

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: Shenzhen Zhuopu Digital Technology Co., Ltd.
Address of applicant: 301, Xiagu, Meishengchuanggu, Longchang Road, Baoan District, Shenzhen, Guangdong, China

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General Description of EUT:

Product Name: Trail Camera
Trade Name: /
Model No.: W600
Adding Model(s): E6
Rated Voltage: DC12V
FCC ID: 2AY57-W600
Equipment Type: Mobile

Technical Characteristics of EUT:	
Wi-Fi	
Support Standards:	802.11b, 802.11g, 802.11n(HT20), 802.11n(HT40)
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	15.94dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	2dBi

1.2 Standard Applicable

According to § 1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(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
1500-100000	/	/	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
1500-100000	/	/	1	30

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

1.3 MPE Calculation Method

$$S = (30*P*G) / (377*R^2)$$

S = power density (in appropriate units, e.g., mw/cm²)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator,

the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

For Wi-Fi:

Maximum Tune-Up output power: 16(dBm)

Maximum peak output power at antenna input terminal: 39.81 (mW)

Prediction distance: >20(cm)

Prediction frequency: 2462 (MHz)

Antenna gain: 2(dBi)

Directional gain (numeric gain): 1.58

The worst case is power density at prediction frequency at 20cm: 0.0126 (mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

For Bluetooth:

The worst case is power density at prediction frequency at 20cm: 0.00023(mw/cm²)

Mode for Simultaneous Multi-band Transmission

Wi-Fi+ Bluetooth

The worst case is power density at prediction frequency at 20cm: $0.0126 + 0.00023 = 0.01283(\text{mw/cm}^2)$

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

Result: Pass