



## **FCC RF EXPOSURE REPORT**

*For*

**AX1500 Dual Band Gigabit Wi-Fi 6 Router**

**MODEL NUMBER: EX141**

**REPORT NUMBER: 4790868921-RF-3**

**ISSUE DATE: June 26, 2023**

**FCC ID: 2AXJ4EX141**

*Prepared for*

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Revision History

| Rev. | Issue Date    | Revisions     | Revised By |
|------|---------------|---------------|------------|
| V0   | June 26, 2023 | Initial Issue |            |



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## 1. ATTESTATION OF TEST RESULTS

### Applicant Information

Company Name: TP-Link Corporation Limited  
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### Manufacturer Information

Company Name: TP-Link Corporation Limited  
Address: Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hong Kong

### EUT Information

EUT Name: AX1500 Dual Band Gigabit Wi-Fi 6 Router  
Model: EX141  
Sample Received Date: May 29, 2023  
Sample ID: 6125501  
Date of Tested: May 29, 2023 to June 25, 2023

| APPLICABLE STANDARDS |              |
|----------------------|--------------|
| STANDARD             | TEST RESULTS |
| FCC 47CFR§2.1091     | PASS         |
| KDB-447498 D01 V06   | PASS         |

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 and KDB 447498 D01 General RF Exposure Guidance v06.

## 3. FACILITIES AND ACCREDITATION

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accreditation Certificate | <p><b>A2LA (Certificate No.: 4102.01)</b><br/>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p><b>FCC (FCC Designation No.: CN1187)</b><br/>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p><b>ISED (Company No.: 21320)</b><br/>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p><b>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)</b><br/>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793.<br/>Facility Name:<br/>Chamber D, the VCCI registration No. is G-20019 and R-20004<br/>Shielding Room B, the VCCI registration No. is C-20012 and T-20011</p> |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.



#### 4. DESCRIPTION OF EUT

|                                    |                     |                                                                                                                                                                                                                              |
|------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EUT Name/PMN:                      |                     | AX1500 Dual Band Gigabit Wi-Fi 6 Router                                                                                                                                                                                      |
| Model/HVIN:                        |                     | EX141                                                                                                                                                                                                                        |
| Product Description<br>(2.4G WLAN) | Frequency Range:    | 2412 MHz to 2462 MHz                                                                                                                                                                                                         |
|                                    | Type of Modulation: | IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)<br>IEEE 802.11g/n: OFDM (64-QAM, 16-QAM, QPSK, BPSK)                                                                                                                                  |
|                                    | Radio Technology:   | IEEE802.11b/g/n HT20/n HT40/n VHT20/n VHT40                                                                                                                                                                                  |
| Product Description<br>(5G RLAN)   | Frequency Range:    | U-NII-1 Band: 5180 MHz to 5240 MHz<br>U-NII-2A Band: 5260 MHz to 5320 MHz<br>U-NII-2C Band: 5500 MHz to 5720 MHz<br>U-NII-3 Band: 5745 MHz to 5825 MHz                                                                       |
|                                    | Type of Modulation: | IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11ax: OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK) |
|                                    | Radio Technology:   | IEEE802.11a/n HT20/n HT40/<br>ac VHT20/ac VHT40/ac VHT80/<br>ax HE20/ax HE40/ax HE80/                                                                                                                                        |
| Normal Test Voltage:               |                     | DC 12 V via adapter                                                                                                                                                                                                          |



## 5. REQUIREMENT

### LIMIT AND CALCULATION METHOD

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

### RF EXPOSURE LIMIT

| Frequency Range (MHz) | E-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                                                                |

### CALCULATION METHOD

$$S = PG/4\pi R^2$$

Where:

S=power density

P=power input to 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



## **CALCULATED RESULTS**

### Radio Frequency Radiation Exposure Evaluation

| (Worst case)   |                    |                               |                        |       |
|----------------|--------------------|-------------------------------|------------------------|-------|
| Operating Mode | Max. Tune up Power | Max. Directional Antenna Gain | Power density          | Limit |
|                | (dBm)              | (dBi)                         | (mW/ cm <sup>2</sup> ) |       |
| WIFI 2.4G      | 23.82              | 5.01                          | 0.152                  | 1     |

| (Worst case)   |                    |                               |                        |       |
|----------------|--------------------|-------------------------------|------------------------|-------|
| Operating Mode | Max. Tune up Power | Max. Directional Antenna Gain | Power density          | Limit |
|                | (dBm)              | (dBi)                         | (mW/ cm <sup>2</sup> ) |       |
| WIFI 5G        | 25.94              | 5.01                          | 0.248                  | 1     |

Note:

1. The calculated distance is 20 cm.
  2. The power comes from test reports 4790868921-RF-1/-2.
  3. 5 GHz WiFi + 2.4 GHz WiFi =  $0.152 + 0.248 = 0.4$  (mW/cm<sup>2</sup>)
- Therefor the maximum calculations of above situations are less than the “1” limit.

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**END OF REPORT**