EMC TEST REPORT

Product	:	Webcam
Trade mark	:	ANC, tracEr, CANYON
Model/Type reference	:	335WS (TRF-021), 177WS, 152WS, 150WS, 097WS , 363WS (CNE-CWC3)
Serial Number	:	N/A
Ratings	:	DC 5V
Report Number	:	EESZF07170003R1
Date	:	Oct. 16, 2014
Regulations	:	See below

Test Standards	Results
☒ EN 55022: 2010	PASS
☒ EN 55024: 2010	PASS

Prepared for:

SHENZHEN AONI ELECTRONIC INDUSTRY CO., LTD
No.5 Bldg, Honghui Industrial park, 2nd liuxian Road,
Xinan street, Baoan District, Shenzhen

Prepared by:

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Tested by: Reviewed by:

Approved by: Date: Oct. 16, 2014

Louisa Lu
Lab Supervisor

Check No.: 1702035198

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(Note: N/A means not applicable)

1. GENERAL INFORMATION

Applicant: SHENZHEN AONI ELECTRONIC INDUSTRY CO., LTD
No.5 Bldg, Honghui Industrial park, 2nd liuxian Road,
Xinan street, Baoan District, Shenzhen

Manufacturer: SHENZHEN AONI ELECTRONIC INDUSTRY CO., LTD
No.5 Bldg, Honghui Industrial park, 2nd liuxian Road,
Xinan street, Baoan District, Shenzhen

EMC Directive: 2004/108/EC

Product: Webcam

Trade mark: ANC, tracEr, CANYON

Model/Type reference: 335WS (TRF-021), 177WS, 152WS, 150WS, 097WS, 363WS (CNE-CWC3)

Serial Number: N/A

Report Number: EESZF07170003R1

Sample Received Date: Aug. 25, 2011

Date of Test: Aug. 25, 2011 to Aug. 29, 2011, July 16, 2013 to July 17, 2013

This testing report displaces the original report of No. EESZF07170003, and the original one No. EESZF07170003 was invalid since the date of this testing report released.

2. TEST SUMMARY

The Product has been tested according to the following specifications:

EMISSION		
Standard	**Test Item**	**Test**
EN 55022	Conducted disturbance	N/A[1]
EN 55022	Radiated disturbance	Yes
IMMUNITY (EN 55024)		
Standard	**Test Item**	**Test**
IEC 61000-4-2	Electrostatic discharge (ESD)	Yes
IEC 61000-4-3	Radio-frequency electromagnetic field Immunity	Yes
IEC 61000-4-4	Electrical fast transients (EFT)	N/A[1]
IEC 61000-4-5	Surges	N/A[1]
IEC 61000-4-6	Radio-frequency continuous conducted Immunity	N/A[1]
IEC 61000-4-8	Power-frequency magnetic fields Immunity	N/A[2]
IEC 61000-4-11	Voltage dips and interruptions	N/A[1]

Remark:
1. The Product is powered by USB port from PC.
2. The Product doesn't contain any device susceptible to magnetic fields.

3. TEST UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the PRODUCT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Radiated disturbance	4.5

4. PRODUCT INFORMATION AND TEST SETUP

4.1 PRODUCT INFORMATION

Ratings: DC 5V

The highest frequency of the internal sources of the Product is less than 108 MHz:

☒ less than 108 MHz, the measurement shall only be made up to 1 GHz.
☐ between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz.
☐ between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz.
☐ above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

Model difference: All models are identical except the appearance. The test models are 335WS (TRF-021) and 097WS and the test results are applicable to the others.

Cable of PRODUCT

No.	Cable Type	Quantity	Provider	Length (m)	Specification	Note
1	USB cable	1	Applicant	1.5	Shielded	With a ferrite ring near the USB port

4.2 TEST SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between Product and support equipment.

4.3 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	Note book	Dell	V3400D-326	GY QTVP1	N/A	N/A

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5. FACILITIES AND ACCREDITATIONS

5.1 TEST FACILITY

All test facilities used to collect the test data are located at Hongwei Industrial Zone, 70 Area, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4, CISPR 16-1-1 and other equivalent standards.

5.2 TEST EQUIPMENT LIST

Instrumentation: The following list contains equipments used at CTI for testing.
The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

Equipment used during the tests:

3M Semi-anechoic Chamber - Radiated disturbance Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	07/12/2016
Spectrum Analyzer	Agilent	E4440A	MY46185649	01/18/2014
Biconilog Antenna	ETS-LINGREN	3142C	00044562	07/21/2014
Multi device Controller	ETS-LINGREN	2090	00057230	N/A

Shielding Room No. 3 - ESD Test (IEC 61000-4-2)				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**
ESD Simulator	EM TEST	ESD30C	V0603101091	07/30/2013

3M Full-anechoic Chamber - Radio-frequency electromagnetic field Immunity Test (IEC 61000-4-3)				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	07/12/2016
ESG Vector signal generators	Agilent	E4438C	MY45095744	01/18/2014
Power Amplifier	AR	150W1000	0322288	07/19/2014
Biconilog Antenna	ETS-LINGREN	3142C	00044562	07/21/2014

