



A D T

# FCC TEST REPORT (PART 27)

**REPORT NO.:** RF990902E03

**MODEL NO.:** MC100W

**FCC ID:** UXX-MC100W

**RECEIVED:** Sep. 02, 2010

**TESTED:** Sep. 13 to 15, 2010

**ISSUED:** Sep. 21, 2010

**APPLICANT:** Cradlepoint, Inc.

**ADDRESS:** 805 W. Franklin Street, Boise, ID 83702

**ISSUED BY :** Bureau Veritas Consumer Products Services (H.K.)  
Ltd., Taoyuan Branch Hsin Chu Laboratory

**LAB ADDRESS :** No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen,  
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

This test report consists of 67 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample. The test results in this report are traceable to the national or international standards.





## TABLE OF CONTENTS

1	CERTIFICATION .....	4
2	SUMMARY OF TEST RESULTS .....	5
2.1	MEASUREMENT UNCERTAINTY .....	6
3	GENERAL INFORMATION.....	7
3.1	GENERAL DESCRIPTION OF EUT.....	7
3.2	DESCRIPTION OF TEST MODES.....	9
3.2.1	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	10
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS.....	13
3.4	DESCRIPTION OF SUPPORT UNITS .....	14
3.4.1	CONFIGURATION OF SYSTEM UNDER TEST .....	15
4	TEST TYPES AND RESULTS .....	16
4.1	OUTPUT POWER MEASUREMENT .....	16
4.1.1	LIMITS OF OUTPUT POWER MEASUREMENT .....	16
4.1.2	TEST INSTRUMENTS .....	16
4.1.3	TEST PROCEDURES.....	16
4.1.4	TEST SETUP.....	16
4.1.5	EUT OPERATING CONDITIONS.....	17
4.1.6	TEST RESULTS.....	18
4.2	FREQUENCY STABILITY MEASUREMENT.....	19
4.2.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT .....	19
4.2.2	TEST INSTRUMENTS .....	19
4.2.3	TEST PROCEDURE .....	20
4.2.4	TEST SETUP.....	20
4.2.5	TEST RESULTS.....	21
4.3	EMISSION BANDWIDTH MEASUREMENT.....	23
4.3.1	LIMITS OF EMISSION BANDWIDTH MEASUREMENT .....	23
4.3.2	TEST INSTRUMENTS .....	23
4.3.3	TEST SETUP.....	23
4.3.4	TEST PROCEDURES.....	24
4.3.5	TEST RESULTS.....	25
4.4	CHANNEL EDGE MEASUREMENT .....	29
4.4.1	LIMITS OF CHANNEL EDGE MEASUREMENT .....	29
4.4.2	TEST INSTRUMENTS .....	29
4.4.3	TEST SETUP .....	29
4.4.4	TEST PROCEDURES.....	30
4.4.5	EUT OPERATING CONDITION .....	30
4.4.6	TEST RESULTS.....	31
4.5	CONDUCTED SPURIOUS EMISSIONS .....	37
4.5.1	LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT .....	37



A D T


4.5.2	TEST INSTRUMENTS .....	37
4.5.3	TEST PROCEDURE .....	38
4.5.4	TEST SETUP .....	38
4.5.5	EUT OPERATING CONDITIONS .....	38
4.5.6	TEST RESULTS.....	39
4.6	RADIATED EMISSION MEASUREMENT (BELOW 1GHz) .....	51
4.6.1	LIMITS OF RADIATED EMISSION MEASUREMENT .....	51
4.6.2	TEST INSTRUMENTS .....	51
4.6.3	TEST PROCEDURES.....	52
4.6.4	DEVIATION FROM TEST STANDARD .....	52
4.6.5	TEST SETUP .....	53
4.6.6	EUT OPERATING CONDITIONS .....	53
4.6.7	TEST RESULTS.....	54
4.7	RADIATED EMISSION MEASUREMENT (ABOVE 1GHz).....	56
4.7.1	LIMITS OF RADIATED EMISSION MEASUREMENT .....	56
4.7.2	TEST INSTRUMENTS .....	56
4.7.3	TEST PROCEDURES.....	57
4.7.4	DEVIATION FROM TEST STANDARD .....	57
4.7.5	TEST SETUP .....	58
4.7.6	EUT OPERATING CONDITIONS .....	58
4.7.7	TEST RESULTS.....	59
5	PHOTOGRAPHS OF THE TEST CONFIGURATION .....	65
6	INFORMATION ON THE TESTING LABORATORIES .....	66
7	APPENDIX - A DL/UL RATION FOR TEST .....	67



# 1 CERTIFICATION

**PRODUCT:** WiMAX USB RSU Modem  
**BRAND NAME:** Cradlepoint  
**MODEL NO.:** MC100W  
**APPLICANT:** Cradlepoint, Inc.  
**TESTED:** Sep. 13 to 15, 2010  
**TEST SAMPLE:** R&D SAMPLE  
**TEST STANDARDS:** FCC 47 CFR Part 2  
FCC 47 CFR Part 27, Subpart C & M  
ANSI/TIA/EIA-603-C-2004

The above equipment (Model No.: MC100W) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** :  , **DATE:** Sep. 21, 2010  
( Claire Kuan, Specialist )

**TECHNICAL ACCEPTANCE** :  , **DATE:** Sep. 21, 2010  
( Hank Chung, Deputy Manager )

**APPROVED BY** :  , **DATE:** Sep. 21, 2010  
( May Chen, Deputy Manager )

## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

<b>APPLIED STANDARD: FCC Part 27 &amp; Part 2</b>			
<b>STANDARD SECTION</b>	<b>TEST TYPE AND LIMIT</b>	<b>RESULT</b>	<b>REMARK</b>
2.1046 27.50(h)(2)	Maximum Peak Output Power Limit: max. 2 watts conducted peak power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability Stay with the authorized bands of operation	PASS	Meet the requirement of limit.
2.1049 27.53(m)(6)	Emission Bandwidth	PASS	Meet the requirement of limit.
2.1051 27.53(m)(2)(6)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(m)(2)(6)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(m)(2)(6)	Radiated Spurious Emissions	PASS	Meet the requirement of limit.



A D T

## 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Measurement	Value
Radiated emissions (30MHz-1GHz)	3.94 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	WiMAX USB RSU Modem
<b>MODEL NO.</b>	MC100W
<b>FCC ID</b>	UXX-MC100W
<b>POWER SUPPLY</b>	DC 5V from host equipment
<b>MODULATION TECHNOLOGY</b>	OFDMA
<b>MODULATION</b>	Up-Link : QPSK-1/2, -3/4, 16QAM-1/2, 3/4, Down-Link : QPSK-1/2, -3/4, 16QAM-1/2, 3/4, 64QAM-1/2, -2/3, -3/4, -5/6
<b>OPERATING FREQUENCY</b>	5MHz: 2498.5MHz ~ 2687.5MHz 10MHz: 2501MHz ~ 2685MHz
<b>CHANNEL BANDWIDTH</b>	5MHz & 10MHz
<b>MAX. CONDUCTED POWER</b>	5MHz: 23.8dBm 10MHz: 23.8dBm
<b>ANTENNA TYPE</b>	Please see note 2
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	USB port x 1
<b>ASSOCIATED DEVICES</b>	Wired AP x 1 Adapter x 1

**NOTE:**

- The EUT's appearance has two different colors , which are identical to each other in all aspects except for the following information:

No.	Color	Difference
1	Black	For marketing requirement
2	White	

From the above colors, the black was selected as representative model for the test and its data was recorded in this report.

- The EUT (WiMAX USB RSU Modem) was sold together with one Wired AP. The detail information is as below:

Product	Brand	Model No.	Rating
Wired AP	Cradlepoint	CBA 750 v2	-
Adapter (For Wired AP)	LEI	MU18-2120150-A1	Input : 100-240V, 50/60Hz, 0.6A Output : 12V, 1.5A



A D T

3. There is two antennas provided to this EUT, please refer to the following table:

Chain	Brand	Model	Gain (dBi)	Antenna Type	Connector Type	Frequency range (MHz to MHz)	Diversity Function
Chain 0	JOYMAX	RWX-1511SAXX-711	5	Omni Dipole	SMA	2500~2700	Yes
Chain 1	JOYMAX	RWX-1511SAXX-711	5	Omni Dipole	SMA	2500~2700	Yes

4. For the EUT Modulation type and coding rate. After pre-testing items of output power and spurious emissions, QPSK-1/2 was found to be 5MHz /10MHz worst case, and was selected for the final test configuration.

Up Link		Down Link	
Modulation	Coding rate	Modulation	Coding rate
QPSK	1/2	QPSK	1/2
	3/4		3/4
16QAM	1/2	16QAM	1/2
	3/4		3/4
/		64QAM	1/2
			3/4
			2/3
			5/6

5. The EUT was pre-tested in chamber under the following modes:

Test Mode	Description
Mode A	Level-set (Put on tabletop)
<b>Mode B</b>	<b>Tower-set (Wall-mounted)</b>

For radiated spurious emissions Test, worse case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

- The EUT is 1 \* 2 spatial SIMO without beam forming function. The antenna configuration is one transmitter antenna and two receiver antennas, as there are two Omni Dipole antennas.
- The EUT embedded a firmware for testing that needs to control from Notebook computer to let EUT with different DL/UL ration.
- The device has different DL/UL ration in normal operation. It was tested with (DL:UL= 29:18) duty cycle mode for 5MHz and 10MHz, which is the worse mode, and controlled by software. (The detail duty cycle refer to APPENDIX A).
- The above EUT information was declared by manufacturer and for more detailed feature descriptions, please refers to the manufacturer's specifications or User's Manual.



### 3.2 DESCRIPTION OF TEST MODES

Three channels have been tested and presented.

#### **CHANNEL BANDWIDTH: 5MHz**

**Low channel (L):** 2498.5MHz.

**Middle channel (M):** 2587MHz.

**High channel (H):** 2687.5MHz.

#### **CHANNEL BANDWIDTH: 10MHz**

**Low channel (L):** 2501MHz.

**Middle channel (M):** 2593MHz.

**High channel (H):** 2685MHz.



### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO							DESCRIPTION
	OP	FS	EB	CE	CSE	RE<1G	RE <sup>3</sup> 1G	
MODE 1	√	√	√	√	√	√	√	Channel Bandwidth: 5MHz
MODE 2	√	√	√	√	√	√	√	Channel Bandwidth: 10MHz

Where **OP**: Output power **FS**: Frequency stability  
**EB**: Emission bandwidth **CE**: Channel edge  
**CSE**: Conducted spurious emissions **RE<1G**: Radiated emission below 1GHz  
**RE<sup>3</sup>1G**: Radiated emission above 1GHz

#### **OUTPUT POWER MEASUREMENT:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

TESTED MODE	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
MODE 1	L, M, H	OFDMA	QPSK
MODE 2	L, M, H	OFDMA	QPSK

#### **FREQUENCY STABILITY MEASUREMENT:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

TESTED MODE	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
MODE 1	M	OFDMA	Unmodulation
MODE 2	M	OFDMA	Unmodulation

**EMISSION BANDWIDTH MEASUREMENT:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

TESTED MODE	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
MODE 1	L, M, H	OFDMA	QPSK
MODE 2	L, M, H	OFDMA	QPSK

**CHANNEL EDGE MEASUREMENT:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

TESTED MODE	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
MODE 1	L, M, H	OFDMA	QPSK
MODE 2	L, M, H	OFDMA	QPSK

**CONDUCTED SPURIOUS EMISSIONS MEASUREMENT:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

TESTED MODE	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
MODE 1	L, M, H	OFDMA	QPSK
MODE 2	L, M, H	OFDMA	QPSK

**RADIATED EMISSION MEASUREMENT (BELOW 1 GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

TESTED MODE	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
MODE 1	M	OFDMA	QPSK
MODE 2	M	OFDMA	QPSK

**RADIATED EMISSION MEASUREMENT (ABOVE 1 GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

TESTED MODE	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE
MODE 1	L, M, H	OFDMA	QPSK
MODE 2	L, M, H	OFDMA	QPSK



### **3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27, Subpart C & M**

**ANSI/TIA/EIA-603-C-2004**

All test items have been performed and recorded as per the above standards.

**NOTE:** The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



A D T

### 3.4 DESCRIPTION OF SUPPORT UNITS

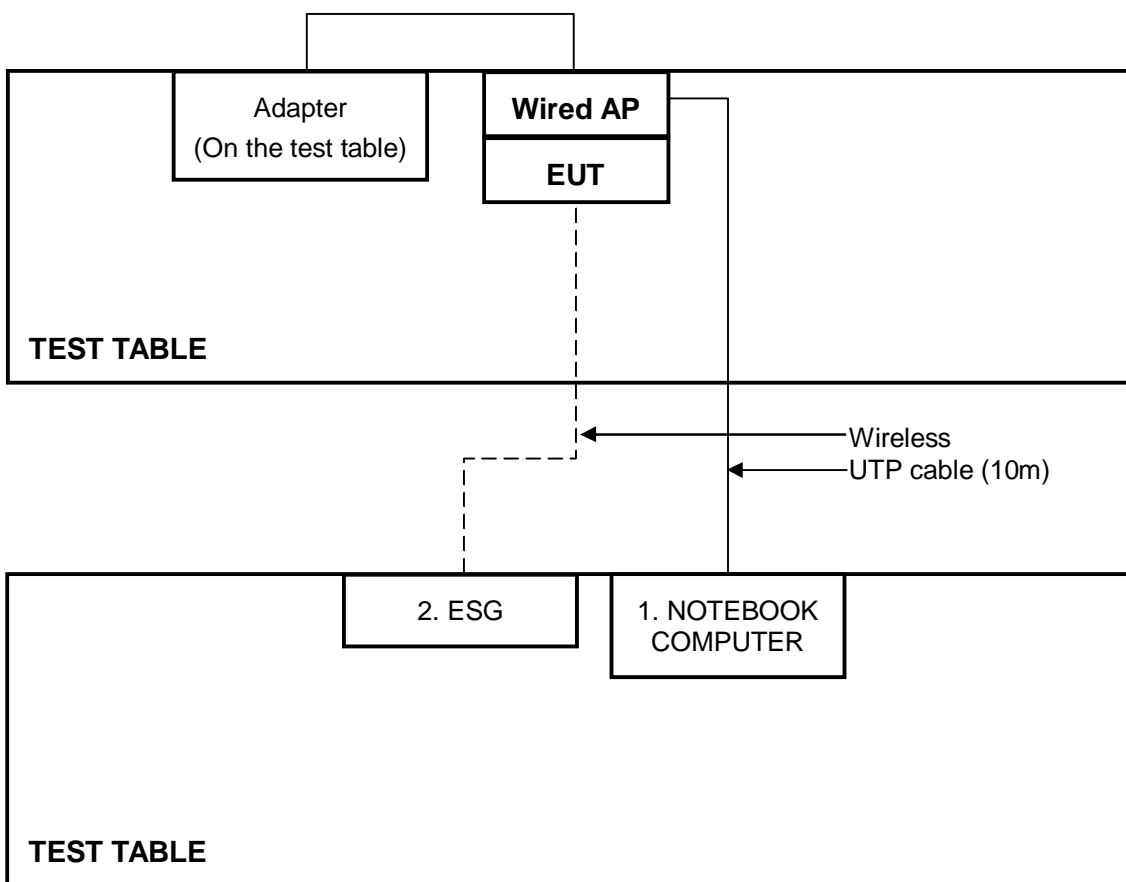
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	D531	CN-0XM006-48643-86L-4472	QDS-BRCM1019
2	ESG	Agilent	E4438C	MY45094468/005 506 602 UK6 UNJ	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable, 10m
2	NA

**NOTE:** All power cords of the above support units are non shielded (1.8m).

### 3.4.1 CONFIGURATION OF SYSTEM UNDER TEST



## 4 TEST TYPES AND RESULTS

### 4.1 OUTPUT POWER MEASUREMENT

#### 4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The peak output power shall be according to the specific rule Part 27.50(h)(2) that “Other User stations are limited to 2 watts and 27.50(i) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Anritsu Power meter	ML2495A	0824006	May 04, 2010	May 03, 2011
JFW 10dB attenuation	50HF-010-SMA	N/A	NA	NA

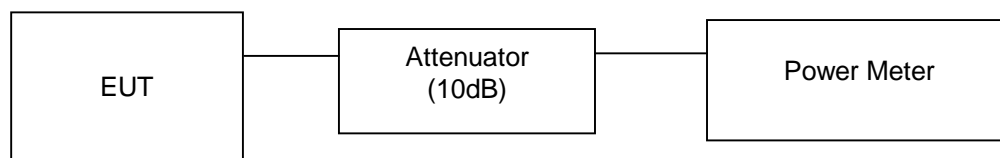
**NOTE:**

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

#### 4.1.3 TEST PROCEDURES

The transmitter output was connected to power meter through an attenuator. The test result was measured and recorded.

