

RF Exposure Report

(Part 0: SAR Char Evaluation)

APPLICANT : Realme Chongqing Mobile Telecommunications Corp., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : realme
MODEL NAME : RMX5078
FCC ID : 2AUYFRMX5078
STANDARD : FCC 47 CFR PART 2 (2.1093)

We, Sporton International Inc. (Shenzhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Shenzhen), the test report shall not be reproduced except in full.



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History of this test report

Report No.	Version	Description	Issued Date
FA4D2714C	01	Initial issue of report	Mar. 06, 2025



1. Introduction

The RF exposure limit is defined based on time-averaged RF exposure. The product implements MediaTek TA-SAR feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with RF exposure limit over a defined time window, for SAR (transmit frequency $\leq$ 6GHz). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement. TA-SAR cannot operate without SAR characterization at the device level, beforehand.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for TA-SAR algorithm. Both SAR char will be entered via the MediaTek's NV suggestion to enable the TA-SAR Feature.

Terminologies in this report

P_{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P_{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory power density limit to account for all device design related uncertainty.
SAR char	P_{limit} for all the technologies/bands for all applicable ECI



2. Product Description

Product Feature & Specification	
Equipment Name	Mobile Phone
Brand Name	realme
Model Name	RMX5078
FCC ID	2AUYFRMX5078
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850MHz ~ 1910MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n26: 814 MHz ~ 849 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA/HSUPA DC-HSDPA HSPA+ (16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM 5G NR: DFT-s-OFDM/CP-OFDM, QPSK/16QAM/64QAM/256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ac VHT20/VHT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC: ASK



3. SAR Characterization

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for TA-SAR algorithm to control and manage RF exposure for $f < 6$ GHz.

3.1 SAR design target and uncertainty

SAR design Target:

For WWAN bands: [Unit: (W/kg)]

