

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

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1 Cover Page

RF Exposure Evaluation Report

Test Result:	Pass*
Date of Issue:	2021-09-24
Date of Test:	2021-07-21 to 2021-09-24
Date of Receipt:	2021-07-21
	RSS-102 Issue 5 Amendment 1 (February 2, 2021)
Standard(s) :	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06
For IC Model No:	CS-C8PF
Add Model No.:	CS-C8PF (2MP, W1), CS-C8PF-A0-6E22WFR
Model No.:	CS-C8PF
EUT Name:	Smart Home Camera
Equipment Under Test (EUT):	:
Address of Manufacturer:	Room 302, Unit B, Building 2,399 Danfeng Road, Binjiang District, Hangzhou, Zhejiang
Manufacturer:	Hangzhou Ezviz Software Co., Ltd.
Applicant: Address of Applicant:	Hangzhou Ezviz Software Co., Ltd. Room 302, Unit B, Building 2,399 Danfeng Road, Binjiang District, Hangzhou, Zhejiang
FCC ID: IC:	2APV2-CSC8PF6E 23928-CSC8PF6E
Application No.:	SHEM2107007938CR

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

Darlan Shan

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	2021-09-24	/		

Authorized for issue by:		
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	Micheal Niu / Project Engineer	
	Parlam zhan	
	Parlam Zhan / Reviewer	



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3 General Information

3.1	General	Descri	ption	of	E.U	.Т.

Power supply:	DC 12V by Adapter

3.2 Technical Specifications

2.4GHz

Antenna Gain:	Ant 1: 3.4dBi (Provided by the manufacturer) Ant 2: 3.3dBi (Provided by the manufacturer) Directional gain:6.36dBi
Serial Number:	G20507980
Firmware Version:	6E22WFR
Antenna Type:	Antenna 1: PCB Antenna
	Antenna 2: PCB 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
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz



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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.

CAB Identifier: CN0072.

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

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 x $10^{-2} f^{0.6834}$ 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 2.4G device, the limit of worse case is 2.68 W

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5 Measurement and Calculation

5.1 Maximum transmit power

Antenna 1 Antenna 2 Antenna 1 Antenna 2 MIMO MIMO Test Mode Channel Power[mW] Power[dBm] Power[dBm] Power[dBm] Power[mW] Power[mW] 11B 2412 16.58 NA 64.71 45.50 N/A 18.11 NA 55.72 N/A 11B 2437 17.46 17.50 56.23 11B 2462 17.47 17.35 NA 55.85 54.33 N/A 11G 2412 17.93 18.13 NA 62.09 65.01 N/A 11G 2437 18.04 17.42 NA 63.68 55.21 N/A 11G 2462 18.19 NA 65.92 54.70 N/A 17.38 2412 15.51 14.77 18.17 35.56 29.99 65.61 11N20MIMO 2437 15.67 14.58 18.17 36.90 28.71 65.61 11N20MIMO 2462 15.58 14.53 18.10 36.14 28.38 64.57 11N20MIMO

The Power Data is based on the RF Test Report SHEM210700793801



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5.2 MPE Calculation

According to the formula S=P/4 π R², 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

For 2.4G WiFi - Antenna1:

The max. an	tenna gain is	3.4	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
65.92	2.188	20	0.02869	1	Pass

For 2.4G WiFi - Antenna2:

The max. an	tenna gain is	3.3	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
65.01	2.138	20	0.02765	1	Pass

In MIMO mode:

The max. a	ntenna gain is	6.36	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
65.61	4.325	20	0.05645	1	Pass

according to the KDB447498 section 7.2 determine the device is exclusion from SAR test

For IC:

For 2.4GHz WiFi SISO mode:

Antenna 1:E.I.R.P.= P*G= 0.06592×2.188 =0.1442W<2.68W

Antenna 2:E.I.R.P.= P*G= 0.06501×2.138=0.1390W<2.68W

For 2.4GHz WiFi MIMO mode: E.I.R.P.= P*G= 0.06561×4.325=0.2838W<2.68W

So the device is exclusion from SAR test.

--End of the Report--



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