#### 4.1.4 TEST SETUP





#### 4.1.5 EUT OPERATING CONDITIONS

1. The EUT connects the support unit 1(Notebook computer) via wired AP by one UTP cable.
2. Support unit 1(Notebook computer) ran test program “Beceem Diagnostic Control Panel 3.4.0” to enable EUT under transmission/receiving condition continuously via Support unit 2 (ESG) by wireless transmission.



A D T

#### 4.1.6 TEST RESULTS

<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz		
<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa	<b>TESTED BY</b>	Phoenix Huang

#### CHANNEL BANDWIDTH: 5MHz

CONDUCTED POWER			
CHANNEL	FREQUENCY (MHz)	POWER OUTPUT(mW)	POWER OUTPUT(dBm)
Low	2498.5	239.883	23.8
Middle	2587	239.883	23.8
High	2687.5	229.087	23.6

#### CHANNEL BANDWIDTH: 10MHz

CONDUCTED POWER			
CHANNEL	FREQUENCY (MHz)	POWER OUTPUT(mW)	POWER OUTPUT(dBm)
Low	2501	229.087	23.6
Middle	2593	239.883	23.8
High	2685	234.423	23.7



## 4.2 FREQUENCY STABILITY MEASUREMENT

### 4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that” The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.” The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT -30°C ~ 50°C .

### 4.2.2 TEST INSTRUMENTS

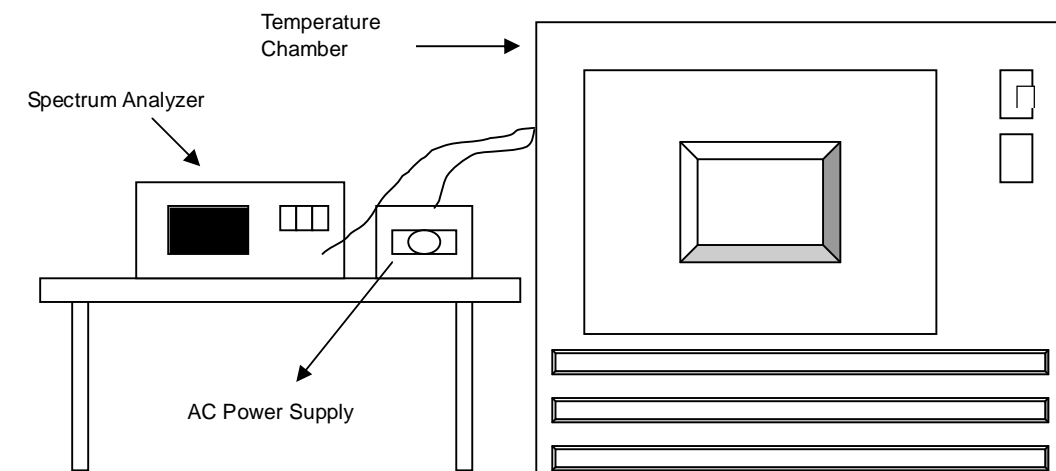
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 02, 2010	Aug. 01, 2011
OVEN	MHU-225AU	911033	Dec. 17, 2009	Dec. 16, 2010
HUBER+SUHNER	SUCOFLEX104	222684/4	Aug. 14, 2010	Aug. 13, 2011
AC POWER SOURCE	6205	1140503	NA	NA

**NOTE:** 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

#### 4.2.3 TEST PROCEDURE

- a. Power must be removed when changing from one temperature to another or one voltage to another voltage. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- b. EUT is connected the external power supply to control the AC input power. The various Volts from the minimum 102 Volts to 138 Volts. Each step shall be record the frequency error rate.
- c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  during the measurement testing.
- d. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

#### 4.2.4 TEST SETUP





#### 4.2.5 TEST RESULTS

##### CHANNEL BANDWIDTH: 5MHz

<b>MODE</b>	Middle channel (2587MHz)	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz
<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa	<b>TESTED BY</b>	Phoenix Huang

AFC FREQUENCY ERROR VS. VOLTAGE								
VOLTAGE (Volts)	0Minutes		2Minutes		5Minutes		10Minutes	
	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)
138	2587.00316	0.000122	2587.00312	0.000121	2587.00321	0.000124	2587.00311	0.000120
120	2587.00319	0.000123	2587.00306	0.000118	2587.00323	0.000125	2587.00292	0.000113
102	2587.00314	0.000121	2587.00315	0.000122	2587.00322	0.000124	2587.00306	0.000118

AFC FREQUENCY ERROR VS. TEMP								
TEMP (°C)	0Minutes		2Minutes		5Minutes		10Minutes	
	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)
50	2587.00262	0.000101	2587.00260	0.000101	2587.00258	0.000100	2587.00254	0.000098
40	2587.00251	0.000097	2587.00255	0.000099	2587.00253	0.000098	2587.00248	0.000096
30	2587.00286	0.000111	2587.00285	0.000110	2587.00282	0.000109	2587.00283	0.000109
20	2587.00319	0.000123	2587.00306	0.000118	2587.00323	0.000125	2587.00292	0.000113
10	2587.00357	0.000138	2587.00352	0.000136	2587.00550	0.000213	2587.00530	0.000205
0	2587.00406	0.000157	2587.00416	0.000161	2587.00413	0.000160	2587.00412	0.000159
-10	2587.00487	0.000188	2587.00488	0.000189	2587.00483	0.000187	2587.00486	0.000188
-20	2587.00564	0.000218	2587.00560	0.000216	2587.00563	0.000218	2587.00566	0.000219
-30	2587.00693	0.000268	2587.00685	0.000265	2587.00684	0.000264	2587.00685	0.000265



A D T

**CHANNEL BANDWIDTH: 10MHz**

<b>MODE</b>	Middle channel (2593MHz)	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz
<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa	<b>TESTED BY</b>	Phoenix Huang

AFC FREQUENCY ERROR VS. VOLTAGE								
VOLTAGE (Volts)	0Minutes		2Minutes		5Minutes		10Minutes	
	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)
138	2593.00322	0.000124	2593.00329	0.000127	2593.00324	0.000125	2593.00326	0.000126
120	2593.00323	0.000125	2593.00322	0.000124	2593.00318	0.000123	2593.00326	0.000126
102	2593.00324	0.000125	2593.00317	0.000122	2593.00316	0.000122	2593.00317	0.000122

AFC FREQUENCY ERROR VS. TEMP								
TEMP (°C)	0Minutes		2Minutes		5Minutes		10Minutes	
	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)
50	2593.00296	0.000114	2593.00292	0.000113	2593.00286	0.000110	2593.00277	0.000107
40	2593.00307	0.000118	2593.00311	0.000120	2593.00302	0.000116	2593.00301	0.000116
30	2593.00315	0.000121	2593.00314	0.000121	2593.00309	0.000119	2593.00318	0.000123
20	2593.00323	0.000125	2593.00322	0.000124	2593.00318	0.000123	2593.00326	0.000126
10	2593.00424	0.000164	2593.00422	0.000163	2593.00416	0.000160	2593.0040	0.000153
0	2593.00518	0.000200	2593.00516	0.000199	2593.00506	0.000195	2593.0051	0.000197
-10	2593.00588	0.000227	2593.00606	0.000234	2593.00611	0.000236	2593.00624	0.000241
-20	2593.00605	0.000233	2593.00607	0.000234	2593.00615	0.000237	2593.00611	0.000236
-30	2593.0069	0.000266	2593.0066	0.000255	2593.00670	0.000258	2593.00650	0.000251

### 4.3 EMISSION BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF EMISSION BANDWIDTH MEASUREMENT

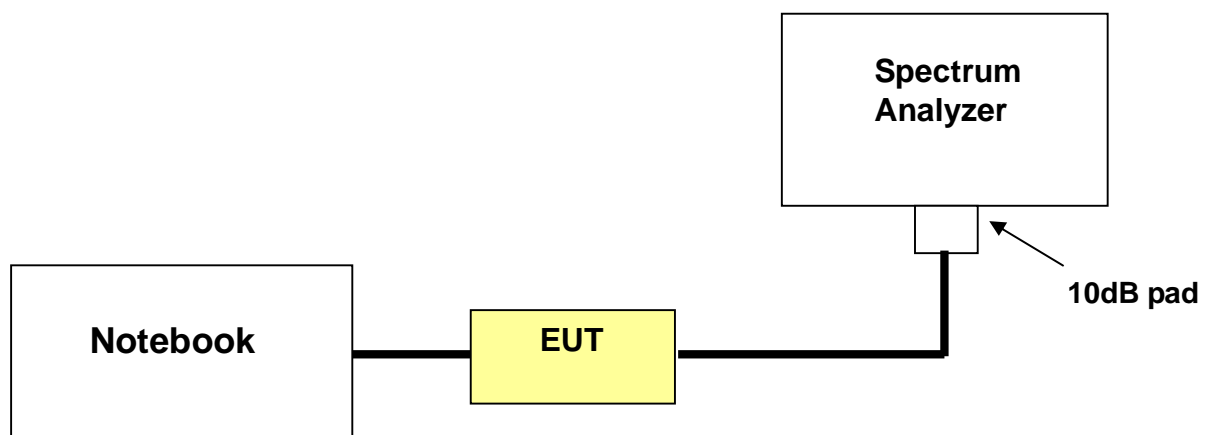
According to FCC 27.53(m)(6) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

#### 4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY46180622	May 12, 2010	May 11, 2011
HUBER+SUHNER	SUCOFLEX104	222684/4	Aug. 14, 2010	Aug. 13, 2011
JFW 10dB attenuation	50HF-010-SMA	N/A	N/A	N/A

**NOTE:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

#### 4.3.3 TEST SETUP



#### 4.3.4 TEST PROCEDURES

- a. The Notebook controlled EUT to export rated output power under transmission mode and specific channel frequency. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.





