

# Maximum Permissible Exposure Evaluation

## FCC ID: 2AEP6XM-JPL1-1

### 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

<b>EUT Name</b>	:	CAR DVR
<b>Models No.</b>	:	XM-JPL1-1, XM-JPL1S-2K, XMJPL1S-4K, XM-JPL1, XM-JPL1S, XM-JPL2, XM-JPL2S, L1-1, L1S-2K, L1S-4K, L1, L1S, L2, L2S
<b>Brand Name</b>	:	XM
<b>Model Difference</b>	:	All models are identical in the same PCB layout, interior structure and electrical circuits, the only difference is model name for commercial purpose.
<b>Product Description</b>	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz
		Number of Channel: 802.11b/g/n(HT20): 11channels
		Output Power: 802.11b: 15.30 dBm 802.11g: 13.41 dBm 802.11n (HT20): 12.16 dBm
		Antenna Gain: 2 dBi (FPC Antenna)
		Modulation Type: 802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g: QPSK , BPSK, 16QAM , 64QAM 802.11n: QPSK , BPSK, 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
<b>Power Supply</b>	:	DC Power by Dual USB Auto Adapter

<b>Power Rating</b>	:	Input: DC12~24V, 1.5A USB1 output: DC 5V, 1A USB2 output: DC 5V, 2.1A
<b>Connecting I/O Port(S)</b>	:	Please refer to the User's Manual
<b>Note:</b> More detail information about Equipment, please refer to User's manual, more information about the RF, please refer to test report.		

## MPE Calculations for WIFI

### 1. Antenna Gain:

FPC Antenna: 2 dBi.

### 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 <sub>TX</sub>	Frequency (MHz)	Power (dBm) [P]	ANT Gain (dBi) [G]	Turn-up Power Tolerance (dB)	Distance (cm) [R]	Power Density (mW/ cm <sup>2</sup> ) [S]
2.4G							
802.11b	1	2462	15.30	2	±1	20	0.01345
802.11g	1	2412	13.41	2	±1	20	0.00870
802.11n (HT20)	1	2412	12.16	2	±1	20	0.00653
<b>Note:</b> (1) N <sub>TX</sub> = 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 <sup>2</sup> )
300-1,500	F/1500
1,500-100,000	1.0

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

MPE limit S: 1 mW/ cm<sup>2</sup>

The MPE is calculated as 0.01345mW / cm<sup>2</sup> < limit 1 mW / cm<sup>2</sup>. 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.