

# TEST REPORT

FCC MPE Test for LGSBWAC94  
Certification

APPLICANT  
LG Electronics Inc.

REPORT NO.  
HCT-RF-1908-FI004-R2

DATE OF ISSUE  
August 27, 2019

**HCT Co., Ltd.**

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LGSBWAC94

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## DATE OF ISSUE

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## FCC ID

BEJLGSBWAC94

## Applicant

LG Electronics Inc.

222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea

## Eut Type Model Name

RF Module  
LGSBWAC94

## Date of Receipt

July 12, 2019

## Frequency range

2402 MHz - 2480 MHz (Bluetooth, BT LE)  
2 412 MHz ~ 2 462 MHz (WLAN)  
5180 MHz - 5825 MHz (UNII)

This test results were applied only to the test methods required by the standard.

## Tested by

Se Wook Park

(signature)

## Technical Manager

Jong Seok Lee

(signature)

HCT CO., LTD.

*Soo Chan Lee*

SooChan Lee / CEO  
Accredited by KOLAS, Republic of KOREA

## REVISION HISTORY

The revision history for this test report is shown in table.

| Revision No. | Date of Issue   | Description                    |
|--------------|-----------------|--------------------------------|
| 0            | August 02, 2019 | Initial Release                |
| 1            | August 08, 2019 | Changed the FCC ID on Page 2   |
| 2            | August 27, 2019 | Changed the BT, BT LE Ant Gain |

The measurements shown in this report were made in accordance with the procedures specified in § 2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C.853(a)

This laboratory is not accredited for the test results marked \*.

The above testing certificate is the accredited test result by KOLAS(Korea Laboratory Accreditation Scheme) / A2LA(American Association for Laboratory Accreditation)

## RF Exposure Statement

### 1. Limit

According to § 1.1310, § 2.1091 RF exposure is calculated.

#### (B) Limits for General Population/Uncontrolled Exposures

| Frequency range<br>(MHz) | Electric field<br>Strength (V/m) | Magnetic field<br>Strength (A/m) | Power density<br>(mW/cm <sup>2</sup> ) | Averaging time<br>(minutes) |
|--------------------------|----------------------------------|----------------------------------|----------------------------------------|-----------------------------|
| 0.3 -<br>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 -<br>100.000.....   | .....                            | .....                            | 1.0                                    | 30                          |

F = frequency in MHz

\* = Plane-wave equivalent power density

### 2. Maximum Permissible Exposure Prediction

Prediction of MPE limit at a given distance

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

S = Power density

P = Power input to antenna

G = Power gain to the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

### 3. RESULTS

#### 3-1. Bluetooth

|                                                             |             |                    |
|-------------------------------------------------------------|-------------|--------------------|
| Average output Power at antenna input terminal              | 10.00       | dBm                |
| Average output Power at antenna input terminal              | 10.00       | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 2402 – 2480 | MHz                |
| Antenna Gain(typical)                                       | 0.71        | dBi                |
| Antenna Gain(numeric)                                       | 1.178       | -                  |
| Power density at prediction frequency( S)                   | 0.0234      | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

#### 2.1091

|           |             |
|-----------|-------------|
| EIRP      | 10.71 (dBm) |
| ERP       | 8.56 (dBm)  |
| ERP       | 0.007 (W)   |
| ERP Limit | 3.00 (W)    |
| MARGIN    | 26.21 (dB)  |

### 3-1. BT LE

|                                                             |             |                    |
|-------------------------------------------------------------|-------------|--------------------|
| Average output Power at antenna input terminal              | 8.50        | dBm                |
| Average output Power at antenna input terminal              | 7.08        | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 2402 – 2480 | MHz                |
| Antenna Gain(typical)                                       | 0.71        | dBi                |
| Antenna Gain(numeric)                                       | 1.178       | -                  |
| Power density at prediction frequency( S)                   | 0.00166     | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

### 2.1091

|           |            |
|-----------|------------|
| EIRP      | 9.21 (dBm) |
| ERP       | 7.06 (dBm) |
| ERP       | 0.005 (W)  |
| ERP Limit | 3.00 (W)   |
| MARGIN    | 27.71 (dB) |

**3-1. DTS**

|                                                             |             |                    |
|-------------------------------------------------------------|-------------|--------------------|
| Average output Power at antenna input terminal              | 19.00       | dBm                |
| Average output Power at antenna input terminal              | 79.43       | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 2412 – 2462 | MHz                |
| Antenna Gain(typical)                                       | 4.50        | dBi                |
| Antenna Gain(numeric)                                       | 2.818       | -                  |
| Power density at prediction frequency( S)                   | 0.0445      | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

**2.1091**

|           |             |
|-----------|-------------|
| EIRP      | 23.5 (dBm)  |
| ERP       | 21.35 (dBm) |
| ERP       | 0.136 (W)   |
| ERP Limit | 3.00 (W)    |
| MARGIN    | 13.42 (dB)  |

### 3-1. UNII

|                                                             |             |                    |
|-------------------------------------------------------------|-------------|--------------------|
| Average output Power at antenna input terminal              | 21.00       | dBm                |
| Average output Power at antenna input terminal              | 125.89      | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 5180 - 5825 | MHz                |
| Antenna Gain(typical)                                       | 4.49        | dBi                |
| Antenna Gain(numeric)                                       | 2.812       | -                  |
| Power density at prediction frequency( S )                  | 0.0704      | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

### 2.1091

|           |             |
|-----------|-------------|
| EIRP      | 25.49 (dBm) |
| ERP       | 23.34 (dBm) |
| ERP       | 0.216 (W)   |
| ERP Limit | 3.00 (W)    |
| MARGIN    | 11.43 (dB)  |

### Worst Case: Simultaneous MPE 20cm is

$$5G \text{ WLAN } (0.0704) + BT (0.0234) = 0.0938 < 1$$