



STC Test Report

Date: 2012-09-18

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No.: DM109022DP

Applicant (ZHS002):

The Maya Group Inc.
19823 Hamilton Ave., Torrance California 90502 US

Manufacturer:

The Maya Group Inc.
19823 Hamilton Ave., Torrance California 90502 US

Description of Sample(s):

Submitted samples(s) said to be
Product: Orbeez RC Ladybug Scooper
Brand Name: N/A
Model Number: 47180
FCCID: XLAMAYA47180

Date Sample(s) Received: 2012-08-20

Date Tested: 2012-08-20 to 2012-08-23

Investigation Requested:

Perform ElectroMagnetic Interference measurement in
accordance with FCC 47CFR [Codes of Federal Regulations]
Part 15: 2011 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):



LONG Yun Jian, Along
Authorized Signatory
ElectroMagnetic Compatibility Department
For and on behalf of
STC (Dongguan) Company Limited

The Hong Kong Standards and Testing Centre Ltd.

10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong

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1.0 General Details

1.1 Equipment Under Test [EUT]

Description of Sample(s)

Product: ORBEEZ RC LADYBUG SCOOOPER
Manufacturer: The Maya Group Inc.
Brand Name: N/A
Model Number: 47180
Rating: 9Vd.c.("6F22" size battery x 1)

1.1.1 Description of EUT Operation

The Equipment Under Test (EUT) is a The Maya Group Inc., ORBEEZ RC LADYBUG SCOOOPER. The EUT is a transmitter of radio control toy. The transmitter was operating with 2 joysticks; the EUT continues to transmit while one of the joysticks is pressed, It is pulse transmitter, Modulation by IC, and type is pulses modulation.

1.2 Date of Order

2012-08-20

1.3 Submitted Sample(s):

1 Sample

1.4 Test Duration

2012-08-20

1.5 Country of Origin

China

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2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2011 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	Failed	N/A
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.227	ANSI C63.4:2009	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: N/A - Not Applicable

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3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions (30 – 1000MHz)

Test Requirement: FCC 47CFR 15.227
Test Method: ANSI C63.4:2009
Test Date: 2012-08-20
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. In the frequency range of 9kHz to 30MHz, The center of the loop antenna shall be 1 meter above the ground and rotated loop axis for maximum reading. 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 STC (Dongguan) Company Ltd. 68 Fumin Nan Road, Dalang, Dongguan, Guangdong, PRC with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 629686.

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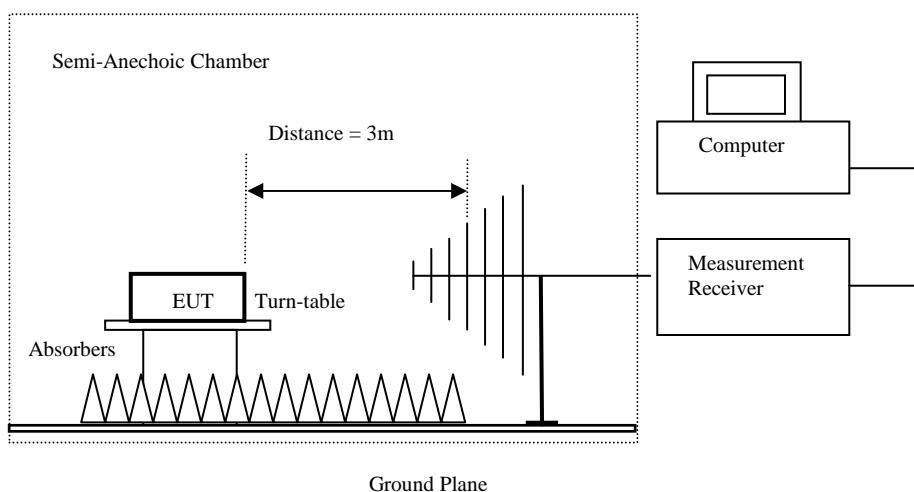
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Spectrum Analyzer Setting:

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.

