FCC TEST REPORT

Product Name	:	R/C Toys
Trade Name	:	XQ
Model Name	:	1:10/12 R/C Toys
Serial Number	:	N/A
Technical Data	:	DC 7.2V
FCC ID	:	W2MXQ042RX49
Report Number	:	EESZE05250010-2
Date	:	Jun. 07, 2012
Regulations	:	See below

Test Standards	Results
☒ 47 CFR FCC Part 15 Subpart B:2010	PASS

Prepared for:

XQ ARTS TOYS CO., LTD
North of Xing Ye Road, Lai Mei Industrial District,
Shan Tou Guang Dong, China

Prepared by:

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Approved by: (for) Date: Jun. 07, 2012

Jimmy Li
Lab manager

Check No.: 30006586

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Description Page

(Note: N/A means not applicable)

1. GENERAL INFORMATION

Applicant:	XQ ARTS TOYS CO., LTD North of Xing Ye Road, Lai Mei Industrial District, Shan Tou, Guang Dong, China
Manufacturer:	XQ ARTS TOYS CO., LTD North of Xing Ye Road, Lai Mei Industrial District, Shan Tou, Guang Dong, China
Equipment Authorization:	FCC Part 15 Certification
FCC ID:	W2MXQ042RX49
Product Name:	R/C Toys
Trade Name:	XQ
Model Name:	1:10/12 R/C Toys
Serial Number:	Not Applicable
Report Number:	EESZE05250010-2
Date of Test:	May 25, 2012 to June 07, 2012

2. TEST SUMMARY

The EUT has been tested according to the following specifications:

Standard	Test Item	Test
FCC 15.107	Conducted Emission	Yes
FCC 15.109	Radiated Emission	Yes

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT 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)
Conducted Emission	3.2
Radiated Emission	4.5

4. PRODUCT INFORMATION AND TEST SETUP

4.1. PRODUCT INFORMATION

Technical Data:	DC 7.2V
Adapter information:	Model No.: ZX-072050US Input: AC120V 60Hz Output: DC 7.2V 0.5A
Product Description:	The equipment under test (EUT) is a receiver for a RC Car operating at 49.86 MHz. The EUT is powered by 7.2V DC. The EUT has a power switch. When the power switch is "ON", the EUT can be controlled to run forward, backward, turning left and right directions by the corresponding controller.
Related Submittal(s) Grants:	This is a single application for certification of a receiver. The transmitter for this receiver is authorized by Certification procedure with FCC ID: W2MXQ006TX49.

4.2. TEST SETUP CONFIGURATION

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

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, Bao'an 70 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:

Shielding Room No. 1 - Conducted Emission Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**
Receiver	R&S	ESCI	100009	07/06/2012
LISN	R&S	ENV216	100098	07/06/2012

3M Semi-anechoic Chamber - Radiated Emission Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	07/09/2012
Spectrum Analyzer	Agilent	E4440A	MY46185649	03/07/2013
TRILOG Broadband Antenna	schwarzbeck	VULB 9136	401	07/06/2012
Multi device Controller	ETS-LINGREN	2090	00057230	N/A

Support Equipment List:

3M Semi-anechoic Chamber - Radiated Emission Test				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Due Date**
Signal Generator	IFR	2023B	202307/883	03/07/2013

6. SYSTEM TEST CONFIGURATION

6.1. JUSTIFICATION

The system was configured for testing in a typical fashion (as a customer would normally use it), The EUT was placed on a turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes in receiving mode and in the confines as outlined in ANSI C63.4 (2009).

The EUT was powered by 7.2V DC during test.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed.

The unit was operated standalone and placed in the center of the turntable when it works in receiving mode, and placed at the rear edge of the turntable when it works in charging mode (please see the setup photo).

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

6.2. EUT EXERCISING SOFTWARE

No Software was used during testing.

