

# SOLECTEK CORP

## Outdoor Broadband Wireless Radio

Model: SkyWay XL49

3 May 2010

Report No.: SL10032601-SOL-001rev 2.0

(This report supersedes: SL10032601-SOL-001rev 1.0)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

	
Choon Sian Ooi Compliance Engineer	Leslie Bai Director of Certification

This test report may be reproduced in full only.  
Test result presented in this test report is applicable to the representative sample only.

# EMC Test Report

SIEMIC, INC.  
Accessing global markets

To: FCC Part 90Y, RSS111 Issue 3

## Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to [testing](#) and [certification](#), SIEMIC provides initial design reviews and [compliance management](#) throughout a project. Our extensive experience with [China](#), [Asia Pacific](#), [North America](#), [European](#), and [international](#) compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the [global markets](#).

### Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless , Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRR, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom , Safety

### Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom

This page has been left blank intentionally.

## CONTENTS

1	EXECUTIVE SUMMARY & EUT INFORMATION .....	6
2	TECHNICAL DETAILS.....	7
3	MODIFICATION .....	8
4	TEST SUMMARY .....	9
5	MEASUREMENTS, EXAMINATION AND DERIVED RESULTS .....	10
ANNEX A. TEST INSTRUMENT & METHOD.....		73
ANNEX B EUT AND TEST SETUP PHOTOGRAPHS.....		77
ANNEX C. TEST SETUP AND SUPPORTING EQUIPMENT .....		77
ANNEX D USER MANUAL, BLOCK & CIRCUIT DIAGRAM .....		81
ANNEX E. SIEMIC ACCREDITATION CERTIFICATES .....		82

This page has been left blank intentionally.

## 1 Executive Summary & EUT information

The purpose of this test programmed was to demonstrate compliance of the Solectek Corp, Model: Nano-UHF against the current Stipulated Standards. The Outdoor Broadband Wireless Radio have demonstrated compliance with the FCC 90Y 2009.

The equipment under test radio operating frequency is

**4945MHz to 4985MHz (10MHz)**

**4950MHz to 4980 MHz (20MHz)**

The test has demonstrated that this unit complies with stipulated standards.

### EUT Information

<b>EUT Description</b>	: System, a feature rich, best-in-class wireless solution. <b>SYSTEM FEATURES</b> <ul style="list-style-type: none"> <li>• Field proven, MIMO-OFDM modulation allowing high capacity, near line-of-sight deployment and strong immunity to multi-path.</li> <li>• Power over Ethernet (PoE) for simplified cable routing.</li> <li>• Integrated antenna/radio simplifies installation and eliminates lossy RF coax runs.</li> <li>• Frame aggregation for enhanced data throughput.</li> <li>• Line speed QoS packet inspection prioritizes latency sensitive, realtime data.</li> <li>• Intuitive Web based user interface and Telnet CLI.</li> </ul> <b>KIT CONTENTS</b> <ul style="list-style-type: none"> <li>• SkyWay Radio (2)</li> <li>• External antennas &amp; RF Cables (2 sets)1</li> <li>• +48VDC AC-DC Power Supply (2)</li> <li>• Power over Ethernet (PoE) injector (2)</li> <li>• Pre-assembled, two-axis mast mounting kit (2)</li> <li>• Cat5 weatherproofing feedthrough (2)</li> <li>• Coax/grommet seals</li> <li>• Documentation CD</li> <li>• Warranty and Compliance Card.</li> </ul>
<b>Model No</b>	: SkyWay XL49
<b>Input Power</b>	: 120Vac 60Hz
<b>Classification Per Stipulated Test Standard</b>	: Licensed Non-Broadcast Station Transmitter

## 2 TECHNICAL DETAILS

Purpose	Compliance testing of Outdoor Broadband Wireless Radio , model SkyWay XL49 Module with stipulated standard
Applicant / Client	Solectek Corp
Manufacturer	Solectek Corp 6370 Nancy Ridge Drive, #109 San Diego, CA, USA
Laboratory performing the tests	SIEMIC Laboratories
Test report reference number	SL10032601-SOL-001rev 2.0
Date EUT received	09 April 2010
Standard applied	47 CFR §90: 2009 & RSS111 issue 3 2009
Dates of test (from – to)	11 to 17 April 2010
No of Units:	1
Equipment Category:	TNB
Trade Name:	Solectek Corp
Model :	SkyWay XL49
RF Operating Frequency (ies)	4945MHz to 4985MHz (10MHz) 4950MHz to 4980 MHz (20MHz)
FCC ID :	KA349WAN3
IC ID :	2499A-49WAN3

### 3 MODIFICATION

NONE



## 4 TEST SUMMARY

**The product was tested in accordance with the following specifications. All testing has been performed according to below product classification:**

### Licensed Non-Broadcast Station Transmitter

#### Test Results Summary

Test Standard	Description	Pass / Fail
<b>47 CFR Part 90, Part 22: 2010 &amp; RSS119</b>		
47 CFR 2.1046, 47 CFR 90.1215	RF Output Power	Pass
47 CFR 2.1047, 47 CFR 90	Occupied Bandwidth	N/A
47 CFR 2.1049, 47 CFR 90.210	Emission Mask	Pass
47 CFR 2.1051, 47 CFR 90.210	Spurious Emission at Antenna Terminals	Pass
47 CFR 2.1055, 47 CFR §90.1215	Peak Excursion Ratio	Pass
47 CFR 2.1053, 47 CFR §90.210	Field Strength of Spurious radiation	Pass
RSS-111, RSS-GEN Section 6	Receiver Spurious Emission	Pass
47 CFR §90.1215	Peak Power Spectral Density	Pass
47 CFR §90.213	Frequency Stability	
PS: All measurement uncertainties are not taken into consideration for all presented test result.		

The test has demonstrated that this unit complies with stipulated standards.

Note: The radio utilizes external antenna with a minimum gain 10dBi, external antenna with maximum gain 29dBi and integral antenna with 23dBi gain.  
All testing were tested with modulation QPSK

## 5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

### 5.1 Conducted Emissions Voltage

Note: N/A

5.2 RF Output Power

- Conducted Measurement
1. EUT was set for low, mid, high channel with modulated mode and highest RF output power. The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions

Temperature25°C

Relative Humidity50%

Atmospheric Pressure1019mbar
- Conducted Emissions Measurement Uncertainty
3. All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 20GHz is ±1.5dB.
4. Test Date : April 11 & 17 2010
- Tested By : Choon Sian Ooi

Requirement(s): 47 CFR § 2.1046 and § 90.1215

Procedures: Power limits.

The transmitting power of stations operating in the 4940–4990 MHz band must not exceed the maximum limits in this section.

(a)(1) The maximum conducted output power should not exceed:

Channel bandwidth (MHz)	Low power maximum conducted output power (dBm)	High power maximum conducted output power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

(2) High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. High power devices using channel bandwidths other than those listed above are permitted; however, they are limited to peak power spectral density of 21 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

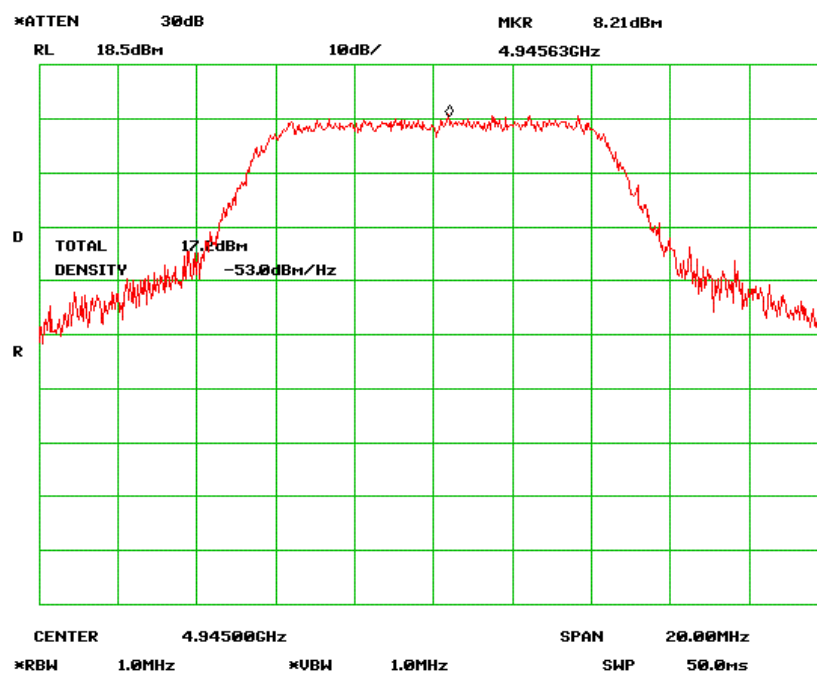
Channel bandwidth: 10MHz

Channel	Channel Frequency (MHz)	Channel Power-Chain 1 (dBm)	Channel Power Chain 2 (dBm)	Total Power (dBm)
Low	4945	17.20	17.30	20.26
Mid	4965	17.00	17.20	20.11
High	4985	17.10	17.10	20.11

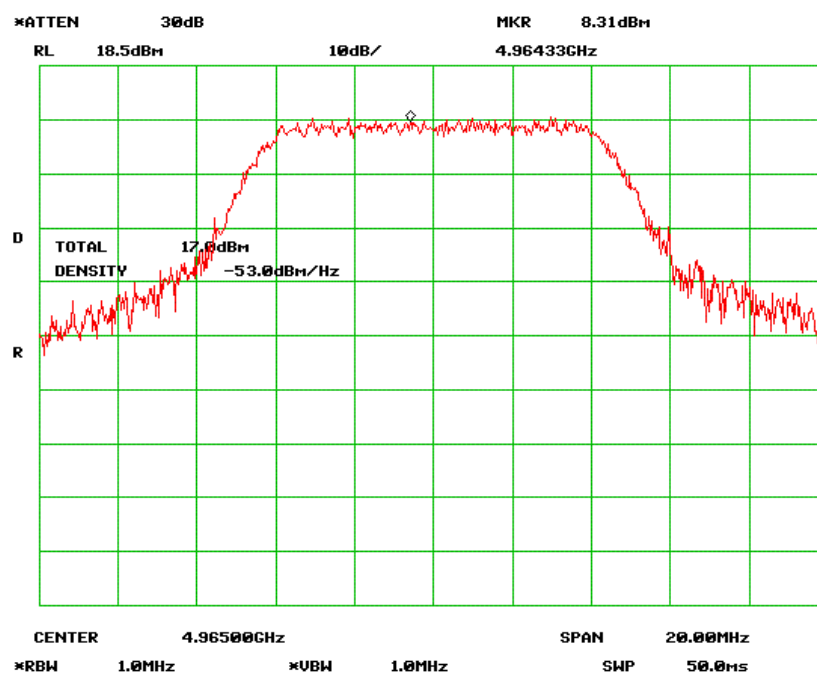
Refer to the attached plots.

# Chain 1

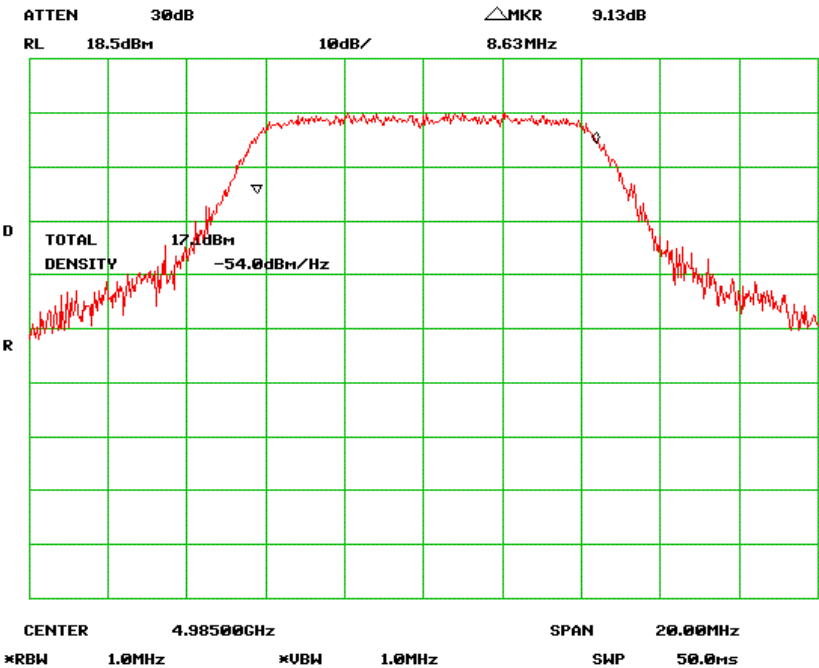
## Low Channel



## Middle Channel

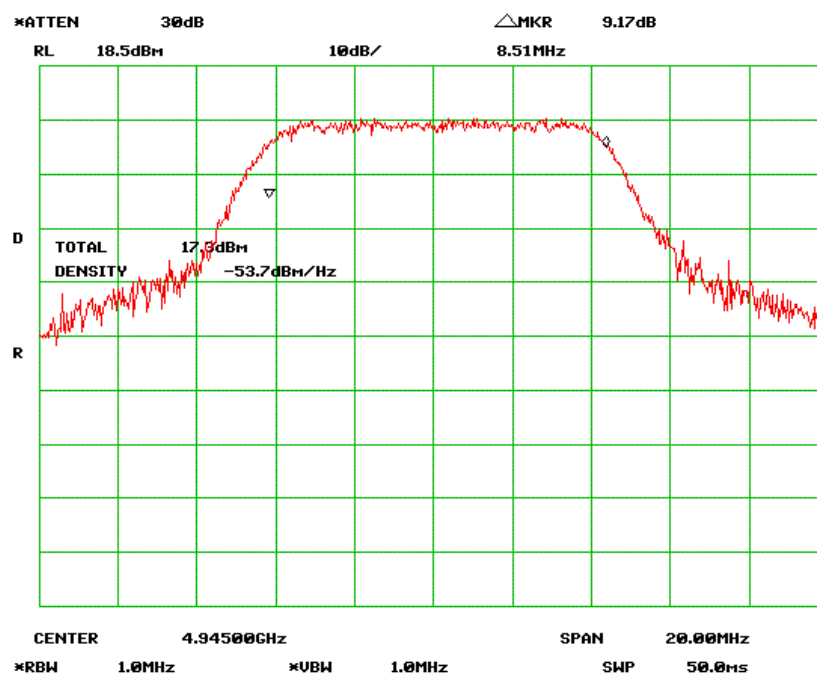


High Channel

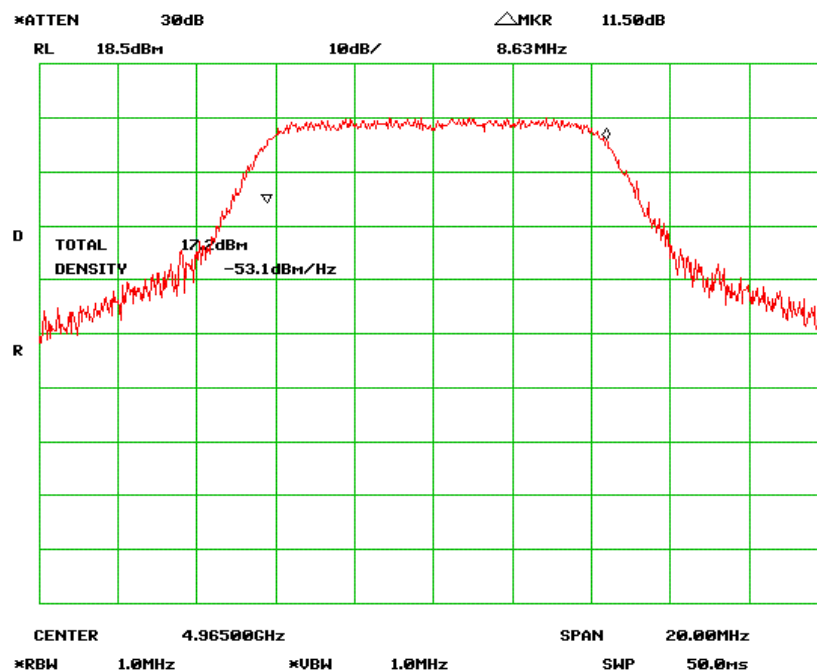


## Chain 2

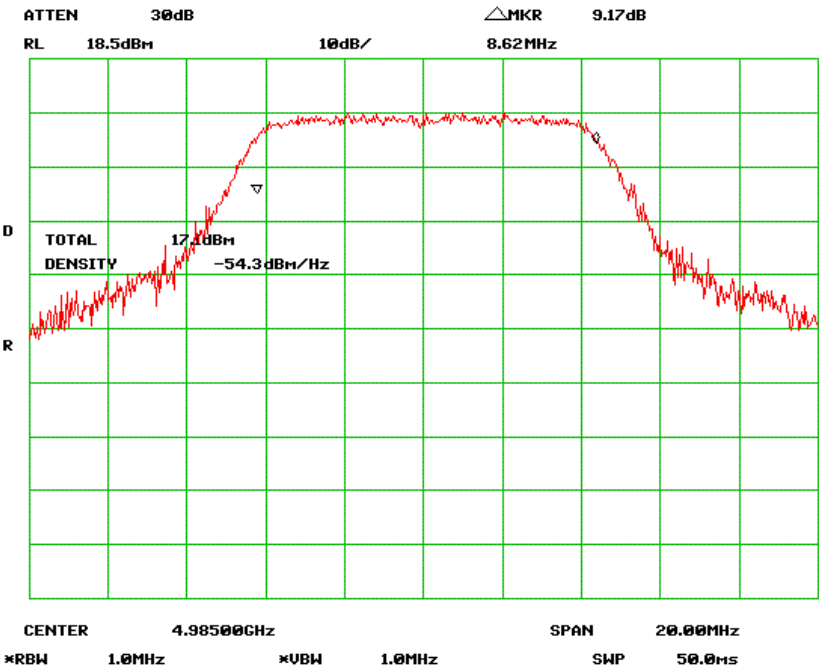
### Low Channel



### Middle Channel



High Channel





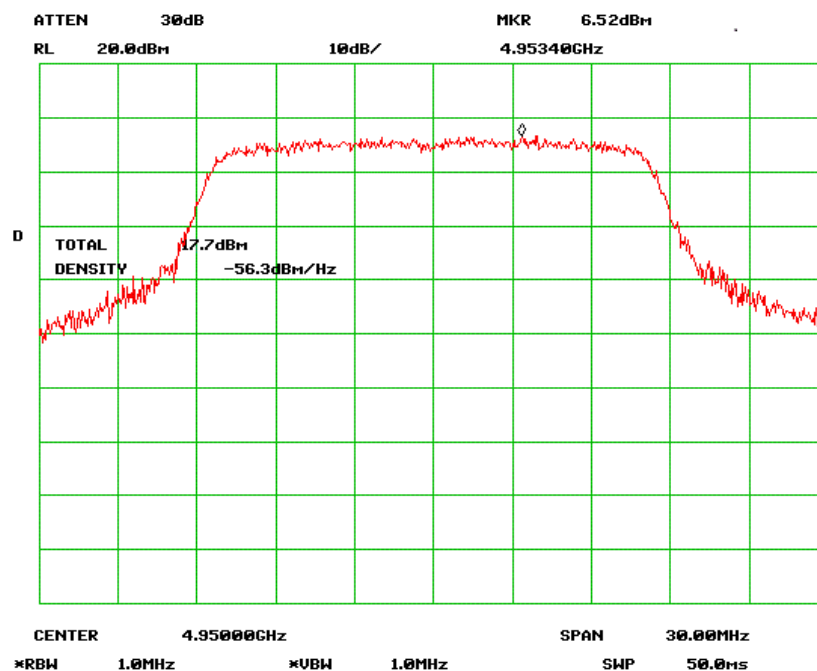
Channel bandwidth: 20MHz

Channel	Channel Frequency (MHz)	Channel Power-Chain 1 (dBm)	Channel Power Chain 2 (dBm)	Total Power (dBm)
Low	4950	17.7	17.70	20.71
Mid	4965	17.0	17.20	20.11
High	4980	17.0	17.20	20.11

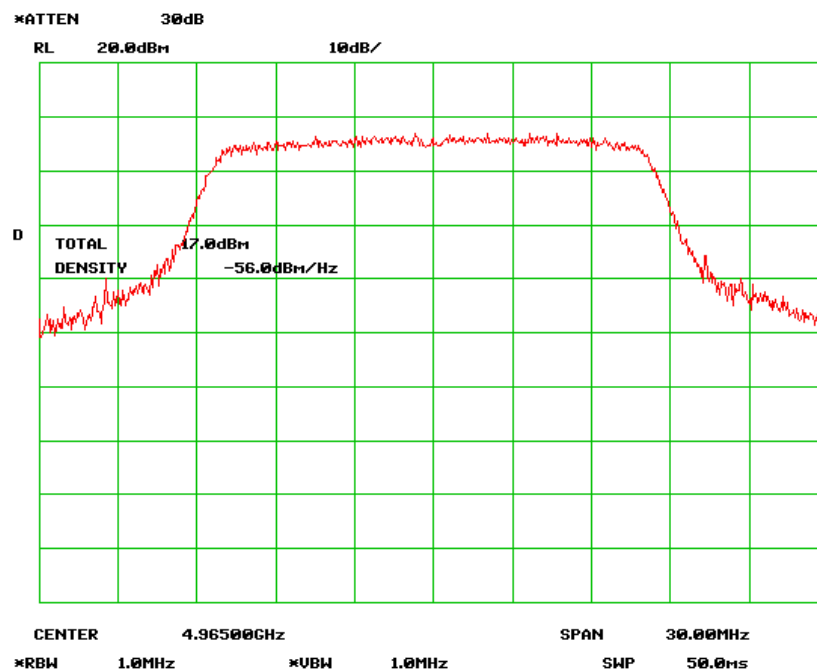
Refer to the attached plots.

