

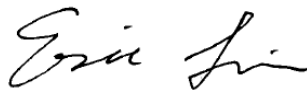
**1 Cover Page**

***RF Exposure Evaluation Report***

**Application No.:** KSCR2203000378AT  
**FCC ID:** 2ADTD-CP03009601219  
**Applicant:** Hangzhou Hikvision Digital Technology Co., Ltd  
**Address of Applicant:** 555 Qianmo Road, Binjiang District, Hangzhou, Hangzhou, Zhejiang, China  
**Manufacturer:** Hangzhou Hikvision Digital Technology Co., Ltd  
**Address of Manufacturer:** 555 Qianmo Road, Binjiang District, Hangzhou, Hangzhou, Zhejiang, China  
**Factory:** 1.Hangzhou Hikvision Electronics Co., Ltd.  
 2.Hangzhou Hikvision Technology Co., Ltd.  
 3.CHONGQING HIKVISION TECHNOLOGY CO.,LTD.  
**Address of Factory:** 1.No.299,Qiushi Road,Tonglu Economic Development Zone,Tonglu County, Hangzhou,Zhejiang  
 2.No.700 Dongliu Road, Binjiang District, Hangzhou 310052, China  
 3.No. 118, Haikang Road, Area C, Jianqiao Industrial Park, Dadukou District, Chongqing, 401325,China  
**Equipment Under Test (EUT):**  
**EUT Name:** AX PRO  
**Model No.:** DS-PWA96-M2-WB  
**Add Model No:** DS-PWA96-M2-WBUHK,DS-PWA96-M2-WBCKV,DS-PWA96-M2-WBUVS,DS-PWA96-M2-WBKVO,DS-PWA96-M2-WBHUN  
**Standard(s) :** FCC Rules 47 CFR §2.1091  
 KDB447498 D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2022-03-24  
**Date of Test:** 2022-05-10 to 2022-05-15  
**Date of Issue:** 2022-05-16

<b>Test Result:</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.



Eric Lin  
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022-05-16		Original

<b>Authorized for issue by:</b>			
		<i>Pawn. Liu</i>	
		<b>Pawn.Liu/Project Engineer</b>	
		<i>Eric Lin</i>	
		<b>Eric Lin/Reviewer</b>	



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### 3 General Information

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

Power supply:	AC 100-240V,50/60Hz,0.2-0.1A
---------------	------------------------------

#### 3.2 Technical Specifications

2.4GHz

Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz;802.11n(HT40): 2422MHz to 2452MHz
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
Channel Spacing:	5MHz
Antenna Type:	Ant1:PCB Antenna; Ant2:PCB Antenna
Antenna Gain:	Ant 1:2.04dBi (Provided by manufacturer) Ant 2:3.51dBi (Provided by manufacturer) Directional Gain: 5.85dBi



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**433Mhz**

Operation Frequency	R3 module:433.1-433.7MHz; RX module:434.6MHz
Channel Numbers:	R3 module: 7 ;RX module: 1
Channel Space	R3 module:100KHz
Modulation Type:	ASK
Antenna Gain:	R3 module: Ant 1:-3.5dBi , (Provided by manufacturer) Ant 2:-3.1dBi ; (Provided by manufacturer) RX module: Ant 1:-3.5dBi , (Provided by manufacturer) Ant 2:-3.1dBi (Provided by manufacturer)
Antenna Type:	R3 module:Ant1 :PCB antenna,Ant2 :PCB antenna; RX module:Ant1 :PCB antenna,Ant2 :PCB antenna

**GSM**

GSM Operation Frequency Band:	GSM850/1900
Modulation Type:	GMSK,8PSK
Antenna Type:	LDS
Antenna Gain:	GSM850:-2.51dBi GSM1900:-2.51dBi

**WCDMA**

WCDMA Operation Frequency Band:	Band2/5
Modulation Type:	QPSK, 16QAM
Antenna Type:	LDS
Antenna Gain:	Band2:-2.51dBi Band5:-2.51dBi

**LTE**



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LTE Operation Frequency Band:	Band2/4/5/28/66
Modulation Type:	QPSK, 16QAM
Antenna Type:	LDS
Antenna Gain:	Band2:-2.51dBi Band4:-2.94dBi Band5:-2.51dBi Band28:-5.97dBi Band66:-2.70dBi



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### 3.3 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

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

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

### 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 (Kunshan) Inc. has been recognized as an accredited testing laboratory.

Designation Number: CN1172.

- **ISED (CAB identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

CAB Identifier: CN0072.

- **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.



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## 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

Note: PSD limit for 2.4G=1 MW/cm<sup>2</sup> ,for 433MHz=0.289 MW/cm<sup>2</sup> ,For GSM850=0.549 MW/cm<sup>2</sup> ,GSM1900=1 MW/cm<sup>2</sup> ,For WCDMA Band2=1 MW/cm<sup>2</sup> ,WCDMA Band5=0.549 MW/cm<sup>2</sup> ,For LTE Band 2=1 MW/cm<sup>2</sup> ,LTE Band4=1 MW/cm<sup>2</sup> ,LTE Band5=0.549 MW/cm<sup>2</sup> ,LTE Band28=0.469 MW/cm<sup>2</sup> ,LTE Band66=1 MW/cm<sup>2</sup> .



