

FCC RF EXPOSURE REPORT

FCC ID: TE7M4R

Project No. : 1806C057
Equipment : AC1200 Whole Home Mesh Wi-Fi System
Test Model : Deco M4R
Series Model : N/A
Applicant : TP-Link Technologies Co., Ltd.
Address : Building 24 (floors 1,3,4,5) and 28 (floors1-4)
Central Science and Technology Park,Shennan
Rd, Nanshan, Shenzhen,China

According: : FCC Guidelines for Human Exposure IEEE C95.1
& FCC Part 2.1091

B T L I N C .

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1. CERTIFICATION

Equipment : AC1200 Whole Home Mesh Wi-Fi System
Brand Name : tp-link
Test Model : Deco M4R
Series Model : N/A
Applicant : TP-Link Technologies Co., Ltd.
Manufacturer : TP-Link Technologies Co., Ltd.
Address : Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China
Date of Test : Jun. 15, 2018 ~ Sep. 17, 2018
Test Sample : Engineering Sample No.: D180604963
Standards : 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.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-3-1806C057) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP according to the ISO-17025 quality assessment standard and technical standard(s).

2. 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 2.4G

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	PCB	N/A	1.47
2	N/A	N/A	PCB	N/A	1.47

Note:

This EUT supports MIMO 2X2, any transmit signals are correlated with each other, so Directional gain = $G_{ANT} + 10\log(N)$ dBi, that is Directional gain = $1.47 + 10\log(2)$ dBi = 4.48.

For 5G

Ant.	Brand	Model Name	Antenna Type	Connector	Gain(dBi)
1	N/A	N/A	PCB	N/A	0.89
2	N/A	N/A	PCB	N/A	0.91

Note:

(1) This EUT supports MIMO 2X2, any transmit signals are correlated with each other, so

Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi, that is Directional gain = $10\log[(10^{0.89/20} + 10^{0.97/20})^2 / N]$ dBi = 3.91.

(2) Beamforming Gain: 3.01 dBi, so Directional gain = $3.01 + 0.91 = 3.92$.

3. TEST RESULTS

2.4G WIFI

Directional gain (dBi)	Directional gain (numeric)	AVG Output Power (dBm)	AVG Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
4.48	2.8054	27.87	612.3504	0.34194	1	Complies

5G Band 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
3.91	2.4604	26.85	484.1724	0.23711	1	Complies

5G Band UNII-1 with Beamforming

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
3.92	2.4660	26.37	433.5109	0.21279	1	Complies

5G Band 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
3.91	2.4604	26.96	496.5923	0.24319	1	Complies

5G Band UNII-3 with Beamforming

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
3.92	2.4660	26.65	462.3810	0.22696	1	Complies

For the max simultaneous transmission MPE:

Power Density (S) (mW/cm ²)	Power Density (S) (mW/cm ²)	Total (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2.4G	5G			
0.34194	0.24319	0.58513	1	Complies

Note: the calculated distance is 20 cm.