Product Name:	Alpha0790311
Model Number:	ALPHA0790311
Applicant:	D-Parts Mobilphon & Zubehoer GmbH Birkenweiher Str 16 D-63505 Langenselbold
Date of Receipt:	Mar. 29, 2007
Finished date of Test:	Apr. 16, 2007
Applicable Standards:	47 CFR Part 15, Subpart C ANSI C63.4:2003 FCC Public Notice DA 00-705(March 2000)

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: _____ Date: Apr. 16, 2007
(John Yu)

Approved By: _____ Date: Apr. 16, 2007
(Johnson Ho, Director)

NVLAP®
Lab Code: 200099-0

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	Alpha0790311
MODEL NO.	ALPHA0790311
POWER SUPPLY	DC 4.5 V, 500mA
FREQUENCY BAND	2.4GHz
CARRIER FREQUENCY	2.4GHz
NUMBER OF CHANNEL	79
CHANNEL SPACING	1 MHz
RATED RF OUTPUT POWER	-4 dBm
MODULATION TYPE	GFSK
MODE OF OPERATION	duplex
BIT RATE OF TRANSMISSION	700K
ANTENNA TYPE	PCB pattern
ANTENNA GAIN	-3 dBi
OPERATING TEMPERATURE	-5~80℃
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	NOTEBOOK	DELL	PP01L	DOC	2.0m unshielded power cord
2	PRINTER	HP	HP3325	DOC	1.5m unshielded power cord 1.5m shielded data cord
3	BLUETOOTH DONGLE	MSI	MS-6970A	N/A	N/A

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	2448
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
Public Notice DA 00-705 (March 2000)

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

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.

4.1.5 EUT OPERATING CONDITION

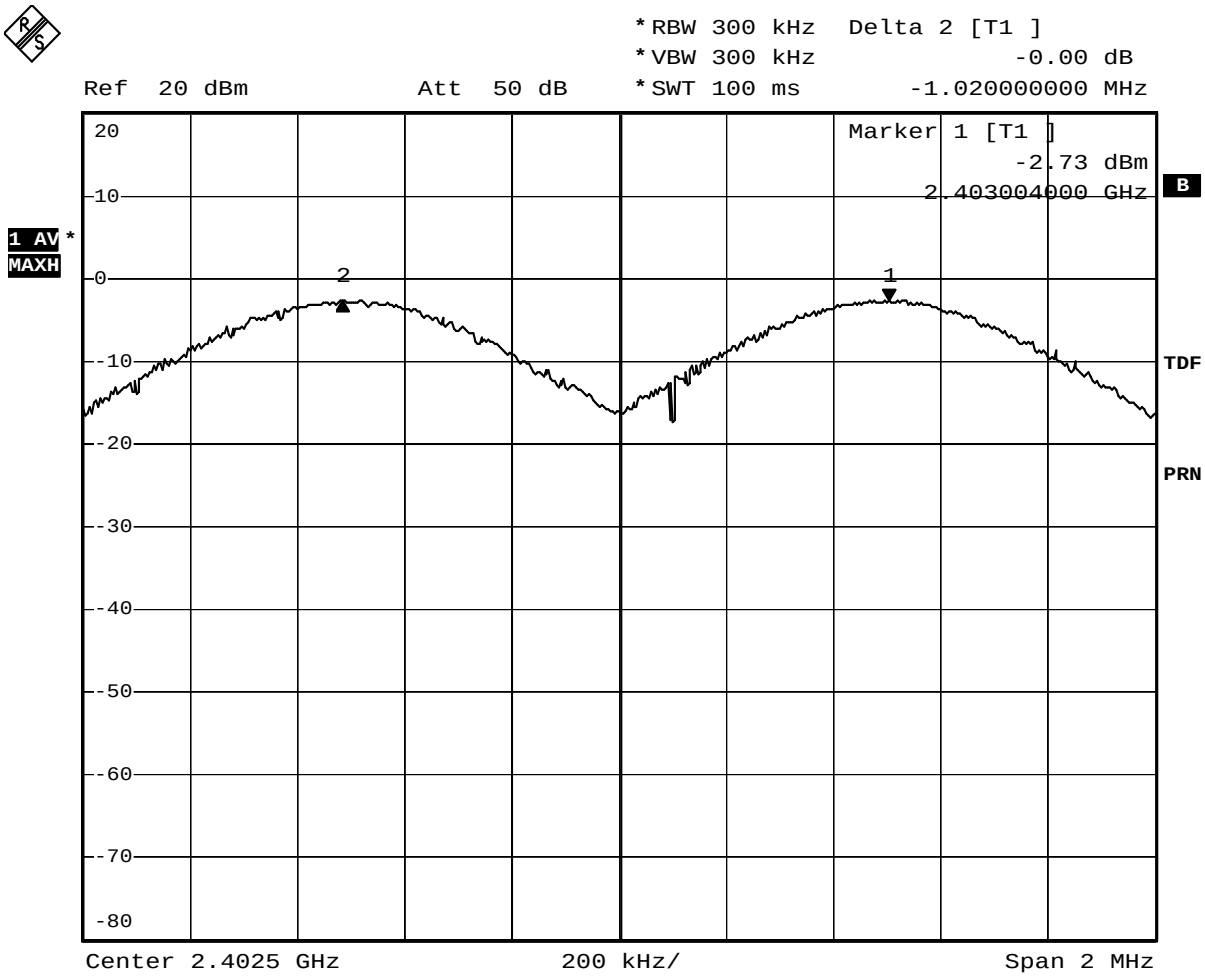
1. Set the EUT under transmission condition continuously at a specific channel frequency.
2. The EUT was set to the highest available power level.

4.1.6 TEST RESULT

Temperature:	25°C	Humidity:	65%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Apr. 13, 2007

Channel Number	Channel Frequency (MHz)	Separation Read Value (kHz)	Minimum Limit(20dB Bandwidth) (kHz)
0	2402	1020.000	25
39	2441	964.000	25
78	2480	1036.000	25

CH0:



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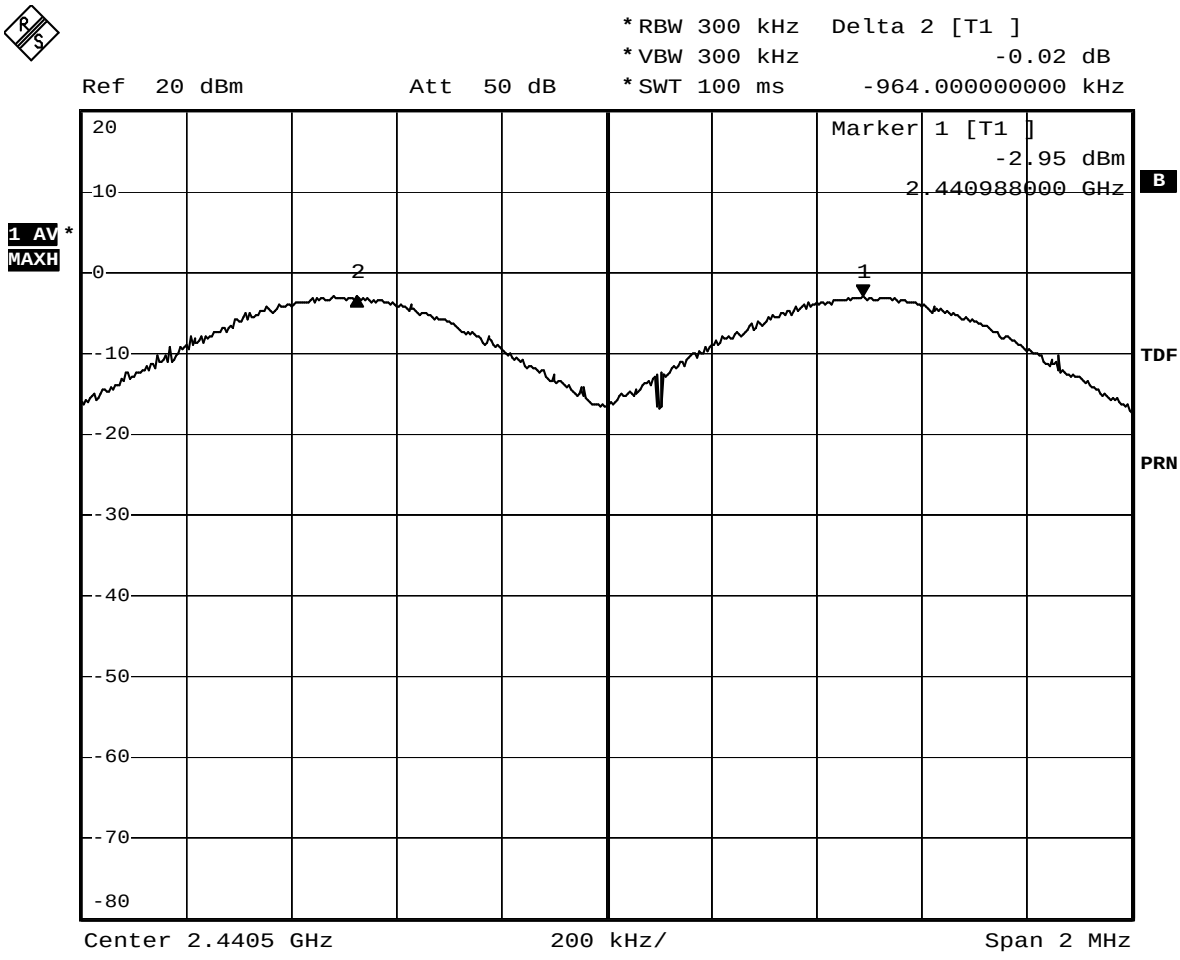
CH39:



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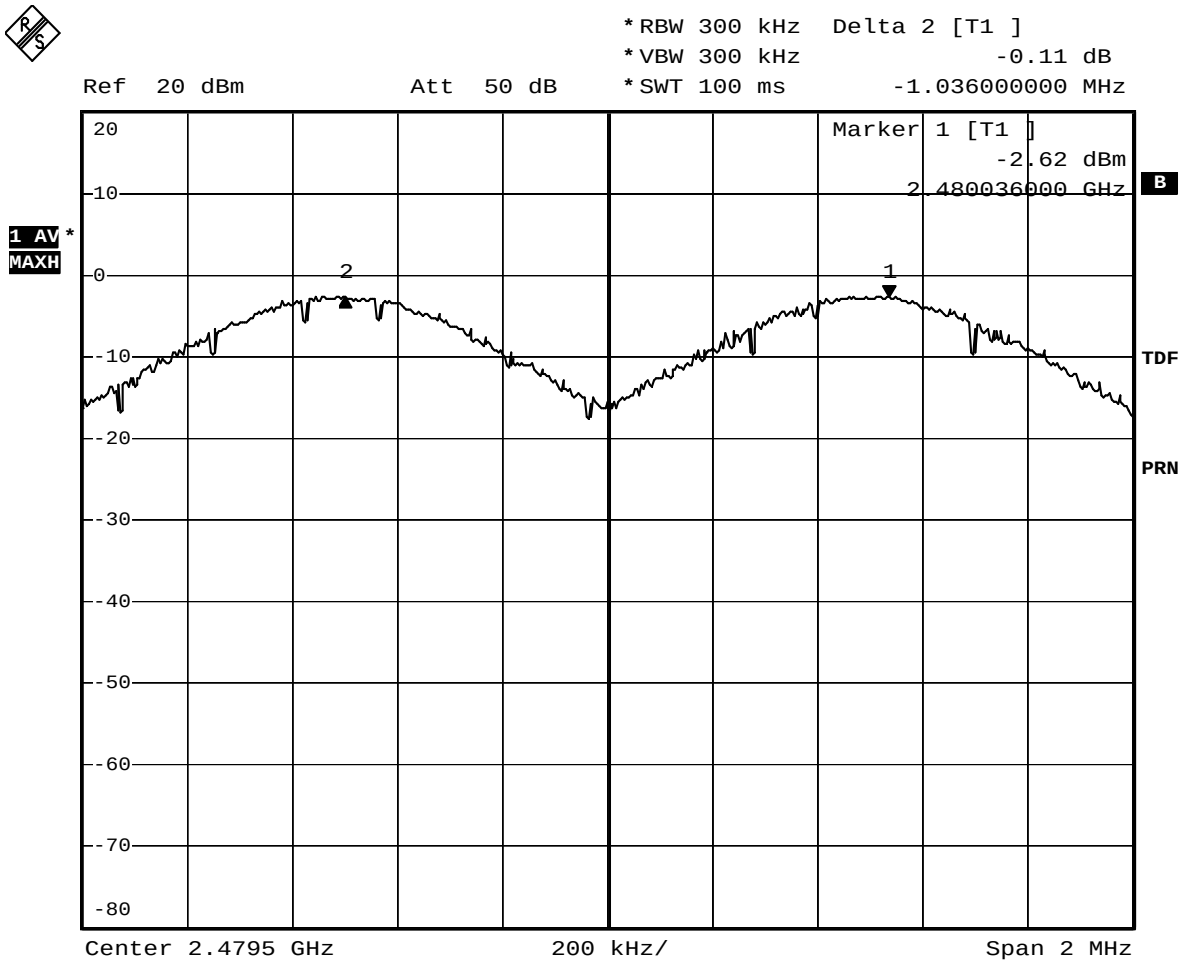


Date: 13.APR.2007 16:21:18

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

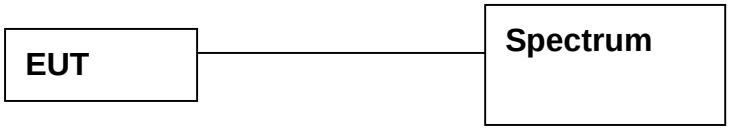
4.2.2 TEST EQUIPMENT

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

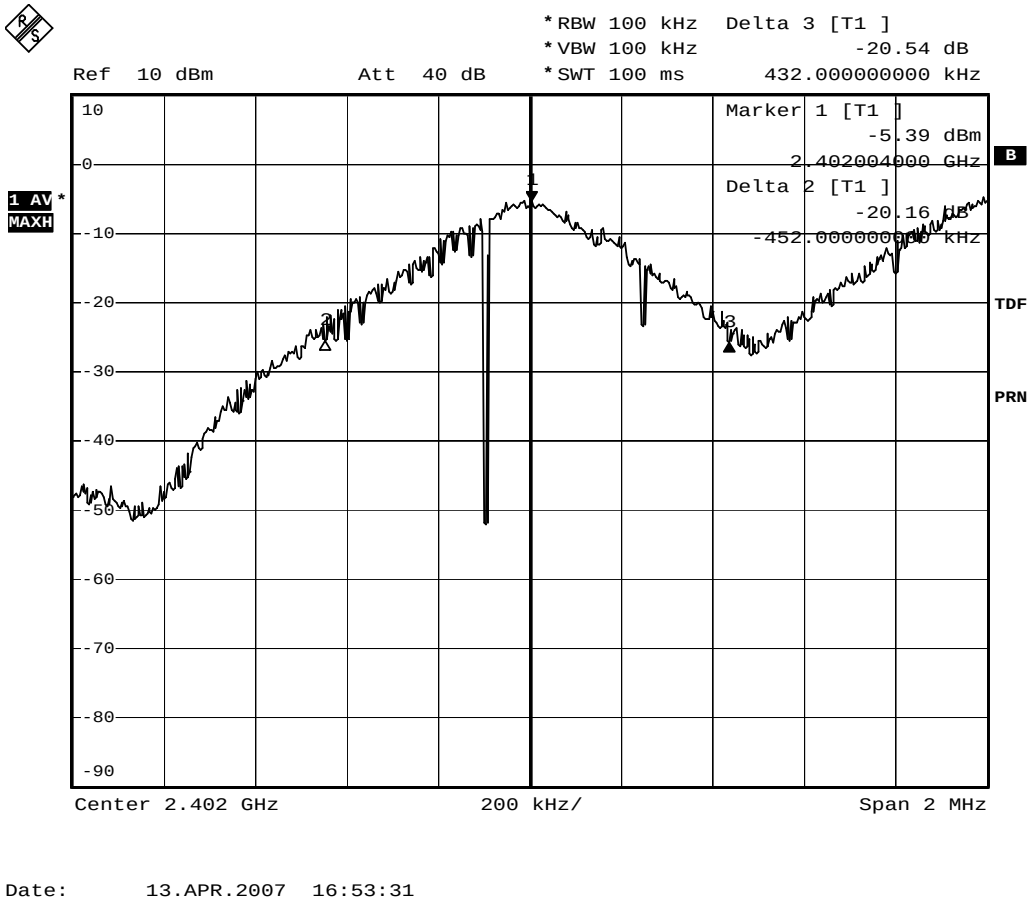
The EUT was operated in hopping mode or any specific channel.
Printed out the test result from the spectrum by hard copy function.

4.2.5 TEST RESULT

Temperature:	25°C	Humidity:	60%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Apr.13, 2007

Channel Number	Channel Frequency (MHz)	20dB Down Bandwidth (kHz)
0	2402	884
39	2441	916
78	2480	940

CH0:



