1 Cover Page

RF MPE REPORT

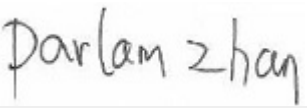
Application No.:	SHEM1904012131CR
FCC ID:	2APV2-CSA1S32W
IC:	23928-CSA1S32W
Applicant:	Hangzhou Ezviz Software Co., Ltd.
Address of Applicant:	Floor 16, Unit B Building 1, No. 555, Qianmo Road, Binjiang District, Hangzhou City, Zhejiang Province
Manufacturer:	Hangzhou Ezviz Software Co., Ltd.
Address of Manufacturer:	Floor 16, Unit B Building 1, No. 555, Qianmo Road, Binjiang District, Hangzhou City, Zhejiang Province
Factory:	Hangzhou Hikvision Electronics Co., Ltd.
Address of Factory:	No.299, Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou, Zhejiang, 310052, China.
Equipment Under Test (EUT):	
EUT Name:	Internet Alarm Hub
Model No.(EUT):	CS-A1S-32WE4G
Trade Mark:	eZVIZ
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06 RSS-102 Issue 5 (March 2015)
Date of Receipt:	2019-04-04
Date of Test:	2019-04-10 to 2019-04-16
Date of Issue:	2019-04-30
Test Result:	**Pass***

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

Parlam Zhan
E&E Section 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.

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2019-04-30	/

Authorized for issue by:				
				
		Vincent Zhu / Project Engineer		
				
		Parlam Zhan / Reviewer		

2 Contents

3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 5V by adapter Adapter: Model:ADS-5RE-06 05050EPCU Input:100-240V~50/60Hz Output:5V 1A
Test voltage:	AC 120V 60Hz
Cable:	DC Cable 90cm for adapter

3.2 Technical Specifications

2.4GHz

Antenna Gain	2dBi
Antenna Type	Integral Antenna
Channel Spacing	5MHz
Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels	802.11b/g/n(HT20):11 802.11n(HT40):7
Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz 802.11n(HT40): 2422MHz to 2452MHz

915MHz

Antenna Type	PCB Antenna
Modulation Type	FSK
Number of Channels	1
Operation Frequency	915MHz
Antenna Gain	1dBi

3.3 Test Location

All tests were performed at:

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

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 17025:2005 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.

• NVLAP (Certificate No. 201034-0)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program(NVLAP). Certificate No. 201034-0.

• FCC –Designation Number: CN5033

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

Designation Number: CN5033. Test Firm Registration Number: 479755.

• Innovation, Science and Economic Development Canada

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

IC Registration No.: 8617A-1. CAB identifier: CN0020.

• 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:

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

For 700MHz band, the limit of worse case is 0.47 mW/cm^2

For 826MHz band, the limit of worse case is 0.55 mW/cm^2

For 915MHz band, the limit of worse case is 0.604 mW/cm^2

For 1700MHz band, the limit of worse case is 1.0 mW/cm^2

For 1800MHz band, the limit of worse case is 1.0 mW/cm^2

For 2.4G and 5G band, the limit is 1.0 mW/cm^2

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 700MHz band, the limit of worse case is 1.15W

For 826MHz band, the limit of worse case is 1.29W

For 915MHz band, the limit of worse case is 1.37W

For 1700MHz band, the limit of worse case is 2.11W

For 1800MHz band, the limit of worse case is 2.20W

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 SHEM190401213101 & SHEM190401213102

2.4G WiFi

Test Mode	Test Channel	Ant	Power [dBm]	Power [mW]
11B	2412	Ant1	14.17	26.12
11B	2437	Ant1	14.87	30.69
11B	2462	Ant1	15.17	**32.89**
11G	2412	Ant1	12.82	19.14
11G	2437	Ant1	13.61	22.96
11G	2462	Ant1	13.86	24.32
11N20SISO	2412	Ant1	12.87	19.36
11N20SISO	2437	Ant1	13.62	23.01
11N20SISO	2462	Ant1	13.89	24.49

915MHz

Frequency (MHz)	Level (dBuV/m)	Output Power (dBm)	Output Power (mW)
915	92.83	-2.47	**0.57**
	91.67	-3.63	0.43

The power of LTE band base on the FCC Certificate module of LTE Module: FCC ID: XMR201605EC25A and IC Certificate module of LTE Module: IC: 10224A-201611EC25A.

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/cm²

The best case gain of the WiFi antenna is 2dBi.
The best case gain of the LTE band antenna is 0dBi.

For 700MHz band:

The max. antenna gain is 0 dBi

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
242	1.000	20	0.04814	0.47	Pass

For 850MHz band:

The max. antenna gain is 0 dBi

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
205	1.000	20	0.04078	0.55	Pass

For 915MHz band:

The max EIRP is 0.57 mW.

So, $S=\frac{0.57}{4*\pi*20^2} = 0.0001$ $mW/cm^2 < 0.6mW/cm^2$

For 1700MHz, 1800MHz band

The max. antenna gain is 0 dBi

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
244	1.000	20	0.04854	1	Pass

For 2.4GHz WiFi:

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
32.89	1.585	20	0.01037	1	Pass

915MHz & 2.4G & LTE band modules can simultaneous transmitting, so the maximum rate of MPE is (0.0001/0.6)+(0.01037/1)+(0.04814/0.47)=0.113<=1.0. according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

For IC:

For LTE band,the worst E.I.R.P.= 0.288W

For 915MHz band: E.I.R.P.= 0.00057W

For 2.4GHz WiFi: E.I.R.P.= P*G= 0.03289×1.58=0.052W

All band modules can simultaneous transmitting, so the maximum rate of MPE is

(0.00057/1.37)+(0. 288/2.20)+(0.052/2.68) =0.15<=1.0.

So the device is exclusion from SAR test.

--End of the Report--