

1 Cover Page

RF Exposure Evaluation Report

Application No.: SHEM1901010170CR
FCC ID: 2ADTD-5604SD
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.
 4, Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Factory: 1, No.700,Dongliu Road, Binjiang District, Hangzhou City,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.
 4, No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Equipment Under Test (EUT):
EUT Name: Digital Video Recorder
Model No.: DS-MP3504-SD, DS-MP5604-SD, DS-MP3504-SD/GW, DS-MP5604-SD/GW, DS-MP3504-SD/GW/WI, DS-MP5604-SD/GW/WI, DS-MP5604-SD/GW/WI58, DS-MP3504-SD/GLF, DS-MP5604-SD/GLF, DS-MP3504-SD/GLF/WI, DS-MP5604-SD/GLF/WI, DS-MP5604-SD/GLF/WI58, DS-MP5XXX-SD/YY/ZZ, DS-MP5604-SDUHK, DS-MP5604-SDCKV, DS-MP5604-SDUVS, DS-MP5604-SDKVO, DS-MP5604-SDHUN
 ✖ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade mark: HIKVISION
Standard(s) : FCC Rules 47 CFR §2.1091
 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt: 2019-01-09
Date of Test: 2019-02-20 to 2019-02-23
Date of Issue: 2019-02-23

Test Result:	Pass*
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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.



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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

**SGS-CSTC Standards
Technical Services Co., Ltd.**

Report No.:
Page 2 of 10

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



Revision Record			
Version	Description	Date	Remark
00	Original	2019-02-23	/

Authorized for issue by:			
			
		<hr/>	
		Bill Wu / Project Engineer	
			
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		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
3.1 DETAILS OF E.U.T.	5
3.2 TEST LOCATION	5
3.3 TEST FACILITY.....	6
4 TEST STANDARDS AND LIMITS.....	7
4.1 FCC RADIOFREQUENCY RADIATION EXPOSURE LIMITS:	7
5 MEASUREMENT AND CALCULATION.....	7
5.1 MAXIMUM TRANSMIT POWER.....	7
5.2 MPE CALCULATION.....	9

3 General Information

3.1 General Description of E.U.T.

Power supply: DC 9-32V
 Test voltage: DC 12V

3.1 Details of E.U.T.

2.4G WiFi

Antenna Gain: 3dBi
 Antenna Type: Dipole 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

5G WiFi

Antenna Gain: 3dBi
 Antenna Type: Dipole Antenna

Operation Frequency	Band	Mode	Frequency Range(MHz)	Number of channels
	Band 3	802.11a/n(HT20)/ac(HT20)	5745-5825	5
		802.11n(HT40)/ac(HT40)	5755-5795	2
		802.11ac(HT80)	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(HT20): 20MHz 802.11n(HT40)/ac(HT40): 40MHz 802.11ac(HT80): 80MHz			

3.2 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

3.3 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 ²)	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 SHEM190101017001 & SHEM190101017002

2.4G WiFi

Test Mode	Test Channel	Ant	Power [dBm]	Power [mW]
11B	2412	Ant1	13.38	21.78
11B	2437	Ant1	13.50	22.39
11B	2462	Ant1	13.68	23.33
11G	2412	Ant1	11.72	14.86
11G	2437	Ant1	12.51	17.82
11G	2462	Ant1	12.70	18.62
11N20SISO	2412	Ant1	11.86	15.35
11N20SISO	2437	Ant1	12.96	19.77
11N20SISO	2462	Ant1	13.21	20.94
11N40SISO	2422	Ant1	9.87	9.71
11N40SISO	2437	Ant1	10.29	10.69
11N40SISO	2452	Ant1	10.51	11.25



5.8G WiFi

Test Mode	Test Channel	Ant	Power [dBm]	Power [mW]
11A	5745	Ant1	13.55	22.65
11A	5785	Ant1	13.49	22.34
11A	5825	Ant1	14.13	25.88
11N20	5745	Ant1	12.05	16.03
11N20	5785	Ant1	12.15	16.41
11N20	5825	Ant1	12.86	19.32
11N40	5755	Ant1	11.41	13.84
11N40	5795	Ant1	11.87	15.38
11AC20	5745	Ant1	11.93	15.60
11AC20	5785	Ant1	11.9	15.49
11AC20	5825	Ant1	12.68	18.54
11AC40	5755	Ant1	11.24	13.30
11AC40	5795	Ant1	11.81	15.17
11AC80	5775	Ant1	10.66	11.64

The power of 3G band & 4G band base on the FCC Certificate module of UC20(3G): FCC ID: XMR201510UC20 and the module of UC25(4G): FCC ID:XMR201805EC25AU.

5.2 MPE Calculation

For WiFi

The Max Conducted Peak Output Power is 25.88mW;

Based on original module grantee,

For module (UC20):

850band: the max output power is 0.1795W;

1900band: the max output power is 0.2415W.

For module (EC25):

850 band: the max output power is 1.25W;

1900 band: the max output power is 0.778W;

1750 band: the max output power is 0.308W.

2500 band: the max output power is 0.614W.

The best case antenna gain for WiFi band is 3dBi. the logarithmic terms convert to numeric result is nearly 2.00;

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/cm²

For WiFi:

$$S = \frac{PG}{4R^2\pi} = \frac{25.88 \times 2.00}{4 \times 400 \times 3.14} = 0.01 \text{ mW/cm}^2$$

For module (UC20):

$$850 \text{ band: } S = \frac{PG}{4R^2\pi} = \frac{179.5}{4 \times 400 \times 3.14} = 0.036 \text{ mW/cm}^2$$

$$1900 \text{ band: } S = \frac{PG}{4R^2\pi} = \frac{241.5}{4 \times 400 \times 3.14} = 0.048 \text{ mW/cm}^2$$

For module (UC25):

$$850 \text{ band: } S = \frac{PG}{4R^2\pi} = \frac{1250}{4 \times 400 \times 3.14} = 0.249 \text{ mW/cm}^2$$

$$1900 \text{ band: } S = \frac{PG}{4R^2\pi} = \frac{778}{4 \times 400 \times 3.14} = 0.155 \text{ mW/cm}^2$$

$$1750 \text{ band: } S = \frac{PG}{4R^2\pi} = \frac{308}{4 \times 400 \times 3.14} = 0.061 \text{ mW/cm}^2$$



$$2500 \text{ band: } S = \frac{PG}{4R^2\pi} = \frac{614}{4 \times 400 \times 3.14} = 0.122 \text{ mW/cm}^2$$

Module(UC20) and WiFi module can simultaneous transmitting, so the maximum rate of MPE is,

$$\text{For 850 band: } \frac{0.01}{1} + \frac{0.036}{0.55} = 0.075 \leq 1.0.$$

$$\text{For 1900 band: } \frac{0.01}{1} + \frac{0.048}{1} = 0.058 \leq 1.0.$$

Module(UC25) and WiFi module can simultaneous transmitting, so the maximum rate of MPE is,

$$\text{For 850 band: } \frac{0.01}{1} + \frac{0.249}{0.55} = 0.463 \leq 1.0.$$

$$\text{For 1900 band: } \frac{0.01}{1} + \frac{0.155}{1} = 0.165 \leq 1.0.$$

$$\text{For 1700 band: } \frac{0.01}{1} + \frac{0.061}{1} = 0.071 \leq 1.0.$$

$$\text{For 2500 band: } \frac{0.01}{1} + \frac{0.122}{1} = 0.132 \leq 1.0.$$

So the device is exclusion from SAR test.

--End of the Report--