

# MT76xx Single SKU V2 User Guide

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## **Document Revision History**

Revision	Date	Author	Description	
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#### 1. What Is Single SKU

Single SKU means single stock-keeping unit. Different countries have different transmission power rules for wireless equipments. If the company wants sell one kind of wireless equipment to several countries, the company has to manufacture different type of products with different transmission power rule. It is not convenient for the company.

Single SKU is the software feature can limit transmission power under the specification. The transmission power for each country is specified in Single SKU table. The driver will adjust transmission power according to Single SKU table. So, the company can manufacture one kind of wireless equipment with the same transmission power.

#### 2. The difference between Single SKU V1 and Single SKU V2

Single SKU V1 is for RT5xxx, RT3xxx series. The Single SKU table in V1 is hard code in driver. The users have to specify the CountryCode in profile. The driver will select corresponding transmission power rules. It can limit transmission power per-channel and per-bandwidth.

Single SKU V2 is only for MT76xx series. Single SKU V1 and Single SKU V2 are exclusive. The users cannot enable Single SKU V1 and Single SKU V2 at the same time. The Single SKU table in V2 is restored in file system. It can limit transmission power per-channel, per-bandwidth and per-rate.

#### 3. Enable Singke SKU V2

Set HAS\_SINGLE\_SKU\_V2\_SUPPORT=y in config.mk, and rebuild driver to enable Single SKU V2 feature.

```
#Support features of Single SKU.
HAS SINGLE SKU V2 SUPPORT=y
```

The Single SKU table is named SingleSKU.dat. Copy SingleSKU.dat to following directory.

AP:

/etc/Wireless/RT2860AP/SingleSKU.dat

OI

/etc/Wireless/RT2870AP/SingleSKU.dat

STA:

/etc/Wireless/RT2860STA/SingleSKU.dat

or

/etc/Wireless/RT2870STA/SingleSKU.dat

#### 4. Single SKU Table for 2.4G

The following is the example Single SKU Table for 2.4G.



```
| CCK 1~11 |
                                                                                                                                  HT40 MCS 0 ~ 15
                                   14 14
16 16
17 17
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17 17
    16 16 16 16
18 18 18 18
                    14
16
                        14 14
16 16
                                               14
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19 19
19 19
                                                                       17
17
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ch6 19 19 19 19 19 19
ch7 19 19 19 19 19 19
                            19
                                19
                                    17
17
                                                   19
                                                               19
                                                                                       19
                                                                                           19
                                                                                                   13
13
13
                                                     13
                                                             13
                                                                 13
                                                                    13 13
                                                                                            13
13
# End of Single SKU Table
```

The table should be defined between following block.

```
# Single SKU Max Power Table
```

# End of Single SKU Table

The basic unit of Single SKU table is per-channel transmission power definition. The per-channel TX power definition starts with channel number. For example:

ch1 = channel 1ch2 = channel 2

The per-rate transmission power is defined behind channel number. The sequence is CCK, OFDM, HT20, and HT40.

С	С	С	С	0	0	0	0	0	0	0	0	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н
С	С	С	С	F	F	F	F	F	F	F	F	Т	Т	Т	T	Т	Т	Т	Т	Т	T	T	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т
Κ	Κ	Κ	Κ	D	D	D	D	D	D	D	D	2	,2	2	2	2	2	2	2	2	2	. 2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
				M	M	Ν	Ν	Ν	Ν	Ν	Ν	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	2	5	1									7	Ш			Ν		- 21														Ν											
Ν	Ν		1	6	9	1	1	2	3	4	5	M	M	Ν	M	С	Ν	M	M	M	Ν	Ν	Ν	Ν	M	Ν	Ν	Ν	Ν	Ν	Ν	С	Ν	M	Ν	M	Ν	Ν	Ν	Ν	Ν	Ν	Μ
		5	Ν	M	M	2	8	4	6	8	4	c	C	C	С	S	C	C	'C	С	С	С	С	С	С	С	С	С	С	С	С	S	С	С	С	С	С	С	С	С	С	С	С
		M				Ν	M	Ν	Ν	Μ	Μ	S	S	S	S	4	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	4	S	S	S	S	S	S	S	S	S	S	S
												0	1	2	3		5	6	7	8	9	1	1	1	1	1	1	0	1	2	3		5	6	7	8	9	1	1	1	1	1	1
															_							0	1	2	3	4	5											0	1	2	3	4	5

The per-rate TX power definition should follow this format. Even 1x1n dongle not support MCS8 ~ MCS15, the user still have to define MCS 8 ~ MCS15. Otherwise the parser for Single SKU table will go wrong. The driver will ignore MCS 8~ MCS15 settings.