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Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.227]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [μ V/m]	Field Strength of Fundamental Emission [Average] [μ V/m]
26.96-27.28	100,000	10,000

Results of Tx mode: PASS

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μ V	Correction Factor dB/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
27.145	43.50	19.2	62.7	1,364.6	100,000	Vertical

Field Strength of Fundamental Emissions Average Value							
Frequency MHz	Measured Level @3m dB μ V	Adjusted by Duty Cycle dB	Correction Factor dB/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
27.145	38.1	-5.3	19.2	57.3	732.8	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 4.6dB

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Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μ V/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.

Result of Tx mode (9 kHz to 30MHz): PASS

Emissions detected are more than 20 dB below the limit line(s).

Results of Tx mode: PASS

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dB μ V	Correction Factor dB/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
30.00	14.0	17.1	31.1	35.9	100	Horizontal
54.30	17.5	15.5	33.0	44.7	100	Vertical
81.40	17.8	7.2	25.0	17.8	100	Vertical
300.00	21.7	13.3	35.0	56.2	200	Vertical
542.90	20.4	7.6	28.0	25.1	200	Horizontal

Remarks:

No further spurious emissions found between lowest internal frequency and 30MHz.

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 4.6dB

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3.2 20dB Bandwidth of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.227
Test Method:	ANSI C63.4:2009 (Section 13.1.7)
Test Date:	2012-08-23
Mode of Operation:	Tx 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.

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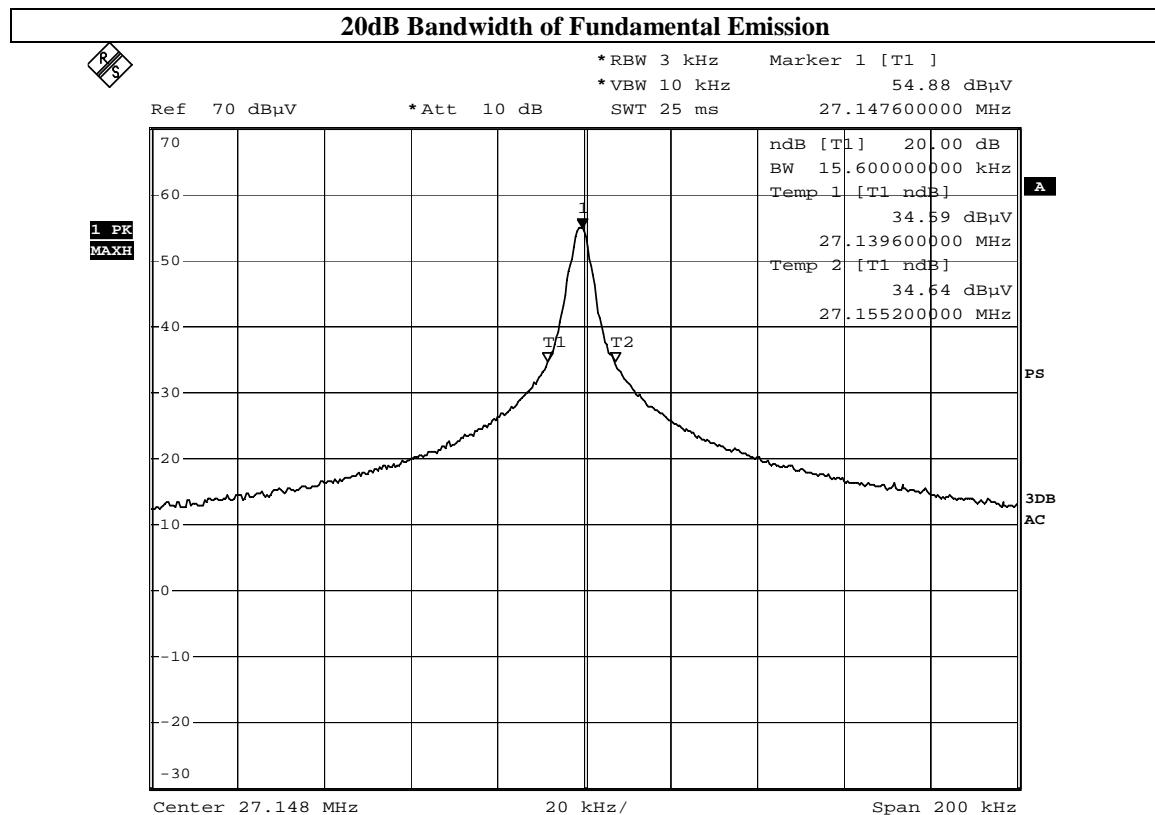
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Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [kHz]	FCC Limits [MHz]
27.145	15.60	within 26.96-27.28



