Product Name:	Bluetooth Vista Remote Control
Model Number:	VR-1000
Applicant:	Vencer Co., Ltd. 20F-1, No.77, Sec.1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, 221
Date of Receipt:	Aug. 31, 2007
Finished date of Test:	Sep. 08, 2007
Applicable Standards:	47 CFR Part 15, Subpart C ANSI C63.4:2003

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By: Jeff Yu (Jeff Yu), Date: Sep /10 /2007

Approved By: (Johnson Ho, Director), Date: 9/10/2007

TABLE OF CONTENTS

1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- AC power source, 120 VAC/60 Hz, was used during the test.

1.3 EUT MODIFICATION

- No modification in SRT Lab.

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Bluetooth Vista Remote Control
MODEL NO.	VR-1000
POWER SUPPLY	DC 3.0 V, 0.18A
FREQUENCY BAND	2400MHz ~2483MHz
CARRIER FREQUENCY	2402MHz ~2480MHz
NUMBER OF CHANNEL	79
CHANNEL SPACING	1 MHz
RATED RF OUTPUT POWER	0dBm
MODULATION TYPE	GFSK, II/4DQPSK, 8DPSK
DUTY CYCLE	50%
MODE OF OPERATION	duplex
BIT RATE OF TRANSMISSION	2.1 Mbps
ANTENNA TYPE	PCB ANT
ANTENNA GAIN	-2 dBi
OPERATING TEMPERATURE	-10~55℃
CHANNEL BANDWIDTH	1MHz

NOTE：
For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF SUPPORT UNIT

The transmitter part of EUT was tested with a PC system and configured by the requirement of ANSI C63.4. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

No	Device	Brand	Model #	FCC ID/DoC	Cable
1	COMPUTER	ACER	ACERPOWER F6	DOC	2.0m unshielded power cord
2	MONITOR	SAMSUNG	SYNCMASTER 757NF	DOC	2.0m unshielded power cord 2.0m shielded power cord

NOTE ： For the actual test configuration, please refer to the photos of testing.

2.3 DESCRIPTION OF TEST MODE

79 channels are provided by EUT. Three channels of lower, medium and higher were chosen for test.

Channel	Frequency (MHz)
0	2402
39	2441
78	2480

NOTE :

1. Below 1 GHz, the channel 0, 39 and 78 were pre-tested in chamber. The channel 78, worst case one, was chosen for radiated emission test.
2. Above 1 GHz, the channel 0, 39 and 78 were tested individually.

3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a kind of wireless product and to be connected with a PC system for normal use. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C
ANSI C63.4: 2003

All tests have been performed and recorded as the above standards.

4. TECHNICAL CHARACTERISTICS TEST

4.1 CHANNEL SEPARATION TEST

4.1.1 LIMIT

FCC Part15, Subpart C Section 15.247(a)(1). Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Frequency Range (MHz)	Limit(kHz)
902-928	>25kHz
2400-2483.5	>25kHz
5725-5850	>25kHz

4.1.2 TEST EQUIPMENT

The following test equipment was used during the radiated emission test：

Equipment/ Facilities	Specifications	Manufacturer	Model#/ Serial#	Due Date of Cal. & Cal. Center
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	MAR. 2008 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.1.3 TEST SET-UP

The EUT was connected to a spectrum through a 50Ω RF cable.

4.1.4 TEST PROCEDURE

1. The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.
2. Under Windows XP ran “EMI TEST” program and PC sent "H" pattern or accessed the following peripherals directly or via EUT:

- LCD PANEL
- FDD
- HDD

4.1.5 EUT OPERATING CONDITION

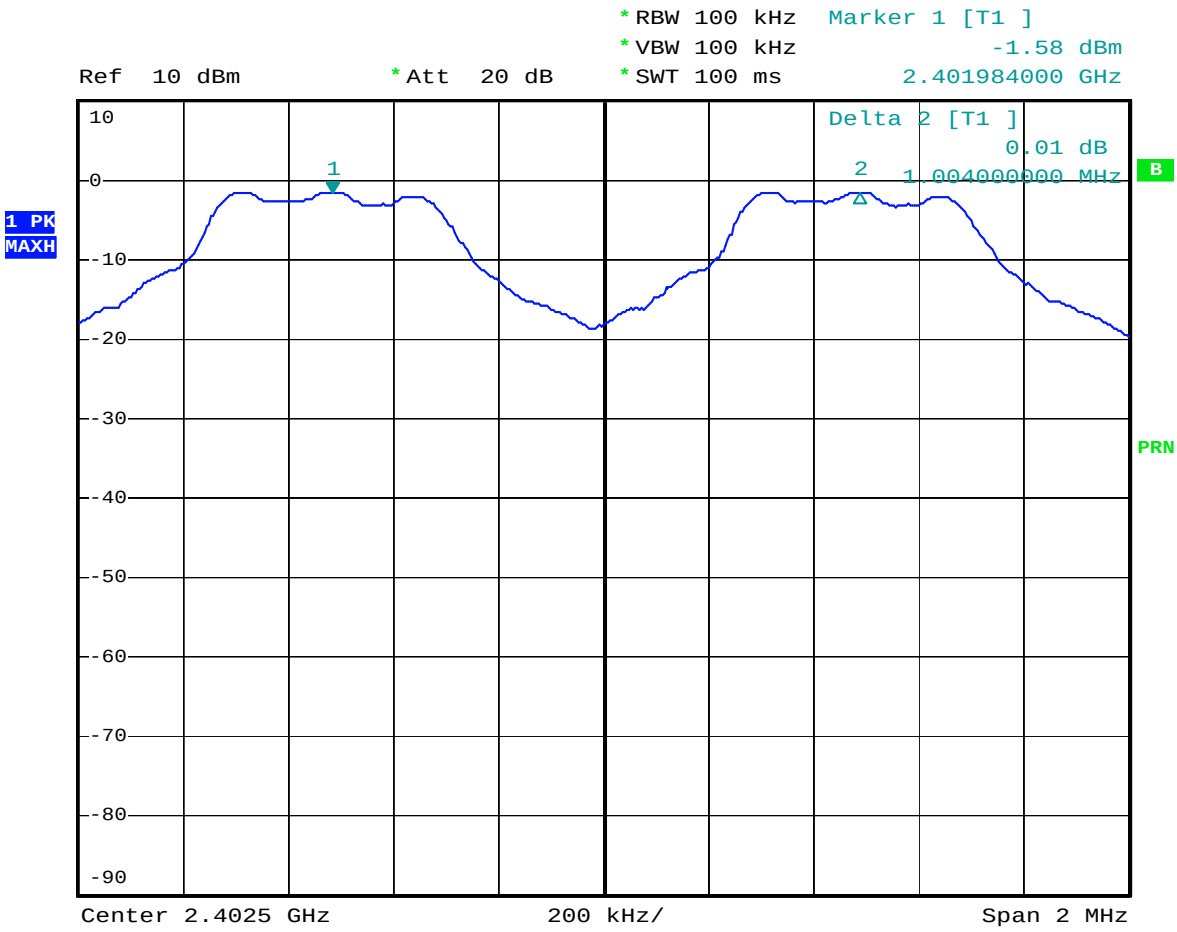
1. Set the EUT under transmission condition continuously at a specific channel frequency.
2. The EUT was set to the highest available power level.

4.1.6 TEST RESULT

Temperature:	24°C	Humidity:	64%RH
Spectrum Detector:	PK	Tested by:	Jeff Yu
Test Result:	PASS	Tested Date:	Sep. 03, 2007

Channel Number	Channel Frequency (MHz)	Separation Read Value (kHz)	Minimum Limit(20dB Bandwidth) (kHz)
0	2402	1004.000	25
39	2441	1004.000	25
78	2480	1004.000	25

