FCC RF EXPOSURE REPORT

FCC ID: 2BBLK-WL2179A

Equipment	:	WiFi+BT Module
Model No.	:	WL00018
Trademark	:	MTK
Product No.	:	POC230524018-S001
Applicant	:	Huizhou speed wireless technology co., ltd
Address	:	No. 138 Huize Road, Hi-Tech Industrial Park of East River, Zhongkai Hi-tech District, Huizhou City, Guangdong Province, China
Manufacturer	:	Huizhou speed wireless technology co., ltd
Address	:	No. 138 Huize Road, Hi-Tech Industrial Park of East River, Zhongkai Hi-tech District, Huizhou City, Guangdong Province, China
Receipt Date	:	2023.07.24
Issued Date	:	2023.08.16
Test Sample	:	Final Sample
Standard(s)	:	CFR47 FCC Part 1: Section 1.1310 CFR47 FCC Part 2: Section 2.1091 FCC KDB Publication 447498 v06 FCC KDB Publication 865664 D02 v01r02

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History of this test report

Original Report Issue Date: 2023.08.16

● No additional attachment

○ Additional attachments were issued following record

Attachment No.	Issue Date	Description

1. TEST FACILITY

Company:	Shenzhen Haiyun Standard Technical CO., Ltd.
Address:	Room 110, 111, 112, 113, 115, 116, Block B, Jinyuan Business Building, No. 302, Xixiang Avenue, Labor Community, Xixiang Street, Baoan District, Shenzhen, China
CNAS Registration Number:	CNAS L18252
CAB identifier:	CN0145
A2LA Certificate Number:	6823.01
Telephone:	0755-26024411

2. MPE CALCULATION METHOD

➢ **Product Classification**

This device defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

Max 1.8 dBi for Bluetooth, Max 6.61 dBi for 2.4GHz Wi-Fi MIMO mode, Max 7.41 dBi for 5GHz Wi-Fi MIMO mode, Max 6.56 dBi for WiFi 6e Wi-Fi MIMO mode

➢ **Radio Frequency Exposure Limit**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)
300-1,500	--	--	f/1500
1,500-100,000	--	--	1.0

➢ **Radio Frequency Exposure Calculation Formula**

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW)
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 (appropriate units, e.g., cm)

or:

$$S = \frac{EIRP}{4\pi R^2}$$

where: EIRP = equivalent (or effective) isotropically radiated power

➢ **Table for Filed Antenna**

For BDR+EDR & BLE

Ant.	Brand	Antenna Type	Connector	Gain (dBi)
1	N/A	PCB	N/A	1.80
2	N/A	PCB	N/A	0.80

For 2.4G WIFI

Ant.	Brand	Antenna Type	Connector	Gain (dBi)
1	N/A	PCB	N/A	3.40
2	N/A	PCB	N/A	3.80

For 5G WIFI

Ant.	Brand	Antenna Type	Connector	Gain (dBi)
1	N/A	PCB	N/A	4.20
2	N/A	PCB	N/A	4.60

For 6E WIFI

Ant.	Brand	Antenna Type	Connector	Gain (dBi)
1	N/A	PCB	N/A	3.60
2	N/A	PCB	N/A	3.50

3. TEST RESULTS

Worse case data:

Mode	*Measured RF Output Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm²)	FCC Limit (mW/cm²)
Bluetooth	10.14	0.8	20	0.0025	1.0
2.4G Wi-Fi ant1	15.92	3.4	20	0.0170	1.0
2.4G Wi-Fi ant2	14.82	3.8	20	0.0145	1.0
5G Wi-Fi ant1	15.71	4.2	20	0.0195	1.0
5G Wi-Fi ant2	15.23	4.6	20	0.0191	1.0
Wi-Fi 6e ant1	3.66	3.6	20	0.0011	1.0
Wi-Fi 6e ant2	3.30	3.5	20	0.0010	1.0

Note:

1. BT(hopping) RF Output Power: Refer to RF230524018-04-003
2. BLE RF Output Power: Refer to RF230524018-04-002
3. *2.4GHz Band RF Output Power: Refer to RF230524018-04-001
4. *5GHz Bands RF Output Power: Refer to RF230524018-04-004
5. WIFI 6e band RF Output Power: Refer to RF230524018-04-005

a) Simultaneous transmission MPE:

Per KDB 447498 D01 v06, 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 calculated or measured field strengths or power density, is ≤ 1.0.

Simultaneous transmission Scenarios

No.	Simultaneous transmission Scenarios
1	Bluetooth + 2.4GHz Wi-Fi ant1 + 2.4GHz Wi-Fi ant2
2	Bluetooth + 5GHz Wi-Fi ant1 + 5GHz Wi-Fi ant2
3	Bluetooth + Wi-Fi 6e ant1 + Wi-Fi 6e ant2

1) For Bluetooth + 2.4GHz Wi-Fi ant1 + 2.4GHz Wi-Fi ant2:

The MPE ratio for Bluetooth can be calculated as follow:
=The power density at 20cm distance/MPE limit
=0.0025 mW/cm²

The MPE ratio for 2.4GHz Wi-Fi ant1 can be calculated as follow:
=The power density at 20cm distance/MPE limit
=0.0170 mW/cm²

The MPE ratio for 2.4GHz Wi-Fi ant2 can be calculated as follow:
=The power density at 20cm distance/MPE limit
=0.0145 mW/cm²

The sum of the MPE ratios for all simultaneous transmitting antennas:
=0.0025+0.0170+0.0145
= 0.034<1.0

As the sum of MPE ratios for all simultaneous transmitting antennas is ≤ 1.0, simultaneous transmission MPE test exclusion will be applied.

2) For Bluetooth +5GHz Wi-Fi ant1 + 5GHz Wi-Fi ant2:

The MPE ratio for Bluetooth can be calculated as follow:
=The power density at 20cm distance/MPE limit
=0.0025 mW/cm²

The MPE ratio for 5GHz Wi-Fi ant1 can be calculated as follow:
=The power density at 20cm distance/MPE limit
=0.0195 mW/cm²

The MPE ratio for 5GHz Wi-Fi ant2 can be calculated as follow:
=The power density at 20cm distance/MPE limit
=0.0191 mW/cm²

The sum of the MPE ratios for all simultaneous transmitting antennas:
=0.0025+0.0195+0.0191
= 0.0411<1.0

3) For Bluetooth + Wi-Fi 6e ant1 + Wi-Fi 6e ant2:

The MPE ratio for Bluetooth can be calculated as follow:
=The power density at 20cm distance/MPE limit
=0.0025 mW/cm²

The MPE ratio for Wi-Fi 6e ant1 can be calculated as follow:
=The power density at 20cm distance/MPE limit
=0.0011 mW/cm²

The MPE ratio for Wi-Fi 6e ant2 can be calculated as follow:
=The power density at 20cm distance/MPE limit
=0.0010 mW/cm²

The sum of the MPE ratios for all simultaneous transmitting antennas:
=0.0025+0.0011+0.0010
= 0.0046<1.0

As the sum of MPE ratios for all simultaneous transmitting antennas is ≤ 1.0, simultaneous transmission MPE test exclusion will be applied.

- **Conclusion**

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.

（END OF REPORT）