



STC Test Report

Date : 2012-03-27

Page 1 of 30

No. : HM167365

Applicant (GAS003): Gatekeeper Systems (HK) Ltd.
Unit 2318-2319, Level 23, Tower 1, Metroplaza No. 223
Hing Fong Road, Kwai Fong, N.T., Hong Kong.

Manufacturer: Gatekeeper Systems (HK) Ltd.
Unit 2318-2319, Level 23, Tower 1, Metroplaza No. 223
Hing Fong Road, Kwai Fong, N.T., Hong Kong.

Description of Sample(s): Submitted sample(s) said to be
Product: SuperKey
Brand Name: Gatekeeper Systems
Model Number: K-9701
FCC ID: W3Z-K9701

Date Sample(s) Received: 2012-02-02

Date Tested: 2012-03-19 to 2012-03-22

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): ---

Dr. LEE Kam Chuen
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 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 full text of "Conditions of Issuance of Test Report", please refer to overleaf or refer to the website of Homepage.



STC Test Report

Date : 2012-03-27

Page 2 of 30

No. : HM167365

CONTENT:

Cover
Content

Page 1 of 30
Page 2-3 of 30

1.0 General Details

1.1 Equipment Under Test [EUT]
Description of EUT operation

Page 4 of 30

1.2 Description of EUT Operation

1.3 Date of Order

Page 4 of 30

1.4 Submitted Sample

Page 4 of 30

1.5 Test Duration

Page 4 of 30

1.6 Country of Origin

Page 4 of 30

2.0 Technical Details

2.1 Investigations Requested

Page 5 of 30

2.2 Test Standards and Results Summary

Page 5 of 30

3.0 Test Results

3.1 Emission

Page 6-26 of 30

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 : 2012-03-27

Page 3 of 30

No. : HM167365

Appendix A

List of Measurement Equipment

Page 27 of 30

Appendix B

Photographs

Page 28-30 of 30

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 : 2012-03-27

Page 4 of 30

No. : HM167365

1.0 General Details

1.1 Equipment Under Test [EUT] Description of Sample(s)

Product: SuperKey
Manufacturer: Gatekeeper Systems (HK) Ltd.
Unit 2318-2319, Level 23, Tower 1, Metroplaza
No. 223 Hing Fong Road, Kwai Fong, N.T., Hong Kong.
Brand Name: Gatekeeper Systems
Model Number: K-9701
Input Voltage: 3Vd.c. (Li-MH battery × 1) or 3Vd.c. (Li-MH battery × 2)

1.2 Description of EUT Operation

The Equipment Under Test (EUT) is a Gatekeeper Systems (HK) Ltd., SuperKey. The transmission transmitter operating in the 2.4GHz ISM frequency band. The EUT continues to transmit while Key is being pressed. Modulation by digital data; and type is MSK/FSK modulation.

1.3 Date of Order

2012-02-02

1.4 Submitted Sample(s):

1 Sample

1.5 Test Duration

2012-03-19 to 2012-03-22

1.6 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 : 2012-03-27

Page 5 of 30

No. : HM167365

2.0 Technical Details

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2011 Regulations 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	Fail	N/A
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	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 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 : 2012-03-27

Page 6 of 30

No. : HM167365

3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

Test Requirement:	FCC 47CFR 15.249
Test Method:	ANSI C63.4:2009
Test Date:	2012-03-19
Mode of Operation:	Tx Mode (20kbps) / Tx Mode (500kbps) / Rx 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 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.

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 : 2012-03-27

Page 7 of 30

No. : HM167365

Spectrum Analyzer Setting:

9KHz – 30MHz (Pk & Av)

RBW: 10kHz
VBW: 30kHz
Sweep: Auto
Span: Fully capture the emissions being measured
Trace: Max. hold

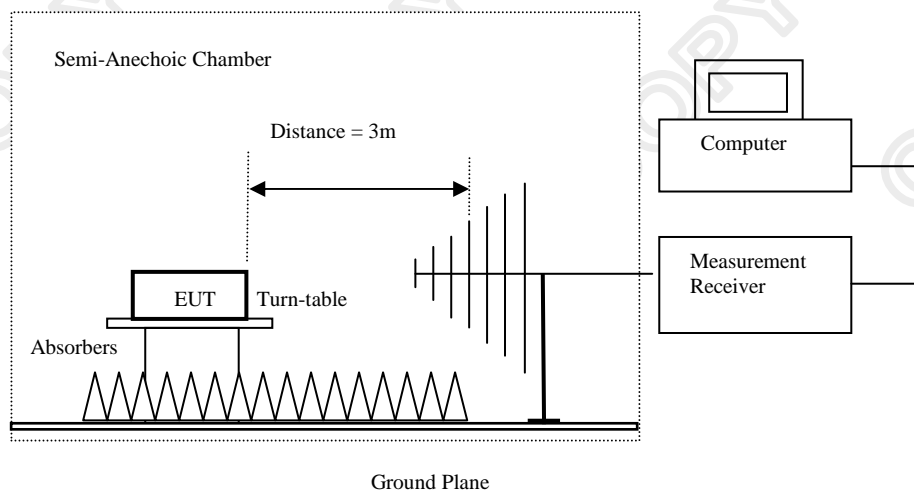
30MHz – 1GHz (QP)

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.

