STC Test Report

Date : 2006-07-28
No. : HM157114

Applicant: KID GALAXY INC
ONE SUNDIAL AVE, SUITE 310 MANCHESTER, NH 03103, U.S.A.

Description of Samples:

Model name:	DRV – SUV & PLANE W/LIGHT
Model no.:	10222
Brand name:	DRV
FCC ID:	QEASUVPLANE49

Date Samples Received: 2006-07-22

Date Tested: 2006-07-26

Investigation Requested: FCC Part 15 Subpart C

Conclusions: 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.

Remarks: ----

TSANG Chi Ho, EMD
For and on behalf of
The Hong Kong Standards and Testing Centre Ltd.

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

KID GALAXY INC
ONE SUNDIAL AVE, SUITE 310 MANCHESTER,
NH 03103, U.S.A.

Manufacturer

Lung Cheong Toys Ltd.
Lung Cheong Building, 1 Lok Yip Road On Lok Tsuen,
Fanling N.T. Hong Kong

1.3 Equipment Under Test [EUT]

Description of Sample

Model Name:	DRV – SUV & PLANE W/LIGHT
Manufacturer:	Lung Cheong Toys Ltd.
Brand Name:	DRV
Model Number:	10222
Input Voltage:	9Vd.c. (“6F22” size battery x 1)

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a KID GALAXY INC, DRV – SUV & PLANE W/LIGHT. The transmitter is a 2 Joystick transmitter. The EUT continues to transmit while joystick is being pressed, It is pulse transmitter, Modulation by IC, and type is pulse modulation.

1.4 Date of Order

2006-07-22

1.5 Submitted Sample(s):

2 Samples per model

1.6 Test Duration

2006-07-26

1.7 Country of Origin

China

2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2005 and ANSI C63.4:2003 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	Failed	N/A
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.235	ANSI C63.4:2003	N/A	☒	☐	☐
Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.209	ANSI C63.4:2003	N/A	☒	☐	☐
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2003	N/A	☐	☐	☒

Note: N/A - Not Applicable

3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions (30 – 1000MHz)

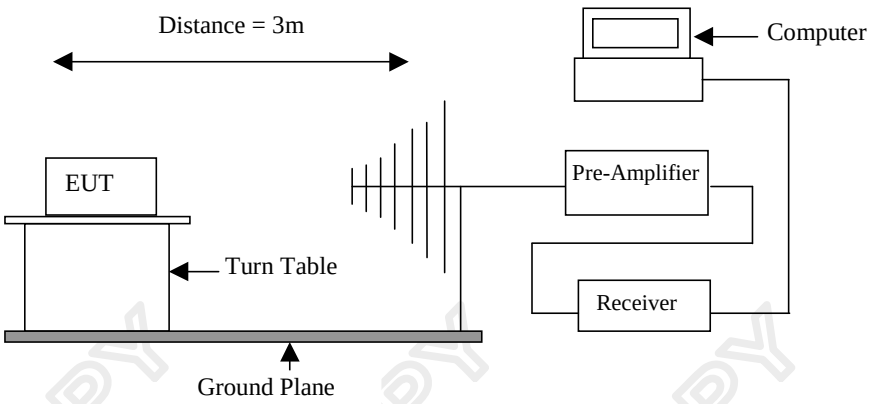
Test Requirement:	FCC 47CFR 15.235
Test Method:	ANSI C63.4:2003
Test Date:	2006-07-26
Mode of Operation:	Tx mode

Test Method:

The sample was placed 0.8m above the ground plane on a standard radiated emission test site *. 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.

*: On a standard radiated emission test site located at HKSTC with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

Test Setup:



Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.235]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [µV/m]	Field Strength of Fundamental Emission [Average] [µV/m]
49.82-49.90	100,000	10,000

Results:

Field Strength of Fundamental Emissions 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
49.85	70.4	9.0	79.4	9,332.5	100,000	Vertical

Field Strength of Fundamental Emissions Average							
Frequency MHz	Measured Level @3m dBµV	Adjusted by Duty Cycle dB	Correction Factor dB/m	Field Strength dBµV/m	Field Strength µV/m	Limit @3m µV/m	E-Field Polarity
49.85	64.7	-5.7	9.0	73.7	4,841.7	10,000	Vertical

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty : 30MHz to 1GHz ±4.1dB

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [µV/m]
30-88	100
88-216	150
216-960	200
Above960	500

