



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

**850/1900 GSM/GPRS, 850 WCDMA PHONE WITH BLUETOOTH 3.0 AND EDR,
HOTSPOTS, VOIP AND WLAN TRANSCEIVER**

MODEL NUMBER: GT-S5360L

FCC ID: A3LGTS5360L

REPORT NUMBER: 11I13976- 5

ISSUE DATE: SEPTEMBER 6, 2011

Prepared for

**SAMSUNG ELECTRONICS CO., LTD
416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA**

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NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	09/06/11	Initial Issue	F. Ibrahim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD
416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA

EUT DESCRIPTION: 850/1900 GSM/GPRS, 850 WCDMA PHONE WITH BLUETOOTH
3.0 AND EDR, HOTSPOTS, VOIP AND WLAN TRANSCEIVER

MODEL: GT-S5360L

SERIAL NUMBER: R26B610193T and FI 192 D

DATE TESTED: AUGUST 11- SEPTEMBER 1, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass

Compliance Certification Services (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:



FRANK IBRAHIM
EMC SUPERVISOR
UL CCS

Tested By:



THANH NGUYEN
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 850/1900 GSM/GPRS, 850 WCDMA phone with Bluetooth 3.0 and EDR, Hotspots, VOIP and WLAN transceiver.

The radio module is manufactured by Samsung Electronics Co., Ltd.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	16.34	43.05
2412 - 2462	802.11g	21.66	146.55
2412 - 2462	802.11n HT20	19.30	85.11

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of -15 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was S5360B rev. 010.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power; therefore, radiated emissions below 1 GHz and power line conducted emissions were performed with the EUT set to transmit at the channel with highest output power.

Worst-case data rates as provided by the client are as follows:

802.11b mode: 1Mbps
802.11g mode: 6Mbps
802.11n 20MHz: MCS0

EUT was investigated in three orthogonal orientation X,Y,Z in battery-operated configuration, and also while connected to AC/DC adapter and headphones, and it was found that Z (See setup photos) orientation is worst-case, therefore, all final testing was conducted with EUT in Z orientation.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

CONFIGURATION 1:

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
Headset	Samsung	N/A	F1 192B	N/A

CONFIGURATION 2:

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
AC Adapter 1	Samsung	ETA0U10EBE	F1 192C	DoC
Headset	Samsung	N/A	F1 192B	N/A

I/O CABLES

CONFIGURATION 1:

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
3	Audio	1	Mini-Jack	Un-Shielded	1.6m	N	N	

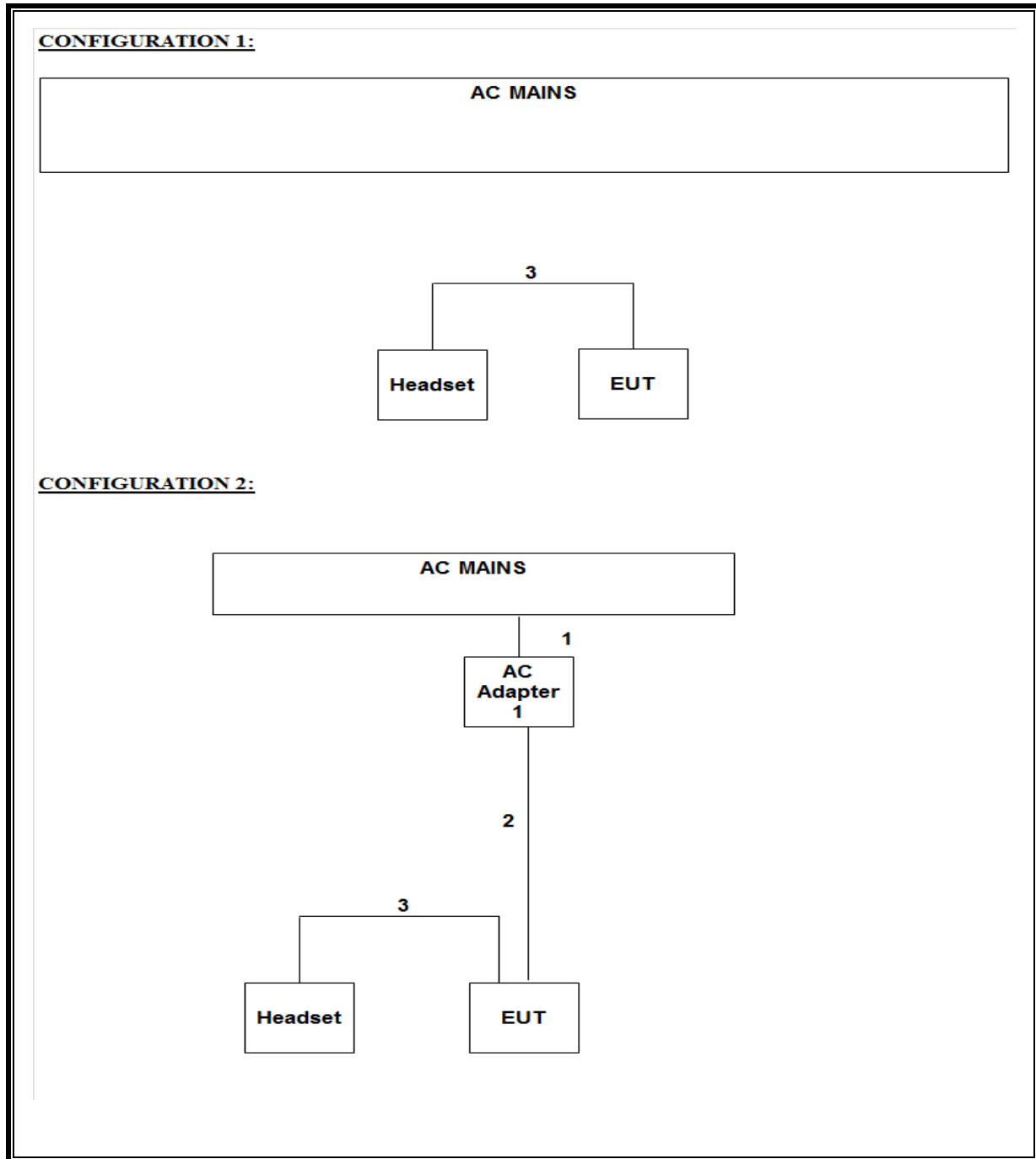
CONFIGURATION 2:

TEST I / O CABLES								
Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	AC	1	USA115V	Shielded	1.5m	N	Y	
2	DC Power	1	Micro USB	Shielded	1.5m	N	Y	
3	Audio	1	Mini-Jack	Un-Shielded	1.6m	N	N	

TEST SETUP

The EUT is a standalone unit with battery operated and/ or an AC adapter. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	Asset	Cal Date	Cal Due
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	01/19/11	04/19/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/16/11	07/16/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/27/11	01/27/12
Antenna, Horn, 18 GHz	EMCO	3115	C00945	06/29/11	06/29/12
Antenna, Horn, 18-26 GHz	A.R.A	MWH-18264/B	C00589	07/28/11	07/28/12
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	None	07/06/11	07/06/12
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/10/10	11/10/11
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	11/10/10	11/10/11

7. ANTENNA PORT TEST RESULTS

7.1. 802.11b MODE IN THE 2.4 GHz BAND

7.1.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

The minimum 6 dB bandwidth shall be at least 500 kHz.

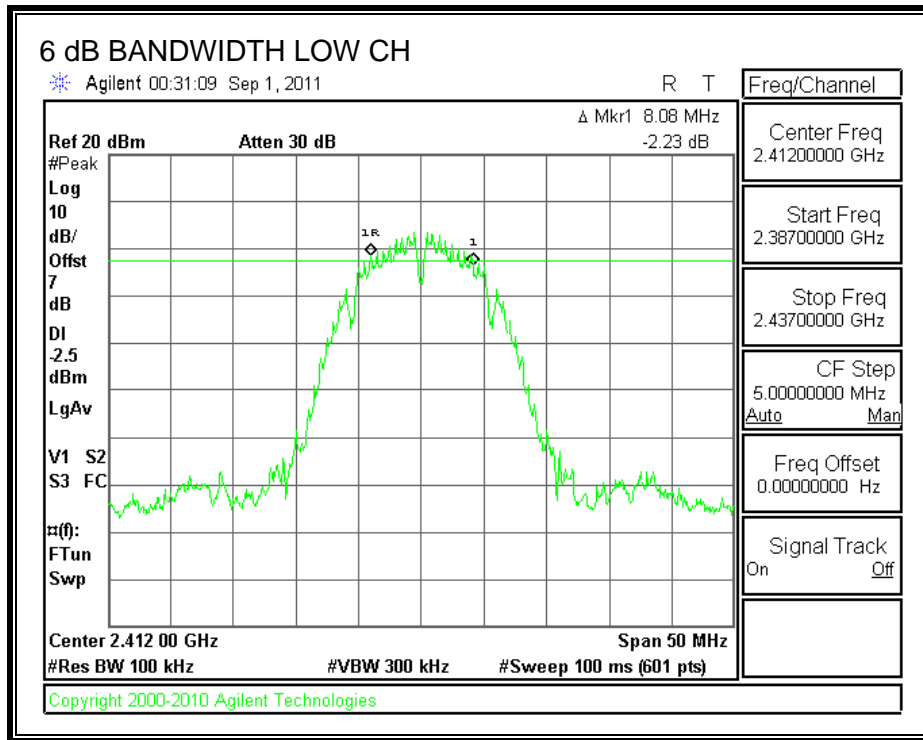
TEST PROCEDURE

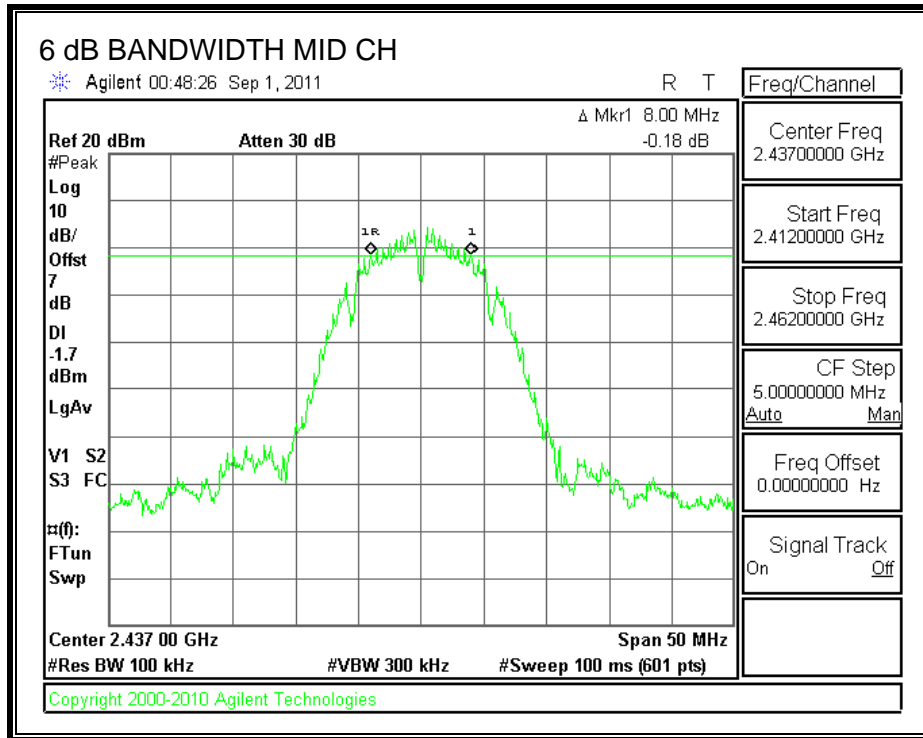
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

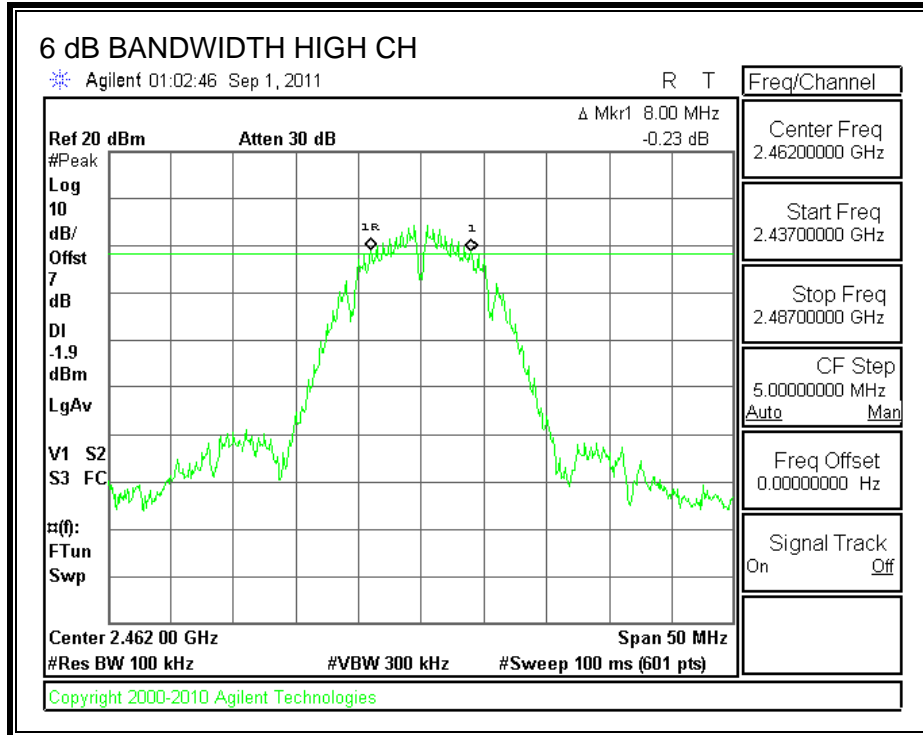
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.08	0.5
Middle	2437	8.00	0.5
High	2462	8.00	0.5

6 dB BANDWIDTH







7.1.2. OUTPUT POWER

LIMITS

FCC §15.247 (b)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

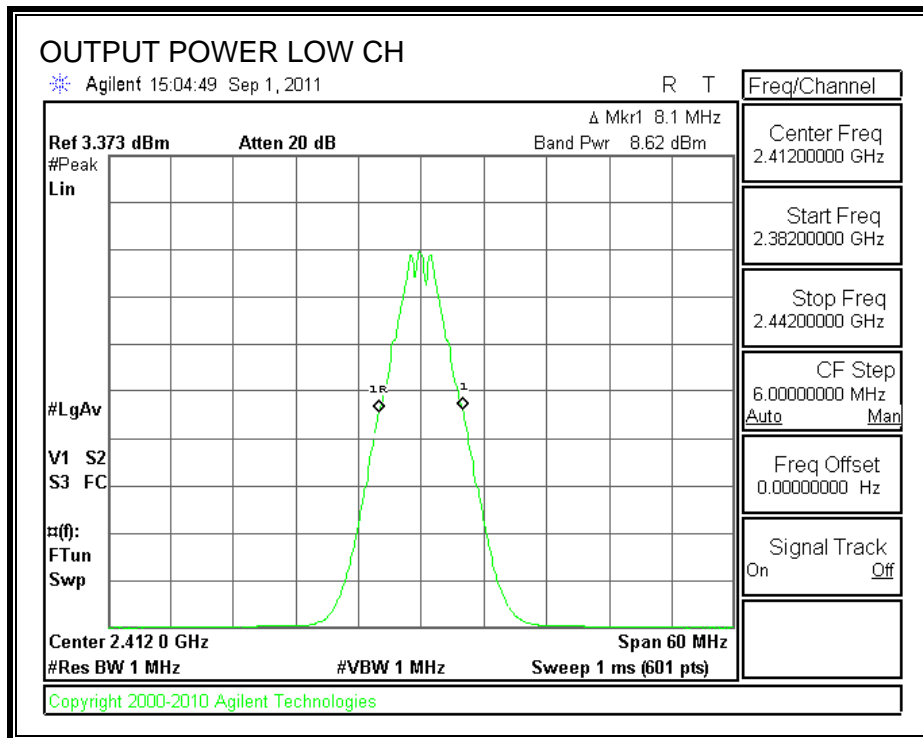
TEST PROCEDURE

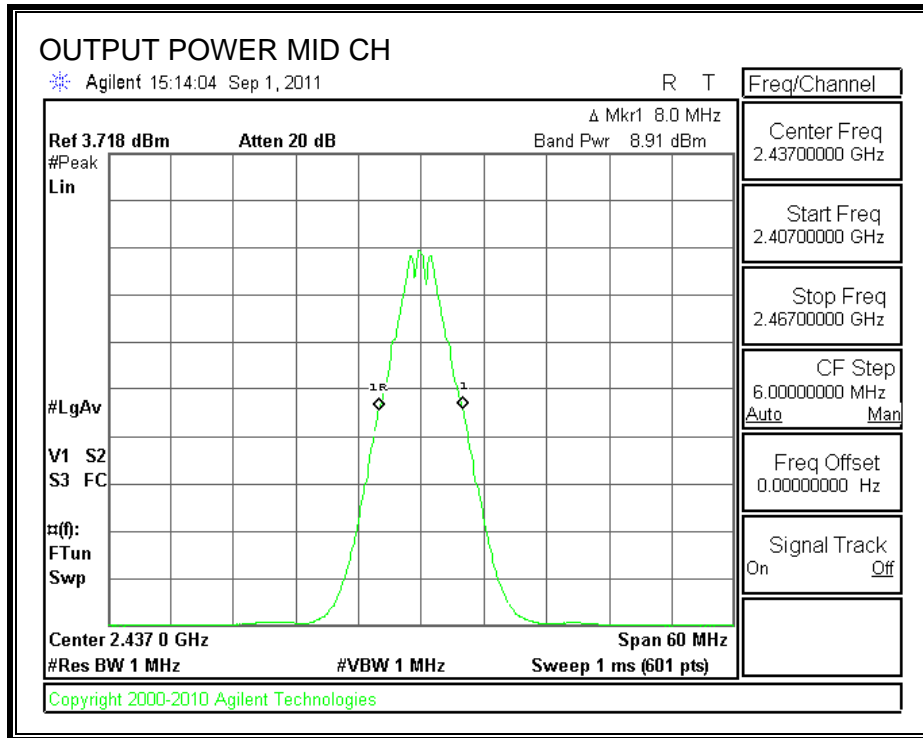
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

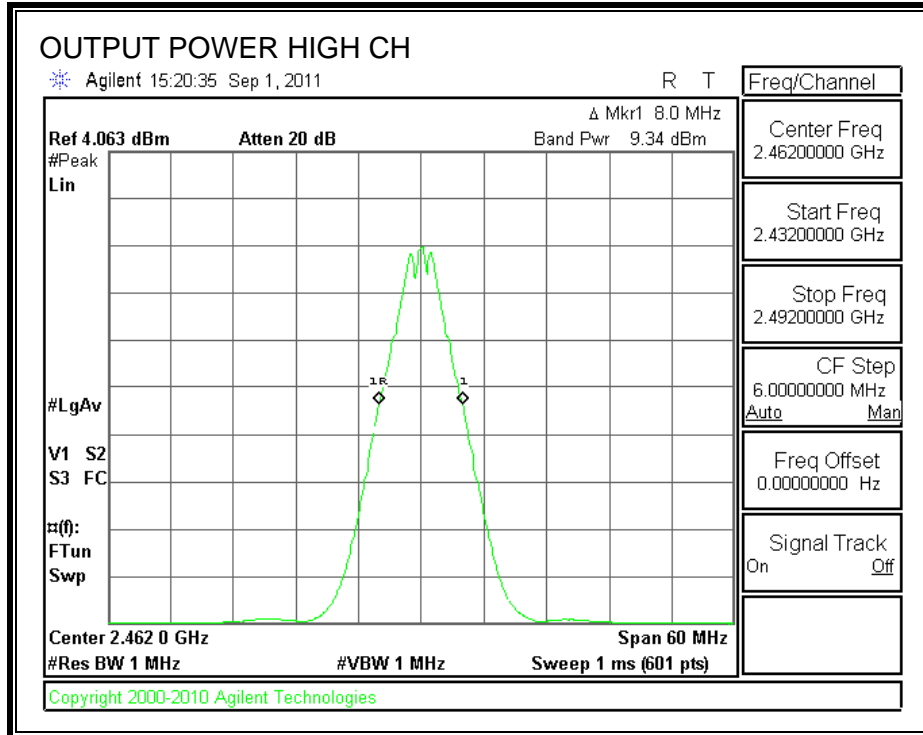
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	8.62	7	15.62	30	-14.38
Middle	2437	8.91	7	15.91	30	-14.09
High	2462	9.34	7	16.34	30	-13.66

OUTPUT POWER







7.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 7 dB (including 6 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	14.10
Middle	2437	14.40
High	2462	14.73

