



## STC Test Report

Date : 2012-08-29

Page 1 of 17

No. : MH187013

**Applicant (JIT004):**

SHANTOU JINMING TOYS & CRAFTS IMP. & EXP.  
CO., LTD.

Jinming Building, Taian Road, Chenghai District, Shantou  
City, Guangdong, China

**Manufacturer:**

SHANTOU JINMING TOYS & CRAFTS IMP. & EXP.  
CO., LTD.

Jinming Building, Taian Road, Chenghai District, Shantou  
City, Guangdong, China

**Description of Sample(s):**

Submitted samples(s) said to be

Product: Flipo Color Magic Car  
Brand Name: Flipo Toys  
Model Number: TOY-COLSCAN  
FCC ID: P3286192

**Date Sample(s) Received:** 2012-08-10

**Date Tested:** 2012-08-21

**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):**

For additional model(s) details, see page 4

Dr. LEE Kam Chun,  
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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)



## STC Test Report

Date : 2012-08-29

Page 2 of 17

No. : MH187013

### **CONTENT:**

Cover	Page 1 of 17
Content	Page 2-3 of 17
<b><u>1.0 General Details</u></b>	
1.1 Equipment Under Test [EUT] Description of EUT operation	Page 4 of 17
1.2 Date of Order	Page 4 of 17
1.3 Submitted Sample(s)	Page 4 of 17
1.4 Test Duration	Page 4 of 17
1.5 Country of Origin	Page 4 of 17
<b><u>2.0 Technical Details</u></b>	
2.1 Investigations Requested	Page 5 of 17
2.2 Test Standards and Results Summary	Page 5 of 17
<b><u>3.0 Test Results</u></b>	
3.1 Emission	Page 6-8 of 17
3.2 Bandwidth Measurement	Page 9-10 of 17

**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



## **STC Test Report**

Date : 2012-08-29

Page 3 of 17

No. : MH187013

### **Appendix A**

List of Measurement Equipment

Page 11 of 17

### **Appendix B**

Duty Cycle Correction During 100 msec

Page 12-14 of 17

### **Appendix C**

Photographs

Page 15-17 of 17

**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



## STC Test Report

Date : 2012-08-29

Page 4 of 17

No. : MH187013

### **1.0 General Details**

#### **1.1 Equipment Under Test [EUT]**

##### **Description of Sample(s)**

Product: Flipo Color Magic Car  
Manufacturer: SHANTOU JINMING TOYS & CRAFTS IMP. & EXP. CO., LTD.  
Brand Name: Flipo Toys  
Model Number: TOY-COLSCAN  
Additional Model Number(s): RC Mini Car, RC Stunt Car  
Rating: 3Vd.c("AA" size battery x 2)

#### **1.1.1 Description of EUT Operation**

The Equipment Under Test (EUT) is a SHANTOU JINMING TOYS & CRAFTS IMP. & EXP. CO., LTD., Flipo Color Magic Car. 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**

2012-08-10

#### **1.3 Submitted Sample(s):**

1 Sample

#### **1.4 Test Duration**

2012-08-21

#### **1.5 Country of Origin**

China

**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)



## STC Test Report

Date : 2012-08-29

Page 5 of 17

No. : MH187013

### **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

**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



## STC Test Report

Date : 2012-08-29

Page 6 of 17

No. : MH187013

### **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: 2012-08-21

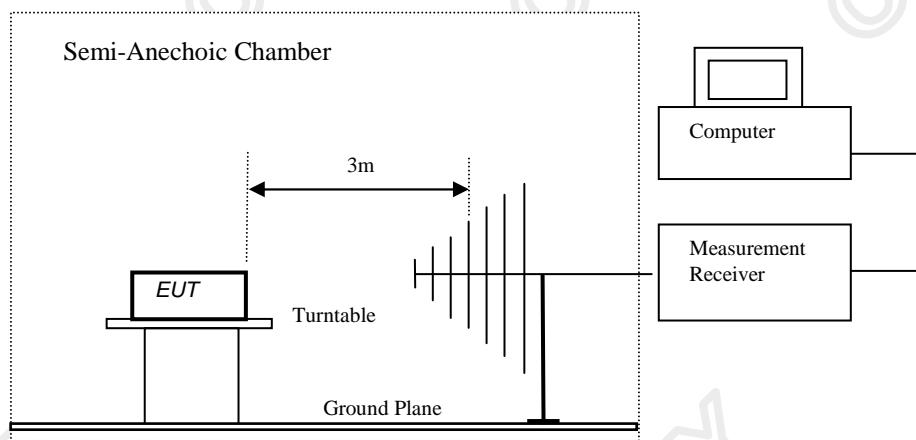
Mode of Operation: Tx mode

#### **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.

\*: 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.