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:

Radiated Emissions Quasi-Peak						
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
36.3	24.6	14.0	38.6	85.1	150	Vertical
99.70	15.5	8.6	24.1	16.0	150	Vertical
149.55	< 1.0	9.0	< 10.0	< 3.2	150	Vertical
199.40	12.9	11.6	24.5	16.8	150	Vertical
249.25	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
299.10	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
348.95	20.5	16.4	36.9	70.0	200	Vertical
398.80	< 1.0	17.0	< 18.0	< 7.9	200	Vertical
448.65	< 1.0	19.7	< 20.7	< 10.8	200	Vertical
498.50	17.8	20.4	38.2	81.3	200	Vertical

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.
Calculated measurement uncertainty : 30MHz to 1GHz ±4.1dB

3.1.2 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.207
Test Method:	ANSI C63.4:2003
Test Date:	N/A
Mode of Operation:	N/A

Results: N/A

The EUT is operated by a single source of internal battery power [located in the battery compartment], therefore power line conducted emission was deemed unnecessary.

3.2 26dB Bandwidth of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.235
Test Method:	ANSI C63.4:2003 (Section 13.1.7)
Test Date:	2006-07-26
Mode of Operation:	On mode

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

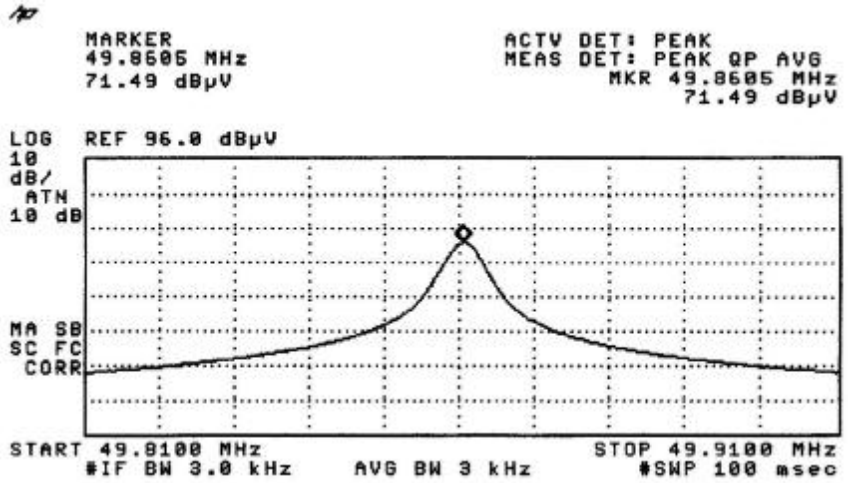
Test Setup:

As Test Setup of clause 3.1.1 in this test report.

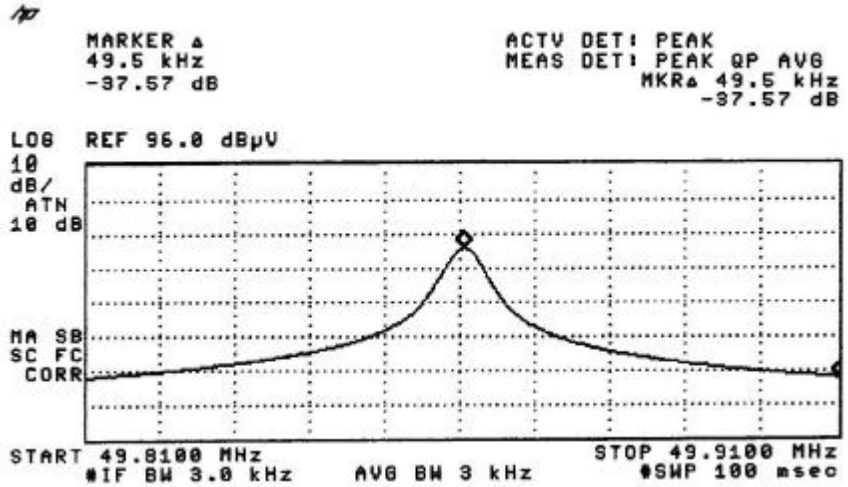
Limits for 26dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	26dB Bandwidth [KHz]	FCC Limits [MHz]
49.8605	25.8	within 49.82-49.90