7.1.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

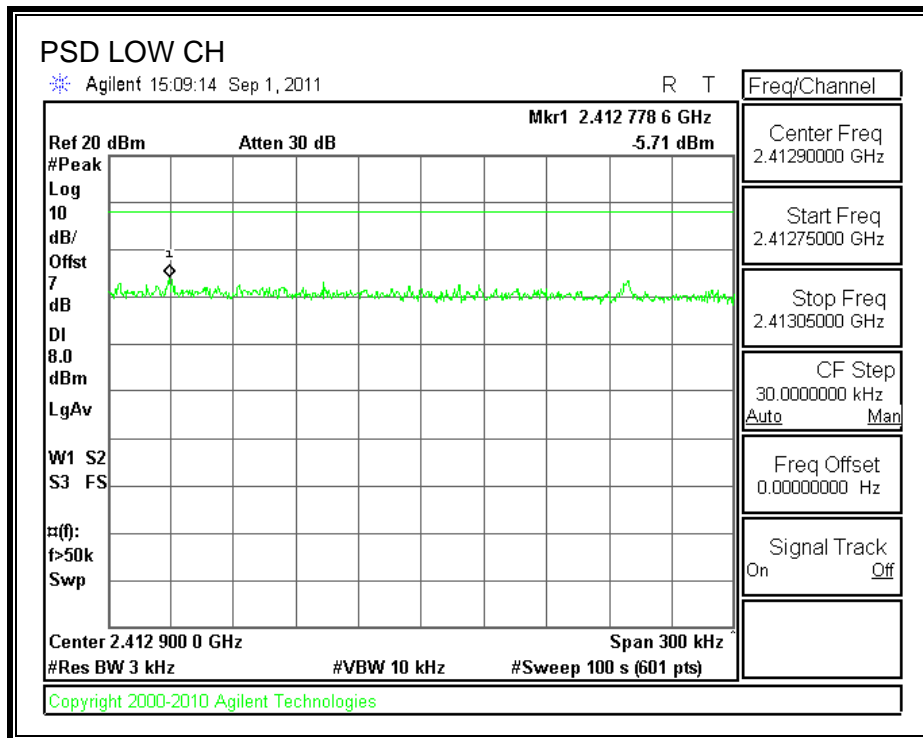
TEST PROCEDURE

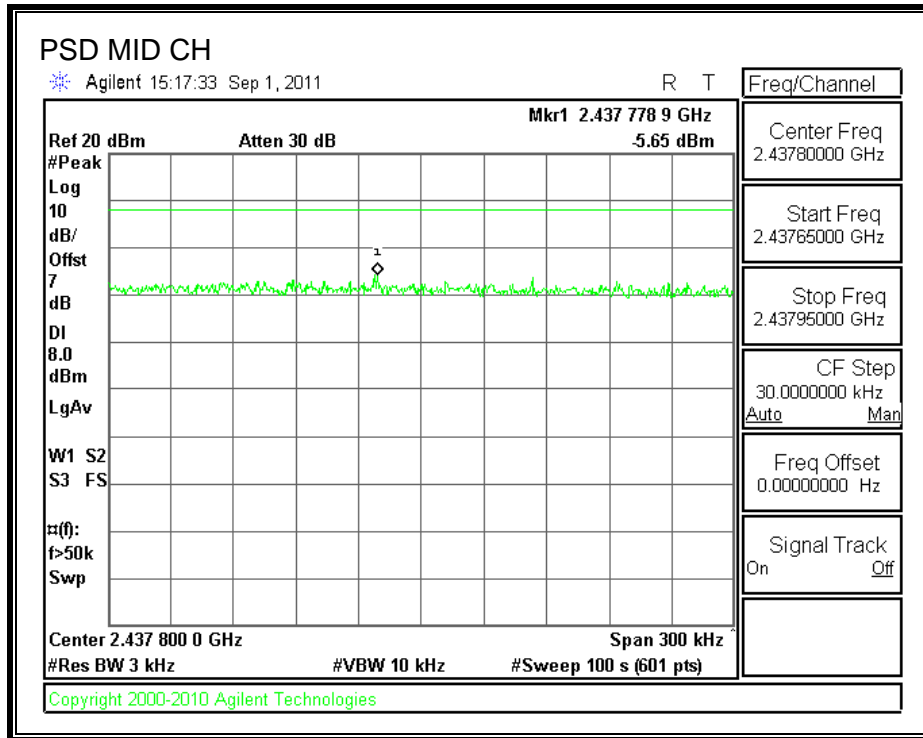
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

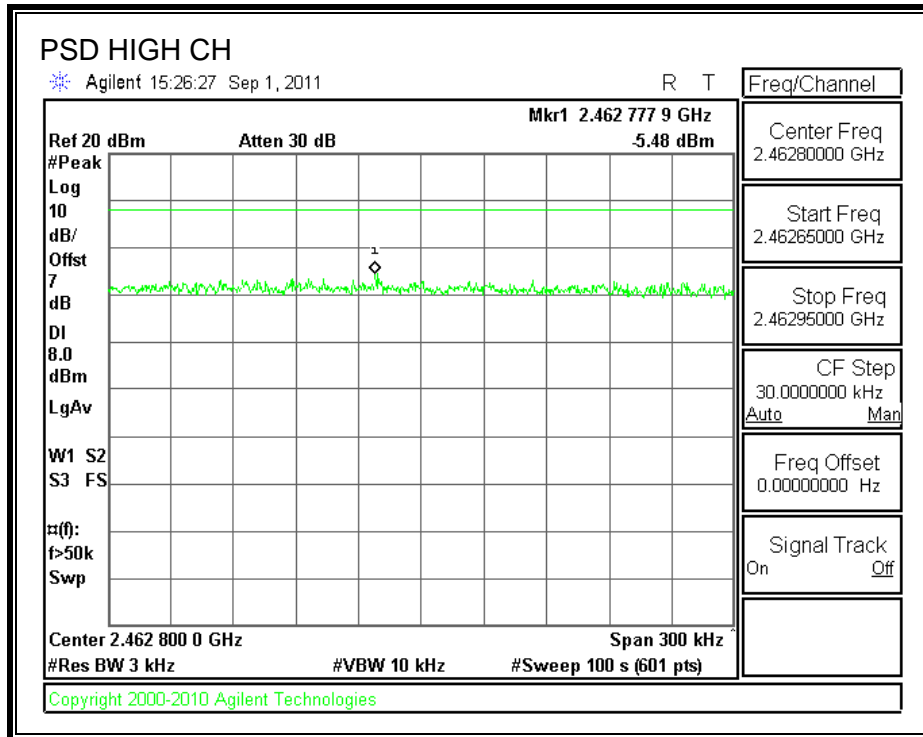
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-5.71	8	-13.71
Middle	2437	-5.65	8	-13.65
High	2462	-5.48	8	-13.48

POWER SPECTRAL DENSITY







7.1.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

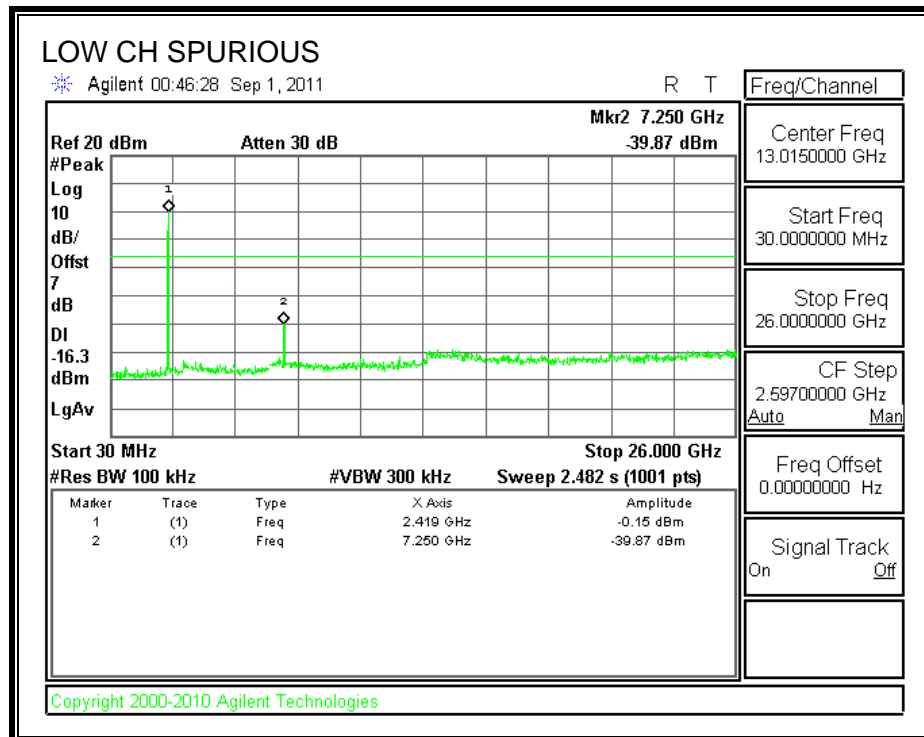
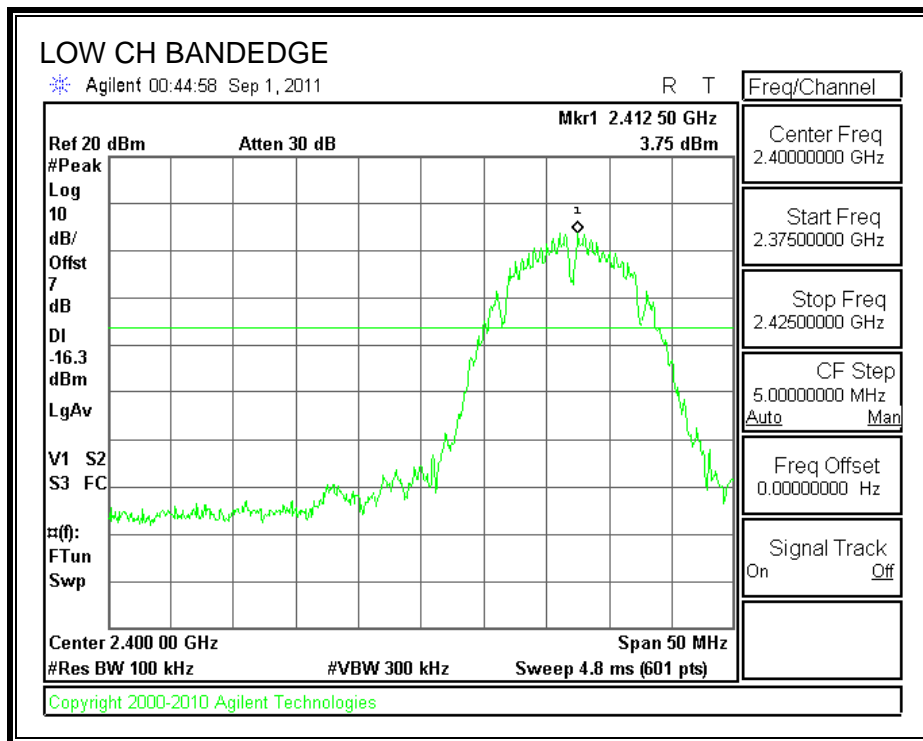
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

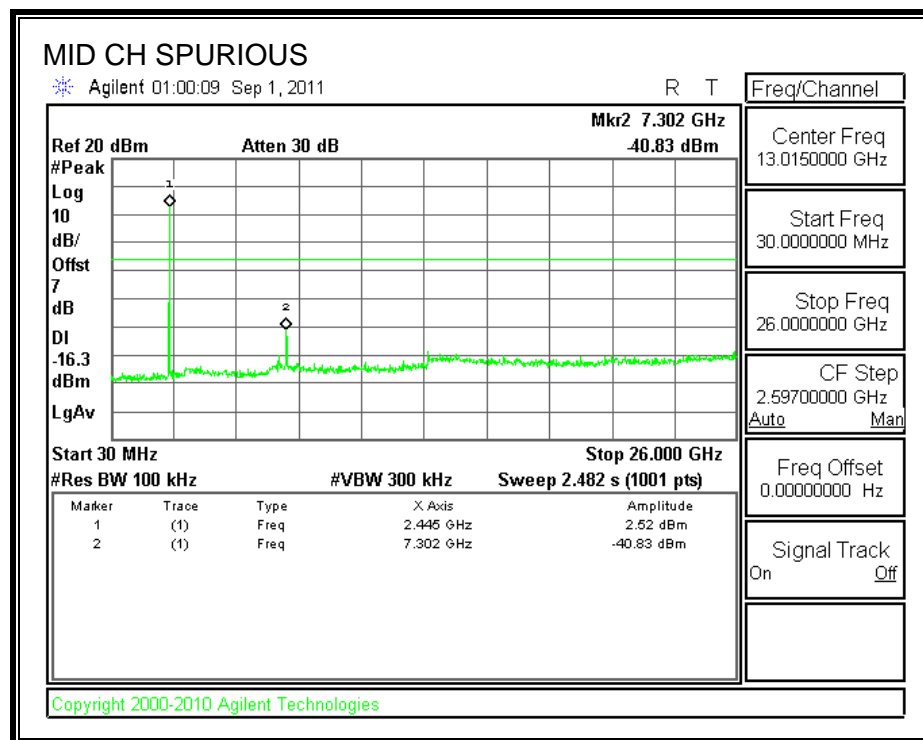
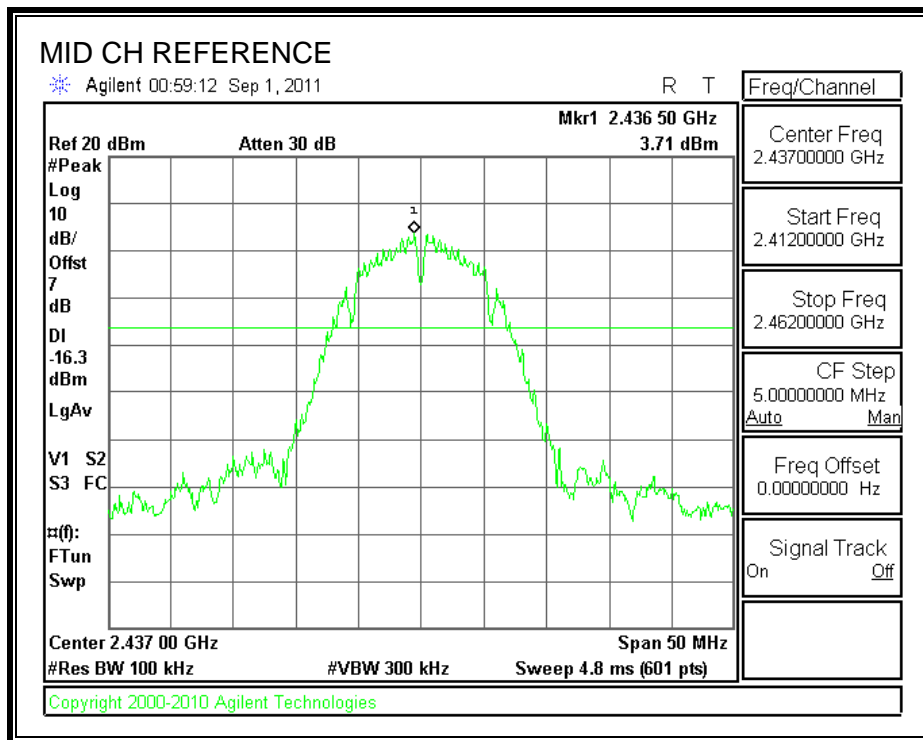
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

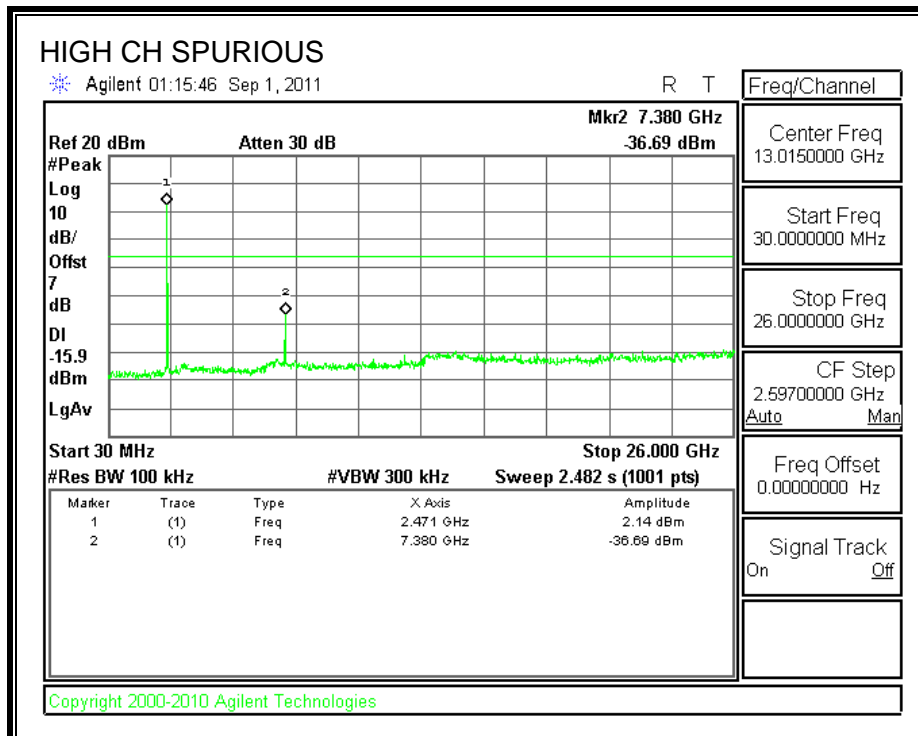
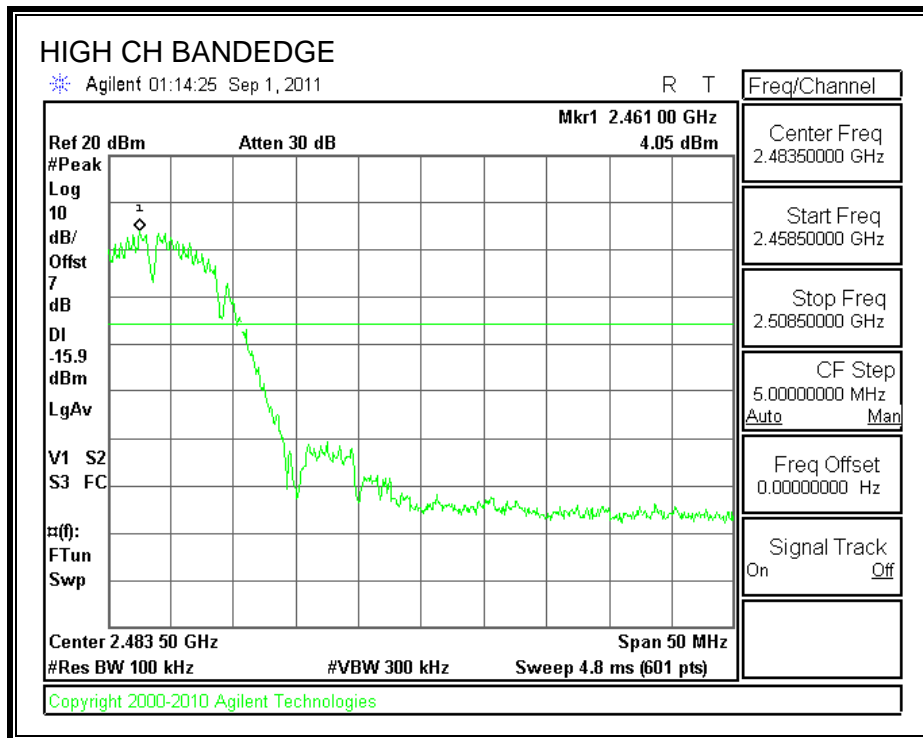
SPURIOUS EMISSIONS, LOW CHANNEL



SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



7.2. 802.11g MODE IN THE 2.4 GHz BAND

7.2.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

The minimum 6 dB bandwidth shall be at least 500 kHz.