CH0: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*VBW 100 kHz
*SWT 100 ms
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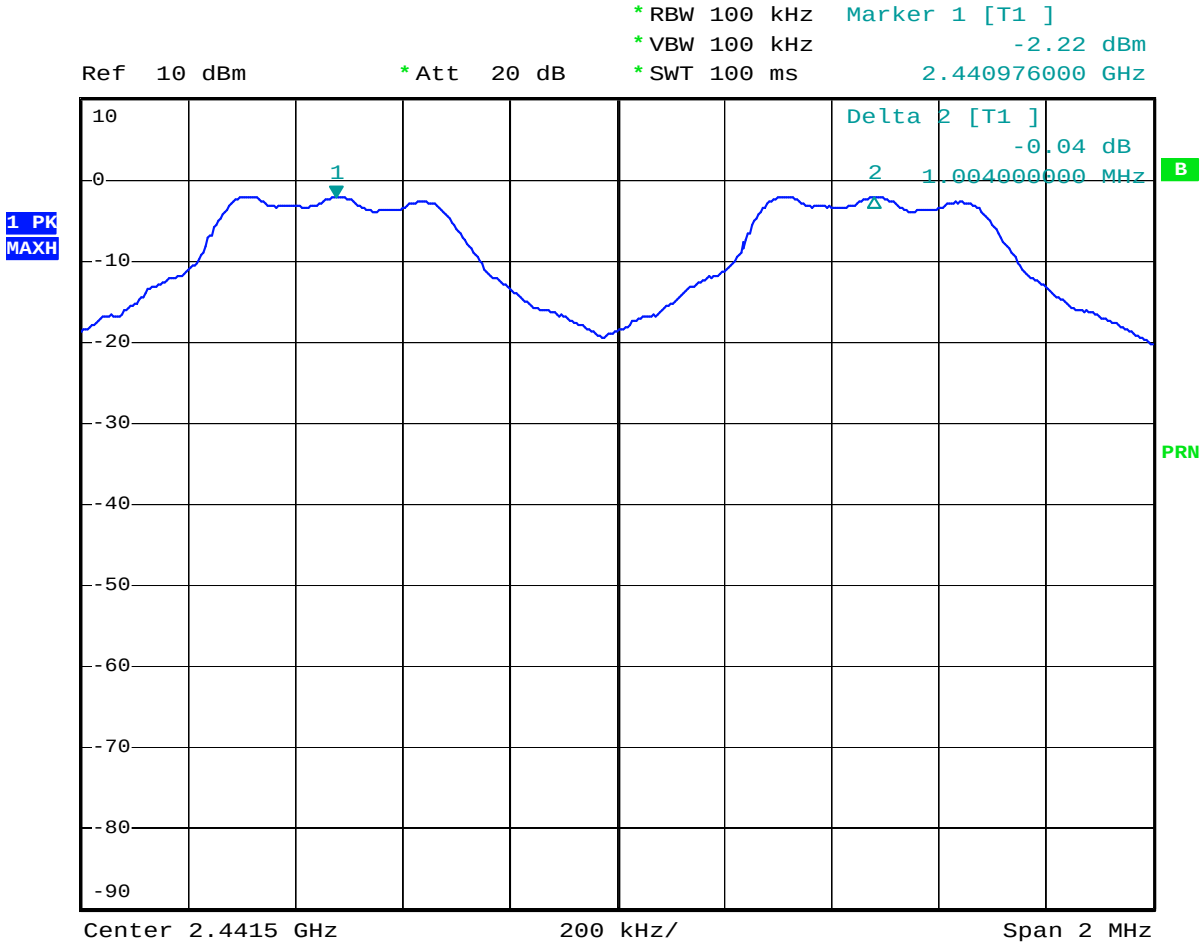
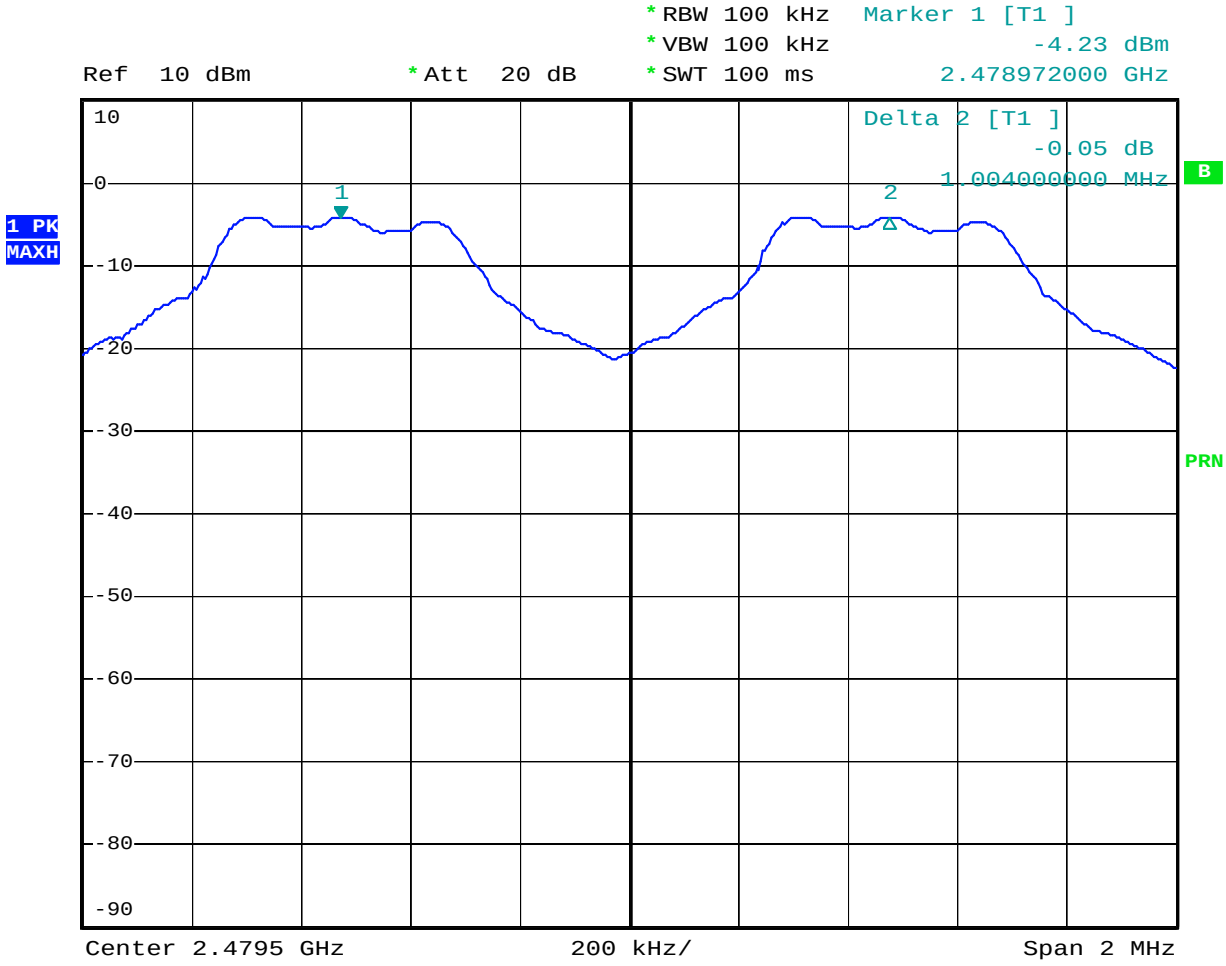
2.401984000 GHz
Ref 10 dBm
*Att 20 dB
Delta 2 [T1]
0.01 dB
1.004000000 MHz
1 PK
MAXH
B
PRN
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.4025 GHz
200 kHz/
Span 2 MHz
Date: 3.SEP.2007 13:25:08

CH39:


*RBW 100 kHz
*VBW 100 kHz
*SWT 100 ms
Marker 1 [T1]
-2.22 dBm
2.440976000 GHz
Delta 2 [T1]
-0.04 dB
1.004000000 MHz
Ref 10 dBm
*Att 20 dB
1 PK
MAXH
B
PRN
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.4415 GHz
200 kHz/
Span 2 MHz
Date: 3.SEP.2007 13:28:45

CH78:



Date: 3.SEP.2007 13:31:06

4.2 20dB Bandwidth

4.2.2 LIMIT

Frequency Range (MHz)	Limit(kHz)				
	Quantity of Hopping Channel	50	25	15	75
902-928		<250	>250	NA	NA
2400-2483.5		NA	NA	>1000	<1000

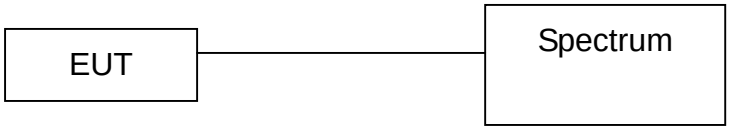
4.2.2 TEST EQUIPMENT

The following test equipment was used during the test:

Equipment/ Facilities	Specifications	Manufacturer	Model#/ Serial#	Due Date of Cal. & Cal. center
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 2008 R&S

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.2.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.2.4 TEST PROCEDURE

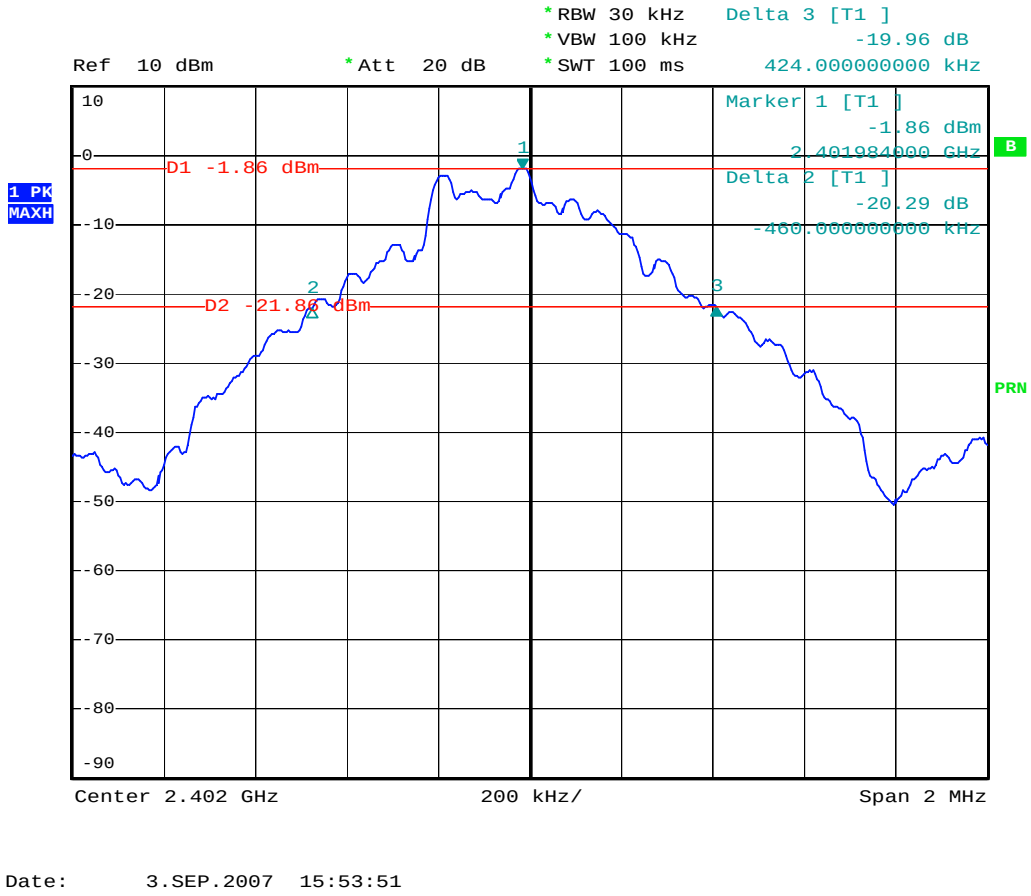
The EUT was operated in hopping mode or any specific channel.
Printed out the test result from the spectrum by hard copy function.

