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RF Exposure Evaluation Report

Application No.:	SHEM1906013767CR
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:	LED Wireless Keypad
Model No.:	DS-PKA-WLM-868
Add Model No.:	DS-PKA-WLM-868UHK, DS-PKA-WLM-868CKV, DS-PKA-WLM-868UVS, DS-PKA-WLM-868KVO, DS-PKA-WLM-868HUN
Trade mark:	HIKVISION
Standard(s) :	EN 62311:2008
Date of Receipt:	2019-06-03
Date of Test:	2019-06-05 to 2019-06-07
Date of Issue:	2019-07-03
Test Result:	**Pass***

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

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

CE

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	2019-07-03	/

Authorized for issue by:				
				
		Vincent Zhu /Project Engineer		
				
		Eddy Zong /Reviewer		

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3 General Information

3.1 General Description of EUT

Power supply:	DC 3V by 4*battery
Test voltage:	DC 3V

3.2 Technical Specifications

13.56MHz

Operation Frequency	13.56MHz
Modulation Technique:	ASK
Antenna Type:	Loop antenna
Number of Channel:	1

868MHz

Operation Frequency	868MHz
Modulation Technique:	2GFSK
Antenna Type:	Spiral antenna
Number of Channel:	1

3.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

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.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

IC Registration No.: 8617A-1. CAB Identifier: CN0020.

• 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

The evaluation has been performed on the EUT, pursuant to the relevant requirements of the following document(s) and the harmonized EN standard(s) covering essential requirements under article 3.1a of the RED Directive (2014/53/EU).

Identity	Document Title	Version
Council Recommendation of 12 July 1999(1999/519/EC)	On the limitation of exposure of the general public to electromagnetic fields (0Hz to 300GHz)	1999
EN 62311	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz – 300 GHz)	2008

Limit: According to EN 62311, the criteria listed in the below table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified table 2 of Council Recommendation 1999/519/EC.

Table 2

Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S_{eq} (W/m²)
0-1 Hz	—	$3,2 \times 10^4$	4×10^4	—
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8-25 Hz	10 000	4 000/f	5 000/f	—
0,025-0,8 kHz	250/f	4/f	5/f	—
0,8-3 kHz	250/f	5	6,25	—
3-150 kHz	87	5	6,25	—
0,15-1 MHz	87	0,73/f	0,92/f	—
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	—
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Notes:

1. f as indicated in the frequency range column.
2. For frequencies between 100 kHz and 10 GHz, S_{eq}, E^2, H^2, and B^2 are to be averaged over any six-minute period.
3. For frequencies exceeding 10 GHz, S_{eq}, E^2, H^2, and B^2 are to be averaged over any $68/f^{1.05}$ -minute period (f in GHz).
4. No E-field value is provided for frequencies < 1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25 kV/m. Spark discharges causing stress or annoyance should be avoided.

Note1: The limit of H-field strength for 13.56MHz is 0.073A/m.
Note2: The limit of power density for 868MHz is 4.34 W/m²

5 Calculation Formula and Test Result

5.1 Calculation Formula

Pd = (Pout*G) / 4πR²

Where:

Pd = Power density in W/m^2

Pout = Output power to antenna in W

G = Antenna Gain in linear scale

π = 3.14

R = distance to the center of radiation of antenna (in meter) = 0.2m

NOTE: Pd limit = 10W/m².

5.2 Test Results

For 868MHz:

The ERP Data is based on the RF Test Report SHEM190601376702.

The max EPR is PG = 8.66 dBm = ##### W;

So, $S=\frac{PG}{4R^2\pi}$ = ### W/m^2

For 13.56MHz:

Refer to the test report SHEM190601376703, the measured maximum Magnetic Fields is -9.58dBuA/m (0.000003A/m). This is below the max permitted sending level of 0.073A/m, so the device meets the requirements.

868MHz & 13.56MHz and WiFi modules can simultaneous transmitting, so the maximum rate of MPE is 0.01/4.34 + 0.000003/0.073 =0.002<=1.0
and then the EUT is not need to conduct SAR measurement.

--The End of Report--