5.3 LABORATORY ACCREDITATIONS AND LISTINGS

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

6. RADIATED DISTURBANCE (RE)

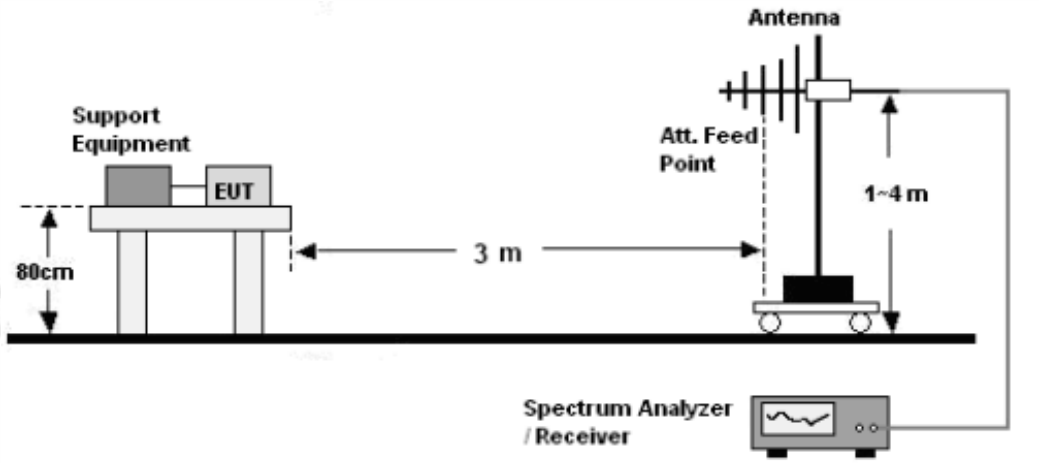
6.1 LIMITS

Limits for radiated disturbance of Class B ITE

Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)
30-230	40
230-1000	47

NOTE: The lower limit shall apply at the transition frequencies.

6.2 BLOCK DIAGRAM OF TEST SETUP



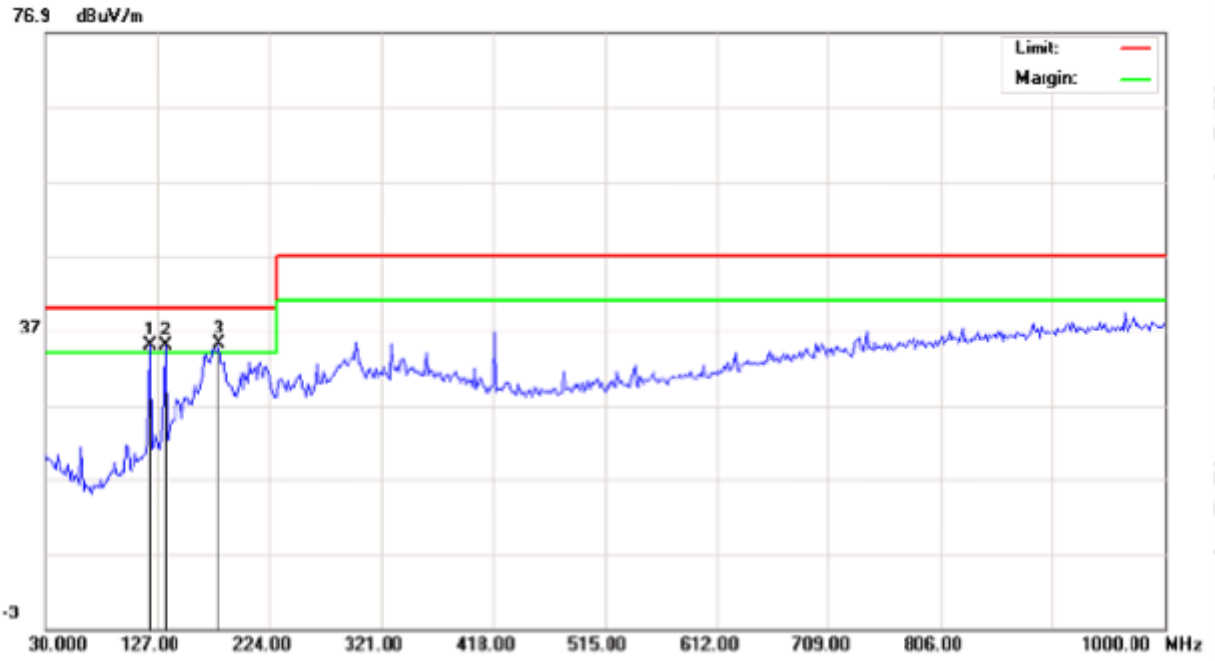
6.3 TEST PROCEDURE

a. The product was placed on the non-conductive turntable 0.8m above the ground at a chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