7. CONDUCTED EMISSION TEST

7.1. LIMITS

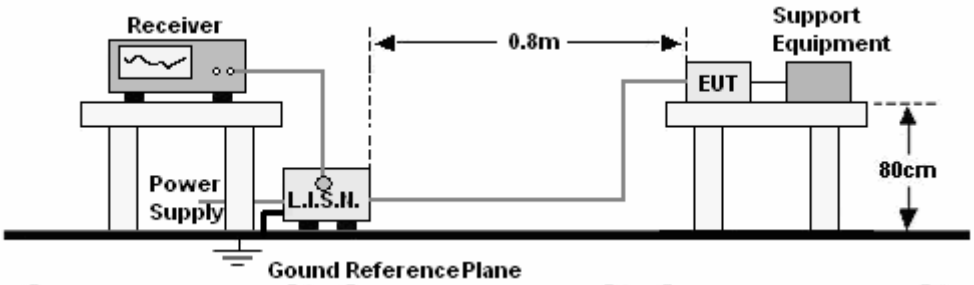
Limits for Class B digital devices

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

7.2. BLOCK DIAGRAM OF TEST SETUP



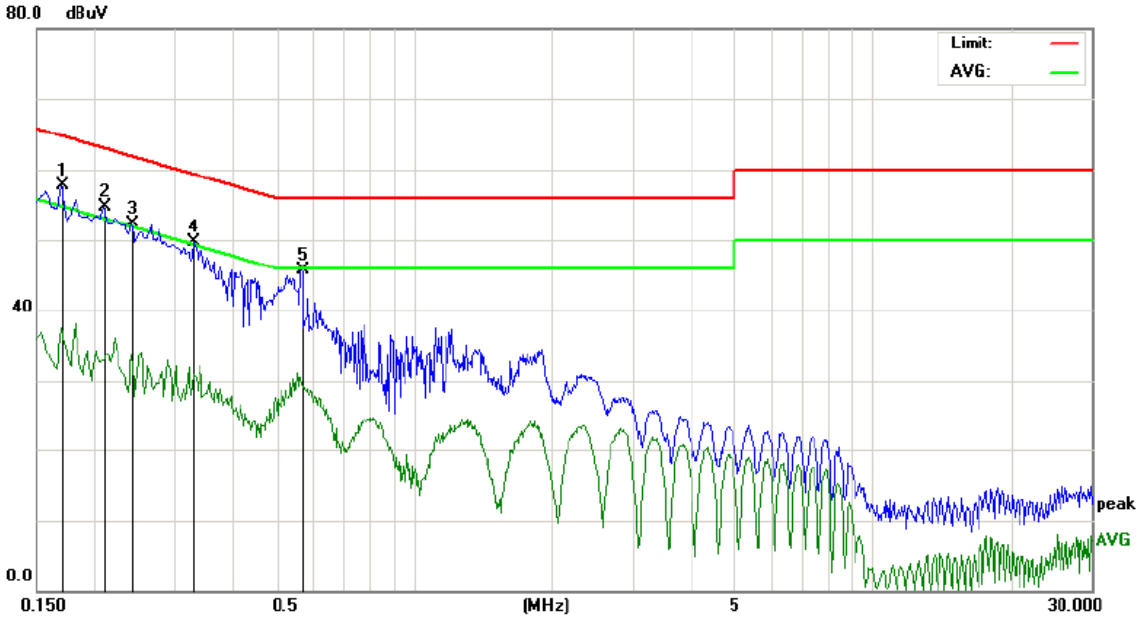
7.3. PROCEDURE OF CONDUCTED EMISSION TEST

a. The EUT was placed on a nonconductive table above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from EUT in all power lines in the full band.

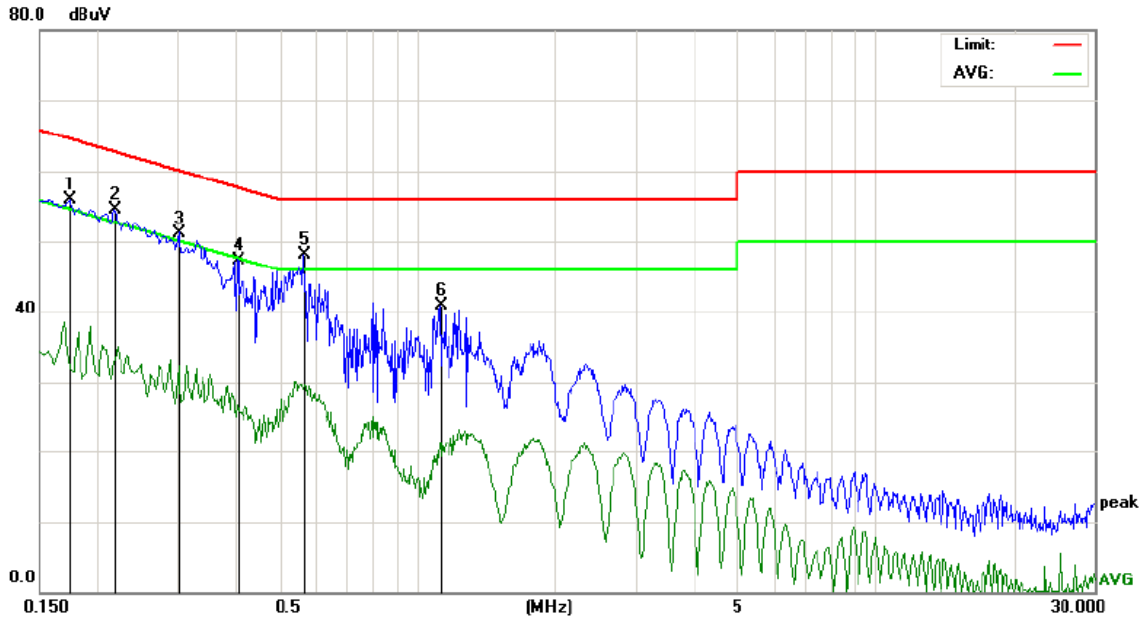
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

7.4. GRAPHS AND DATA



Site site #1 L1 Temperature: 23
Limit: FCC Class B CE (QP) Power: AC 120V/60Hz Humidity: 58 %
EUT: R/C Toys
M/N: 1:10/12 R/C Toys
Mode: Adaptor Charging
Note:

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	0.1700	47.77		27.47	10.00	57.77		37.47	64.96	54.96	-7.19	-17.49	P	
2	0.2100	44.74		22.83	10.00	54.74		32.83	63.20	53.20	-8.46	-20.37	P	
3	0.2420	42.33		23.76	10.00	52.33		33.76	62.02	52.02	-9.69	-18.26	P	
4	0.3300	39.72		20.95	10.00	49.72		30.95	59.45	49.45	-9.73	-18.50	P	
5	0.5700	35.64		19.55	10.00	45.64		29.55	56.00	46.00	-10.36	-16.45	P	



Site site #1 N Temperature: 23

Limit: FCC Class B CE (QP) Power: AC 120V/60Hz Humidity: 58 %

EUT: R/C Toys

M/N: 1:10/12 R/C Toys

Mode: Adaptor Charging

Note:

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	0.1740	45.98		21.98	10.00	55.98		31.98	64.76	54.76	-8.78	-22.78	P	
2	0.2180	44.56		22.64	10.00	54.56		32.64	62.89	52.89	-8.33	-20.25	P	
3	0.3020	41.20		22.35	10.00	51.20		32.35	60.19	50.19	-8.99	-17.84	P	
4	0.4060	37.40		16.63	10.00	47.40		26.63	57.73	47.73	-10.33	-21.10	P	
5	0.5660	38.02		19.19	10.00	48.02		29.19	56.00	46.00	-7.98	-16.81	P	
6	1.1180	31.00		11.50	9.90	40.90		21.40	56.00	46.00	-15.10	-24.60	P	

8. RADIATED EMISSION TEST

8.1. LIMITS

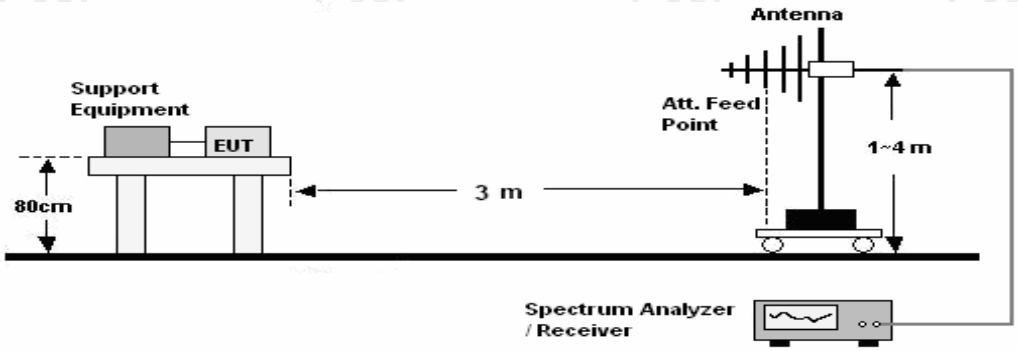
Limits for Class B digital devices

Frequency (MHz)	limits at 3m dB(μV/m)
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

NOTE: 1. The lower limit shall apply at the transition frequency.
2. The limits shown above are based on measuring equipment employing a CISPR quasi-peak detector function for frequencies below or equal to 1000MHz.
3. The limits shown above are based on measuring equipment employing an average detector function for frequencies above 1000MHz.

8.2. BLOCK DIAGRAM OF TEST SETUP .

30MHz ~ 1GHz:



8.3. PROCEDURE OF RADIATED EMISSION TEST

FOR CHARGING MODE:

a. The EUT 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 100 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 EUT 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.

FOR RECEIVING MODE:

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

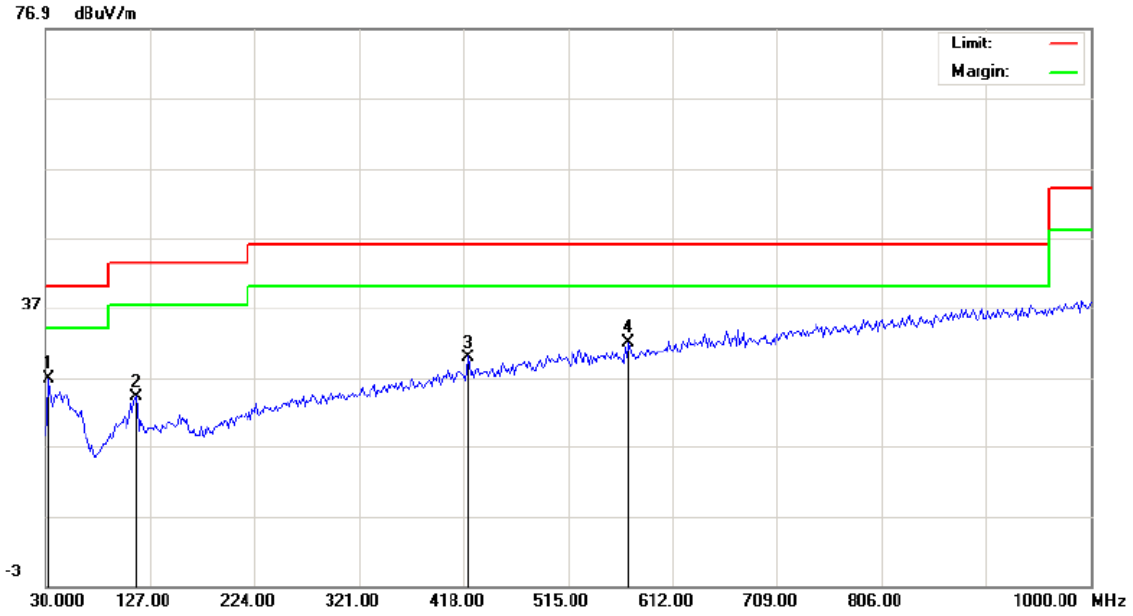
b. Use a signal Generator to generate a 49.86MHz un-modulated CW signal to the super-regenerative receiver. And the signal level is from low signal about -80dBm up to -10dBm to sure the emission level which observed on the test receiver is not increased any more. Then begin testing.

c. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 100 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.

d. 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 EUT 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.

