FCC TEST REPORT (PART 27)

REPORT NO.: RF991130E02-1
MODEL NO.: PHS2000W
FCC ID: UXX-PHS2000W
RECEIVED: Nov. 24, 2010
TESTED: Nov. 24 to Dec. 17, 2010
ISSUED: Jan. 26, 2011

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Jan. 26, 2011

1 CERTIFICATION

PRODUCT: TableRock
BRAND NAME: Cradlepoint
MODEL NO.: PHS2000W
APPLICANT: Cradlepoint, Inc.
TESTED: Nov. 24 to Dec. 17, 2010
TEST SAMPLE: ENGINEERING 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.: PHS2000W) 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:** *Jan. 26, 2011*
(Claire Kuan, Specialist)

APPROVED BY : _____ , **DATE:** *Jan. 26, 2011*
(May Chen, Deputy Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 27 & Part 2			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
2.1046 27.50(h)(2)	Maximum Peak Output Power Limit: max. 2 watts EIRP 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)(4)(6)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(m)(4)(6)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(m)(4)(6)	Radiated Spurious Emissions	PASS	Meet the requirement of limit.

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

PRODUCT	TableRock
MODEL NO.	PHS2000W
FCC ID	UXX-PHS2000W
POWER SUPPLY	DC 5V from adapter or DC 5V from dock or DC 3.7V from battery
MODULATION TECHNOLOGY	OFDMA
MODULATION	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
OPERATING FREQUENCY	5MHz: 2498.5MHz ~ 2687.5MHz 10MHz: 2501MHz ~ 2685MHz
CHANNEL BANDWIDTH	5MHz & 10MHz
MAX. EIRP POWER	5MHz: 27.1dBm (0.513W) 10MHz: 26.8dBm (0.479W)
MAX. CONDUCTED POWER	5MHz: 23.9dBm 10MHz: 23.5dBm
ANTENNA TYPE	Please see note 2
DATA CABLE	Micro USB cable (Shielded, 1.0m)
I/O PORTS	USB port x 1 Micro USB port x 1 10 pin connector port x 1 Antenna port x 2
ASSOCIATED DEVICES	Adapter x 1 Battery x 1 Micro USB cable x 1 Dock x 1

NOTE:

1. The EUT is Multi-function product, this report was recorded the **WiMAX** test data. For the WiFi test data was recorded in another test report<RF991130E02>.
2. There are two sets of antennas provided to this EUT, please refer to the following table:

Set 1 for WiMAX antenna						
Antenna	Antenna Type	Antenna Connector	Gain (dBi)	Cable Length(mm)	Frequency range (MHz)	Diversity Function
1	PCB	I-PEX	2	30	2500~2700	YES
2	PCB	I-PEX	2	45	2500~2700	YES
Set 2 for WIFI antenna						
Antenna	Antenna Type	Antenna Connector	Gain (dBi)	Cable Length(mm)	Frequency range (MHz)	Diversity Function
1	PIFA	NA	1	NA	2412~2472	YES
2	PIFA	NA	1	NA	2412~2472	YES

3. There is one set of antenna provided to this dock, please refer to the following table:

Antenna	Antenna Type	Antenna Connector	Gain (dBi)	Cable Length(mm)	Frequency range (MHz)	Diversity Function
1	PCB	TS-9	5	140	2500~2700	YES
2	PCB	TS-9	5	140	2500~2700	YES

4. The EUT could be supplied with 3.7V battery, dock or the following power adapter which will be sold together with the EUT:

Item	Brand	Model No.	Spec.
Adapter	Tenpao	S012UM0500180	AC I/P: 100-240V, 50/60Hz, 400mA DC O/P: 5V, 1800mA
Battery	ETI CA	0340-1371080001 (BP08-000720)	DC 3.7V, 1900mAh
Dock	Cradlepoint	PHS2000WD	

5. The EUT could be applied with one 3G card and following three different models could be chosen: <only for test, not for sale>

No.	Brand	Model No.	FCC ID
1	SIERRA WIRELESS	AirCard 875U	N7N-MC8775U
2	HUAWEI	E169u	QISE169
3	D-Link	DWM-156	KA2WM156A2

The EUT was pre-tested in chamber with above 3G cards, the worst case was found in model no.: **AirCard 875U**. Therefore only the test data of the mode was recorded in this report.

6. The EUT was pre-tested under the following test modes for three different axes placements:

Test Mode	Description
Mode A	X-Y plane
Mode B	Y-Z plane
Mode C	X-Z plane

From the above modes, the radiated emissions Test (Below 1 GHz), worse case was found in **Mode B**. For radiated emissions Test (Above 1 GHz), worse case was found in **Mode A**. Therefore only the test data of the mode was recorded in this report.

7. 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
			2/3
			3/4
			5/6

8. The EUT is 1 * 2 spatial SIMO (1Tx & 2Rx) without beam forming function.

9. The EUT embedded a firmware for testing that needs to control from Notebook computer to let EUT with different DL/UL ration.

10. 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).

11. 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	RE³1G	
MODE 1	√	-	√	√	√	√	√	Channel Bandwidth: 5MHz EUT + Battery + Dock + Adapter
MODE 2	√	√	√	√	√	√	√	Channel Bandwidth: 10MHz EUT + Battery + Dock + Adapter
MODE 3	-	-	-	-	-	√	-	Channel Bandwidth: 5MHz EUT + Battery + Adapter with 3G card
MODE 4	-	-	-	-	-	√	-	Channel Bandwidth: 10MHz EUT + Battery + Adapter with 3G card

Where **OP:** Output power
FS: Frequency stability
EB: Emission bandwidth
CE: Channel edge
CSE: Conducted spurious emissions
RE<1G: Radiated emission below 1GHz
RE³1G: 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-1/2
MODE 2	L, M, H	OFDMA	QPSK-1/2

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

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-1/2
MODE 2	L, M, H	OFDMA	QPSK-1/2

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-1/2
MODE 2	L, M, H	OFDMA	QPSK-1/2

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-1/2
MODE 2	M	OFDMA	QPSK-1/2

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-1/2
MODE 2	L, M, H	OFDMA	QPSK-1/2

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 is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

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.

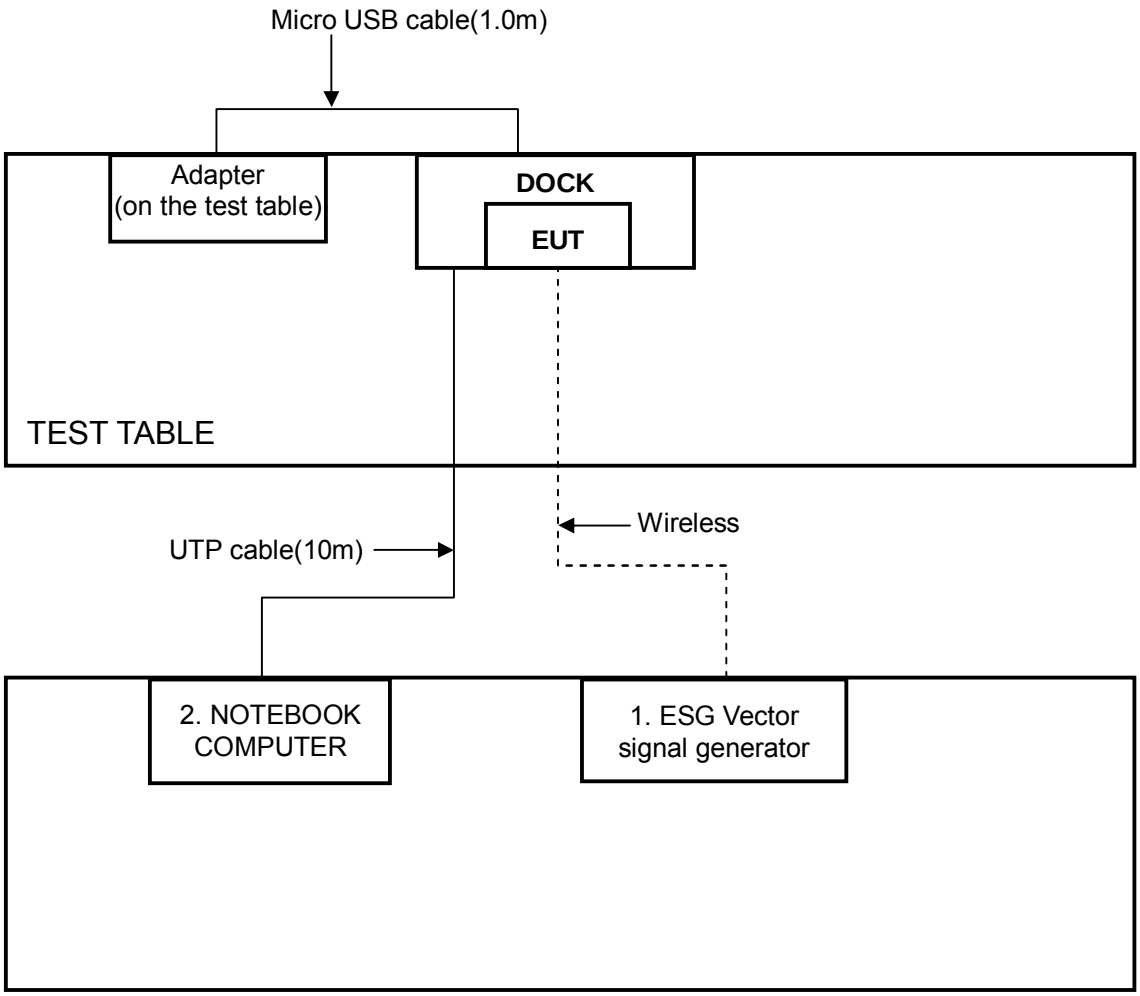
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	ESG Vector signal generator	Agilent	E4438C	MY45094468/005 506 602 UK6 UNJ	NA
2	NOTEBOOK COMPUTER	DELL	D531	CN-0XM006-48643 -86L-4472	QDS-BRCM10 19

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

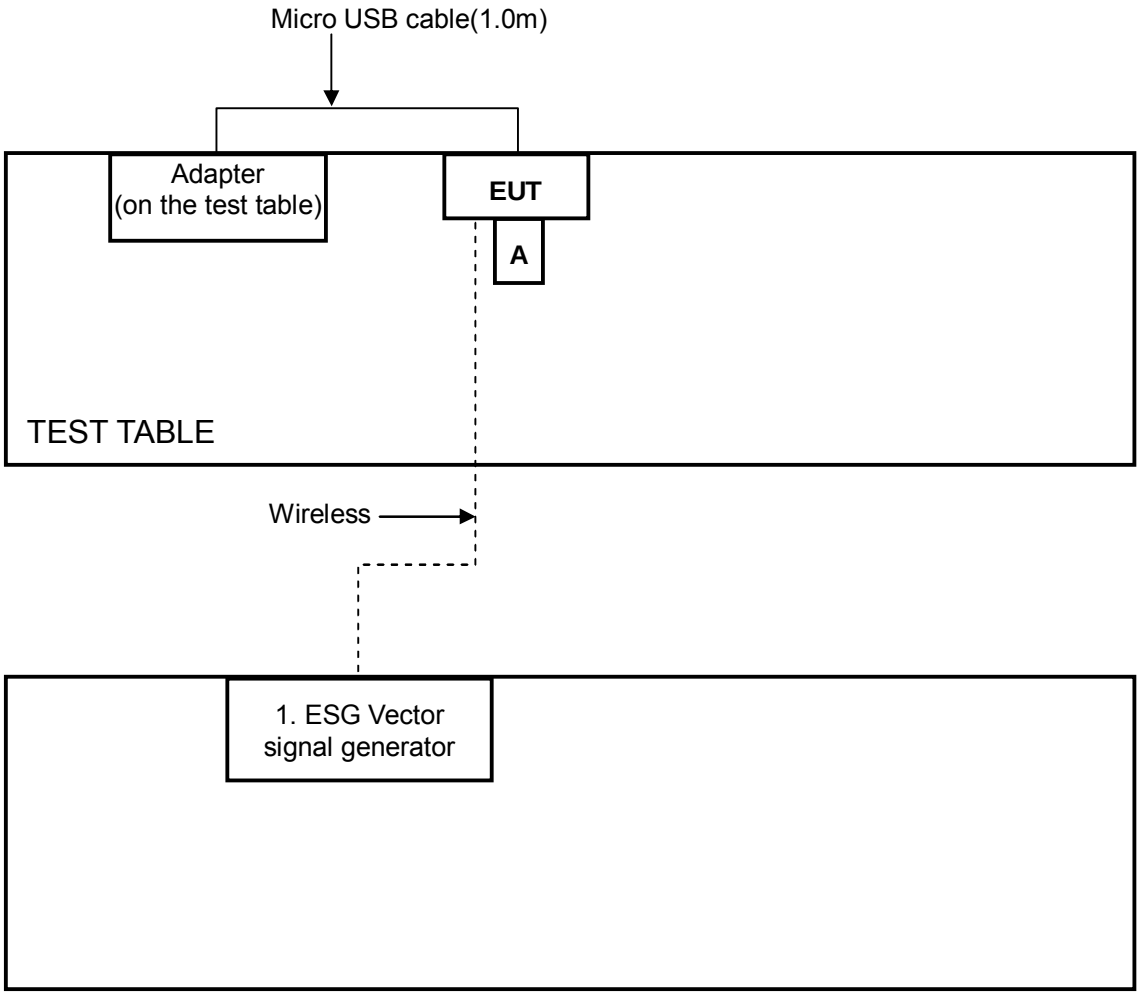
NOTE: All power cords of the above support units are non shielded (1.8m).

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST

For test mode1~2:



For test mode 3~4:



NOTE: 1. Item A is the 3G card.

4 TEST TYPES AND RESULTS

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that “Mobile stations are limited to 2.0 watts EIRP 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

For Conducted Power:

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Anritsu Power meter	ML2495A	0824006	April 25, 2010	April 24, 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.

For EIRP Power:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 17, 2010	Dec. 16, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	May 12 , 2010	May 11 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
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. 17, 2010	Dec. 16, 2011
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.

4.1.3 TEST PROCEDURES

For Conducted Power:

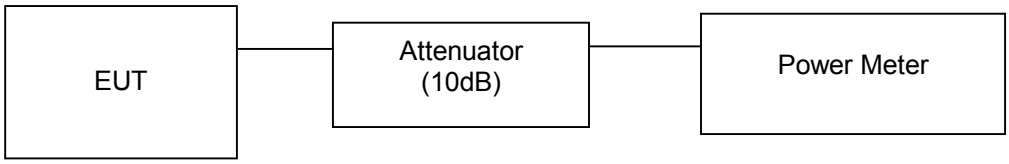
The transmitter output was connected to power meter through an attenuator. The test result was measured and recorded.

For EIRP Power:

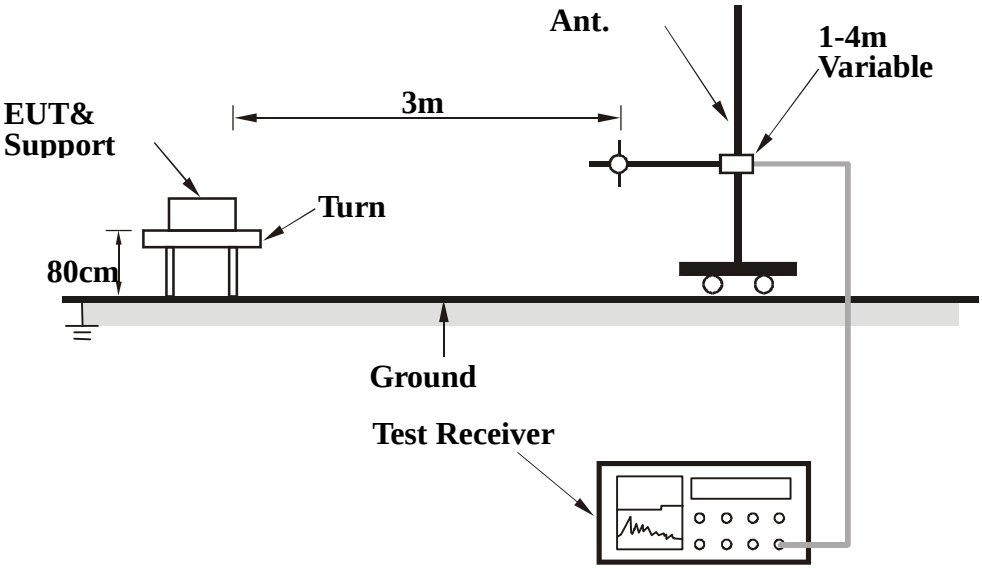
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the receiving antenna, which was mounted on antenna tower and its position at 0.8 m above the ground.
c. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading and recorded the value.
d. The EUT is replaced by a horn antenna connected to a signal generator tuned to the frequency of emission.
e. The signal generator level has to be adjusted to have the same emission nature.
f. The radiated power can be calculated via the factor and antenna gain.
g. Repeat step a ~ f for horizontal polarization.

4.1.4 TEST SETUP

For Conducted Power:



For EIRP Power:



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

4.1.5 EUT OPERATING CONDITIONS

1. Support unit 1 (ESG Vector signal generator) ran test program “Beceem Diagnostic Control Panel 3.4.0” to enable EUT under transmission/receiving condition continuously via wireless transmission.

