

**1 Cover Page**

# ***RF Exposure Evaluation Report***

**Application No.:** SHEM2108009697CR  
**FCC ID:** 2APV2-CSL2S  
**Applicant:** Hangzhou Ezviz Software Co., Ltd.  
**Address of Applicant:** Room 302,Unit B,Building 2,399 Danfeng Road,Binjiang District,Hangzhou,Zhejiang  
**Manufacturer:** Hangzhou Ezviz Software Co., Ltd.  
**Address of Manufacturer:** Room 302,Unit B,Building 2,399 Danfeng Road,Binjiang District,Hangzhou,Zhejiang  
**Equipment Under Test (EUT):**  
**EUT Name:** Smart Fingerprint Lock  
**Model No.:** CS-L2-11FCP, CS-L2-C, CS-L2-P, CS-L2-CP, CS-L2S-11FCP  
**Standard(s) :** FCC Rules 47 CFR §2.1091  
 KDB447498 D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2021-08-20  
**Date of Test:** 2021-09-26 to 2021-09-27  
**Date of Issue:** 2021-09-28

<b>Test Result:</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

*Parlan Zhan*


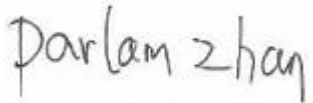
Parlan Zhan  
Laboratory Manager

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Revision Record			
Version	Description	Date	Remark
00	Original	2021-09-28	/

Authorized for issue by:			
			
		<hr/> <b>Micheal Niu / Project Engineer</b>	
			
		<hr/> <b>Parlam Zhan / Reviewer</b>	



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### 3 General Information

#### 3.1 General Description of E.U.T.

Power supply:	DC 6V by Alkaline batteries*4
Test voltage:	DC 6V

#### 3.2 Technical Specifications

Zigbee

Antenna Gain	3.61dBi(Provided by the manufacturer)
Antenna Type	PIFA antenna
Channel Spacing	5MHz
Modulation Type	O-QPSK
Number of Channels	16
Operation Frequency	2405MHz to 2480MHz

13.56MHz:

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



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SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.  
 Testing Center EPMC (Zhejiang)

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### 3.3 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888

Fax: +86 512 5737 0818

No tests were sub-contracted.

### 3.4 Test Facility

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

- **CNAS (No. CNAS L4354)**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. 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. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC (Designation Number: CN1172)**

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

- **ISED (CAB identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

- **VCCI (Member No.: 1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.



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## 4 Test Standards and Limits

### 4.1 FCC Radiofrequency radiation exposure limits:

According to §1.1310, the limit for general population/uncontrolled exposures

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

Note: Limit for 13.56MHz is 60.77 V/m

Limit for 2.4GHz is 1.0 mW/cm<sup>2</sup>



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## 5 Measurement and Calculation

### 5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM210800969701

Test Mode	Channel	Antenna 1 Power[dBm]	Antenna 1 Power[mW]
Zigbee	2405	9.76	<b>9.46</b>
Zigbee	2440	9.54	8.99
Zigbee	2475	9.71	9.35
Zigbee	2480	2.68	1.85

13.56MHz: 80.68dBuV/m@3m  
 @20cm=@3m+40\*log(3/0.02)= 127.72dBuV/m



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## 5.2 MPE Calculation

For FCC:

According to the formula  $S=P/4\pi R^2$ , we can calculate S which is MPE.

Note:

- 1) P (mW)
- 2) R = distance to the center of radiation of antenna (in meter) = 20cm
- 3) MPE limit = 1mW/cm<sup>2</sup>

The max. antenna gain is 3.61 dBi

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
9.46	2.296	20	0.00432	1	Pass

For 13.56MHz: 80.68 dBuV/m@3m, @20cm=@3m+40log(3/0.2)=127.72dBuV/m  
 127.72dBuV/m=2.432V/m < 60.77 V/m.

13.56MHz and Zigbee modules can simultaneous transmitting, so the maximum rate of MPE is 2.432/60.77+0.0043/1.0 =0.0443<=1.0. according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

**--End of the Report--**



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