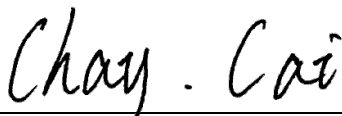


FCC RF EXPOSURE REPORT

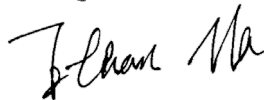
FCC ID: 2AUA9-RQZY003

Project No. : 2005C136
Equipment : AC2100 Smart WiFi Router
Brand Name : ROCK, rock space
Test Model : RSD0614
Series Model : N/A
Applicant : Shenzhen Renqing Excellent Technology Co., Ltd.
Address : 104, No.15, Longfu Industrial Zone, Tongsheng Community, Dalang Street, Longhua District, Shenzhen, Guangdong, China
Manufacturer : Shenzhen Renqing Excellent Technology Co., Ltd.
Address : 104, No.15, Longfu Industrial Zone, Tongsheng Community, Dalang Street, Longhua District, Shenzhen, Guangdong, China
Date of Receipt : May 21, 2020
Date of Test : May 22, 2020 ~ Jun. 10, 2020
Issued Date : Jul. 02, 2020
Report Version : R02
Test Sample : Engineering Sample No.: DG202005224
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.



Prepared by : Chay Cai



Approved by : Ethan Ma



Certificate #5123.02

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Web: www.newbtl.com

REPORT ISSUED HISTORY

| Report Version | Description | Issued Date |
|----------------|--|---------------|
| R00 | Original Issue | Jun. 17, 2020 |
| R01 | Updated the address of applicant and manufacturer. | Jun. 28, 2020 |
| R02 | Added the test factory information. | Jul. 02, 2020 |

1. TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3,Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, 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

Table for Filed Antenna

For WLAN 2.4GHz:

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-------|------------|--------------|-----------|------------|
| 1 | N/A | N/A | Dipole | N/A | 3.5 |
| 2 | N/A | N/A | Dipole | N/A | 3.5 |

Note:

This EUT supports CDD, and all antennas have the same gain, then,

- 1) Non Beamforming function, Directional gain = $G_{ANT} + \text{Array Gain}$,
For power measurements, Array Gain = 0 dB ($N_{ANT} \leq 4$), so the Directional gain=3.5.
For power spectral density measurements, $N_{ANT} = 2$, $N_{SS} = 1$. So Directional gain = $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})$ dB = $3.5 + 10\log(2/1)$ dBi=6.51. Then, the power spectral density limit is $8 - (6.51 - 6) = 7.49$.
- 2) Beamforming function, Beamforming Gain: 3dB. So the Directional gain=3+3.5=6.5.
Then, the power limit is $30 - (6.5 - 6) = 29.5$.

Table for Antenna Configuration:

For Non Beamforming:

| Operating Mode | TX Mode | |
|---------------------|------------|---------------------|
| | 1TX | 2TX |
| 802.11b | V (Ant. 1) | - |
| 802.11g | V (Ant. 1) | - |
| IEEE 802.11n (HT20) | - | V (Ant. 1 + Ant. 2) |
| IEEE 802.11n (HT40) | - | V (Ant. 1 + Ant. 2) |

For Beamforming:

| Operating Mode | TX Mode | |
|---------------------|---------------------|--|
| | 2TX | |
| IEEE 802.11n (HT20) | V (Ant. 1 + Ant. 2) | |
| IEEE 802.11n (HT40) | V (Ant. 1 + Ant. 2) | |

For WLAN 5GHz:

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) | Note |
|------|-------|------------|--------------|-----------|------------|--------|
| 1 | N/A | N/A | Dipole | N/A | 4 | UNII-1 |
| 2 | N/A | N/A | Dipole | N/A | 4 | UNII-1 |
| 3 | N/A | N/A | Dipole | N/A | 4 | UNII-1 |
| 4 | N/A | N/A | Dipole | N/A | 4 | UNII-1 |
| 1 | N/A | N/A | Dipole | N/A | 5.5 | UNII-3 |
| 2 | N/A | N/A | Dipole | N/A | 5.5 | UNII-3 |
| 3 | N/A | N/A | Dipole | N/A | 5.5 | UNII-3 |
| 4 | N/A | N/A | Dipole | N/A | 5.5 | UNII-3 |