4.1.6 TEST RESULTS

CHANNEL BANDWIDTH: 5MHz

INPUT POWER	120Vac, 60Hz		
ENVIRONMENTAL CONDITIONS	20deg°C, 60%RH 1022hPa	**TESTED BY**	Wen Yu

EIRP POWER						
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	2498.5	114.63	33	16.15	6.65	22.8
2	2587	115.22	33	15.95	6.75	22.7
3	2687.5	115.75	33	15.77	6.83	22.6
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	2498.5	118.93	33	20.45	6.65	27.1
2	2587	119.62	33	20.35	6.75	27.1
3	2687.5	119.95	33	19.97	6.83	26.8

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

CONDUCTED POWER			
CHANNEL	**FREQUENCY (MHz)**	**POWER OUTPUT(mW)**	**POWER OUTPUT(dBm)**
Low	2498.5	241.0	23.8
Middle	2587	244.3	23.9
High	2687.5	229.1	23.6

CHANNEL BANDWIDTH: 10MHz

INPUT POWER	120Vac, 60Hz		
ENVIRONMENTAL CONDITIONS	20deg°C, 60%RH 1022hPa	**TESTED BY**	Wen Yu

EIRP POWER						
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	2501	114.13	33	15.65	6.65	22.3
2	2593	115.02	33	15.73	6.77	22.5
3	2685	115.55	33	15.6	6.8	22.4
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	2501	118.43	33	19.95	6.65	26.6
2	2593	119.32	33	20.03	6.77	26.8
3	2685	119.75	33	19.8	6.8	26.6

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

CONDUCTED POWER			
CHANNEL	**FREQUENCY (MHz)**	**POWER OUTPUT(mW)**	**POWER OUTPUT(dBm)**
Low	2501	212.3	23.3
Middle	2593	222.8	23.5
High	2685	211.8	23.3

4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILIITY 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℃ ~ 50℃.

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. 16, 2010	Dec. 15, 2011
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

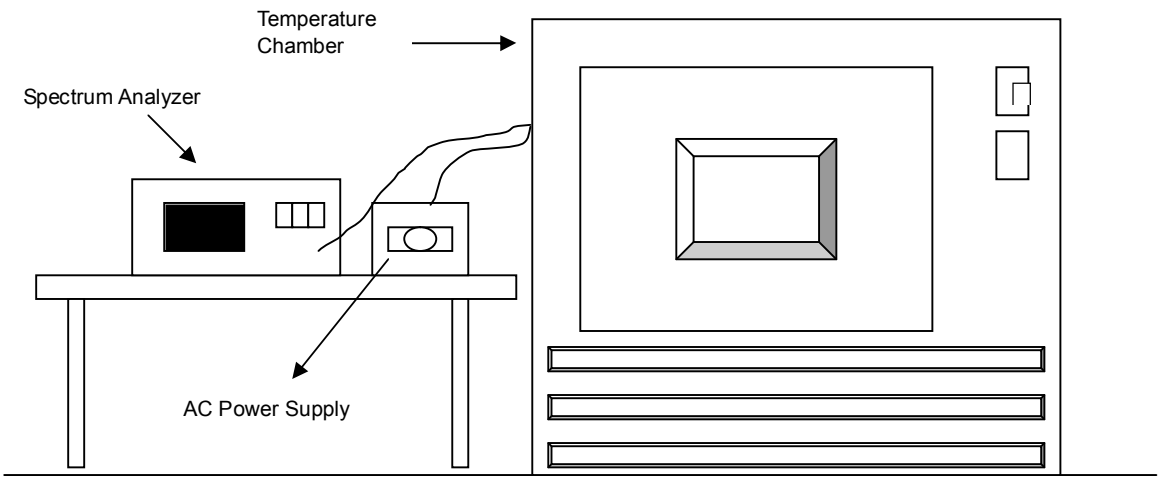
a. Power must be removed when changing from one temperature to another or one voltage to another voltage. Power warm up is at least 15 min and power applied should perform before recording frequency error.

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 ±0.5℃ 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

MODE	Middle channel (2593MHz)	**INPUT POWER**	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	20deg°C, 60%RH 1014hPa	**TESTED BY**	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	2593.0352	0.001358	2593.0351	0.001354	2593.0353	0.001361	2593.0354	0.001365
120	2593.0352	0.001358	2593.0352	0.001358	2593.0351	0.001354	2593.0352	0.001358
102	2593.03525	0.001359	2593.03522	0.001358	2593.0354	0.001364	2593.0354	0.001365

AFC FREQUENCY ERROR VS. TEMP								
TEMP (℃)	**0Minutes**		**2Minutes**		**5Minutes**		**10Minutes**	
	FREQUENCY (MHz)	**PPM (%)**	**FREQUENCY (MHz)**	**PPM (%)**	**FREQUENCY (MHz)**	**PPM (%)**	**FREQUENCY (MHz)**	**PPM (%)**
50	2593.0367	0.001415	2593.0368	0.001419	2593.0367	0.001415	2593.0363	0.001400
40	2593.0359	0.001384	2593.0358	0.001381	2593.0357	0.001377	2593.0358	0.001381
30	2593.0353	0.001361	2593.0351	0.001354	2593.0352	0.001358	2593.0353	0.001361
20	2593.0352	0.001358	2593.0352	0.001358	2593.0351	0.001354	2593.0352	0.001358
10	2593.03432	0.001324	2593.0343	0.001323	2593.03422	0.001320	2593.0343	0.001323
0	2593.03431	0.001323	2593.03428	0.001322	2593.03435	0.001325	2593.0344	0.001327
-10	2593.03435	0.001325	2593.03429	0.001322	2593.0344	0.001326	2593.0345	0.001331
-20	2593.03428	0.001322	2593.03425	0.001321	2593.0344	0.001325	2593.0342	0.001319

NOTE: The EUT can't operate and without any TX signal at -30℃.

4.3 EMISSION BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF EMISSION BANDWIDTH MEASUREMENT

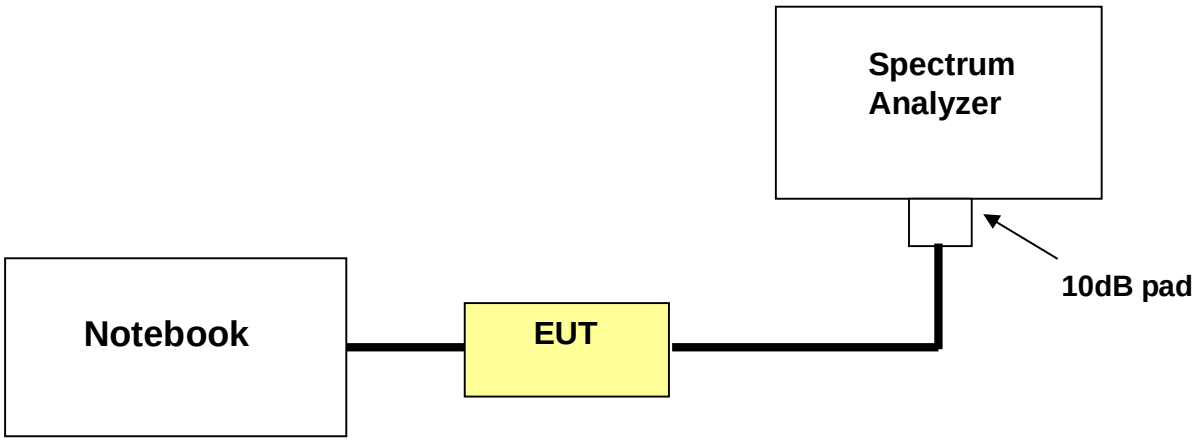
According to FCC 27.53(m)(6) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

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

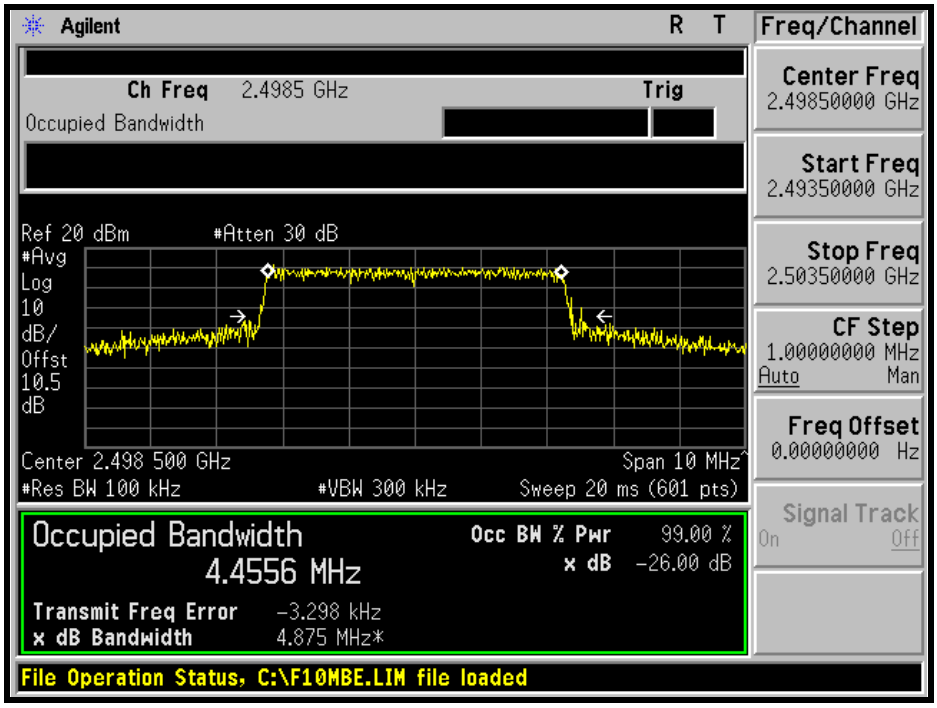
a. The Notebook controlled EUT to export rated output power under transmission mode and specific channel frequency. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 26dB bandwidth is defined as the total spectrum the power of which is higher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