4.2.5 TEST RESULT

Temperature:	24°C	Humidity:	64%RH
Spectrum Detector:	PK	Tested by:	Jeff Yu
Test Result:	PASS	Tested Date:	Sep.03, 2007

Channel Number	Channel Frequency (MHz)	20dB Down Bandwidth (kHz)
0	2402	884
39	2441	812
78	2480	848

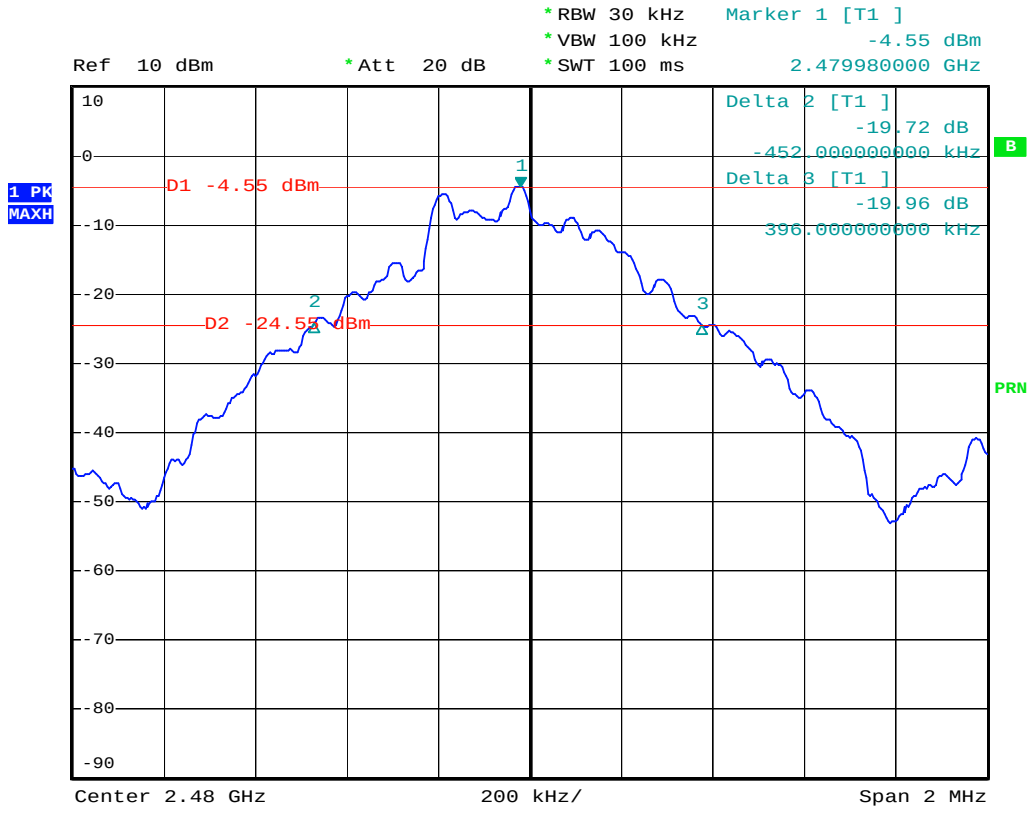
CH0:



CH39:

Date: 3.SEP.2007 15:57:24

CH78:



Date: 3.SEP.2007 16:00:48

4.3 QUANTITY OF HOPPING CHANNEL TEST

4.3.1 LIMIT

FCC Part15, Subpart C Section 15.247.

Frequency Range (MHz)	Limit (Quantity of Hopping Channel)			
	20dB Bandwidth <250kHZ	20dB Bandwidth >250kHZ	20dB Bandwidth <1MHz	20dB Bandwidth >1MHz
902-928	50	25	N/A	N/A
2400-2483.5	N/A	N/A	75	15
5725-5850	N/A	N/A	75	N/A

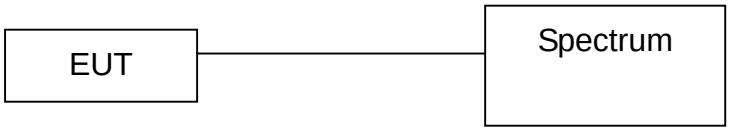
4.3.2 TEST EQUIPMENT

The following test equipment was used during the test:

Equipment/ Facilities	Specifications	Manufacturer	Model#/ Serial#	Due Date of Cal. & Cal. Center
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	MAR. 2008 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.3.4 TEST PROCEDURE

The EUT was operating in hopping mode or could be controlled its channel.
Printed out the test result from the spectrum by hard copy function.

4.3.5 EUT OPERATING CONDITION

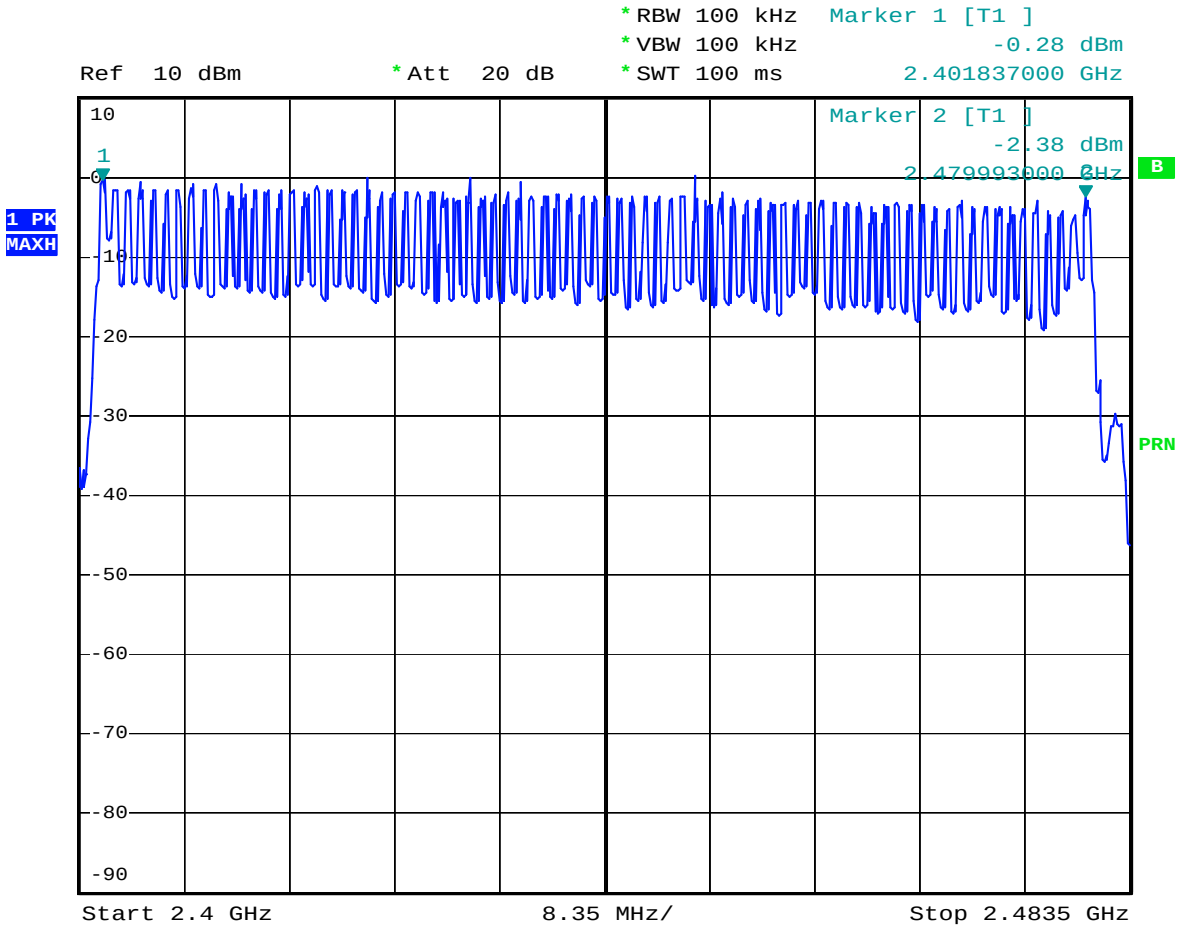
1. Set the EUT under frequency hopping transmission condition.
2. The EUT was set to the highest available power level.

4.3.6 TEST RESULT

Temperature:	24°C	Humidity:	64%RH
Spectrum Detector:	PK	Tested by:	Jeff Yu
Test Result:	PASS	Tested Date:	Sep.03,2007

Hopping Channel Frequency Range(MHz)	Quantity of Hopping Channel Read Value	Quantity of Hopping Channel Limit
2402~2480	79	75

CH0-CH78



Date: 3.SEP.2007 13:46:11

4.4 TIME OF OCCUPANCY (Dwell Time)

4.4.1 LIMIT

FCC Part15, Subpart C Section 15.247.

