

Maximum Permissible Exposure Evaluation

FCC ID: 2AEP6XM-JPR2-R

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	:	Home Robot Camera
Models No.	:	XM-JPR2-R, XM-R2-RX, XM-R2-R, XM-JPR2-RX, XM-JPR13-RX, XM-JPR13-R, 13-R, R2-R, XM-JPR1-R, XM-R1-R, R1-R, XM-R13-R
Model Difference	:	All models are identical in the same PCB layout interior structure and electrical circuits, The only difference is resolution and brand.
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 <i>see note(3)</i> 802.11n(HT40): 7 channels <i>see note(3)</i>
	:	RF Output Power: 802.11b: 17.22dBm 802.11g: 17.74dBm 802.11n (HT20): 16.28dBm 802.11n (HT40): 14.25dBm
	:	Antenna Gain: 3dBi Internal Antenna
	:	Modulation Type: 802.11b: DSSS(CCK, QPSK, BPSK) 802.11g: OFDM 802.11n: OFDM
	:	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 Supply	:

TB-RF-075-1.0

Power Rating	:	AC/DC Adapter (BT-TC-015): Input: AC 100~240V, 50/60Hz, 0.3A. Output: DC 5V, 1.5A.
Connecting I/O Port(S)	:	Please refer to the User's Manual
Note: More information about the RF function, please refer the RF test reports.		

MPE Calculations for WIFI

1. Antenna Gain:

Internal Antenna: 3dBi.

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	15.95	16±1.5	17.5	3	20	0.0223
		2437	16.66	16±1.5	17.5	3	20	0.0223
		2462	17.22	16±1.5	17.5	3	20	0.0223
802.11g	1	2412	16.38	17±1	18	3	20	0.0251
		2437	16.90	17±1	18	3	20	0.0251
		2462	17.74	17±1	18	3	20	0.0251
802.11n (HT20)	1	2412	15.54	16±1	17	3	20	0.0199
		2437	15.71	16±1	17	3	20	0.0199
		2462	16.28	16±1	17	3	20	0.0199
802.11n (HT40)	1	2422	13.48	14±1	15	3	20	0.0126
		2437	13.75	14±1	15	3	20	0.0126
		2452	14.25	14±1	15	3	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: 1mW/ cm²

The MPE is calculated as 0.0223mW / 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.

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