

FCC RF EXPOSURE REPORT

FCC ID: VGYAP905

Report No. : BTL-FCCP-4-2410C274
Equipment : 802.11ax Access Point
Model Name : VigorAP 905
Brand Name : DrayTek
Applicant : Draytek Corporation
Address : No.26, Fu Shing Rd., HuKou County, Hsinchu Industrial Park,
Hsinchu, Taiwan 303
Manufacturer : Shenzhen Cudy Technology Co., Ltd.
Address : 7/F, Lepu Tower (West), 66 Xingke Rd, Nanshan, Shenzhen, China
Factory : Shenzhen Cudy Technology Co., Ltd.
Address : 7/F, Lepu Tower (West), 66 Xingke Rd, Nanshan, Shenzhen, China
Radio Function : WLAN 2.4 GHz
RLAN 5 GHz (U-NII 1, U-NII 2a, U-NII 2c, U-NII 3)
FCC Rule Part(s) : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091
FCC Title 47 Part 2.1091 & KDB 447498 D01 v06
Date of Receipt : 2024/10/19
Date of Test : 2024/10/20 - 2024/11/29
Issued Date : 2024/12/23

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

Prepared by :


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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-4-2410C274	R00	Original Report.	2024/12/23	Valid

1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

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

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

2. ANTENNA SPECIFICATION

For WLAN 2.4 GHz:

Ant.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1	SHENZHEN SOUTH STAR TECHNOLOGY CO.,LTD	3.N101.1363	PCB	N/A	1.87
2	SHENZHEN SOUTH STAR TECHNOLOGY CO.,LTD	3.N101.1363	PCB	N/A	1.87

NOTE:

- 1) This EUT supports MIMO 2X2, any transmit signals are correlated with each other, so Directional gain= $G_{ANT}+10\log(N)$ dBi, that is Directional gain= $1.87+10\log(2)$ dBi=4.88.
- 2) The antenna gain is provided by the manufacturer.

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 RLAN 5 GHz:

Ant.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1	SHENZHEN SOUTH STAR TECHNOLOGY CO.,LTD	3.N101.1623	PCB	N/A	4.32
2	SHENZHEN SOUTH STAR TECHNOLOGY CO.,LTD	3.N101.1363	PCB	N/A	5.72
3	SHENZHEN SOUTH STAR TECHNOLOGY CO.,LTD	3.N101.1363	PCB	N/A	5.72

NOTE:

- 1) This EUT supports MIMO 3X3, any transmit signals are correlated with each other, so Directional gain= $10\log[(10^{G1/20}+10^{G2/20}+...10^{GN/20})^2/N]$ dBi, that is Directional gain= $10\log[(10^{4.32/20}+10^{5.72/20}+10^{5.72/20})^2/3]$ dBi =10.05.
- 2) The antenna gain is provided by the manufacturer.
- 3) EUT only supports up to 2 streams.

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)

3. CALCULATED RESULT

For WLAN 2.4 GHz:

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
1.87	1.5382	19.80	95.4993	0.0292	1	Complies

For RLAN 5 GHz:

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
5.72	3.7325	25.61	363.9150	0.2704	1	Complies

For the max simultaneous transmission MPE:

Ratio		Total	Limit of Ratio	Test Result
2.4GHz	5GHz			
0.0292	0.2704	0.2996	1	Complies

Note:

- (1) The calculated distance is 20 cm.
- (2) $\text{Ratio} = \text{Power Density (S) (mW/cm}^2\text{)} / \text{Limit of Power Density (S) (mW/cm}^2\text{)}$

End of Test Report