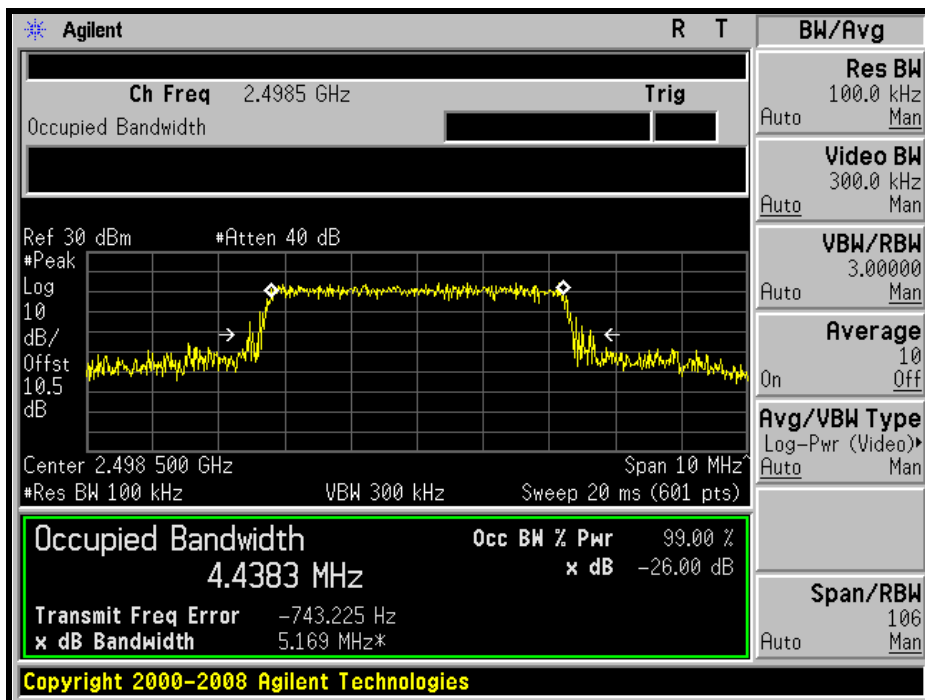
A D T

### 4.3.5 TEST RESULTS

#### CHANNEL BANDWIDTH: 5MHz

FREQUENCY (MHz)	-26 dBc BANDWIDTH (MHz)
2498.5	5.16
2587	5.16
2687.5	5.04

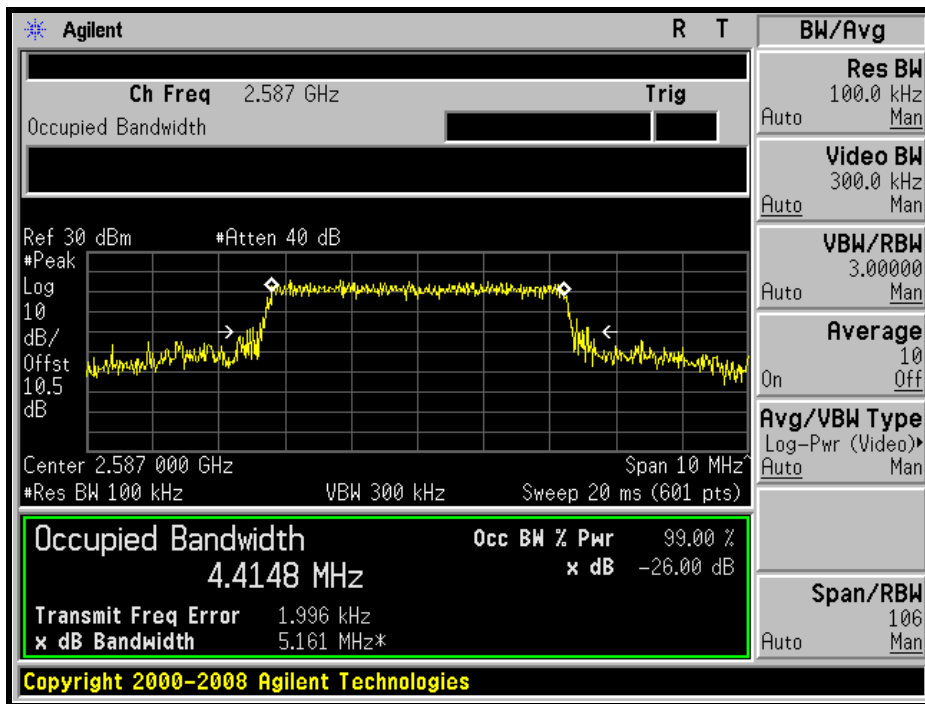
#### LOW CHANNEL



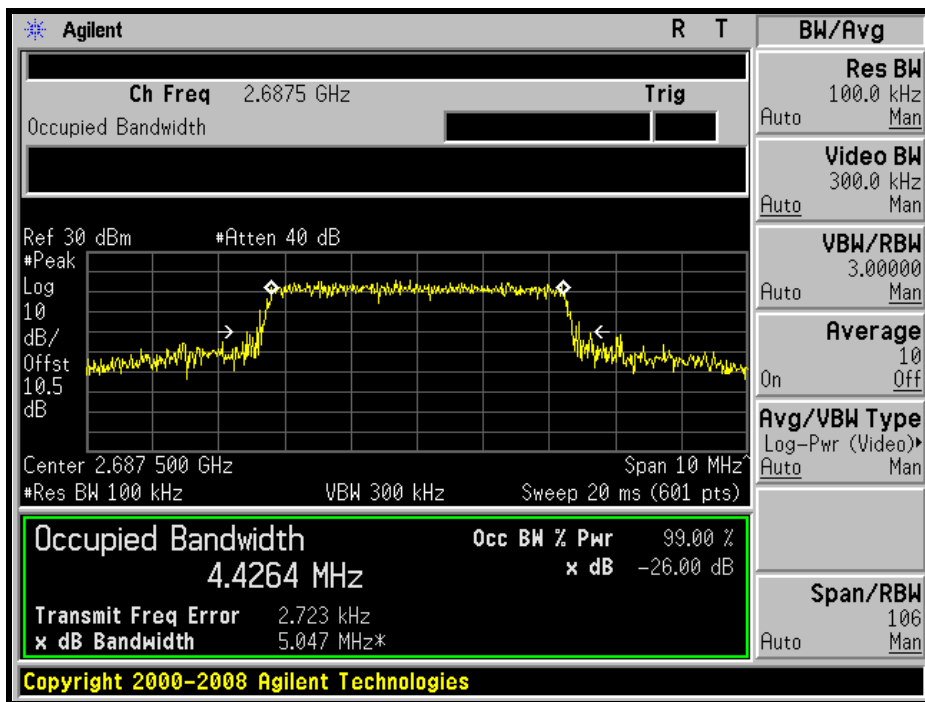


A D T

### MIDDLE CHANNEL



### HIGH CHANNEL



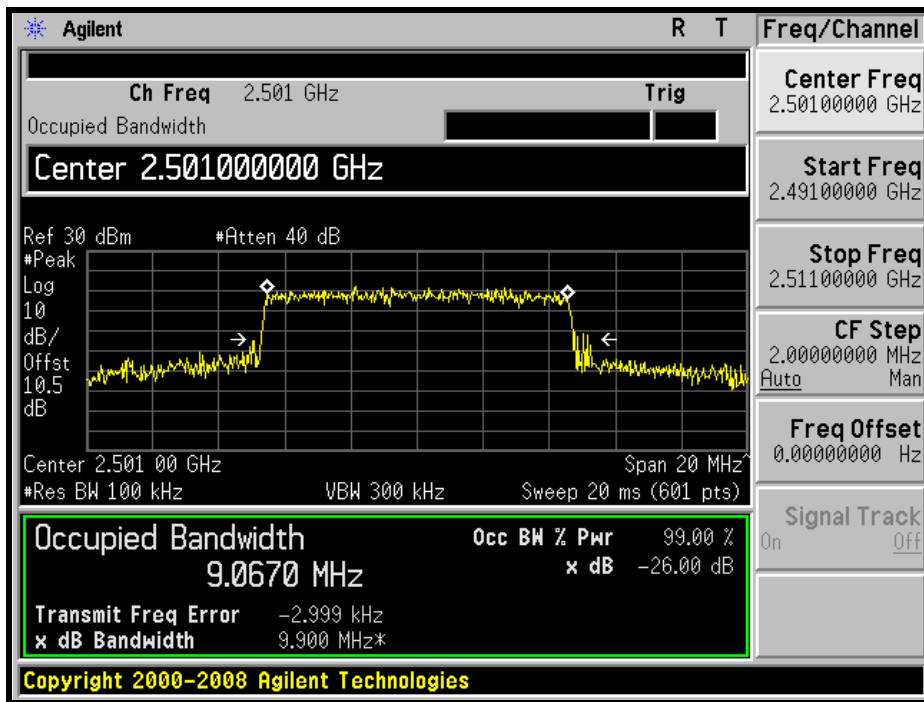


A D T

### CHANNEL BANDWIDTH: 10MHz

FREQUENCY (MHz)	-26 dBc BANDWIDTH (MHz)
2501	9.90
2593	9.74
2685	9.56

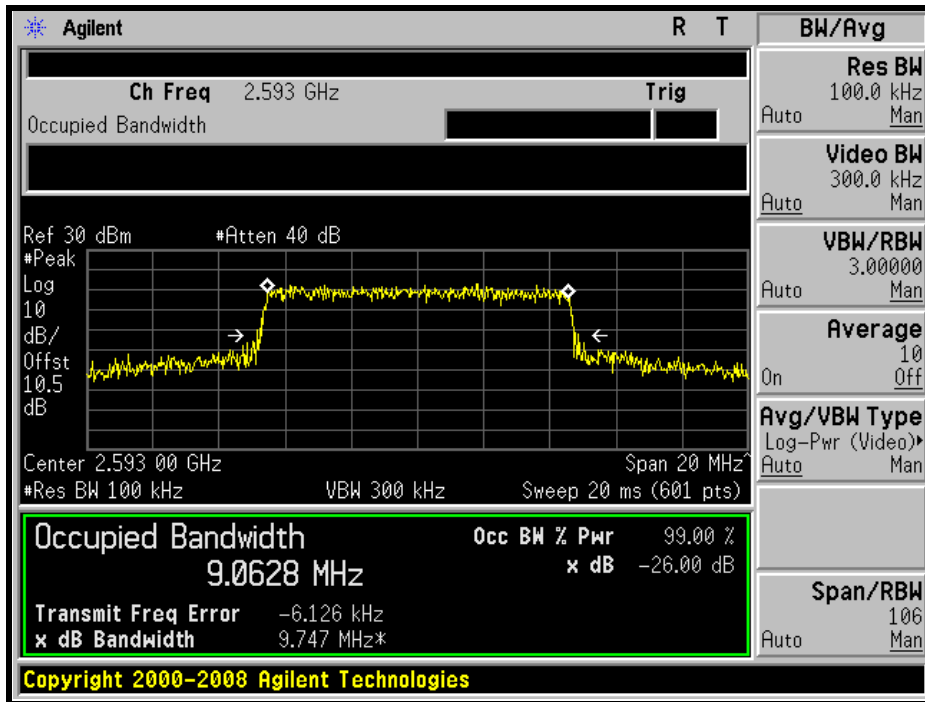
### LOW CHANNEL



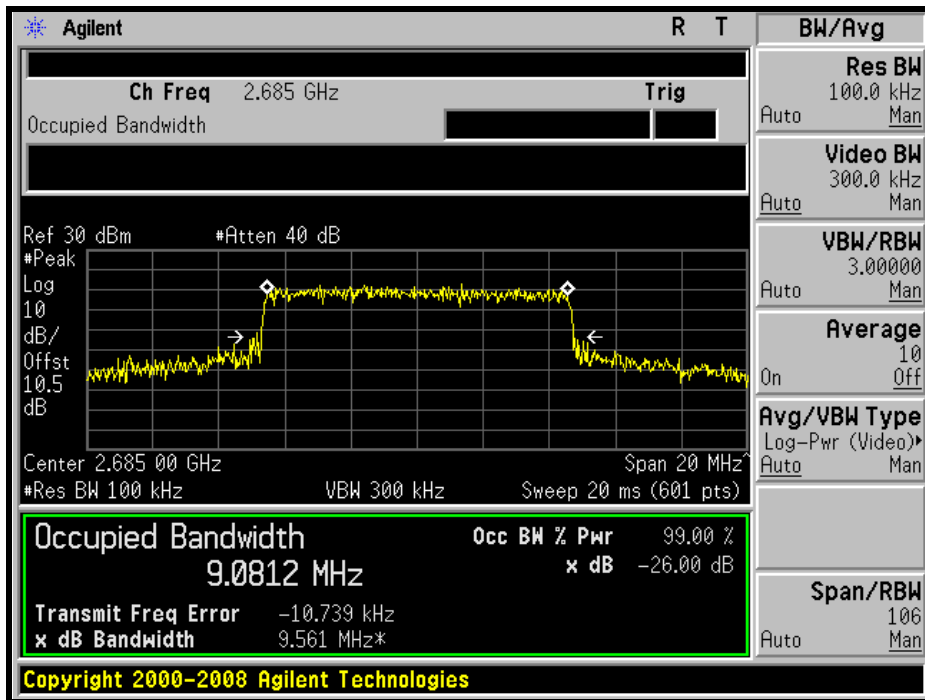


A D T

### MIDDLE CHANNEL



### HIGH CHANNEL





#### 4.4 CHANNEL EDGE MEASUREMENT

##### 4.4.1 LIMITS OF CHANNEL EDGE MEASUREMENT

According to FCC 27.53(m)(2) specified that power of any emission outside of the channel edge must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$ dB. In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

##### 4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY46180622	May 12, 2010	May 11, 2011
HUBER+SUHNER	SUCOFLEX104	222684/4	Aug. 14, 2010	Aug. 13, 2011
JFW 10dB attenuation	50HF-010-SMA	NA	NA	NA

**NOTE:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

##### 4.4.3 TEST SETUP

Same as Item 4.3.3

#### 4.4.4 TEST PROCEDURES

- a. The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels: low, middle and high operational frequency range.
- b. For Channel bandwidth: 5 MHz:  
The center frequency of spectrum is the band edge frequency and span is 20MHz. RBW of the spectrum is 56kHz and VB W of the spectrum is 180kHz.
- c. For Channel bandwidth: 10 MHz:  
The center frequency of spectrum is the band edge frequency and span is 30MHz. RB W of the spectrum is 100kHz and VB W of the spectrum is 300kHz.
- d. Record the max trace plot into the test report.

#### 4.4.5 EUT OPERATING CONDITION

Same as item 4.1.5

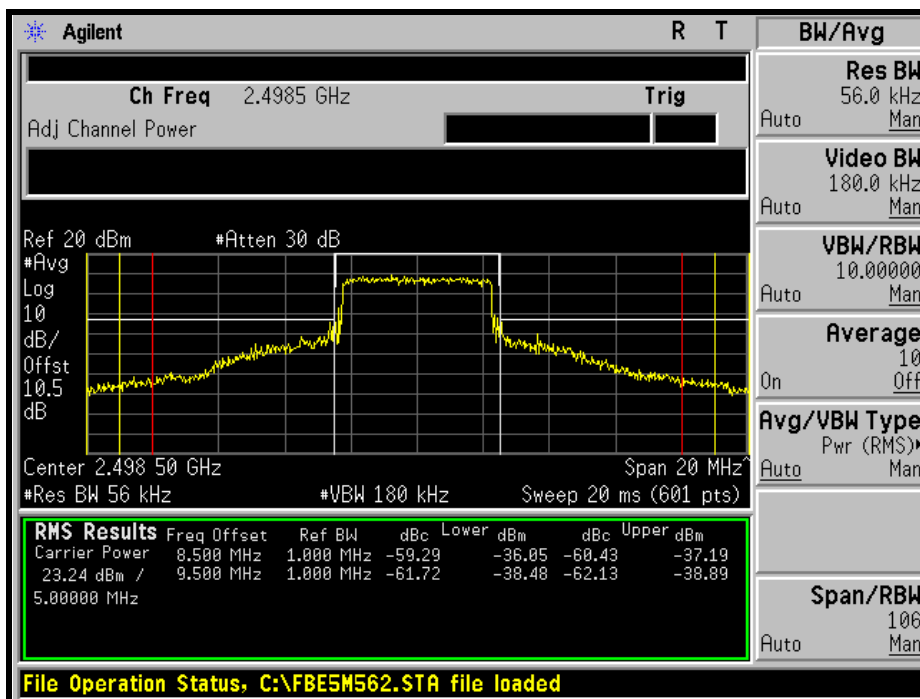
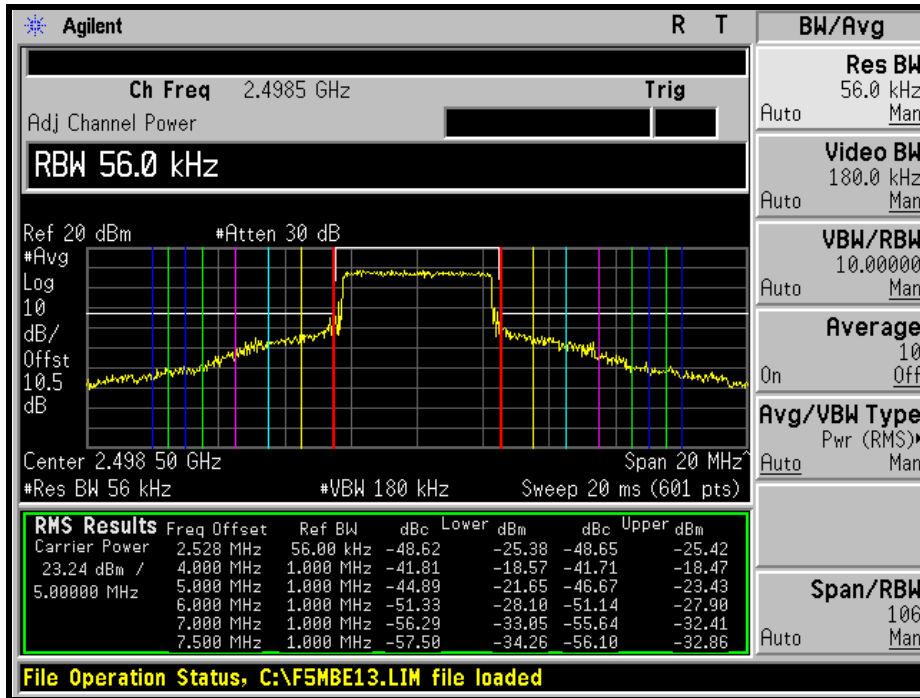


A D T

#### 4.4.6 TEST RESULTS

### CHANNEL BANDWIDTH: 5MHz

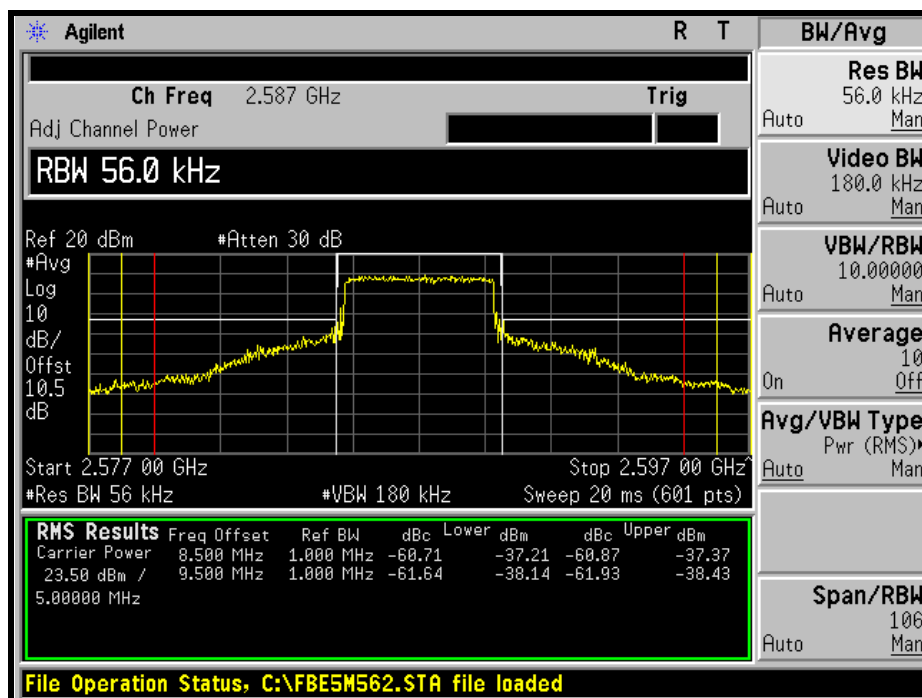
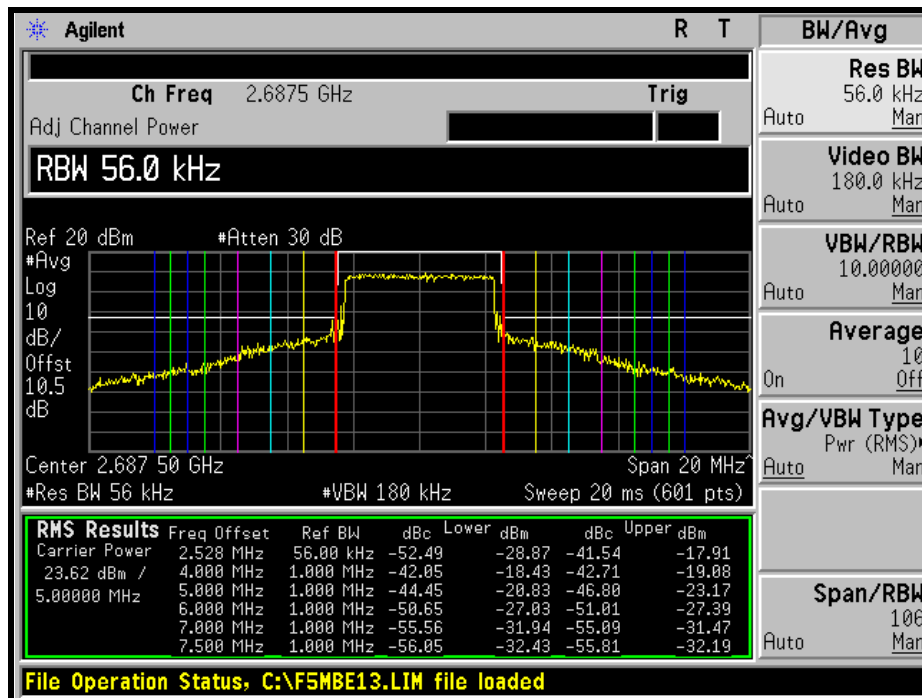
#### LOW CHANNEL