6.4 GRAPHS AND DATA



Site site #1 Polarization: *Horizontal* Temperature: 25

Limit: EN 55022 Class B Radiation Power: DC 5V Humidity: 56 %

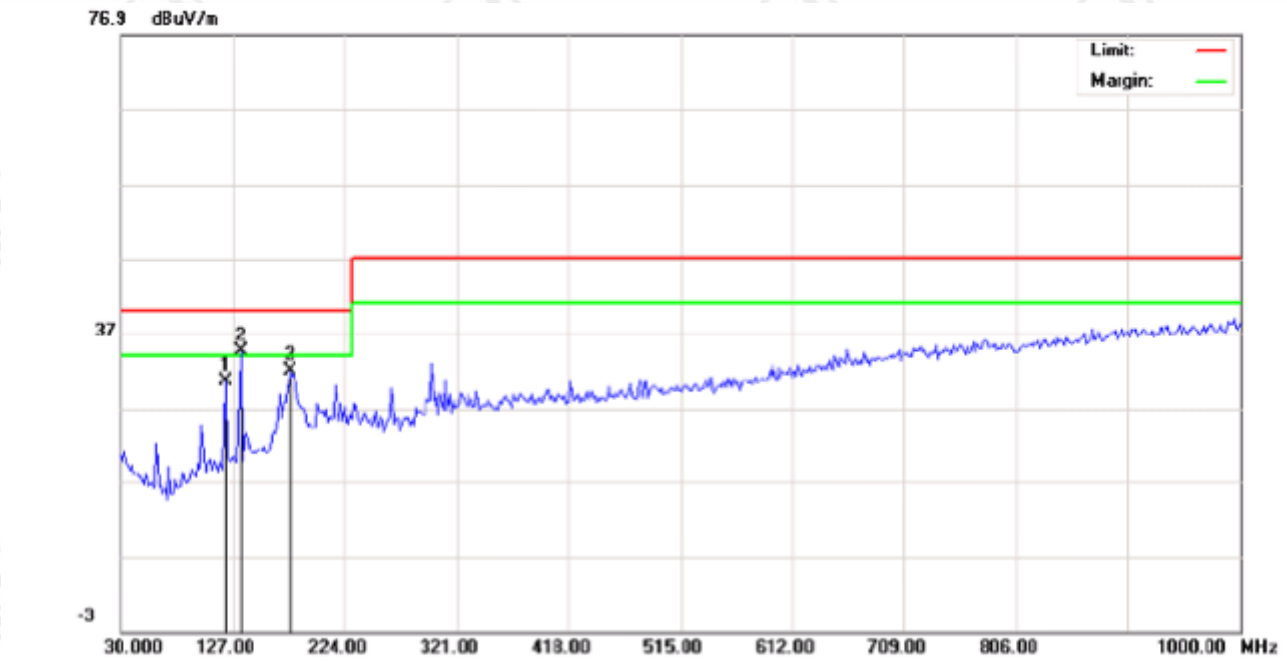
EUT: Webcam

M/N: 335WS(TRF-021)

Mode: NORMAL

Note:

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	120.5333	24.17			10.81	34.98			40.00		-5.02		P	
2	133.4667	23.88			11.16	35.04			40.00		-4.96		P	
3	180.3500	22.76			12.42	35.18			40.00		-4.82		P	



Site site #1 Polarization: *Vertical* Temperature: 25

Limit: EN 55022 Class B Radiation Power: DC 5V Humidity: 56 %

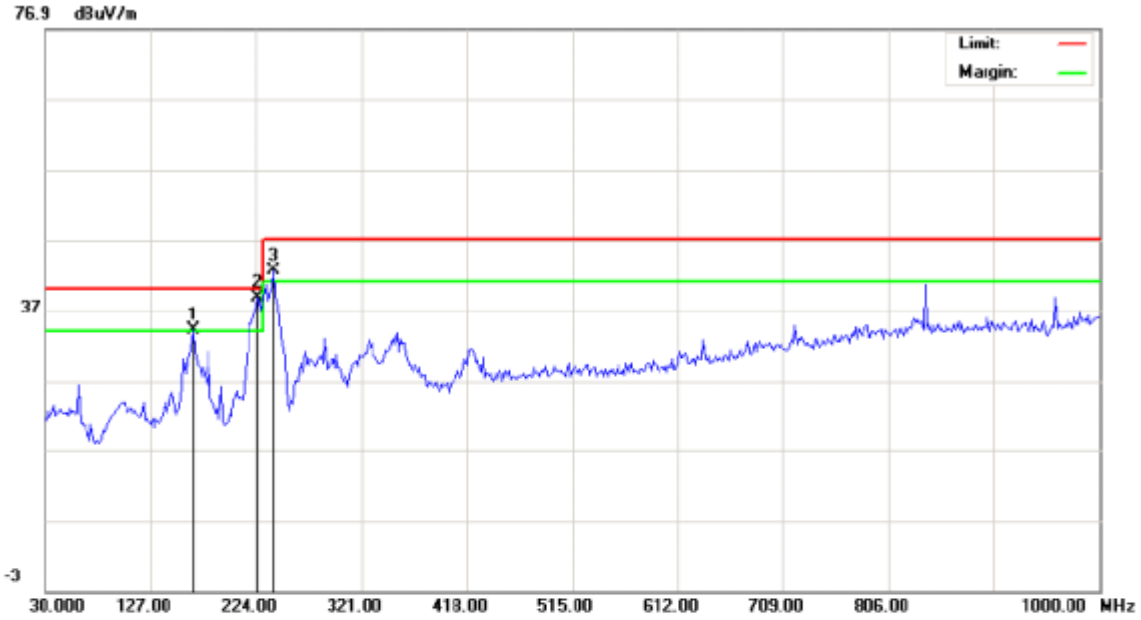
EUT:Webcam

M/N: 335WS(TRF-021)

Mode: NORMAL

Note:

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	120.5333	19.80			10.81	30.61			40.00		-9.39		P	
2	133.4667	23.52			11.16	34.68			40.00		-5.32		P	
3	177.1167	19.72			12.33	32.05			40.00		-7.95		P	

