RF EXPOSURE REPORT

Applicant	ZyXEL Communications Corporation
Product Name	HD Cube IP Camera
Model No.	CAM1215
Serial No.	H-918BW, YNC-918BW
Test Standard	FCC 2.1091: 2015
Test Date	March 18 to April 20, 2016
Issue Date	April 21, 2016
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Winnie Zhang	*David Huang*	
Winnie Zhang	David Huang	
Test Engineer	Checked By	

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Test result presented in this test report is applicable to the tested sample only

Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
16070202-FCC-H	NONE	Original	April 21, 2016

2. Customer information

Applicant Name	ZyXEL Communications Corporation
Applicant Add	No. 2, Gongye E. 9th Road, Hsinchu Science Park,Hsinchu, Taiwan
Manufacturer	Yotascope Technologies Co., Ltd.
Manufacturer Add	3F, No. 7-1, Jhongsing Road, Tucheng Dist., New Taipei City 23678, Taiwan, R.O.C

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao'an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	718246
IC Test Site No.	4842E-1
Test Software	Labview of SIEMIC version 2.0

4. Equipment under Test (EUT) Information

Description of EUT: HD Cube IP Camera

Main Model: CAM1215

Serial Model: H-918BW, YNC-918BW

Equipment Category :   DTS

Antenna Gain: WIFI: 4.64dBi

Port: RJ45 Port, Power Port, Micro SD card Port

Input Power:
Adapter :
Model: TEKA006-0501500UKC
Input: 100-240V~50/60Hz,0.3A
Output: 5V,1.5A

Trade Name :   Yotascope

FCC ID: I88CAM1215

Type of Modulation: 802.11b/g/n: DSSS, OFDM

RF Operating Frequency (ies):
WIFI:802.11b/g/n(20M): 2412-2462 MHz
WIFI:802.11n(40M): 2422-2452 MHz

Number of Channels:
WIFI :802.11b/g/n(20M): 11CH
WIFI :802.11n(40M): 7CH

5. FCC §2.1091 - Maximum Permissible exposure (MPE)

6.1 Applicable Standard

According to §1.1307(b)(1), 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 level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

6.2 Test Result

Type	Test mode	CH	Freq (MHz)	Conducted Power (dBm)	Tune Up Power (dBm)
Output power	802.11b	Low	2412	15.32	14.7±1
		Mid	2437	15.07	14.7±1
		High	2462	15.01	14.7±1
	802.11g	Low	2412	15.33	14.7±1
		Mid	2437	15.32	14.7±1
		High	2462	15.23	14.7±1
	802.11n (20M)	Low	2412	14.50	14.7±1
		Mid	2437	15.00	14.7±1
		High	2462	14.02	14.7±1
	802.11n (40M)	Low	2422	14.22	14.7±1
		Mid	2437	15.21	14.7±1
		High	2452	14.61	14.7±1

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm^2)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For the antenna manufacturer provide only used limited to ERP/EIRP or radiated spurious emission test. The MPE evaluation as below:

Maximum output power at antenna input terminal: 15.7(dBm)

Maximum output power at antenna input terminal: 37.15(mW)

Prediction distance: >20 (cm)

Predication frequency: 2412 (MHz) High frequency

Antenna Gain (typical):4.64 (dBi)

Antenna Gain (typical):2.91 (numeric)

The worst case is power density at predication frequency at 20 cm: 0.02(mW/cm^2)

MPE limit for general population exposure at prediction frequency: 1.0 (mW/cm^2)

0.02(mW/cm^2) < 1.0 (mW/cm^2)

Result: Pass