

Maximum Permissible Exposure Evaluation

FCC ID: 2AXEK-X52

1. Client Information

Applicant	:	SHENZHEN GENERAL TECHNOLOGY CO., LTD
Address	:	Floor 1-3, Building A, Floor 1-4, Building B, No. 11 Xiantian Road, Xinsheng Community, Longgang Sub-District, Longgang District, Shenzhen, China
Manufacturer	:	SHENZHEN GENERAL TECHNOLOGY CO., LTD
Address	:	Floor 1-3, Building A, Floor 1-4, Building B, No. 11 Xiantian Road, Xinsheng Community, Longgang Sub-District, Longgang District, Shenzhen, China

2. General Description of EUT

EUT Name	:	Smart PTZ Camera	
Models No.	:	X52, X50, X51, X53, X54, X55, X56, X57, X58, X59	
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is appearance.	
Product Description	:	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
		Number of Channel:	802.11b/g/n(HT20):11 channels 802.11n(HT40): 7 channels
		Modulation Type:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(QPSK, BPSK, 16QAM, 64QAM)
		Antenna Gain:	5.0dBi External Antenna
Power Rating	:	Input: DC 12V, 2A	
Software Version	:	V0.2.3	
Hardware Version	:	CB140_C02_V2	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

MPE Calculations for WIFI

1. Antenna Gain:

External Antenna: 5.0dBi.

2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna

4. Test Result:

2.4G WiFi MPE Result								
Mode	N _{TX}	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm ²) [S]
802.11b	1	2412	17.151	17±1	18	5.0	20	0.0397
		2437	17.091	17±1	18	5.0	20	0.0397
		2462	17.211	17±1	18	5.0	20	0.0397
802.11g	1	2412	17.418	17±1	18	5.0	20	0.0397
		2437	17.269	17±1	18	5.0	20	0.0397
		2462	17.225	17±1	18	5.0	20	0.0397
802.11n20	1	2412	17.102	17±1	18	5.0	20	0.0397
		2437	17.219	17±1	18	5.0	20	0.0397
		2462	17.09	17±1	18	5.0	20	0.0397
802.11n40	1	2422	16.696	17±1	18	5.0	20	0.0397
		2437	17.396	17±1	18	5.0	20	0.0397
		2452	17.645	18±1	19	5.0	20	0.0500

Note:
 N_{TX}= Number of Transmit Antennas
 RF Output power specifies that Maximum Conducted Peak Output Power.

5. Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm ²)
300-1,500	F/1500
1,500-100,000	1.0

For 2.4WIFI:2412~2462 MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as **0.0500mW / cm² < limit 1mW / cm²**. So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b).

The RF Exposure Information page from the manual is included here for reference.

Note

For a more detailed features description, please refer to the RF Test Report.

6. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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