4.3.5 TEST RESULTS

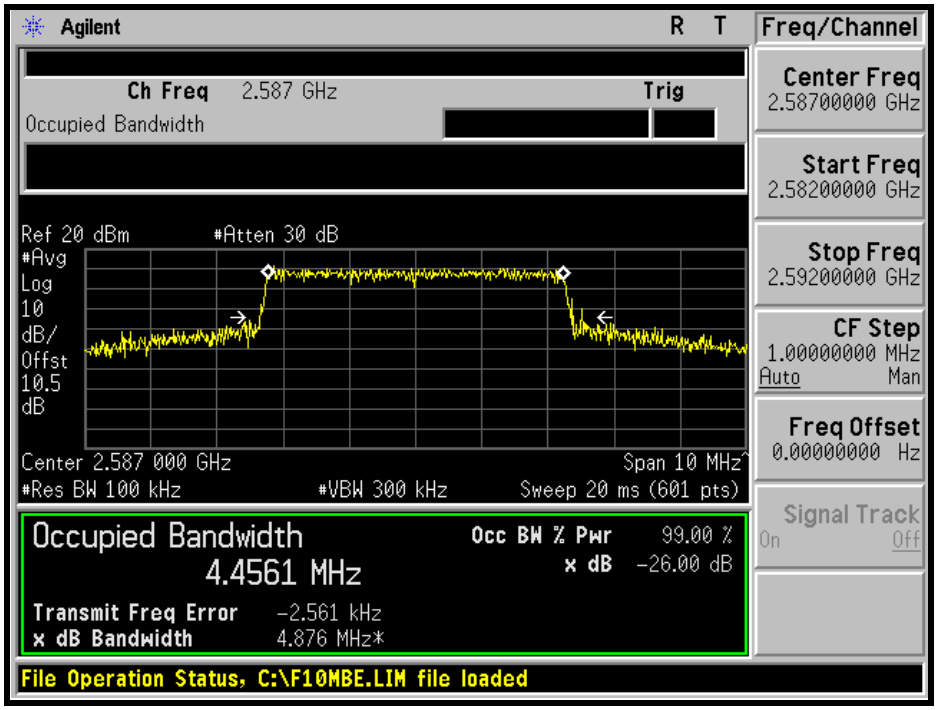
CHANNEL BANDWIDTH: 5MHz

FREQUENCY (MHz)	-26 dBc BANDWIDTH (MHz)
2498.5	4.87
2587	4.87
2687.5	4.87

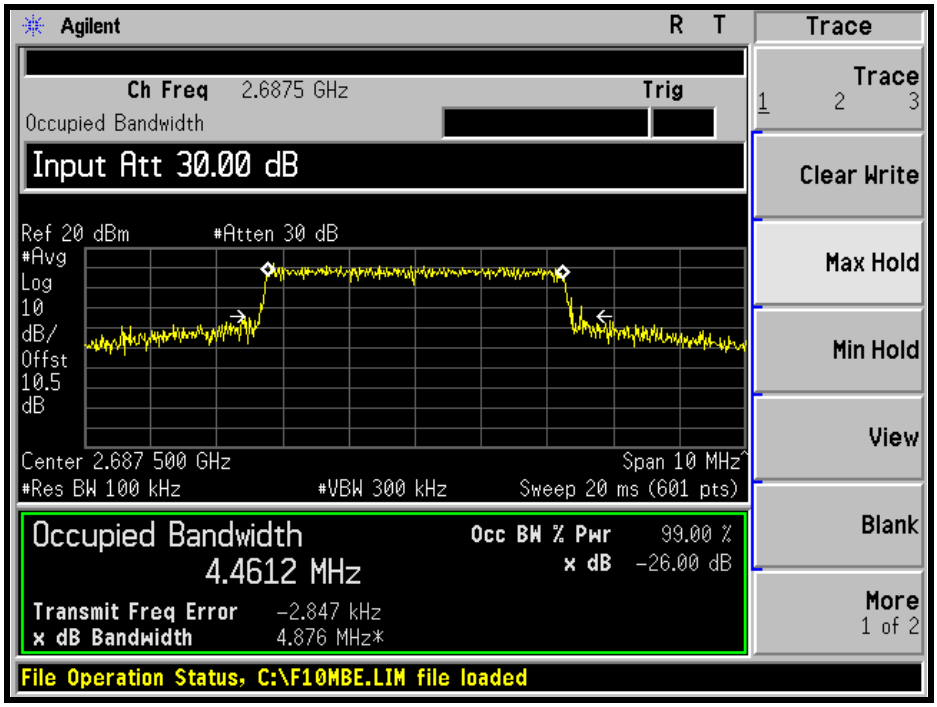
LOW CHANNEL



MIDDLE CHANNEL



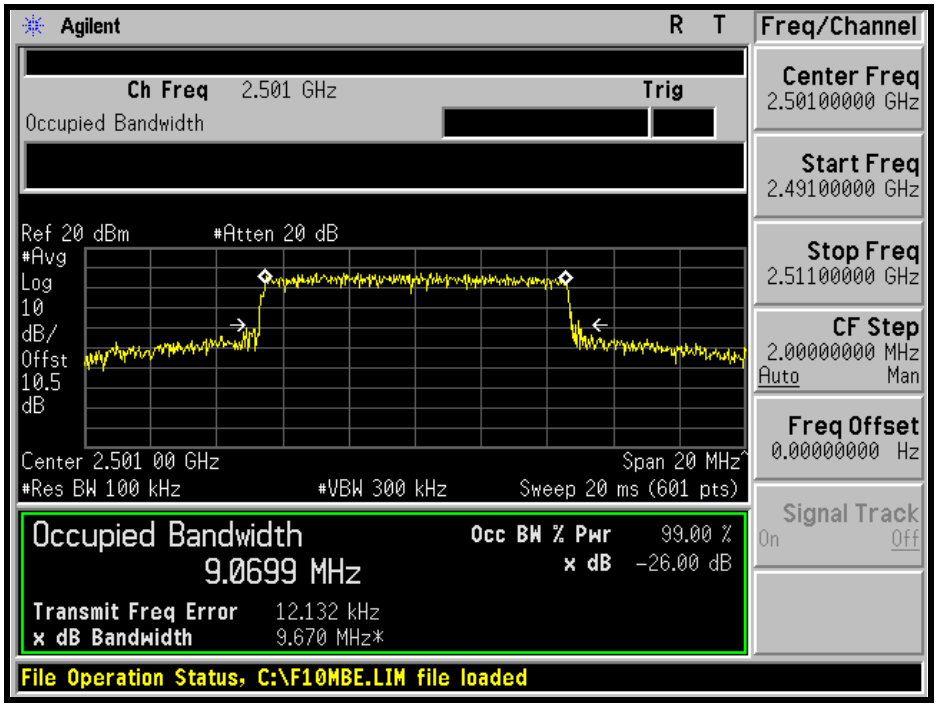
HIGH CHANNEL



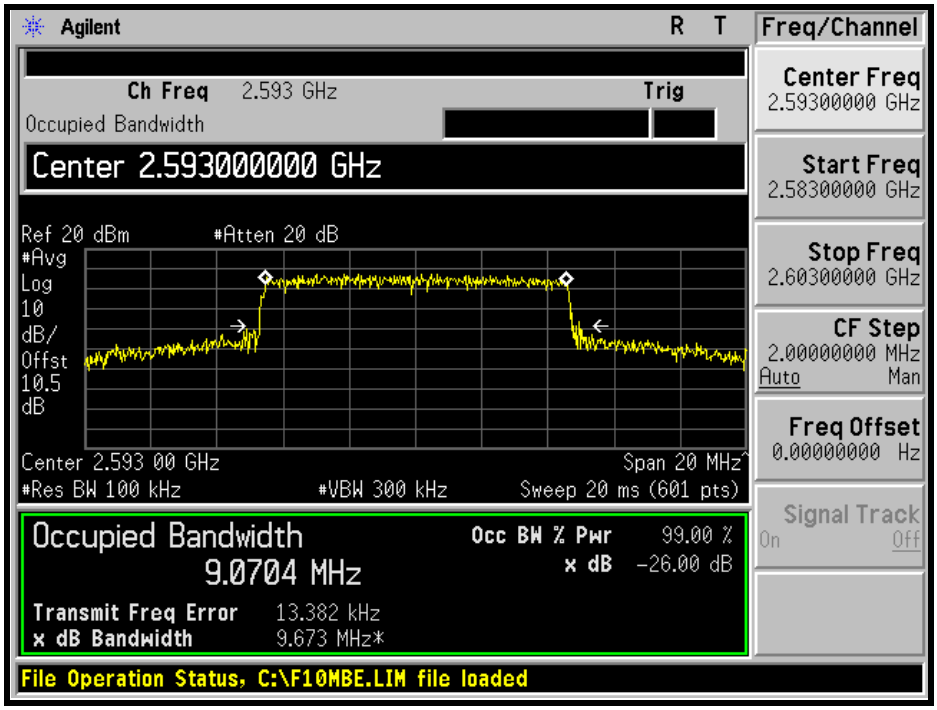
CHANNEL BANDWIDTH: 10MHz

FREQUENCY (MHz)	-26 dBc BANDWIDTH (MHz)
2501	9.67
2593	9.67
2685	9.67

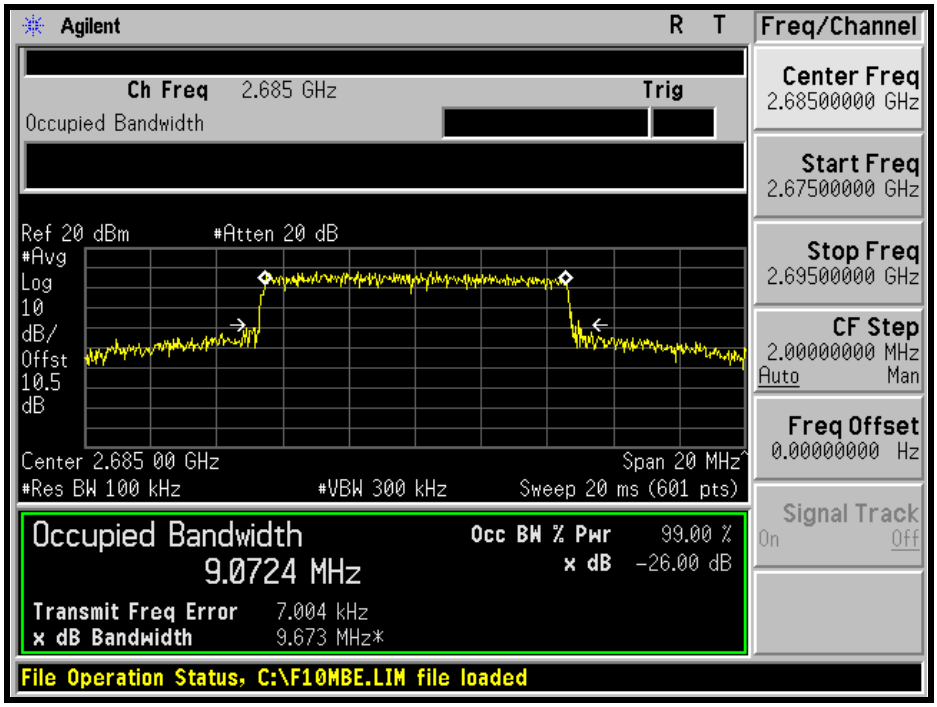
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL



4.4 CHANNEL EDGE MEASUREMENT

4.4.1 LIMITS OF CHANNEL EDGE MEASUREMENT

According to FCC 27.53(m)(4) 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 and 55 + 10 log (P) dB at 5.5 MHz from the channel edges. 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. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz.

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 VBW of the spectrum is 300kHz.

d. Record the max trace plot into the test report.

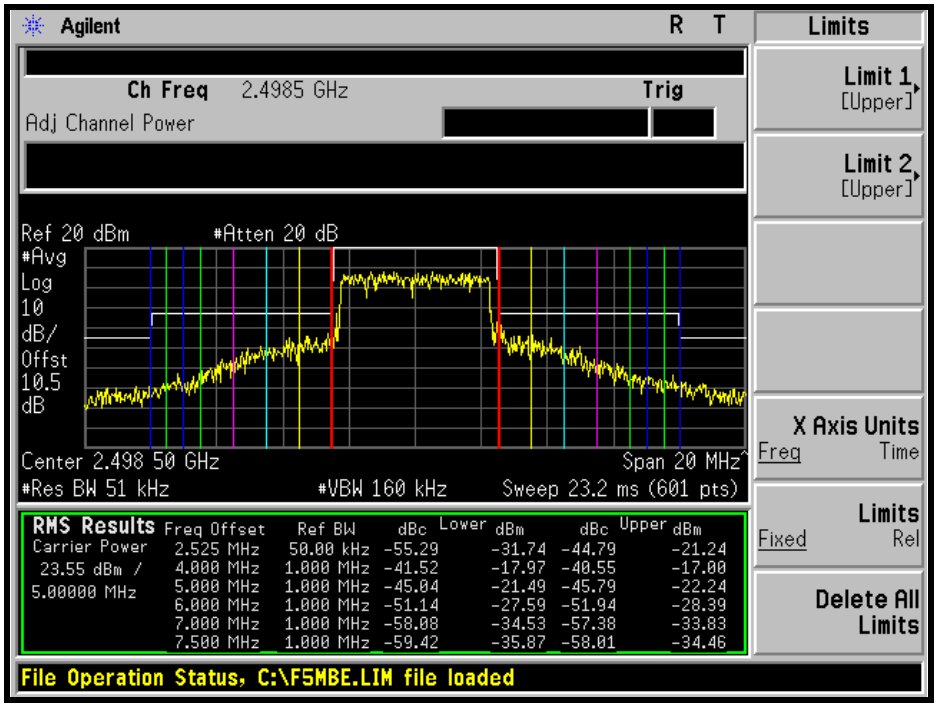
4.4.5 EUT OPERATING CONDITION

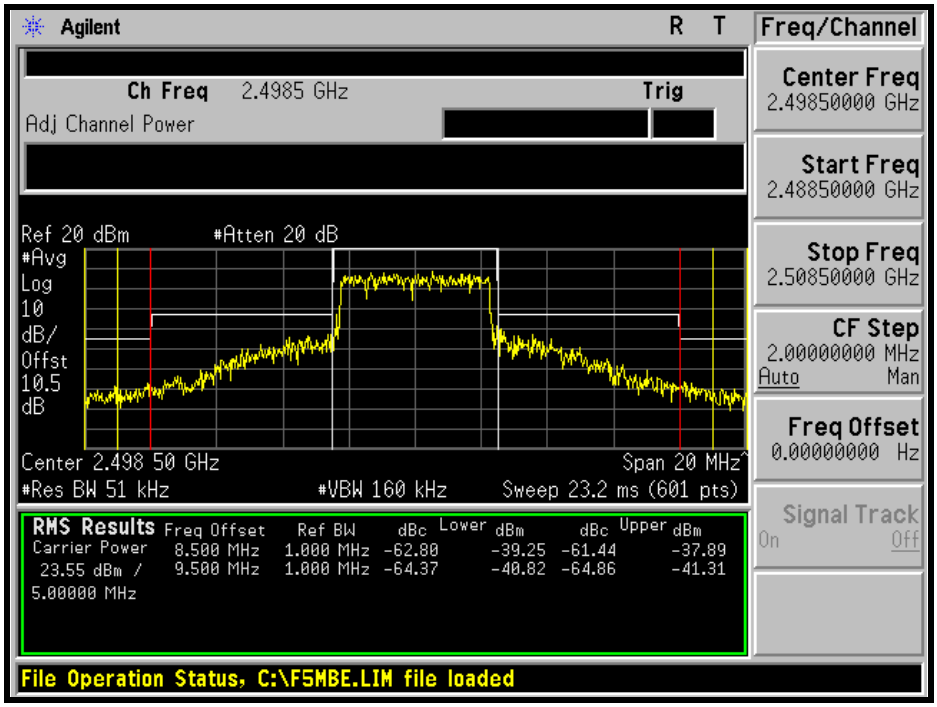
Same as item 4.1.5

4.4.6 TEST RESULTS

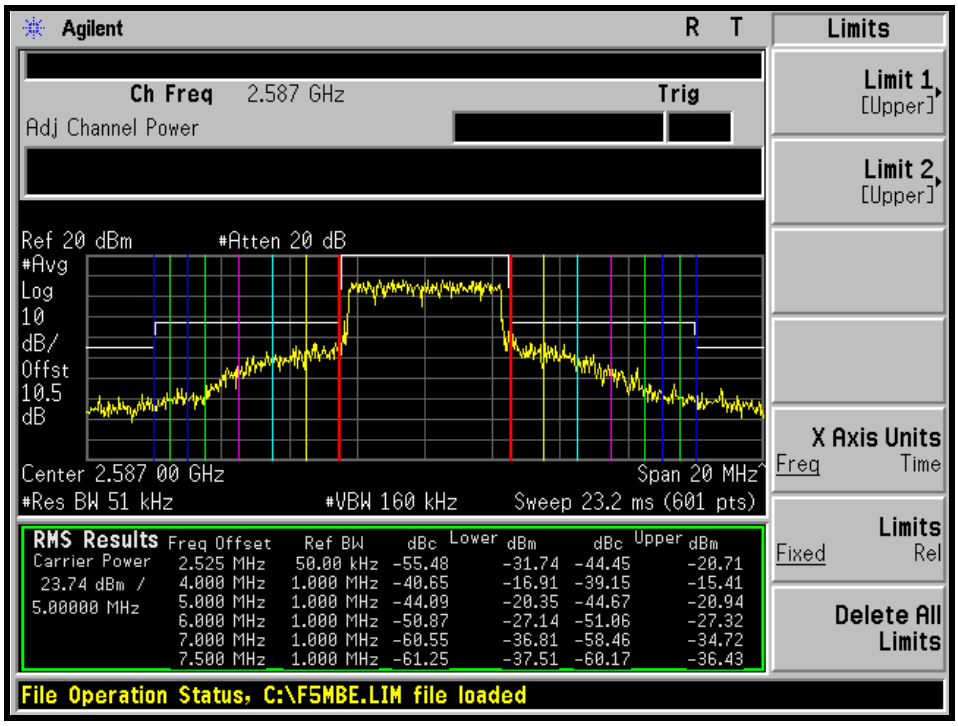
CHANNEL BANDWIDTH: 5MHz

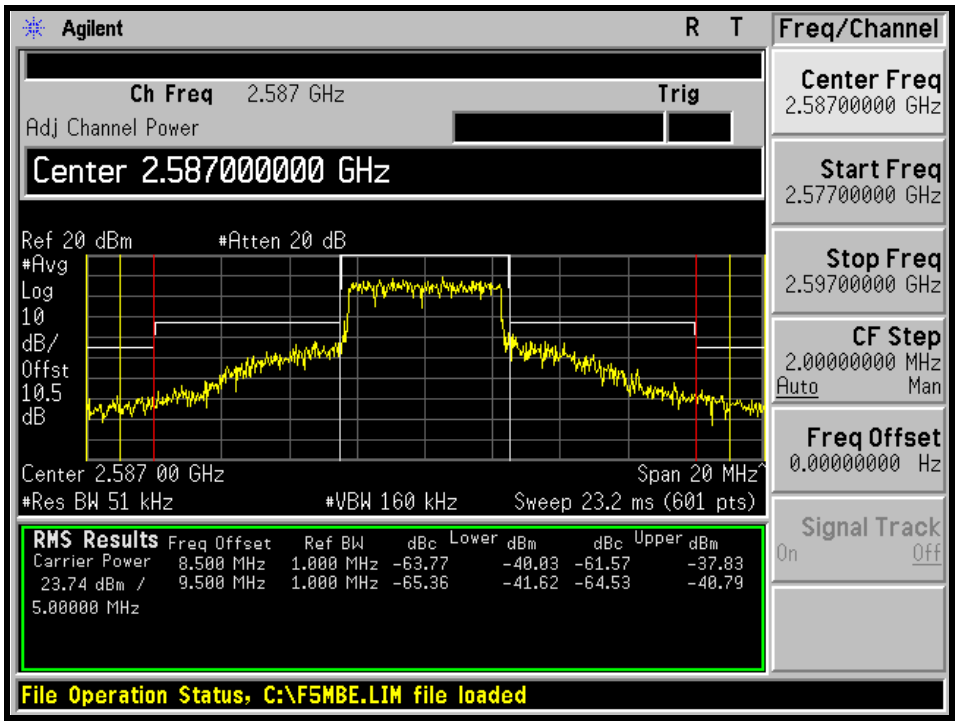
LOW CHANNEL



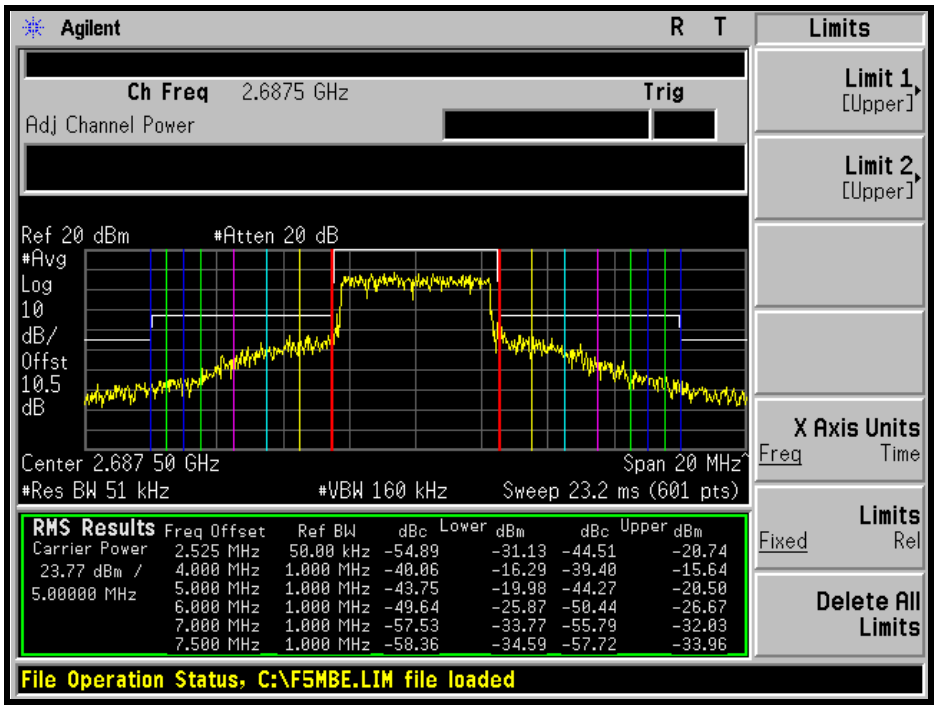


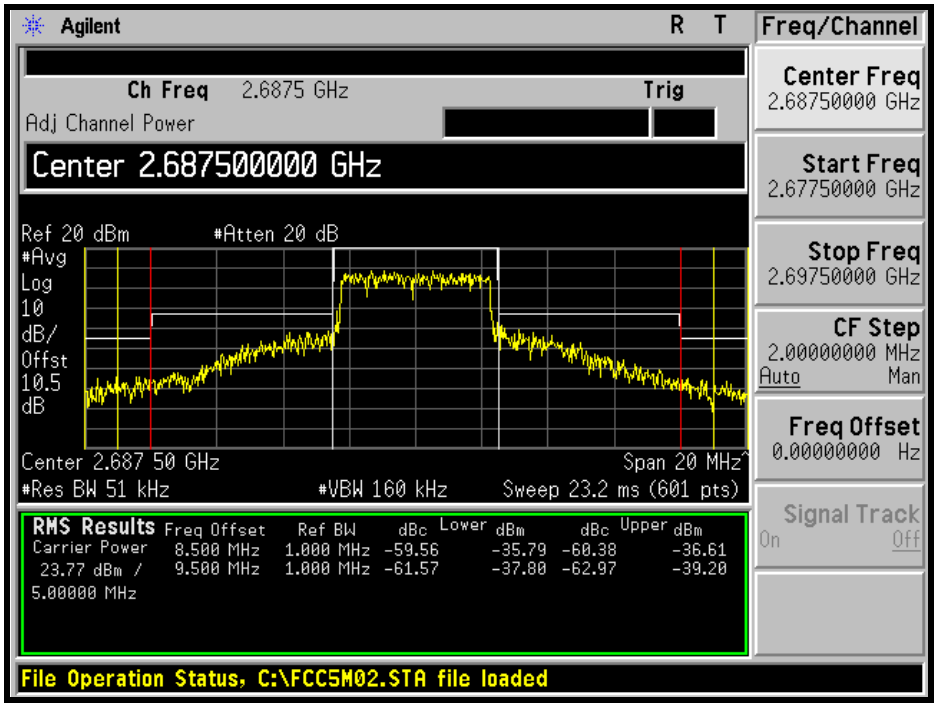
MIDDLE CHANNEL





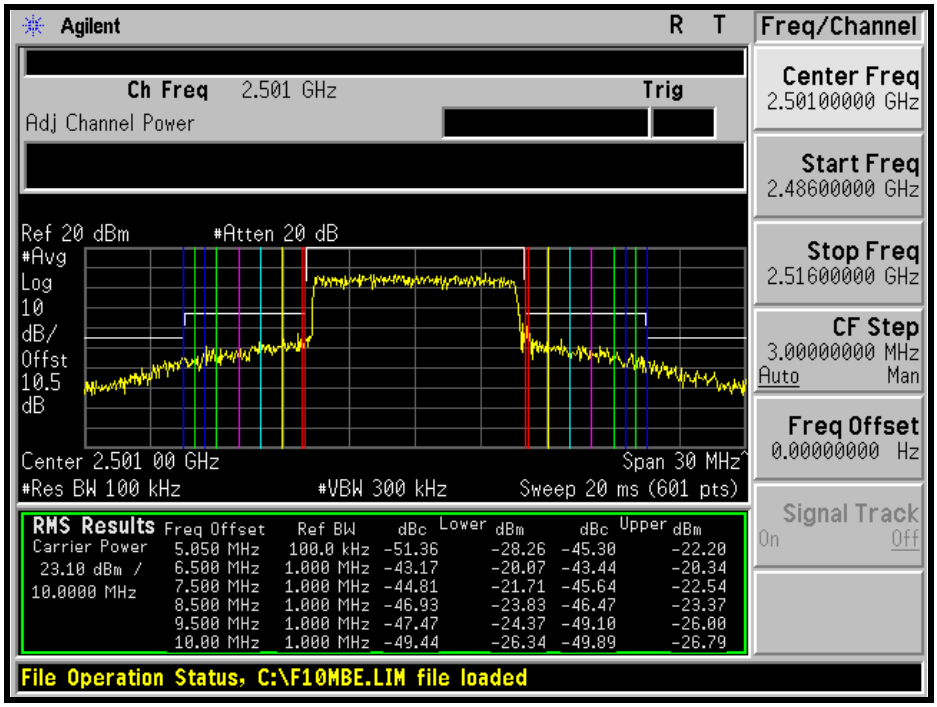
HIGH CHANNEL

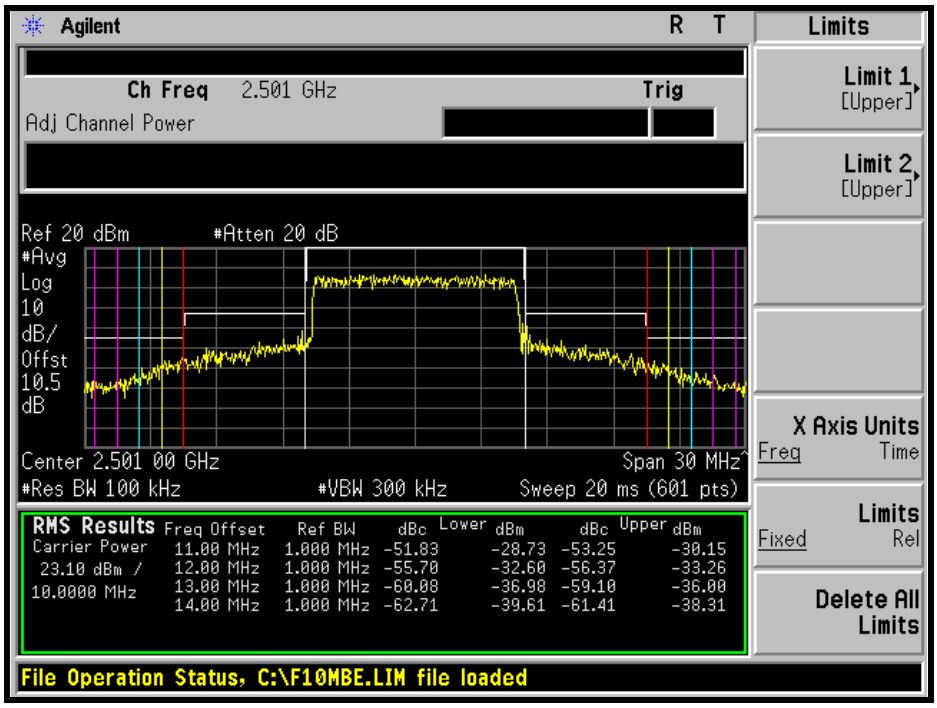




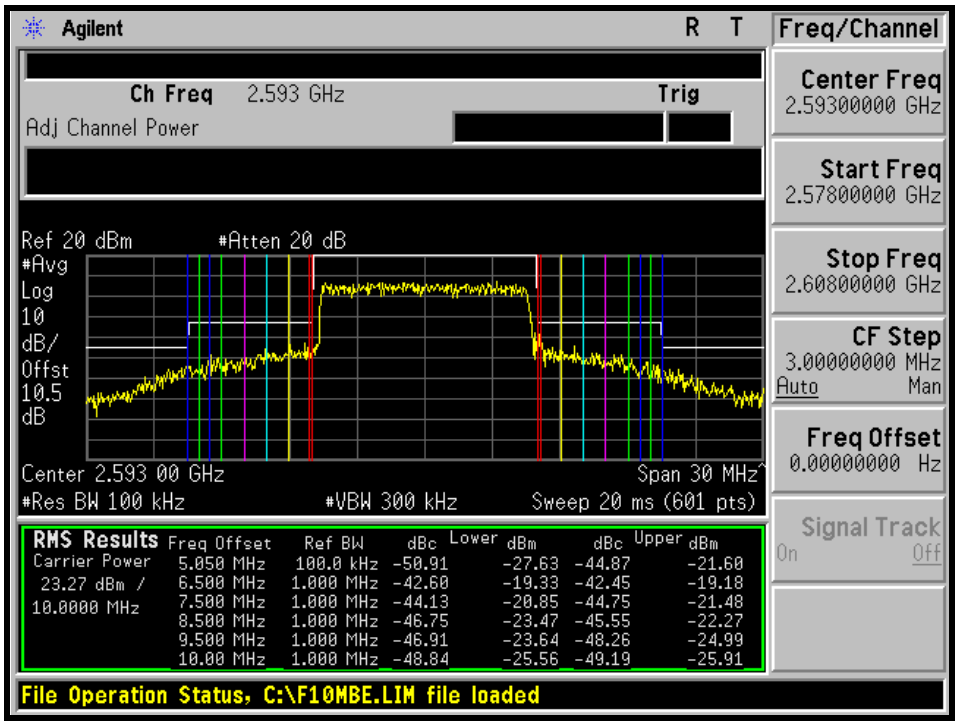
CHANNEL BANDWIDTH: 10MHz

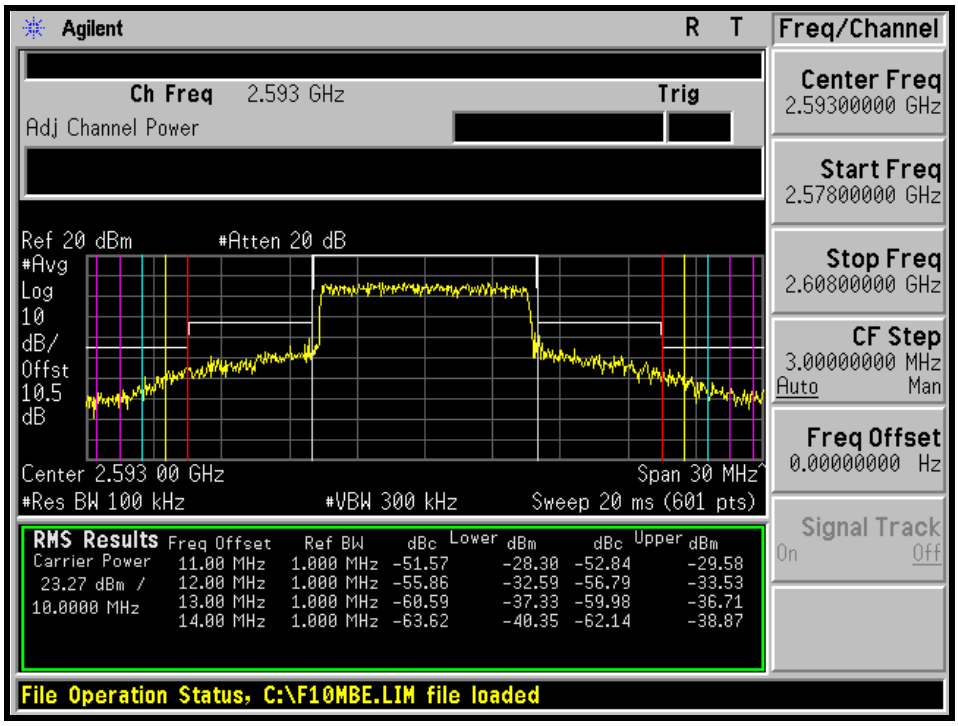
LOW CHANNEL



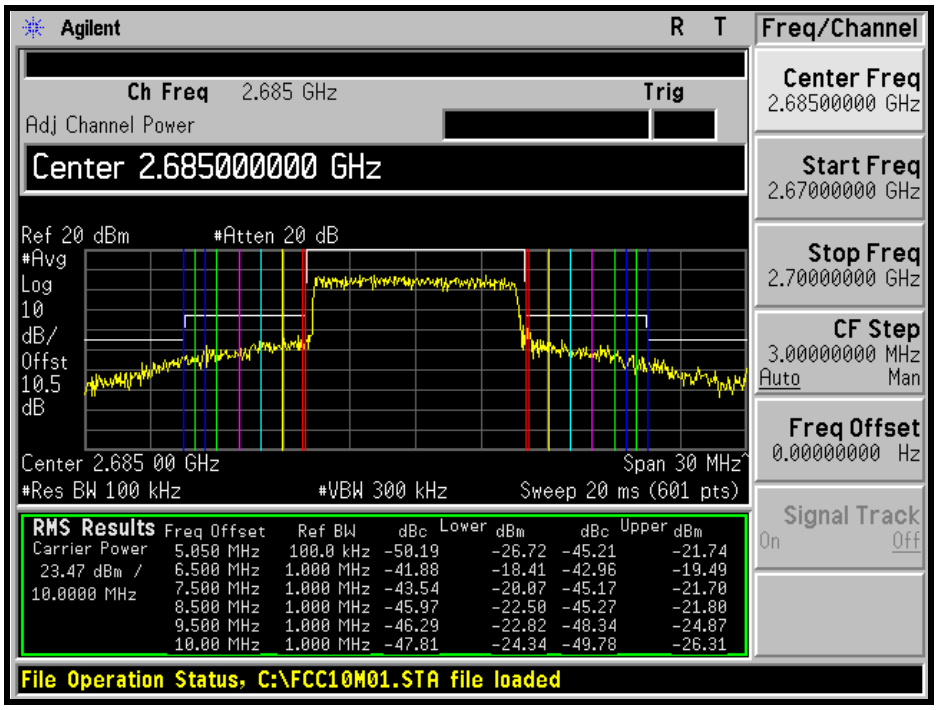


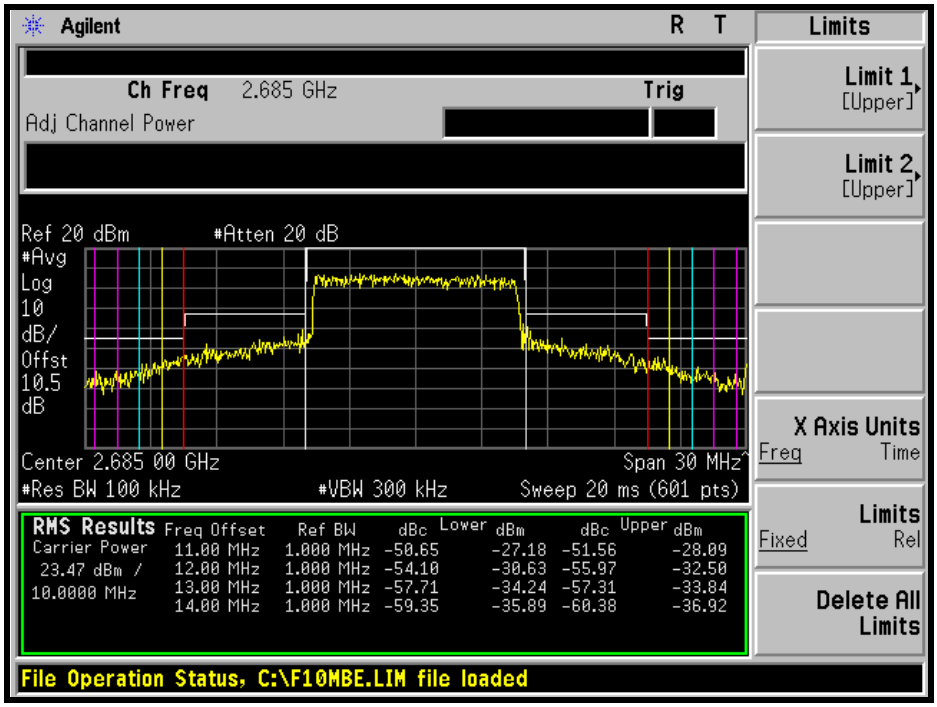
MIDDLE CHANNEL





HIGH CHANNEL





4.5 CONDUCTED SPURIOUS EMISSIONS

4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

In the FCC 27.53(m)(4), 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 and 55 + 10 log (P) dB at 5.5 MHz 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

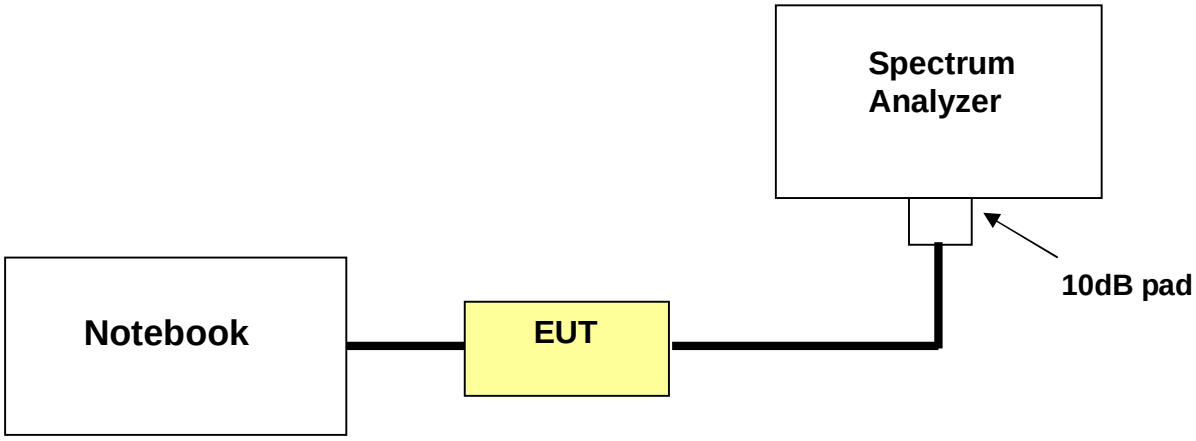
NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

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 26.5GHz, it shall be connected to the 10dB pad attenuated the carried frequency. The spectrum set RB = 1MHz, VB = 3MHz.

4.5.4 TEST SETUP



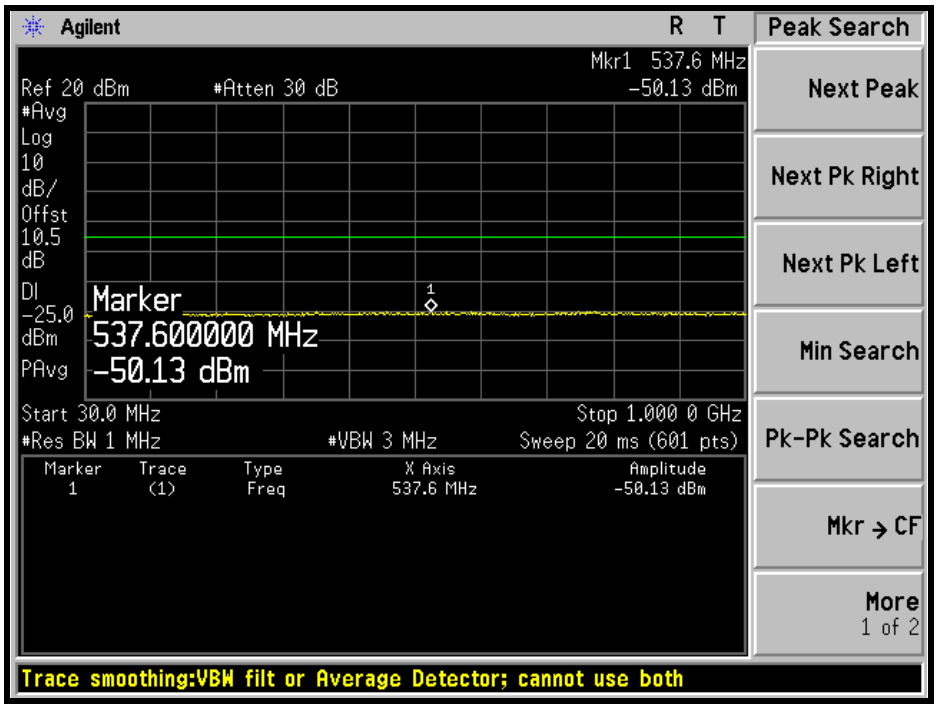
4.5.5 EUT OPERATING CONDITIONS

Same as item 4.1.5

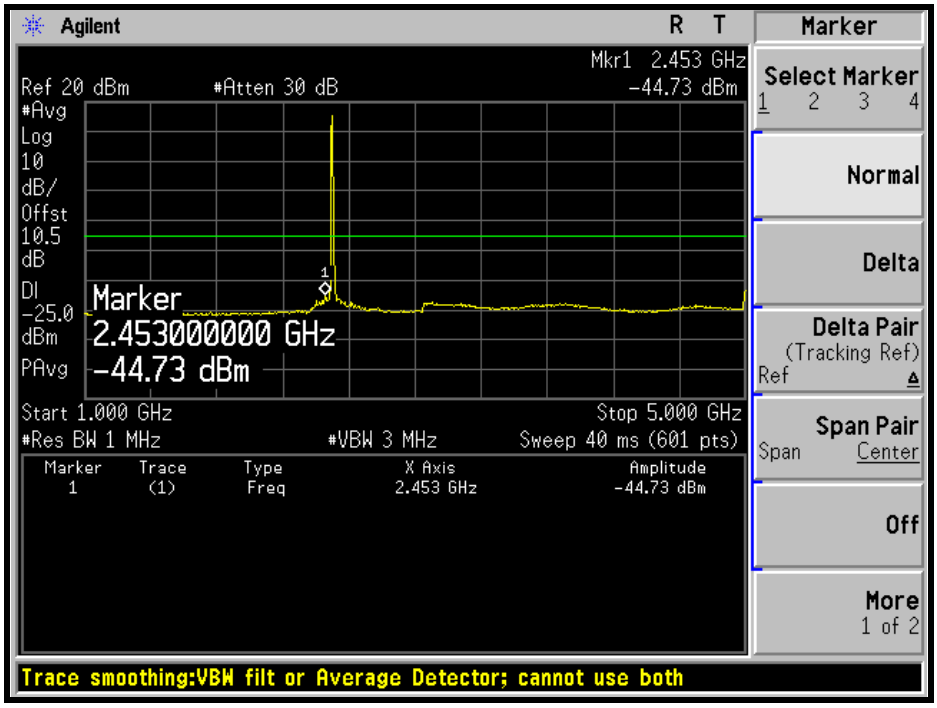
4.5.6 TEST RESULTS

CHANNEL BANDWIDTH: 5MHz

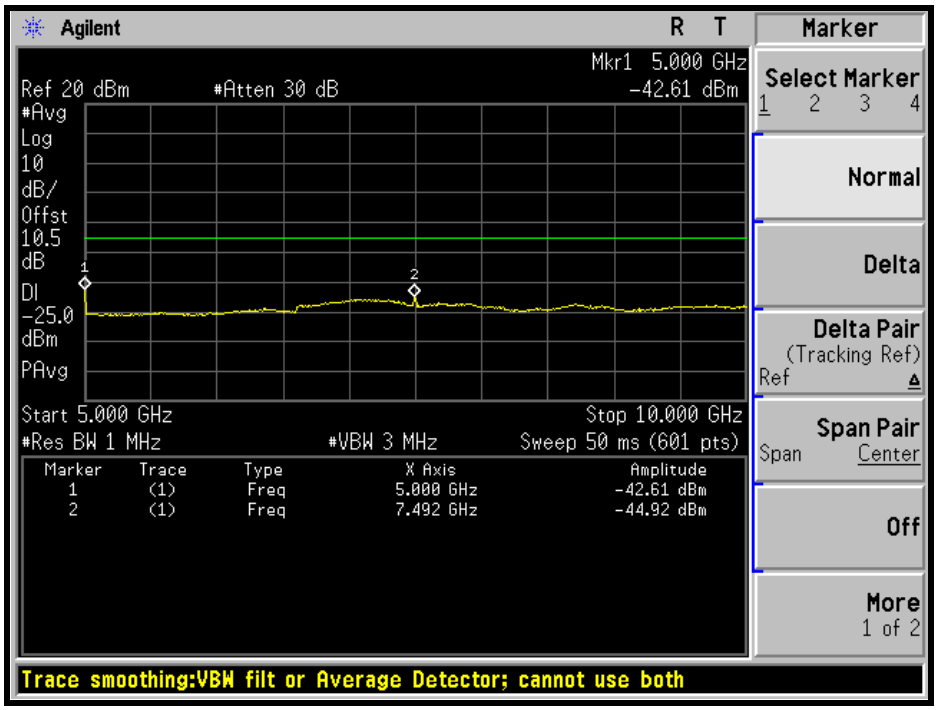
LOW CHANNEL: 30MHz ~ 1GHz:



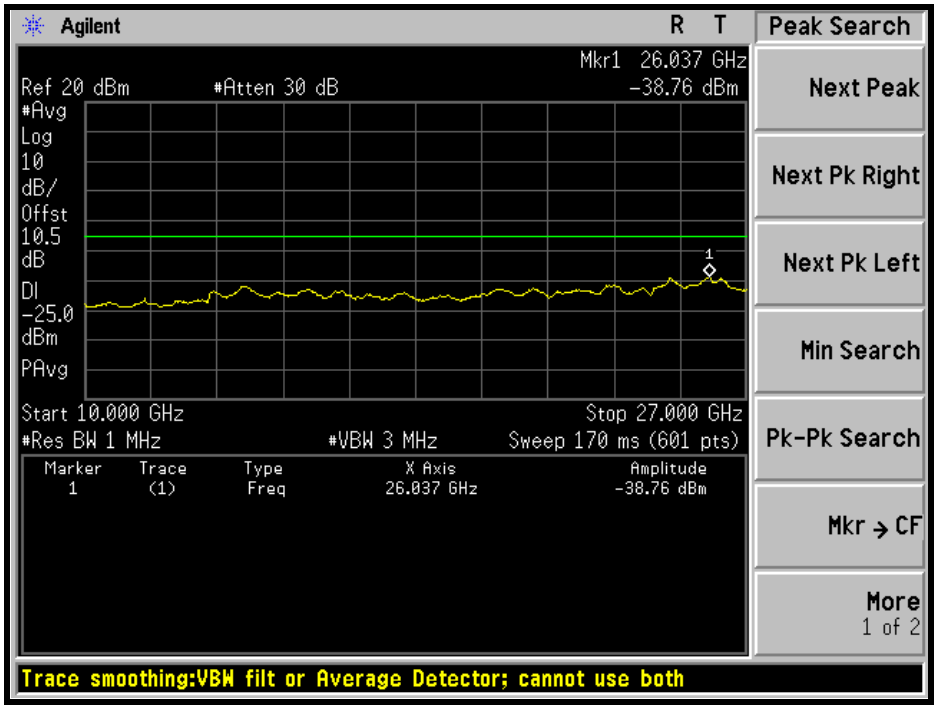
1GHz ~ 5GHz:



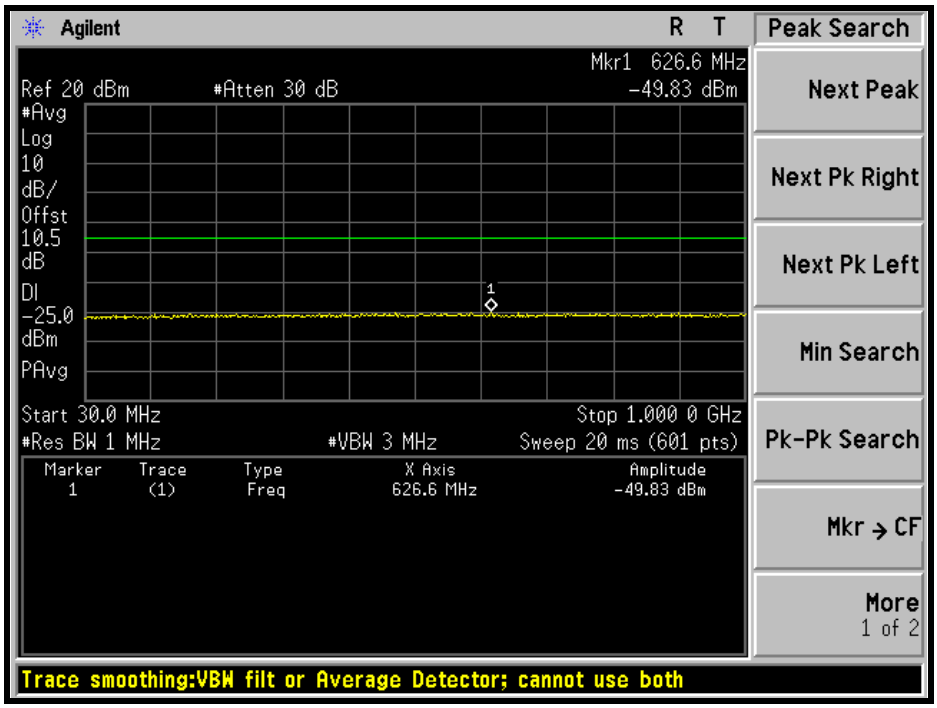
5GHz ~ 10GHz:



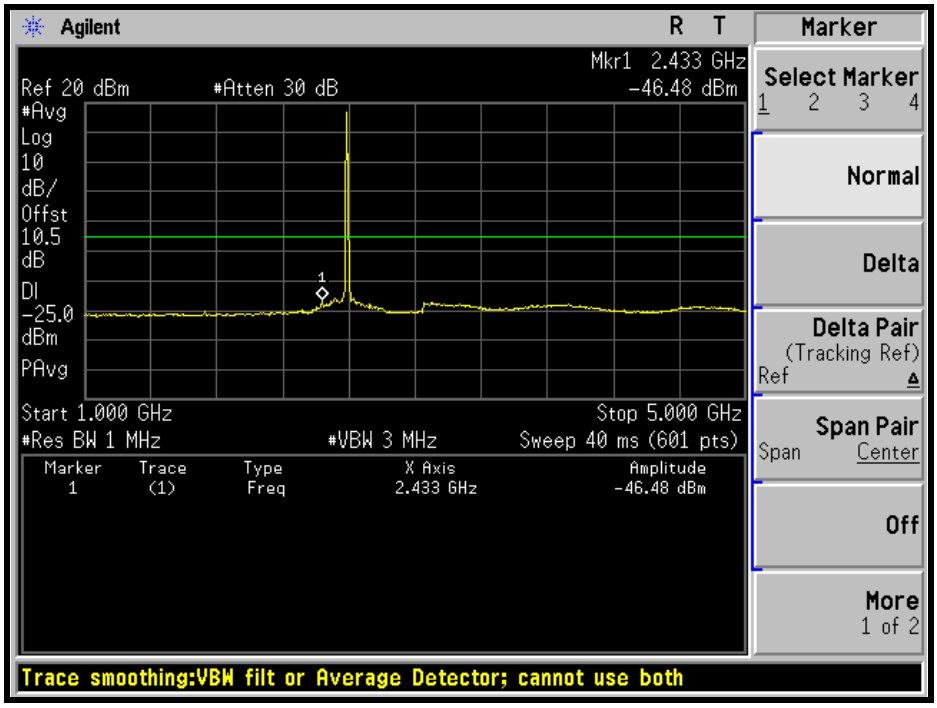
10GHz ~ 27GHz:



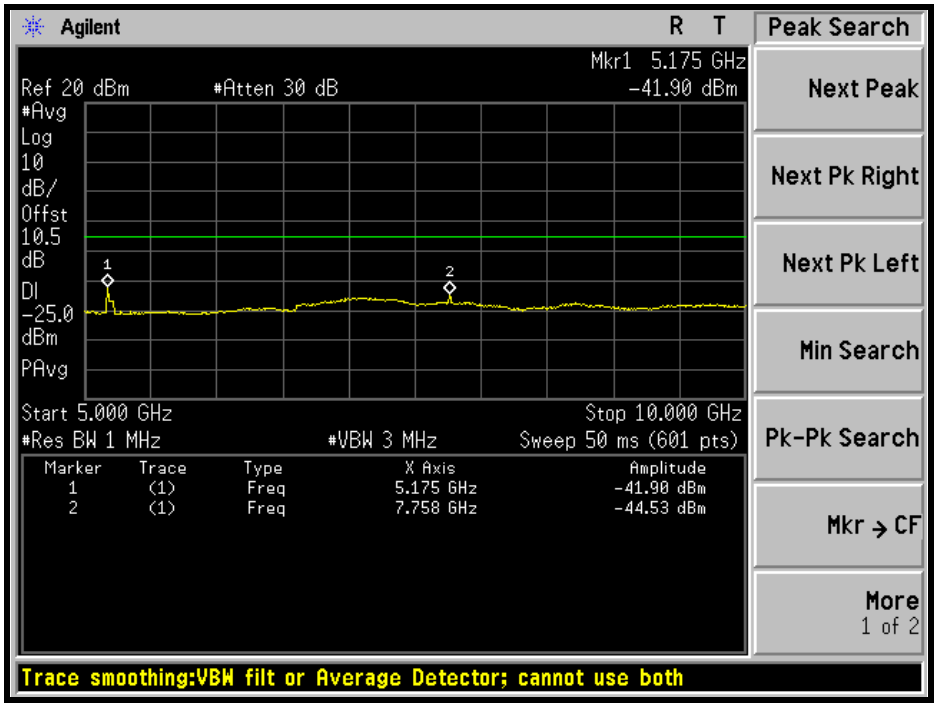
MIDDLE CHANNEL: 30MHz ~ 1GHz:



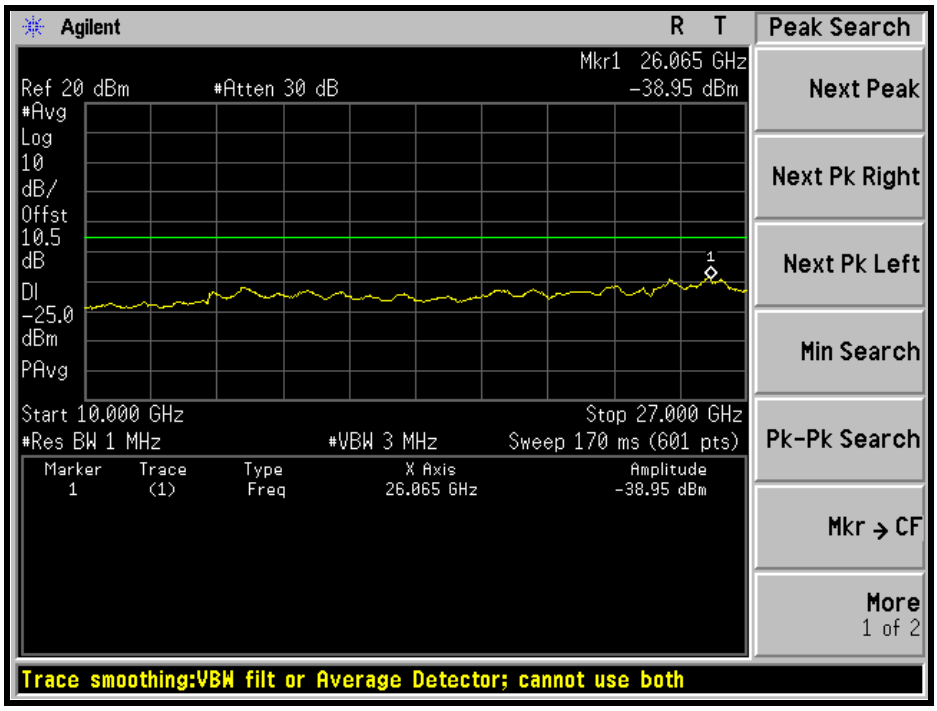
1GHz ~ 5GHz:



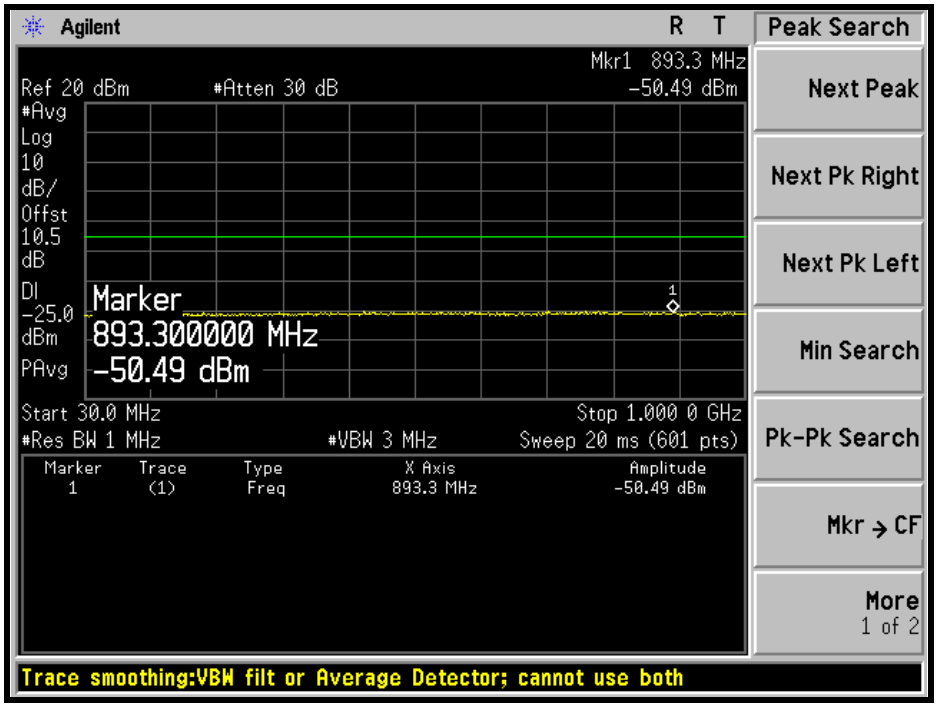
5GHz ~ 10GHz:



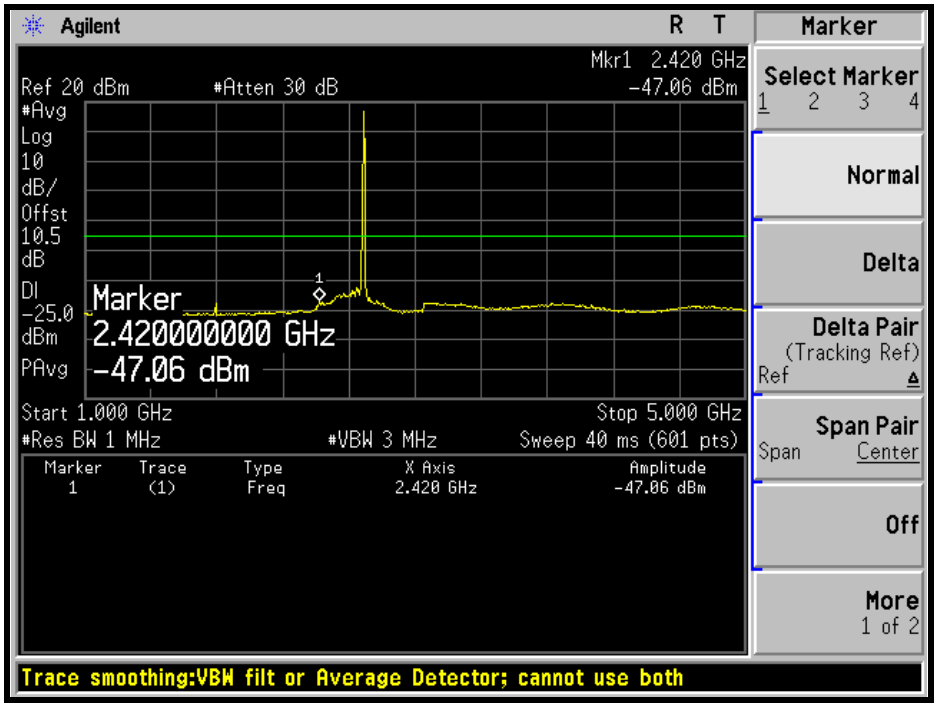
10GHz ~ 27GHz:



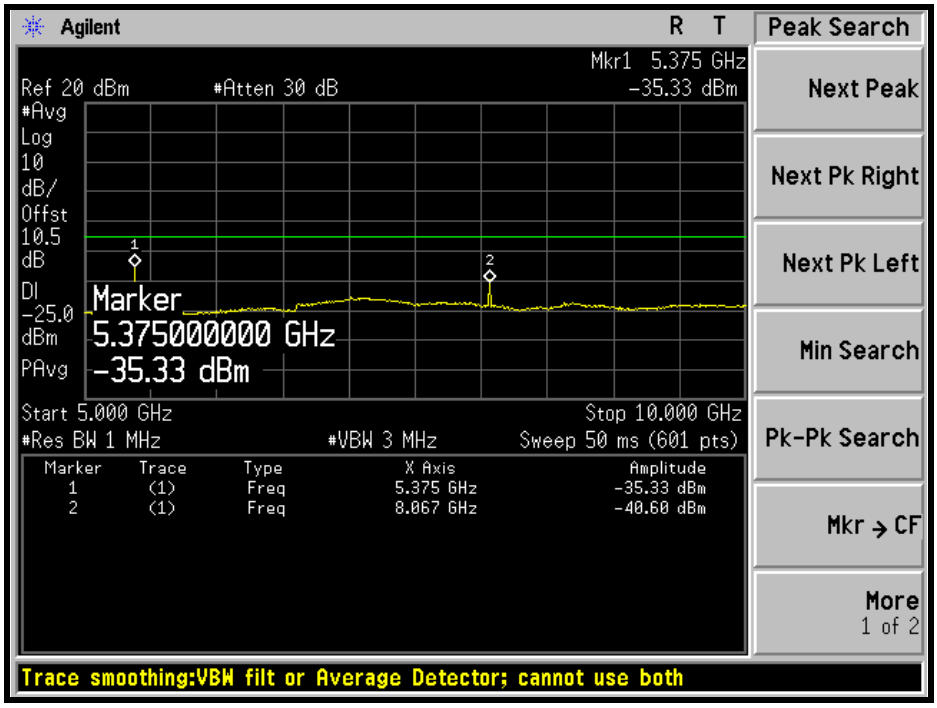
HIGH CHANNEL: 30MHz ~ 1GHz:



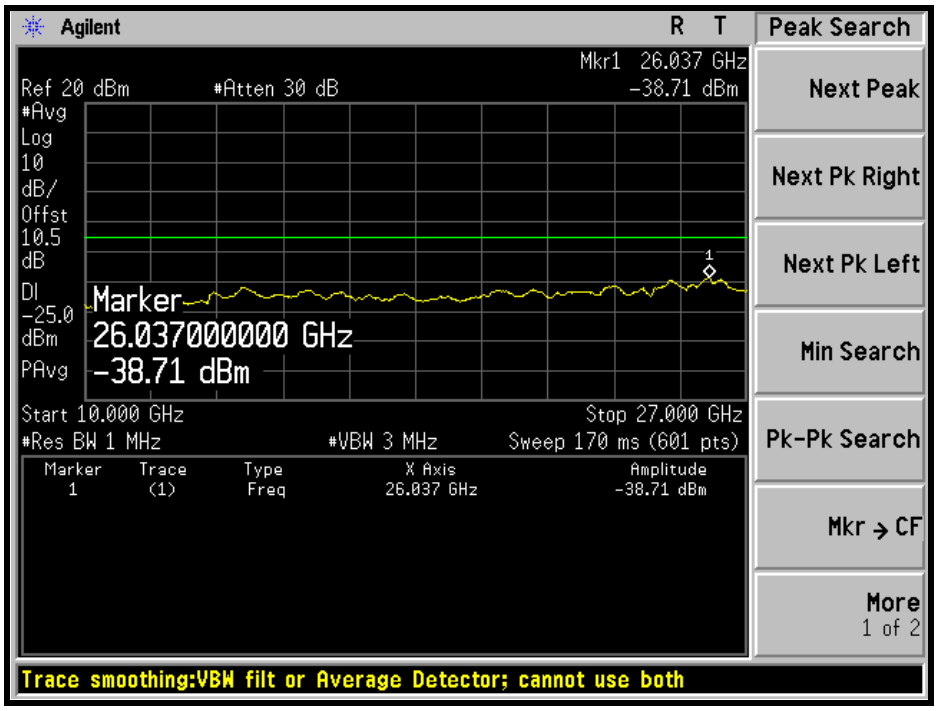
1GHz ~ 5GHz:



5GHz ~ 10GHz:

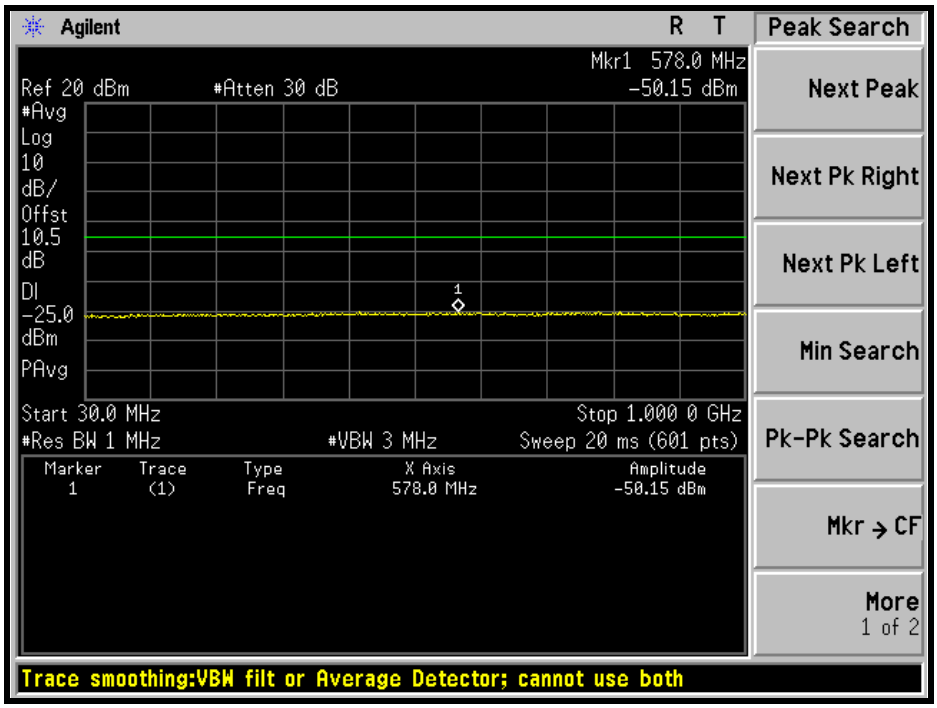


10GHz ~ 27GHz:

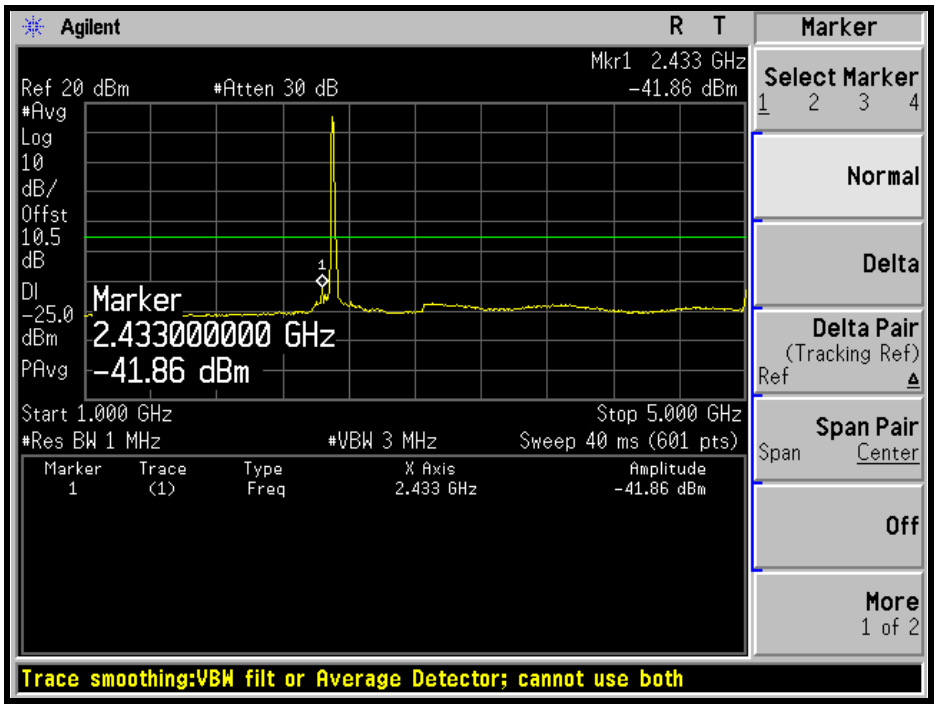


CHANNEL BANDWIDTH: 10MHz

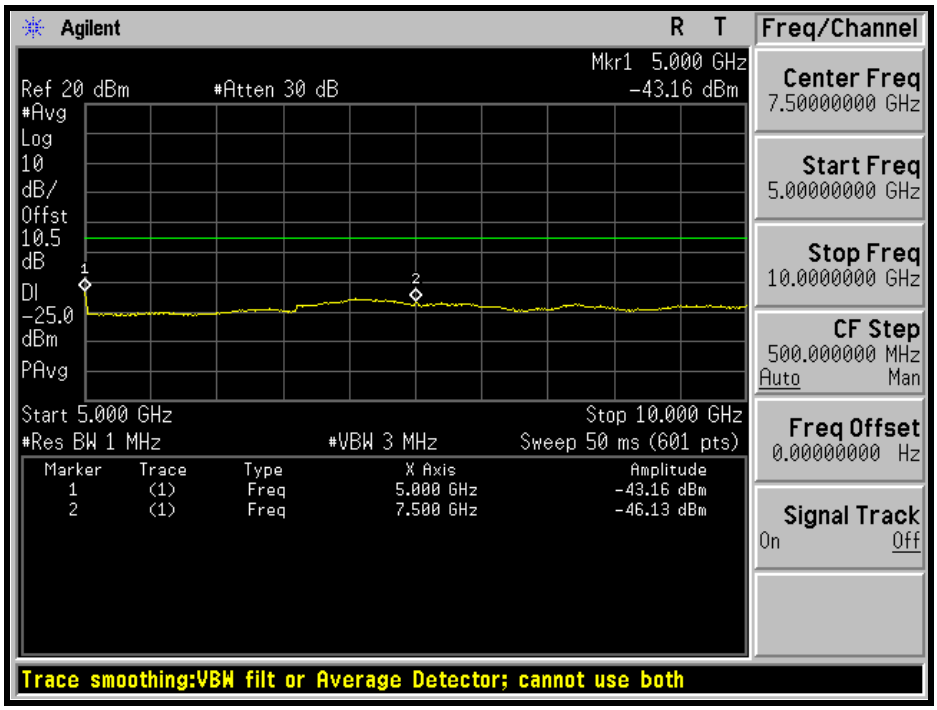
LOW CHANNEL: 30MHz ~ 1GHz:



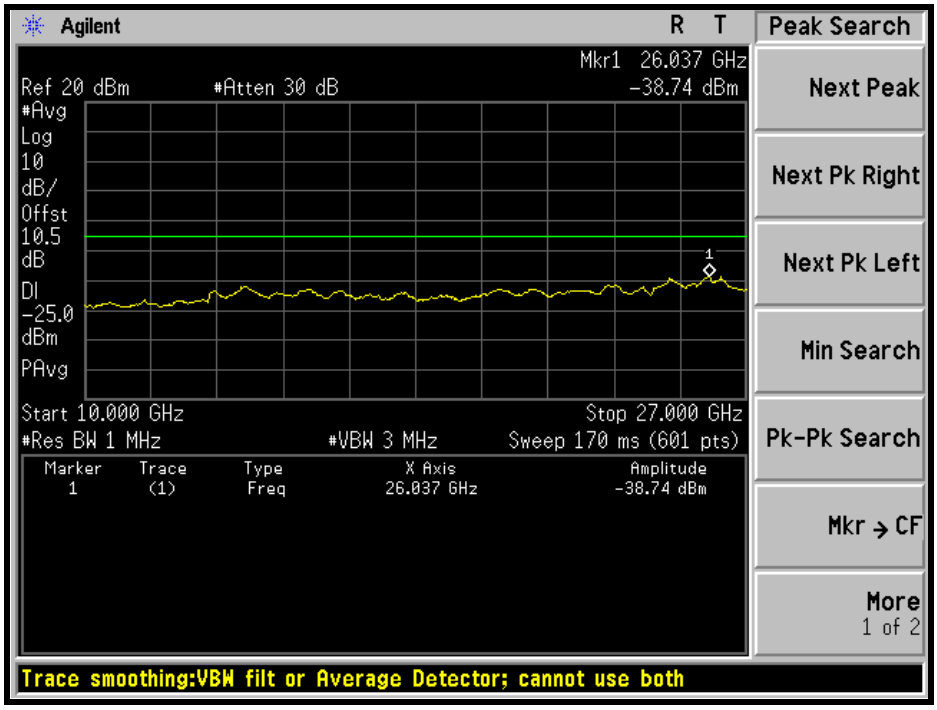
1GHz ~ 5GHz:



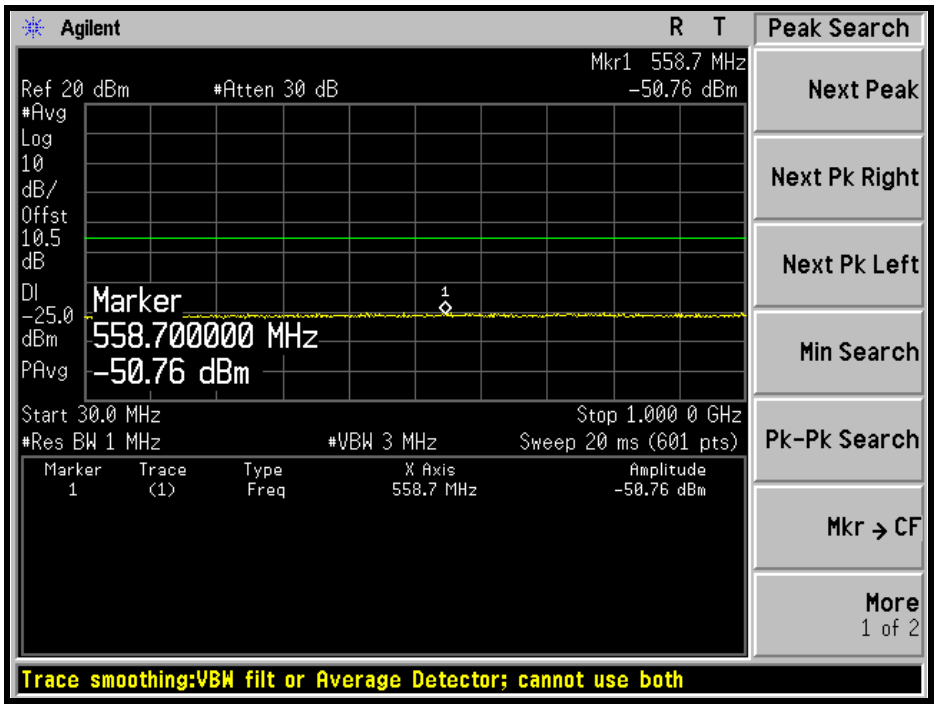
5GHz ~ 10GHz:



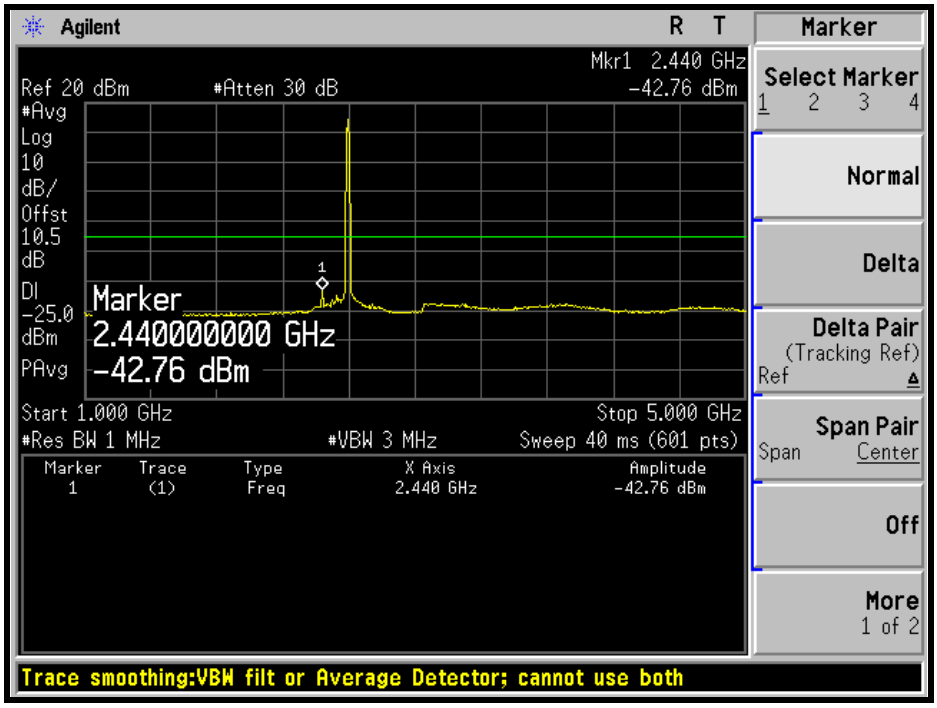
10GHz ~ 27GHz:



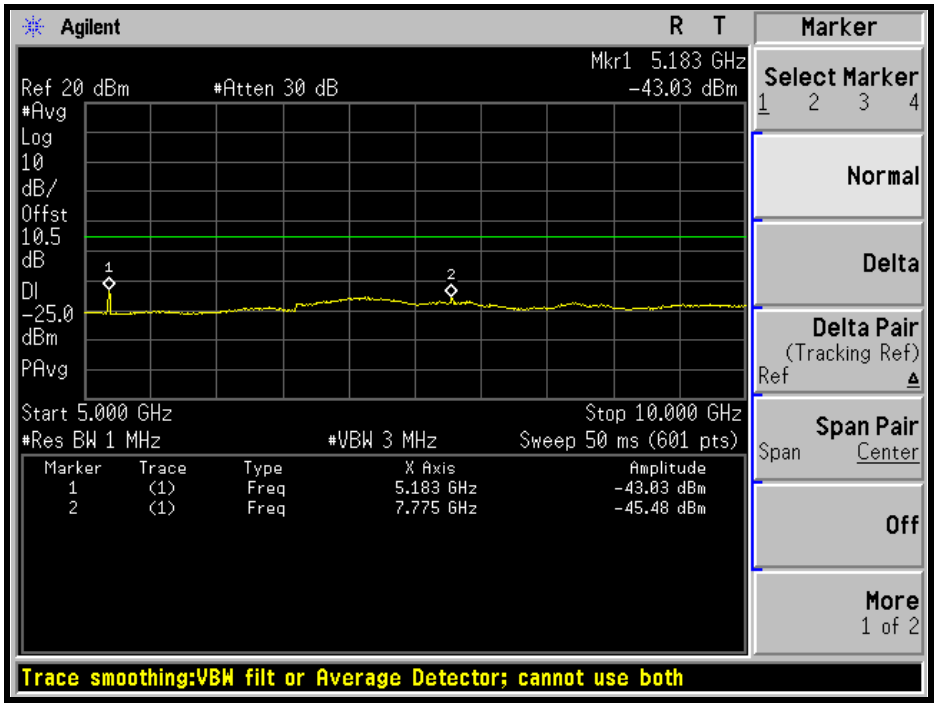
MIDDLE CHANNEL: 30MHz ~ 1GHz:



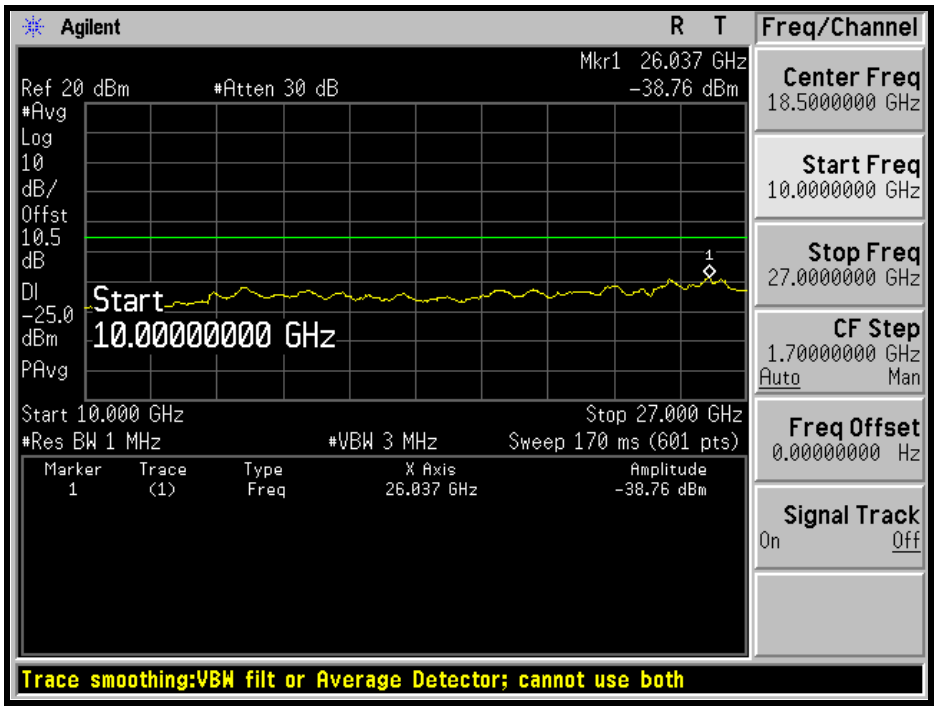
1GHz ~ 5GHz:



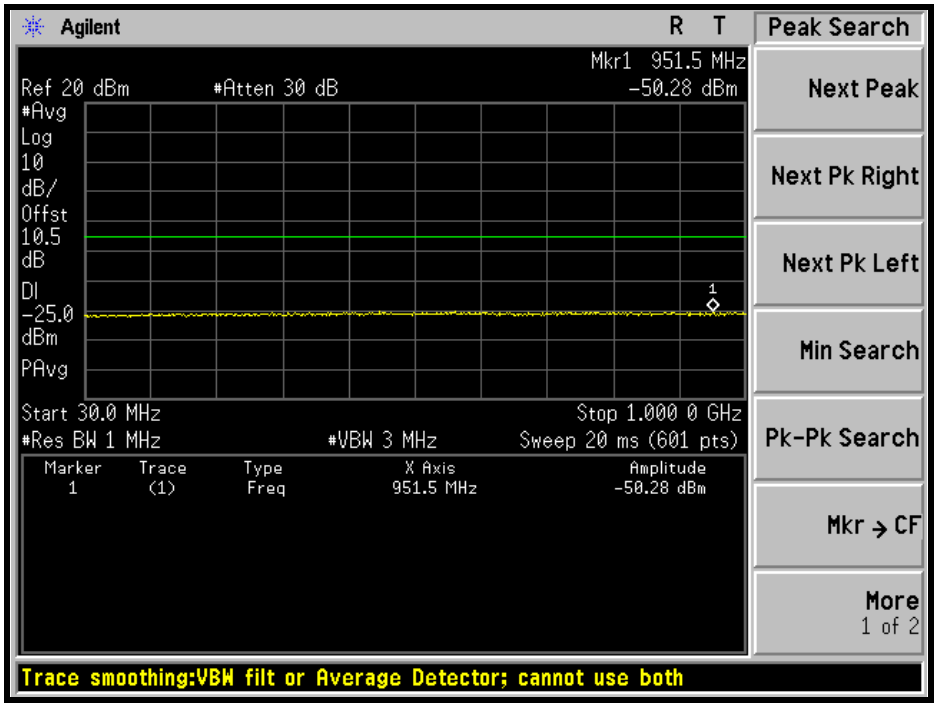
5GHz ~ 10GHz:



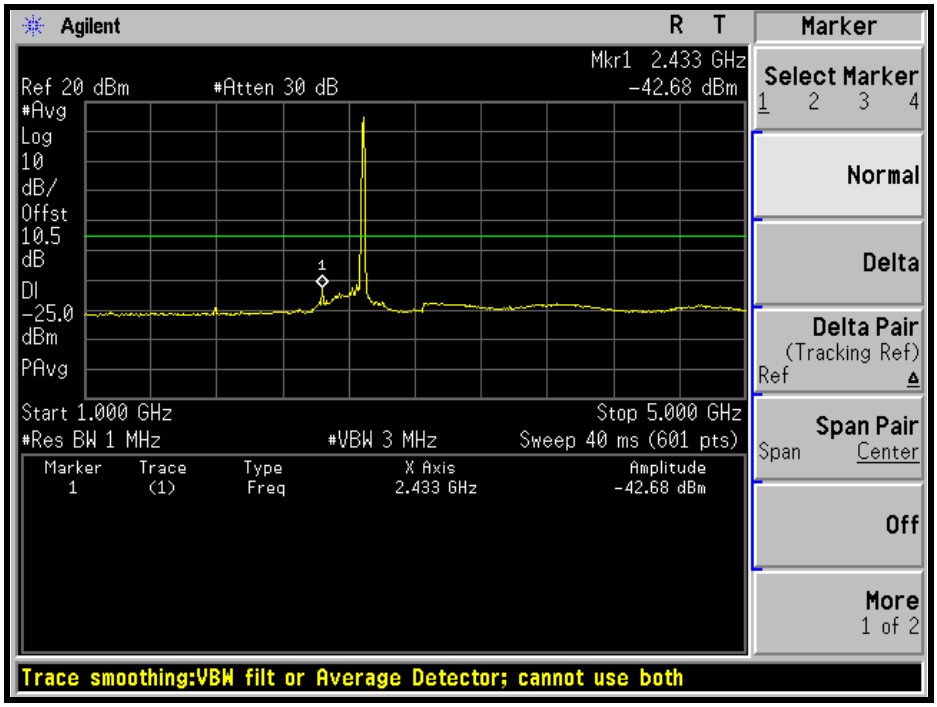
10GHz ~ 27GHz:



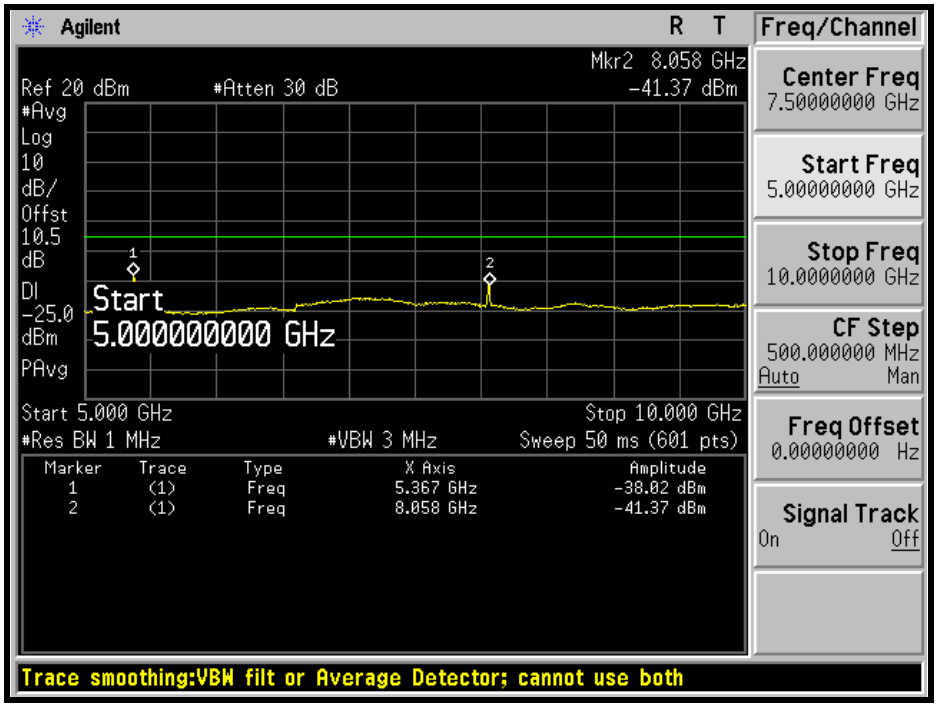
HIGH CHANNEL: 30MHz ~ 1GHz:



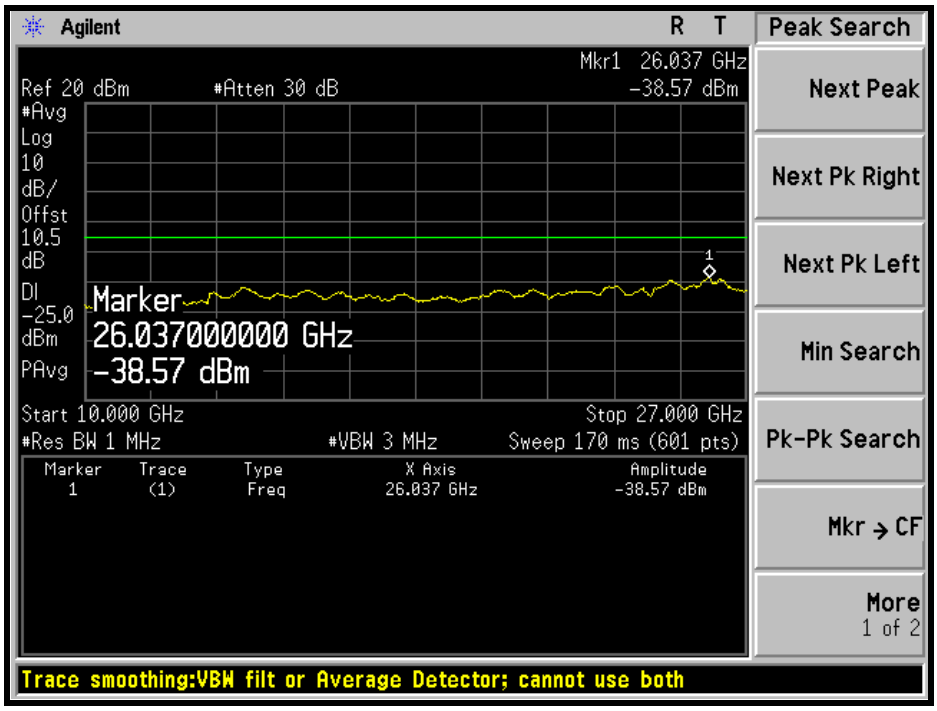
1GHz ~ 5GHz:



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) (4), 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 and 55 + 10 log (P) dB at 5.5 MHz 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. 17, 2010	Dec. 16, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	May 12 , 2010	May 11 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
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. 17, 2010	Dec. 16, 2011
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

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the receiving antenna, which was mounted on antenna tower and its position at 0.8 m above the ground.

c. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading and recorded the value.

d. The EUT is replaced by a horn antenna connected to a signal generator tuned to the frequency of emission.

e. The signal generator level has to be adjusted to have the same emission nature.

f. The radiated power can be calculated via the factor and antenna gain.

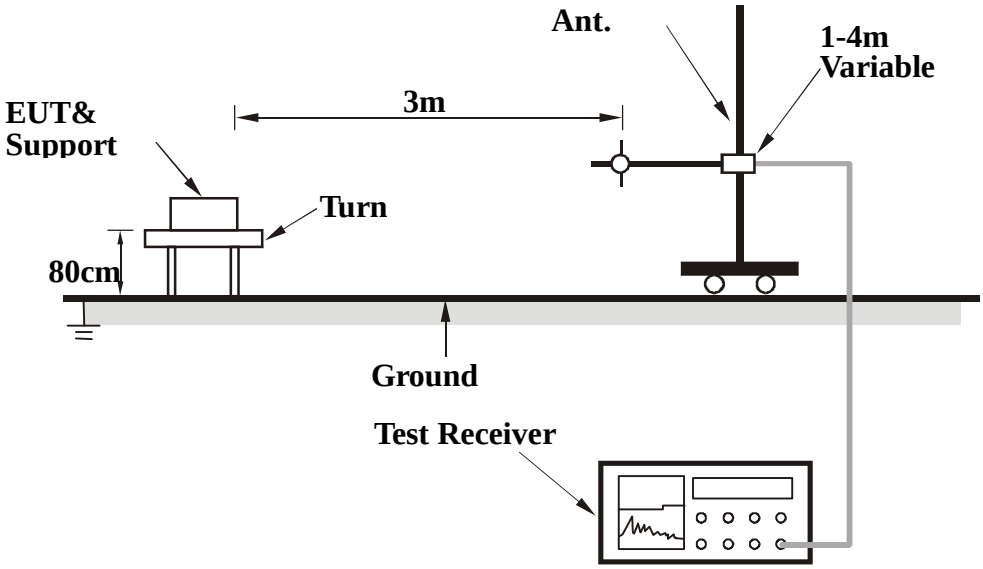
g. Repeat step a ~ f for horizontal polarization.

NOTE: The resolution bandwidth of spectrum analyzer is 1MHz and the video bandwidth is 3MHz.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



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

4.6.6 EUT OPERATING CONDITIONS

Same as item 4.1.5

4.6.7 TEST RESULTS(MODE 1)

CHANNEL BANDWIDTH: 5MHz

MODE	Middle channel	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	33.24	31.48	-25	-40.95	-14.11	-55.06
2	50.52	35.43	-25	-43.26	-9.89	-53.15
3	107.22	36.83	-25	-53.45	-0.83	-54.28
4	270.84	34.85	-25	-60.05	3.90	-56.15
5	346.2	37.30	-25	-60.40	3.60	-56.80
6	357.4	39.04	-25	-58.83	3.56	-55.27
7	378.4	39.00	-25	-58.86	3.45	-55.41
8	896.4	43.51	-25	-59.11	4.71	-54.40

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	32.7	39.41	-25	-32.83	-14.24	-47.07
2	51.6	40.52	-25	-38.56	-9.63	-48.19
3	63.48	43.88	-25	-40.33	-6.57	-46.90
4	107.22	42.96	-25	-47.32	-0.83	-48.15
5	368.6	36.99	-25	-60.87	3.50	-57.37
6	381.2	38.85	-25	-59.00	3.43	-55.57
7	395.2	36.65	-25	-61.20	3.36	-57.84
8	896.4	44.57	-25	-58.05	4.71	-53.34

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

4.6.8 TEST RESULTS(MODE 2)

CHANNEL BANDWIDTH: 10MHz

MODE	Low channel	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	33.24	31.52	-25	-40.91	-14.11	-55.02
2	50.52	35.49	-25	-43.20	-9.89	-53.09
3	107.22	36.79	-25	-53.49	-0.83	-54.32
4	270.84	34.77	-25	-60.13	3.90	-56.23
5	346.2	37.37	-25	-60.34	3.60	-56.73
6	357.4	39.16	-25	-58.70	3.56	-55.15
7	378.4	39.12	-25	-58.73	3.45	-55.29
8	896.4	43.58	-25	-59.04	4.71	-54.33

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	32.7	39.46	-25	-32.78	-14.24	-47.02
2	51.6	40.61	-25	-38.47	-9.63	-48.10
3	63.48	43.87	-25	-40.34	-6.57	-46.91
4	107.22	42.89	-25	-47.39	-0.83	-48.22
5	368.6	36.88	-25	-60.98	3.50	-57.48
6	381.2	38.79	-25	-59.06	3.43	-55.63
7	395.2	36.74	-25	-61.11	3.36	-57.75
8	896.4	44.62	-25	-58.00	4.71	-53.29

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

4.6.9 TEST RESULTS(MODE 3)

CHANNEL BANDWIDTH: 5MHz

MODE	Middle channel	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	33.24	31.56	-25	-40.87	-14.11	-54.98
2	50.52	35.59	-25	-43.10	-9.89	-52.99
3	107.22	36.99	-25	-53.29	-0.83	-54.12
4	270.84	35.02	-25	-59.88	3.90	-55.98
5	346.2	37.48	-25	-60.23	3.60	-56.62
6	357.4	39.32	-25	-58.54	3.56	-54.99
7	378.4	39.25	-25	-58.60	3.45	-55.16
8	896.4	43.63	-25	-58.99	4.71	-54.28

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	32.7	39.51	-25	-32.73	-14.24	-46.97
2	51.6	40.62	-25	-38.46	-9.63	-48.09
3	63.48	43.95	-25	-40.26	-6.57	-46.83
4	107.22	43.12	-25	-47.16	-0.83	-47.99
5	368.6	37.11	-25	-60.75	3.50	-57.25
6	381.2	38.99	-25	-58.86	3.43	-55.43
7	395.2	36.84	-25	-61.01	3.36	-57.65
8	896.4	44.72	-25	-57.90	4.71	-53.19

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

4.6.10 TEST RESULTS(MODE 4)

CHANNEL BANDWIDTH: 10MHz

MODE	Low channel	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	33.24	31.69	-25	-40.74	-14.11	-54.85
2	50.52	35.67	-25	-43.02	-9.89	-52.91
3	107.22	36.94	-25	-53.34	-0.83	-54.17
4	270.84	34.91	-25	-59.99	3.90	-56.09
5	346.2	37.95	-25	-59.76	3.60	-56.15
6	357.4	39.35	-25	-58.51	3.56	-54.96
7	378.4	39.42	-25	-58.43	3.45	-54.99
8	896.4	43.62	-25	-59.00	4.71	-54.29

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	32.7	39.58	-25	-32.66	-14.24	-46.90
2	51.6	40.69	-25	-38.39	-9.63	-48.02
3	63.48	43.95	-25	-40.26	-6.57	-46.83
4	107.22	42.92	-25	-47.36	-0.83	-48.19
5	368.6	36.99	-25	-60.87	3.50	-57.37
6	381.2	38.91	-25	-58.94	3.43	-55.51
7	395.2	36.95	-25	-60.90	3.36	-57.54
8	896.4	44.82	-25	-57.80	4.71	-53.09

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

4.7 RADIATED EMISSION MEASUREMENT (ABOVE 1GHz)

4.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 27.53(m) (4), 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 and 55 + 10 log (P) dB at 5.5 MHz from the channel edges.

4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 17, 2010	Dec. 16, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	May 12 , 2010	May 11 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
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. 17, 2010	Dec. 16, 2011
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.

4.7.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the receiving antenna, which was mounted on antenna tower and its position at 0.8 m above the ground.

c. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading and recorded the value.

d. The EUT is replaced by a horn antenna connected to a signal generator tuned to the frequency of emission.

e. The signal generator level has to be adjusted to have the same emission nature.

f. The radiated power can be calculated via the factor and antenna gain.

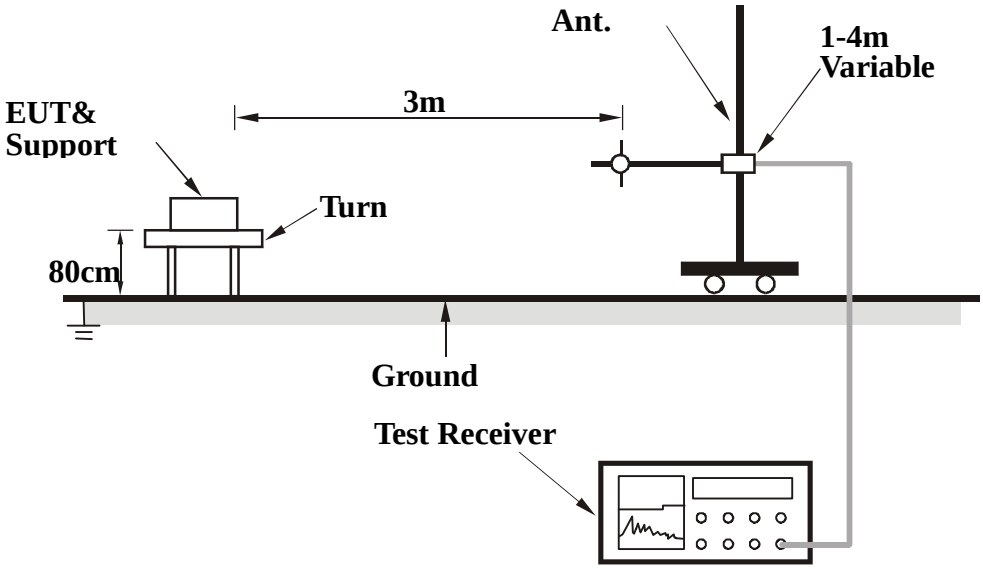
g. Repeat step a ~ f for horizontal polarization.

NOTE: The resolution bandwidth of spectrum analyzer is 1MHz and the video bandwidth is 3MHz.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



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

4.7.6 EUT OPERATING CONDITIONS

Same as item 4.1.5

4.7.7 TEST RESULTS

CHANNEL BANDWIDTH: 5MHz

MODE	Low channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	4997.16	55.15	-25	-49.08	7.01	-42.07
2	7495.3	48.74	-25	-53.87	4.55	-49.32
3	9998.88	40.34	-25	-61.22	4.04	-57.18
4	12494.46	43.78	-25	-57.82	4.34	-53.48

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	4997.16	51.40	-25	-52.83	7.01	-45.82
2	7495.3	49.01	-25	-53.60	4.55	-49.05
3	9998.88	40.88	-25	-60.68	4.04	-56.64
4	12494.46	48.60	-25	-53.00	4.34	-48.66

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

MODE	Middle channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	5174.32	49.90	-25	-54.59	7.05	-47.54
2	7760.44	49.27	-25	-53.35	4.32	-49.03
3	10348.96	43.10	-25	-58.85	3.71	-55.14
4	12936.12	44.42	-25	-56.51	4.43	-52.08

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	5174.32	48.96	-25	-55.53	7.05	-48.48
2	7760.44	48.11	-25	-54.51	4.32	-50.19
3	10348.96	45.55	-25	-56.40	3.71	-52.69
4	12936.12	49.22	-25	-51.71	4.43	-47.28

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

MODE	High channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	5373.4	54.23	-25	-50.56	7.09	-43.47
2	8060.08	55.56	-25	-47.06	4.13	-42.93
3	10748.36	44.27	-25	-57.56	3.33	-54.23
4	13434.8	42.20	-25	-58.02	3.41	-54.61

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	5373.4	50.96	-25	-53.83	7.09	-46.74
2	8060.08	56.26	-25	-46.36	4.13	-42.23
3	10748.36	43.04	-25	-58.79	3.33	-55.46
4	13434.8	43.88	-25	-56.34	3.41	-52.93

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

CHANNEL BANDWIDTH: 10MHz

MODE	Low channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	5002.64	52.80	-25	-51.44	7.01	-44.43
2	7500.96	45.58	-25	-57.04	4.54	-52.50
3	10003.92	39.12	-25	-62.44	4.03	-58.41
4	12500.36	40.77	-25	-60.83	4.34	-56.49

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	5002.64	49.45	-25	-54.79	7.01	-47.78
2	7500.96	44.92	-25	-57.70	4.54	-53.16
3	10003.92	39.48	-25	-62.08	4.03	-58.05
4	12500.36	45.20	-25	-56.40	4.34	-52.06

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

MODE	Middle channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	5186.16	46.72	-25	-57.79	7.05	-50.74
2	7769	39.72	-25	-62.90	4.32	-58.58
3	10371.36	42.16	-25	-59.81	3.69	-56.12
4	12962.32	41.95	-25	-58.94	4.44	-54.50

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	5186.16	44.05	-25	-60.46	7.05	-53.41
2	7769	44.31	-25	-58.31	4.32	-53.99
3	10371.36	42.49	-25	-59.48	3.69	-55.79
4	12962.32	45.47	-25	-55.42	4.44	-50.98

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

MODE	High channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 1021hPa
TESTED BY	Evan 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	5369.9	51.19	-25	-53.59	7.09	-46.50
2	8055.1	52.15	-25	-50.47	4.13	-46.34
3	10737.4	41.91	-25	-59.94	3.34	-56.60
4	13422.8	41.27	-25	-58.97	3.44	-55.53

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	5369.9	47.44	-25	-57.34	7.09	-50.25
2	8055.1	51.99	-25	-50.63	4.13	-46.50
3	10737.4	42.01	-25	-59.84	3.34	-56.50
4	13422.8	42.49	-25	-57.75	3.44	-54.31

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

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.
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

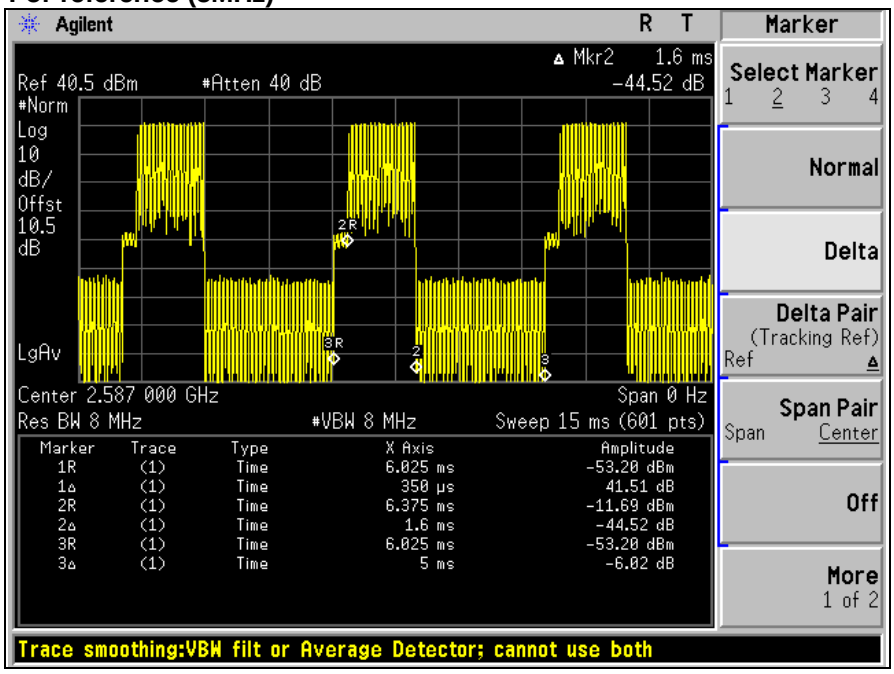
Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Email: service@adt.com.tw
Web Site: www.adt.com.tw

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

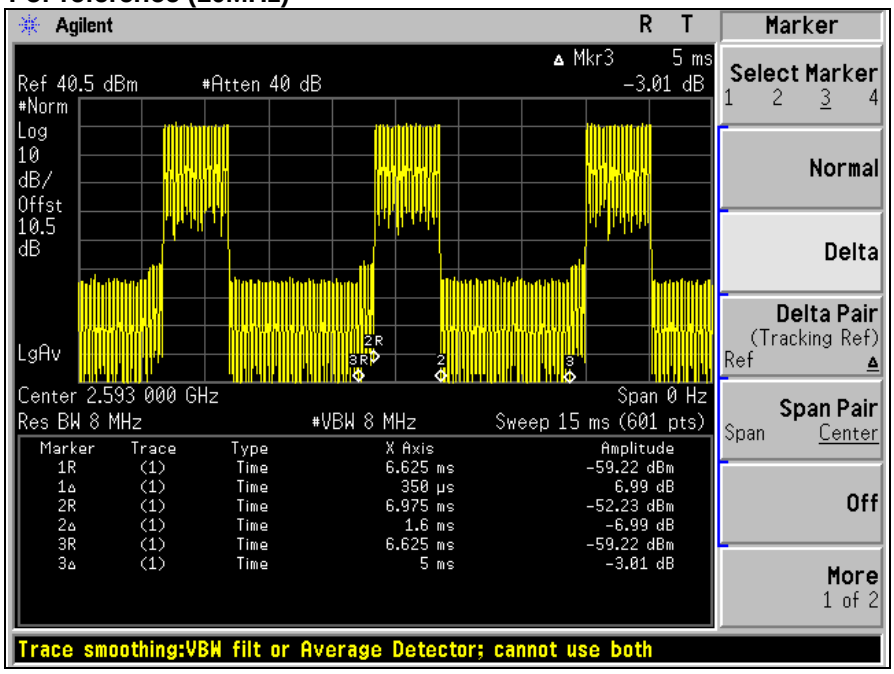
7 APPENDIX - A DL/UL RATION FOR TEST

For reference (5MHz)



Ratio = (1.6 / 5) *% = 32%

For reference (10MHz)



Ratio = (1.6 / 5) *% = 32%

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