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 : 2012-03-27

Page 8 of 30

No. : HM167365

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Tx mode (Ch. 2, 20kbps): Pass

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2401.4	69.3	27.9	97.2	72,443.6	500,000	Horizontal
* 4802.0	19.8	34.7	54.5	530.9	5,000	Horizontal
7204.0	14.4	39.7	54.1	507.0	5,000	Horizontal
9605.6	Emissions detected are more than 20 dB below the FCC Limits				5,000	Vertical
* 12007.0					5,000	Vertical
14408.4					5,000	Vertical
16809.8					5,000	Vertical
* 19211.2					5,000	Vertical
21612.6					5,000	Vertical
24014.0					5,000	Vertical

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2401.4	50.1	27.9	78.0	7,943.3	50,000	Horizontal
* 4802.0	3.6	34.7	38.3	82.2	500	Horizontal
7204.0	0.4	39.7	40.1	101.2	500	Horizontal

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 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 E-mail: hkstc@hkstc.org



STC Test Report

Date : 2012-03-27

Page 9 of 30

No. : HM167365

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Tx mode (Ch. 200, 20kbps): Pass

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2441.2	62.4	27.9	90.3	32,734.1	500,000	Horizontal
* 4882.4	22.0	34.5	56.5	668.3	5,000	Horizontal
7324.2	14.2	39.7	53.9	495.5	5,000	Horizontal
9764.8	Emissions detected are more than 20 dB below the FCC Limits				5,000	Vertical
* 12206.0					5,000	Vertical
14647.2					5,000	Vertical
17088.4					5,000	Vertical
* 19529.6					5,000	Vertical
21970.8					5,000	Vertical
24412.0					5,000	Vertical

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2441.2	43.1	27.9	71.0	3,548.1	50,000	Horizontal
* 4882.4	6.2	34.5	40.7	108.4	500	Horizontal
7324.2	0.2	39.7	39.9	98.9	500	Horizontal

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 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 E-mail: hkstc@hkstc.org



STC Test Report

Date : 2012-03-27

Page 10 of 30

No. : HM167365

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Tx mode (Ch. 395, 20kbps): Pass

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2480.0	65.1	27.9	93.0	44,668.4	500,000	Horizontal
* 4956.2	20.7	34.7	55.4	588.8	5,000	Horizontal
7440.0	18.2	39.4	57.6	758.6	5,000	Horizontal
9920.0	Emissions detected are more than 20 dB below the FCC Limits				5,000	Vertical
* 12400.0					5,000	Vertical
14880.0					5,000	Vertical
17360.0					5,000	Vertical
* 19840.0					5,000	Vertical
22320.0					5,000	Vertical
24800.0					5,000	Vertical

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2480.0	45.9	27.9	73.8	4,897.8	50,000	Horizontal
* 4956.2	7.1	34.7	41.8	123.0	500	Horizontal
7440.0	0.3	39.4	39.7	96.6	500	Horizontal

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 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 E-mail: hkstc@hkstc.org



STC Test Report

Date : 2012-03-27

Page 11 of 30

No. : HM167365

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Tx mode (Ch. 5, 500kbps): Pass

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2402.6	65.2	27.9	93.1	45,185.6	500,000	Horizontal
* 4805.2	24.1	34.5	58.6	851.1	5,000	Vertical
7207.8	15.3	39.9	55.2	575.4	5,000	Horizontal
9610.4	Emissions detected are more than 20 dB below the FCC Limits				5,000	Vertical
* 12013.0					5,000	Vertical
14415.6					5,000	Vertical
16818.2					5,000	Vertical
* 19220.8					5,000	Vertical
21623.4					5,000	Vertical
24026.0					5,000	Vertical

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2402.6	64.2	27.9	92.1	40,271.7	50,000	Horizontal
* 4805.2	10.0	34.5	44.5	167.9	500	Vertical
7207.8	8.1	39.9	48.0	251.2	500	Horizontal

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 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 E-mail: hkstc@hkstc.org



STC Test Report

Date : 2012-03-27

Page 12 of 30

No. : HM167365

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Tx mode (Ch. 117, 500kbps): Pass

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2437.8	64.1	27.9	92.0	39,810.7	500,000	Horizontal
* 4875.6	21.5	34.5	56.0	631.0	5,000	Vertical
7313.4	14.3	39.7	54.0	501.2	5,000	Vertical
9751.2	Emissions detected are more than 20 dB below the FCC Limits				5,000	Vertical
* 12189.0					5,000	Vertical
14626.8					5,000	Vertical
17064.6					5,000	Vertical
* 19502.4					5,000	Vertical
21940.2					5,000	Vertical
24378.0					5,000	Vertical

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2437.8	63.4	27.9	91.3	36,728.2	50,000	Horizontal
* 4875.6	11.1	34.5	45.6	190.5	500	Vertical
7313.4	6.1	39.7	45.8	195.0	500	Vertical

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 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 E-mail: hkstc@hkstc.org



STC Test Report

Date : 2012-03-27

Page 13 of 30

No. : HM167365

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Tx mode (Ch. 239, 500kbps): Pass

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2476.1	64.8	27.9	92.7	43,151.9	500,000	Horizontal
* 4952.2	22.0	34.7	56.7	683.9	5,000	Vertical
7428.3	19.1	39.4	58.5	841.4	5,000	Horizontal
9904.4	Emissions detected are more than 20 dB below the FCC Limits				5,000	Vertical
* 12380.5					5,000	Vertical
14856.6					5,000	Vertical
17332.7					5,000	Vertical
* 19808.8					5,000	Vertical
22284.9					5,000	Vertical
24761.0					5,000	Vertical

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2476.1	63.7	27.9	91.6	38,018.9	50,000	Horizontal
* 4952.2	13.8	34.7	48.5	266.1	500	Vertical
7428.3	9.0	39.4	48.4	263.0	500	Horizontal

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 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 E-mail: hkstc@hkstc.org



