

Maximum Permissible Exposure Evaluation

FCC ID: 2AOQ6-WR09

1. Client Information

Applicant	:	ChongQing Lavid Industrial Co., Ltd.
Address	:	No.2 Workshop, Electronic and Electrical Manufacturing Base, Union Community, Chenjiaba Street, Wanzhou District, Chongqing, China
Manufacturer	:	ChongQing Lavid Industrial Co., Ltd.
Address	:	No.2 Workshop, Electronic and Electrical Manufacturing Base, Union Community, Chenjiaba Street, Wanzhou District, Chongqing, China

2. General Description of EUT

EUT Name	:	WiFi MiNi Router
Models No.	:	WR09, WR02, WR16, WR12, WR13, WR18, WR32, WR42
Model Different	:	All PCB boards and circuit diagrams are the same, the only difference is appearance color.
Product Description	:	Operation Frequency: 2412MHz~2462MHz
Power Rating	:	Input: AC100-240V~ 50/60Hz 0.2A
Software Version	:	20220113
Hardware Version	:	V4.0
Connecting I/O Port(S)	:	Please refer to the User's Manual

MPE Calculations

1. Antenna Gain:

Antenna	Brand	Model Name	Type	Antenna Gain(dBi)	
				Ant.1	Ant.2
2.4G WIFI	N/A	N/A	Dipole	3	3

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. 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:

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

5. Test Result:

2.4G WiFi Worst Maximum MPE Result Ant.1

Mode	N _{TX}	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (m) [R]	Power Density (W/ m ²) [S]
802.11b	1	2412	15.40	15±1	16	3	0.2	0.0158
		2437	14.52	15±1	16	3	0.2	0.0158
		2462	14.29	14±1	15	3	0.2	0.0126
802.11g	1	2412	16.65	17±1	18	3	0.2	0.0250
		2437	16.22	16±1	17	3	0.2	0.0199
		2462	16.21	16±1	17	3	0.2	0.0126
802.11n20	1	2412	13.36	13±1	14	3	0.2	0.0100
		2437	13.90	14±1	15	3	0.2	0.0126
		2462	13.82	14±1	15	3	0.2	0.0126
802.11n40	1	2422	11.86	12±1	13	3	0.2	0.0079
		2437	12.72	13±1	14	3	0.2	0.0100
		2452	12.49	12±1	13	3	0.2	0.0079

Note:

N_{TX}= Number of Transmit Antennas

RF Output power specifies that Maximum Conducted Peak Output Power.

2.4G WiFi Worst Maximum MPE Result Ant.2

Mode	N _{TX}	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (m) [R]	Power Density (W/ m ²) [S]
802.11b	1	2412	15.82	16±1	17	3	0.2	0.0126
		2437	15.20	15±1	16	3	0.2	0.0158
		2462	15.29	15±1	16	3	0.2	0.0158
802.11g	1	2412	16.27	16±1	17	3	0.2	0.0126
		2437	16.06	16±1	17	3	0.2	0.0126
		2462	16.84	17±1	18	3	0.2	0.0250
802.11n20	1	2412	13.38	13±1	14	3	0.2	0.0100
		2437	12.93	13±1	14	3	0.2	0.0100
		2462	13.44	13±1	14	3	0.2	0.0100
802.11n40	1	2422	12.89	13±1	14	3	0.2	0.0100
		2437	11.41	11±1	12	3	0.2	0.0063
		2452	11.45	11±1	12	3	0.2	0.0063

Note:

N_{TX}= Number of Transmit Antennas

RF Output power specifies that Maximum Conducted Peak Output Power.

6. 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 WIFI

MPE limit S: 1mW/ cm²

7. Summary simultaneous transmission results

WIFI and Bluetooth support simultaneous transmit the

WIFI Ant.1 MPE (Ratio)	WIFI Ant.1 MPE (Ratio)	simultaneous MPE (Ratio)	MPE Limits (Ratio)
0.0250	0.0250	0.075	1.0000

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 REPORT-----