

MPE REPORT

Report No.: SRTC2024-9004(F)-24012301(I)
Product Name: WiFi Module
Model Name: MWH541B
Applicant: Qingdao Intelligent & Precise Electronics Co., Ltd.
Manufacturer: Qingdao Intelligent & Precise Electronics Co., Ltd.
FCC ID: 2AJVQ-MWH541B

Reference Specification
FCC Part §1.1310

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30, Shixing Street, Shijingshan District,

Beijing, P.R.China

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1 GENERAL INFORMATION

1.1 Notes of the test report

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1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Test Site 1:	15th Building, No.30 Shixing Street, Shijingshan District
Test Site 2:	No.80, Zhaojiachang, Beizang, Daxing District
City:	Beijing
Country or Region:	P.R.China
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Designation Number:	CN1267
Registration number:	239125

1.3 Applicant's details

Company:	Qingdao Intelligent & Precise Electronics Co., Ltd.
Address:	No.218 Qianwangang Road, Qingdao Economic & Technological Development Zone, Qingdao City, Shandong Province, P. R. China

1.4 Manufacturer's details

Company:	Qingdao Intelligent & Precise Electronics Co., Ltd.
Address:	No.218 Qianwangang Road, Qingdao Economic & Technological Development Zone, Qingdao City, Shandong Province, P. R. China

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2024-01-24
Testing Start Date:	2024-01-25
Testing End Date:	2024-02-22

Environmental Data:	Temperature (°C)	Humidity (%)
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Ambient	25	40
Maximum Extreme	70	---
Minimum Extreme	0	---

Normal Supply Voltage (V d.c.):	3.3
Maximum Extreme Supply Voltage (V d.c.):	3.6
Minimum Extreme Supply Voltage (V d.c.):	3.0

2 DESCRIPTION OF THE DEVICE UNDER TEST

2.1 Final Equipment Build Status

Wi-Fi 2.4G

Frequency Band:	2.412GHz~2.462GHz
Number of Channel For 20MHz:	11
Number of Channel For 40MHz:	7
Modulation Type:	802.11b 802.11g 802.11n (HT20/HT40)
Power Supply:	DC supply
Antenna gain:	ANT0: 2.30dBi ANT1: -0.55dBi
Directional Gain:	1.1dBi
Software Revision:	NA
Hardware Revision:	V1.00
Antenna type:	Monopole Antenna

Wi-Fi 5G

Frequency Band(s):	U-NII-1:5150MHz-5250MHz U-NII-2A:5250MHz-5350MHz U-NII-2C:5470MHz-5600MHz/5650MHz-5725MHz U-NII-3:5725MHz-5850MHz	
The DFS related operating mode(s) of the equipment:	<input type="checkbox"/>	Master
	<input type="checkbox"/>	Slave with radar detection
	<input checked="" type="checkbox"/>	Slave without radar detection
Modulation Type:	802.11a 802.11n (HT20/HT40) 802.11ac (VHT20/VHT40/VHT80)	
Antenna Type:	Monopole Antenna	
Antenna Gain:	ANT0: 5.26dBi ANT1: 0.79dBi	
Beamforming Directional Gain:	3.58dBi	




Power Supply:	DC supply
Software Revision:	NA
Hardware Revision:	V1.00

3 REFERENCE SPECIFICATION

Specification	Version	Title
Part 1.1310	Latest	Radio frequency radiation exposure limits.

4 RESULT SUMMARY

Case	Verdict
MPE	Pass

This Test Report Is Issued by: Mr. Peng Zhen 	Checked by: Mr. Li Bin 
Tested by: 	Issued date: 2024/02/22

5. CALCULATION RESULT

5.1 Maximum permissible exposure (MPE)

Limit:

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

Result:

According to §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = PG / (4\pi R^2)$$

Where S = power density in mW/cm²

P = transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

Standalone Transmission Result

Band	Freq. (MHz)	Maximum Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP(mW)	Power Density at 20cm (mW/cm ²)	Power Density/ Limit
WIFI 2.4G	2452	18.89	1.1	19.99	99.770	0.020	0.020
WIFI 5.2G	5240	18.12	3.58	21.70	147.911	0.029	0.029
WIFI 5.3G	5270	17.56	3.58	21.14	130.017	0.026	0.026
WIFI 5.6G	5510	18.08	3.58	21.66	146.555	0.029	0.029
WIFI 5.8G	5795	18.39	3.58	21.97	157.398	0.031	0.031

---End of Test Report---