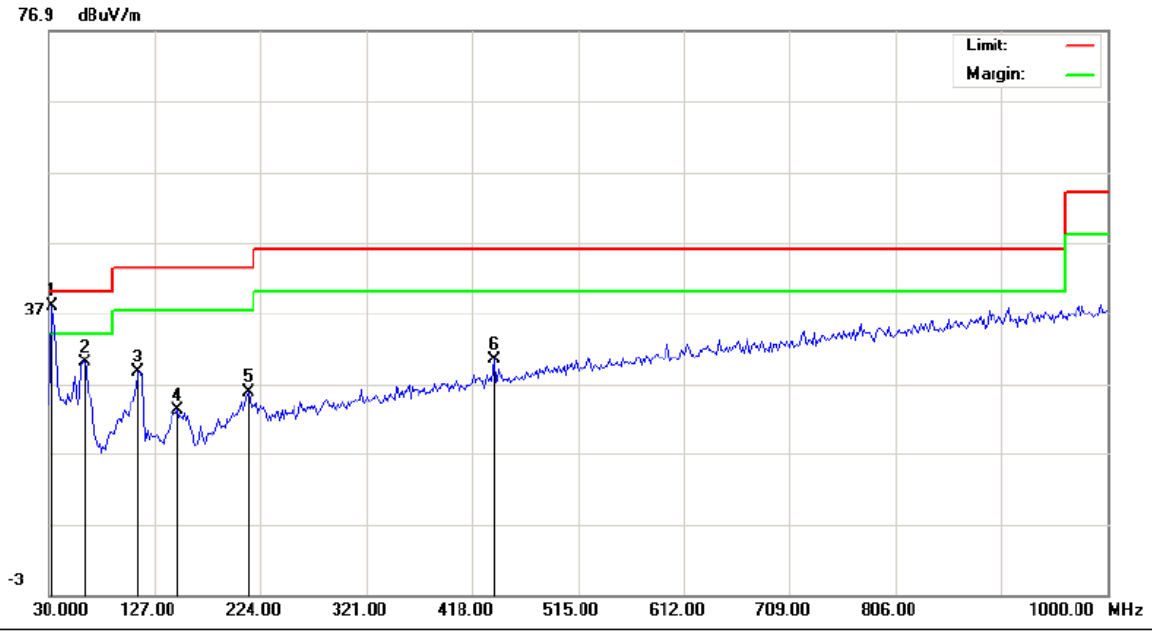
8.4. GRAPHS AND DATA

FOR CHARGING DATA:



Site site #1 Polarization: *Horizontal* Temperature: 23
Limit: FCC PART15 B Power: AC 120V/60Hz Humidity: 58 %
EUT: R/C Toys
M/N: 1:10/12 R/C Toys
Mode: Adaptor Charging
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	33.2333	13.23			13.64	26.87			40.00		-13.13		P
2	114.0667	12.04			12.13	24.17			43.50		-19.33		P
3	422.8500	10.63			19.27	29.90			46.00		-16.10		P
4	571.5833	9.55			22.36	31.91			46.00		-14.09		P



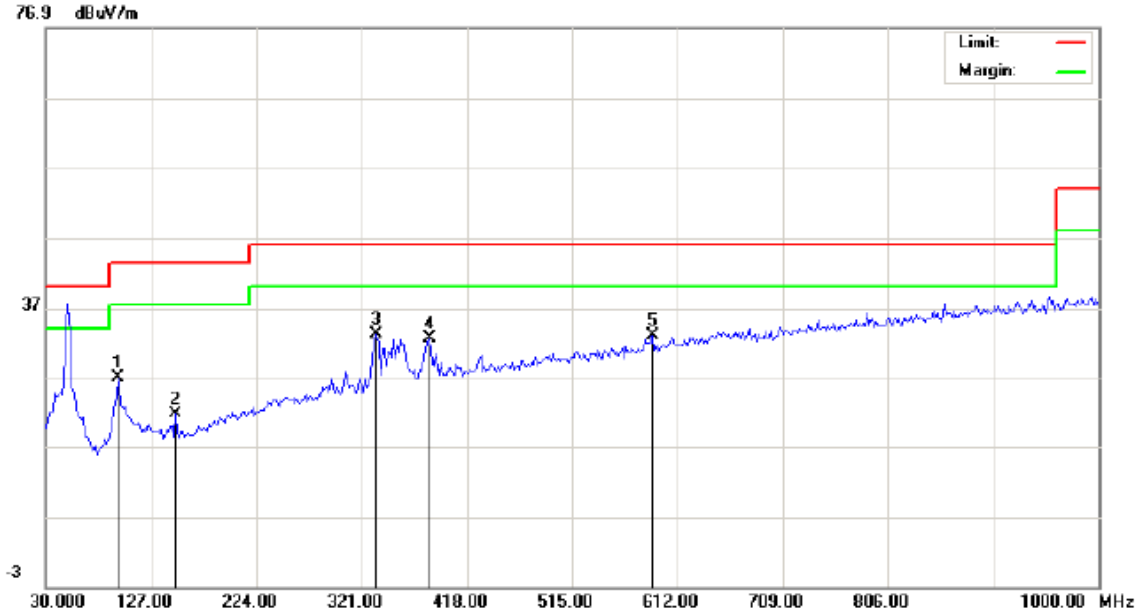
Site site #1
Limit: FCC PART15 B
EUT: R/C Toys
M/N: 1:10/12 R/C Toys
Mode: Adaptor Charging
Note:

Polarization: *Vertical*
Power: AC 120V/60Hz

Temperature: 23
Humidity: 58 %

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	33.2333	24.27	20.45		13.64	37.91	34.09		40.00		-5.91		P	
2	62.3333	17.14			12.96	30.10			40.00		-9.90		P	
3	112.4500	16.38			12.23	28.61			43.50		-14.89		P	
4	148.0167	13.12			10.13	23.25			43.50		-20.25		P	
5	212.6833	12.57			13.31	25.88			43.50		-17.62		P	
6	437.4000	10.93			19.57	30.50			46.00		-15.50		P	

FOR RECEIVING DATA:

