FCC RF EXPOSURE REPORT

FCC ID: 2AXJ4EAP610V3

Project No.	:	2201C075
Equipment	:	AX1800 Ceiling Mount Wi-Fi 6 Access Point
Brand Name	:	tp-link
Test Model	:	EAP610
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	:	Jan. 17, 2022
Date of Test	:	Jan. 18, 2022 ~ Mar. 18, 2022
Issued Date	:	Apr. 28, 2022
Report Version	:	R01
Test Sample	:	Engineering Sample No.: DG2022011822
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.

Prepared by : Chella Zheng

Approved by : Chay Cai

TESTING CERT #5123.02

Add: No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792 People's Republic of China
Tel: +86-769-8318-3000
Web: www.newbtl.com

REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-3-2201C075	R00	Original Report.	Apr. 07, 2022	Invalid
BTL-FCCP-3-2201C075	R01	Updated the test results.	Apr. 28, 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:

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

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

For 2.4GHz:
Antenna Specification:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	EAP610(EU/US)3.0 Antenna	PIFA	N/A	3
2	tp-link	EAP610(EU/US)3.0 Antenna	PIFA	N/A	3

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 ($N_{ANT} \leqslant 4$), so the Directional gain=3 dBi.
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=3+10log(2/1)dBi=6.01 dBi.
Then, the power spectral density limit is 8-(6.01-6)=7.99 dBm/3kHz.
2) Beamforming Gain: 3 dB. Then the Directional gain=3+3=6.00 dBi.
3) The antenna gain and beamforming gain are provided by the manufacturer.

Table for Antenna Configuration:
For 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 Beamforming:

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

For 5GHz:
Antenna Specification:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	EAP610(EU/US)3.0 Antenna	PIFA	N/A	3
2	tp-link	EAP610(EU/US)3.0 Antenna	PIFA	N/A	3

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 ($N_{ANT} \leqslant 4$), so the Directional gain=3 dBi.
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=3+10log(2/1)dBi=6.01 dBi.
Then, the UNII-1 power spectral density limit is 17-(6.01-6)=16.99 dBm/MHz, the UNII-3 power spectral density limit is 30-(6.01-6)=29.99 dBm/500 kHz.
2) Beamforming Gain: 3 dB. Then the Directional gain=3+3=6.00 dBi.
3) The antenna gain and beamforming gain are provided by the manufacturer.

Table for Antenna Configuration:
For 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 Beamforming:

Operating Mode / TX Mode	2TX
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
3	1.9953	24.53	283.7919	0.11271	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	3.9811	23.72	235.5049	0.18662	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
3	1.9953	24.53	283.7919	0.11271	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
6	3.9811	23.97	249.4595	0.19767	1	Complies

For the max simultaneous transmission MPE:

Ratio		Total	Limit of Ratio	Test Result
2.4GHz	5GHz			
0.18662	0.19767	0.38429	1	Complies

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

End of Test Report