STC Test Report

Date : 2012-03-27

Page 14 of 30

No. : HM167365

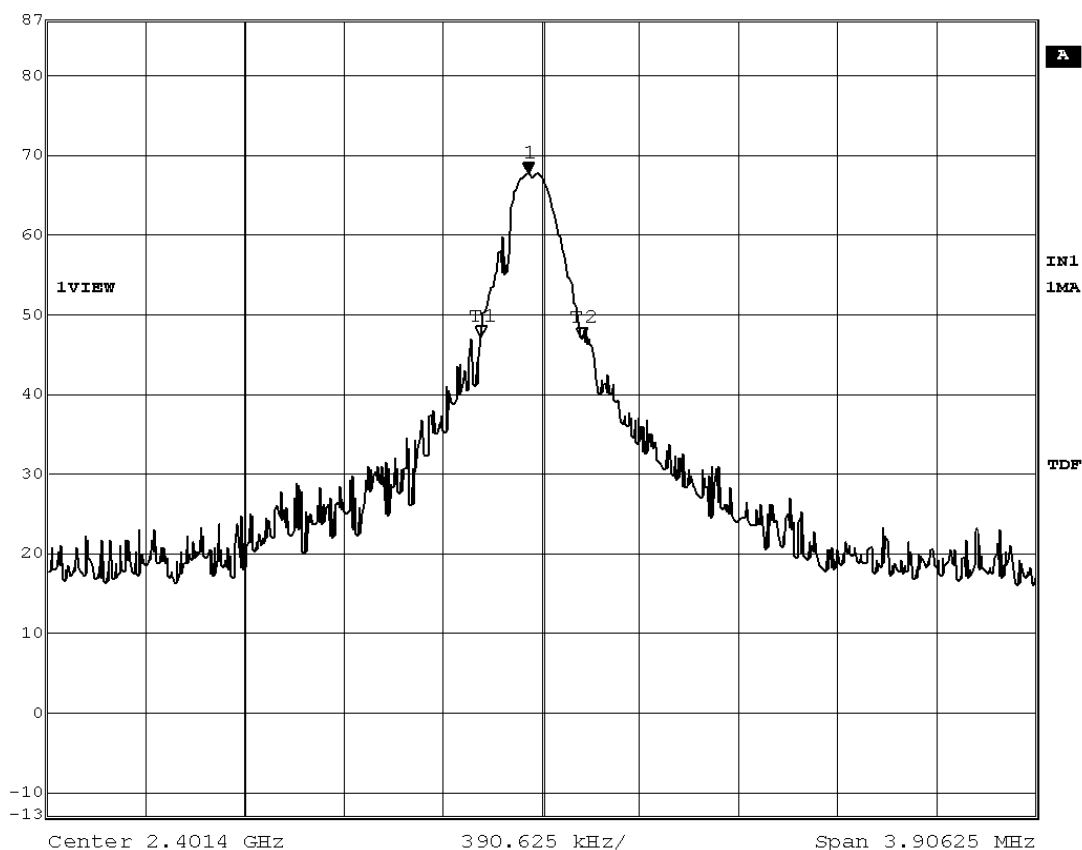
Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [kHz]
2401.4	399.24

(Ch. 2, 20kbps)

20dB Bandwidth of Fundamental Emission

	Marker 1 [T1 ndB]	REW	100 kHz	RF Att	0 dB	
Ref Lvl	ndB	20.00 dB	VBW	300 kHz		
87 dB μ V	BW	399.23597194 kHz	SWT	5 ms	Unit	dB μ V



Date: 21.MAR.2012 15:11:17

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 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 : 2012-03-27

Page 15 of 30

No. : HM167365

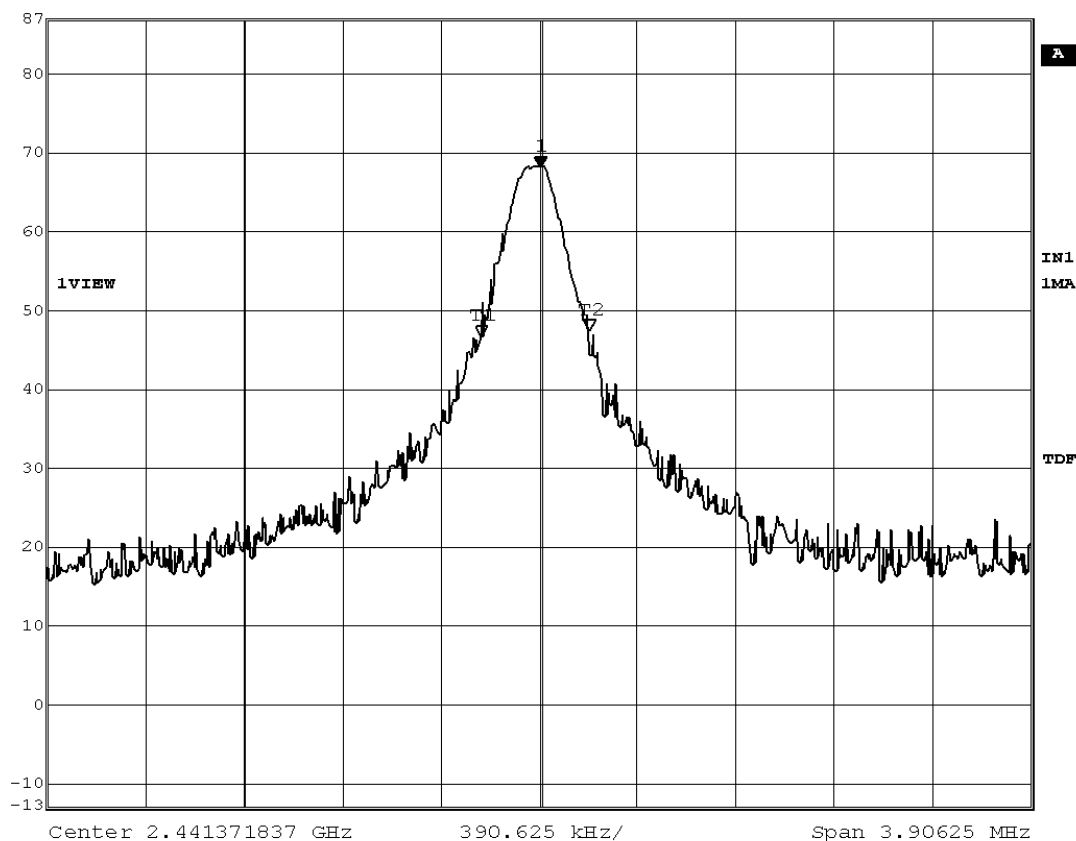
Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [kHz]
2441.4	430.55

(Ch. 200, 20kbps)

20dB Bandwidth of Fundamental Emission

	Marker 1 [T1 ndB]	RBW	100 kHz	RF Att	0 dB	
Ref Lvl	ndB	20.00 dB	VBW	300 kHz		
87 dB μ V	BW	430.54859719 kHz	SWT	5 ms	Unit	dB μ V



