

RF EXPOSURE REPORT



FCC Applicant: RightCrowd
Ferdinand Lousbergskaaï 105/2 Ghent Oost-Vlaanderen 9000
Belgium

FCC Manufacturer: RightCrowd
Ferdinand Lousbergskaaï 105/2 Ghent Oost-Vlaanderen 9000
Belgium

Product Name: RightCrowd Badgeholder v2

Brand Name: RightCrowd Badgeholder

Model No.: HW3.1

Model Difference: N/A

Report Number: ER/2021/A0090

FCC ID 2A4P8-0310

Issue Date: Jun. 08, 2022

Date of EUT Received: Oct. 27, 2021

Approved By

John Yeh

We hereby certify that:

The above equipment was evaluate by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §2.1093.

The results of this report relate only to the sample identified in this report.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
ER/2021/A0090	00	Original.	Mar. 22, 2022	Yi-Shan Tsai	
ER/2021/A0090	01	Update Calculation	Jun. 08, 2022	Yi-Shan Tsai	*

Note:

- 1、The remark "*" indicates modification of the report upon requests from certification body.

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1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

1.1 Product Description

Product Name:	RightCrowd Badgeholder v2
Brand Name:	RightCrowd Badgeholder
Model No.:	HW3.1
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	PJ21A147011
Power Supply:	Battery 3.7Vdc Adapter 12Vdc USB 5Vdc

1.2 Antenna Information:

1.2.1 BLE

Antenna Type	Freq. (MHz)	Peak Antenna Gain (dBi)
Chip	2402 – 2480	0

Note: Antenna information is provided by the applicant.

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2 RF EXPOSURE EVALUATION FOR PORTABLE CONDITIONS

2.1 FCC Standard Applicable:

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

2.1.1 As per KDB 447498 D01 4.3.1,

Step 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:

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

- $f(\text{GHz})$ 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

Step 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

Step c: For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

- 1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$
- 2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$
- 3) SAR measurement procedures are not established below 100 MHz

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2.2 Measurement Result:

Frequency (MHz)	Max. output power including tune-up tolerance(dBm)	Max. output power including tune-up tolerance(mW)	Distance (mm)	Result	≤ 3.0 for 1-g SAR
2402	-3.85	0.412	5	0.128	TRUE
13.56	-64.10757	0.0000004	5	0.000000009	

As the result of calculation result indicates, the RF exposure generating from given transmitter (transmitter employed digital modulation) can be excluded from SAR measurement, and is deemed compliant with RF exposure as per FCC.

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2.2.1 As per KDB447498D01v06 4.3.1 c)

Based on KDB447498D01v06 4.3.1 c), SAR test exclusion threshold for NFC (13.56MHz) shall be evaluated as below,

- a) For test separation distances ≤ 50 mm, the power threshold determined by the equation in 4.3.1 c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$
- b) The power threshold at 50mm/100 MHz in 4.3.1 b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$ where f is 13.56MHz
- c) The power threshold in 4.3.1 b) is [Power allowed at numeric threshold for 50 mm in 4.3.1 a)] + [(test separation distance – 50 mm) · (f(MHz)/150)] mW, for 100 MHz to 1500 MHz where test separation distance is 50mm, frequency is 100MHz.
- d) Power allowed at numeric threshold for 50 mm in 4.3.1 a) is $[3/\sqrt{f(\text{GHz})}] \cdot (\text{test separation distance})$
- Hence, SAR test exclusion threshold is calculated in reverse sequence:
- d) : $[3/\sqrt{0.1}] \cdot 50 = 474.3416\text{mW}$
- c) : $474.3416 + (50-50) \cdot (100/150) = 474.3416\text{mW}$
- b) : $474.3416 \cdot [1 + \log(100/13.56)] = 885.9470\text{mW}$
- a) : $885.9470 \cdot 0.5 = 442.974\text{mW}$

Step c:

Frequency (MHz)	E-FIELD dBuV/m	Test Distance (m)	EIRP (dBm)	EIRP (mW)	Threshold (mW)
13.56	11.05	30	-64.10757	0.0000004	442.974

Note:

$\text{EIRP (dBm)} = (\text{E-FIELD(dBuV/m)} + 20\log(d(\text{m})) - 104.7$

$\text{EIRP(mW)} = (10^{(\text{EIRP(dBm)}/10)})$

~ End of Report ~

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