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## 5 Measurement and Calculation

### 5.1 Maximum transmit power

The Power Data is based on the RF Test Report KSCR220300037801, KSCR220300037802

#### 2.4G

Test Mode	Frequency (MHz)	Antenna 1 Power[dBm]	Antenna 2 Power[dBm]	MIMO Power[dBm]	Antenna 1 Power[mW]	Antenna 2 Power[mW]	MIMO Power[mW]
11B	2412	13.65	12.95	NA	23.17	19.72	N/A
11B	2437	13.98	13.41	NA	25.00	21.93	N/A
11B	2462	13.68	13.77	NA	23.33	23.82	N/A
11G	2412	14.54	14.10	NA	28.44	25.70	N/A
11G	2437	14.77	14.53	NA	<b>29.99</b>	28.38	N/A
11G	2462	14.63	15.03	NA	29.04	<b>31.84</b>	N/A
11N20MIMO	2412	14.00	14.09	17.06	25.12	25.64	50.82
11N20MIMO	2437	14.28	14.54	17.42	26.79	28.44	55.21
11N20MIMO	2462	14.11	15.02	17.60	25.76	31.77	<b>57.54</b>
11N40MIMO	2422	13.34	13.28	16.32	21.58	21.28	42.85
11N40MIMO	2437	13.50	13.59	16.56	22.39	22.86	45.29
11N40MIMO	2452	13.45	13.83	16.65	22.13	24.15	46.24

#### 433MHz

Module	Frequency (MHz)	Antenna 1 Power[dBuV/m]	Antenna 2 Power[dBuV/m]	Antenna 1 Power[dBm]	Antenna 2 Power[dBm]	Antenna 1 Power[mW]	Antenna 2 Power[mW]
R3	433.10	71.51	73.60	-23.69	-21.60	0.004	0.007
R3	433.70	72.20	73.42	-23.00	-21.78	0.005	0.007
RX	434.60	70.36	71.03	-24.84	-24.17	0.003	0.004

Remark: Power(dBm)= Power(dBuV/m@3m)-95.2



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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/cm<sup>2</sup>

For 2.4G WiFi –Antenna1:

The max. antenna gain is 2.04 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
29.99	1.600	20	0.00954	1	Pass

For 2.4G WiFi –Antenna2:

The max. antenna gain is 3.51 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
31.84	2.244	20	0.01421	1	Pass

In MIMO mode:

Two antennas can transmit simultaneously and they are correlated.

The max. antenna gain is 5.85 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
57.54	3.846	20	0.04402	1	Pass

For R3 module –Antenna1:



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Max. Power P(mW)	Operation Distance R(cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
0.005	20	0.000001	0.289	Pass

For R3 module –Antenna2:

Max. Power P(mW)	Operation Distance R(cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
0.007	20	0.000001	0.289	Pass

For RX module –Antenna1:

Max. Power P(mW)	Operation Distance R(cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
0.003	20	0.000001	0.289	Pass

For RX module –Antenna2:

Max. Power P(mW)	Operation Distance R(cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
0.004	20	0.000001	0.289	Pass

For GSM

Power data based on report No. I22W00025-GSM RF\_Rev2

Band Information	Antenna Gain (dBi)	Gain in Linear Scale G	Operation Distance R(cm)	Max Tune-up power (dBm)	Max Tune-up power (mW)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
GSM850	-2.51	0.56	20	35	3162.28	0.352	0.549	Pass



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GSM1900	-2.51	0.56	20	32	1584.89	0.177	1.000	Pass
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For WCDMA

Power data based on report No. I22W00025-WCDMA RF\_Rev2

Band Information	Antenna Gain (dBi)	Gain in Linear Scale G	Operation Distance R(cm)	Max Tune-up power (dBm)	Max Tune-up power (mW)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
WCDMA Band2	-2.51	0.56	20	24	251.19	0.028	1.000	Pass
WCDMA Band2	-2.51	0.56	20	26	398.11	0.044	0.549	Pass

For LTE

Power data based on report No. I22W00025-LTE RF\_Rev2

Band Information	Antenna Gain (dBi)	Gain in Linear Scale G	Operation Distance R(cm)	Max Tune-up power (dBm)	Max Tune-up power (mW)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
LTE Band 2	-2.51	0.56	20	25	316.23	0.035	1.000	Pass
LTE Band 4	-2.94	0.51	20	23	199.53	0.020	1.000	Pass
LTE Band 5	-2.51	0.56	20	26	398.11	0.044	0.549	Pass
LTE Band 28	-5.97	0.25	20	24	251.19	0.013	0.469	Pass
LTE Band 66	-2.70	0.54	20	26	398.11	0.043	1.000	Pass

WiFi and 433MHz and LTE modules can simultaneous transmitting, so the maximum rate of MPE is  $0.04402/1+0.000001/0.289+0.000001/0.289+0.352/0.549=0.685 \leq 1.0$ . according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

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



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