Band	Antenna	ECI 2 for 1g SAR	ECI 4 for 1g SAR	ECI 1 for 1g SAR(15mm)	ECI 3 for 1g SAR(15mm)	ECI 1 for 10g SAR	ECI 3 for 1g SAR(10mm)
GSM850	0	0.910	0.910	0.910	0.910	2.280	0.111
GSM850	1	0.448	0.448	0.910	0.910	2.280	0.045
GSM1900	1	0.886	0.886	0.118	0.118	2.280	0.082
GSM1900	3	0.910	0.910	0.910	0.910	2.280	0.101
WCDMA II	1	0.709	0.709	0.158	0.158	2.020	0.360
WCDMA II	3	0.910	0.910	0.250	0.250	2.280	0.226
WCDMA IV	1	0.825	0.825	0.088	0.088	2.280	0.056
WCDMA IV	3	0.910	0.910	0.156	0.156	2.280	0.146
WCDMA V	0	0.910	0.910	0.910	0.910	2.280	0.121
WCDMA V	1	0.530	0.530	0.910	0.910	2.280	0.079
LTE Band 2	1	0.845	0.845	0.181	0.181	2.280	0.155
LTE Band 2	3	0.910	0.910	0.910	0.910	2.280	0.185
LTE Band 2	4	0.879	0.879	0.195	0.195	2.280	0.208
LTE Band 4	1	0.910	0.910	0.110	0.110	2.280	0.087
LTE Band 4	3	0.910	0.910	0.174	0.174	2.280	0.170
LTE Band 4	4	1.010	0.395	0.190	0.190	2.240	0.305
LTE Band 5/26	0	0.910	0.910	0.910	0.910	2.280	0.097
LTE Band 5/26	1	0.910	0.910	0.910	0.910	2.280	0.064
LTE Band 7	1	0.812	0.812	0.242	0.242	2.140	0.398
LTE Band 7	3	0.910	0.910	0.243	0.243	2.280	0.254
LTE Band 7	5	0.481	0.481	0.106	0.106	2.280	0.084
LTE Band 12/17	0	0.910	0.910	0.910	0.910	2.280	0.100
LTE Band 12/17	1	0.910	0.910	0.910	0.910	2.280	0.057
LTE Band 13	0	0.910	0.910	0.910	0.910	2.280	0.090
LTE Band 13	1	0.910	0.910	0.910	0.910	2.280	0.040
LTE Band 66	1	0.807	0.807	0.091	0.091	2.280	0.067
LTE Band 66	3	0.910	0.910	0.220	0.220	2.280	0.221
LTE Band 66	4	0.983	0.983	0.322	0.322	2.240	0.289
LTE Band 38	1	0.728	0.728	0.910	0.910	2.280	0.201
LTE Band 38	3	0.910	0.910	0.910	0.910	2.280	0.194
LTE Band 38	5	0.525	0.525	0.910	0.910	2.280	0.096
LTE Band 41	1	0.831	0.831	0.120	0.120	2.280	0.116
LTE Band 41	3	0.910	0.910	0.093	0.093	2.280	0.114
LTE Band 41	5	0.419	0.419	0.094	0.094	2.280	0.074
FR1 n2	1	0.647	0.647	0.145	0.145	2.280	0.136
FR1 n2	3	0.910	0.910	0.185	0.185	2.280	0.182
FR1 n2	4	0.684	0.684	0.219	0.219	2.280	0.232
FR1 n5	0	0.910	0.910	0.910	0.910	2.280	0.090
FR1 n5	1	0.910	0.910	0.910	0.910	2.280	0.062
FR1 n26	0	0.910	0.910	0.910	0.910	2.280	0.090
FR1 n26	1	0.910	0.910	0.910	0.910	2.280	0.062
FR1 n7	1	0.791	0.791	0.221	0.221	2.250	0.439
FR1 n7	3	0.910	0.910	0.182	0.182	2.280	0.271
FR1 n66	1	0.447	0.447	0.105	0.105	2.280	0.062
FR1 n66	3	0.910	0.910	0.174	0.174	2.280	0.163



