FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

TABLET with GSM/GPRS/EDGE/WCDMA, 802.11bgn, BT3.0

MODEL NUMBER: GT-P3100

FCC ID: A3LGTP3100

REPORT NUMBER: 12I14206-2

ISSUE DATE: FEBRUARY 17, 2012

Prepared for
SAMSUNG ELECTRONICS CO., LTD.
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SOUTH KOREA

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	02/17/12	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:	TABLET with GSM/GPRS/EDGE/WCDMA, 802.11bgn, BT3.0
MODEL:	GT-P3100
SERIAL NUMBER:	03050 (CONDUCTED), 02000 & 3006 (RADIATED)
DATE TESTED:	FEBRUARY 8-17, 2012

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:

STEVE AGUILAR
EMC TECHNICIAN
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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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 a tablet with GSM/GPRS/EDGE/WCDMA, 802.11bgn, and Bluetooth 3.0.

The radio module is manufactured by Broadcom Corporations.

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	13.33	21.53
2412 - 2462	802.11g	18.71	74.30
2412 - 2462	802.11n HT20	18.35	68.39

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an 802.11 b/g/n and a Bluetooth antenna, with a maximum gain as stated in the table below:

No.	Contents	Standards			Unit	Condition	Remarks
		Min.	Avg.	Max.			
1	Gain of BT/WIFI	-6.4	-	-1.4	dBi	Based on Max. Gain in H-Plane.	
2	VSWR of BT/WIFI	1.2	1.7	2.2	-	2213 MHz	Jig Data
		1.2	1.7	2.2	-	2233 MHz	

5.4. SOFTWARE AND FIRMWARE

Bluetooth firmware - BCM4330B1_002.001.003.0634.0678.hcd
Wi-Fi Firmware Rev 5.90.125.1191

EUT driver software version: P3100.001

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

For the fundamental investigation, since the EUT is a portable device that has three orientations; therefore X, Y and Z orientations have been investigated, also with AC/DC adapter, and earphone, and the worst case was found to be at Y orientation with headset alone.

Worst-case data rates used for the testing as provided by the client were as follows:

802.11b Mode: 1Mbps
802.11g Mode: 6Mbps
802.11n HT20 Mode: MCS0

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	Samsung	ETA-P11X	3046	N/A
Headset	Samsung	EHS64AVFWE	3040	N/A

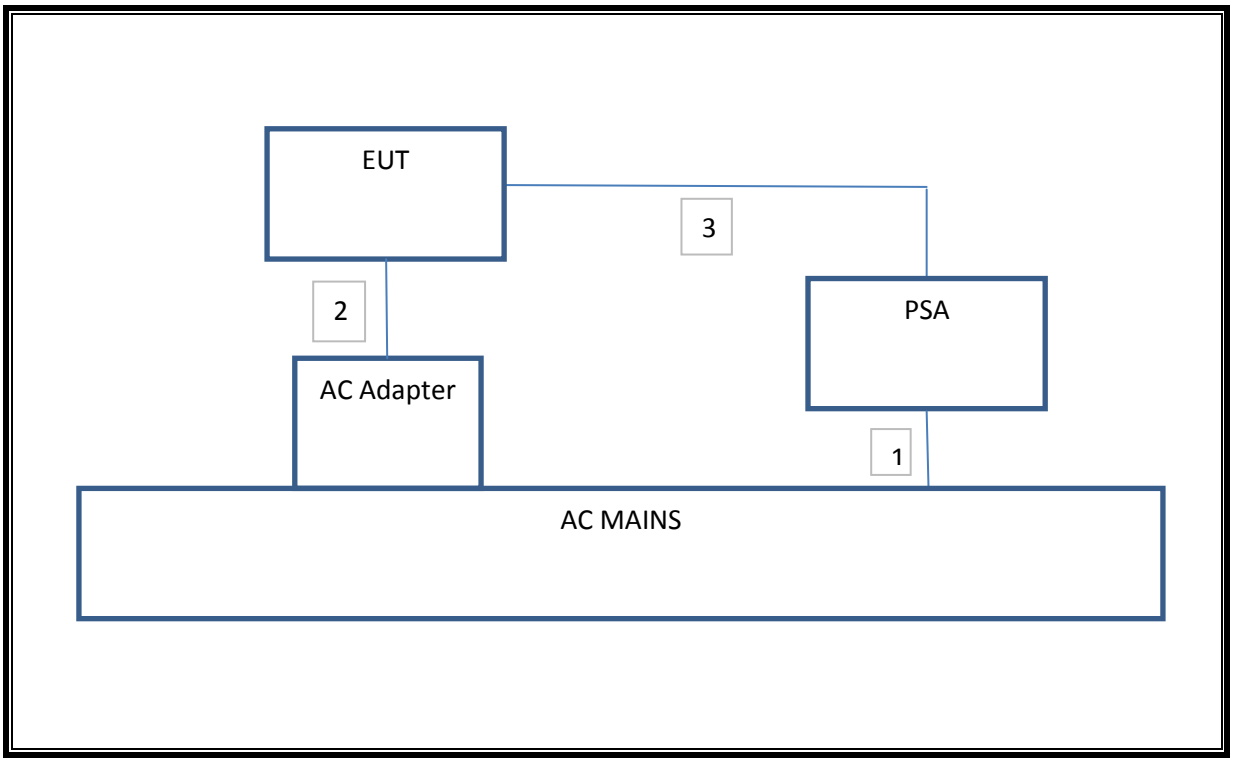
I/O CABLES (CONDUCTED SETUP)

