

Maximum Permissible Exposure Evaluation

FCC ID: 2APRB-DB-WNIP2-SU

1. Client Information

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

2. General Description of EUT

EUT Name	:	Wireless IP Doorbell	
Models No.	:	DB-WNIP2-SU, DB-WNIP2, WM-2DBWNPM, DBWNIP2M, DBWNIP2M-B, CL-WNIP2DB-M	
Model Different	:	All of these models are in the same PCB, layout and circuitry, the only difference is model name.	
Brand Name	:	NIGHT OWL	
Product Description	:	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz
		Number of Channel:	802.11b/g/n(HT20):11 channels
		RF Output Power:	802.11b:11.61dBm 802.11g: 12.45dBm 802.11n (HT20): 12.63dBm
		Antenna Gain:	2.5 dBi FPC Antenna
Power Rating	:	Input:AC 12-24V DC 3.7V 300mAh by Li-ion Battery	
Software Version	:	DB-WNVR-SU_20200713	
Hardware Version	:	FH8852_V161P_F37_MTY_DR	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Remark	:	the MPE report used the EUT(TBBJ-20200630-03-2#).	

MPE Calculations for WIFI

1. Antenna Gain:

Dipole Antenna:2.5dBi.

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	11.61	11±1	12	2.5	20	0.0056
		2437	8.97	8±1	9	2.5	20	0.0028
		2462	8.97	8±1	9	2.5	20	0.0028
802.11g	1	2412	12.45	12±1	13	2.5	20	0.0070
		2437	10.53	10±1	11	2.5	20	0.0044
		2462	10.77	10±1	11	2.5	20	0.0044
802.11n(HT20)	1	2412	12.63	12±1	13	2.5	20	0.0070
		2437	10.48	10±1	11	2.5	20	0.0044
		2462	10.95	10±1	11	2.5	20	0.0044

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 2.4WIFI:2412~2462 MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as $0.0070 \text{ mW} / \text{cm}^2 < \text{limit } 1 \text{mW} / \text{cm}^2$. 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.

6. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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