Maximum Permissible Exposure Evaluation

FCC ID:2APRB-K8210-W6-CE-1

1. Client Information

Applicant	:	Guangdong Juan Intelligent Technology Joint Stock Co., Ltd.
Address	:	THE FIRST AND SECOND FLOORS OF BUILDING 2 (PLANT NO.2), WEST SIDE OF SHANXI VILLAGE, DASHI STREET, PANYU DISTRICT, GUANGZHOU, China
Manufacturer	:	Guangdong Juan Intelligent Technology Joint Stock Co., Ltd.
Address	:	THE FIRST AND SECOND FLOORS OF BUILDING 2 (PLANT NO.2), WEST SIDE OF SHANXI VILLAGE, DASHI STREET, PANYU DISTRICT, GUANGZHOU, China

2. General Description of EUT

EUT Name	:	Wireless Network Video Recorder	
Models No.	:	K8210-W6-CE-1, K8210-PJ2131-W-EN(10+4), K8216-PJ2050-W6-EN-1(16+16), K8210-PJ2031-W6-EN(10+8), K8208-P295A-W6-TUYA-CE(8+4), K8210-PJ2050-(W10+4)-TUY, K8216-PJ2050-W6-TUYA-EN/16+4, K8216-PJ2050-W6-EN/16+4, K8208-P293A-W6-TUYA-CE(8+4), K8210-PJ2031-W6, HW-3310M-H3, K8210-W6, HW-33B305M-H3, PJ2031-W6, HW-3304KIT305M-H3, HW-3308KIT305M-H3, K8210-PJ2031-W6(10+4), K8210-PJ2031-W6(10+8)	
Model Different	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is that sales customers.	
Product Description	:	Operation Frequency:	U-NII-1: 5180MHz~5240MHz U-NII-2A: 5260MHz~5320MHz U-NII-2C: 5500MHz~5700MHz U-NII-3: 5745MHz~5825MHz 802.11b/g/n/ac/ax(HT20)/n/ax/ax(HT40): 2412MHz~2462MHz
Power Rating	:	For Adapter (Model: CS-1202000): Input: 100-240V~50/60Hz 1.5A Max Output: 12.0V⎓2.0A	
Software Version	:	V3.6.6.6M	
Hardware Version	:	V220	
Remark	:	The antenna gain provided by the manufacturer, the verified for the RF conduction test provided by TOBY test lab.	

1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Tel: +86 75526509301 Fax: +86 75526509195

Method of Measurement for FCC

1. Max. Antenna Gain:

Antenna			
Antenna Type: Dipole/FPC	Antenna 1	Max. Gain:	2.4G: 3.56dBi
	Antenna 2	Max. Gain:	2.4G: 3.56dBi
			U-NII-1: 3.1dBi
			U-NII-2A: 3.6dBi
			U-NII-2C: 3.49dBi
			U-NII-3: 3.54dBi
	Antenna 3	Max. Gain:	2.4G: 3.39dBi
			U-NII-1: 2.95dBi
			U-NII-2A: 2.79dBi
			U-NII-2C: 2.67dBi
			U-NII-3: 2.66dBi
NOTE: The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.			

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

Simultaneous transmission MPE Considerations

According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0.
This means that:

∑ of MPE ratios ≤ 1.0

4. Test Result:

Worst MPE Result							
Test Mode	Antenna	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]
2.4G b	Ant1	13.39	13±1	14	3.56	20	0.0011
	Ant2	14.62	15±1	16	3.56	20	0.0180
	Ant3	13.59	14±1	15	3.39	20	0.0137
2.4G g	Ant1	14.05	14±1	15	3.56	20	0.0143
	Ant2	14.99	15±1	16	3.56	20	0.0180
	Ant3	13.23	13±1	14	3.39	20	0.0109
2.4G n20	Ant1	13.65	14±1	15	3.56	20	0.0143
	Ant2	14.54	15±1	16	3.56	20	0.0180
	Ant3	13.41	14±1	15	3.39	20	0.0137
2.4G n40	Ant1	/	/	/	/	/	/
	Ant2	15.41	15±1	16	3.56	20	0.0180
	Ant3	13.04	13±1	14	3.39	20	0.0109
2.4G ax20	Ant1	13.52	14±1	15	3.56	20	0.0143
	Ant2	15.12	15±1	16	3.56	20	0.0180
	Ant3	13.3	13±1	14	3.39	20	0.0109
2.4G ax40	Ant1	/	/	/	/	/	/
	Ant2	13.97	14±1	15	3.56	20	0.0143
	Ant3	13.17	13±1	14	3.39	20	0.0109
5G a	Ant2	15.80	16±1	17	3.6	20	0.0228
	Ant3	16.24	16±1	17	2.95	20	0.0197
5G n20	Ant2	15.54	16±1	17	3.6	20	0.0228
	Ant3	15.58	16±1	17	2.95	20	0.0197
5G n40	Ant2	15.43	15±1	16	3.6	20	0.0181
	Ant3	15.11	15±1	16	2.95	20	0.0156
5G ac20	Ant2	15.20	15±1	16	3.6	20	0.0181
	Ant3	14.89	15±1	16	2.95	20	0.0156
5G ac40	Ant2	15.00	15±1	16	3.6	20	0.0181
	Ant3	15.13	15±1	16	2.95	20	0.0156
5G ax20	Ant2	14.56	15±1	16	3.6	20	0.0181
	Ant3	15.08	15±1	16	2.95	20	0.0156
5G ax40	Ant2	14.88	15±1	16	3.6	20	0.0181
	Ant3	15.35	15±1	16	2.95	20	0.0156
Note: The antenna gain used max. antenna gain							

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: 2412~2462MHz&5180~5825MHz
MPE limit S: 1mW/ cm^2
The MPE is calculated as ***0.0228mW / cm^2 < limit 1mW / cm^2***.

6. Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna			Simultaneous Transmission
		Antenna 1	Antenna 2	Antenna 3	
IEEE 802.11a	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	/	Yes	Yes	Yes
IEEE 802.11b	2.4GHz	Yes	Yes	Yes	Yes
IEEE 802.11g	2.4GHz	Yes	Yes	Yes	Yes
IEEE 802.11n HT20	2.4GHz	Yes	Yes	Yes	Yes
IEEE 802.11n HT40	2.4GHz	/	Yes	Yes	Yes
IEEE 802.11n HT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	/	Yes	Yes	Yes
IEEE 802.11n HT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	/	Yes	Yes	Yes
IEEE 802.11ac VHT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	/	Yes	Yes	Yes
IEEE 802.11ac VHT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	/	Yes	Yes	Yes
IEEE 802.11ax VHT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes	Yes
IEEE 802.11ax VHT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	/	Yes	Yes	Yes

7. Summary simultaneous transmission results

Antenna 1 , 2 and Antenna 3 for 2.4GWLAN& 5GWLAN

MPE Antenna 1 (mW/cm^2)	MPE Antenna 2 (mW/cm^2)	MPE Antenna 3 (mW/cm^2)	∑MPE ratios	Limit	Results
0.0180	0.0228	0.0197	0.0605	1.0	PASS

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.

-----END OF THE REPORT-----