RF EXPOSURE EVALUATION REPORT

FCC ID	: A6GC4MAX-4MUSACV4
Equipment	: Telematic embedded system
Brand Name	: Mobile Devices Ingenierie
Model Name	: C4MAX-4MUSAC_V4
Marketing Name	: C4MAX-4MUSAC_V4
Applicant	: Mobile Devices Ingénierie 100 Avenue de Stalingrad 94800 Villejuif FRANCE
Manufacturer	: Mobile Devices Ingénierie 100 Avenue de Stalingrad 94800 Villejuif FRANCE
Standard	: 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated in accordance with 47 CFR Part 2.1091 for the device and pass the limit.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Cona Huang

Approved by: Cona Huang / Deputy Manager

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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History of this test report

Report No.	Version	Description	Issued Date
FA891223	Rev. 01	Initial issue of report	Oct. 15, 2018

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Telematic embedded system
Brand Name	Mobile Devices Ingenierie
Model Name	C4MAX-4MUSAC_V4
Marketing Name	C4MAX-4MUSAC_V4
FCC ID	A6GC4MAX-4MUSACV4
Wireless Technology and Frequency Range	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 12: 699 MHz ~ 716 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 Bluetooth: 2402 MHz ~ 2480 MHz
Mode	LTE: QPSK, 16QAM 802.11b/g/n HT20 Bluetooth BR/EDR/LE
HW Version	SAP00381
SW Version	v2080
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Reviewed by: Jason Wang

Report Producer: Wan Liu

2. Maximum RF average output power among production units

Mode		Maximum Average power(dBm)
LTE	Band 2	25.0
	Band 4	25.0
	Band 12	25.0

Band / Mode	Average Power (dBm)			
	BR / EDR			LE
	1M	2M	3M	GFSK
Bluetooth	11	6	6	9

	Mode	Channel	Frequency (MHz)	Tune-Up Limit
2.4GHz WLAN	802.11b	CH 1	2412	15.00
		CH 6	2437	15.00
		CH 11	2462	15.00
	802.11g	CH 1	2412	12.00
		CH 6	2437	12.00
		CH 11	2462	12.00
	802.11n-HT20	CH 1	2412	10.50
		CH 6	2437	10.50
		CH 11	2462	10.50

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)	Power Density / Limit
LTE Band 2	1850.7	2.50	25.00	27.500	0.562	562.341	0.112	1.000	0.112
LTE Band 4	1710.7	2.50	25.00	27.500	0.562	562.341	0.112	1.000	0.112
LTE Band 12	699.7	2.50	25.00	27.500	0.562	562.341	0.112	0.466	0.240
2.4GHz WLAN	2412.0	0.20	15.00	15.200	0.033	33.113	0.007	1.000	0.007
Bluetooth	2402.0	0.20	11.00	11.200	0.013	13.183	0.003	1.000	0.003

Note: For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band

4.2. Collocated Power Density Calculation

WWAN Power Density / Limit	WLAN Power Density / Limit	Bluetooth Power Density / Limit	Σ(Power Density / Limit) of WWAN+WLAN+Bluetooth
0.240	0.007	0.003	0.250

Note:

1. Σ(Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + WLAN + Bluetooth.
2. Considering the WWAN module collocation with the WLAN and Bluetooth transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 3 collocated transmitters is compliant

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.