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Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUe CAL
EMD036	EMI Test Receiver	ROHDE & SCHWARZ	ESIB26	100388	2011.09.07	2012.09.07
EMD061	Biconilog Antenna	ETS.LINDGREN	3142C	00060439	2010.11.20	2012.11.20
EMD084	MULTI-DVICE CONTROLLER	ETS.LINDGREN	2090	00060107	N/A	N/A
EMD088	Video Contol Unit	ETS.LINDGREN	Y21953A	2601073	N/A	N/A
EMD093	Monitor	ViewSonic	VA9036	Q8X064201876	N/A	N/A
EMD102	Intelligent Frequency	Ainuo Instrument Co., Ltd	AN97005SS	79707454	N/A	N/A
EMD105	FACT-3 EMC Chamber	ETS.LINDGREN	FACT-3	3803	N/A	N/A
EMD124	LOOP Antenna	ETS.LINDGREN	6502	00104905	2012.03.26	2014.03.26

Remarks:-

CM Corrective Maintenance

N/A Not Applicable or Not Available

TBD To Be Determined

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Appendix B

Duty Cycle Correction During 100msec

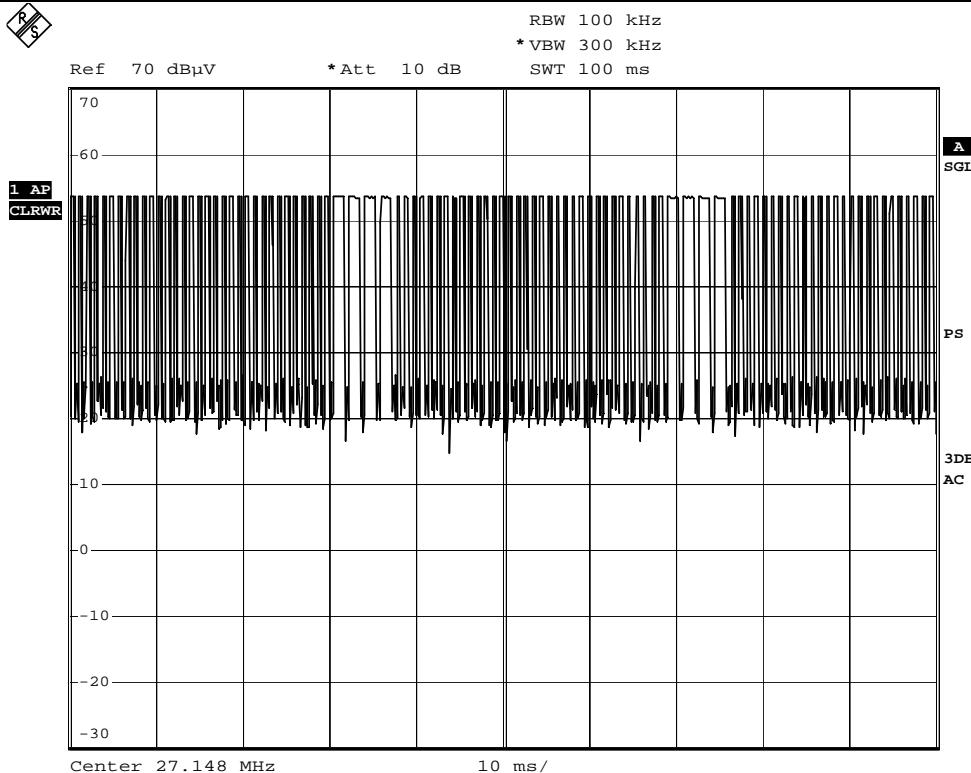
Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 93 short pulses (0.46msec) and 8 long pulses (1.38msec). Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered (93x0.46msec+8x1.38msec) per 100msec=53.82% duty cycle. Figure A through C shows the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction = $20\log(0.5382) = -5.4\text{dB}$

