RF Exposure Evaluation Report

APPLICANT	:	AMobile Intelligent Corp
EQUIPMENT	:	AMobile 5" RISC-based Panel PC
BRAND NAME	:	AMobile
MODEL NAME	:	IOT-500
FCC ID	:	2ACC5-HM500
STANDARD	:	47 CFR Part 2.1091

We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA611103	Rev. 01	Initial issue of report	Mar. 08, 2016

1. Administration Data

1.1. Testing Laboratory

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	AMobile Intelligent Corp
Address	18F. -1, No.150, Jian 1st Rd., Zhong He Dist., New Taipei City 235, Taiwan

Manufacturer	
Company Name	AMobile Intelligent Corp
Address	18F. -1, No.150, Jian 1st Rd., Zhong He Dist., New Taipei City 235, Taiwan

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	AMobile 5" RISC-based Panel PC
Brand Name	AMobile
Model Name	IOT-500
FCC ID	2ACC5-HM500
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	· GPRS/EGPRS · RMC 12.2Kbps · HSDPA · HSUPA · DC-HSDPA · 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 · Bluetooth v4.1-LE
Antenna Type	WWAN: Dipole Antenna WLAN: Dipole Antenna Bluetooth: Dipole Antenna
HW Version	1.0
SW Version	V01.01.00.R277
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	GSM 850	GSM 1900
	Burst Average power(dBm)	
GPRS/EDGE (GMSK, 1 Tx slot)	33.00	30.00
GPRS/EDGE (GMSK, 2 Tx slots)	31.00	29.00
GPRS/EDGE (GMSK, 3 Tx slots)	30.00	26.00
GPRS/EDGE (GMSK, 4 Tx slots)	29.00	25.00
EDGE (8PSK, 1 Tx slot)	25.00	24.00
EDGE (8PSK, 2 Tx slots)	24.00	23.00
EDGE (8PSK, 3 Tx slots)	22.00	21.00
EDGE (8PSK, 4 Tx slots)	21.00	20.00

Mode	Average Power (dBm)	
	WCDMA Band V	WCDMA Band II
RMC 12.2Kbps	24.00	23.00
HSDPA Subtest-1	24.00	23.00
DC-HSDPA Subtest-1	24.00	23.00
HSUPA Subtest-5	24.00	23.00

	Mode	Channel	Frequency (MHz)	Tune-Up Limit
2.4GHz WLAN	802.11b	CH 1	2412	19.50
		CH 6	2437	20.00
		CH 11	2462	18.00
	802.11g	CH 1	2412	19.50
		CH 6	2437	21.50
		CH 11	2462	13.50
	802.11n-HT20	CH 1	2412	18.50
		CH 6	2437	21.50
		CH 11	2462	10.50
	802.11n-HT40	CH 3	2422	17.50
		CH 6	2437	17.00
		CH 9	2452	10.50

	Mode	Channel	Frequency (MHz)	Tune-Up Limit
5.2GHz WLAN	802.11a	CH 36	5180	16.00
		CH 40	5200	19.50
		CH 44	5220	19.50
		CH 48	5240	19.50
	802.11n-HT20/ 802.11ac-VHT20	CH 36	5180	15.50
		CH 40	5200	19.50
		CH 44	5220	19.50
		CH 48	5240	19.50
	802.11n-HT40/ 802.11ac-VHT40	CH 38	5190	12.50
		CH 46	5230	19.50
	802.11ac-VHT80	CH 42	5210	11.50

	Mode	Channel	Frequency (MHz)	Tune-Up Limit
5.8GHz WLAN	802.11a	CH 149	5745	19.00
		CH 157	5785	20.00
		CH 165	5825	20.00
	802.11n-HT20/ 802.11ac-VHT20	CH 149	5745	19.50
		CH 157	5785	20.00
		CH 165	5825	20.00
	802.11n-HT40/ 802.11ac-VHT40	CH 151	5755	18.00
		CH 159	5795	20.00
	802.11ac-VHT80	CH 155	5775	16.50

Mode	Average power (dBm)
	GFSK
v4.1 with LE	2.00

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/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

5. Radio Frequency Radiation Exposure Evaluation

5.1. 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
GPRS 850 (1 Tx slot)	824.2	2.43	33.00	35.430	3.491	439.542	0.087	0.549	0.1592
GPRS 850 (2 Tx slots)	824.2	2.43	31.00	33.430	2.203	553.350	0.110	0.549	0.2005
GPRS 850 (3 Tx slots)	824.2	2.43	30.00	32.430	1.750	656.145	0.131	0.549	0.2377
GPRS 850 (4 Tx slots)	824.2	2.43	29.00	31.430	1.390	696.627	0.139	0.549	0.2524
EGPRS 850 (1 Tx slot)	824.2	2.43	25.00	27.430	0.553	69.663	0.014	0.549	0.0252
EGPRS 850 (2 Tx slots)	824.2	2.43	24.00	26.430	0.440	110.408	0.022	0.549	0.0400
EGPRS 850 (3 Tx slots)	824.2	2.43	22.00	24.430	0.277	103.992	0.021	0.549	0.0377
EGPRS 850 (4 Tx slots)	824.2	2.43	21.00	23.430	0.220	110.408	0.022	0.549	0.0400
GPRS 1900 (1 Tx slot)	1850.2	1.61	30.00	31.610	1.449	182.390	0.036	1.000	0.0363
GPRS 1900 (2 Tx slots)	1850.2	1.61	29.00	30.610	1.151	289.068	0.058	1.000	0.0575
GPRS 1900 (3 Tx slots)	1850.2	1.61	26.00	27.610	0.577	216.272	0.043	1.000	0.0430
GPRS 1900 (4 Tx slots)	1850.2	1.61	25.00	26.610	0.458	229.615	0.046	1.000	0.0457
EGPRS 1900 (1 Tx slot)	1850.2	1.61	24.00	25.610	0.364	45.814	0.009	1.000	0.0091
EGPRS 1900 (2 Tx slots)	1850.2	1.61	23.00	24.610	0.289	72.611	0.014	1.000	0.0145
EGPRS 1900 (3 Tx slots)	1850.2	1.61	21.00	22.610	0.182	68.391	0.014	1.000	0.0136
EGPRS 1900 (4 Tx slots)	1850.2	1.61	20.00	21.610	0.145	72.611	0.014	1.000	0.0145
WCDMA Band 5	826.4	2.43	24.00	26.430	0.440	439.542	0.087	0.551	0.1588
WCDMA Band 2	1852.4	1.61	23.00	24.610	0.289	289.068	0.058	1.000	0.0575
Bluetooth	2402.0	1.00	2.00	3.000	0.002	1.995	0.000	1.000	0.0004
2.4GHz WLAN	2412.0	1.00	21.50	22.500	0.178	177.828	0.035	1.000	0.0354
5GHz WLAN	5180.0	4.49	20.00	24.490	0.281	281.190	0.056	1.000	0.0560

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

<Collocated analysis>

Note:

1. For colocation analysis, GPRS850 (4TX slot) is chosen for summation due to the highest (power density/limit) among all WWAN wireless modes.
2. ∑(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.
3. 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

Max WLAN Power Density / Limit	Max Bluetooth Power Density / Limit	Max WWAN Power Density / Limit	∑(Power Density / Limit) of WWAN + WLAN + Bluetooth
0.0560	0.0004	0.2524	0.3088

Conclusion:

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