STC Test Report

Date : 2011-05-04
No. : HM166541

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:	Wireless Color Camera
Brand Name:	X10
Model Number:	XC30A
FCC ID:	B4S-XC30A

Date Sample(s) Received: 2011-04-12

Date Tested: 2011-04-19 to 2011-04-21

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): For additional product name and models details, see page 4.

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
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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:	Wireless Color Camera
Additional Product Name(s):	Wireless Color WideEye Camera, Wireless B/W Camera, Wireless B/W WideEye 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:	XC30A
Additional Model Number(s):	XC31A, XC32A, XC33A
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: XM20A, Input: 120Va.c. 60Hz 3W, Output: 9Vd.c. 120mA

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is an X 10 (USA) Inc. Wireless Color Camera. XC30A is a 900MHz camera which converts video and audio to 900MHz RF signal. The modulation is FM.

1.4 Date of Order

2011-04-12

1.5 Submitted Sample(s):

1 Sample

1.6 Test Duration

2011-04-19 to 2011-04-21

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
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2009	N/A	☒	☐
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A	☒	☐
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	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 15.249
Test Method:	ANSI C63.4:2009
Test Date:	2011-04-21
Mode of Operation:	Tx 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.

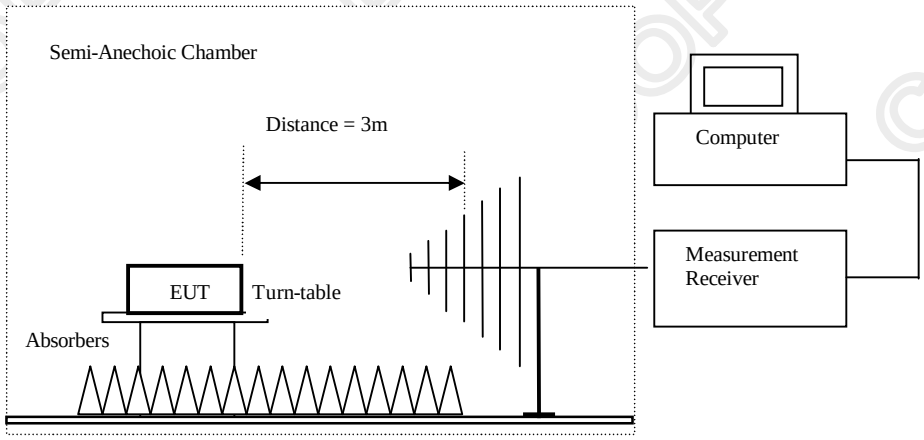
Remark: 3 orthogonal axis apply to hand-held device only.

* 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:



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

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Tx mode: Pass

Field Strength of Fundamental Emissions
Quasi-Peak Value

Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
921.0	63.9	26.4	90.3	32,734.1	50,000	Vertical

Field Strength of Fundamental Emissions
Peak Value

	Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
	1842.8	17.6	28.1	45.7	192.8	50,000	Vertical
*	2763.0					50,000	Horizontal
*	3684.0					50,000	Horizontal
*	4605.0					50,000	Horizontal
	5526.0					50,000	Horizontal
	6447.0	**No Emission Detected**				50,000	Horizontal
*	7368.0					50,000	Horizontal
*	8289.0					50,000	Horizontal
*	9210.0					50,000	Horizontal

Remarks:
No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz
*: Denotes restricted band of operation.
Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 5.1dB

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Tx mode: Pass

	Field Strength of Fundamental Emissions Average Value						
	Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
	1842.8	-2.4	28.1	25.7	19.3	5,000	Vertical
*	2763.0					5,000	Vertical
*	3684.0					5,000	Vertical
*	4605.0					5,000	Vertical
	5526.0					5,000	Vertical
	6447.0			**No Emission Detected**		5,000	Vertical
*	7368.0					5,000	Vertical
*	8289.0					5,000	Vertical
*	9210.0					5,000	Vertical

