

# 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 : 2021.06.03  
Date of Test(s) : 2020.06.03 ~ 2021.06.29  
Date of Issue : 2021.06.29

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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We are responsible for all the information of this test report except for the data(※) provided by the customer.

Tested by:



Nancy Park

Technical  
Manager:



Jinhyoung Cho

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



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Report Number: F690501-RF-RTL002352

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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
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- Designation number: KR0150

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### 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, Dae-woong

Phone No. : +1 201 266 2215

### 1.3. Details of Manufacturer

Company : Same as applicant

Address : Same as applicant

### 1.4. Description of EUT

|                                 |                                                                                                                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Kind of Product</b>          | Telematics Module                                                                                                                                                                                          |
| <b>Model Name</b>               | TM03LNNAHD0                                                                                                                                                                                                |
| <b>Serial Number</b>            | 353342700000291, 353342700000309                                                                                                                                                                           |
| <b>Power Supply</b>             | DC 3.90 V                                                                                                                                                                                                  |
| <b>Rated Power</b>              | WCDMA II, V: 23 dB m<br>LTE Band 2, 4, 5, 12: 23 dB m                                                                                                                                                      |
| <b>Frequency Range</b>          | WCDMA II: 1 850 MHz ~ 1 910 MHz<br>WCDMA V: 824 MHz ~ 849 MHz<br>LTE Band 2: 1 850 MHz ~ 1 910 MHz<br>LTE Band 4: 1 710 MHz ~ 1 755 MHz<br>LTE Band 5: 824 MHz ~ 849 MHz<br>LTE Band 12: 699 MHz ~ 716 MHz |
| <b>Modulation Technique</b>     | QPSK, 16QAM                                                                                                                                                                                                |
| <b>Antenna Type</b>             | Planar Inverted F Antenna                                                                                                                                                                                  |
| <b>Antenna Gain<sup>※</sup></b> | 699 MHz ~ 716 MHz: -2.85 dB i<br>824 MHz ~ 849 MHz: 0.32 dB i<br>1 710 MHz ~ 1 780 MHz: 2.86 dB i<br>1 850 MHz ~ 1 910 MHz: 2.83 dB i                                                                      |
| <b>H/W Version</b>              | Rev.C1                                                                                                                                                                                                     |
| <b>S/W Version</b>              | TN23XA01                                                                                                                                                                                                   |

### 1.5. Test Report Revision

| Revision | Report Number        | Date of Issue | Description |
|----------|----------------------|---------------|-------------|
| 0        | F690501-RF-RTL002352 | 2021.06.29    | 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<sup>2</sup>

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

$G$  = gain of antenna in linear scale

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

$P_d$  the limit of MPE, 1 mW/cm<sup>2</sup>. 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 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                                   | 2.83                | 0.095 880                                    | 1                            |

#### WCDMA 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                                   | 0.32                | 0.053 794                                    | 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                                   | 2.83                | 0.095 880                                    | 1                            |

#### LTE Band 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 ~ 1 755         | 24.0                                   | 2.86                | 0.096 545                                    | 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                                   | 0.32                | 0.053 794                                    | 0.549 333                    |

#### LTE Band 12

##### - 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             | 24.0                                   | -2.85               | 0.025 926                                    | 0.466 000                    |

**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 dBi 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 -**