FCC TEST REPORT (PART 27)

REPORT NO.: RF980916H02A

MODEL NO.: CPEi25725

RECEIVED: Sep. 16, 2009

TESTED: Sep. 22 to Oct. 20, 2009

ISSUED: Oct. 29, 2009

APPLICANT: Motorola Home & Networks Mobility · Broadband Access Solutions

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

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1 CERTIFICATION

PRODUCT: WiMAX CPE

BRAND NAME: Motorola

MODEL NO.: CPEi25725

APPLICANT: Motorola Home & Networks Mobility · Broadband Access Solutions

TESTED: Sep. 22 to Oct. 20, 2009

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.: CPEi25725) 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 : Carol Liao , **DATE:** *Oct. 29, 2009*

(Carol Liao, Specialist)

TECHNICAL ACCEPTANCE : , **DATE:** *Oct. 29, 2009*

(Hank Chung, Deputy Manager)

APPROVED BY : , **DATE:** *Oct. 29, 2009*

(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 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)(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	WiMAX CPE
MODEL NO.	CPEi25725
FCC ID	VYO-CPE25725
POWER SUPPLY	DC 12V from Power Adapter
POWER CORD	DC output cable (Unshielded, 3m) DC output cable (Unshielded, 3m, with one core)
MODULATION TECHNOLOGY	OFDMA
MODULATION	BPSK-1/2, QPSK-1/2, -3/4, 16QAM-1/2, 3/4, 64QAM-1/2, -2/3, -3/4 (64QAM for Rx only)
FREQUENCY RANGE	2505MHz ~ 2685MHz
CHANNEL BANDWIDTH	5MHz & 10MHz
MAX. CONDUCTED POWER	5MHz: 25.83dBm 10MHz: 25.92dBm
ANTENNA TYPE	Please see note 1
DATA CABLE	NA
I/O PORTS	RJ-45 port x 1 RJ-11 port x 1
ASSOCIATED DEVICES	NA

NOTE:

1. This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RF980916H02 design is as the following information:

u Correct the antenna gain:

Original							
No.	Antenna Type	Antenna Connector	Antenna Gain (dBi)	Cable loss(dB)	Net Gain (dBi)	Cable Length (cm)	Frequency range (MHz)
1	Slot	Murata connector	5	1.1	3.9	10	2500~2700
Correction							
No.	Antenna Type	Antenna Connector	Antenna Gain (dBi)				Frequency range (MHz)
1	Slot	Murata connector	5				2500~2700

2. The reason of change is only for typo correction on the gain and all test results are not affected. Therefore all test data was copied from the original test report (Report No.: RF980916H02). And all data was verified to meet the requirements.

3. The EUT must be supplied with a power adapter and following two different models could be chosen:

No.	Brand	Model No.	Spec.
1	OPERATTING	OTE-15-12L US 120150	AC Input: 100-120VAC, 50/60Hz, 0.5A DC Output: 12VDC, 1.25A DC output cable (Unshielded, 3m)
2	PHIHONG	PSAA20R-120	AC Input: 100-240VAC, 50/60Hz, 0.5A DC Output: 12VDC, 1.67A DC output cable (Unshielded, 3m, with one core)

The EUT was pre-tested in chamber with above power adapters, the worse case was found in power adapter 1. Therefore only the test data of the power adapter was recorded in this report.

4. For the EUT Modulation type and coding rate. After pre-testing items of output power and spurious emissions, 5MHz:QPSK-1/2 and 10MHz:16QAM-1/2 were found to be worst case, and were selected for the final test configuration.

Up Link		Down Link	
Modulation	Coding rate	Modulation	Coding rate
BPSK	1/2	BPSK	1/2
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. The EUT embedded a firmware for testing that needs to control from Notebook computer to let EUT with different DL/UL ration.

6. The device has different DL/UL ration in normal operation. It was tested with 38.78% (DL:UL= 29:18) and 38.79% (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 typical control traffic was transmitted in 3 control symbols.

7. The above EUT information was declared by manufacturer and for more detailed features description, 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 & 10MHz

Low channel (L): 2505MHz.

Middle channel (M): 2595MHz.

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≥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≥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 CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	EUT CONFIGURE MODE
L, M, H	OFDMA	QPSK	MODE 1
L, M, H	OFDMA	16QAM	MODE 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 CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	EUT CONFIGURE MODE
L, M, H	OFDMA	QPSK	MODE 1
L, M, H	OFDMA	16QAM	MODE 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 CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	EUT CONFIGURE MODE
L, M, H	OFDMA	QPSK	MODE 1
L, M, H	OFDMA	16QAM	MODE 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 CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	EUT CONFIGURE MODE
L, M, H	OFDMA	QPSK	MODE 1
L, M, H	OFDMA	16QAM	MODE 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 CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	EUT CONFIGURE MODE
M	OFDMA	QPSK	MODE 1
L	OFDMA	16QAM	MODE 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 CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	EUT CONFIGURE MODE
L, M, H	OFDMA	QPSK	MODE 1
L, M, H	OFDMA	16QAM	MODE 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

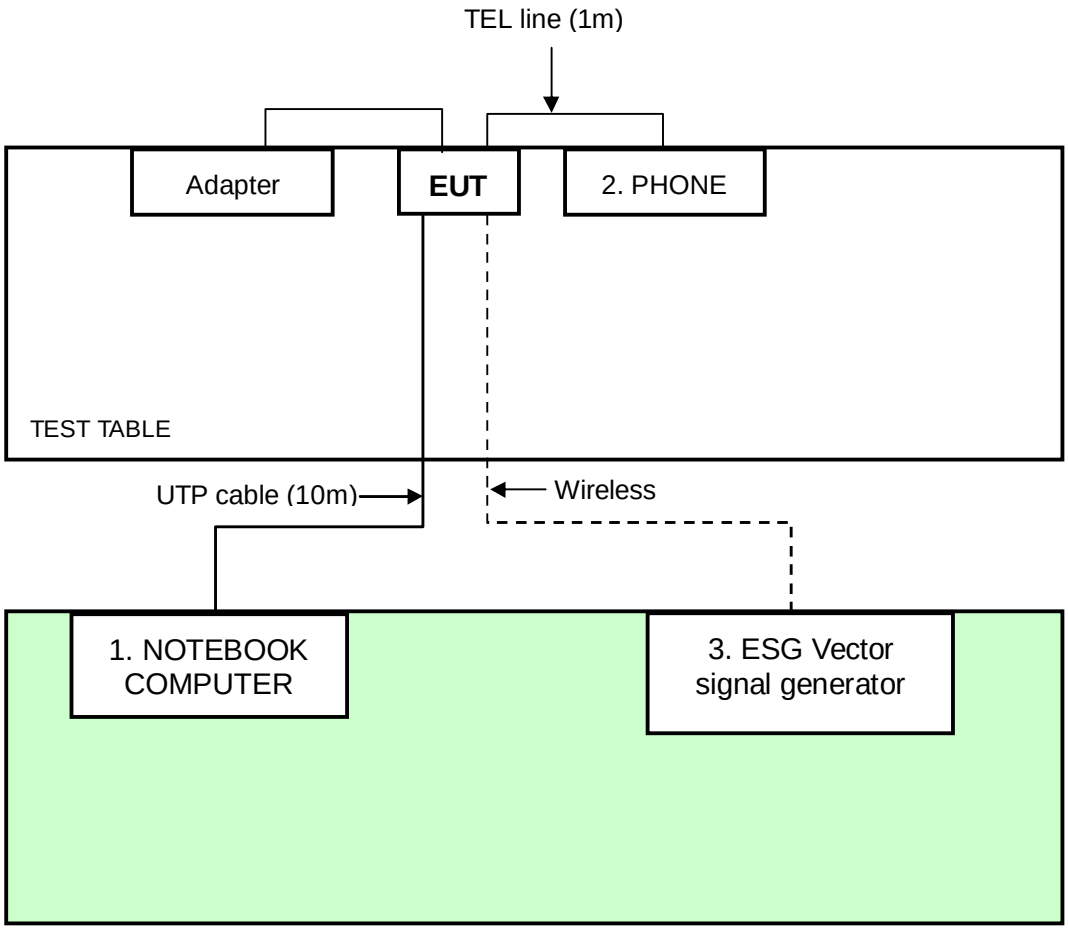
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	ASUS	M2400N	4ANP088103	FCC DoC
2	PHONE	Romeo	TE-812	97280926	FCC DoC
3	ESG Vector signal generator	Agilent	E4438C	MY45094468/005 506 602 UK6 UNJ	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (10m)
2	TEL line (1m)
3	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 radiated 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	April 25, 2009	April 24, 2010
Pulse Power Sensor	MA2411B	0738172	April 25, 2009	April 24, 2010

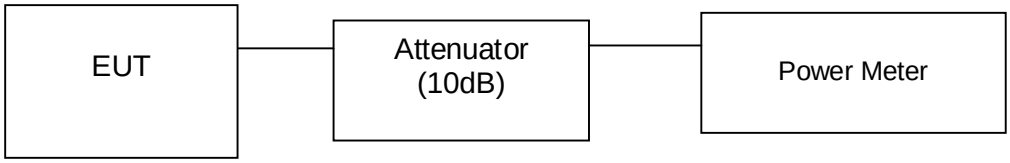
NOTE:
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1.3 TEST PROCEDURES

a. The transmitter output was connected to the power meter through an attenuator; the bandwidth of the fundamental frequency was measured with the power meter.

b. Record the power level.

4.1.4 TEST SETUP



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

4.1.5 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared other computer system (support unit 1) to act as communication partner and placed it outside of testing area.
3. The communication partners run test program “BCS200 Control Panel 3.3.0” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.6 TEST RESULTS

CHANNEL BANDWIDTH: 5MHz

INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	RMS
ENVIRONMENTAL CONDITIONS	20deg°C, 60%RH 965hPa	**TESTED BY**	Wen Yu

CONDUCTED POWER			
CHANNEL	**FREQUENCY (MHz)**	**POWER OUTPUT(mW)**	**POWER OUTPUT(dBm)**
Low	2505	363.078	25.60
Middle	2595	383.001	25.83
High	2685	379.315	25.79

CHANNEL BANDWIDTH: 10MHz

INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	RMS
ENVIRONMENTAL CONDITIONS	20deg°C, 60%RH 965hPa	**TESTED BY**	Wen Yu

CONDUCTED POWER			
CHANNEL	**FREQUENCY (MHz)**	**POWER OUTPUT(mW)**	**POWER OUTPUT(dBm)**
Low	2505	368.978	25.67
Middle	2595	375.837	25.75
High	2685	390.841	25.92

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℃ ~ 60℃.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 03, 2009	Aug. 02, 2010
OVEN	MHU-225AU	911033	Dec. 18, 2008	Dec. 17, 2009
HUBER+SUHNER	SUCOFLEX104	22076614	Nov. 13, 2008	Nov. 12, 2009
AC POWER SOURCE	6205	1140503	N/A	N/A

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

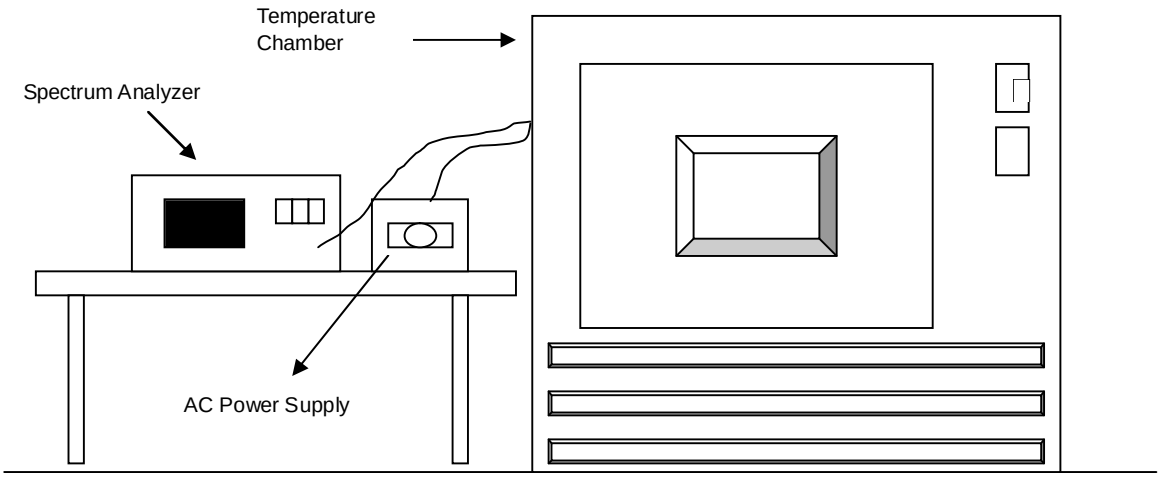
a. Power must be removed when changing from one temperature to another or one voltage to another voltage. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected the external power supply to control the AC input power. The various Volts from the minimum 93.5 Volts to 126.5 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 (2595MHz)	INPUT POWER (SYSTEM)	120Vac, 60Hz
ENVIRONMENTAL CONDITIONS	20deg°C, 60%RH 965hPa	TESTED BY	Wen Yu

AFC FREQUENCY ERROR VS. VOLTAGE						
VOLTAGE (Volts)	2Minutes		5Minutes		10Minutes	
	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)
138	2595.045	0.001723	2595.04463	0.001720	2595.0443	0.001705
120	2595.045	0.001722	2595.04452	0.001716	2595.0444	0.001710
102	2595.045	0.001728	2595.04473	0.001724	2595.0444	0.001712

AFC FREQUENCY ERROR VS. TEMP						
TEMP (℃)	2Minutes		5Minutes		10Minutes	
	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)	FREQUENCY (MHz)	PPM (%)
60	2595.055	0.002108	2595.0542	0.002089	2595.05317	0.002049
50	2595.053	0.002035	2595.05213	0.002009	2595.05208	0.002007
40	2595.054	0.002066	2595.0532	0.002050	2595.05311	0.002047
30	2595.05	0.001934	2595.05017	0.001933	2595.05008	0.001930
20	2595.045	0.001722	2595.04452	0.001716	2595.0444	0.001710
10	2595.037	0.001434	2595.03718	0.001433	2595.03701	0.001426
0	2595.038	0.001476	2595.03814	0.001470	2595.0382	0.001472
-10	2595.038	0.001469	2595.03822	0.001473	2595.0372	0.001432
-20	2595.037	0.001430	2595.0367	0.001414	2595.0358	0.001380
-30	2595.037	0.001425	2595.0363	0.001395	2595.0362	0.001394

4.3 EMISSION BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF EMISSION BANDWIDTH MEASUREMENT

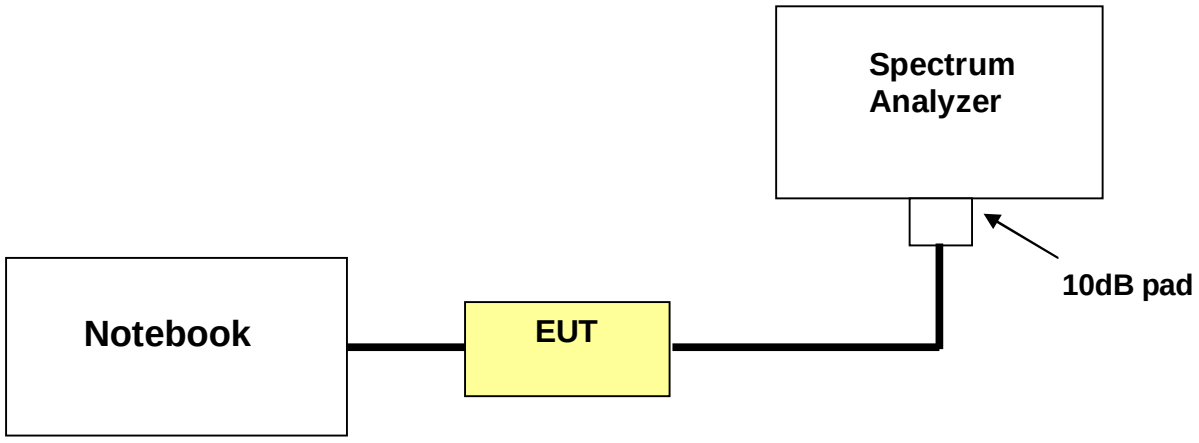
According to FCC 27.53(m)(6) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4440A	MY46185282	Jun. 14, 2009	Jun. 13, 2010
HUBER+SUHNER	SUCOFLEX104	231115/4	May 29, 2009	May 28, 2010
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

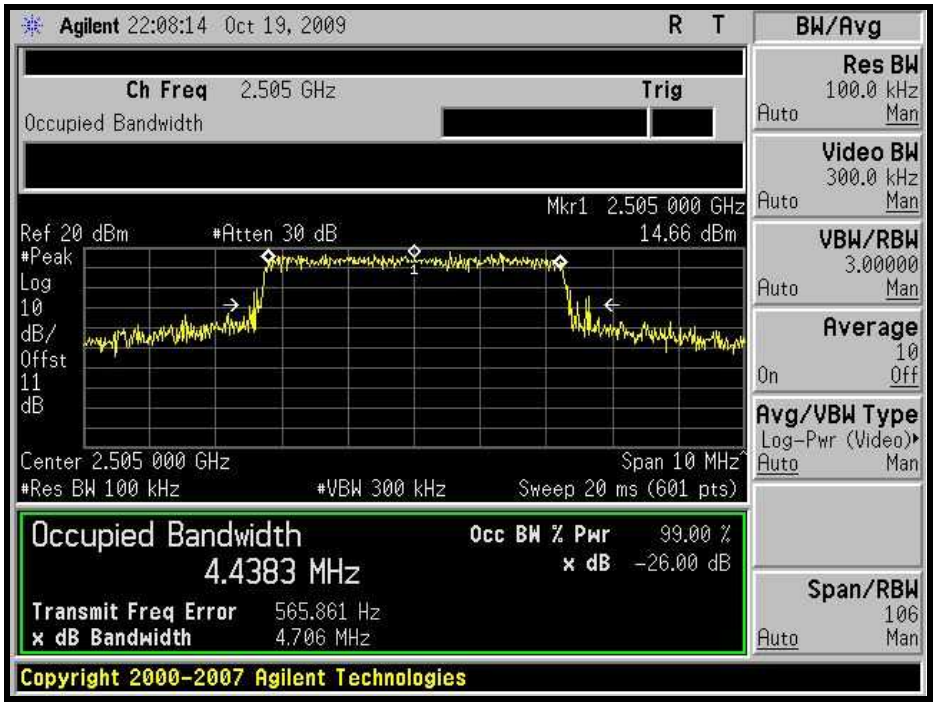
a. The Notebook controlled EUT to export rated output power under transmission mode and specific channel frequency. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 26dB bandwidth is defined as the total spectrum the power of which is higher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

