

# TEST REPORT

of

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


FCC ID: BEJGEN5WIDEPD

1. Equipment Under Test : Car Navigation System
2. Model Name : GEN5 WIDE PD
3. Variant Model Name(s) : -
4. Applicant : LG Electronics USA
5. Manufacturer : LG Electronics Inc.
6. Date of Receipt : 2020.03.13
7. Date of Test(s) : 2020.05.11 ~ 2020.06.04
8. Date of Issue : 2020.06.10

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.

**Tested by:**

  
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**Murphy Kim**

**Technical  
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\_\_\_\_\_  
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Report Number: F690501-RF-RTL000759

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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
- 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>.

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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. : +1 201 472 2623

### 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>	Car Navigation System	
<b>Model Name</b>	GEN5 WIDE PD	
<b>Power Supply</b>	DC 12 V	
<b>Frequency Range</b>	2 402 MHz ~ 2 480 MHz (Bluetooth) 2 412 MHz ~ 2 462 MHz (11b/g/n_HT20) 5 745 MHz ~ 5 825 MHz (Band 3: 11a/n_HT20, 11ac_VHT20) 5 755 MHz ~ 5 795 MHz (Band 3: 11n_HT40, 11ac_VHT40) 5 775 MHz (Band 3: 11ac_VHT80)	
<b>Modulation Technique</b>	DSSS, OFDM, GFSK, $\pi/4$ DQPSK, 8DPSK	
<b>Number of Channels</b>	79 channels (Bluetooth) 11 channels (11b/g/n_HT20) 5 channels (Band 3: 11a/n_HT20, 11ac_VHT20) 2 channels (Band 3: 11n_HT40, 11ac_VHT40) 1 channel (Band 3: 11ac_VHT80)	
<b>Antenna Type</b>	PCB & Cable Assembly antenna	
<b>Antenna Gain</b>	<b>ANT 1</b>	2 400 MHz ~ 2 483.5 MHz: 2.30 dB i 5 725 MHz ~ 5 850 MHz: 4.70 dB i
	<b>ANT 2</b>	2 400 MHz ~ 2 483.5 MHz: 4.20 dB i 5 725 MHz ~ 5 850 MHz: 3.80 dB i

### 1.5. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL000759	2020.06.10	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
300-1 500	-	-	f/1500	30
<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

### 2.1.4. Output Power into Antenna & RF Exposure Evaluation Distance

#### Bluetooth

##### - 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> )
2 400 ~ 2 483.5	2	2.30	0.000 535	1

#### WLAN (2.4G)

##### - 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> )
2 400 ~ 2 483.5	17	4.20	0.026 226	1

#### WLAN (5G)

##### - 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> )
5 725 ~ 5 850	19	7.27	0.084 281	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.

#### Simultaneous transmission of RF Exposure test exclusion for worst case configuration.

Bluetooth: the ratio is 0.000 535 / 1  
 WLAN: the ratio is 0.084 281 / 1

Confirm the sum result of individual MPEs ratio is ≤ 1.0;  
 Bluetooth + WLAN: (0.000 535 / 1) + (0.084 281 / 1) = 0.084 816 ≤ 1.0

**- End of the Test Report -**