

# TEST REPORT

of

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

FCC ID: YZP-VL3000

Equipment Under Test : Telematics Modem  
Model Name : LTD-VL3000  
Applicant : LG Innotek Co., Ltd.  
Manufacturer : LG Innotek Co., Ltd.  
Date of Receipt : 2017.09.18  
Date of Test(s) : 2017.10.12 ~ 2017.10.26  
Date of Issue : 2017.10.26

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

Tested By:



Date:

2017.10.26

Jinhyoung Cho

Technical  
Manager:



Date:

2017.10.26

Jungmin Yang

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# INDEX

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

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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>.

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### 1.2. Details of applicant

Applicant : LG Innotek Co., Ltd.

Address : 55, Hanyangdaehak-ro, Sangnok-gu, Ansan-si, Gyeonggido, 15588, Rep. of Korea

Contact Person : Eum, Ki-Hun

Phone No. : +82 10 2701 4217

### 1.3. Details of manufacturer

Company : LG Innotek Co., Ltd.

Address : 26, Hanamsandan 5beon-ro, Gwangsan-gu, Gwangju, 62229, Rep. of Korea

### 1.4. Description of EUT

<b>Kind of Product</b>	Telematics Modem
<b>Model Name</b>	LTD-VL3000
<b>Power Supply</b>	DC 4.0 V
<b>Frequency Range</b>	CDMA BC0: 824 MHz ~ 849 MHz CDMA BC1: 1 850 MHz ~ 1 910 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 13: 777 MHz ~ 787 MHz
<b>Antenna Type</b>	Dipole Antenna
<b>Antenna Gain</b>	824 MHz ~ 849 MHz: 4.5 dB i, 1 850 MHz ~ 1 910 MHz: 2.0 dB i, 1 710 MHz ~ 1 755 MHz: 2.0 dB i, 777 MHz ~ 787 MHz: 4.5 dB i

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### 1.5. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL011909	2017.10.26	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 <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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

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

$\pi$  = 3.1416

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.


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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. Output Power into Antenna & RF Exposure Evaluation Distance

Power Index table		
1. Maximum output Power (Target Power, Tolerance)		
	Target Power	Tolerance
LTE B2, B4, B5, B13	23	±2.7
CDMA BC0, BC1	24	+1.7/-3.7

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#### CDMA BC0

##### - Maximum tune up tolerance

Channel	Frequency (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> )
1013	824.70	25.7	4.5	0.208 320	0.549 800

#### CDMA BC1

##### - Maximum tune up tolerance

Channel	Frequency (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> )
25	1 851.25	25.7	2.0	0.117 147	1

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**LTE Band 2**
**- Maximum tune up tolerance**

Channel	Frequency (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> )
18607	1 850.70	25.7	2.0	0.117 147	1

**LTE Band 4**
**- Maximum tune up tolerance**

Channel	Frequency (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> )
19957	1 710.70	25.7	2.0	0.117 147	1

**LTE Band 5**
**- Maximum tune up tolerance**

Channel	Frequency (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> )
20407	824.70	25.7	4.5	0.208 320	0.549 800

**LTE Band 13**
**- Maximum tune up tolerance**

Channel	Frequency (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> )
23205	779.50	25.7	4.5	0.208 320	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/cm<sup>2</sup>.

**- End of the Test Report -**

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A4(210 mm x 297 mm)