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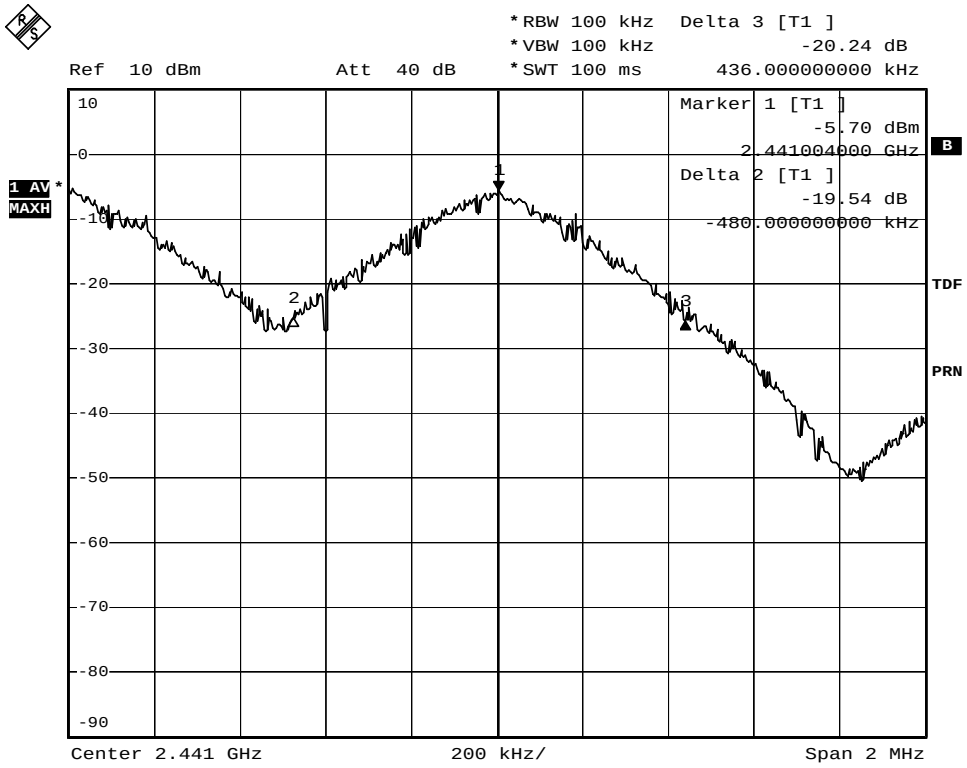
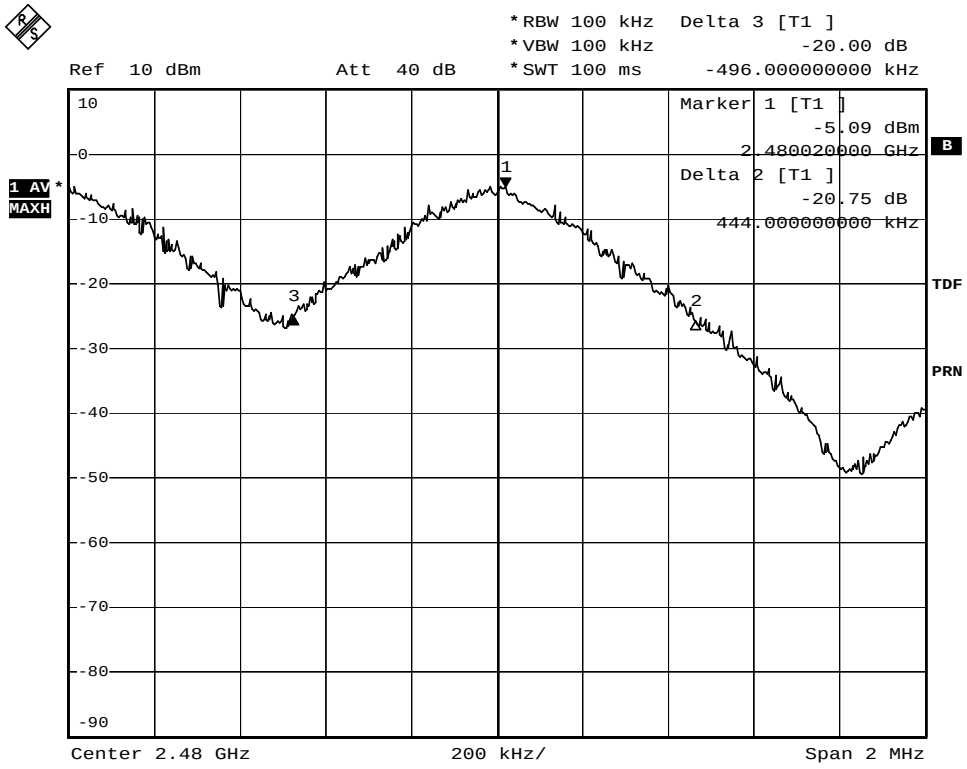

*RBW 100 kHz
*VBW 100 kHz
*SWT 100 ms
Delta 3 [T1]
-20.24 dB
436.000000000 kHz
Ref 10 dBm
Att 40 dB
Marker 1 [T1]
-5.70 dBm
2.441004000 GHz
Delta 2 [T1]
-19.54 dB
-480.000000000 kHz
1 AV
MAXH
B
TDF
PRN
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.441 GHz
200 kHz/
Span 2 MHz
Date: 13.APR.2007 17:01:25

CH78:



Date: 13.APR.2007 17:12:43

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

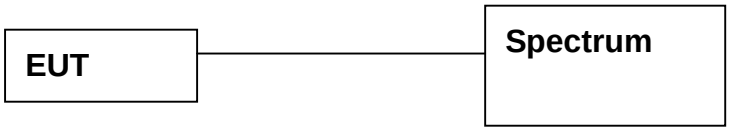
4.3.2 TEST EQUIPMENT

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

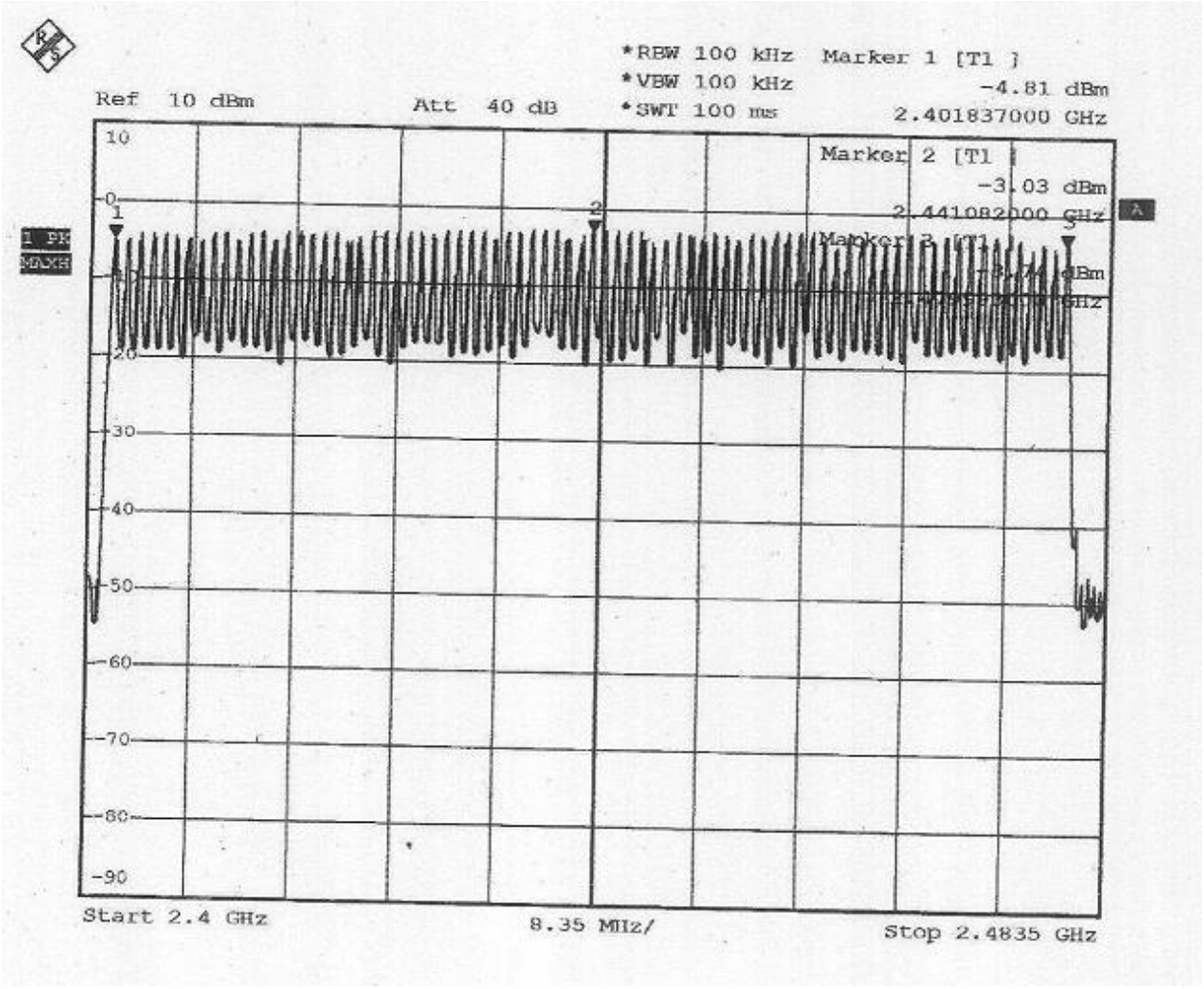
1. Set the EUT under frequency hopping transmission condition.
2. The EUT was set to the highest available power level.

4.3.6 TEST RESULT

Temperature:	25°C	Humidity:	65%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Apr.14,2007

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

CH0-CH78



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.

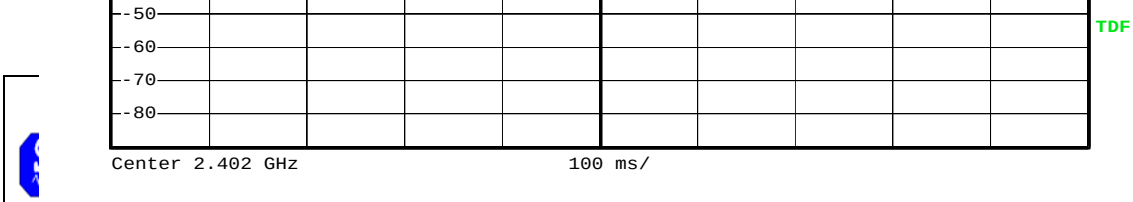
4.4.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

4.4.6 TEST RESULT

Temperature:	25°C	Humidity:	65%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Apr.16,2007

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	398	31.6	125.76	400
39	2441.00	398	31.6	125.76	400
78	2480.00	398	31.6	125.76	400