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	1	AC	UnShielded	2.0m	NA
2	DC	1	USB	Shielded	1.0m	NA
3	RF	1	SMA	Shielded	0.1 m	NA

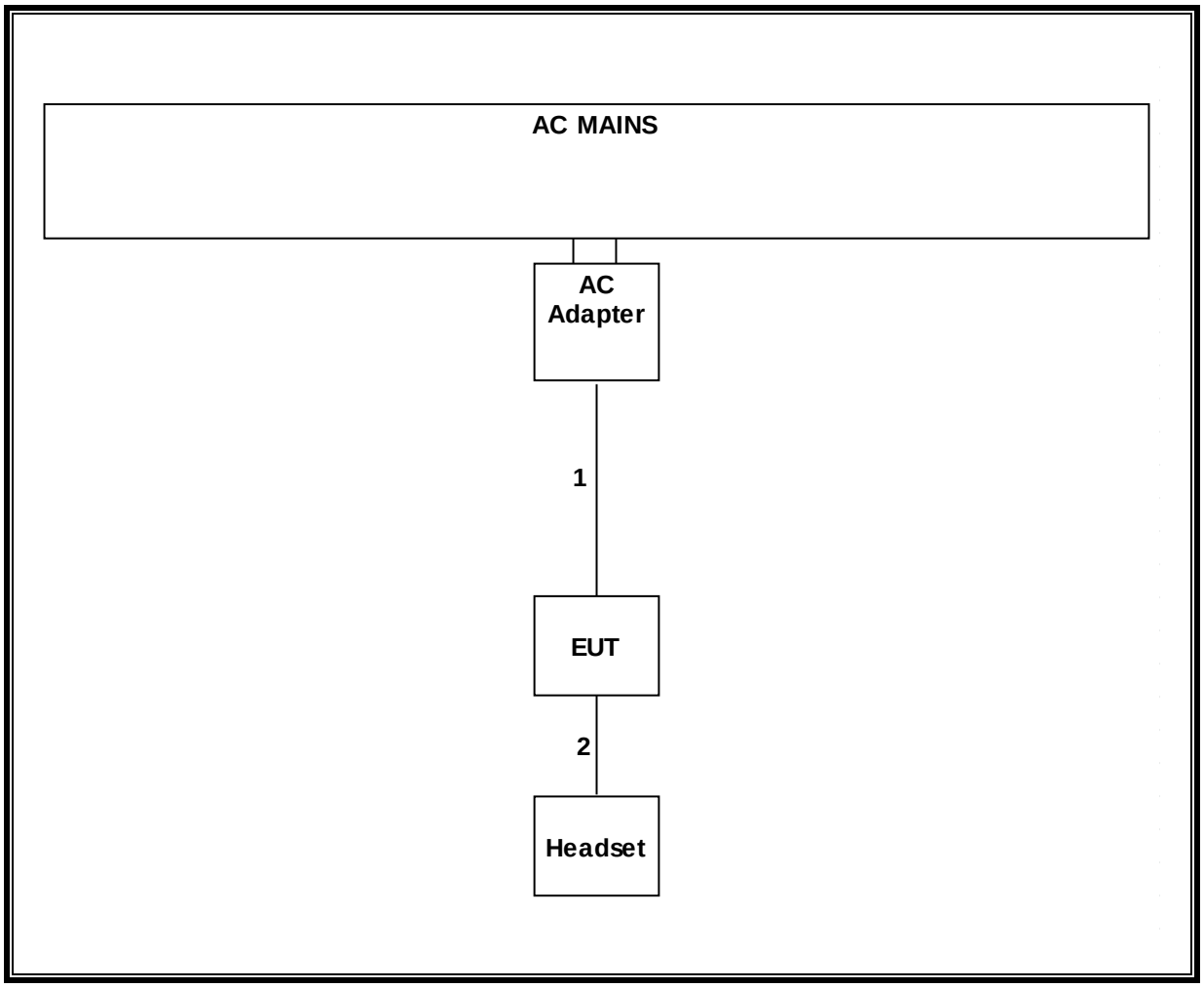
I/O CABLES (RADIATED SETUP)