Frequency Range (MHz)	Limit (ms)		
	20dB Bandwidth <250kHZ(50Channel)	20dB Bandwidth >250kHZ(25Channel)	20dB Bandwidth <1MHz(75Channel)
902-928	400(20s)	400(10s)	NA
2400-2483.5	NA	NA	400(30s)
5725-5850	NA	NA	400(30s)

NOTE: The "()" is all channel's average time of occupancy.

4.4.2 TEST EQUIPMENT

The following test equipment was used during the test:

Equipment/ Facilities	Specifications	Manufacturer	Model#/ Serial#	Due Date of Cal. & Cal. Center
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	MAR. 2008 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.3 TEST SET-UP

The EUT was connected to a spectrum through a 50Ω RF cable.

4.4.4 TEST PROCEDURE

The EUT was operating in hopping mode or could be controlled its channel.
Printed out the test result from the spectrum by hard copy function.

4.4.5 EUT OPERATING CONDITION

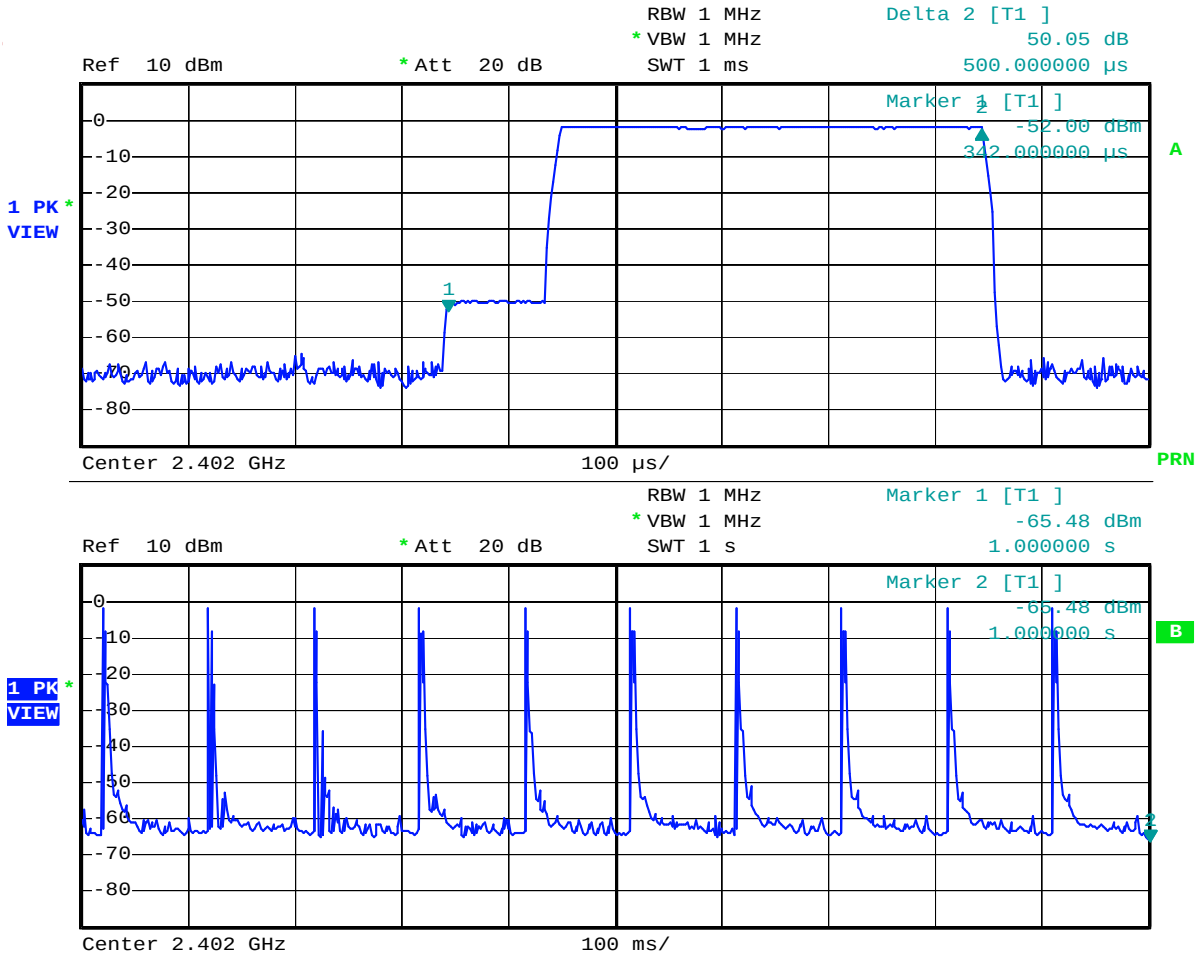
Same as section 4.1.5 of this report.

4.4.6 TEST RESULT

Temperature:	24°C	Humidity:	64%RH
Spectrum Detector:	PK	Tested by:	Jeff Yu
Test Result:	PASS	Tested Date:	Sep. 03, 2007

Channel Number	Channel Frequency (MHz)	Pulse Time (μs)	Period Time (s)	Time of Occupancy (Dwell Time) (ms)	Average Time of Occupancy Limit (ms)
0	2402.00	500	31.6	158	400
39	2441.00	492	31.6	155.47	400
78	2480.00	496	31.6	156.73	400

CH0:



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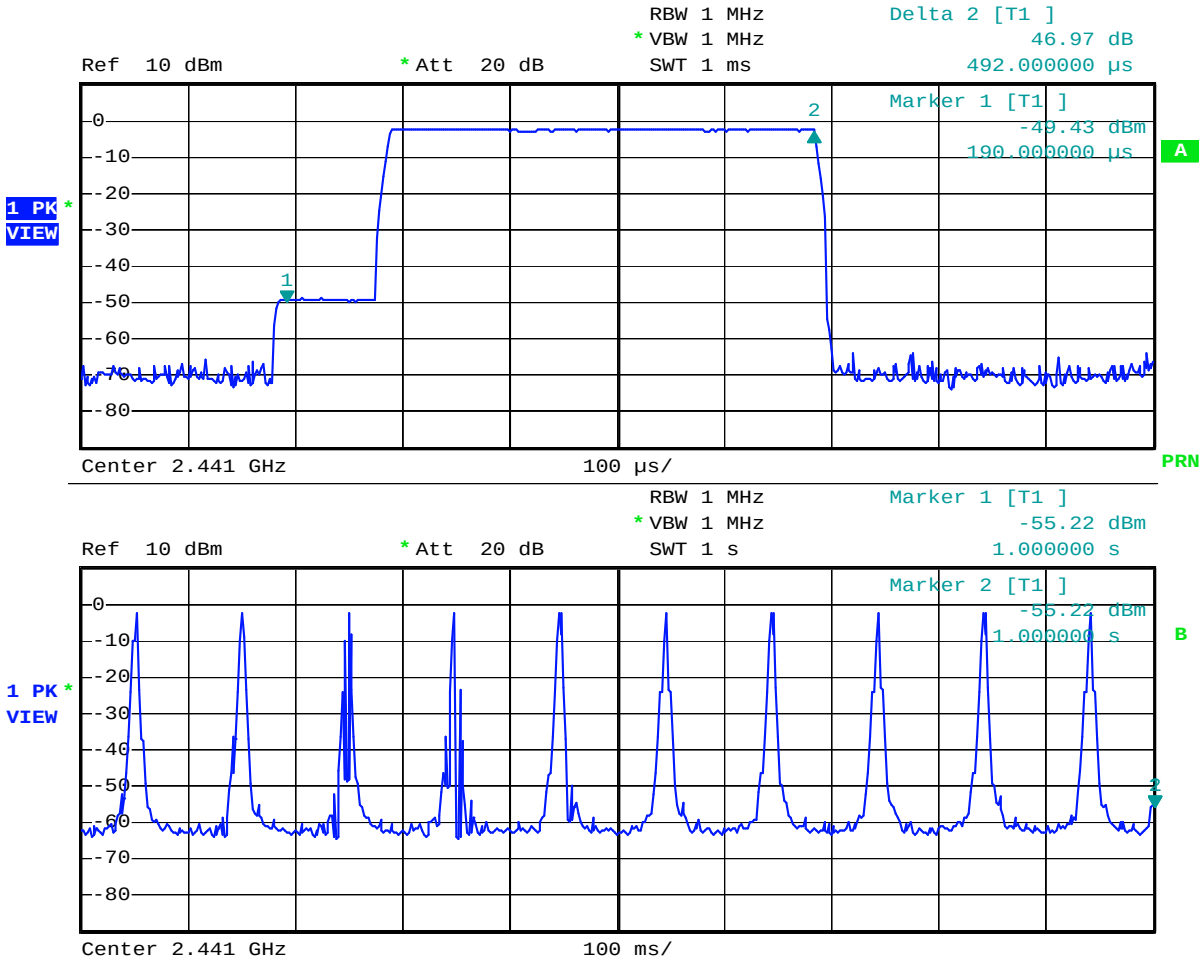
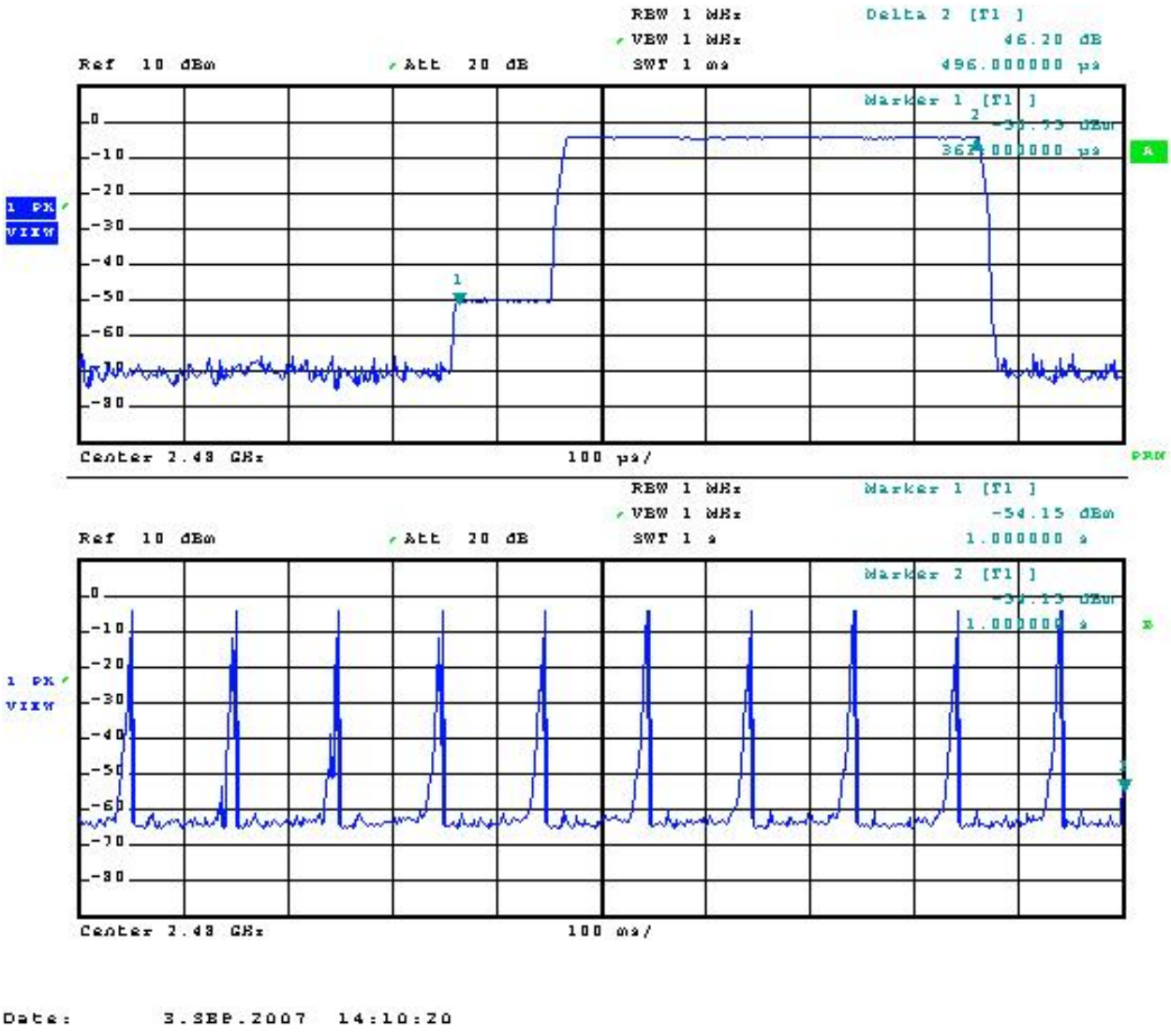
Ch39:



Date: 3.SEP.2007 14:07:00

CH78:


RBW 1 MHz
VBW 1 MHz
SWT 1 ms
Delta 2 [T1]
46.20 dB
496.000000 µs
Ref 10 dBm
Att 20 dB
Marker 1 [T1]
Center 2.48 GHz
100 µs/
RBW 1 MHz
VBW 1 MHz
SWT 1 s
Marker 1 [T1]
-54.15 dBm
1.000000 s
Ref 10 dBm
Att 20 dB
Marker 2 [T1]
Center 2.48 GHz
100 ms/
Date: 3.SEP.2007 14:10:20

4.5 RADIATED EMISSION TEST

4.5.1 LIMIT

FCC Part15, Subpart C Section 15.209 limit of radiated emission measurement for frequency below 1000 MHz. The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCY (MHz)	DISTANCE(m)	FIELD STRENGTH (dBμV/m)
30 – 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
ABOVE 960	3	54.0

NOTE:

1. In the emission tables above, the tighter limit applies at the band edges.
2. Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

FCC Part 15, Subpart 15.35(b) limit of radiated emission for frequency above 1000MHz

FREQUENCY (MHz)	Class A (dBμV/m) (at 3m)		Class B (dBμV/m) (at 3m)	
	PK.	AV.	PK.	AV.
Above 1000	80.0	60.0	74.0	54.0

FCC Part 15, Subpart C Section 15.249. The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

FUNDAMENTAL FREQUENCY (MHz)	FILED STRENGTH OF FUNDAMENTAL (dBμV/m) (at 3m)		FIELD STRENGTH OF HARMONICS (dBμV/m) (at 3m)	
	PK.	AV.	PK.	AV.
902-928	114	94	74.0	54.0
2400-2483.5	114	94	74.0	54.0
5725-5875	114	94	74.0	54.0
24000-24250	128	108	88	68

4.5.2TEST EQUIPMENT

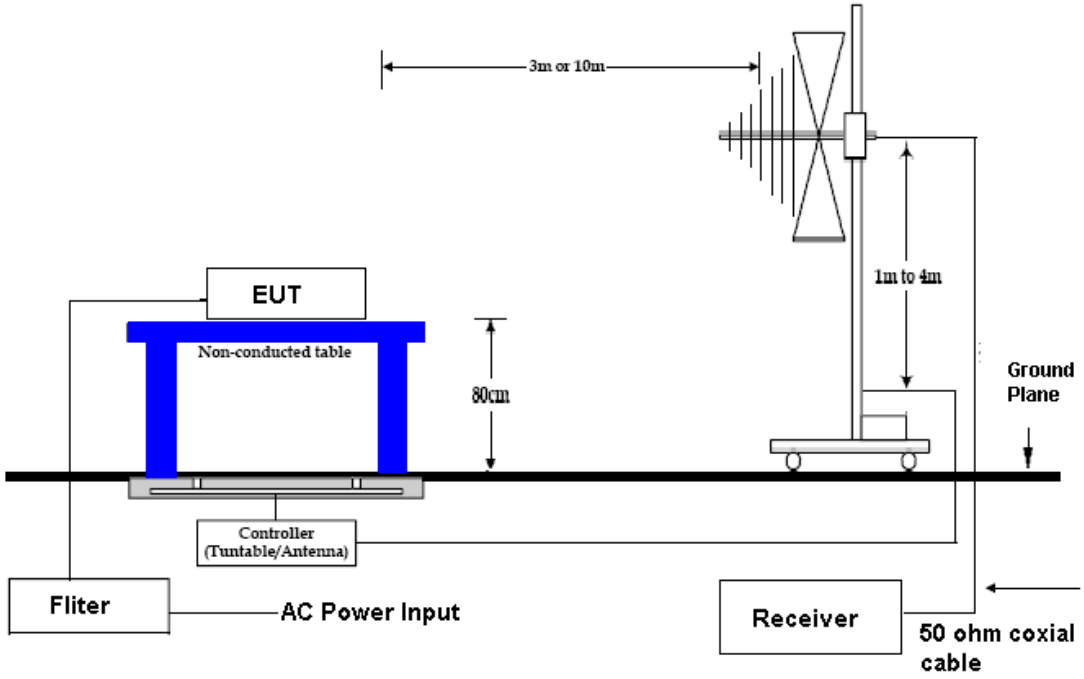
The following test equipment was used during the radiated emission test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9kHz TO 2.75 GHz	ROHDE & SCHWARZ	ESCS30/ 830245/012	OCT. 2007 ETC
BI-LOG ANTENNA	25 MHz TO 2 GHz	EMCO	3143/ 9509-1152	JUN. 2008 SRT
PRE-AMPLIFIER	1 GHz TO 26.5 GHz	HP	8449B/ 3008A01019	AUG. 2008 ETC
HORN ANTENNA	1 GHz TO 18 GHz	EMCO	3115/ 9602-4681	DEC. 2007 ETC
OATS	3 – 10 M MEASUREMENT	SRT	SRT-1	DEC. 2007 SRT
COAXIAL CABLE	25M	SUNCITY	J400-25M-2NP/ #153-25M	JUN. 2008 SRT
FILTER	2 LINE, 30A	FIL.COIL	FC-943/ 869	N/A
FREQUENCY CONVERTER	N/A	APC	AFC-2KBB/ F100030031	AUG. 2008 SRT

NOTE:

1. The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.
2. The Open Area Test Site (SRT-1) is registered by FCC with No. 90957 and VCCI with No. R-1081.
3. The Open Area Test Site (SRT-2) is registered by FCC with No. 98458 and VCCI with No. R-1168.

4.5.3 TEST SET-UP



NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.