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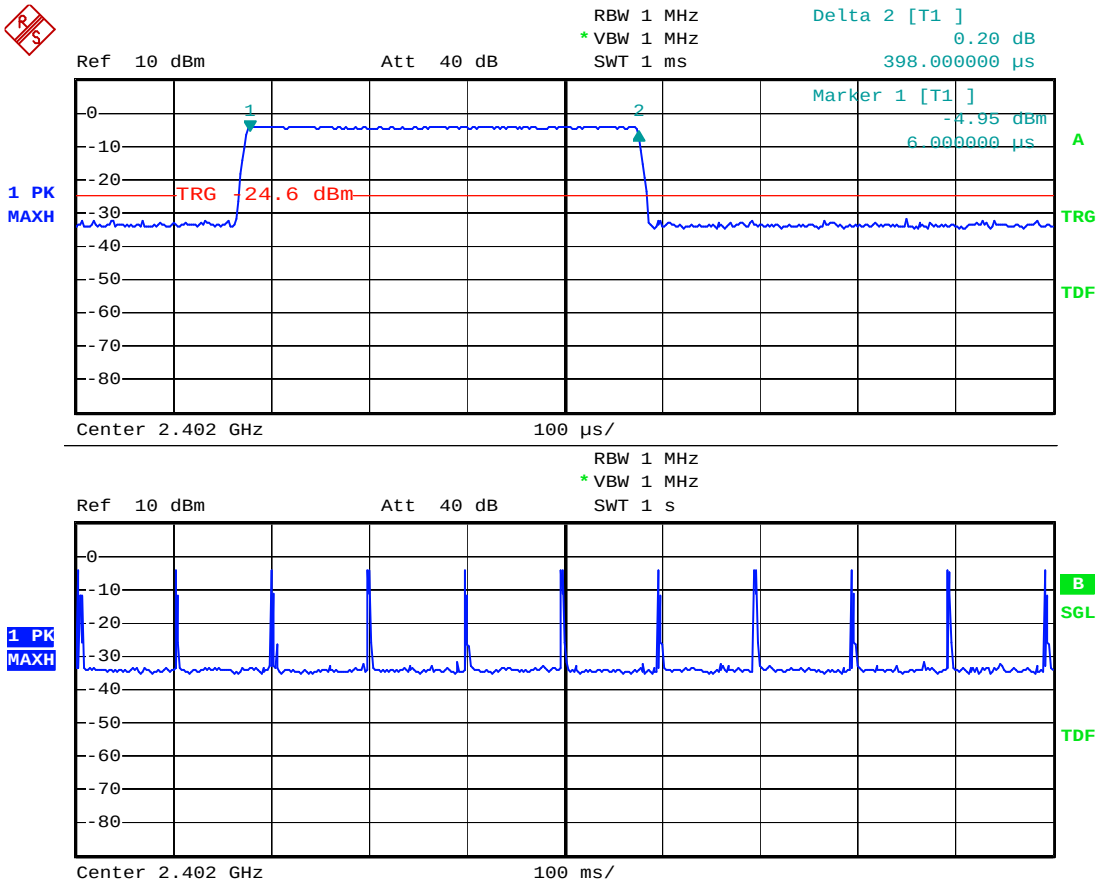
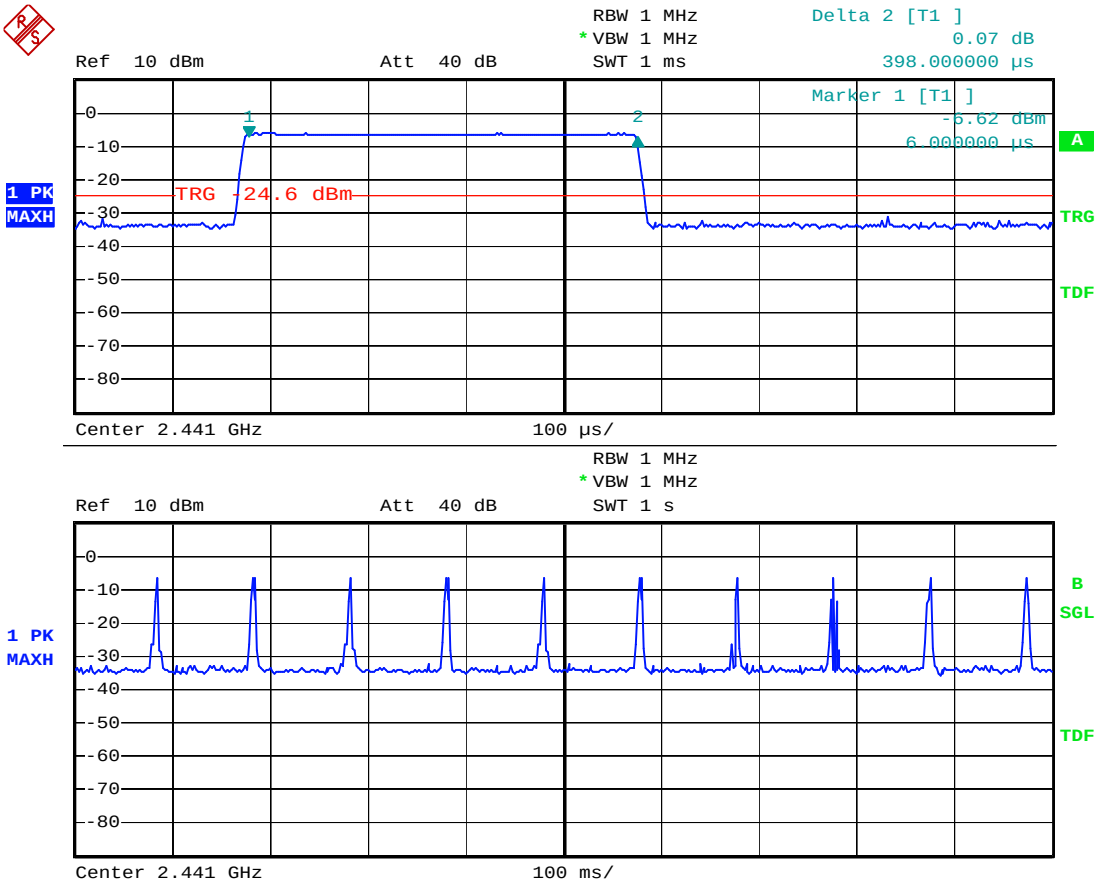


Date: 16.APR.2007 20:43:04

Ch39:



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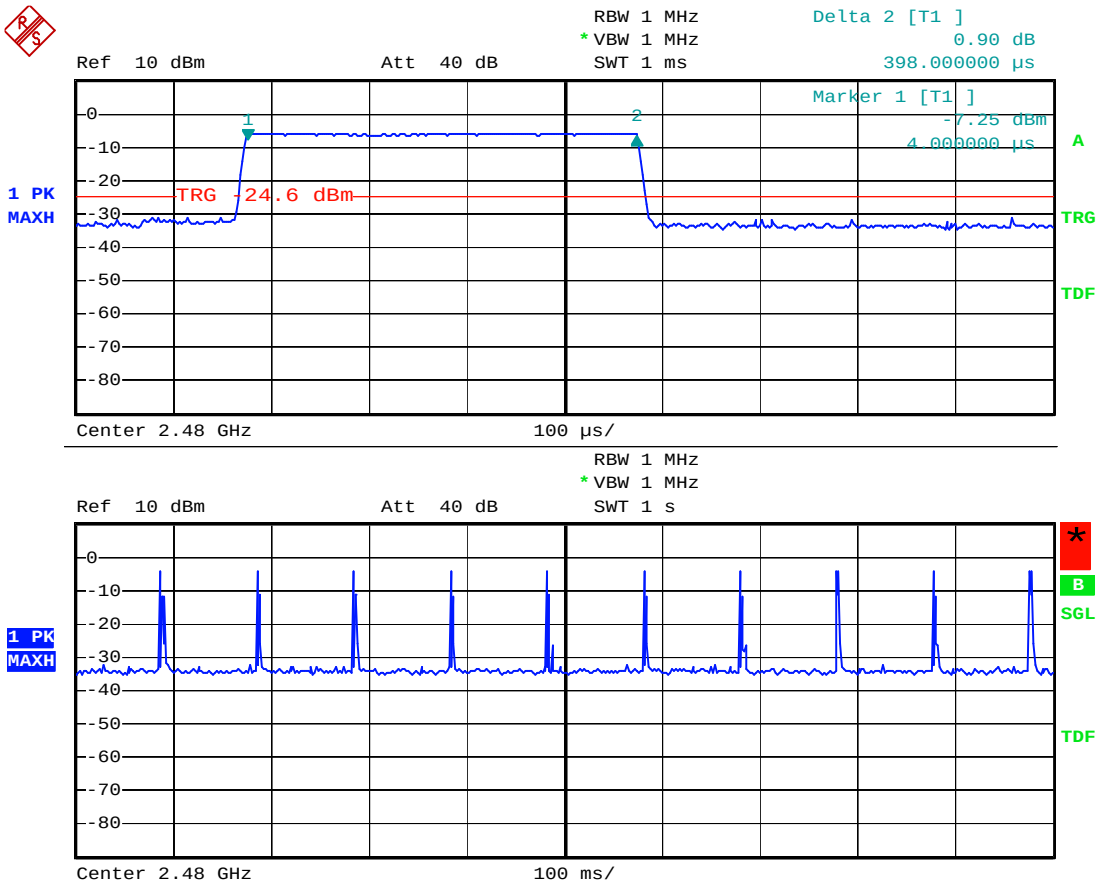
CH78:



Date: 16.APR.2007 20:40:20

4.5 PEAK POWER TEST

4.5.1 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)

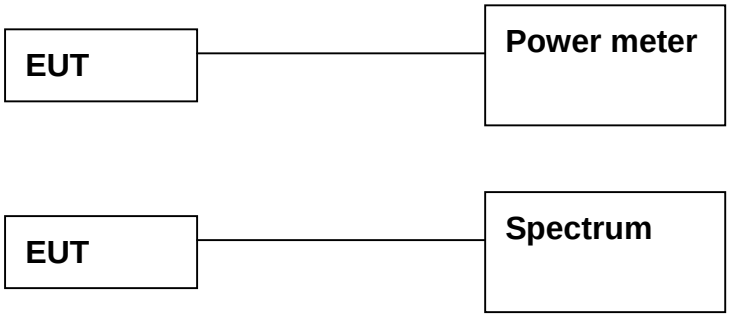
4.5.2 TEST EQUIPMENT

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
POWER METER	N/A	BOONTON	4232A/ 29001	MAY 2007 ETC
POWER SENSOR	DC-18GHz 0.3μW-100mW 50Ω	BOONTON	51011-EMC/ 31184	JUN. 2007 ETC

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

4.5.3 TEST SET-UP



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

4.5.4 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.

