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# TEST REPORT

FCC /ISED SAR Exclusion Report for certification of PM20GA

APPLICANT

LG Electronics Inc

REPORT NO.

HCT-SR-1910-FI001

DATE OF ISSUE

October 18, 2019

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# TEST REPORT

(If needed)  
FCC SAR Test for  
certification

REPORT NO.  
HCT-SR-1910-FI001

DATE OF ISSUE  
October 18, 2019

FCC ID  
BEJPM20GA  
ISED ID  
2703H-PM20GA

Applicant

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

Product Name

Premium Magic Remote

Model Name

PM20GA

FCC ID

BEJMR20GA

ISED ID

2703H-PM20GA

Date of Test

October 17, 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 4.0 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.

*Soo Chan Lee*

SooChan Lee / CEO

## REVISION HISTORY

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

| Revision No. | Date of Issue | Description     |
|--------------|---------------|-----------------|
| 0            | Oct.18, 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:

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

## 2. Test Location

### 2.1 Test Laboratory

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

## 3. Information of the EUT

### 3.1 General Information of the EUT

|                        |                                                                     |
|------------------------|---------------------------------------------------------------------|
| Model Name             | LG Electronics inc                                                  |
| Product Name           | Premium Magic Remote                                                |
| Manufacturer           | LG Electronics inc                                                  |
| Manufacturer's Address | 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea |

#### 4. FCC

##### 4.1 Lim SAR and Face SAR Test Exclusions Applied \_Bluetooth 4.0 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: 6 mW

The Highest RF channel frequency: 2 480 MHz

For Face SAR Exclusion

| Mode             | Frequency | Maximum Allowed Power | Separation Distance | $\leq 3.0$<br>for 1g SAR |
|------------------|-----------|-----------------------|---------------------|--------------------------|
|                  | [MHz]     | [mW]                  | [mm]                |                          |
| Bluetooth 4.0 LE | 2 480     | 6                     | 10                  | 0.9                      |

For Limb SAR exclusion

| Mode             | Frequency | Maximum Allowed Power | Separation Distance | $\leq 7.5$<br>for 10g SAR |
|------------------|-----------|-----------------------|---------------------|---------------------------|
|                  | [MHz]     | [mW]                  | [mm]                |                           |
| Bluetooth 4.0 LE | 2 480     | 6                     | 5                   | 1.9                       |

Based on the maximum output power of Bluetooth 4.0 LE and antenna to use separation distance, Bluetooth 4.0 LE Limb SAR and Face SAR were not required.

## 5. ISED

### 5.1 SAR Test Exclusions Applied \_Bluetooth 4.0 LE

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<sup>4,5</sup>**

| 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:  $4\text{mW} \times 2.5 = 10\text{ mW}$

For Face SAR Exclusion:  $= 7\text{ mW}$

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: 6 mW

The Highest RF channel frequency: 2 480 MHz

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