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}+Array Gain.
For power measurements, Array Gain=0dB (N_{ANT}≤4), so the Directional gain=1.99.
For power spectral density measurements, N_{ANT}=4, N_{SS} = 1.
So the Directional gain=G_{ANT}+Array Gain=G_{ANT}+10log(N_{ANT}/ N_{SS})dBi=1.99+10log(4/1)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}+Array Gain.
For power measurements, Array Gain=0dB (N_{ANT}≤4), so the Directional gain=2.99.
For power spectral density measurements, N_{ANT}=4, N_{SS} = 1.
So the Directional gain=G_{ANT}+Array Gain=G_{ANT}+10log(N_{ANT}/ N_{SS})dBi=2.99+10log(4/1)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}+Array Gain.
For power measurements, Array Gain=0dB (N_{ANT}≤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}+Array Gain=G_{ANT}+10log(N_{ANT}/N_{SS})dBi=2.99+10log(4/1)dBi=9.01, NSS2 Directional gain=G_{ANT}+Array Gain=G_{ANT}+10log(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^2)	Limit of Power Density (S) (mW/cm^2)	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^2)	Limit of Power Density (S) (mW/cm^2)	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^2)	Limit of Power Density (S) (mW/cm^2)	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^2)/Limit of Power Density (S) (mW/cm^2)

End of Test Report