30)

Step3: bt_mp_Report 1 (if need report, to do..)

Step4: bt_mp_Exec(PACKET_TX_STOP =14) or (FW_PACKET_TX_STOP=31)

4.4 LE DUT Test Mode-TX/RX (MP) (BLEMode)

```

bt_mp_Exec 5
bt_mp_Exec 6
bt_mp_SetParam 1,10;2,0x09;3,0x00;7,0x1c;11,0x25;
bt_mp_Exec 22 //LE_TX_DUT_TEST_CMD start
bt_mp_Exec 24 //LE_TX_DUT_TEST_CMD stop
bt_mp_Exec 0
    
```

Note:

INDEX	VALUE	Value Range
1	ChannelNumber	0~39
3	PayloadType	BT_LE_PAYLOAD_TYPE_PRBS9 = 0, BT_LE_PAYLOAD_TYPE_1111_0000 = 1, BT_LE_PAYLOAD_TYPE_

		1010 = 2, BT_LE_PAYLOAD_TYPE_ PRBS15 = 3, BT_LE_PAYLOAD_TYPE_ ALL1 = 4, BT_LE_PAYLOAD_TYPE_ ALLO = 5, BT_LE_PAYLOAD_TYPE_ 0000_1111 = 6, BT_LE_PAYLOAD_TYPE_ 0101 = 7,
7	TxGainIndex	1~MAX_POWER_INDEX
15	LEDataLen	0x00~0x25

Step 2: bt_mp_Exec(LE_TX_DUT_TEST_CMD = 22)

Step 3: bt_mp_Exec(LE_DUT_TEST_END_CMD=24) to stop LE TX DUT mode

5 Parameter description

bt_mp_SetParam Index0,value0;Index1,value1;... IndexN,valueN metrics and values see MP tool user guide for linux PDF document

Index has the following options

INDEX	VALUE	Length (Byte)	Value Range	Table Index
0	PGRawData	256	Row data	None
1	ChannelNumber	1	0~78	None
2	PacketType	1	0~9	See PKT_TYPE
3	PayloadType	1	0~7	See PAYLOAD_TYPE
4	TxPacketCount (only for packet tx)	2	0~0x3FFF	See Section3.2.3
6	WhiteningCoeffValue	1	0x00~0x7F	0x00~0x7F: Enable Whitening 0x80: Disable Whitening
7	TxGainIndex	1	Realtek define	See Section3.2.5
9	PacketHeader	4	0x0~0x3FFFF	See PACKET_HEADER
10	HoppingFixChannel (for Hopping mode)	1	0 : Disable 1 : Enable Fix Channel	None
11	HitTarget	6	6 bytes	None
14	Xtal	4	0~0x3F	None
15	LEDataLen	1	0~0x25	None

Index following value

For example bt_mp_SetParam 1,10; (indicates that channel 10 is selected, channel selectable range 0~78) 2,1; (indicates that the type of the packet is BT_PKT_DH3)

The packet types are defined in Table PKT_TYPE:

NAME	INDEX	Payload Length in bits
BT_PKT_DH1	0	0~27*8
BT_PKT_DH3	1	0~183*8
BT_PKT_DH5	2	0~339*8
BT_PKT_2DH1	3	0~54*8
BT_PKT_2DH3	4	0~367*8
BT_PKT_2DH5	5	0~679*8
BT_PKT_3DH1	6	0~83*8
BT_PKT_3DH3	7	0~552*8
BT_PKT_3DH5	8	0~1021*8
BT_PKT_LE	9	0~39*8


Table PKT_TYPE















The payload types are defined in Table PAYLOAD_TYPE.

NAME	INDEX
BT_PAYLOAD_TYPE_ALL0	0
BT_PAYLOAD_TYPE_ALL1	1
BT_PAYLOAD_TYPE_0101	2
BT_PAYLOAD_TYPE_1010	3
BT_PAYLOAD_TYPE_0x0_0xF	4
BT_PAYLOAD_TYPE_0000_1111	5
BT_PAYLOAD_TYPE_1111_0000	6
BT_PAYLOAD_TYPE_PRBS9	7

Table PAYLOAD_TYPE

According to the test requirements for a reasonable choice of bt_mp_SetParam parameters needed, specific please see the MP tool user guide for linux PDF documents

The parameter settings of bt_mp_Exec can be found in the table below. Depending on the module used, the parameter settings are different, so you need to follow the table to find them. The parameter  is supported.

Command	Index	Support Chip	
		RTL8723B	RTL8723D
		RTL8761A	RTL8821C
		RTL8821A	RTL8822B
HCI_RESET	0		
TEST_MODE_ENABLE	1		
WRITE_EFUSE_DATA	2		
SET_TX_GAIN_TABLE	3		
SET_TX_DAC_TABLE	4		
SET_DEFAULT_TX_GAIN_TABLE	5		
SET_DEFAULT_TX_DAC_TABLE	6		

LB-LINK

SET_POWER_GAIN_INDEX	7	■	■
SET_POWER_GAIN	8	■	■
SET_POWER_DAC	9	■	■
SET_XTAL	10	■	■
REPORT_CLEAR	11	■	■
PACKET_TX_START	12	■	
PACKET_TX_UPDATE	13	■	
PACKET_TX_STOP	14	■	
CONTINUE_TX_START	15	■	
CONTINUE_TX_UPDATE	16	■	
CONTINUE_TX_STOP	17	■	
PACKET_RX_START	18	■	
PACKET_RX_UPDATE	19	■	
PACKET_RX_STOP	20	■	
HOPPING_DWELL_TIME	21	■	■
LE_TX_DUT_TEST_CMD	22	■	■
LE_RX_DUT_TEST_CMD	23	■	■
LE_DUT_TEST_END_CMD	24	■	■
READ_EFUSE_DATA	25	■	■
LE_CONTINUE_TX_START	28	■	
LE_CONTINUE_TX_STOP	29	■	
FW_PACKET_TX_START	30		■
FW_PACKET_TX_STOP	31		■
FW_PACKET_RX_START	32		■
FW_PACKET_RX_STOP	33		■
FW_CONTINUE_TX_START	34		■
FW_CONTINUE_TX_STOP	35		■
FW_LE_CONTINUE_TX_START	36		■
FW_LE_CONTINUE_TX_STOP	37		■
FW_READ_TX_POWER_INFO	38		■