



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

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Report No.: SHEM180900782802

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## 1 Cover Page

# RF Exposure Evaluation Report

Application No.:	SHEM1809007828CR
Applicant:	Hangzhou Ezviz Software Co., Ltd.
FCC ID:	2APV2-CVX2Y
<b>Equipment Under Test (EUT):</b> <b>NOTE:</b> The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	Smart Wi-Fi Turret Camera
Model No.:	CS-CV228
Add Model No.:	CS-CV220, CS-CV226, CS-CV320, CS-CV326, CS-CV328, CS-CV420, CS-CV426, CS-CV428
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt:	2018-09-06
Date of Test:	2018-10-12
Date of Issue:	2018-10-22
Test Result:	<b>Pass*</b>

\* 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.

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Revision Record			
Version	Description	Date	Remark
00	Original	2018-10-22	/

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



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### 3 General Information

#### 3.1 Client Information

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.

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

Power supply:	DC 12V by adapter
Test voltage:	AC 120V 60Hz
Antenna Gain	1.28 dBi
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



### 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.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

- **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 <sup>2</sup> )	Averaging time(minutes)
300MHz~1.5GHz	f/1500	30
1.5GHz~100GHz	1.0	30



## 5 Measurement and Calculation

### 5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM180900782801

Test Mode	Channel	Antenna 0 Power[dBm]	Antenna 1 Power[dBm]	MIMO Power[dBm]	Antenna 0 Power[mW]	Antenna 1 Power[mW]	MIMO Power[mW]
11B	2412	14.61	15.59	NA	28.91	36.22	N/A
11B	2437	14.87	15.65	NA	30.69	36.73	N/A
11B	2462	14.89	15.35	NA	30.83	34.28	N/A
11G	2412	13.72	16.42	NA	23.55	43.85	N/A
11G	2437	15.71	16.04	NA	37.24	40.18	N/A
11G	2462	15.30	14.75	NA	33.88	29.85	N/A
11N20MIMO	2412	13.98	15.79	17.99	25.00	37.93	62.95
11N20MIMO	2437	14.17	14.31	17.25	26.12	26.98	53.09
11N20MIMO	2462	15.04	15.58	18.33	31.92	36.14	68.08
11N40MIMO	2422	14.96	16.37	18.73	31.33	43.35	74.64
11N40MIMO	2437	15.19	13.41	17.40	33.04	21.93	54.95
11N40MIMO	2452	13.11	13.69	16.42	20.46	23.39	43.85



## 5.2 MPE Calculation

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

Note:

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

For FCC:

The best case gain of the antenna is 1.28dBi. 1.28dB logarithmic terms convert to numeric result is nearly 1.34

The Max Conducted Peak Output Power is 43.85mW;

$$S = \frac{PG}{4R^2\pi} = \frac{43.85 \times 1.34}{4 \times 400 \times 3.14} = 0.012 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

For MIMO:

The best case gain of the antenna is 4.29dBi. 4.29dB logarithmic terms convert to numeric result is nearly 2.69

The Max Conducted Peak Output Power is 74.64mW;

$$S = \frac{PG}{4R^2\pi} = \frac{74.64 \times 2.69}{4 \times 400 \times 3.14} = 0.028 \text{ mW/cm}^2$$

So the device is exclusion from SAR test.

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