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1 Cover Page

RF MPE REPORT

Application No.:	SZEM1708008850CR
Applicant:	Hangzhou EZVIZ Network Co., Ltd
FCC ID:	2ALZF-A1
IC:	22696-A1
Equipment Under Test (EUT): NOTE: The following sample(s) was/were submitted and identified by the client as	
Product Name:	Home Sense Alarm Hub
Model No.(EUT):	CS-AH200
Add Model No.:	CS-AH300, CS-AH400
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06 RSS-102 Issue 5 (March 2015)
Date of Receipt:	2017-07-10
Date of Test:	2017-07-11 to 2017-08-16
Date of Issue:	2017-08-22
Test Result:	Pass*

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

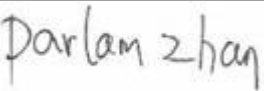

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	2017-08-22	/	Original

Authorized for issue by:				
Engineer				2017-08-22
		Vincent Zhu /Project Engineer		Date
Reviewer				2017-08-22
		Parlam Zhan /Reviewer		Date



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3 General Information

3.1 Client Information

Applicant:	Hangzhou Ezviz Network Co., Ltd
Address of Applicant:	Floor 7, Building 1, No.700, Dongliu Road, Binjiang District, Hangzhou
Manufacturer:	Hangzhou Ezviz Network Co., Ltd
Address of Manufacturer:	Floor 7, Building 1, No.700, Dongliu Road, Binjiang District, Hangzhou
Factory:	1. Hangzhou Hikvision Technology Co., Ltd. 2. Hangzhou Hikvision Electronics Co., Ltd.
Address of Factory:	1. No.700, Dongliu Road, Binjiang District, Hangzhou Ctiy,Zhejiang, 310052, China 2. No.299, Qiushi Road,Tonglu Economic Development Zone,Tonglu County, Hangzhou,Zhejiang,310052,China.

3.1 General Description of E.U.T.

Product Description:		Fixed product with 2.4GHz WiFi function	
Brand Name:			
Power Supply:		DC 5V 1 A	
Rated Input:		DC 5V via USB port	
Adapter:	Model No.:	ED1-050100UA	
	Rated Input:	AC 100V-240V 50/60Hz, 0.2A	
	Rated Output:	DC 5.0V 1.0A	
	Cable length:	AC port:	2 wires
		DC port:	100 cm
Test Voltage:	AC 120V 60Hz for adapter		

3.2 Technical Specifications

Operation Frequency:	802.11 (HT40): 2422MHz-2452MHz 915MHz
Modulation Technique:	802.11 b DSSS(CCK, DQPSK, DBPSK) 802.11 g/n(OFDM(64QAM, 16QAM, QPSK, BPSK) 915MHz: FSK
Number of Channel:	802.11 b/g/n(HT20): 11 R915MHz:1
Data Rate:	802.11b: 1/2/5.5/11Mbps, 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: 13/26/39/52/78/104/117/135Mbps
Antenna Type:	Embedded Antenna for 2.4GHz WiFi Helix Antenna for 915MHz
Antenna Gain:	2 dBi for WiFi



3.3 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.

Tel: +86 755 2601 2053

Fax: +86 755 2671 0594

3.4 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 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 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.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



4 Test Standards and Limits

4.1 FCC Radiofrequency radiation exposure limits:

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

Frequency	Power density(mW/cm ²)	Averaging time(minutes)
300MHz~1.5GHz	f/1500	30
1.5GHz~100GHz	1.0	30

Limit for 915MHz is 0.61 mW/cm²

4.2 IC Radiofrequency radiation exposure limits:

According to RSS-102 section 2.5.2, RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);

- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

For 915MHz band, the limit of worse case is 1.38 W

For 2.4G band, the limit of worse case is 2.68 W



5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SZEM170800885003 & SZEM170800885004.

2.4GHz band

Test Mode	Test Channel	Power[dBm]	Power (mW)
11B	2412	17.98	62.81
11B	2437	18.54	71.45
11B	2462	17.77	59.84
11G	2412	18.7	74.13
11G	2437	19.35	86.10
11G	2462	18.92	77.98
11N20SISO	2412	18.53	71.29
11N20SISO	2437	19.15	82.22
11N20SISO	2462	18.66	73.45

915MHz band

Frequency (MHz)	Read Level (dBuV)	Level (dBuV/m)	Output Power (dBm)	Output Power (mW)
915	109.70	93.12	-2.18	0.61
	107.95	91.37	-3.93	0.40



5.2 MPE Calculation

The best case gain of the antenna is 2 dBi. 2dB logarithmic terms convert to numeric result is nearly 1.58.

For 2.4GHz WiFi: The Max Conducted Peak Output Power is 86.10mW(0.0861W);

For 915MHz: The Max E.I.R.P is 0.61mW(0.00061W).

For FCC:

According to the formula $S = \frac{PG}{4R^2\pi}$, we can calculate S which is MPE.

Note:

1) P (Watts) = Power Input to antenna = $10^{\frac{dBm}{10}} / 1000$

2) G (Antenna gain in numeric) = $10^{(Antenna\ gain\ in\ dBi / 10)}$

3) R = distance to the center of radiation of antenna (in meter) = 20cm

4) MPE limit = 1mW/cm²

$$\text{WiFi: } S = \frac{PG}{4R^2\pi} = \frac{86.1 \times 1.58}{4 \times 400 \times 3.14} = 0.0271 \text{ mW/cm}^2$$

$$915\text{MHz: } S = \frac{PG}{4R^2\pi} = \frac{0.61}{4 \times 400 \times 3.14} = 0.00012 \text{ mW/cm}^2$$

915MHz and WiFi modules can simultaneous transmitting, so the maximum rate of MPE is $\frac{0.0271}{1.0} + \frac{0.00012}{0.61} = 0.0273 \leq 1.0$. according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

For IC:

For 2.4GHz WiFi: E.I.R.P. = $P \times G = 0.0861 \times 1.58 = 0.136\text{W}$

For 915MHz: E.I.R.P. = 0.00061W

915MHz and 2.4GHz WiFi modules can simultaneous transmitting, so the maximum rate of MPE is

$$\frac{0.136}{2.68} + \frac{0.00061}{1.38} = 0.0516 \leq 1.0.$$

So the device is exclusion from SAR test.

6 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

--End of the Report--