4.3.5 TEST RESULTS

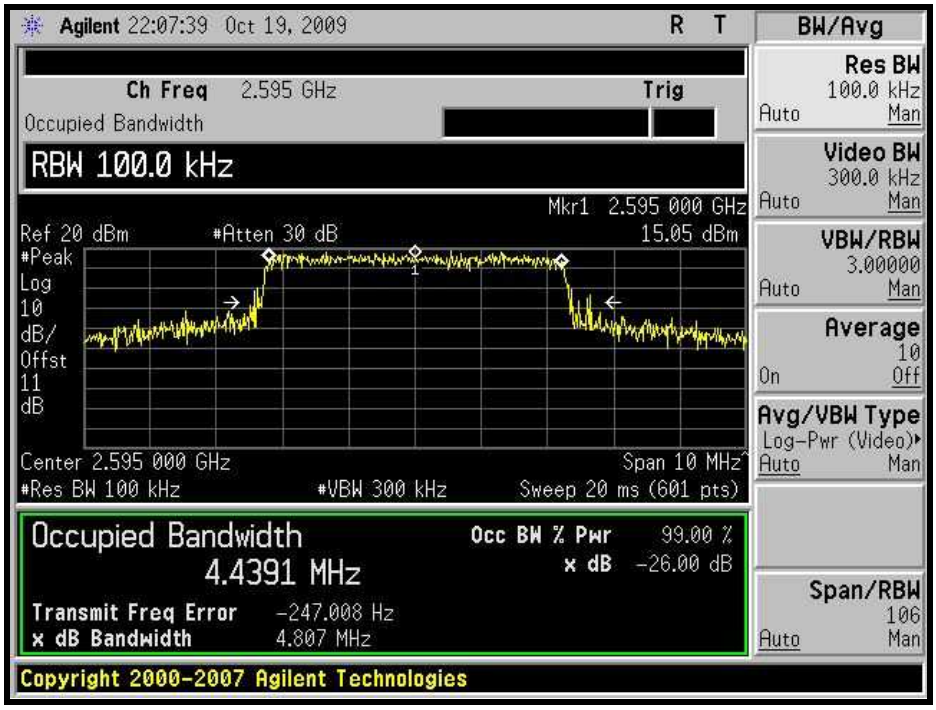
CHANNEL BANDWIDTH: 5MHz

FREQUENCY (MHz)	-26 dBc BANDWIDTH (MHz)
2505	4.706
2595	4.807
2685	4.767

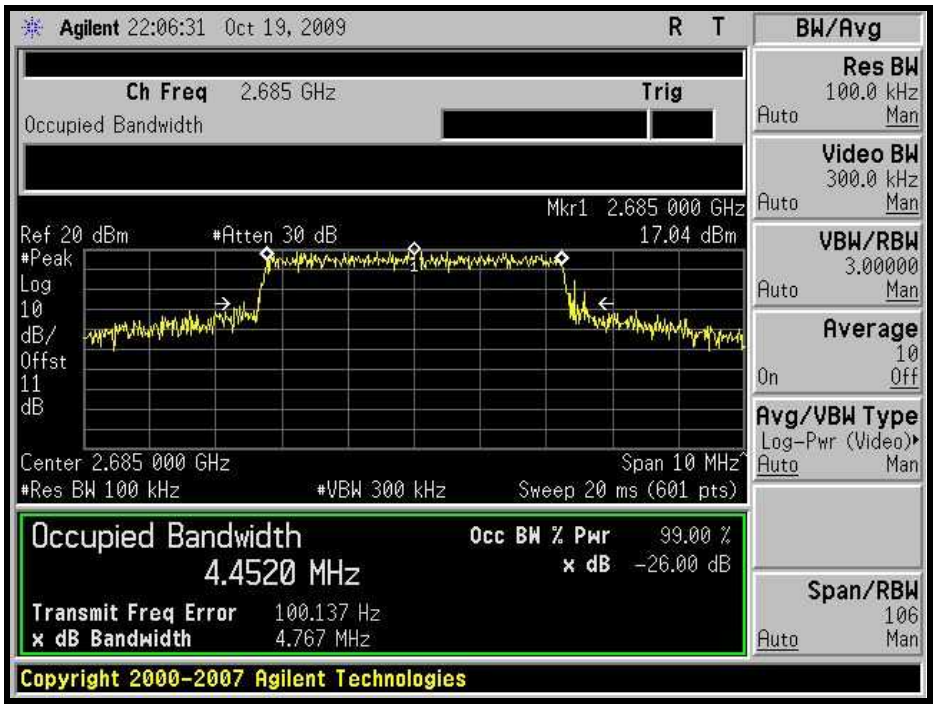
LOW CHANNEL



MIDDLE CHANNEL



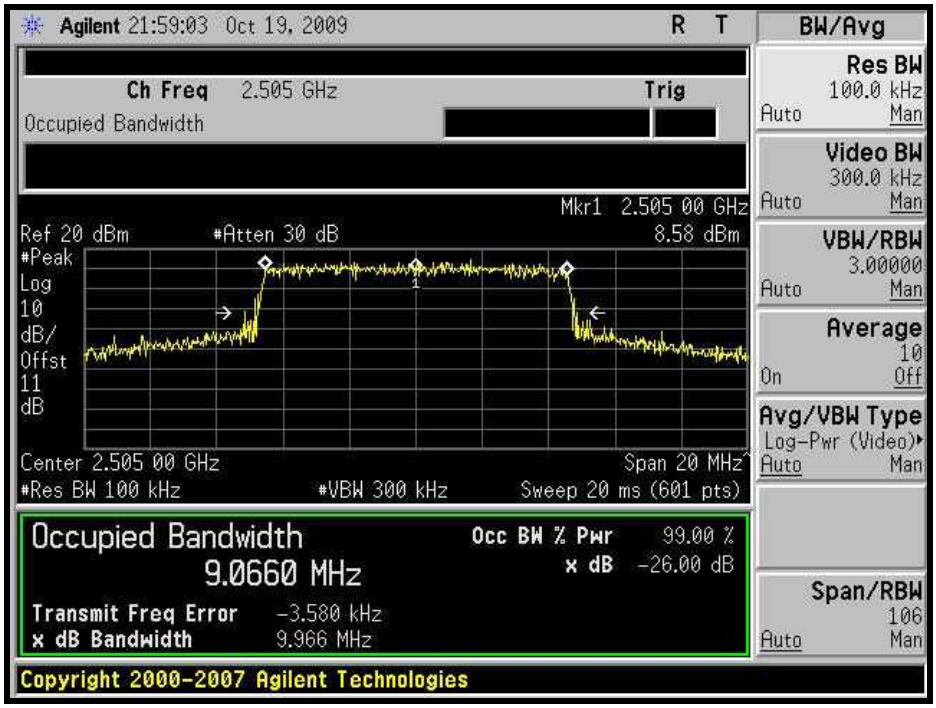
HIGH CHANNEL



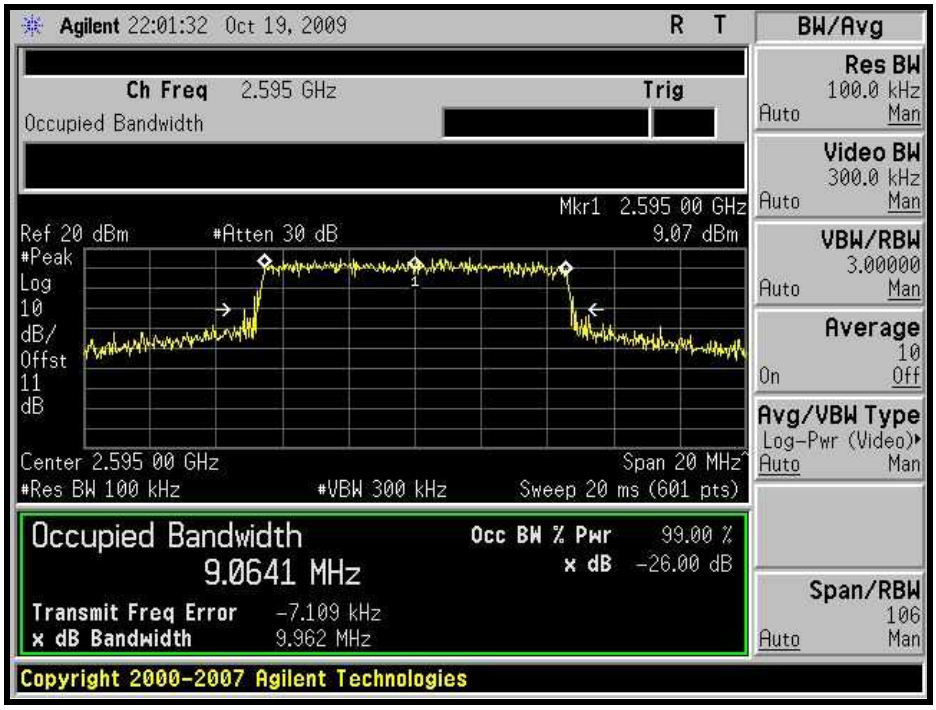
CHANNEL BANDWIDTH: 10MHz

FREQUENCY (MHz)	-26 dBc BANDWIDTH (MHz)
2505	9.966
2595	9.962
2685	9.965

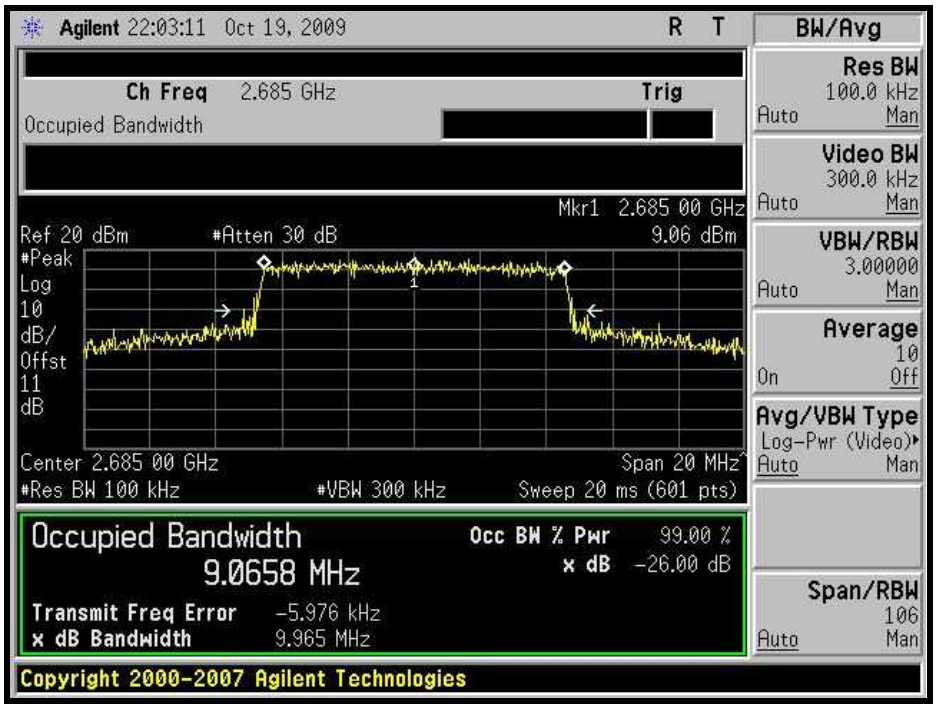
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL



4.4 CHANNEL EDGE MEASUREMENT

4.4.1 LIMITS OF CHANNEL EDGE MEASUREMENT

According to FCC 27.53(m)(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	Apr. 24 , 2009	Apr. 23 , 2010
HUBER+SUHNER	SUCOFLEX104	22238114	July 31, 2009	July 30, 2010
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.

4.4.3 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 150kHz.

c. For Channel bandwidth: 10 MHz:

The center frequency of spectrum is the band edge frequency and span is 30MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz.

