



MPE Report

According to

FCC CFR Title 47 Part 15 Subpart E (15.407)

Applicant	: Amcrest Technologies LLC
Address	: 16727 Park Row Dr.Houston, TX 77084
Manufacturer	: Zhejiang Dahua Vision Technology Co., Ltd.
Address	: No.1199, Bin'an road, Binjiang District, Hangzhou,P.R.China.
Equipment	: IP CAMERA
Model No.	: IPM-HX1B ,IPM-HX1W
FCC ID	: ZZ2AMC015
IC ID	: 21923-AMC015
Test Period	: Jul.18,2017~ Jul.20, 2017

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of **Cerpass Technology Corporation Test Laboratory**. the test report shall not be reproduced exc- ept in full.
- The test report must not be used by the clients to claim product certification approval by any agency of the Government.

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.10 – 2013&RSS-247,Issue 2&RSS-Gen&FCC Part15.407**and the energy emitted by this equipment was **passed**.

Approved by:

Laboratory Accreditation:

Mark Liao / Assistant Manager



Cerpass Technology Corporation Test Laboratory

TAF LAB Code:

1439



Radio Frequency Exposure

LIMIT

For 2.4G Band: According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

For 5.0G Band: According to FCC §1.1310, The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in § 1.1307(b).

**EUT Specification**

EUT	IP CAMERA		
Frequency band (Operating)	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> WLAN: 5.150GHz ~ 5.250GHz <input checked="" type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz		
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation)		
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)		
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity		
Max. output power for 2.4G Band	Mode	Power (dBm)	Power (mW)
	IEEE802.11b	23.41	219.28
	IEEE802.11g	23.23	210.38
	IEEE802.11n(20MHz)	23.24	210.86
	IEEE802.11n(40MHz)	23.18	207.97
Max. output power for 5.150-5.250GHz	IEEE802.11a	16.94	49.43
	IEEE802.11n(20MHz)	16.79	47.75
	IEEE802.11n(40MHz)	16.16	41.30
	IEEE802.11ac(80MHz)	15.28	33.73
Max. output power for 5.745-5.850GHz	IEEE802.11a	12.90	19.50
	IEEE802.11n(20MHz)	12.86	19.32
	IEEE802.11n(40MHz)	12.28	16.90
	IEEE802.11ac(80MHz)	11.73	14.89
Antenna gain (Max)	1.68dBi for 2.4G Band		
	5.2G: 1.99dBi ,5.8G: 1.59dBi		
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation* <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A		

Remark:

- The maximum output power is 25.89dBm (0.3459W) at 2412MHz (with numeric 4.093antenna gain.) for 2.4G band
The maximum output power is 14.54dBm (0.0284W) at 5240MHz (with numeric 1.919antenna gain.)
The maximum output power is 14.24dBm (0.0265W) at 5825MHz (with numeric 2.065antenna gain.)
- DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.
- For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.

*Note: Simultaneous transmission is not applicable for this EUT.

**TEST RESULTS**

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

Where $E =$ Field strength in Volts / meter

$P =$ Power in Watts

$G =$ Numeric antenna gain

$d =$ Distance in meters

$S =$ Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770d^2}$$

Changing to units of mW and cm, using:

$$P (mW) = P (W) / 1000 \text{ and}$$

$$d (cm) = d(m) / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where $d =$ Distance in cm

$P =$ Power in mW

$G =$ Numeric antenna gain

$S =$ Power density in mW / cm²

**Maximum Permissible Exposure**

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
IEEE802.11b	2412-2462	23.41	1.68	20	0.6423	1
IEEE802.11g	2412-2462	23.23	1.68	20	0.6162	1
IEEE802.11n20	2412-2462	23.24	1.68	20	0.6176	1
IEEE802.11n40	2422-2452	23.18	1.68	20	0.6092	1

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
IEEE802.11a	5180-5240	16.94	1.99	20	0.1555	1
IEEE802.11n(20MHz)	5180-5240	16.79	1.99	20	0.1502	1
IEEE802.11n(40MHz)	5190-5230	16.16	1.99	20	0.1299	1
IEEE802.11ac(80MHz)	5210	15.28	1.99	20	0.1061	1

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
IEEE802.11a	5745-5825	12.90	1.59	20	0.0559	1
IEEE802.11n(20MHz)	5745-5825	12.86	1.59	20	0.0554	1
IEEE802.11n(40MHz)	5755-5795	12.28	1.59	20	0.0485	1
IEEE802.11ac(80MHz)	5775	11.73	1.59	20	0.0427	1

Note: The 2.4GHz & 5GHz can not transmit at same time.