



Maximum Permissible Exposure Evaluation

FCC ID: 2APRB-K8508-MW

1. Client Information

Applicant	:	Guangzhou Juan Intelligent Tech Co., Ltd
Address	:	No.2 Plant, West of Shanxi country, Dashi street, Panyu District, Guangzhou, China
Manufacturer	:	Guangzhou Juan Intelligent Tech Co., Ltd
Address	:	No.2 Plant, West of Shanxi country, Dashi street, Panyu District, Guangzhou, China

2. General Description of EUT

EUT Name	:	Network Video Recorder
Models No.	:	K8508-MW, K8508-GW, K8508-W, XF-3714N-K-W, OSX-K8508-MW, OH-K8508-MW, WE-K8508-MW, NVR-M8108NM-W-MU, NVR-M8128NM-W-MU, NVR-M8158NM-W-MU, NVR-M8158NM-W-2MU, G4H, 8108, G4R, G4H-2-NVR, D5109HN8-W, A04N9266, A04N9266, A08N9254, A08N9275, CW29, HGWNK-48402, V80, V18, V16, T-DL6003T0, TZ-NVR8A
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name.
Sample ID	:	RW-C-202202-0074-1-1#&RW-C-202202-0074-2-2#
Product Description	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz
	Antenna Gain:	5.0dBi FPC Antenna(ALTOBEAM) 5.0dBi Dipole Antenna 1&2(REALTEK 8192FC)
Power Rating	:	Adapter(TEKA012-1201000XX) Input: 100-240V~50/60Hz 0.35A MAX Output: 12V1A 12.0W
Software Version	:	v3.5.0.0
Hardware Version	:	v210P1
Remark	:	The adapter and antenna gain provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.

TB-RF-074-1.0

Method of Measurement for FCC

1. Max. Antenna Gain:

5.0dBi FPC Antenna(ALTOBEAM)
5.0dBi Dipole Antenna 1&2(REALTEK 8192FC)

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:

$$\sum \text{ of MPE ratios } \leq 1.0$$

4. Test Result:

2.4G WiFi MPE Result (ALTOBEAM)								
Mode	N _T x	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	17.30	17±1	18	5.0	20	0.0396
		2437	16.77	16±1	17	5.0	20	0.0315
		2462	16.64	16±1	17	5.0	20	0.0315
802.11g	1	2412	16.62	16±1	17	5.0	20	0.0315
		2437	16.79	16±1	17	5.0	20	0.0315
		2462	16.63	16±1	17	5.0	20	0.0315
802.11n20	1	2412	16.73	16±1	17	5.0	20	0.0315
		2437	16.80	16±1	17	5.0	20	0.0315
		2462	16.84	16±1	17	5.0	20	0.0315
Note: N _{TX} = Number of Transmit Antennas RF Output power specifies that Maximum Conducted Peak Output Power.								

2.4G WiFi MPE Result Antenna 1(REALTEK 8192FC)

Mode	N _T x	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	14.00	14±1	15	5.0	20	0.0198
		2437	13.91	13±1	14	5.0	20	0.0158
		2462	13.76	13±1	14	5.0	20	0.0158
802.11g	1	2412	13.87	13±1	14	5.0	20	0.0158
		2437	14.26	14±1	15	5.0	20	0.0198
		2462	14.07	14±1	15	5.0	20	0.0198
802.11n20	1	2412	13.89	13±1	14	5.0	20	0.0158
		2437	14.02	14±1	15	5.0	20	0.0198
		2462	14.00	14±1	15	5.0	20	0.0198

Note:

N_{TX}= Number of Transmit Antennas

RF Output power specifies that Maximum Conducted Peak Output Power.

2.4G WiFi MPE Result Antenna 2(REALTEK 8192FC)

Mode	N _T x	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	12.08	12±1	13	5.0	20	0.0125
		2437	12.35	12±1	13	5.0	20	0.0125
		2462	12.19	12±1	13	5.0	20	0.0125
802.11g	1	2412	12.34	12±1	13	5.0	20	0.0125
		2437	12.58	12±1	13	5.0	20	0.0125
		2462	12.68	12±1	13	5.0	20	0.0125
802.11n20	1	2412	12.31	12±1	13	5.0	20	0.0125
		2437	12.43	12±1	13	5.0	20	0.0125
		2462	12.56	12±1	13	5.0	20	0.0125

Note:

N_{TX}= Number of Transmit Antennas

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: 2412~2462MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as $0.0396\text{mW} / \text{cm}^2 < \text{limit } 1\text{mW} / \text{cm}^2$.

WIFI(ALTOBEAM) and WiFi(REALTEK 8192FC) support Synchronization transmit the

$$\sum \text{MPE}_{\text{ratios}} = 0.0396 + 0.0198 + 0.0125 = 0.0719 < 1$$

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.

Remark:

1. Output power including turn-up tolerance;
2. Output power was adjust to duty cycle at 100% if measured duty cycle less than 98%;
3. MPE evaluate distance is 20cm from user manual provide by manufacturer.

Note

For a more detailed features description, please refer to the RF Test Report.

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