STC Test Report

Date : 2011-06-01
No. : HM166812

Applicant (XLT001): X 10 (USA) Inc.
620 Naches Ave SW, Building A, Renton, WA 98057,

Manufacturer: X-10 Electronics (Shenzhen) Co., Ltd.
Together Rich Industrial Park B, Sanwei Industrial District, Xixiang Town, Baoan Country, Shengzhen, China

Description of Sample(s): Submitted sample(s) said to be

Product:	Professional Pan/Tilt/Zoom wireless color camera
Brand Name:	X10
Model Number:	XC35A
FCC ID:	B4SXC35A

Date Sample(s) Received: 2011-04-26

Date Tested: 2011-05-16 to 2011-05-17

Investigation Requested: Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2010 and ANSI C63.4:2009 for FCC Certification.

Conclusion(s): The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

Remark(s): ---

Dr. LEE Kam Chuen
Authorized Signatory
ElectroMagnetic Compatibility Department
For and on behalf of
The Hong Kong Standards and Testing Centre Ltd.

The Hong Kong Standards and Testing Centre Ltd.
10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong
Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage:www.hkstc.org E-mail: hkstc@hkstc.org

CONTENT:

1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.
EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate
New Territories, Hong Kong

1.2 Applicant Details

Applicant

X 10 (USA) Inc.
620 Naches Ave SW, Building A, Renton, WA 98057,

Manufacturer

X-10 Electronics (Shenzhen) Co., Ltd.
Together Rich Industrial Park B, Sanwei Industrial District, Xixiang Town, Baoan Country, Shengzhen, China

1.3 Equipment Under Test [EUT]
Description of Sample(s)

Product:	Professional Pan/Tilt/Zoom wireless color camera
Manufacturer:	X-10 Electronics (Shenzhen) Co., Ltd.
	Together Rich Industrial Park B, Sanwei Industrial District, Xixiang Town, Baoan Country, Shengzhen, China
Brand Name:	X10
Model Number:	XC35A
Input Voltage:	117Va.c.

The AC/DC Adaptor used for the tests was provided by the applicant with the following details: Two pins (Live / Neutral) only adaptor, Model Number: SHE1500500PU, Input: 100-240Va.c. 50-60Hz 300mA, Output: 15Vd.c. 500mA

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is an X-10 (USA) INC.; Professional Pan/Tilt/Zoom wireless color camera. 310MHz super-regeneration receiver which received RF signal from user remote control and send to the main MCU for function control.

1.4 Date of Order

2011-04-26

1.5 Submitted Sample(s):

1 Sample

1.6 Test Duration

2011-05-16 to 2011-05-17

1.7 Country of Origin

China

2.0 Technical Details

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2010 Regulations and ANSI C63.4:2009 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION
Results Summary

Test Condition	Test Requirement	Test Method	Class / Severity	Test Result	
				Pass	Fail
Radiated Emissions	FCC 47CFR 15.109	ANSI C63.4:2009	N/A	☒	☐
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.107	ANSI C63.4:2009	N/A	☒	☐

Note: N/A - Not Applicable

3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

Test Requirement:	FCC 47CFR 15.109
Test Method:	ANSI C63.4:2009
Test Date:	2011-05-16
Mode of Operation:	Receiver mode

Test Method:

The sample was placed 0.8m above the ground plane of semi-anechoic Chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

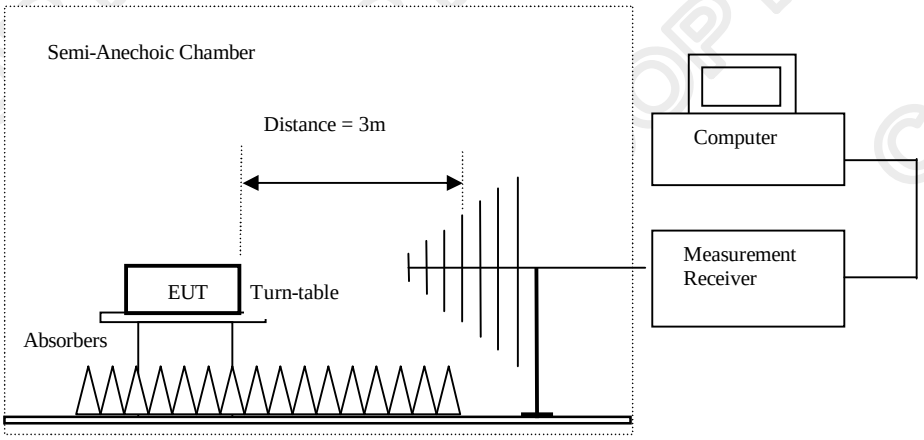
Remark: 3 orthogonal axis apply to hand-held device only.