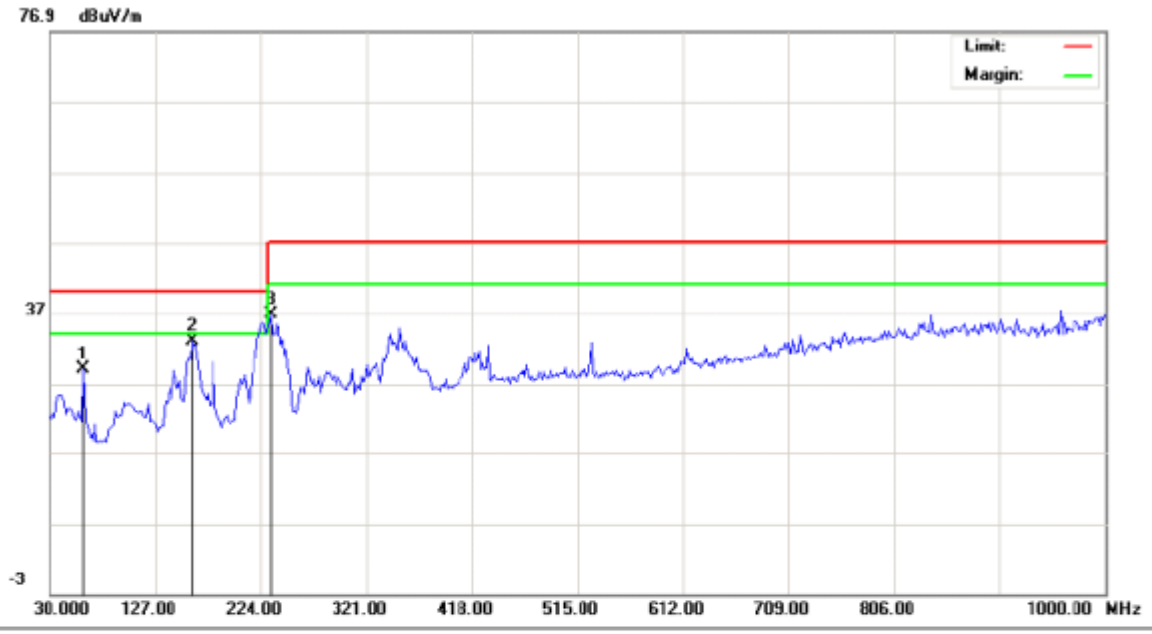


Site site #1
Limit: EN 55022 Class B Radiation
EUT: Webcam
M/N: 097WS
Mode: Normal
Note:

Polarization: *Horizontal*
Power: DC 5V

Temperature: 24
Humidity: 55 %

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F Comment
1	165.8000	22.40	17.56		11.81	34.21	29.37		40.00		-10.63		P
2	225.6167	24.61	18.19		14.23	38.84	32.42		40.00		-7.58		P
3	240.1667	27.99	21.70		14.62	42.61	36.32		47.00		-10.68		P



Site site #1
Limit: EN 55022 Class B Radiation
EUT: Webcam
M/N: 097WS
Mode: Normal
Note:

Polarization: *Vertical*
Power: DC 5V

Temperature: 24
Humidity: 55 %

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	60.7167	14.67	13.11		14.40	29.07	27.51		40.00		-12.49		P	
2	160.9500	21.42	16.20		11.56	32.98	27.76		40.00		-12.24		P	
3	233.7000	22.40	17.25		14.45	36.85	31.70		47.00		-15.30		P	

7. IMMUNITY TEST

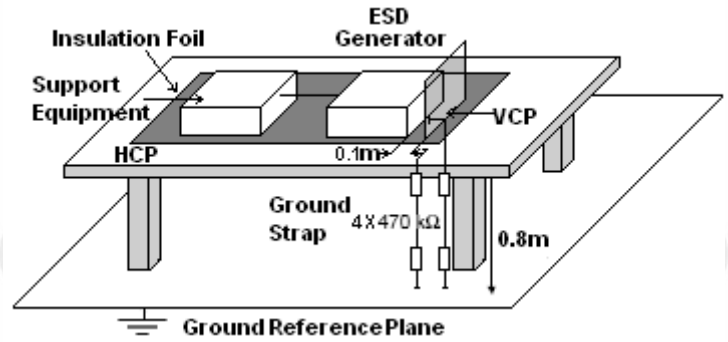
General Performance Criteria	
Product Standard	**EN 55024:2010 clause 7**
CRITERION A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
CRITERION B	After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
CRITERION C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

7.1 ELECTROSTATIC DISCHARGE (ESD)

7.1.1 TEST SPECIFICATION

Basic Standard	:	EN 55024 & IEC 61000-4-2
Test Port	:	Enclosure port
Discharge Impedance	:	330 ohm / 150 pF
Discharge Mode	:	Single Discharge
Discharge Period	:	one second between each discharge

7.1.2 BLOCK DIAGRAM OF TEST SETUP



7.1.3 TEST PROCEDURE

ESD shall be applied only to those points and surfaces of the Product which are expected to be touched during usual operation, including user access, as specified in the user manual.

