

FCC RF EXPOSURE REPORT

FCC ID: 2AXJ4WA3001

Project No. : 2402G090
Equipment : AX3000 Gigabit Wi-Fi 6 Access Point
Brand Name : tp-link
Test Model : TL-WA3001
Series Model : NA
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 : Dec. 30, 2021
Mar. 01, 2024
Date of Test : Jan. 04, 2022 ~ Feb. 17, 2022
Mar. 04, 2024 ~ Apr. 03, 2024
Apr. 30, 2024
Issued Date : May 07, 2024
Report Version : R01
Test Sample : Engineering Sample No.: DG2021123040, SSL20240301209
Standard(s) : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091
FCC Title 47 Part 2.1091 & KDB 447498 D01 v06

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-4-2402G090	R00	This is a supplementary report to the original test report (BTL-FCCP-4-2112C158). Change the adapter and 5G FEM, so the output power been re-evaluated and recorded. Other are kept the same.	Apr. 16, 2024	Invalid
BTL-FCCP-4-2402G090	R01	Modified the comments.	May 07, 2024	Valid

Remark: For the original report (BTL-FCCP-4-2112C158), the test data, data evaluation, and equipment configuration contained was accredited by the Authority of A2LA according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

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

For 2.4GHz:

Antenna Specification:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	3101504476	Dipole	Weld	1.58
2	tp-link	3101504477	Dipole	Weld	1.58

Note:

- 1) This EUT supports CDD, and all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$. For power measurements, Array Gain=0dB ($N_{ANT} \leq 4$), so the Directional gain=1.58 dBi.
- 2) Beamforming Gain: 3 dB. So the Directional gain=3+1.58=4.58 dBi.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

For 5GHz:

Antenna Specification:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	3101504478	Dipole	Weld	2.46
2	tp-link	3101504479	Dipole	Weld	2.46

Note:

- 1) This EUT supports CDD, and all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$. For power measurements, Array Gain=0dB ($N_{ANT} \leq 4$), so the Directional gain=2.46 dBi.
- 2) Beamforming Gain: 3 dB. So the Directional gain=3+2.46=5.46 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 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 802.11ac(VHT160)	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)
IEEE 802.11ax(HE160)	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 802.11ac(VHT160)		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)
IEEE 802.11ax(HE160)		V (Ant. 1 + Ant. 2)

2. 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
1.58	1.4388	26.41	437.5221	0.12530	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
4.58	2.8708	25.52	356.4511	0.20368	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
2.46	1.7620	25.41	347.5362	0.12189	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
5.46	3.5156	25.09	322.8494	0.22592	1	Complies

For the max simultaneous transmission MPE:

Ratio		Total	Limit of Ratio	Test Result
2.4GHz	5GHz			
0.20368	0.22592	0.4296	1	Complies

- Note: 1) The calculated distance is 20 cm.
2) Output power including tune up tolerance.
3) The 2.4G power is provided by the manufacturer.

End of Test Report