* Semi-anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

Spectrum Analyzer Setting:

9KHz – 30MHz (Pk & Av)	RBW:	10kHz
	VBW:	30kHz
	Sweep:	Auto
	Span:	Fully capture the emissions being measured
	Trace:	Max. hold
30MHz – 1GHz (QP)	RBW:	120kHz
	VBW:	120kHz
	Sweep:	Auto
	Span:	Fully capture the emissions being measured
	Trace:	Max. hold
Above 1GHz (Pk & Av)	RBW:	3MHz
	VBW:	3MHz
	Sweep:	Auto
	Span:	Fully capture the emissions being measured
	Trace:	Max. hold

Test Setup:



Ground Plane

Absorbers placed on top of the ground plane are for measurements above 1000MHz only.

Limits for Radiated Emissions [FCC 47 CFR 15.109]:

Frequency Range [MHz]	Field strength [microvolts/meter]	Measurement distance [meters]
30-88	100	3
88-216	150	3
216-960	200	3
Above960	500	3

Results of Rx on mode (30MHz – 1000MHz): PASS

Field Strength of Fundamental Emissions Quasi-Peak Value						
Frequency MHz	Measured Level @3m dBµV	Correction Factor dB/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	E-Field Polarity
42.9	19.4	11.2	30.6	33.9	100	Vertical
57.3	23.5	9.3	32.8	43.7	100	Vertical
128.9	19.4	7.5	26.9	22.1	150	Vertical
310.8	11.6	15.6	27.2	22.9	200	Vertical
429.6	9.1	18.3	27.4	23.4	200	Vertical

Results of Rx on mode (Above 1000MHz): PASS

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBµV	Correction Factor dB/m	Field Strength dBµV/m	Field Strength µV/m	Limit µV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Results of Rx on mode (Above 1000MHz): PASS

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBµV	Correction Factor dB/m	Field Strength dBµV/m	Field Strength µV/m	Limit µV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Remarks:
Correction Factor includes Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty : 30MHz to 1GHz 5.1dB

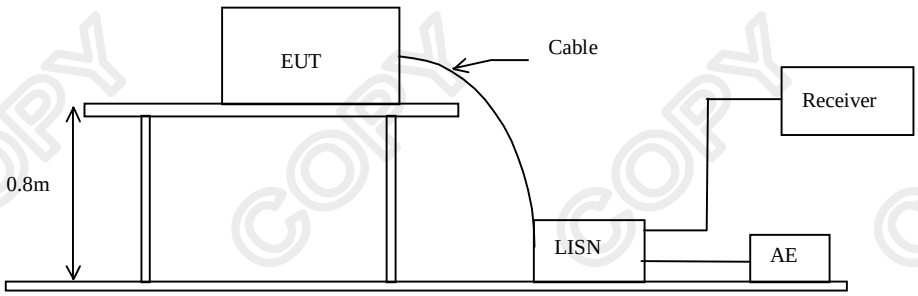
3.1.1 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.107
Test Method:	ANSI C63.4:2009
Test Date:	2011-05-17
Mode of Operation:	Receiving mode

Test Method:

The test was performed in accordance with ANSI C63.4: 2009, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Test Setup:



