

Report No.: SZEM190801708803

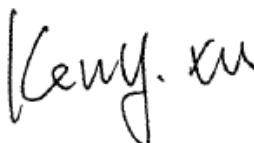
Page: 1 of 8

# RF Exposure Evaluation Report

<b>Application No.:</b>	SZEM1908017088CR
<b>Applicant:</b>	Chongqing luxiangjia technology co., Ltd.
<b>Address of Applicant:</b>	No. 388 jinchuan avenue, dongcheng street, tongliang district, chongqing, China
<b>Manufacturer:</b>	Chongqing luxiangjia technology co., Ltd.
<b>Address of Manufacturer:</b>	No. 388 jinchuan avenue, dongcheng street, tongliang district, chongqing, China
<b>Factory:</b>	Huizhou yunding network technology co., Ltd.
<b>Address of Factory:</b>	Floor 3, factory building J, yonghua industrial park, ganpi village, zhenlong town, huiyang district, Huizhou, China
<b>Equipment Under Test (EUT):</b>	
<b>Product Name:</b>	Wyze Lock Gateway
<b>Model No.:</b>	WLGW01
<b>Trade Mark:</b>	WYZE
<b>FCC ID:</b>	2AUAQWLGW01
<b>Standards:</b>	47 CFR Part 1.1307 47 CFR Part 1.1310
<b>Date of Receipt:</b>	2019-08-05
<b>Date of Test:</b>	2019-08-18 to 2019-11-11
<b>Date of Issue:</b>	2019-11-11

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



Keny Xu  
EMC Laboratory Manager



SGS-CSTC Standards Technical Services Co., Ltd.  
Shenzhen Branch Inspection & Testing Laboratory

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## 2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-11-11		Original

Authorized for issue by:			
		Damon Su	
		_____ Damon Su /Project Engineer	
		Eric Fu	
		_____ Eric Fu /Reviewer	

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## 4 General Information

### 4.1 General Description of EUT

Power supply:	Input: AC 100-240V, 0.15A
Operation Frequency:	2405MHz to 2480MHz
Modulation Type:	O-QPSK
Number of Channels:	16
Channel Spacing:	5MHz
Antenna Type:	PCB Antenna
Antenna Gain:	0dBi

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## 4.2 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China  
518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

## 4.3 Test Facility

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

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 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. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

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#### 4.4 Deviation from Standards

None.

#### 4.5 Abnormalities from Standard Conditions

None.

#### 4.6 Other Information Requested by the Customer

None.

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## 5 RF Exposure Evaluation

### 5.1 RF Exposure Compliance Requirement

#### 5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3–3.0 .....	614	1.63	*(100)	6
3.0–30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300 .....	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
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

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

#### 5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

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#### 4.1.3 EUT RF Exposure Evaluation

##### 1) exposure conditions for standalone operations

###### For Bluetooth&WIFI

Antenna Gain: 3.74dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.37 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Mode	Frequency (MHz)	Max Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	MPE Ratios	Result
BT	2402-2480	3	0.0014	1.0	0.0014	PASS
BLE	2402-2480	1	0.0005	1.0	0.0005	PASS
WIFI	2412-2462	236	0.1113	1.0	0.1113	PASS

Note: Refer FCC Grant 2AC7Z-ESP32WROVERB for EUT test Max Conducted Peak Output Power value.

The distance r (5th column) calculated from the Friis transmission formula is far greater than 20 cm separation requirement.

###### For Zigbee

Antenna Gain: 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Mode	Frequency (MHz)	Max Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit	MPE Ratios	Result
Zigbee	2405-2480	86.10	0.0171	1.0	0.0171	PASS

Note: Refer to report No. SZEM190801708802 for EUT test Max Conducted Peak Output Power value.

The distance r (5th column) calculated from the Friis transmission formula is far greater than 20 cm separation requirement.

##### 2) exposure conditions for simultaneous transmission operations

Simultaneous transmission MPE test is not required, because the Max. sum of the MPE ratios for Bluetooth&WIFI and Zigbee is  $0.1113+0.0171=0.1284 < 1$

- End of the Report -



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