

## FCC 47 CFR MPE REPORT

Power7 Technology(Dong Guan) Co., Ltd.

Smart Wi-Fi Plug

Model Number: SO2-US

FCC ID: QT72018TEN-SO2

Prepared for:	Power7 Technology(Dong Guan) Co., Ltd.
	No.28 Binjiang Blvd Shishuikou Village, Qiaotou To, Dongguan, China
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
Tel: 86-769-83081888-808	

Report Number:	ESTE-R1807021
Date of Test:	Jun. 21~Jul. 09, 2018
Date of Report:	July 09, 2018

## 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

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

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/cm <sup>2</sup> )	Limited of Power Density (S) (mW/cm <sup>2</sup> )	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