

FCC RF EXPOSURE REPORT

FCC ID: 2AFZZRB02

Project No. : 2108C087
Equipment : Xiaomi Router AC1200
Brand Name : Xiaomi
Test Model : RB02
Series Model : N/A
Applicant : Xiaomi Communications Co.,Ltd
Address : No.019, Floor 9, Building 6, Yard 33, Middle Xierqi Road, Haidian District, Beijing
Manufacturer : Xiaomi Communications Co.,Ltd
Address : #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China
Factory : Huizhou MTN WEIYE Technology Development Co.,Ltd
Address : No.2 Huitai Road,Huinan High-tech Industrial Park, Huihao Avenue, Huizhou City, Guangdong Province, China. 516000
Date of Receipt : Aug. 06, 2021
Date of Test : Aug. 11, 2021~ Oct. 08, 2021
Issued Date : Oct. 09, 2021
Report Version : R01
Test Sample : Engineering Sample No.: DG2021080560 for radiated, DG2021080561 for conducted
Standard(s) : FCC Title 47 Part 2.1091
KDB 447498 D01 General RF exposure guidance v06

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

Maker Qi

Prepared by : Maker Qi

Ryan Wang

Approved by : Ryan Wang



TESTING CERT #5123.03

Add: No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210,China

TEL: +86-021-61765666

Web: www.newbtl.com

REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Sep. 27, 2021
R01	Revised report to address TCB's comments.	Oct. 09, 2021

1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

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

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

Table for Filed Antenna

For 2.4G:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	N/A	N/A	Dipole	N/A	5.66	N/A
2	N/A	N/A	Dipole	N/A	6.03	N/A

Note:

- This EUT supports MIMO 2X2, any transmit signals are correlated with each other, so Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi, that is Directional gain = $10\log[(10^{5.66/20} + 10^{6.03/20})^2 / 2]$ dBi = 8.86. So, the output power limit is $30 - (8.86 - 6) = 27.14$, the power spectral density limit is $8 - (8.86 - 6) = 5.14$.
- This EUT supports CDD, and all antenna gains are not equal, so Directional gain = $G_{ANT} + \text{Array Gain}$. For power measurements, Array Gain = 0dB ($N_{ANT} \leq 4$), so the Directional gain = 6.03. For power spectral density measurements, $N_{ANT} = 2$, $N_{SS} = 1$. So the Directional gain = $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT} / N_{SS})$ dBi = $6.03 + 10\log(2/1)$ dBi = 9.04. Then, the power spectral density limit is $8 - (9.04 - 6) = 4.96$.
- The antenna gain is provided by the manufacturer.

For 5GHz

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	N/A	N/A	Dipole	N/A	5.64	N/A
2	N/A	N/A	Dipole	N/A	5.52	N/A

Note:

- This EUT supports MIMO 2X2, any transmit signals are correlated with each other, so Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi, that is Directional gain = $10\log[(10^{5.64/20} + 10^{5.52/20})^2 / 2]$ dBi = 8.59. So, the UNII-1, UNII-3 output power limit is $30 - (8.59 - 6) = 27.41$. The UNII-1 power spectral density limit is $17 - (8.59 - 6) = 14.41$, the UNII-3 power spectral density limit is $30 - (8.59 - 6) = 27.41$.
- This EUT supports CDD, and all antenna gains are not equal, Directional gain = $G_{ANT} + \text{Array Gain}$. For power measurements, Array Gain = 0dB ($N_{ANT} \leq 4$), so the Directional gain = 5.64. For power spectral density measurements, $N_{ANT} = 2$, $N_{SS} = 1$. So the Directional gain = $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT} / N_{SS})$ dBi = $5.64 + 10\log(2/1)$ dBi = 8.65. Then, the UNII-1 power spectral density limit is $17 - (8.65 - 6) = 14.35$, the UNII-3 power spectral density limit is $30 - (8.65 - 6) = 27.35$.
- The antenna gain is provided by the manufacturer.

Table for Antenna Configuration:
For 2.4G:

Operating Mode TX Mode	Ant. 1	Ant. 2	Ant. 1+2
802.11b	✓	✓	✓
802.11g	✓	✓	✓
802.11n(20 MHz)	✓	✓	✓
802.11n(40 MHz)	✓	✓	✓

For 5G:

Operating Mode TX Mode	Ant. 1	Ant. 2	Ant. 1+2
IEEE 802.11a	✓	✓	✓
IEEE 802.11n (HT20)	✓	✓	✓
IEEE 802.11n (HT40)	✓	✓	✓
IEEE 802.11ac (VHT20)	✓	✓	✓
IEEE 802.11ac (VHT40)	✓	✓	✓
IEEE 802.11ac (VHT80)	✓	✓	✓

2. TEST RESULTS

For 2.4GHz:

Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
6.03	4.0087	26.10	407.3803	0.3249	1	Complies

For 5GHz:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
5.64	3.6644	26.01	399.0249	0.2909	1	Complies

For the max simultaneous transmission MPE:

Power Density (S) (mW/cm ²)	Power Density (S) (mW/cm ²)	Total	Limit of Power Density (S) (mW/ cm ²)	Test Result
2.4GHz	5GHz			
0.3249	0.2909	0.6158	1	Complies

Note: The calculated distance is 20 cm.

End of Test Report