

TEST REPORT

of

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

FCC ID: BEJGEN11NAN

Equipment Under Test : Telematics
Model Name : GEN11NAN
Applicant : LG Electronics Inc.
Manufacturer : LG Electronics Inc.
Date of Receipt : 2017.07.31
Date of Test(s) : 2017.08.13 ~ 2017.08.25
Date of Issue : 2017.08.29

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

Tested By:



Date:

2017.08.29

Jinhyoung Cho

Technical
Manager:



Date:

2017.08.29

Harim Lee

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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(210 mm x 297 mm)

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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>.

Phone No. : +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 : Park, Eui-Soon

Phone No. : +82 2 2033 1110

1.3. Description of EUT

Kind of Product	Telematics
Model Name	GEN11NAN
Power Supply	DC 12 V
Frequency Range	GSM 850: 824 MHz ~ 849 MHz GSM 1 900: 1 850 MHz ~ 1 910 MHz WCDMA 2: 1 850 MHz ~ 1 910 MHz WCDMA 4: 1 710 MHz ~ 1 755 MHz WCDMA 5: 824 MHz ~ 849 MHz LTE Band 2: 1 850 MHz ~ 1 910 MHz LTE Band 4: 1 710 MHz ~ 1 755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz
Antenna Gain	824 MHz ~ 849 MHz: -0.7 dB i 1 850 MHz ~ 1 910 MHz: 1.2 dB i 1 850 MHz ~ 1 910 MHz: 1.2 dB i 1 710 MHz ~ 1 755 MHz: -0.1 dB i 824 MHz ~ 849 MHz: -0.7 dB i 1 850 MHz ~ 1 910 MHz: 1.2 dB i 1 710 MHz ~ 1 755 MHz: -0.1 dB i 824 MHz ~ 849 MHz: -0.7 dB i 699 MHz ~ 716 MHz: -1.5 dB i 777 MHz ~ 787 MHz: -1.3 dB i

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1.4. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL011772	2017.08.29	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
<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. Test information of Cable Loss and Antenna Gain

Test Item	Frequency (MHz)	Cable Loss (dB)	Antenna Gain of EUT (dB i)	Final Antenna Gain (dB i)
GSM 850	836.6	-5.45	-0.7	-6.15
GSM 1900	1 850.2	-8.29	1.2	-7.09
WCDMA 2	1 852.4	-8.29	1.2	-7.09
WCDMA 4	1 712.4	-7.95	-0.1	-8.05
WCDMA 5	826.4	-5.45	-0.7	-6.15
LTE 2	1 850.7	-8.29	1.2	-7.09
LTE4	1 710.7	-7.95	-0.1	-8.05
LTE 5	824.7	-5.45	-0.7	-6.15
LTE 12	699.7	-4.79	-1.5	-6.29
LTE 13	779.5	-5.16	-1.3	-6.46

Note :

-The cable used for normal operation is 6.8 m.

-Final Antenna Gain = Cable Loss(dB) + Antenna Gain of EUT(dB i)

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2.1.4. Output Power into Antenna & RF Exposure Evaluation Distance

GSM 850

- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
128	824.2	35.5	-6.15	0.171 289	0.549 467

GSM 1 900

- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
512	1 850.2	32.5	-7.09	0.069 140	1

WCDMA Band 2

- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
9262	1 852.4	25.7	-7.09	0.014 445	1

WCDMA Band 4

- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
1312	1 712.4	25.7	-8.05	0.011 581	1

WCDMA Band 5

- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
4132	826.4	25.7	-6.15	0.017 936	0.550 933

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LTE Band 2
- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
18607	1 850.7	25.7	-7.09	0.014 445	1

LTE Band 4
- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
19957	1 710.7	25.7	-8.05	0.011 581	1

LTE Band 5
- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
20407	824.7	25.7	-6.15	0.017 731	0.549 800

LTE Band 12
- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
23017	699.7	25.7	-6.29	0.017 367	0.466 467

LTE Band 13
- Maximum tune up tolerance

Channel	Frequency (MHz)	Output Average Power to Antenna (dB m)	Final Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
23205	779.5	25.7	-6.46	0.016 701	0.519 667

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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