

TEST REPORT

of

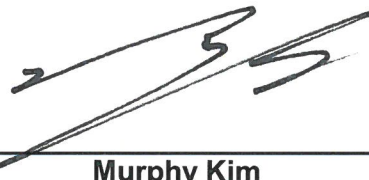
FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: BEJ-AIGC92W

Equipment Under Test : LG IoT Hub
Model Name : AIGC92W
Variant Model Name : AIGB92W
Applicant : LG Electronics USA
Manufacturer : LG Electronics Inc.
Date of Receipt : 2018.11.08
Date of Test(s) : 2018.11.09 ~2019.02.01
Date of Issue : 2019.08.30

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

Tested By:

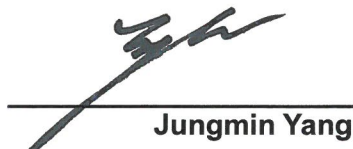


Murphy Kim

Date:

2019.08.30

Technical
Manager:



Jungmin Yang

Date:

2019.08.30

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RTT5041-19(2019.04.24)(1)

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A4(210 mm x 297 mm)

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

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1.2. Details of Applicant

Applicant : LG Electronics USA

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

Contact Person : Park, Sang-jin

Phone No. : +82 55 260 3966

1.3. Details of Manufacturer

Company : LG Electronics Inc.

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

1.4. Description of EUT

Kind of Product		LG IoT Hub
Model Name		AIGC92W
Variant Model Name		AIGB92W
Power Supply		DC 5 V
Frequency Range		908.40 MHz, 916.00 MHz (Z-Wave), 2 405 MHz ~ 2 475 MHz (Zigbee), 2 412 MHz ~ 2 462 MHz (11b/g/n_HT20)
Modulation Technique		DSSS, OFDM, FSK
Number of Channels		2 channels (Z-Wave), 15 channels (Zigbee), 11 channels (11b/g/n_HT20)
Antenna Type		PCB antenna
Antenna Gain	Wlan_ANT 1	1.43 dB i
	Wlan_ANT 2	1.53 dB i
	Zigbee	1.86 dB i
	Z-Wave	-0.81 dB i

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1.5. Declaration by the Manufacturer

- WiFi, Zigbee, Z-wave can transmit simultaneously.

1.6. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501/RF-RTL013956	2019.06.18	Initial
1	F690501/RF-RTL013956-1	2019.08.30	Revised the address of manufacturer

1.7. Information of Variant Model

Model Name	Information
AIGC92W	- Basic Model
AIGB92W	- Same to basic mode, but variant model name is made for marketing purpose

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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
<u>300-1 500</u>	-	-	<u>f/1500</u>	<u>30</u>
<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

Z-Wave

- Maximum tune up tolerance

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
908.40, 916.00	-8	-0.81	0.000 026	0.61

Zigbee

- Maximum tune up tolerance

Frequency Range (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 ~ 2 475	20	1.86	0.030 530	1

WLAN (2.4G)

- Maximum tune up tolerance

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	22	4.49	0.088 660	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.

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Simultaneous transmission of MPE test exclusion for worst case configuration.

Z-Wave: the ratio is 0.000 026 / 0.61

Zigbee: the ratio is 0.030 530 / 1

WLAN: the ratio is 0.088 660 / 1

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

Z-Wave + Zigbee + WLAN: $(0.000\ 026 / 0.61) + (0.030\ 530 / 1) + (0.088\ 660 / 1)$
 $= 0.119\ 233 \leq 1.0$

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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