

TEST REPORT

of

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

FCC ID: BEJ-TTA20ANEBR

Equipment Under Test : Telematics
Model Name : TTA20ANEBR
Variant Model Names : TTA20ANENR, TTA20ANEBS, TTA20ANENS,
TTA20GNEBS, TTA20GNENS
Applicant : LG Electronics USA.
Manufacturer : LG Electronics Inc.
Date of Receipt : 2018.04.30
Date of Test(s) : 2018.05.06 ~ 2018.05.10
Date of Issue : 2018.05.11

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

Tested By:



Jinhyoung Cho

Date:

2018.05.11

Technical
Manager:



Harim Lee

Date:

2018.05.11

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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 USA.

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

Contact Person : Han, Kyung-Su

Phone No. : +1 201 816 2003

1.3. Details of manufacturer

Company : LG Electronics Inc.

Address : 10, Magokjungang 10-ro, Gangseo-gu, Seoul, Korea, 07796

1.4. Description of EUT

Kind of Product	Telematics
Model Name	TTA20ANEBR
Variant Model Names	TTA20ANENR, TTA20ANEBS, TTA20ANENS, TTA20GNEBS, TTA20GNENS
Power Supply	DC 12 V
Frequency Range	1 710 MHz ~ 1 755 MHz
Antenna Gain	-0.1 dBi

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1.5. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL012665	2018.05.11	Initial

1.6. Information of Variant Models

Model Name		CAN	HW(TDD)	Back up battery
Basic model	TTA20ANEBR	High / Low Speed	O	O
Variant models	TTA20ANENR	High / Low Speed	O	X
	TTA20ANEBS	High / Low Speed	X	O
	TTA20ANENS	High / Low Speed	X	X
	TTA20GNEBS	High	X	O
	TTA20GNENS	High	X	X

Note;

TTA20ANEBR, TTA20ANENR has TDD circuit but it's function is disabled by software.

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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. 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)
WCDMA 4	1 712.4	-7.95	-0.1	-8.05

Note :

- The cable used for normal operation is 6.8 m.
- Final Antenna Gain = Cable Loss(dB) + Antenna Gain of EUT(dB i)

2.1.4. Output Power into Antenna & RF Exposure Evaluation Distance

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

- 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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