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

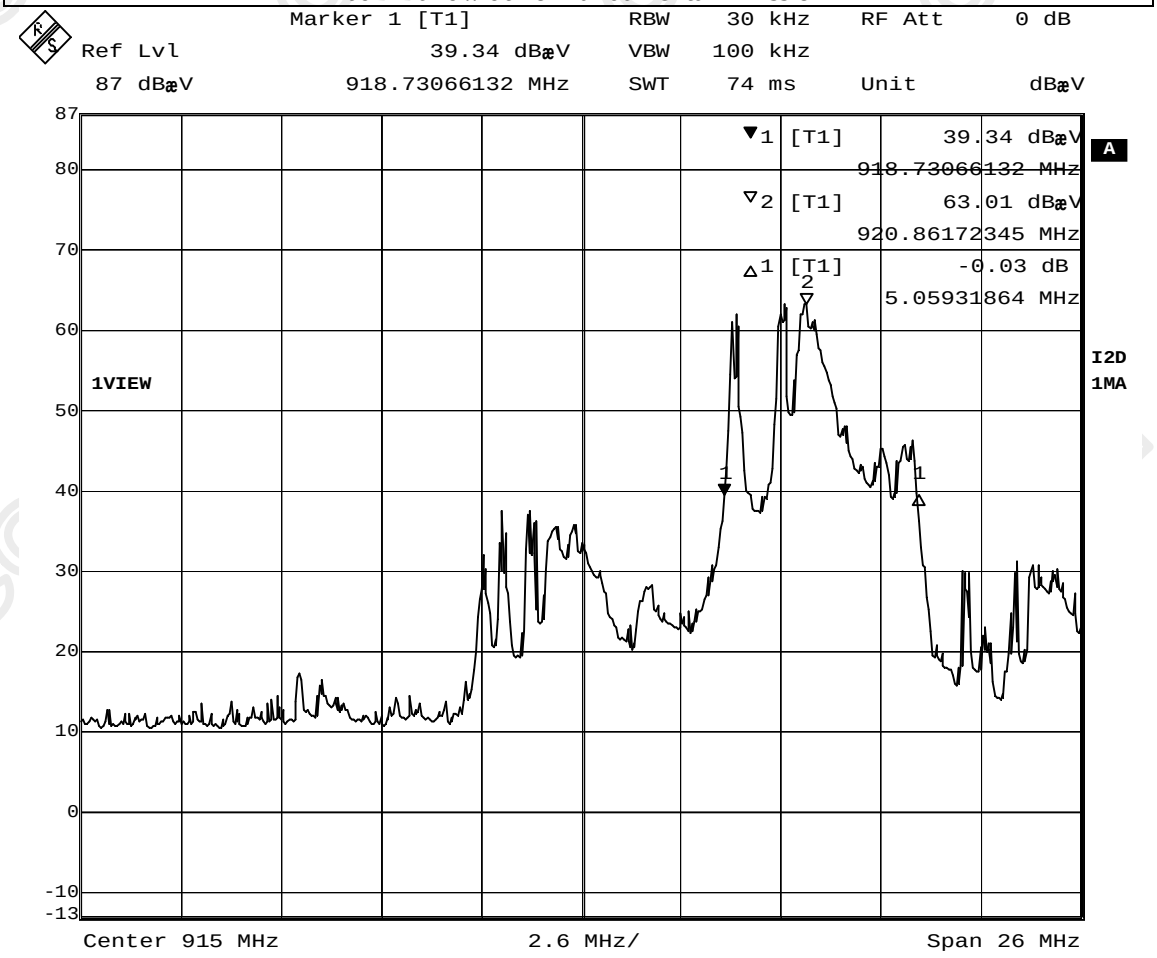
*: Denotes restricted band of operation.
Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 5.1dB

