

FCC 47 CFR MPE REPORT

Power7 Technology(Dong Guan) Co., Ltd.

Smart Wi-Fi Plug

Model Number: SO2-US

FCC ID: QT72018TEN-SO2

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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

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

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、Conducted Power Result

3.1 Antenna

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11b	2412	17.87	61.235	17 ± 1	2	1.58
	2437	17.33	54.075	17 ± 1	2	1.58
	2462	16.62	45.920	16 ± 1	2	1.58
IEEE 802.11g	2412	13.38	21.777	13 ± 1	2	1.58
	2437	13.42	21.979	13 ± 1	2	1.58
	2462	12.22	16.672	12 ± 1	2	1.58
IEEE 802.11n HT20	2412	13.78	23.878	13 ± 1	2	1.58
	2437	12.97	19.815	12 ± 1	2	1.58
	2462	12.94	19.679	12 ± 1	2	1.58
IEEE 802.11n HT40	2422	12.70	18.621	12 ± 1	2	1.58
	2437	12.90	19.498	12 ± 1	2	1.58
	2452	11.91	15.524	11 ± 1	2	1.58

4、Calculated Result and Limit

4.1 Antenna

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
		(dBi)	(Linear)			
2.4G Band						
IEEE 802.11b	18	2	1.58	0.01989	1	Compiles
IEEE 802.11g	14	2	1.58	0.00792	1	Compiles
IEEE 802.11n HT20	14	2	1.58	0.00792	1	Compiles
IEEE 802.11n HT40	13	2	1.58	0.00629	1	Compiles