EN 62311 TEST REPORT

On Behalf of

Sunivision Technology Development Company Limited

Wifi camera

Model No.: See the Annex for details

Prepared for	:	Sunivision Technology Development Company Limited
Address	:	Floor 3, Building B, TaoYuan Industrial Park, Huangpu East Development Zone, Guangzhou, China

Prepared By	:	Shenzhen Alpha Product Testing Co., Ltd.
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Report Number	:	A2102076-C01-R04
Date of Receipt	:	March 4, 2021
Date of Test	:	March 4, 2021 – March 12, 2021
Date of Report	:	March 12, 2021
Version Number	:	V0

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TEST REPORT DECLARATION

Applicant	:	Sunivision Technology Development Company Limited
Address	:	Floor 3, Building B, TaoYuan Industrial Park, Huangpu East Development Zone, Guangzhou, China
Manufacturer	:	Sunivision Technology Development Company Limited
Address	:	Floor 3, Building B, TaoYuan Industrial Park, Huangpu East Development Zone, Guangzhou, China
EUT Description	:	Wifi camera
	(A) Model No.	: See the Annex for details
	(B) Trademark	: N/A

Measurement Standard Used:

EN 62311:2008

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the EN 62311 requirements.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....…..: Lucas Pang
Project Engineer

Approved by (name + signature)…....: Simple Guan
Project Manager

Date of issue…… ……..: March 12, 2021

SHENZHEN ALPHA PRODUCT TESTING CO.,LTD
ALPHA TESTING

Revision History

Revision	Issue Date	Revisions	Revised By
V0	March 12, 2021	Initial released Issue	Lucas Pang

1. General Information

1.1. Description of Device (EUT)

EUT Name	:	Wifi camera
Trademark	:	N/A
Model No.	:	See the Annex for details
DIFF.	:	There is no difference except for the appearance, shape and model name. So all the test were performed on the model AP-107W1Y-2MP-TY.
Power supply	:	DC 5V from adapter
2.4G WIFI	:	
Operation frequency	:	2412MHz-2472MHz for IEEE 802.11 b, g. n/HT20 2422MHz-2462MHz for IEEE 802. 11 n/HT40.
Channel No.	:	802.11b/802.11g /802.11n(HT20): 13CH 802.11(HT40): 9CH
Modulation type	:	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n :OFDM(64QAM, 16QAM, QPSK, BPSK)
Antenna Type	:	Internal antennal, Maximum Gain is 1.0dBi
Software version	:	V1.0
Hardware version	:	V1.0
Intend use environment	:	Residential, commercial and light industrial environment
	:	

1.2. Test Lab Information

Shenzhen Alpha Product Testing Co., Ltd.

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District,
518103, Shenzhen, Guangdong, China

1.3. Measurement Uncertainty (95% confidence levels, k=2)

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.74dB	
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.77dB	Polarize: V
	3.80dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	4.16dB	Polarize: H
	4.13dB	Polarize: V
Uncertainty for radio frequency	5.4*10-8	
Uncertainty for conducted RF Power	0.37dB	

2. Limit

2.1. Basic Restrictions Reference levels

Council Recommendation 99/519/EC Annex II

Basic restrictions for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	Magnetic flux density (mT)	Current density (Ma/m2) (rms)	Whole body average SAR (W/kg)	Localised SAR (head and trunk) (W/kg)	Localised SAR (limbs) (W/kg)	Power density (W/m2)
0Hz	40	-	-	-	-	-
>0-1Hz	-	8	-	-	-	-
1-4Hz	-	8/f	-	-	-	-
4-1000Hz	-	2	-	-	-	-
1000Hz-100kHz	-	f/500	-	-	-	-
100kHz-10MHz	-	f/500	0.08	2	4	-
10MHz-10GHz	-	-	0.08	2	4	-
10-300GHz	-	-	-	-	-	10

Note:

1. f is the frequency in Hz.
2. The basic restriction on the current density is intended to protect against acute exposure effects on central nervous system tissues in the head and trunk of the body and includes a safety factor. The basic restrictions for ELF fields are based on established adverse effects on the central nervous system. Such acute effects are essentially instantaneous and there is no scientific justification to modify the basic restrictions for exposure of short duration. However, since the basic restriction refers to adverse effects on the central nervous system, this basic restriction may permit higher current densities in body tissues other than the central nervous system under the same exposure conditions.
3. Because of electrical inhomogeneity of the body, current densities should be averaged over a cross section of 1cm2 perpendicular to the current direction.
4. For frequencies up to 100 kHz, peak current density values can be obtained by multiplying the rms value by √2(=1.414). For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated as=1/(2tp)
5. For frequencies up to 100kHz and for pulsed magnetic fields, the maximum current density associated with the pulses can be calculated from the rise/fall times and the maximum rate of change of magnetic flux density. The induced current density can then be compared with the appropriate basic restriction.
6. All SAR values are to be averaged over any six-minute period.
7. Localised SAR averaging mass is any 10g of contiguous tissue; the maximum SAR so obtained should be the value used for the estimation of exposure. These 10g of tissue are intended to be a mass of contiguous tissue with nearly homogeneous electrical properties. In specifying a

contiguous mass of tissue, it is recognised that this concept can be used in computational dosimeter but may present difficulties for direct physical measurements. A simple geometry such as cubic tissue mass can be used provided that the calculated dissymmetric quantities have conservation values relative to the exposure guidelines.