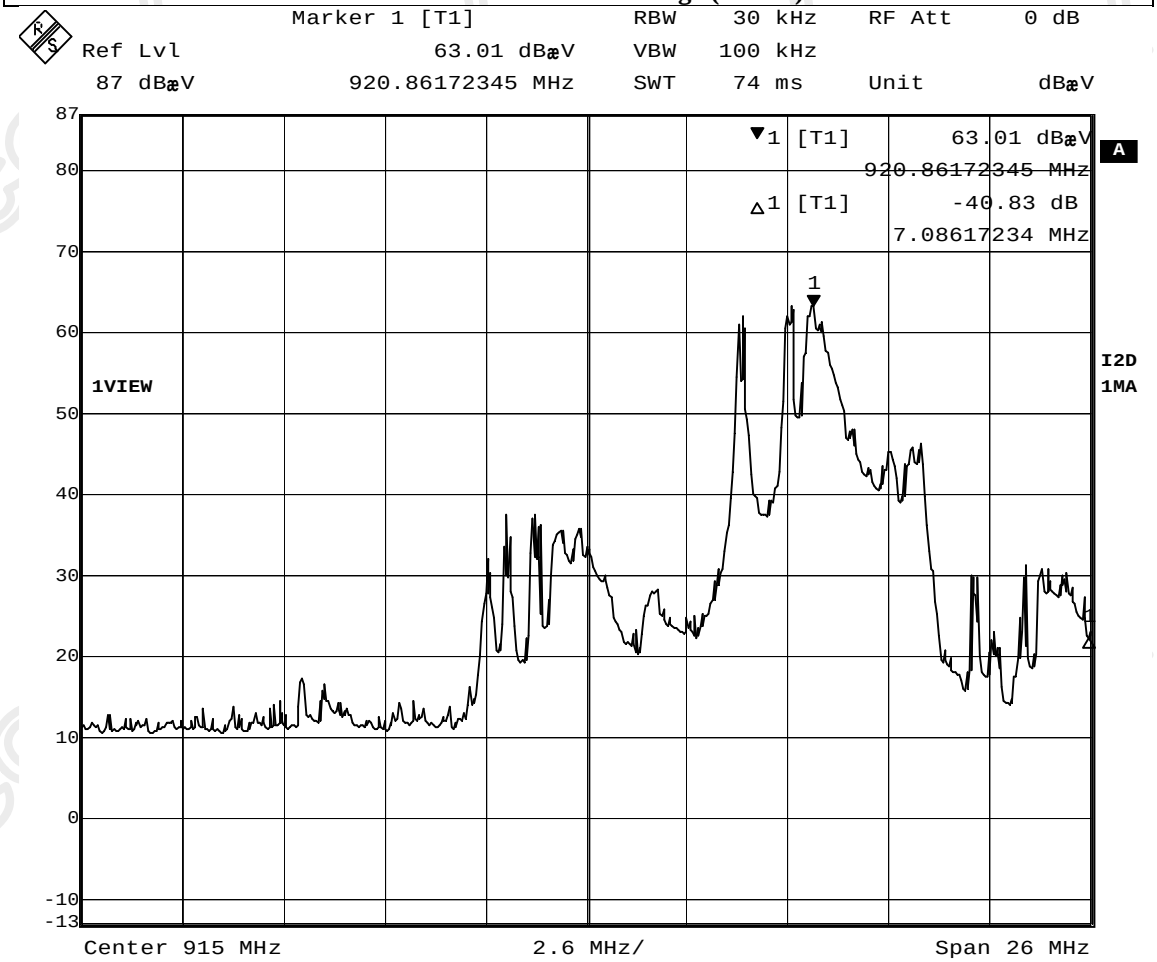
Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [MHz]
921	5.05

20dB Bandwidth of Fundamental Emission



40.8dB reduction at band edge (<50dB)



Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Field strength [microvolts/meter]	Measurement distance [meters]
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above960	500	3

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of Tx on mode (9k – 30MHz): PASS

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

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

Field Strength of Spurious Emissions						
Quasi-Peak Value						
Frequency	Measured Level	Correction Factor	Field Strength	Field Strength	Limit	E-Field Polarity
MHz	dBμV	dB/m	dBμV/m	μV/m	μV/m	
928.10	17.9	26.4	44.3	164.1	200.0	Vertical

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

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

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

Field Strength of Spurious Emissions						
Average Value						
Frequency	Measured Level	Correction Factor	Field Strength	Field Strength	Limit	E-Field Polarity
MHz	dBμV	dB/m	dBμV/m	μV/m	μV/m	
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

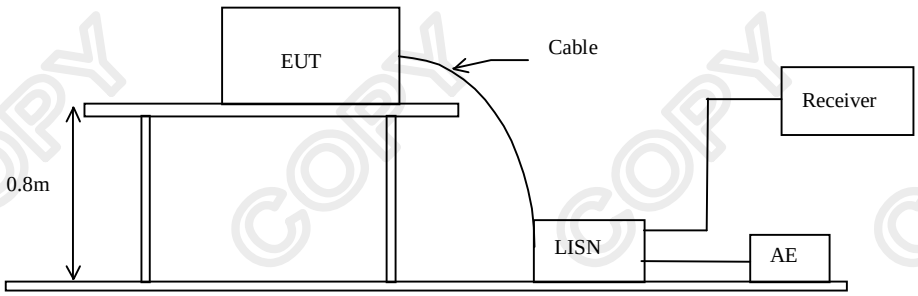
3.1.1 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.207
Test Method:	ANSI C63.4:2009
Test Date:	2011-04-19
Mode of Operation:	Tx 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:



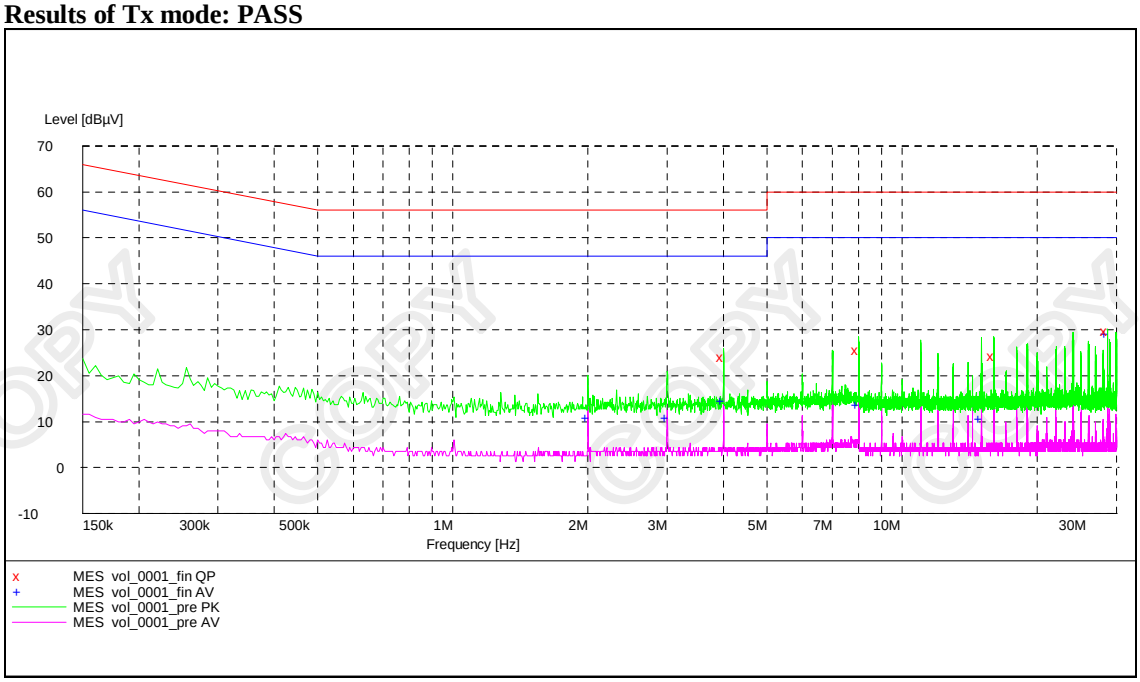
Limit for Conducted Emissions (FCC 47 CFR 15.207):

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 Tx mode: PASS



Results of Tx mode: PASS

Conductor	Frequency	Quasi-peak		Average	
		Level	Limit	Level	Limit
Live or Neutral	MHz	dBμV	dBμV	μV	μV
Live	4.000	-*-	-*-	14.5	46.0
Neutral	2.000	-*-	-*-	10.9	46.0
Neutral	3.000	-*-	-*-	10.9	46.0
Neutral	4.000	23.9	56.0	-*-	-*-
Neutral	8.000	25.6	60.0	13.7	50.0
Neutral	15.000	-*-	-*-	10.5	50.0
Neutral	15.980	24.3	60.0	-*-	-*-
Neutral	28.640	29.8	60.0	29.1	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