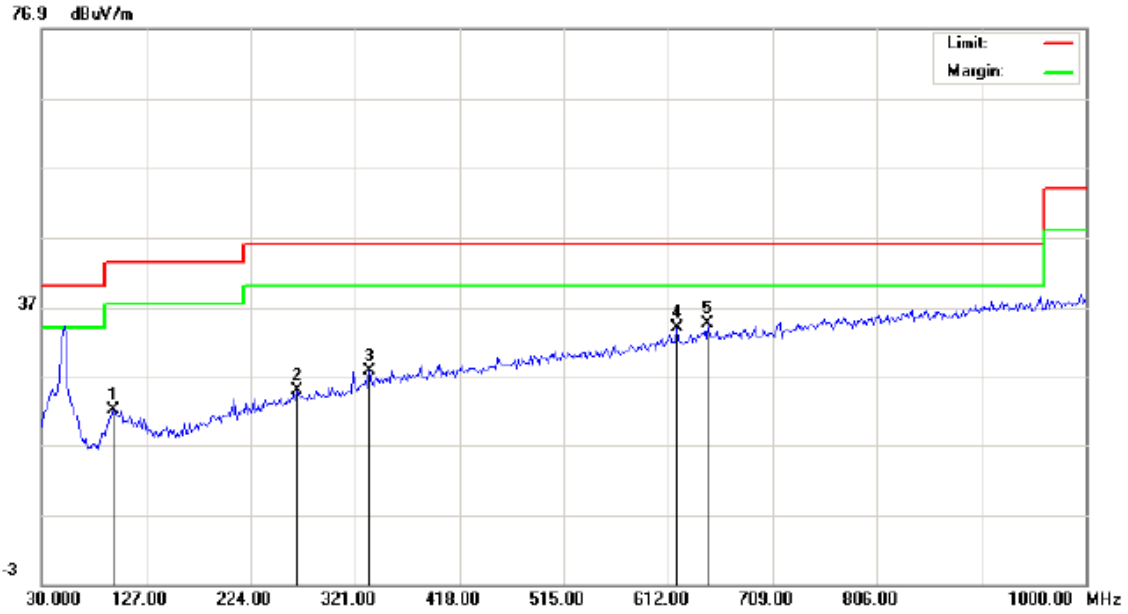


Site site #1
Limit: FCC PART15 B
EUT: R/C Toys
M/N: 1:10/12 R/C Toys
Mode: RX
Note:

Polarization: *Horizontal*
Power: DC 7.2V

Temperature: 23
Humidity: 58 %

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	96.2832	14.70			12.32	27.02			43.50		-16.48		P	
2	149.6332	11.82			10.03	21.85			43.50		-21.65		P	
3	333.9332	15.92			17.26	33.18			46.00		-12.82		P	
4	384.0500	14.07			18.46	32.53			46.00		-13.47		P	
5	589.3667	10.21			22.74	32.95			46.00		-13.05		P	

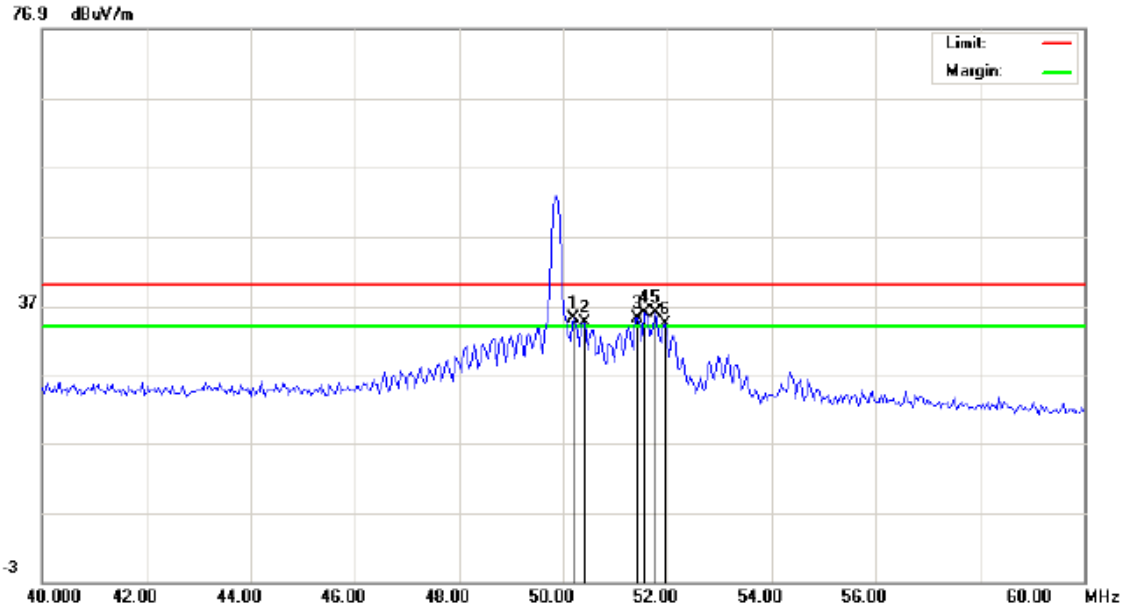


Site site #1
Limit: FCC PART15 B
EUT: R/C Toys
M/N: 1:10/12 R/C Toys
Mode: RX
Note:

Polarization: *Vertical*
Power: DC 7.2V

Temperature: 23
Humidity: 58 %

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	96.2832	9.97			12.32	22.29			43.50		-21.21		P	
2	267.6499	9.51			15.42	24.93			46.00		-21.07		P	
3	333.9332	10.54			17.26	27.80			46.00		-18.20		P	
4	620.0833	10.52			23.39	33.91			46.00		-12.09		P	
5	649.1833	10.66			23.99	34.65			46.00		-11.35		P	

