

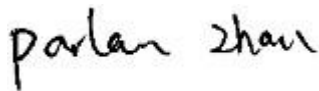
1 Cover Page

RF MPE REPORT

Application No.: SHEM2107008419CR
FCC ID: 2APV2-CSW5S
Applicant: Hangzhou Ezviz Software Co., Ltd.
Address of Applicant: Room 302,Unit B,Building 2,399 Danfeng Road,Binjiang District,Hangzhou,Zhejiang
Manufacturer: Hangzhou Ezviz Software Co., Ltd.
Address of Manufacturer: Room 302,Unit B,Building 2,399 Danfeng Road,Binjiang District,Hangzhou,Zhejiang
Equipment Under Test (EUT):
EUT Name: Wireless Access Point
Model No.: CS-W5S
Add Model No.: CS-W5S (A0-MT1200GP)
 CS-W5S-A0-MT1200GP
Trade mark: EZVIZ
Standard(s) : FCC Rules 47 CFR §2.1091
 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt: 2021-07-29
Date of Test: 2021-08-12 to 2021-08-31
Date of Issue: 2021-09-01

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Parlam Zhan
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	Description	Date	Remark
00	Original	2021-09-01	/

Authorized for issue by:			
		<i>Michael Niu</i>	

		Micheal Niu / Project Engineer	
		<i>Parlam Zhan</i>	

		Parlam Zhan / Reviewer	



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SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center E1101 (201612)

NO.588 West Jindu Road, Songjiang District, Shanghai, China 201612
中国·上海·松江区金都西路588号 邮编: 201612

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3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 12V,1.5A,18W Max by Adapter or POE DC(802.3af,48V),375mA,Max.
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3.2 Technical Specifications

2.4G WiFi

Antenna Gain:	Ant 1:2.7dBi; (Provided by manufacturer) Ant 2:2.7dBi(Provided by manufacturer) Directional gain:5.71dBi
Antenna Type:	Antenna 1: TIN-COATED COPPER Antenna Antenna 2: TIN-COATED COPPER 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



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5G WiFi

Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
	U-NII-1	802.11a/n(HT20)/ac(VHT20)	5180-5240	4
		802.11n(HT40)/ac(VHT40)	5190-5230	2
		802.11ac(VHT80)	5210	1
	U-NII-3	802.11a/n(HT20)/ac(VHT20)	5745-5825	5
		802.11n(HT40)/ac(VHT40)	5755-5795	2
		802.11ac(VHT80)	5775	1
Modulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)			
Channel Spacing:	802.11a/n(HT20)/ac(VHT20): 20MHz 802.11n(HT40)/ac(VHT40): 40MHz 802.11ac(VHT80): 80MHz			
Data Rate:	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: MCS0-7 802.11ac: MCS0-9			
Antenna Gain:	Ant 1:3.4dBi;(Provided by manufacturer) Ant 2:3.4dBi(Provided by manufacturer) Directional gain:6.41dBi			
Antenna Type:	Antenna 1: TIN-COATED COPPER Antenna Antenna 2: TIN-COATED COPPER Antenna			



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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.

Company Number: 2324E

• **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



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5 Measurement and Calculation

5.1 Maximum transmit power

2.4GHz for FCC

The Power Data is based on the RF Test Report SHEM210700841901-2.4GHz

Test Mode	Channel	Antenna 1 Power[dBm]	Antenna 2 Power[dBm]	MIMO Power[dBm]	Antenna 1 Power[mW]	Antenna 2 Power[mW]	MIMO Power[mW]
11B	2412	17.12	17.09	NA	51.52	51.17	N/A
11B	2437	17.84	17.52	NA	60.81	56.49	N/A
11B	2462	17.60	17.37	NA	57.54	54.58	N/A
11G	2412	17.79	17.51	NA	60.12	56.36	N/A
11G	2437	17.45	17.18	NA	55.59	52.24	N/A
11G	2462	18.14	18.00	NA	65.16	63.10	N/A
11N20MIMO	2412	15.78	14.59	18.24	37.84	28.77	66.68
11N20MIMO	2437	15.53	14.18	17.92	35.73	26.18	61.94
11N20MIMO	2462	15.10	14.25	17.71	32.36	26.61	59.02
11N40MIMO	2422	15.09	13.81	17.51	32.28	24.04	56.36
11N40MIMO	2437	14.86	14.54	17.71	30.62	28.44	59.02
11N40MIMO	2452	14.62	14.56	17.60	28.97	28.58	57.54



