

# TEST REPORT

FCC MPE Test for LGSBWAX12  
Certification

**APPLICANT**  
LG Electronics Inc.

**REPORT NO.**  
HCT-RF-2009-FI008-R1

**DATE OF ISSUE**  
14 September 2020

**Tested by**  
Jin Gwan Lee



**Technical Manager**  
Jong Seok Lee



Accredited by KOLAS, Republic of KOREA

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고객비밀  
CUSTOMER SECRET



# TEST REPORT

FCC MPE Test for  
LGSBWAX12

**REPORT NO.**

HCT-RF-2009-FI008-R1

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**Additional Model**

-

**Applicant**

**LG Electronics Inc.**

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

**Eut Type  
Model Name**

RF Module  
LGSBWAX12

**FCC ID**

BEJLGSBWAX12

**Date of Receipt**

July 02, 2020

**Frequency range**

2 402 MHz ~ 2 480 MHz (Bluetooth)  
2 412 MHz ~ 2 472 MHz (WLAN)  
5 180 MHz ~ 5 825 MHz (UNII)

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

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

## REVISION HISTORY

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

| Revision No. | Date of Issue      | Description                                 |
|--------------|--------------------|---------------------------------------------|
| 0            | September 10, 2020 | Initial Release                             |
| 1            | September 14, 2020 | Typo correction & Add DBS mode (Page 9, 10) |

### Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance

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

The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 AND KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA.(HCT Accreditation No.: KT197)

\* The report shall not be reproduced except in full(only partly) without approval of the laboratory.

## 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              | 8.00        | dBm                |
| Average output Power at antenna input terminal              | 6.31        | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 2402 – 2480 | MHz                |
| Antenna Gain(typical)                                       | 1.190       | dBi                |
| Antenna Gain(numeric)                                       | 1.315       | -                  |
| Power density at prediction frequency( S)                   | 0.0017      | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

#### 2.1091

|           |            |
|-----------|------------|
| EIRP      | 9.19 (dBm) |
| ERP       | 7.04 (dBm) |
| ERP       | 0.005 (W)  |
| ERP Limit | 3.00 (W)   |
| MARGIN    | 27.73 (dB) |

### 3-1. BT LE

|                                                             |             |                    |
|-------------------------------------------------------------|-------------|--------------------|
| Average output Power at antenna input terminal              | 9.00        | dBm                |
| Average output Power at antenna input terminal              | 7.94        | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 2402 – 2480 | MHz                |
| Antenna Gain(typical)                                       | 1.190       | dBi                |
| Antenna Gain(numeric)                                       | 1.315       | -                  |
| Power density at prediction frequency( S)                   | 0.0021      | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

### 2.1091

|           |             |
|-----------|-------------|
| EIRP      | 10.19 (dBm) |
| ERP       | 8.04 (dBm)  |
| ERP       | 0.006 (W)   |
| ERP Limit | 3.00 (W)    |
| MARGIN    | 26.73 (dB)  |

### 3-1. DTS\_MIMO

|                                                             |             |                    |
|-------------------------------------------------------------|-------------|--------------------|
| Average output Power at antenna input terminal              | 18.50       | dBm                |
| Average output Power at antenna input terminal              | 70.79       | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 2412 – 2472 | MHz                |
| Antenna Gain(typical)                                       | 3.380       | dBi                |
| Antenna Gain(numeric)                                       | 2.178       | -                  |
| Power density at prediction frequency( S)                   | 0.0307      | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

### 2.1091

|           |             |
|-----------|-------------|
| EIRP      | 21.88 (dBm) |
| ERP       | 19.73 (dBm) |
| ERP       | 0.094 (W)   |
| ERP Limit | 3.00 (W)    |
| MARGIN    | 15.04 (dB)  |

### 3-1. UNII\_MIMO

|                                                             |             |                    |
|-------------------------------------------------------------|-------------|--------------------|
| Average output Power at antenna input terminal              | 17.00       | dBm                |
| Average output Power at antenna input terminal              | 50.12       | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 5180 – 5825 | MHz                |
| Antenna Gain(typical)                                       | 4.440       | dBi                |
| Antenna Gain(numeric)                                       | 2.780       | -                  |
| Power density at prediction frequency( S)                   | 0.0277      | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

### 2.1091

|           |             |
|-----------|-------------|
| EIRP      | 21.44 (dBm) |
| ERP       | 19.29 (dBm) |
| ERP       | 0.085 (W)   |
| ERP Limit | 3.00 (W)    |
| MARGIN    | 15.48 (dB)  |

### 3-1. DTS\_Ant.2

|                                                             |             |                    |
|-------------------------------------------------------------|-------------|--------------------|
| Average output Power at antenna input terminal              | 18.50       | dBm                |
| Average output Power at antenna input terminal              | 70.79       | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 2412 – 2472 | MHz                |
| Antenna Gain(typical)                                       | 1.500       | dBi                |
| Antenna Gain(numeric)                                       | 1.423       | -                  |
| Power density at prediction frequency( S)                   | 0.0199      | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

### 2.1091

|           |             |
|-----------|-------------|
| EIRP      | 20.00 (dBm) |
| ERP       | 17.85 (dBm) |
| ERP       | 0.061 (W)   |
| ERP Limit | 3.00 (W)    |
| MARGIN    | 16.92 (dB)  |

### 3-1. UNII\_Ant.1

|                                                             |             |                    |
|-------------------------------------------------------------|-------------|--------------------|
| Average output Power at antenna input terminal              | 17.00       | dBm                |
| Average output Power at antenna input terminal              | 50.12       | mW                 |
| Prediction distance                                         | 20.00       | cm                 |
| Prediction frequency                                        | 5180 – 5825 | MHz                |
| Antenna Gain(typical)                                       | 1.440       | dBi                |
| Antenna Gain(numeric)                                       | 1.393       | -                  |
| Power density at prediction frequency( S)                   | 0.0139      | mW/cm <sup>2</sup> |
| MPE limit for uncontrolled exposure at prediction frequency | 1.000       | mW/cm <sup>2</sup> |

### 2.1091

|           |             |
|-----------|-------------|
| EIRP      | 18.44 (dBm) |
| ERP       | 16.29 (dBm) |
| ERP       | 0.043 (W)   |
| ERP Limit | 3.00 (W)    |
| MARGIN    | 18.48 (dB)  |

### Worst Case: Simultaneous MPE 20cm is

2.4G WLAN\_MIMO (0.0307) + BT LE (0.0021) = 0.0328 < 1

2.4G WLAN\_Ant.2 (0.0199) + 5G WLAN\_Ant.1 (0.0139) + BT LE (0.0021) = 0.0359 < 1