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

Figure A [Pulse Train]



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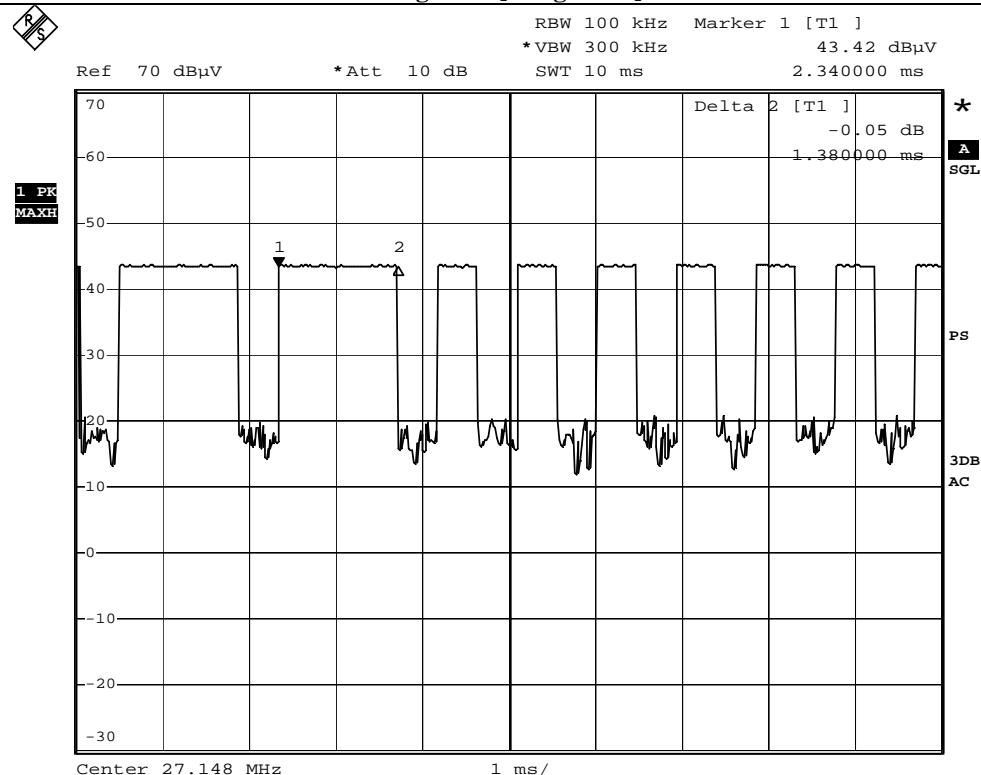
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Figure B [Long Pulse]



