FCC 47 CFR MPE REPORT

Hong Kong Etech Groups Ltd.

smart pulg

Model Number: ETS-C-006

Additional Model: EIX3-1003-PP2, EIX3-1003, EIX3-1003-ME2,

EIX3-1003-WHT, XWS7-2001-WHT, XWS7-2001

FCC ID: 2A3ZO-ETS-C-006

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Maximum Permissible Exposure

1. Applicable Standards

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.

1.1. 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 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.o	30

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

1.2. MPE Calculation Method

$$E\ (V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd\ (W/m^2) = \frac{E^2}{377}$$

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

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

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

2. Conducted Power Result

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)
BLE	2402	0.99	1.2560	0±1
	2440	0.55	1.1350	0±1
	2480	-3.3	0.4677	-3±1
IEEE 802.11b	2412	14.58	28.708	14±1
	2437	13.98	25.003	13±1
	2462	12.85	19.275	12±1
IEEE 802.11g	2412	16.91	49.091	16±1
	2437	16.45	44.157	16±1
	2462	15.34	34.198	15±1
IEEE 802.11n HT20	2412	16.82	48.084	16±1
	2437	16.06	40.365	16±1
	2462	14.91	30.974	14±1
IEEE 802.11n HT40	2422	16.04	40.179	16±1
	2437	15.51	35.563	15±1
	2452	14.59	28.774	14±1

3. Calculated Result and Limit

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm^2)	Limited of Power Density (S) (mW/cm^2)	Test Result
		(dBi)	(Linear)			
2.4G Band						
BLE	1	-0.68	0.855	0.0004	1	Complies
IEEE 802.11b	15	-0.68	0.855	0.0063	1	Complies
IEEE 802.11g	17	-0.68	0.855	0.0100	1	Complies
IEEE 802.11n HT20	17	-0.68	0.855	0.0100	1	Complies
IEEE 802.11n HT40	17	-0.68	0.855	0.0100	1	Complies

End of Test Report