

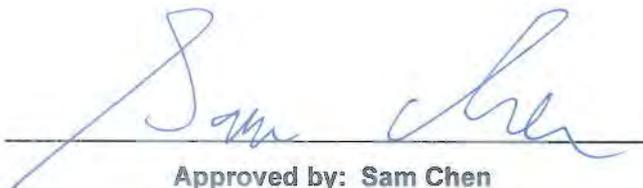


# RADIO EXPOSURE TEST REPORT

**FCC ID** : 2AXJ4X50  
**Equipment** : AX3000 Whole Home Mesh Wi-Fi 6 System  
**Brand Name** : tp-link  
**Model Name** : Deco X50, Deco X55  
**Applicant** : TP-Link Corporation Limited  
Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hong Kong  
**Manufacturer** : TP-Link Corporation Limited  
Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hong Kong  
**Standard** : 47 CFR Part 2.1091

The product was received on Jul. 13, 2021, and testing was started from Jul. 22, 2021 and completed on Sep. 14, 2021. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.



Approved by: Sam Chen

**Sporton International Inc. Hsinchu Laboratory**  
No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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### Photographs of EUT v01





## Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items          | Result (PASS/FAIL) | Remark |
|---------------|-----------------|---------------------|--------------------|--------|
| 2             | -               | Exposure evaluation | PASS               | -      |

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: **Sam Chen**

Report Producer: **Vicky Huang**



# 1 General Description

## 1.1 EUT General Information

| RF General Information |                                     |                                     |  |
|------------------------|-------------------------------------|-------------------------------------|--|
| Evaluation Mode        | Frequency Range (MHz)               | Operating Frequency (MHz)           | Modulation Type  |
| 2.4GHz WLAN            | 2400-2483.5                         | 2412-2462                           | 802.11b: DSSS (DBPSK, DQPSK, CCK)<br>802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)                 |
| 5GHz WLAN              | 5150-5250<br>5250-5350<br>5725-5850 | 5180-5250<br>5250-5320<br>5745-5825 | 802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)<br>802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) |

## 1.2 Antenna Information

| Ant. | Port | Brand   | Model Name | Antenna Type   | Connector | Gain (dBi) |      |
|------|------|---------|------------|----------------|-----------|------------|------|
|      |      |         |            |                |           | 2.4GHz     | 5GHz |
| 1    | 2    | tp-link | 3101502756 | Dipole Antenna | I-PEX     | 1.93       | 0.9  |
| 2    | 1    | tp-link | 3101502757 | Dipole Antenna | I-PEX     | 1.94       | 0.97 |

Note: The above information was declared by manufacturer.

<For 2.4GHz Function>

For IEEE 802.11b/g/n/ax mode (2TX, 2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

<For 5GHz Function>

For IEEE 802.11a/n/ac/ax mode (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.



### 1.3 Table for Multiple Listing

| EUT | Model Name | The color of the top cover on the EUT |
|-----|------------|---------------------------------------|
| 1   | Deco X50   | White                                 |
| 2   | Deco X55   | Black                                 |

Note 1: From the above models, model: Deco X50 was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.

### 1.4 Table for EUT Supports Functions

| Function  |
|-----------|
| AP Router |
| Mesh      |

### 1.5 Accessories

| Accessories    |            |             |  |
|----------------|------------|-------------|--|
| Equipment Name | Brand Name | Model Name  | Rating   |
| Adapter        | tp-link    | T120150-2B4 | Input: 100-240V~50/60Hz, 0.6A<br>Output: 12V, 1.5A |

### 1.6 Testing Location

| Testing Location Information                                    |  |
|---|--|
| Test Lab. : Sporton International Inc. Hsinchu Laboratory       |  |
| Hsinchu   | ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) |
| (TAF: 3787)   | TEL: 886-3-656-9065      FAX: 886-3-656-9085                                       |
| Test site Designation No. TW3787 with FCC.                      |  |
| Conformity Assessment Body Identifier (CABID) TW3787 with ISED. |  |



## 2 Maximum Permissible Exposure

### 2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|--|--|
| 0.3-3.0               | 614                               | 1.63                              | *(100)                                   | <6   |
| 3.0-30                | 1842/f                            | 4.89/f                            | *(900/f <sup>2</sup> )                   | <6   |
| 30-300                | 61.4                              | 0.163                             | 1.0                                      | <6   |
| 300-1500              | -                                 | -                                 | f/300                                    | <6   |
| 1500-100,000          | -                                 | -                                 | 5  | <6   |

(B) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|--|--|
| 0.3-1.34              | 614                               | 1.63                              | *(100)                                   | <30  |
| 1.34-30               | 824/f                             | 2.19/f                            | *(180/f <sup>2</sup> )                   | <30  |
| 30-300                | 27.5                              | 0.073                             | 0.2                                      | <30  |
| 300-1500              | -                                 | -                                 | f/1500                                   | <30  |
| 1500-100,000          | -                                 | -                                 | 1.0                                      | <30  |

Note: f = frequency in MHz ; \*Plane-wave equivalent power density

### 2.2 MPE Calculation Method

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**E** = Electric field (V/m)

**P** = RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



### 2.3 Calculated Result and Limit

**Exposure Environment: General Population / Uncontrolled Exposure**

| Mode     | DG (dBi) | Power (dBm) | EIRP (dBm) | Tolerance (dB) | Tune-up EIRP (dBm) | Tune-up EIRP (W) | Distance (cm) | S (mW/cm <sup>2</sup> ) | S Limit (mW/cm <sup>2</sup> ) |
|----------|----------|-------------|------------|----------------|--------------------|------------------|---------------|-------------------------|-------------------------------|
| 2.4G;D1D | 1.94     | 29.15       | 31.09      | 0.50           | 31.59              | 1.44212          | 20            | 0.28690                 | 1.00000                       |
| 5.2G;D1D | 0.97     | 26.19       | 27.16      | 0.50           | 27.66              | 0.58345          | 20            | 0.11607                 | 1.00000                       |
| 5.3G;D1D | 0.97     | 20.95       | 21.92      | 0.50           | 22.42              | 0.17458          | 20            | 0.03473                 | 1.00000                       |
| 5.8G;D1D | 0.97     | 26.45       | 27.42      | 0.50           | 27.92              | 0.61944          | 20            | 0.12323                 | 1.00000                       |

**Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+WLAN 5GHz**

| Mode     | DG (dBi) | Power (dBm) | EIRP (dBm) | Tolerance (dB) | Tune-up EIRP (dBm) | Tune-up EIRP (W) | Distance (cm) | S (mW/cm <sup>2</sup> ) | S Limit (mW/cm <sup>2</sup> ) | Ratio (S/Limit) |
|----------|----------|-------------|------------|----------------|--------------------|------------------|---------------|-------------------------|-------------------------------|-----------------|
| 2.4G;D1D | 1.94     | 29.15       | 31.09      | 0.50           | 31.59              | 1.44212          | 20            | 0.2869                  | 1.00000                       | 0.2869          |
| 5.8G;D1D | 0.97     | 26.45       | 27.42      | 0.50           | 27.92              | 0.61944          | 20            | 0.12323                 | 1.00000                       | 0.12323         |
|          |          |             |            |                |                    |                  |               |                         | Sum Ratio                     | 0.41013         |
|          |          |             |            |                |                    |                  |               |                         | Ratio Limit                   | 1               |

Note: The above antenna gain was declared by manufacturer.

————THE END————