26dB Bandwidth of Fundamental Emission



26dB Bandwidth of Fundamental Emission



Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM007	SPECTRUM ANALYZER	HEWLETT PACKARD	HP85660B	3144A21192	2005/06/27
EM008	SPECTRUM ANALYZER DISPLAY	HEWLETT PACKARD	HP85662A	3144A20514	2005/06/27
EM009	QUASI PEAK ADAPTOR	HEWLETT PACKARD	HP85650A	3303A01702	2005/06/27
EM010	RF PRESELECTOR	HEWLETT PACKARD	HP85685A	3221A01410	2005/06/27
EM011	ATTENUATOR/SWITCH	HEWLETT PACKARD	HP11713A	2508A10595	2005/06/27
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262	2005/06/27
EM020	HORN ANTENNA	ETS-Linggren	3115	4032	2003/07/30
EM022	LOOP ANTENNA	ETS-Linggren	6502	1189-2424	2003/09/19
EM072	SIGNAL GENERATOR	HEWLETT PACKARD	8640B	1948A11892	N/A
EM083	OPEN AREA TEST SITE	HKSTC	N/A	N/A	2005/12/08
EM131	EMC ANALYZER	HEWLETT PACKARD	8595EM	3710A00155	2006/03/29
EM145	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCS 30	830245/021	2004/10/04
EM195	ANTENNA POSITIONING MAST	ETS-Linggren	2075	2368	N/A
EM196	MULTI-DEVICE CONTROLLER	ETS-Linggren	2090	1662	N/A
EM215	MULTIDEVICE CONTROLER	ETS-Linggren	2090	00024676	N/A
EM216	MINI MAST SYSTEM	ETS-Linggren	2075	00026842	N/A
EM217	ELECTRIC POWERED TURNTABLE	ETS-Linggren	2088	00029144	N/A
EM218	ANECHOIC CHAMBER	ETS-Linggren	FACT-3	--	2006/05/02
EM219	BICONILOG ANTENNA	ETS-Linggren	3142C	00029071	2006/02/01
EM229	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB40	100248	2005/02/04

Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM078	VARIAC	SHANGHAI VOLTAGE	TDGC-3/0.5	N/A	CM
EM081	SMALL SCREENED ROOM	MIKO INST HK	N/A	N/A	2006/01/12
EM119	LISN	ROHDE & SCHWARZ	ESH3-Z5	0831.5518.52	2004/10/14
EM127	ISOLATION TRANSFORMER 220 TO 300V	WING SUN	N/A	N/A	CM
EM233	PULSE LIMITER	ROHDE & SCHWARZ	ESH3-Z2	100314	2006/01/09
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2006/03/17
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057-99A	2006/01/12
EM197	LISN	ETS-Linggren	4825/2	1193	2005/06/27
EM213	DIGITAL POWER METER	VICNOBL	VIP120	00277	2004/09/14

Remarks:-

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

Appendix B

Duty Cycle Correction During 100msec

Each function key sends a different series of characters, but each packet period (37.117msec) never exceeds a series of 8 long (1.125msec) and 18 short (563µsec) pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered 8x1.125msec+18x563µsec per 37.117msec=51.5% duty cycle. Figure A through C show the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction = 20Log(0.515) =-5.7dB

The following figures [Figure A to Figure C] show the characteristics of the pulse train for one of these functions.

Figure A [Pulse Train]

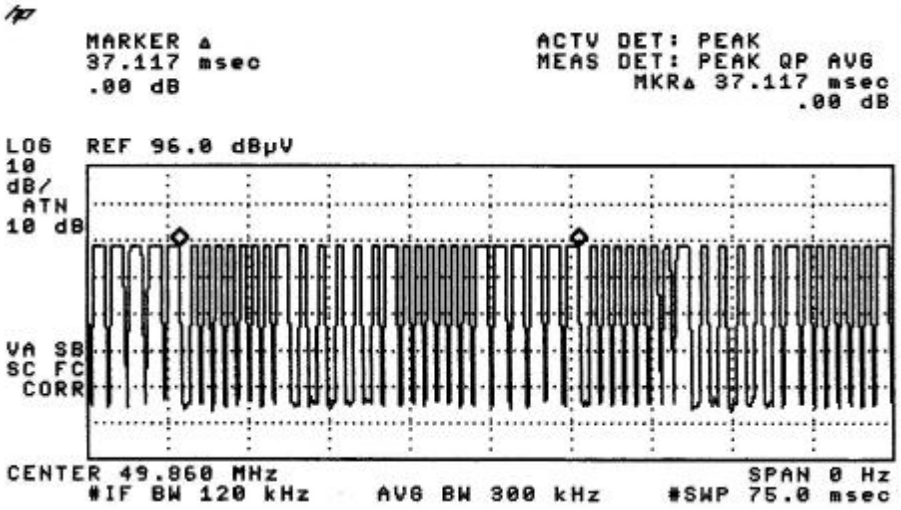


Figure B [Long Pulse]

