



STC Test Report

Date : 2007-08-30

Page 1 of 19

No. : HM159265

Applicant (BUV001):

Megatoys
905 E 2nd Street, Los Angeles, CA 90012

Manufacturer:

N/A

Description of Samples:

Product: Single Function R/C Car – 49MHz
Brand Name: N/A
Model Number: 21200
FCC ID: S5Z2120049TX

Date Samples Received:

2007-6-23

Date Tested:

2007-06-29 to 2007-08-15

Investigation Requested:

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2006 and ANSI C63.4:2003 for FCC Certification.

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:

Dr. LEE Kam Chuen,
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.hkstdc.org E-mail: hkstdc@hkstdc.org

This report shall not be reproduced unless with prior written approval from the Hong Kong Standards and Testing Centre Ltd.

For full text of "Conditions of Issuance of Test Report", please refer to overleaf or refer to the website of Homepage.



STC Test Report

Date : 2007-08-30

Page 2 of 19

No. : HM159265

CONTENT:

Cover	Page 1 of 19
Content	Page 2-3 of 19
<u>1.0</u>	<u>General Details</u>
1.1	Test Laboratory
1.2	Applicant Details
	Applicant
	Manufacturer
1.3	Equipment Under Test [EUT]
	Description of EUT operation
1.4	Date of Order
1.5	Submitted Samples
1.6	Test Duration
1.7	Country of Origin
<u>2.0</u>	<u>Technical Details</u>
2.1	Investigations Requested
2.2	Test Standards and Results Summary
<u>3.0</u>	<u>Test Results</u>
3.1	Emission
3.2	Bandwidth Measurement

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 E-mail: 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 : 2007-08-30

Page 3 of 19

No. : HM159265

Appendix A

List of Measurement Equipment

Page 13 of 19

Appendix B

Duty Cycle Correction During 100 msec

Page 14-16 of 19

Appendix C

Photographs

Page 17-19 of 19

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 E-mail: 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 : 2007-08-30

Page 4 of 19

No. : HM159265

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**

Megatoys
905 E 2nd Street, Los Angeles, CA 90012

Manufacturer

N/A

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 E-mail: 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 : 2007-08-30

Page 5 of 19

No. : HM159265

1.3 Equipment Under Test [EUT] Description of Sample

Model Name: Single Function R/C Car – 49MHz
Manufacturer: N/A
Brand Name: N/A
Model Number: 21200
Input Voltage: 9Vd.c (“6F22” size battery x 1)

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a Megatoys, Single Function R/C Car – 49MHz. The transmitter is a 2 buttons transmitter. The EUT continues to transmit while button is being pressed, It is pulse transmitter, Modulation by IC, and type is pulse modulation.

1.4 Date of Order

2007-06-23

1.5 Submitted Sample(s):

2 Samples

1.6 Test Duration

2007-06-29 to 2007-08-15

1.7 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 E-mail: 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 : 2007-08-30

Page 6 of 19

No. : HM159265

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
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.235	ANSI C63.4:2003	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.209	ANSI C63.4:2003	N/A	<input checked="" 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 E-mail: 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 : 2007-08-30

Page 7 of 19

No. : HM159265

3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions (30 – 1000MHz)

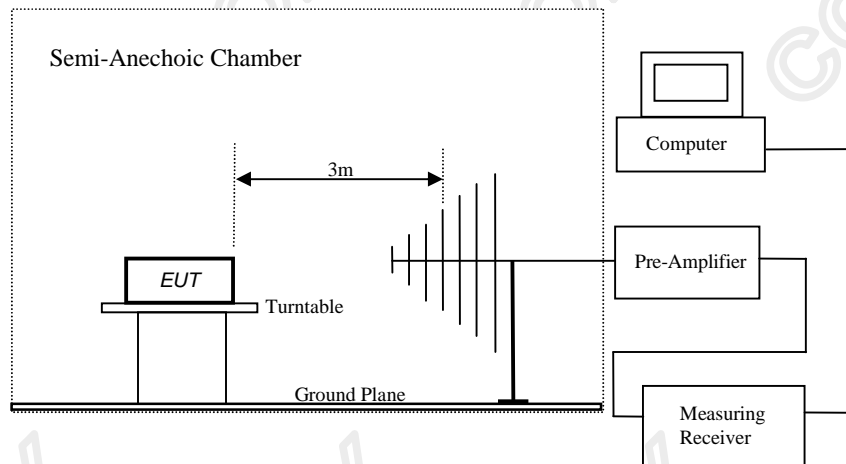
Test Requirement: FCC 47CFR 15.235
Test Method: ANSI C63.4:2003
Test Date: 2007-08-15
Mode of Operation: Tx mode

