SGS Korea Co., Ltd.
4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
Tel. +82 31 428 5700 / Fax. +82 31 427 2370
http://www.sgsgroup.kr

TEST REPORT

of

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

FCC ID: BEJTM03LNNAHD0

Equipment Under Test	:	Telematics Module
Model Name	:	TM03LNNAHD0
Variant Model Name(s)	:	-
Applicant	:	LG Electronics USA
Manufacturer	:	LG Electronics Inc.
Date of Receipt	:	2022.09.26
Date of Test(s)	:	2022.10.10 ~ 2022.11.01
Date of Issue	:	2022.11.03

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

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2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
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Tested by: **Murphy Kim**

Technical Manager: **Jinhyoung Cho**

SGS Korea Co., Ltd. Gunpo Laboratory

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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

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Telephone : +82 31 688 0901
FAX : +82 31 688 0921

1.2. Details of Applicant

Applicant : LG Electronics USA
Address : 111 Sylvan Avenue, North Building, Englewood Cliffs, New Jersey, United States, 07632
Contact Person : Kim, Sung-soo
Phone No. : +1 201 266 2215

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 Module
Model Name	TM03LNNAHD0
Model Serial Number	353342703000020
Power Supply	DC 3.9 V
Rated Power	WCDMA Ⅱ, Ⅴ: 23 dBm LTE Band 2, 4, 5, 12: 23 dBm
Frequency Range	WCDMA Ⅱ: 1 850 ㎒ ~ 1 910 ㎒ WCDMA Ⅴ: 824 ㎒ ~ 849 ㎒ LTE Band 2: 1 850 ㎒ ~ 1 910 ㎒ LTE Band 4: 1 710 ㎒ ~ 1 755 ㎒ LTE Band 5: 824 ㎒ ~ 849 ㎒ LTE Band 12: 699 ㎒ ~ 716 ㎒
Modulation Technique	QPSK, 16QAM
Antenna Type	External antenna
Antenna Gain※	699 ㎒ ~ 716 ㎒: -2.20 dBi 824 ㎒ ~ 849 ㎒: 0.40 dBi 1 710 ㎒ ~ 1 780 ㎒: 0.40 dBi 1 850 ㎒ ~ 1 910 ㎒: -0.10 dBi
H/W Version	Rev.C1
S/W Version	TN23XA01

1.5. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL003529	2022.11.03	Initial

1.6. Test information of Cable Loss and Antenna Gain

Test Item	Frequency (㎒)	Cable Loss (dB)	Antenna Gain (dBi)	Final Antenna Gain (dBi)
WCDMA Ⅱ	1 850 ~ 1 910	0.90	-0.10	-1
WCDMA Ⅴ	824 ~ 849	0.50	0.40	-0.10
LTE - Band 2	1 850 ~ 1 910	0.90	-0.10	-1
LTE - Band 4	1 710 ~ 1 755	0.80	0.40	-0.40
LTE - Band 5	824 ~ 849	0.50	0.40	-0.10
LTE - Band 12	699 ~ 716	0.50	-2.20	-2.70

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 (㎒)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (㎽/㎠)	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/f²	<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/f²)	<30
30-300	27.5	0.073	0.2	<30
300-1 500	-	-	**f/1500**	**<30**
1 500-100 000	-	-	**1.0**	**<30**

2.1.1. Friis transmission formula: Pd = (Pout*G)/(4*pi*R²)

Where Pd = power density in ㎽/㎠

Pout = output power to antenna in ㎽

G = gain of antenna in linear scale

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

Pd the limit of MPE, 1 ㎽/㎠. 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.

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

WCDMA - Band Ⅱ

Frequency (㎒)	Maximum Average Target Power (dB m)	Maximum Tune up (dB)	Maximum Average Output Power (dB m)	Final Antenna Gain (dB i)	Power Density at 20 ㎝ (㎽/㎠)	Limits (㎽/㎠)
1 850 ~ 1 910	23.0	1	24.0	-1.0	0.039 694	1

WCDMA - Band Ⅴ

Frequency (㎒)	Maximum Average Target Power (dB m)	Maximum Tune up (dB)	Maximum Average Output Power (dB m)	Final Antenna Gain (dB i)	Power Density at 20 ㎝ (㎽/㎠)	Limits (㎽/㎠)
824 ~ 849	23.0	1	24.0	-0.10	0.048 835	0.549 333

LTE Band 2

Frequency (㎒)	Maximum Average Target Power (dB m)	Maximum Tune up (dB)	Maximum Average Output Power (dB m)	Final Antenna Gain (dB i)	Power Density at 20 ㎝ (㎽/㎠)	Limits (㎽/㎠)
1 850 ~ 1 910	23.0	1	24.0	-1.0	0.039 694	1

LTE Band 4

Frequency (㎒)	Maximum Average Target Power (dB m)	Maximum Tune up (dB)	Maximum Average Output Power (dB m)	Final Antenna Gain (dB i)	Power Density at 20 ㎝ (㎽/㎠)	Limits (㎽/㎠)
1 710 ~ 1 755	23.0	1	24.0	-0.40	0.045 575	1

LTE Band 5

Frequency (㎒)	Maximum Average Target Power (dB m)	Maximum Tune up (dB)	Maximum Average Output Power (dB m)	Final Antenna Gain (dB i)	Power Density at 20 ㎝ (㎽/㎠)	Limits (㎽/㎠)
824 ~ 849	23.0	1	24.0	-0.10	0.048 835	0.549 333

LTE Band 12

Frequency (㎒)	Maximum Average Target Power (dB m)	Maximum Tune up (dB)	Maximum Average Output Power (dB m)	Final Antenna Gain (dB i)	Power Density at 20 ㎝ (㎽/㎠)	Limits (㎽/㎠)
699 ~ 716	23.0	1	24.0	-2.70	0.026 837	0.466 000

Note;

- The power density Pd (5th column) at a distance of 20 ㎝ calculated from the friis transmission formula is far below the limit of 1 ㎽/㎠.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 ㎝ between the radiator and your body.
- The antenna gain of this transmitter is less than 6㏈i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.
- According to KDB 447498 D01 RF Exposure Guidance 4.1.

- End of the Test Report -