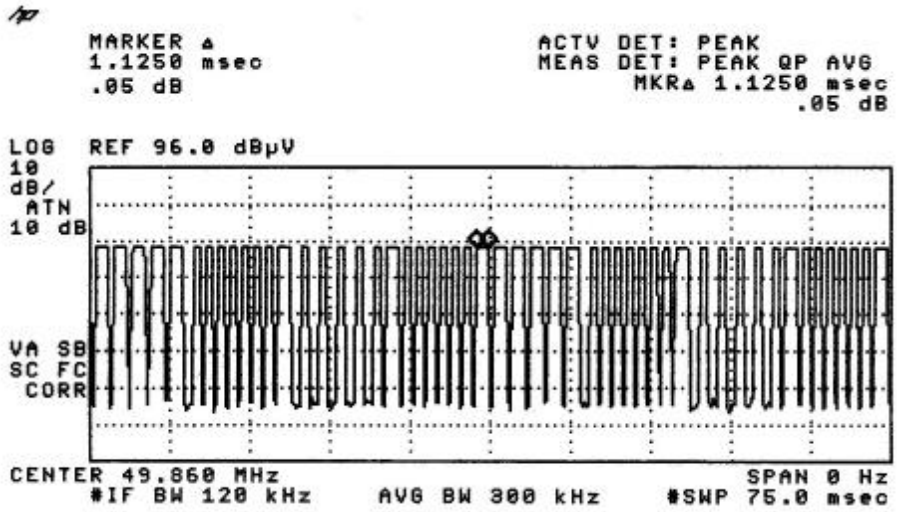
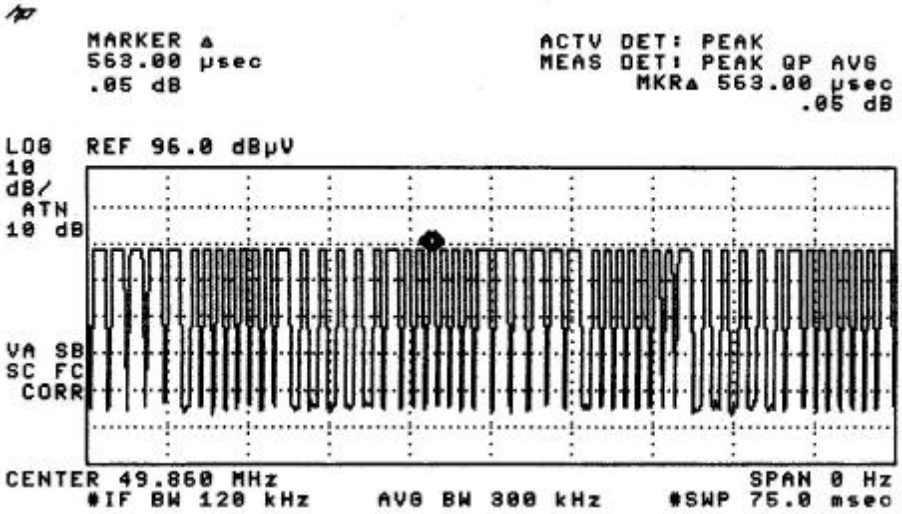


Figure C [Short Pulse]



