

Maximum Permissible Exposure Evaluation

FCC ID: 2AEP6XM-JPE2-2R

1. Client Information

Applicant : HangZhou XiongMai Technology CO., LTD
Address : 9th Floor, Building 9, Yinhu Innovation Center, No.9 FuXian Road,
YinHu Street, Hangzhou, China
Manufacturer : HangZhou XiongMai Technology CO., LTD
Address : 9th Floor, Building 9, Yinhu Innovation Center, No.9 FuXian Road,
YinHu Street, Hangzhou, China

2. General Description of EUT

EUT Name	:	BULLET CAMERA
Models No.	:	XM-JPE2-2R, XM-E2-2R, XM-E13-2R, XM-JPE13-2R, E13-2R, E2-2R
Model Difference	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is market positioning.
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):9 channels
	RF Output Power:	802.11b: 17.53 dBm 802.11g: 17.18 dBm 802.11n (HT20): 15.62 dBm 802.11n (HT40): 14.57 dBm
	Antenna Gain:	2 dBi Dipole Antenna
	Modulation Type:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n:OFDM(BPSK,QPSK,16QAM, 64QAM)
	Bit Rate of Transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps
	Power Rating	: AC/DC Adapter: Input: AC 100-240V, 50/60Hz, 0.35A Max Output: DC 12.0V, 1A
Connecting I/O Port(S)	:	Please refer to the User's Manual

MPE Calculations for WiFi

1. Antenna Gain:

Dipole 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	17.53	17±1	18	2	20	0.0199
		2437	17.46	17±1	18	2	20	0.0199
		2462	17.37	17±1	18	2	20	0.0199
802.11g	1	2412	17.13	17±1	18	2	20	0.0199
		2437	17.12	17±1	18	2	20	0.0199
		2462	17.18	17±1	18	2	20	0.0199
802.11n (HT20)	1	2412	15.56	16±1	17	2	20	0.0158
		2437	15.48	16±1	17	2	20	0.0158
		2462	15.62	16±1	17	2	20	0.0158
802.11n (HT40)	1	2422	14.57	15±1	16	2	20	0.0126
		2437	14.38	15±1	16	2	20	0.0126
		2452	14.46	15±1	16	2	20	0.0126

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 802.11b/g/n (2412~2462 MHz)

MPE limit S: 1 mW/ cm²

The MPE is calculated as **0.0199mW/cm² < limit 1 mW/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.

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