RF Exposure Report

(Part 0: SAR Char Evaluation)

FCC ID	**: YY3-1102418**
Equipment	**: Wireless Module**
Brand Name	**: AirPrime**
Model Name	**: EM9191**
Applicant	**: Handheld Group AB Kinnegatan 17 A, SE-531 33, Lidköping, Sweden**
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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History of this test report

Report No.	Version	Description	Issued Date
FA261002A	01	Initial issue of report	Mar. 21, 2023

1. Introduction

The FCC RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter sto ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 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. 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 (reffered 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.
Test Firm Information	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan TEL: +886-3-327-3456 FAX: +886-3-328-4978
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	Wireless Module
Brand Name	AirPrime
Model Name	EM9191
FCC ID	YY3-1102418
Wireless Technology and Frequency Range	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 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 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 LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM, 256QAM

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	Device Uncertainty (dB)	duty cycle %	1g SAR design target (W/kg)
WCDMA II	1	100.00%	0.953
WCDMA IV	1	100.00%	0.953
WCDMA V	1	100.00%	0.953
LTE B2/25	1	100.00%	0.953
LTE B66/4	1	100.00%	0.953
LTE B7	1	100.00%	0.953
LTE B12/B17	1	100.00%	0.953
LTE B13	1	100.00%	0.953
LTE B14	1	100.00%	0.953
LTE B26/5	1	100.00%	0.953
LTE B41/38(PC2)**	1	63.30%	0.953
LTE B41 (PC3)**	1	43.30%	0.953
LTE B71	1	100.00%	0.953
n2	1	100.00%	0.953
n5	1	100.00%	0.953
n66	1	100.00%	0.953
n71	1	100.00%	0.953

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 Pmax + 1dB 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} + 1dB device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

Band	TDD duty cycle	Plimit*	Pmax * (dBm)
		Body (DSI:1)	
WCDMA II	100.00%	18.6	23.5
WCDMA IV	100.00%	20.0	23.5
WCDMA V	100.00%	21.2	23.5
LTE B2/25	100.00%	18.1	23.0
LTE B66/4	100.00%	20.5	23.0
LTE B7	100.00%	21.8	23.8
LTE B12/B17	100.00%	21.0	23.0
LTE B13	100.00%	20.7	23.0
LTE B14	100.00%	20.7	23.0
LTE B26/5	100.00%	20.6	23.0
LTE B41/38(PC2)**	63.30%	21.2	21.8
LTE B41 (PC3)**	43.30%		21.4
LTE B71	100.00%	22.0	23.0
n2	100.00%	19.0	23.5
n5	100.00%	21.1	23.5
n66	100.00%	20.5	23.5
n71	100.00%	22.5	23.5