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

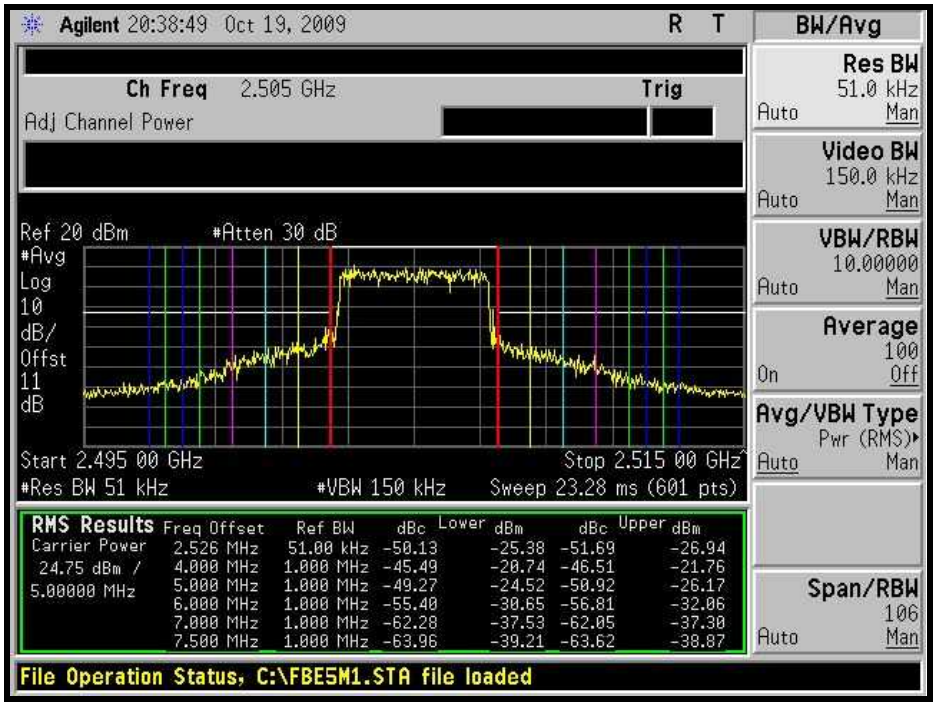
4.4.5 EUT OPERATING CONDITION

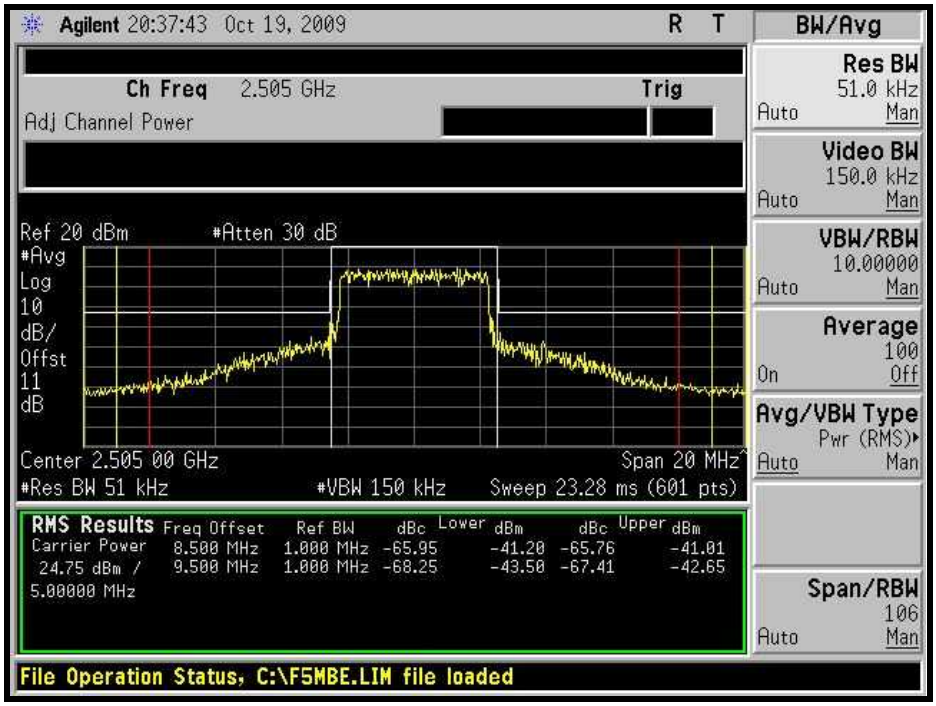
Same as item 4.1.5

4.4.6 TEST RESULTS

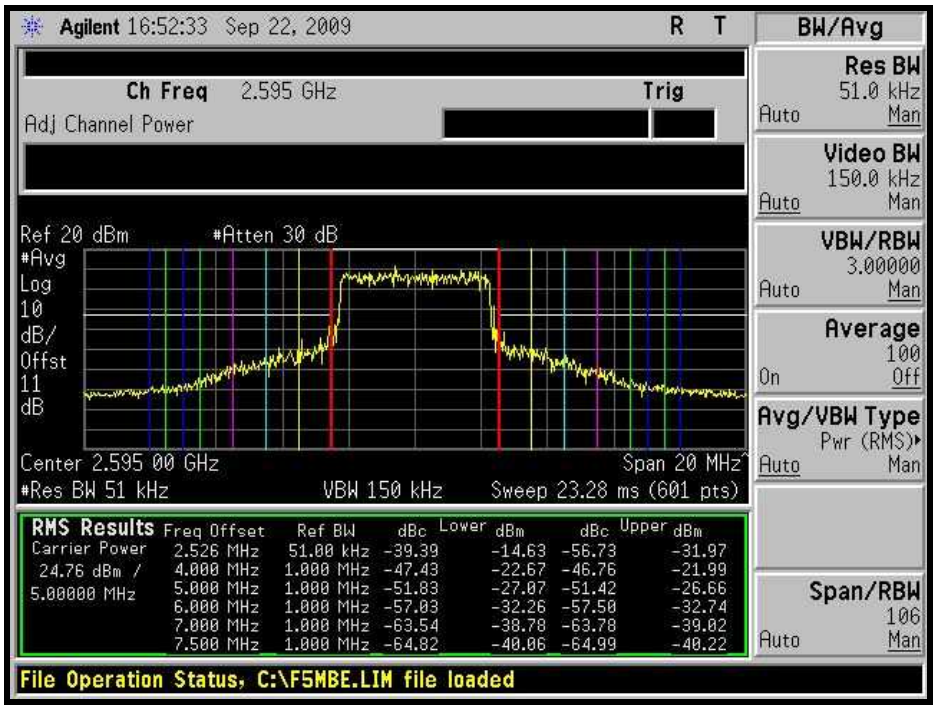
CHANNEL BANDWIDTH: 5MHz

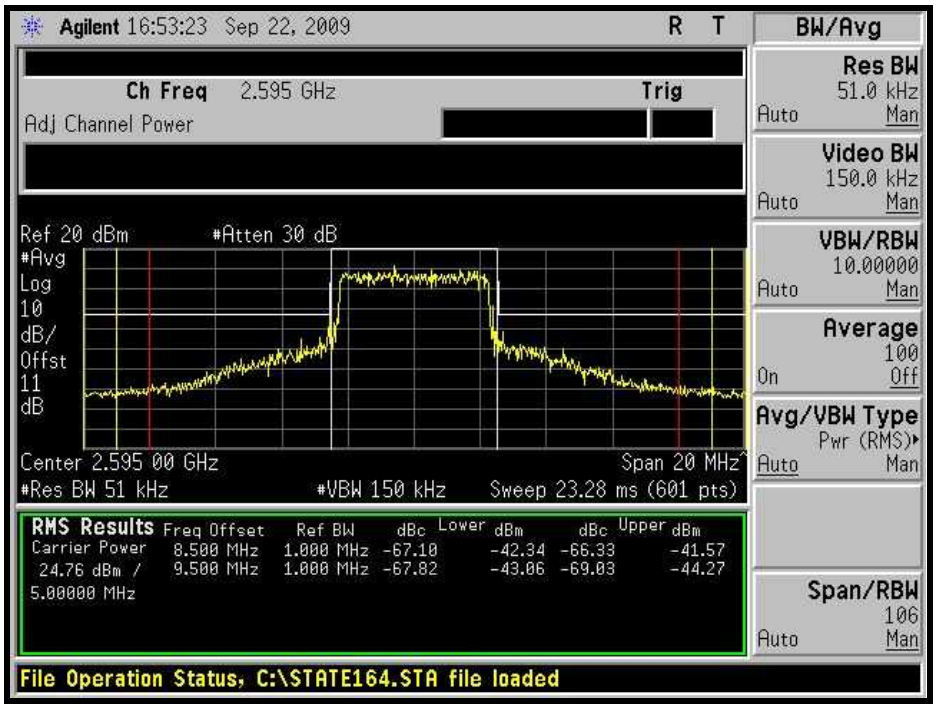
LOW CHANNEL



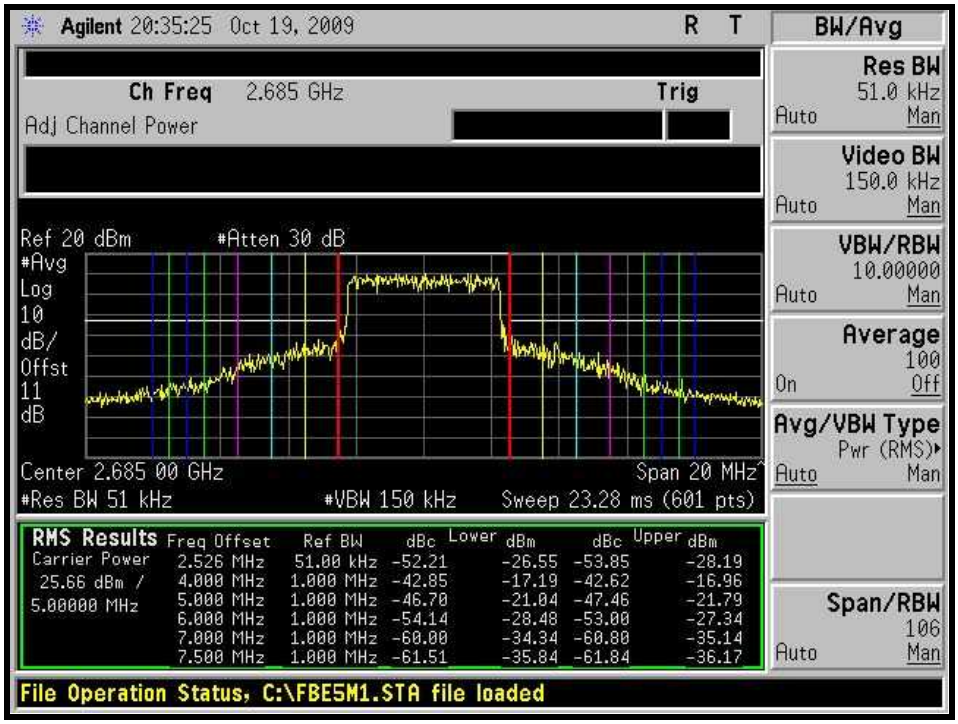


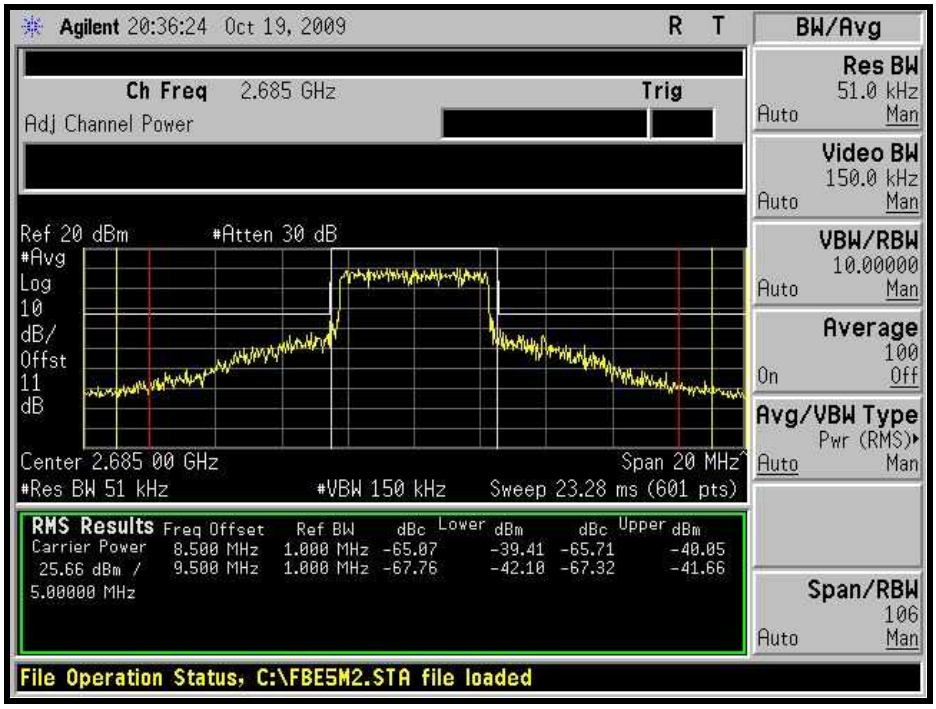
MIDDLE CHANNEL





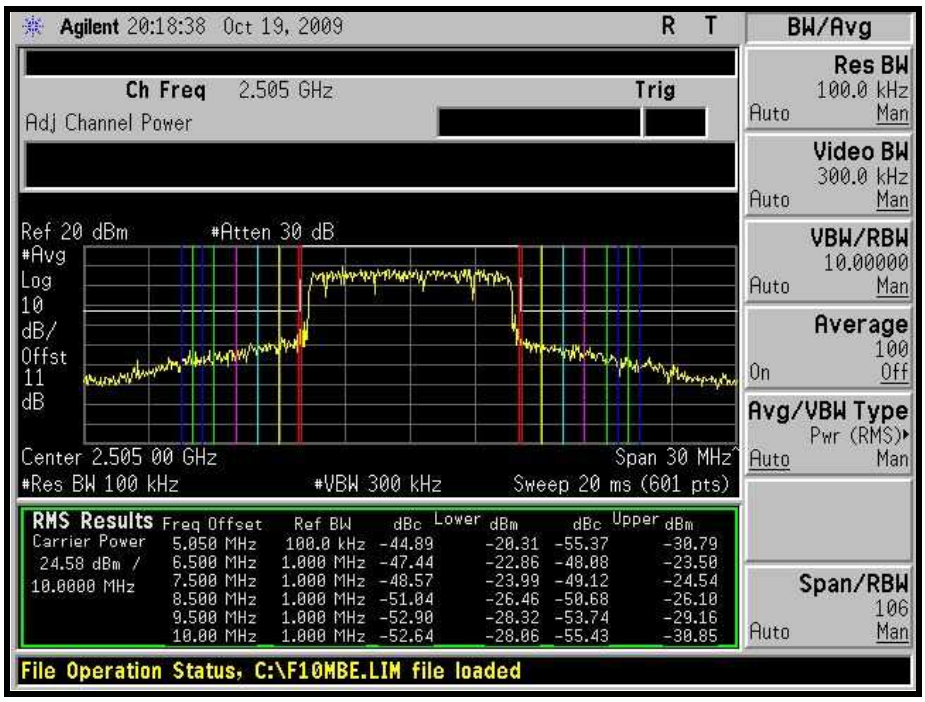
HIGH CHANNEL

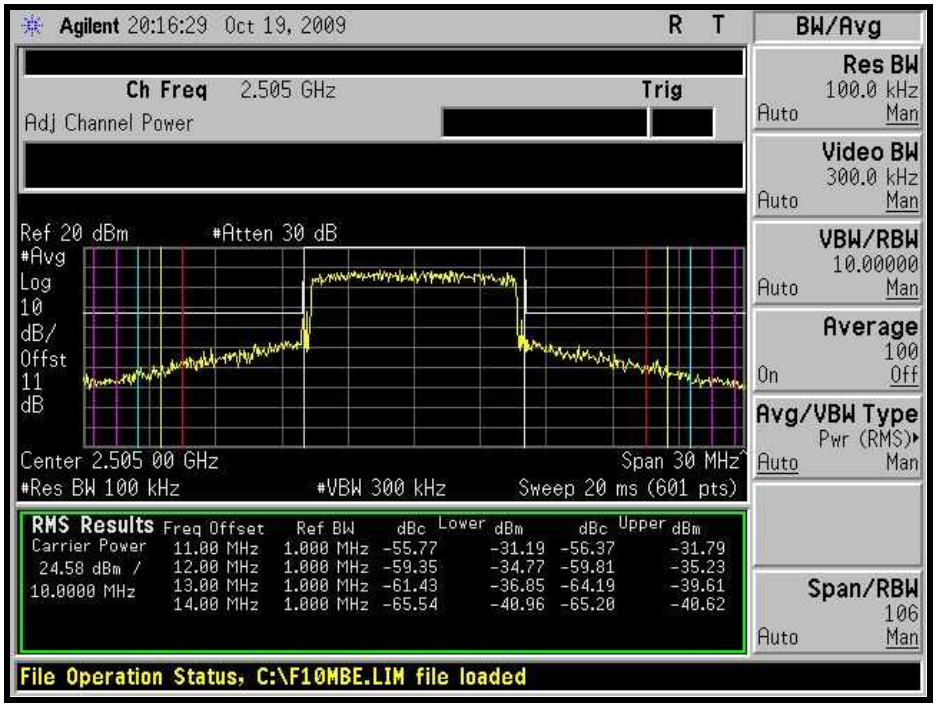




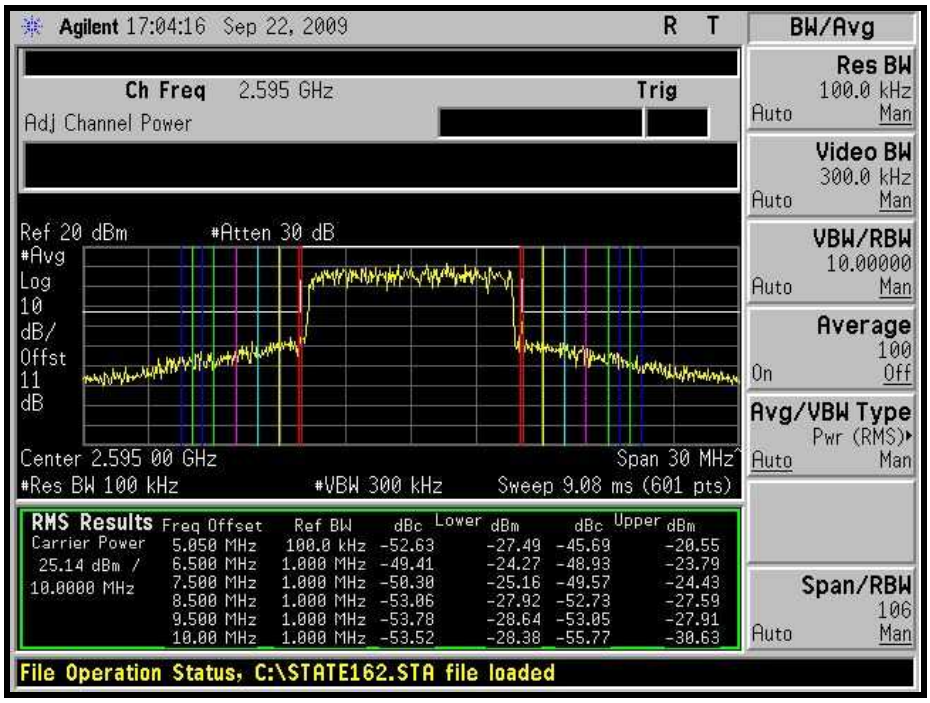
CHANNEL BANDWIDTH: 10MHz

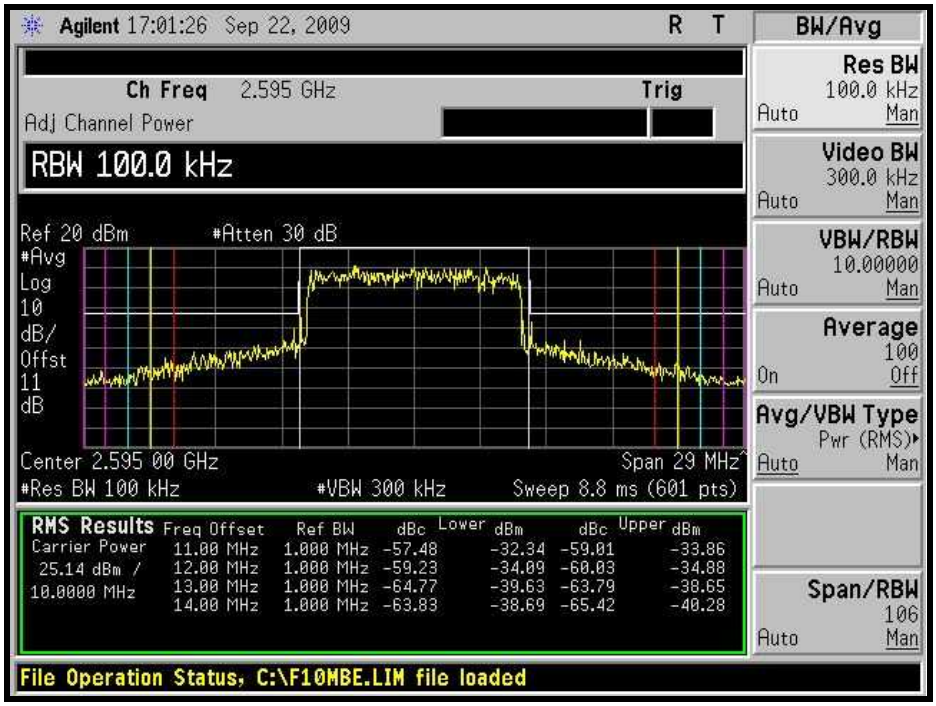
LOW CHANNEL



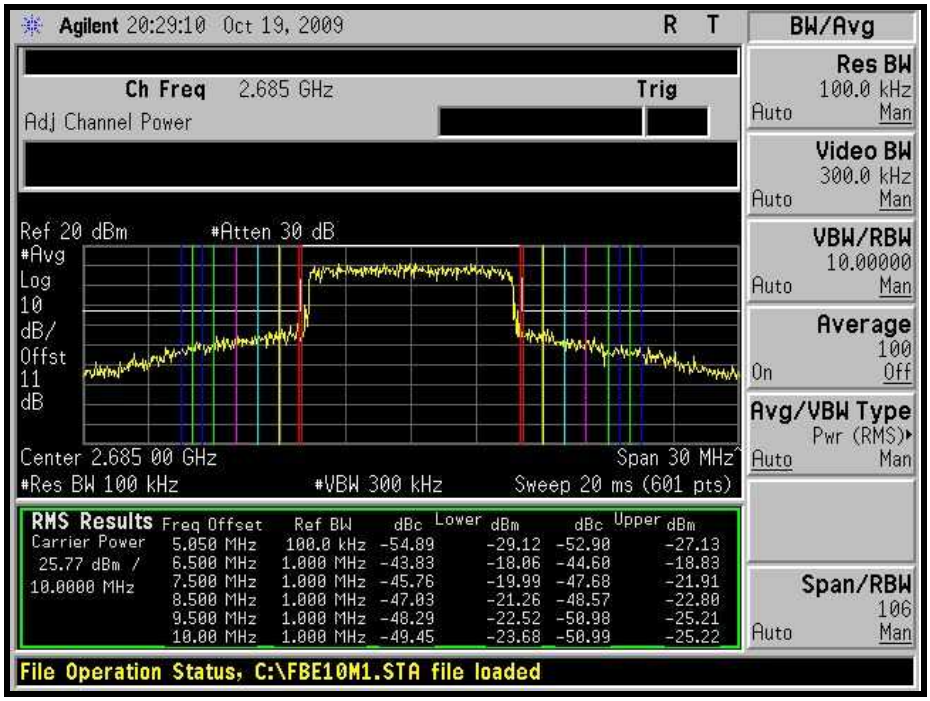


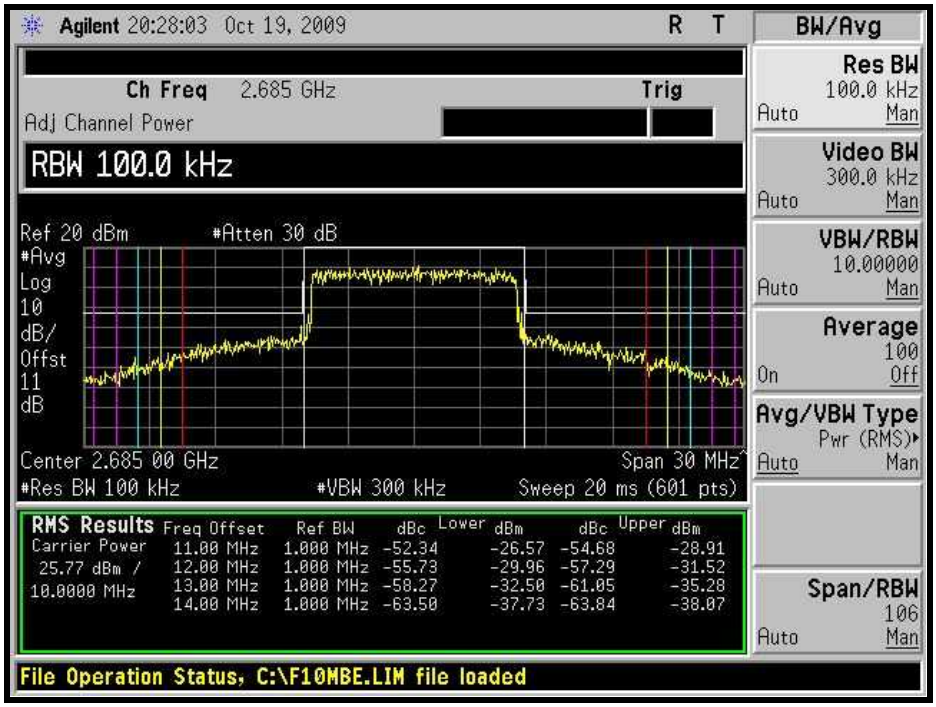
MIDDLE CHANNEL





HIGH CHANNEL





4.5 CONDUCTED SPURIOUS EMISSIONS

4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

In the FCC 27.53(m)(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	E4440A	MY46185282	Jun. 14, 2009	Jun. 13, 2010
HUBER+SUHNER	SUCOFLEX104	231115/4	May 29, 2009	May 28, 2010
JFW 10dB attenuation	50HF-010-SMA	N/A	N/A	N/A
Wainwright Instruments High Pass Filter	WHK3.1/18G-10SS	ZZ-010091	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.

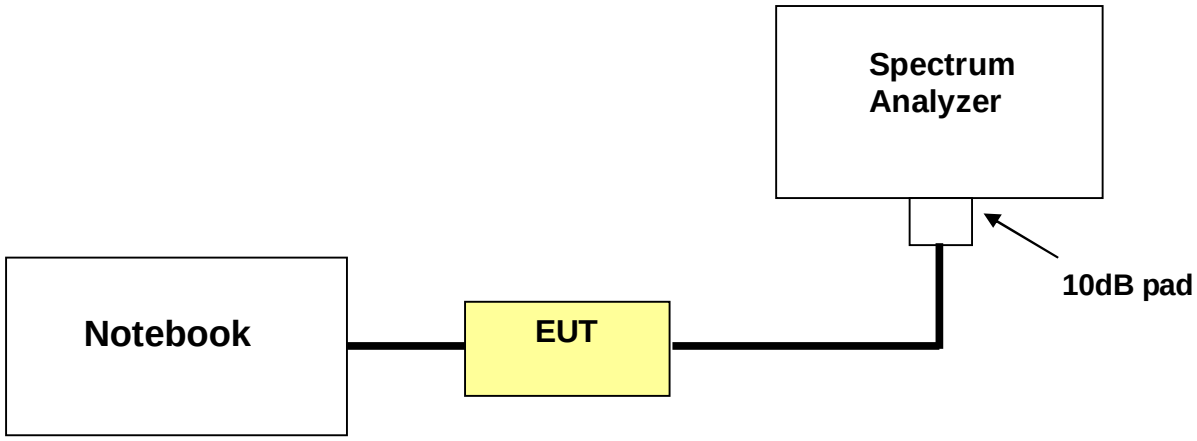
4.5.3 TEST PROCEDURE

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

c. When the spectrum scanned from 3GHz to 26.5GHz, it shall be connected to the high pass filter attenuated the carried frequency. The spectrum set RB = 1MHz, VB = 3MHz.