4.5.5 EUT OPERATING CONDITION

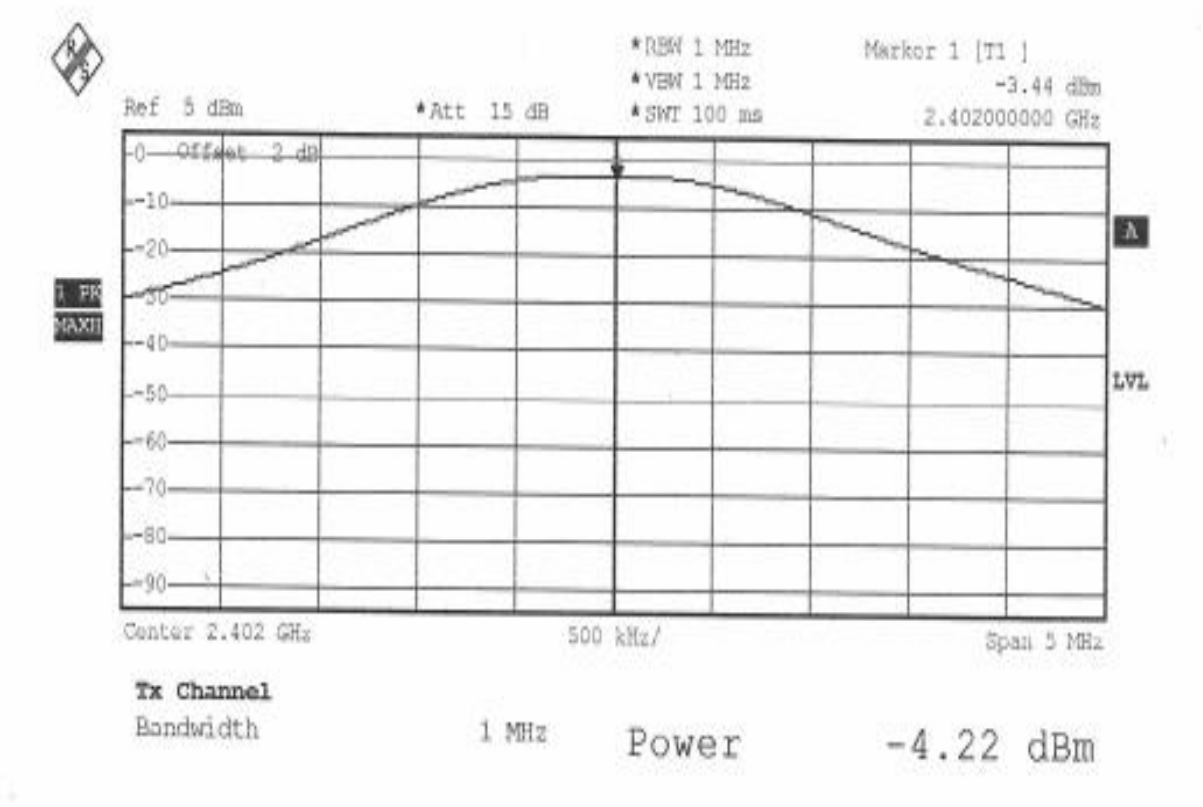
Same as section 4.1.5 of this report.

4.5.6 TEST RESULT

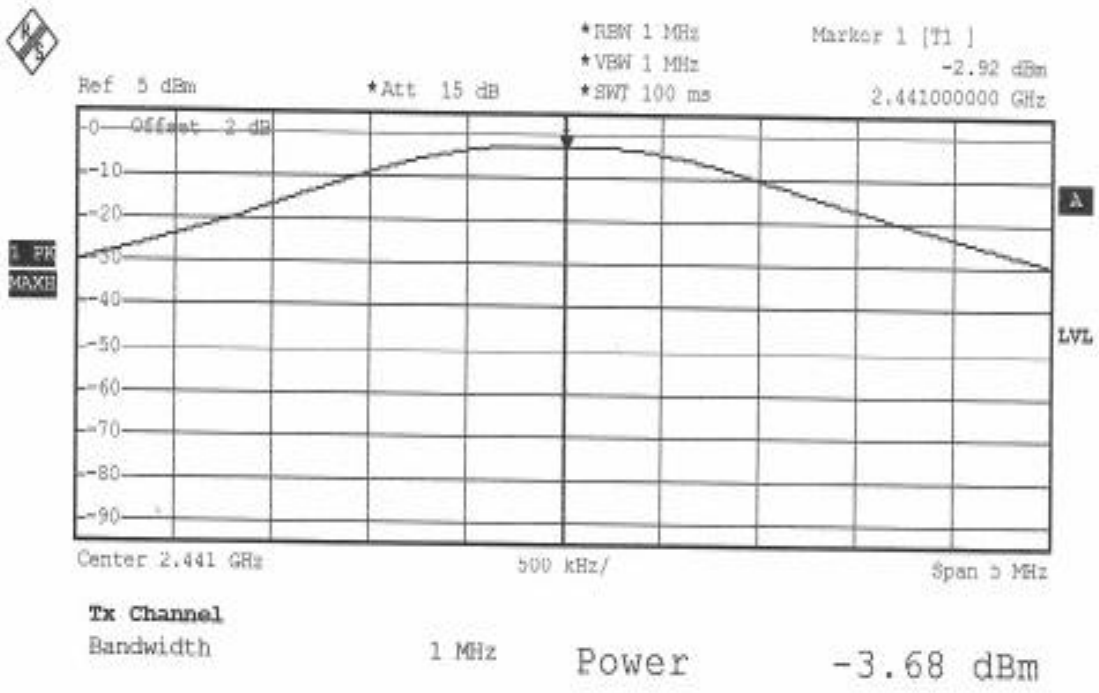
Temperature:	25°C	Humidity:	65%RH
Spectrum Detector:	PK	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Apr.14,2007

Channel Number	Channel Frequency (MHz)	Peak Output Power (dBm)	Peak Power Limit (dBm)
0	2402.0000	-4.22	30
39	2441.0000	-3.68	30
78	2480.0000	-2.77	30

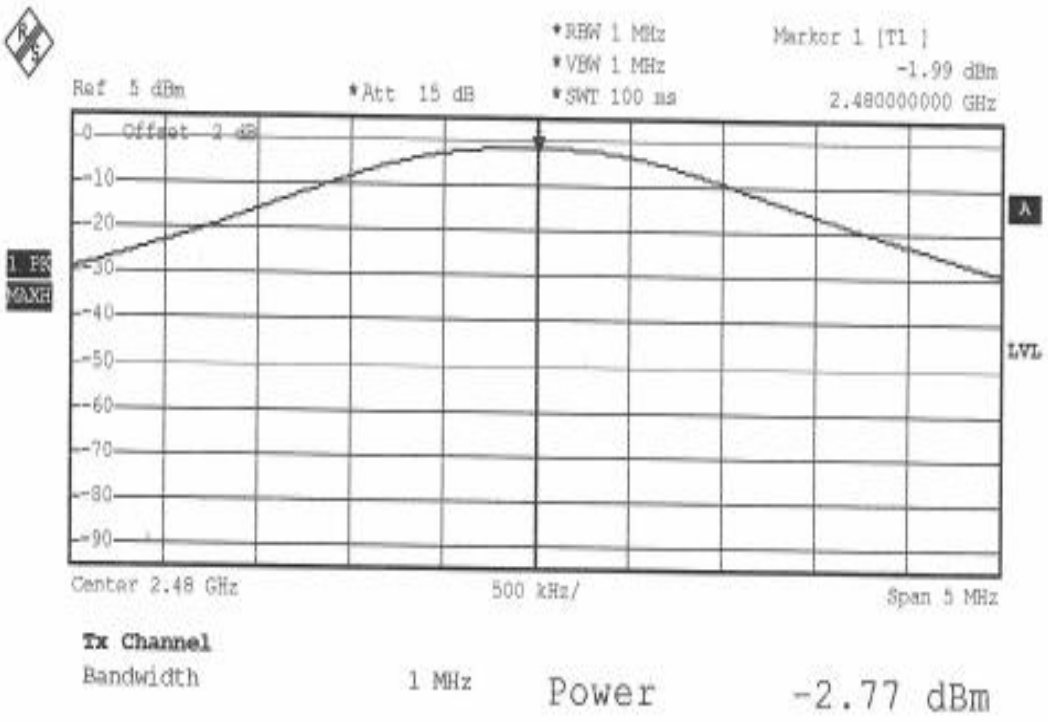
CH0:


*RBW 1 MHz
*VBW 1 MHz
*SWT 100 ms
Marker 1 [T1]
-3.44 dBm
2.402000000 GHz
Ref 5 dBm
*Att 15 dB
Offset 2 dB
-10
-20
-30
-40
-50
-60
-70
-80
-90
1 PK
MAXH
A
LVL
Center 2.402 GHz
500 kHz/
Span 5 MHz
Tx Channel
Bandwidth
1 MHz
Power
-4.22 dBm

