



# RF TEST REPORT

Product Name: Bluetooth Speaker

Model Name: TURTLEBOX, TURTLEBOXG3

FCC ID: 2A28W-TURTLEBOXG3

Issued For : Turtlebox Audio LLC

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Issued By : Shenzhen LGT Test Service Co., Ltd.

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Sample Received Date: Jun. 06, 2024

Date of Test: Jun. 06, 2024 – Jun. 21, 2024

Date of Issue: Jun. 21, 2024

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## TEST REPORT CERTIFICATION

**Applicant:** Turtlebox Audio LLC

**Address:** 11020 Katy Freeway Suite 202 Houston, TX 77043

**Manufacture:** Turtlebox Audio LLC

**Address:** 11020 Katy Freeway Suite 202 Houston, TX 77043

**Product Name:** Bluetooth Speaker

**Trademark:** TURTLEBOX

**Model Name:** TURTLEBOX, TURTLEBOXG3

**Sample Status:** Normal

| APPLICABLE STANDARDS   |              |
|--|--------------|
| STANDARD   | TEST RESULTS |
| FCC 47 CFR §2.1091<br>KDB 447498 D01 General RF Exposure<br>Guidance v06 | PASS         |

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### Revision History

| Rev. | Issue Date    | Revisions     |
|------|---------------|---------------|
| 00   | Jun. 21, 2024 | Initial Issue |
|      |               |               |



## 1. GENERAL INFORMATION

### 1.1 GENERAL DESCRIPTION OF THE EUT

|                   |   |                 |
|-------------------|---|-----------------|
| Product Name:     | Bluetooth Speaker                                       |                 |
| Trademark:        | TURTLEBOX   |                 |
| Model Name:       | TURTLEBOX   |                 |
| Series Model:     | TURTLEBOXG3   |                 |
| Model Difference: | Only the model is different.                            |                 |
| Frequency Bands:  | Bluetooth   | 2402 – 2480 MHz |
| Adapter:          | Input: AC 100-240V 50/60hz 1.25A<br>Output: DC 15V 3A   |                 |
| Battery:          | Rated Capacity: 7800mAh 86.58Wh<br>Rated Voltage: 11.1V |                 |
| Hardware Version: | N/A   |                 |
| Software Version: | N/A   |                 |

### 1.2 TEST LABORATORY

|                           |  |  |
|---------------------------|--|--|
| Company Name:             | Shenzhen LGT Test Service Co., Ltd.  |  |
| Address:                  | Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China |  |
| Accreditation Certificate | A2LA Certificate No.: 6727.01  |  |
|                           | FCC Registration No.: 746540   |  |
|                           | CAB ID: CN0136   |  |



## 2. FCC 47CFR §2.1091 REQUIREMENT

### 2.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

### 2.2 LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

| Frequency Range<br>(MHz)                              | Electric Field<br>Strength (V/m) | Magnetic Field<br>Strength (A/m) | Power Density<br>(mW/cm <sup>2</sup> ) |
|---|----------------------------------|----------------------------------|--|
| Limits for Occupational / controlled Exposures        |                                  |                                  |  |
| 0.3-3.0   | 614                              | 1.63                             | *(100)                                 |
| 3.0-30  | 1842/f                           | 4.89/f                           | *(900/f <sup>2</sup> )                 |
| 30-300  | 61.4                             | 0.163                            | 1.0                                    |
| 300 - 1500  | --                               | --                               | F/300                                  |
| 1500 – 100000   | --                               | --                               | 5.0                                    |
| Limits for General population / Uncontrolled Exposure |                                  |                                  |  |
| 0.3-1.34  | 614                              | 1.63                             | *(100)                                 |
| 1.34-30   | 824/f                            | 2.19/f                           | *(180/f <sup>2</sup> )                 |
| 30-300  | 27.5                             | 0.073                            | 0.2                                    |
| 300 - 1500  | --                               | --                               | F/1500                                 |
| 1500 – 100000   | --                               | --                               | 1.0                                    |

F= Frequency in MHz

\* = Plane-wave equivalent power density.

Friss Formula

Friss Transmission Formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.



## **2.3 EUT OPERATION CONDITION**

EUT was enabled to transmit and receive at lowest, middle and highest channels.

## **2.4 CLASSIFICATION**

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.



## 2.5 TEST RESULT

### Turn up Result

| Mode               | Turn up Power |
|--------------------|---------------|
| BT-GFSK            | 3±1dBm        |
| BT- $\pi/4$ -DQPSK | 4±1dBm        |
| BT-8DPSK           | 4±1dBm        |
| BLE 1M-GFSK        | 4±1dBm        |
| BLE 2M-GFSK        | 4±1dBm        |

### The MPE result of worst mode:

| RF Function | Frequency (MHz) | Max Turn up Power (dBm) | Max Turn up Power (mW) | ANT Gain (dBi) | ANT Gain (gain of antenna in linear scale) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/c m <sup>2</sup> ) | Ratio | Result |
|-------------|-----------------|-------------------------|------------------------|----------------|--|-------------------------------------|------------------------------|-------|--------|
| BT          | 2402            | 5                       | 3.16                   | 3.49           | 2.23                                       | 0.001                               | 1                            | 0.001 | Pass   |
| BLE         | 2402            | 5                       | 3.16                   | 3.49           | 2.23                                       | 0.001                               | 1                            | 0.001 | Pass   |

**Note:** The Maximum Power Density is less than the limit, complies with the exemption requirements.





## **APPENDIX I - PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS**

Note: Please see the attached TURTLEBOX\_External Photos and TURTLEBOX\_Internal Photos.

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