

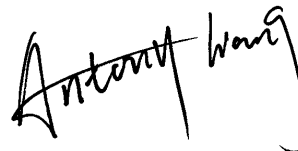
# FCC RF EXPOSURE REPORT

## FCC ID: 2BH7FHB810

**Project No.** : 2409G041  
**Equipment** : BE22000 Whole Home Mesh Wi-Fi 7 AP  
**Brand Name** : tp-link  
**Test Model** : HB810  
**Series Model** : N/A  
**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** : Sep. 24, 2024  
**Date of Test** : Sep. 27, 2024 ~ Jan. 14, 2025  
**Issued Date** : Jan. 23, 2025  
**Report Version** : R00  
**Test Sample** : Engineering Sample No.: SSL20240924146  
**Standard(s)** : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091  
FCC Title 47 Part 2.1091 & KDB 447498 D01 v06

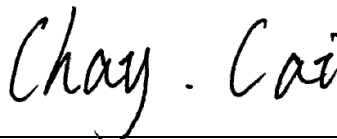
The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

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**REPORT ISSUED HISTORY**

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-5-2409G041	R00	Original Report.	Jan. 23, 2025	Valid

## 1. 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

## 2. ANTENNA SPECIFICATION

For 2.4GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	3101505537	Dipole	IPEX	1.98
2	tp-link	3101505538	Dipole	IPEX	1.97
3	tp-link	3101505539	Dipole	IPEX	1.96
4	tp-link	3101505540	Dipole	IPEX	1.99

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 Directional gain=1.99.  
For power spectral density measurements,  $N_{ANT}=4$ ,  $N_{SS} = 1$ .  
So the Directional gain= $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})\text{dBi} = 1.99 + 10\log(4/1)\text{dBi} = 8.01$ .
- 2) Beamforming Gain: 6dBi. Then the Directional gain=6+1.99=7.99.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

For 5GHz:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	3101505537	Dipole	IPEX	2.99
2	tp-link	3101505538	Dipole	IPEX	2.98
3	tp-link	3101505539	Dipole	IPEX	2.98
4	tp-link	3101505540	Dipole	IPEX	2.97

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 Directional gain=2.99.  
For power spectral density measurements,  $N_{ANT}=4$ ,  $N_{SS} = 1$ .  
So the Directional gain= $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})\text{dBi} = 2.99 + 10\log(4/1)\text{dBi} = 9.01$ .
- 2) Beamforming Gain: 6dBi. Then the Directional gain=6+2.99=8.99.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

For WIFI 6E:

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	tp-link	3101505936	Dipole	IPEX	2.98
2	tp-link	3101505937	Dipole	IPEX	2.96
3	tp-link	3101505938	Dipole	IPEX	2.99
4	tp-link	3101505939	Dipole	IPEX	2.98

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 Directional gain=2.99.  
For power spectral density measurements,  $N_{ANT}=4$ ,  $N_{SS} = 1$  and  $N_{SS} = 4$ .  
So the NSS1 Directional gain= $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})$  dBi=2.99+10log(4/1)dBi=9.01, NSS2 Directional gain= $G_{ANT} + \text{Array Gain} = G_{ANT} + 10\log(N_{ANT}/N_{SS})$  dBi=2.99+10log(4/4)dBi=2.99.
- 2) Beamforming Gain: 6dBi. so the Directional gain=2.99+6=8.99.
- 3) The antenna gain and beamforming gain are provided by the manufacturer.

### 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 <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
1.99	1.5812	29.06	805.3784	0.25348	1	Complies

For 5GHz:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
2.99	1.9907	29.88	972.7472	0.38543	1	Complies

For WIFI 6E:

Max. e.i.r.p. (dBm)	Max. e.i.r.p. (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
29.62	916.2205	0.18237	1	Complies

**For the max simultaneous transmission MPE:**

Ratio			Total	Limit of Ratio	Test Result
2.4GHz	5GHz	WIFI 6E			
0.25348	0.38543	0.18237	0.82128	1	Complies

Note:

- (1) The calculated distance is 20 cm.
- (2) Ratio=Power Density (S) (mW/cm<sup>2</sup>)/Limit of Power Density (S) (mW/cm<sup>2</sup>)

**End of Test Report**