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 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:



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 E-mail: 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 : 2007-08-30

Page 8 of 19

No. : HM159265

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

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [$\mu\text{V/m}$]	Field Strength of Fundamental Emission [Average] [$\mu\text{V/m}$]
49.82-49.90	100,000	10,000

Results:

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μV	Correction Factor dB/m	Field Strength dB $\mu\text{V/m}$	Field Strength $\mu\text{V/m}$	Limit @3m $\mu\text{V/m}$	E-Field Polarity
49.86	22.6	9.3	31.9	39.4	100,000	Vertical

Field Strength of Fundamental Emissions Average							
Frequency MHz	Measured Level @3m dB μV	Adjusted by Duty Cycle dB	Correction Factor dB/m	Field Strength dB $\mu\text{V/m}$	Field Strength $\mu\text{V/m}$	Limit @3m $\mu\text{V/m}$	E-Field Polarity
49.86	13.4	-9.2	9.3	22.7	13.6	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 5.2dB

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 E-mail: 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 : 2007-08-30

Page 9 of 19

No. : HM159265

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [$\mu\text{V/m}$]
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:

Radiated Emissions Quasi-Peak						
Frequency MHz	Measured Level @3m dB μV	Correction Factor dB/m	Field Strength dB $\mu\text{V/m}$	Field Strength $\mu\text{V/m}$	Limit @3m $\mu\text{V/m}$	E-Field Polarity
99.72	27.3	8.8	36.1	63.8	150	Vertical
149.58	< 1.0	9.8	< 10.8	< 3.5	150	Vertical
199.44	< 1.0	11.5	< 12.5	< 4.2	150	Vertical
249.30	< 1.0	15.9	< 16.9	< 7.0	200	Vertical
299.16	< 1.0	17.4	< 18.4	< 8.3	200	Vertical
349.02	< 1.0	17.2	< 18.2	< 8.1	200	Vertical
398.88	14.5	17.3	31.8	38.9	200	Vertical
448.74	18.1	20.5	38.6	85.1	200	Vertical
498.60	< 1.0	20.6	< 21.6	< 12.0	200	Vertical

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB

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.hksc.org E-mail: hksc@hksc.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 : 2007-08-30

Page 10 of 19

No. : HM159265

3.2 20dB Bandwidth of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.235
Test Method:	ANSI C63.4:2003 (Section 13.1.7)
Test Date:	2007-08-15
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.

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 E-mail: 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 : 2007-08-30