4.5.4 TEST SETUP



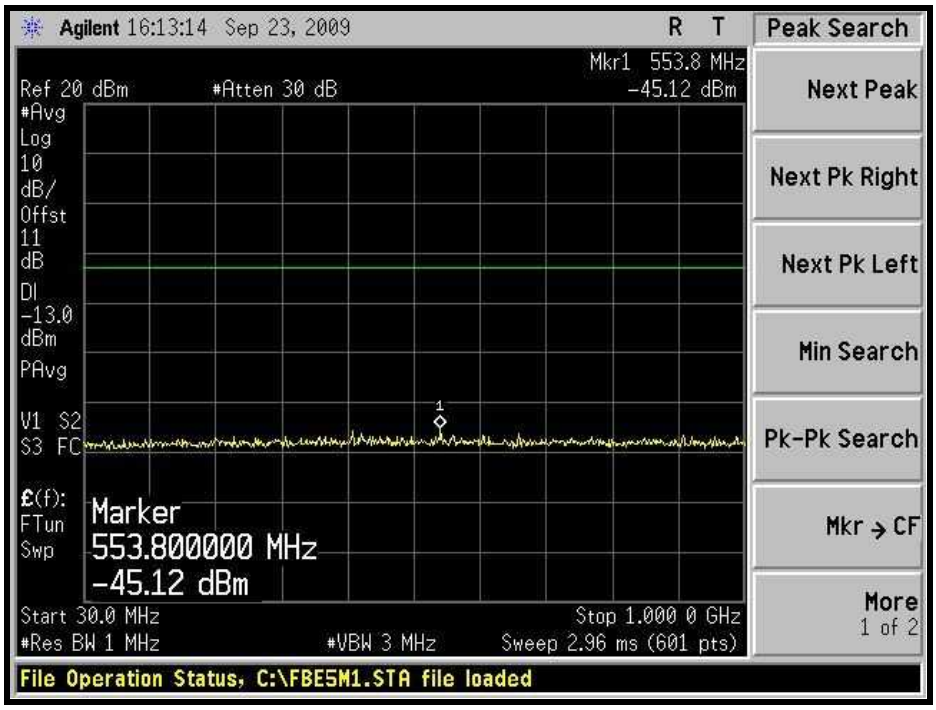
4.5.5 EUT OPERATING CONDITIONS

Same as item 4.1.5

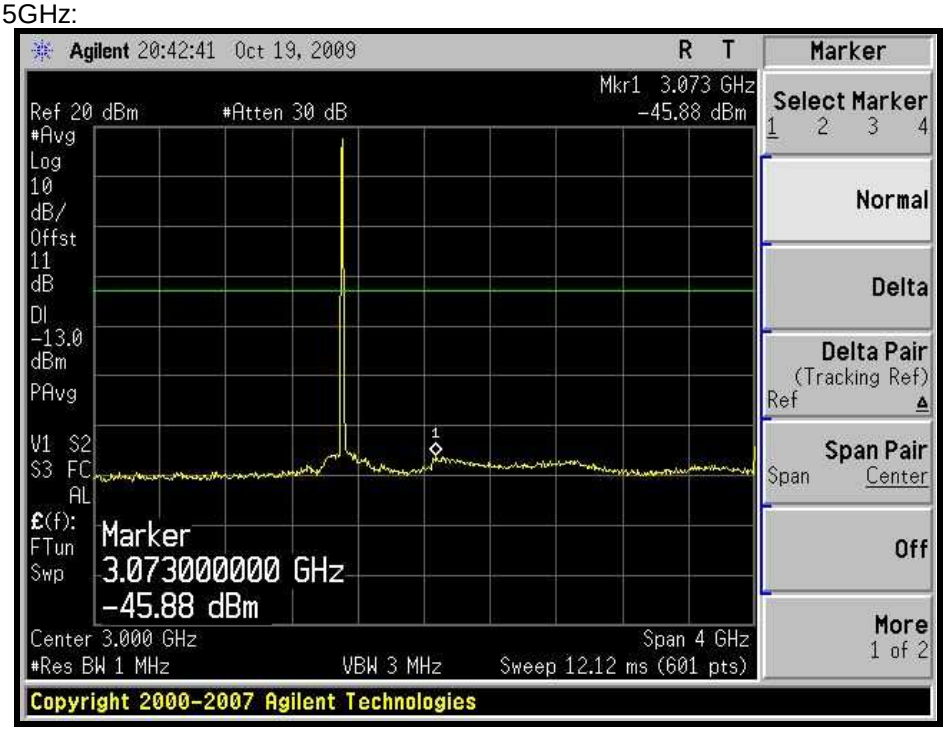
4.5.6 TEST RESULTS

CHANNEL BANDWIDTH: 5MHz

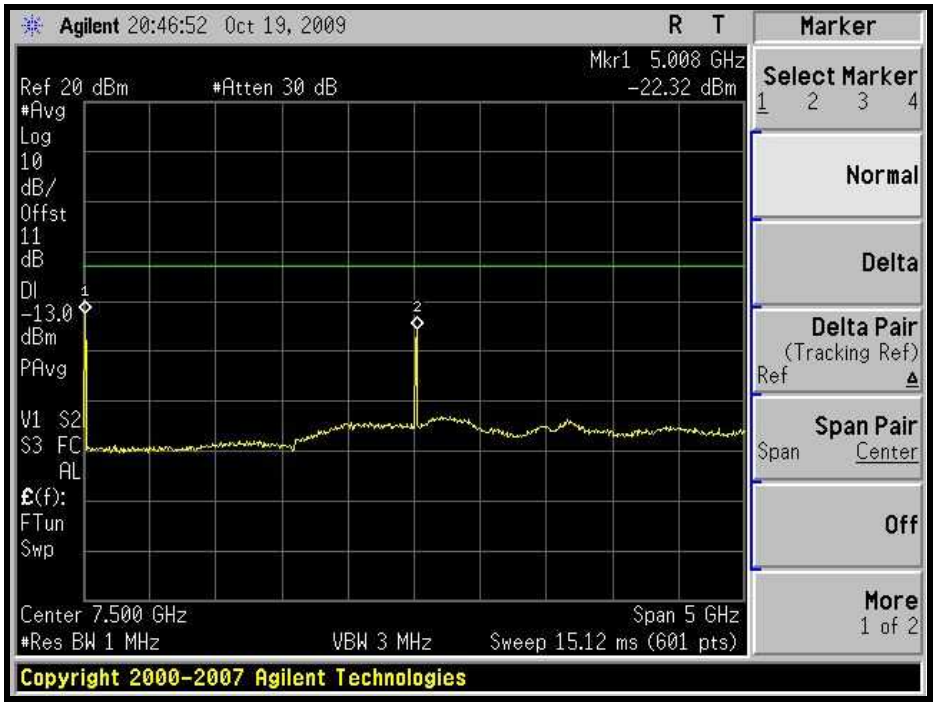
LOW CHANNEL: 30MHz ~ 1GHz:

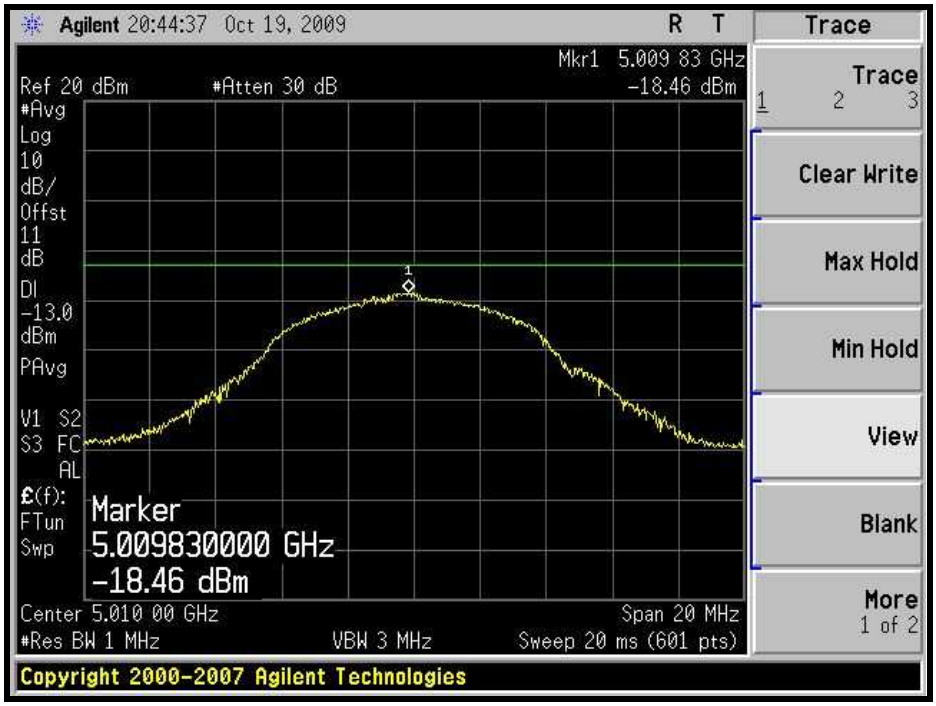


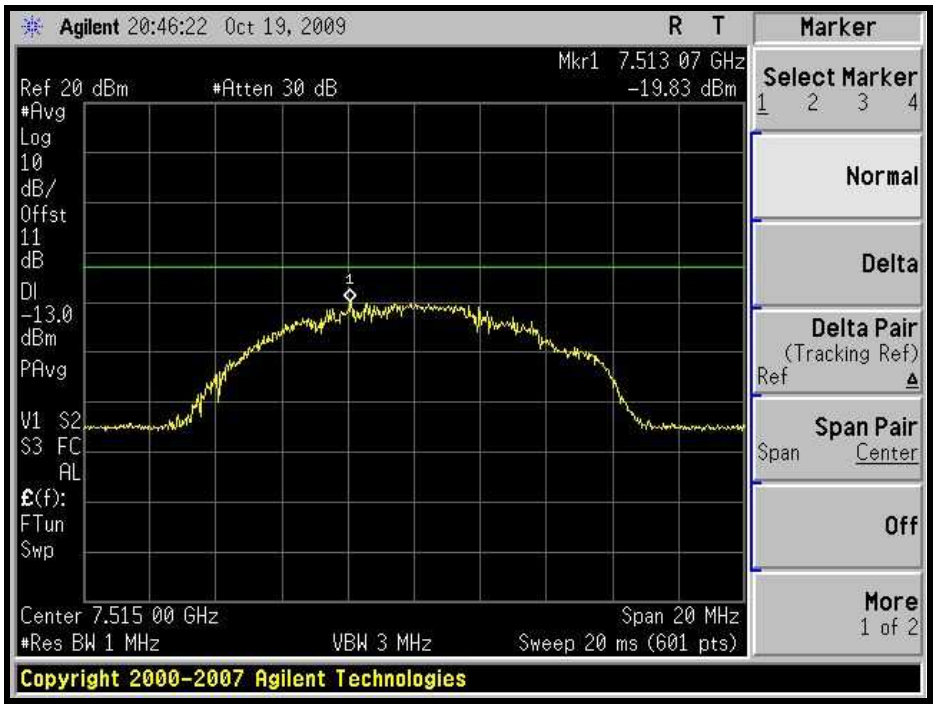
1GHz ~ 5GHz:



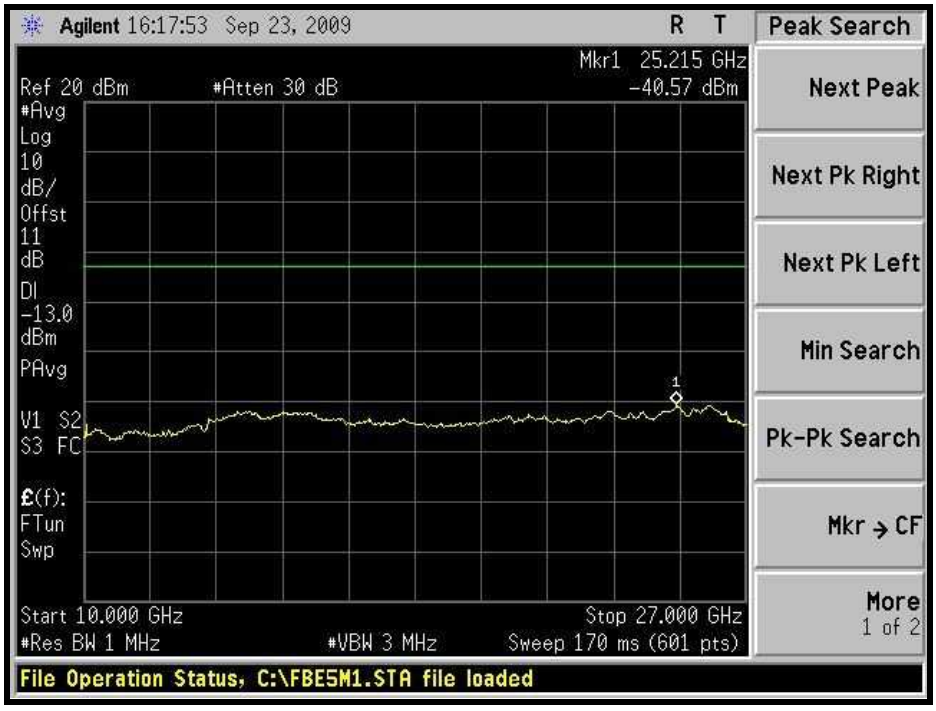
5GHz ~ 10GHz:


Agilent 20:46:52 Oct 19, 2009
R T
Marker
Mkr1 5.008 GHz
-22.32 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
AL
£(f):
FTun
Swp
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
Center 7.500 GHz
Span 5 GHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 15.12 ms (601 pts)
Copyright 2000-2007 Agilent Technologies

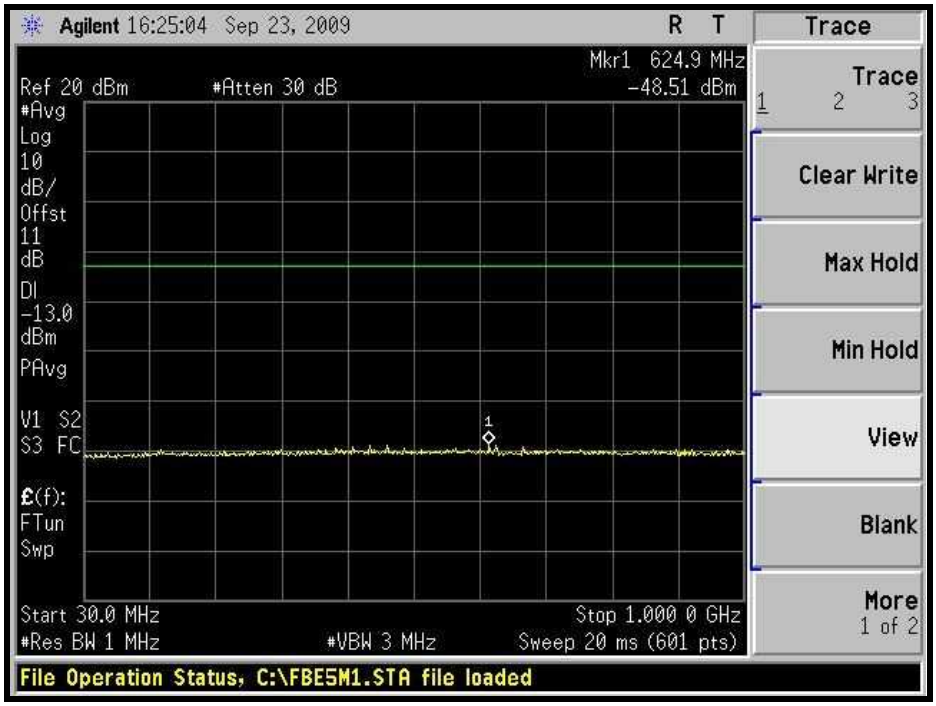

Agilent 20:44:37 Oct 19, 2009
R T
Trace
Mkr1 5.009 83 GHz
-18.46 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
AL
£(f):
FTun
Swp
Marker
5.009830000 GHz
-18.46 dBm
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2
Center 5.010 00 GHz
Span 20 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 20 ms (601 pts)
Copyright 2000-2007 Agilent Technologies


Agilent 20:46:22 Oct 19, 2009
R T
Marker
Mkr1 7.513 07 GHz
-19.83 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
AL
£(f):
FTun
Swp
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
Center 7.515 00 GHz
Span 20 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 20 ms (601 pts)
Copyright 2000-2007 Agilent Technologies

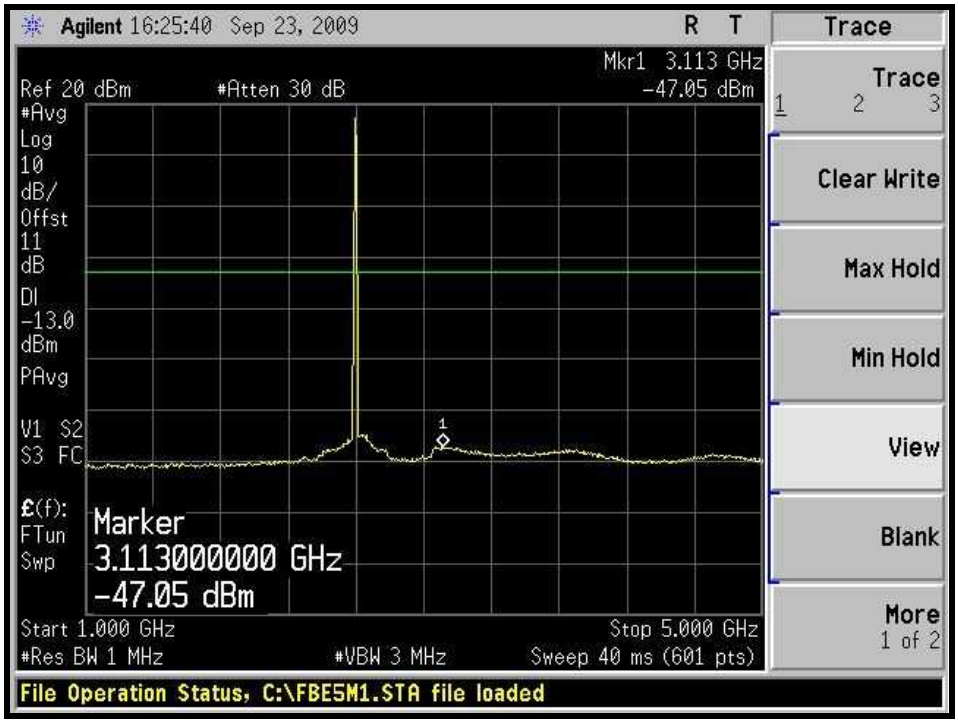
10GHz ~ 27GHz:


Agilent 16:17:53 Sep 23, 2009
R T
Peak Search
Mkr1 25.215 GHz
-40.57 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
Start 10.000 GHz
Stop 27.000 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 170 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

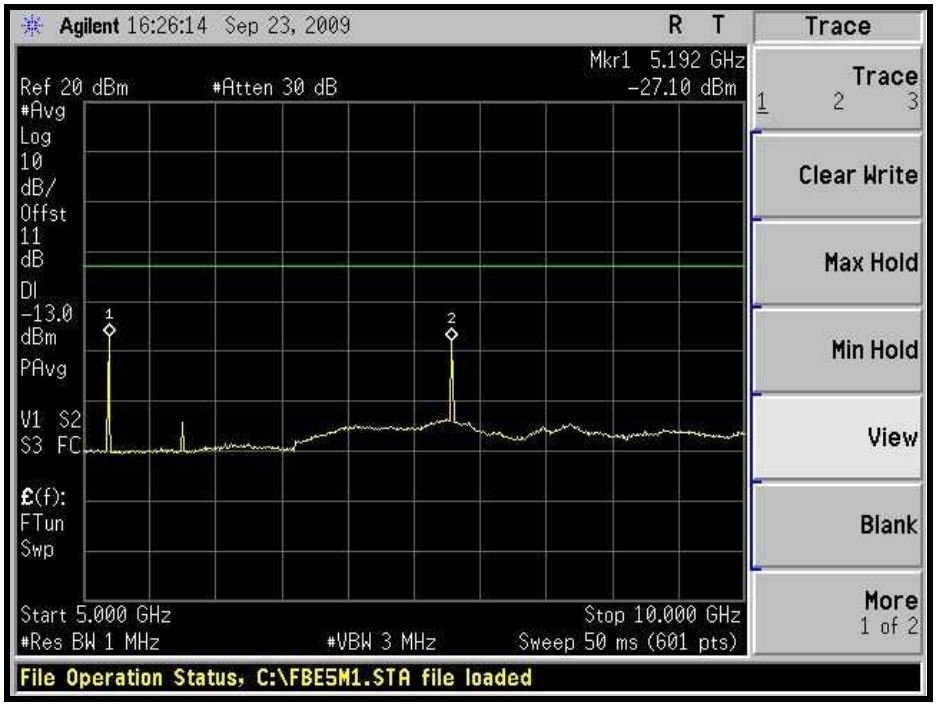
MIDDLE CHANNEL: 30MHz ~ 1GHz:



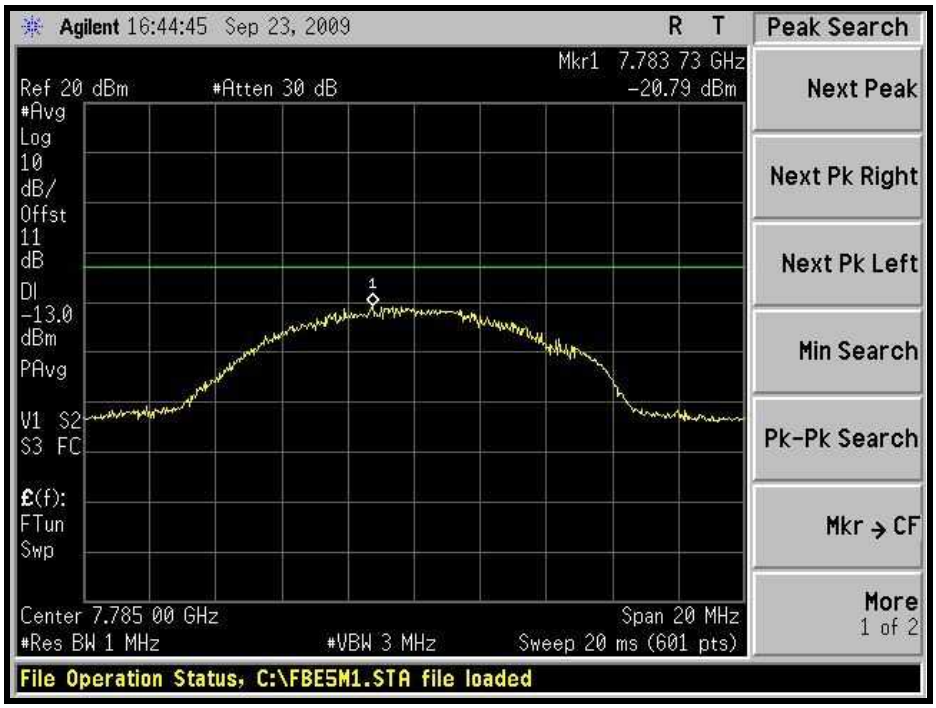
1GHz ~ 5GHz:



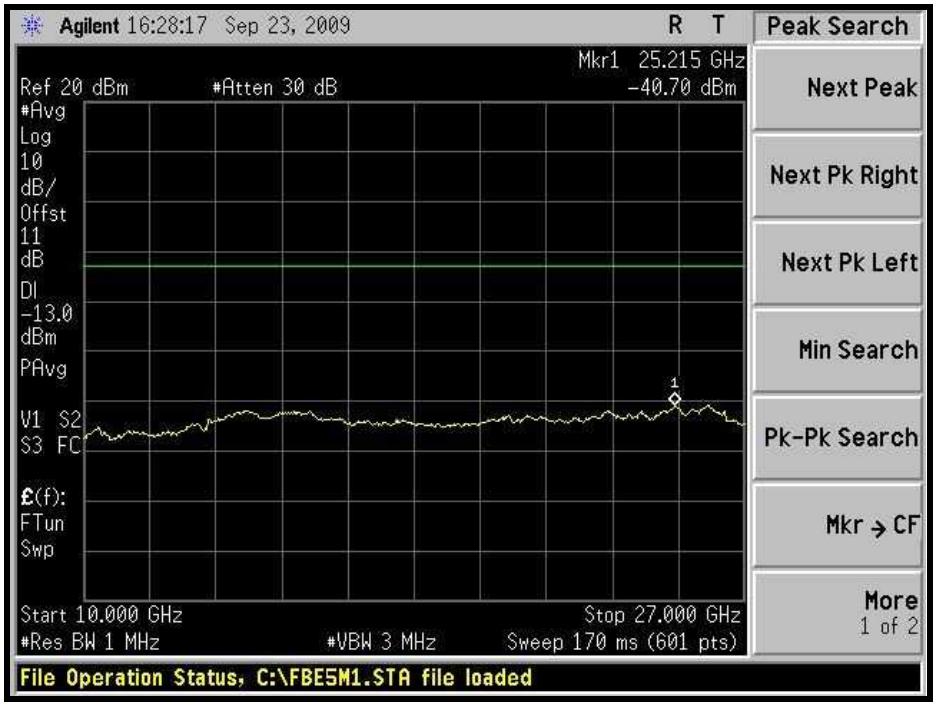
5GHz ~ 10GHz:


Agilent 16:26:14 Sep 23, 2009
R T
Trace
Mkr1 5.192 GHz
-27.10 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2
Start 5.000 GHz
Stop 10.000 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 50 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

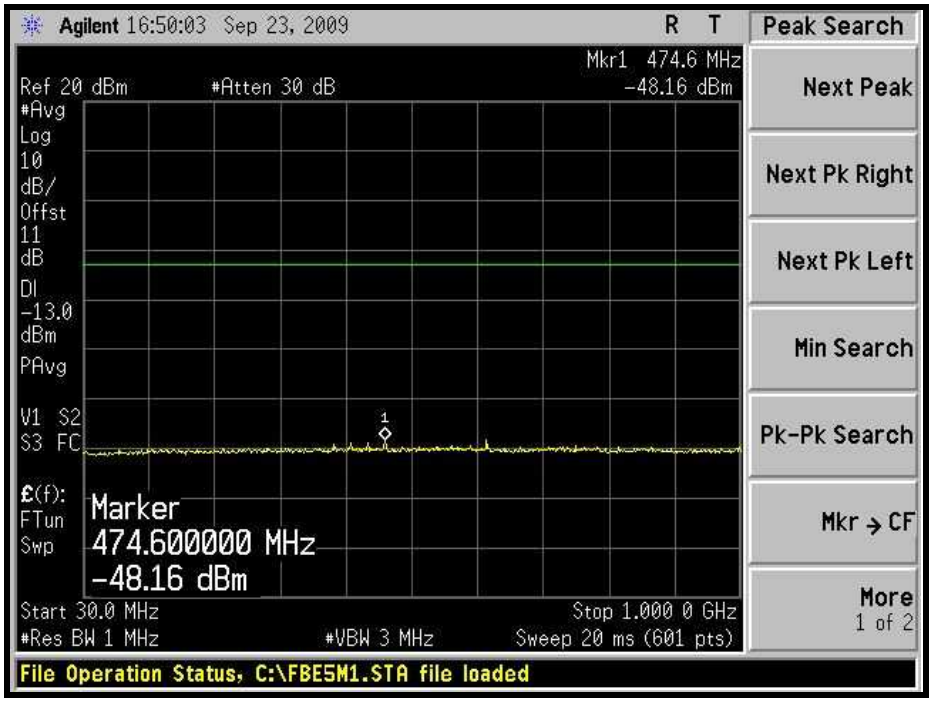

Agilent 16:44:18 Sep 23, 2009
R T
Peak Search
Mkr1 5.190 03 GHz
-20.47 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Marker
5.190030000 GHz
-20.47 dBm
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
Center 5.190 00 GHz
Span 20 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 20 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded


Agilent 16:44:45 Sep 23, 2009
R T
Peak Search
Mkr1 7.783 73 GHz
Ref 20 dBm
#Atten 30 dB
-20.79 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
More
1 of 2
Center 7.785 00 GHz
Span 20 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 20 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

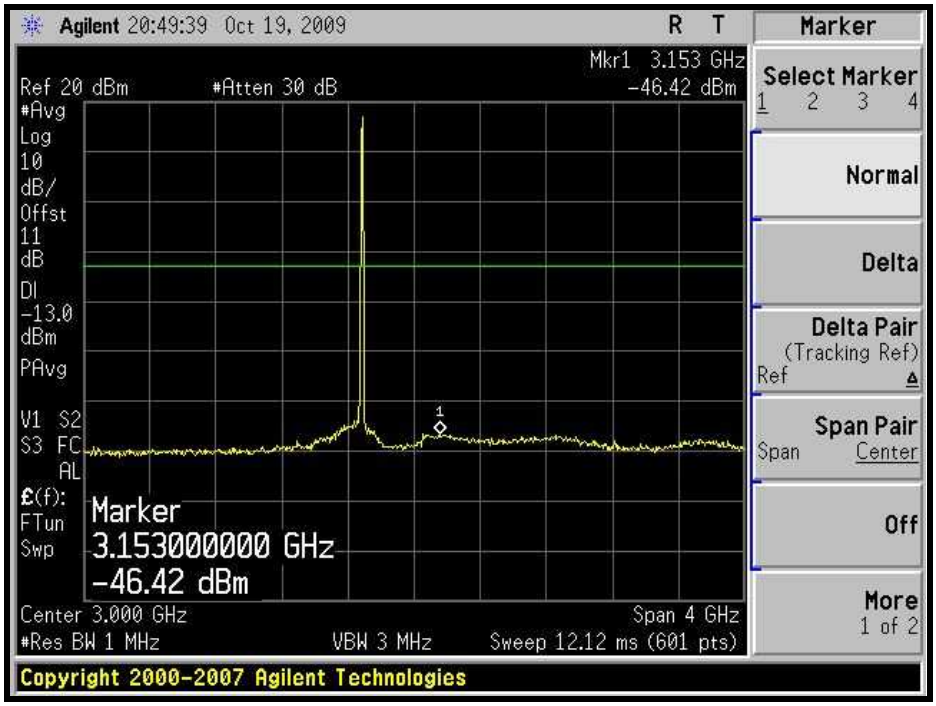
10GHz ~ 27GHz:


Agilent 16:28:17 Sep 23, 2009
R T
Peak Search
Mkr1 25.215 GHz
Ref 20 dBm
#Atten 30 dB
-40.70 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
More
1 of 2
Start 10.000 GHz
Stop 27.000 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 170 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

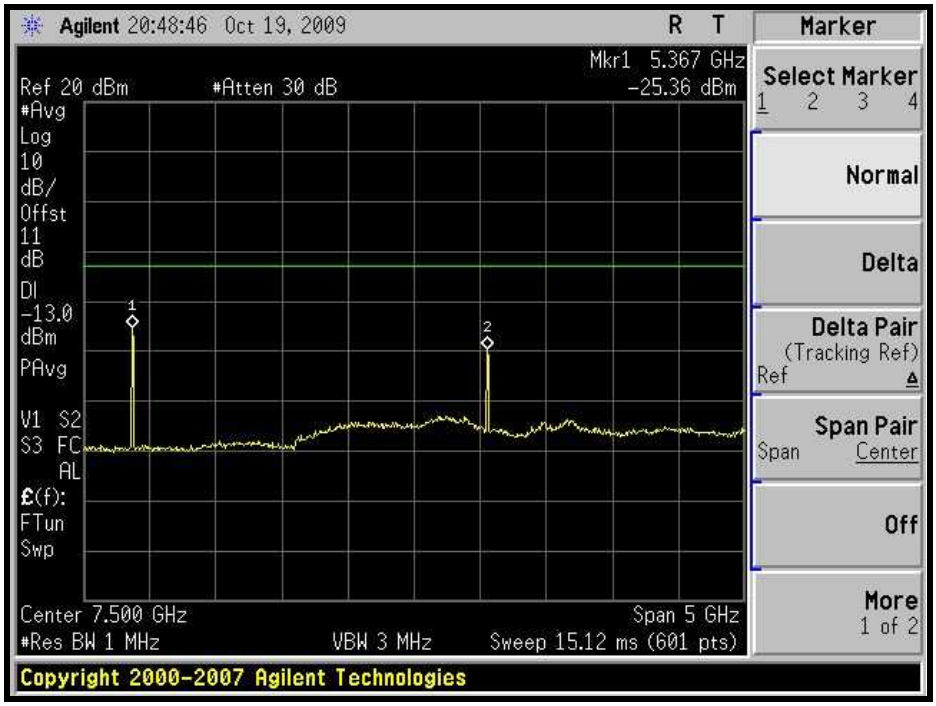
HIGH CHANNEL: 30MHz ~ 1GHz:

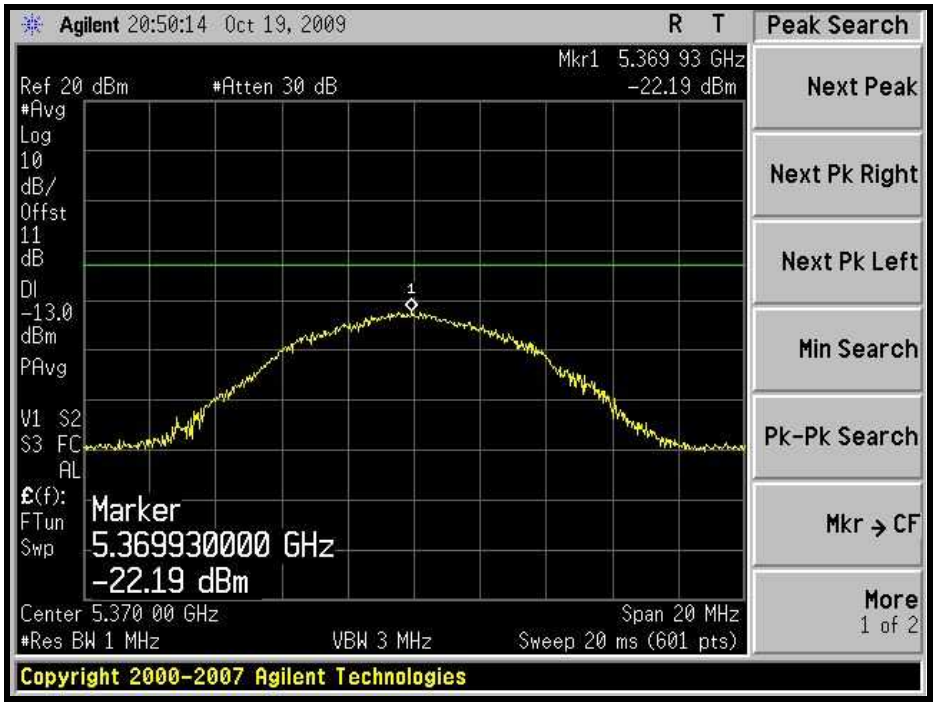


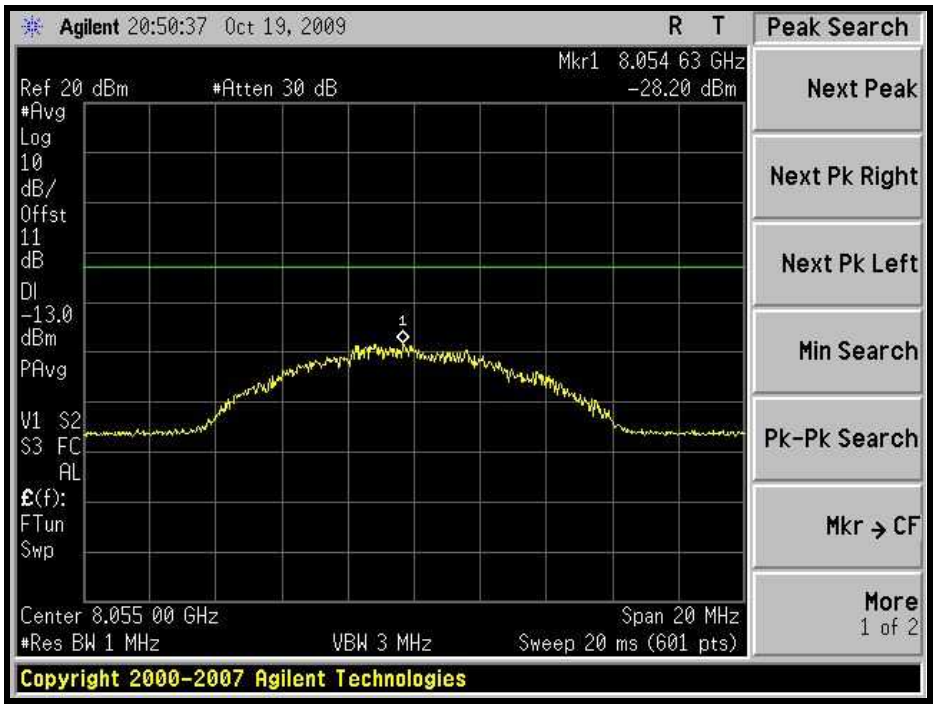
1GHz ~ 5GHz:



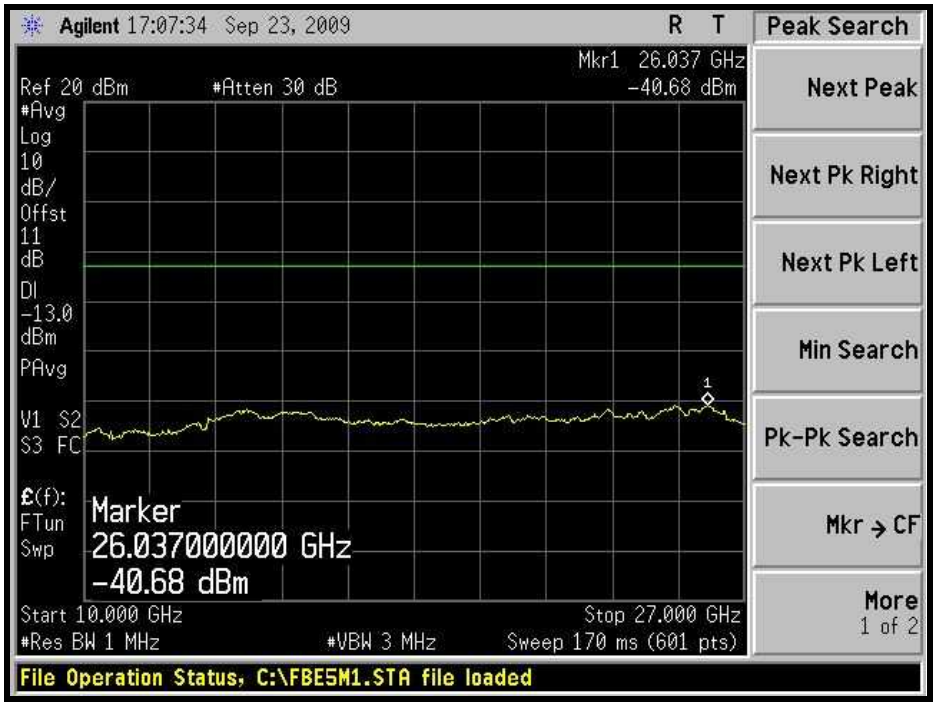
5GHz ~ 10GHz:


Agilent 20:48:46 Oct 19, 2009
R T
Marker
Mkr1 5.367 GHz
-25.36 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
AL
£(f):
FTun
Swp
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
Center 7.500 GHz
Span 5 GHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 15.12 ms (601 pts)
Copyright 2000-2007 Agilent Technologies


Agilent 20:50:14 Oct 19, 2009
R T
Peak Search
Mkr1 5.369 93 GHz
-22.19 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
AL
£(f):
FTun
Swp
Marker
5.369930000 GHz
-22.19 dBm
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
Center 5.370 00 GHz
Span 20 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 20 ms (601 pts)
Copyright 2000-2007 Agilent Technologies

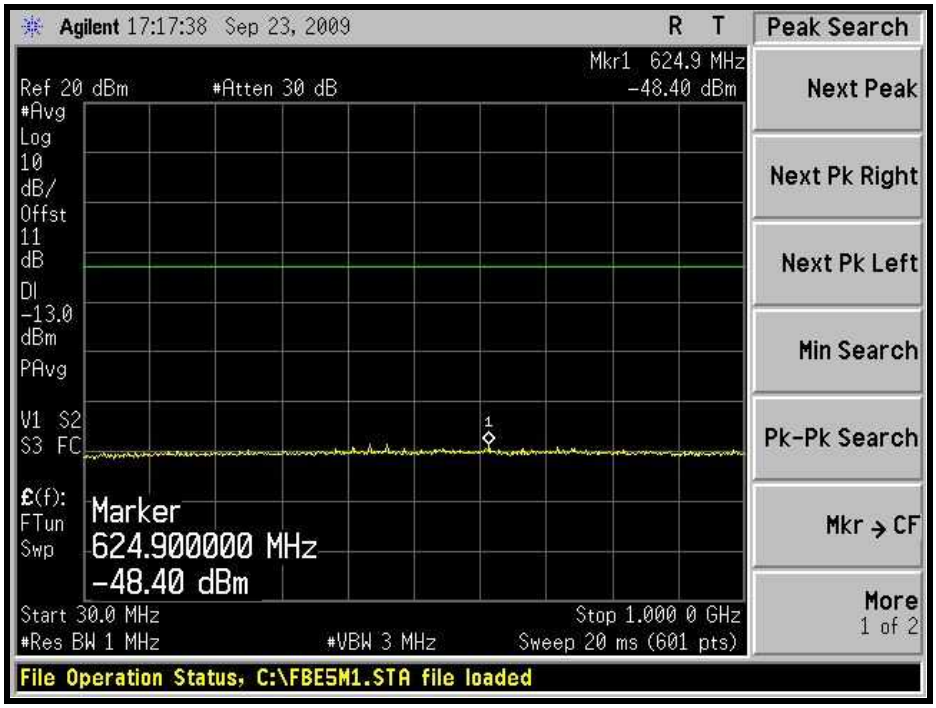

Agilent 20:50:37 Oct 19, 2009
R T
Peak Search
Mkr1 8.054 63 GHz
Ref 20 dBm
#Atten 30 dB
-28.20 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
AL
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
More
1 of 2
Center 8.055 00 GHz
Span 20 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 20 ms (601 pts)
Copyright 2000-2007 Agilent Technologies

10GHz ~ 27GHz:

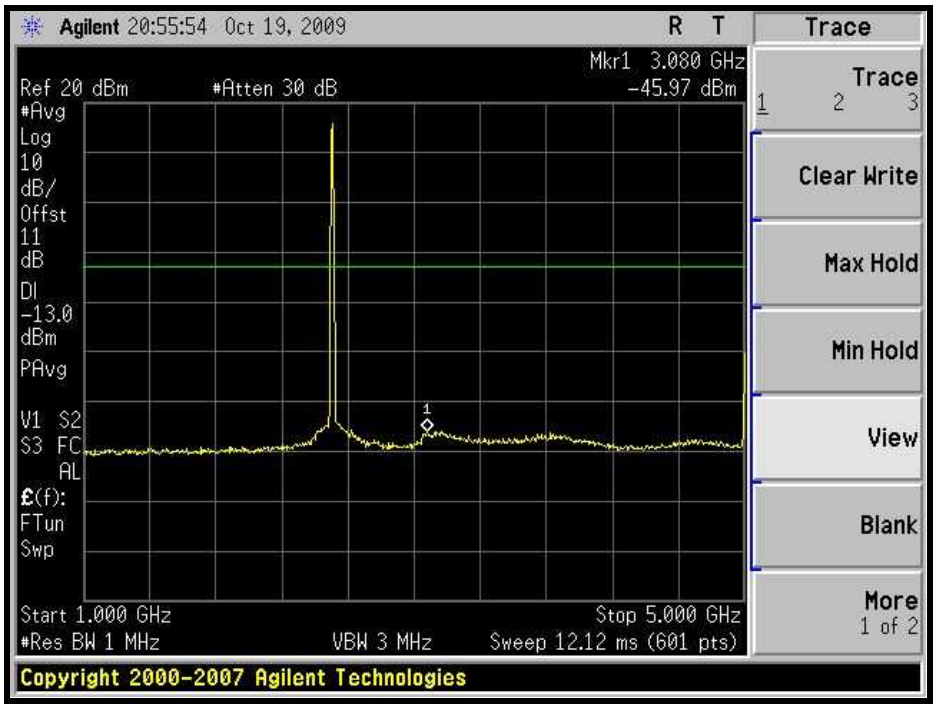

Agilent 17:07:34 Sep 23, 2009
R T
Peak Search
Mkr1 26.037 GHz
Ref 20 dBm
#Atten 30 dB
-40.68 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
Pk-Pk Search
£(f):
FTun
Swp
Marker
26.037000000 GHz
-40.68 dBm
Mkr → CF
More
1 of 2
Start 10.000 GHz
Stop 27.000 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 170 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

CHANNEL BANDWIDTH: 10MHz

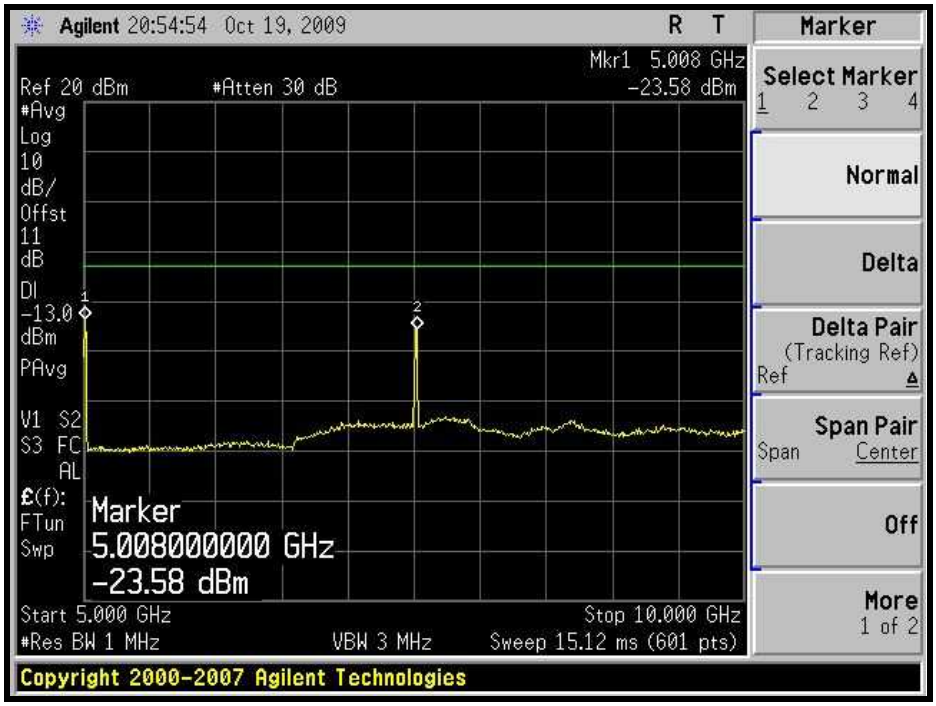
LOW CHANNEL: 30MHz ~ 1GHz:

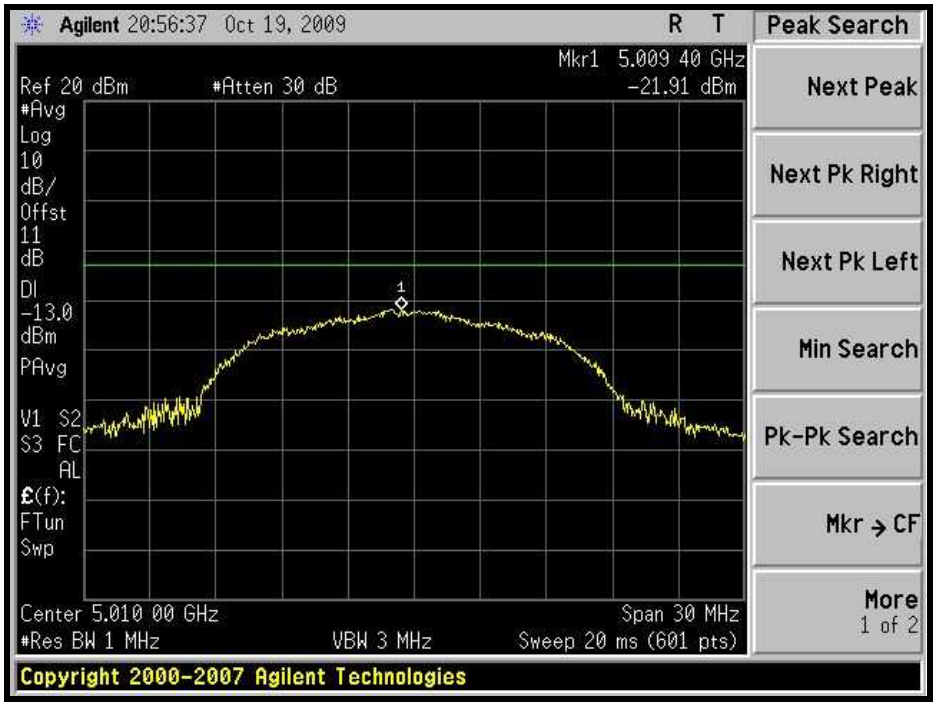


1GHz ~ 5GHz:



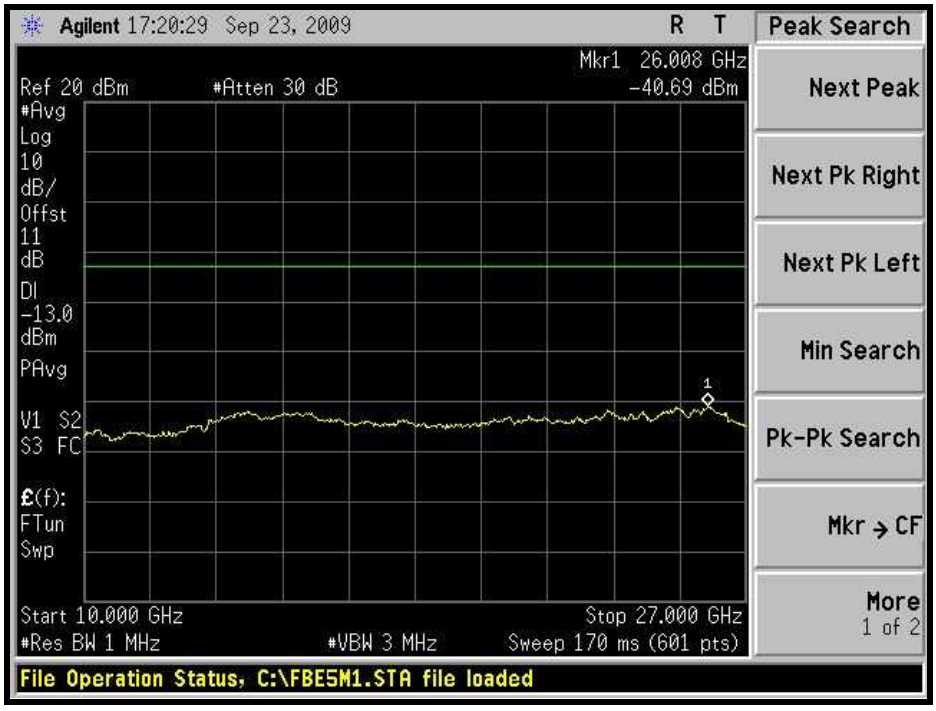
5GHz ~ 10GHz:


Agilent 20:54:54 Oct 19, 2009
R T
Marker
Mkr1 5.008 GHz
-23.58 dBm
Ref 20 dBm
#Atten 30 dB
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
AL
£(f):
FTun
Swp
Marker
5.008000000 GHz
-23.58 dBm
Start 5.000 GHz
Stop 10.000 GHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 15.12 ms (601 pts)
Copyright 2000-2007 Agilent Technologies

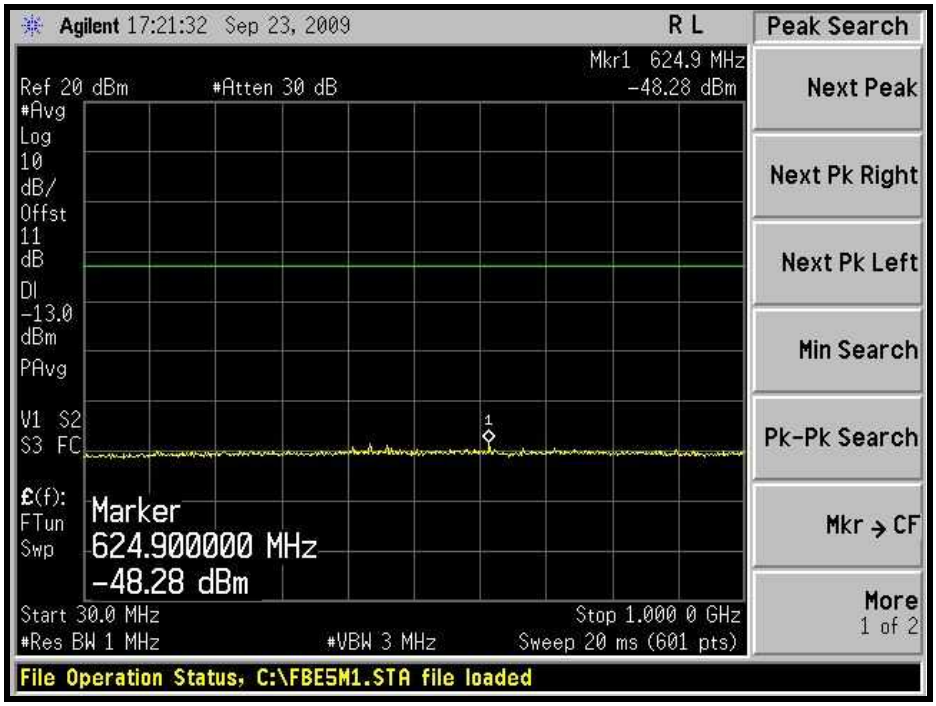

Agilent 20:56:37 Oct 19, 2009
R T
Peak Search
Mkr1 5.009 40 GHz
-21.91 dBm
Ref 20 dBm
#Atten 30 dB
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
AL
£(f):
FTun
Swp
Center 5.010 00 GHz
Span 30 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 20 ms (601 pts)
Copyright 2000-2007 Agilent Technologies


Agilent 20:56:58 Oct 19, 2009
R T
Peak Search
Mkr1 7.515 40 GHz
Ref 20 dBm
#Atten 30 dB
-23.48 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
AL
Pk-Pk Search
£(f):
FTun
Swp
Marker
7.515400000 GHz
-23.48 dBm
Mkr → CF
More
1 of 2
Center 7.515 00 GHz
Span 30 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 20 ms (601 pts)
Copyright 2000-2007 Agilent Technologies

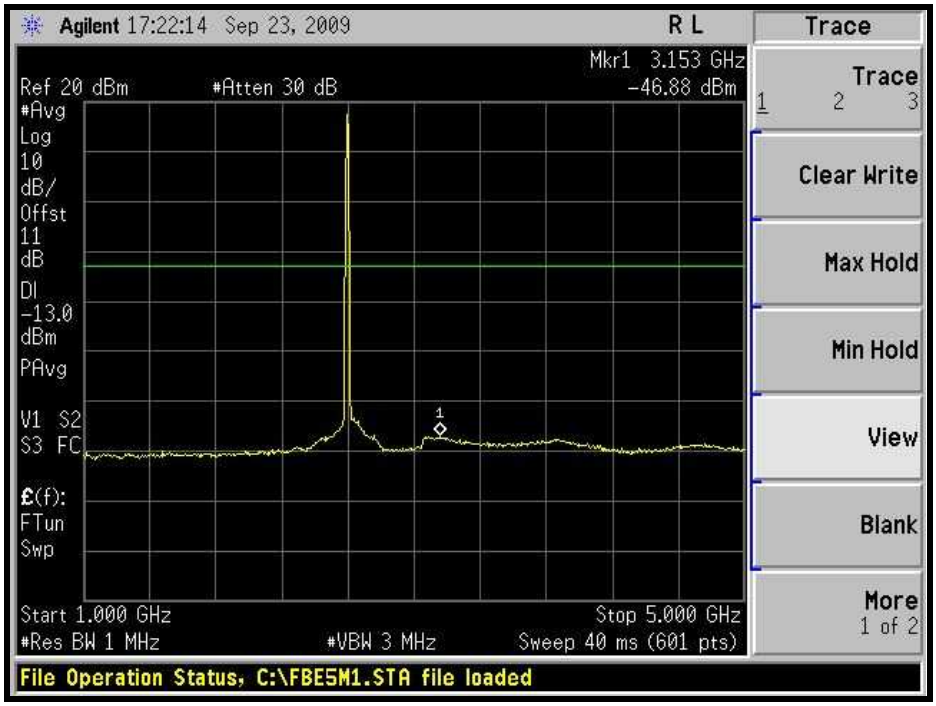
10GHz ~ 27GHz:


Agilent 17:20:29 Sep 23, 2009
R T
Peak Search
Mkr1 26.008 GHz
Ref 20 dBm
#Atten 30 dB
-40.69 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
More
1 of 2
Start 10.000 GHz
Stop 27.000 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 170 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

