



## 1 Cover Page

# RF Exposure Evaluation Report

**Application No.:** SHEM1904012423CR  
**FCC ID:** 2ADTD-KB8103WIP  
**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. 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. 555 Qianmo Road, Binjiang District, Hangzhou 310052, China  
**Equipment Under Test (EUT):**  
**EUT Name:** Doorbell Camera  
**Model No.:** DS-KB8103-WIP  
**Add Model No.:** DS-KB8103-WIPUHK, DS-KB8103-WIPCKV, DS-KB8103-WIPUVS, DS-KB8103-WIPKVO, DS-KB8103-WIPHUN  
**Standard(s) :** FCC Rules 47 CFR §2.1091  
KDB447498 D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2019-04-17  
**Date of Test:** 2019-04-17 to 2019-04-22  
**Date of Issue:** 2019-05-06

<b>Test Result:</b>	<b>Pass*</b>
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\* 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.



SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.  
Testing Center EMC Laboratory

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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**

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Revision Record			
Version	Description	Date	Remark
00	Original	2019-05-06	/

Authorized for issue by:				
		Vincent Zhu		
		Vincent Zhu /Project Engineer		
		Parlam Zhan		
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### 3 General Information

#### 3.1 General Description of E.U.T.

Power supply:	16~24V AC or POE(36-57V)
Test voltage:	AC 120V 60Hz for POE & AC 24V

#### 2.4G WiFi

Antenna Gain	5.1 dBi
Antenna Type	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):11 802.11n(HT40):7
Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz 802.11n(HT40): 2422MHz to 2452MHz

#### 5.8G WiFi

Antenna Gain	2.9 dBi
Antenna Type	PCB Antenna
Operation Frequency:	802.11a/n(HT20)/ac(HT20): 5745MHz-5825MHz 802.11n(HT40)/ac(HT40): 5755MHz-5795MHz 802.11ac(HT80): 5775MHz
Modulation Technique:	OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK) Remark: 256QAM for 802.11 ac only
Data Rate:	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: MCS0-7 802.11ac: MCS0-9
Number of Channel:	802.11 a/n(HT20)/ac(HT20): 5 Channel 149, 153, 157, 161, 165 802.11 n(HT40)/ac(HT40): 2 Channel 151, 159 802.11 ac(HT80): 1 Channel 155



### 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.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

IC Registration No.: 8617A-1. CAB identifier: CN0020.

- **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 <sup>2</sup> )	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 SHEM190401242301 & SHEM190401242302

2.4G WiFi

Test Mode	Test Channel	Power [dBm]	Power [mW]
11B	2412	14.48	28.05
11B	2437	14.80	<b>30.20</b>
11B	2462	14.78	30.06
11G	2412	13.61	22.96
11G	2437	14.08	25.59
11G	2462	14.12	25.82
11N20SISO	2412	12.20	16.60
11N20SISO	2437	12.46	17.62
11N20SISO	2462	12.62	18.28
11N40SISO	2422	11.21	13.21
11N40SISO	2437	11.52	14.19
11N40SISO	2452	11.57	14.35



5G WiFi

Test Mode	Test Channel	Power [dBm]	Power [mW]
11A	5745	8.54	7.14
11A	5785	9.37	<b>8.65</b>
11A	5825	9.03	8.00
11N20	5745	7.11	5.14
11N20	5785	7.9	6.17
11N20	5825	7.71	5.90
11N40	5755	6.3	4.27
11N40	5795	7.31	5.38
11AC20	5745	6.39	4.36
11AC20	5785	7.1	5.13
11AC20	5825	6.88	4.88
11AC40	5755	6.41	4.38
11AC40	5795	7.29	5.36
11AC80	5775	6.27	4.24

## 5.2 MPE Calculation

For FCC:

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/cm<sup>2</sup>

### 2.4 G WiFi:

The max. antenna gain is		5.1	dBi		
Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
30.2	3.236	20	0.01944	1	Pass

### 5.8G WiFi:

The max. antenna gain is 2.9 dBi

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
8.65	1.950	20	0.00336	1	Pass

2.4GHz WiFi modules & 5.8GHz WiFi modules can simultaneous transmitting, so the maximum rate of MPE is  $0.01944/1+0.00336/1=0.0228<1$

So the device is exclusion from SAR test.

**--End of the Report--**