

TEST REPORT

of

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

FCC ID: BEJHGQQMSD10

Equipment Under Test : Communication Gateway

Model Name : HGQQMSD10

Applicant : LG Electronics USA

Manufacturer : LG Electronics Inc.

Date of Receipt : 2017.07.20

Date of Test(s) : 2017.07.24 ~ 2017.07.28

Date of Issue : 2017.07.31

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

Tested By:



Date:

2017.07.31

Jinhyoung Cho

Technical
Manager:



Date:

2017.07.31

Hyunchoe You

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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>

RTT5041-19(2017.07.10)(0)

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

FAX : +82 31 688 0921

1.2. Details of applicant

Applicant : LG Electronics USA.

Address : 1000 Sylvan Avenue Englewood Cliffs New Jersey United States 07632

Contact Person : Kwon, Yong-Duk

Phone No. : +82 31 8066 5538

1.3. Details of manufacturer

Applicant : LG Electronics Inc.

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

1.4. Description of EUT

Kind of Product	Communication Gateway
Model Name	HGQQMSD10
Power Supply	AC 120 V
Frequency Range	2 412 MHz ~ 2 462 MHz (11b/g/n_HT20), 2 422 MHz ~ 2 452 MHz (11n_HT40)
Modulation Technique	DSSS, OFDM
Number of Channels	11 channels (11b/g/n_HT20), 7 channels (11n_HT40)
Antenna Type	Dipole Antenna
Antenna Gain	3.7 dBi

1.5. Declaration of manufacturer

- Zigbee module is exempt from testing using previously approved.

FCC ID : BEJ-WZB1NP6

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1.6. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL011685	2017.07.31	Initial

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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

WLAN (2.4G)

- Maximum tune up tolerance

Operating 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)
2 412 ~ 2 462	20	3.7	0.046 637	1

Zigbee

- Maximum tune up tolerance

Operating 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)
2 405 ~ 2 480	19	1.33	0.021 465	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.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.

Simultaneous transmission of MPE test exclusion for worst case configuration.

WLAN: the ratio is 0.046 637 / 1

Zigbee: the ratio is 0.021 465 / 1

Confirm the sum result of individual MPEs ratio is ≤1.0;

WLAN +Zigbee: (0.046 637 / 1) + (0.021 465 / 1) = 0.068 102 ≤1.0

So this device meets the KDB447498 D01 v06 section 7.2 requirement of "Simultaneous transmission MPE test exclusion"

- End of the Test Report -

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