

FCC RF EXPOSURE REPORT

FCC ID: 2APRGAP01

Project No. : 2310G131C
Equipment : AX3000 Ceiling Mount Wi-Fi 6 Access Point with 2.5G Port
Brand Name : Cudy
Test Model : AP3000
Series Model : N/A
Applicant : Shenzhen Cudy Technology Co., Ltd.
Address : Room A606, Gaoxinqi Industrial Park, Liuxianyi Road, Baoan District, Shenzhen, China
Manufacturer : Shenzhen Cudy Technology Co., Ltd.
Address : Room A606, Gaoxinqi Industrial Park, Liuxianyi Road, Baoan District, Shenzhen, China
Factory : Shenzhen Cudy Technology Co., Ltd.
Address : Room A606, Gaoxinqi Industrial Park, Liuxianyi Road, Baoan District, Shenzhen, China
Date of Receipt : Dec. 15, 2023
Date of Test : Dec. 19, 2023 ~ Mar. 04, 2024
Mar. 18, 2024
Issued Date : Mar. 18, 2024
Report Version : R01
Test Sample : Engineering Sample No.: SSL20231215195
Standard(s) : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091
FCC Title 47 Part 2.1091

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

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-4-2310G131C	R00	Original Report.	Mar. 07, 2024	Invalid
BTL-FCCP-4-2310G131C	R01	Modified the comments.	Mar. 18, 2024	Valid

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 2.4GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	 South star	3.N101.1160	PCB	N/A	4.32
2	 South star	3.N101.1161	PCB	N/A	4.89

Note:

- 1) This EUT supports MIMO, 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= $10\log[(10^{4.32/20} + 10^{4.89/20})^2/2]$ dBi =7.62.
- 2) Beamforming gain is 3dB. So Directional gain=3+4.89=7.89.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

For 5GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	 South star	3.N101.1162	PCB	N/A	5.27
2	 South star	3.N101.1163	PCB	N/A	5.69
3	 South star	3.N101.1164	PCB	N/A	4.68

Note:

- 1) This EUT supports MIMO, 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= $10\log[(10^{5.27/20} + 10^{5.69/20} + 10^{4.68/20})^2/3]$ dBi =9.99.
- 2) Beamforming gain is 3dB. So Directional gain=3+5.69=8.69.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.
- 4) Any one of the three antennas is used as an intelligent switching antenna, and the antenna data stream is NSS2 when used.

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)

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	3TX
IEEE 802.11a		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11n(HT20)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11n(HT40)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ac(VHT20)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ac(VHT40)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ac(VHT80)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ac(VHT160)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ax(HE20)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ax(HE40)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ax(HE80)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ax(HE160)		V (Ant. 1 + Ant. 2 + Ant. 3)

Beamforming:

Operating Mode	TX Mode	3TX
IEEE 802.11n(HT20)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11n(HT40)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ac(VHT20)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ac(VHT40)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ac(VHT80)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ac(VHT160)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ax(HE20)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ax(HE40)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ax(HE80)		V (Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11ax(HE160)		V (Ant. 1 + Ant. 2 + Ant. 3)

2. TEST RESULTS

For 2.4GHz_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
7.62	5.7810	26.37	433.5109	0.37719	1	Complies

For 2.4GHz_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
7.89	6.1518	24.53	283.7919	0.26276	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
9.99	9.9770	26.00	398.1072	0.59780	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
8.69	7.3961	25.52	356.4511	0.39678	1	Complies

For the max simultaneous transmission MPE:

Ratio		Total	Limit of Ratio	Test Result
2.4GHz	5GHz			
0.37719	0.59780	0.97499	1	Complies

Note: The calculated distance is 23 cm.

End of Test Report