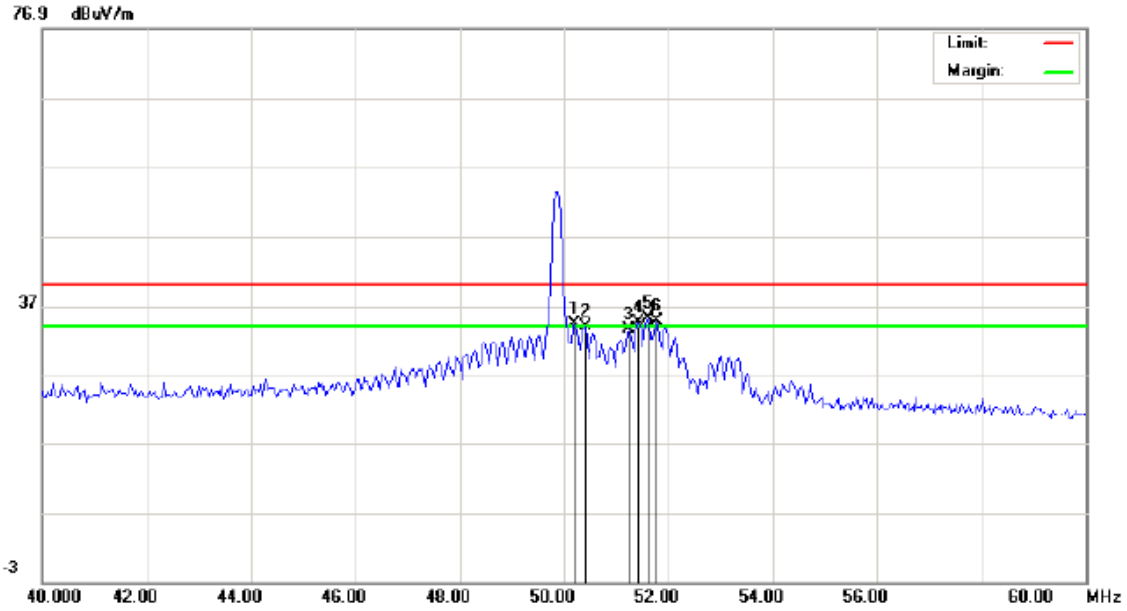


Site site #1
Limit: FCC PART15 B
EUT: R/C Toys
M/N: 1:10/12 R/C Toys
Mode: RX
Note:

Polarization: *Horizontal*
Power: DC 7.2V

Temperature: 23
Humidity: 58 %

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	50.2000	18.94			16.31	35.25			40.00		-4.75		P
2	50.4000	18.33			16.26	34.59			40.00		-5.41		P
3	51.4333	19.24			16.03	35.27			40.00		-4.73		P
4	51.5667	19.99	19.47		16.00	35.99	35.47		40.00		-4.53		P
5	51.7667	19.95	19.53		15.96	35.91	35.49		40.00		-4.51		P
6	51.9667	18.46			15.91	34.37			40.00		-5.63		P



Site site #1
Limit: FCC PART15 B
EUT: R/C Toys
M/N: 1:10/12 R/C Toys
Mode: RX
Note:

Polarization: *Vertical*
Power: DC 7.2V

Temperature: 23
Humidity: 58 %

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	50.2000	18.01			16.31	34.32			40.00		-5.68		P
2	50.4000	17.71			16.26	33.97			40.00		-6.03		P
3	51.2333	17.58			16.07	33.65			40.00		-6.35		P
4	51.4333	18.48			16.03	34.51			40.00		-5.49		P
5	51.6000	19.22			15.99	35.21			40.00		-4.79		P
6	51.7667	18.89			15.96	34.85			40.00		-5.15		P

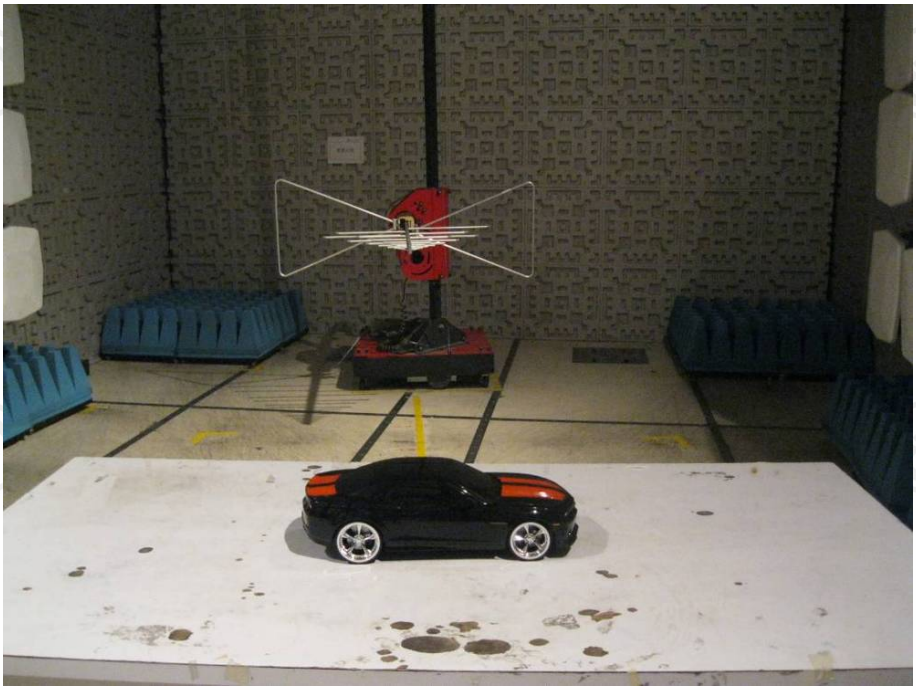
Note 1: The peak data of the fundamental frequency is below the average limit (please refer to the test graph as above), so the average data is deems to fulfill the average limits and not reported.