#### **Test Setup:**



**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)



## STC Test Report

Date : 2012-08-29

Page 7 of 17

No. : MH187013

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

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [ $\mu$ V/m]	Field Strength of Fundamental Emission [Average] [ $\mu$ 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 $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
27.145	30.30	19.2	49.5	298.5	100,000	Vertical

Field Strength of Fundamental Emissions Average Value							
Frequency MHz	Measured Level @3m dB $\mu$ V	Adjusted by Duty Cycle dB	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m	Limit @3m $\mu$ V/m	E-Field Polarity
27.145	25.9	-4.4	19.2	45.1	179.9	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 5.1dB

**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)



## STC Test Report

Date : 2012-08-29

Page 8 of 17

No. : MH187013

### **Limits for Radiated Emissions [FCC 47 CFR 15.209]:**

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu$ V/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above 960	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 of Tx mode (9kHz-30MHz): PASS**

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

### **Results of Tx mode (30MHz-1000MHz): PASS**

Frequency MHz	Measured Level @3m dB $\mu$ V	Radiated Emissions Quasi-Peak			Limit @3m $\mu$ V/m	E-Field Polarity
		Correction Factor dB/m	Field Strength dB $\mu$ V/m	Field Strength $\mu$ V/m		
38.10	16.6	14.7	31.3	36.7	100	Vertical
54.30	18.5	9.8	28.3	26.0	100	Vertical
317.00	16.2	14.8	31.0	35.5	200	Vertical
54.30	15.6	8.4	24.0	15.8	100	Horizontal
381.40	14.9	18.1	33.0	44.7	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 5.1dB

#### **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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)



## **STC Test Report**

Date : 2012-08-29

Page 9 of 17

No. : MH187013

### **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:	2012-08-21
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.