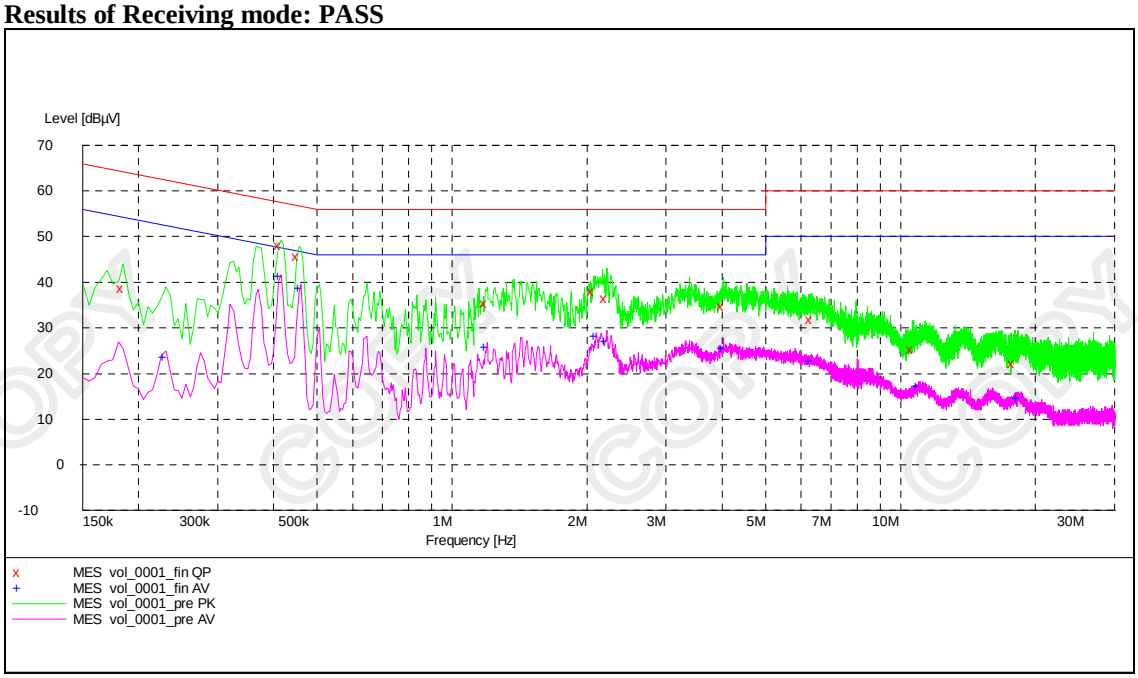
Limit for Conducted Emissions (FCC 47 CFR 15.207):

Frequency Range [MHz]	Quasi-Peak Limits [dBµV]	Average [dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Results of Receiving mode: PASS



Results of Receiving mode: PASS

Conductor Live or Neutral	Frequency MHz	Quasi-peak		Average	
		Level dBμV	Limit dBμV	Level μV	Limit μV
Live	0.415	-*-	-*-	41.2	48.0
Live	0.455	45.8	57.0	-*-	-*-
Live	0.460	-*-	-*-	38.6	47.0
Live	1.195	35.4	56.0	25.9	46.0
Live	2.095	-*-	-*-	28.0	46.0
Live	2.210	36.5	56.0	-*-	-*-
Live	4.035	34.6	56.0	25.4	46.0
Live	6.315	-*-	-*-	22.7	50.0
Live	6.340	31.9	60.0	-*-	-*-
Live	18.300	-*-	-*-	14.5	50.0
Neutral	0.185	38.6	64.0	-*-	-*-
Neutral	0.230			23.5	52.0
Neutral	0.415	48.0	58.0	-*-	-*-
Neutral	2.070	37.9	56.0	-*-	-*-
Neutral	2.210			27.1	46.0
Neutral	10.700	25.3	60.0	-*-	-*-
Neutral	10.980			17.2	50.0
Neutral	17.960	22.2	60.0	-*-	-*-
Neutral	18.300	-*-	-*-	14.5	50.0

Remarks:
Calculated measurement uncertainty : 3.97dB
-*- Emission(s) that is far below the corresponding limit line.

Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM020	HORN ANTENNA	EMCO	3115	4032	2009/09/02	2011/09/02
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	EMCO	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-Linggren	FACT-3	--	2008/12/01	2011/12/01
EM174	BICONILOG ANTENNA	EMCO	3142B	1671	2010/02/09	2012/02/09
EM229	EMI Test Receiver	R&S	ESIB40	100248	2010/11/02	2011/11/02
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	2009/07/26	2011/07/26

Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM197	LISN	EMCO	4825/2	1193	2010/10/13	2011/10/13
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2010/07/01	2011/07/01
EM154	SHIELDING ROOM	SIEMENS MATSUSHITA COMPONENTS	N/A	803-740-057-99A	2011/01/23	2012/01/23