If TX power definition is omitted, the driver use default power stored in EEPROM 0xD0 as target power.

#### 5. Single SKU Table for 5G

The following is the example Single SKU Table for 5G.



```
Single SKU Max
|CCK 1~11 | |
             Power Table
OFDM 6 ~
                                                                              HT40 MCS 0 ~ 15
  HT20 MCS 0 ~
13 13 13 13
16 16 16 16 16
17 17 17 17
17 17 17 17
17 17 17 17
17 17 17 17
17 17 17 17
17 17 17 17
17 17 17 17
                                               13 13 13
16 16 16
17 17 17
ch1 16 16 16
ch2 18 18 18
                            14
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17 17
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16 16 16 16 16
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18 18 18
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19 19 19 17
19 19 19 17
ch6 19 19 19 19 19 19
                               19 19 19 19
                                                 19
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                                                                    18 18 18 18
                                                                       17
17
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                                 19 19
19 19
                                      19
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                                                 19
19
ch9 19 19 19 19 17 17 17 17 17 17 17 17 17 17 17 17
                                        17 17 17 17 17 17 17 17 17
                                                             17 17 17 12
```

Because of 5G not support CCK rate, CCK definition is omitted in 5G. The detail per-channel transmission power definition format is shown below.

О	0	0	0	0	0	0	0	Н	Н	Н	Н	Н	Н	Н	Н	H	Н	H	H	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н	Н
F	F	F	F	F	F	F	F	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	T	Т	T	T	Т	T	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т	Т
D	D	D	D	D	D	D	D	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Ν	1 N	N	M	M	Μ	Μ	Μ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
												Μ										<b>Y</b>						Μ											
6	9	1	1	2	3	4	5	M	Μ	Μ	Μ	С	Μ	M	Μ	M	Μ	Μ	М	M	M	M	Μ	Ν	Μ	Μ	M	С	M	Μ	Μ	M	Μ	Μ	Μ	Μ	Μ	Μ	M
Ν	1 N	2	8	4	6	8	4	С	С	С	С	S	С	C	С	C	С	С	С	C	C	С	С	С	С	С	С	S	С	С	С	С	С	С	С	С	С	С	С
		N	M	M	Μ	Μ	Μ	S	S	S	S	4	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	4	S	S	S	S	S	S	S	S	S	S	S
								0	1	2	3		5	6	7	8	9	1	1	1	1	1	1	0	1	2	3		5	6	7	8	9	1	1	1	1	1	1
																	$\Delta$	0	1	2	3	4	5											0	1	2	3	4	5

#### 6. EEPROM Setting

The EEPROM 0xD0 is defined as target power. It indicate the maximum transmission power of the wireless module at OFDM 54M. According to target power, PA mode and MAC 0x1314(EEPROM 0xDE~0xEF), the driver can calculate the maximum transmission power for each rate. For example:

	OFDM
6m	20
9m	20
12m	20
18m	20
24m	18
36m	18
48m	18
54m	18

	HT20
MO	20
M1	20
M2	20
M3	20
M4	18
M5	18
М6	18
M7	18

	HT40
M0	20
M1	20
M2	20
M3	20
M4	18
M5	18
M6	18
M7	18

	ССК
1M	21
2M	21
5.5M	21
11M	21

If the TX power in Single SKU table exceeds the Wi-Fi module transmission capability, the driver will limit the transmission power on maximum TX power. For example, the maximum TX power at OFDM 54M is 18dBm. But Single SKU table at OFDM 54M is 25dBm. The final TX power is 18dBm at OFDM 54M.

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#### 7. Notice

Please check the related transmission power settings in EEPROM 0xD0, EEPROM 0x52~0x5F and EEPROM 0xDE~0xEF. If transmission power setting in EEPROM exceeds real transmission capability, the dongle will have bad EVM. For example, the real transmission capability is 18dBm, but EEPROM 0xD0 is 0x28 (20dBm).

If transmission power setting in EEPROM is less than real transmission capability, the transmission performance is limited.

Second, for hardware limitation, the following TX rate is grouped. The Single SKU table cannot set different value in grouped TX rate.

TX power for CCK 1M/2M
TX power for CCK 5.5M/11M
TX power for OFDM 6M/9M
TX power for OFDM 12M/18M
TX power for OFDM 24M/36M
TX power for OFDM 48M/54M
TX power for HT MCS=0,1
TX power for HT MCS=2,3
TX power for HT MCS=4,5
TX power for HT MCS=6,7
TX power for HT MCS=8,9
TX power for HT MCS=10,11
TX power for HT MCS=12,13
TX power for HT MCS=14,15