FR1 n66	4	0.802	0.802	0.273	0.273	2.280	0.284
FR1 n38	1	0.991	0.991	0.157	0.157	2.280	0.192
FR1 n38	3	0.910	0.910	0.250	0.250	2.280	0.258
FR1 n41	1	0.899	0.899	0.187	0.187	2.280	0.210
FR1 n41	3	0.910	0.910	0.250	0.250	2.280	0.258

<SAR Characterization>:

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR_{design_target} < SAR_{regulatory_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

**3.2 SAR Char Table**

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for TA-SAR algorithm to control and manage RF exposure for $f < 6$ GHz.

<P_{limit} for supported technologies and bands>

Band	Antenna	ECI 2	ECI 4	ECI 1	ECI 3	Total Uncertainty dB (k=2)	Pmax*
GSM850	0	31.2	31.2	30.8	20.8	1.2	25.8
GSM850	1	22.3	20.8	36.7	20.8	1.2	25.3
GSM1900	1	17.3	13.8	17.6	13.6	1.2	22.3
GSM1900	3	33.8	33.8	29.4	15.8	1.2	22.8
WCDMA II	1	17.3	12.3	19.8	14.8	1.2	23.8
WCDMA II	3	35.1	35.1	22.3	17.3	1.2	23.8
WCDMA IV	1	22.3	17.3	21.8	16.8	1.2	23.8
WCDMA IV	3	33.4	33.4	22.3	17.3	1.2	23.8
WCDMA V	0	30.9	30.9	32.1	20.8	1.2	23.8
WCDMA V	1	21.8	20.3	34.2	20.3	1.2	23.3
LTE Band 2	1	17.5	12.5	19.5	14.5	1.2	22.5
LTE Band 2	3	33.2	33.2	29.9	18.0	1.2	23.0
LTE Band 2	4	20.5	15.5	20.5	15.5	1.2	22.5
LTE Band 4	1	24.4	18.6	22.6	17.6	1.2	23.6
LTE Band 4	3	33.3	33.3	22.6	17.6	1.2	23.6
LTE Band 4	4	21.6	17.6	22.1	17.1	1.2	23.6
LTE Band 5/26	0	31.9	31.9	32.0	20.8	1.2	23.8
LTE Band 5/26	1	25.5	20.0	35.7	20.0	1.2	23.0
LTE Band 7	1	15.0	13.0	20.5	15.5	1.2	22.5
LTE Band 7	3	29.1	18.0	21.5	16.5	1.2	23.0
LTE Band 7	5	17.8	12.8	20.3	15.3	1.2	22.3
LTE Band 12/17	0	34.4	34.4	31.8	20.3	1.2	23.3
LTE Band 12/17	1	25.8	19.5	32.6	19.5	1.2	22.5
LTE Band 13	0	31.7	31.7	30.4	20.3	1.2	23.3
LTE Band 13	1	27.7	19.5	35.2	19.5	1.2	22.5
LTE Band 66	1	21.1	17.1	21.6	16.6	1.2	23.1
LTE Band 66	3	33.3	33.3	22.1	17.1	1.2	23.6
LTE Band 66	4	18.1	17.6	20.6	16.6	1.2	23.6
LTE Band 38	1	16.8	12.8	26.8	15.8	1.2	20.8
LTE Band 38	3	30.3	30.3	29.1	16.3	1.2	21.3
LTE Band 38	5	17.3	12.3	25.6	15.3	1.2	20.3
LTE Band 41	1	15.3	11.8	18.3	13.3	1.2	20.8
LTE Band 41	3	30.3	30.3	18.8	13.8	1.2	21.3
LTE Band 41	5	15.3	10.3	16.8	11.8	1.2	19.3
FR1 n2	1	16.5	11.5	18.5	13.5	1.2	23.0
FR1 n2	3	31.9	31.9	22.0	17.0	1.2	23.5
FR1 n2	4	19.5	15.5	20.5	15.5	1.2	23.0

FR1 n5	0	31.7	20.5	31.3	20.5	1.2	23.5
FR1 n5	1	24.6	19.7	34.5	19.7	1.2	22.7
FR1 n26	0	31.7	20.5	31.3	20.5	1.2	23.5
FR1 n26	1	24.6	20.0	34.5	20.0	1.2	23.0
FR1 n7	1	15.5	12.5	20.5	16.5	1.2	22.5
FR1 n7	3	29.1	29.1	21.0	16.0	1.2	23.0
FR1 n66	1	20.7	15.7	20.2	15.2	1.2	22.7
FR1 n66	3	32.4	32.4	21.7	16.7	1.2	23.2
FR1 n66	4	16.7	15.7	19.7	14.7	1.2	22.7
FR1 n38	1	18.5	13.5	21.0	16.0	1.2	22.5
FR1 n38	3	30.0	30.0	20.5	15.5	1.2	23.0
FR1 n41	1	17.0	13.0	20.5	15.5	1.2	22.5
FR1 n41	3	30.1	30.1	21.0	16.0	1.2	23.0

- Note: 1) *P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to P_{max} +1.2 uncertainty.
2) All Plimit power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM & LTE TDD & NR TDD).
3) The max allowed output power is the Plimit + 1.2db device uncertainty, and if Plimit is higher than P_{max}, the device output power will be P_{max} instead.
4) The following table is duty cycle and factor used for calculating time average power.

GSM/FDD/TDD	Duty Cycle	Time average calculation factor(dB)
GSM 1TX	12.50%	-9.0
GSM 2TX	25%	-6.0
GSM 3TX	37.50%	-4.3
GSM 4TX	50%	-3.0
FDD LTE	100%	0.0
TDD LTE	63.30%	-2.0
NR FDD/TDD	100%	0.0