Remarks:-

CM Corrective Maintenance
N/A Not Applicable
TBD To Be Determined

Appendix B

Photographs of EUT

Front View of the product

Rear View of the product

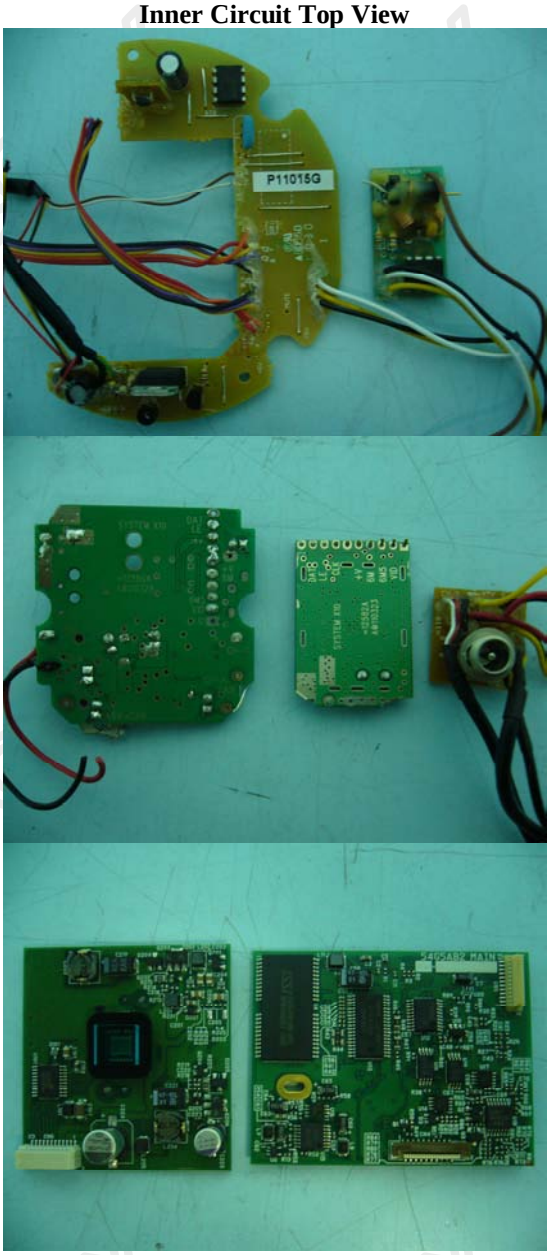
Left View of the product

Right View of the product

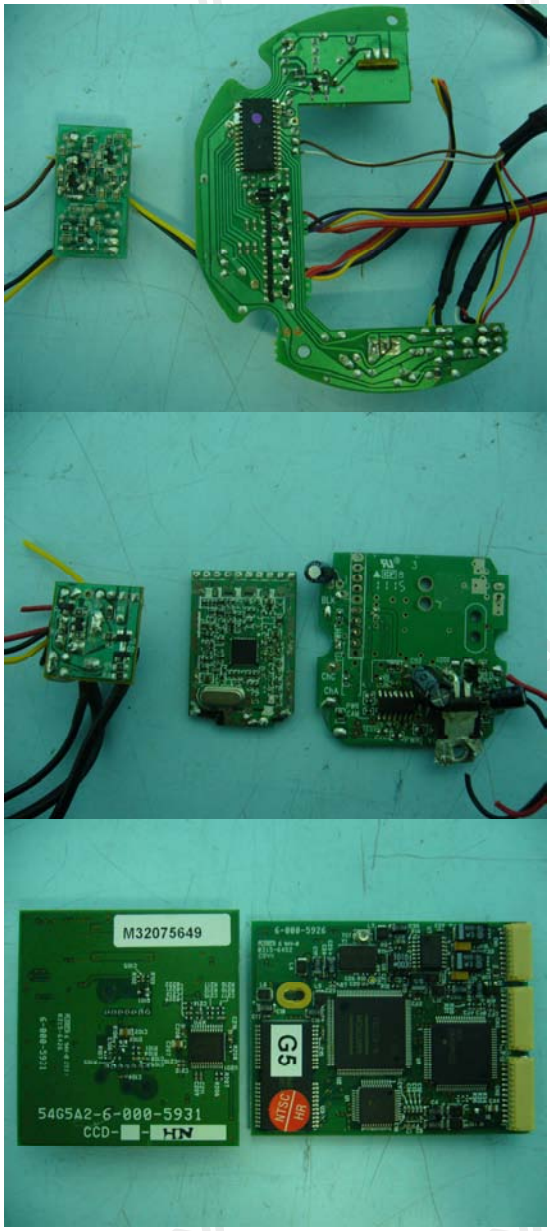
Top View of the product