# Chain 1

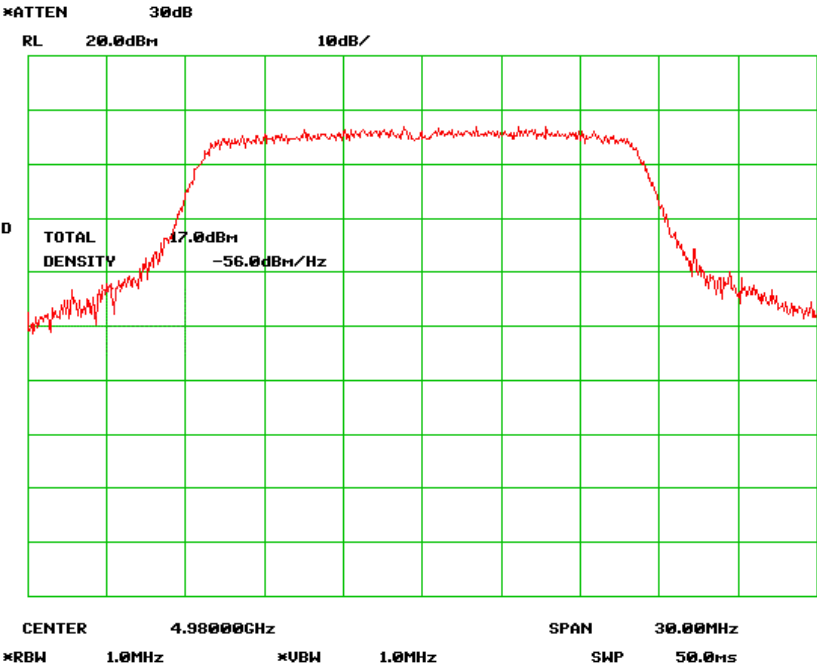
## Low Channel



## Middle Channel

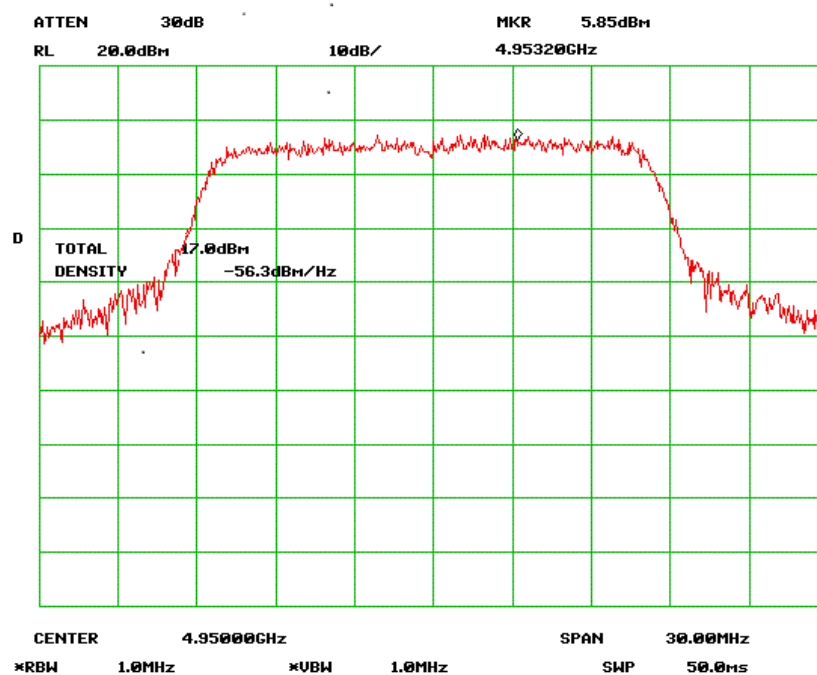


High Channel

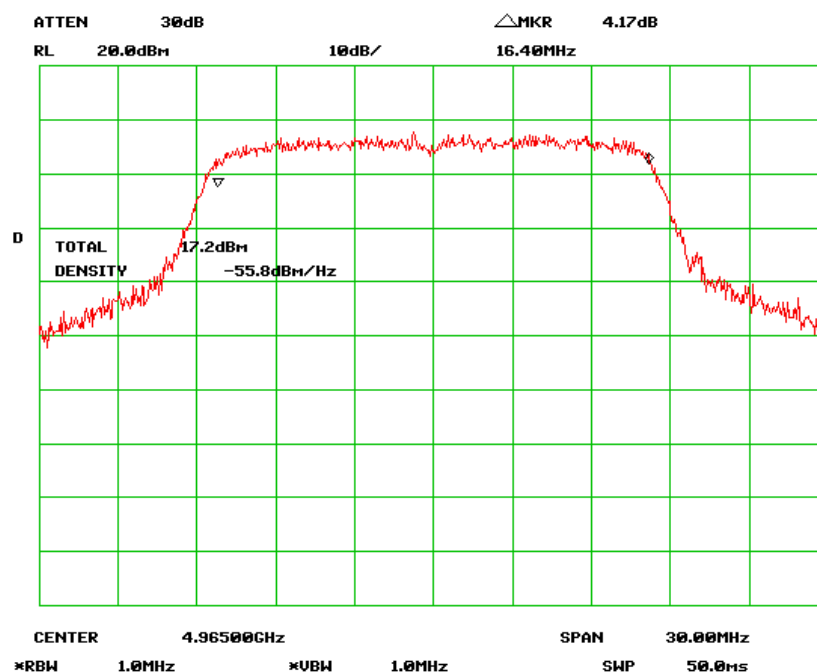


## Chain 2

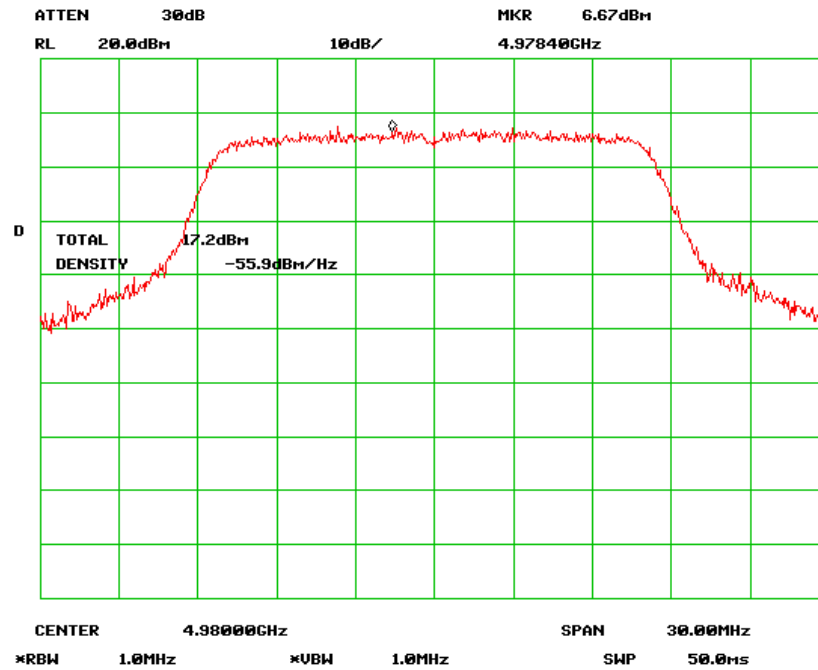
### Low Channel



### Middle Channel



### High Channel



## 5.3 Occupied Bandwidth

1. Conducted Measurement  
 EUT was set for low, mid, high channel with modulated mode and highest RF output power.  
 The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions
 

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
3. Conducted Emissions Measurement Uncertainty  
 All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5\text{dB}$ .
4. Test Date : April 11 & 17 2010  
 Tested By : Choon Sian Ooi

**Requirement(s):** 47 CFR §90

**Procedures:** The 99% bandwidths was measured conducted using a spectrum analyzer at low, mid, and hi channels.

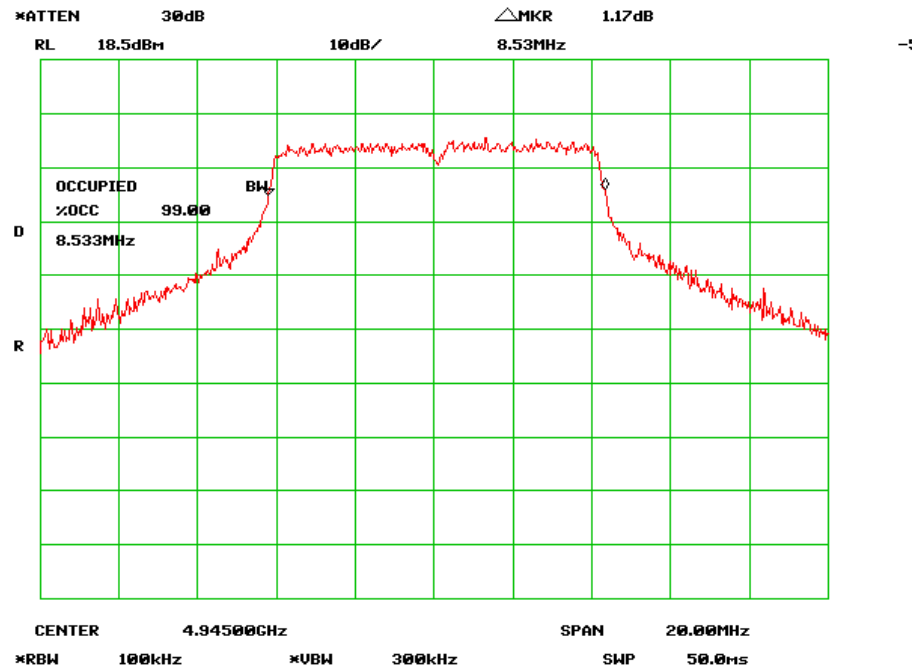
Operating channel bandwidth: 10MHz

Channel	Channel Frequency (MHz)	Chain 1-99% bandwidth (MHz)	Chain 2-99% bandwidth (MHz)
Low	4945	8.53	8.50
Mid	4965	8.50	8.60
High	4985	8.53	8.60

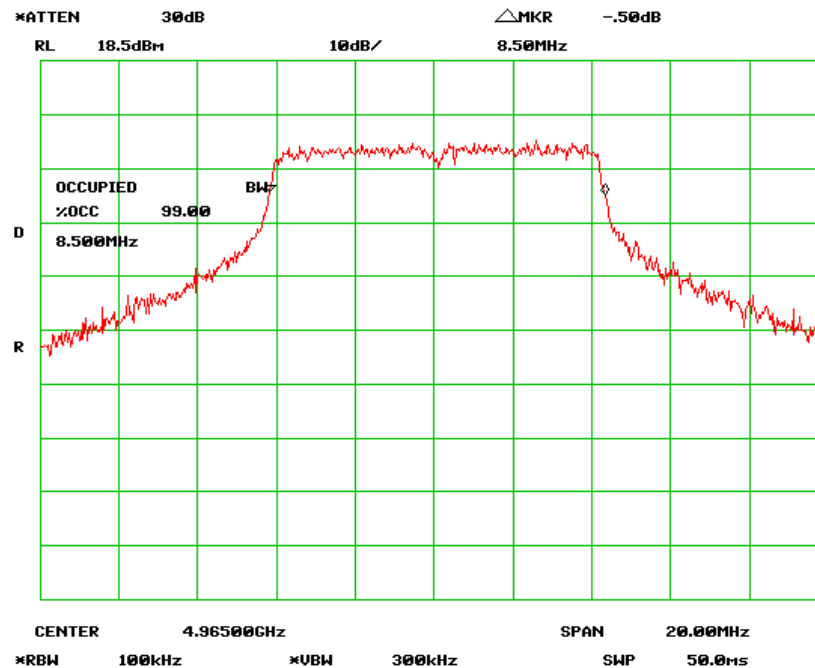
Refer to the attached plots.

## Chain 1

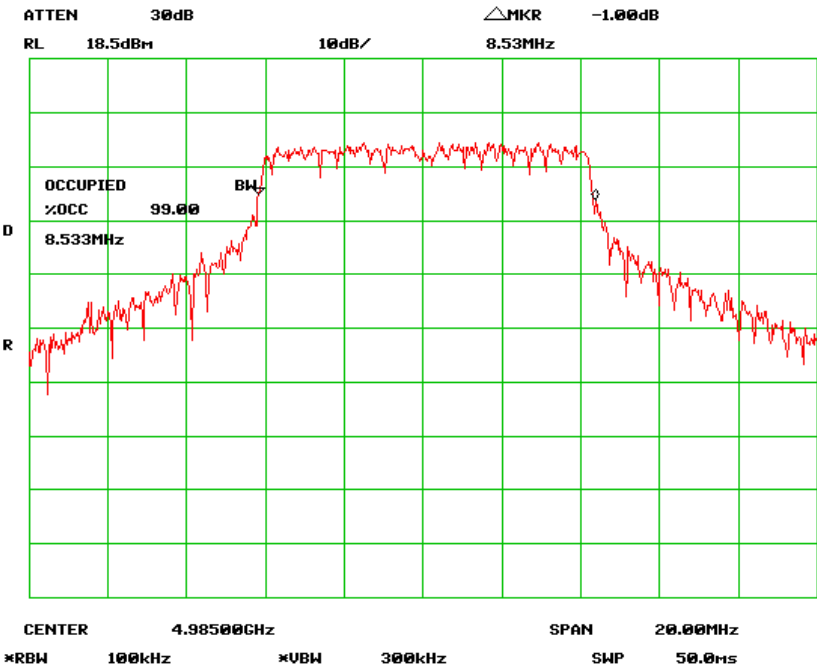
### 99% Bandwidth - Low Channel



### 99% Bandwidth - Mid Channel



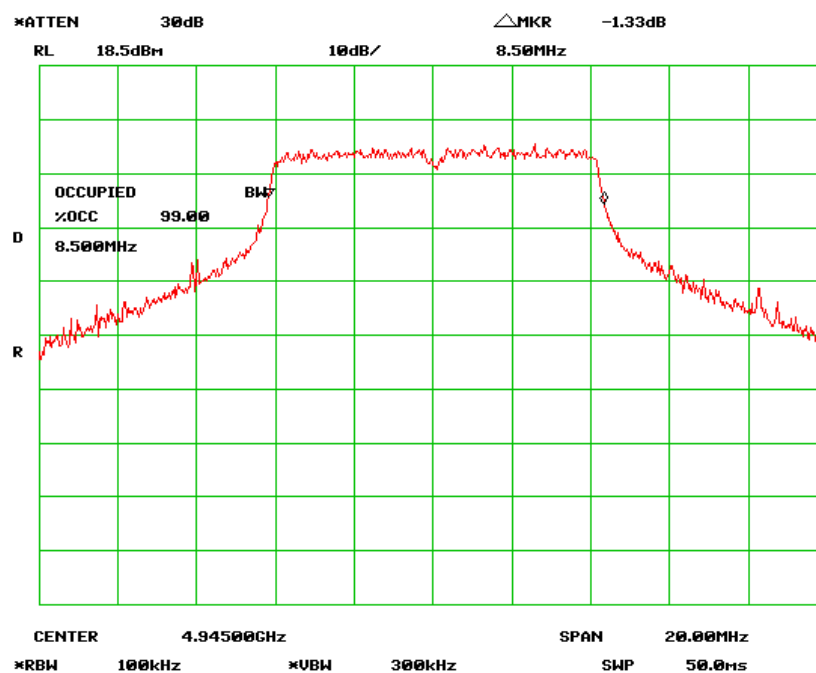
99% Bandwidth – High Channel



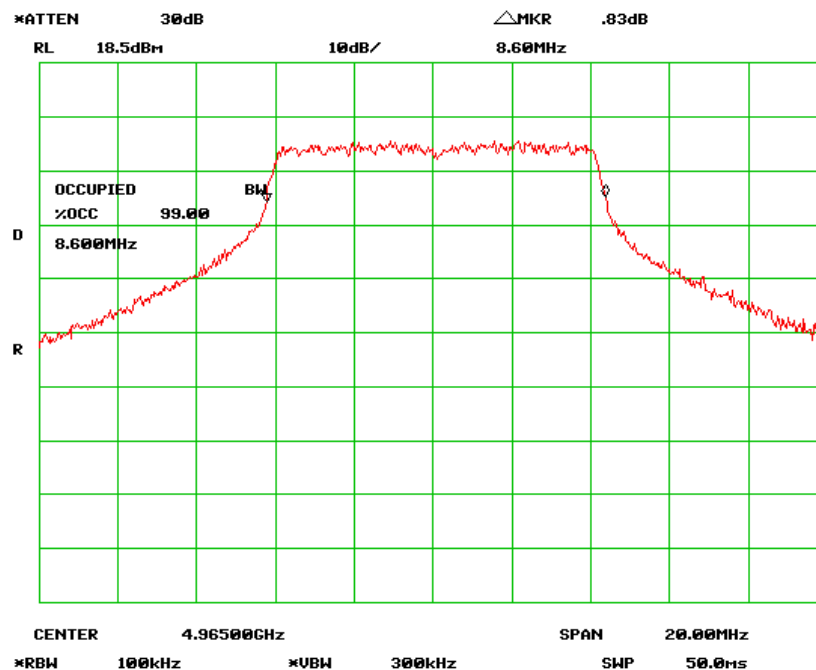


## Chain 2

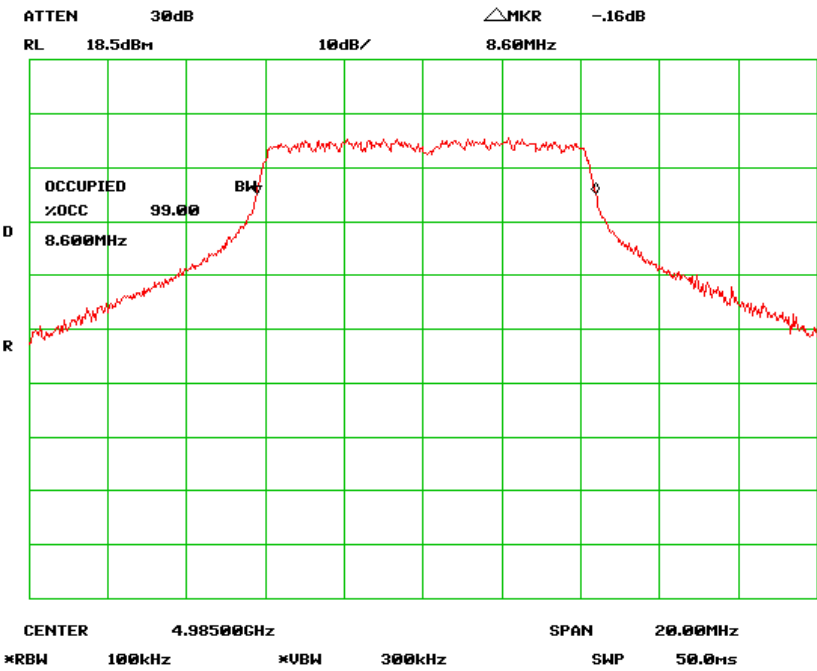
### 99% Bandwidth - Low Channel



### 99% Bandwidth - Mid Channel



99% Bandwidth - High Channel



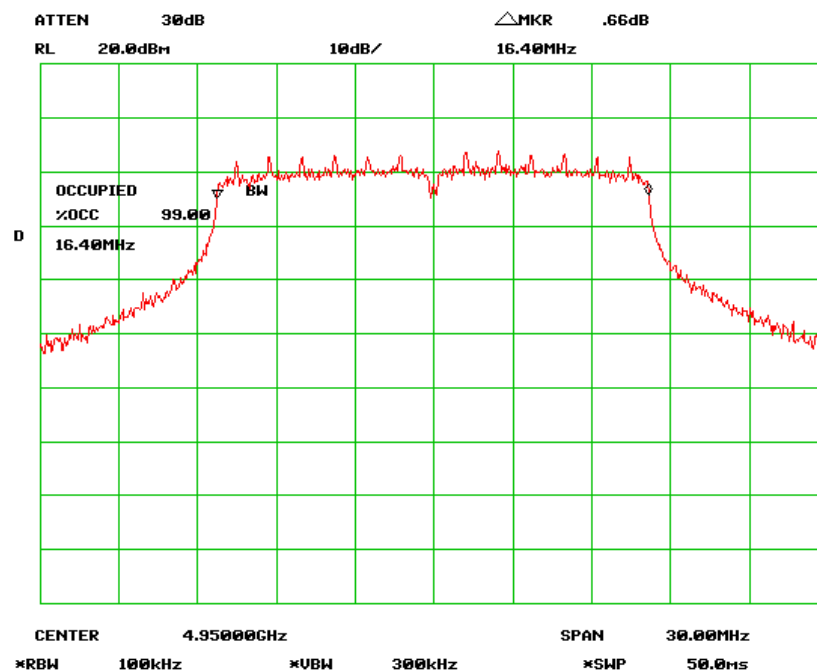
Operating channel bandwidth: 20MHz

Channel	Channel Frequency (MHz)	Chain 1-99% bandwidth (KHz)	Chain 2-99% bandwidth (KHz)
Low	4950	16.40	16.45
Mid	4965	16.40	16.45
High	4980	16.45	16.40