Note 2: The total factor = cable loss+ antenna factor.
Final Emission _PK = Reading Level_ PK+ total factor.
For example: The cable loss of 50.2MHz is 1.2dB and the antenna factor is 15.11dB, So, the Total factor=1.2+15.11=16.31dB

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

CONDUCTED EMISSION TEST SETUP (FOR CHARGING MODE)

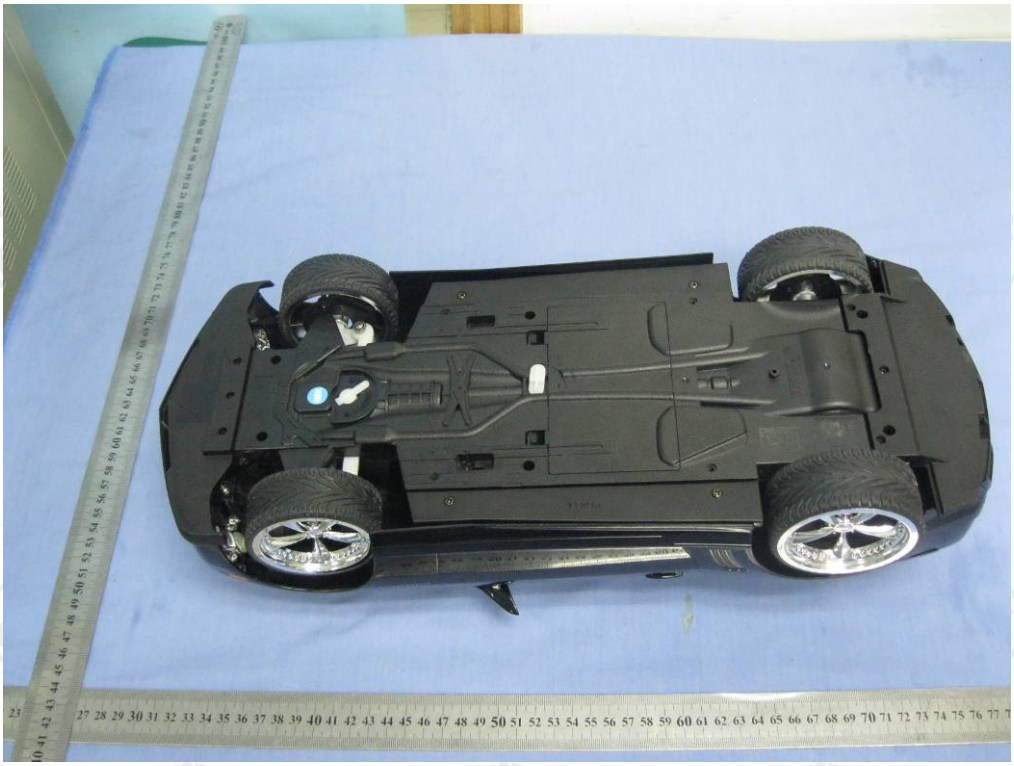
RADIATED EMISSION TEST SETUP (FOR CHARGING MODE)



RADIATED EMISSION TEST SETUP (FOR RECEIVING MODE)