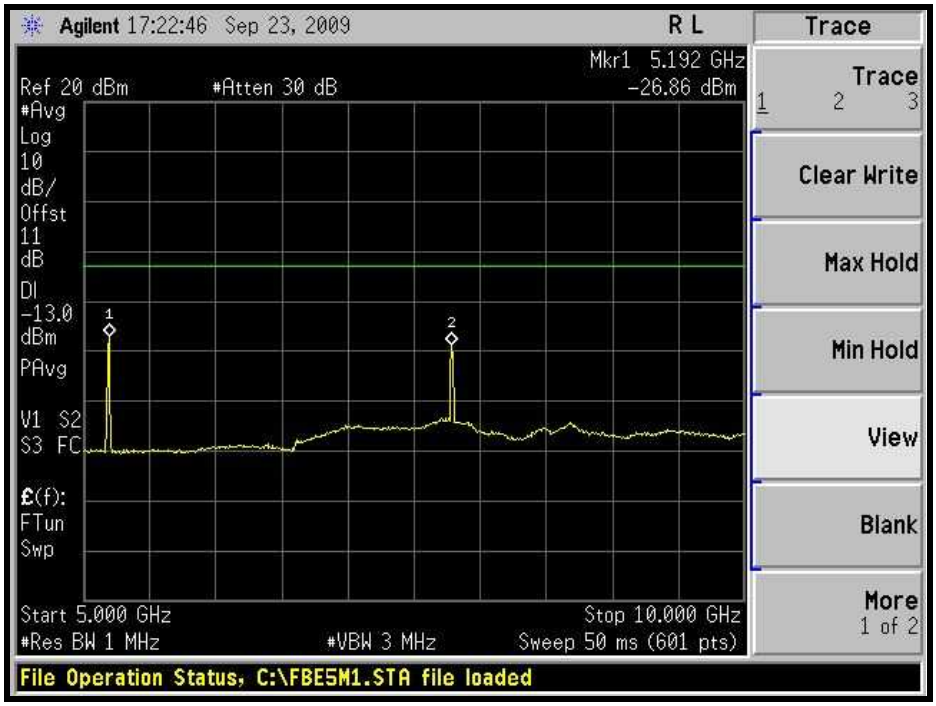
MIDDLE CHANNEL: 30MHz ~ 1GHz:

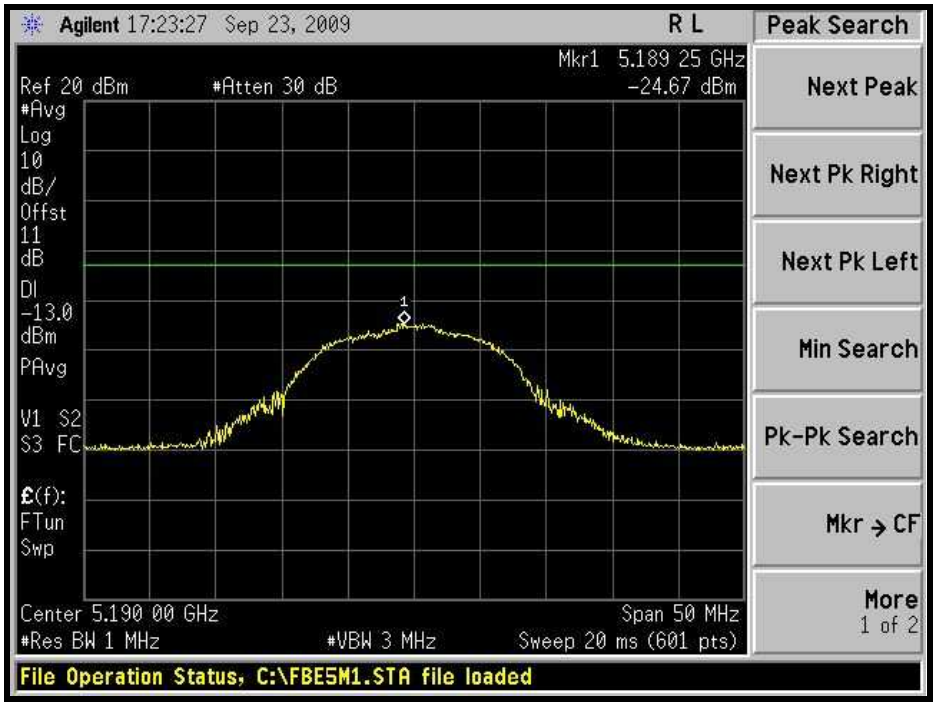


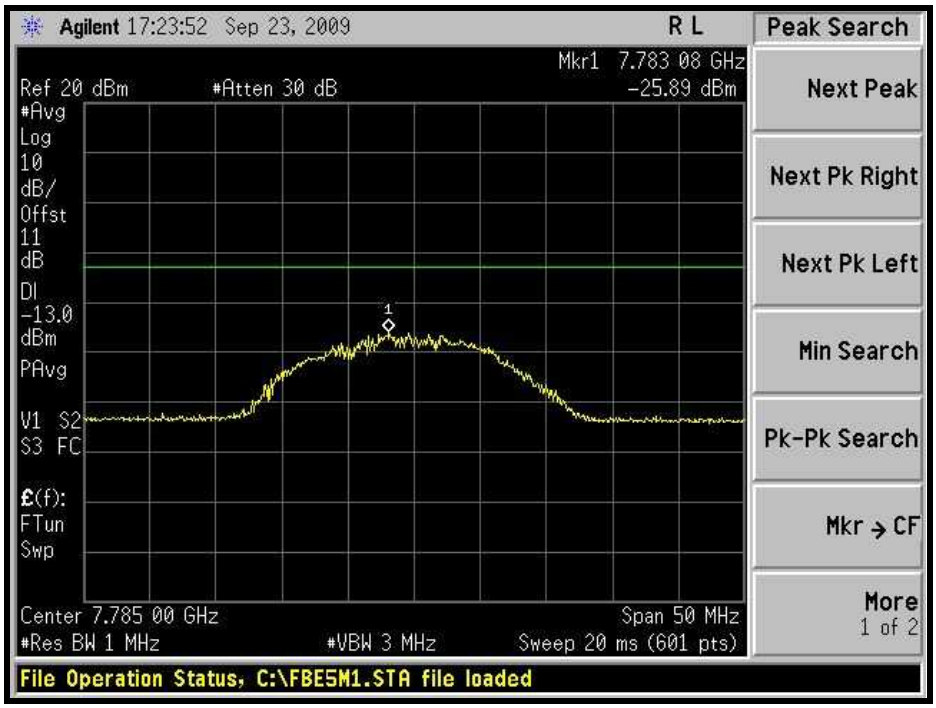
1GHz ~ 5GHz:



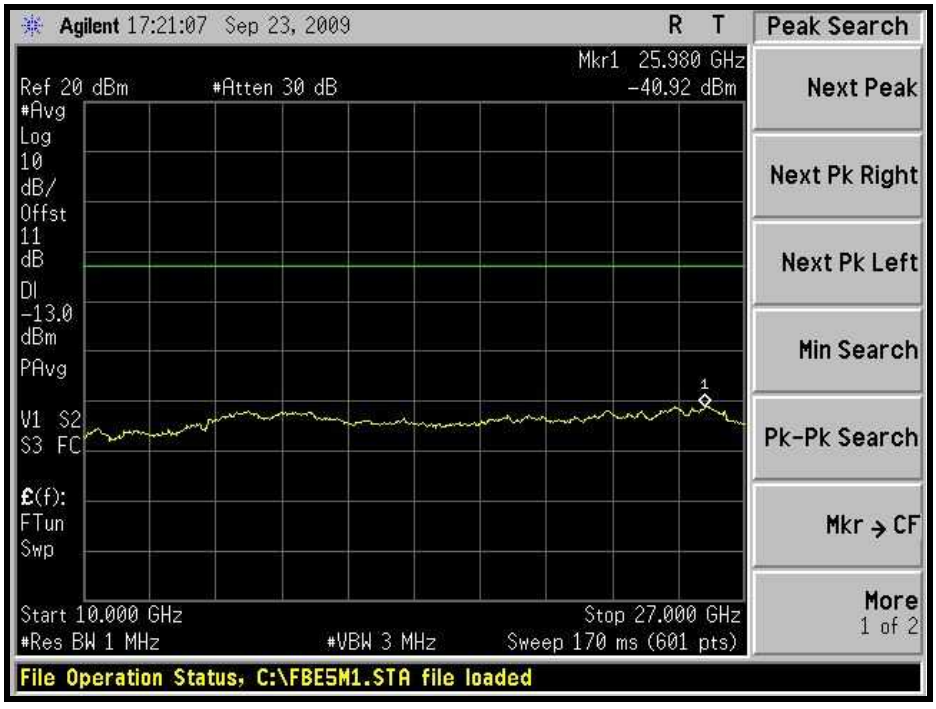
5GHz ~ 10GHz:


Agilent 17:22:46 Sep 23, 2009
R L
Trace
Mkr1 5.192 GHz
Ref 20 dBm
#Atten 30 dB
-26.86 dBm
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2
Start 5.000 GHz
Stop 10.000 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 50 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

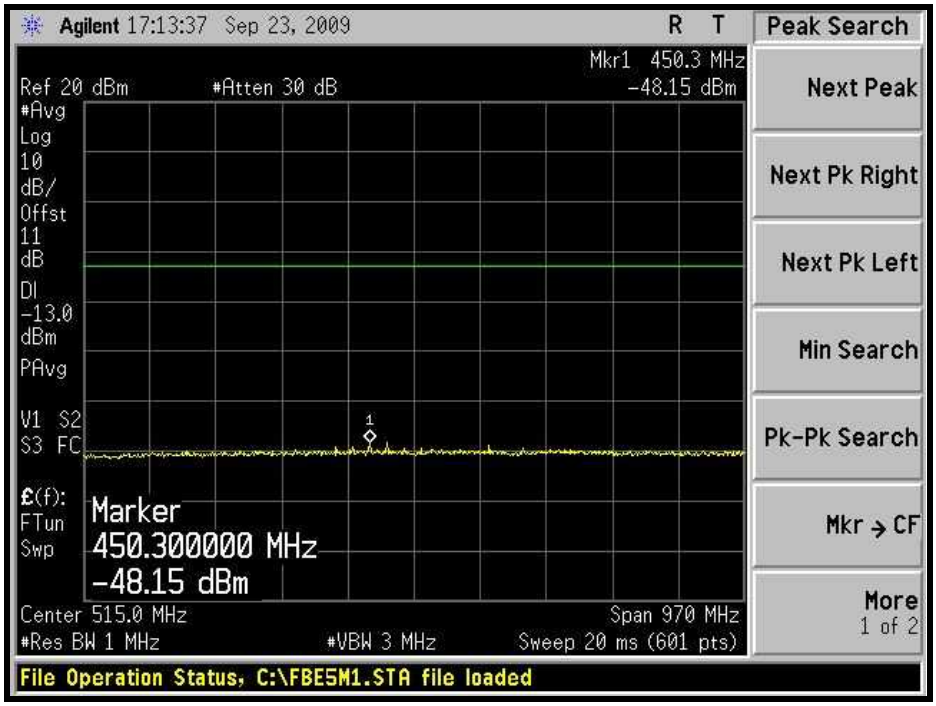

Agilent 17:23:27 Sep 23, 2009
R L
Peak Search
Mkr1 5.189 25 GHz
Ref 20 dBm
#Atten 30 dB
-24.67 dBm
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
£(f):
FTun
Swp
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
Center 5.190 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 20 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded


Agilent 17:23:52 Sep 23, 2009
R L
Peak Search
Mkr1 7.783 08 GHz
Ref 20 dBm
#Atten 30 dB
-25.89 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
More
1 of 2
Center 7.785 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 20 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

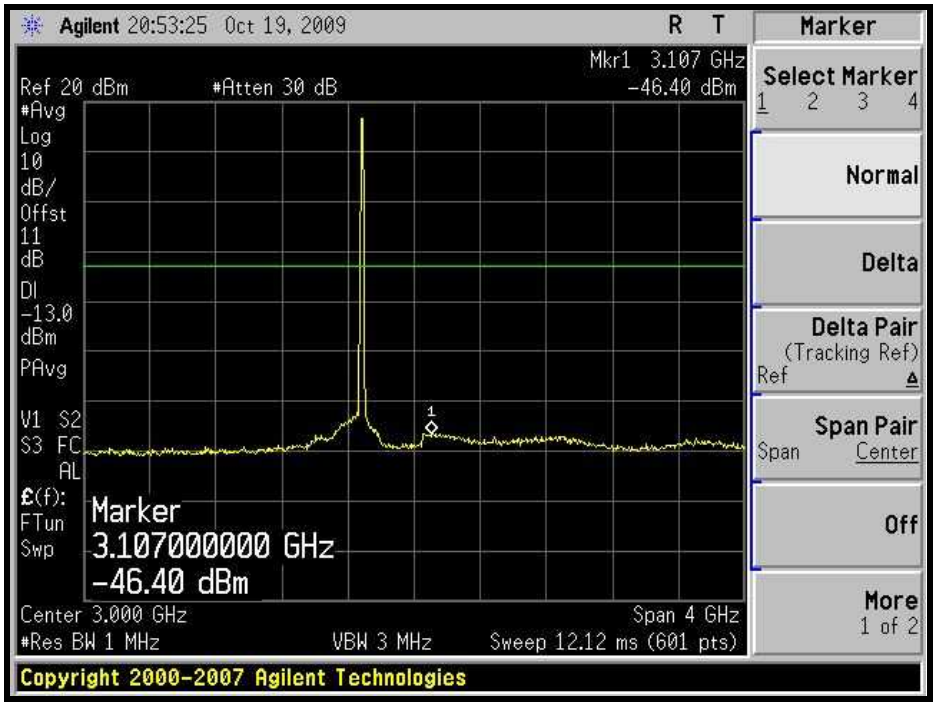
10GHz ~ 27GHz:


Agilent 17:21:07 Sep 23, 2009
R T
Peak Search
Mkr1 25.980 GHz
Ref 20 dBm
#Atten 30 dB
-40.92 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
More
1 of 2
Start 10.000 GHz
Stop 27.000 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 170 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

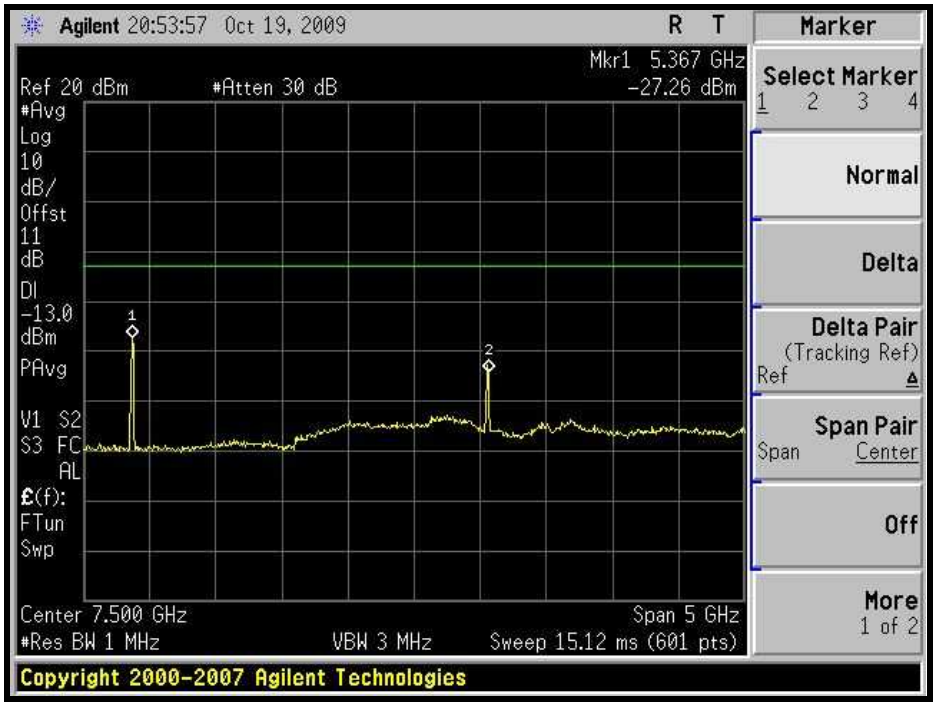
HIGH CHANNEL: 30MHz ~ 1GHz:

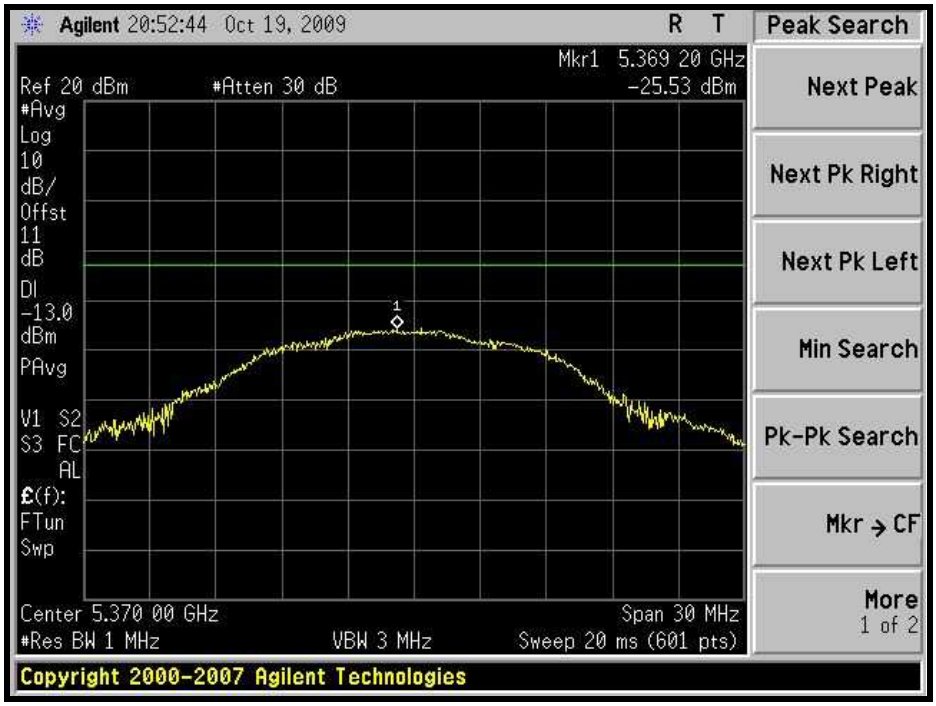


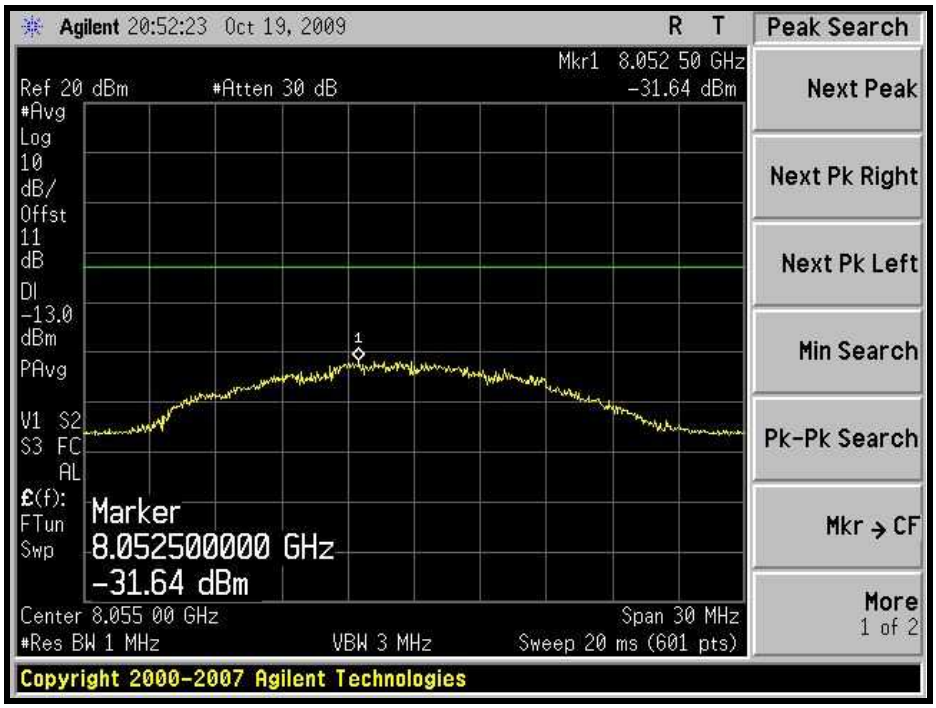
1GHz ~ 5GHz:



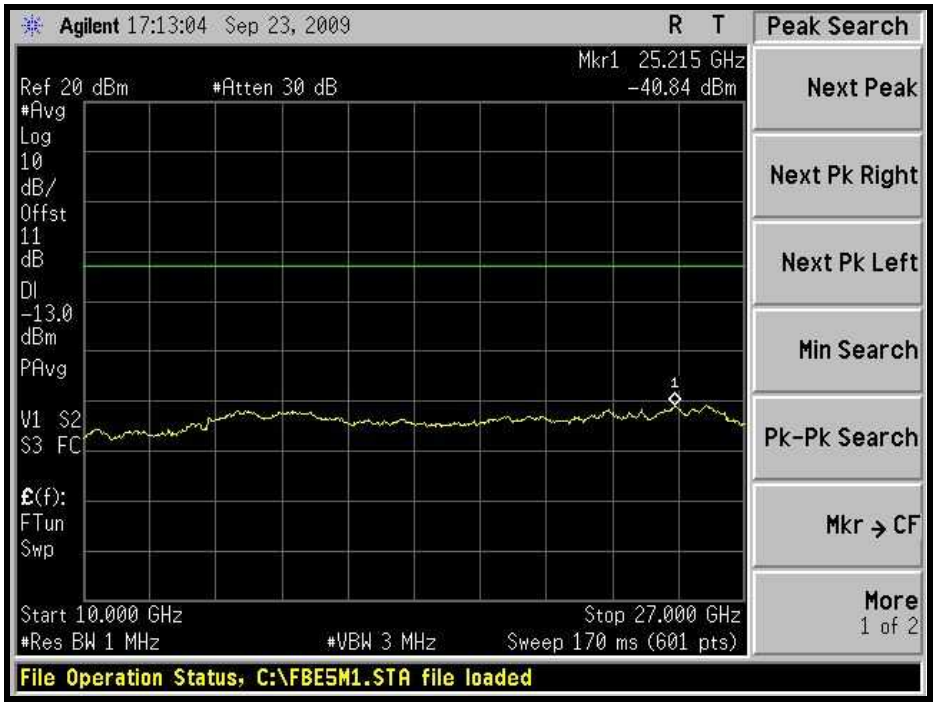
5GHz ~ 10GHz:


Agilent 20:53:57 Oct 19, 2009
R T
Marker
Mkr1 5.367 GHz
-27.26 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
AL
£(f):
FTun
Swp
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
Center 7.500 GHz
Span 5 GHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 15.12 ms (601 pts)
Copyright 2000-2007 Agilent Technologies


Agilent 20:52:44 Oct 19, 2009
R T
Peak Search
Mkr1 5.369 20 GHz
-25.53 dBm
Ref 20 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
11
dB
Dl
-13.0
dBm
PAvg
V1 S2
S3 FC
AL
£(f):
FTun
Swp
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
Center 5.370 00 GHz
Span 30 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 20 ms (601 pts)
Copyright 2000-2007 Agilent Technologies


Agilent 20:52:23 Oct 19, 2009
R T
Peak Search
Mkr1 8.052 50 GHz
Ref 20 dBm
#Atten 30 dB
-31.64 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
AL
Pk-Pk Search
£(f):
FTun
Swp
Marker
8.052500000 GHz
-31.64 dBm
Mkr → CF
More
1 of 2
Center 8.055 00 GHz
Span 30 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 20 ms (601 pts)
Copyright 2000-2007 Agilent Technologies

10GHz ~ 27GHz:


Agilent 17:13:04 Sep 23, 2009
R T
Peak Search
Mkr1 25.215 GHz
Ref 20 dBm
#Atten 30 dB
-40.84 dBm
Next Peak
#Avg
Log
10
dB/
Offst
11
dB
Next Pk Right
Dl
-13.0
dBm
Next Pk Left
PAvg
Min Search
V1 S2
S3 FC
Pk-Pk Search
£(f):
FTun
Swp
Mkr → CF
More
1 of 2
Start 10.000 GHz
Stop 27.000 GHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 170 ms (601 pts)
File Operation Status, C:\FBE5M1.STA file loaded

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. 9, 2008	Dec. 8, 2009
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	Apr. 24 , 2009	Apr. 23 , 2010
HP Pre_Amplifier	8449B	3008A01923	Nov. 10, 2008	Nov. 9, 2009
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Aug. 28, 2009	Aug. 27, 2010
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 29, 2009	April 28, 2010
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 09, 2008	Dec. 08, 2009
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2009	Jan. 21, 2010
R&S Loop Antenna	HFH2-Z2	100070	Jan. 14, 2008	Jan. 13, 2010
RF Switches	EMH-011	08009	Oct. 07, 2009	Oct. 06, 2010
RF CABLE (Chaintek)	Sucoflex 106	28077	Aug. 14, 2009	Aug. 13, 2010
RF Cable	8DFB	STCCAB-30M-1GHz	Oct. 07, 2009	Oct. 06, 2010
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, HP 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.

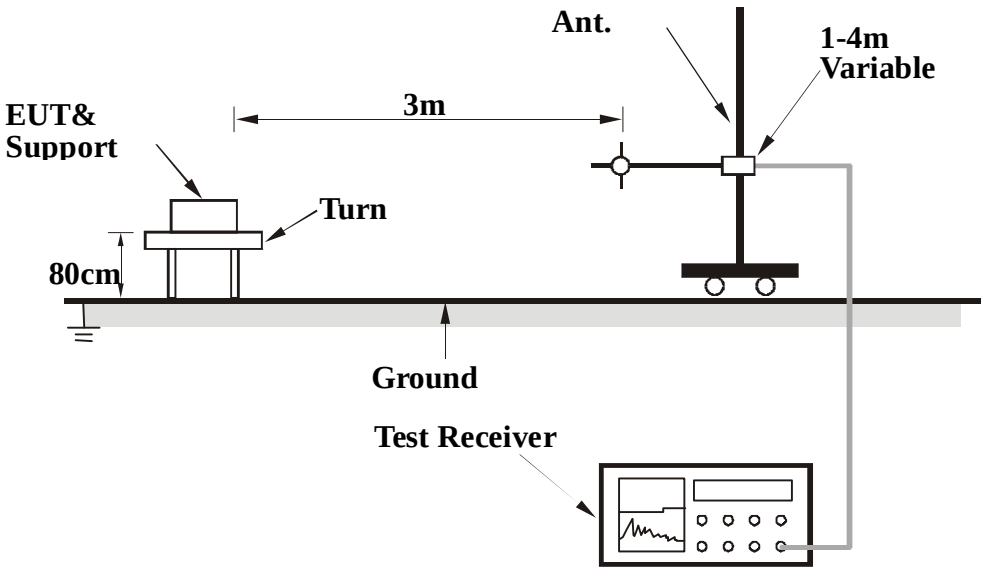
g. Repeat step a ~ f for horizontal polarization.

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

CHANNEL BANDWIDTH: 5MHz

MODE	Middle channel	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 965hPa
TESTED BY	Duke Tseng		

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	250.03	21.73	-13	-73.23	3.89	-69.34
2	375.01	29.56	-13	-68.29	3.46	-64.83
3	425.00	30.72	-13	-67.33	3.07	-64.26
4	625.00	34.8	-13	-60.01	1.77	-58.24
5	675.01	35.3	-13	-60.37	1.68	-58.69
6	749.99	34.42	-13	-61.95	0.81	-61.14

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	67.49	30.68	-13	-55.93	-5.41	-61.34
2	247.91	30.65	-13	-64.40	3.88	-60.52
3	300.00	27.74	-13	-68.04	3.71	-64.33
4	425.00	29.19	-13	-68.86	3.07	-65.79
5	625.01	33.66	-13	-61.15	1.77	-59.38
6	750.08	33.94	-13	-62.44	0.82	-61.62

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

CHANNEL BANDWIDTH: 10MHz

MODE	High channel	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 965hPa
TESTED BY	Eric Lee		

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	250.03	22.44	-13	-72.52	3.89	-68.63
2	375.01	29.72	-13	-68.13	3.46	-64.67
3	425	30.6	-13	-67.45	3.07	-64.38
4	625	34.97	-13	-59.84	1.77	-58.07
5	675.01	35.19	-13	-60.48	1.68	-58.80
6	749.99	35.25	-13	-61.12	0.81	-60.31

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	67.49	31.56	-13	-55.05	-5.41	-60.46
2	247.91	32.7	-13	-62.35	3.88	-58.47
3	300	28.31	-13	-67.47	3.71	-63.76
4	425	29.88	-13	-68.17	3.07	-65.10
5	625.01	34.53	-13	-60.28	1.77	-58.51
6	750.08	35.09	-13	-61.29	0.82	-60.47

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) (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.

4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 9, 2008	Dec. 8, 2009
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	Apr. 24 , 2009	Apr. 23 , 2010
HP Pre_Amplifier	8449B	3008A01923	Nov. 10, 2008	Nov. 9, 2009
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Aug. 28, 2009	Aug. 27, 2010
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 29, 2009	April 28, 2010
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 09, 2008	Dec. 08, 2009
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2009	Jan. 21, 2010
R&S Loop Antenna	HFH2-Z2	100070	Jan. 14, 2008	Jan. 13, 2010
RF Switches	EMH-011	08009	Oct. 07, 2009	Oct. 06, 2010
RF CABLE (Chaintek)	Sucoflex 106	28077	Aug. 14, 2009	Aug. 13, 2010
RF Cable	8DFB	STCCAB-30M-1GHz	Oct. 07, 2009	Oct. 06, 2010
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, HP 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.

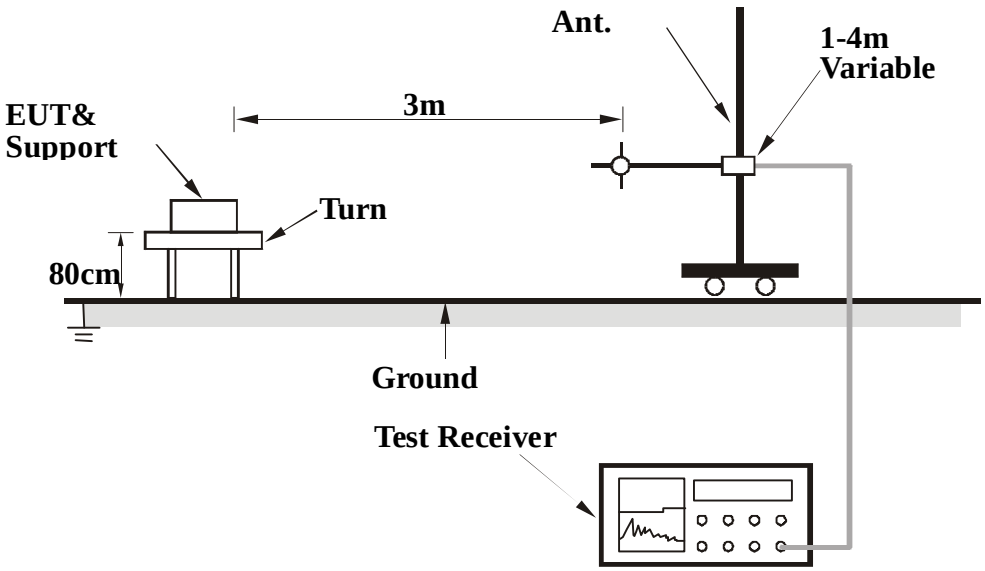
g. Repeat step a ~ f for horizontal polarization.

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 (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 965hPa
TESTED BY	Duke Tseng		

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	5010	52.71	-13	-51.54	7.01	-44.52
2	7515	79.53	-13	-23.09	4.53	-18.56
3	10020	57.74	-13	-44.93	4.03	-40.90

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	5010	82.65	-13	-21.60	7.01	-14.58
2	7515	68.51	-13	-34.11	4.53	-29.58
3	10020	53.27	-13	-49.40	4.03	-45.37

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

MODE	Middle channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 965hPa
TESTED BY	Duke Tseng		

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	5190	80.3	-13	-24.22	7.05	-17.16
2	7785	82.9	-13	-19.72	4.30	-15.42
3	10380	61.15	-13	-40.84	3.68	-37.15

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	5190	78.85	-13	-25.67	7.05	-18.61
2	7785	69.73	-13	-32.89	4.30	-28.59
3	10380	56.66	-13	-45.33	3.68	-41.64

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

MODE	High channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 965hPa
TESTED BY	Duke Tseng		

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	5370	72.95	-13	-31.84	7.09	-24.74
2	8055	70.1	-13	-32.52	4.13	-28.39
3	10740	68.92	-13	-32.93	3.34	-29.59

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	5370	74.41	-13	-30.38	7.09	-23.28
2	8055	64.81	-13	-37.81	4.13	-33.68
3	10740	63.88	-13	-37.97	3.34	-34.63

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 (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 965hPa
TESTED BY	Duke Tseng		

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	5010	83.3	-13	-20.95	7.01	-13.93
2	7515	79.95	-13	-22.67	4.53	-18.14
3	10020	67.15	-13	-35.52	4.03	-31.49

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	5010	81.73	-13	-22.52	7.01	-15.50
2	7515	67.09	-13	-35.53	4.53	-31.00
3	10020	51.96	-13	-50.71	4.03	-46.68

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

MODE	Middle channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 965hPa
TESTED BY	Duke Tseng		

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	5190	80.82	-13	-23.70	7.05	-16.64
2	7785	78.77	-13	-23.85	4.30	-19.55
3	10380	62.5	-13	-39.49	3.68	-35.80

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	5190	82.94	-13	-21.58	7.05	-14.52
2	7785	68.11	-13	-34.51	4.30	-30.21
3	10380	56.89	-13	-45.10	3.68	-41.41

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

MODE	High channel	**FREQUENCY RANGE**	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg°C, 60%RH 965hPa
TESTED BY	Duke Tseng		

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	5370	71.68	-13	-33.11	7.09	-26.01
2	8055	68.06	-13	-34.56	4.13	-30.43
3	10740	60.15	-13	-41.70	3.34	-38.36

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	5370	74.84	-13	-29.95	7.09	-22.85
2	8055	60.62	-13	-42.00	4.13	-37.87
3	10740	58.94	-13	-42.91	3.34	-39.57

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 by the following approval agencies according to ISO/IEC 17025.

USA	FCC, NVLAP
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA(MOU)
Russia	CERTIS(MOU)

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: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

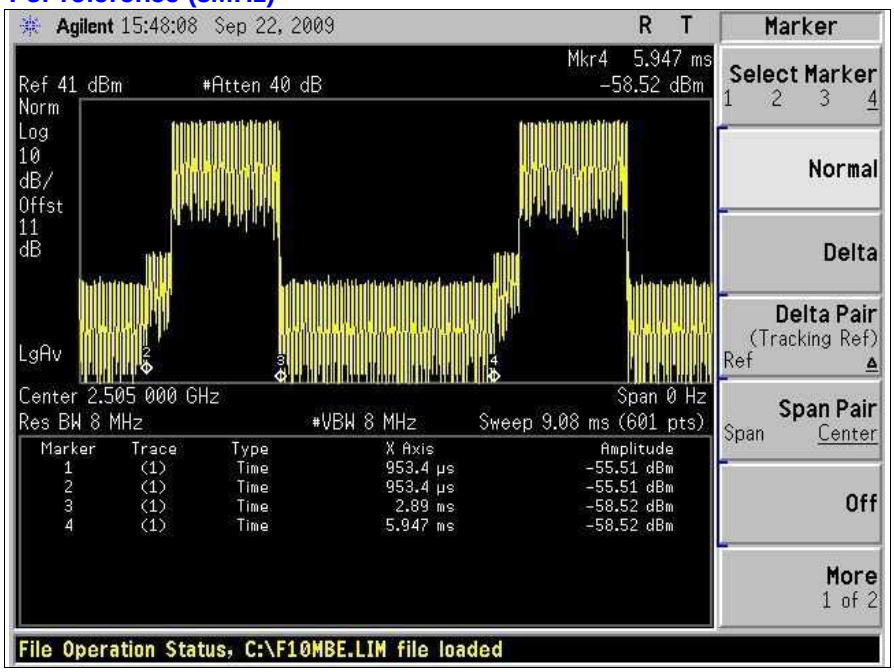
Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

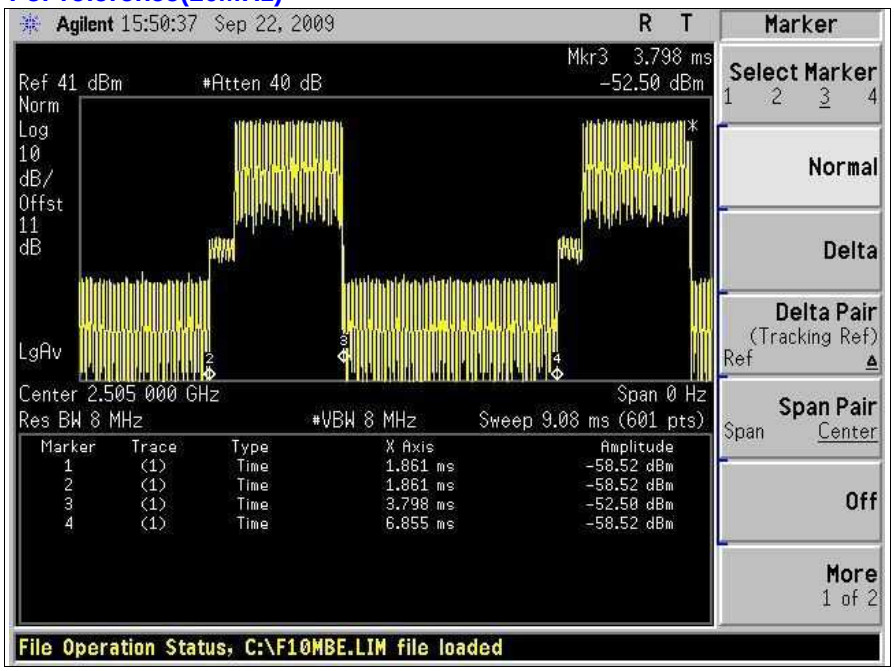
7 APPENDIX- A DL/UL RATION FOR TEST

For reference (5MHz)



The ratio is approximate 38.78%.

For reference(10MHz)



The ratio is approximate 38.79%.

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