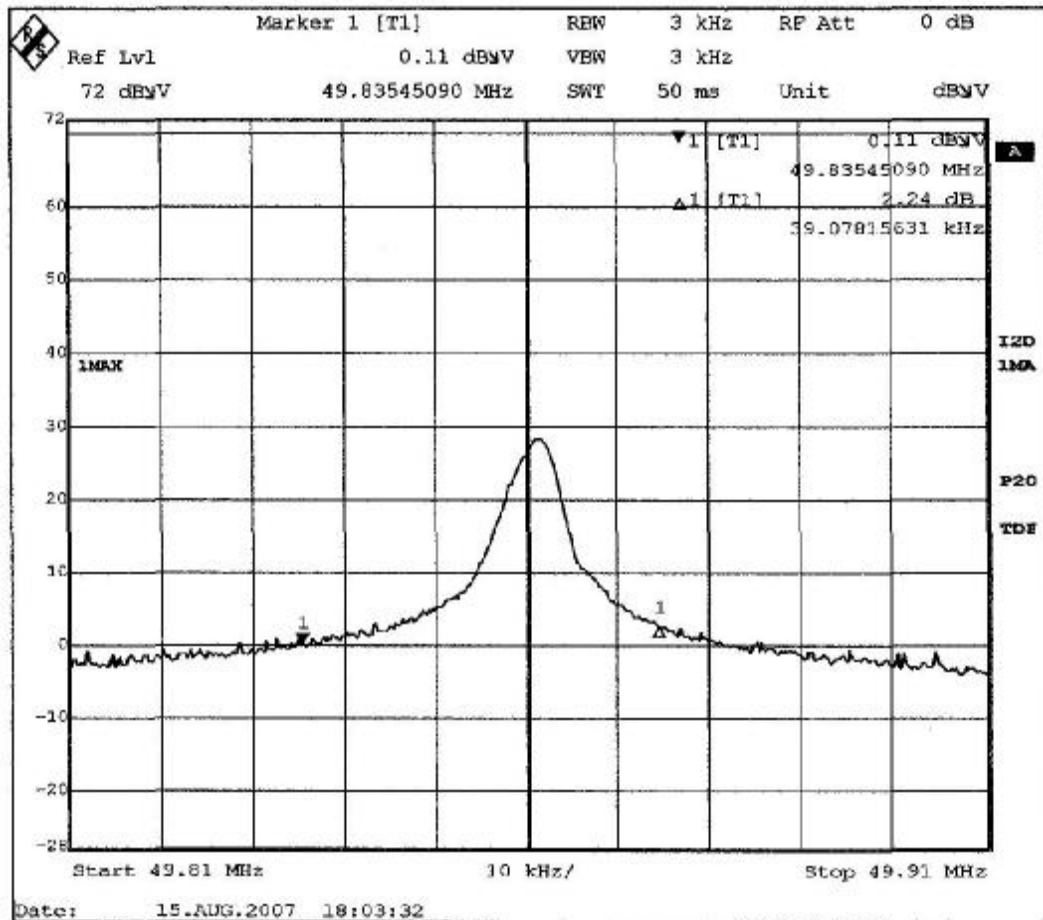
Page 11 of 19

No. : HM159265

Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [KHz]	FCC Limits [MHz]
49.86	39.08	within 49.82-49.90

20dB Bandwidth of Fundamental Emission



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 E-mail: 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



