

TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: BEJ-WB1NB7

Equipment Under Test : Bluetooth Module
Model Name : WB1NB7
Applicant : LG Electronics Inc.
Manufacturer : LG Electronics Inc.
Date of Receipt : 2016.10.10
Date of Test(s) : 2016.10.11 ~ 2016.11.10
Date of Issue : 2016.11.24

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



Youngmin Park

Date:

2016.11.24

Technical
Manager:



Alvin Kim

Date:

2016.11.24

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SGS Korea Co., Ltd. (Gunpo Laboratory) 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807 <http://www.sgsgroup.kr>

RTT5041-20(2015.10.01)(3)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210mm x 297mm)

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

-Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Telephone : +82 31 688 0901

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1.2. Details of applicant

Applicant : LG Electronics Inc.

Address : 222 LG-ro Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 17709, Korea

Contact Person : Yeo, So-Young

Phone No. : + 82 31 8066 5538

1.3. Description of EUT

Kind of Product	Bluetooth Module
Model Name	WB1NB7
Power Supply	DC 3.3 V
Frequency Range	2 402 MHz ~ 2 480 MHz (Bluetooth, Bluetooth Low Energy)
Modulation Technique	GFSK, π /4DQPSK, 8DPSK
Number of Channels	79 channels (Bluetooth), 40 channels (Bluetooth Low Energy)
Antenna Type	PCB Antenna
Antenna Gain	1.62 dBi

1.4. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL010571	2016.11.22	Initial
1	F690501/RF-RTL010571-1	2016.11.24	Changed Output Average Power to Antenna

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2. RF Exposure Evaluation

2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength(V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time
(A) Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/f	4.89/f	*900/f ²	6
30 - 300	61.4	0.163	1.0	6
300 – 1 500	-	-	f/300	6
1 500 – 100 000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
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 – 1 500	-	-	f/1500	30
<u>1 500 – 100 000</u>	-	-	<u>1.0</u>	<u>30</u>

2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

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2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

Test Mode : Normal Operation

2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

Bluetooth

- Maximum tune up tolerance

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
0	2 402	2.00	1.62	0.000 458	1

Bluetooth Low Energy

- Maximum tune up tolerance

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
0	2 402	2.00	1.62	0.000 458	1

Note :

The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm².

- End of the Test Report -

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