

## **FCC 47 CFR MPE REPORT**

**Tymphany HK Limited**

**Wireless Subwoofer**

**Model Number: R-4B Subwoofer**

**FCC ID: 2AAGJR4BSUB**

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**Report Number: ESTE-R1508024**

**Date of Test : July 22 ~ August 13,2015**

**Date of Report : August 15, 2015**

## 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 <sup>2</sup> )	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 <sup>2</sup> )	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

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

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

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

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

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power ( dBm )	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
					(dBi)	(Linear)			
GFSK	2402	2.578	1.811	2±2	2.27	1.69	<b>0.00084</b>	1	Compiles
	2441	3.715	2.352	2±2	2.27	1.69	<b>0.00084</b>	1	Compiles
	2480	3.990	2.506	2±2	2.27	1.69	<b>0.00084</b>	1	Compiles
8-DPSK	2402	1.319	1.355	1±2	2.27	1.69	<b>0.00067</b>	1	Compiles
	2441	1.664	1.460	1±2	2.27	1.69	<b>0.00067</b>	1	Compiles
	2480	1.372	1.372	1±2	2.27	1.69	<b>0.00067</b>	1	Compiles