4.5.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2006. The measurements were made at an open area test site with 10 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.
First, Find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

4.5.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

4.5.6 RADIATED EMISSION TEST RESULT

Temperature:	25°C	Humidity:	58%RH
Frequency Range:	30M – 1GHz	Measured Distance:	3m
Receiver Detector:	Q.P. or AV.	Tested Mode:	CH0-Link
Tested By:	Jeff Yu	Tested Date:	Sep. 04, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
67.8690	1.53	7.31	14.2	23.0	40.0	-17.0
165.4400	2.27	9.75	13.3	25.3	43.5	-18.2
263.8410	2.88	12.32	15.3	30.5	46.0	-15.5
326.2800	3.15	14.58	14.5	32.2	46.0	-13.8
433.7650	3.78	16.95	12.7	33.4	46.0	-12.6
699.2950	5.02	21.38	10.7	37.1	46.0	-8.9

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
67.8690	1.53	7.31	16.7	25.5	40.0	-14.5
165.4400	2.27	9.75	14.8	26.8	43.5	-16.7
263.8410	2.88	12.32	17.1	32.3	46.0	-13.7
326.2800	3.15	14.58	17.8	35.5	46.0	-10.5
433.7650	3.78	16.95	13.5	34.2	46.0	-11.8
699.2950	5.02	21.38	7.6	34.0	46.0	-12.0

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25°C	Humidity:	58%RH
Frequency Range:	30M – 1GHz	Measured Distance:	3m
Receiver Detector:	Q.P. or AV.	Tested Mode:	CH39-Link
Tested By:	Jeff Yu	Tested Date:	Sep. 04, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
108.6350	1.84	6.40	16.5	24.7	43.5	-18.8
194.8530	2.46	10.42	15.1	28.0	43.5	-15.5
266.2940	2.92	12.44	15.1	30.5	46.0	-15.5
399.5400	3.59	15.40	9.5	28.5	46.0	-17.5
460.3490	3.92	17.80	11.2	32.9	46.0	-13.1
667.6810	4.85	20.54	8.5	33.9	46.0	-12.1

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
108.6350	1.84	6.40	17.2	25.4	43.5	-18.1
194.8530	2.46	10.42	9.9	22.8	43.5	-20.7
266.2940	2.92	12.44	13.9	29.3	46.0	-16.7
399.5400	3.59	15.40	8.3	27.3	46.0	-18.7
460.3490	3.92	17.80	12.4	34.1	46.0	-11.9
667.6810	4.85	20.54	6.0	31.4	46.0	-14.6

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25°C	Humidity:	58%RH
Frequency Range:	30M – 1GHz	Measured Distance:	3m
Receiver Detector:	Q.P. or AV.	Tested Mode:	CH78-Link
Tested By:	Jeff Yu	Tested Date:	Sep. 04, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
64.2350	1.50	7.52	10.5	19.5	40.0	-20.5
130.0570	2.05	8.00	15.1	25.2	43.5	-18.4
258.1360	2.83	12.16	14.3	29.3	46.0	-16.7
324.0325	3.14	14.52	15.8	33.4	46.0	-12.6
459.9800	3.92	17.80	12.9	34.6	46.0	-11.4
596.1680	4.58	19.20	9.3	33.1	46.0	-12.9

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
64.2350	1.50	7.52	11.7	20.7	40.0	-19.3
130.0570	2.05	8.00	18.5	28.6	43.5	-15.0
258.1360	2.83	12.16	16.3	31.3	46.0	-14.7
324.0325	3.14	14.52	17.7	35.4	46.0	-10.6
459.9800	3.92	17.80	14.2	35.9	46.0	-10.1
596.1680	4.58	19.20	10.5	34.3	46.0	-11.7

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25°C	Humidity:	58%RH
Frequency Range:	1 – 12.5GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	CH0-Link
Tested By:	Jeff Yu	Tested Date:	Sep. 04, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dBμV)		Emission (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2402.00	-32.16	28.54	88.5	62.3	84.9	58.7	N/A	N/A	N/A	N/A
1894.03	-32.70	26.80	50.2	31.7	44.3	25.8	74.0	54.0	-29.7	-28.2
2243.15	-32.53	27.69	53.1	33.4	48.3	28.6	74.0	54.0	-25.7	-25.4
4804.00	-30.47	33.64	55.8	45.7	59.0	48.9	74.0	54.0	-15.0	-5.1
5368.20	-29.56	33.95	44.3	*	48.7	*	74.0	54.0	-25.3	*
7831.01	-28.78	36.90	40.2	*	48.3	*	74.0	54.0	-25.7	*

Antenna Polarization: Vertical

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dBμV)		Emission (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2402.00	-32.16	28.00	90.2	61.7	86.0	57.5	N/A	N/A	N/A	N/A
1894.03	-32.70	26.80	53.4	32.4	47.5	26.5	74.0	54.0	-26.5	-27.5
2243.15	-32.53	27.69	54.9	34.1	50.1	29.3	74.0	54.0	-23.9	-24.7
4804.00	-30.47	33.64	51.2	*	54.4	*	74.0	54.0	-19.6	*
5368.20	-29.56	33.95	43.3	*	47.7	*	74.0	54.0	-26.3	*
7831.01	-28.78	36.90	41.5	*	49.6	*	74.0	54.0	-24.4	*

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25°C	Humidity:	58%RH
Frequency Range:	1 – 12.5GHz	Measured Distance:	3m
Receiver Detector:	PK. Or AV.	Tested Mode:	CH39-Link
Tested By:	Jeff Yu	Tested Date:	Sep. 04, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dBμV)		Emission (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2441.00	-32.23	28.62	90.7	61.5	87.1	57.9	N/A	N/A	N/A	N/A
2728.30	-32.00	29.48	49.7	*	47.2	*	74.0	54.0	-26.8	*
3652.00	-30.94	32.44	51.2	39.0	52.7	40.5	74.0	54.0	-21.3	-13.5
3952.10	-30.40	32.32	45.2	*	47.1	*	74.0	54.0	-26.9	*
4882.00	-30.26	33.71	42.6	*	46.0	*	74.0	54.0	-28.0	*
7352.00	-28.98	36.38	44.7	*	52.1	*	74.0	54.0	-21.9	*

Antenna Polarization: Vertical

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dBμV)		Emission (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2441.00	-32.23	28.08	93.5	63.4	89.4	59.3	N/A	N/A	N/A	N/A
2728.30	-32.00	29.48	52.3	36.2	49.8	33.7	74.0	54.0	-24.2	-20.3
3652.00	-30.94	32.44	54.7	41.8	56.2	43.3	74.0	54.0	-17.8	-10.7
3952.10	-30.40	32.32	47.1	*	49.0	*	74.0	54.0	-25.0	*
4882.00	-30.26	33.71	44.7	*	48.1	*	74.0	54.0	-25.9	*
7352.00	-28.98	36.38	43.2	*	50.6	*	74.0	54.0	-23.4	*

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25°C	Humidity:	58%RH
Frequency Range:	1 – 12.5GHz	Measured Distance:	3m
Receiver Detector:	PK. Or AV.	Tested Mode:	CH78-Link
Tested By:	Jeff Yu	Tested Date:	Sep. 04, 2007

Antenna Polarization: Horizontal

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dBµV)		Emission (dBµV/m)		Limit (dBµV/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2480.00	-32.19	28.73	87.0	59.3	83.5	55.8	N/A	N/A	N/A	N/A
1763.01	-33.04	26.30	49.2	*	42.5	*	74.0	54.0	-31.5	*
2135.60	-32.30	27.47	46.3	*	41.5	*	74.0	54.0	-32.5	*
2845.50	-31.64	30.13	47.2	*	45.7	*	74.0	54.0	-28.3	*
4960.00	-30.26	33.77	47.8	*	51.3	*	74.0	54.0	-22.7	*
6813.03	-29.15	35.73	41.4	*	48.0	*	74.0	54.0	-26.0	*

Antenna Polarization: Vertical

Frequency (MHz)	Corret Factor (dB)	Antenna Factor (dB/m)	Reading (dBµV)		Emission (dBµV/m)		Limit (dBµV/m)		Margin (dB)	
			PK	AV	PK	AV	PK	AV	PK	AV
2480.00	-32.19	28.16	89.2	61.3	85.2	57.3	N/A	N/A	N/A	N/A
1763.01	-33.04	26.30	51.2	*	44.5	*	74.0	54.0	-29.5	*
2135.60	-32.30	27.47	49.2	*	44.4	*	74.0	54.0	-29.6	*
2845.50	-31.64	30.13	49.8	*	48.3	*	74.0	54.0	-25.7	*
4960.00	-30.26	33.77	51.2	32.8	54.7	36.3	74.0	54.0	-19.3	-17.7
6813.03	-29.15	35.73	42.3	*	48.9	*	74.0	54.0	-25.1	*

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

4.6 PEAK POWER TEST

4.6.1 LIMIT

FCC Part15, Subpart C Section 15.247.

Frequency Range (MHz)	Limit(w)				
	Quantity of Hopping Channel	50	25	15	75
902-928		1(30dBm)	0.125(21dBm)	NA	NA
2400-2483.5		NA	NA	0.125(21dBm)	1(30dBm)
5725-5850		NA	NA	NA	1(30dBm)

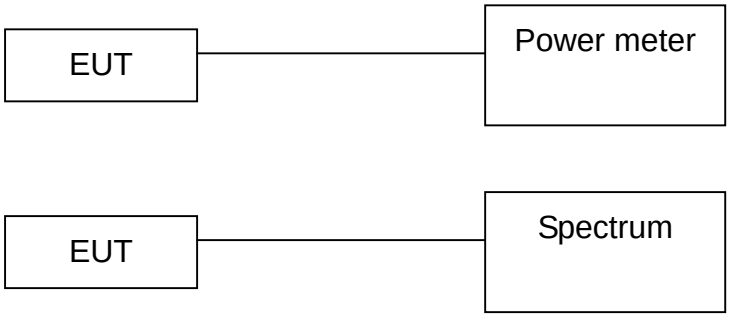
4.6.2 TEST EQUIPMENT

The following test equipment was used during the test：

Equipment/ Facilities	Specifications	Manufacturer	Model#/ Serial#	Due Date of Cal. & Cal. Center
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	JUN. 2008 ETC
POWER METER	N/A	BOONTON	4232A/ 29001	JAN 2008 ETC
POWER SENSOR	DC-18GHz 0.3μW-100mW 50Ω	BOONTON	51011-EMC/ 31184	JUN. 2008 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.6.4 TEST PROCEDURE

The EUT was operating in hopping mode or could control its channel.
Printed out the test result from the spectrum by hard copy function.
Recorded the read value of the power meter.