A D T

### MIDDLE CHANNEL

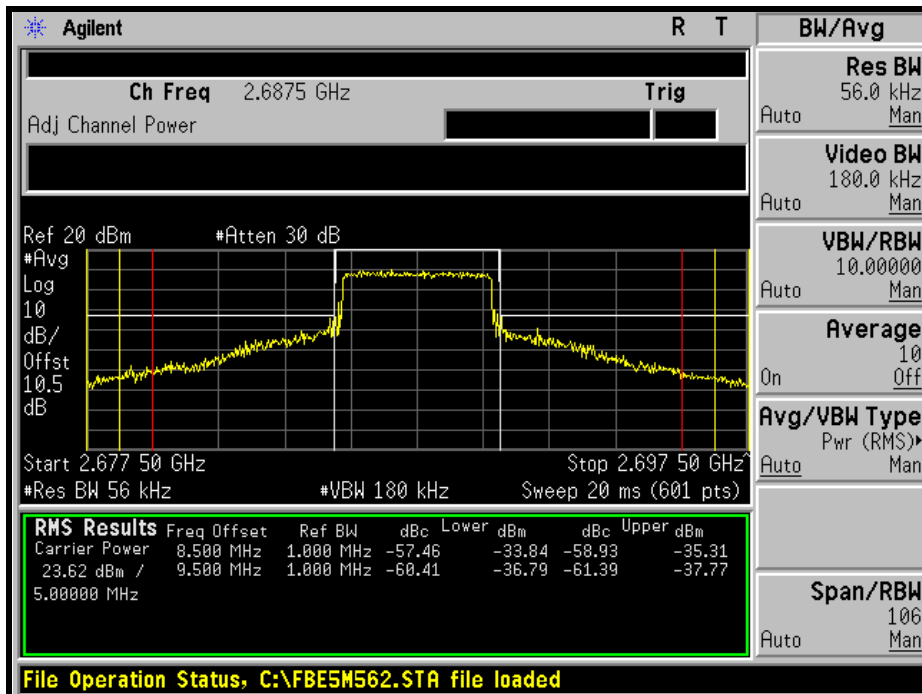
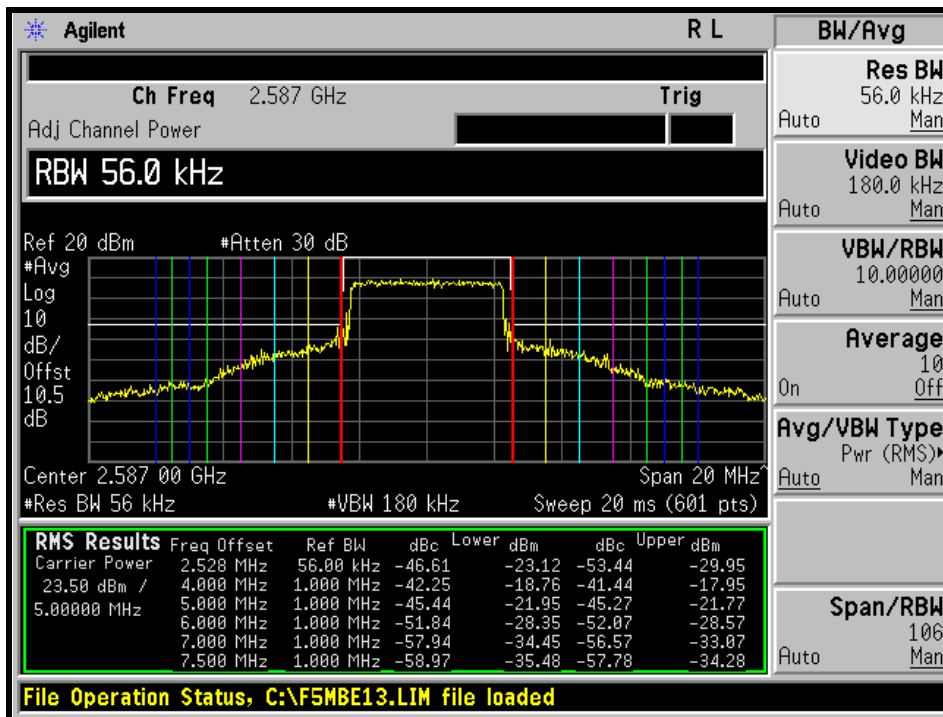






A D T

### HIGH CHANNEL

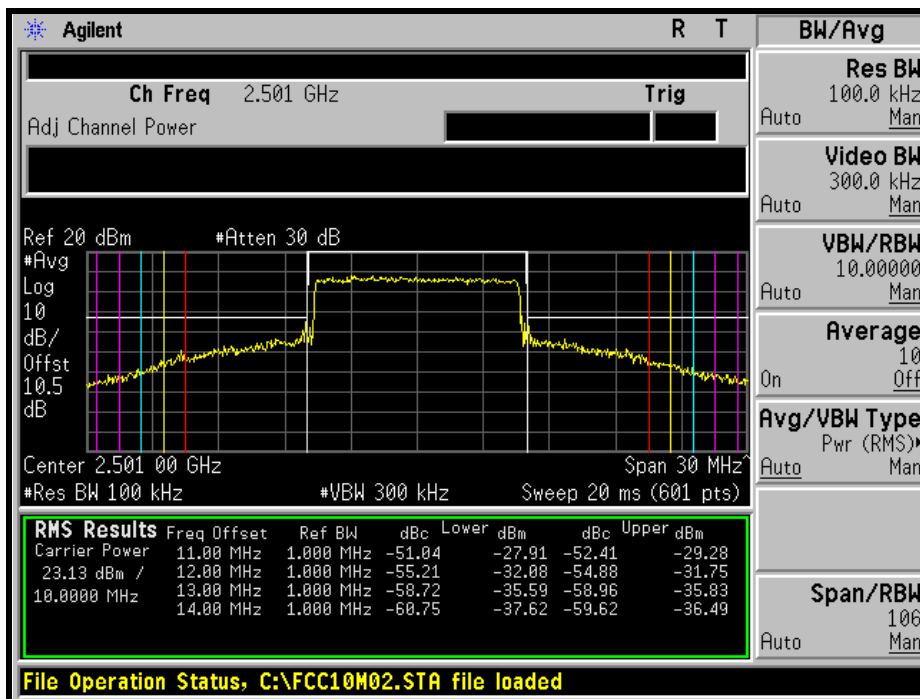
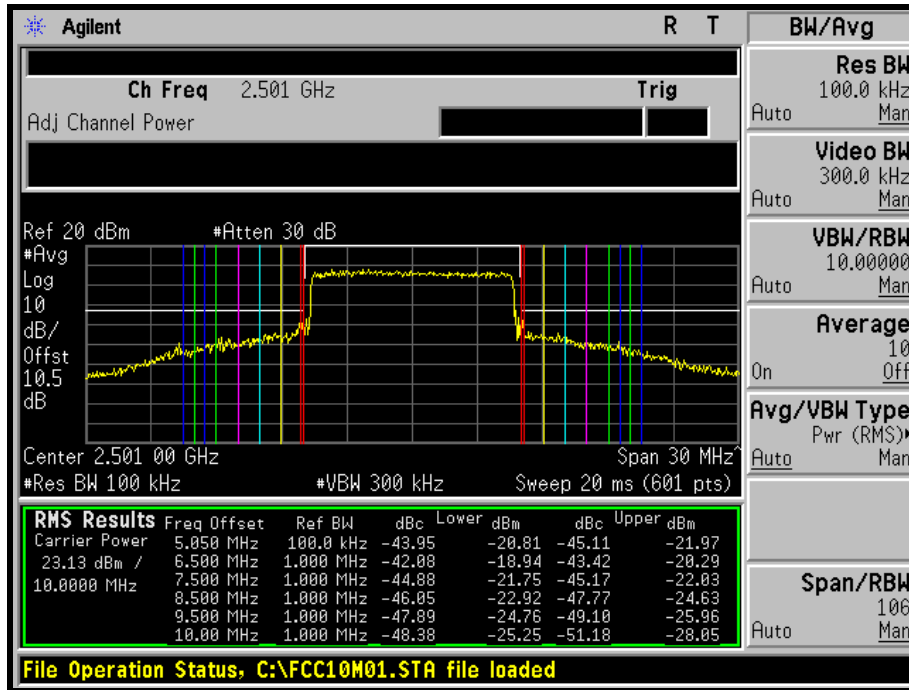




A D T

# CHANNEL BANDWIDTH: 10MHz

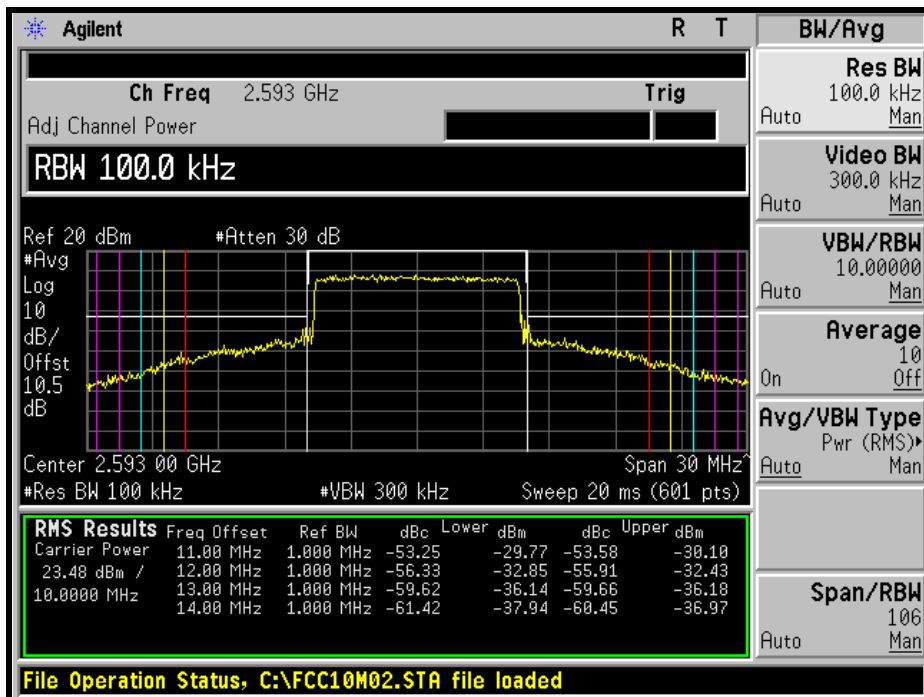
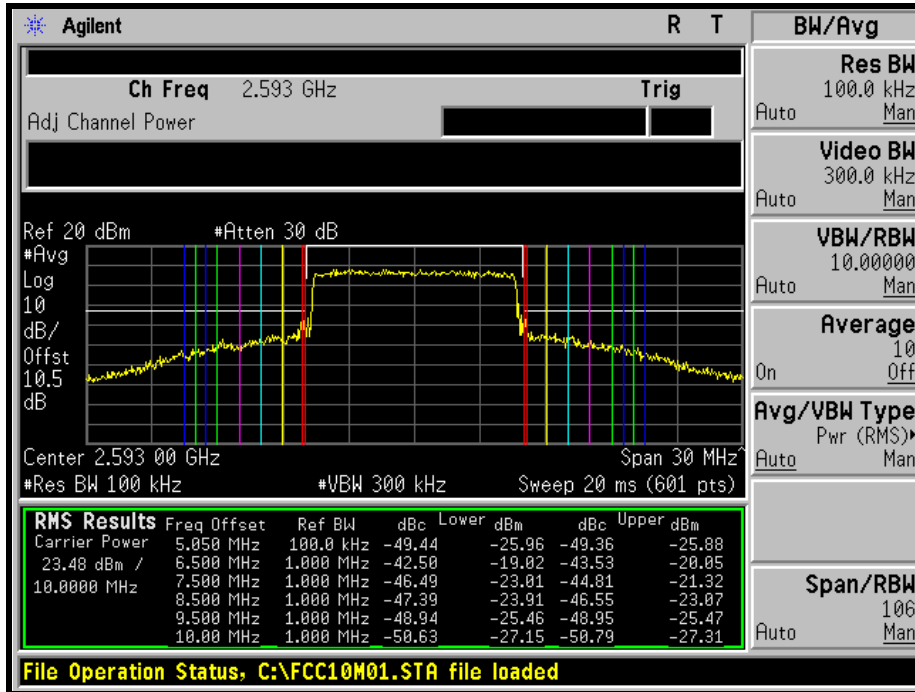
## LOW CHANNEL





A D T

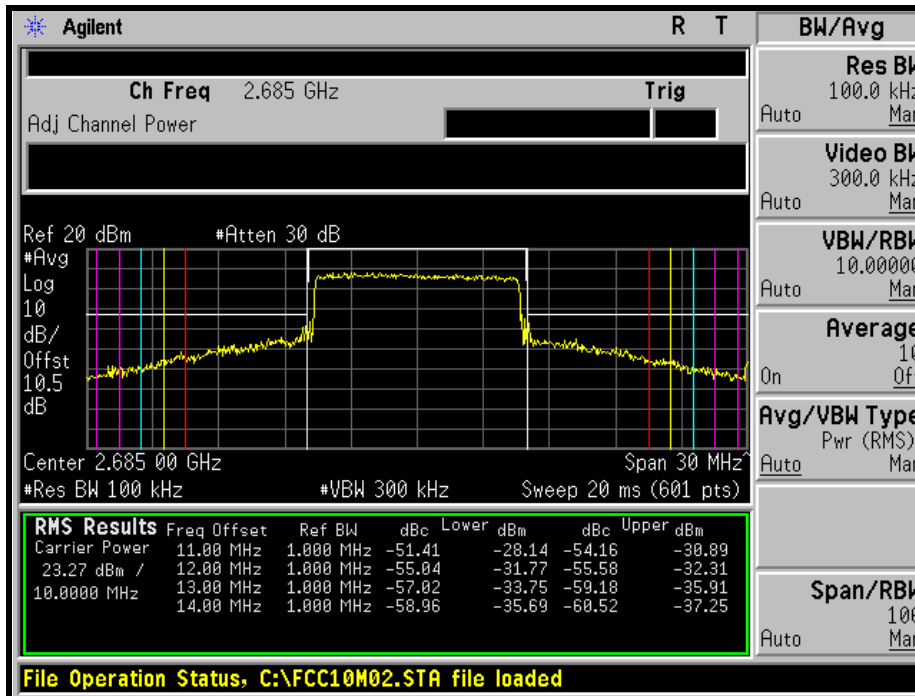
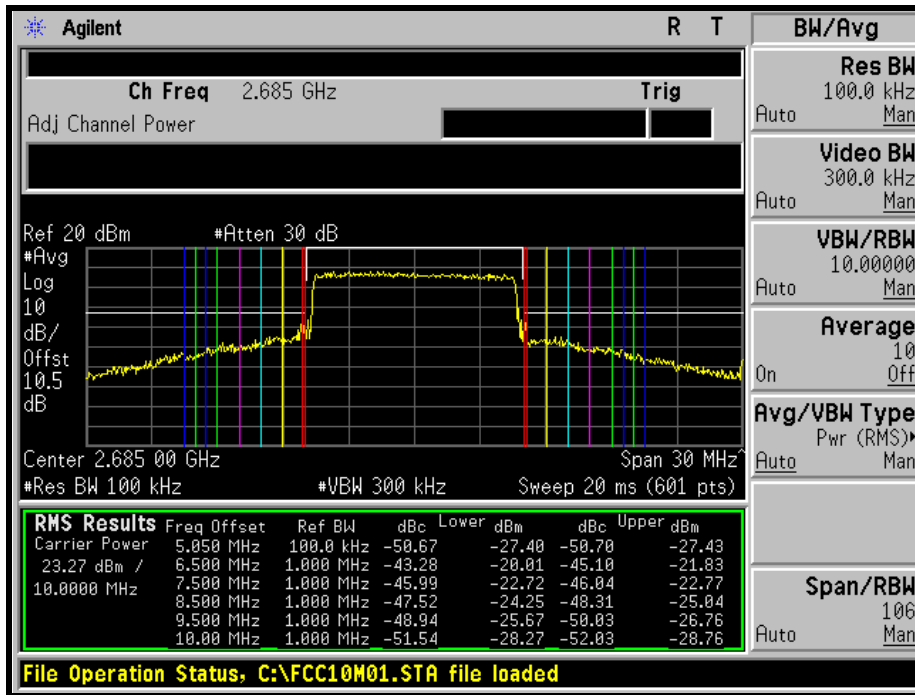
MIDDLE CHANNEL





A D T

### HIGH CHANNEL





## 4.5 CONDUCTED SPURIOUS EMISSIONS

### 4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

In the FCC 27.53(m)(2), On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$ dB from the channel edges.

### 4.5.2 TEST INSTRUMENTS

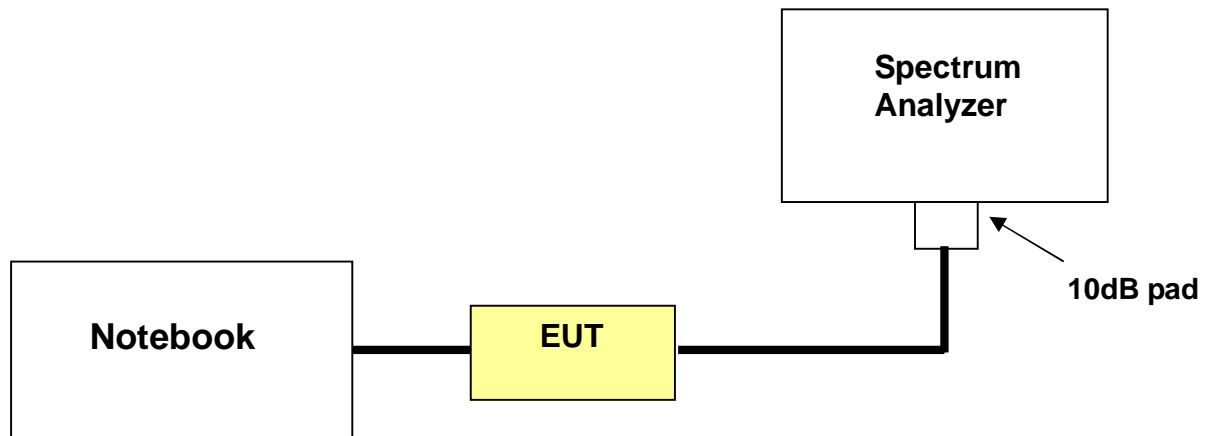
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY46180622	May 12, 2010	May 11, 2011
HUBER+SUHNER	SUCOFLEX104	22238114	July 30, 2010	July 29, 2011
JFW 10dB attenuation	50HF-010-SMA	N/A	N/A	N/A

**NOTE:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

#### 4.5.3 TEST PROCEDURE

- a. The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels: low, middle and high operational frequency range.
- b. When the spectrum scanned from 30MHz to 27GHz, it shall be connected to the 10dB pad attenuated the carried frequency. The spectrum set RB = 1MHz, VB = 3MHz.

