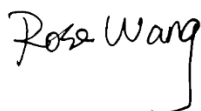


# RF Exposure Evaluation Report

APPLICANT : Hangzhou Tuya Information Technology Co.,  
Ltd  
EQUIPMENT : Module  
MODEL NAME : WBR3D  
FCC ID : 2ANDL-WBR3D  
STANDARD : 47 CFR Part 2.1091  
FCC KDB 447498 D01 v06

We, Sporton International (Kunshan) Inc., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Rose Wang / Supervisor



Approved by: Kat Yin / Manager



**Sporton International (Kunshan) Inc.**

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300  
People's Republic of China**



## **Table of Contents**

|                                                                        |          |
|------------------------------------------------------------------------|----------|
| <b>1. ADMINISTRATION DATA .....</b>                                    | <b>4</b> |
| 1.1. Testing Laboratory .....                                          | 4        |
| <b>2. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT) .....</b>              | <b>5</b> |
| <b>3. MAXIMUM RF AVERAGE OUTPUT POWER AMONG PRODUCTION UNITS .....</b> | <b>6</b> |
| <b>4. RF EXPOSURE LIMIT INTRODUCTION .....</b>                         | <b>7</b> |
| <b>5. RADIO FREQUENCY RADIATION EXPOSURE EVALUATION .....</b>          | <b>8</b> |
| 5.1. Standalone Power Density Calculation .....                        | 8        |



**Revision History**

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FA992508   | Rev. 01 | Initial issue of report | Nov. 19, 2019 |
|            |         |                         |               |
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**1. Administration Data****1.1. Testing Laboratory**

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

| Testing Laboratory |                                                                                                                                                                          |                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Test Firm          | Sporton International (Kunshan) Inc.                                                                                                                                     |                                |
| Test Site Location | No. 1098, Pengxi North Road, Kunshan Economic Development Zone<br>Jiangsu Province 215300 People's Republic of China<br>TEL : +86-512-57900158<br>FAX : +86-512-57900958 |                                |
| Test Site No.      | FCC Designation No.                                                                                                                                                      | FCC Test Firm Registration No. |
|                    | CN1257                                                                                                                                                                   | 314309                         |

| Applicant    |                                                                              |
|--------------|------------------------------------------------------------------------------|
| Company Name | Hangzhou Tuya Information Technology Co., Ltd                                |
| Address      | Room701, Building3, More Center, No.87 GuDun Road, Hangzhou, Zhejiang, China |

| Manufacturer |                                                                              |
|--------------|------------------------------------------------------------------------------|
| Company Name | Hangzhou Tuya Information Technology Co., Ltd                                |
| Address      | Room701, Building3, More Center, No.87 GuDun Road, Hangzhou, Zhejiang, China |

## 2. Description of Equipment Under Test (EUT)

| Product Feature & Specification                                                                                                                                                                                          |                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EUT Type                                                                                                                                                                                                                 | Module                                                                                                                                                                                                                               |
| Model Name                                                                                                                                                                                                               | WBR3D                                                                                                                                                                                                                                |
| FCC ID                                                                                                                                                                                                                   | 2ANDL-WBR3D                                                                                                                                                                                                                          |
| Wireless Technology and Frequency Range                                                                                                                                                                                  | WLAN2.4GHz Band: 2412 MHz ~ 2462 MHz<br>WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz<br>WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz<br>WLAN5.5GHz Band: 5500 MHz ~ 5700 MHz<br>WLAN5.8GHz Band: 5745 MHz ~ 5825 MHz<br>Bluetooth: 2402 ~ 2480 MHz |
| Mode                                                                                                                                                                                                                     | WLAN 2.4GHz 802.11b/g/n HT20/HT40<br>WLAN 5GHz 802.11a/n HT20/HT40<br>Bluetooth LE                                                                                                                                                   |
| Antenna Type                                                                                                                                                                                                             | WLAN: PCB Antenna<br>Bluetooth: PCB Antenna                                                                                                                                                                                          |
| Antenna Gain                                                                                                                                                                                                             | WLAN2.4GHz Band: 2.0dBi<br>WLAN 5.2GHz Band: 2.6dBi<br>WLAN 5.3GHz Band: 2.6dBi<br>WLAN5.5GHz Band: 2.6dBi<br>WLAN5.8GHz Band: 2.6dBi<br>Bluetooth: 2.0dBi                                                                           |
| HW Version                                                                                                                                                                                                               | V1.0.2                                                                                                                                                                                                                               |
| SW Version                                                                                                                                                                                                               | 2V1                                                                                                                                                                                                                                  |
| <b>Remark:</b><br>1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.<br>2. WLAN operation in 5600 MHz ~ 5650 MHz is notched |                                                                                                                                                                                                                                      |

### 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.

**3. Maximum RF average output power among production units****<WLAN 2.4GHz and Bluetooth>**

| Mode   |              | Maximum Average Power (dBm) |
|--------|--------------|-----------------------------|
| 2.4GHz | 802.11b      | 18.50                       |
|        | 802.11g      | 17.50                       |
|        | 802.11n-HT20 | 16.50                       |
|        | 802.11n-HT40 | 15.50                       |
|        | Bluetooth LE | 9.00                        |

**<WLAN 5GHz>**

| Mode   |              | Maximum Average Power (dBm) |
|--------|--------------|-----------------------------|
| 5.2GHz | 802.11a      | 16.00                       |
|        | 802.11n-HT20 | 15.00                       |
|        | 802.11n-HT40 | 14.00                       |
| 5.3GHz | 802.11a      | 16.00                       |
|        | 802.11n-HT20 | 15.00                       |
|        | 802.11n-HT40 | 14.00                       |
| 5.5GHz | 802.11a      | 16.00                       |
|        | 802.11n-HT20 | 15.00                       |
|        | 802.11n-HT40 | 14.00                       |
| 5.8GHz | 802.11a      | 16.00                       |
|        | 802.11n-HT20 | 15.00                       |
|        | 802.11n-HT40 | 14.00                       |

## 4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

| Frequency range (MHz)                                          | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposures</b>        |                               |                               |                                     |                          |
| 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>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 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                       |

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:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

**5. Radio Frequency Radiation Exposure Evaluation****5.1. Standalone Power Density Calculation**

| Band               | Frequency (MHz) | Antenna Gain (dBi) | Maximum Power (dBm) | Maximum EIRP (dBm) | Maximum EIRP (W) | Average EIRP (mW) | Power Density at 20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|--------------------|-----------------|--------------------|---------------------|--------------------|------------------|-------------------|---------------------------------------------|-----------------------------|
| WLAN2.4GHz 802.11b | 2412            | 2.0                | 18.50               | 20.50              | 0.11             | 112.20            | 0.022                                       | 1.000                       |
| Bluetooth          | 2402            | 2.0                | 9.00                | 11.00              | 0.01             | 12.59             | 0.003                                       | 1.000                       |
| WLAN5.2GHz 802.11a | 5180            | 2.6                | 16.00               | 18.60              | 0.07             | 72.44             | 0.014                                       | 1.000                       |

**Note:**

1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. WLAN 2.4GHz and Bluetooth share the same antenna, and cannot transmit simultaneously.
3. According to the EUT character, WLAN 5GHz and Bluetooth cannot transmit simultaneously.
4. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
5. Chose the maximum power density to do MPE analysis.

**Conclusion:**

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.