1 Cover Page

RF Exposure Evaluation Report

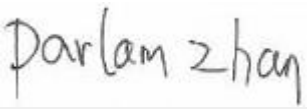
Application No.:	SHEM2006004902CR
FCC ID:	2ADTD-CP03006402211
Applicant:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Applicant:	No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Manufacturer:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Manufacturer:	Hangzhou Hikvision Digital Technology Co., Ltd.
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-PWA64-L-WB
Add Model No.:	DS-PWA64-L-WBUHK, DS-PWA64-L-WBCKV, DS-PWA64-L-WBUVS, DS-PWA64-L-WBKVO, DS-PWA64-L-WBHUN
Standard(s) :	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt:	2020-06-18
Date of Test:	2020-07-08 to 2020-07-14
Date of Issue:	2020-07-15
Test Result:	**Pass***

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

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.

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2020-07-15	/

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

2 Contents

3 General Information

3.1 General Description of E.U.T.

Power supply:	AC100-240V 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 Directional gain: 5.41dBi
Antenna Type:	Antenna 1: PCB Antenna Antenna 2: 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

433MHz

Modulation Type	2GFSK
Number of Channels	2
Operation Frequency	R2:434.60MHz R3:433.10MHz
Antenna Type	Antenna1: Spring Antenna Antenna2: Spring Antenna

2G Module

Support Band	2GFSK
GPRS Class	12
TX Operation Frequency	GSM 850: 824.2MHz to 848.4MHz PCS 1900: 1850.2MHz to 1909.8MHz
RX Operation Frequency	GSM 850: 869.2MHz to 893.8MHz PCS 1900: 1930.2MHz to 1989.8MHz
Type of Modulation	GMSK for GSM/GPRS
Antenna Gain	2.68dBi

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

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 17025:2017 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.

• NVLAP (LAB CODE: 201034-0)
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

• FCC (Designation Number: CN5033)
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

• ISED (CAB Identifier: CN0020)
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

• 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 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/f2)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

Note:Limit for GSM 850MHz is 0.55 mW/cm^2
Limit for GSM 1900MHz is 1.0 mW/cm^2
Limit for 2.4GHz is 1.0 mW/cm^2

5 Measurement and Calculation

5.1 Maximum transmit power

The 2.4GHz WiFi Power Data is based on the RF Test Report SHEM200600490201

Test Mode	Test Channel	Power [dBm]			Power [mW]		
		Ant1	Ant2	MIMO	Ant1	Ant2	MIMO
11B	2412	13.00	13.13	NA	19.95	20.56	NA
11B	2437	13.55	13.60	NA	22.65	**22.91**	NA
11B	2462	13.72	13.41	NA	**23.55**	21.93	NA
11G	2412	12.15	11.99	NA	16.41	15.81	NA
11G	2437	12.61	12.40	NA	18.24	17.38	NA
11G	2462	12.79	12.25	NA	19.01	16.79	NA
11N20MIMO	2412	11.42	10.87	16.36	13.87	12.22	43.25
11N20MIMO	2437	11.62	11.11	16.71	14.52	12.91	**46.88**
11N20MIMO	2462	11.76	10.91	16.67	15.00	12.33	46.45
11N40MIMO	2422	9.84	9.02	15.04	9.64	7.98	31.92
11N40MIMO	2437	10.23	9.20	15.07	10.54	8.32	32.14
11N40MIMO	2452	10.40	9.13	15.12	10.96	8.18	32.51

The power of 2G band base on RF Test Report UL15820150209FCC041-1 and the FCC Certificate module of SIM800C: FCC ID: UDV-SIM800C

GSM850 Conducted Power（dBm）						
Band	Measured Power(dBm)			Averaged power(dBm)		
Frequency	128	189	251	512	661	810
GPRS(1 Tx slot)	32.85	32.87	32.88	23.82	23.84	23.85
GPRS(2 Tx slot)	31.99	32.02	32.03	25.97	26	26.01
GPRS(3 Tx slot)	30.30	30.33	30.35	26.04	26.07	**26.09**
GPRS(4 Tx slot)	28.63	28.64	28.68	25.62	25.63	25.67

GSM1900 Conducted Power（dBm）						
Band	Measured Power(dBm)			Averaged power(dBm)		
Frequency	512	661	810	512	661	810
GPRS(1 Tx slot)	29.70	29.89	29.78	20.67	20.86	20.75
GPRS(2 Tx slot)	29.13	29.00	28.76	23.11	22.98	22.74
GPRS(3 Tx slot)	27.35	27.03	26.67	23.09	22.77	22.41
GPRS(4 Tx slot)	26.50	26.18	25.75	**23.49**	23.17	22.74

Note：The averaged power calculated method are shown as below:

Averaged power= Measured Power (1 Tx Slot)+(10lg(1/8))dB=-9.03dB

Averaged power= Measured Power (2 Tx Slot) + (10lg(2/8))dB=-6.02dB

Averaged power= Measured Power (3 Tx Slot) + (10lg(3/8))dB =-4.26dB

Averaged power= Measured Power (4 Tx Slot) + (10lg(4/8))dB =-3.01dB

Band	Max average power(dBm)	Max average power(mW)
GSM 850	26.09	406.44
GSM 1900	23.49	223.36

5.2 MPE Calculation

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 WiFi:

For Antenna 1

The max. antenna gain is 2.43 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
23.55	1.750	20	0.00820	1	Pass

For Antenna 2

The max. antenna gain is 2.36 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
22.91	1.722	20	0.00785	1	Pass

For MIMO:

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
46.88	3.475	20	0.03241	1	Pass

For GSM 850:

The max. antenna gain is 2.68 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
406.44	1.854	20	0.14987	0.55	Pass

For GSM 1900:

The max. antenna gain is 2.68 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
223.36	1.854	20	0.08236	1	Pass

2G module and WiFi modules can simultaneous transmitting, so the maximum rate of MPE is 0.15/0.55+0.032/1.0 =0.305<=1.0. according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

--End of the Report--