CH39:


*RBW 1 MHz
*VBW 1 MHz
*SWT 100 ms
Marker 1 [T1]
-2.92 dBm
2.441000000 GHz
Ref 5 dBm
*Att 15 dB
Offset 2 dB
1 PK
MAXH
A
LVL
Center 2.441 GHz
500 kHz/
Span 5 MHz
Tx Channel
Bandwidth
1 MHz
Power
-3.68 dBm

CH78:


*RBW 1 MHz
*VBW 1 MHz
*SWT 100 ms
Marker 1 [T1]
-1.99 dBm
2.480000000 GHz
Ref 5 dBm
*Att 15 dB
Offset 2 dB
-10
-20
-30
-40
-50
-60
-70
-80
-90
1 PK
MAXH
A
LVL
Center 2.48 GHz
500 kHz/
Span 5 MHz
Tx Channel
Bandwidth
1 MHz
Power
-2.77 dBm

4.6 BAND EDGE TEST

4.6.1 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		

4.6.2 TEST EQUIPMENT

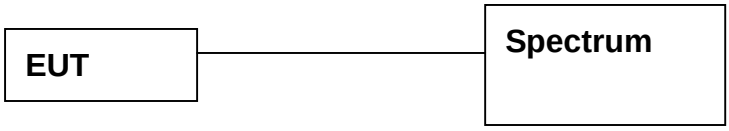
The following test equipment was used during the test：

Equipment/ Facilities	Specification	Manufacturer	Model#/ Serial#	Due Date of Cal. & Cal. Center
SPECTRUM	9kHz-7GHz	ROHDE & SCHWARZ	FSP7/ 839511/010	APR. 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	MAY 2007 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.

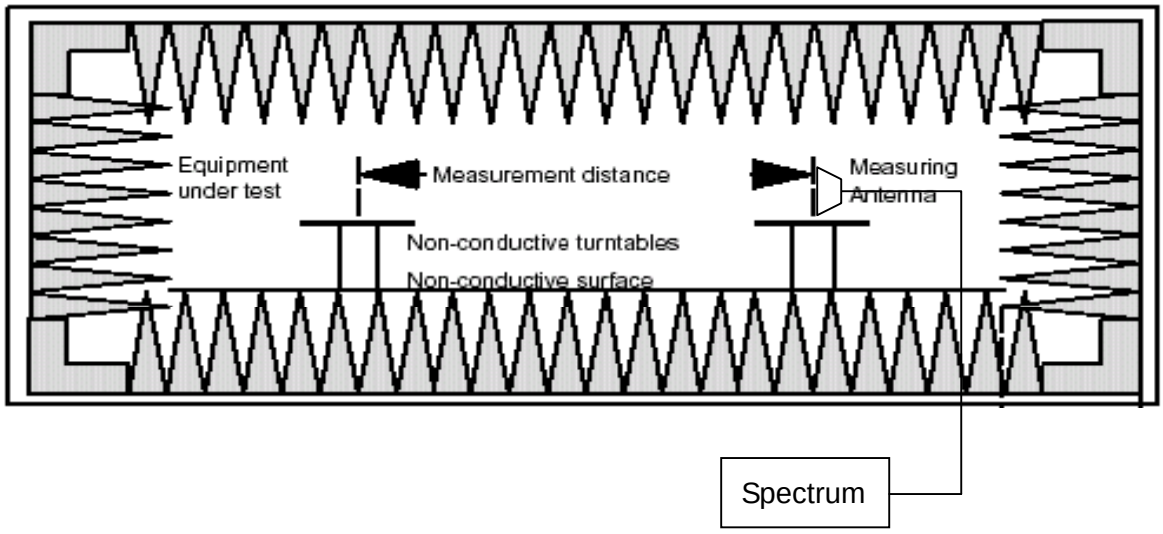
4.6.3 TEST SET-UP

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.

4.6.4 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.

4.6.5 EUT OPERATING CONDITION

Same as section 4.1.5 of this report.

4.6.6 TEST RESULT

Temperature:	26°C	Humidity:	61%RH
Spectrum Detector:	PK & AV	Tested by:	John Yu
Test Result:	PASS	Tested Date:	Apr. 14, 2007

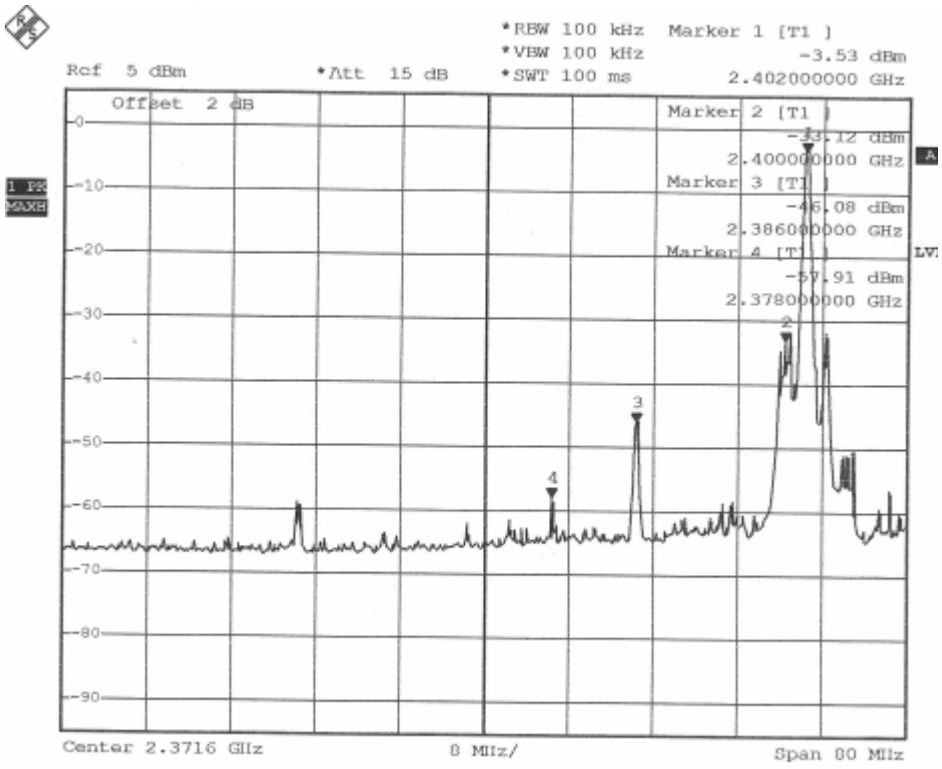
1.Conducted test

Frequency (MHz)	PEAK POWER OUTPUT (dBm)	Emission read Value(dBm)	Result of Band edge (dBc)	Band edge LIMIT (dBc)
<2400	-3.53	-33.12	29.59	>20dBc
>2483.5	-2.08	-51.77	49.69	>20dBc

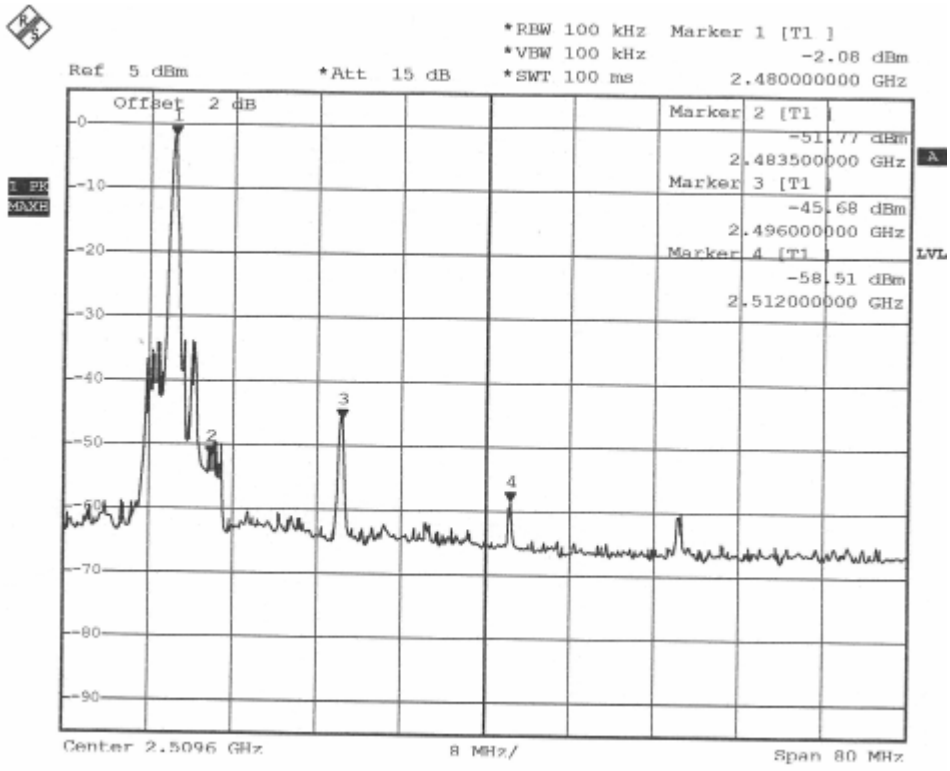
2.Radiated emission test

Frequency (MHz)	Antenna polarization (H/V)	PEAK POWER OUTPUT (dBuV/m)		Emission read Value(dBuV/m)		Band edge Limit (dBuV/m)	
		PK	AV	PK	AV	PK	AV
<2400	V	49.6	*	45.4	*	74.0	54.0
>2483.5	V	48.9	*	45.1	*	74.0	54.0

