


RF Exposure Report

(Part 0: SAR Char Evaluation)

FCC ID : VUIMD100
Equipment : Module
Brand Name : PEGATRON
Model Name : MD100-Q62
Applicant : PEGATRON CORPORATION
5F., NO. 76, LIGONG ST., BEITOU
DISTRICT, TAIPEI CITY, Taiwan
Standard : FCC 47 CFR Part 2 (2.1093)

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures 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., the test report shall not be reproduced except in full.



Approved by: Cona Huang / Deputy Manager



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1. Introduction

The FCC RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature version16 which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency $\leq 6\text{GHz}$) 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. Cannot operate without SAR characterization at the device level, beforehand.

This report describes the procedures for the SAR char and the parameters obtained from SAR characterization (referred to as SAR char respectively) will be used as input for Smart Transmit. Both SAR char will be entered via the Embedded File System (EFS) to enable the Smart Transmit 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 uncertainties.
SAR char	P_{limit} for all the technologies/bands for all applicable DSI

Test Lab Information

Test Firm Name	Sporton International Inc.
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Test Firm Registration Number for FCC	553509
FCC Designation No.	TW1190
Test Engineers	Steven Chang, Aaron Chen
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2. Product Description

Product Feature & Specification	
Equipment Name	Module
Brand Name	PEGATRON
Model Name	MD100-Q62
FCC ID	VUIMD100
Wireless Technology and Frequency Range	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n14 : 788 MHz ~ 798 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n30 : 2305 MHz ~ 2315 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n48 : 3550 MHz ~ 3700 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n70 : 1695 MHz ~ 1710 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77: 3700 MHz ~ 3980 MHz, 3450MHz ~ 3550MHz
Mode	LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM
EUT Stage	Production Unit

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 Smart Transmit to control and manage RF exposure for f < 6 GHz.

3.1 SAR design target and uncertainty

<SAR design target and uncertainty>

The detail SAR design target relate to each exposure conditions pls refer to operation description

Band	Antenna	Device Uncertainty (dB)	1g SAR design target (W/kg)
LTE Band 2	0	1.5	0.85
LTE Band 2	3	1.5	0.85
LTE Band 5	3	1.5	0.85
LTE Band 12	3	1.5	0.85
LTE Band 13	3	1.5	0.85
LTE Band 30	0	1.5	0.85
LTE Band 66/4	0	1.5	0.85
LTE Band 66	3	1.5	0.85
LTE Band 71	3	1.5	0.85
LTE Band 41(PC3)	0	1.5	0.85
LTE Band 41(PC2)	0	1.5	0.85
LTE Band B48	0	1	0.95
FR1 n5	0	1.5	0.85
FR1 n5	3	1.5	0.85
FR1 n12	3	1.5	0.85
FR1 n14	3	1.5	0.85
FR1 n25 / FR1 n2	0	1.5	0.85
FR1 n25 / FR1 n2	3	1.5	0.85
FR1 n30	0	1.5	0.85
FR1 n66	0	1.5	0.85
FR1 n66	3	1.5	0.85
FR1 n70	0	1.5	0.85
FR1 n71	3	1.5	0.85
FR1 n48	0	1	0.95
FR1 n41(PC3)	0	1.5	0.85
FR1 n41(PC2)	0	1.5	0.85
FR1 n41(PC3)	3	1.5	0.85
FR1 n41(PC2)	3	1.5	0.85
FR1 n77(PC3)	0	1.5	0.85
FR1 n77(PC2)	0	1.5	0.85
FR1 n77(PC3)	3	1.5	0.85
FR1 n77(PC2)	3	1.5	0.85

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

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

*P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to P_{max} + uncertainty.

**All P_{limit} 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).

The max allowed output power is the P_{limit} + device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

Band	Antenna	TDD duty cycle	P _{limit} **	P _{max} * (dBm)
			Body	
LTE Band 2	0	100.00%	19.1	23.0
LTE Band 2	3	100.00%	20.5	23.0
LTE Band 5	3	100.00%	23.4	23.0
LTE Band 12	3	100.00%	23.2	23.0
LTE Band 13	3	100.00%	22.1	23.0
LTE Band 30	0	100.00%	18.5	23.0
LTE Band 66/4	0	100.00%	19.3	23.0
LTE Band 66	3	100.00%	23.3	23.0
LTE Band 71	3	100.00%	23.2	23.0
LTE Band 41(PC3)	0	63.30%	13.1	21.0
LTE Band 41(PC2)	0	43.30%		21.4
LTE Band B48	0	63.30%	16.7	18.5
FR1 n5	0	100.00%	26.4	21.5
FR1 n5	3	100.00%	22.7	23.5
FR1 n12	3	100.00%	22.8	23.0
FR1 n14	3	100.00%	23.1	23.0
FR1 n25 / FR1 n2	0	100.00%	19.0	23.0
FR1 n25 / FR1 n2	3	100.00%	21.2	23.0
FR1 n30	0	100.00%	19.2	23.0
FR1 n66	0	100.00%	19.9	23.0
FR1 n66	3	100.00%	22.3	23.0
FR1 n70	0	100.00%	21.9	23.0
FR1 n71	3	100.00%	22.9	23.0
FR1 n41(PC3)	0	100.00%	14.5	23.0
FR1 n41(PC2)	0	50.00%		21.5
FR1 n41(PC3)	3	100.00%	16.7	23.0
FR1 n41(PC2)	3	50.00%		21.5
FR1 n48	0	100.00%	16.5	21.0
FR1 n77(PC3)	0	100.00%	15.4	21.8
FR1 n77(PC2)	0	50.00%		21.2
FR1 n77(PC3)	3	100.00%	15.6	21.8
FR1 n77(PC2)	3	50.00%		21.2