Date: 21.MAR.2012 15:04:30

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 : 2012-03-27

Page 16 of 30

No. : HM167365

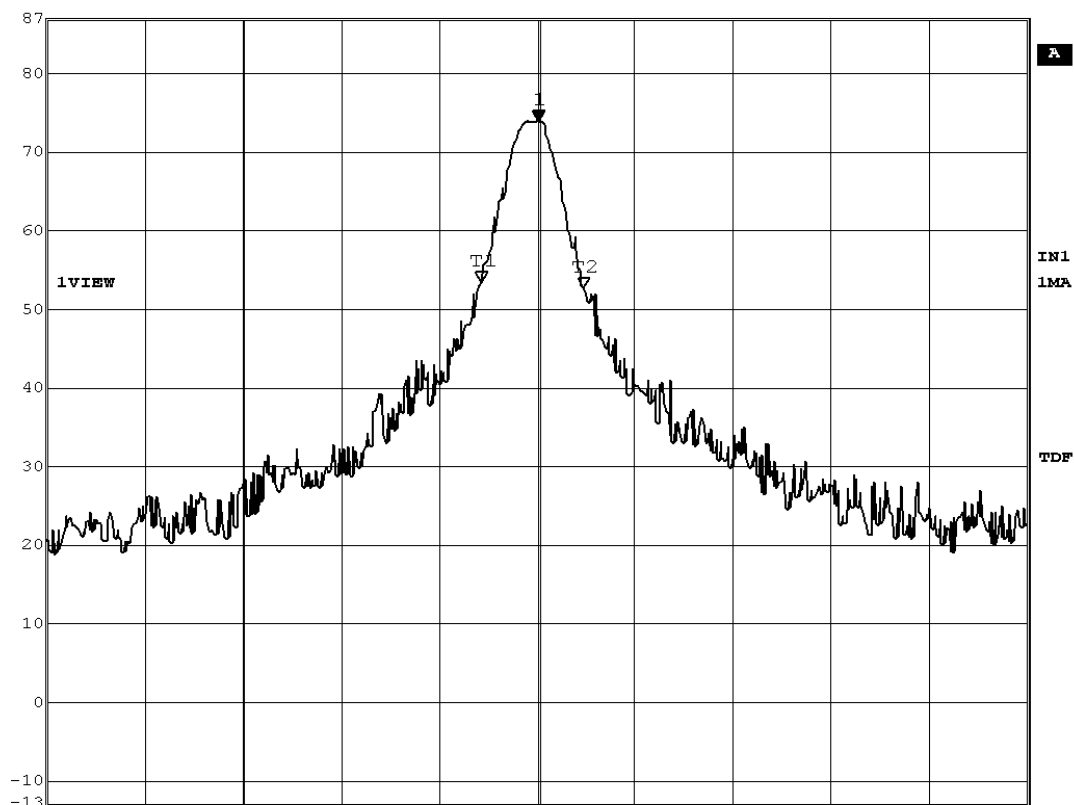
Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [kHz]
2480	407.06

(Ch. 395, 20kbps)

20dB Bandwidth of Fundamental Emission

	Marker 1 [T1 ndB]	RBW	100 kHz	RF Att	0 dB
	ndB	VBW	300 kHz		
	87 dB μ V	BW	407.06412826 kHz	SWT	5 ms
				Unit	dB μ V



Center 2.479975119 GHz 390.625 kHz/ Span 3.90625 MHz

Date: 21.MAR.2012 14:58:12

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 : 2012-03-27

Page 17 of 30

No. : HM167365

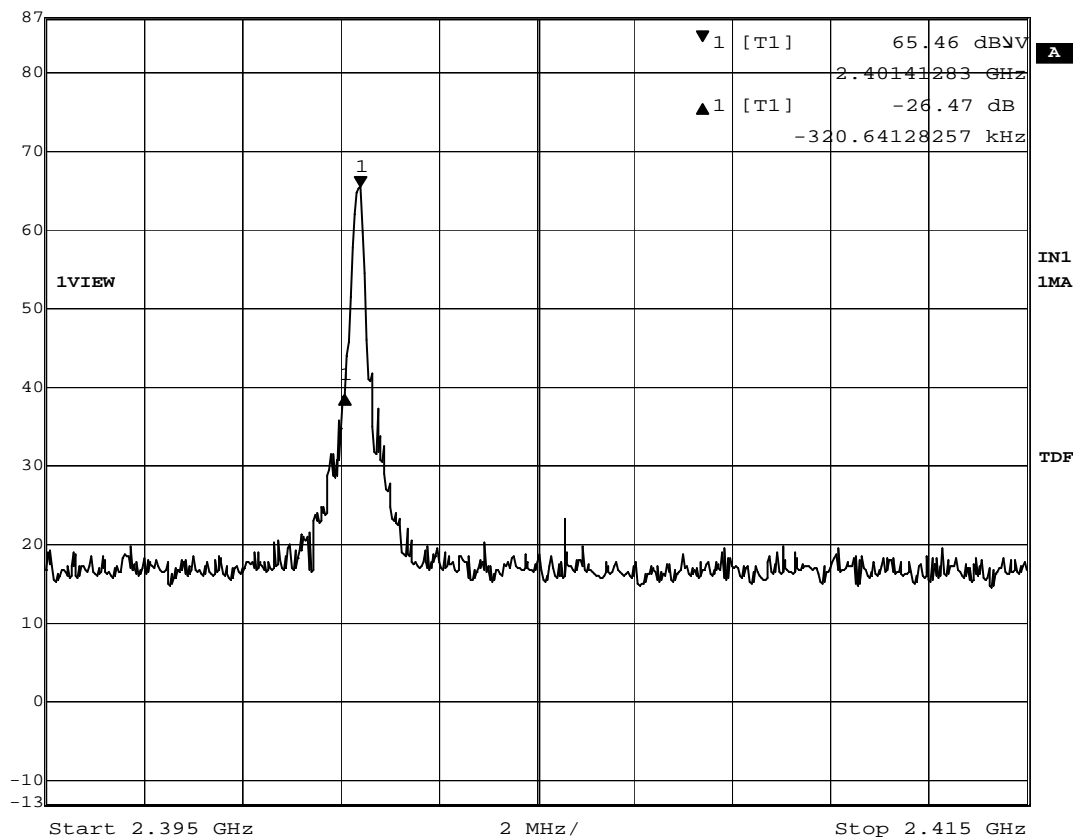
Band Edge Measurement:

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2401.4 – Lowest Fundamental	26.47

(20kbps)

26.47dB Reduction at Lower Band Edge

	Delta 1 [T1]	RBW	100 kHz	RF Att	0 dB
Ref Lvl	-26.47 dB	VBW	300 kHz		
87 dBV	-320.64128257 kHz	SWT	5 ms	Unit	dBV



Date: 21.MAR.2012 15:23:05

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 : 2012-03-27

Page 18 of 30

No. : HM167365

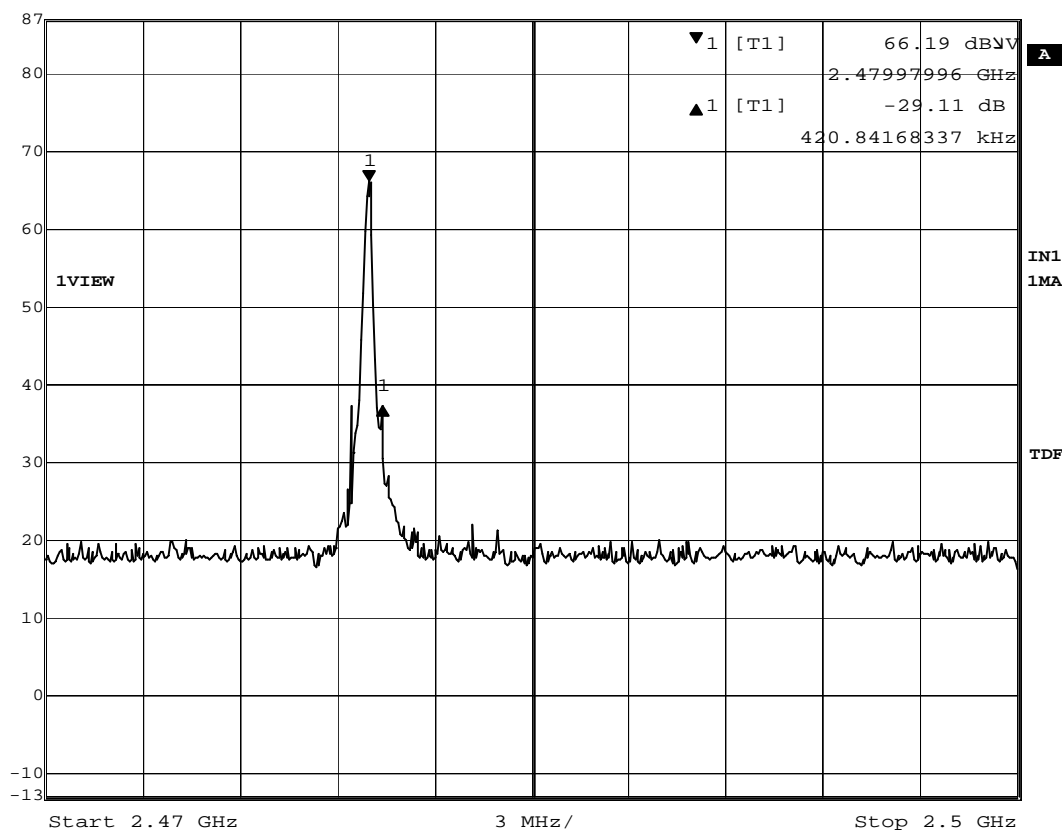
Band Edge Measurement:

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2479.97 - Highest Fundamental	29.11

(20kbps)

29.11dB Reduction at Upper Band Edge

	Delta 1 [T1]	RBW	100 kHz	RF Att	0 dB
Ref Lvl	-29.11 dB	VBW	300 kHz		
87 dB μ V	420.84168337 kHz	SWT	7.5 ms	Unit	dB μ V



Date: 21.MAR.2012 15:20:49

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 : 2012-03-27

Page 19 of 30

No. : HM167365

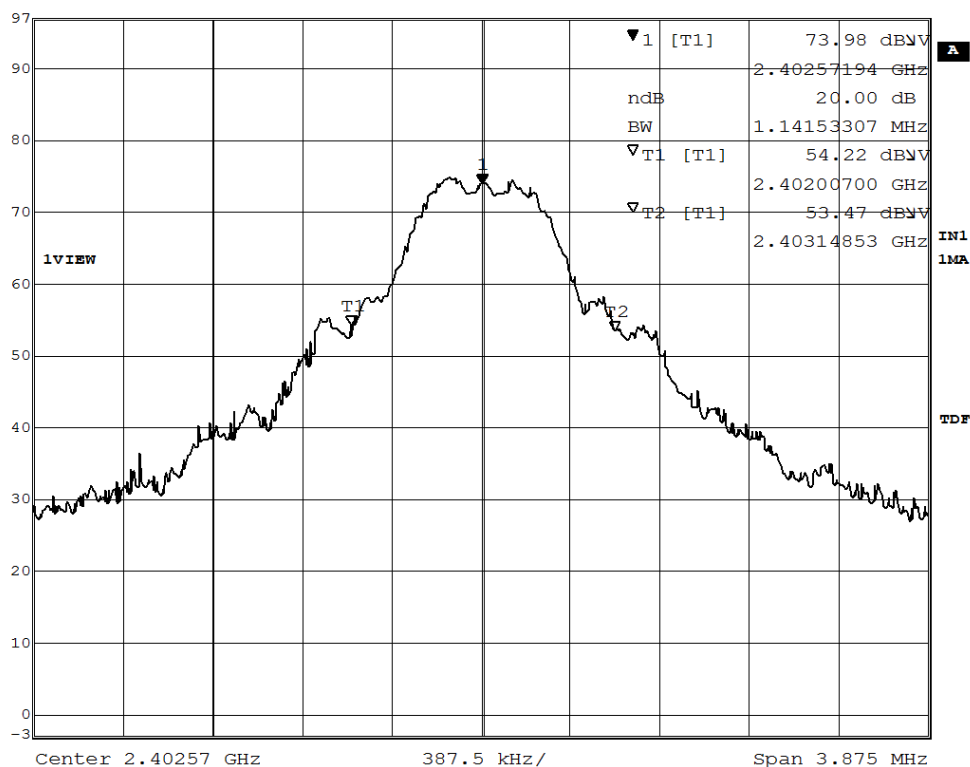
Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [MHz]
2402.57	1.14