Ch0:


*RBW 100 kHz
*VBW 100 kHz
*SWT 100 ms
Marker 1 [T1]
-3.53 dBm
2.402000000 GHz
Ref 5 dBm
*Att 15 dB
Offset 2 dB
Marker 2 [T1]
2.400000000 GHz
Marker 3 [T1]
-46.08 dBm
2.386000000 GHz
Marker 4 [T1]
-57.91 dBm
2.378000000 GHz
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.3716 GHz
8 MHz/
Span 80 MHz

Ch78:


*RBW 100 kHz
*VBW 100 kHz
*SWT 100 ms
Marker 1 [T1]
-2.08 dBm
2.480000000 GHz
Ref 5 dBm
*Att 15 dB
Offset 2 dB
Marker 2 [T1]
-51.77 dBm
2.483500000 GHz
Marker 3 [T1]
-45.68 dBm
2.496000000 GHz
Marker 4 [T1]
-58.51 dBm
2.512000000 GHz
1 PK MAXH
A
LVL
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.5096 GHz
8 MHz/
Span 80 MHz

4.7 FUNDERMENTAL & SPURIOUS RADIATED EMISSION TEST

4.7.1 LIMIT

FCC Part15, Subpart C Section 15.209 limit of radiated emission for frequency below1000MHz. 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, Section15.35(b) limit of radiated emission for frequency above 1000 MHz

Frequency (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
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 (dBuV/m) (at 3m)		Field Strength of Harmonics (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
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	88.0	68.0

4.7.2 TEST EQUIPMENT

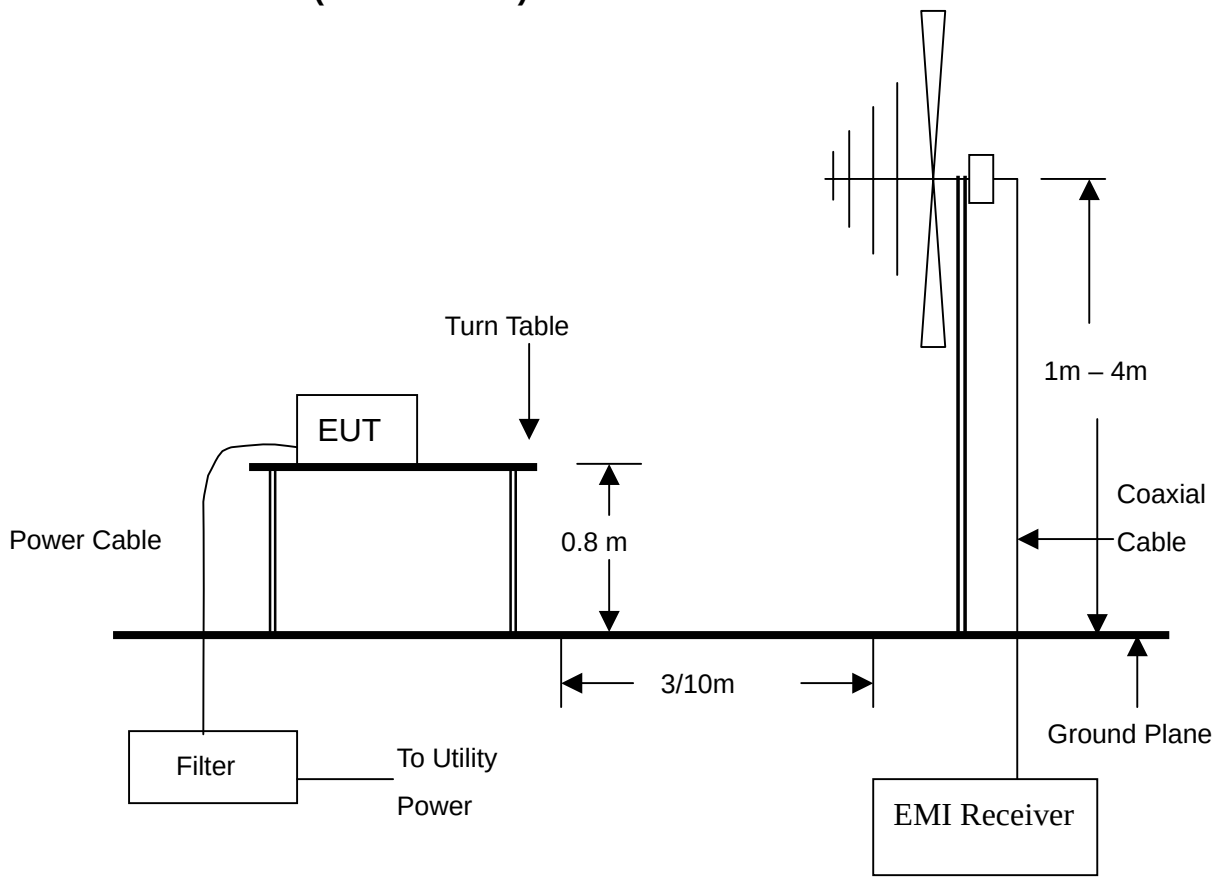
The following test equipment was used during the radiated emission test：

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz TO 2750 MHz	ROHDE & SCHWARZ	ESCS30/ 830245/012	OCT. 2007 ETC
SPECTRUM ANALYZER	9KHz TO 26.5GHz	HP	8593E/ 3710A03220	JULY, 2007 ETC
HORN ANTENNA	1GHz TO 18GHz	EMCO	3115/9012-3619	JAN, 2008 ETC
PREAMPLIFIER	1GHz TO 26.5GHz	HP	8449B/ 3008A01019	SEP. 2007 ETC
BI-LOG ANTENNA	25 MHz TO 2 GHz	EMCO	3143 9509-1152	NOV. 2007 SRT
OATS	3 – 10 M MEASUREMENT	SRT	SRT-1	NOV. 2007 SRT
COAXIAL CABLE	25M	SUNCITY	J400/ 25M	JUN. 2007 SRT
FILTER	2 LINE, 30A	FIL.COIL	FC-943/ 869	N/A

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.

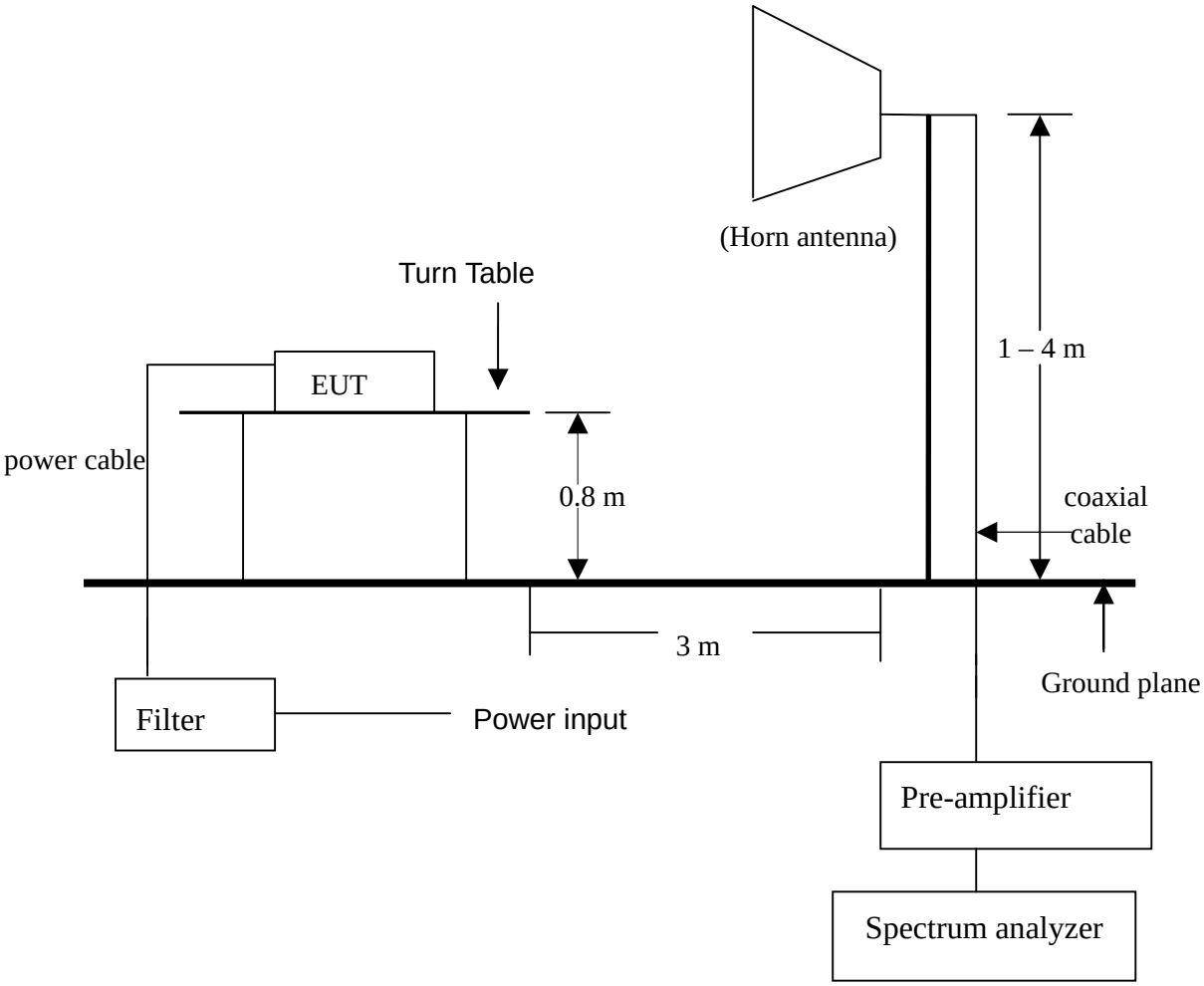
4.7.3 TEST SET-UP (30MHz-1GHz)



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.