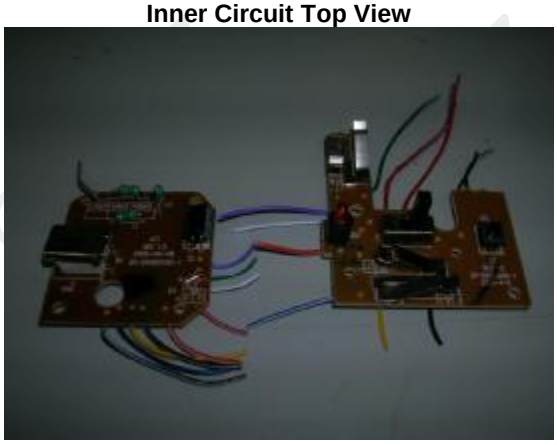
Appendix C

Photographs of EUT

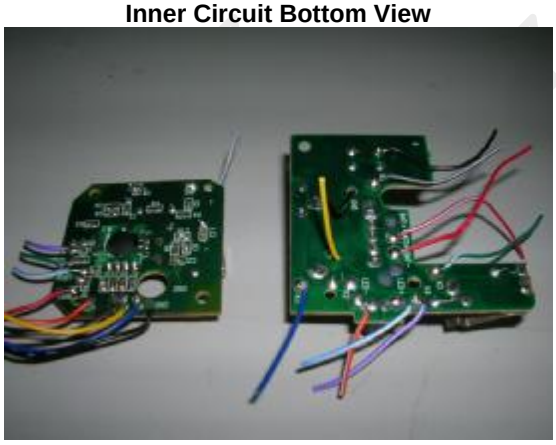
Front View of the product

Rear View of the product

Inner Circuit Top View

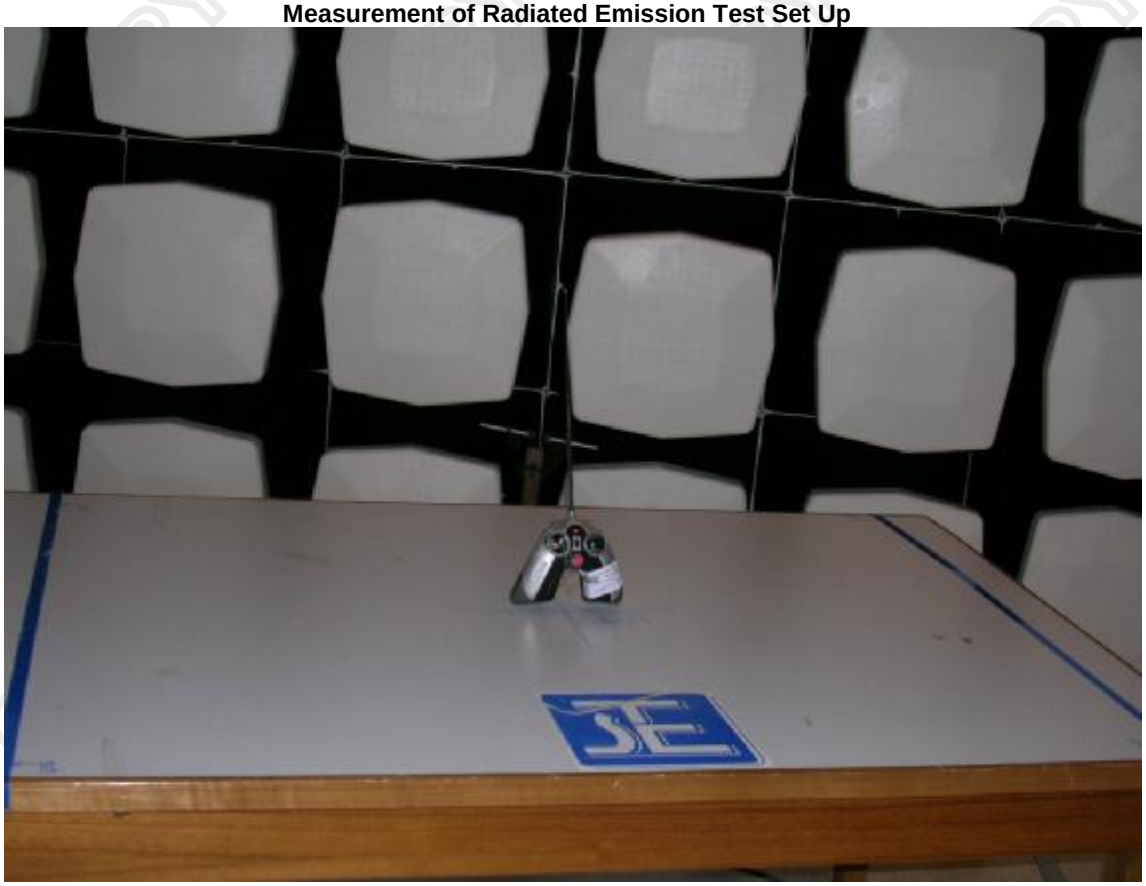


Inner Circuit Bottom View



Photographs of EUT

Measurement of Radiated Emission Test Set Up



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