FCC RF EXPOSURE REPORT

FCC ID: 2AX5J-R4

Project No.	:	2107C181
Equipment	:	1800M Wi-Fi 6 Dual-band Mesh Router
Brand Name	:	Ruijie , Reyee , Ruijie | Reyee
Test Model	:	RG-R4
Series Model	:	N/A
Applicant	:	Ruijie Networks Co.,Ltd.
Address	:	Building 19, Juyuanzhou Industrial Park, No. 618 Jinshan Road, Cangshan District, Fuzhou, Fujian, China
Manufacturer	:	Ruijie Networks Co.,Ltd.
Address	:	Building 19, Juyuanzhou Industrial Park, No. 618 Jinshan Road, Cangshan District, Fuzhou, Fujian, China
Date of Receipt	:	Jul. 29, 2021
Date of Test	:	Aug. 09, 2021 ~ Sep. 01, 2021
Issued Date	:	Sep. 09, 2021
Report Version	:	R00
Test Sample	:	Engineering Sample No.: DG2021072776
Standard(s)	:	FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091 FCC Title 47 Part 2.1091, OET Bulletin 65 Supplement C

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

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ACCREDITED
TESTING CERT #5123.02

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue	Sep. 09, 2021

1. TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town, Dongguan City, Guangdong, People's Republic of China.
BTL's Test Firm Registration Number for FCC: 357015
BTL's Designation Number for FCC: CN1240

2. 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

Antenna Specification:
For 2.4GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	RFlink	RF11C00741A	PCB	N/A	3.42
2	RFlink	RF11C00742A	PCB	N/A	4.17

Note:
1) This EUT supports CDD, and all antenna gains are not equal, Directional gain=10log[$(10^{G1/20}+10^{G2/20}+...10^{GN/20})^2$/N]dBi, that is Directional gain=10log[$(10^{3.42/20}+10^{4.17/20})^2$/2]dBi =6.81. So, the output power limit is 30-(6.81-6)=29.19, the power spectral density limit is 8-(6.81-6)=7.19.
2) Beamforming Gain: 2dB. So Directional gain=4.17+2=6.17. Then, the output power limit is 30-(6.17-6)=29.83.
3) The antenna gain and beamforming gain are provided by the manufacturer.

For 5GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	RFlink	RF11C00743A	PCB	N/A	6.84
2	RFlink	RF11C00744A	PCB	N/A	6.84

Note:
1) This EUT supports CDD, and all antennas have the same gain, Directional gain = G_{ANT}+Array Gain.
For power measurements, Array Gain=0dB ($N_{ANT} \leq 4$), so the Directional gain=6.84.
For power spectral density measurements, N_{ANT}=2, N_{SS} = 1.
So the Directional gain=G_{ANT}+Array Gain=G_{ANT}+10log(N_{ANT}/ N_{SS})dBi=6.84+10log(2/1)dBi=9.85.
Then, the UNII-1 power spectral density limit is 17-(9.85-6)=13.15, the UNII-2A, UNII-2C power spectral density limit is 11-(9.85-6)=7.15, the UNII-3 power spectral density limit is 30-(9.85-6)=26.15.
2) Beamforming Gain: 2dB. So Directional gain=6.84+2=8.84. Then, the UNII-1, UNII-3 output power limit is 30-(8.84-6)=27.16, the UNII-2A, UNII-2C output power limit is 23.98-(8.84-6)=21.14.
3) The antenna gain and beamforming gain are provided by the manufacturer.

Table for Antenna Configuration:
For 2.4GHz Non Beamforming:

Operating Mode / TX Mode	2TX
IEEE 802.11b	V(Ant. 1 + Ant. 2)
IEEE 802.11g	V(Ant. 1 + Ant. 2)
IEEE 802.11n(HT20)	V(Ant. 1 + Ant. 2)
IEEE 802.11n(HT40)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE20)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE40)	V(Ant. 1 + Ant. 2)

For 2.4GHz Beamforming:

Operating Mode / TX Mode	2TX
IEEE 802.11n(HT20)	V(Ant. 1 + Ant. 2)
IEEE 802.11n(HT40)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE20)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE40)	V(Ant. 1 + Ant. 2)

For 5GHz Non Beamforming:

Operating Mode / TX Mode	2TX
IEEE 802.11a	V(Ant. 1 + Ant. 2)
IEEE 802.11n(HT20)	V(Ant. 1 + Ant. 2)
IEEE 802.11n(HT40)	V(Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT20)	V(Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT40)	V(Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT80)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE20)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE40)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE80)	V(Ant. 1 + Ant. 2)

For 5GHz Beamforming:

Operating Mode / TX Mode	2TX
IEEE 802.11n(HT20)	V(Ant. 1 + Ant. 2)
IEEE 802.11n(HT40)	V(Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT20)	V(Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT40)	V(Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT80)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE20)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE40)	V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE80)	V(Ant. 1 + Ant. 2)

3. TEST RESULTS

For 2.4GHz Non Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Average Output Power (dBm)	Max. Average Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
6.81	4.7973	21.47	140.2814	0.13395	1	Complies

For 2.4GHz Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Average Output Power (dBm)	Max. Average Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
6.17	4.1400	18.77	75.3356	0.06208	1	Complies

For 5GHz Non Beamforming:

Directional Gain (dBi)	Directional 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
6.84	4.8306	29.14	820.3515	0.78877	1	Complies

For 5GHz Beamforming:

Directional Gain (dBi)	Directional 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
8.84	7.6560	27.15	518.8000	0.79059	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			
0.13395	0.79059	0.92454	1	Complies

Note: The calculated distance is 20 cm.

End of Test Report