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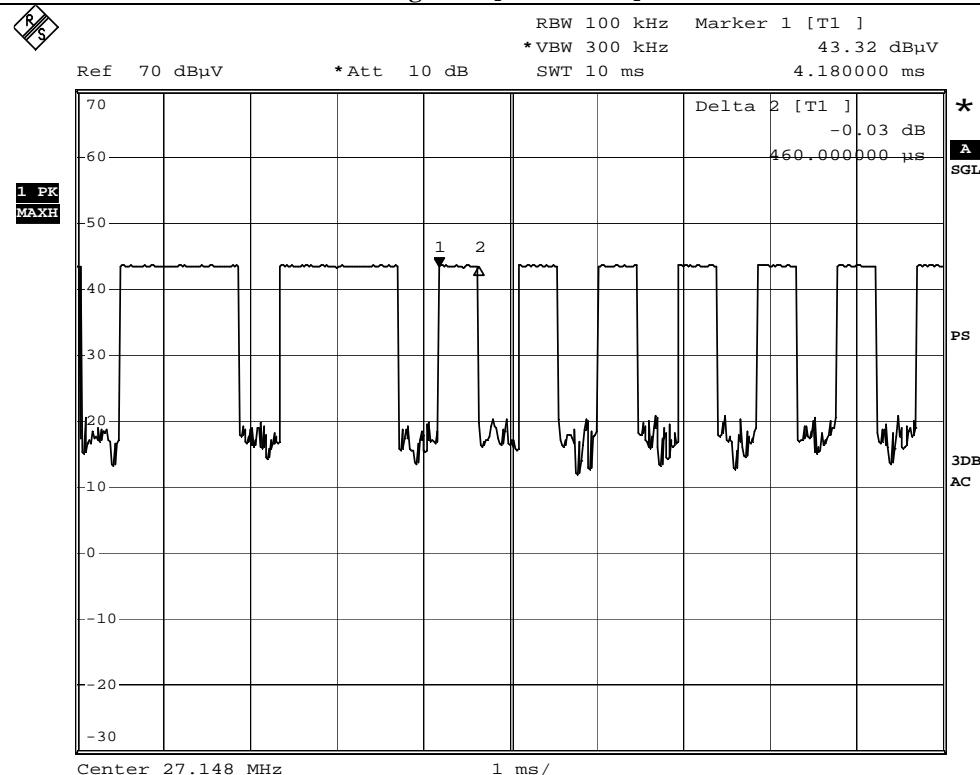
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Figure C [Short Pulse]



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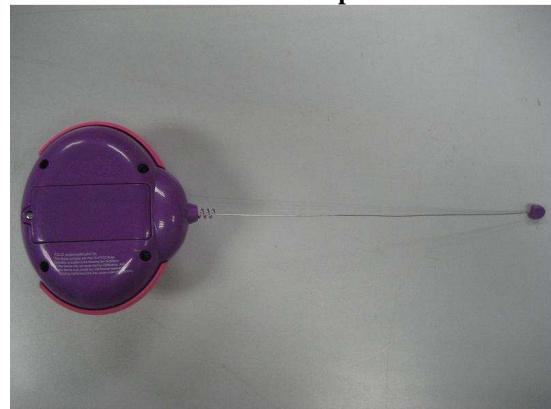
Appendix C

Photographs of EUT

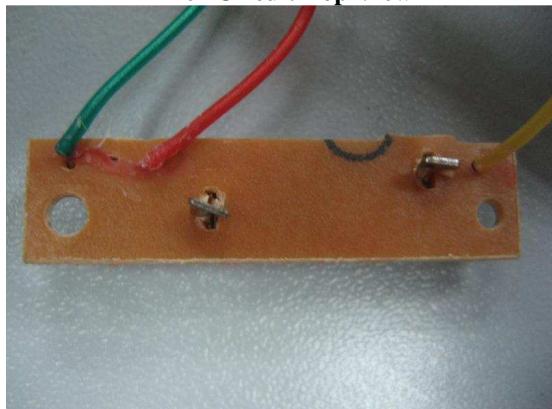
Front View of the product



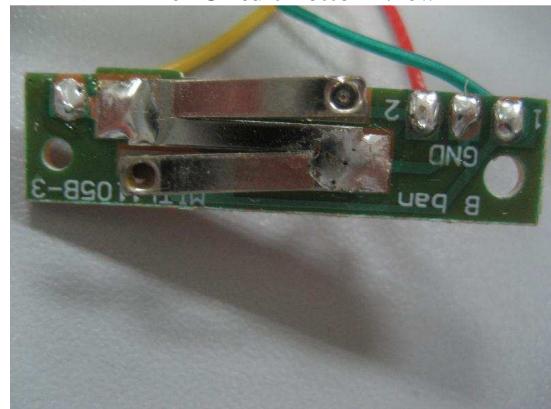
Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View



