



## 1 Cover Page

# RF MPE REPORT

**Application No.:** SHEM2006004628CR  
**FCC ID:** 2ADTD-IOP2101  
**IC:** 20199-IOP2101  
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### Equipment Under Test (EUT):

**EUT Name:** NETWORK CAMERA

**Model No.:** DS-2CV2146G0-IDW

**Trade mark:** HIKVISION

FCC Rules 47 CFR §2.1091

**Standard(s) :** KDB447498 D01 General RF Exposure Guidance v06  
RSS-102:Issue 5(March 2015)

**Date of Receipt:** 2020-06-16

**Date of Test:** 2020-06-17 to 2020-07-03

**Date of Issue:** 2020-07-05

|                     |              |
|---------------------|--------------|
| <b>Test Result:</b> | <b>Pass*</b> |
|---------------------|--------------|

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

Parlan Zhan

Parlan Zhan  
E&E Section Manager

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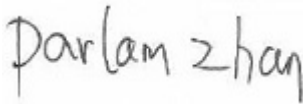
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| Revision Record |             |            |        |
|-----------------|-------------|------------|--------|
| Version         | Description | Date       | Remark |
| 00              | Original    | 2020-07-05 | /      |
|                 |             |            |        |
|                 |             |            |        |

|                             |  |                                                                                    |  |  |
|-----------------------------|--|------------------------------------------------------------------------------------|--|--|
| Authorized for issue<br>by: |  |                                                                                    |  |  |
|                             |  |  |  |  |
|                             |  | <hr/>                                                                              |  |  |
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### 3 General Information

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

|                   |                   |
|-------------------|-------------------|
| Power supply:     | DC 12V by adapter |
| Serial Number:    | E38304032         |
| Firmware Version: | V5.5.83_190218    |

#### 3.2 Technical Specifications

|                      |                                                                                 |
|----------------------|---------------------------------------------------------------------------------|
| Antenna Gain:        | Antenna 1:2dBi<br>Antenna 2: 2dBi<br>Directional gain:5.01dBi                   |
| Antenna Type:        | Antenna 1: Dipole Antenna<br>Antenna 2: Dipole Antenna                          |
| Channel Spacing:     | 5MHz                                                                            |
| Modulation Type:     | 802.11b: DSSS (CCK, DQPSK, DBPSK)<br>802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK) |
| Number of Channels:  | 802.11b/g/n(HT20):11<br>802.11n(HT40):7                                         |
| Operation Frequency: | 802.11b/g/n(HT20): 2412MHz to 2462MHz<br>802.11n(HT40): 2422MHz to 2452MHz      |

### 3.3 Test Location

All tests were performed at: Compliance Certification Services (Kunshan) Inc.

All measurement facilities used to collect the measurement data are located at

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

## 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                      |

For 2.4G band, the limit is 1.0 mW/cm<sup>2</sup>

### 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

## 5 Measurement and Calculation

### 5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM200600462801

| Test Mode  | Channel | Antenna 1<br>Power[dBm] | Antenna 2<br>Power[dBm] | MIMO<br>Power[dBm] | Antenna 1<br>Power[mW] | Antenna 2<br>Power[mW] | MIMO<br>Power[mW] |
|------------|---------|-------------------------|-------------------------|--------------------|------------------------|------------------------|-------------------|
| 11B        | 2412    | 17.67                   | 16.32                   | NA                 | <b>58.48</b>           | <b>42.95</b>           | NA                |
| 11B        | 2437    | 16.90                   | 15.71                   | NA                 | 48.98                  | 37.24                  | NA                |
| 11B        | 2462    | 17.24                   | 16.33                   | NA                 | 52.97                  | 42.95                  | NA                |
| 11G        | 2412    | 16.17                   | 14.77                   | NA                 | 41.40                  | 29.99                  | NA                |
| 11G        | 2437    | 15.37                   | 14.09                   | NA                 | 34.43                  | 25.64                  | NA                |
| 11G        | 2462    | 15.75                   | 14.68                   | NA                 | 37.58                  | 29.38                  | NA                |
| 11N20MIMO  | 2412    | 16.24                   | 14.67                   | 18.54              | 42.07                  | 29.31                  | 71.45             |
| 11N20 MIMO | 2437    | 15.33                   | 14.05                   | 17.75              | 34.12                  | 25.41                  | 59.57             |
| 11N20 MIMO | 2462    | 15.69                   | 14.65                   | 18.21              | 37.07                  | 29.17                  | 66.22             |
| 11N40 MIMO | 2422    | 16.24                   | 14.90                   | 18.63              | 42.07                  | 30.90                  | <b>72.95</b>      |
| 11N40 MIMO | 2437    | 15.88                   | 14.66                   | 18.32              | 38.73                  | 29.24                  | 67.92             |
| 11N40 MIMO | 2452    | 16.04                   | 14.98                   | 18.55              | 40.18                  | 31.48                  | 71.61             |

## 5.2 MPE Calculation

For FCC:

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 2.4GHz WiFi SISO mode:

Antenna 1:

The max. antenna gain is 2 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 |
|----------------------------|------------------------|--------------------------|-------------------------------------|-----------------------------|--------|
| 58.48                      | 1.585                  | 20                       | 0.01844                             | 1                           | Pass   |

Antenna 2:

The max. antenna gain is 2 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 |
|----------------------------|------------------------|--------------------------|-------------------------------------|-----------------------------|--------|
| 42.95                      | 1.585                  | 20                       | 0.01354                             | 1                           | Pass   |

For 2.4GHz WiFi MIMO mode:

The max. antenna gain is 5.01 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 |
|----------------------------|------------------------|--------------------------|-------------------------------------|-----------------------------|--------|
| 72.95                      | 3.170                  | 20                       | 0.04600                             | 1                           | Pass   |

For IC:

For 2.4GHz WiFi SISO mode:

Antenna 1:E.I.R.P.= P\*G= 0.05848×1.585=0.093W<2.68W

Antenna 2:E.I.R.P.= P\*G= 0.04295×1.585=0.068W<2.68W

For 2.4GHz WiFi MIMO mode: E.I.R.P.= P\*G= 0.07295×3.170=0.23W<2.68W

So the device is exclusion from SAR test.

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