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RF Exposure Evaluation Report

Application No.:	SHCR2201000133HS
FCC ID:	2A38I-39974C1
Applicant:	SmartOS LLC
Address of Applicant:	100 Technology Drive Trumbull, CT 06511, USA
Manufacturer:	Ningbo Rayonics Technology Co., Ltd.
Address of Manufacturer:	2nd Floor, West of Building 6, Lingyun Industrial Park, No, 1177 Lingyun Rd, National Hi-tech Zone, Ningbo, China
Factory:	Ningbo Rayonics Technology Co., Ltd.
Address of Factory:	2nd Floor, West of Building 6, Lingyun Industrial Park, No, 1177 Lingyun Rd, National Hi-tech Zone, Ningbo, China
Equipment Under Test (EUT):	
EUT Name:	EntryReady Electronic Cylinder
Model No.:	SE-LC
Add Model No.:	SE-LC-XXXX-XXXX-XXXX (1-3X means: product standard; 4X means: technical indicators (unlocking method); 5-6X means: outer length; 7-8X means: inner length; 9-10X means: finishes; 11X means: cam; 12X means: other)
Standard(s) :	FCC Rules 47 CFR §2.1093 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt:	2022-01-11
Date of Test:	2022-01-18 to 2022-01-24
Date of Issue:	2022-01-27
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan
Laboratory Manager

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Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2022-01-27	/

Authorized for issue by:				
		Wade Zhang **Wade Zhang / Project Engineer**		
		Parlam Zhan **Parlam Zhan /Reviewer**		

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3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 3V Battery

3.2 Details of E.U.T.

BLE

Antenna Gain:	1dBi (Provided by manufacturer)
Antenna Type:	Ceramic Antenna
Bluetooth Version:	V5.0 LE
Data Rate:	1Mbps
Channel Spacing:	2MHz
Modulation Type:	GFSK
Number of Channels:	40
Operation Frequency:	2402MHz to 2480MHz

13.56MHz

Antenna Type	Integral Loop Antenna
Modulation Type	ASK
Number of Channels	1
Operation Frequency	13.56MHz

3.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China.

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

3.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

- **FCC (Designation Number: CN1301)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

- **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory Company Number: 8617A

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4 Test Standards and Limits

4.1 FCC Radiofrequency radiation exposure limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max power of channel)/(min test separation distance)]*[√f(GHz)] ≤ 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

• The result is rounded to one decimal place for comparison

• 3.0 and 7.5 are referred to as the numeric thresholds

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

For 2.4G band device, the limit of worse case is

$P_{max} \leq 3.0 * D_{min} / \sqrt{f} = 3.0 * 5 / \sqrt{2.480} = 9.525 mW$

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHCR220100013301.

Test Data:

Test Mode	Test Channel	Power [dBm]	Power [mW]
BLE	2402	-7.32	0.19
BLE	2440	-6.65	**0.22**
BLE	2480	-6.82	0.21

5.2 RF Exposure Calculation

The Max Conducted Peak Output Power is 0.22mW. The best case gain of the antenna is 1dBi. 1dBi logarithmic terms convert to numeric result is nearly 1.26

According to the formula. calculate the EIRP test result:

EIRP= P x G = 0.22 mW x 1.26 = 0.28mW < 9.525mW

So the SAR report is not required.

--End of the Report--