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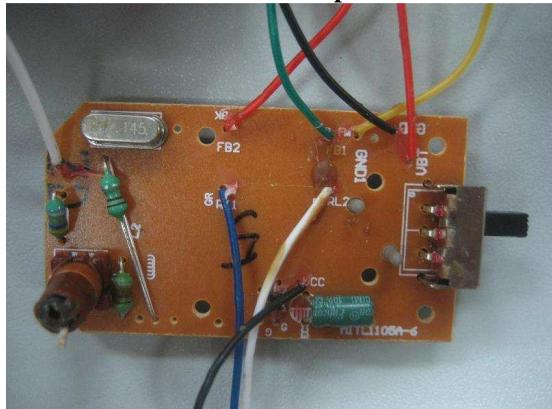
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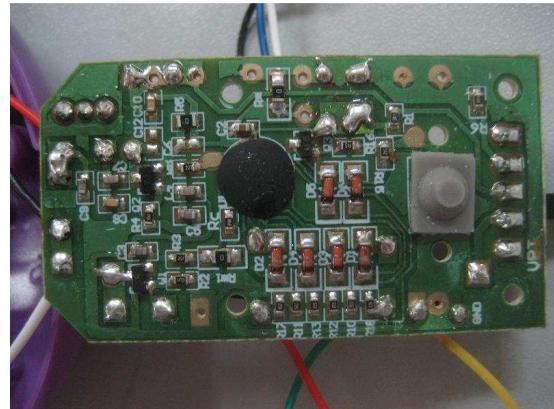
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Photographs of EUT

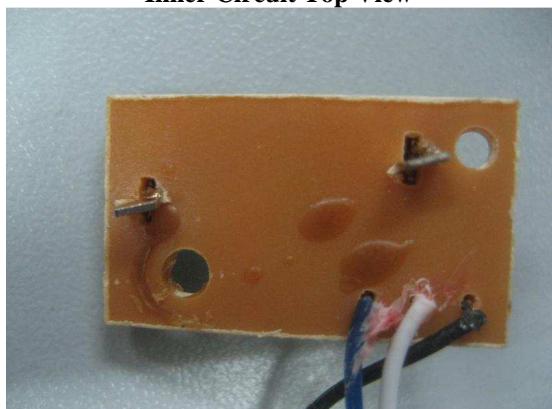
Inner Circuit Top View



Inner Circuit Bottom View



Inner Circuit Top View



Inner Circuit Bottom View



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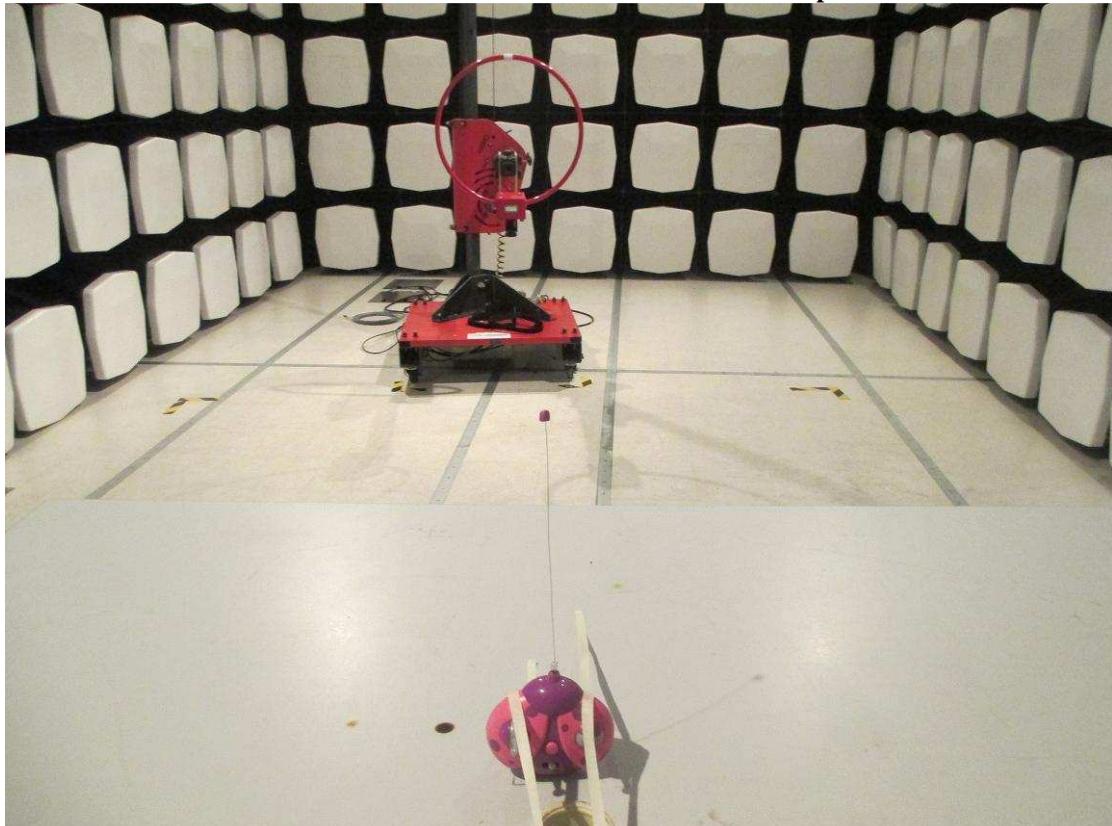
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Photographs of EUT

