



1 Cover Page

RF Exposure Evaluation Report

Application No.: SHEM2010008914CR
FCC ID: 2ADTD-CP03009601211
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: Hangzhou Hikvision Electronics Co.,Ltd.
Address of Factory: No.299,Qiushi Road,Tonglu Economic Development Zone,Tonglu County, Hangzhou,Zhejiang,310052,China

Equipment Under Test (EUT):

EUT Name: AX PRO
Model No.: DS-PWA96-M-WB,DS-PWA96-M-WBUHK, DS-PWA96-M-WBCKV,DS-PWA96-M-WBUVS,DS-PWA96-M-WBKVO,DS-PWA96-M-WBHUN,DS-PWA48-E-WB, DS-PWA48-E-WBUHK,DS-PWA48-E-WBCKV,DS-PWA48-E-WBUVS,DS-PWA48-E-WBKVO,DS-PWA48-E-WBHUN

Standard(s) : FCC Rules 47 CFR §2.1091
 KDB447498 D01 General RF Exposure Guidance v06

Date of Receipt: 2020-11-05
Date of Test: 2020-11-05 to 2020-12-03
Date of Issue: 2020-12-04

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

Parlan 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.

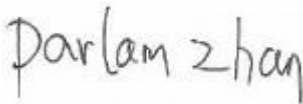


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Revision Record			
Version	Description	Date	Remark
00	Original	2020-12-04	/

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



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3 General Information

3.1 General Description of E.U.T.

Power supply:	AC 100-240V~50/60Hz,0.2A-0.09A
Battery information:	Model: 765965 Nominal Voltage:3.8V Capacity: 4520mAh

3.2 Technical Specifications

2.4G WiFi

Antenna Gain	Antenna 1: 2.43dBi Antenna 2: 2.36dBi
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

13.56MHz:

Antenna Type	Loop antenna
Modulation Type	ASK
Number of Channels	1
Operation Frequency	13.56MHz

433MHz

Modulation Type	2GFSK
Number of Channels	1
Operation Frequency	433.10MHz
Antenna Type	Antenna1: Spiral Antenna Antenna2: Spiral Antenna

Modulation Type	2GFSK
Number of Channels	1
Operation Frequency	434.60MHz
Antenna Type	Antenna1: Spiral Antenna Antenna2: Spiral Antenna



GSM

GSM Operation Frequency Band:	GSM 850/1900
Modulation Type:	GMSK, 8PSK
Antenna Type:	PIFA
Antenna Gain:	GSM 850: 0.91dBi GSM 1900: 1.87dBi

WCDMA

UMTS Operation Frequency Band:	Band2/5
Modulation Type:	QPSK,BPSK
Antenna Type:	PIFA
Antenna Gain:	Band 2: 1.87dBi Band 5: 0.91dBi

LTE

LTE Operation Frequency Band:	Band2/4/5/28/66
Modulation Type:	QPSK, 16QAM
Antenna Type:	PIFA
Antenna Gain:	Band 2: 1.87dBi Band 4: 3.12dBi Band 5: 0.91dBi Band 28: 0.95dBi Band 66: 3.12dBi

3.3 Test Location

All tests were performed at:

All measurement facilities used to collect the measurement data are located at

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

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. Test Firm Registration Number: 995260.

- Industry Canada (IC) – IC Assigned Code: 2324E

The 10m and 3m Semi-anechoic chamber of Compliance Certification Services (Kunshan) Inc. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 2324E-1 for 10m chamber, 2324E-2 for 3m chamber.

- 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 range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM201000891401

2.4G WiFi

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	17.47	17.18	NA	55.85	52.24	N/A
11B	2437	17.26	16.94	NA	53.21	49.43	N/A
11B	2462	17.33	17.56	NA	54.08	57.02	N/A
11G	2412	17.84	18.24	NA	60.81	66.68	N/A
11G	2437	17.56	17.92	NA	57.02	61.94	N/A
11G	2462	17.49	17.45	NA	56.10	55.59	N/A
11N20SISO	2412	14.70	15.43	18.09	29.51	34.91	64.42
11N20SISO	2437	15.28	14.49	17.91	33.73	28.12	61.80
11N20SISO	2462	15.99	15.08	18.57	39.72	32.21	71.94
11N40SISO	2422	13.75	13.33	16.56	23.71	21.53	45.29
11N40SISO	2437	14.33	13.71	17.04	27.10	23.50	50.58
11N40SISO	2452	14.30	13.85	17.09	26.92	24.27	51.17

The power of GSM,WCDMA,LTE base on the module report "B19W50074-WWAN_Rev3", and the FCC certificate module of SIM7600SA-H:FCC ID: 2AJYU-8PYA002.

GSM,WCDMA,LTE

Frequency Band	Highest Averaged Power Output(dBm)	Highest Frame-Averaged Output Power (dBm)	Highest Frame-Averaged Output Power (mW)	Antenna Gain(dBi)
GSM 850	35	25.97	395.37	0.91
GSM 1900	32	22.97	198.15	1.87
GPRS 850 4TS	35	31.99	1581.25	0.91
GPRS 1900 4TS	32	28.99	792.50	1.87
WCDMA Band2	25	25	316.23	1.87
WCDMA Band5	25	25	316.23	0.91
LTE Band2	25.7	25.7	371.54	1.87
LTE Band4	25.7	25.7	371.54	3.12
LTE Band5	25.7	25.7	371.54	0.91
LTE Band28	25.7	25.7	371.54	0.95
LTE Band66	25.7	25.7	371.54	3.12

Notes:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

2) According to the conducted power as above, the measurements are performed with 1Txslots for 850MHz and 1900MHz.

5.2 MPE Calculation

For WiFi:

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

The max. antenna gain is 5.41 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
71.94	3.475	20	0.04974	1	Pass

For GSM,WCDMA,LTE

Frequency range	Power(mW)	Gain in Linear scale G	Result(mW/cm ²)	Limit(mW/cm ²)	Result
GSM 850	395.37	1.23	0.097	0.55	Pass
GSM 1900	198.15	1.54	0.061	1.0	Pass
GSM 850 4TS	1581.25	1.23	0.388	0.55	Pass
GSM 1900 4TS	792.50	1.54	0.194	1.0	Pass
WCDMA Band 2	316.23	1.54	0.097	1.0	Pass
WCDMA Band 5	316.23	1.23	0.078	0.55	Pass
LTE Band 2	371.54	1.54	0.114	1.0	Pass
LTE Band 4	371.54	2.05	0.152	1.0	Pass
LTE Band 5	371.54	1.23	0.091	0.55	Pass
LTE Band 28	371.54	1.24	0.092	0.47	Pass
LTE Band 66	371.54	2.05	0.152	1.0	Pass

The 2.4G & GSM function can simultaneous transmitting.so the maximum rate of MPE is $0.05/1.0+0.388/0.55=0.76\leq 1.0$.

The 2.4G & WCDMA function can simultaneous transmitting.so the maximum rate of MPE is $0.05/1.0+0.078/0.55=0.192\leq 1.0$.

The 2.4G & LTE function can simultaneous transmitting.so the maximum rate of MPE is $0.05/1.0+0.092/0.47=0.246\leq 1.0$.

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

--End of the Report--