

FCC RF EXPOSURE REPORT

FCC ID: TE7X20V2

Project No. : 2004C022
Equipment : AX1800 Whole Home Mesh Wi-Fi 6 System
Brand Name : tp-link
Test Model : Deco X20
Series Model : Deco X25
Applicant : TP-Link Technologies Co., Ltd.
Address : Building 24(floors1,3,4,5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
Manufacturer : TP-Link Technologies Co., Ltd.
Address : Building 24(floors1,3,4,5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
Date of Receipt : Apr. 07, 2020
Date of Test : Apr. 09, 2020 ~ Jun. 11, 2020
Issued Date : Jun. 29, 2020
Report Version : R00
Test Sample : Engineering Sample No.: DG2020040754
Standard(s) : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091
FCC Title 47 Part 2.1091, OET Bulletin 65 Supplement C

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 Version	Description	Issued Date
R00	Original Issue.	Jun. 29, 2020

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

Table for Filed Antenna

For WLAN 2.4GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1		N/A	Dipole	I-PEX	1.93
2		N/A	Dipole	I-PEX	1.94

Note:

This EUT supports CDD, and antenna gains are not equal, so

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi = $10 \log[(10^{1.93/20} + 10^{1.94/20})^2 / 2]$ = 4.95dB.

Table for Antenna Configuration:

Operating Mode	TX Mode	2TX
802.11b		V (Ant. 1 + Ant. 2)
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 (HEW20)		V (Ant. 1 + Ant. 2)
IEEE 802.11ax (HEW40)		V (Ant. 1 + Ant. 2)

For WLAN 5GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1		N/A	Dipole	I-PEX	2.90	UNII-1
2		N/A	Dipole	I-PEX	2.97	UNII-1
1		N/A	Dipole	I-PEX	2.85	UNII-3
2		N/A	Dipole	I-PEX	2.94	UNII-3

Note:

This EUT supports CDD, and antenna gains are not equal, so,

For UNII-1: Directional gain= $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi= $10\log[(10^{2.90/20} + 10^{2.97/20})^2 / 2]$ =5.95.

For UNII-3: Directional gain= $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi= $10\log[(10^{2.85/20} + 10^{2.94/20})^2 / 2]$ =5.91.

Table for Antenna Configuration:

Operating Mode / TX Mode	2TX
IEEE 802.11a	V (Ant. 1 + Ant. 2)
IEEE 802.11n (HT20)	V (Ant. 1 + Ant. 2)
IEEE 802.11n (HT40)	V (Ant. 1 + Ant. 2)
IEEE 802.11ac (VHT20)	V (Ant. 1 + Ant. 2)
IEEE 802.11ac (VHT40)	V (Ant. 1 + Ant. 2)
IEEE 802.11ac (VHT80)	V (Ant. 1 + Ant. 2)
IEEE 802.11ax (HEW20)	V (Ant. 1 + Ant. 2)
IEEE 802.11ax (HEW40)	V (Ant. 1 + Ant. 2)
IEEE 802.11ax (HEW80)	V (Ant. 1 + Ant. 2)

2. TEST RESULTS

For 2.4GHz:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Average Output Power (dBm)	Max. Average Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
4.95	3.1261	28.31	677.6415	0.42165	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
5.95	3.9355	28.12	648.6344	0.50810	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
5.91	3.8994	28.06	639.7348	0.49654	1	Complies

For the max simultaneous transmission MPE:

Power Density (S) (mW/cm ²)	Power Density (S) (mW/cm ²)	Total	Limit of Power Density (S) (mW/cm ²)	Test Result
2.4GHz	5GHz			
0.42165	0.50810	0.92975	1	Complies

Note: The calculated distance is 20 cm.

Output power including tune up tolerance.

End of Test Report