

# TEST REPORT

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

FCC ID: BEJTM04ANNABM1

Equipment Under Test : Telematics Module  
Model Name : TM04ANNABM1  
Variant Model Name(s) : -  
Applicant : FCC: LG Electronics USA  
IC: LG ELECTRONICS INC.  
Manufacturer : LG Electronics Inc.  
Date of Receipt : 2021.01.04  
Date of Test(s) : 2020.01.13 ~ 2021.02.05  
Date of Issue : 2021.03.05

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

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
- 3) This test report cannot be reproduced, except in full, without prior written permission of the Company.

Tested by:



Jinhyoung Cho

Technical  
Manager:



Jungmin Yang

**SGS Korea Co., Ltd. Gunpo Laboratory**



**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>

Report Number: F690501-RF-RTL001768

Page: 2 of 7

---

# INDEX

<u>Table of Contents</u>	Page
1. General Information -----	3
2. RF Exposure Evaluation -----	5



**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>

## 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

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

FCC Applicant : LG Electronics USA

FCC Address : 111 Sylvan Avenue, Englewood Cliffs, New Jersey, United States, 07632

IC Applicant : LG ELECTRONICS INC.

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

Contact Person : Kim, Dae-woong

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

<b>Kind of Product</b>	Telematics Module
<b>Model Name</b>	TM04ANNABM1
<b>Serial Number</b>	001, 002
<b>Power Supply</b>	DC 12.5 V
<b>Rated Power</b>	GSM 850: 33 dB m GSM 1 900: 30 dB m WCDMA II, IV, V: 24 dB m LTE Band 2, 4, 5, 7, 12, 17, 66: 23 dB m
<b>Frequency Range</b>	GSM 850: 824 MHz ~ 849 MHz GSM 1 900: 1 850 MHz ~ 1 910 MHz WCDMA II: 1 850 MHz ~ 1 910 MHz WCDMA IV: 1 710 MHz ~ 1 755 MHz WCDMA V: 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 7: 2 500 MHz ~ 2 570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 66: 1 710 MHz ~ 1 780 MHz
<b>Modulation Technique</b>	QPSK, 16QAM, GMSK, 8PSK
<b>Antenna Type</b>	Planar Inverted F Antenna
<b>Antenna Gain</b>	699 MHz ~ 716 MHz: -2.40 dB i 824 MHz ~ 849 MHz: -0.82 dB i 1 710 MHz ~ 1 780 MHz: -0.48 dB i 1 850 MHz ~ 1 915 MHz: -0.48 dB i 2 500 MHz ~ 2 570 MHz: -1.94 dB i
<b>H/W Version</b>	Rev.C
<b>S/W Version</b>	TN22XA01

### 1.5. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL001768	2021.03.05	Initial

## 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 <sup>2</sup> )	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 <sup>2</sup>	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 <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
<b><u>300-1 500</u></b>	-	-	<b><u>f/1500</u></b>	<b><u>30</u></b>
<b><u>1 500-100 000</u></b>	-	-	<b><u>1.0</u></b>	<b><u>30</u></b>

#### 2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where  $P_d$  = power density in  $mW/cm^2$

$P_{out}$  = output power to antenna in  $mW$

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

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

$P_d$  the limit of MPE,  $1 mW/cm^2$ . 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

#### GSM 850

##### - Maximum tune up tolerance

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Duty Cycle (%)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	34	-0.82	25	0.103 450	0.549 333

#### GSM 1 900

##### - Maximum tune up tolerance

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Duty Cycle (%)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 910	31	-0.48	25	0.056 070	1

#### WCDMA II

##### - 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 <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 910	25	-0.48	0.056 329	1

#### WCDMA IV

##### - 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 <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 710 ~ 1 755	25	-0.48	0.056 329	1

#### WCDMA V

##### - 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 <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	25	-0.82	0.052 087	0.549 333

**LTE Band 2**

**- 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 <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 910	24	-0.48	0.044 744	1

**LTE Band 5**

**- 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 <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	24	-0.82	0.041 374	1

**LTE Band 7**

**- 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 <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 500 ~ 2 570	24	-1.94	0.031 969	1

**LTE Band 12/17**

**- 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 <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
699 ~ 716	24	-2.40	0.028 756	0.466 000

**LTE Band 66/4**

**- 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 <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 710 ~ 1 780	24	-0.48	0.044 744	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/cm<sup>2</sup>.
- 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.
- According to KDB 447498 D01 RF Exposure Guidance 4.1.

**- End of the Test Report -**