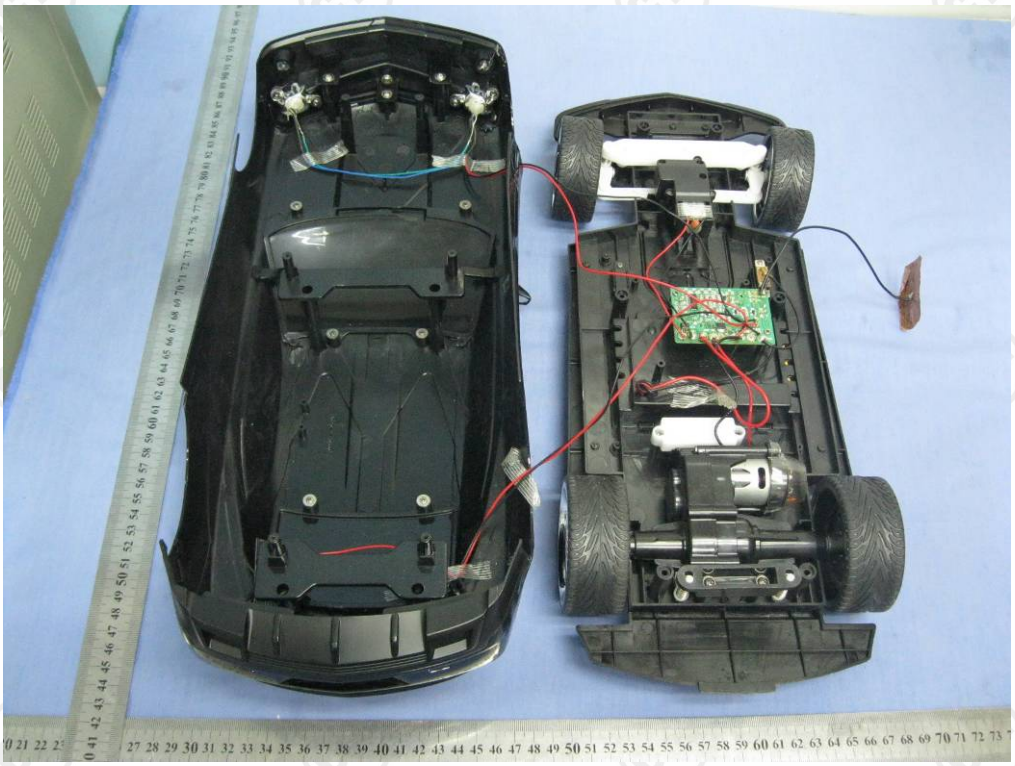
APPENDIX 2 EXTERNAL PHOTOGRAPHS OF EUT

View of EUT-1

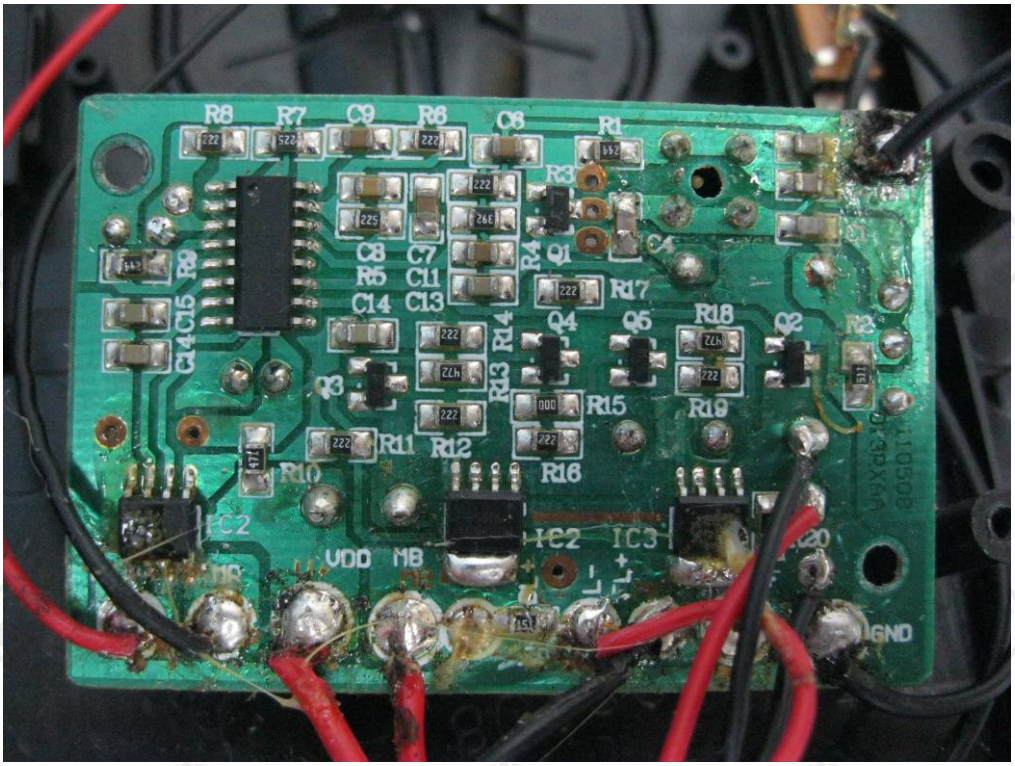


View of EUT-2

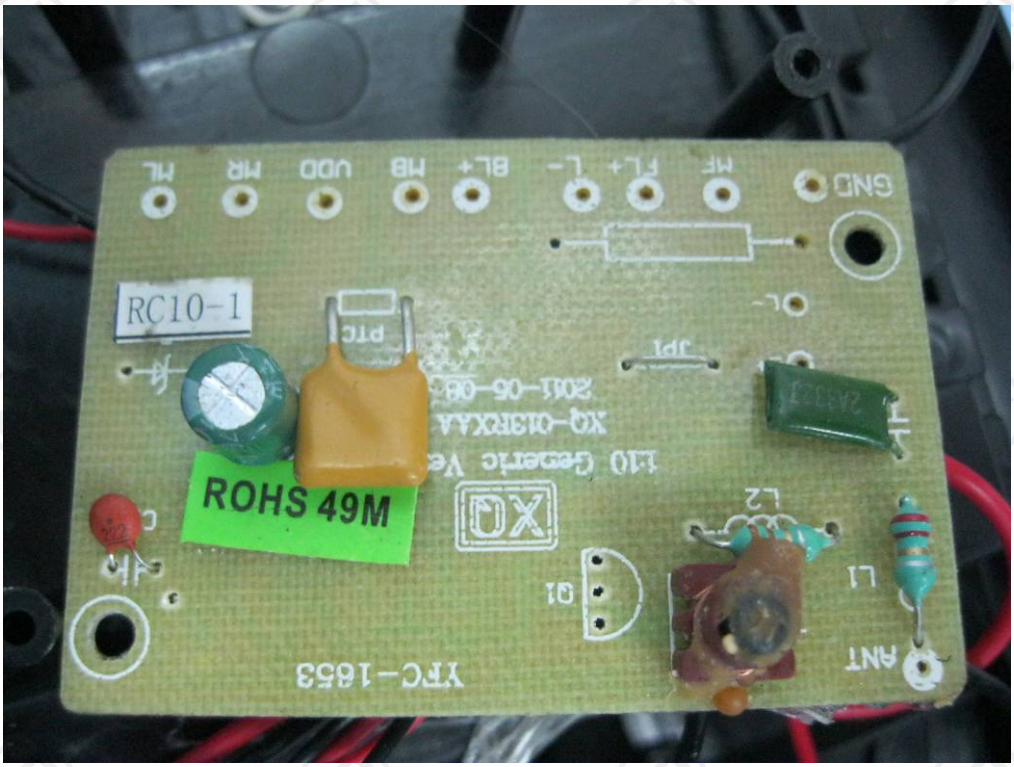
APPENDIX 3 INTERNAL PHOTOGRAPHS OF EUT



View of EUT-1



View of EUT-2



View of EUT-3

*** End of report ***

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 CTI, this report can't be reproduced except in full.