Bottom View of the product

Inner Circuit Top View

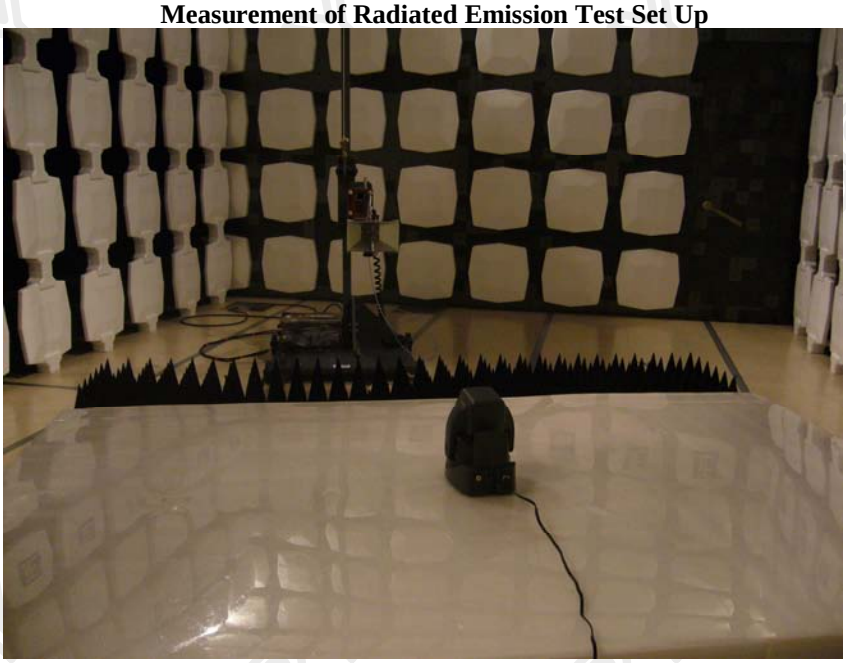


Inner Circuit Bottom View

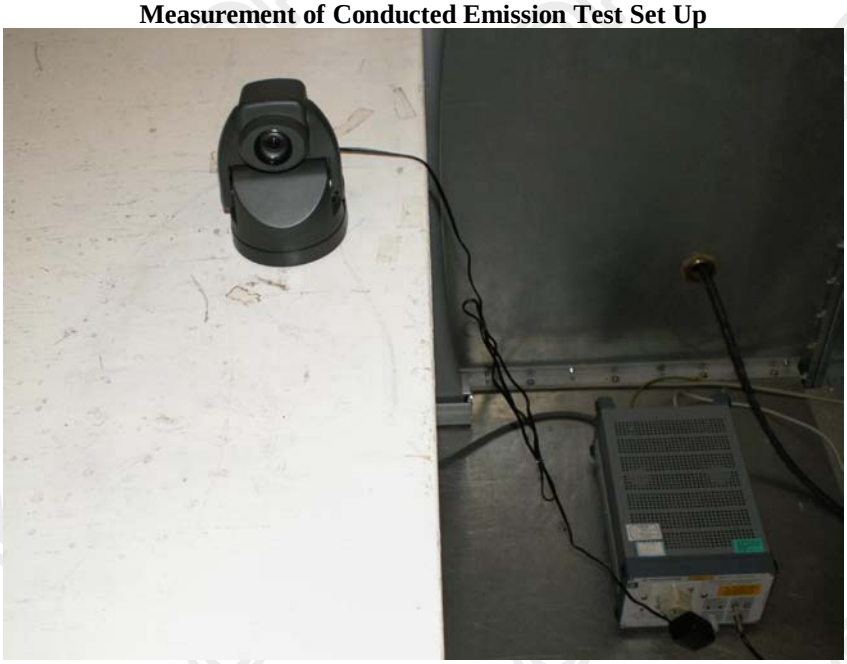


Photographs of EUT

Measurement of Radiated Emission Test Set Up



Measurement of Conducted Emission Test Set Up



******* End of Test Report *******