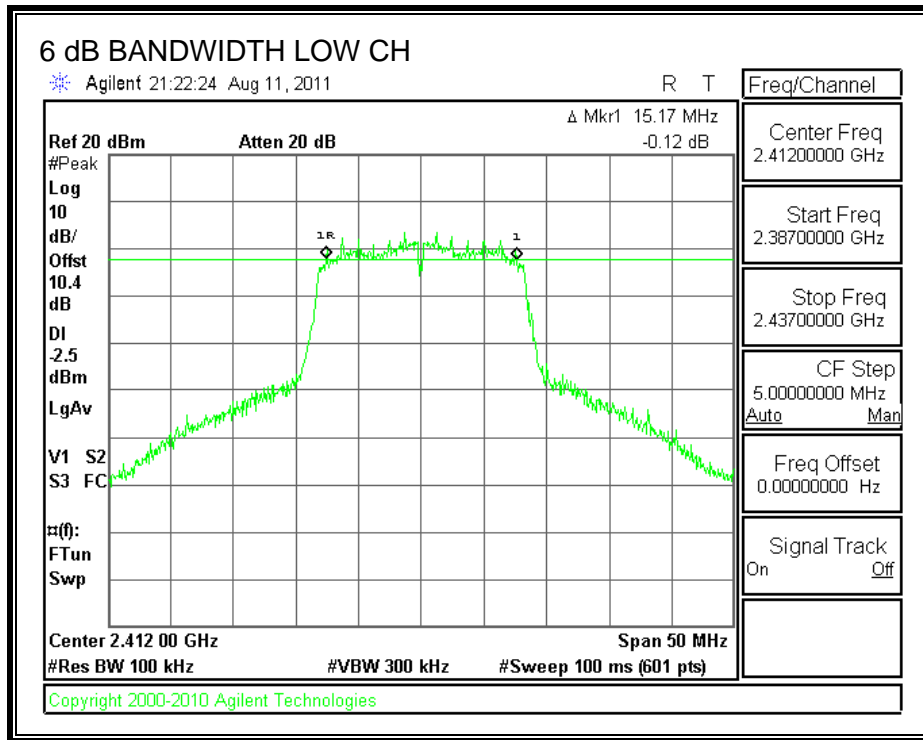
TEST PROCEDURE

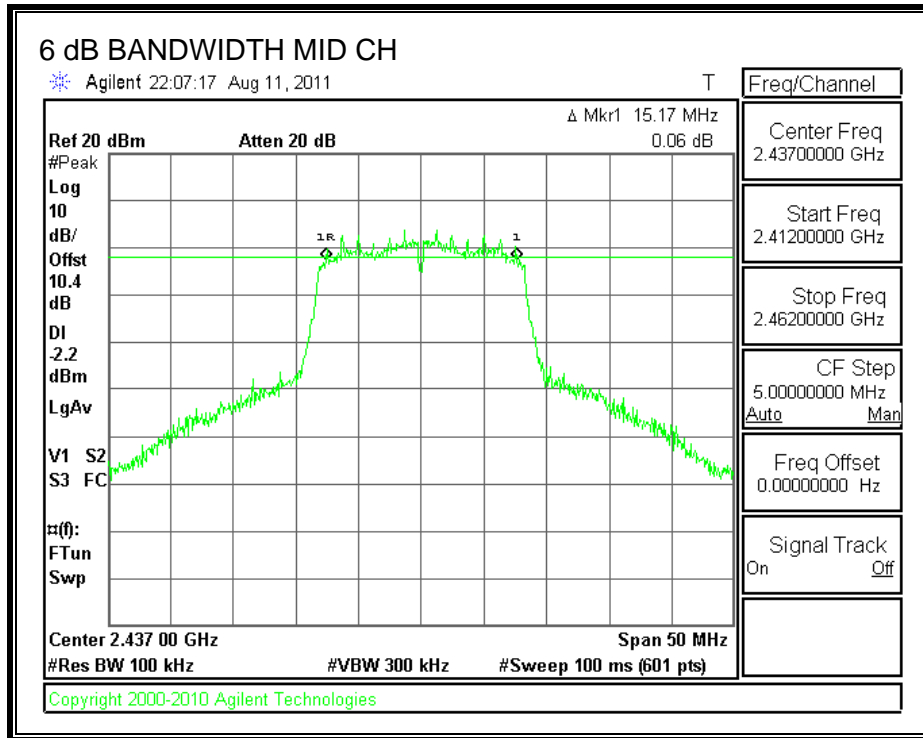
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

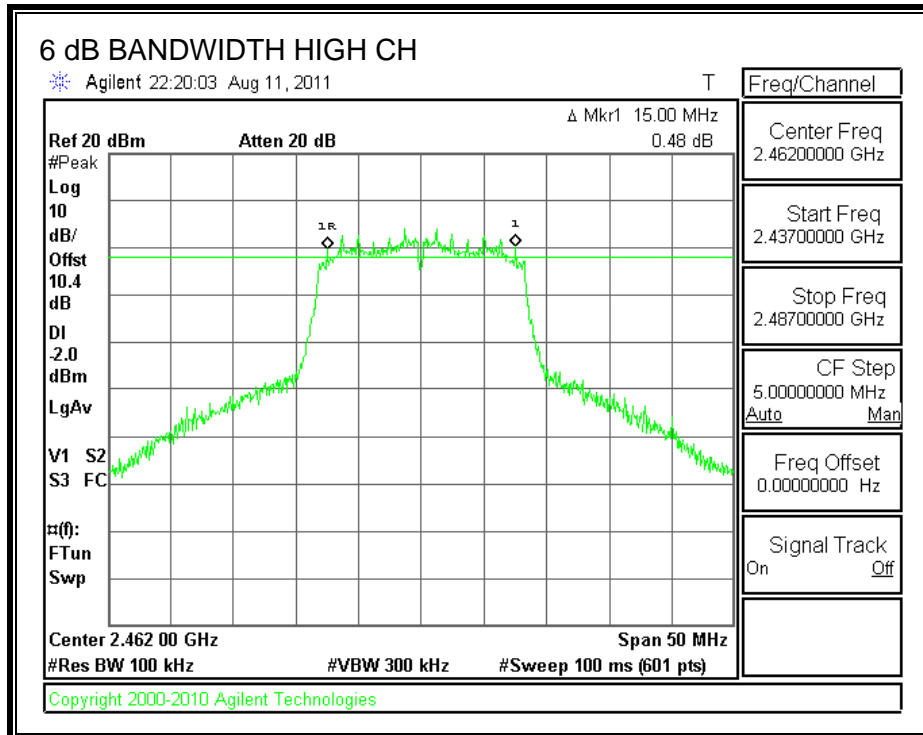
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.17	0.5
Middle	2437	15.17	0.5
High	2462	15.00	0.5

6 dB BANDWIDTH







7.2.2. OUTPUT POWER

LIMITS

FCC §15.247 (b)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

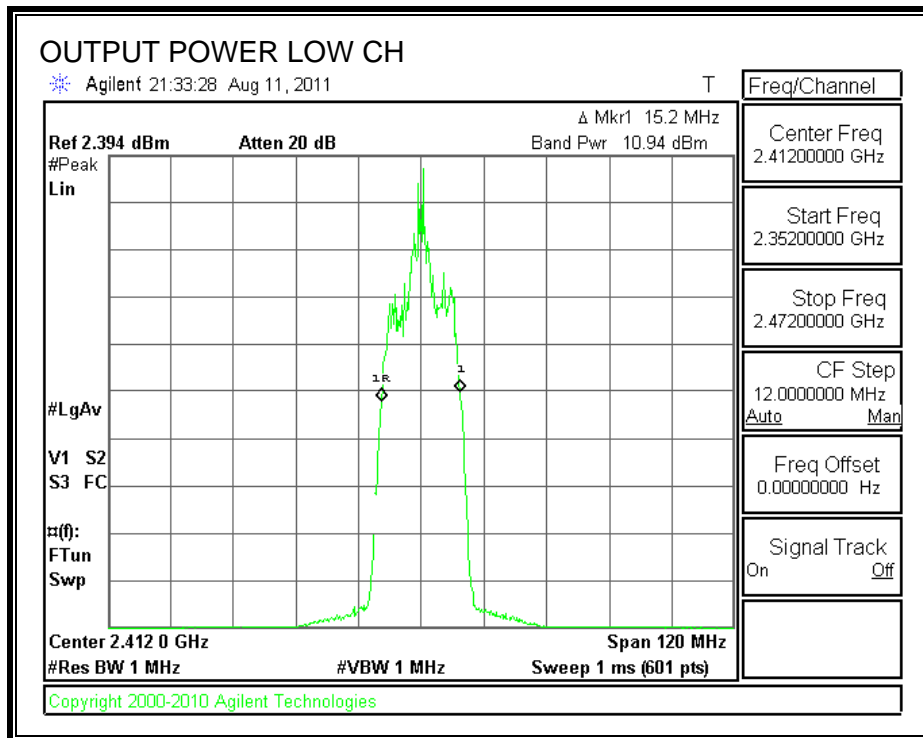
TEST PROCEDURE

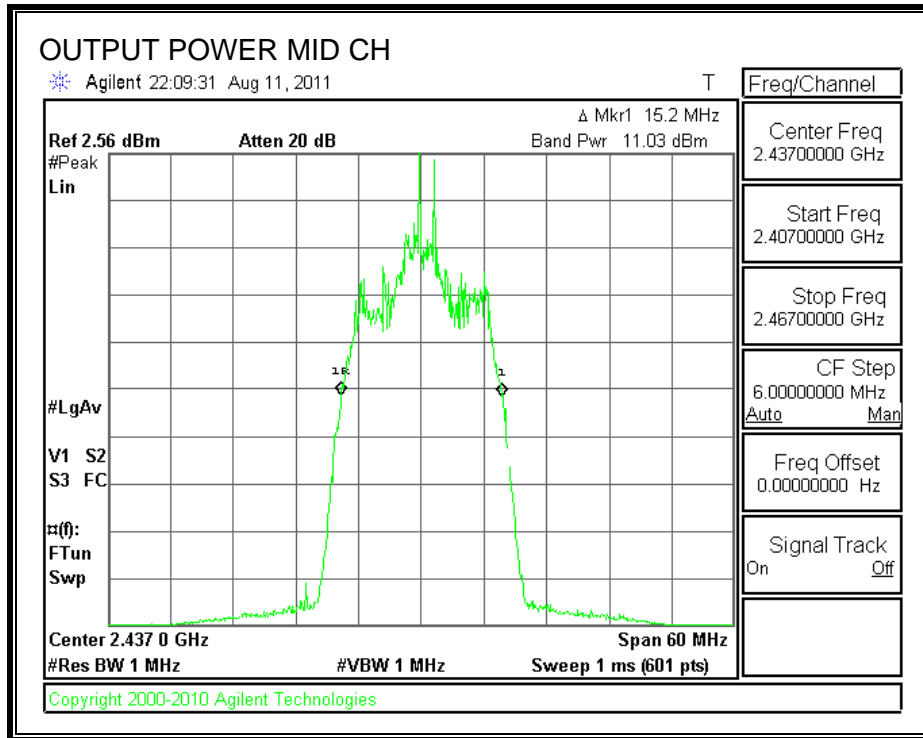
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

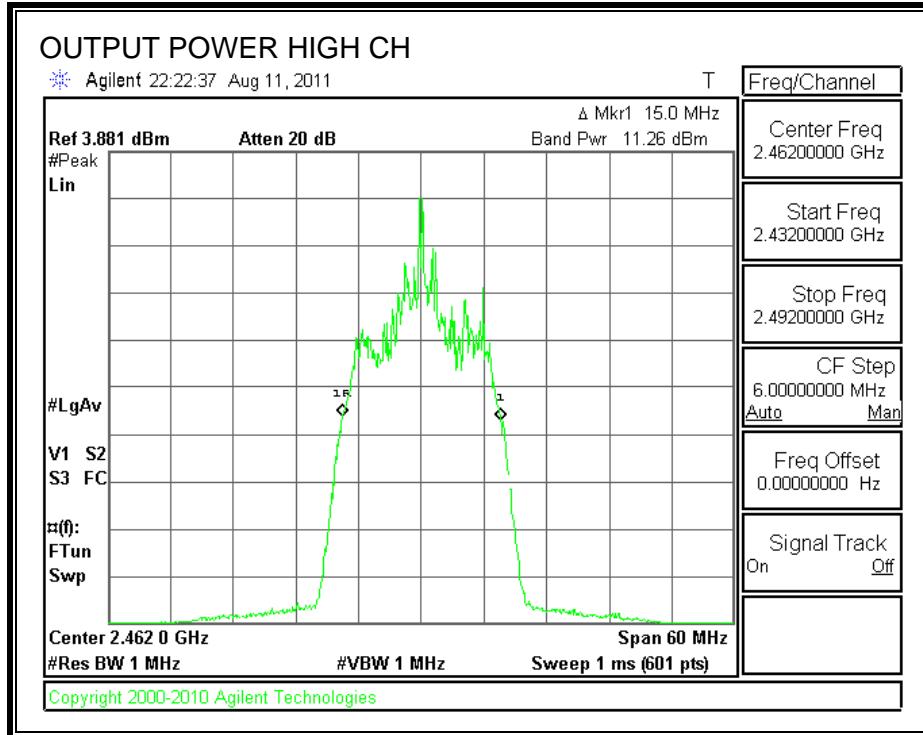
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	10.94	10.4	21.34	30	-8.66
Middle	2437	11.03	10.4	21.43	30	-8.57
High	2462	11.26	10.4	21.66	30	-8.34

OUTPUT POWER







7.2.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 7.3 dB (including 6 dB pad and 1.3 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	14.06
Middle	2437	14.22
High	2462	14.34

7.2.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

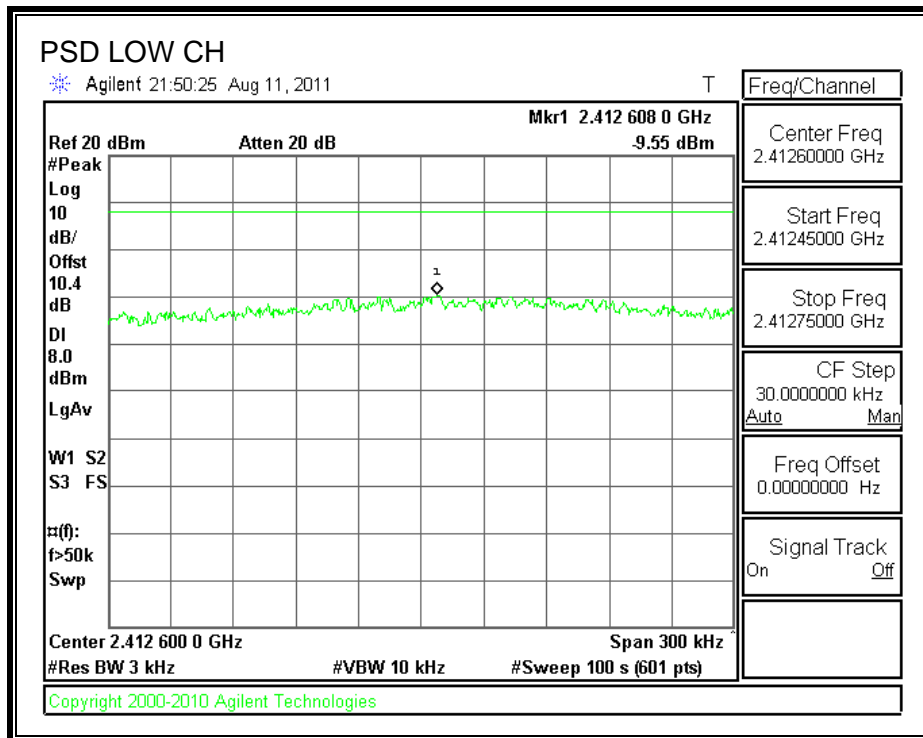
TEST PROCEDURE

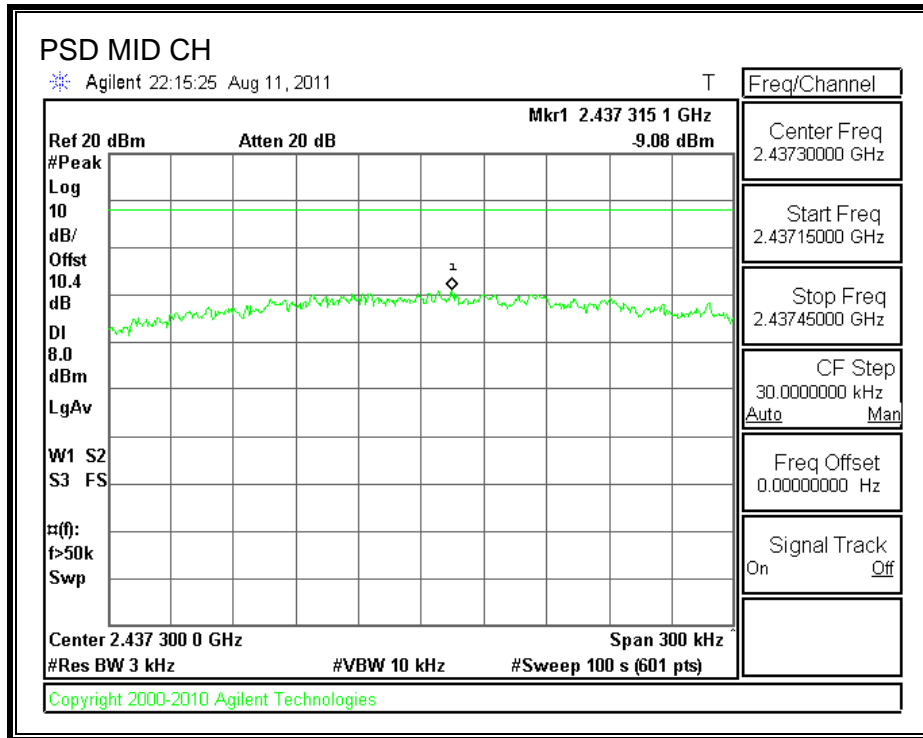
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

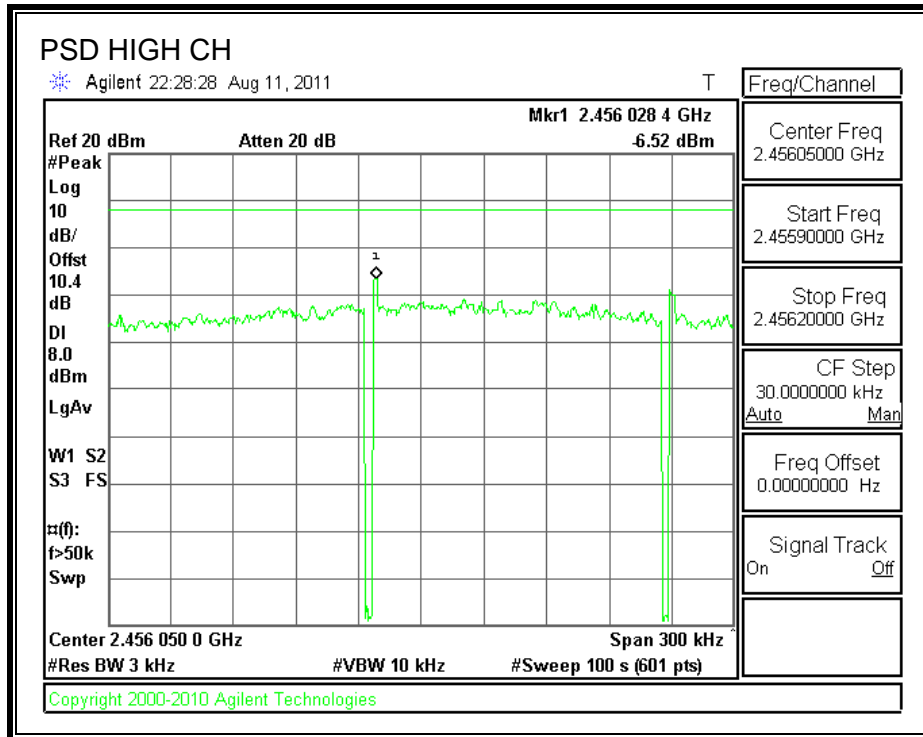
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-9.55	8	-17.55
Middle	2437	-9.08	8	-17.08
High	2462	-6.52	8	-14.52

POWER SPECTRAL DENSITY







7.2.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

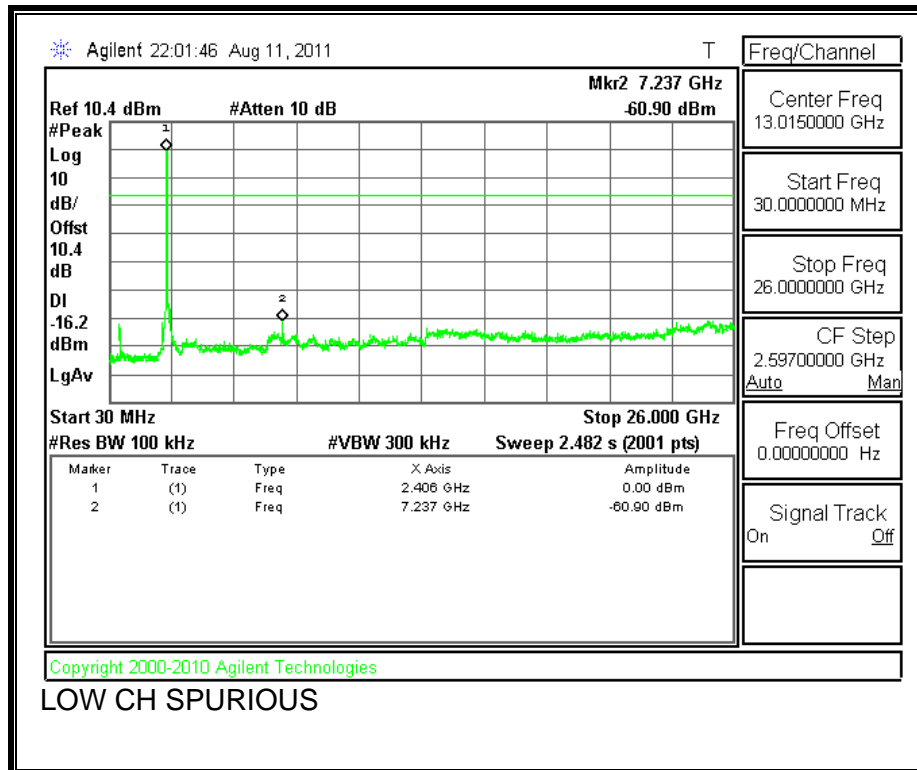
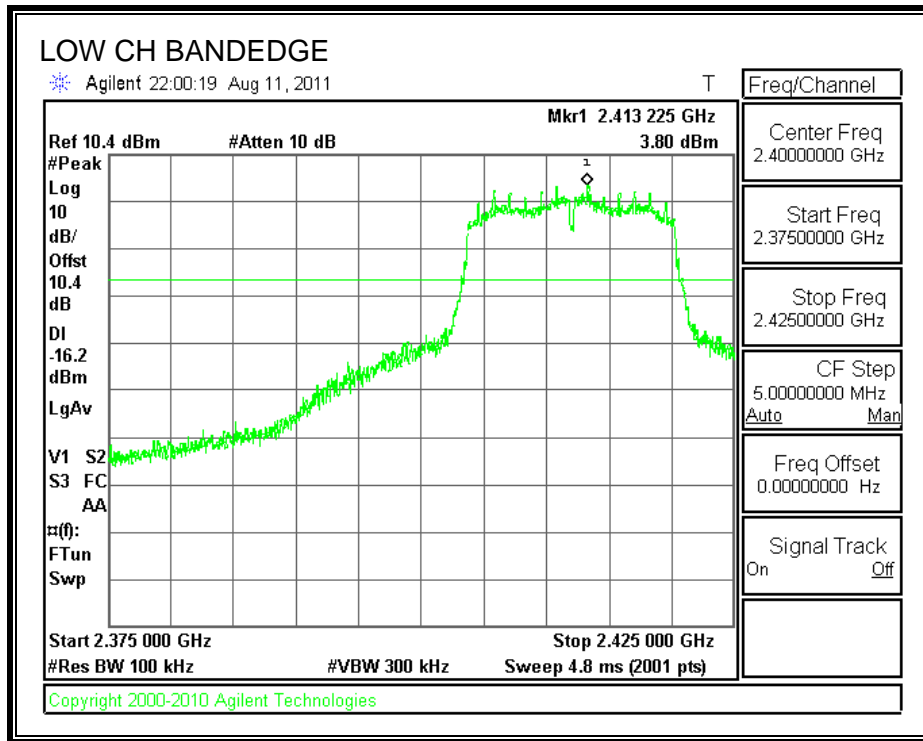
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

