

1 Cover Page

RF Exposure Evaluation Report

Application No.:	SHEM1505001361CR
Applicant:	Hangzhou Hikvision Digital Technology Co., Ltd.
FCC ID:	2ADTD-IPC2F
IC:	20199-IPC2F
Equipment Under Test (EUT):	
NOTE: The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	IP Camera
Model No.(EUT):	DS-2CD2F42FWD-IWS
Add Model No.:	DS-2CD2F12F-IZW, DS-2CD2F12F-IZWS, DS-2CD2F22FWD-IW, DS-2CD2F22FWD-IWS, DS-2CD2F42FWD-IW, DS-2CD2F52F-IW, DS-2CD2F52F-IWS
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06 RSS-102 Issue 5 (March 2015)
Date of Receipt:	May 13, 2015
Date of Test:	December 18, 2015 to December 20, 2015
Date of Issue:	January 22, 2016
Test Result:	Pass*

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.



Parlam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.

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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	January 22, 2016	/	Original

Authorized for issue by:			
Engineer		Eddy Zong	 _____ _____ _____
Clerk		Susie Liu	 _____ _____
Reviewer		Keny Xu	 _____ _____

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4 General Information

4.1 Client Information

Applicant:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Applicant:	700 Dongliu Road, Binjiang, Hangzhou, 310052 Zhejiang, China
Manufacturer:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Manufacturer:	700 Dongliu Road, Binjiang, Hangzhou, 310052 Zhejiang, China
Factory:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Factory:	700 Dongliu Road, Binjiang, Hangzhou, 310052 Zhejiang, China

4.2 General Description of E.U.T.

Brand Name:	HIKVISION
Product Description:	Fixed product with WiFi function
Rated Input:	DC 12V, 0.5A or PoE 0.15A Via adapter

4.1 Technical Specifications

Operation Frequency:	802.11b/g/n20: 2412MHz~2462MHz 802.11n40: 2422MHz~2452MHz
Modulation Technique:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n20/n40: OFDM(64QAM, 16QAM, QPSK, BPSK)
Data Rate:	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n20: 13/26/39/52/78/104/117/135Mbps 802.11n40: 27/54/81/108/162/216/243/270Mbps
Number of Channel:	802.11b/g/n20: 11 802.11n40: 7
Antenna Type:	Integral
Antenna Gain:	2.4 dBi

4.2 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
No.588 West Jindu Road, Songjiang District, Shanghai, China.201612.
Tel: +86 21 6191 5666
Fax: +86 21 6191 5678

4.3 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. Date of expiry: 2017-07-14.

- FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2017-09-16.

- 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. Expiry Date: 2017-06-18.

- 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-3868, C-4336, T-2221, G-830 respectively. Date of Expiry: 2017-11-16.

5 Test Standards and Limits

5.1 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

5.2 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

6 Measurement and Calculation

6.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM150800299001.

Test mode	Test Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11b	2412	13.33	21.53
	2437	13.87	24.38
	2462	14.14	25.94
802.11g	2412	15.16	32.81
	2437	15.59	36.22
	2462	16.05	40.27
802.11 n(HT20)	2412	14.89	30.83
	2437	15.34	34.20
	2462	15.81	38.11
802.11 n(HT40)	2422	15.03	31.84
	2437	15.23	33.34
	2452	15.44	34.99

6.2 MPE Calculation

The Max Conducted Peak Output Power is 40.27mW in lowest channel;

The best case gain of the antenna is 2.4dBi. 2.4dB logarithmic terms convert to numeric result is nearly 1.738

For FCC:

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

$$S = \frac{PG}{4R^2\pi} = \frac{40.27 \times 1.738}{4 \times 400 \times 3.14} = 0.0139 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

For IC:

$$E.I.R.P. = P \times G = 0.04027 \times 1.738 = 0.0699 \text{ W} < 1 \text{ W}$$

So the device is exclusion from SAR test.

7 EUT Constructional Details

Refer to the < DS-2CD2F42FWD-IWS_External Photos > & < DS-2CD2F42FWD-IWS_Internal Photos >.

--End of the Report--