

Maximum Permissible Exposure Evaluation

FCC ID: 2ANFP-WL672

1. Client Information

Applicant : Shenzhen Jiangnengfa Technology Co.,Ltd
Address : Building NO.126, Dankeng Runtang Industrial Park, Danhu
Community, Guanlan Street, Longhua District, Shenzhen, China
Manufacturer : Shenzhen Jiangnengfa Technology Co.,Ltd
Address : Building NO.126, Dankeng Runtang Industrial Park, Danhu
Community, Guanlan Street, Longhua District, Shenzhen, China

2. General Description of EUT

EUT Name	:	Wireless Security Camera	
Models No.	:	CA-WL672-IP1M, CA-WL645-IP1M	
Model Difference	:	All models are identical in the same PCB layout interior structure and electrical circuits, The only difference is appearance color.	
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: 17.39dBm 802.11g: 17.69dBm 802.11n (HT20): 16.29dBm 802.11n (HT40): 15.26dBm
	:	Antenna Gain:	5dBi Dipole 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	:	DC Voltage supplied by AC/DC Adapter.	

TB-RF-075-1.0

Power Rating	:	AC/DC Adapter (KA-120100EU): Input: AC 100~240V, 50/60Hz, 0.4A. Output: DC 12V, 1A.
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:

Dipole Antenna: 5dBi.

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	15.79	16±1.5	17.5	5	20	0.0354
		2437	16.78	16±1.5	17.5	5	20	0.0354
		2462	17.39	16±1.5	17.5	5	20	0.0354
802.11g	1	2412	16.73	17±1	18	5	20	0.0397
		2437	17.15	17±1	18	5	20	0.0397
		2462	17.69	17±1	18	5	20	0.0397
802.11n (HT20)	1	2412	14.20	15±1.5	16.5	5	20	0.0281
		2437	15.54	15±1.5	16.5	5	20	0.0281
		2462	16.29	15±1.5	16.5	5	20	0.0281
802.11n (HT40)	1	2422	14.49	15±1	16	5	20	0.0251
		2437	14.84	15±1	16	5	20	0.0251
		2452	15.26	15±1	16	5	20	0.0251
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 $0.0354\text{mW} / \text{cm}^2 < \text{limit } 1\text{mW} / \text{cm}^2$. 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.

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