

FCC RF EXPOSURE REPORT

KONG YUE ELECTRONICS & INFORMATION INDUSTRY LTD.

POS Terminal

Model Number: IM-78G

Additional Model: IM-78; IM-78C; IM-78T; IM-78F

FCC ID: WAGIM-78

Prepared for : KONG YUE ELECTRONICS & INFORMATION INDUSTRY LTD.

18 Kongyue Industrial Park, Jinguzhou Zone, Xinhui District,
Jiangmen City, Guangdong Province, China

Prepared By : EST Technology Co., Ltd.

San Tun Management Zone, Houjie District, Dongguan, China

Tel: 86-769-83081888-808

Report Number: ESTE-R1608105

Date of Test : July 20 ~ August 24, 2016

Date of Report: August 26, 2016

Maximum Permissible Exposure

1、Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

(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 Times E 2 , H 2 or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-10000			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 Times E 2 , H 2 or S (minutes)
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
1500-10000			1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

2、MPE Calculation Method

$$E \text{ (V/m)} = (30 \cdot P \cdot G)^{0.5} / d \quad \text{Power Density: } P_d \text{ (W/m}^2\text{)} = E^2 / 377$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$P_d = (30 \cdot P \cdot G) / (377 \cdot d^2)$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

3、Calculated Result and Limit

Model	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Antenna gain		Target power (dBm)	Power Density (S) (mW/cm ²)	Limited of Power Density (S) (mW/cm ²)	Test Result
				(dBi)	(Linear)				
GFSK	2402	-4.232	0.377	0	1	-5±1	0.00007920	1	Compiles
	2441	-3.923	0.405	0	1	-4±1	0.00009971	1	Compiles
	2480	-3.582	0.438	0	1	-4±1	0.00009971	1	Compiles
8-DPSK	2402	-3.099	0.490	0	1	-4±1	0.00009971	1	Compiles
	2441	-2.746	0.531	0	1	-3±1	0.00012552	1	Compiles
	2480	-2.271	0.593	0	1	-3±1	0.00012552	1	Compiles
BLE	2402	4.600	2.884	0	1	4±1	0.00062911	1	Compiles
	2440	5.010	3.170	0	1	5±1	0.00079201	1	Compiles
	2480	5.370	3.443	0	1	5±1	0.00079201	1	Compiles
IEEE 802.11 b	2412	13.76	23.768	2	1.58	13±1	0.00792007	1	Compiles
	2442	14.23	26.485	2	1.58	14±1	0.00997078	1	Compiles
	2472	14.04	25.351	2	1.58	14±1	0.00997078	1	Compiles
IEEE 802.11 g	2412	12.69	18.578	2	1.58	12±1	0.00629114	1	Compiles
	2442	12.95	19.724	2	1.58	12±1	0.00629114	1	Compiles
	2472	13.30	21.380	2	1.58	13±1	0.00792007	1	Compiles
IEEE 802.11 n HT 20	2412	11.65	14.622	2	1.58	11±1	0.00499723	1	Compiles
	2442	12.03	15.959	2	1.58	12±1	0.00629114	1	Compiles
	2472	11.68	14.723	2	1.58	12±1	0.00629114	1	Compiles
Max Target Power Density of the total from BT and Wi-Fi									
BT Max Target Power (dBm)		Wi-Fi Max Target Power (dBm)	Total Max Target Power (W)	Antenna gain		Power Density (S) (mW /cm ²)	Limited of Power Density (S) (mW /cm ²)	Test Result	
5.370		14.23	0.144544	(dBi)	(Linear)	0.02875604	1	Compiles	
				2	1.58				