

FCC RF EXPOSURE REPORT

FCC ID: TE7EAP620HD

Project No. : 2006C097A
Equipment : AX1800 Wireless Dual-Band Gigabit Ceiling Mount Access Point
Brand Name : tp-link
Test Model : EAP620 HD
Series Model : N/A
Applicant : TP-Link Technologies Co., Ltd.
Address : Building 24(floors1,3,4,5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
Manufacturer : TP-Link Technologies Co., Ltd.
Address : Building 24(floors1,3,4,5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
Date of Receipt : Aug. 17, 2020
Date of Test : Aug. 17, 2020 ~ Nov. 03, 2020
Issued Date : Nov. 24, 2020
Report Version : R00
Test Sample : Engineering Sample No.: DG202008181
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.



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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue	Nov. 24, 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 2.4GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1		N/A	Internal	N/A	3
2		N/A	Internal	N/A	3

Note:

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

- 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.
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 = $3 + 10\log(2/1)$ dBi=6.01. Then,
the power spectral density limit is $8 - (6.01 - 6) = 7.99$.
- Beamforming Gain: 3 dB, So Directional Gain=3+3=6.



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 802.11nax(HE40)	V (Ant. 1 + Ant. 2)

For Beamforming:

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

For 5GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1		N/A	Internal	N/A	2.69
2		N/A	Internal	N/A	2.65

Note:

This EUT supports CDD, and antenna gains are not equal,

- 1) so Directional gain= $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi,
that is Directional gain= $10\log[(10^{2.69/20} + 10^{2.65/20})^2 / 2]$ dBi =5.68.
- 2) Beamforming Gain: 3dB, the Directional gain=3+2.69=5.69

4. 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
3.00	1.9953	25.25	334.9654	0.13303	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
6.00	3.9811	24.62	289.7344	0.22959	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
5.68	3.6983	25.29	338.0648	0.24886	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
5.69	3.7068	24.83	304.0885	0.22436	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
5.68	3.6983	26.59	456.0369	0.33570	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
5.69	3.7068	25.93	391.7419	0.28903	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			
0.22959	0.33570	0.56529	1	Complies

Note: The calculated distance is 25 cm.

End of Test Report