(Ch.5, 500kbps)

20dB Bandwidth of Fundamental Emission

	Marker 1 [T1 ndB]	RBW	100 kHz	RF Att	0 dB
Ref Lvl	ndB	VBW	300 kHz		
97 dBV	BW 1.14153307 MHz	SWT	5 ms	Unit	dBV



Date: 18.APR.2012 11:17:20

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 : 2012-03-27

Page 20 of 30

No. : HM167365

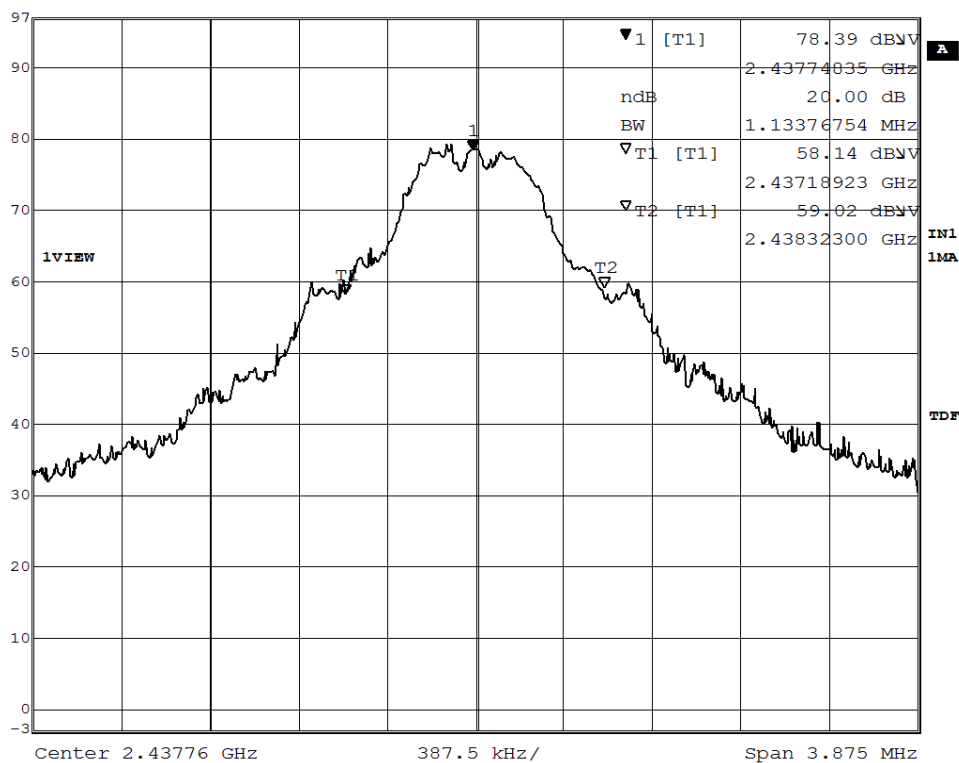
Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [MHz]
2437.74	1.13

(Ch. 117, 500kbps)

20dB Bandwidth of Fundamental Emission

Ref Lvl	Marker 1 [T1 ndB]	RBW	100 kHz	RF Att	0 dB
97 dBV	ndB	20.00 dB	VBW	300 kHz	
	BW	1.13376754 MHz	SWT	5 ms	Unit dBV



Date: 18.APR.2012 11:22:10

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 : 2012-03-27

Page 21 of 30

No. : HM167365

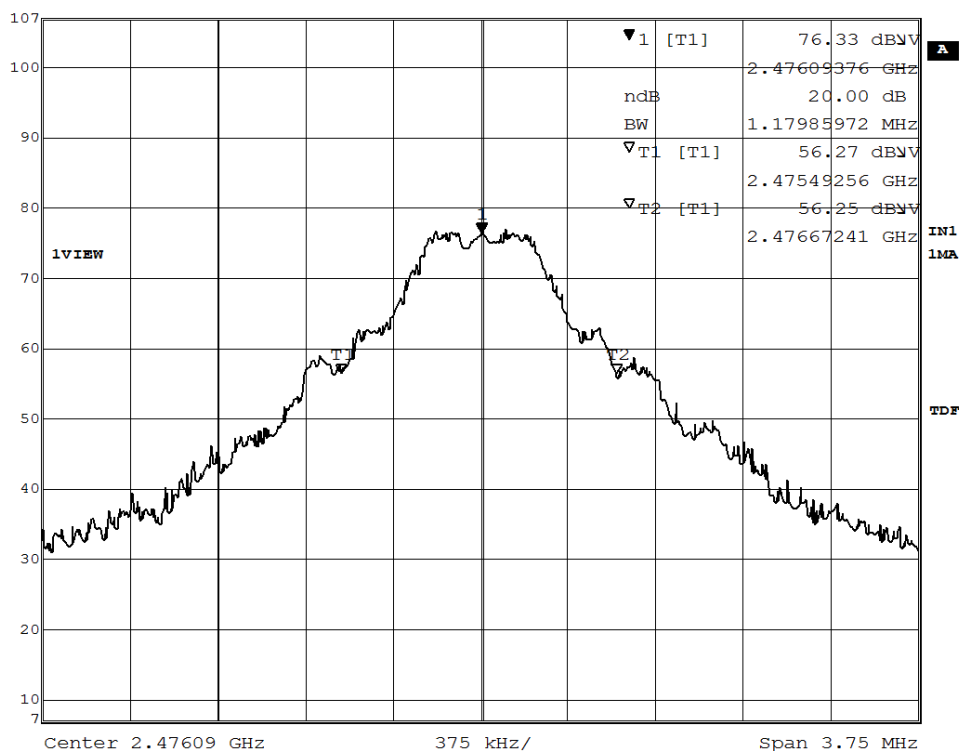
Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [MHz]
2476.09	1.18

