

# SAR EXEMPTION EXHIBIT

## FCC

APPLICANT

**Universal Electronics Inc**

MODEL NAME

**117966**

FCC ID

**MG3-117966**

REPORT NUMBER

**HA230330-UEI-004-R04**

# TEST REPORT

**Date of Issue**

June 8, 2023

**Test Site**Hyundai C-Tech, Inc. dba HCT America, Inc.  
1726 Ringwood Ave, San Jose, CA 95131, USA

<b>Applicant</b>	Universal Electronics BV
<b>Applicant Address</b>	Colosseum 2, 7521 PT Enschede, The Netherlands
<b>FCC ID</b>	MG3-117966
<b>Model Name</b>	117966
<b>EUT Type</b>	BLE Remote control
<b>FCC Classification</b>	GFSK
<b>FCC Rule Part(s)</b>	Part 2 (§2.1091)
<b>Test Procedure</b>	KDB 447498 D01 v06

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was in accordance with the procedures specified in §2.947. The results in this report apply only to the product which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Hyundai C-Tech, Inc. dba HCT America, Inc. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

**Tested By**

Tim Lee

Test Engineer

**Reviewed By**

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## REVISION HISTORY

The revision history for this document is shown in table.

TEST REPORT NO.	DATE	DESCRIPTION
HA230330-UEI-004-R04	June 8, 2023	Initial Release

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## 1. EUT DESCRIPTION

<b>Model</b>	117966	BV OFA Platform Remote
<b>EUT Type</b>	BLE Remote control	
<b>Power Supply</b>	DC 3V (4 x AAA Alkaline Batteries)	
<b>RF Specification</b>	Bluetooth V5.0 LE (1 M/2 M)	
<b>Frequency Range</b>	2 402 MHz – 2 480 MHz	
<b>Max. RF Output Power</b>	Max. Peak Power : 7.426 dBm (5.528 mW) Max tune up power is 8 dBm	
<b>Modulation Type</b>	GFSK	
<b>Number of Channels</b>	40 Channels	
<b>Antenna Specification <sup>2)</sup></b>	Antenna Type : PCB trace Antenna Peak Gain : 1.78 dBi	
<b>Transmitter Chain</b>	1	
<b>Operating Environment</b>	Indoor only	
<b>Operating Temperature</b>	0 °C – 50 °C	

**Note :**

1. Antenna information is based on the document provided.

## 2. INTRODUCTION

### 2.1. LIMIT

The RF exposure from portable device, as defined by FCC, must be evaluated with respect to FCC-adopted limits for SAR in accordance with 47 CFR §2.1091.

If no other RF exposure testing or reporting are required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for SAR test exclusion.

#### SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table, Appendix A, KDB 447498 D01 v06, 'General RF Exposure Guidance'.

MHz	5	10	15	20	25	30	35	40	45	50	mm
150	39	77	116	155	194	232	271	310	349	387	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	164	192	219	246	274	
450	22	45	67	89	112	134	157	179	201	224	
835	16	33	49	66	82	98	115	131	148	164	
900	16	32	47	63	79	95	111	126	142	158	
1500	12	24	37	49	61	73	86	98	110	122	
1900	11	22	33	44	54	65	76	87	98	109	
2450	10	19	29	38	48	57	67	77	86	96	
3600	8	16	24	32	40	47	55	63	71	79	
5200	7	13	20	26	33	39	46	53	59	66	
5400	6	13	19	26	32	39	45	52	58	65	
5800	6	12	19	25	31	37	44	50	56	62	

**Note :** 10-g Extremity SAR Test Exclusion Power Threshold are 2.5 times higher than the 1g SAR Test Exclusion Threshold indicated above. These thresholds do not apply, by extrapolation or other means, to occupational exposure limits.

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 equation according to 4.3.1 a), KDB 447498 D01 v06 :

#### 1-g SAR Test Exclusion Thresholds

$$\frac{(\text{max. power of channel, including tuneup tolerance, mW})}{(\text{min. test separation distance, mm})} \times [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR}$$

#### 10-g SAR Test Exclusion Thresholds

$$\frac{(\text{max. power of channel, including tuneup tolerance, mW})}{(\text{min. test separation distance, mm})} \times [\sqrt{f(\text{GHz})}] \leq 7.5 \text{ for 10-g Extremity SAR}$$

### 3. RESULT

#### 3.1. SUMMARY OF RESULTS

Mode	Frequency (MHz)	Measured Level (dBm)	Max Power <sup>1)</sup> (dBm)	Max. Power (mW)	Calculated Threshold
BLE (1M)	2402	7.334	8.00	6.31	0.652
	2440	7.411	8.00	6.31	0.657
	2480	7.426	8.00	6.31	0.662
BLE (2M)	2402	7.342	8.00	6.31	0.652
	2440	7.410	8.00	6.31	0.657
	2480	7.416	8.00	6.31	0.662

**Note :**

1. Maximum output power including tune-up tolerance.
2. The device is a hand-held remote control. According to user manual, Arms are separated from the antenna with less than 5 mm and body is separated from the antenna more than 15 mm in normal use condition

**Sample Calculation (Worst case) :**

(max. power of channel including tune-up tolerance in mW) / (min. test separation distance) x SQRT(frequency in GHz)  
 = (6.31 mW) / (15 mm) x SQRT(2.480 GHz) = 0.662 ≤ 3.0

#### 3.2. CONCLUSION

Since BLE (1M/2M) are not operating simultaneously, the calculated worst-case threshold is 0.662 at the frequency 2480 MHz, which is less than 3.0 (1-g SAR Exclusion limit), therefore SAR evaluation is not required for the EUT.

**END OF TEST REPORT**