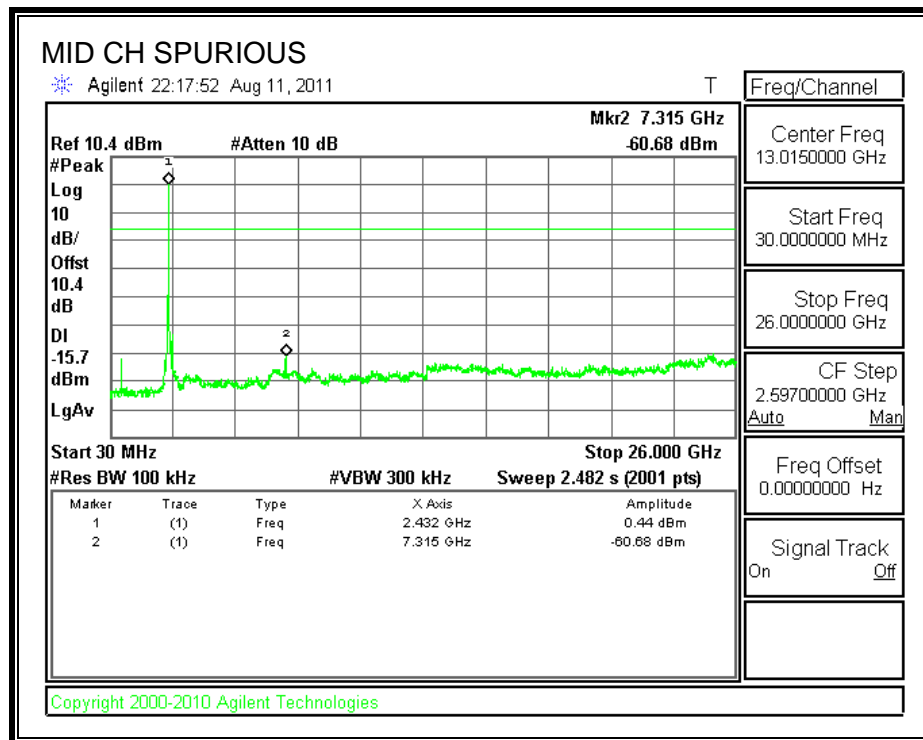
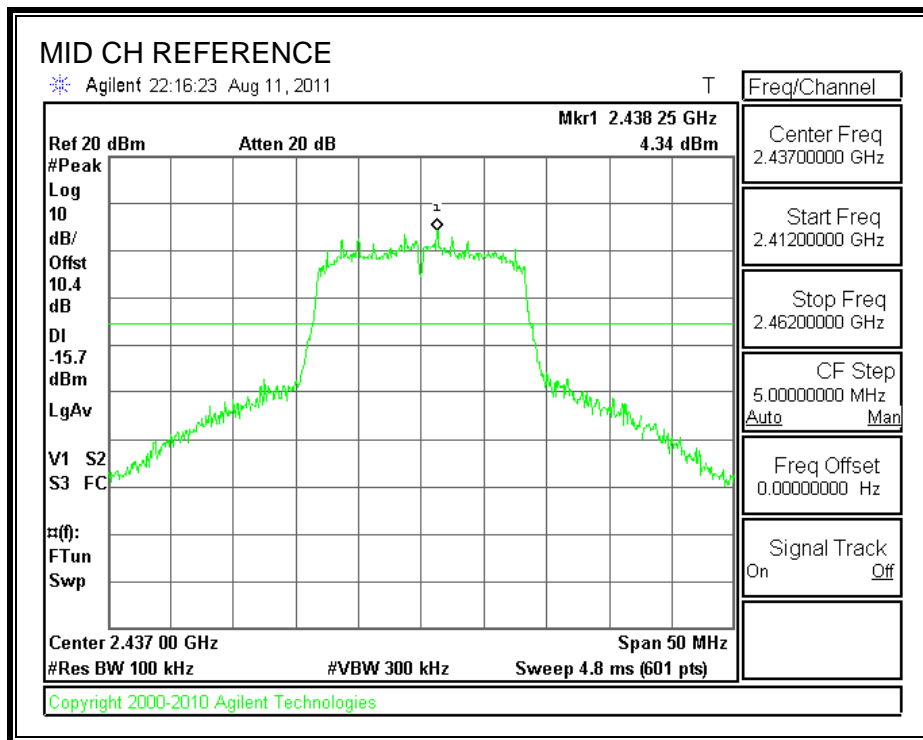
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

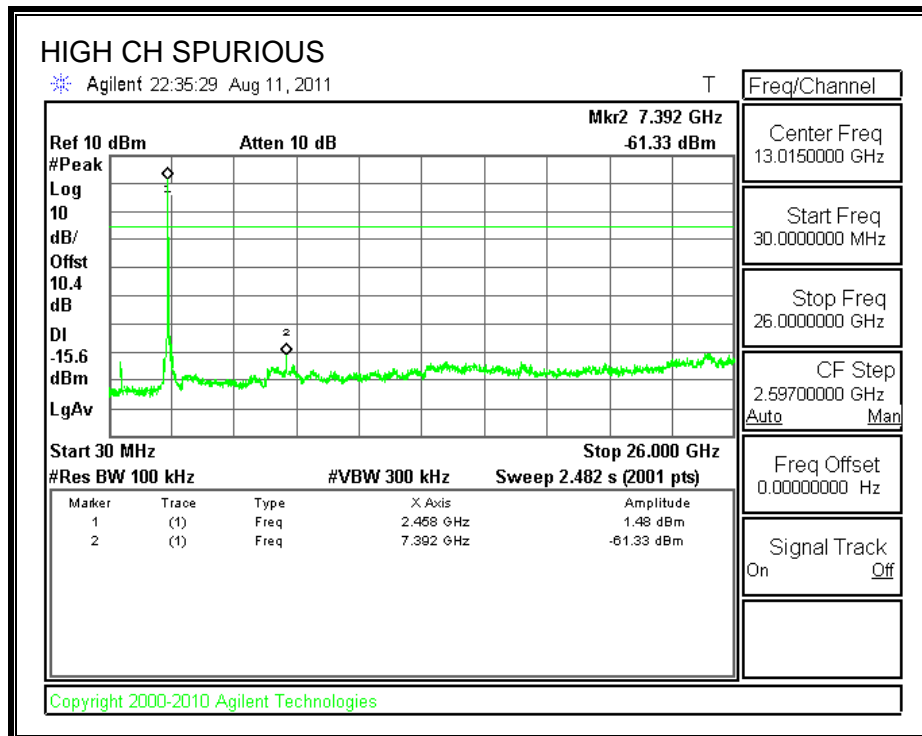
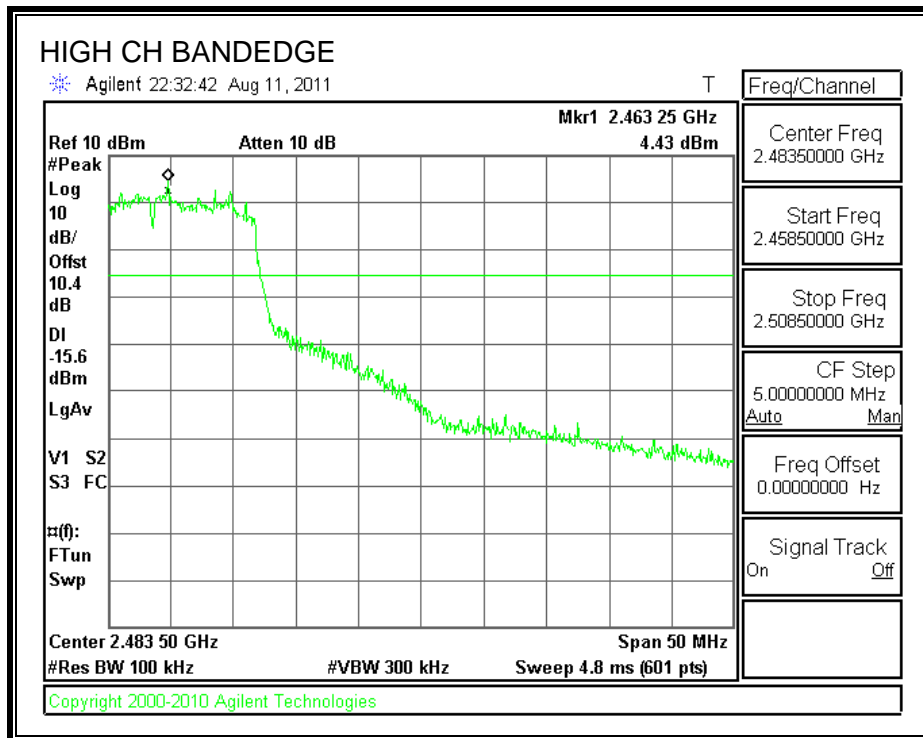
SPURIOUS EMISSIONS, LOW CHANNEL



SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



7.3. 802.11 HT 20 MODE IN THE 2.4 GHz BAND

7.3.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

The minimum 6 dB bandwidth shall be at least 500 kHz.

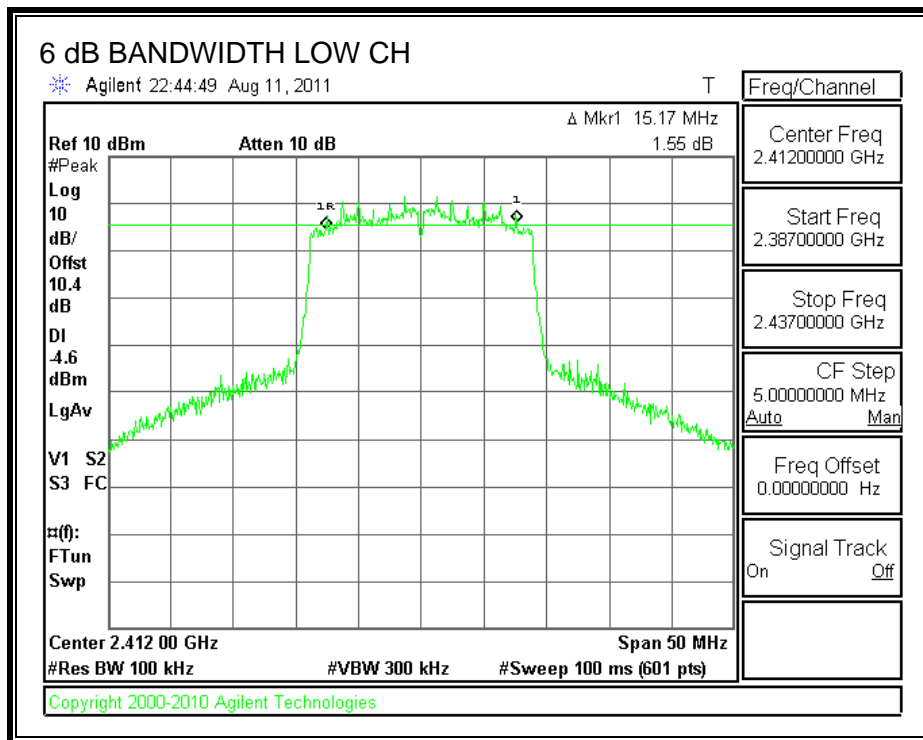
TEST PROCEDURE

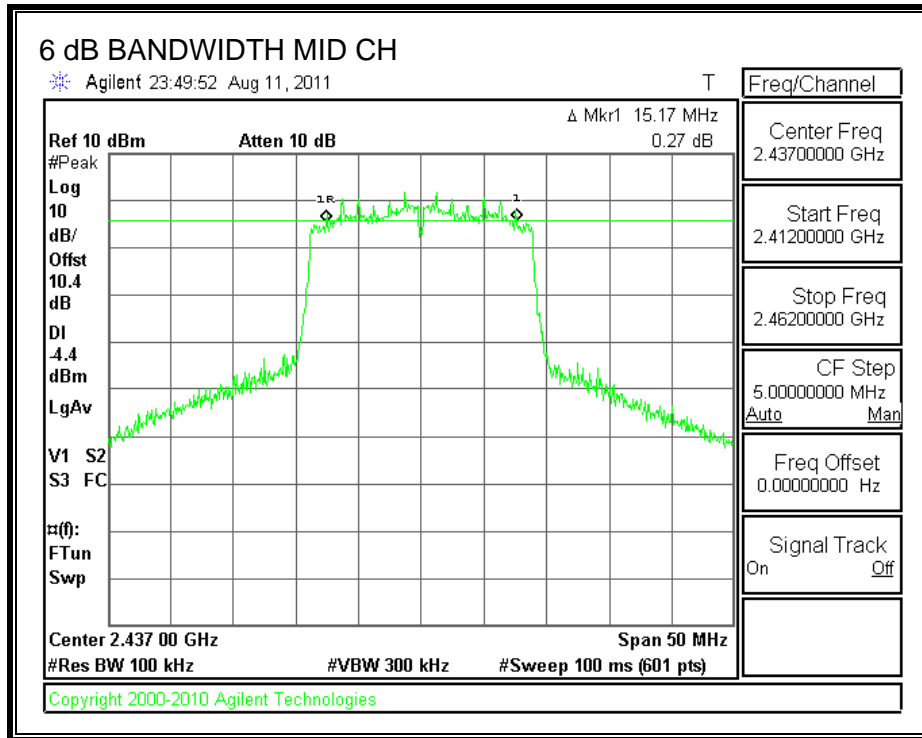
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

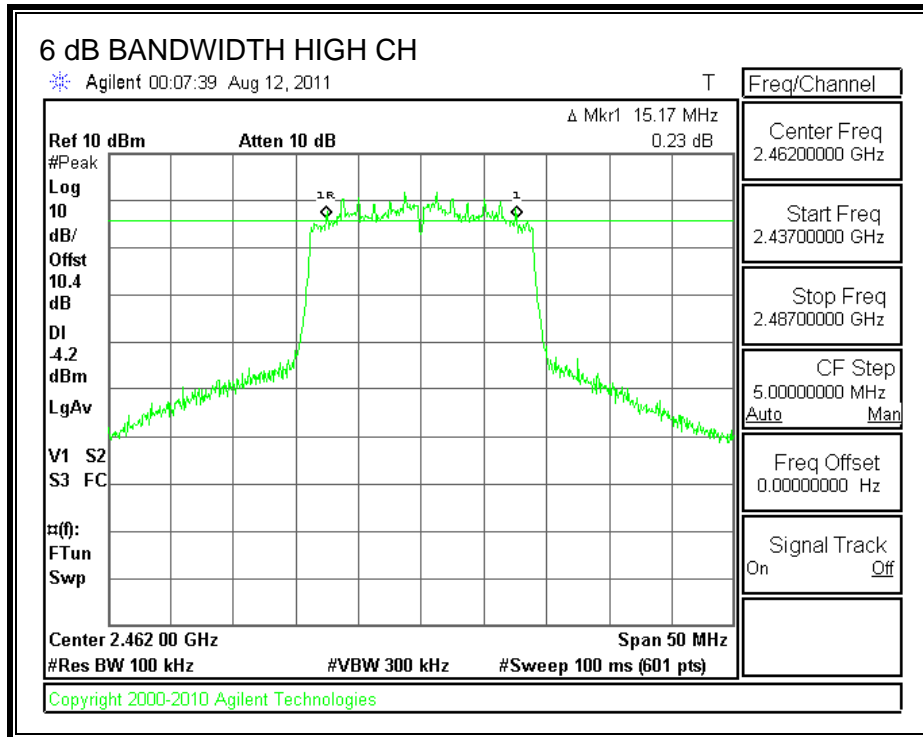
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.17	0.5
Middle	2437	15.17	0.5
High	2462	15.17	0.5

6 dB BANDWIDTH







7.3.2. OUTPUT POWER

LIMITS

FCC §15.247 (b)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

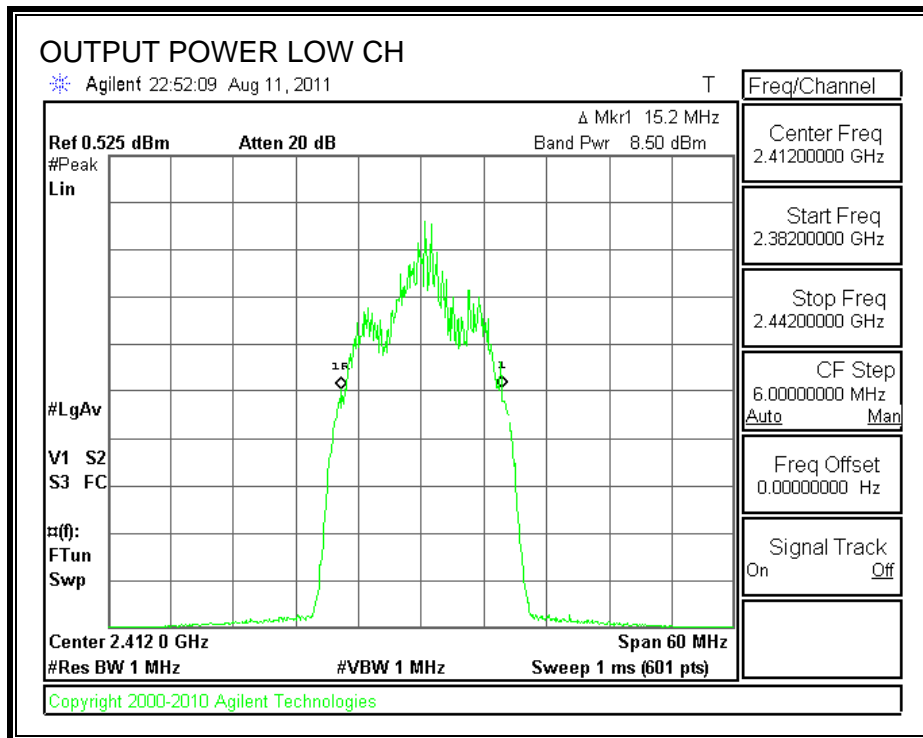
TEST PROCEDURE

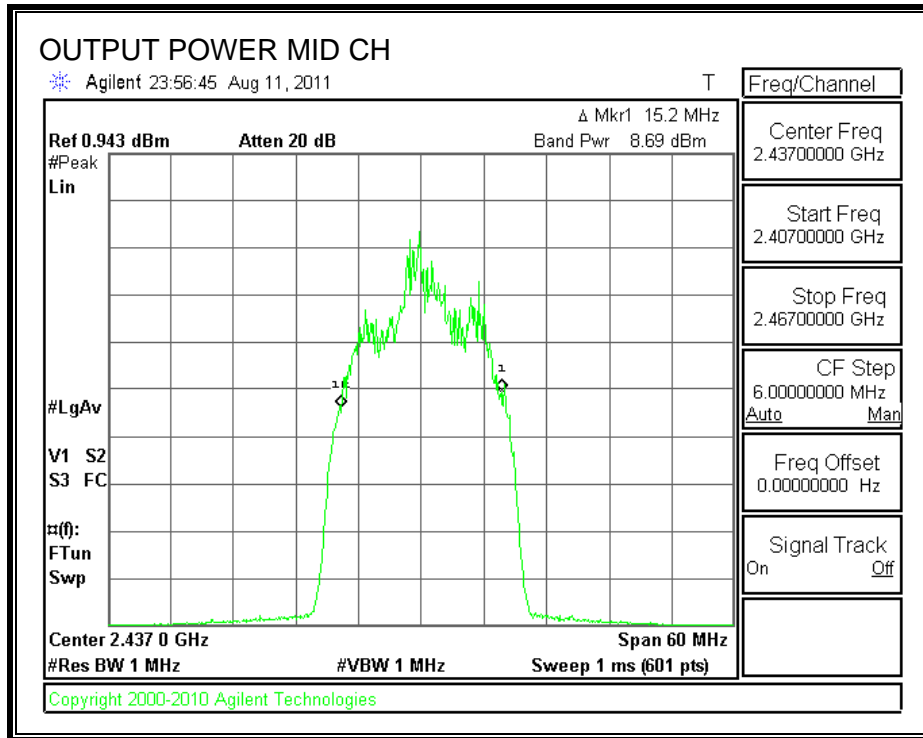
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

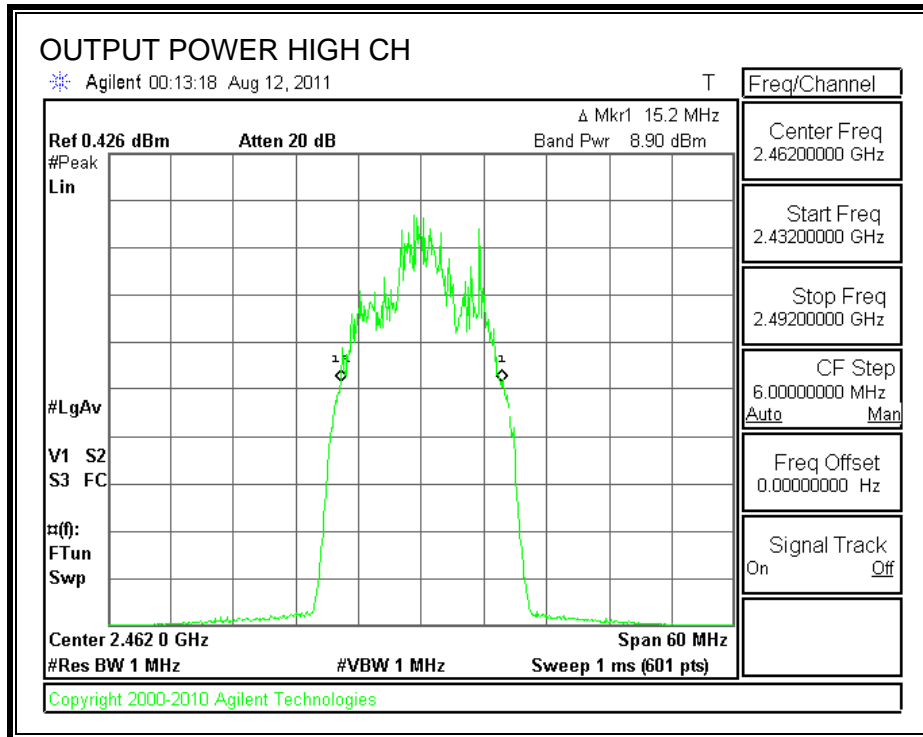
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	8.50	10.4	18.90	30	-11.10
Middle	2437	8.69	10.4	19.09	30	-10.91
High	2462	8.90	10.4	19.30	30	-10.70

