



1 Cover Page

RF MPE REPORT

Application No.: SHEM2010009105CR
FCC ID: 2ADTD-DS2DE2204IW
IC : 20199-DS2DE2204IW
Applicant: Hangzhou Hikvision Digital Technology Co., Ltd
Address of Applicant: No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Manufacturer: Hangzhou Hikvision Digital Technology Co.,Ltd
Address of Manufacturer: No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Factory: 1.Hangzhou Hikvision Technology Co., Ltd.
 2.Hangzhou Hikvision Electronics Co., Ltd.
 3.Chongqing Hikvision technology 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.No.118,Haikang Road,Area C,Jianqiao Industrial Park,Dadukou District,Chongqing,401325,China

Equipment Under Test (EUT):
EUT Name: MINI PTZ CAMERA
Model No.: DS-2DE2204IW-DE3/W S5,DS-2DE2402IW-DE3/W,DS-2DE2402IW-DE3/W-UHK,DS-2DE2402IW-DE3/W-CKV,DS-2DE2402IW-DE3/W-HUN,DS-2DE2402IW-DE3/W-KVO, DS-2DE2402IW-DE3/W-UVS,DS-2DE2204IW-DE3/W,DS-2DE2204IW-DE3/W-UHK,DS-2DE2204IW-DE3/W-CKV,DS-2DE2204IW-DE3/W-HUN, DS-2DE2204IW-DE3/W-KVO, DS-2DE2204IW-DE3/W-UVS,DS-2DE2ABCDE-UVW/XYZ

Standard(s) : FCC Rules 47 CFR §2.1091
 KDB447498 D01 General RF Exposure Guidance v06
 RSS-102 Issue 5 (March 2015)

Date of Receipt: 2020-10-29
Date of Test: 2020-11-04 to 2020-11-09
Date of Issue: 2020-11-10

Test Result:	Pass*
---------------------	--------------

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

Parlan Zhan

Parlan 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.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.


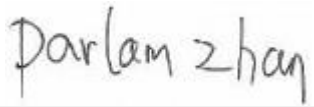
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com



For IC Model No: DS-2DE2204IW-DE3/W S5



Revision Record			
Version	Description	Date	Remark
00	Original	2020-11-10	/

Authorized for issue by:			
			
		<hr/>	
		Micheal Niu / Project Engineer	
			
		<hr/>	
		Parlam Zhan / Reviewer	



2 Contents

	Page
1 COVER PAGE.....	1
2 CONTENTS	4
3 GENERAL INFORMATION	5
3.1 GENERAL DESCRIPTION OF E.U.T.	5
3.2 TECHNICAL SPECIFICATIONS	5
3.3 TEST LOCATION	6
3.4 TEST FACILITY.....	6
4 TEST STANDARDS AND LIMITS	7
4.1 FCC RADIOFREQUENCY RADIATION EXPOSURE LIMITS:	7
4.2 IC RADIOFREQUENCY RADIATION EXPOSURE LIMITS:	7
5 MEASUREMENT AND CALCULATION	8
5.1 MAXIMUM TRANSMIT POWER	8
5.2 MPE CALCULATION	9



3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 12V by adapter or POE (802.3at) 42.5-57V
Serial Number:	E20189D0
Firmware Version:	V1.2021

3.2 Technical Specifications

2.4GHz

Antenna Gain:	ANT 1:1.28dBi (Provided by the manufacturer), ANT 2:1.28dBi (Provided by the manufacturer) Directional gain:4.29dBi
Antenna Type:	Antenna 1: Ceramic antenna Antenna 2: Ceramic 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:

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-1600, C-1707, T-1499, G-10216 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

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 2.4G device, 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 SHEM201000910501

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	17.50	16.93	NA	56.23	49.32	N/A
11B	2437	18.20	17.10	NA	66.07	51.29	N/A
11B	2462	17.86	17.47	NA	61.09	55.85	N/A
11G	2412	17.98	16.33	NA	62.81	42.95	N/A
11G	2437	18.60	17.48	NA	72.44	55.98	N/A
11G	2462	17.86	17.86	NA	61.09	61.09	N/A
11N20MIMO	2412	15.09	15.00	18.06	32.28	31.62	63.97
11N20MIMO	2437	15.68	15.28	18.49	36.98	33.73	70.63
11N20MIMO	2462	15.65	15.89	18.78	36.73	38.82	75.51
11N40MIMO	2422	15.88	15.46	18.69	38.73	35.16	73.96
11N40MIMO	2437	15.67	15.13	18.42	36.90	32.58	69.50
11N40MIMO	2452	15.71	15.26	18.50	37.24	33.57	70.79

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 1.28 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
72.44	1.343	20	0.01935	1	Pass

For 2.4G WiFi –Antenna2:

The max. antenna gain is 1.28 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
61.09	1.343	20	0.01632	1	Pass

In MIMO mode:

The max. antenna gain is 4.29 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
75.51	2.685	20	0.04034	1	Pass

2.4G WiFi modules can simultaneous transmitting, so the maximum rate of MPE is $0.04034/1.0=0.04\leq 1.0$. 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.= $P \times G = 0.07244 \times 1.343 = 0.097W < 2.68W$

Antenna 2:E.I.R.P.= $P \times G = 0.06109 \times 1.343 = 0.082W < 2.68W$

For 2.4GHz WiFi MIMO mode: E.I.R.P.= $P \times G = 0.07551 \times 2.685 = 0.20W < 2.68W$

So the device is exclusion from SAR test

--End of the Report--