4.6.5 EUT OPERATING CONDITION

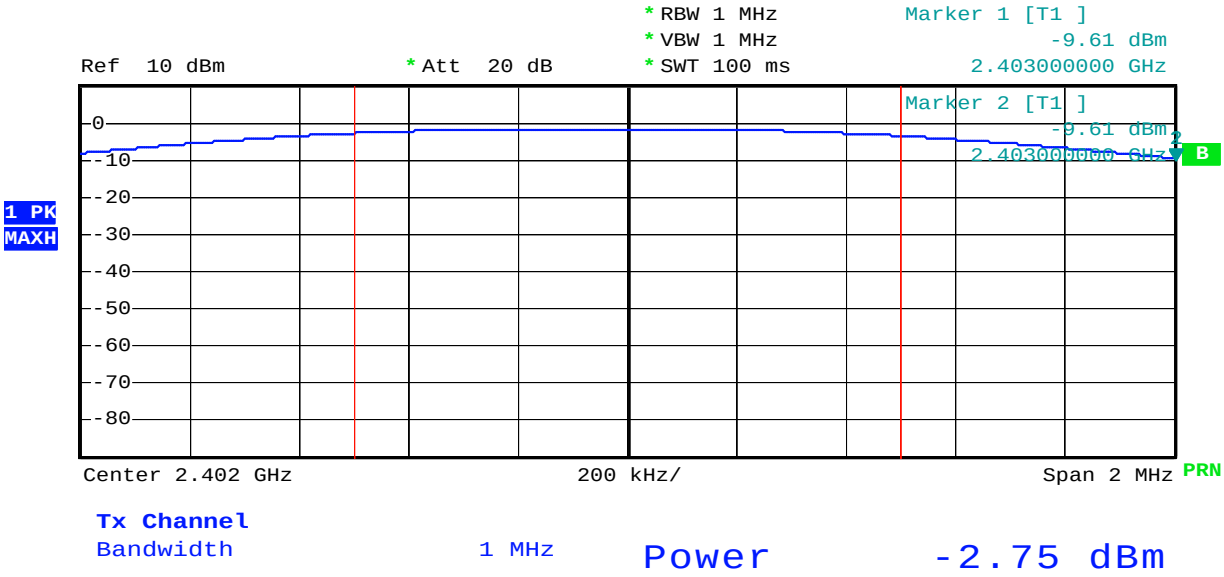
Same as section 4.1.5 of this report.

4.6.6 TEST RESULT

Temperature:	22°C	Humidity:	63%RH
Spectrum Detector:	PK	Tested by:	Jeff Yu
Test Result:	PASS	Tested Date:	Sep.05, 2007

Channel Number	Channel Frequency (MHz)	Peak Output Power (dBm)	Peak Power Limit (dBm)
0	2402.0000	-9.61	30
39	2441.0000	-8.55	30
78	2480.0000	-10.51	30

CH0:

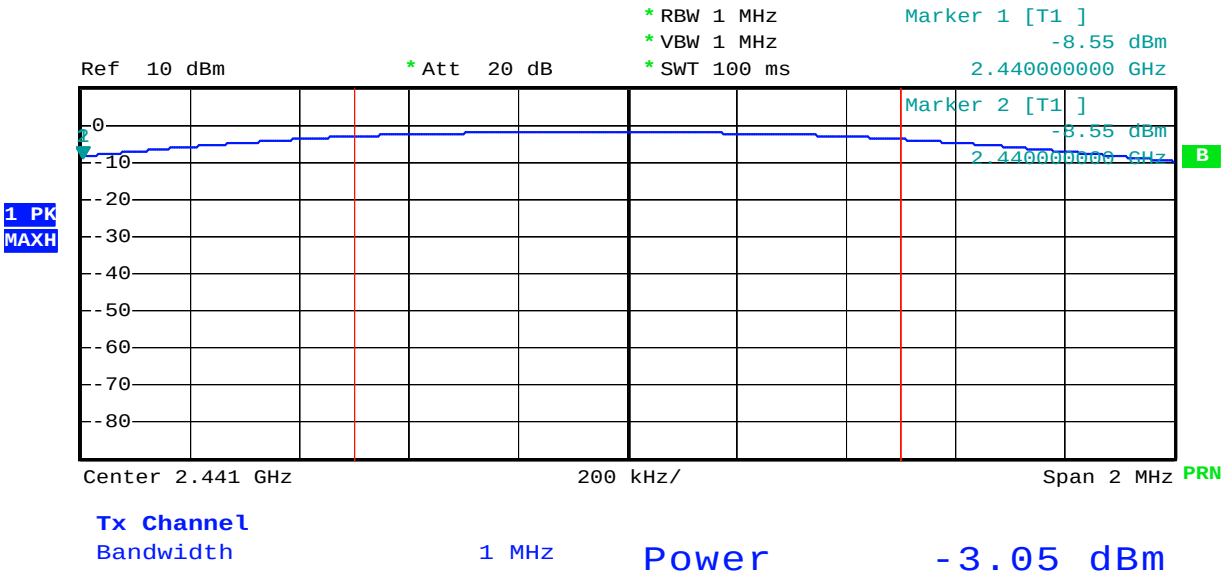


Tx Channel

Bandwidth 1 MHz Power -2.75 dBm

Date: 3.SEP.2007 14:49:33

CH39:

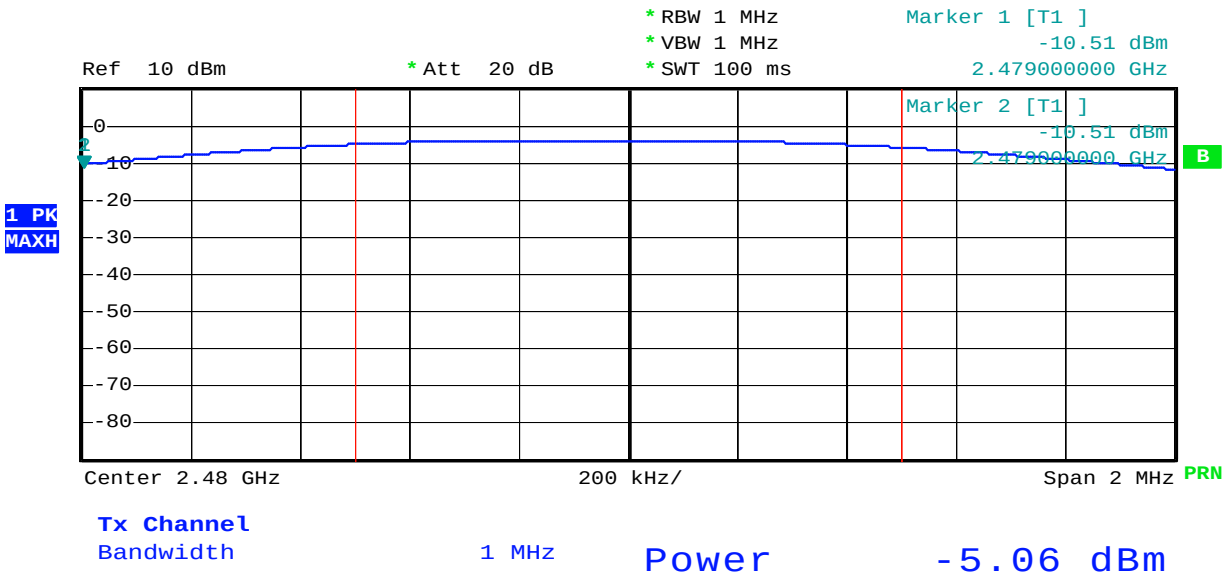


Tx Channel

Bandwidth 1 MHz Power -3.05 dBm

Date: 3.SEP.2007 14:52:30

CH78:



Date: 3.SEP.2007 14:56:48

4.7 BAND EDGE TEST

4.7.1 LIMIT

FCC Part15, Subpart C Section 15.249 (c), Emission radiated outside of the specified frequency bands, except for harmonics, shall attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Operating Frequency Range (MHz)	Limit (dBμV/m)	
	Peak	Average
902-928	74	54
2400-2483.5		
5725-5850		

4.7.2 TEST EQUIPMENT

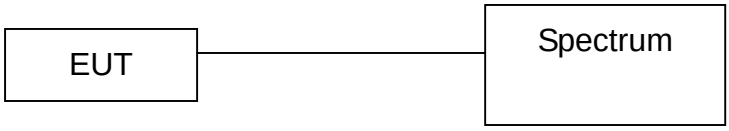
The following test equipment was used during the test：

Equipment/ Facilities	Specification	Manufacturer	Model#/ Serial#	Due Date of Cal. & Cal. Center
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	JUN. 2008 R&S
EMI TEST RECEIVER	9 kHz TO 2750 MHz	ROHDE & SCHWARZ	ESCS30/ 830245/012	OCT. 2007 ETC
SPECTRUM	9KHz-26.5GHz	HP	8953E/ 3710A03220	JUL. 2008 ETC
PRE-AMPLIFIER	1GHz-26.5GHz Gain:30dB	HP	8449B/ 3008A01019	NOV. 2007 ETC
BI-LOG ANTENNA	25 MHz TO 2 GHz	EMCO	3142/ 9701-1124	FEB. 2008 SRT
HORN ANTENNA	1GHz to 18GHz	EMCO	3115/ 9602-4681	DEC. 2007 ETC
OATS	3 - 10 M measurement	SRT	SRT-1	APR. 2008 SRT

