SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

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1 Cover Page

RF MPE REPORT

Application No.:	SZEM1710010642CR
Applicant:	WUHAN HIKSTORAGE TECHNOLOGY CO.,LTD
FCC ID:	2ANVY-HH10000
IC:	23225-HH10000
Equipment Under Test (EUT): **NOTE:** The following sample(s) was/were submitted and identified by the client as	
Product Name:	Personal Cloud
Model No.(EUT):	HS-AFS-H100I
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06 RSS-102 Issue 5 (March 2015)
Date of Receipt:	2017-09-19
Date of Test:	2017-09-19 to 2017-10-12
Date of Issue:	2017-10-18
Test Result:	**Pass***

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

Jack Zhang
EMC Laboratory Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00	/	2017-10-18	/	Original

Authorized for issue by:				
Tested By		Foray Chen **Foray Chen /Project Engineer**		2017-10-18 **Date**
Checked By		Eric Fu **Eric Fu /Reviewer**		2017-10-18 **Date**

2 Contents

3 General Information

3.1 Client Information

Applicant:	WUHAN HIKSTORAGE TECHNOLOGY CO.,LTD
Address of Applicant:	Rm.01, 21/F, F4 Building, 5th Phase-NO.1 Software Park, Guanshan 1 Rd, East Lake Development Zone, Wuhan, China(430040)
Manufacturer:	WUHAN HIKSTORAGE TECHNOLOGY CO.,LTD
Address of Manufacturer:	Rm.01, 21/F, F4 Building, 5th Phase-NO.1 Software Park, Guanshan 1 Rd, East Lake Development Zone, Wuhan, China(430040)
Factory:	1. Hangzhou Hikvision Technology Co., Ltd. 2. Hangzhou Hikvision Electronics Co., Ltd.
Address of Factory:	1. No.700, Dongliu Road, Binjiang District, Hangzhou Ctiy,Zhejiang, 310052, China 2. No.299, Qiushi Road,Tonglu Economic Development Zone,Tonglu County, Hangzhou,Zhejiang,310052,China.

3.1 General Description of E.U.T.

Brand Name:	HIKVISION
Product Description:	Fixed product with 2.4G & 5GHz WiFi function
Rated Input:	DC 12V 1.5A by Adapter
Test Voltage:	AC 120V 60Hz for adapter

3.2 Technical Specifications

Operation Frequency:	2.4GHz WiFi: 802.11 b/g/n(HT20): 2412MHz~2462MHz 802.11 n(HT40): 2422MHz~2452MHz 5GHz WiFi: 802.11a/n(HT20)/ac(HT20): 5180-5240MHz, 5745MHz-5825MHz 802.11n(HT40)/ac(HT40): 5190-5230MHz, 5755MHz-5795MHz 802.11ac(HT80): 5210MHz, 5775MHz
Modulation Technique:	2.4GHz WiFi: 802.11 b: DSSS(CCK, DQPSK, DBPSK) 802.11 g/n(HT20/n(HT40): OFDM(64QAM, 16QAM, QPSK, BPSK) 5GHz WiFi: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK) Remark: 256QAM for 802.11 ac only
Data Rate:	2.4GHz WiFi: 802.11 b: 1/2/5.5/11Mbps 802.11 g: 6/9/12/18/24/36/48/54Mbps 802.11n(HT20)/n(HT40): MCS0-MCS7 5GHz WiFi: 802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: MCS0-7 802.11ac: MCS0-9
Number of Channel:	2.4GHz WiFi: 802.11 b/g/n(HT20): 11 802.11 n(HT40): 7 5GHz WiFi: 802.11 a/n(HT20)/ac(HT20): 9 Channel 36, 40, 44, 48, 149, 153, 157, 161, 165 802.11 n(HT40)/ac(HT40): 4 Channel 38, 46, 151, 159 802.11 ac(HT80): 2 Channel 42, 155
Antenna Type:	PCB Antenna
Antenna Gain:	2.55 dBi for 2.4GHz 3.42 dBi for 5GHz

3.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.
Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

3.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab 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.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.
Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

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

4.2 IC Radiofrequency radiation exposure limits:

According to RSS-102 section 2.5.2, RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);

• at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;

• at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);

• at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2}\ f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

• at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

For 2.4G band, the limit of worse case is 2.68 W

For 5G band, the limit of worse case is 4.53 W

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SZEM171001064203 & SZEM171001064204

2.4GHz WiFi

Test mode	Test Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11b	2412	12.97	19.82
	2437	13.03	20.09
	2462	14.52	**28.31**
802.11g	2412	10.74	11.86
	2437	10.73	11.83
	2462	12.11	16.26
802.11 n(HT20)	2412	10.32	10.76
	2437	10.59	11.46
	2462	11.87	15.38
802.11 n(HT40)	2422	11.11	12.91
	2437	11.31	13.52
	2452	12.09	16.18

5GHz WiFi

Test Mode	Test Channel	Output Power (dBm)	Output Power (mW)
11A	5180	11.70	14.79
11A	5220	11.57	14.35
11A	5240	11.91	15.52
11A	5745	16.90	48.98
11A	**5785**	17.85	**60.95**
11A	5825	15.95	39.36
11N20	5180	11.44	13.93
11N20	5220	11.41	13.84
11N20	5240	11.19	13.15
11N20	5745	15.53	35.73
11N20	5785	15.62	36.48
11N20	5825	13.98	25.00
11N40	5190	12.15	16.41
11N40	5230	11.67	14.69
11N40	5755	17.20	52.48
11N40	5795	16.90	48.98
11AC20	5180	11.30	13.49
11AC20	5220	10.17	10.40
11AC20	5240	9.54	8.99
11AC20	5745	14.78	30.06
11AC20	5785	15.26	33.57
11AC20	5825	13.74	23.66
11AC40	5190	12.24	16.75
11AC40	5230	11.91	15.52
11AC40	5755	16.58	45.50
11AC40	5795	16.12	40.93
11AC80	5210	13.86	24.32
11AC80	5775	14.91	30.97

5.2 MPE Calculation

The best case gain of the antenna is 2.55dBi for 2.4GHz, 3.42dBi for 5GHz, 2.55dB logarithmic terms convert to numeric result is nearly 1.8, 2.42dB logarithmic terms convert to numeric result is nearly 1.75.

For 2.4GHz WiFi: The Max Conducted Output Power is 28.31mW(0.02831W);

For 5GHz WiFi: The Max Conducted Output Power is 60.95mW(0.06095W);

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

2.4GHz WiFi: S= $\frac{PG}{4R^2\pi}$ =$\frac{28.31\times1.8}{4\times400\times3.14}$ =0.01014 mW/cm²

5GHz WiFi: S= $\frac{PG}{4R^2\pi}$ =$\frac{60.95\times1.75}{4\times400\times3.14}$ =0.02123 mW/cm²

For IC:

For 2.4GHz WiFi: E.I.R.P.= P*G= 0.02831×1.8=0.051W

For 5GHz WiFi: E.I.R.P.= P*G= 0.06095×1.75=0.1067W

2.4GHz WiFi and 5GHz WiFi modules can't simultaneous transmitting.

So the device is exclusion from SAR test.

--End of the Report--