OUTPUT POWER







7.3.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 7.3 dB (including 6 dB pad and 1.3 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	12.25
Middle	2437	11.98
High	2462	12.53

7.3.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

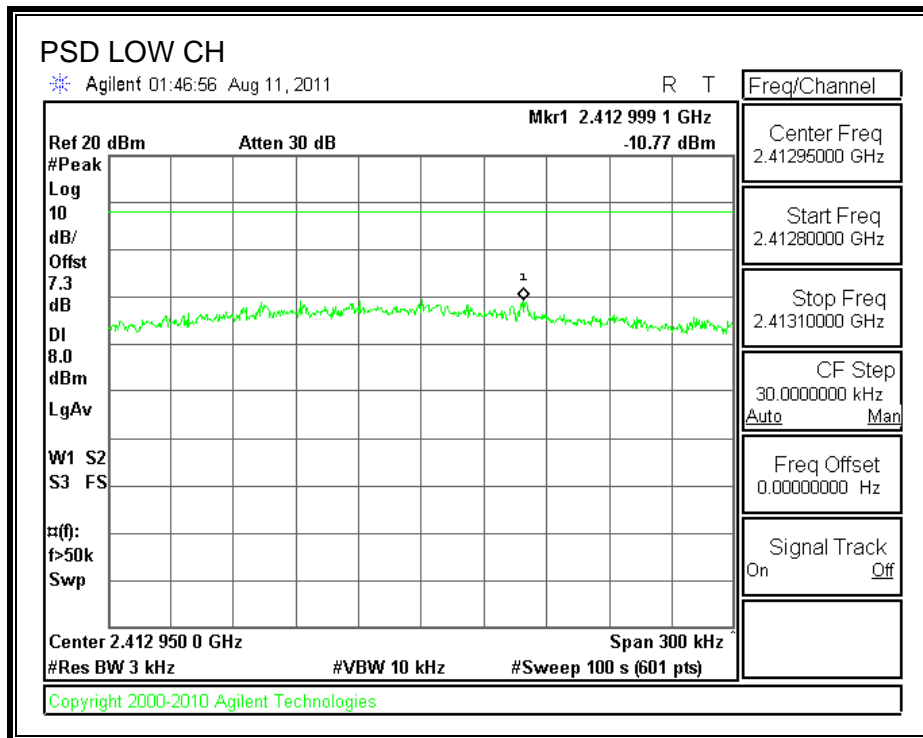
TEST PROCEDURE

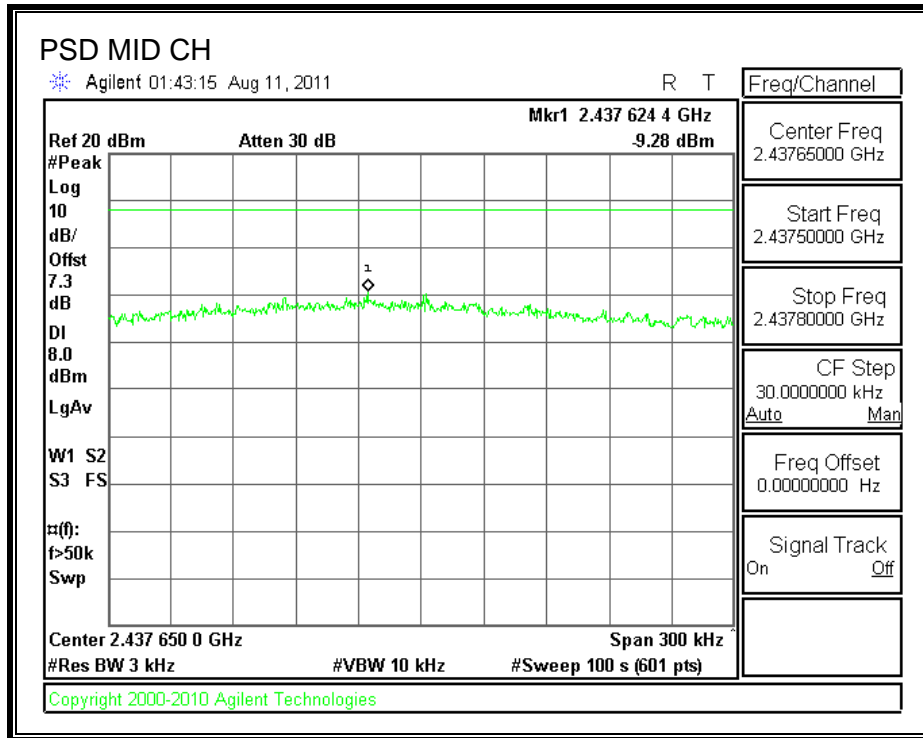
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

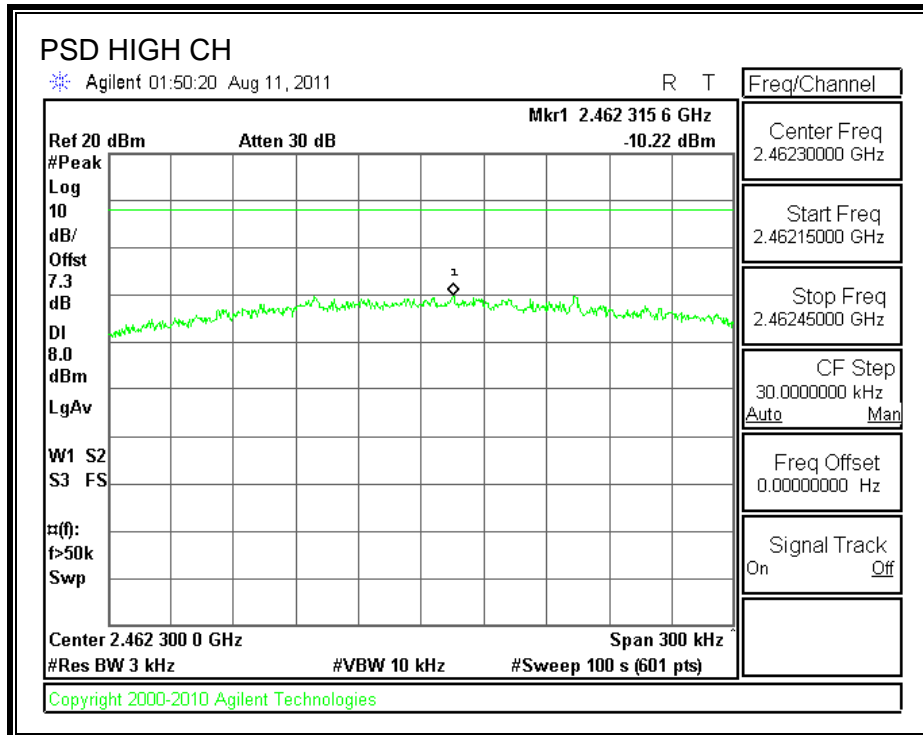
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.77	8	-18.77
Middle	2437	-9.28	8	-17.28
High	2462	-10.22	8	-18.22

POWER SPECTRAL DENSITY







7.3.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

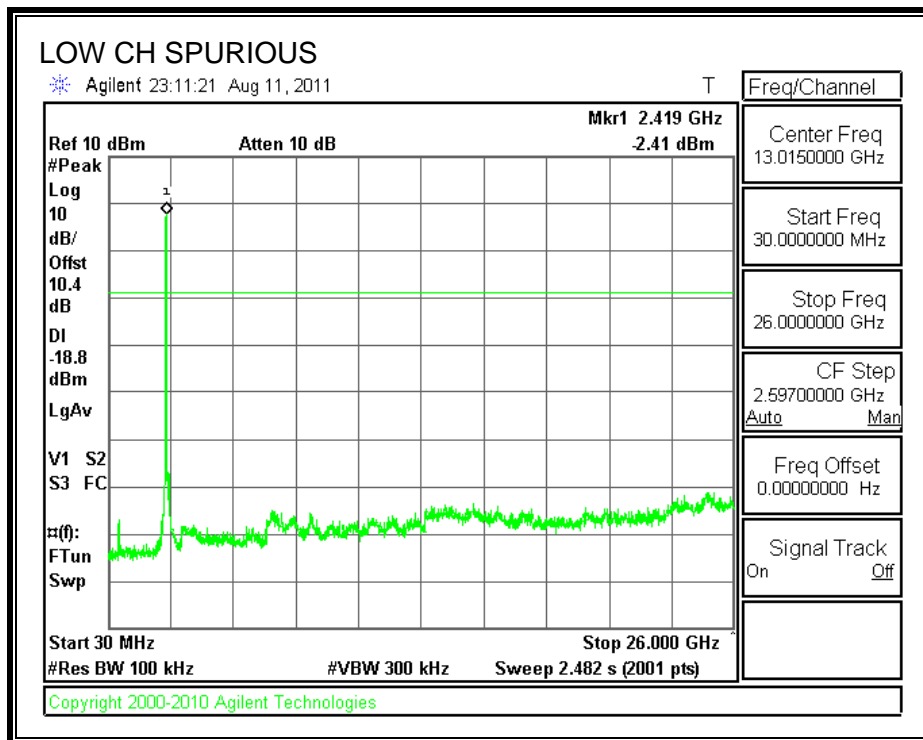
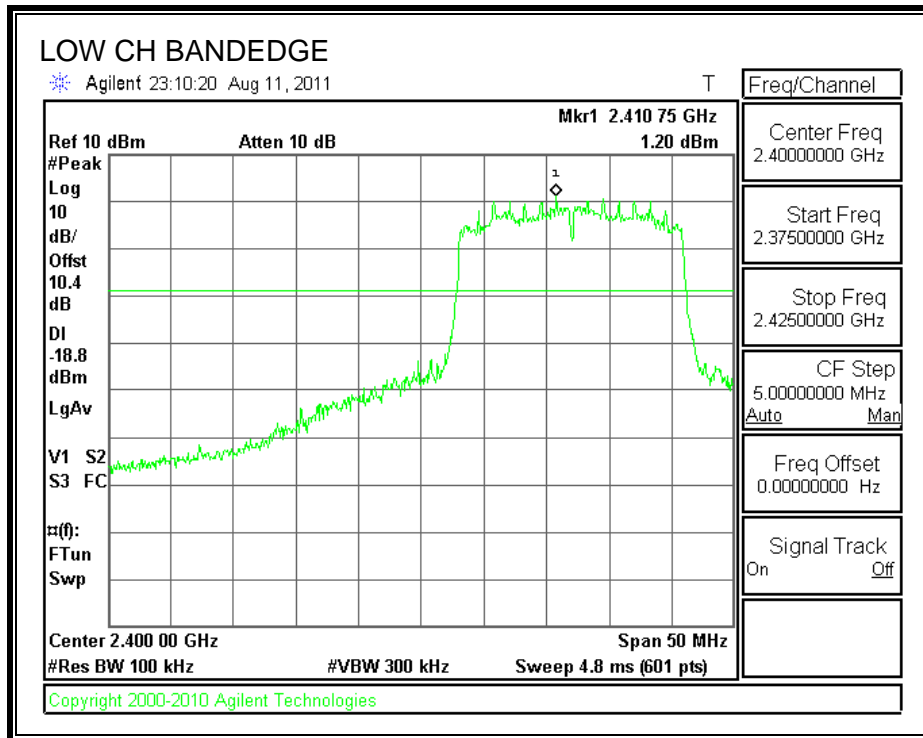
TEST PROCEDURE

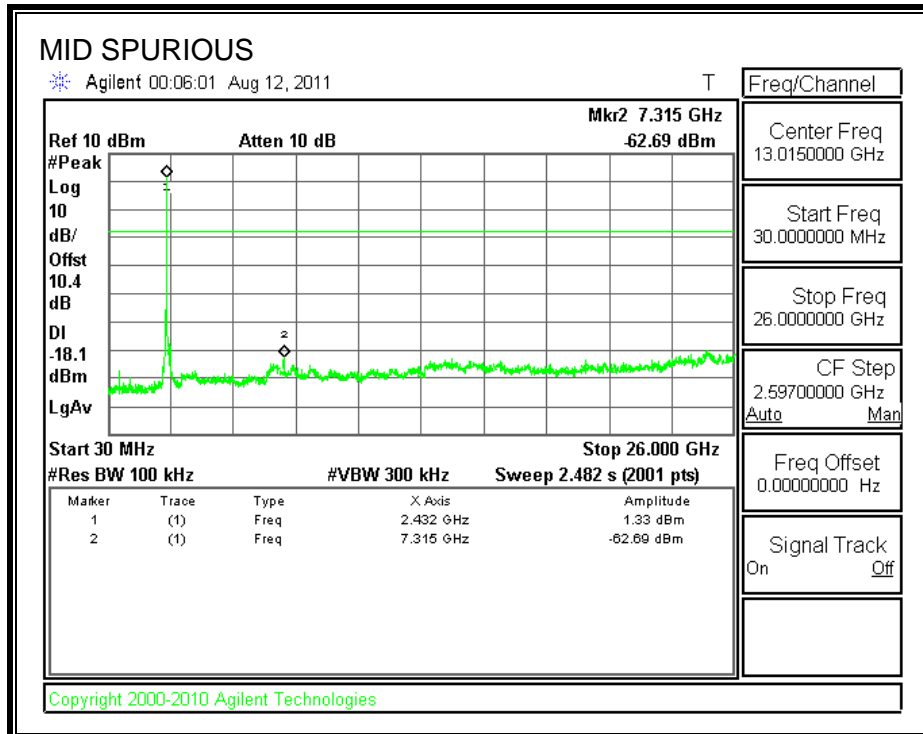
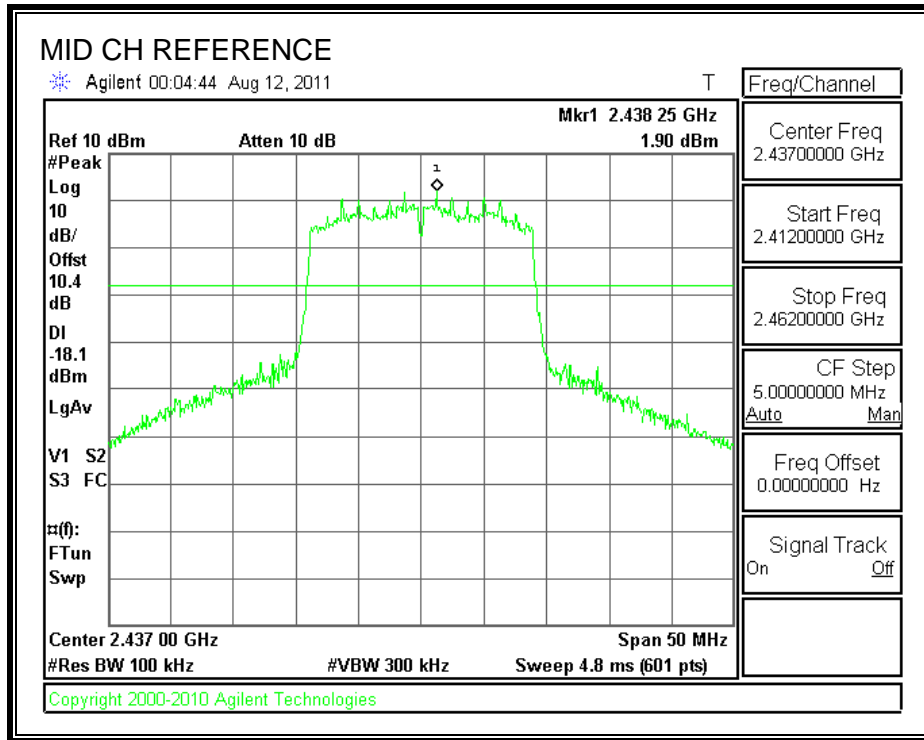
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

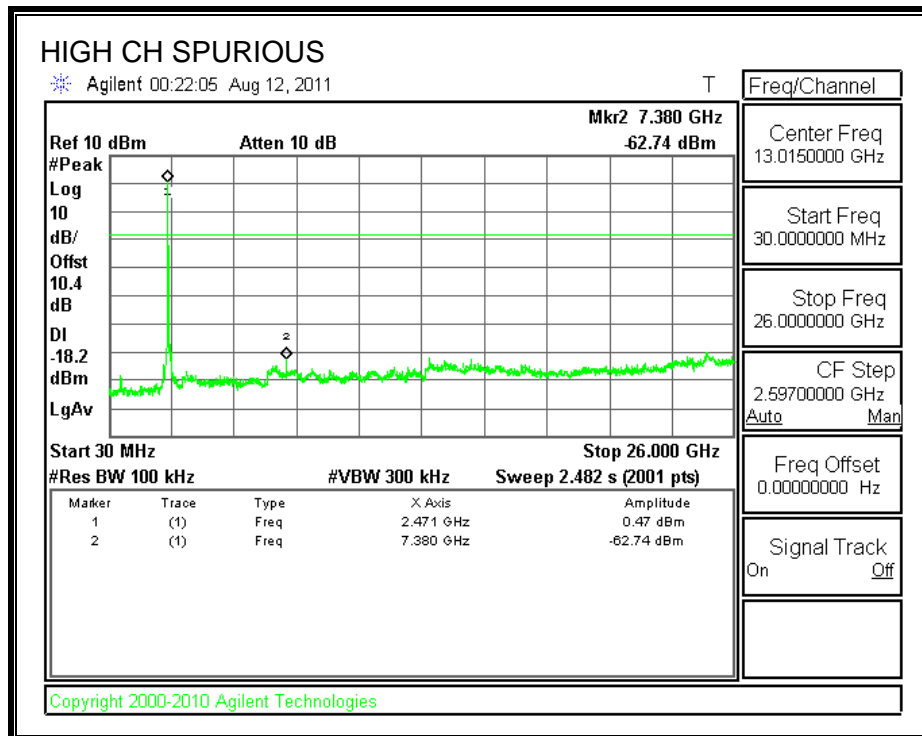
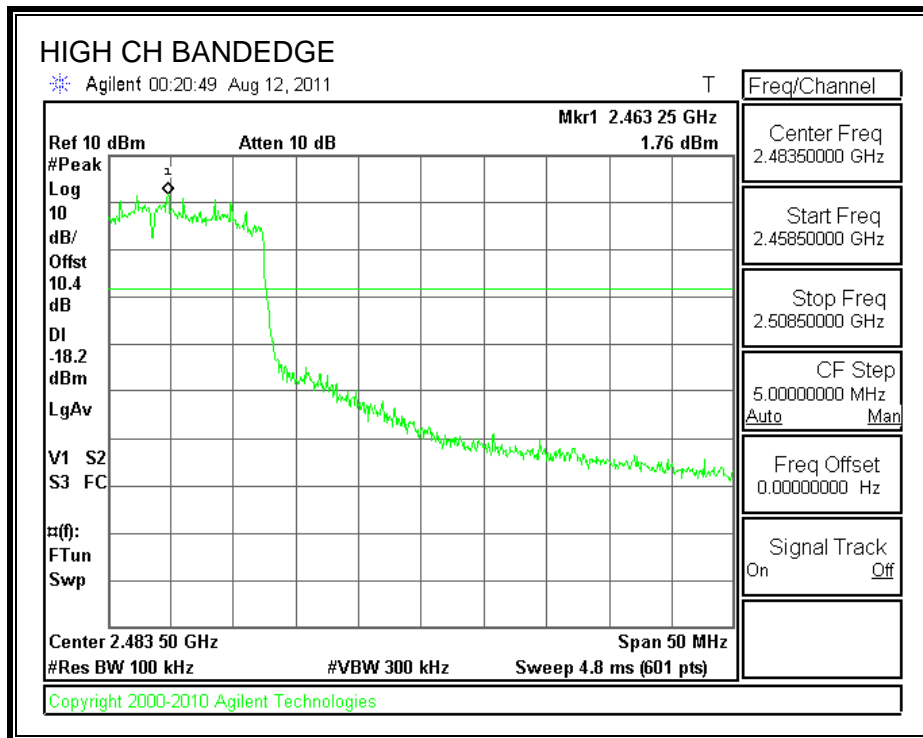
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL





SPURIOUS EMISSIONS, HIGH CHANNEL



8. RADIATED TEST RESULTS

1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

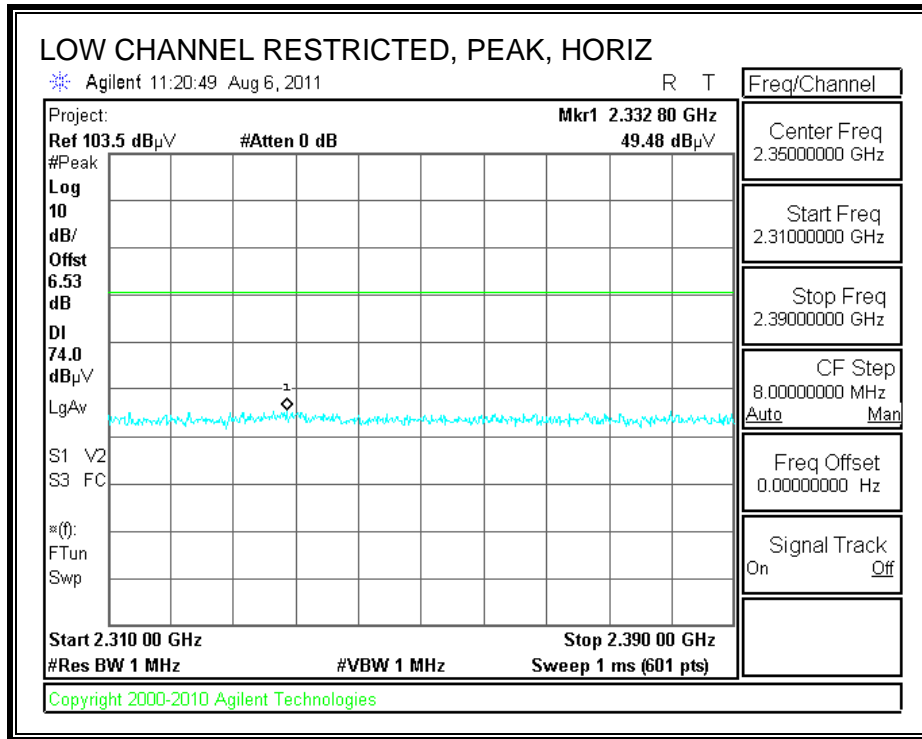
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