The discharges shall be applied in two ways:

a. Contact discharges to the conductive surfaces and to coupling planes (HCP & VCP):

The Product shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points (a minimum of 50 discharges at each point). One of the test pints shall be subjected to at last 50 indirect discharges (contact) to the centre of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct discharges. Tests shall be performed at a maximum repetition rate of one discharge per second.

b. Air discharge at slots and apertures, and insulating surfaces:

On those parts of the Product where it is not possible to perform contact discharge testing, the equipment should be investigated to identify user accessible points where breakdown may occur. Such points are tested using the air discharge method. A minimum of 10 single air discharges shall be applied to the selected test point for each such area.

7.1.4 RESULTS & PERFORMANCE

Product	:	Webcam	**Model/Type reference**	:	335WS(TRF-021), 097WS
Power	:	DC 5V	**Temperature**	:	23℃
Mode	:	Normal	**Humidity**	:	53%

Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	2, 4	25	B	A
	Indirect Discharge HCP	2, 4	25	B	A
	Indirect Discharge VCP	2, 4	25	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	2, 4, 8	10	B	A

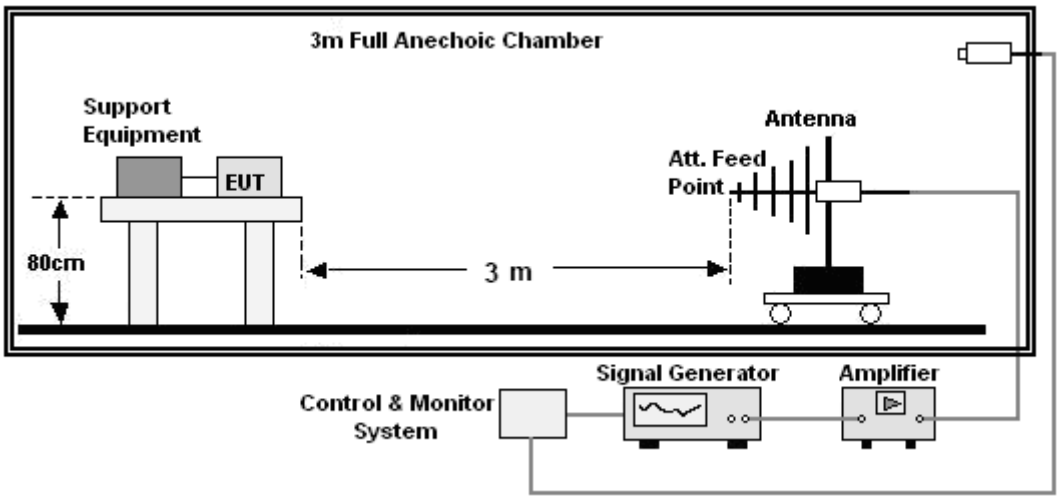
☑ There was no observable degradation in performance.

7.2 RADIO-FREQUENCY ELECTROMAGNETIC FIELD IMMUNITY

7.2.1 TEST SPECIFICATION

Basic Standard	:	EN 55024 & IEC 61000-4-3
Test Port	:	Enclosure port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second
Polarization	:	Horizontal & Vertical

7.2.2 BLOCK DIAGRAM OF TEST SETUP



7.2.3 TEST PROCEDURE

a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the product.

b. The frequency range is swept from 80MHz to 1000MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed 1.5x 10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1%.

c. The test was performed with the product exposed to both vertically and horizontally polarized fields on each of the four sides.

7.2.4 RESULTS & PERFORMANCE

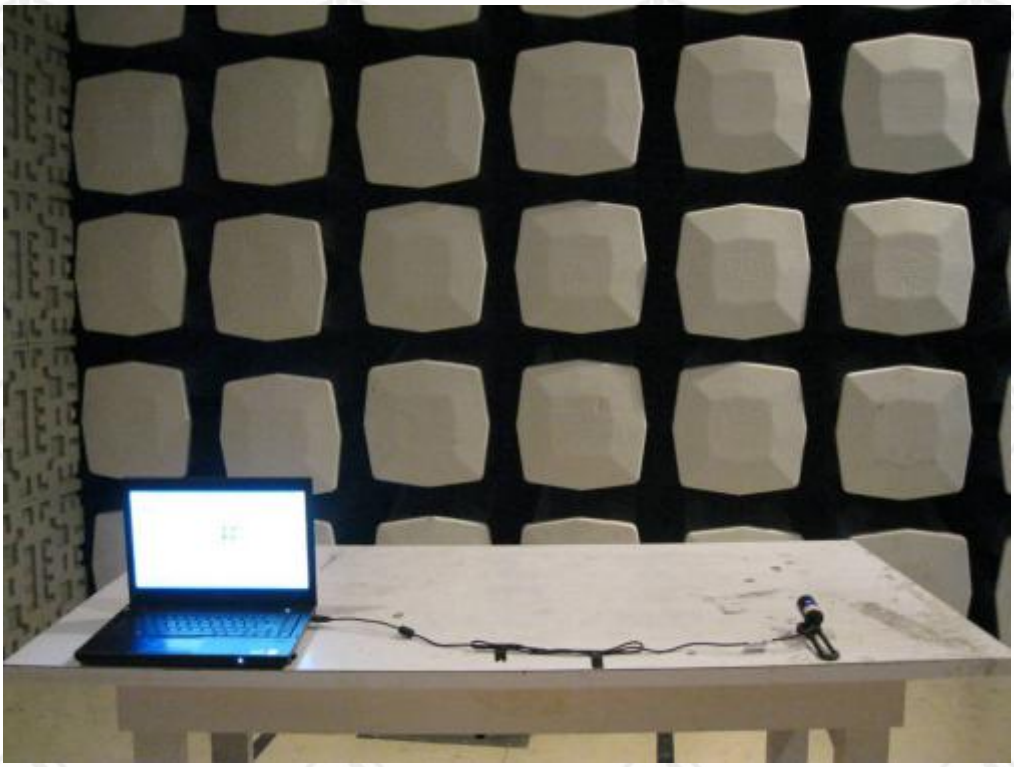
Product	:	Webcam	**Model/Type reference**	:	335WS(TRF-021), 097WS
Power	:	DC 5V	**Temperature**	:	23℃
Mode	:	Normal	**Humidity**	:	53%

Frequency (MHz)	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000	Front, Right, Back, Left	3	A	A

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

RADIATED DISTURBANCE TEST SETUP

ESD TEST SETUP



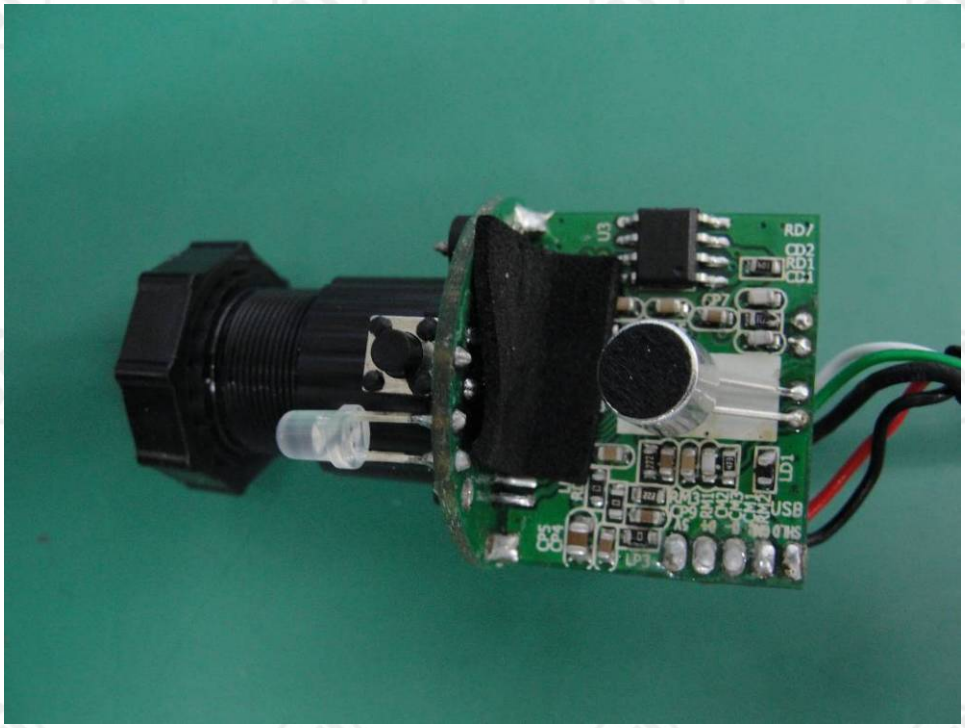
RADIO-FREQUENCY ELECTROMAGNETIC FIELD IMMUNITY TEST SETUP

APPENDIX 2 PHOTOGRAPHS OF PRODUCT

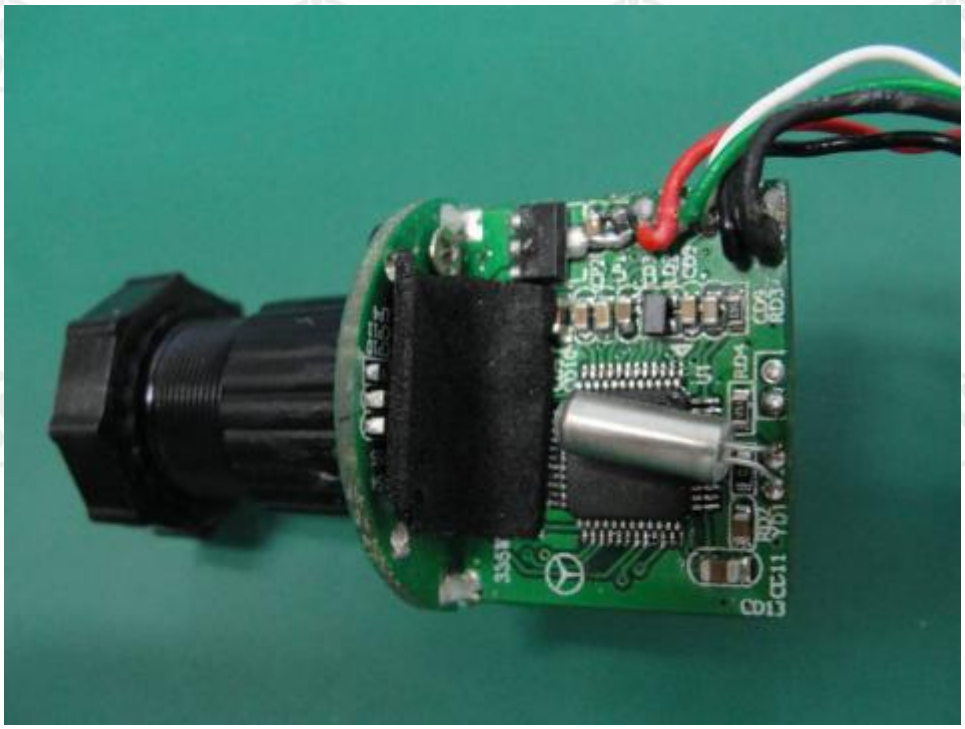
View of Product -1 (335WS (TRF-021))

