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

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1 Cover Page

RF MPE REPORT

Application No.:	SHEM1702000736CR
Applicant:	UTC FIRE & SECURITY AMERICAS CORPORATION, INC
FCC ID:	2AENJ-RS323X
Equipment Under Test (EUT): **NOTE:** The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	Network Camera
Model No.(EUT):	RS-3231
Add Model No.:	RS-3230, TVQ-8101
Standards:	FCC Rules 47 CFR §2.109 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt:	2016-11-03
Date of Test:	2016-11-28 to 2016-11-29
Date of Issue:	2017-03-02
Test Result:	**Pass***

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

Parlam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.

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.

2 Contents

3 General Information

3.1 Client Information

Applicant:	UTC FIRE & SECURITY AMERICAS CORPORATION, INC
Address of Applicant:	2955 Red Hill Ave Suite 100 Costa Mesa, CA 92626 United States
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 Ctiy,Zhejiang, 310052, China 2. No.299, Qiushi Road,Tonglu Economic Development Zone,Tonglu County, Hangzhou,Zhejiang,310052,China.

3.2 General Description of E.U.T.

Product Description:	Fixed product with Enternet port and WiFi monitor function		
Rated Input:	DC 12V via adapter		
Test Voltage:	AC 120V 60Hz for adapter		
Adapter:	Rated Input:	AC 100V-240V 50/60Hz 0.3A	
	Rated Output:	DC 5V 1.0A	
	Cable length:	AC port:	2 wires
		DC port:	100 cm

3.3 Details of E.U.T.

Operation Frequency:	WiFi: 2412MHz~2462MHz
Modulation Technique:	802.11g/n: OFDM(64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	802.11 b/g/n(HT20): 11 802.11 n(HT40): 7
Antenna Type	Integral
Antenna Gain	2.4dBi

3.4 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

3.5 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. Date of expiry: 2017-07-14.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2017-09-16.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1. Expiry Date: 2017-06-18.

- **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-3868, C-4336, T-2221, G-830 respectively. Date of Expiry: 2017-11-16.

4 Test Standards and Limits

According to§1.1310 Radiofrequency radiation exposure limits:

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

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM170200073603.

For WiFi:

Test mode	Test Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11b	2412	19.56	90.36
	2437	21.10	128.82
	2462	20.43	110.41
802.11g	2412	18.38	68.87
	2437	19.03	79.98
	2462	19.74	94.19
802.11 n(HT20)	2412	18.23	66.53
	2437	19.18	82.79
	2462	19.36	86.30
802.11 n(HT40)	2422	17.22	52.72
	2437	17.77	59.84
	2452	18.34	68.23

5.2 MPE Calculation

The Max Conducted Peak Output Power is 128.82mW(0.12882W) in Middle channel of 802.11b;
The best case gain of the antenna is 2.4dBi. 2.4dB logarithmic terms convert to numeric result is nearly 1.738.

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

S= $\frac{PG}{4R^2\pi}$ =$\frac{128.82\times1.738}{4\times400\times3.14}$ =0.0447 mW/cm^2

6 EUT Constructional Details

Refer to the < RS-3231 _External Photos > & < RS-3231 _Internal Photos>.

--End of the Report--