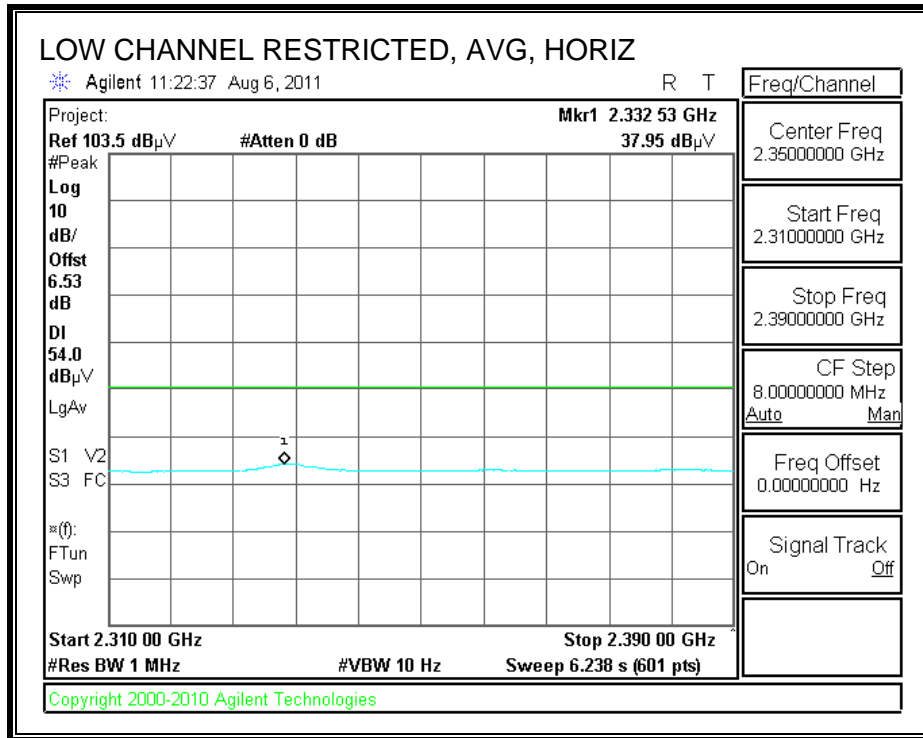
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

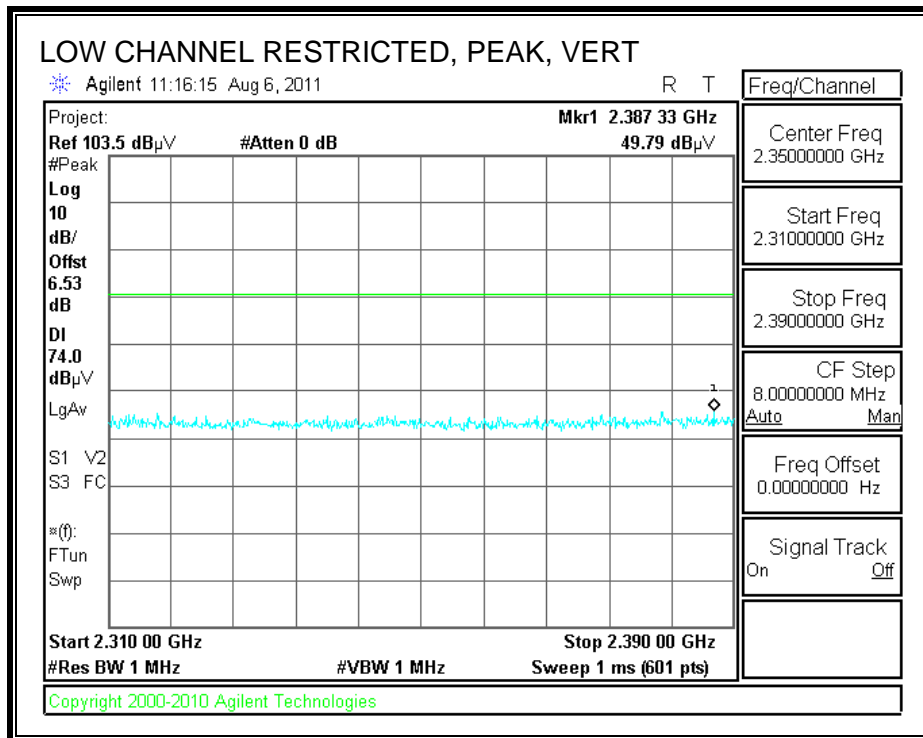
8.1. TX ABOVE 1 GHz FOR 802.11b MODE IN THE 2.4 GHz BAND

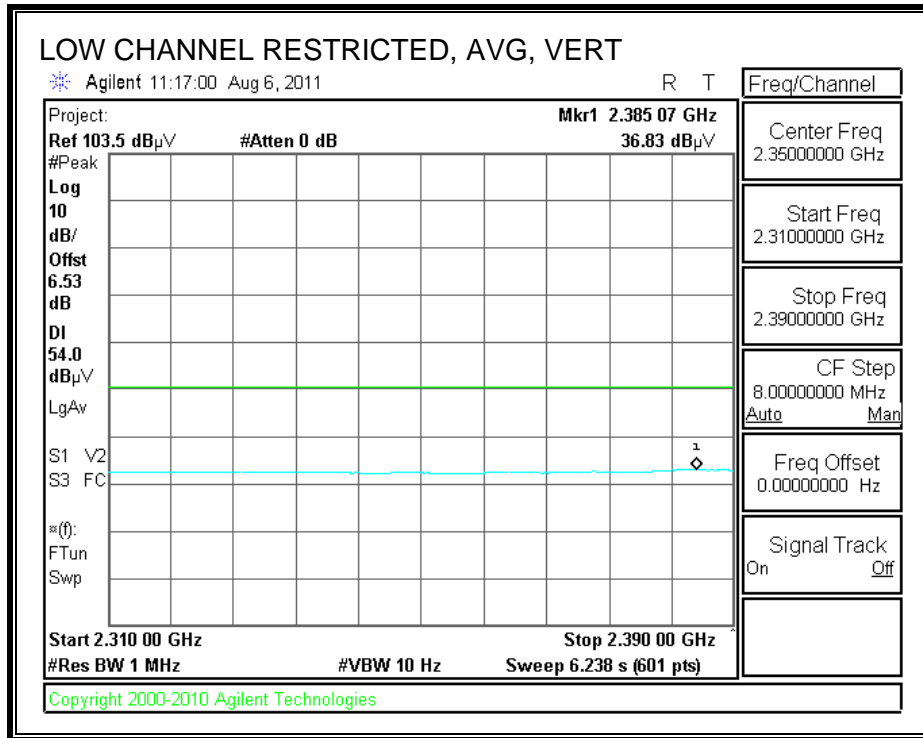
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



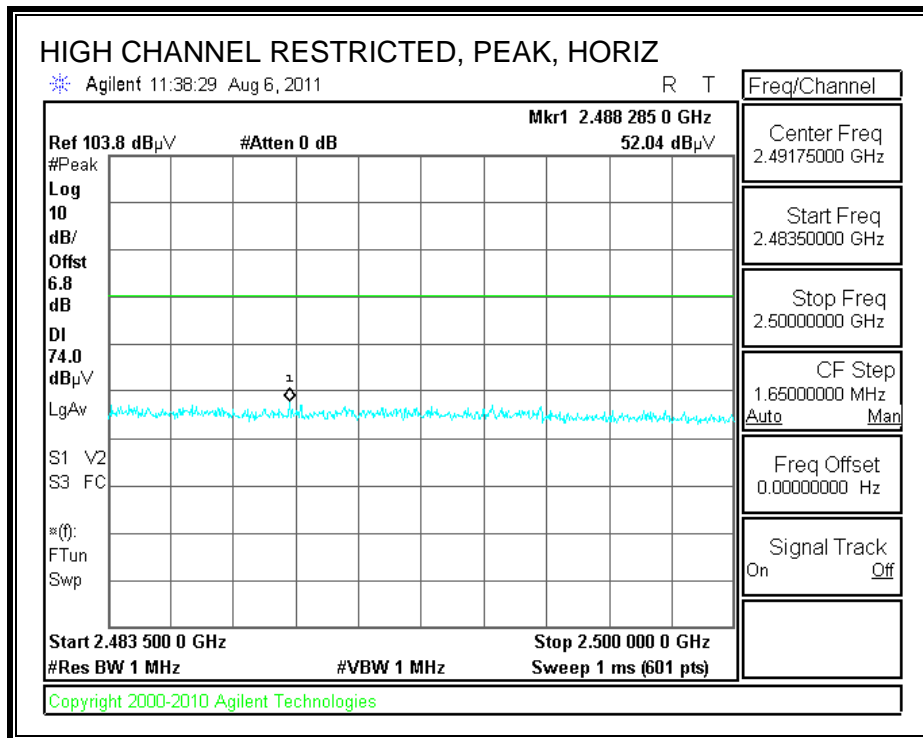


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

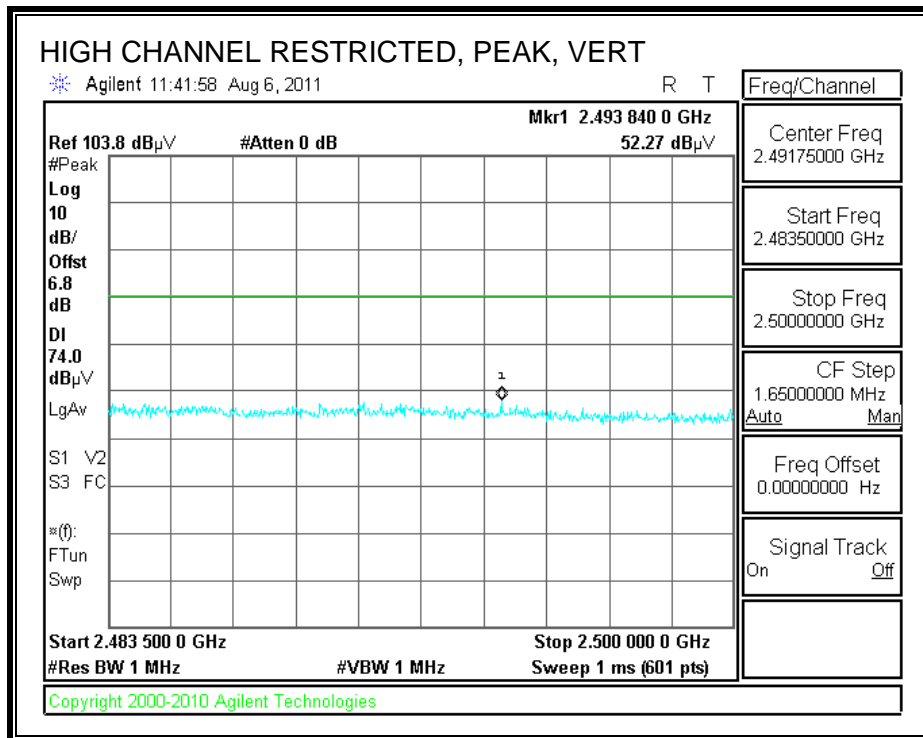




RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-A

Company: Samsung Electronics CO.,LTD
 Project #: 11113976
 Date: 8/30/2011
 Test Engineer: Thanh Nguyen
 Configuration: EUT at worst position, Battery
 Mode: Transmit b mode

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B		T39; ARA 18-26GHz; S/N:1013	FCC 15.205

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_4.0GHz		Average Measurements RBW=1MHz ; VBW=10Hz

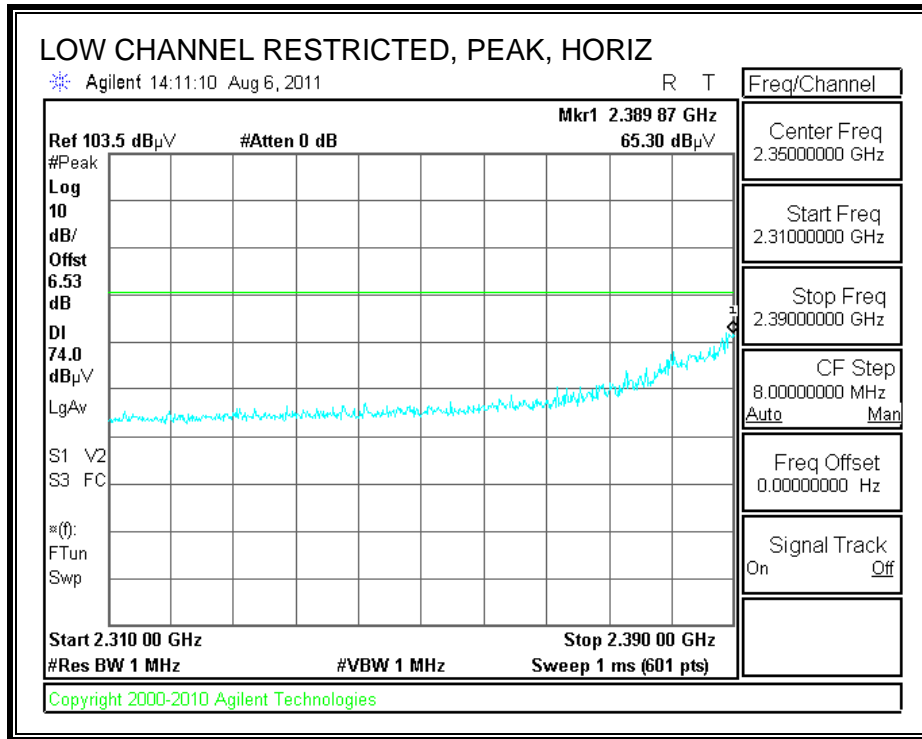
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch															
4.824	3.0	47.3	45.4	33.9	6.2	-34.1	0.0	0.6	53.9	52.0	74	54	-20.1	-2.0	H
4.824	3.0	48.6	45.7	33.9	6.2	-34.1	0.0	0.6	55.3	52.4	74	54	-18.7	-1.6	V
Mid Ch															
4.874	3.0	44.3	41.5	33.9	6.2	-34.0	0.0	0.6	51.1	48.3	74	54	-22.9	-5.7	H
4.824	3.0	46.2	44.4	33.9	6.2	-34.1	0.0	0.6	52.8	51.0	74	54	-21.2	-3.0	V
7.311	3.0	43.9	38.6	36.6	8.4	-33.1	0.0	0.6	56.3	51.0	74	54	-17.7	-3.0	V
7.311	3.0	42.1	36.9	36.6	8.4	-33.1	0.0	0.6	54.6	49.3	74	54	-19.4	-4.7	V
High Ch															
4.924	3.0	45.9	44.3	34.0	6.3	-34.0	0.0	0.6	52.8	51.1	74	54	-21.2	-2.9	H
7.386	3.0	40.3	35.0	36.6	8.4	-33.1	0.0	0.6	52.9	47.6	74	54	-21.1	-6.4	H
4.924	3.0	45.7	43.3	34.0	6.3	-34.0	0.0	0.6	52.5	50.1	74	54	-21.5	-3.9	H
7.386	3.0	43.4	37.2	36.6	8.4	-33.1	0.0	0.6	56.0	49.8	74	54	-18.0	-4.2	V

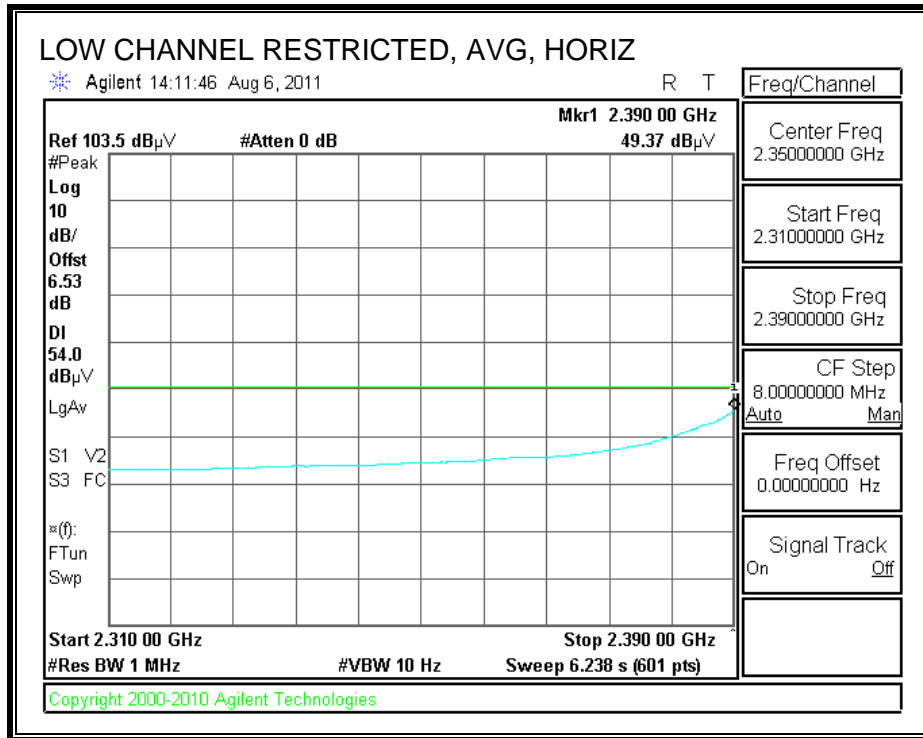
Rev. 07.08.11

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

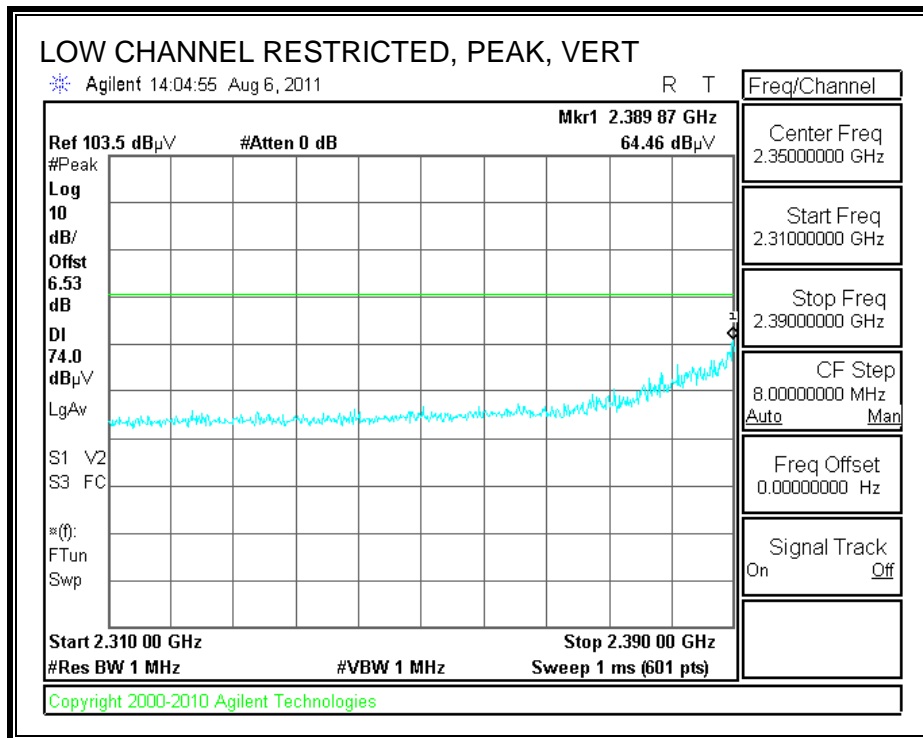
8.2. TX ABOVE 1 GHz FOR 802.11g MODE IN THE 2.4 GHz BAND

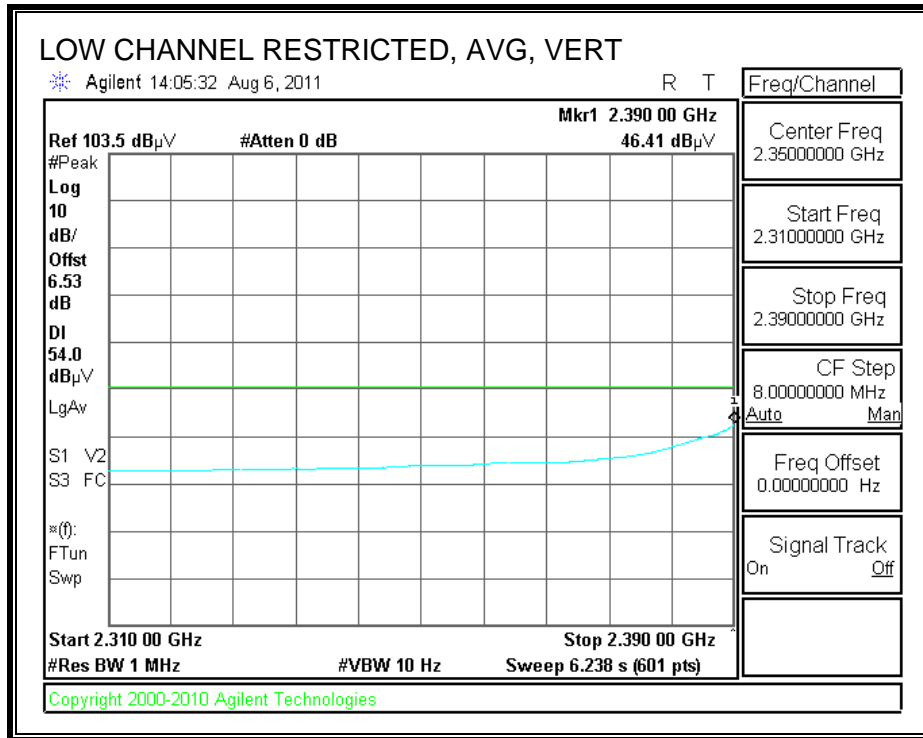
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



