

Maximum Permissible Exposure Evaluation

FCC ID: 2AXEK-X09

1. Client Information

Applicant	:	SHENZHEN GENERAL TECHNOLOGY CO., LTD
Address	:	Floor 1-3, Building A, NO.11 Xiantian Road, Longgang District, Shenzhen, China 518000
Manufacturer	:	SHENZHEN GENERAL TECHNOLOGY CO., LTD
Address	:	Floor 1-3, Building A, NO.11 Xiantian Road, Longgang District, Shenzhen, China 518000

2. General Description of EUT

EUT Name	:	Smart Pan-tilt camera
Models No.	:	X09, X01, X02, X03, X04, X05, X06, X07, X08, X10, X11, X12, X13, X14, X15, X16, X17, X18, X19
Model Difference	:	All PCB boards and circuit diagrams are the same, the only difference is that names.
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
	RF Output Power:	802.11b: 17.40dBm 802.11g: 17.40dBm 802.11n (HT20): 17.46dBm 802.11n (HT40): 17.63dBm
	Antenna Gain:	2dBi PCB Antenna
Power Rating	:	For adapter Input: AC 100-240V~ 50/60Hz 0.2A Output: DC 5V 1.0A
Software Version	:	V0.2.1
Hardware Version	:	CB340
Connecting I/O Port(S)	:	Please refer to the User's Manual
Remark	:	the MPE report used the EUT (202201-0066-1-02).

MPE Calculations for WIFI

1. Antenna Gain:

PCB Antenna:2dBi.

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:

Worst Maximum 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	16.61	16±1	17	2	20	0.0158
		2437	16.21	16±1	17	2	20	0.0158
		2462	17.40	17±1	18	2	20	0.0199
802.11g	1	2412	17.01	17±1	18	2	20	0.0199
		2437	17.40	17±1	18	2	20	0.0199
		2462	16.44	16±1	17	2	20	0.0158
802.11n(HT20)	1	2412	17.46	17±1	18	2	20	0.0199
		2437	17.39	17±1	18	2	20	0.0199
		2462	16.52	16±1	17	2	20	0.0158
802.11n(HT40)	1	2422	17.63	17±1	18	2	20	0.0199
		2437	17.39	17±1	18	2	20	0.0199
		2452	16.99	17±1	18	2	20	0.0199
Note: (1) N _{TX} = Number of Transmit Antennas (2) 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 $0.0199 \text{ mW} / \text{cm}^2 < \text{limit } 1 \text{mW} / \text{cm}^2$. 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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