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

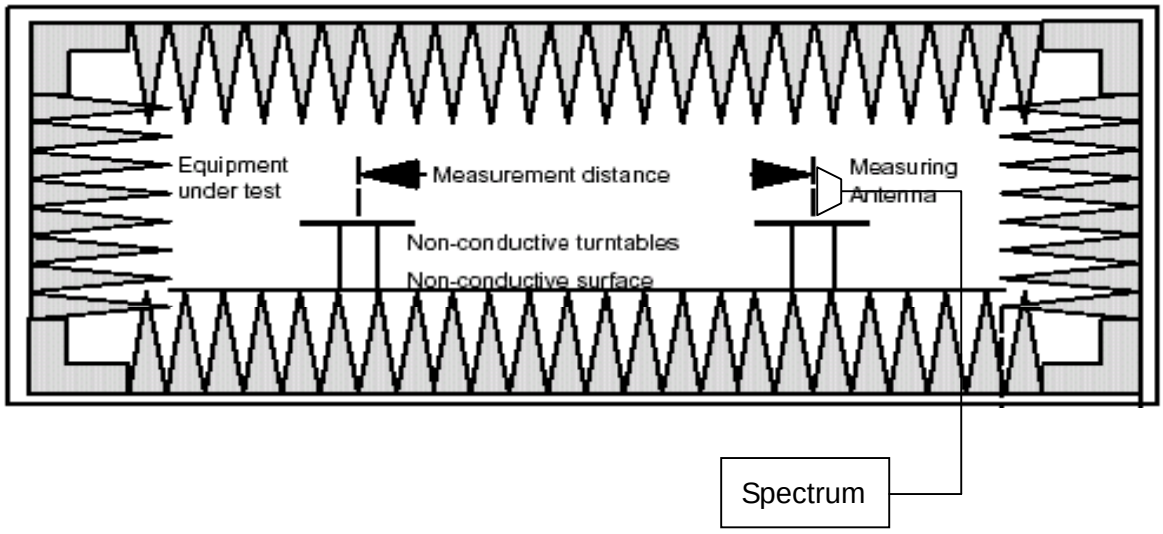
4.7.3 TEST SET-UP

FOR RF CONDUCTED TEST (dBc)



The EUT was connected to the spectrum through a 50Ω RF cable.

FOR RADIATED EMISSION TEST



NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.

4.7.4 TEST PROCEDURE

1. The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.
2. The EUT was tested according to the requirement of ANSI C63.4 and CISPR 22. The measurements were made at an open area test site with 10 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz. All readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak and average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

4.7.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

4.7.6 TEST RESULT

Temperature:	22°C	Humidity:	63%RH
Spectrum Detector:	PK & AV	Tested by:	Jeff Yu
Test Result:	PASS	Tested Date:	Sep. 05, 2007

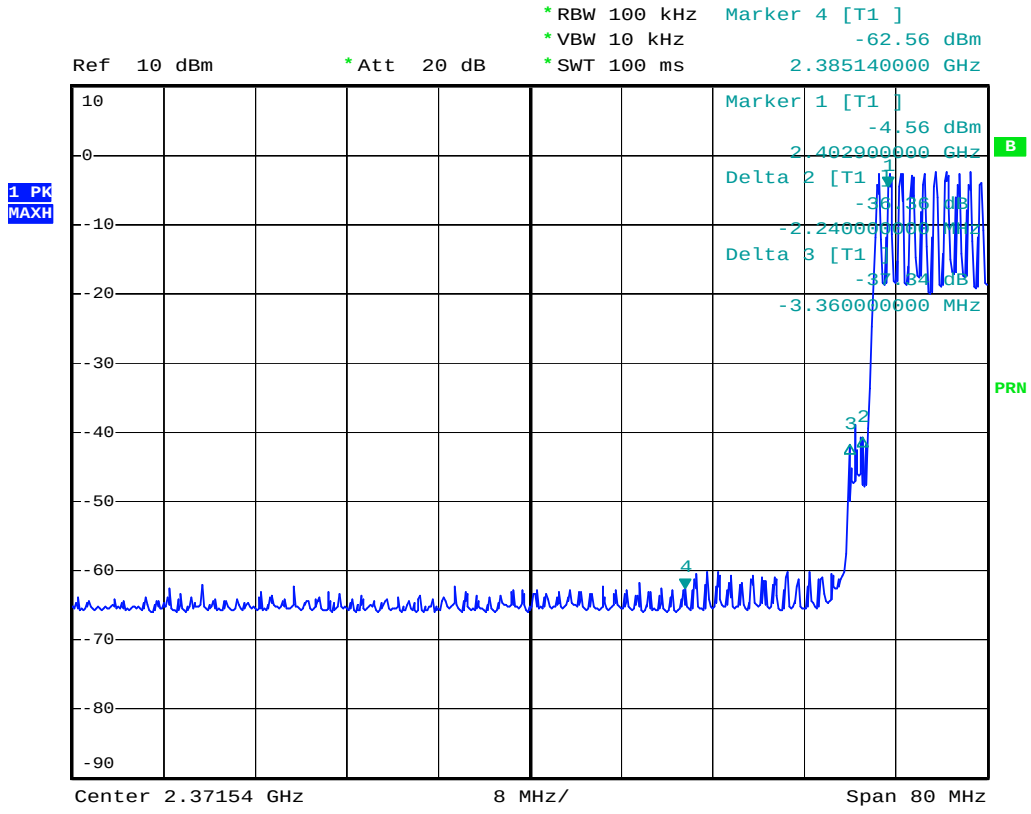
1.Conducted emission test

Frequency (MHz)	PEAK POWER OUTPUT (dBm)	Emission read Value(dBm)	Result of Band edge (dBc)	Band edge LIMIT (dBc)
<2400	-4.56	-36.36	31.8	>20dBc
>2480	-5.11	-42.07	36.96	>20dBc

2.Radiated emission test

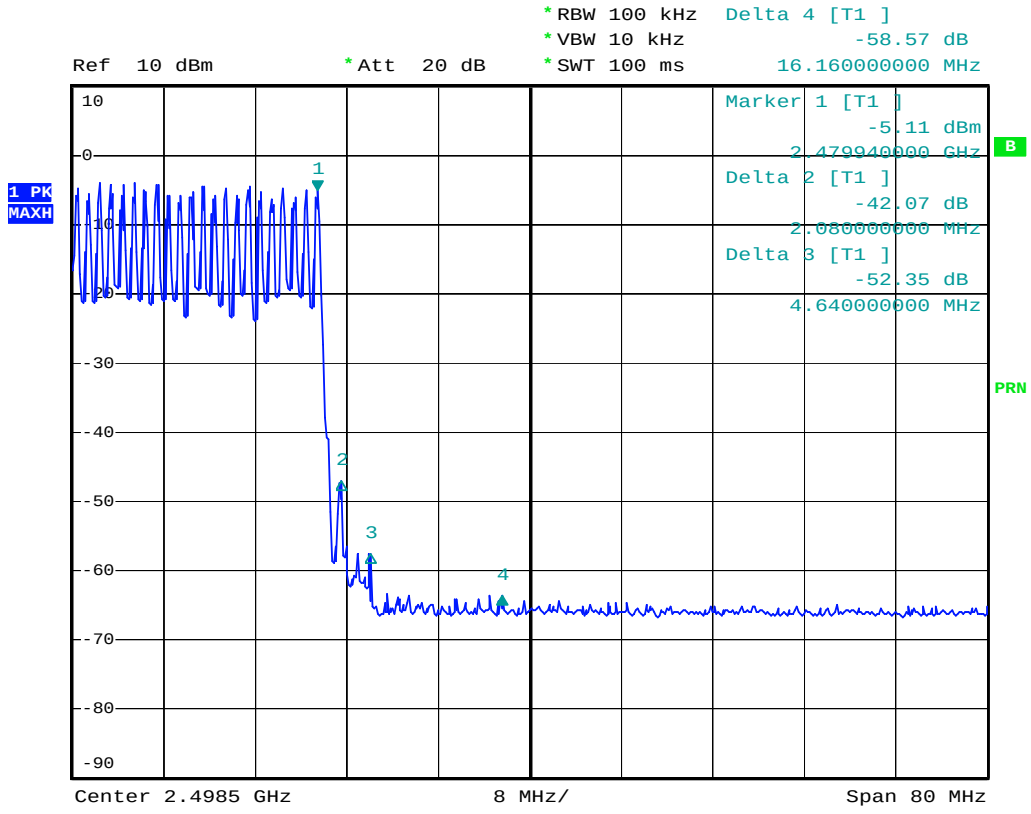
Frequency (MHz)	Antenna polarization (H/V)	Reading (dBuV)		Emission (dBuV/m)		Band edge Limit (dBuV/m)	
		PK	AV	PK	AV	PK	AV
<2400	H	30.6	*	28.1	*	74.0	54.0
>2483.5	V	28.9	*	25.8	*	74.0	54.0

CH0: (for Conducted emission only)



Date: 3.SEP.2007 15:24:21

CH78: (for Conducted emission only)



5 ANTENNA APPLICATION

5.1 Antenna requirement

The EUT's antenna is met the requirement of FCC part15C section15.203 and 15.204.

5.2 Result

The EUT's antenna used a monopole antenna and integrated on PCB. The antenna's gain is -2 dBi and meets the requirement.

7. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction