

FCC RF EXPOSURE REPORT

FCC ID: 2BH7FX20V5

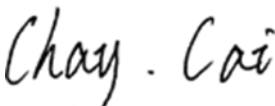
Project No. : 2505G018
Equipment : AX1800 Whole Home Mesh Wi-Fi 6 System
Brand Name : tp-link
Test Model : Deco X20
Model Name : Deco X20
Hardware Version : V5
Software Version : V5
Applicant : TP-Link Systems Inc.
Address : 10 Mauchly, Irvine, CA 92618
Manufacturer : TP-Link Systems Inc.
Address : 10 Mauchly, Irvine, CA 92618
Date of Receipt : May 22, 2025
Date of Test : May 23, 2025 ~ Aug. 11, 2025
Issued Date : Sep. 05, 2025
Test Sample : Engineering Sample No.: DG2025052224
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)

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REVISION HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-5-2505G018	R00	Original Report.	Sep. 05, 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 LE:

Ant.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1	TP-Link Systems Inc.	N/A	IFA	N/A	3.54

Note: The antenna gain is provided by the manufacturer.

For 2.4GHz:

Ant.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)
1	TP-Link Systems Inc.	N/A	Dipole	ipex	5.22
2	TP-Link Systems Inc.	N/A	Dipole	ipex	4.44

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 ($N_{ANT} \leq 4$), so the Directional gain=5.22. For power spectral density measurements, Directional gain(each angle)= $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$ dBi= $10\log[(10^{4.79/20} + 10^{0.36/20})^2/2]$ =5.60.
- (2) Beamforming Gain is 3dB.
- (3) The antenna gain and beamforming gain are provided by the manufacturer.

For 5GHz:

Ant.	Manufacturer	P/N	Antenna Type	Connector	Gain (dBi)	Note
1	TP-Link Systems Inc.	N/A	Dipole	ipex	4.70	UNII-1
					5.19	UNII-2A
					6.46	UNII-2C
					5.78	UNII-3
2	TP-Link Systems Inc.	N/A	Dipole	ipex	4.18	UNII-1
					4.42	UNII-2A
					5.10	UNII-2C
					5.34	UNII-3

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 ($N_{ANT} \leq 4$), so the UNII-1 Directional gain=4.70, the UNII-2A Directional gain=5.19, the UNII-2C Directional gain=6.46, the UNII-3 Directional gain=5.78. So, the UNII-2C output power limit is $23.98 - (6.46 - 6) = 23.52$. For power spectral density measurements, Directional gain(each angle)= $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$ dBi, so the UNII-1 Directional gain(each angle)= $10\log[(10^{4.31/20} + 10^{2.02/20})^2/2]$ =6.25, the UNII-2A Directional gain(each angle)= $10\log[(10^{2.65/20} + 10^{1.35/20})^2/2]$ =5.03, the UNII-2C Directional gain(each angle)= $10\log[(10^{5.19/20} + 10^{2.35/20})^2/2]$ =5.22, the UNII-3 Directional gain(each angle)= $10\log[(10^{5.72/20} + 10^{2.13/20})^2/2]$ =7.12. So, the UNII-1 power spectral density limit is $17 - (6.25 - 6) = 16.75$, the UNII-3 power spectral density limit is $30 - (7.12 - 6) = 28.88$.
- (2) Beamforming Gain is 3dB.
- (3) The antenna gain and beamforming gain are provided by the manufacturer.

3. CALCULATED RESULT

For LE:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Max. Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
3.54	2.2594	5.25	3.3497	0.0010	1	Complies

For 2.4GHz:

Antenna Gain (dBi)	Antenna 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
5.22	3.3266	29.56	903.6495	0.3829	1	Complies

For 5GHz:

Band	Antenna Gain (dBi)	Antenna 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
UNII-1	4.70	2.9512	27.81	603.9486	0.2271	1	Complies
UNII-2A	5.19	3.3037	23.85	242.6610	0.1021	1	Complies
UNII-2C	6.46	4.4259	23.49	223.3572	0.1259	1	Complies
UNII-3	5.78	3.7844	29.96	990.8319	0.4777	1	Complies

For the max simultaneous transmission MPE:

Ratio			Total	Limit of Ratio	Test Result
LE	2.4GHz	5GHz			
0.0010	0.3829	0.4777	0.8616	1	Complies

Note:

- (1) The calculated distance is 25 cm.
- (2) Ratio=Power Density (S) (mW/cm²)/Limit of Power Density (S) (mW/cm²)

End of Test Report