

FCC RF EXPOSURE REPORT

FCC ID: 2BH7FER706WP4G

Project No. : 2410G027A
Equipment : 4G+ Cat6 AX3000 Gigabit VPN Gateway with 4-Port PoE+
Brand Name : tp-link
Model Name : ER706WP-4G
Hardware Version : V1
Software Version : V1
Applicant : TP-Link Systems Inc.
Address : 10 Mauchly, Irvine, CA 92618
Manufacturer : TP-Link Systems Inc.
Address : 10 Mauchly, Irvine, CA 92618
Date of Receipt : Feb. 28, 2025
Date of Test : Mar. 06, 2025 ~ Jul. 16, 2025
Issued Date : Aug. 08, 2025
Test Sample : Engineering Sample No.: DG2025022846 for WiFi.
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. (Dongguan)

Prepared by : Chella Zheng
Chella Zheng

Approved by : Chay Cai
Chay Cai

No.3, Jinshagang 1st Road, Dalang, Dongguan, Guangdong People's Republic of China.

Tel: +86-769-8318-3000 Web: www.newbtl.com Service mail: btl_qa@newbtl.com

REVISION HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-7-2410G027A	R00	Original Report.	Aug. 06, 2025	Invalid
BTL-FCCP-7-2410G027A	R01	This report updated beamforming gain information in page 3. It is a revision of the report BTL-FCCP-7-2410G027A R00. This is a newly released report, replacing the BTL-FCCP-7-2410G027A R00 report.	Aug. 08, 2025	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 2.4GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	ER706WP_ant1	Dipole	RP-SMA-M	6.02
2	tp-link	ER706WP_ant3	Dipole	RP-SMA-M	6.84

Note:

- 1) This EUT supports CDD, and all antenna gains are not equal, so Directional gain = $G_{ANT} + \text{Array Gain}$. For power measurements, Array Gain=0dB ($N_{ANT} \leq 4$), so the Directional gain=6.84.
- 2) Beamforming Gain: 3 dB.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

For 5GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)	Note
1	tp-link	ER706WP_ant1	Dipole	RP-SMA-M	5.17	UNII-1
2	tp-link	ER706WP_ant2	Dipole	RP-SMA-M	4.32	
3	tp-link	ER706WP_ant3	Dipole	RP-SMA-M	5.29	
1	tp-link	ER706WP_ant1	Dipole	RP-SMA-M	4.83	UNII-2A
2	tp-link	ER706WP_ant2	Dipole	RP-SMA-M	5.51	
3	tp-link	ER706WP_ant3	Dipole	RP-SMA-M	5.56	
1	tp-link	ER706WP_ant1	Dipole	RP-SMA-M	5.33	UNII-2C
2	tp-link	ER706WP_ant2	Dipole	RP-SMA-M	4.22	
3	tp-link	ER706WP_ant3	Dipole	RP-SMA-M	5.94	
1	tp-link	ER706WP_ant1	Dipole	RP-SMA-M	4.70	UNII-3
2	tp-link	ER706WP_ant2	Dipole	RP-SMA-M	4.08	
3	tp-link	ER706WP_ant3	Dipole	RP-SMA-M	4.79	

Note:

- 1) This EUT supports CDD, and all antenna gains are not equal, Directional gain = $G_{ANT} + \text{Array Gain}$. For power measurements, Array Gain=0dB ($N_{ANT} \leq 4$), so the UNII-1 Directional gain=5.29, the UNII-2A Directional gain=5.56, the UNII-2C Directional gain=5.94, the UNII-3 Directional gain=4.79.
- 2) Beamforming Gain: 4.76 dB.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

For LTE:

Brand	P/N	Antenna Type	Connector	Gain (dBi)	Note
tp-link	ER706WP_ ant4	Dipole	N/A	0.53	LTE Band 5 (Ant. 4)
				0.53	LTE Band 26 (Ant. 4)
				3.90	LTE Band 2 (Ant. 4)
				3.90	LTE Band 25 (Ant. 4)
				3.39	LTE Band 4 (Ant. 4)
				2.69	LTE Band 7 (Ant. 4)
				2.13	LTE Band 12 (Ant. 4)
				0.64	LTE Band 13 (Ant. 4)
				0.84	LTE Band 30 (Ant. 4)
				2.81	LTE Band 41 (Ant. 4)
				3.39	LTE Band 66 (Ant. 4)
				0.44	LTE Band 71 (Ant. 4)
				0.59	LTE Band 14 (Ant. 4)
				-0.30	LTE Band 48 (Ant. 4)

Note: The antenna gain is provided by the manufacturer.

Table for Antenna Configuration:
For 2.4GHz_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 2.4GHz_Beamforming:

Operating Mode	TX Mode	2TX
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 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)
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)

For 5GHz_Beamforming:

Operating Mode	TX Mode	3TX
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 2.4GHz:

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
6.84	4.8306	23.21	209.4112	0.18263	1	Complies

For 5GHz_ UNII-1:

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
5.29	3.3806	27.34	542.0009	0.33080	1	Complies

For 5GHz_ UNII-2A:

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
5.56	3.5975	23.15	206.5380	0.13414	1	Complies

For 5GHz_ UNII-2C:

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
5.94	3.9264	23.86	243.2204	0.17241	1	Complies

For 5GHz_ UNII-3:

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
4.79	3.0130	29.72	937.5620	0.51000	1	Complies

For LTE:

Band	Frequency (MHz)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Antenna Gain (linear)	Output Power to Antenna	Power Density (mW/cm ²)	Power Density Limit (mW/cm ²)	Test Result
Band 5	824.7	25	0.53	1.1298	357.2728	0.0645	0.5498	Complies
Band 26 (824-849)	824.7	25	0.53	1.1298	357.2728	0.0645	0.5498	Complies
Band 2	1850.7	25	3.90	2.4547	776.25	0.1401	1.0000	Complies
Band 25	1850.7	25	3.90	2.4547	776.25	0.1401	1.0000	Complies
Band 4	1710.7	25	3.39	2.1827	690.24	0.1246	1.0000	Complies
Band 7	2502.5	25	2.69	1.8578	587.49	0.1060	1.0000	Complies
Band 12	699.7	25	2.13	1.6331	516.4164	0.0932	0.4665	Complies
Band 13	779.5	25	0.64	1.1588	366.4376	0.0661	0.5197	Complies
Band 30	2307.5	23	0.84	1.2134	242.1029	0.0437	1.0000	Complies
Band 41	2498.5	25	2.81	1.9099	603.95	0.1090	1.0000	Complies
Band 66	1710.7	25	3.39	2.1827	690.24	0.1246	1.0000	Complies
Band 71	665.5	25	0.44	1.1066	349.9452	0.0632	0.4437	Complies
Band 26 (814-824)	814.7	25	0.53	1.1298	357.2728	0.0645	0.5431	Complies
Band 14	790.5	25	0.59	1.1455	362.2430	0.0654	0.5270	Complies
Band 48	3552.5	23	-0.30	0.9333	186.2087	0.0336	1.0000	Complies

For the max simultaneous transmission MPE:

Ratio			Total	Limit of Ratio	Test Result
2.4GHz	5GHz	LTE			
0.18263	0.51000	0.1998	0.89243	1	Complies

Note:

- (1) The calculated distance is 21 cm.
- (2) The WWAN Max. Tune up Power test results reference to module report which is provided by the manufacturer. (Report No.: SEWA2208000035RG03)

End of Test Report