

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
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Technical Manager
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Accredited by KOLAS, Republic of KOREA

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고객비밀
CUSTOMER SECRET



TEST REPORT

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LGSBWAX12

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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 (MHz)	Electric field Strength (V/m)	Magnetic field Strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
0.3 - 1.34.....	614	1.63	*(100)	30
1.34 - 30.....	824/f	2.19/f	*(180/ f ²)	30
30 - 300.....	27.5	0.073	0.2	30
300 - 1500.....			f/1500	30
1500 - 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 ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

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 ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

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 ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

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 ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

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 ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

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 ²
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm ²

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