

FCC 47 CFR MPE REPORT

Shenzhen Interthings Technology Co., Ltd.

Security Camera

Model Number: IPC159

Additional Model: BKWIFICAMWL2

FCC ID: 2AQ7B-IPC159

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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			1.0	30

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

1.2. MPE Calculation Method

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

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)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11b	2412	14.75	29.854	14±2	2	1.585
	2437	13.62	23.014	13±2	2	1.585
	2462	12.72	18.707	12±2	2	1.585
IEEE 802.11g	2412	13.90	24.547	13±2	2	1.585
	2437	13.05	20.184	13±2	2	1.585
	2462	12.15	16.406	12±2	2	1.585
IEEE 802.11n HT20	2412	14.16	26.062	14±2	2	1.585
	2437	13.12	20.512	13±2	2	1.585
	2462	12.27	16.866	12±2	2	1.585
IEEE 802.11n HT40	2422	14.68	29.376	14±2	2	1.585
	2437	14.01	25.177	14±2	2	1.585
	2452	13.40	21.878	13±2	2	1.585

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						
IEEE 802.11b	16	2	1.585	0.01255	1	Compiles
IEEE 802.11g	15	2	1.585	0.00997	1	Compiles
IEEE 802.11n HT20	16	2	1.585	0.01255	1	Compiles
IEEE 802.11n HT40	16	2	1.585	0.01255	1	Compiles

End of Test Report