8. For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated as=1/(2tp). Additionally, for pulsed exposures, in the frequency range 0,3 to 10GHz and for localised exposure of the head, in order to limit and avoid auditory effects caused by thermoplastic expansion, an additional basic restriction is recommended. This is that SA should not exceed 2mJ kg-1 averaged over 10g of tissue.

2.2. Reference Levels

Council Recommendation 99/519/EC Annex III

Reference levels for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density Seq (W/m2)
0-1Hz	-	$3,2\times10^4$	4×10^4	-
1-8Hz	1000	$3,2\times10^4/f^2$	$4\times10^4/f^2$	-
8-25Hz	1000	4000/f	5000/f	-
0.025Hz-0,8kHz	250/f	4/f	5/f6,25	-
0,8-3kHz	250/f	5	6,25	-
3-150kHz	87	5	6,25	-
0,15-1MHz	87	0.73/f	0,92/f	-
1-10MHz	$87/f^{1/2}$	0.73/f	0,92/f	-
10-400MHz	28	0.073	0,092	2
400-2000MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046f^{1/2}$	f/200
2-300GHz	61	0,16	0,20	10

Note:

1. As indicated in the frequency range column.
2. For frequencies between 100kHz and 10GHz, Seq, E2, H2 and B2 are to be averaged over any six-minute period.
3. For frequencies exceeding 10GHz, Seq, E2, H2 and B2 are to be averaged over any 68/.1.05-minute period (.in GHz).
4. No E-field value is provided for frequencies <1Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 20kV/m. Spark discharges causing stress or annoyance should be avoided.

2.3. Limit Calculations for Radiated Electric Field Strength Measurement

For the calculation of the limits, the near field proportionality factor 1/d3 has been used. For ten times the distance, the level is decreased by the cubical, giving 60 dB.

Frequency range	EMF Limit V/m at 0.3m	Limit V/m at 3m	Limit (add. span)
30MHz 400MHz	28V/m(149dBuV/m)	89dBuV/m	69dBuV/m
400MHz – 2GHz	27.5V/m- 61.5V/m	89dBuV/m-----	69dBuV/m-------
	149dBuV/m – 155dBuV/m	95dBuV/m	75dBuV/m
2GHz – 300GHz	61V/m(155dBuV/m)	95dBuV/m	75dBuV/m

To deal with reflexions, other effects due to the measurement in 3 m distance and to deal with a measurement uncertainty of at least 5 dB, an additional span of 20 dB has been added.

For additional three times the distance, the level is decreased by additional 30 dB.

Frequency range	Limit V/m at 0.3m	Limit V/m at 3m	Limit (add. span)
30MHz 400MHz	28V/m(149dBuV/m)	69dBuV/m	39dBuV/m
400MHz – 2GHz	27.5V/m- 61.5V/m	69dBuV/m	39dBuV/m
	149dBuV/m – 155dBuV/m	75dBuV/m	45dBuV/m
2GHz – 300GHz	61V/m(155dBuV/m)	75dBuV/m	45dBuV/m

Limits for radiated field according to EN 55022 / CISPR 22 for a class B appliance:

Frequecncy Range	Limit dBuV/m at 3m Peak	Limit dBuV/m at 3m QP or Average
30MHz – 230MHz		40dBuV/m quasi-peak
230MHz -1GHz		47dBuV/m quasi-peak
1GHz-3GHz	70dBuV/m peak	50dBuV/m average
3GHz-6GHz	74dBuV/m peak	54dBuV/m average

Conclusion: If the requirements for radiated emissions according to EN 55022 / CISPR 22 or other standards with the same limits are fulfilled, also the EMF requirements for the measured frequency range are fulfilled

3. Assess Result

Frequency range	Maximum output power(dBm)	Power density at 0.2m distanc (W/m^2)	Limit (W/m^2)	Conclusion
2412-2472MHz	14.62	0.073	10	PASS

Note 1:. The output power comes from the Operating description for this device.

Note 2:. $\mathbf{S = PG / 4\pi R^2}$

P = Power input to antenna

G = Antenna Gain

R = distance to the center of radiation of antenna (in meter) = 0.2 m

Annex

Model List		
AP-107W1Y-2MP-TY	AP-107W1-1MP-TY	AP-TY688ZD-1MP
AP-TY688ZD-2MP	AP-9826-10-TY-2MP	AP-TYB151-1MP
AP-TYB151-2MP	AP-TYB149-1MP	AP-VR-P1-130
AP-TYB150-1MP	AP-TYB150-2MP	AP-308ZD-1MP-TY
AP-308ZY-2MP-TY	AP-9826-10-TY-1MP	AP-228ZD-1MP-TY
AP-228ZDH-2MP-TY	AP-618ZD-1MP-TY	AP-K2-10TY
AP-K2-20TY	AP-P11-12-2MP-3.6-6	AP-P09-12-2MP
AP-P10-15-2MP	AP-B166-2MP-XM	AP-B166-1MP-TY
AP-B166-2MP-TY	AP-B166-1MP-AJ	AP-B166-2MP-AJ
AP-618ZDH-2MP-TY		

-------END OF REPORT-------