(Ch. 239, 500kbps)

20dB Bandwidth of Fundamental Emission

Ref Lvl	Marker 1 [T1 ndB]	RBW	RF Att
107 dBV	ndB	100 kHz	10 dB
	BW	300 kHz	
	1.17985972 MHz	SWT	5 ms
		Unit	dBV



Date: 18.APR.2012 11:05:45

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 : 2012-03-27

Page 22 of 30

No. : HM167365

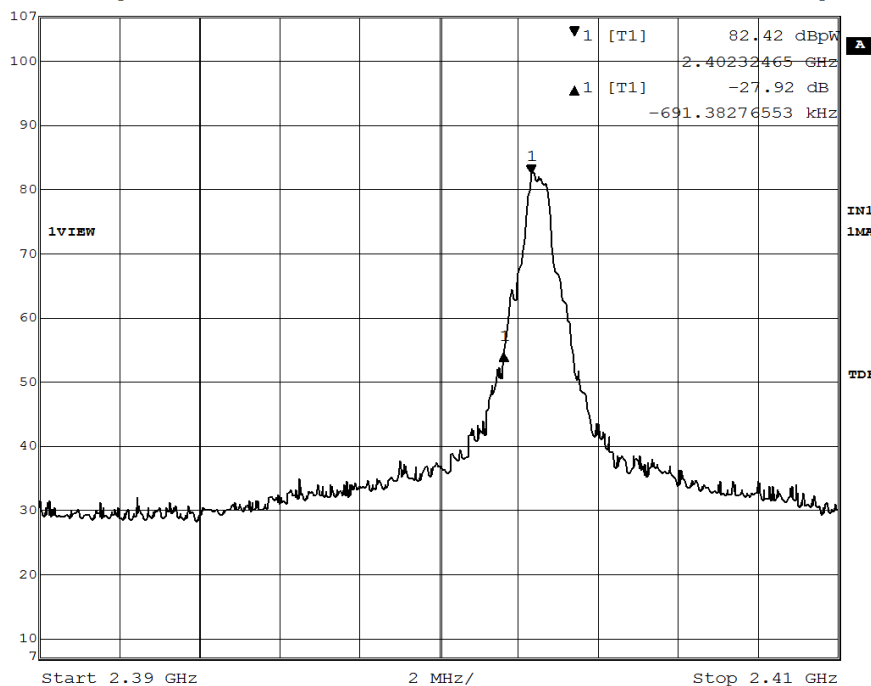
Band Edge Measurement:

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2402.3 – Lowest Fundamental	27.92

(500kbps)

27.92dB Reduction at Lower Band Edge

	Delta 1 [T1]	RBW	100 kHz	RF Att	10 dB
Ref Lvl	-27.92 dB	VEW	300 kHz		
107 dBpW	-691.38276553 kHz	SWT	5 ms	Unit	dBpW



Date: 18.APR.2012 12:17:52

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 : 2012-03-27

Page 23 of 30

No. : HM167365

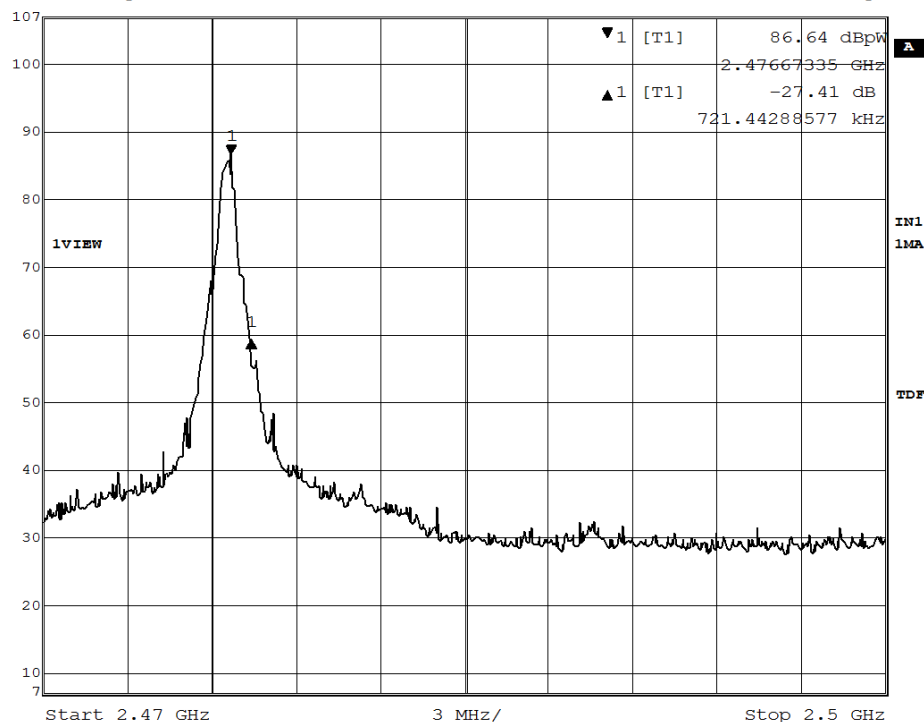
Band Edge Measurement:

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2476.6 - Highest Fundamental	27.41

(500kbps)

27.41dB Reduction at Upper Band Edge

	Delta 1 [T1]	-27.41 dB	RBW	100 kHz	RF Att	10 dB
	Ref Lvl	107 dBpW	VBW	300 kHz	SWT	7.5 ms
		721.44288577 kHz	Unit			dBpW



Date: 18.APR.2012 12:25:15

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 : 2012-03-27

Page 24 of 30

No. : HM167365

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [μ 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
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 of Tx mode (20kbps) (9kHz – 30MHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Results of Tx mode (20kbps) (30MHz – 25GHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 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 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 : 2012-03-27

Page 25 of 30

No. : HM167365

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [μ 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
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 of Tx mode (500kbps) (9kHz – 30MHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Results of Tx mode (500kbps) (30MHz – 25GHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 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 E-mail: hkstc@hkstc.org



