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**HCT**

# TEST REPORT

FCC /IC SAR Exclusion Report for certification of MR20GA

APPLICANT

LG Electronics Inc.

REPORT NO.

HCT-SR-1905-FI001

DATE OF ISSUE

24. May, 2019

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# TEST REPORT

(If needed)  
FCC SAR Test for  
certification

REPORT NO.  
HCT-SR-1905-FI001

DATE OF ISSUE  
May 01, 2019

Other ID

Applicant **LG Electronics inc**  
222, LG-ro, Jinwi-myeon,, Pyeongtae-si,, Gyeonggi-do, 451-713, Rep. of Korea

Product Name Magic Remote  
Model Name MR20GA  
FCC ID BEJMR20GA  
ISED ID 2703H-MR20GA

Date of Test May 01, 2019

FCC Test Standard Used **47CFR §2.1093**  
ISED Test Standard Used **RSS-102 Issue 5; Health Canada Safety Code 6**

Test Results PASS  
**This device has been excluded from SAR based on FCC and ISED Standard**

Manufacturer **LG Electronics inc**  
Bluetooth 4.2 LE. .2 402 – 2 480 MHz

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

Technical Manager  
Yun Jeang Heo

HCT CO., LTD.

SooChon Lee / CEO

## REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	May 24, 2019	Initial Release

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## 1. Test Regulations

The results in this report apply only to sample tested.  
The tests were performed according to the following regulations:

<b>Test Standard</b>	FCC: 47CFR §2.1093 ISED : RSS102 Issue 5
<b>Phenomena</b>	Calculation
<b>Application Port</b>	SAR
<b>Test Method</b>	FCC KDB 447498 D01 v06 Per RSS102 Issue 5

## 2. Test Location

### 2.1 Test Laboratory

<b>Company Name</b>	HCT Co., Ltd.
<b>Address</b>	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA
<b>Telephone</b>	031-645-6300
<b>Fax</b>	031-645-6401

## 3. Information of the EUT

### 3.1 General Information of the EUT

<b>Model Name</b>	LG Electronics inc
<b>Product Name</b>	Magic Remote
<b>Manufacturer</b>	LG Electronics inc
<b>Manufacturer's Address</b>	222, LG-ro, Jinwi-myeon, Pyeongtae-si, Gyeonggi-do, 451-713, Rep. of Korea

#### 4. FCC

##### 4.1 Lim SAR and Face SAR Test Exclusions Applied \_Bluetooth 4.2 LE

Since this product is a remote control product, it is used by most users in the hand, so Limb SAR standard is applied. In addition, since this product is capable of voice recognition by the user, an exception evaluation is applied at a distance of 10 mm from the face SAR (head SAR).

According to the FCC KDB 447498 D01 v06 section 4.3.1, for 100 MHz to 6 GHz and test separation distances  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

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

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

$$\frac{\text{Max Power of Channel(mW)}}{\text{Test Separation Distance (mm)}} * \sqrt{\text{Frequency(GHz)}} \leq 3.0 \text{ For 1g SAR, 7.5 for 10g SAR}$$

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

Calculation Result::

Tx frequency range: 2 402 MHz ~ 2 480 MHz

Limb SAR Consideration Min. test separation distance: 5 mm

Face SAR Consideration Min. test separation distance: 10 mm

Maximum Output Power: 5 mW

The Highest RF channel frequency: 2 480 MHz

For Face SAR Exclusion

Mode	Frequency	Maximum Allowed Power	Separation Distance	$\leq 3.0$ for 1g SAR
	[MHz]	[mW]	[mm]	
Bluetooth 4.2 LE	2 480	5	10	0.8

For Limb SAR exclusion

Mode	Frequency	Maximum Allowed Power	Separation Distance	$\leq 7.5$ for 10g SAR
	[MHz]	[mW]	[mm]	
Bluetooth 4.2 LE	2 480	5	5	1.6

Based on the maximum output power of Bluetooth 4.2 LE and antenna to use separation distance, Bluetooth 4.2 LE Limb SAR and Face SAR were not required.

## 5. ISED

### 5.1 SAR Test Exclusions Applied \_Bluetooth 4.2 LE

Per RSS102 Issue 5, 2.5.1 Exemption Limits for Routine Evaluation

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

For Lim-worn SAR Exclusion:  $4\text{mW} * 2.5 = 10\text{ mW}$

For Face SAR Exclusion: 7 mW

Calculation Result::

Tx frequency range: 2 402 MHz ~ 2 480 MHz

Limb SAR Consideration Min. test separation distance: 5 mm

Face SAR Consideration Min. test separation distance: 10 mm

Maximum Output Power: 5 mW

The Highest RF channel frequency: 2 480 MHz

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