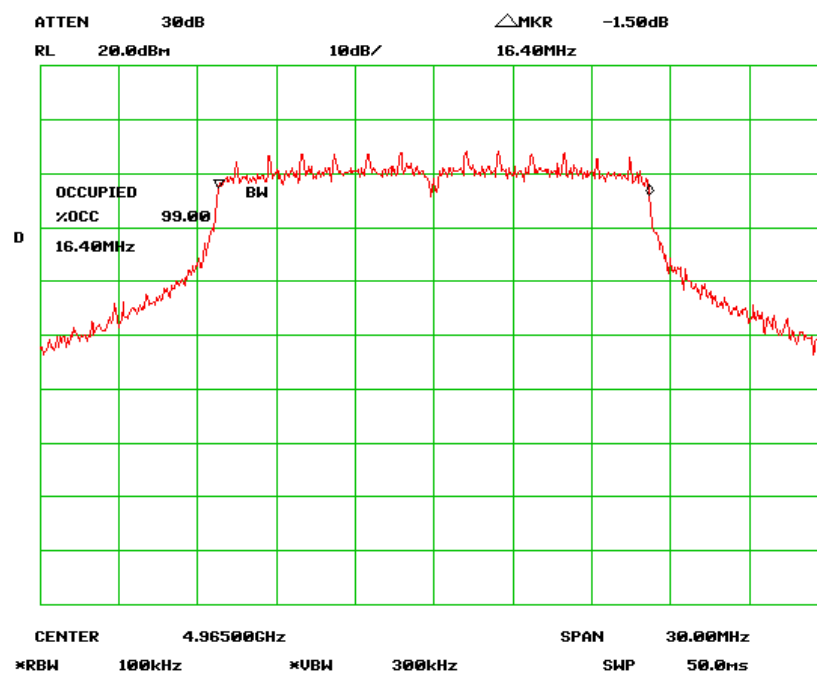
Refer to the attached plot

# Chain 1

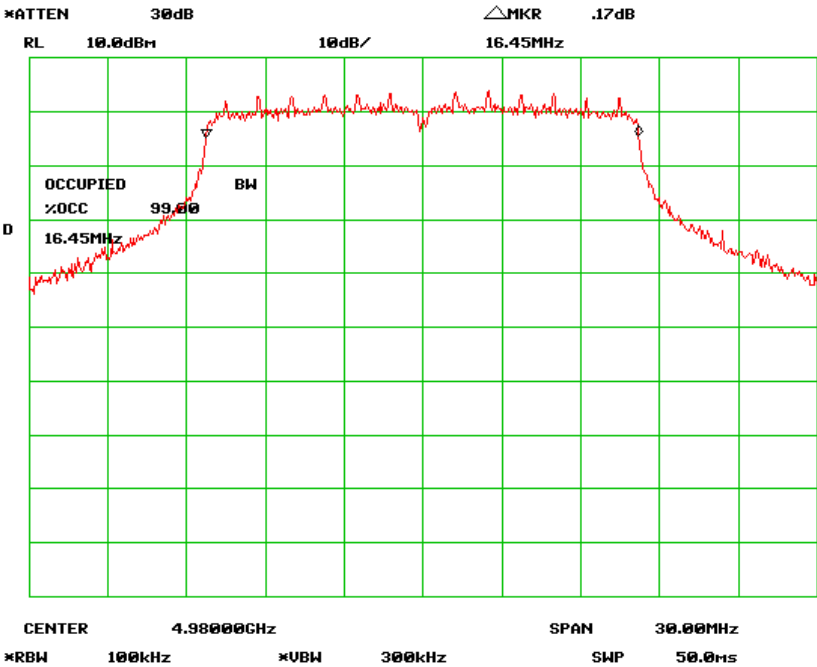
## 99% Bandwidth - Low Channel



## 99% Bandwidth - Mid Channel

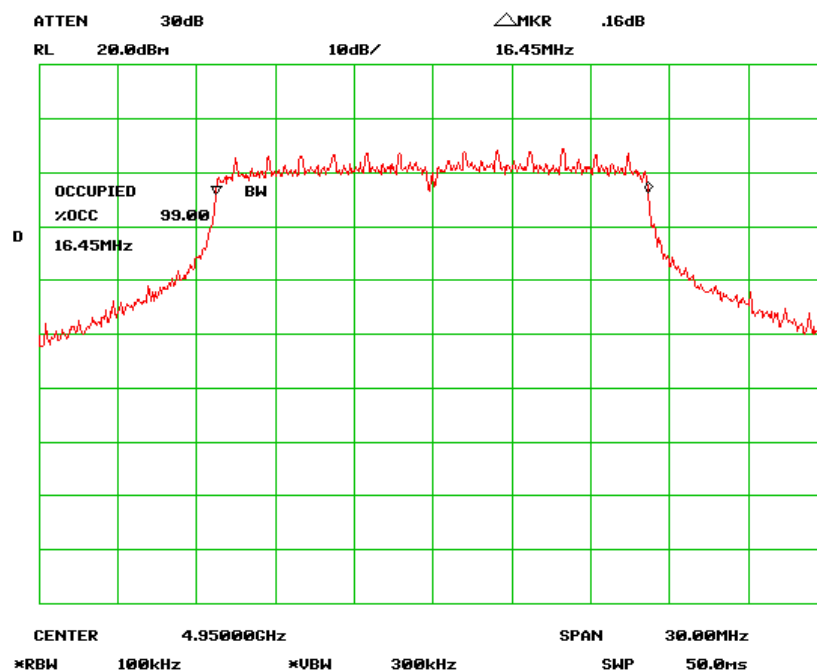


99% Bandwidth - High Channel

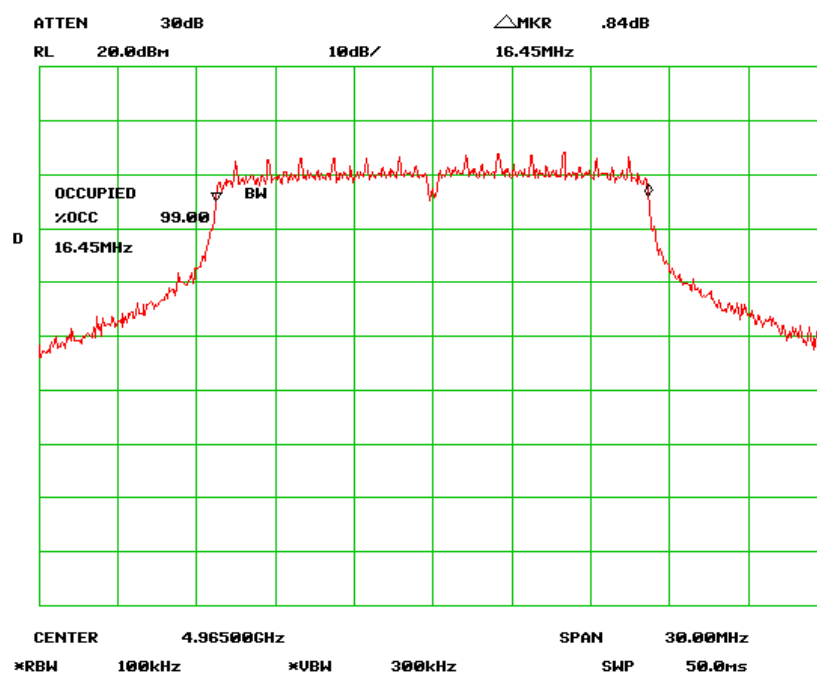


## Chain 2

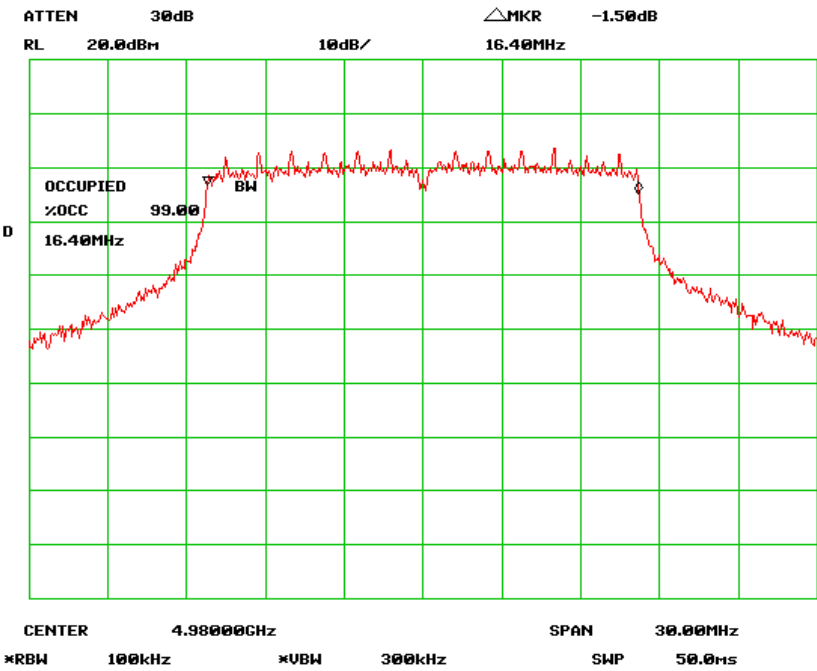
### 99% Bandwidth - Low Channel



### 99% Bandwidth - Mid Channel



99% Bandwidth - High Channel



## 5.4 Emission Mask

1. Conducted Measurement  
EUT was set for low , mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.  
Conducted Emissions Measurement Uncertainty
2. All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5\text{dB}$ .
3. Environmental Conditions
 

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
4. Test Date : April 11 & 17 2010  
Tested By : Choon Sian Ooi

**Standard Requirement:** 47 CFR §90.210

Emission Mask M. For high power transmitters (greater than 20 dBm) operating in the 4940–4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

- (1) On any frequency removed from the assigned frequency between 0–45% of the authorized bandwidth (BW): 0 dB.
- (2) On any frequency removed from the assigned frequency between 45–50% of the authorized bandwidth:  $56.8 \log (\% \text{ of } (BW)/45)$  dB.
- (3) On any frequency removed from the assigned frequency between 50–55% of the authorized bandwidth:  $26 + 14.5 \log (\% \text{ of } BW/50)$  dB.
- (4) On any frequency removed from the assigned frequency between 55–100% of the authorized bandwidth:  $32 + 31 \log (\% \text{ of } (BW)/55)$  dB.
- (5) On any frequency removed from the assigned frequency between 100–150% of the authorized bandwidth:  $40 + 5.7 \log (\% \text{ of } (BW)/100)$  dB.
- (6) On any frequency removed from the assigned frequency between above 150% of the authorized bandwidth: 50 dB or  $55 + 10 \log (P)$  dB, whichever is the lesser attenuation.