Note:

This EUT supports CDD, and all antennas have the same gain, then,

 1) Non Beamforming function, Directional gain = $G_{ANT} + \text{Array Gain}$,

a) For UNII-1:

 For power measurements, Array Gain = 0 dB ($N_{ANT} \leq 4$), so the Directional gain=4.

 For power spectral density measurements, $N_{ANT} = 4$, $N_{SS} = 1$. So Directional gain= $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})$ dB = $4 + 10\log(4/1)$ dBi=10.02. Then, the power spectral density limit is $17 - (10.02 - 6) = 12.98$.

b) For UNII-3:

 For power measurements, Array Gain = 0 dB ($N_{ANT} \leq 4$), so the Directional gain=5.5.

 For power spectral density measurements, $N_{ANT} = 4$, $N_{SS} = 1$. So Directional gain = $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})$ dB = $5.5 + 10\log(4/1)$ dBi=11.52. Then, the power spectral density Limit is $30 - (11.52 - 6) = 24.48$.

2) Beamforming function, Beamforming Gain: 6dB. So,

a) For UNII-1:

 The Directional gain= $6 + 4 = 10$. Then, the average output power limit is $30 - (10 - 6) = 26$.

b) For UNII-3:

 The Directional gain= $6 + 5.5 = 11.5$. Then, the average output power limit is $30 - (11.5 - 6) = 24.5$.

Table for Antenna Configuration:

For Non Beamforming:

| Operating Mode | TX Mode | |
|-----------------------|------------|---------------------------------------|
| | 1TX | 4TX |
| IEEE 802.11a | V (Ant. 1) | - |
| IEEE 802.11n (HT20) | - | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11n (HT40) | - | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac (VHT20) | - | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac (VHT40) | - | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac (VHT80) | - | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |

For Beamforming:

| Operating Mode | TX Mode | 4TX |
|-----------------------|---------|---------------------------------------|
| IEEE 802.11n (HT20) | | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11n (HT40) | | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac (VHT20) | | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac (VHT40) | | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |
| IEEE 802.11ac (VHT80) | | V (Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4) |

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 |
|------------------------|----------------------------|---------------------------------|--------------------------------|---|--|-------------|
| 3.5 | 2.2387 | 24.73 | 297.1666 | 0.13242 | 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 |
|------------------------|----------------------------|---------------------------------|--------------------------------|---|--|-------------|
| 6.5 | 4.4668 | 18.14 | 65.1628 | 0.05794 | 1 | Complies |

For 5GHz UNII-1 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 |
|------------------------|----------------------------|-------------------------|------------------------|---|--|-------------|
| 4 | 2.5119 | 24.58 | 287.0781 | 0.14353 | 1 | Complies |

For 5GHz UNII-3 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 |
|------------------------|----------------------------|-------------------------|------------------------|---|--|-------------|
| 5.5 | 3.5481 | 29.14 | 820.3515 | 0.57936 | 1 | Complies |

For 5GHz UNII-1 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 |
|------------------------|----------------------------|-------------------------|------------------------|---|--|-------------|
| 10 | 10.0000 | 24.26 | 266.6859 | 0.53082 | 1 | Complies |

For 5GHz UNII-3 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 |
|------------------------|----------------------------|-------------------------|------------------------|---|--|-------------|
| 11.5 | 14.1254 | 24.43 | 277.3320 | 0.77974 | 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 | | | |
| 0.13242 | 0.77974 | 0.91216 | 1 | Complies |

Note: The calculated distance is 20 cm.

End of Test Report