

RF Exposure Evaluation Report

APPLICANT : Mobile Devices Ingénierie
EQUIPMENT : Telematics embedded system
BRAND NAME : Mobile Devices Ingenierie
MODEL NAME : C4MAX
MARKETING NAME : C4Max-E V2
FCC ID : A6GC4MAX-E
STANDARD : 47 CFR Part 2.1091

We, Sporton International (Shenzhen) Inc., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit. Without written approval of Sporton International (Shenzhen) Inc., the test report shall not be reproduced except in full.



Approved by: Mark Qu / Manager



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA533103-03	Rev. 01	Initial issue of report	Jan. 04, 2018



1. Administration Data

1.1. Testing Laboratory

Testing Laboratory	
Test Site	Sporton International (Shenzhen) Inc.
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595

Applicant	
Company Name	Mobile Devices Ingénierie
Address	100 Avenue de Stalingrad 94800 Villejuif FRANCE

Manufacturer	
Company Name	Mobile Devices Ingénierie
Address	100 Avenue de Stalingrad 94800 Villejuif FRANCE

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Telematics embedded system
Brand Name	Mobile Devices Ingenierie
Model Name	C4MAX
Marketing Name	C4Max-E V2
FCC ID	A6GC4MAX-E
IMEI Code	354676050526556
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	<ul style="list-style-type: none"> • 802.11b/g/n HT20/HT40 • Bluetooth v3.0+EDR, Bluetooth v4.0 LE
Antenna Type	WLAN: Chip Antenna Bluetooth: Chip Antenna
HW Version	SAP00383
SW Version	V1944
EUT Stage	Production Unit
Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	



3. Maximum RF average output power among production units

Mode		Maximum Average Power (dBm)	
2.4GHz	802.11b	CH1	3.50
		CH6	3.00
		CH11	2.50
	802.11g	CH1	11.50
		CH6	10.50
		CH11	10.50
	802.11n-HT20	CH1	11.50
		CH6	10.50
		CH11	10.50
	802.11n-HT40	CH3	7.50
		CH6	11.00
		CH9	10.50
Bluetooth v3.0+EDR		7.00	
Bluetooth v4.0 LE		5.00	

4. 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/f ²)	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/f ²)	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



5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum ERP/EIRP (W)	Maximum output power Limit (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
WLAN2.4GHz	2412.0	0.20	11.50	11.70	0.01	14.79	0.003	1.00
Bluetooth	2402.0	0.20	7.00	7.20	0.01	5.25	0.001	1.00

Note:

1. For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band
2. WLAN2.4GHz and Bluetooth can't transmit simultaneously.

Conclusion:

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