**Procedures:** The Emission mask were measured conducted using a spectrum analyzer at low, mid, and hi channels.

**Note:** Below are spectrum analyzer parameters setting for emission mask testing.

**RBW: 300 KHz**

**VBW: 30 KHz**

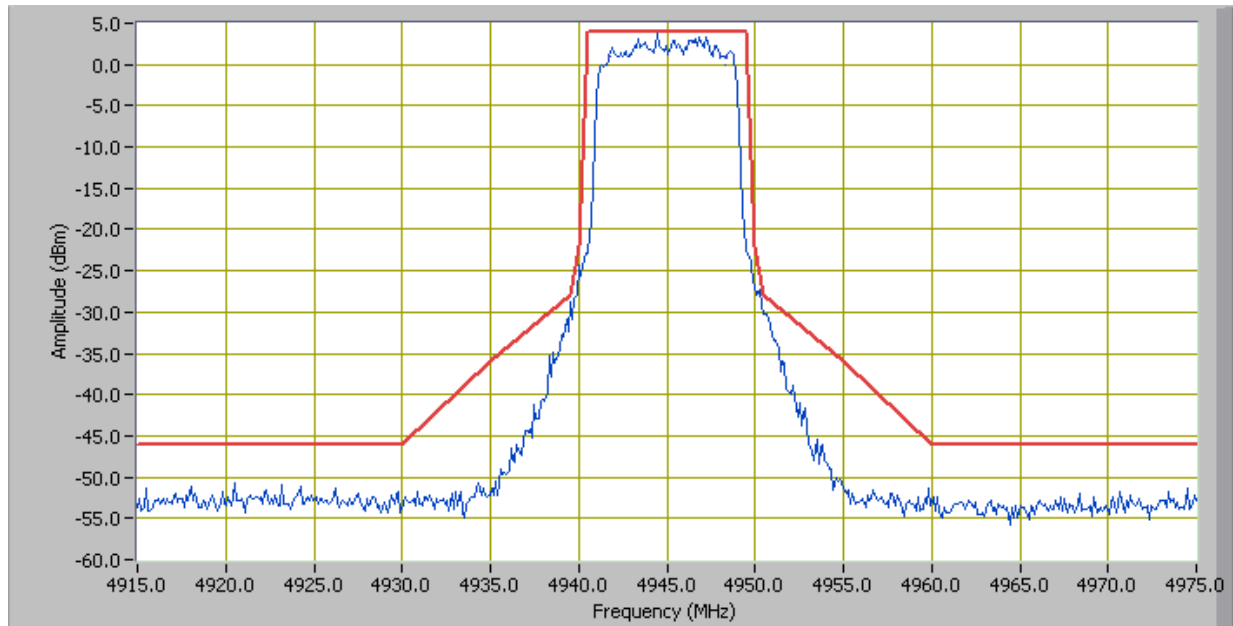
**Detector: Average power detector**



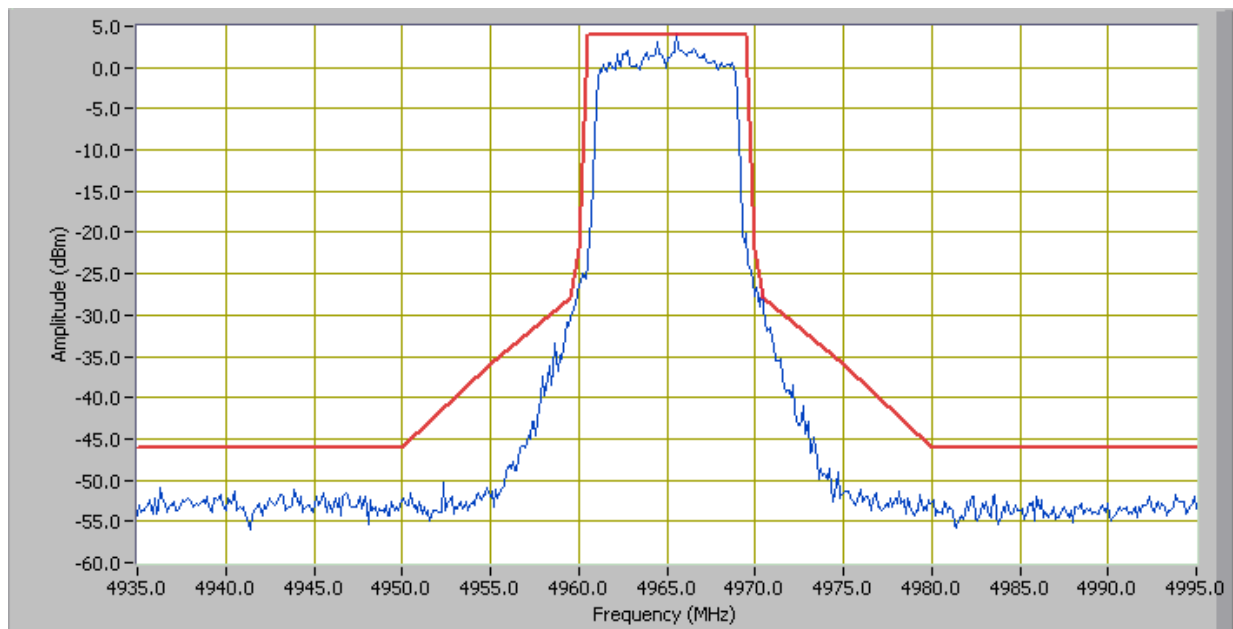
### Channel Bandwidth: 10MHz

Chain 1

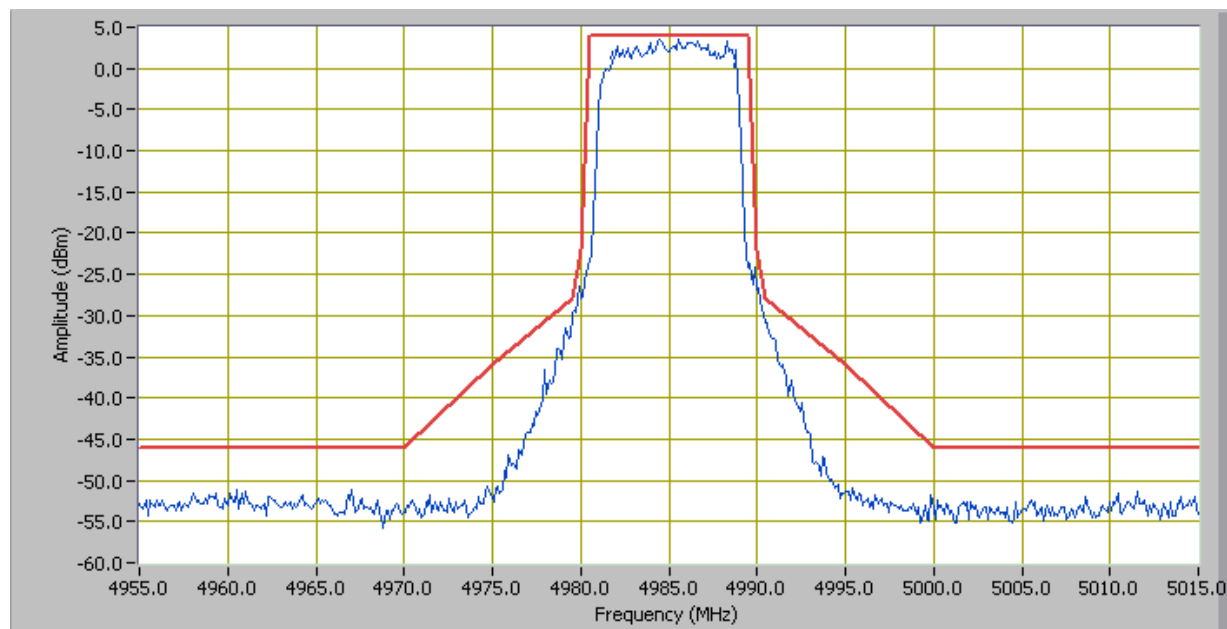
Low Channel



Mid Channel

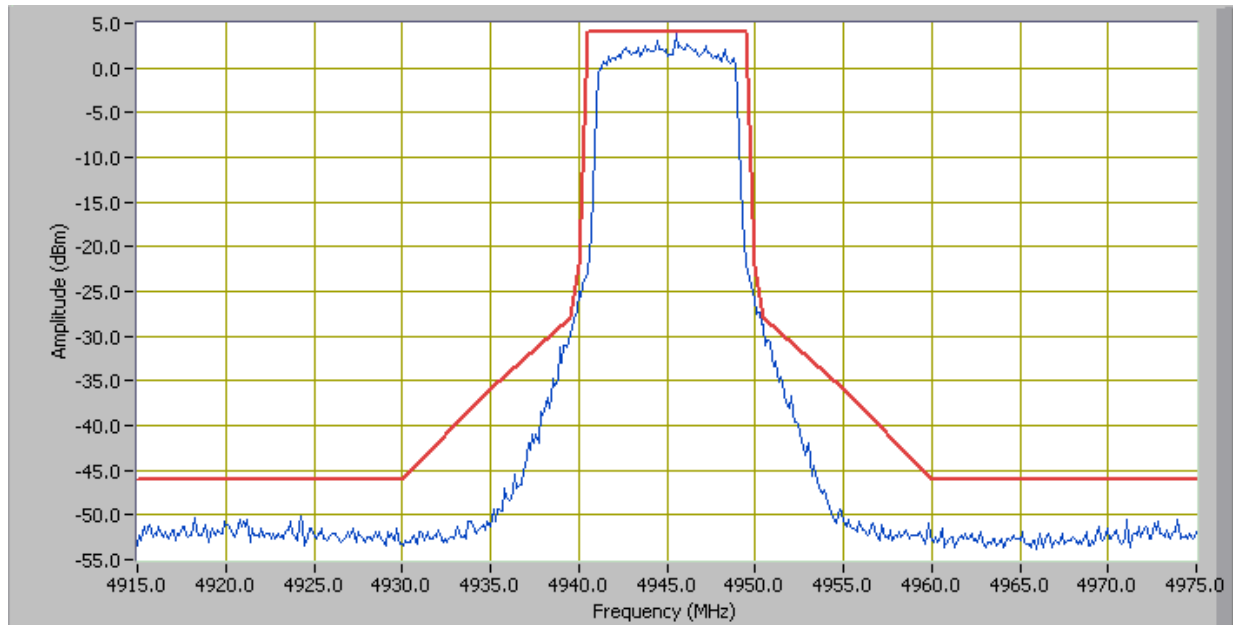


# High Channel

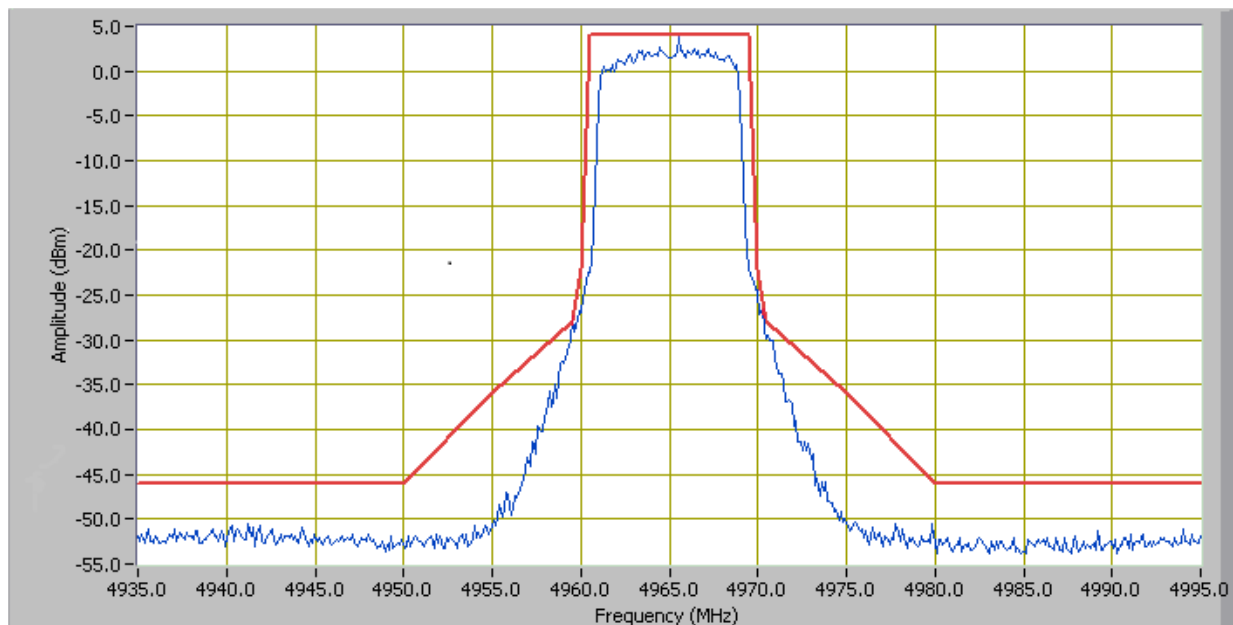


## Chain 2

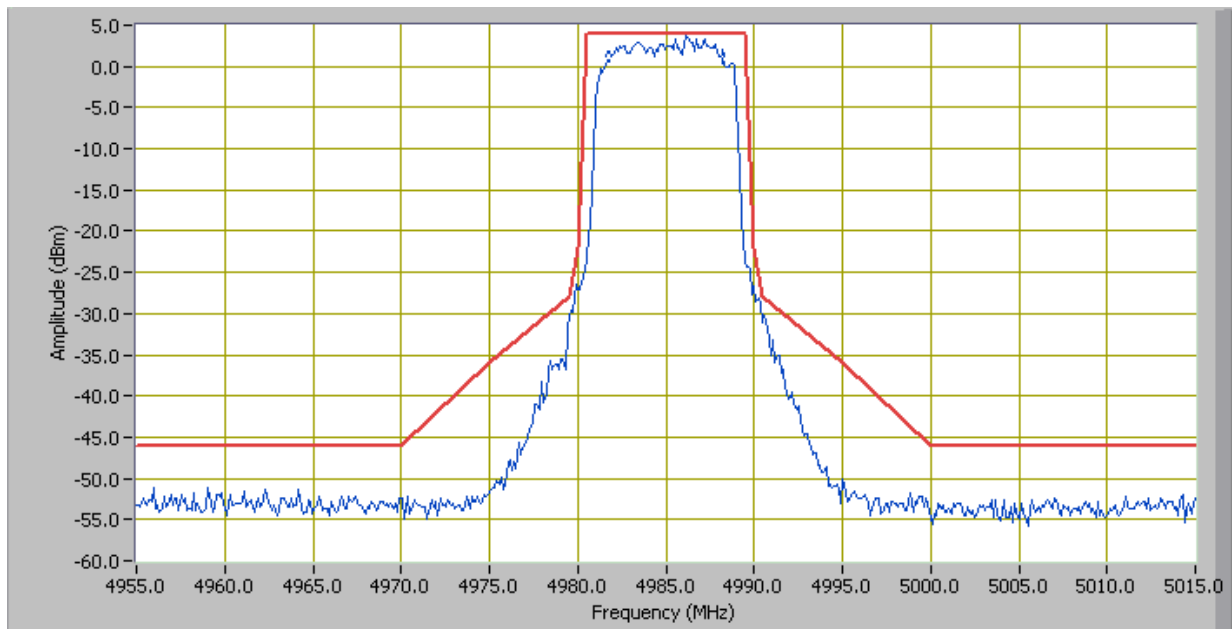
### Low Channel



### Mid Channel



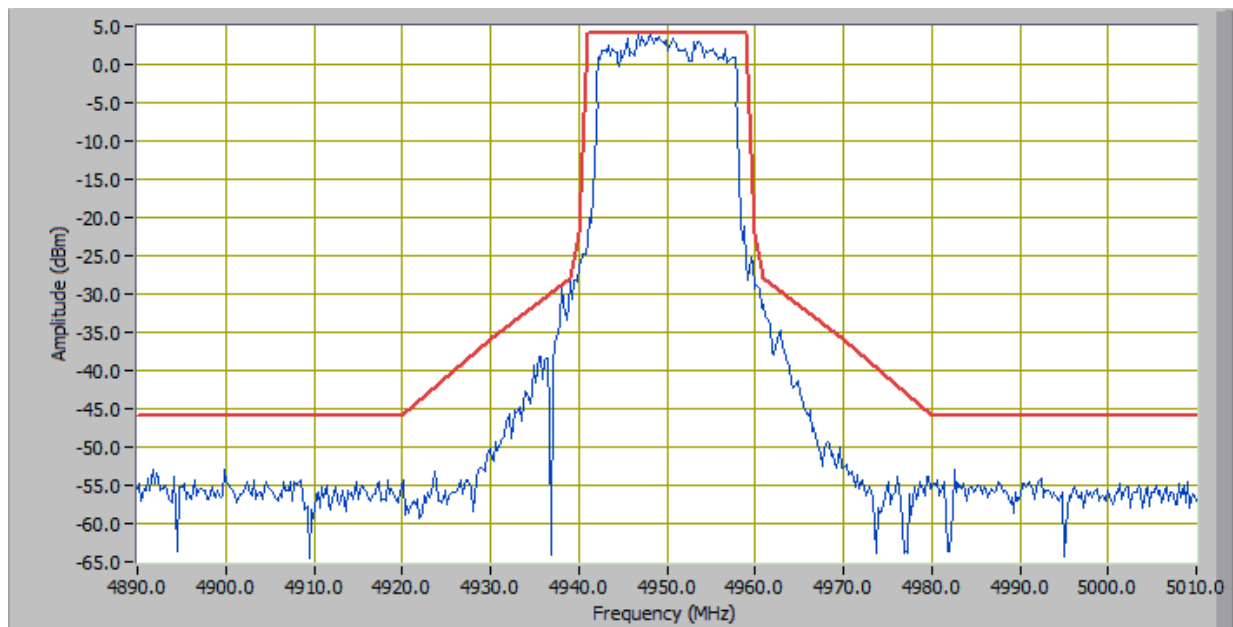
High Channel



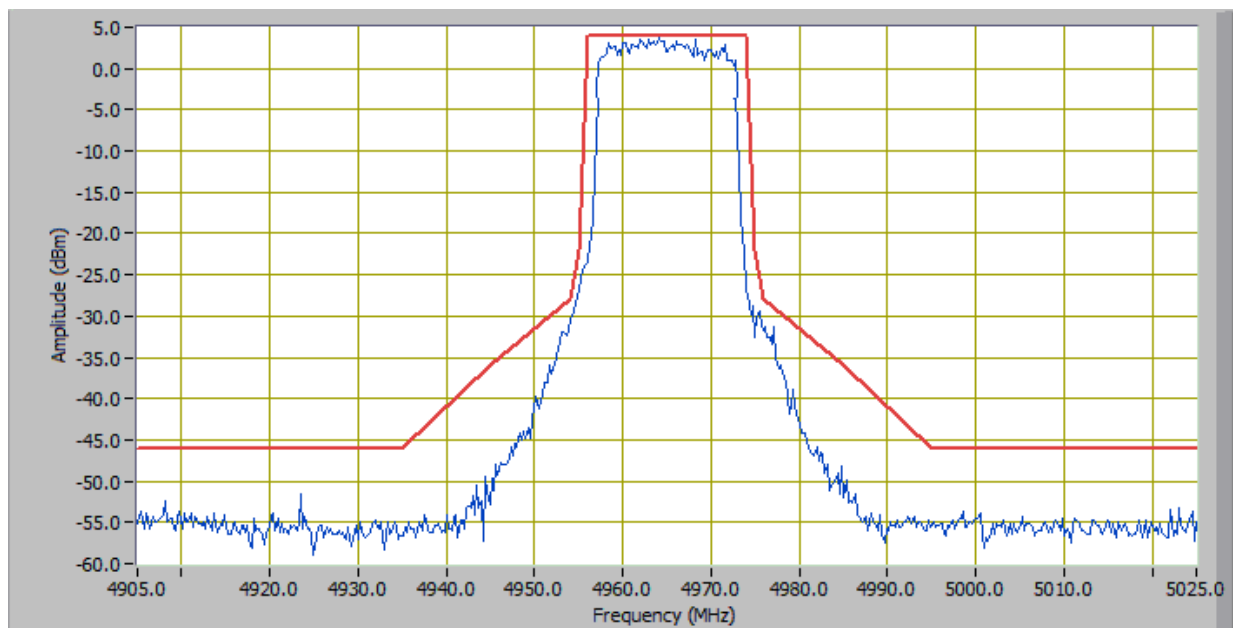
Channel Bandwidth: 20MHz

Chain 1

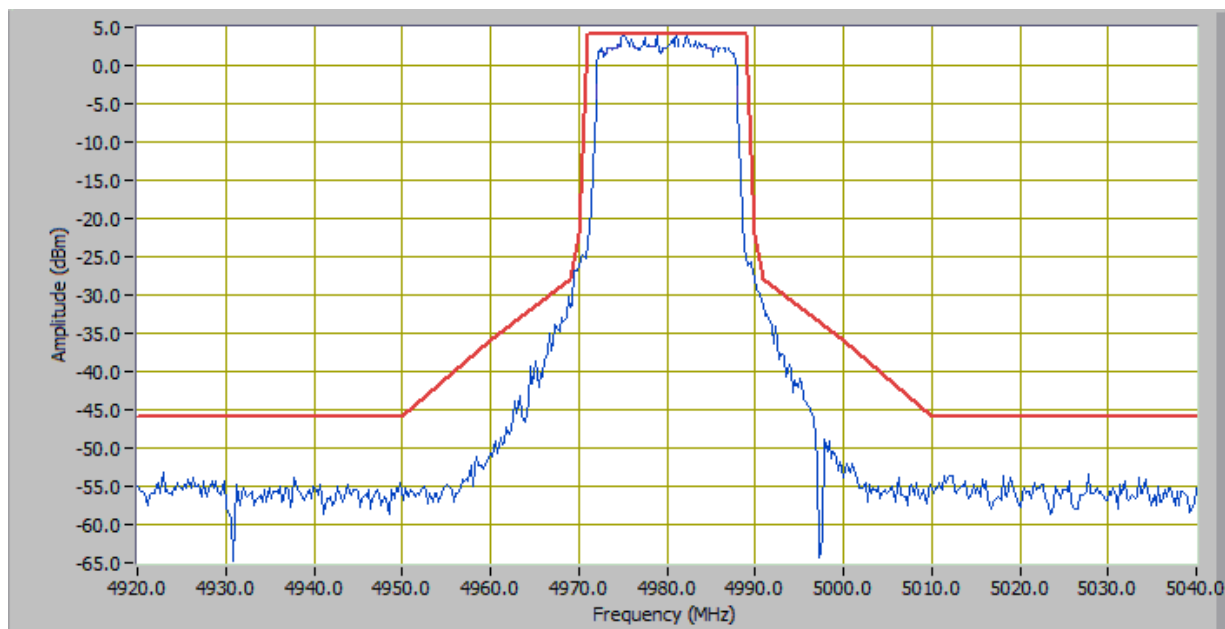
Low Channel



Mid Channel

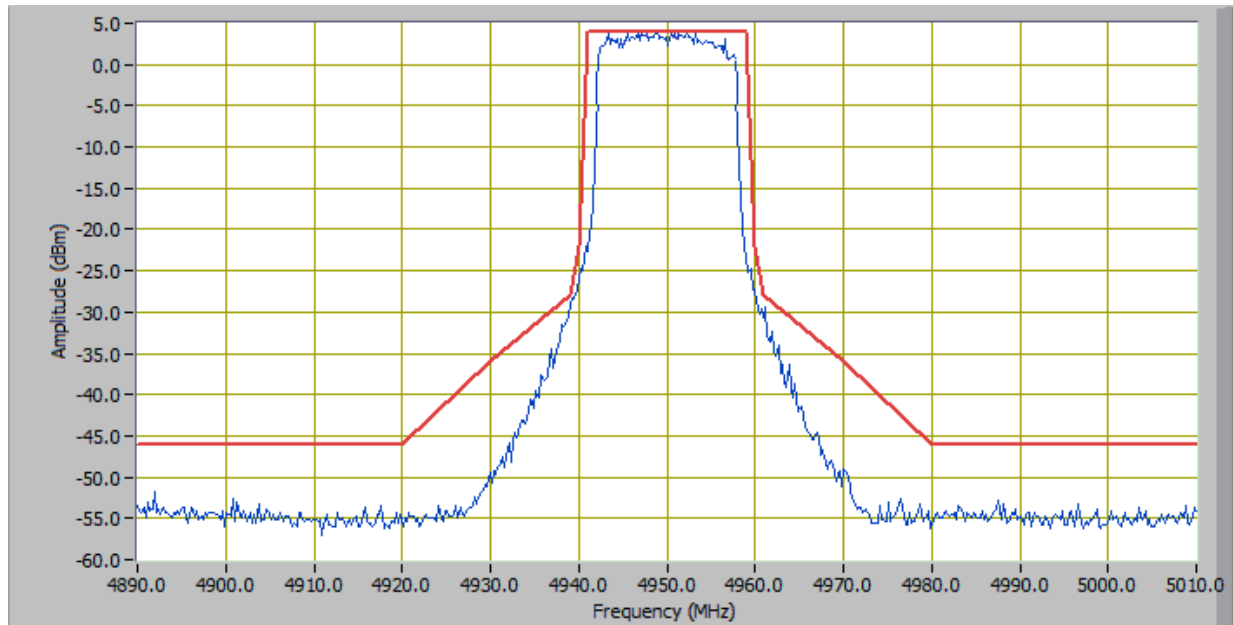


## High Channel

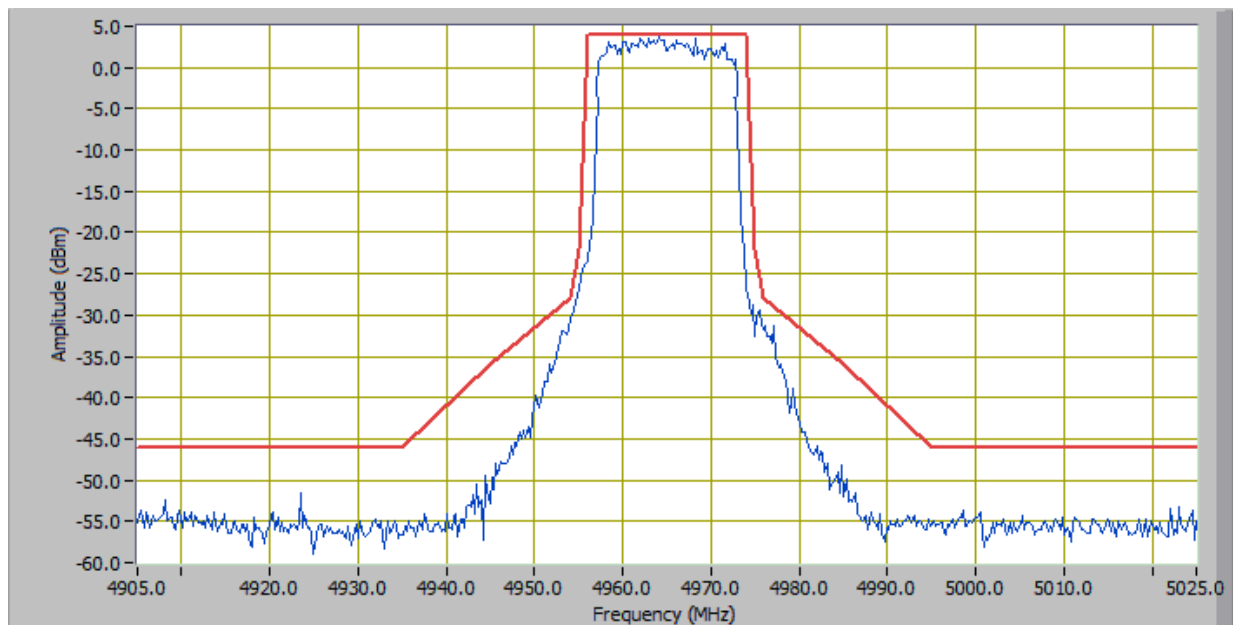


## Chain 2

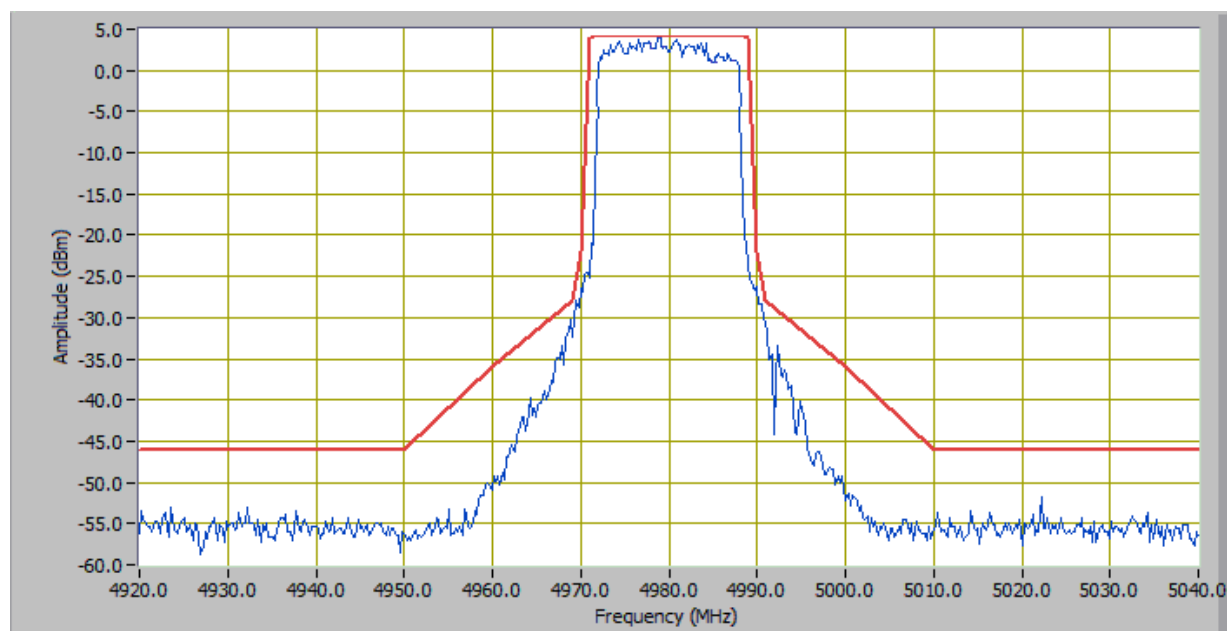
### Low Channel



### Mid Channel



# High Channel





## **5.5 Spurious Emissions at Antenna Terminals**

1. Conducted Measurement  
EUT was set for low, mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5\text{dB}$ .
3. Environmental Conditions

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
4. Test Date : April 11 & 17 2010  
Tested By : Choon Sian Ooi

**Standard Requirement:** 47 CFR §90.210

The power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

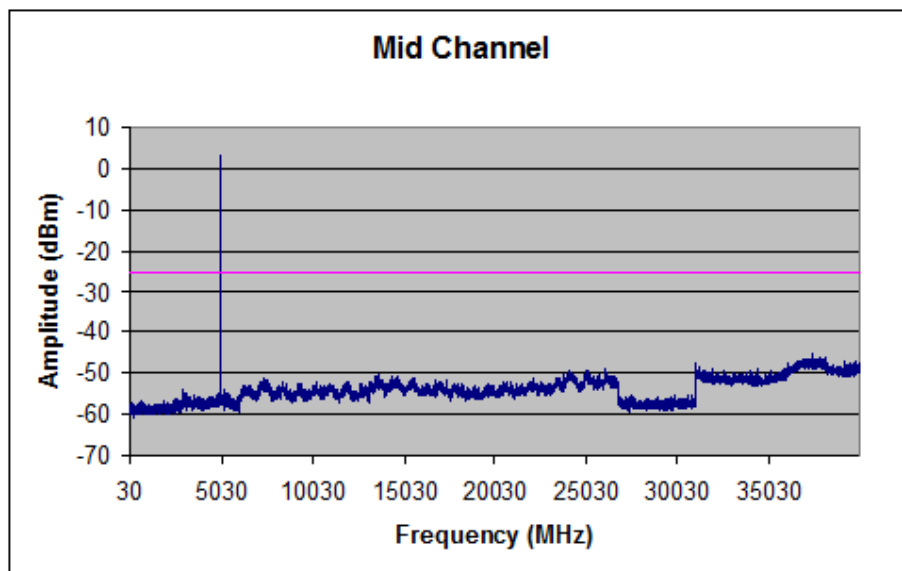
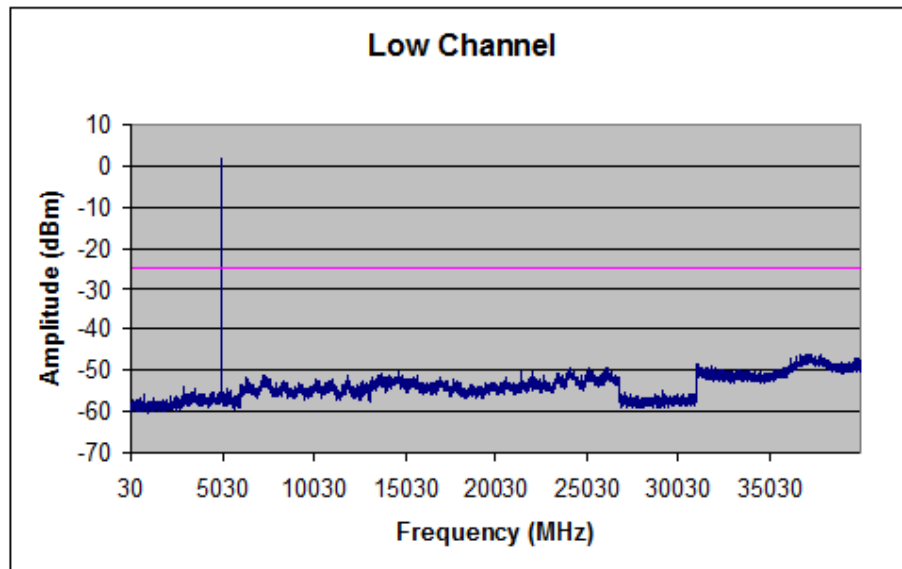
On any frequency removed from the assigned frequency between above 150% of the authorized bandwidth: 50 dB or  $55 + 10 \log (P)$  dB, whichever is the lesser attenuation.

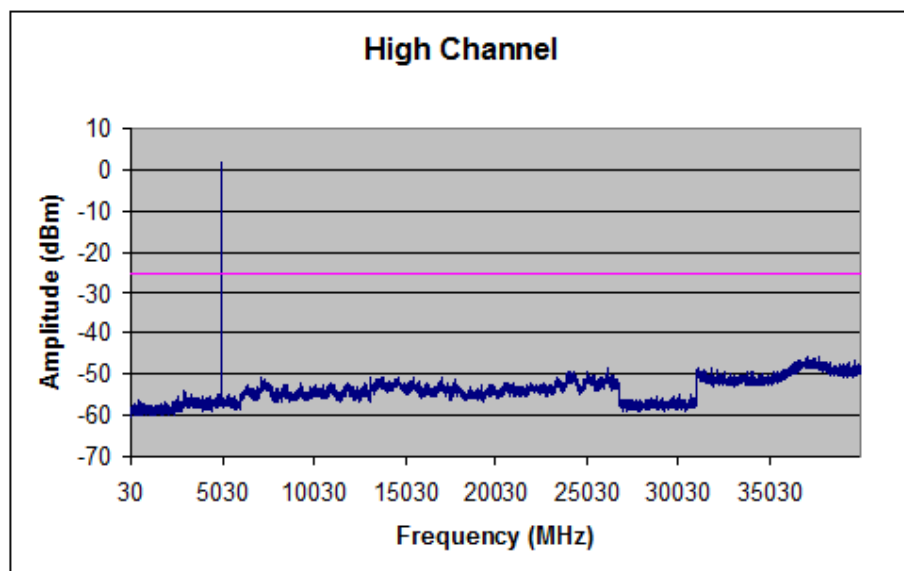
**Procedures:** The spurious emission at antenna terminals measurement was taken conducted using a spectrum analyzer.

Refer to the attached plots.