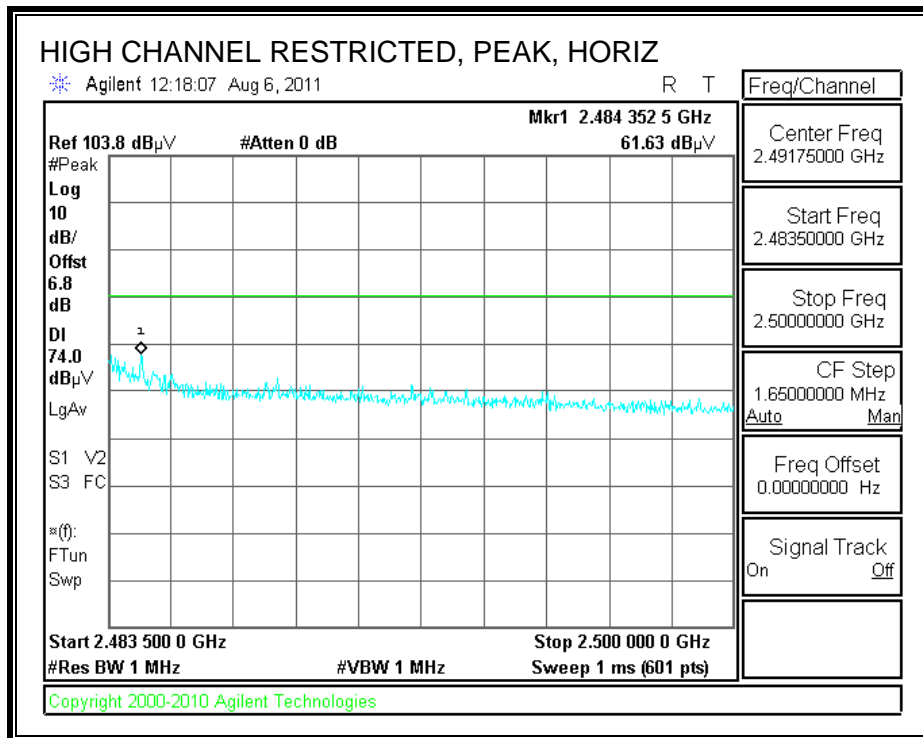


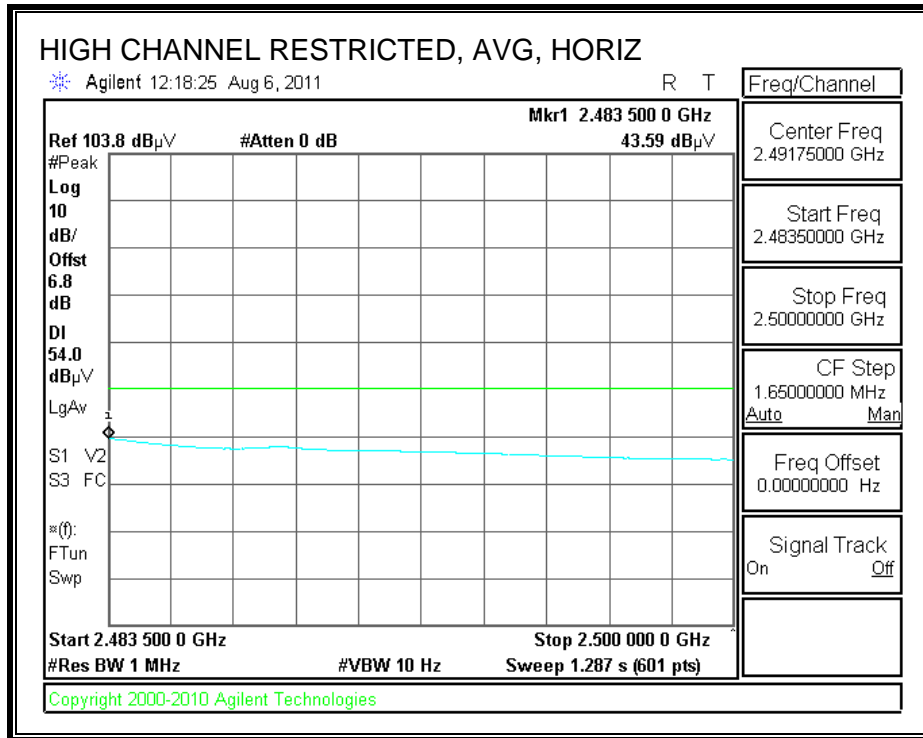
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



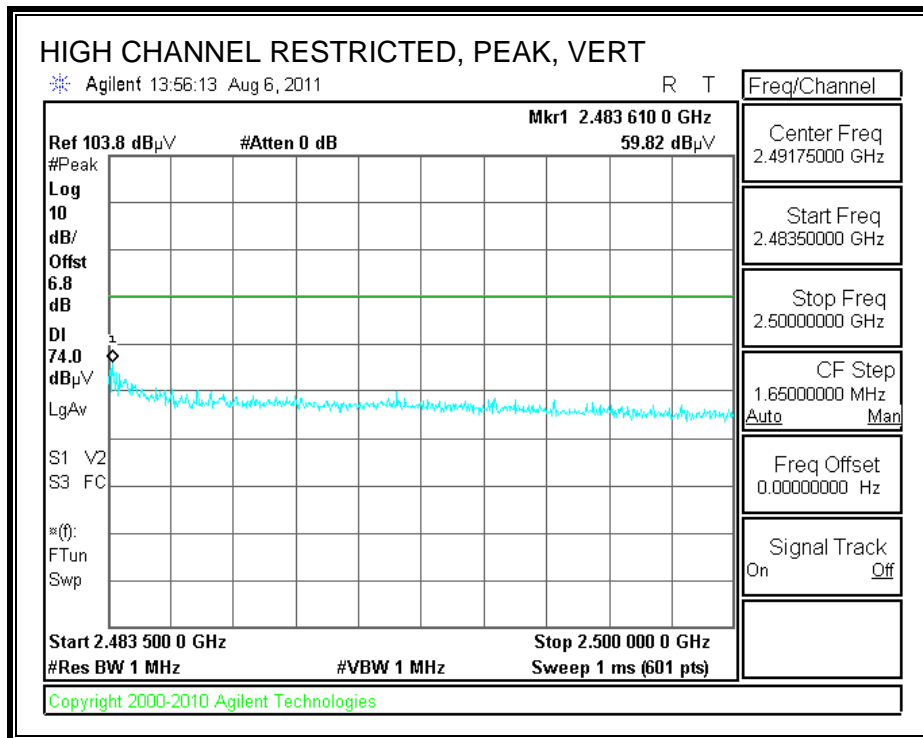


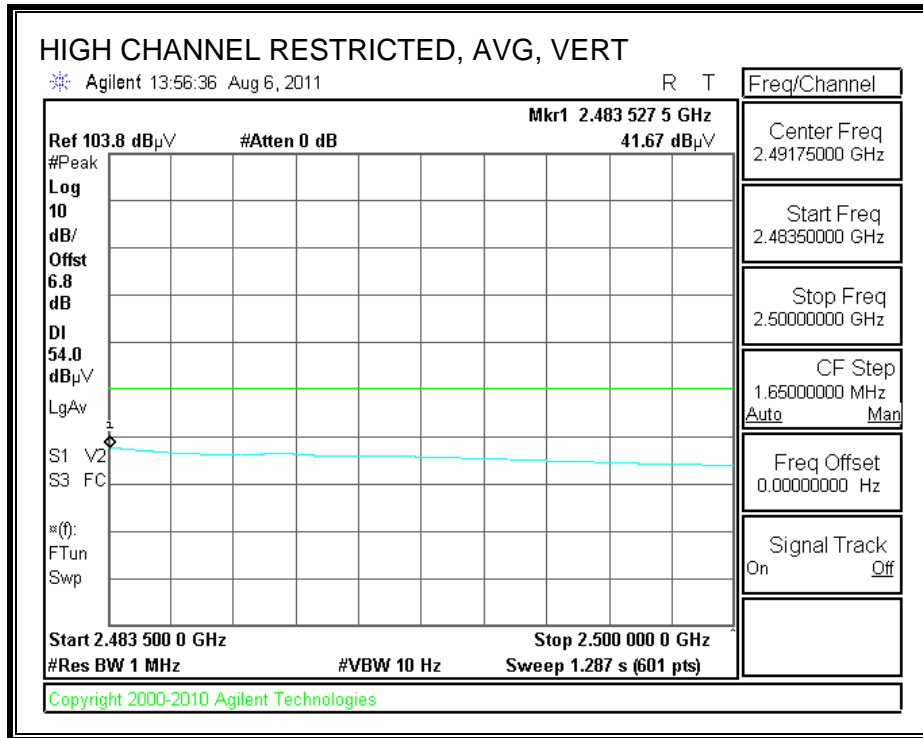
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-A

Company: Samsung Electronics CO.,LTD
 Project #: 11113976
 Date: 8/25/2011
 Test Engineer: Thanh Nguyen
 Configuration: EUT at worst position, AC Adapter, ear phone
 Mode: Transmit g mode

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T144 Miteq 3008A00931		T39; ARA 18-26GHz; S/N:1013	FCC 15.205

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_4.0GHz		Average Measurements RBW=1MHz ; VBW=10Hz

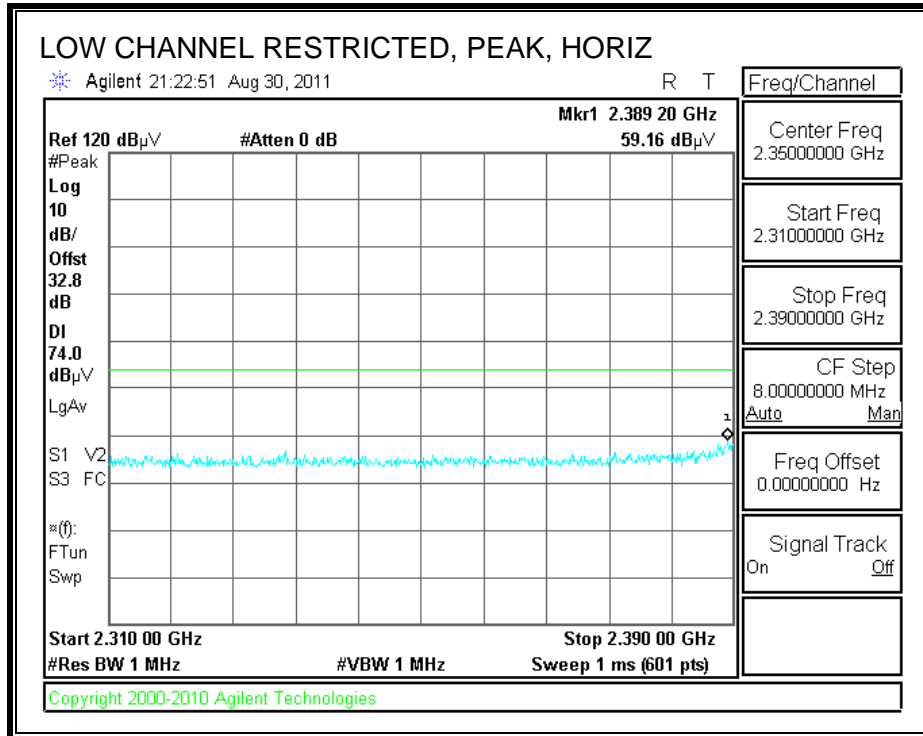
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch															
4.824	3.0	51.1	38.4	34.6	6.2	-35.5	0.0	0.6	57.0	44.3	74	54	-17.0	-9.7	V
4.824	3.0	53.2	42.1	34.6	6.2	-35.5	0.0	0.6	59.1	48.0	74	54	-14.9	-6.0	H
Mid Ch															
4.874	3.0	53.4	38.4	34.7	6.2	-35.5	0.0	0.6	59.4	44.4	74	54	-14.6	-9.6	V
7.311	3.0	47.3	33.2	36.2	8.4	-35.4	0.0	0.6	57.1	43.0	74	54	-16.9	-11.0	V
4.874	3.0	48.3	35.2	34.7	6.2	-35.5	0.0	0.6	54.4	41.3	74	54	-19.6	-12.7	H
7.311	3.0	47.3	31.8	36.2	8.4	-35.4	0.0	0.6	57.1	41.6	74	54	-16.9	-12.4	H
High Ch															
4.924	3.0	52.4	37.6	34.8	6.3	-35.5	0.0	0.6	58.6	43.8	74	54	-15.4	-10.2	V
7.386	3.0	44.4	31.4	36.3	8.4	-35.5	0.0	0.6	54.3	41.3	74	54	-19.7	-12.7	V
4.924	3.0	51.7	38.5	34.8	6.3	-35.5	0.0	0.6	57.9	44.7	74	54	-16.1	-9.3	H
7.386	3.0	43.4	31.3	36.3	8.4	-35.5	0.0	0.6	53.3	41.2	74	54	-20.7	-12.8	H
No other emissions were detected above the system noise floor.															H
															H

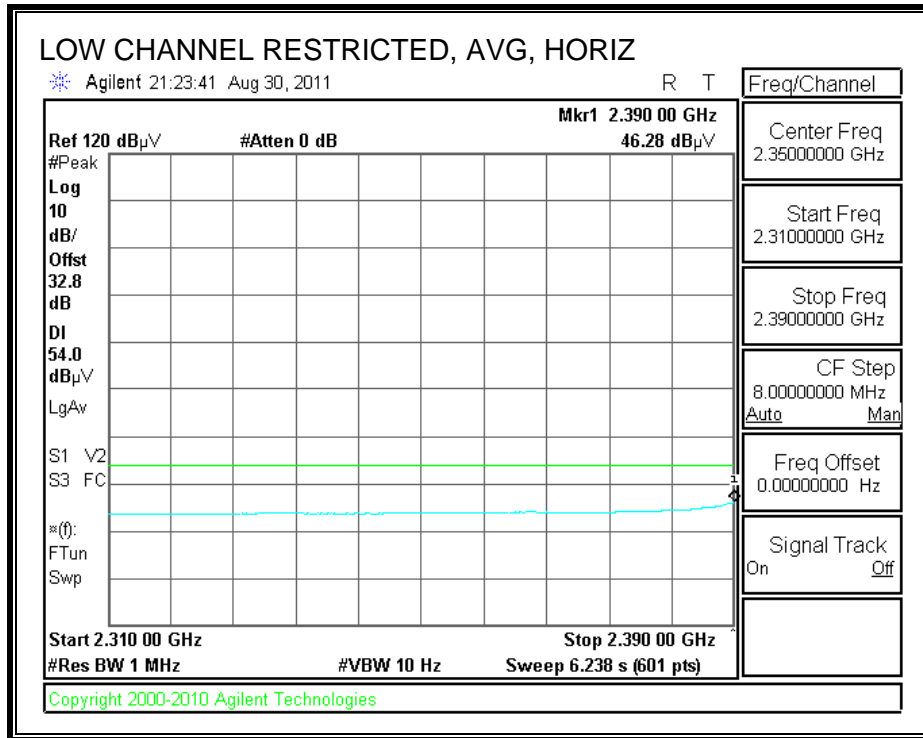
Rev. 07.08.11

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

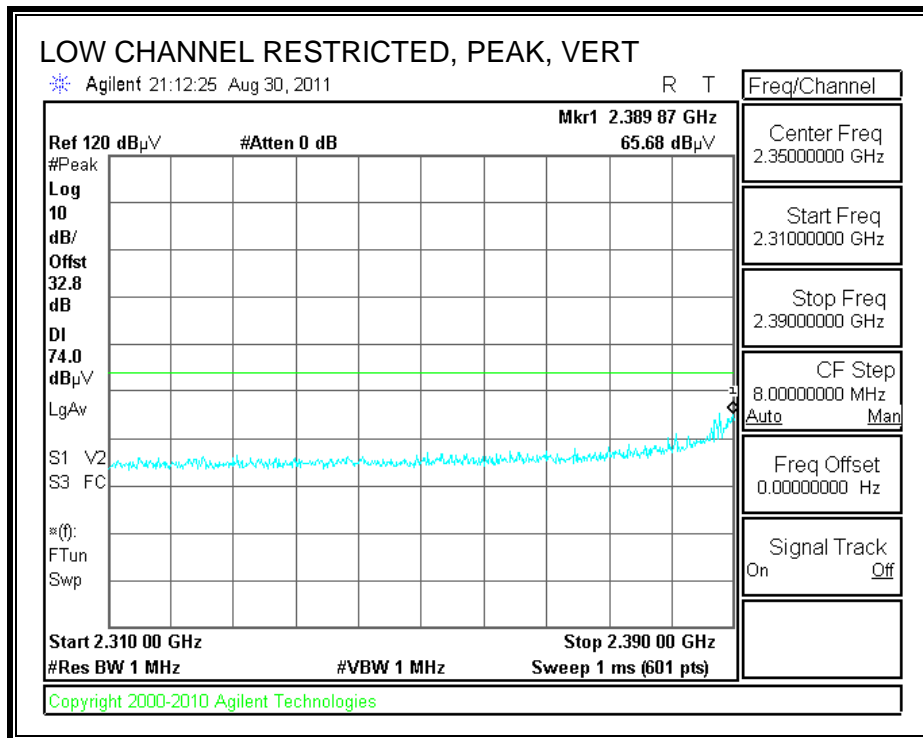
8.3. TX ABOVE 1 GHz FOR 802.11n HT20 MODE IN THE 2.4 GHz BAND

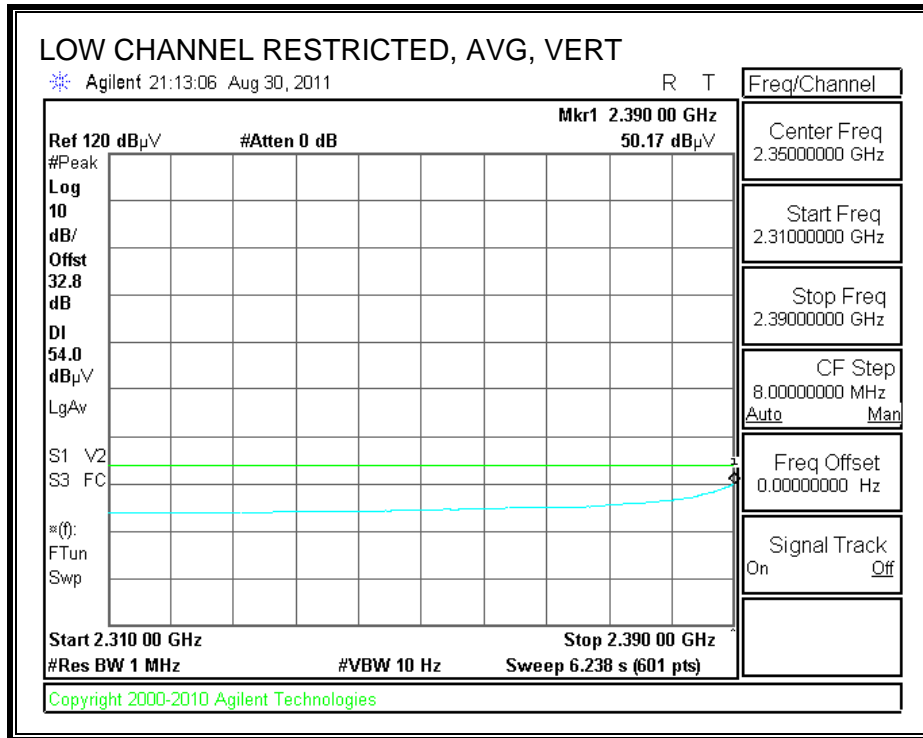
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