#### 4.5.4 TEST SETUP



#### 4.5.5 EUT OPERATING CONDITIONS

Same as item 4.1.5

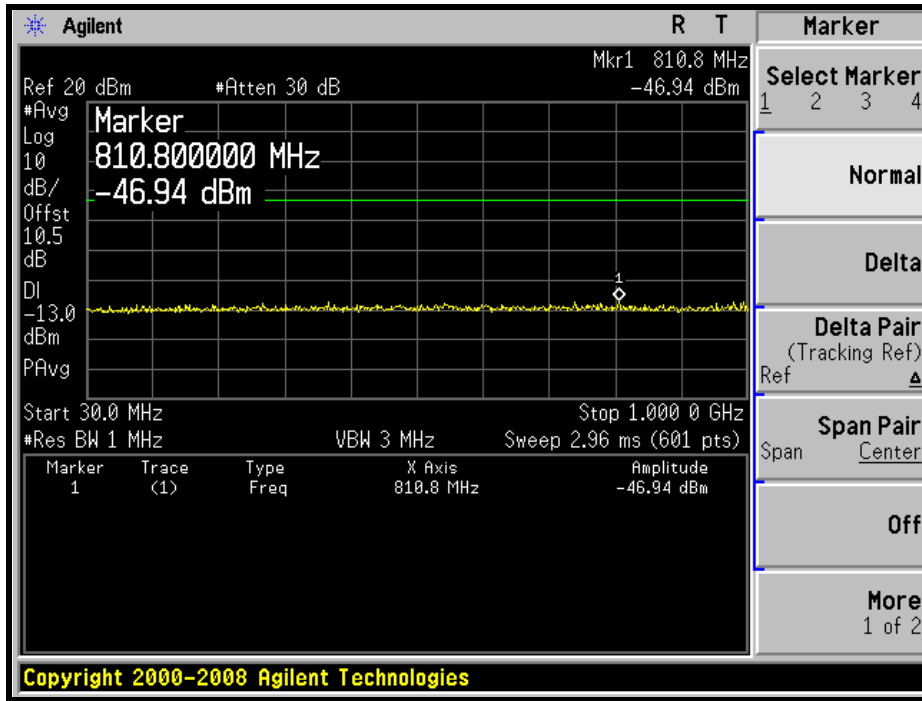


A D T

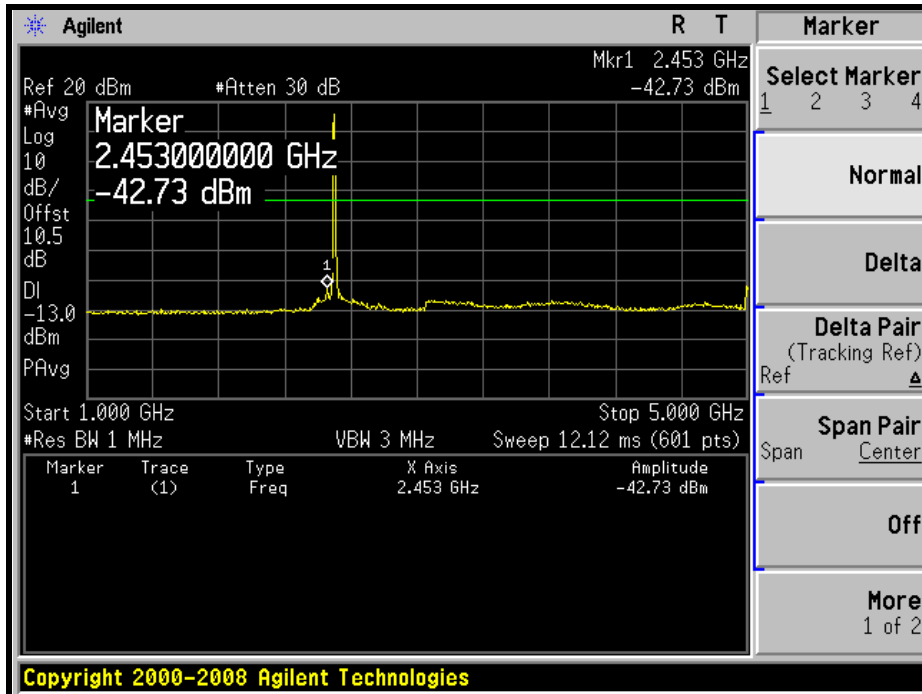
#### 4.5.6 TEST RESULTS

##### CHANNEL BANDWIDTH: 5MHz

LOW CHANNEL: 30MHz ~ 1GHz:



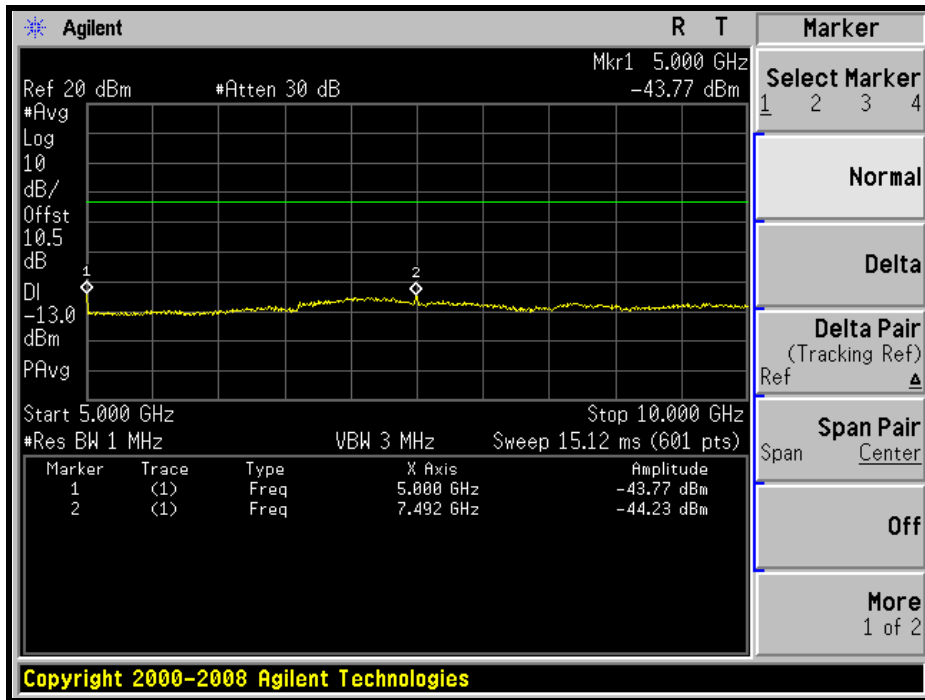
1GHz ~ 5GHz:



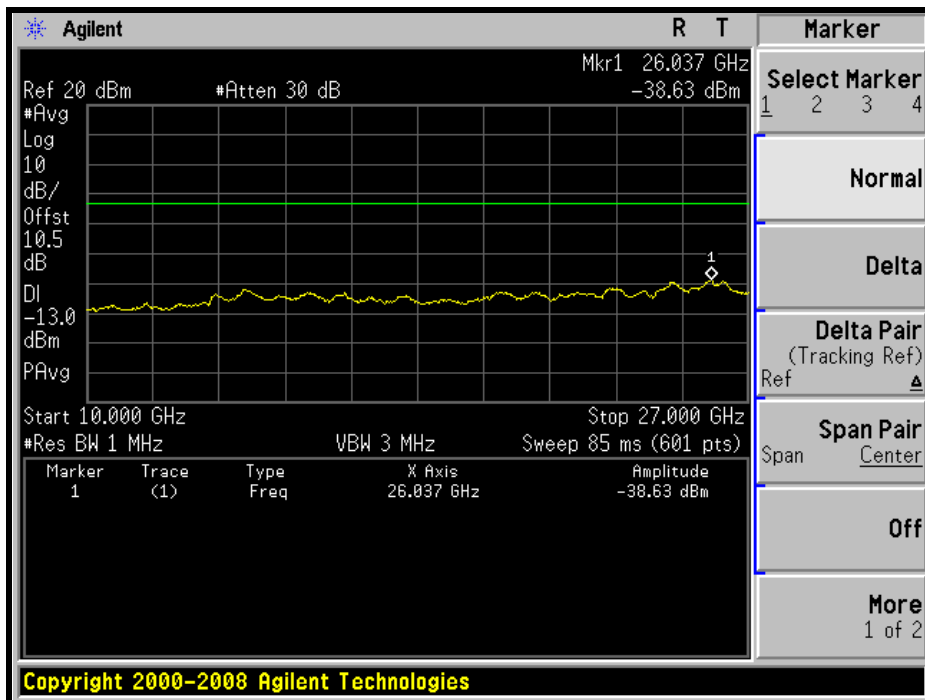


A D T

5GHz ~ 10GHz:



10GHz ~ 27GHz:

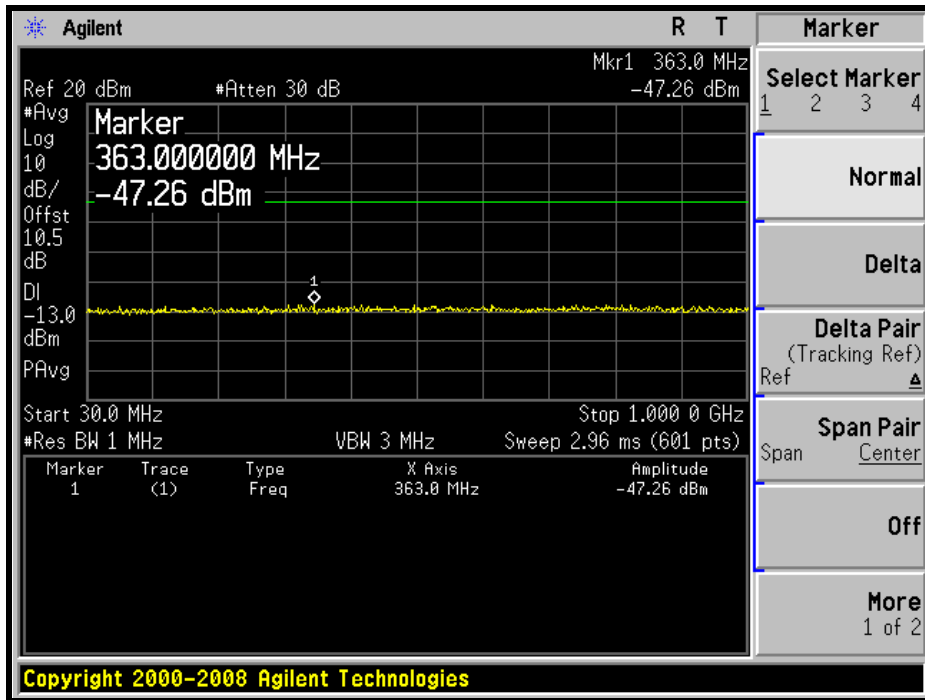




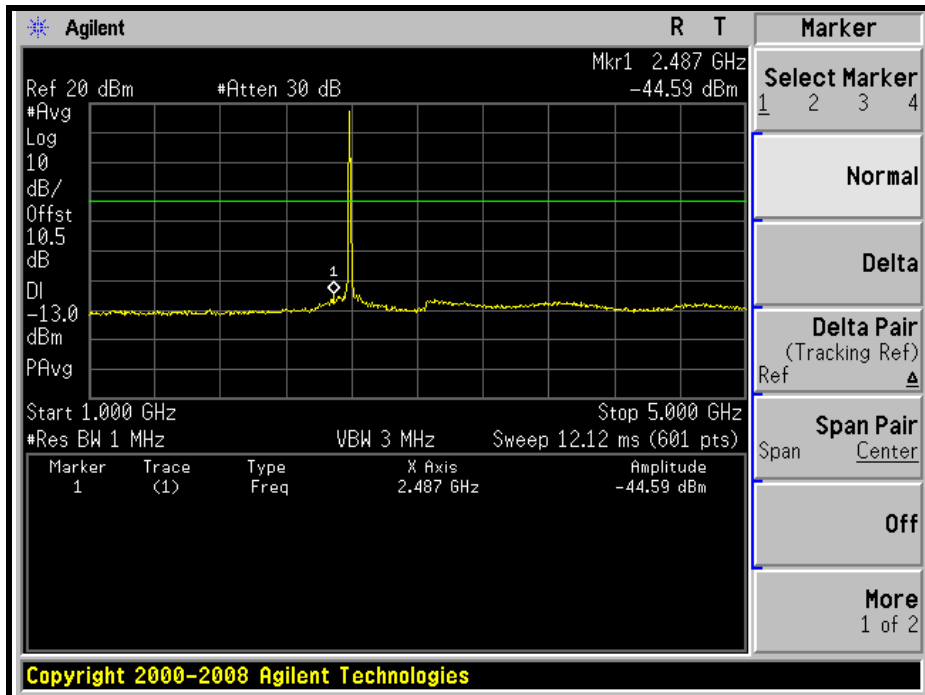


A D T

MIDDLE CHANNEL: 30MHz ~ 1GHz:



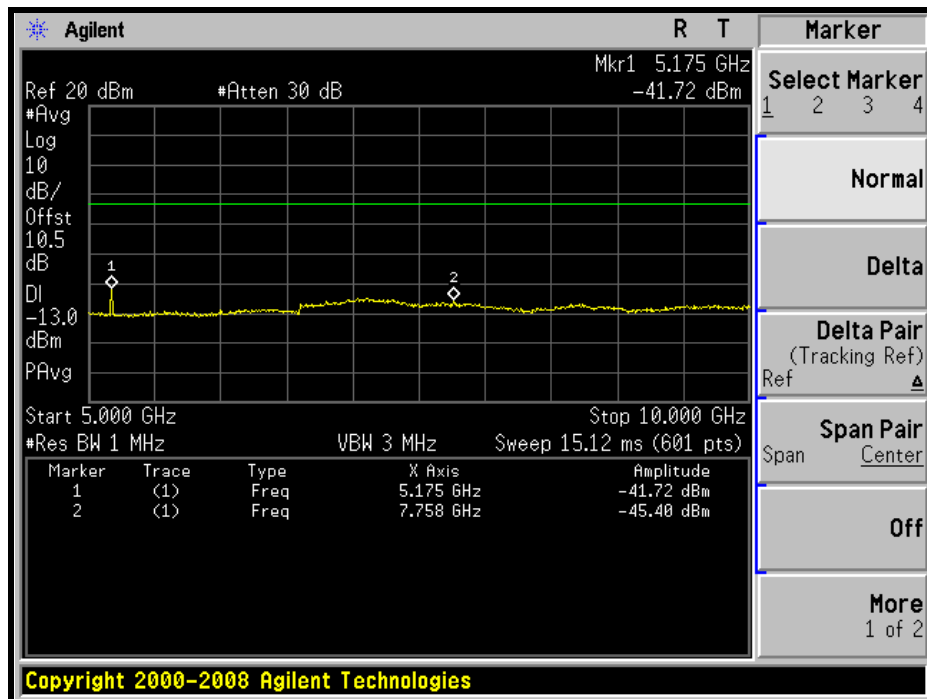
1GHz ~ 5GHz:



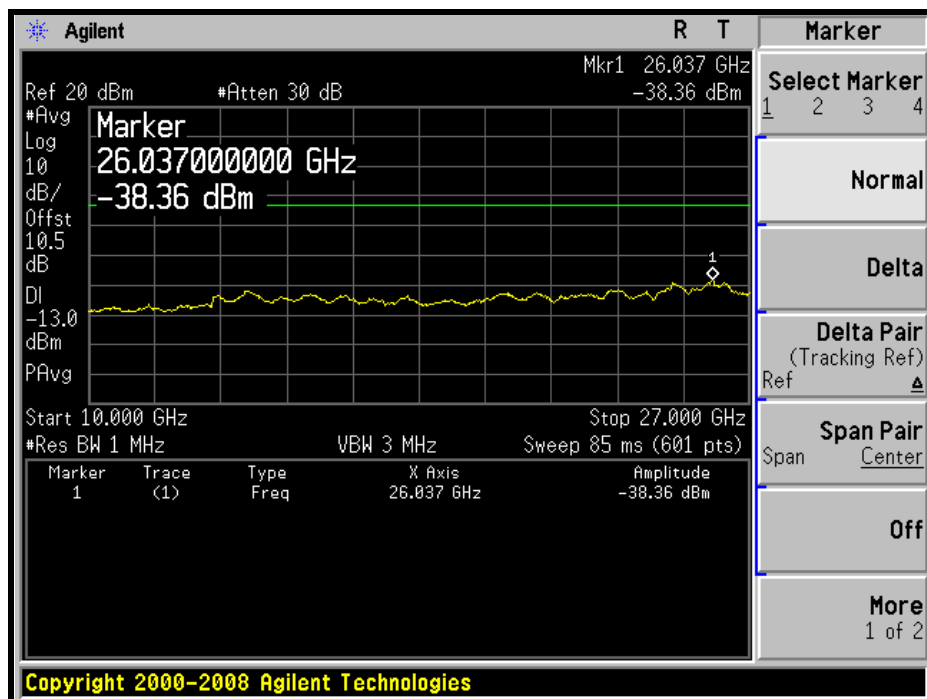


A D T

5GHz ~ 10GHz:



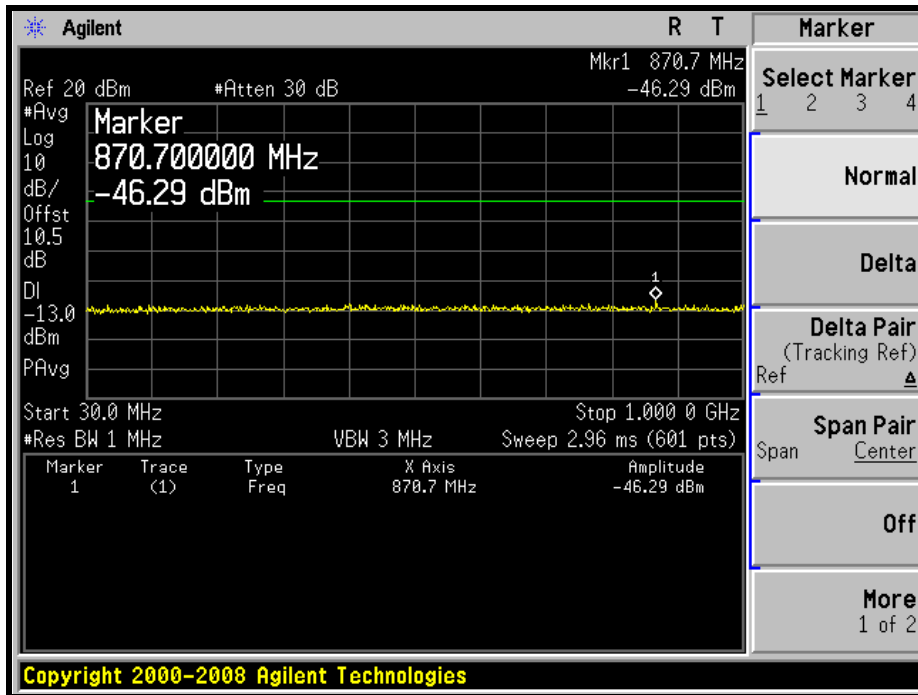
10GHz ~ 27GHz:



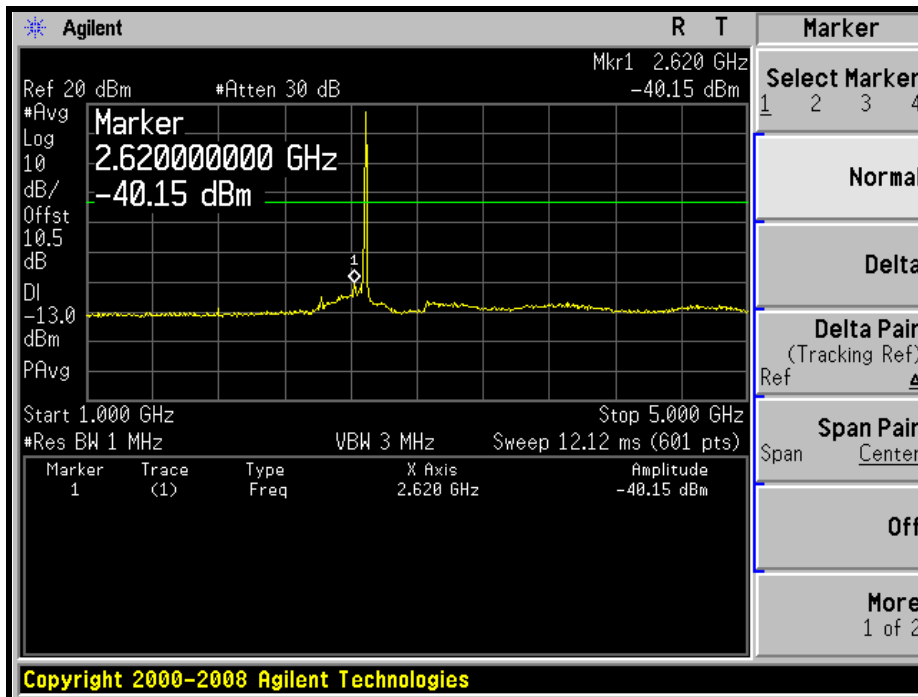


A D T

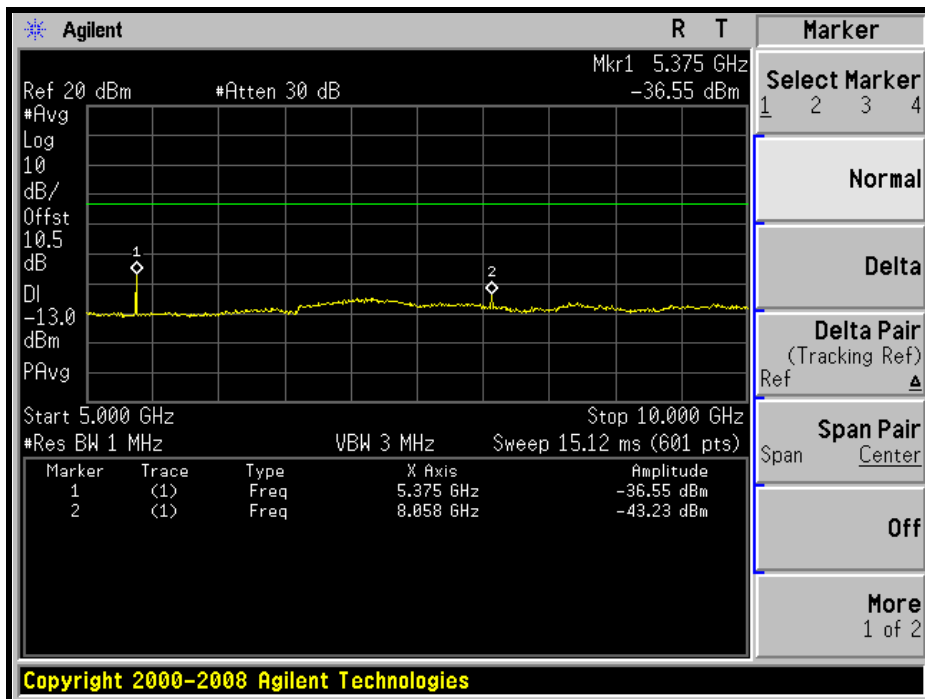
**HIGH CHANNEL: 30MHz ~ 1GHz:**



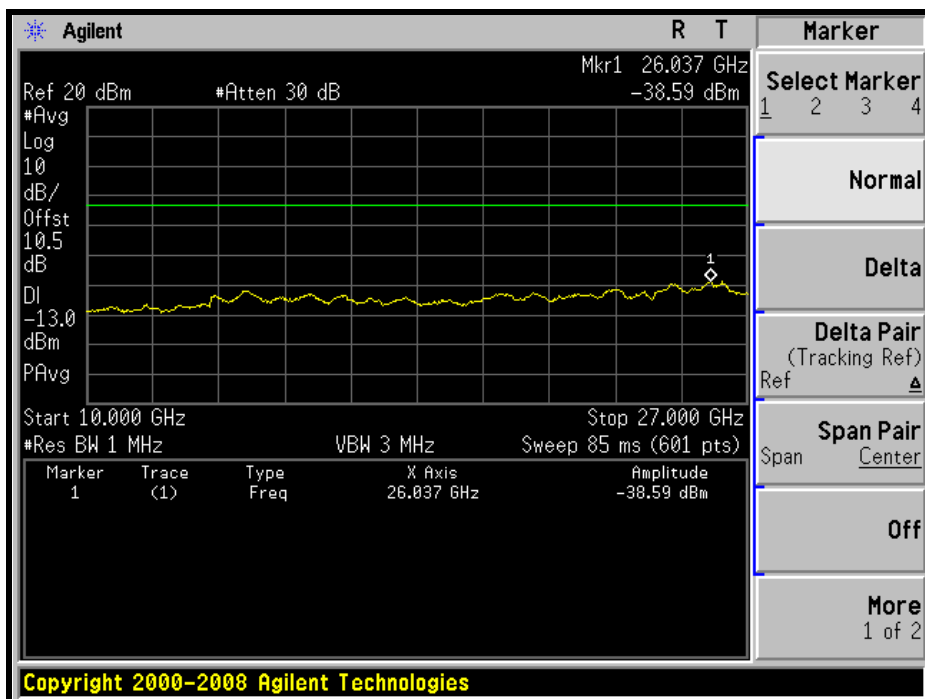
**1GHz ~ 5GHz:**



5GHz ~ 10GHz:



10GHz ~ 27GHz:

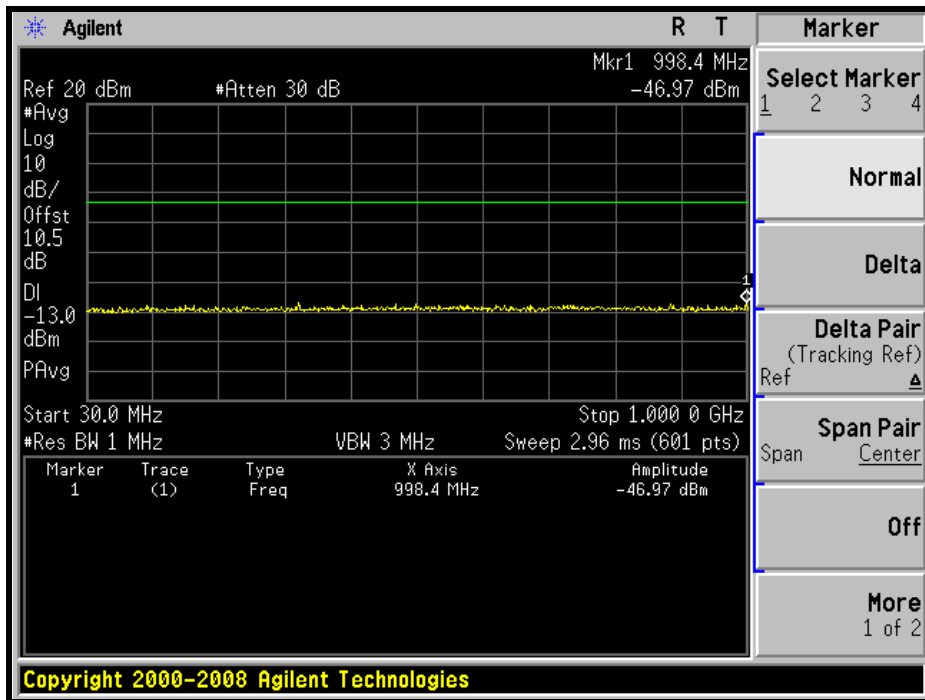




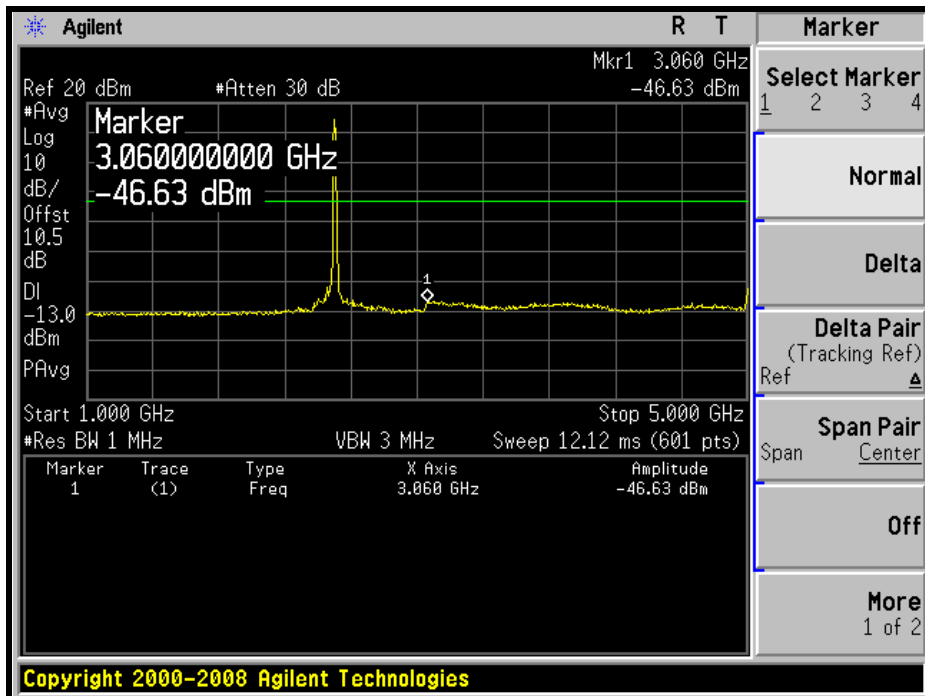
A D T

### CHANNEL BANDWIDTH: 10MHz

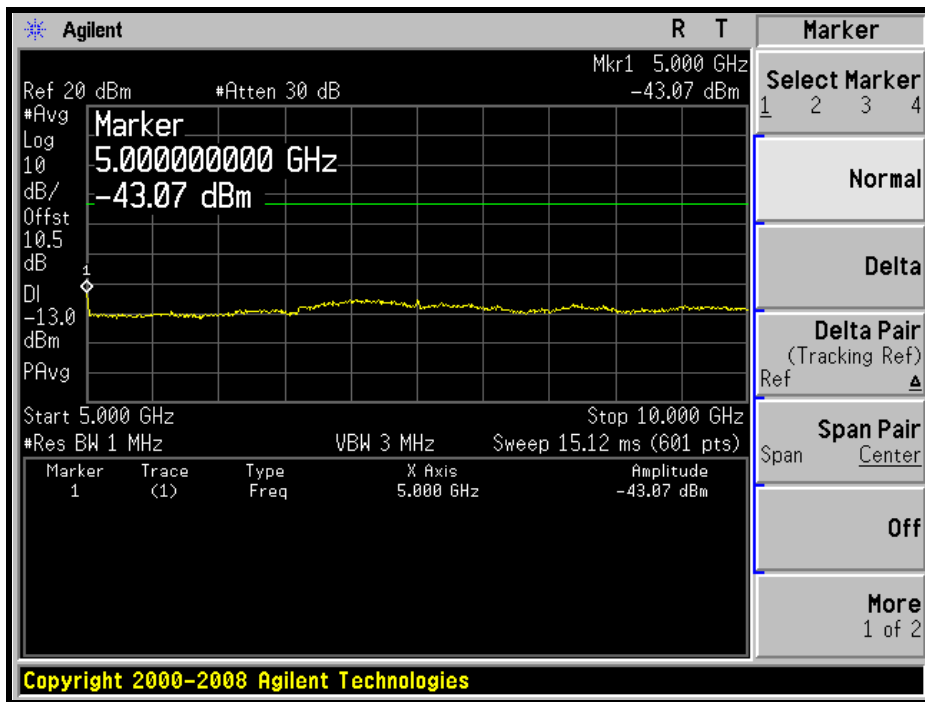
LOW CHANNEL: 30MHz ~ 1GHz:



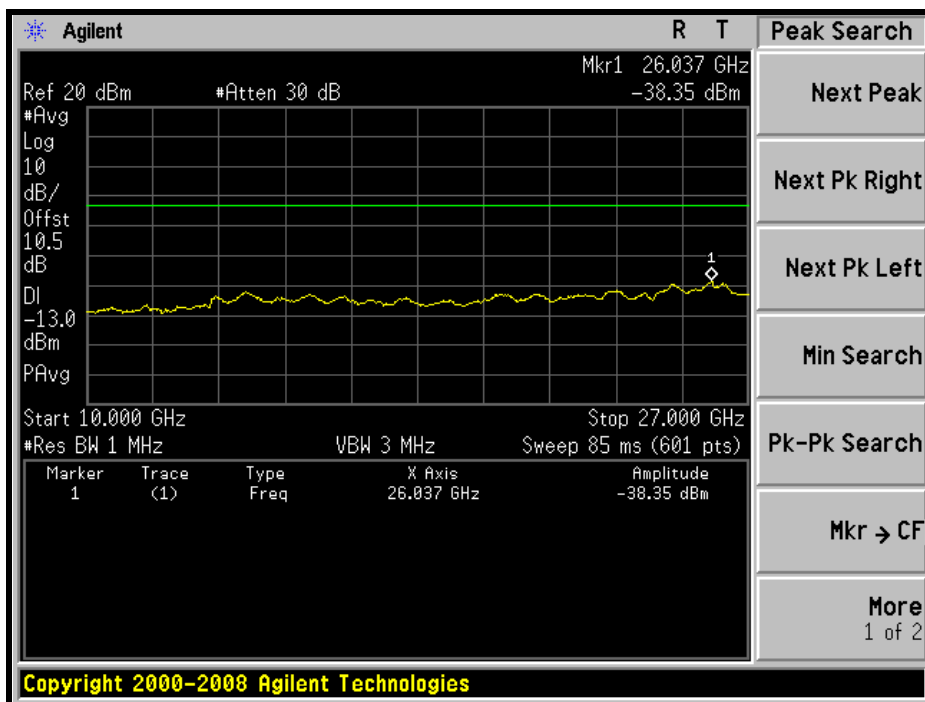
1GHz ~ 5GHz:



5GHz ~ 10GHz:



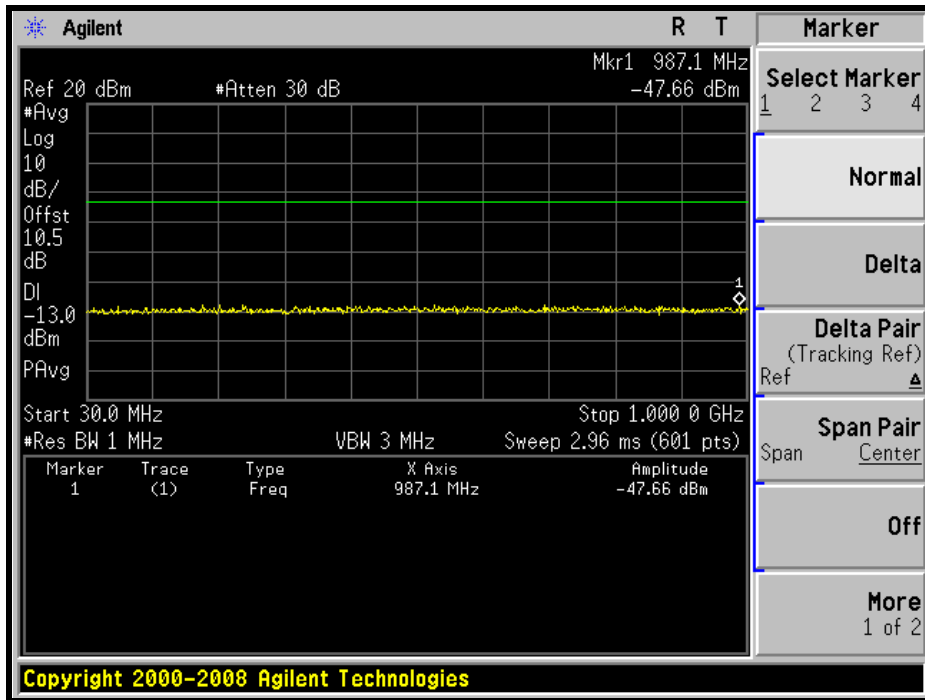
10GHz ~ 27GHz:



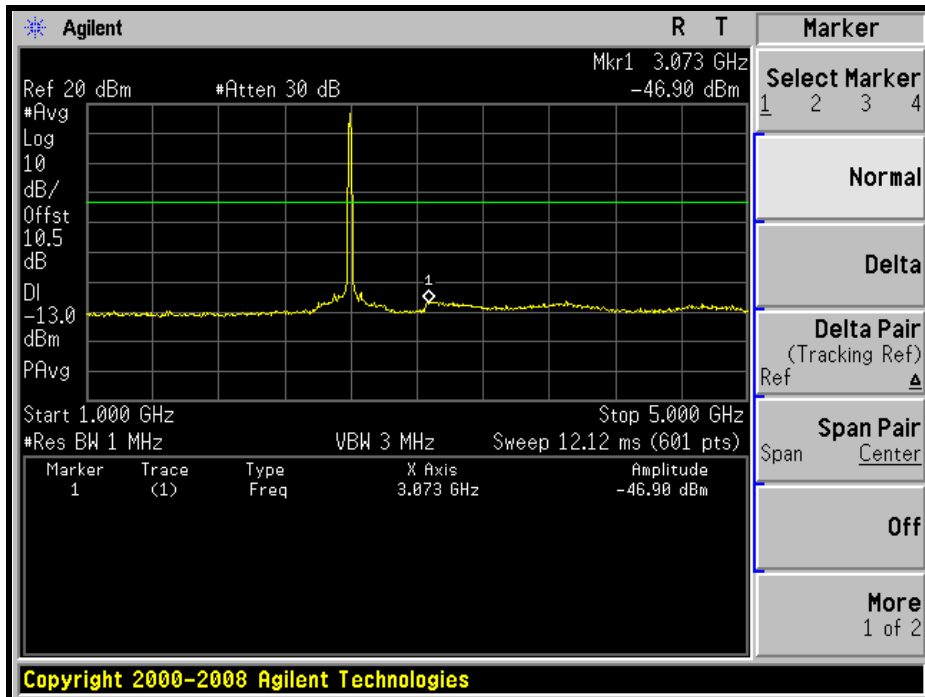


A D T

MIDDLE CHANNEL: 30MHz ~ 1GHz:



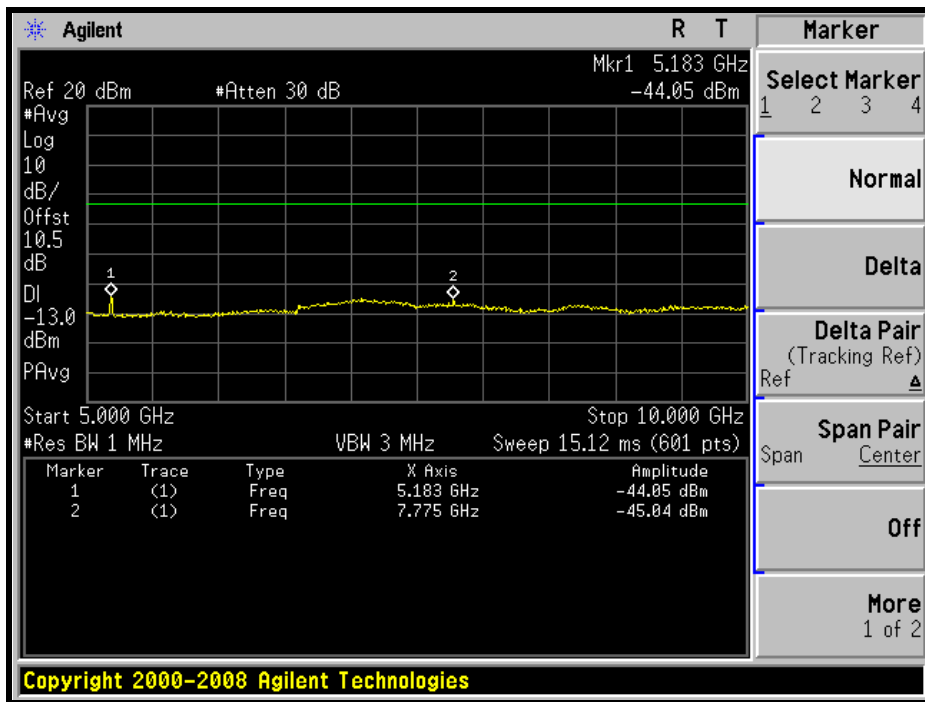
1GHz ~ 5GHz:



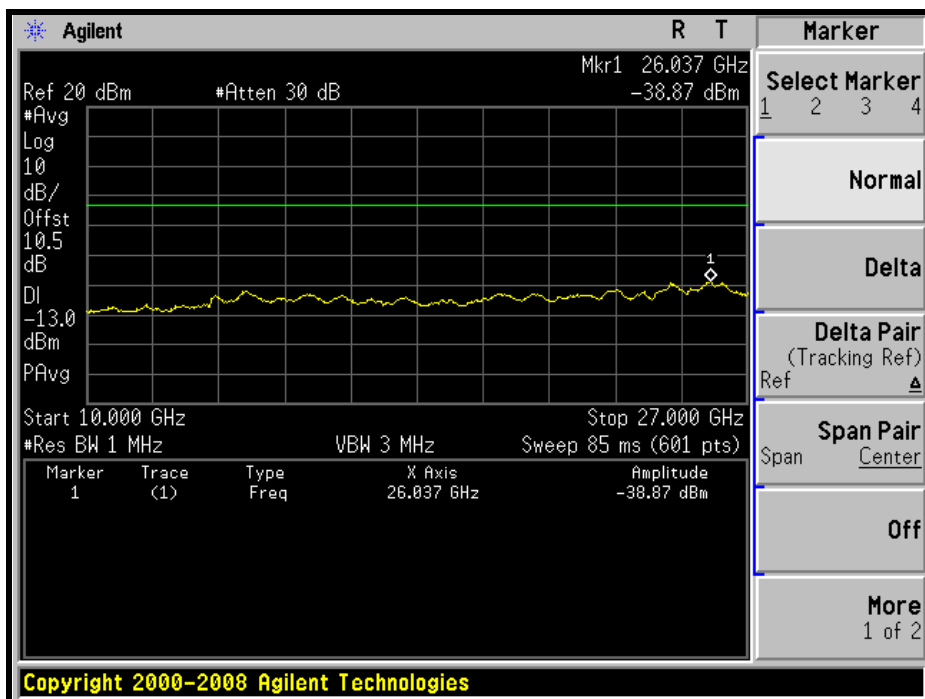


A D T

5GHz ~ 10GHz:



10GHz ~ 27GHz:

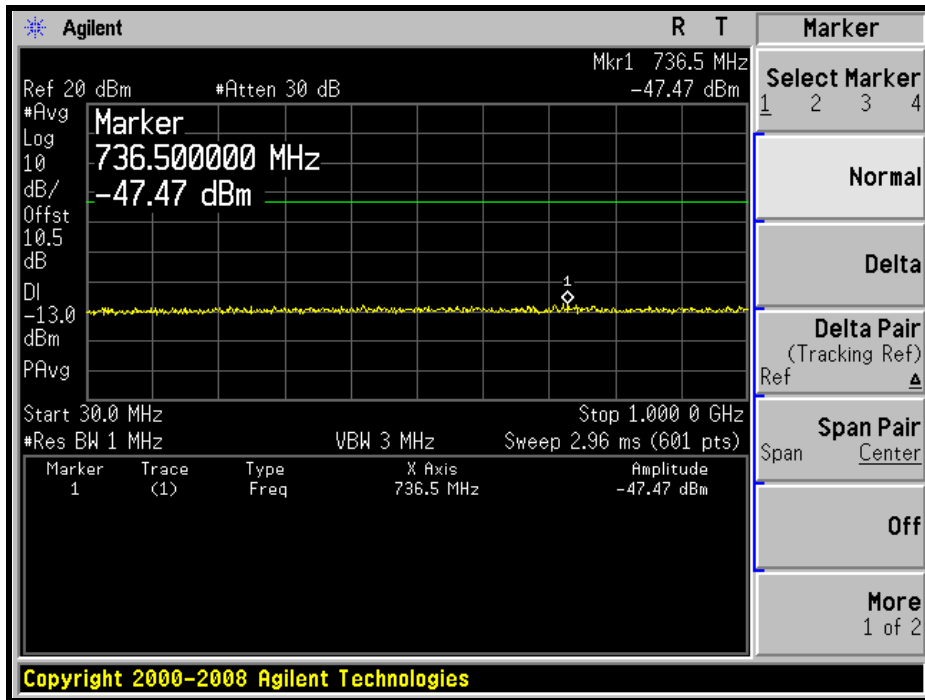




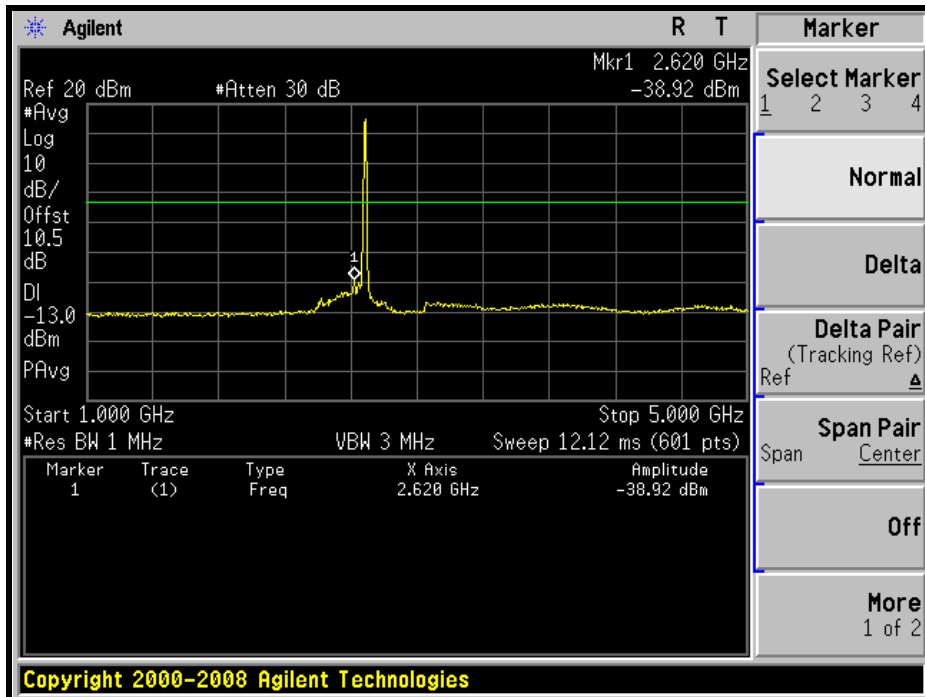


A D T

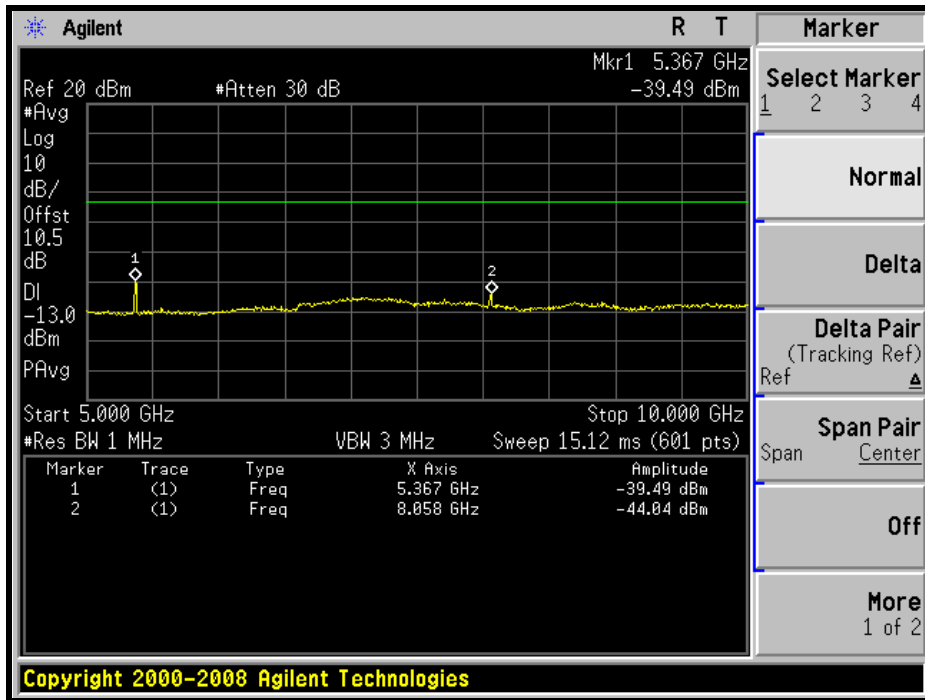
### HIGH CHANNEL: 30MHz ~ 1GHz:



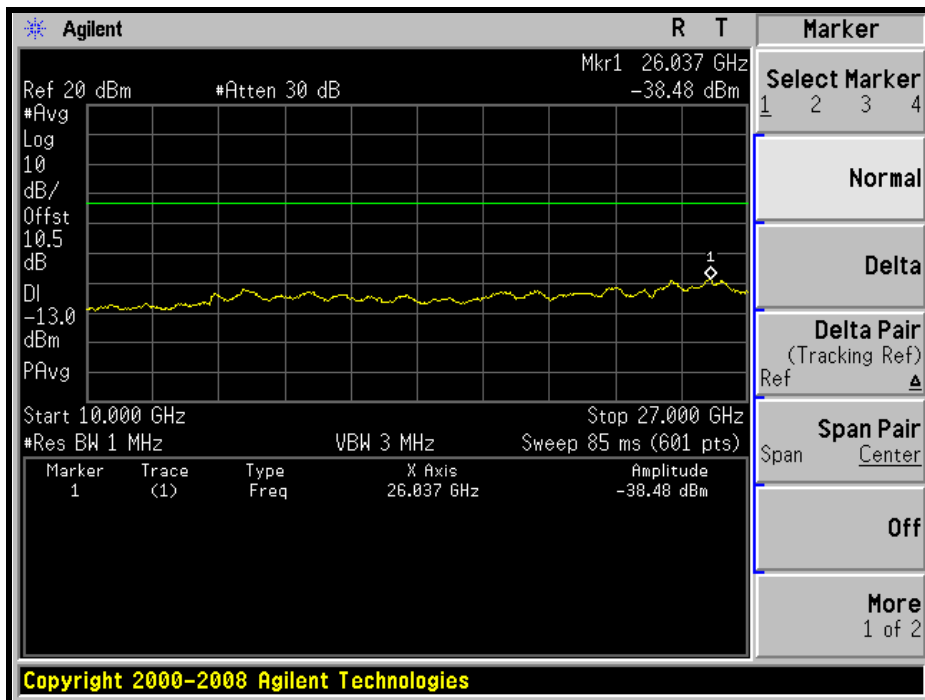
### 1GHz ~ 5GHz:



5GHz ~ 10GHz:



10GHz ~ 27GHz:





## 4.6 RADIATED EMISSION MEASUREMENT (BELOW 1GHz)

### 4.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 27.53(m) (2), On any frequency outside a licensee's frequency block the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB from the channel edges.