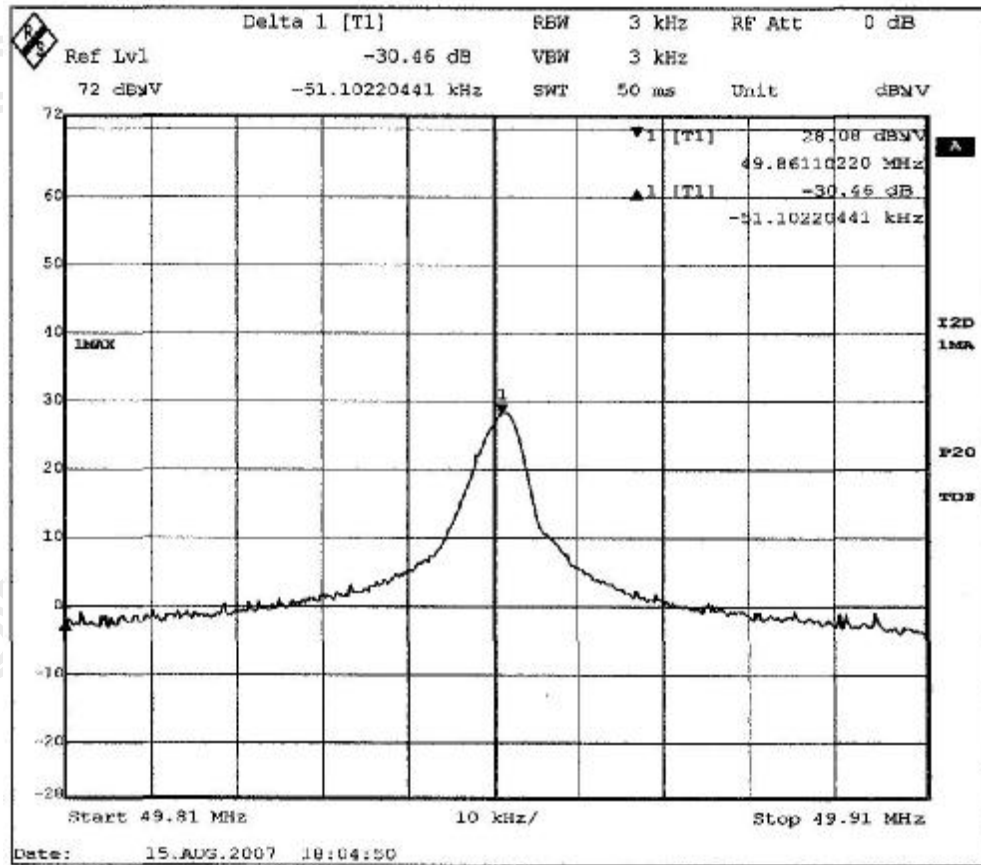
STC Test Report

Date : 2007-08-30

Page 12 of 19

No. : HM159265

20dB Bandwidth of Fundamental Emission



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 E-mail: 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 : 2007-08-30

Page 13 of 19

No. : HM159265

Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM007	SPECTRUM ANALYZER	HEWLETT PACKARD	HP85660B	3144A21192	2006/12/29	2007/12/29
EM008	SPECTRUM ANALYZER DISPLAY	HEWLETT PACKARD	HP85662A	3144A20514	2006/12/29	2007/12/29
EM009	QUASIPeAK ADAPTOR	HEWLETT PACKARD	HP85650A	3303A01702	2006/12/29	2007/12/29
EM010	RF PRESELECTOR	HEWLETT PACKARD	HP85685A	3221A01410	2006/12/29	2007/12/29
EM011	ATTENUATOR/SWITCH	HEWLETT PACKARD	HP11713A	2508A10595	2006/12/29	2007/12/29
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262	2006/12/29	2007/12/29
EM020	HORN ANTENNA	ETS-LINGGREN	3115	4032	2006/07/11	2008/07/11
EM022	LOOP ANTENNA	ETS-LINGGREN	6502	1189-2424	2006/07/26	2008/07/26
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB 7	100072	22007/06/08	2008/06/08
EM215	MULTIDEVICE CONTROLLER	ETS-LINGGREN	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	ETS-LINGGREN	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNABLE	ETS-LINGGREN	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINGGREN	FACT-3	--	2007/05/02	2008/05/02
EM219	BICONILOG ANTENNA	ETS-LINGGREN	3142C	00029071	2006/02/01	2008/02/01
EM229	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB 40	100248	2007/07/11	2008/07/11

Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM119	LISN	ROHDE & SCHWARZ	ESH3-Z5	0831.5518.52	2006/07/15	2007/07/15
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB 7	100072	22007/06/08	2008/06/08
EM197	LISN	ETS-LINGGREN	4825/3	1193	2006/09/25	2007/09/25
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057- 99A	2006/01/12	2008/01/12

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 E-mail: 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 : 2007-08-30

Page 14 of 19

No. : HM159265

Appendix B

Duty Cycle Correction During 100msec

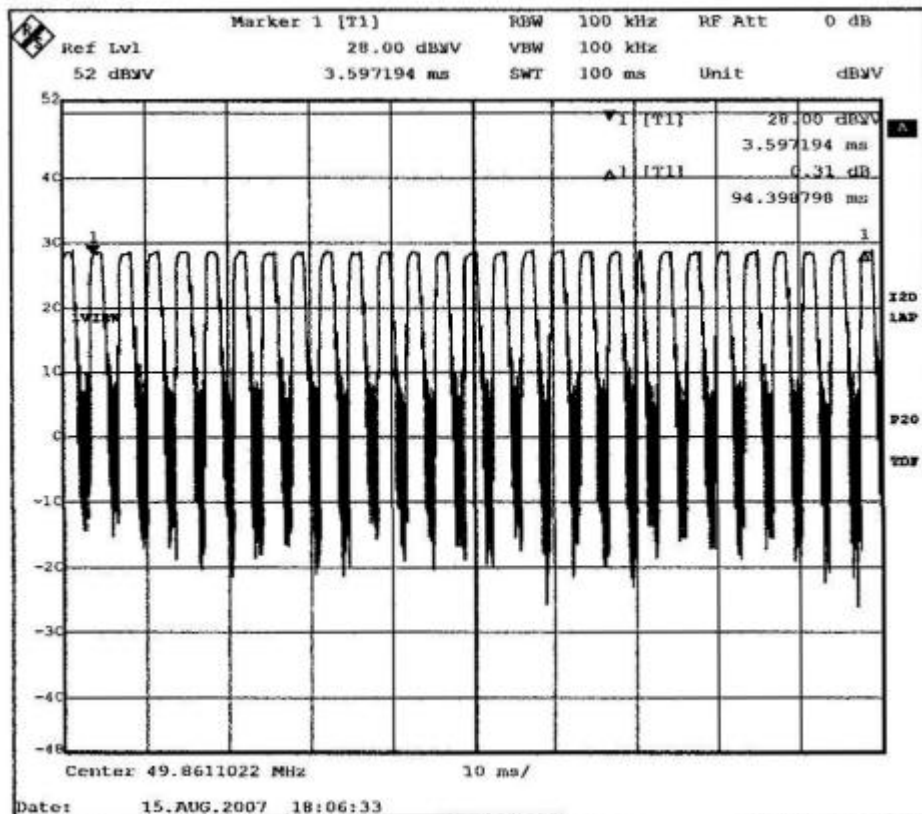
Each function key sends a different series of characters, but each packet period (94.4msec) never exceeds a series of 27 long (1.21msec) or 27 short (1.01msec) pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered $27 \times 1.21 \text{ msec} \text{ per } 94.4 \text{ msec} = 34.6\%$ duty cycle. Figure A through C show the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction = $20\text{Log}(0.346) = -9.2\text{dB}$

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 E-mail: 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 : 2007-08-30

Page 15 of 19

No. : HM159265

COPY

COPY

COPY

COPY

COPY

COPY

COPY

COPY

COPY

COPY

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 E-mail: 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



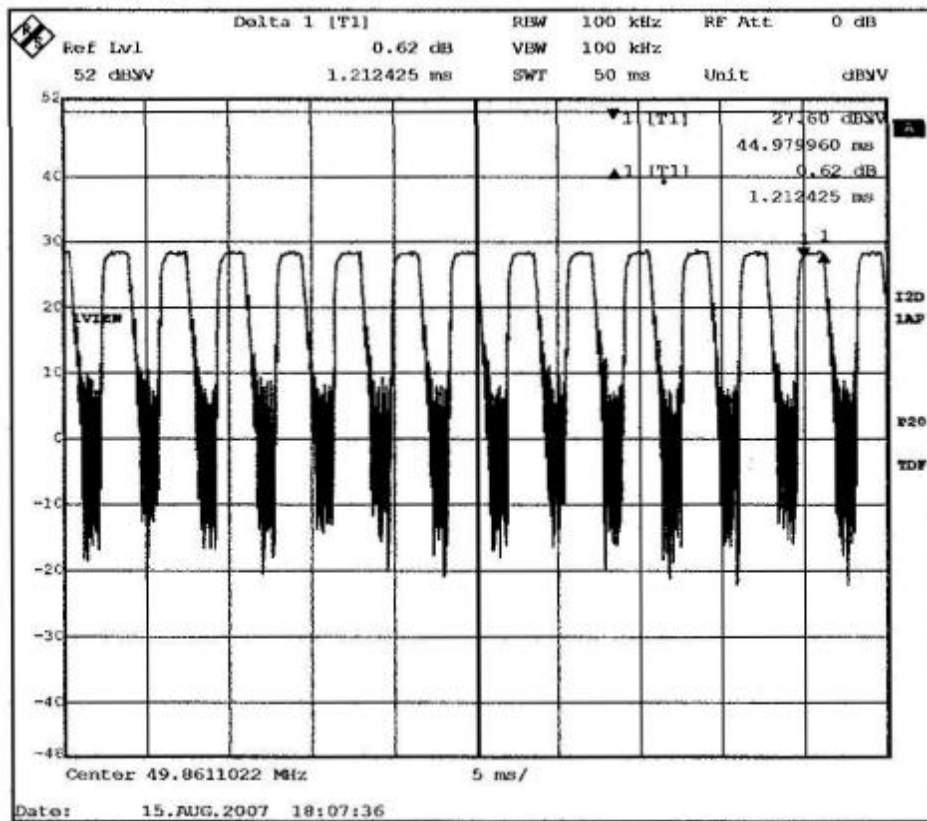
STC Test Report

Date : 2007-08-30

Page 16 of 19

No. : HM159265

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 E-mail: 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



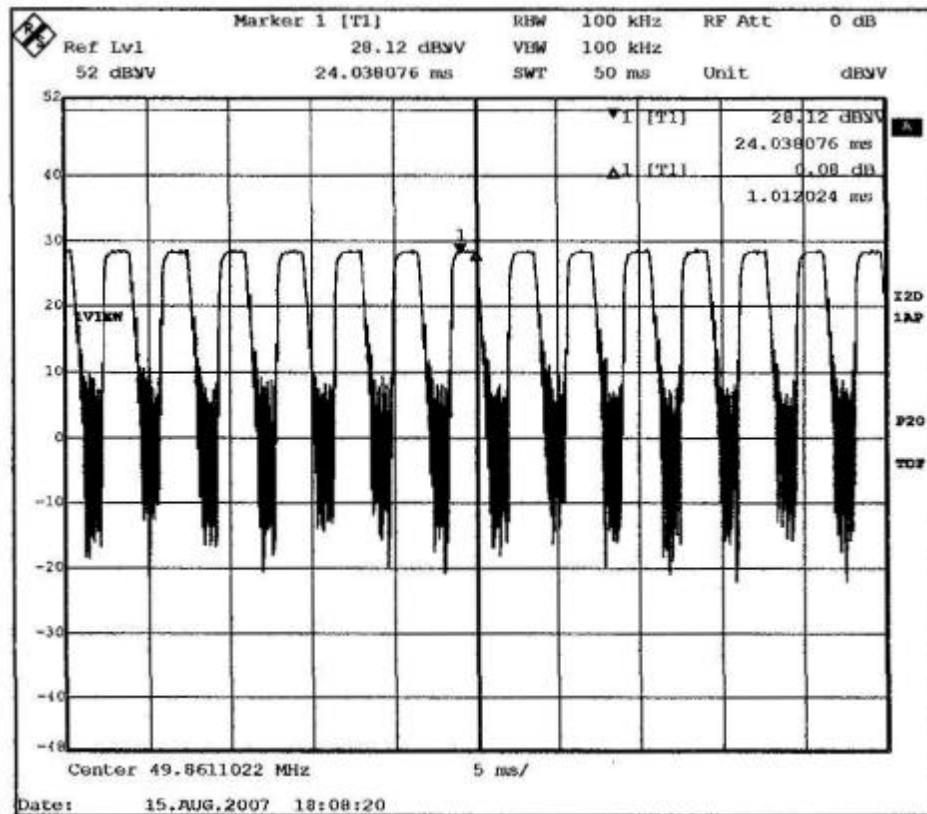
STC Test Report

Date : 2007-08-30

Page 17 of 19

No. : HM159265

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 E-mail: 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 : 2007-08-30

Page 18 of 19

No. : HM159265

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 E-mail: 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 : 2007-08-30

Page 19 of 19

No. : HM159265

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 E-mail: 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