TEST SET- UP (1GHz – 12.5GHz)



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

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:	25°C	Humidity:	60 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	CH0
Tested By:	John Yu	Tested Date:	Apr. 14, 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)	AZ(°)	EL(m)
42.667	1.11	11.72	11.6	24.4	40.0	-15.6	156	1.2
135.939	1.63	7.15	11.7	20.5	43.5	-23.0	89	2.1
238.726	2.07	11.72	11.9	25.7	46.0	-20.3	111	1.6
452.033	2.89	18.66	11.6	33.1	46.0	-12.9	144	1.3
559.357	3.30	20.95	11.5	35.7	46.0	-10.3	270	2.2
689.198	3.61	21.50	11.4	36.5	46.0	-9.5	46	2.3

Antenna Polarization: Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
43.256	1.12	11.33	11.2	23.6	40.0	-16.4	57	2.1
55.498	1.20	7.60	11.5	20.3	40.0	-19.7	110	2.5
297.496	2.43	14.08	11.2	27.7	46.0	-18.3	136	1.8
550.112	3.24	21.00	11.4	35.6	46.0	-10.4	263	2.1
687.198	3.61	21.48	11.1	36.2	46.0	-9.8	49	1.9
733.491	3.63	21.73	10.7	36.1	46.0	-9.9	57	2.3

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": Measurement does not apply for this frequency.
3. Emissiom 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:	60 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	CH39
Tested By:	John Yu	Tested Date:	Apr. 14, 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)	AZ(°)	EL(m)
44.335	1.13	10.94	11.3	23.4	40.0	-16.6	130	1
56.214	1.20	7.40	12.8	21.4	40.0	-18.6	90	1
289.364	2.19	13.76	13.4	29.4	46.0	-16.6	67	1
549.261	3.24	21.01	13.2	37.4	46.0	-8.6	294	1.1
687.162	3.61	21.48	12.4	37.5	46.0	-8.5	167	1.2
873.162	3.89	23.70	11.9	39.5	46.0	-6.5	350	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)	AZ(°)	EL(m)
41.256	1.10	12.11	11.1	24.3	40.0	-15.7	10	3.9
133.482	1.62	7.09	11.5	20.2	43.5	-23.3	275	3.6
238.491	2.07	11.72	11.6	25.4	46.0	-20.6	180	3.4
451.361	2.89	18.61	12.2	33.7	46.0	-12.3	162	2.9
559.429	3.30	20.95	12.7	36.9	46.0	-9.1	85	1.3
687.742	3.61	21.48	11.5	36.6	46.0	-9.4	350	1

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": Measurement does not apply for this frequency.
3. Emissiom 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:	68 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3m
Receiver Detector:	Q.P.	Tested Mode:	CH78
Tested By:	John Yu	Tested Date:	Apr. 14, 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)	AZ(°)	EL(m)
44.335	1.13	10.94	11.3	23.4	40.0	-16.6	130	1
56.214	1.20	7.40	12.8	21.4	40.0	-18.6	90	1
289.364	2.19	13.76	13.4	29.4	46.0	-16.6	67	1
549.261	3.24	21.01	13.2	37.4	46.0	-8.6	294	1.1
687.162	3.61	21.48	12.4	37.5	46.0	-8.5	167	1.2
873.162	3.89	23.70	11.9	39.5	46.0	-6.5	350	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)	AZ(°)	EL(m)
41.256	1.10	12.11	11.1	24.3	40.0	-15.7	10	3.9
133.482	1.62	7.09	11.5	20.2	43.5	-23.3	275	3.6
238.491	2.07	11.72	11.6	25.4	46.0	-20.6	180	3.4
451.361	2.89	18.61	12.2	33.7	46.0	-12.3	162	2.9
559.429	3.30	20.95	12.7	36.9	46.0	-9.1	85	1.3
687.742	3.61	21.48	11.5	36.6	46.0	-9.4	350	1

NOTE :

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

Temperature:	26 °C	Humidity:	62 %RH
Frequency Range:	1 – 12.5 GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	Ch0
Tested By:	John Yu	Tested Date:	Apr. 14, 2007

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2402.00	-32.16	28.54	88.3	84.1	84.7	80.5	N/A	N/A	N/A	N/A	165	1.21
4804.00	-30.47	33.64	42.2	35.0	45.4	38.1	74.0	54.0	-28.6	-15.9	135	1.32
7206.00	-28.90	36.26	33.2	*	40.6	*	74.0	54.0	-33.4	*	147	1.34
2399.16	-32.16	28.00	36.5	*	32.3	*	74.0	54.0	-41.7	*	153	1.25
2420.36	-32.19	28.04	36.7	*	32.6	*	74.0	54.0	-41.4	*	164	1.3
2471.23	-32.21	28.14	32.1	*	28.1	*	74.0	54.0	-45.9	*	94	1.2

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2402.00	-32.16	28.00	87.4	82.6	83.2	78.5	N/A	N/A	N/A	N/A	327	2.65
4804.00	-30.47	33.64	45.3	37.2	48.4	40.4	74.0	54.0	-25.6	-13.6	175	2.63
7206.00	-28.90	36.26	32.5	*	39.8	*	74.0	54.0	-34.2	*	168	2.31
2348.16	-32.35	27.90	32.7	*	28.3	*	74.0	54.0	-45.7	*	227	2.2
2398.13	-32.17	28.00	33.6	*	29.4	*	74.0	54.0	-44.6	*	134	2.12
2521.36	-32.01	28.32	34.8	*	31.1	*	74.0	54.0	-42.9	*	169	1.89

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	26 °C	Humidity:	62 %RH
Frequency Range:	1 – 12.5 GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	Ch39
Tested By:	John Yu	Tested Date:	Apr. 14, 2007

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2441.00	-32.23	28.62	87.6	84.5	84.0	80.9	N/A	N/A	N/A	N/A	124	1.11
4882.00	-30.26	33.71	46.3	32.6	49.7	36.0	74.0	54.0	-24.3	-18.0	163	1.28
7323.00	-29.04	36.36	32.4	*	39.7	*	74.0	54.0	-34.3	*	185	1.24
2403.16	-32.16	28.01	33.6	*	29.4	*	74.0	54.0	-44.6	*	155	1.29
2469.72	-32.21	28.14	37.1	*	33.0	*	74.0	54.0	-41.0	*	168	1.32
2503.62	-32.14	28.22	35.4	*	31.5	*	74.0	54.0	-42.5	*	258	1.21

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2441.00	-32.23	28.08	64.9	58.2	60.8	54.1	N/A	N/A	N/A	N/A	136	2.67
4882.00	-30.26	33.71	45.8	31.7	49.2	35.1	74.0	54.0	-24.8	-18.9	24	2.28
7323.00	-29.04	36.36	31.9	*	39.2	*	74.0	54.0	-34.8	*	68	2.36
2463.79	-32.22	28.13	33.8	*	29.7	*	74.0	54.0	-44.3	*	92	2.32
2502.34	-32.15	28.21	32.7	*	28.8	*	74.0	54.0	-45.2	*	335	2.21
2578.31	-31.96	28.64	34.6	*	31.3	*	74.0	54.0	-42.7	*	32	2.03

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	26 °C	Humidity:	62 %RH
Frequency Range:	1 – 12.5 GHz	Measured Distance:	3m
Receiver Detector:	PK. or AV.	Tested Mode:	Ch78
Tested By:	John Yu	Tested Date:	Apr. 14, 2007

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2480.00	-32.19	28.73	88.9	85.0	85.4	81.5	N/A	N/A	N/A	N/A	46	1.64
4960.00	-30.26	33.77	46.7	36.4	50.2	39.9	74.0	54.0	-23.8	-14.1	32	1.27
7440.00	-28.95	36.45	32.6	*	40.1	*	74.0	54.0	-33.9	*	46	1.32
2348.20	-32.35	27.90	35.8	*	31.3	*	74.0	54.0	-42.7	*	47	1.28
2426.90	-32.20	28.05	34.7	*	30.6	*	74.0	54.0	-43.4	*	149	1.48
2484.10	-32.19	28.17	36.9	*	32.9	*	74.0	54.0	-41.1	*	116	1.56

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2480.00	-32.19	28.16	65.8	59.2	61.8	55.2	N/A	N/A	N/A	N/A	261	2.7
4960.00	-30.26	33.77	48.7	38.2	52.2	41.7	74.0	54.0	-21.8	-12.3	97	2.49
7440.00	-28.95	36.45	35.4	*	42.9	*	74.0	54.0	-31.1	*	32	2.67
2400.30	-32.16	28.00	32.6	*	28.4	*	74.0	54.0	-45.6	*	279	2.58
2486.70	-32.18	28.17	33.8	*	29.8	*	74.0	54.0	-44.2	*	49	2.74
2570.60	-31.92	28.59	32.7	*	29.4	*	74.0	54.0	-44.6	*	338	2.31

NOTE :

1. Measurement uncertainty is +/-2dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

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 chip antenna and integrated on PCB. The antenna's gain is -3 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