

# UDS710\_UMW2651 RF Connectivity ini Files Guide

HW\_RF WCN

2020/02/24

## History

Version	Owner	Date	Notes
V1.0	HW_RF WCN	2020.02.14	Preliminary release

Unisoc Confidential For hial



# Contents

1

Operational approach of ini files

2

RF parameters introduction in ini files --- WIFI part

3

RF parameters introduction in ini files --- BT part

# 1. Operational approach of ini files

## 1.1 The calibration files of UDS710\_UMW2651:

The UDS710\_UMW2651 RF ini file name: [wifi\\_board\\_config.ini](#), [bt\\_configure\\_rf.ini](#) and [bt\\_configure\\_pskey.ini](#)

## 1.2 The paths of calibration files:

Andorid 8.0 and above version, the ini path of the phone: [/vendor/etc](#)

older Andorid version, the ini path of the phone: [/system/etc](#)

## 1.3 The operation methods of the ini files:

### Pull the ini files out of the phone:

`adb root`

`adb remount`

`adb pull /vendor/etc/wifi_board_config.ini the folder path on PC`

`adb pull /vendor/etc/bt_configure_rf.ini the folder path on PC`

`adb pull /vendor/etc/bt_configure_pskey.ini the folder path on PC`

After pull the ini files out of the phone, you can modify the related RF parameters at the PC, and then save the changes.

### Push the calibration files from the PC to phone:

`adb push the folder path on PCwifi_board_config.ini /vendor/etc`

`adb push the folder path on PCbt_configure_rf.ini /vendor/etc`

`adb push the folder path on PCbt_configure_pskey.ini /vendor/etc`

After pushing the ini file to phone, you could observe the ini files through below command to find out whether it is successful to push the ini files:

`adb shell`

`cat /vendor/etc/wifi_board_config.ini`

`reboot`

*#read the ini file at the cmd window*

*#reboot the phone*

## 2. RF parameters introduction in ini files --- WIFI part

[Section 1: Version]

Major = 2

Minor = 2

*//ini version ID, is represent v2.2, keep the default value as the v2.2*

[Section 2: Board Config]

Calib\_Bypass = 1518

TxChain\_Mask = 3

RxChain\_Mask = 3

*// Calib\_Bypass is the calibration control parameter, keep the value as 1518 (decimalism); Bit 0: N/A; Bit 1: RC; Bit 2: RX-DCOC; Bit 3: RXIQ; Bit 4:TPC; Bit 5:TXDC; Bit 6: DPD RXDC; Bit 7: TXIQ; Bit 8:DPD; Bit 9: SCAN\_RXDCOC; Bit 10: TPC Open-loop; Bit 11: LNA DCOC; Bit 13: DPD\_2G; Bit 14: DPD\_P2P; Bit 15: DPD\_SAP;*

*// TxChain\_Mask represent the 2G chain, 1→primary (SISO); 2→diversity (SISO); 3→MIMO;*

*// RxChain\_Mask represent the 5G chain, 1→primary (SISO); 2→diversity (SISO); 3→MIMO;*

[Section 3: Board Config TPC]

DPD\_LUT\_idx = 0x30,0x01,0x12,0x23,0x33,0x33,0x33,0x33

TPC\_Goal\_Chain0 = 109,160,175,175,113,151,166,172

TPC\_Goal\_Chain1 = 142,159,162,156,144,143,152,155

*// DPD\_LUT\_idx represent the TPC\_LUT element of dpd calibration enable, 0,1,2 represent dpd enable, 3 represent dpd disable, high 4bit for 2G, low 4bit for 5G; keep these value as default;*

*// TPC\_Goal\_Chain0/1 represent primary/diversity chain ATE Pmean value, and the Efuse corresponding frequency are 2442/5200/5500/5700MHz, keep the default value; The first four parameters represent old substrate Efuse Pmean, the last four parameters represent new substrate Efuse Pmean;*

[Section 5: Board Config Frequency Compensation]

2G\_Channel\_Chain0 = -3,-3,-2,-1,-1,-2,-2,-2,-1,-1,-1,-1,-3

2G\_Channel\_Chain1 = -4,-3,-2,-1,-1,-2,-2,-2,-1,-1,-1,-1,-3

5G\_Channel\_Chain0 = 2,2,2,1,1,1,0,0,0,0,0,-1,-1,-1,-1,-2,-2,-2,-2,-3,-3,-3,-3

5G\_Channel\_Chain1 = 2,2,2,1,1,1,0,0,0,0,0,-1,-1,-1,-1,-2,-2,-2,-2,-3,-3,-3,-3

*// 2G\_Channel\_Chain0/1 represent 2.4G primary/diversity chain channel compensation of TX power, from channel 1 to 14, step is -0.5dB;*

*// 5G\_Channel\_Chain0/1 represent 5G primary/diversity chain channel compensation of TX power, from channel 36 to 165, step is -0.5dB;*

*Note: it is better configure positive value on the Frequency Compensation;*

## 2. RF parameters introduction in ini files --- WIFI part

[Section 6: Rate To Power with BW 20M]

11b\_Power = 16,16,16,16

11ag\_Power = 32,32,32,32,32,32,32

11n\_Power = 40,40,40,40,40,40,40,40,36,36,36,36,36,36,36,40

11ac\_Power = 44,44,44,44,44,44,44,44,44,44,44,44,44,44,44,44,44,44

// 11b\_Power represent 11b TSSI backoff of related rate, the rate from the left to right are 1/2/5.5/11Mbps, the TX Power step is -1/8dB;

// 11ag\_Power represent 11ag TSSI backoff of related rate, the same modulation signal have the same TSSI backoff, the detail mapping relation as below show, the TX Power step is -1/8dB;

// 11n\_Power represent 2.4G MCS0~7 and 5G MCS0~7 and MCS32 TSSI backoff of related rate, SISO/MIMO have the same configuration with the same parameter; the rate from the left to right are MCS0~15, the TX Power step is -1/8dB;

// 11ac\_Power represent 5G11ac TSSI backoff of related rate, the rate from the left to right are MCS0~9\_1SS, MCS0~9\_2SS, the TX Power step is -1/8dB;

//2G 11ac: MCS0~7 keep same with 2G 11n MCS0~7, MCS8/9 is 2dB lower than 11n 40M MCS32 Power;

// for the TX Power adjustment, it's better to adjust the TSSI of related rate, and the [Section 5: Board Config Frequency Compensation] is just for the channel compensation to seek the TX power flatness of different channels;

	2.4G 11g								5G 11a							
11ag_Power	32		32		32		32		32		32		32		32	
Modulation	BPSK		QPSK		16-QAM		64-QAM		BPSK		QPSK		16-QAM		64-QAM	
RATE	6M	9M	12M	18M	24M	36M	48M	54M	6M	9M	12M	18M	24M	36M	48M	54M

[Section 7: Power Backoff]

Green\_WIFI\_offset = 0

HT40\_Power\_offset = 0

VHT40\_Power\_offset = 0

VHT80\_Power\_offset = 0

SAR\_Power\_offset = 0

Mean\_Power\_offset = 36

	2.4G 11n								5G 11n								40M
11n_Power	40	40	40	40	40	40	40	40	36	36	36	36	36	36	36	36	40
Modulation	BPSK	QPSK	QPSK	16-QAM	16-QAM	64-QAM	64-QAM	64-QAM	BPSK	QPSK	QPSK	16-QAM	16-QAM	64-QAM	64-QAM	64-QAM	BPSK
RATE(SISO /MIMO)	MCS0 /MCS8	MCS1 /MCS9	MCS2 /MCS10	MCS3 /MCS11	MCS4 /MCS12	MCS5 /MCS13	MCS6 /MCS14	MCS7 /MCS15	MCS0 /MCS8	MCS1 /MCS9	MCS2 /MCS10	MCS3 /MCS11	MCS4 /MCS12	MCS5 /MCS13	MCS6 /MCS14	MCS7 /MCS15	MCS32

// HT40\_Power\_offset represent the backoff of HT40 based on HT20, the step is -1/8dB;

// VHT40\_Power\_offset represent the backoff of VHT40 based on VHT20, the step is -1/8dB;

// VHT80\_Power\_offset represent the backoff of VHT80 based on VHT20, the step is -1/8dB;

### 3. RF parameters introduction in ini files --- BT part

#### 3.1 BT parameters introduction in bt\_configure\_rf.ini

#[2.02]\_\_\_/L=20 the suffix '\_B' means BT RF Path is Shared with WiFi

g\_ClassicPowerValue\_B = 0x4A15,0x4415,0x3E15, 0x3615, 0x3015, 0x2A15, 0x2415,0x1E15,0x1815,0x1115

*#BT classic tx power control words, have 8 level, the last one is max power.*

#[2.03]\_\_\_/L=32

g\_LEPowerValue\_B = 0x3715, 0x3715, 0x3715, 0x3715, 0x3715, 0x3715, 0x3715, 0x3715, 0x3615, 0x2F15, 0x2915, 0x2315, 0x1E15, 0x1915, 0x1315, 0x0D15

*#BT BLE tx power control words, have 13 level, the last one is max power.*

#[2.04]\_\_\_/L=32

g\_BRChannelpwrvalue\_B = 0x0915, 0x0915, 0x0915, 0x0D15, 0x0D15, 0x0D15, 0x0D15, 0x0D15

*#setting BR tx power level with different channels, and 10 channels interval.*

g\_EDRChannelpwrvalue\_B = 0x0A15, 0x0B15, 0x0B15, 0x0E15, 0x0E15, 0x0E15, 0x0E15, 0x0E15

*#setting EDR tx power level with different channels, and 10 channels interval.*

#[2.05]\_\_\_/L=16

g\_LEChannelpwrvalue\_B = 0x1B15,0x1B15,0x1B15,0x1B15,0x1B15,0x1B15,0x1B15,0x1B15

*#setting BT 5.0 tx power level with different channels, and 5 channels interval.*

Note: this power control word format is only applied to effused chip



### 3. RF parameters introduction in ini files --- BT part

#### 3.2 gain table for BT power

The table on the right is the BT power control word table of UMW2651, please refer to this table for BT power adjustment.

Index	Pout(dBm)	Control Word
0	12.633	0015
1	12.112	0115
2	11.694	0215
3	11.301	0315
4	10.8	0415
5	10.272	0515
6	9.803	0615
7	9.395	0715
8	8.894	0815
9	8.262	0915
10	7.515	0A15
11	7.065	0B15
12	6.595	0C15
13	6.094	0D15
14	5.524	0E15
15	4.973	0F15
16	4.528	1015
17	3.985	1115
18	3.369	1215
19	2.652	1315
20	2.25	1415
21	1.812	1515
22	1.34	1615
23	0.86	1715
24	0.336	1815
25	-0.159	1915
26	-0.729	1A15
27	-1.211	1B15
28	-1.781	1C15
29	-2.429	1D15
30	-2.793	1E15
31	-3.175	1F15
32	-3.58	2015
33	-4.024	2115
34	-4.51	2215
35	-5.005	2315

Index	Pount(dBm)	Control Word
36	-5.551	2415
37	-5.975	2515
38	-6.576	2615
39	-7.07	2715
40	-7.647	2815
41	-8.308	2915
42	-8.679	2A15
43	-9.063	2B15
44	-9.476	2C15
45	-9.928	2D15
46	-10.421	2E15
47	-10.927	2F15
48	-11.481	3015
49	-12.064	3115
50	-12.484	3215
51	-12.963	3315
52	-13.571	3415
53	-14.235	3515
54	-14.608	3615
55	-15.009	3715
56	-15.425	3815
57	-15.868	3915
58	-16.36	3A15
59	-16.88	3B15
60	-17.448	3C15
61	-18.032	3D15
62	-18.559	3E15
63	-19.246	3F15



# THANKS



All data and information contained in or disclosed by this document is confidential and proprietary information of UNISOC and all rights therein are expressly reserved. By accepting this material, the recipient agrees that this material and the information contained therein is to be held in confidence and in trust and will not be used, copied, reproduced in whole or in part, nor its contents revealed in any manner to others without the express written permission of UNISOC. The contents are subject to change without prior notice. Although every reasonable effort is made to present current and accurate information, UNISOC makes no guarantees of any kind with respect to the matters addressed in this document. In no event shall UNISOC be responsible or liable, directly or indirectly, for any damage or loss caused or alleged to be caused by or in connection with the use of or reliance on any such content.