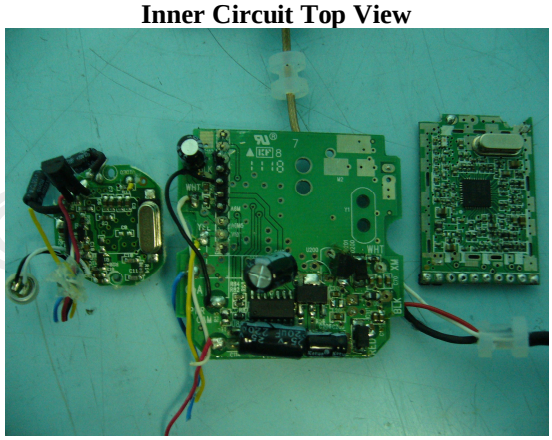
Appendix B

Photographs of EUT

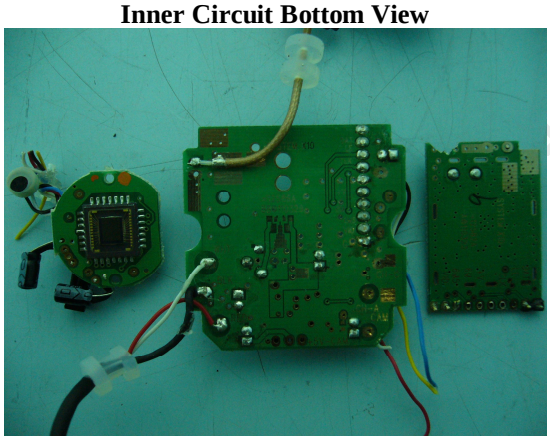
Front View of the product

Rear View of the product

Inner Circuit Top View

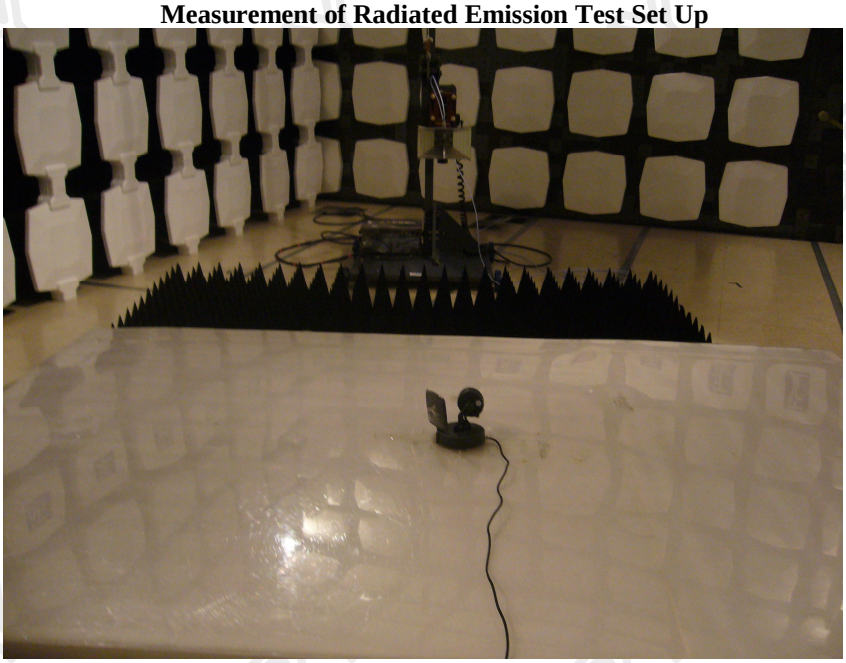


Inner Circuit Bottom View

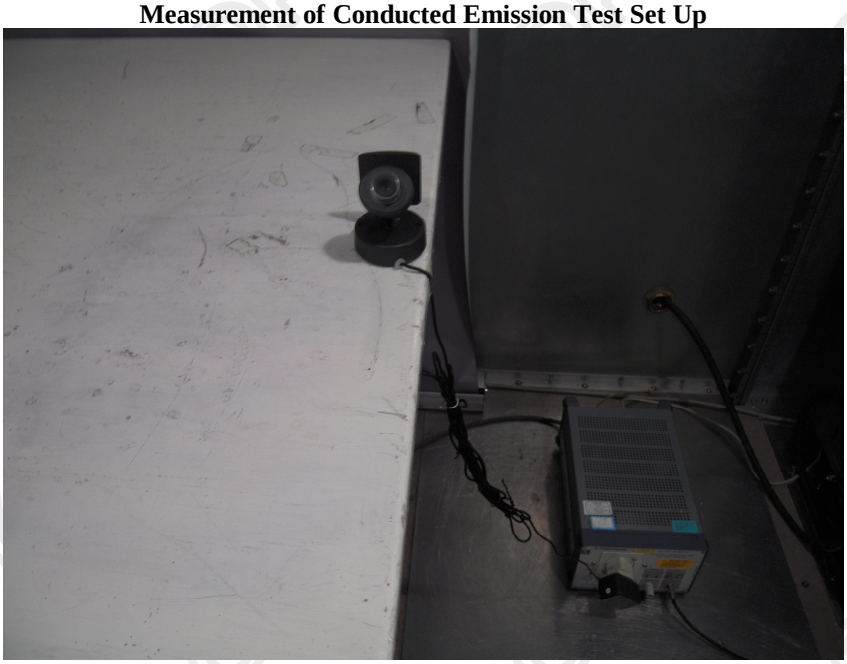


Photographs of EUT

Measurement of Radiated Emission Test Set Up



Measurement of Conducted Emission Test Set Up



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