FCC Maximum Permissible Exposure(MPE) Estimation Report

For

Amobile Intelligent Corp.

8F-1., No.700, Zhongzheng Rd., Zhonghe Dist.,
New Taipei City 235, Taiwan

Model: **IOT-800**

Test Engineer:	Mist Peng
Report Number:	WSCT-R&E16023446A-SAR
Report Date:	2016-06-15
Check By:	Mark Cheng
Approved By:	Michal Ling
Prepared By:	World Standardization Certification & Testing (Shenzhen)Co., Ltd. Building A, Baoshi Science & Technology Park, Baoshi Road, Bao'an District, Shenzhen, Guangdong, China Tel: +86-755-26996192 Fax: +86-755-26996253

Modified History

REV.	Modification Description	Issued Date	Remark
REV.1.0	Initial Test Report Relesse	2016-06-08	
REV.1.1	Update Report	2016-06-15	

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1. General information

1.1. Notes

The test results of this test report relate exclusively to the test item specified in this test report. World Standardization Certification & Testing CO., LTD does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report is not to be reproduced or published in full without the prior written permission.

1.2. Application details

Date of receipt of test item: 2016-03-17

Start of test: 2016-03-17

End of test: 2016-05-30

1.3. EUT Description

Device Information：			
DUT Name:	8 inches Risc-based Panel PC		
Trade Mark：	Amobile		
Applicant:	**Amobile Intelligent Corp.** 8F-1., No.700, Zhongzheng Rd., Zhonghe Dist., New Taipei City 235, Taiwan.		
Manufacturer:	**Shenzhen JOYHONG Technology Co.,Ltd.** Building A2, Zhengfeng Industrial Park, Fengtang Road, Fuyong, Baoan, Shenzhen, China		
Device Type :	Portable device		
Exposure Category:	Uncontrolled environment/general population		
Hardware Version :	MB.MHI8_REV 0.3		
Software Version :	1.0.0		
Antenna Type :	Detachable Antenna		
Device Operating Configurations:			
Supporting Mode(s)	UMTS Band V,LTE Band XLI, Wi-Fi, BT		
Test Modulation	QPSK/16-QAM, OFDM/CCK,GFSK/π/4-DQPSK/ 8-DPSK		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	UTMS Band V	824~849	869~894
	LTE Band XLI	2498~2688	2498~2688
	Wi-Fi	2412~2472	2412~2472
	BT	2402~2480	2402~2480

2. Test specification(s)

SUPPLEMENT C Edition 01-01 to OET65c	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields – Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions
ANSI Std C95.1-1992	Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.(IEEE Std C95.1-1991)
RSS-102	Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands (Issue 4 of March 2010))
KDB 447498 D01v05	General RF Exposure Guidance

3 Testing laboratory

TEST SITE	WORLD STANDARDIZATION CERTIFICATION & TESTING CO., LTD.
Test Location	Building A, Baoshi Science & Technology Park, Baoshi Road, Bao'an District, Shenzhen, Guangdong, China
Telephone	+86-755-26996192
Fax	+86-755-26996253
State of accreditation	The Test laboratory (area of testing) is accredited according to ISO/IEC 17025. CNAS Registration number:

4 Ambient Condition

Ambient temperature	20℃ – 24℃
Relative Humidity	30% – 70%

5 RF Exposure Requirements

An estimation of MPE in this application for product is used to ensure if it complies to the rules of the standard in the regulation list above.

Maximum permissible exposure (MPE) refers to the RF energy that is acceptable for human exposure. It is broken down into two categories, Occupational/controlled and General population/uncontrolled.

Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

We analysis if it comply with the limits for General population/uncontrolled exposure. The FCC's MPE limits for field strength and power density are given in 47CFR 1.1310(Table below).These limits are generally based on recommended exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP), and also partly based on guidelines recommended by the American National Standards Institute (ANSI) in Section 4.1 of ANSI/IEEE C95.1.

NOTE: 1.After confirming this device using panel W / O battery charging, so the RF exposure evaluated.