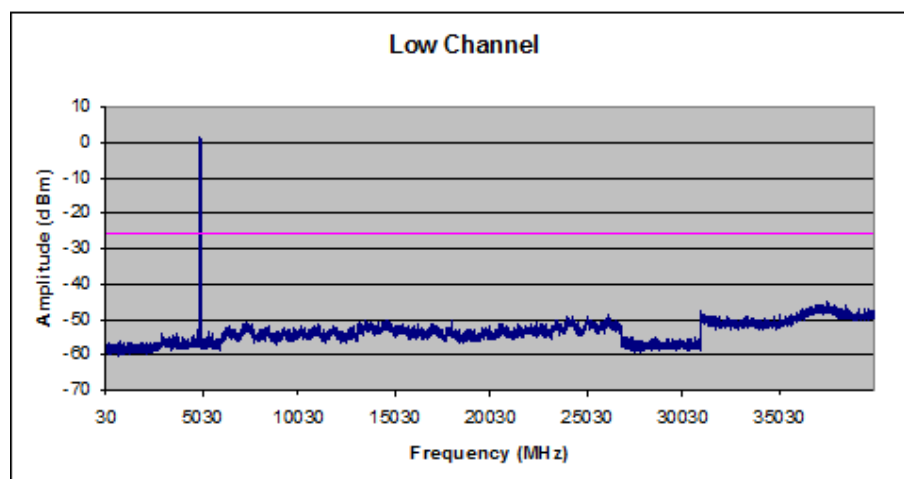
Operating channel bandwidth: 10MHz

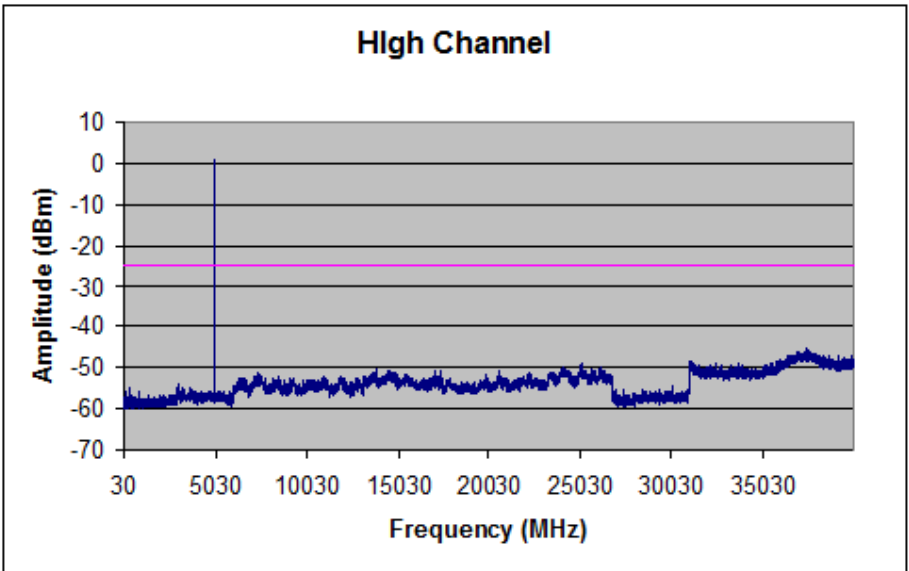
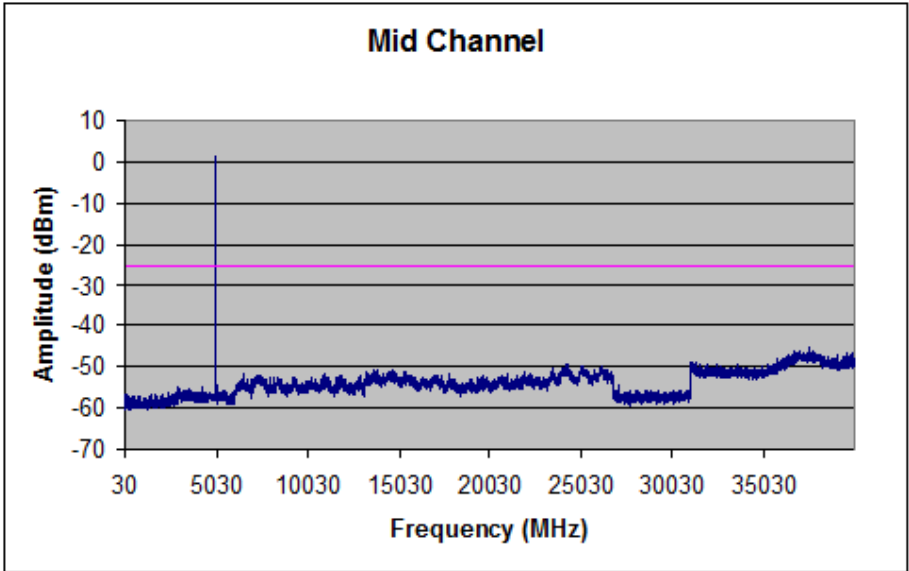
Chain 1





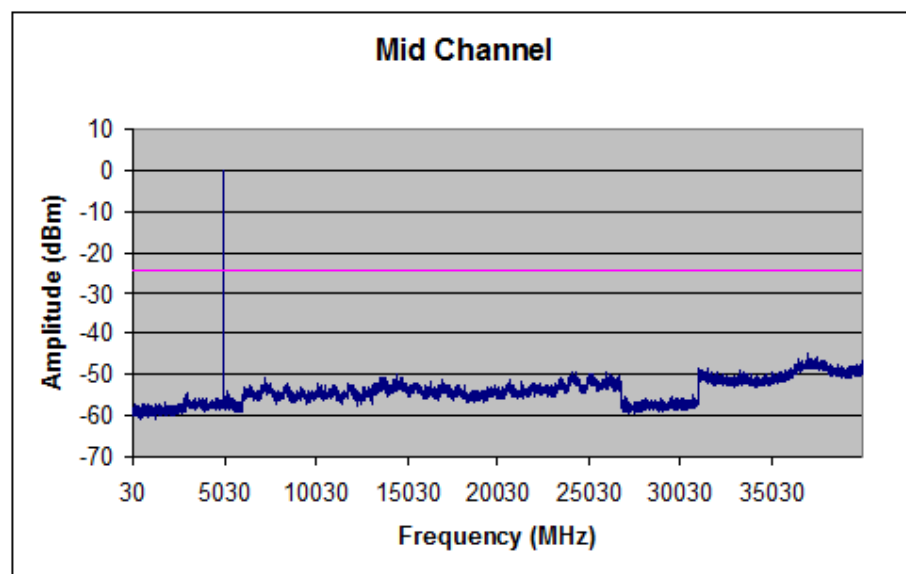
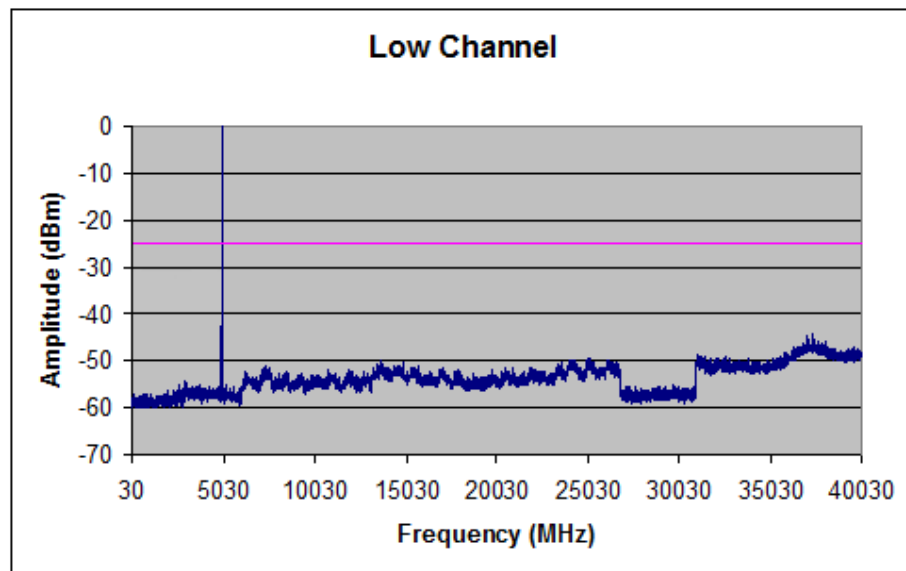
Chain 2

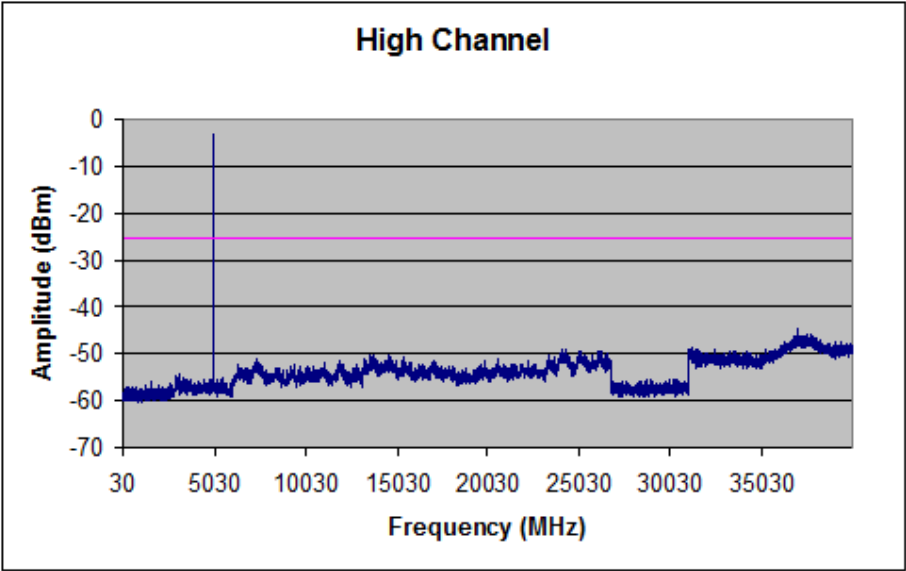




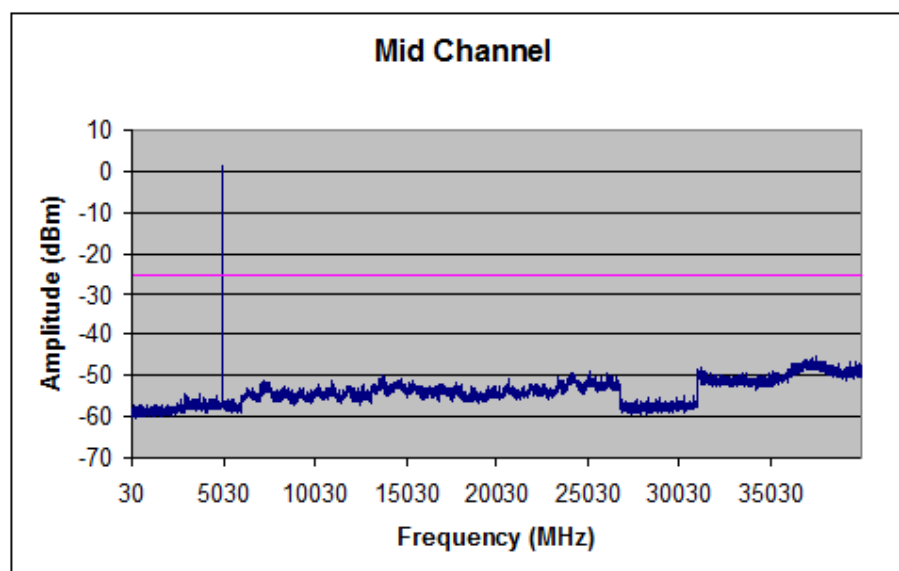
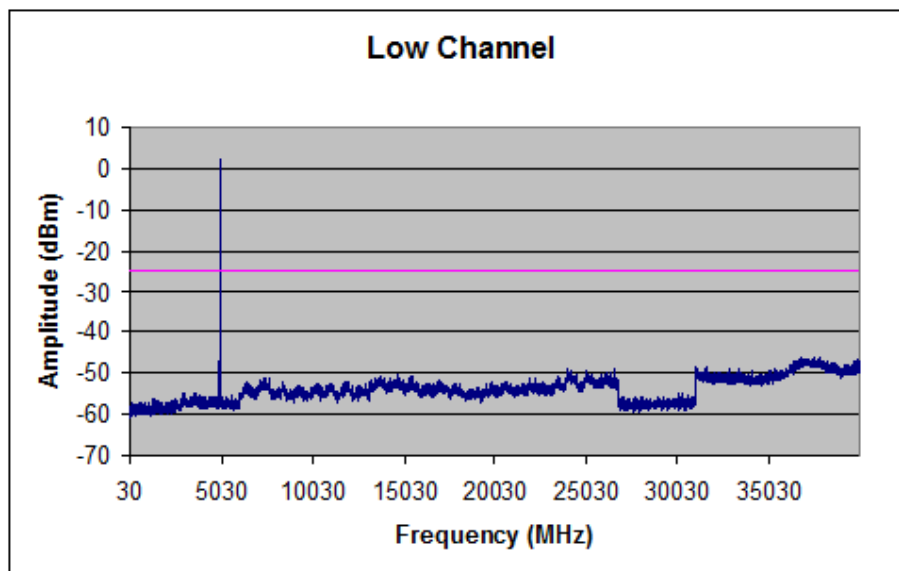
operating channel bandwidth: 20MHz

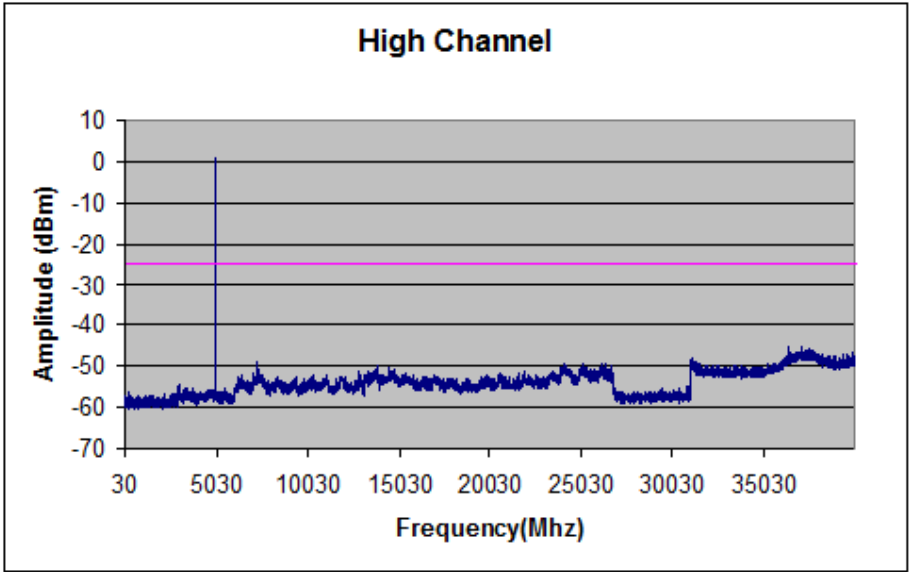
Chain 1





Chain 2







## **5.6 Peak Excursion Ratio**

1. Conducted Measurement  
EUT was set for mid channel.  
The spectrum analyzer was connected to the antenna terminal.  
Conducted Emissions Measurement Uncertainty
2. All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5\text{dB}$ .
3. Environmental Conditions

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
4. Test Date : April 11 & 17 2010  
Tested By : Choon Sian Ooi

**Standard Requirement:** 47 CFR §90.1215

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

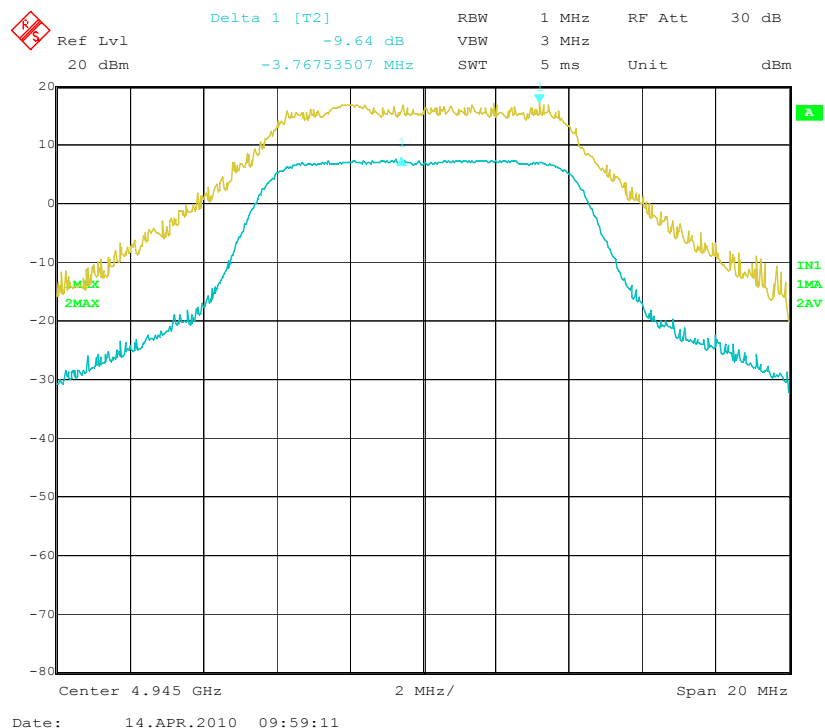
**Procedures:** The peak excursion was measured conducted using a spectrum analyzer mid channels.