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5GHz for FCC

The Power Data is based on the RF Test Report SHEM210700841902-5GHz

Test Mode	Test Channel	Antenna 1 Power[dBm]	Antenna 2 Power[dBm]	MIMO Power[dBm]	Antenna 1 Power[mW]	Antenna 2 Power[mW]	MIMO Power[mW]
802.11a	5180	16.82	16.49	/	48.08	44.57	NA
	5200	17.08	16.21	/	51.05	41.78	NA
	5240	17.24	15.30	/	52.97	33.88	NA
	5745	17.00	16.81	/	50.12	47.97	NA
	5785	16.55	16.43	/	45.19	43.95	NA
	5825	16.56	16.22	/	45.29	41.88	NA
802.11n(HT20)	5180	14.19	14.43	17.32	26.24	27.73	53.95
	5200	14.35	14.16	17.27	27.23	26.06	53.33
	5240	14.57	13.02	16.87	28.64	20.04	48.64
	5745	12.87	15.81	17.59	19.36	38.11	57.41
	5785	12.27	15.36	17.09	16.87	34.36	51.17
	5825	11.56	15.05	16.66	14.32	31.99	46.34
802.11n(HT40)	5190	14.67	14.55	17.62	29.31	28.51	57.81
	5230	14.93	13.64	17.34	31.12	23.12	54.20
	5755	14.02	15.28	17.71	25.23	33.73	59.02
	5795	13.19	14.80	17.08	20.84	30.20	51.05
802.11ac(VHT20)	5180	14.72	14.42	17.58	29.65	27.67	57.28
	5200	14.88	14.19	17.56	30.76	26.24	57.02
	5240	14.99	13.05	17.14	31.55	20.18	51.76
	5745	14.74	14.86	17.81	29.79	30.62	60.39
	5785	14.31	14.31	17.32	26.98	26.98	53.95
	5825	14.38	14.08	17.24	27.42	25.59	52.97
802.11ac(VHT40)	5190	14.58	14.58	17.59	28.71	28.71	57.41
	5230	13.54	13.57	16.57	22.59	22.75	45.39
	5755	15.04	15.09	18.08	31.92	32.28	64.27
	5795	14.61	14.61	17.62	28.91	28.91	57.81
802.11ac(VHT80)	5210	14.41	14.21	17.32	27.61	26.36	53.95
	5775	13.84	14.95	17.44	24.21	31.26	55.46



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5.2 MPE Calculation

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

For 2.4G WiFi –Antenna1:

The max. antenna gain is 2.7 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
65.16	1.862	20	0.02414	1	Pass

For 2.4G WiFi –Antenna2:

The max. antenna gain is 2.7 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
63.1	1.862	20	0.02338	1	Pass

In MIMO mode:

The max. antenna gain is 5.71 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
66.68	3.724	20	0.04940	1	Pass



For 5G WiFi–Antenna1:

The max. antenna 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
52.97	2.188	20	0.02305	1	Pass

For 5G WiFi–Antenna2:

The max. antenna 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
47.97	2.188	20	0.02088	1	Pass

In MIMO mode:

The max. antenna gain is 6.41 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
64.27	4.375	20	0.05594	1	Pass

2.4G WiFi and 5G WiFi modules can simultaneous transmitting, so the maximum rate of MPE is $0.04940/1.0+0.05594/1.0=0.11 \leq 1.0$. according to the KDB447498 section 7.2 determine the device is exclusion from SAR test

--End of the Report--



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