**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



## STC Test Report

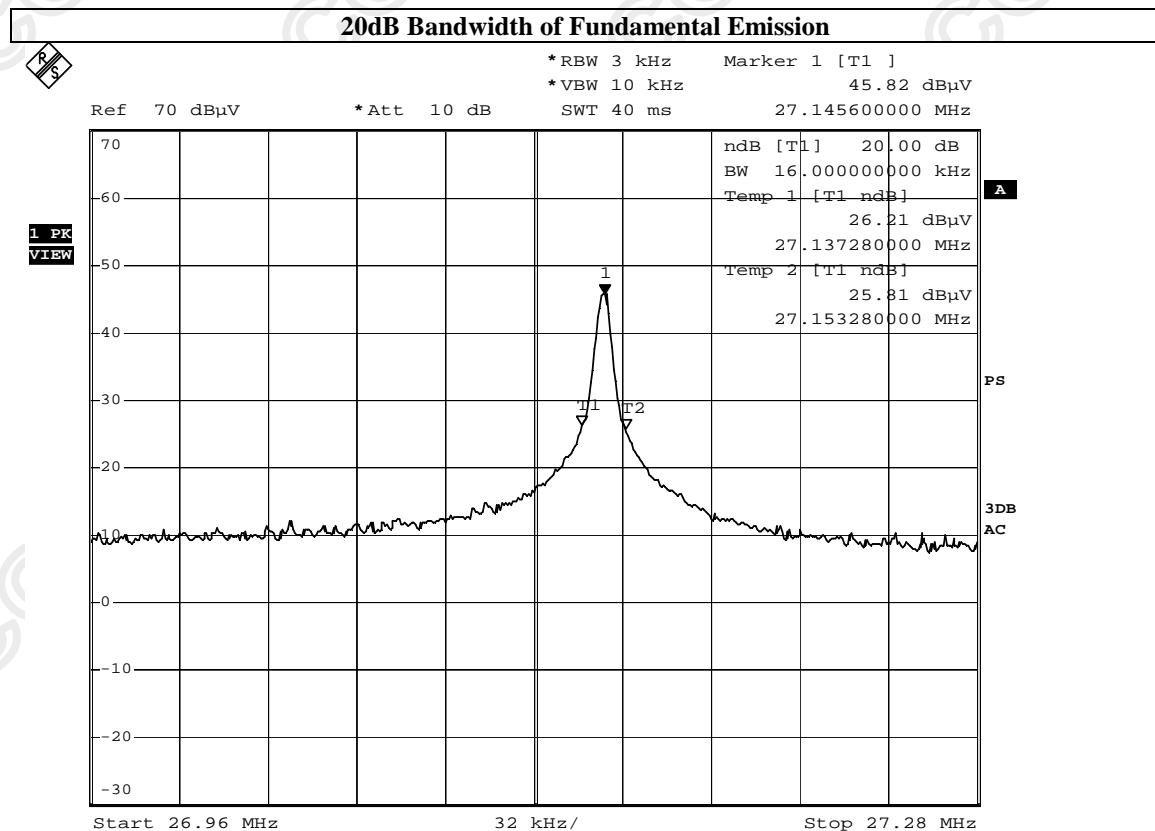
Date : 2012-08-29

Page 10 of 17

No. : MH187013

### Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [kHz]	FCC Limits [MHz]
27.145	14.60	within 26.96-27.28



Date: 24.AUG.2012 17:36:25

**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



## STC Test Report

Date : 2012-08-29

Page 11 of 17

No. : MH187013

### Appendix A

#### List of Measurement Equipment

##### Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
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	--	2011/10/25	2012/10/25
EM219	BICONILOG ANTENNA	EMCO	3142C	00029071	2011/03/01	2013/03/01
EM229	EMI Test Receiver	R&S	ESIB40	100248	2012/05/03	2013/05/03
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	2010/09/07	2012/09/07

#### Remarks:-

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

**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



## STC Test Report

Date : 2012-08-29

Page 12 of 17

No. : MH187013

### Appendix B

#### Duty Cycle Correction During 100msec

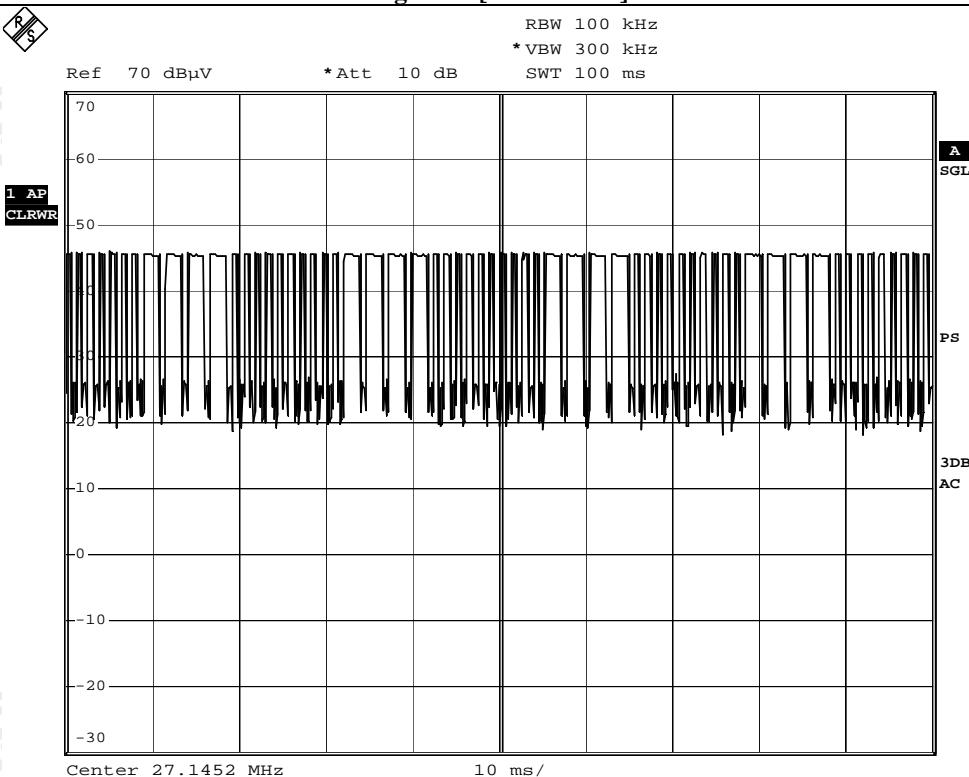
Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 16 long pulses (1.94msec) and 46 short pulses (0.64msec). Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered (16x1.94msec+46x0.64msec) per 100msec=60.48% duty cycle. Figure A through C show the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction = $20\log(0.6048) = -4.4\text{dB}$