View of Product -2 (335WS (TRF-021))

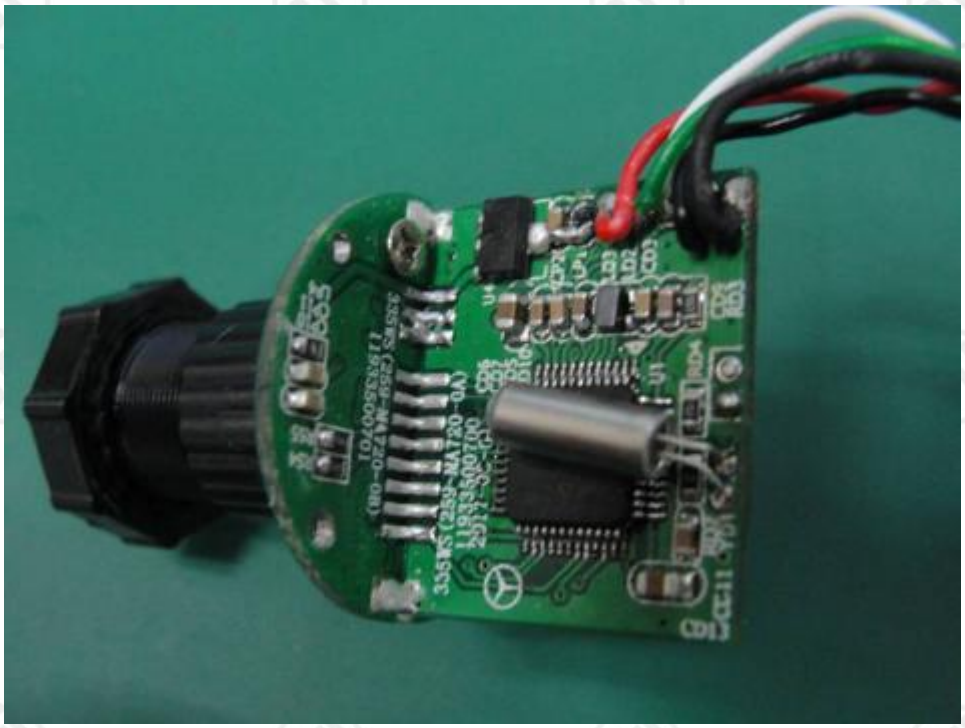
View of Product -3 (335WS (TRF-021))



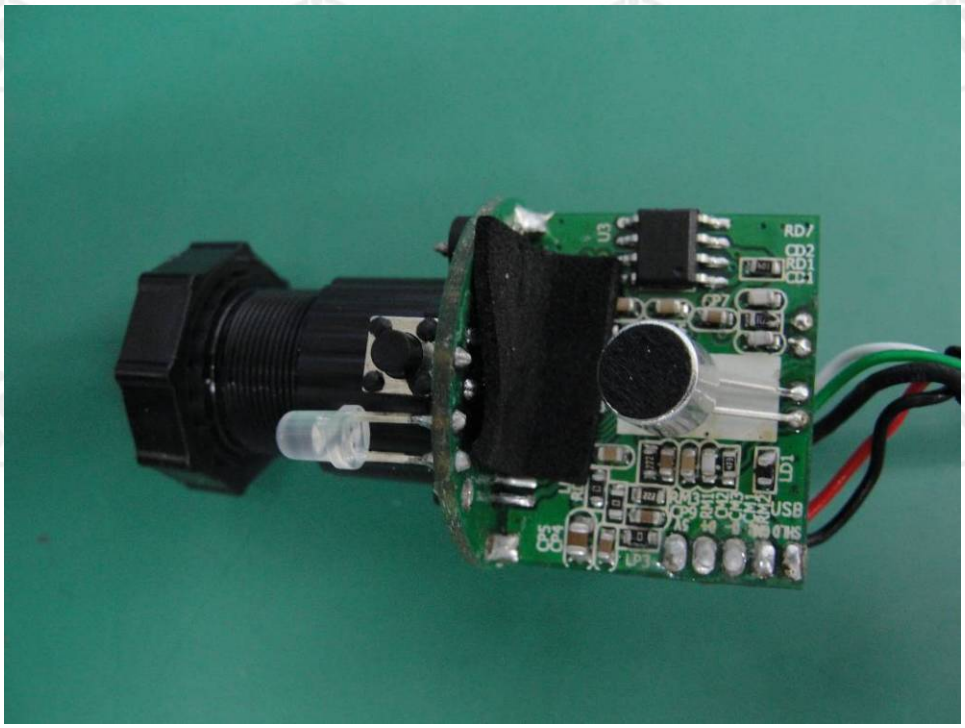
View of Product -4 (335WS (TRF-021))



View of Product -5 (335WS (TRF-021))



