



1 Cover Page

RF MPE REPORT

Application No.: SHEM1901010489CR
FCC ID: 2ADTD-AEG4
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.
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
Equipment Under Test (EUT):
EUT Name: DashCam
Model No.: AE-DI5042-G4
Add Model No.: AE-DI5002-G4, AE-DI5012-G4, AE-DI5022-G4,
AE-DI5032-G4, AE-DI5052-G4
Trade mark: HIKVISION
Standard(s) : FCC Rules 47 CFR §2.1091
KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt: 2019-01-18
Date of Test: 2019-01-21 to 2019-01-23
Date of Issue: 2019-03-05

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

Parlam Zhan

Parlam 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 (Shanghai) Co., Ltd.
Testing Center E&E

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Revision Record			
Version	Description	Date	Remark
00	Original	2019-03-05	/

Authorized for issue by:				
		Vincent Zhu		
		Vincent Zhu / Project Engineer		
		Parlam Zhan		
		Parlam Zhan /Reviewer		



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3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 12V
Test voltage:	DC 12V
Cable:	DC Cable 2m

3.2 Technical Specifications

BLE

Antenna Gain	0.3dBi
Antenna Type	PIFA Antenna
Channel Spacing	2MHz
Modulation Type	GFSK
Number of Channels	40
Operation Frequency	2402MHz to 2480MHz

2.4G WiFi

Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz
Antenna Gain	0.3dBi
Antenna Type	PIFA 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



3.3 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

No tests were sub-contracted.

3.4 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

For frequency below 1.5G: the limit of worse case is 0.466 mW/cm²

For frequency above 1.5G: the limit of worse case is 1 mW/cm²

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM190101048901 & SHEM190101048902.

Test Mode	Test Frequency (MHz)	Output Power (dBm)	Reading Power (mW)
BLE	2402	5.95	3.94
	2442	7.65	5.82
	2480	8.98	7.91

2.4G WiFi

Test Mode	Test Channel	Power [dBm]	Power [mW]
11B	2412	14.25	26.61
11B	2437	14.59	28.77
11B	2462	14.42	27.67
11G	2412	13.79	23.93
11G	2437	14.18	26.18
11G	2462	14.03	25.29
11N20SISO	2412	12.95	19.72
11N20SISO	2437	13.29	21.33
11N20SISO	2462	13.16	20.70

The power of 4G band base on the FCC certified module of N720: FCC ID: PJ7-1705.

5.2 MPE Calculation

For FCC:

According to the formula $S = \frac{PG}{4R^2\pi}$, we can calculate S which is MPE.

Note:

- 1) P (Watts) = Power Input to antenna = $10^{\frac{dBm}{10}} / 1000$
- 2) G (Antenna gain in numeric) = $10^{(Antenna\ gain\ in\ dBi / 10)}$
- 3) R = distance to the center of radiation of antenna (in meter) = 20cm
- 4) MPE limit = 1mW/cm²

For BLE

The Max Conducted Output Power is 7.91mW

The best case gain of the antenna is 0.3dBi. 0.3dB logarithmic terms convert to numeric result is nearly 1.07

$$S = \frac{PG}{4R^2\pi} = \frac{7.91 \times 1.07}{4 \times 400 \times 3.14} = 0.002 \text{ mW/cm}^2$$

For 2.4G WiFi

The Max Conducted Output Power is 28.77mW

The best case gain of the antenna is 0.3dBi. 0.3dB logarithmic terms convert to numeric result is nearly 1.07.

$$S = \frac{PG}{4R^2\pi} = \frac{28.77 \times 1.07}{4 \times 400 \times 3.14} = 0.006 \text{ mW/cm}^2$$

For 4G module:

For frequency below 1.5G:

The max conducted output power is 1786.50 mW.

$$\text{So, } S = \frac{1786.50}{4 \times \pi \times 20^2} = 0.356 \text{ mW/cm}^2 < 0.466 \text{ mW/cm}^2$$

For frequency above 1.5G:

The max conducted output power is 1191.20 mW.

$$\text{So, } S = \frac{1191.20}{4 \times \pi \times 20^2} = 0.237 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

The BT & DTS modules and 4G module below 1.5G can simultaneous transmitting.

So the maximum rate of MPE is

$$0.002/1 + 0.006/1 + 0.356/0.466 = 0.772 \leq 1.0$$

The BT & DTS modules and 4G module above 1.5G can simultaneous transmitting.

So the maximum rate of MPE is

$$0.002/1 + 0.006/1 + 0.237/1 = 0.245 \leq 1.0$$

according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

--End of the Report--