**Test Result:** Pass

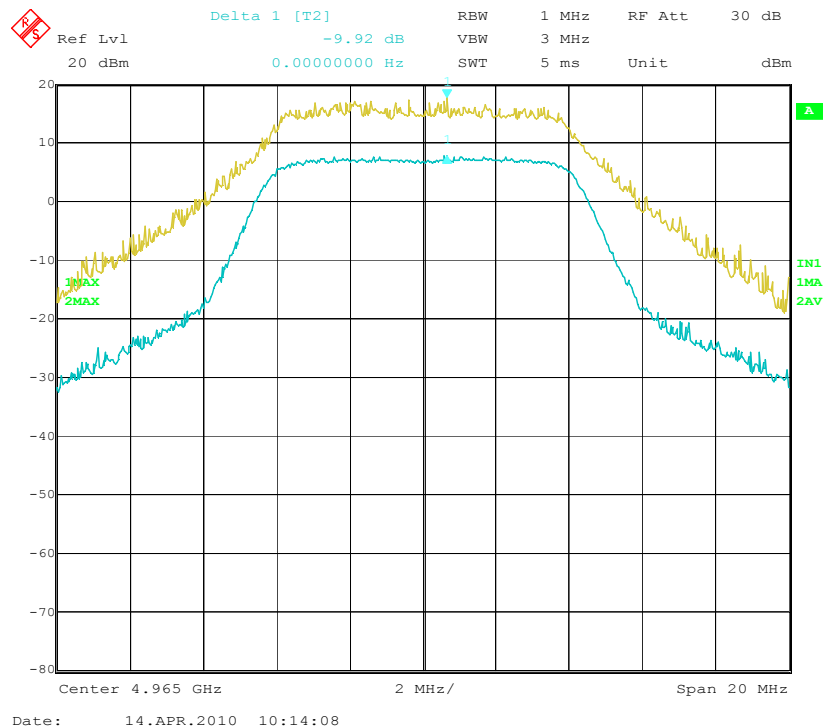
Channel Bandwidth: 10MHz

Chain 1

Low Channel

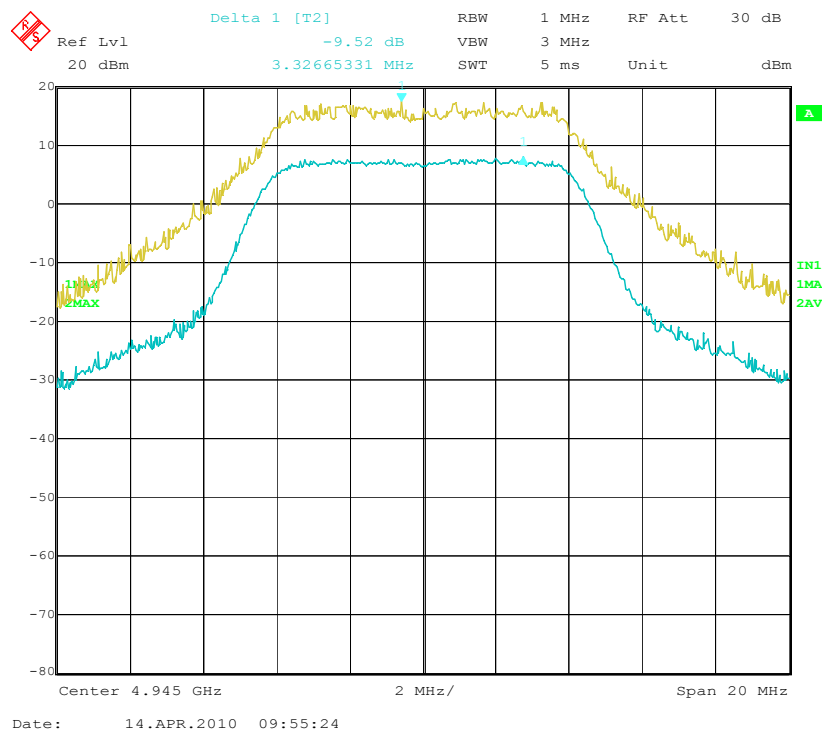


Mid Channel

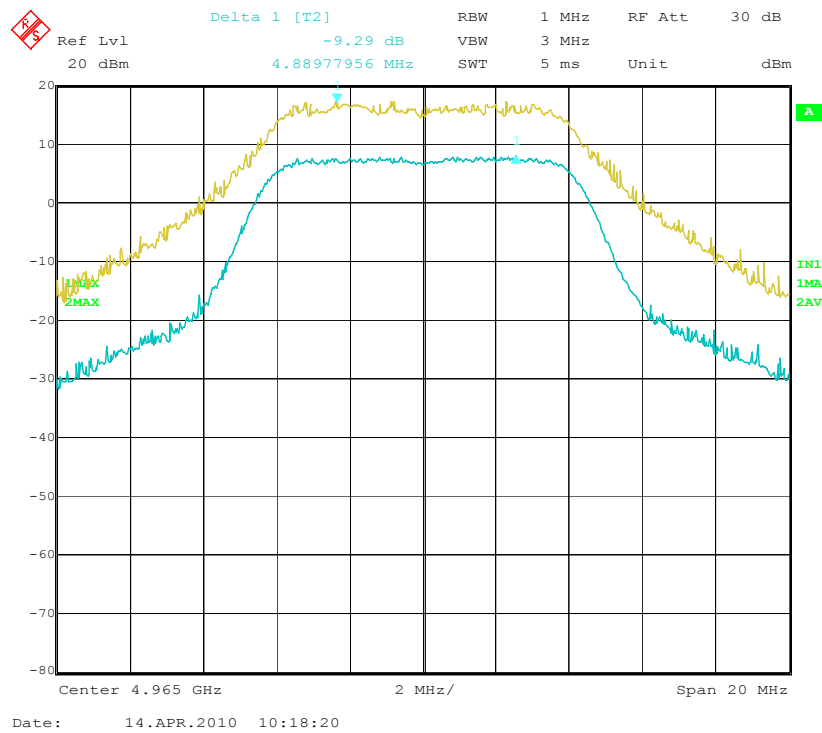


Chain 2

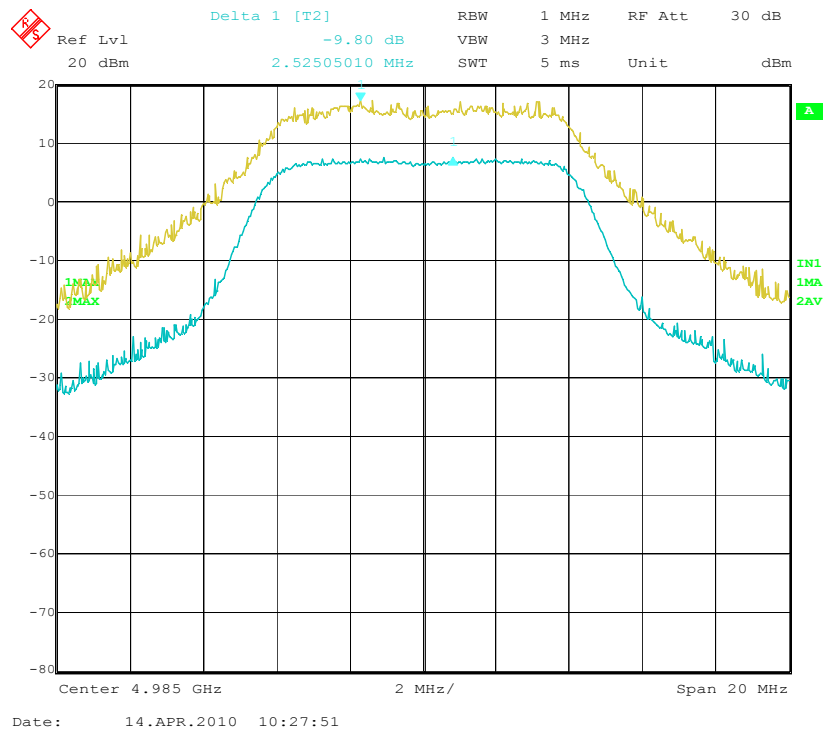
Low Channel



Mid Channel



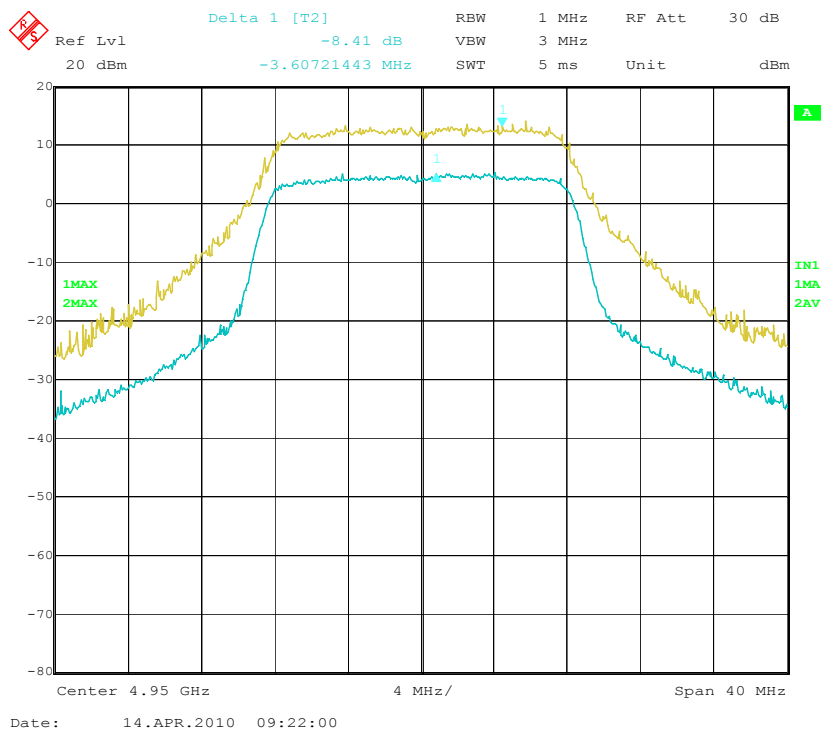
High Channel



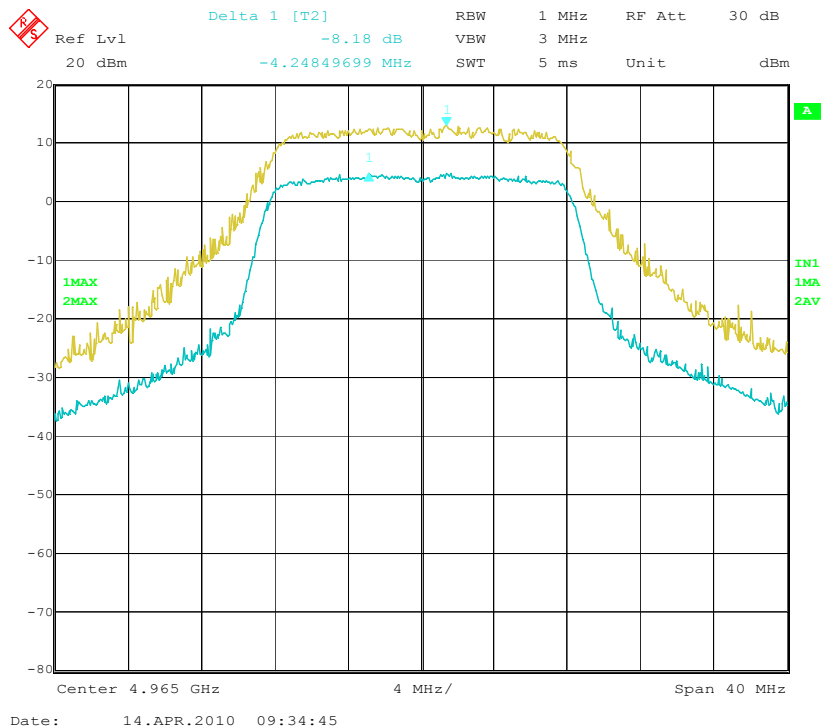
Channel Bandwidth: 20MHz

Chain 1

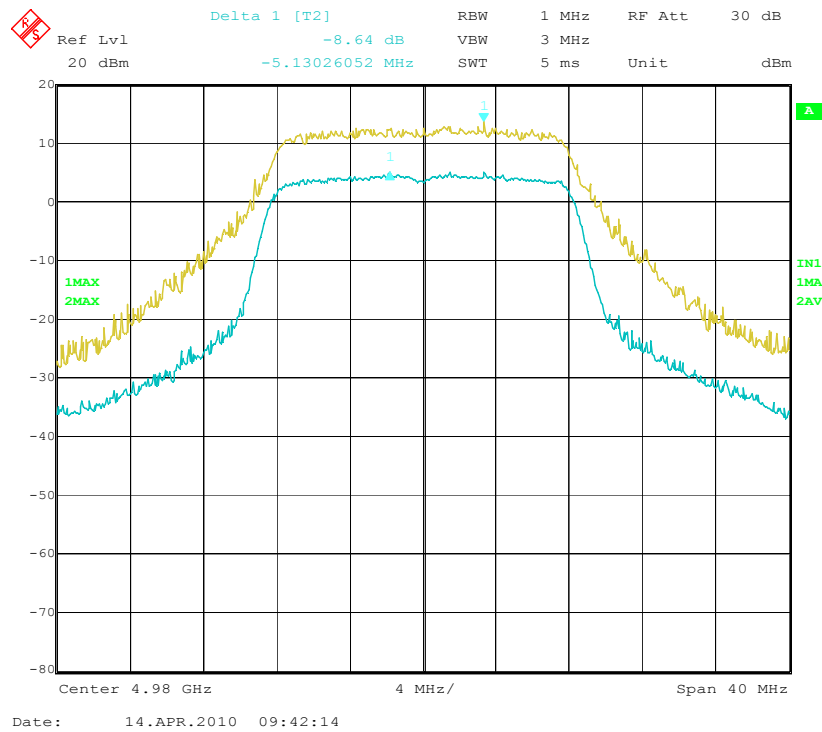
Low Channel



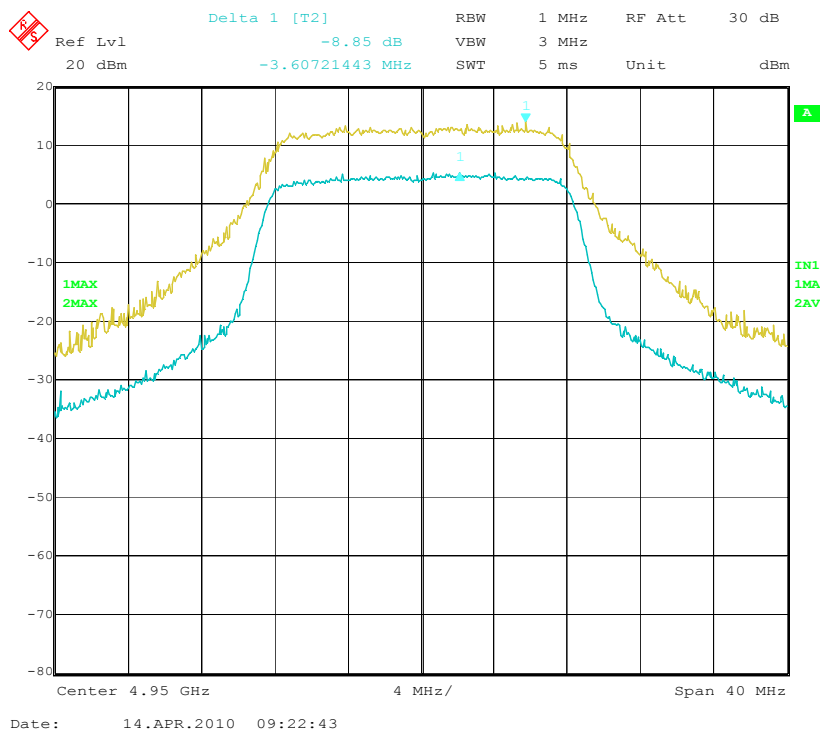
Mid Channel



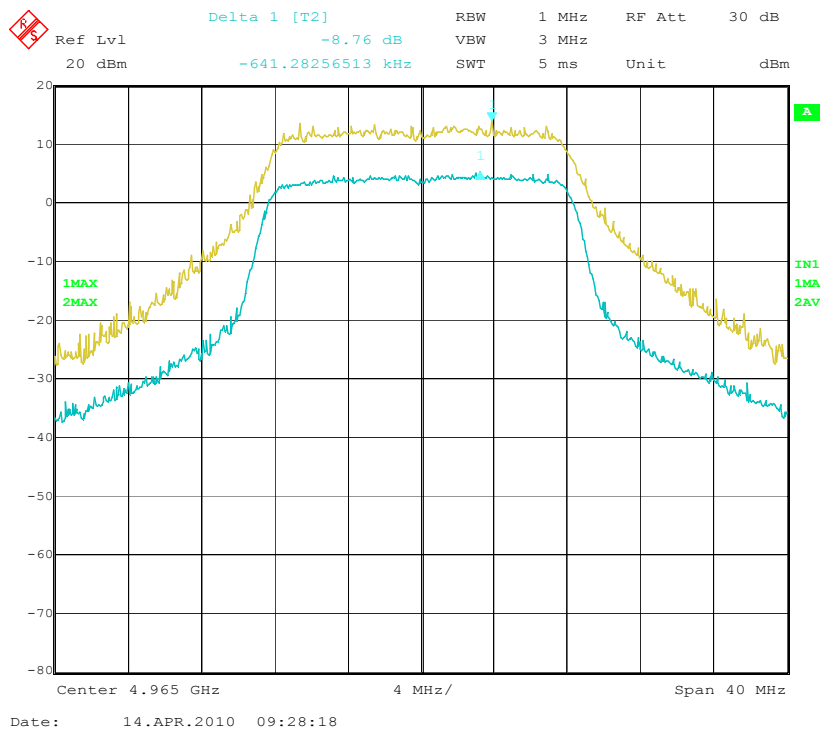
High Channel



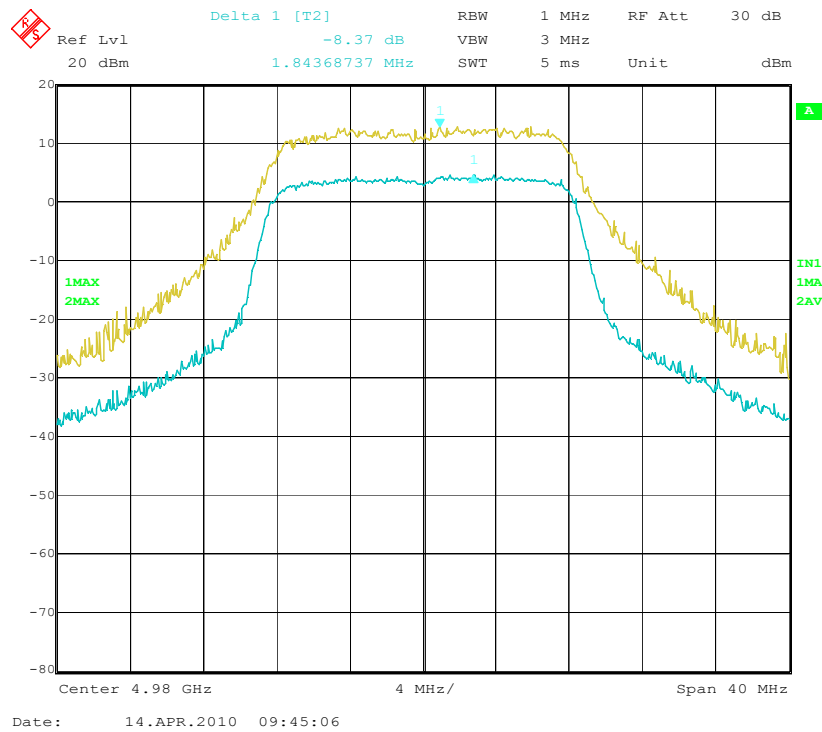
## Low Channel



## Mid Channel



High Channel





## **5.7 Field Strength of spurious, Radiation (Transmitter)**

1. Radiated Measurement  
EUT was set for low, mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.
2. Radiated Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above ( 3m & 10m) is +/-6dB.
3. Environmental Conditions
 

Temperature	23°C - 25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
4. Test Date : April 11 & 17 2010  
Tested By : Choon Sian Ooi

**Standard Requirement :** 47 CFR §90.210

On any frequency removed from the assigned frequency between above 150% of the authorized bandwidth: 50 dB or  $55 + 10 \log (P)$  dB, whichever is the lesser attenuation.

**Procedures:** ANSI/TIA/EIA 603 Clause 3.2.12

**Test Result:** Pass

#### Below 1GHz

Frequency(MHz)	Azimuth	Antenna Polarity	Antenna Height (cm)	ERP (dBm)	ERP Limit (dBm)	Margin (dB)
116.85	8.00	H	228.00	-49.31	-25.7	-23.61
75.19	153.00	H	308.00	-55.98	25.7	-81.68
120.31	165.00	H	263.00	-52.93	25.7	-78.63
87.58	311.00	H	391.00	-57.19	25.7	-82.89
92.84	20.00	V	391.00	-55.08	25.7	-80.78
107.26	24.00	V	391.00	-57.87	25.7	-83.57

#### Above 1GHz

#### Channel Bandwidth 10MHz

#### Low Channel

Frequency	Reading	Direction	Height	Polar	Antenna Loss	Cable loss	Amplifier	ERP			
GHz	(dBuV/m)	Degree	Meter	H / V	(dB)	(dB)	(dB)	(dBm)	Limit (dBm)	Margin	Comments
9.89	62.6	285	1.5	v	38.9	10.26	32.32	-32.7	-25.3	-7.4	Peak
9.89	58.6	253	1.5	h	38.9	10.26	32.32	-36.7	-25.3	-11.4	Peak

#### Mid Channel

Frequency	Reading	Direction	Height	Polar	Antenna Loss	Cable loss	Amplifier	ERP			
GHz	(dBuV/m)	Degree	Meter	H / V	(dB)	(dB)	(dB)	(dBm)	Limit (dBm)	Margin	Comments
9.93	61.32	115	1.1	v	38.9	10.26	32.32	-33.98	-25.3	-8.68	Peak
9.93	59.65	235	1.7	h	38.9	10.26	32.32	-35.65	-25.3	-10.35	Peak

#### High Channel

Frequency	Reading	Direction	Height	Polar	Antenna Loss	Cable loss	Amplifier	ERP			
GHz	(dBuV/m)	Degree	Meter	H / V	(dB)	(dB)	(dB)	(dBm)	Limit (dBm)	Margin	Comments
9.97	60.98	115	1.1	v	38.9	10.26	32.32	-34.32	-25.3	-9.02	Peak
9.97	60.19	235	1.7	h	38.9	10.26	32.32	-35.11	-25.3	-9.81	Peak

#### Above 1GHz

## Channel Bandwidth 20MHz

### Low Channel

Frequency	Reading	Direction	Height	Polar	Antenna Loss	Cable loss	Amplifier	ERP			
GHz	(dBuV/m)	Degree	Meter	H / V	(dB)	(dB)	(dB)	(dBm)	Limit (dBm)	Margin	Comments
9.9	59.98	285	1.5	v	38.9	10.26	32.32	-35.32	-25.00	-10.32	Peak
9.9	59.37	253	1.5	h	38.9	10.26	32.32	-35.93	-25.00	-10.93	Peak

### Mid Channel

Frequency	Reading	Direction	Height	Polar	Antenna Loss	Cable loss	Amplifier	ERP			
GHz	(dBuV/m)	Degree	Meter	H / V	(dB)	(dB)	(dB)	(dBm)	Limit (dBm)	Margin	Comments
9.93	61.19	271	1	v	38.9	10.26	32.32	-34.11	-25.00	-9.11	Peak
9.93	60.97	159	1	h	38.9	10.26	32.32	-34.33	-25.00	-9.33	Peak

### High Channel

Frequency	Reading	Direction	Height	Polar	Antenna Loss	Cable loss	Amplifier	ERP			
GHz	(dBuV/m)	Degree	Meter	H / V	(dB)	(dB)	(dB)	(dBm)	Limit (dBm)	Margin	Comments
9.96	62.08	115	1.1	v	38.9	10.26	32.32	-33.22	-25.00	-8.22	Peak
9.96	61.4	235	1.7	h	38.9	10.26	32.32	-33.9	-25.00	-8.9	Peak

## 5.8 Receiver Spurious Emission

1. Radiated Measurement  
EUT was set for low , mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.  
Radiated Emissions Measurement Uncertainty
2. All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above ( 3m & 10m) is +/-6dB.
3. Environmental Conditions
 

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
4. Test Date : April 11 & 17 2010  
 Tested By : Choon Sian Ooi

**Standard Requirement:** RSS-111, RSS-GEN Section 6

**Procedures:** The EUT was set to transmit at the highest output power. The EUT was set to transmit at mid channel. Note that setting the channel other than mid, the spurious emissions are the same.

**Test Result:** Pass

equency(MHz)	Azimuth	Antenna Polarity	Antenna Height (cm)	Final Field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dB)
75.58	47.00	V	295.00	37.15	40.00	-2.85
115.27	21.00	H	257.00	43.14	43.50	-0.36
118.32	171.00	H	391.00	38.94	43.50	-4.56
87.61	141.00	H	369.00	38.15	40.00	-1.85
92.32	131.00	H	391.00	39.56	43.50	-3.94
294.53	16.00	H	107.00	43.14	46.00	-2.86

## 5.9 Peak Power Spectral Density

1. Conducted Measurement  
TIA/EIA-603-C 2.2.19  
Conducted Emissions Measurement Uncertainty
2. All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5$ dB.
3. Environmental Conditions
 

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
4. Test Date : April 11 & 17 2010  
Tested By : Choon Sian Ooi

**Standard Requirement:** 47 CFR §90.1215

(a)(1) The maximum conducted output power should not exceed:

Channel bandwidth (MHz)	Low power maximum conducted output power (dBm)	High power maximum conducted output power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

(2) High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. High power devices using channel bandwidths other than those listed above are permitted; however, they are limited to peak power spectral density of 21 dBm/MHz. If transmitting antennas of directional gain greater than 9 dBi are used, both the maximum conducted output power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point and point-to-multipoint operations (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the maximum conducted output power or spectral density. Corresponding reduction in the maximum conducted output power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

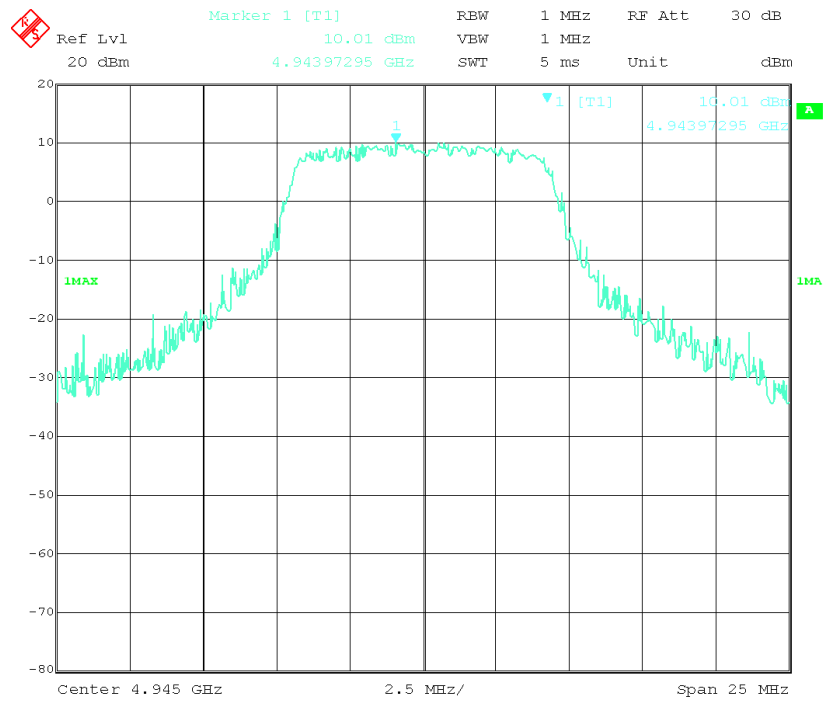
**Procedures:** The peak value measured in a 1MHz measurement bandwidth.