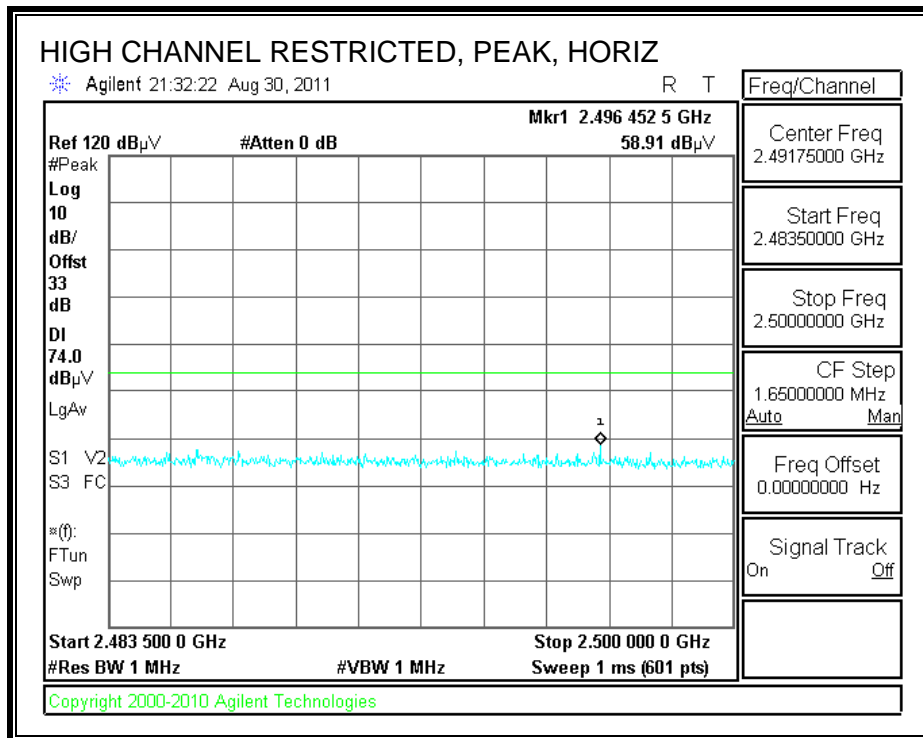


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

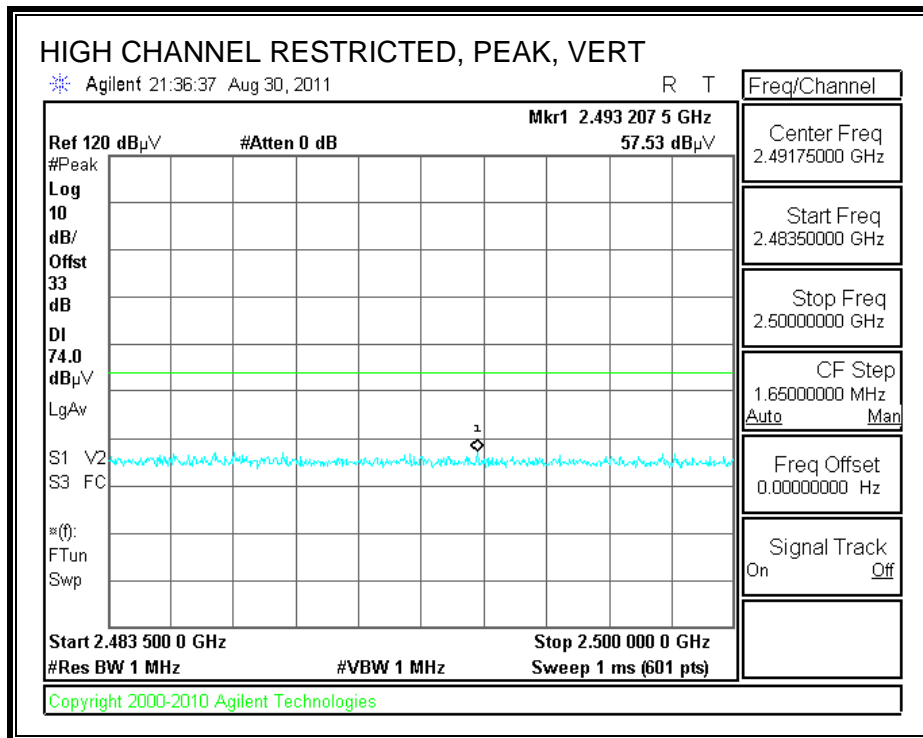


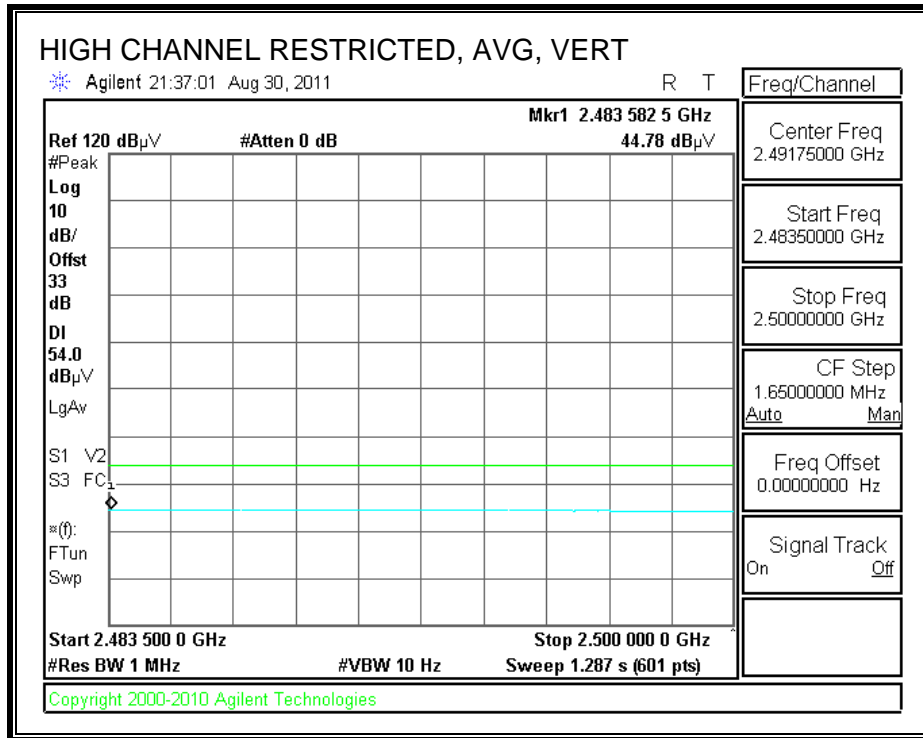


RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-A

Company: Samsung Electronics CO.,LTD
 Project #: 11113976
 Date: 8/30/2011
 Test Engineer: Thanh Nguyen
 Configuration: EUT at worst position, battery, earphone
 Mode: Transmit HT20

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T144 Miteq 3008A00931		T39; ARA 18-26GHz; S/N:1013	FCC 15.205

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	
3' cable 22807700	12' cable 22807600	20' cable 22807500		R_001	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz

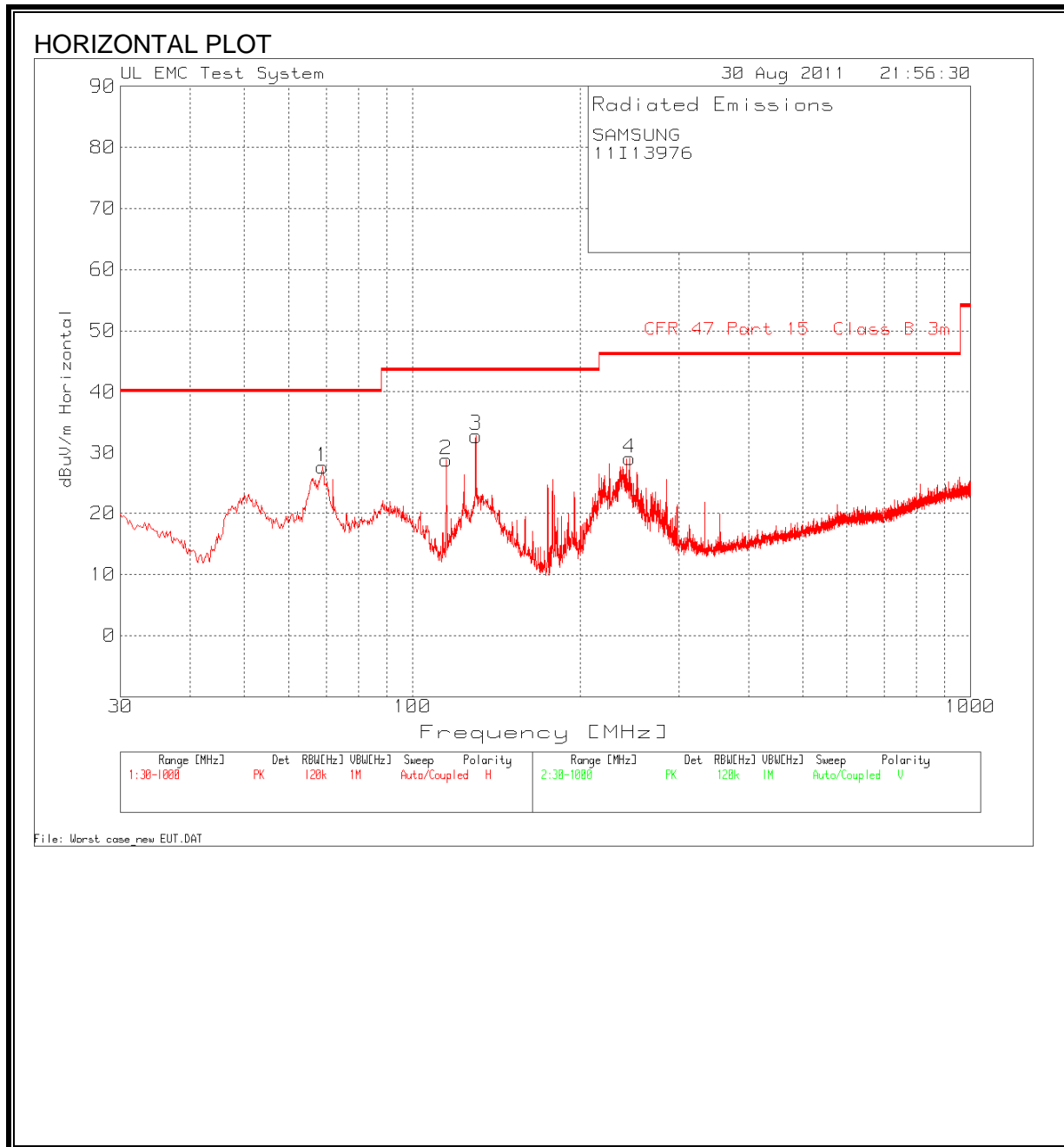
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch															
4.824	3.0	45.1	31.9	34.6	6.2	-35.5	0.0	0.0	50.4	37.3	74	54	-23.6	-16.7	V
4.824	3.0	42.6	28.6	34.6	6.2	-35.5	0.0	0.0	48.0	33.9	74	54	-26.0	-20.1	H
Mid Ch															
4.874	3.0	43.9	29.6	34.7	6.2	-35.5	0.0	0.0	49.3	35.0	74	54	-24.7	-19.0	V
7.311	3.0	43.6	29.5	36.2	8.4	-35.4	0.0	0.0	52.8	38.6	74	54	-21.2	-15.4	V
4.874	3.0	44.0	31.1	34.7	6.2	-35.5	0.0	0.0	49.4	36.5	74	54	-24.6	-17.5	H
7.311	3.0	43.8	28.8	36.2	8.4	-35.4	0.0	0.0	53.0	38.0	74	54	-21.0	-16.0	H
High Ch															
4.924	3.0	51.8	37.3	34.8	6.3	-35.5	0.0	0.0	57.4	42.9	74	54	-16.6	-11.1	V
7.386	3.0	43.3	30.2	36.3	8.4	-35.5	0.0	0.0	52.6	39.5	74	54	-21.4	-14.5	V
4.924	3.0	51.4	38.2	34.8	6.3	-35.5	0.0	0.0	56.9	43.7	74	54	-17.1	-10.3	H
7.386	3.0	42.4	29.8	36.3	8.4	-35.5	0.0	0.0	51.7	39.0	74	54	-22.3	-15.0	H
No other emissions were detected above the system noise floor.															H
															H

Rev. 07.08.11

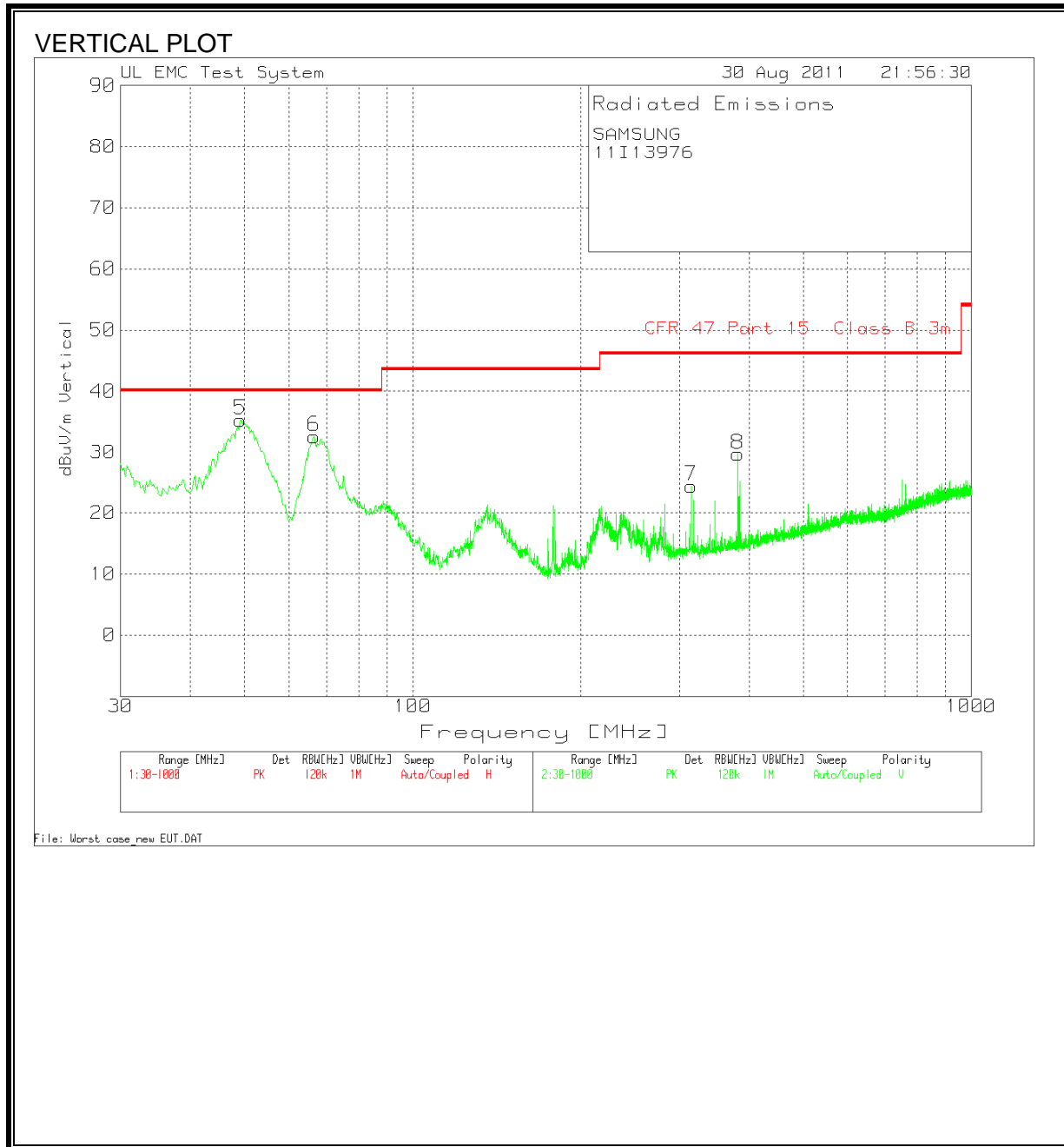
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

8.4. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



EMI DATA

SAMSUNG										
11113976										
Range 1 30 - 1000MHz										
Test Freq. (MHz)	Meter Reading (dBuV)	Detector	Cable Loss [dB]	Pre-Amp Gain [dB]	Antenna Factor [dB]	10m to 3m Conversion [dB]	CISPR22 Class B 10 m Limit	Margin	Height [cm]	Polarity
68.9628	46.55	PK	0.9	-28.1	8.2	27.55	40	-12.45	251	Horz
115.0979	43.11	PK	1.1	-28	12.5	28.71	43.5	-14.79	251	Horz
129.8301	45.79	PK	1.1	-27.9	13.8	32.79	43.5	-10.71	251	Horz
245.3617	43.07	PK	1.6	-27.5	11.8	28.97	46	-17.03	101	Horz
Range 2 200 - 1000MHz										
Test Freq. (MHz)	Meter Reading (dBuV)	Detector	Cable Loss [dB]	Pre-Amp Gain [dB]	Antenna Factor [dB]	10m to 3m Conversion [dB]	CISPR22 Class B 10 m Limit	Margin	Height [cm]	Polarity
49.1906	52.99	PK	0.8	-28.2	9.7	35.29	40	-4.71	101	Vert
66.6367	51.75	PK	0.9	-28.2	8.1	32.55	40	-7.45	176	Vert
315.5336	36.12	PK	1.8	-27.3	13.7	24.32	46	-21.68	101	Vert
382.2162	40.79	PK	2	-27.8	14.7	29.69	46	-16.31	101	Vert

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

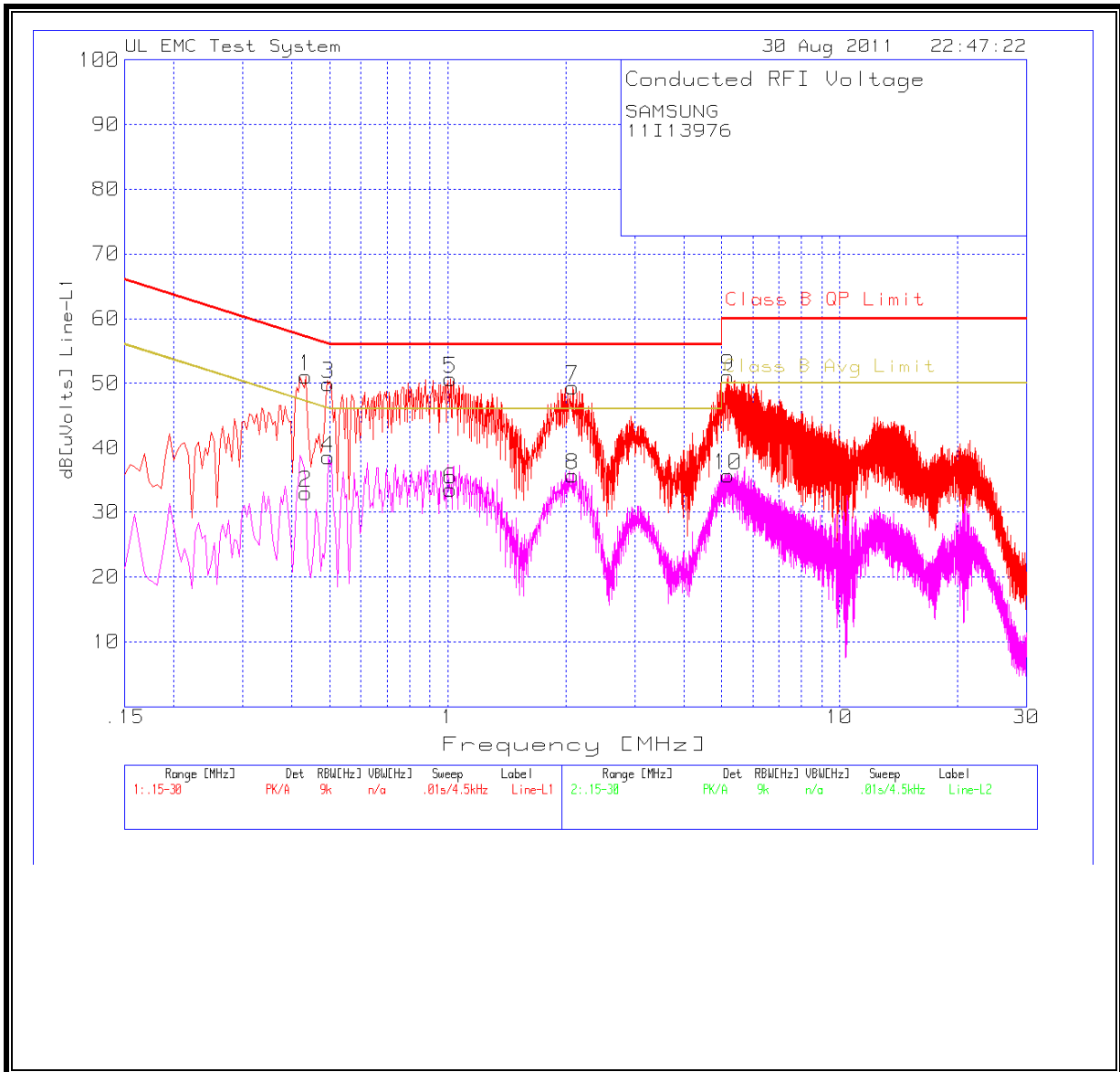
ANSI C63.4

RESULTS

6 WORST EMISSIONS

SAMSUNG									
11113976									
Line-L1 .15 - 30MHz									
Test Freq. (MHz)	Meter Reading	Detector	LISN [dB]	Conduct ed Emission Cable [dB]	Correct Reading (dBuVolts)	Class B Quasi-peak Limit	Quasi-Peak Margin	Class B Average Limit	Average Margin
0.4335	51.08	PK	0	0	51.08	57.2	-6.12		
0.4335	32.94	Av	0	0	32.94	57.2	-24.26	47.2	-14.26
0.4965	49.96	PK	0	0	49.96	56.1	-6.14		
0.4965	38.48	Av	0	0	38.48	56.1	-17.62	46.1	-7.62
1.014	50.71	PK	0	0	50.71	56	-5.29		
1.014	33.46	Av	0	0	33.46	56	-22.54	46	-12.54
2.085	49.37	PK	0	0	49.37	56	-6.63		
2.085	35.67	Av	0	0	35.67	56	-20.33	46	-10.33
5.1945	51.06	PK	0	0	51.06	60	-8.94		
5.1945	35.63	Av	0	0	35.63	60	-24.37	50	-14.37
Line-L2 .15 - 30MHz									
Test Freq. (MHz)	Meter Reading	Detector	LISN [dB]	Conduct ed Emission Cable [dB]	Correct Reading (dBuVolts)	Class B Quasi-peak Limit	Quasi-Peak Margin	Class B Average	Average Margin
0.429	46.06	PK	0	0	46.06	57.3	-11.24		
0.429	32.73	Av	0	0	32.73	57.3	-24.57	47.3	-14.57
0.9285	47.13	PK	0	0	47.13	56	-8.87		
0.9285	33.01	Av	0	0	33.01	56	-22.99	46	-12.99
1.9725	45.93	PK	0	0	45.93	56	-10.07		
1.9725	31.86	Av	0	0	31.86	56	-24.14	46	-14.14
5.1945	49.12	PK	0	0	49.12	60	-10.88		
5.1945	29.96	Av	0	0	29.96	60	-30.04	50	-20.04
20.697	48.48	PK	0	0	48.48	60	-11.52		
20.697	33.19	Av	0	0	33.19	60	-26.81	50	-16.81

LINE 1 RESULTS



LINE 2 RESULTS