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

**Figure A [Pulse Train]**



**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



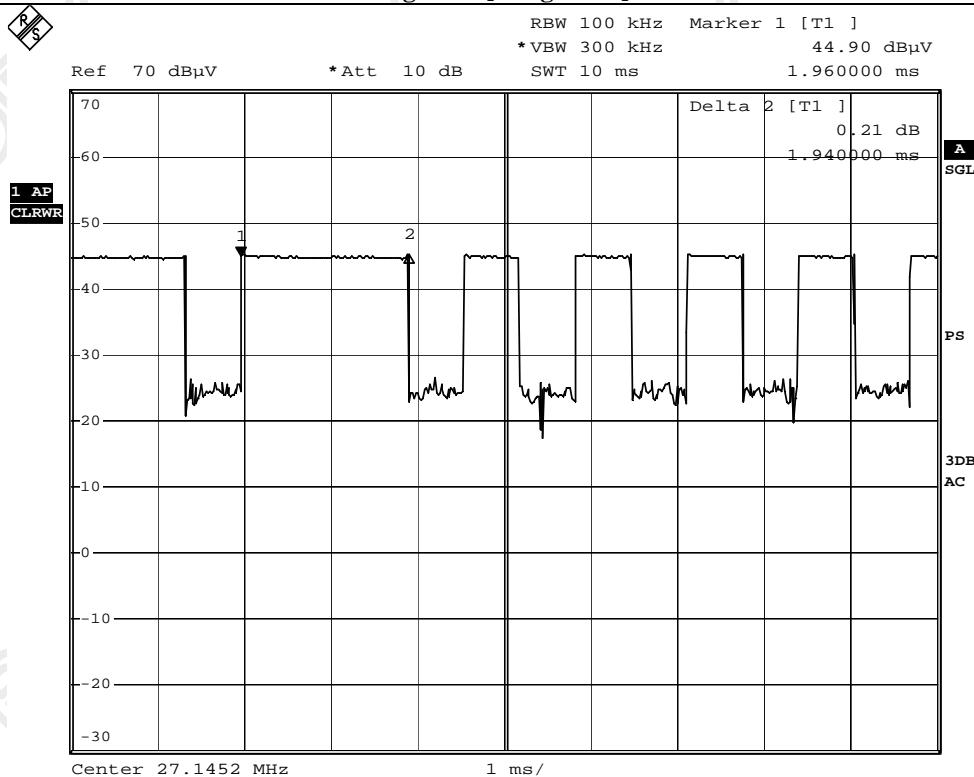
## STC Test Report

Date : 2012-08-29

Page 13 of 17

No. : MH187013

Figure B [Long Pulse]



**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



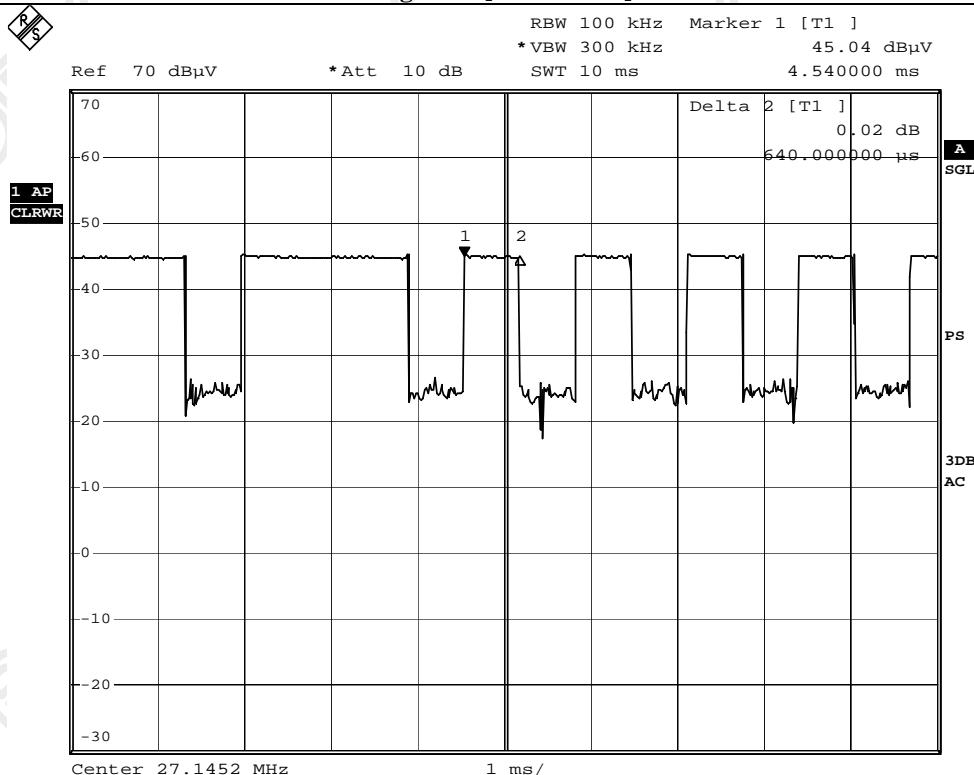
## STC Test Report

Date : 2012-08-29

Page 14 of 17

No. : MH187013

Figure C [Short Pulse]



**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



## STC Test Report

Date : 2012-08-29

Page 15 of 17

No. : MH187013

### Appendix C

#### Photographs of EUT

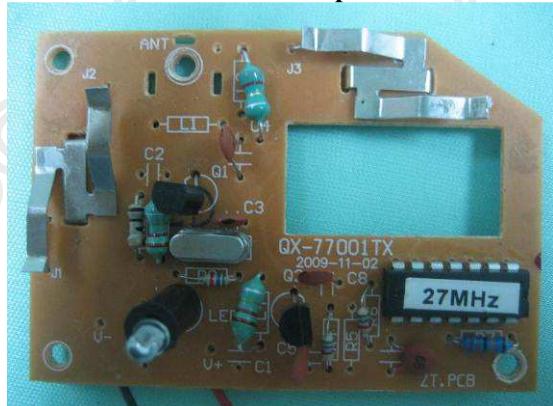
Front View of the product



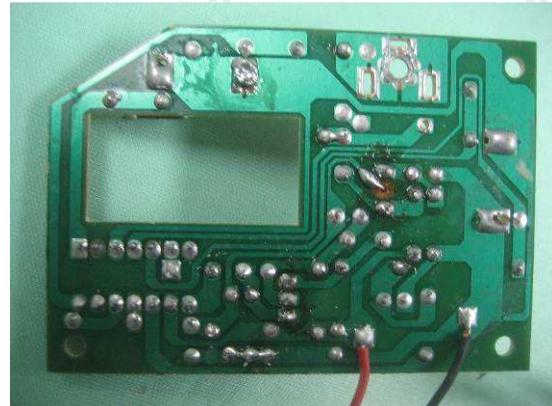
Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View



**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



## STC Test Report

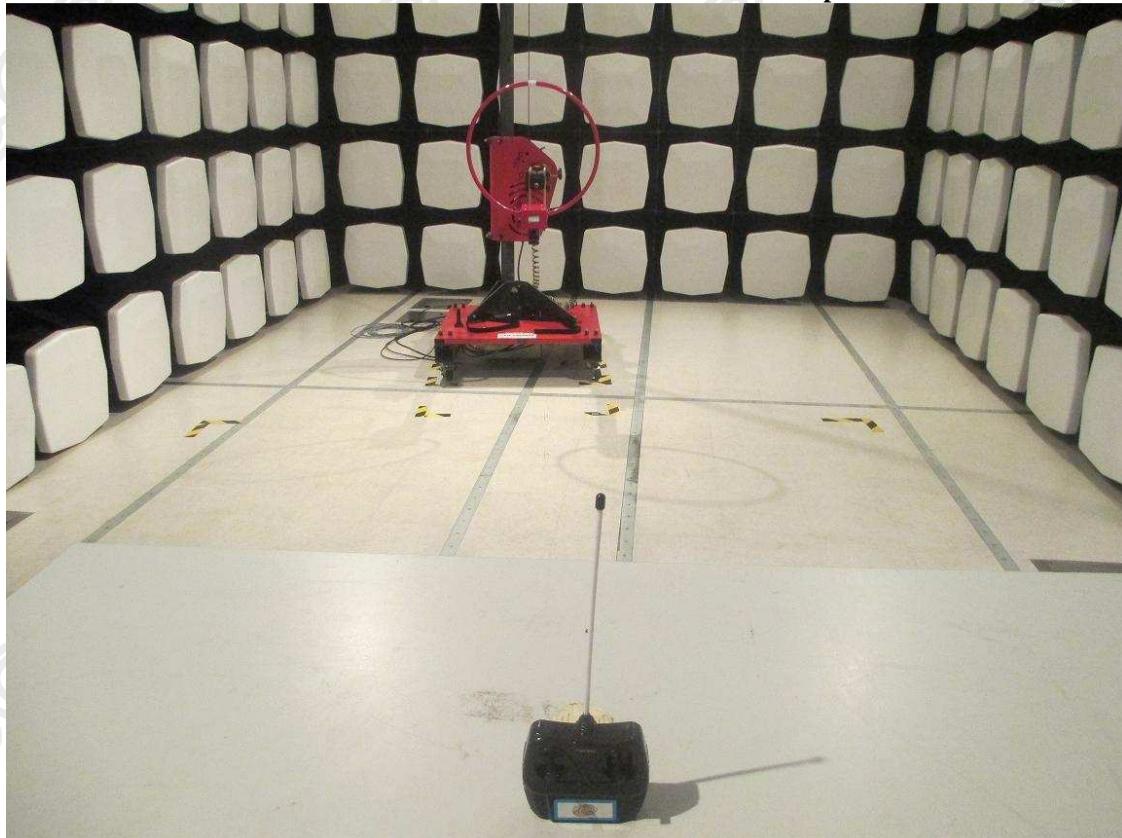
Date : 2012-08-29

Page 16 of 17

No. : MH187013

### Photographs of EUT

Measurement of Radiated Emission Test Set Up



**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage



## STC Test Report

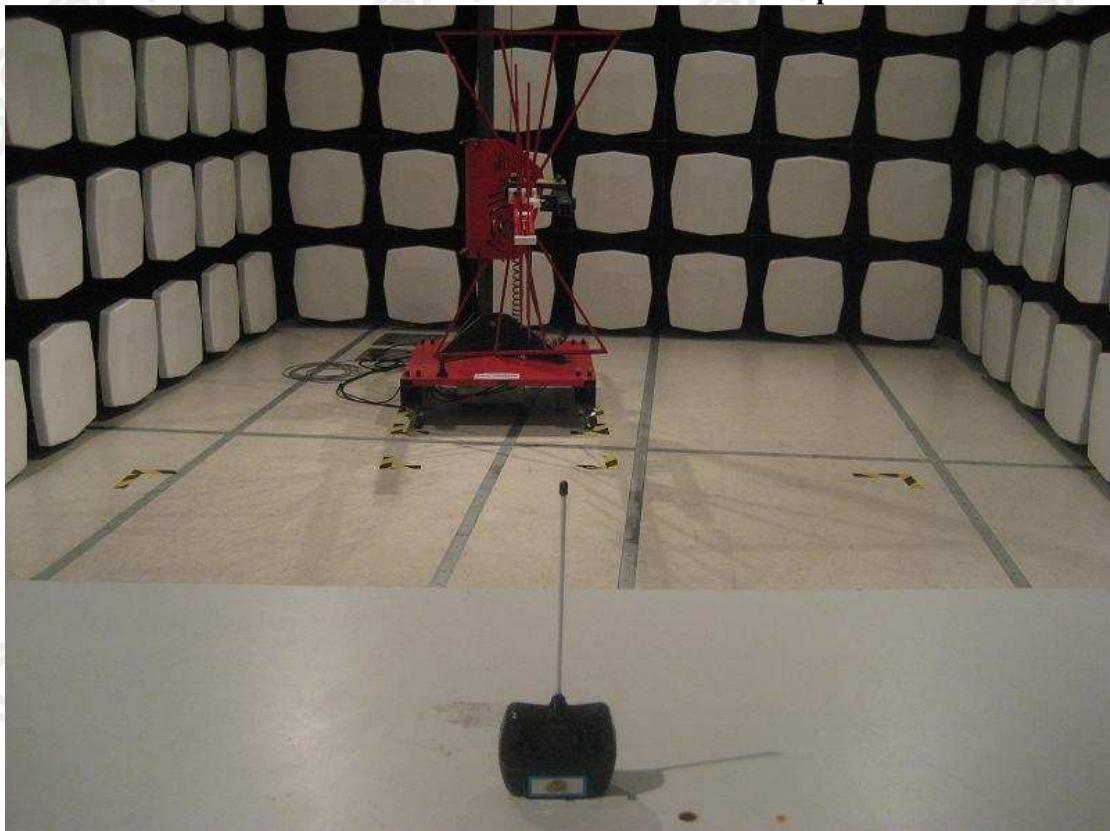
Date : 2012-08-29

Page 17 of 17

No. : MH187013

### Photographs of EUT

**Measurement of Radiated Emission Test Set Up**



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

**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](http://www.hkstc.org) E-mail: [hkstc@hkstc.org](mailto:hkstc@hkstc.org)

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd.  
For Conditions of Issuance of this test report, please refer to the overleaf or Homepage