Measurement of Radiated Emission Test Set Up



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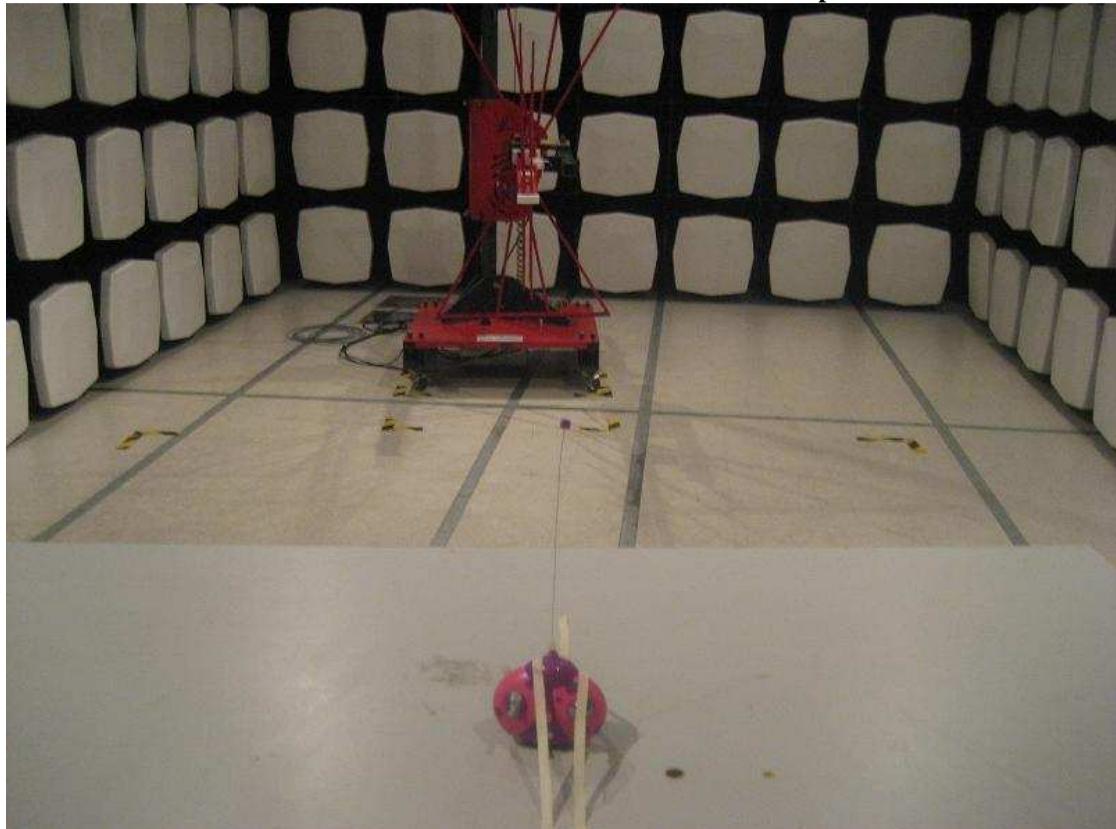
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Measurement of Radiated Emission Test Set Up



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