Maximum Permissible Exposure Evaluation

FCC ID: CMOQRT-601

1. Client Information

Applicant	:	KGUARD INFORMATION CO., LTD.
Address	:	4F, NO.113, Jian 2nd Rd., Jhonghe Dist., New Taipei City 23585, Taiwan
Manufacturer	:	Shenzhen Annidigital Technology Co., LTD
Address	:	3rd Floor,building D, Shangxue HiTech Industrial Park, Bantian, Longgang District, Shenzhen City, China

2. General Description of EUT

EUT Name	:	Wireless IP Camera	
Models No.	:	QRT-601, QRC-601	
Brand Name	:	KGUARD SECURITY®	
Model Difference	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is model name for commercial.	
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 **see note(3)** 802.11n(HT40):9 channels **see note(3)**
		RF Output Power:	802.11b: 16.76 dBm 802.11g: 16.68 dBm 802.11n (HT20): 16.08 dBm 802.11n (HT40): 15.83 dBm
		Antenna Gain:	3.23 dBi Ceramic Antenna
		Modulation Type:	802.11b: CCK, DQPSK, DBPSK 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 power by AC/DC Adapter(TS-A010-050020AH).	

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Power Rating	:	Input:100-240V, 50/60Hz, 0.4A. Output: 5V, 2A.
Connecting I/O Port(S)	:	Please refer to the User's Manual

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MPE Calculations for WiFi

1. **Antenna Gain:**
   Ceramic Antenna: 3.23 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_{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	16.76	16±1	17	3.23	20	0.021
		2437	16.57	16±1	17	3.23	20	0.021
		2462	16.63	16±1	17	3.23	20	0.021
802.11g	1	2412	16.68	16±1	17	3.23	20	0.021
		2437	16.64	16±1	17	3.23	20	0.021
		2462	16.59	16±1	17	3.23	20	0.021
802.11n (HT20)	1	2412	16.06	16±1	17	3.23	20	0.021
		2437	16.08	16±1	17	3.23	20	0.021
		2462	16.03	16±1	17	3.23	20	0.021
802.11n (HT40)	1	2422	15.75	16±1	17	3.23	20	0.021
		2437	15.83	16±1	17	3.23	20	0.021
		2452	15.69	16±1	17	3.23	20	0.021

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/cm^2
The MPE is calculated as 0.021mW/cm^2 < limit 1 mW/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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