Table: Limits For Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/controlled Exposure				
Frequency Range(MHz)	Electric Field Strength(E)(V/m)	Magnetic Field Strength(H)(A/m)	Power Density (S)(mW/cm^2)	Averaging Time (minute)$\|E\|^2$,$\|H\|^2$ or S
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				
Frequency Range(MHz)	Electric Field Strength(E)(V/m)	Magnetic Field Strength(H)(A/m)	Power Density (S)(mW/cm^2)	Averaging Time (minute)$\|E\|^2$,$\|H\|^2$ or S
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30
f=frequency in MHz			*Plane-wave equivalent power density	

A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation:

$$S=\frac{P*G}{4\pi*R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R= distance to the centre of radiation of the antenna

EIRP = P*G

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user. Warning statement to the user for keeping at least 20cm separation distance and the prohibition of operating to a person has been printed on the user's manual. Therefore, the S of the device is calculated with R=20cm, and if it is below the limit S, then we can conclude the device complies with the rules.

6 RF Exposure Evaluation

6.1. Operation in UMTS Band V

(uplink: 824-849MHz, downlink: 869-894MHz)

$EIRP_{max}$* (dBm)	$EIRP_{max}$ (mW)	R (cm)	S (mW/cm^2)	MPE Limit (mW/cm^2)	Conclusion
21.95	156.68	20	0.312	0.549	PASS

Note:*- based on the maximum tune-up tolerance limit declared by manufacturer

According to the Table, we can conclude the max power density level at 20 cm is 0.312mW/cm^2, which is below the uncontrolled exposure limit of 0.549mW/cm^2 at 824MHz, so we can conclude it is into compliance.

6.2. Operation in LTE Band XLI

(uplink: 2498~2688MHz, downlink: 2498~2688MHz)

$EIRP_{max}$* (dBm)	$EIRP_{max}$ (mW)	R (cm)	S (mW/cm^2)	MPE Limit (mW/cm^2)	Conclusion
21.84	152. 76	20	0. 304	1.00	PASS

Note:*- based on the maximum tune-up tolerance limit declared by manufacturer

According to the Table, we can conclude the max power density level at 20 cm is 0.304mW/cm^2, which is below the uncontrolled exposure limit of 1.00mW/cm^2 at 2498MHz, so we can conclude it is into compliance.

6.3. Operation in Wi-Fi

(uplink: 2412~2472MHz, downlink: 2412~2472MHz)

$EIRP_{max}$* (dBm)	$EIRP_{max}$ (mW)	R (cm)	S (mW/cm^2)	MPE Limit (mW/cm^2)	Conclusion
18.60	72.44	20	0.144	1.00	PASS

Note:*- based on the maximum tune-up tolerance limit declared by manufacturer

According to the Table, we can conclude the max power density level at 20 cm is 0.144mW/cm^2, which is below the uncontrolled exposure limit of 1.00mW/cm^2 at 2400MHz, so we can conclude it is into compliance.

6.4. Operation in BT

(uplink: 2402-2480MHz, downlink: 2402-2480MHz)

$EIRP_{max}$* (dBm)	$EIRP_{max}$ (mW)	R (cm)	S (mW/cm^2)	MPE Limit (mW/cm^2)	Conclusion
3.82	2.409	20	0.0048	1.00	PASS

Note:*- based on the maximum tune-up tolerance limit declared by manufacturer

According to the Table, we can conclude the max power density level at 20 cm is $0.0048mW/cm^2$, which is below the uncontrolled exposure limit of $1.00mW/cm^2$ at 2400MHz, so we can conclude it is into compliance.

------END OF REPORT------

ADD:Building A, Baoshi Science & technology Park, Baoshi Road, Bao' an District, Shenzhen, Guangdong, China
TEL:86-755-26996143/26996144/26996145/26996192 FAX: 86-755-26996253 E-mail: market@wsct.org.cn Http: www.wsct-cert.org
Member of the WSCT INC.