FCC RF EXPOSURE REPORT

FCC ID: 2BH7FBE5000

Project No.	:	2502G008
Equipment	:	BE5000 Dual-Band Wi-Fi 7 Router
Brand Name	:	tp-link
Test Model	:	Archer BE5000
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	:	Feb. 11, 2025
Date of Test	:	Feb. 12, 2025 ~ Mar. 24, 2025
Issued Date	:	Apr. 09, 2025
Report Version	:	R01
Test Sample	:	Engineering Sample No.: SSL2025021134
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-5-2502G008	R00	Original Report.	Apr. 01, 2025	Invalid
BTL-FCCP-5-2502G008	R01	Modified the comments of TCB.	Apr. 09, 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	Model Name	Antenna Type	Connector	Gain (dBi)
1	tp-link	BE5000(US)1.6	Franklin	Weld	4.39
2	tp-link	BE5000(US)1.6	Franklin	Weld	5.48

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=5.48.
For power spectral density measurements, Directional gain (each angle)=10log[$(10^{G1/20}+10^{G2/20}+...10^{GN/20})^2$/N]dBi=10log[$(10^{3.41/20}+10^{6.36/20})^2$/2]=8.02.
2) Beamforming Gain: 3 dB.
3) The antenna gain and beamforming gain are provided by the manufacturer.

For 5GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	tp-link	BE5000(US)1.6	Franklin	Weld	5.62	UNII-1
2	tp-link	BE5000(US)1.6	Franklin	Weld	5.11	
3	tp-link	BE5000(US)1.6	Franklin	Weld	4.85	
1	tp-link	BE5000(US)1.6	Franklin	Weld	5.29	UNII-2A
2	tp-link	BE5000(US)1.6	Franklin	Weld	4.20	
3	tp-link	BE5000(US)1.6	Franklin	Weld	4.18	
1	tp-link	BE5000(US)1.6	Franklin	Weld	4.51	UNII-2C
2	tp-link	BE5000(US)1.6	Franklin	Weld	4.91	
3	tp-link	BE5000(US)1.6	Franklin	Weld	4.50	
1	tp-link	BE5000(US)1.6	Franklin	Weld	5.28	UNII-3/ UNII-4
2	tp-link	BE5000(US)1.6	Franklin	Weld	5.96	
3	tp-link	BE5000(US)1.6	Franklin	Weld	6.81	

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 UNII-1 Directional gain=5.62, the UNII-2A Directional gain=5.29, the UNII-2C Directional gain=4.91, the UNII-3 Directional gain=6.81.
For power spectral density measurements, Directional gain(each angle)=10log[$(10^{G1/20}+10^{G2/20}+...10^{GN/20})^2$/N]dBi.
So the UNII-1 Directional gain(each angle)=10log[$(10^{5.39/20}+10^{5.11/20}+10^{2.35/20})^2$/3]dBi=9.16, the UNII-2A Directional gain(each angle)=10log[$(10^{4.86/20}+10^{4.08/20}+10^{1.80/20})^2$/3]dBi=8.45, the UNII-2C Directional gain(each angle)=10log[$(10^{3.29/20}+10^{3.23/20}+10^{3.23/20})^2$/3]dBi=8.02, the UNII-3 & UNII-4 Directional gain(each angle)=10log[$(10^{2.35/20}+10^{3.46/20}+10^{6.81/20})^2$/3]dBi=9.19.
2) Beamforming Gain: 4.7 dB.
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
5.48	3.5318	27.92	619.4411	0.27870	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
5.62	3.6475	26.38	434.5102	0.20190	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
5.29	3.3806	21.14	130.0170	0.05599	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
4.91	3.0974	23.75	237.1374	0.09357	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
6.81	4.7973	29.16	824.1381	0.50365	1	Complies

For 5GHz (UNII-4):

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
33.36	2167.7041	0.27614	1	Complies

For the max simultaneous transmission MPE:

Ratio		Total	Limit of Ratio	Test Result
2.4GHz	5GHz			
0.27870	0.50365	0.78235	1	Complies

Note:
(1) The calculated distance is 25 cm.
(2) Ratio=Power Density (S) (mW/cm^2)/Limit of Power Density (S) (mW/cm^2)

End of Test Report