



TEST REPORT

FCC / ISED SAR Exclusion Report for GVMRB
Certification

APPLICANT
LG Electronics Inc.

REPORT NO.
HCT-SR-2303-FI001

DATE OF ISSUE
March 02, 2023

Technical Manager
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(signature)

Accredited by KOLAS, Republic of KOREA

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Bluetooth Test for
GVMRB

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Applicant

LG Electronics Inc.

222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Republic of Korea

**EUT Type
Model Name**

Generic Video Module
GVMRB

**FCC ID
ISED ID**

BEJGVMRB
2703H-GVMRB

FCC Classification

Spread Spectrum Transmitter (DSS)

FCC Rule

47CFR §2.1093

ISED Rule Part(s)

RSS-102 Issue 5; Health Canada Safety Code 6

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test results were applied only to the test methods required by the standard.

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	March 02, 2023	Initial Release

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC / ISED Rules under normal use and maintenance.

This laboratory is not accredited for the test results marked *.

The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 AND KOLAS (Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

If this report is required to confirmation of authenticity, please contact to www.hct.co.kr



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1. EUT DESCRIPTION

Model Name	GVMRB
EUT Type	Generic Video Module
Power Supply	DC 12 V
Frequency Range	2 402 MHz – 2 480 MHz
Max. Aver. Output Power	4 dBm (3mW) (including tolerance)
Max. Peak. Output Power	Ant. 0: 5.526 dBm (3.57 mW) Ant. 1: 5.220 dBm (3.33 mW)
Modulation Type	GFSK(Normal), $\pi/4$ DQPSK and 8DPSK(EDR)
Number of Channels	79 Channels, Minimum 20 Channels (AFH)
Antenna Specification	Antenna type: PCB Trace Antenna Peak Gain: ANT0: 6.39 dBi, ANT1: 6.94 dBi
PMN (Product Marketing Number)	Generic Video Module
HVIN (Hardware Version Identification Number)	GVMRB
FVIN (Firmware Version Identification Number)	1.0
HMN (Host Marketing Name)	N/A
EUT Serial Numbers	Radiated: 211950362 Conducted: 211950348

2. TEST METHODOLOGY

2.1 FCC

Body SAR for Test Exclusions Applied _Bluetooth

The module is a wireless device mounted near the vehicle's console box and has a minimum separation distance of 58.56 mm from the user in the vehicle. Please check the technical document for details.

- **Closest distances antenna molding to inside of center console (passenger side) :58.56mm**

Per FCC KDB 447498 D01 General RF Exposure Guidance v06 sec.4.3.1. Standalone SAR test exclusion considerations:

These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.

According to the FCC KDB 447498 D01 v06 section 4.3.1,b) for 100 MHz to 6 GHz and test separation distances > 50 mm

a) For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] * [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation.
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below

b) For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):

1) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\}$ mW, for 100 MHz to 1500 MHz

2) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$ mW, for > 1500 MHz and ≤ 6 GHz

Calculation Result:

Tx frequency range: 2 402 MHz ~ 2 480 MHz
 Body SAR Consideration Min. separation distance: 58.56 mm
 Maximum Ave. Output Power: 3 mW
 The Highest RF channel frequency: 2 480 MHz

SAR test exclusion thresholds power for this module is 180.9 mW

Based on the maximum output power of Bluetooth and antenna to use separation distance, Bluetooth SAR Test was not required.

***Note: "The test exclusion conditions of the SAR test were satisfied by evaluating the exemption threshold power according to the FCC KDB 447498 D01v06, sec.4.3.1."**



2.2 ISED

SAR Test Exclusions Applied _Bluetooth
Per RSS102 Issue 5, 2.5.1 Exemption Limits for Routine Evaluation

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power.

Tx frequency range: 2 402 MHz ~ 2 480 MHz

Body SAR Consideration Min. test separation distance: 58.56 mm

Maximum Averaged Output Power: 4 dBm (3 mW), 10.94 dBm(12.41mW)[EIRP].

Maximum peak Output Power: Ant 0: 5.526 dBm (3.57 mW) ,[11.92 dBm(15.55 mW)]EIRP]

Ant 1: 5.220 dBm (3.33 mW) [12.16 dBm (16.44 mW)]EIRP]

Considering the maximum frequency of 2480 MHz and the minimum separation distance of 58.56 mm, the interpolated Exemption threshold power is 434.7.mW

The SAR exemption from RSS102: Issue 5 was exempted by the above exclusion conditions.

***Note:** "The Exemption threshold conditions of the SAR test were satisfied by evaluating the exemption threshold according to the RSS-102: issue 5. sec.2.5.1."