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	May 12, 2010	May 11, 2011
HP Pre_Amplifier	8449B	300801923	Nov. 02, 2009	Nov. 01, 2010
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 03, 2010	Sep. 02, 2011
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 28, 2010	Apr. 27, 2011
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 18, 2009	Dec. 17, 2010
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2010	Jan. 21, 2011
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 104+ Sucoflex 106	RF104-101+R F106-101	Aug. 24, 2010	Aug. 23, 2011
RF Cable	8DFB	STCCAB-30M-1GHz	NA	NA
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The horn antenna, preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in Open Site No. C.

4. The FCC Site Registration No. is 656396.

5. The VCCI Site Registration No. is R-1626.

6. The CANADA Site Registration No. is IC 7450G-3.

#### 4.6.3 TEST PROCEDURES

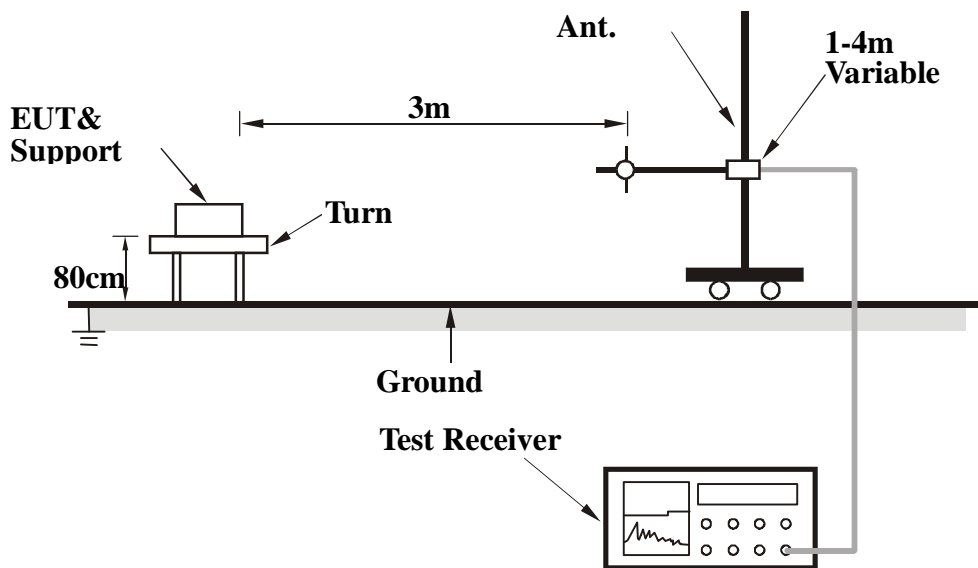
- 1 The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high channel of operational frequency range.)
- 2 Substitution method is used for E.I.R.P measurement. In the open area test site, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- 3 The substitution antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step b. Record the power level of S.G
- 4  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution antenna.}$

**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz

#### 4.1.1 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.2 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.1.3 EUT OPERATING CONDITIONS

Same as item 4.1.5



A D T

#### 4.1.4 TEST RESULTS

##### CHANNEL BANDWIDTH: 5MHz

<b>MODE</b>	Middle channel	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa
<b>TESTED BY</b>	Kent Liu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	125	25.76	-13	-64.92	-1.21	-66.14
2	240	30.75	-13	-64.61	3.82	-60.79
3	360	29.18	-13	-68.68	3.54	-65.14
4	480	31.45	-13	-65.16	2.86	-62.31
5	500	33.84	-13	-61.68	2.89	-58.79
6	679.7	36.48	-13	-59.31	1.67	-57.64

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	158	26.63	-13	-62.15	-0.76	-62.91
2	240	27.05	-13	-68.31	3.82	-64.49
3	360	29.15	-13	-68.71	3.54	-65.17
4	480	32.54	-13	-64.07	2.86	-61.22
5	500	32.31	-13	-63.21	2.89	-60.32
6	679.7	33.92	-13	-61.87	1.67	-60.20

REMARKS: 1. Power Value(dBm)=S.G Power Value (dBm) + Correction Factor(dB)



A D T

**CHANNEL BANDWIDTH: 10MHz**

<b>MODE</b>	Middle channel	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa
<b>TESTED BY</b>	Kent Liu		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	125	26.13	-13	-64.55	-1.21	-65.77
2	240	30.49	-13	-64.87	3.82	-61.05
3	360	29.27	-13	-68.59	3.54	-65.05
4	480	31.63	-13	-64.98	2.86	-62.13
5	500	33.86	-13	-61.66	2.89	-58.77
6	679.7	36	-13	-59.79	1.67	-58.12

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	158	26.61	-13	-62.17	-0.76	-62.93
2	240	27.08	-13	-68.28	3.82	-64.46
3	360	29.17	-13	-68.69	3.54	-65.15
4	480	32.8	-13	-63.81	2.86	-60.96
5	500	32.51	-13	-63.01	2.89	-60.12
6	679.7	34.33	-13	-61.46	1.67	-59.79

**REMARKS:** 1. Power Value(dBm)=S.G Power Value (dBm) + Correction Factor(dB)



A D T

## 4.2 RADIATED EMISSION MEASUREMENT (ABOVE 1GHz)

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 27.53(m) (2), On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB from the channel edges.

### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	May 12 , 2010	May 11 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 02, 2009	Nov. 01, 2010
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 03, 2010	Sep. 02, 2011
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 28, 2010	Apr. 27, 2011
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 18, 2009	Dec. 17, 2010
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2010	Jan. 21, 2011
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 104+ Sucoflex 106	RF104-101+R F106-101	Aug. 24, 2010	Aug. 23, 2011
RF Cable	8DFB	STCCAB-30M- 1GHz	NA	NA
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The horn antenna, preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in Open Site No. C.

4. The FCC Site Registration No. is 656396.

5. The VCCI Site Registration No. is R-1626.

6. The CANADA Site Registration No. is IC 7450G-3.



#### 4.2.3 TEST PROCEDURES

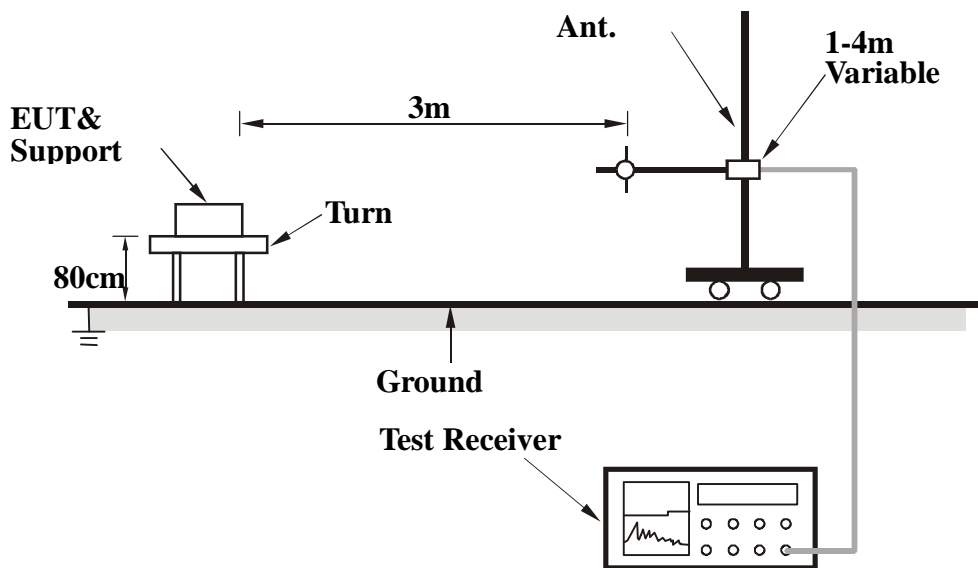
- 1 The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high channel of operational frequency range.)
- 2 Substitution method is used for E.I.R.P measurement. In the open area test site, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- 3 The substitution antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step b. Record the power level of S.G
- 4  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution antenna.}$

**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz

#### 4.1.1 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.2 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.1.3 EUT OPERATING CONDITIONS

Same as item 4.1.5



A D T

#### 4.1.4 TEST RESULTS

##### CHANNEL BANDWIDTH: 5MHz

<b>MODE</b>	Low channel	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa
<b>TESTED BY</b>	Phoenix Huang		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>						
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	4997	49.5	-13	-54.73	7.01	-47.72
2	7495.5	50	-13	-52.61	4.55	-48.06

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>						
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	4997	58.43	-13	-45.80	7.01	-38.79
2	7495.5	57.5	-13	-45.11	4.55	-40.56

**REMARKS:** 1. Power Value(dBm)=S.G Power Value (dBm) + Correction Factor(dB)



A D T

<b>MODE</b>	Middle channel	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa
<b>TESTED BY</b>	Phoenix Huang		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>						
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5174	48.8	-13	-55.69	7.05	-48.64
2	7761	48.7	-13	-53.92	4.32	-49.60

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>						
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5174	56.9	-13	-47.59	7.05	-40.54
2	7761	53.8	-13	-48.82	4.32	-44.50

**REMARKS:** 1. Power Value(dBm)=S.G Power Value (dBm) + Correction Factor(dB)



A D T

<b>MODE</b>	High channel	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa
<b>TESTED BY</b>	Phoenix Huang		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5375	61.4	-13	-43.39	7.09	-36.30
2	8062.5	55.8	-13	-46.82	4.13	-42.69

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5375	64.5	-13	-40.29	7.09	-33.20
2	8062.5	57.8	-13	-44.82	4.13	-40.69

**REMARKS:** 1. Power Value(dBm)=S.G Power Value (dBm) + Correction Factor(dB)



A D T

**CHANNEL BANDWIDTH: 10MHz**

<b>MODE</b>	Low channel	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa
<b>TESTED BY</b>	Phoenix Huang		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5002	45.8	-13	-58.43	7.01	-51.42
2	7503	48.5	-13	-54.12	4.54	-49.58

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5002	54.5	-13	-49.73	7.01	-42.72
2	7503	53	-13	-49.62	4.54	-45.08

**REMARKS:** 1. Power Value(dBm)=S.G Power Value (dBm) + Correction Factor(dB)



A D T

<b>MODE</b>	Middle channel	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa
<b>TESTED BY</b>	Phoenix Huang		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5186	47.2	-13	-57.31	7.05	-50.26
2	7779	47.3	-13	-55.32	4.31	-51.01

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5186	54.6	-13	-49.91	7.05	-42.86
2	7779	51.2	-13	-51.42	4.31	-47.11

**REMARKS:** 1. Power Value(dBm)=S.G Power Value (dBm) + Correction Factor(dB)



A D T

<b>MODE</b>	High channel	<b>FREQUENCY RANGE</b>	Above 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg°C, 60%RH 1015hPa
<b>TESTED BY</b>	Phoenix Huang		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>						
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5370	59.3	-13	-45.49	7.09	-38.39
2	8055	52.2	-13	-50.42	4.13	-46.29

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>						
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBm)	S.G level (dBm)	C.F. (dB)	Power level (dBm)
1	5370	63.3	-13	-41.49	7.09	-34.39
2	8055	56.3	-13	-46.32	4.13	-42.19

**REMARKS:** 1. Power Value(dBm)=S.G Power Value (dBm) + Correction Factor(dB)





A D T

## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).





## 6 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025:

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: [www.adt.com.tw/index.5/phtml](http://www.adt.com.tw/index.5/phtml).  
If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26052943

**Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343

Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety/Telecom Lab:**

Tel: 886-3-3183232

Fax: 886-3-3185050

**Email:** [service@adt.com.tw](mailto:service@adt.com.tw)

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

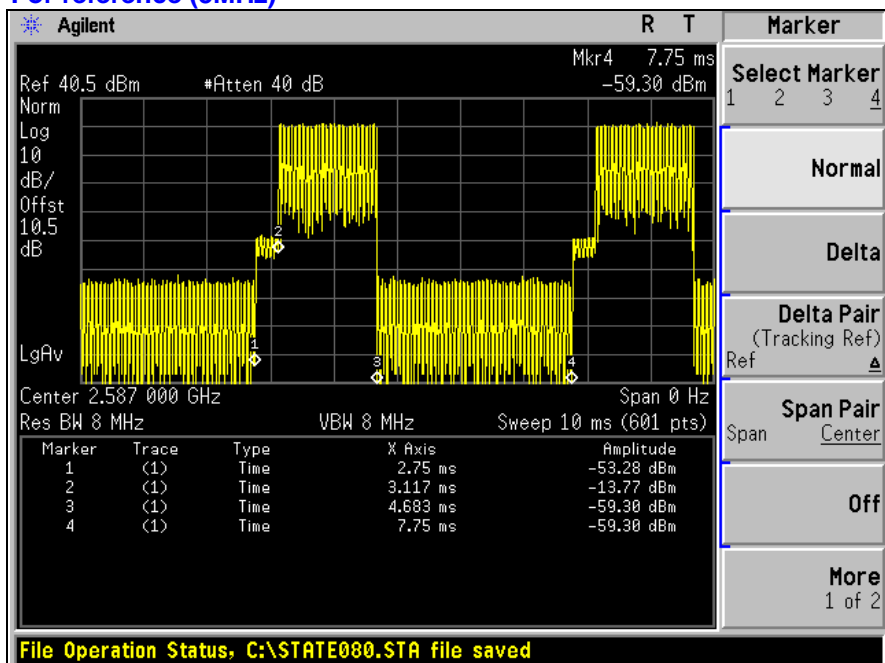
The address and road map of all our labs can be found in our web site also.



A D T

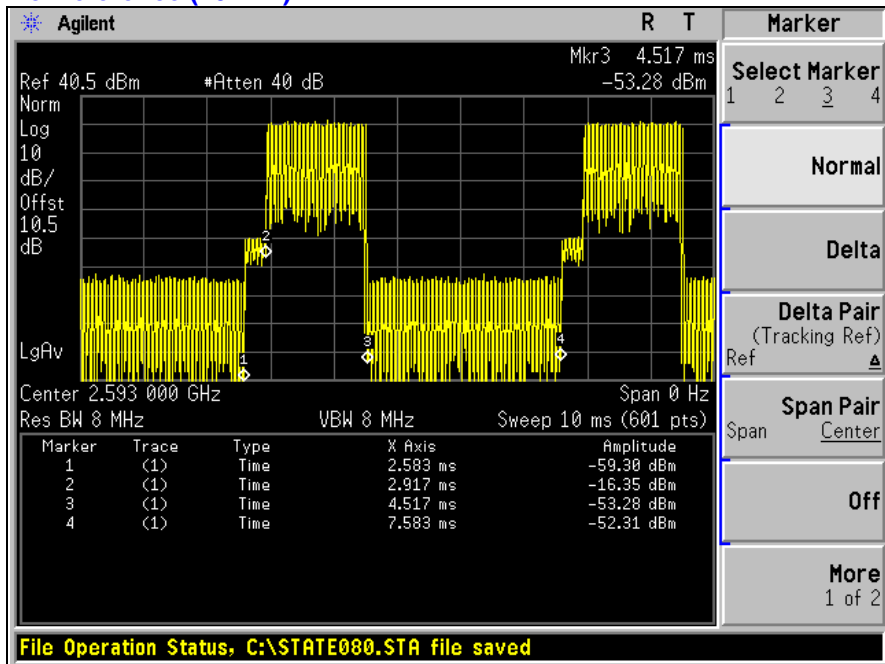
## 7 APPENDIX - A DL/UL RATION FOR TEST

### For reference (5MHz)



$$\text{Ratio} = (1.566 / 5) * \% = 31.32\%$$

### For reference (10MHz)



$$\text{Ratio} = (1.6 / 5) * \% = 32.00\%$$

--- END ---