

FCC RF EXPOSURE REPORT

FCC ID: 2AXJ4EAP245V4

Project No. : 2206C110A
Equipment : AC1750 Wireless MU-MIMO Gigabit Ceiling Mount Access Point
Brand Name : tp-link
Test Model : EAP245
Series Model : N/A
Applicant : TP-Link Corporation Limited
Address : Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road,
Tsim Sha Tsui, Kowloon, Hong Kong
Manufacturer : TP-Link Corporation Limited
Address : Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road,
Tsim Sha Tsui, Kowloon, Hong Kong
Date of Receipt : Jul. 07, 2022
Date of Test : Jul. 08, 2022 ~ Aug. 08, 2022
Issued Date : Sep. 05, 2022
Report Version : R00
Test Sample : Engineering Sample No.: DG2022070778
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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TESTING CERT #5123.02

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-3-2206C110A	R00	Original Report.	Sep. 05, 2022	Valid

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 523792 People's Republic of China.

BTL's Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

2. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

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

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

Antenna Specification:

For 2.4GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	EAP245 4.0	PIFA	N/A	1.98
2	tp-link	EAP245 4.0	PIFA	N/A	2.00
3	tp-link	EAP245 4.0	PIFA	N/A	1.39

Note:

- 1) This EUT supports CDD, and all antenna gains are not equal, so Directional gain=10log[(10^{G1/20}+10^{G2/20}+...10^{GN/20})²/N]dBi, that is Directional gain=10log[(10^{1.98/20}+10^{2.00/20}+10^{1.39/20})²/3]dBi =6.57. So, the output power limit is 30-(6.57-6)=29.43, the power spectral density limit is 8-(6.57-6)=7.43.
- 2) The antenna gain is provided by the manufacturer.

For 5GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	EAP245 4.0	PIFA	N/A	3.00
2	tp-link	EAP245 4.0	PIFA	N/A	3.00
3	tp-link	EAP245 4.0	PIFA	N/A	2.72

Note:

- 1) This EUT supports CDD, and all antenna gains are not equal, so Directional gain=10log[(10^{G1/20}+10^{G2/20}+...10^{GN/20})²/N]dBi, that is Directional gain=10log[(10^{3.00/20}+10^{3.00/20}+10^{2.72/20})²/3]dBi=7.68. So, the output power limit is 30-(7.68-6)=28.32. The UNII-1 power spectral density limit is 17-(7.68-6)=15.32, the UNII-3 power spectral density limit is 30-(7.68-6)=28.32.
- 2) Beamforming Gain: 4 dBi. So Directional gain=4+3=7. Then the output power limit is 30-(7-6)=29.00.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

Table for Antenna Configuration:
For 2.4GHz:

Operating Mode	TX Mode	3TX
IEEE 802.11b		V(Ant. 1 + Ant. 2 + Ant. 3)
IEEE 802.11g		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)

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)

For 5GHz Beamforming:

Operating Mode	TX Mode	3TX
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)

3. TEST RESULTS

For 2.4GHz:

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
6.57	4.5394	27.25	530.8844	0.47968	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
7.68	5.8614	26.13	410.2041	0.47858	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
7.00	5.0119	25.62	364.7539	0.36387	1	Complies

For the max simultaneous transmission MPE:

Ratio		Total	Limit of Ratio	Test Result
2.4GHz	5GHz			
0.47968	0.47858	0.95826	1	Complies

Note: The calculated distance is 20 cm.
Output power including tune up tolerance.

End of Test Report