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RF Exposure Evaluation Report

Report No. : CQASZ20190800043EX-02

Applicant: Amovision Technology Co., Ltd

Address of Applicant: 2/F, Building C, Xinghezhong Shenlan Innovation Incubator, #63 Huan Guan South Road, Long Hua District, Shenzhen City, China

Manufacturer: Amovision Technology Co., Ltd

Address of Manufacturer: 2/F, Building C, Xinghezhong Shenlan Innovation Incubator, #63 Huan Guan South Road, Long Hua District, Shenzhen City, China

Equipment Under Test (EUT):

Product: Network Camera

All Model No.: A3, A1, A1 1080P, A1K, A1S, A1P, A2, A3, A3S, A3K, A3 1080P, A3M, A3P, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13, B13, B14, B15, B16, B17, B18, B19, B20, C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C10-TZ, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, HMD2, HMD4, HMB1, ZM-A3, ZM-WFA3, ZM-WFA3K, ZM-WFA3S, CT-AYBWC, EC730, EC750

Test Model No.: A3

Brand Name: N/A

FCC ID: 2AUAU-AX

Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06

Date of Test: Aug. 12, 2019 to Sep. 02, 2019

Date of Issue: Sep. 02, 2019

Test Result : **PASS***

Tested By:

Tom Chen

(Tom Chen)

Reviewed By:

Aaron Ma

(Aaron Ma)

Approved By:

Jack Ai

(Jack Ai)



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

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

2. Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20190800043EX-02	Rev.01	Initial report	Sep. 02, 2019

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4. General Information

4.1 Client Information

Applicant:	Amovision Technology Co., Ltd
Address of Applicant:	2/F, Building C, Xinghezhong Shenlan Innovation Incubator, #63 Huan Guan South Road, Long Hua District, Shenzhen City, China
Manufacturer:	Amovision Technology Co., Ltd
Address of Manufacturer:	2/F, Building C, Xinghezhong Shenlan Innovation Incubator, #63 Huan Guan South Road, Long Hua District, Shenzhen City, China

4.2 General Description of EUT

Product Name:	Network Camera
Test Model No.:	A3
Trade Mark:	N/A
Hardware Version:	V1.0
Software Version:	V3.2
Sample Type:	☐ Mobile ☐ Portable ☒ Fix Location
Power Supply:	DC 3.7V from battery

4.3 General Description of WIFI

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g : OFDM IEEE for 802.11n(HT20): OFDM
Test Software of EUT:	RF test (manufacturer declare)
Antenna Type:	IPEX Antenna
Antenna Gain:	1.5dBi

1. All model: A3, A1, A1 1080P, A1K, A1S, A1P, A2, A3, A3S, A3K, A3 1080P, A3M, A3P, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13, B13, B14, B15, B16, B17, B18, B19, B20, C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C10-TZ, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, HMD2, HMD4, HMB1, ZM-A3, ZM-WFA3, ZM-WFA3K, ZM-WFA3S, CT-AYBWC, EC730, EC750

2. Only the model A3 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

5. SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Standard Requirement

According to FCC Part1.1310: 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 part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	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

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

5.1.2 Limits

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually.

5.2 EUT RF Exposure

1) For WIFI

Antenna Gain: 1.5Bi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.41 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

802.11b mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	17.147	17.00 ± 2	19	79.433
Middle(2437MHz)	17.289	17.00 ± 2	19	79.433
Highest(2462MHz)	16.472	17.00 ± 2	19	79.433
802.11g mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	15.041	16.00 ± 2	18	63.096
Middle(2437MHz)	17.070	16.00 ± 2	18	63.096
Highest(2462MHz)	16.312	16.00 ± 2	18	63.096
802.11n(HT20)mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	13.776	15.00 ± 2	17	50.119
Middle(2437MHz)	15.468	15.00 ± 2	17	50.119
Highest(2462MHz)	15.569	15.00 ± 2	17	50.119

Worst case

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
79.433	1.5	0.0223	1	PASS

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20190800043EX-01

value.:

$$2) P_d = (P_{out} * G) / (4 * \pi * R^2) = (79.433 * 1.41) / (4 * 3.1416 * 20^2) = 0.0223$$