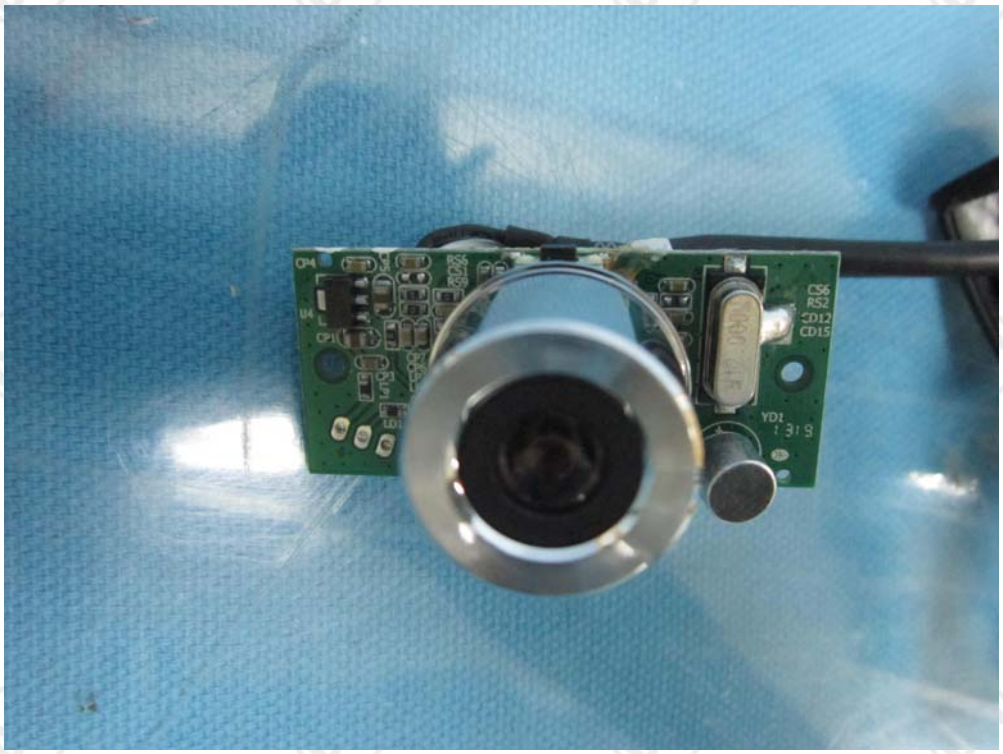
View of Product -6 (335WS (TRF-021))



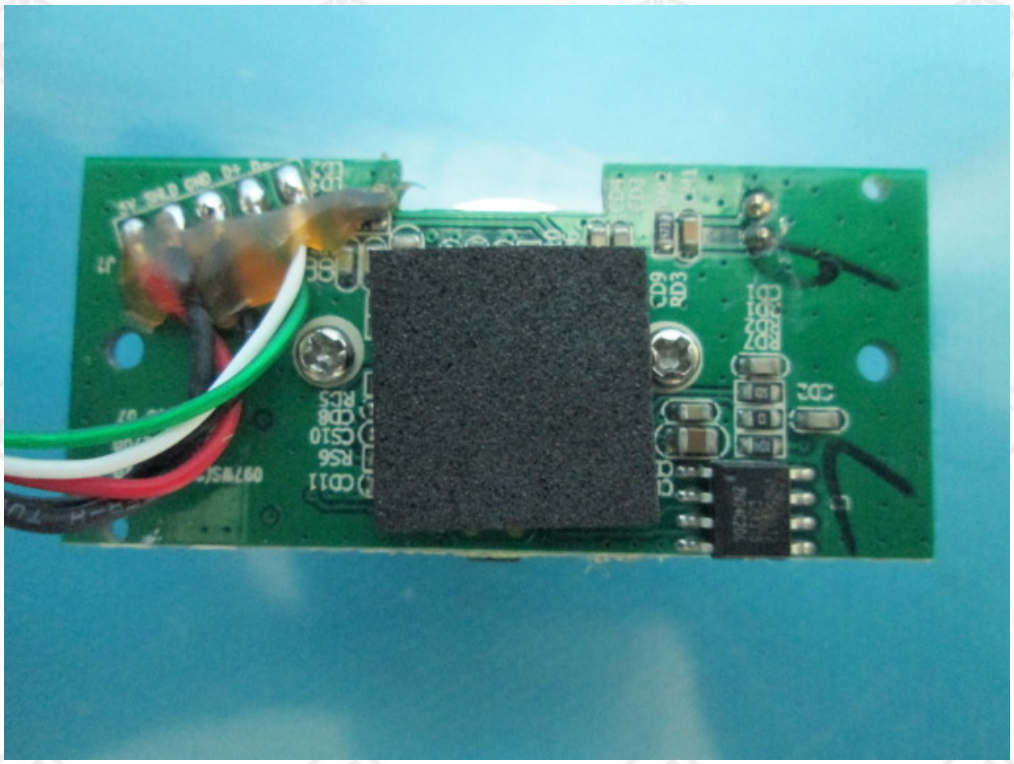
View of Product -7 (335WS (TRF-021))

View of Product -8 (097WS)

View of Product -9 (097WS)



View of Product -10 (097WS)



View of Product -11 (097WS)

View of Product -12 (363WS (CNE-CWC3))

*** End of report ***