Channel bandwidth: 10MHz

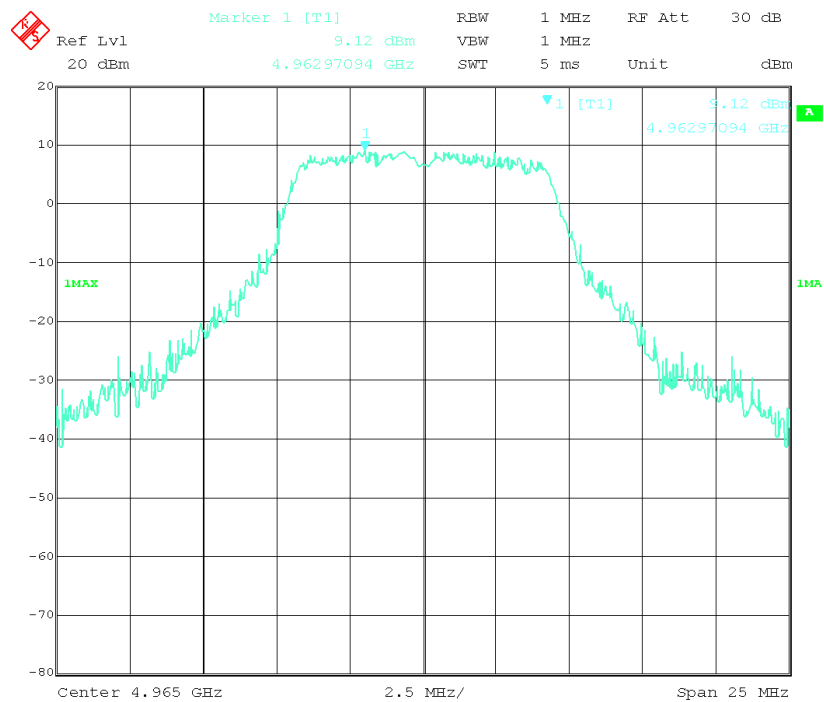
Channel	Channel Frequency (MHz)	PSD-Chain 1 (dBm)	PSD- Chain 2 (dBm)	Total PSD (dBm)
Low	4945	10.01	9.02	12.55
Mid	4965	9.12	9.12	12.13
High	4985	9.05	8.76	11.92

Channel Bandwidth: 10MHz

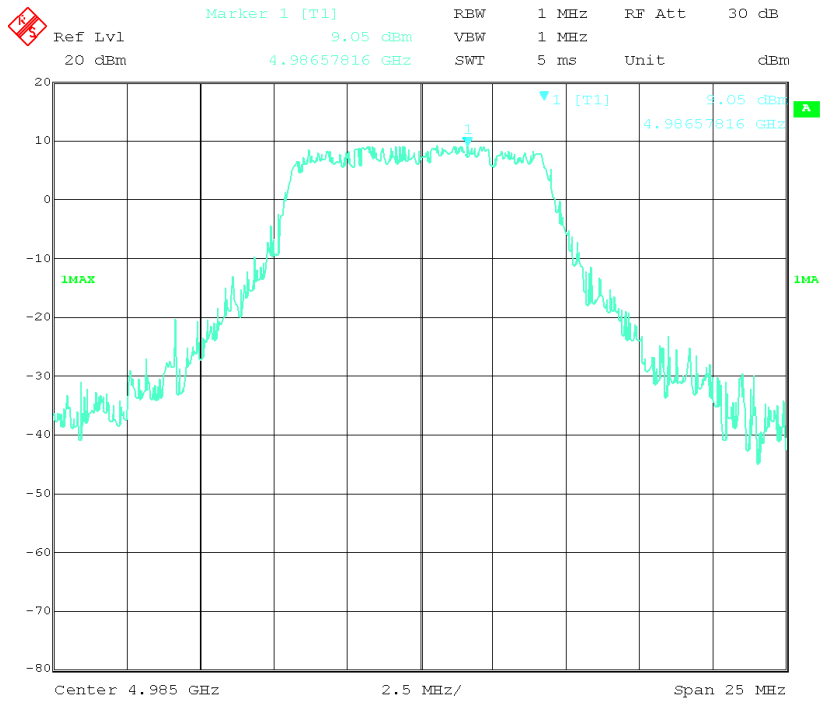
Chain 1  
Low Channel



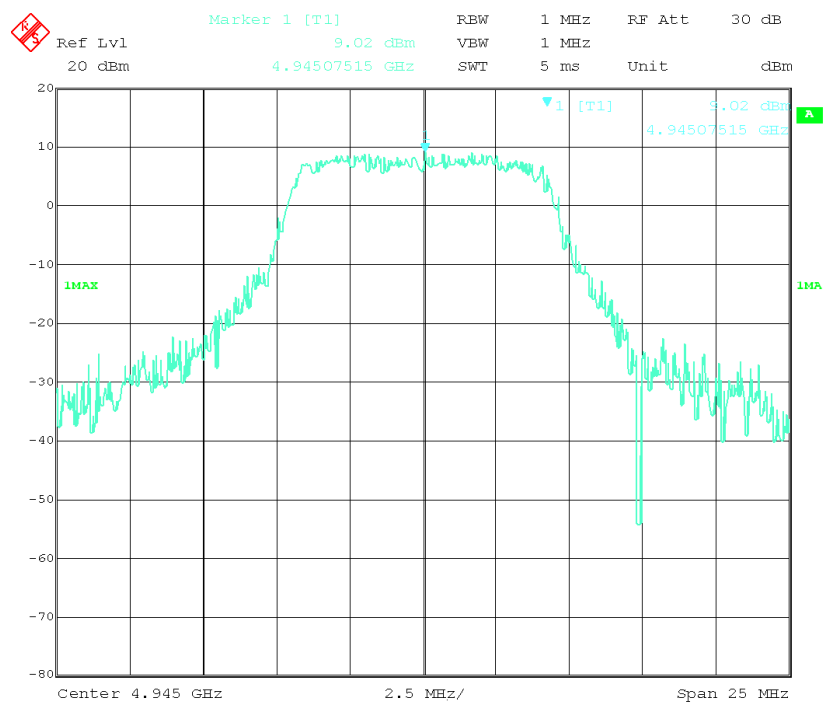
Mid Channel



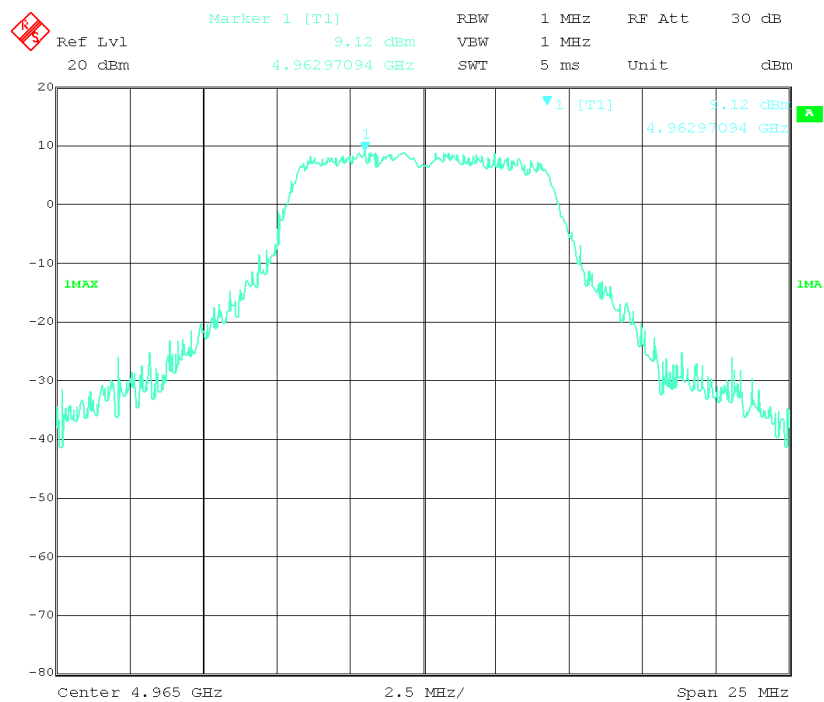
High Channel



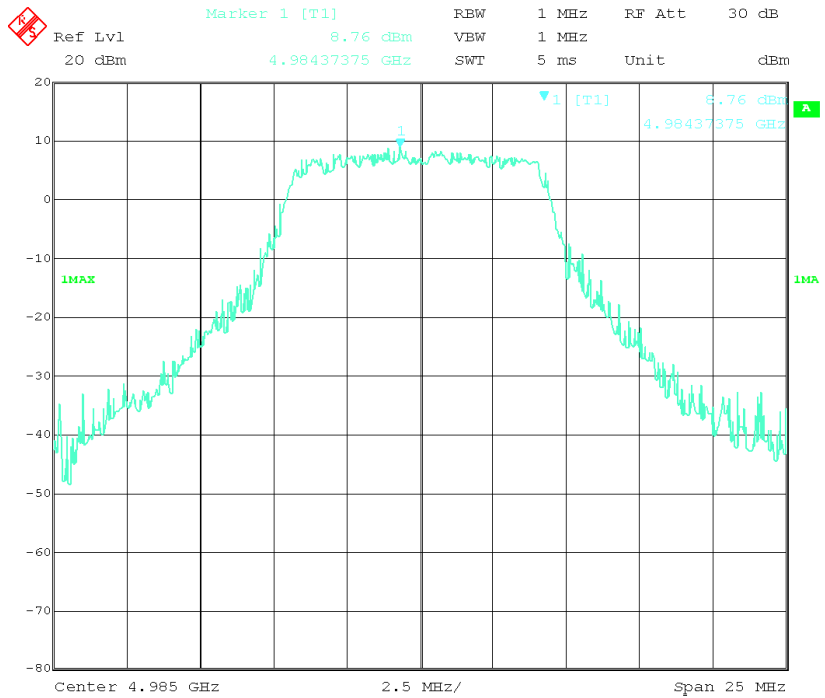




Mid Channel



High Channel

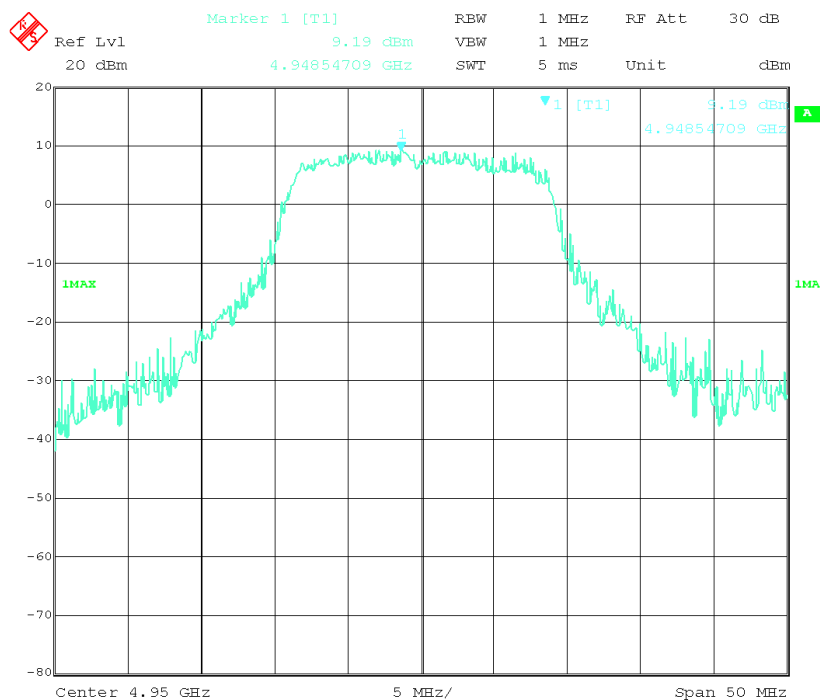


Channel bandwidth: 20MHz

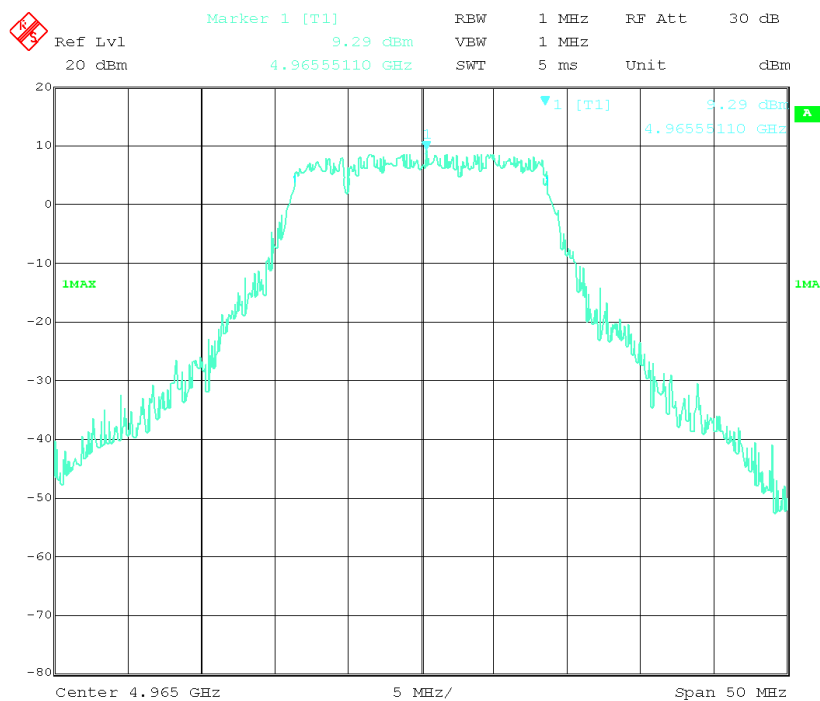
Channel	Channel Frequency (MHz)	Channel Power-Chain 1 (dBm)	Channel Power Chain 2 (dBm)	Total Power (dBm)
Low	4950	9.19	9.59	12.40
Mid	4965	9.29	8.69	12.01
High	4980	9.37	9.09	12.24

Refer to the attached plots

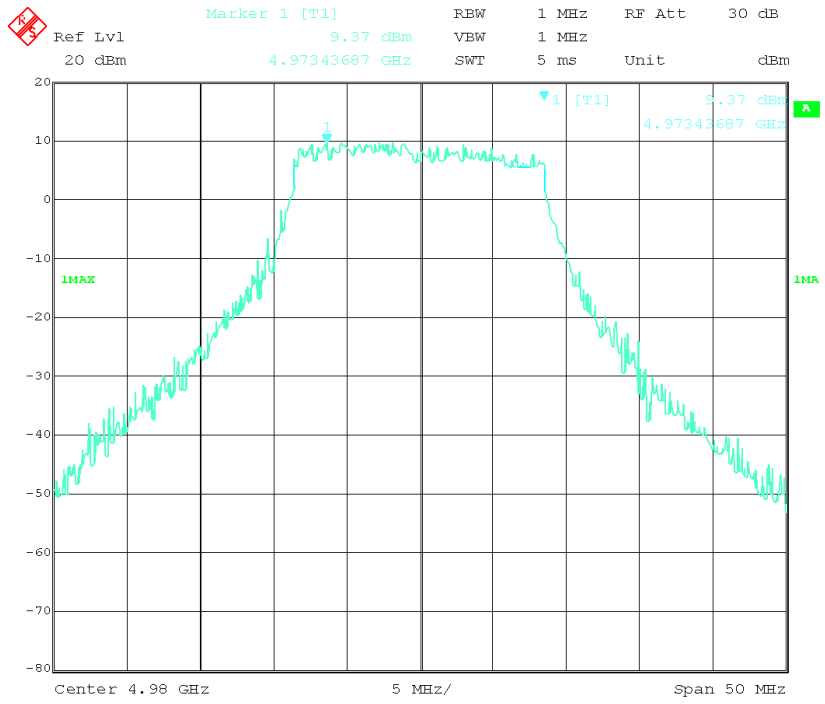
## Low Channel

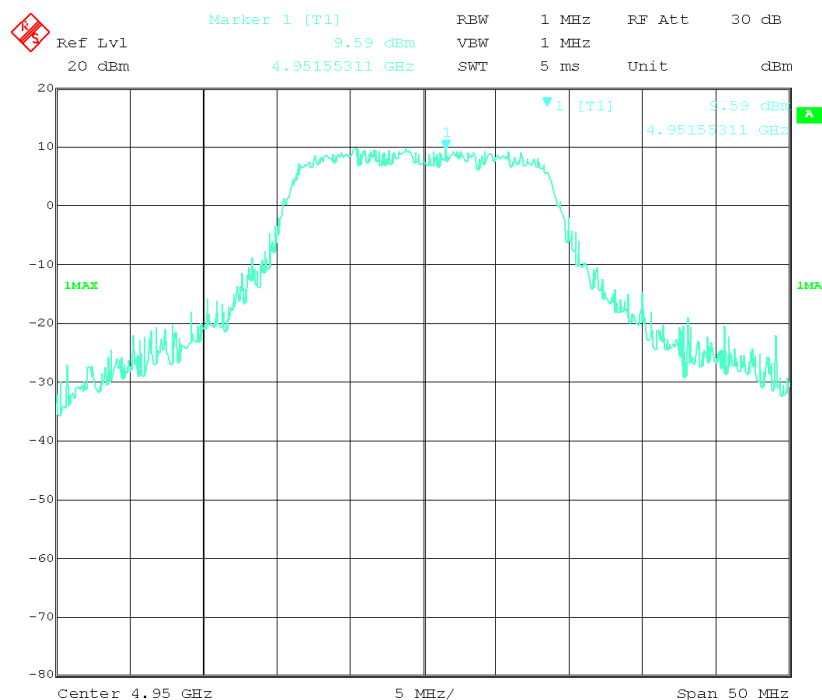


## Mid Channel

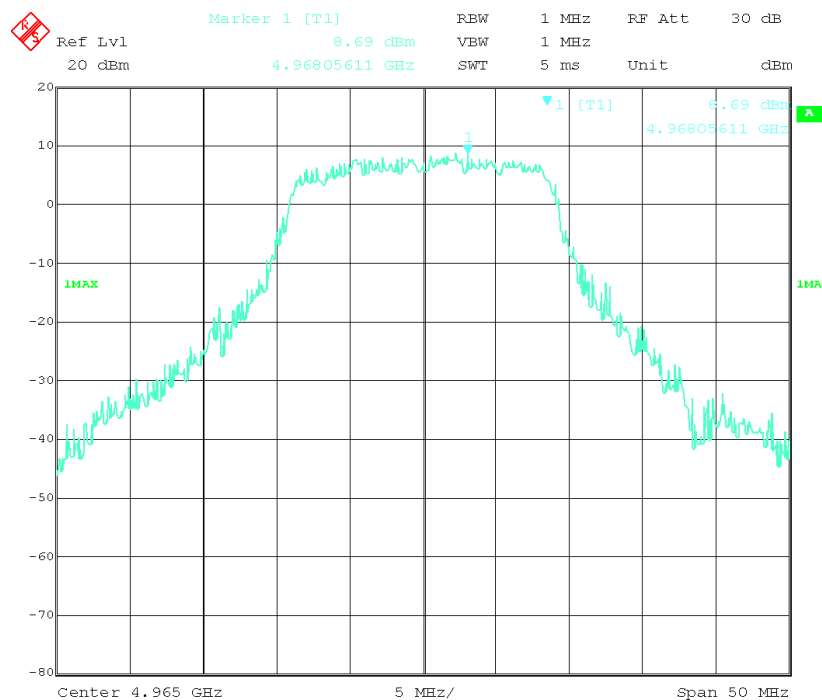


## High Channel

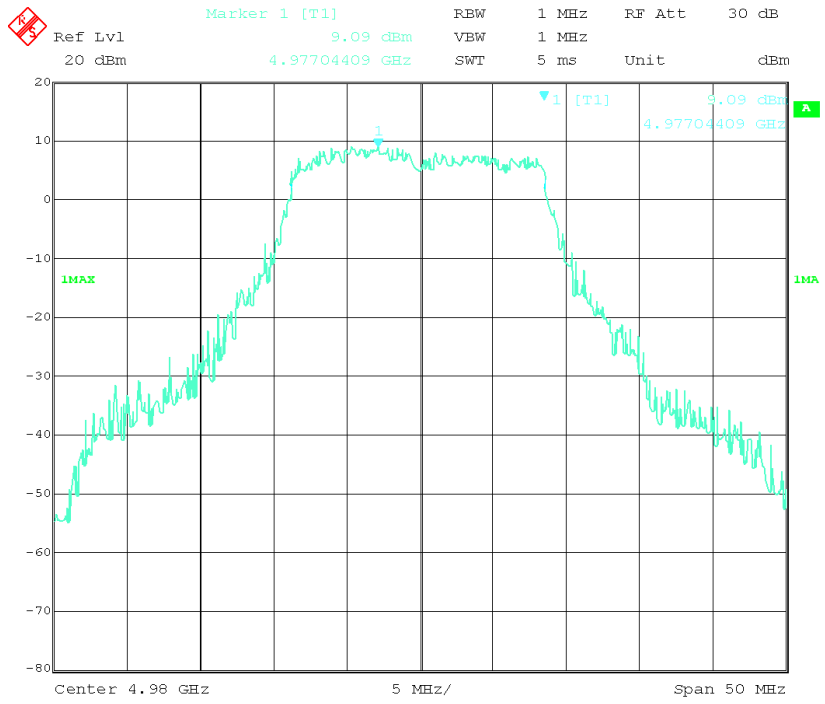




Mid Channel



High Channel



## 5.10 Frequency Stability

1. Conducted Measurement  
EUT was set for low, mid, high channel with modulated mode and highest RF output power.  
The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions
 

Temperature	25°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
3. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is  $\pm 1.5\text{dB}$ .
4. Test Date : April 11 & 17 2010  
Tested By : Choon Sian Ooi

**Requirement(s):** 47 CFR §90.213

**Procedures:** The 99% bandwidths was measured conducted using a spectrum analyzer at low, mid, and hi channels.

Power Supply (Vac)	Temperature (celcius)	Frequency (MHz)	Deviation (ppm)
115	65	4965.388	4.8334825
115	60	4965.385	4.229297188
115	55	4965.383	3.826506979
115	50	4965.379	3.020926563
115	40	4965.375	2.215346146
115	30	4965.373	1.812555937
115	20	4965.364	REF
115	10	4965.362	-0.402790208
115	0	4965.354	-2.013951042
115	-10	4965.357	-1.409765729
115	-20	4965.352	-2.41674125
115	-30	4965.348	-3.222321667
115	-40	4965.347	-3.423716771
115	20	4965.362	-0.402790208
115	20	4965.361	-0.604185312



## Annex A. TEST INSTRUMENT & METHOD

### Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

Instrument	Model	Calibration Due
<b>AC Conducted Emissions</b>		
R&S EMI Test Receiver	ESIB40	04/25/2010
R&S LISN	ESH2-Z5	04/24/2010
CHASE LISN	MN2050B	04/24/2010
<b>Radiated Emissions</b>		
Spectrum Analyzer	8564E	04/26/2010
EMI Receiver	ESIB 40	04/25/2010
R&S LISN	ESH2-Z5	04/24/2010
CHASE LISN	MN2050B	04/24/2010
Antenna(1 ~18GHz)	3115	04/01/2011
Antenna (30MHz~2GHz)	JB1	04/01/2011
Chamber	3m	04/18/2011
Pre-Amplifier(1 ~ 26GHz)	8449	04/24/2010
Horn Antenna (18~40GHz)	AH-840	03/19/2011
Microwave Pre-Amp (18~40GHz)	PA-840	03/19/2011
<b>Frequency Stability</b>		
R&S EMI Receiver	ESIB 40	04/25/2010
TestEquity Environment Chamber	1007H	01/24/2011
<b>Transient Frequency Behaviour</b>		
RF Signal Generator	HP8656	04/25/2011
RF Signal analyzer	HP8920A	01/24/2011
Oscilloscope	-	04/25/2010

Note: \* - Functional Verification

## Annex A.ii. CONDUCTED EMISSIONS TEST DESCRIPTION

### Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.
2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
4. All other supporting equipments were powered separately from another main supply.

### Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.
3. High peaks, relative to the limit line, were then selected.
4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 KHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.
5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

### Sample Calculation Example

At 20 MHz

limit = 250 μV = 47.96 dBμV

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver = 40.00 dBμV

(Calibrated for system losses)

Therefore, Q-P margin = 47.96 – 40.00 = 7.96

i.e. **7.96 dB below limit**

## Annex A. iii RADIATED EMISSIONS TEST DESCRIPTION

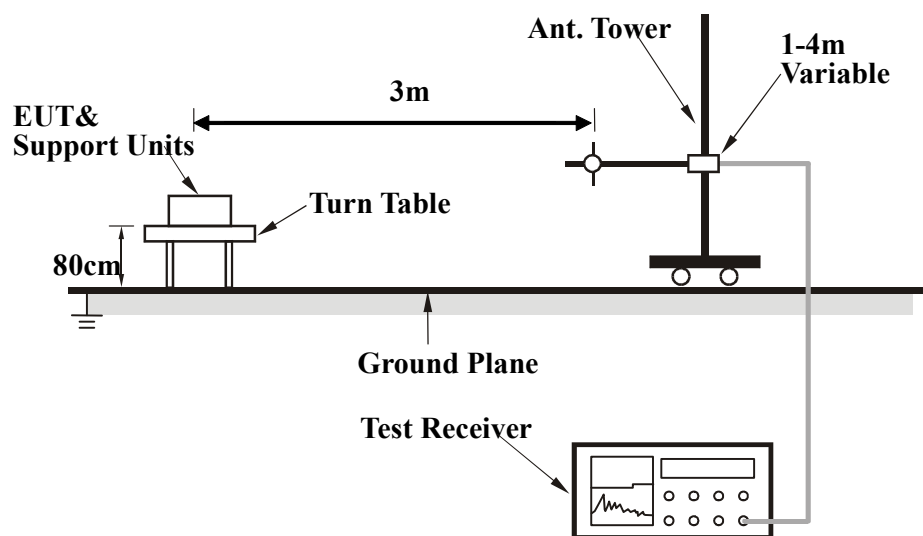
### EUT Characterisation

EUT characterisation, over the frequency range from 30MHz to 10<sup>th</sup> Harmonic , was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred, clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS).

### Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.
2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



## **Test Method**

The following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

### **Final Radiated Emission Measurement**

1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading.
5. Repeat step 4 until all frequencies need to be measured was complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Peak	100 kHz	100 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

## **Sample Calculation Example**

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

$$\text{Peak} = \text{Reading} + \text{Corrected Factor}$$

where

Corr. Factor = Antenna Factor + Cable Factor - Amplifier Gain (if any)

And the average value is

$$\text{Average} = \text{Peak Value} + \text{Duty Factor or}$$

$$\text{Set RBW} = 1\text{MHz, VBW} = 10\text{Hz.}$$

Note:

If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1 GHz. And the measuring instrument is set to quasi peak detector function.

## **Annex B EUT AND TEST SETUP PHOTOGRAPHS**

Please see the attachment

## **Annex C. TEST SETUP AND SUPPORTING EQUIPMENT**

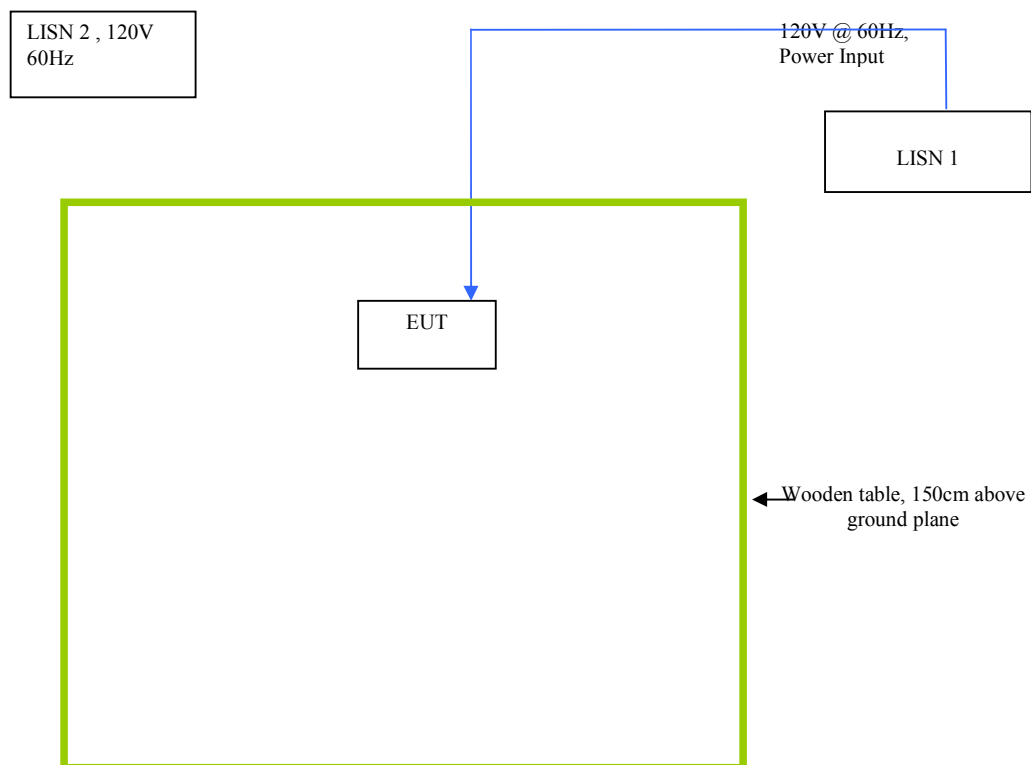
### **EUT TEST CONDITIONS**

#### **Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION**

The following is a description of supporting equipment and details of cables used with the EUT.

Equipment Description (Including Brand Name)	Model & Serial Number	Cable Description (List Length, Type & Purpose)
PC Laptop / DELL	Latitude DS520	Serial Cable , <1 meter From PC Laptop to EUT

## Block Configuration Diagram for Radiated Emission



## Block Configuration Diagram for Conducted Emission

N/A

## **Annex C.ii. EUT OPERATING CONDITIONS**

The following is the description of how the EUT is exercised during testing.

Test	Description Of Operation
Emissions	The radio was set to constant transmitting mode in order to simulate worst case.



## **Annex D USER MANUAL, BLOCK & CIRCUIT DIAGRAM**

**Please see attachment**

## Annex E. SIEMIC ACCREDITATION CERTIFICATES

**SIEMIC ACREDITATION DETAILS: A2LA Certificate Number: 2742.01**

 	<b>THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION</b>
<b>ACCREDITED LABORATORY</b>	
A2LA has accredited <b>SIEMIC LABORATORIES</b> <b>San Jose, CA</b> for technical competence in the field of <b>Electrical Testing</b>	
<small>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAP Conformance dated 18 June 2005).</small>	
	Presented this 11th day of July 2008:  President For the Accreditation Council Certificate Number 2742.01 Valid to September 30, 2010
<small>For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.</small>	

	<b>THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION</b>
<b>ACCREDITED PRODUCT CERTIFICATION BODY</b>	
A2LA has accredited <b>SIEMIC INC.</b> <b>San Jose, CA</b> for technical competence as a <b>Product Certification Body</b>	
<small>This product certification body is accredited in accordance with the recognized International Standard ISO/IEC Guide 65:1996 General requirements for bodies operating product certification systems. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system for a Telecommunications Certification Body (TCB) meeting FCC (U.S.), IDA (Singapore) and IC (Canada) requirements.</small>	
	Presented this 9 <sup>th</sup> day of January 2009.  President For the Accreditation Council Certificate Number: 2742.02 Valid to: September 30, 2010
<small>For the product certification schemes to which this accreditation applies, please refer to the certification body's Scope of Accreditation.</small>	

## SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 65:1996

SIEMIC INC.  
 2206 Ringwood Ave.  
 San Jose, CA 95131  
 Mr. Snell Leong (Authorized Representative) Phone: 408 526 1188  
[www.siemic.com](http://www.siemic.com)

### PRODUCT CERTIFICATION CONFORMITY ASSESSMENT BODY (CAB)

Valid to: September 30, 2010

Certificate Number: 2742.02

In recognition of the successful completion of the A2LA Certification Body Accreditation Program evaluation, including the US Federal Communications Commission (FCC), Industry Canada (IC) and Singapore (IDA) requirements for the indicated types of product certifications, accreditation is granted to this organization to perform the following product certification schemes:

#### Economy

#### Scope

#### **Federal Communication Commission - (FCC)**

Unlicensed Radio Frequency Devices	A1, A2, A3, A4
Licensed Radio Frequency Devices	B1, B2, B3, B4
Telephone Terminal Equipment	C

*\*Please refer to FCC TCB Program Roles and Responsibilities, v04, released February 14, 2008 detailing scopes, roles and responsibilities. <http://www.fcc.gov/pet/ea/FCC-Overview-TCB-Program.pdf>*

#### **Industry Canada - (IC)**

Radio	All Radio Standards Specifications (RSS) in Category I Equipment Standards List Radio
-------	--

*\*Please refer to Industry Canada (IC) website at: [http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/h\\_sf01342e.html](http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/h_sf01342e.html)*

#### **IDA – Singapore**

Line Terminal Equipment	All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2008, Annex 2
Radio-Communication Equipment	All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2008, Annex 2

*\*Please refer to Info-Communication Development Authority (IDA) Singapore website at:  
[http://www.ida.gov.sg/doc/Policies%20and%20Regulation/Policies\\_and\\_Regulation\\_Level2/20060609145118/MRA\\_RecScheme.pdf](http://www.ida.gov.sg/doc/Policies%20and%20Regulation/Policies_and_Regulation_Level2/20060609145118/MRA_RecScheme.pdf)*

**SIEMIC ACREDITATION DETAILS: FCC Test Site Registration No. 783147**

**FEDERAL COMMUNICATIONS COMMISSION**

**Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046**

December 20, 2007

Registration Number: 783147

SIEMIC Laboratories  
2206 Ringwood Avenue,  
San Jose, CA 95131

Attention: Leslie Bai

Re: Measurement facility located at San Jose  
3 & 10 meter site  
Date of Renewal: December 20, 2007

Dear Sir or Madam:

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website [www.fcc.gov](http://www.fcc.gov) under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

Phyllis Parrish  
Industry Analyst

**SIEMIC ACREDITATION DETAILS: Industry of Canada CAB ID : US0160**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899

March 4, 2009

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by Industry Canada (IC), under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name: SIEMIC, Inc.  
Physical Location: 2206 Ringwood Avenue, San Jose, CA 95131 USA  
Identification No.: US0160  
Recognized Scope: CS-03 Part I, II, V, VI, VII and VIII

You may submit test data to IC to verify that the equipment to be imported into Canada satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. Please contact Ms. Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov) if you have any questions.

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: CAB Program Manager

## SIEMIC ACREDITATION DETAILS: Industry of Canada Test Site Registration No. 4842-1



May 23rd, 2008

OUR FILE: 46405-4842

Submission No: 126429

Siemic Inc.  
 2206 Ringwood Ave.  
 San Jose CA 95131  
 USA

Attention: Leslie Bai

Dear Sir/Madame:

The Bureau has received your application for the registration / renewal of a 3/10m OATS. Be advised that the information received was satisfactory to Industry Canada. The following number(s) is now associated to the site(s) for which registration / renewal was sought (**4842A-1**). Please reference the appropriate site number in the body of test reports containing measurements performed on the site. In addition, please be informed that the Bureau is now utilizing a **new site numbering scheme** in order to simplify the electronic filing process. Our goal is to reduce the number of secondary codes associated to one particular company. The following changes have been made to your record.

- Your primary code is: **4842**
- The company number associated to the site(s) located at the above address is: **4842A**
- The table below is a summary of the changes made to the unique site registration number(s):

New Site Number	Obsolete Site Number	Description of Site	Expiry Date (YYYY-MM-DD)
4842A-1	4842-1	3m Chamber	2010-05-23

Furthermore, to obtain or renew a unique site number, the applicant shall demonstrate that the site has been accredited to ANSI C63.4-2003 or later. A scope of accreditation indicating the accreditation by a recognized accreditation body to ANSI C63.4-2003 shall be accepted. Please indicate in a letter the previous assigned site number if applicable and the type of site (example: 3 meter OATS or 3 meter chamber). If the test facility is not accredited to ANSI C63.4-2003 or later, the test facility shall submit test data demonstrating full compliance with the ANSI standard. The Bureau will evaluate the filing to determine if recognition shall be granted.

The frequency for re-validation of the test site and the information that is required to be filed or retained by the testing party shall comply with the requirements established by the accrediting organization. However, in all cases, test site re-validation shall occur on an interval not to exceed two years. There is no fee or form associated with an OATS filing. OATS submissions are encouraged to be submitted electronically to the Bureau using the following URL;  
[http://strategis.ic.gc.ca/epic/internet/inceb-bhst.nsf/en/h\\_t000052e.html](http://strategis.ic.gc.ca/epic/internet/inceb-bhst.nsf/en/h_t000052e.html).

If you have any questions, you may contact the Bureau by e-mail at [certification.bureau@ic.gc.ca](mailto:certification.bureau@ic.gc.ca)  
 Please reference our file and submission number above for all correspondence.

Yours sincerely,



S. Proulx  
 Test & Measurement Specialist  
 Certification and Engineering Bureau  
 3701 Carling Ave., Building 94  
 Ottawa, Ontario K2H 8S2



**SIEMIC ACREDITATION DETAILS: FCC DOC CAB Recognition : US1109**

**FEDERAL COMMUNICATIONS COMMISSION**

**Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046**

August 28, 2008

Siemic Laboratories  
2206 Ringwood Ave.,  
San Jose, CA 95131

Attention: Leslie Bai

Re: Accreditation of Siemic Laboratories  
Designation Number: US1109  
Test Firm Registration #: 540430

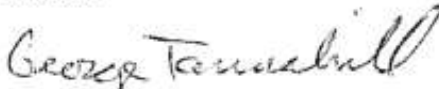
Dear Sir or Madam:

We have been notified by American Association for Laboratory Accreditation that Siemic Laboratories has been accredited as a Conformity Assessment Body (CAB).

At this time Siemic Laboratories is hereby designated to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Parts 15 and 18 of the Commission's Rules.

This designation will expire upon expiration of the accreditation or notification of withdrawal of designation.

Sincerely,



George Tannahill  
Electronics Engineer

**SIEMIC ACREDITATION DETAILS: Australia CAB ID : US0160**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899

November 20, 2008

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Australian Communications and Media Authority (ACMA) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name:	Siemic, Inc.
Physical Location:	2206 Ringwood Avenue, San Jose, CA 95131
Identification No.:	US0160
Recognized Scope:	<u>EMC</u> : AS/NZS 4251.1 (until 5/31/2009), AS/NZS 4251.2 (until 5/31/2009), AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR 22, AS/NZS 61000.6.3, AS/NZS 61000.6.4 <u>Radiocommunications</u> : AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771 <u>Telecommunications</u> : AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06, AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/NZS 60950.1

You may submit test data to ACMA to verify that the equipment to be imported into Australia satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements. Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. Please contact Ms. Ramona Saar, at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov) if you have questions.

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division


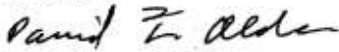

Enclosure

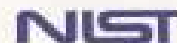
cc: Snell Leong, Siemic, Inc.; Ramona Saar, NIST

**NIST**



**SIEMIC ACREDITATION DETAILS: Korea CAB ID: US0160**

 <p>October 1, 2008</p>	<p><b>UNITED STATES DEPARTMENT OF COMMERCE</b> <b>National Institute of Standards and Technology</b> Gaithersburg, Maryland 20899</p>
<p>Mr. Leslie Bai SIEMIC, Inc. 2206 Ringwood Avenue San Jose, CA 95131</p> <p>Dear Mr. Bai:</p> <p>NIST is pleased to inform you that your laboratory has been recognized by the Radio Research Agency (RRA) Korea Communications Commission (KCC) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, <b>Phase I</b> Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:</p> <p>CAB Name: SIEMIC, Inc. Physical Location: 2206 Ringwood Avenue, San Jose, CA 95131 Identification No.: US0160 Recognized Scope: <b>EMI:</b> KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI <b>EMS:</b> KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN-61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS <b>Wireless:</b> RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68 <b>Wired:</b> President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6 President Notice 20664, RRL Notice 2008-7 with attachment 4</p> <p>You may submit test data to RRA/KCC to verify that the equipment to be imported into Korea satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.</p> <p>Recognized CABs are listed on the NIST website at <a href="http://ts.nist.gov/mra">http://ts.nist.gov/mra</a>. If you have any questions please contact Ramona Saar at (301) 975-5521 or <a href="mailto:ramona.saar@nist.gov">ramona.saar@nist.gov</a>.</p> <p>Sincerely,  David F. Alderman Group Leader, Standards Coordination and Conformity Group Standards Services Division</p> <p>Enclosure</p> <p>cc: Ramona Saar</p>	
<p style="text-align: right;"></p>	



**NIST**

## SIEMIC ACREDITATION DETAILS: Mexico NOM Recognition

 CAMARA NACIONAL DE LA INDUSTRIA ELECTRONICA, DE TELECOMUNICACIONES E INFORMATICA	<b>Laboratorio Valentín V. Rivero</b>
México D.F. a 16 de octubre de 2006.	
<b>LESLIE BAI DIRECTOR OF CERTIFICATION SIEMIC LABORATORIES, INC. ACCESSING GLOBAL MARKETS P R E S E N T E</b>	
En contestación a su escrito de fecha 5 de septiembre del año en curso, le comento que estamos muy interesados en su intención de firmar un Acuerdo de Reconocimiento Mutuo, para lo cual adjunto a este escrito encontrara el Acuerdo en idioma ingles y español preferido de los cuales le pido sea revisado y en su caso corregido, para que si esta de acuerdo poder firmarlo para mandarlo con las autoridades Mexicanas para su visto bueno y así poder ejercer dicho acuerdo.	
Aprovecho este escrito para mencionarle que nuestro intermediario gestor será la empresa Isabel de México, S. A. de C. V., empresa que ha colaborado durante mucho tiempo con nosotros en lo relacionado a la evaluación de la conformidad y que cuenta con amplia experiencia en la gestión de la certificación de cumplimiento con Normas Oficiales Mexicanas de producto en México.	
Me despido de usted enviándole un cordial saludo y esperando sus comentarios al Acuerdo que nos ocupa.	
Atentamente:	
	
<b>Ing. Faustino Gomez Gonzalez Gerente Técnico del Laboratorio de CANIETI.</b>	
Callejón 71 Hidroreos Condéza 06100 México, D.F. Tel: 5264-0938 con 12 líneas Fax: 5264-0482 www.canieti.org	

**SIEMIC ACREDITATION DETAILS: Hong Kong OFTA CAB ID : US0160**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899-

December 8, 2008

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Office of the Telecommunications Authority (OFTA) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name: SIEMIC, Inc.  
Physical Location: 2206 Ringwood Avenue, San Jose, California 95131 USA  
Identification No.: US0160  
Recognized Scope: **Radio:** HKTA 1002, 1007, 1008, 1010, 1015, 1016, 1020, 1022, 1026, 1027, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1039, 1041, 1042, 1043, 1044, 1046, 1047, 1048, 1049, 1051  
**Telecom:** HKTA 2011, 2012, 2013, 2014, 2017, 2018, 2022, 2024, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033

You may submit test data to OFTA to verify that the equipment to be imported into Hong Kong satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. If you have any questions please contact Ramona Saar at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov).

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: Ramona Saar

**NIST**



**SIEMIC ACREDITATION DETAILS: Australia ACMA CAB ID: US0160**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899

November 20, 2008

Mr. Leslie Bai  
SIEMIC, Inc.  
2206 Ringwood Avenue  
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Australian Communications and Media Authority (ACMA) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name: Siemic, Inc.  
Physical Location: 2206 Ringwood Avenue, San Jose, CA 95131  
Identification No.: US0160  
Recognized Scope: EMC: AS/NZS 4251.1 (until 5/31/2009), AS/NZS 4251.2 (until 5/31/2009), AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR 22, AS/NZS 61000.6.3, AS/NZS 61000.6.4  
Radiocommunications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771  
Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06, AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/NZS 60950.1

You may submit test data to ACMA to verify that the equipment to be imported into Australia satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements. Recognized CABs are listed on the NIST website at <http://ts.nist.gov/mra>. Please contact Ms. Ramona Saar, at (301) 975-5521 or [ramona.saar@nist.gov](mailto:ramona.saar@nist.gov) if you have questions.

Sincerely,

David F. Alderman  
Group Leader, Standards Coordination and Conformity Group  
Standards Services Division

Enclosure

cc: Snell Leong, Siemic, Inc.; Ramona Saar, NIST

**NIST**

## SIEMIC ACREDITATION DETAILS: Australia NATA Recognition



Leslie Bai  
 SIEMIC, Inc.  
 2205 Ringwood Avenue  
 San Jose, CA 95131

November 4, 2008

Under Australian government legislation, the Australian Communications and Media Authority (ACMA) has determined the National Association of Testing Authorities, Australia (NATA) as an accreditation body as per Section 409(1) of the Telecommunications Act 1997 (Cth). Pursuant to Section 409(2) of the Telecommunications Act 1997 (Cth), I am pleased to advise that your laboratory has been determined as a Recognised Testing Authority (RTA).

This determination has been made on the basis of your accreditation by A2LA accreditation no. 2742.01 and the Mutual Recognition Agreement between NATA and A2LA. It is effective from 11 July 2008. RTA status applies only to the following standards and is contingent upon their continued inclusion in your laboratory's scope of accreditation.

**AS/ACIF S002, AS/ACIF S003, AS/ACIF S004,  
 AS/ACIF S006, AS/ACIF S016, AS/ACIF S031,  
 AS/ACIF S038, AS/ACIF S041 and  
 AS/ACIF S043.2**

As an RTA, your laboratory has the following obligations:

1. the laboratory shall continue to meet all of the accreditation criteria of A2LA;
2. the authorised representative of the laboratory shall notify NATA of changes to the staff or operations of the laboratory which would affect the performance of the tests for which the laboratory has been determined;
3. compliance of equipment shall be reported on test reports bearing the A2LA logo/endorsement.

Current information on the Australian Communications and Media Authority and regulatory requirements for telecommunications products within Australia can be obtained from the ACMA's web-site at "<http://www.acma.gov.au>". Further information about NATA may be gained by visiting "<http://www.nata.asn.au>".

Please note that AS/ACIF S040 and New Zealand standards do not form part of the RTA scheme.

Your RTA listing will appear on the NATA website shortly.

Kind Regards

Chris Norton,  
 Senior Scientific Officer  
 Measurement Science and Technology  
 National Association of Testing Authorities (NATA)  
 71-73 Flemington Road  
 North Melbourne Vic 3051  
 Australia  
 Ph: +61 3 9329 1633 Fx: +61 3 9326 5148  
 E-Mail: [Christopher.Norton@nata.asn.au](mailto:Christopher.Norton@nata.asn.au)  
 Internet: [www.nata.asn.au](http://www.nata.asn.au)





**SIEMIC ACREDITATION DETAILS: VCCI Conducted (Main Port) Test Site Registration No. C-3421**

	 <i>VCCI Council</i>
<h1 style="text-align: center;">CERTIFICATE</h1>	
<p><b>Company:</b> SIEMIC Inc. <i>&lt;Member No. 3081 &gt;</i></p>	
<p><b>Facility:</b> SIEMIC Inc. (Main Ports Conducted Interference Measurement)</p>	
<p><b>Location of Facility:</b> 2206 Ringwood Avenue, San Jose, CA 95131 USA</p>	
<p><i>This is to certify that the following measuring facility has been registered in accordance with the Rules for Voluntary Control Measures</i></p>	
<p><b>Registration No.:</b> C-3421</p>	
<p><b>Date of Registration:</b> June 12 , 2009</p>	
<p><b>This Certificate is valid until</b> September 30 , 2010</p>	
	<p style="text-align: right;"><i>VCCI Council</i> </p> 

**SIEMIC ACREDITATION DETAILS: VCCI Conducted (Telecom Port) Test Site Registration No. T-1597**



VCCI Council

## CERTIFICATE

Company: SIEMIC Inc.

<Member No. 3081 >

Facility: SIEMIC Inc.

(Telecommunication Ports Conducted Interference Measurement)

Location of Facility:

2206 Ringwood Avenue, San Jose, CA 95131 USA

*This is to certify that the following measuring facility  
has been registered in accordance with the Rules  
for Voluntary Control Measures*

Registration No.: T-1597

Date of Registration: June 12 , 2009

This Certificate is valid until September 30 , 2010

VCCI Council