STC Test Report

Date : 2012-03-27

Page 26 of 30

No. : HM167365

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [μ 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
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 Rx Mode (9kHz – 30GHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Results of Rx mode (30MHz – 25GHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 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 E-mail: hkstc@hkstc.org



STC Test Report

Date : 2012-03-27

Page 27 of 30

No. : HM167365

Appendix A

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM276	Broadband Horn Antenna	A-INFOMW	JXTXLB-10180-SF	J2031090903007	2010/08/21	2013/08/21
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
EM229	EMI Test Receiver	R&S	ESIB40	100248	2011/04/26	2012/04/26
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 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 : 2012-03-27

Page 28 of 30

No. : HM167365

Appendix B

Photographs of EUT

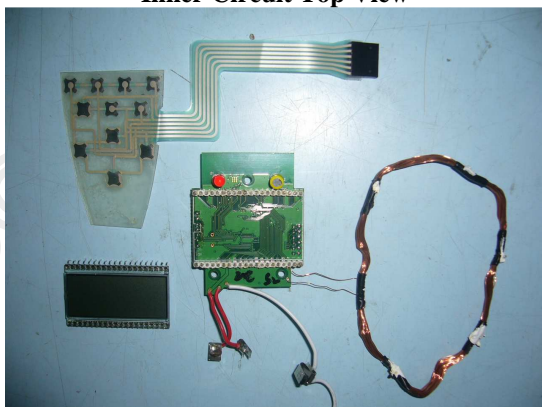
Front View of the product



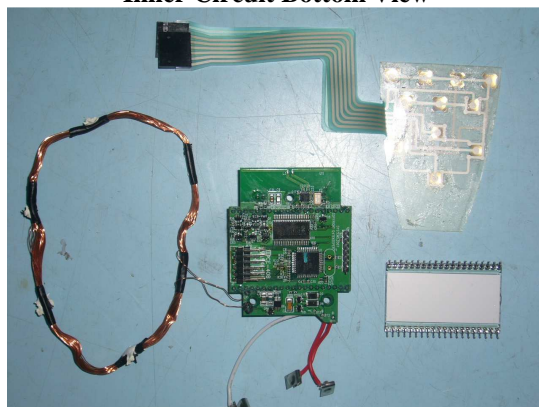
Rear View of the product



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 : 2012-03-27

Page 29 of 30

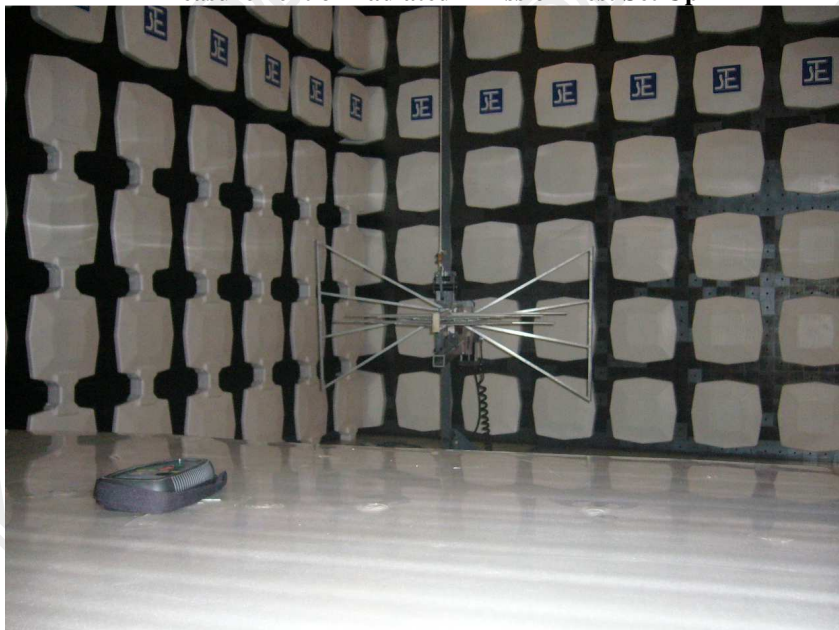
No. : HM167365

Photographs of EUT

Measurement of Radiated Emission Test Set Up



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 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



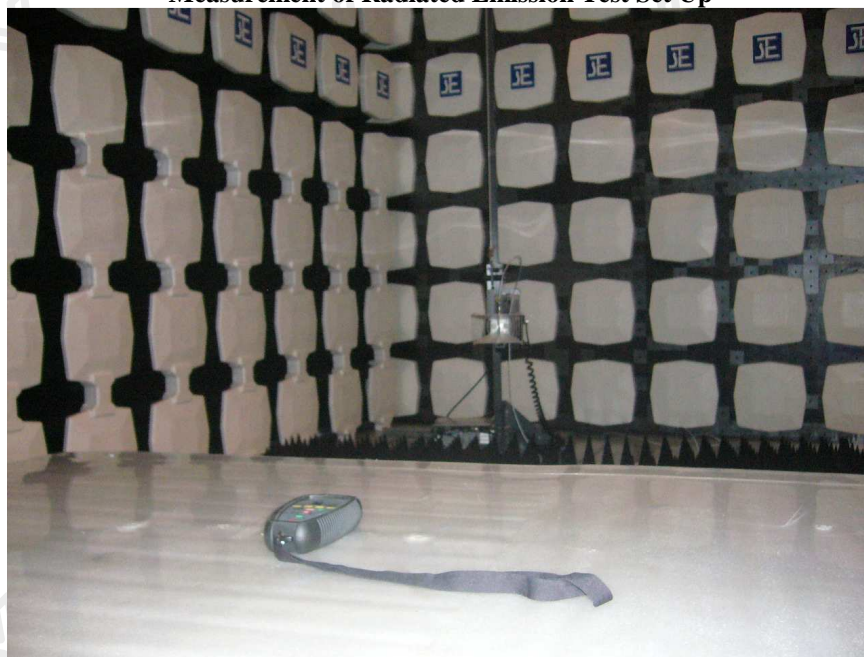
STC Test Report

Date : 2012-03-27

Page 30 of 30

No. : HM167365

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