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	Mini USB	1	USB	shielded	1m	N/A
2	Audio	1	Mini-Jack	Unshielded	1.2 m	Volume control attached

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



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	01/28/11	04/28/12
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/15/11	08/15/12
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	07/06/11	07/06/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/16/11	07/16/12
Antenna, Horn, 18 GHz	EMCO	3115	C00872	06/29/11	06/29/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	11/11/11	11/11/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	07/18/11	07/18/12
Power Meter	Agilent / HP	437B		07/28/11	07/28/12
Power Sensor, 18 GHz	Agilent / HP	8481A	N02782	07/29/11	07/29/13
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	12/13/11	12/13/12
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	07/28/11	07/28/12

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.

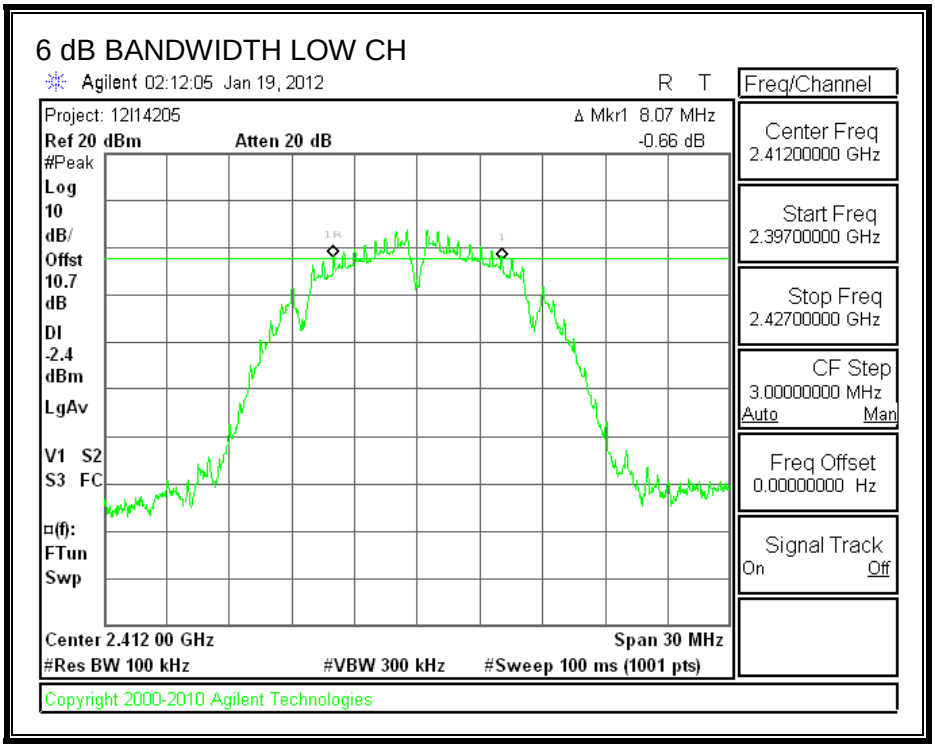
TEST PROCEDURE

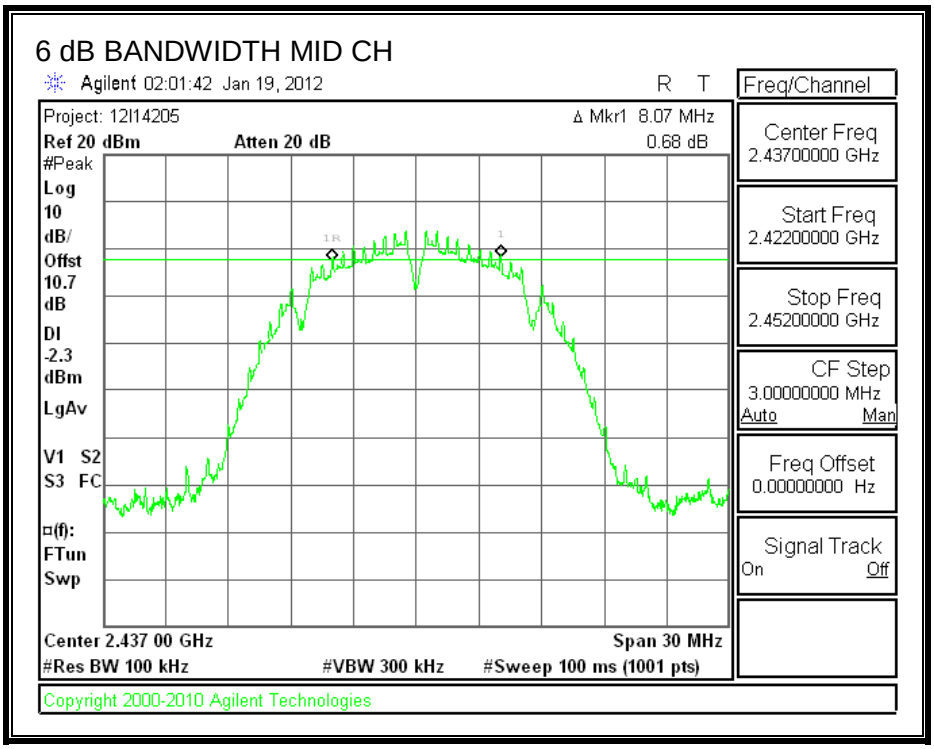
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

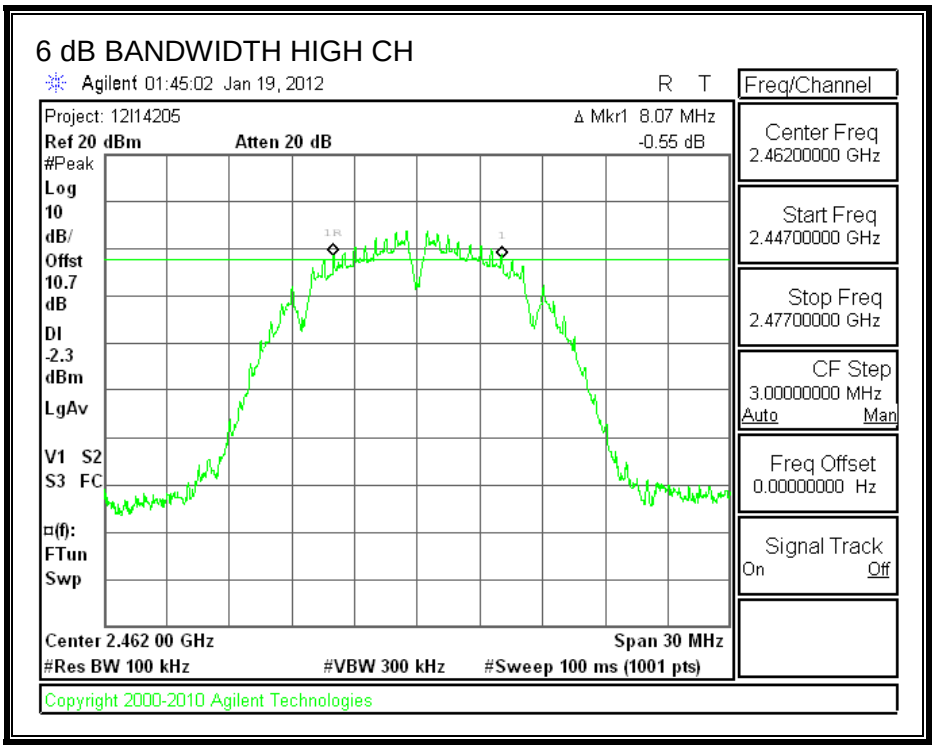
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.07	0.5
Middle	2437	8.07	0.5
High	2462	8.07	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.

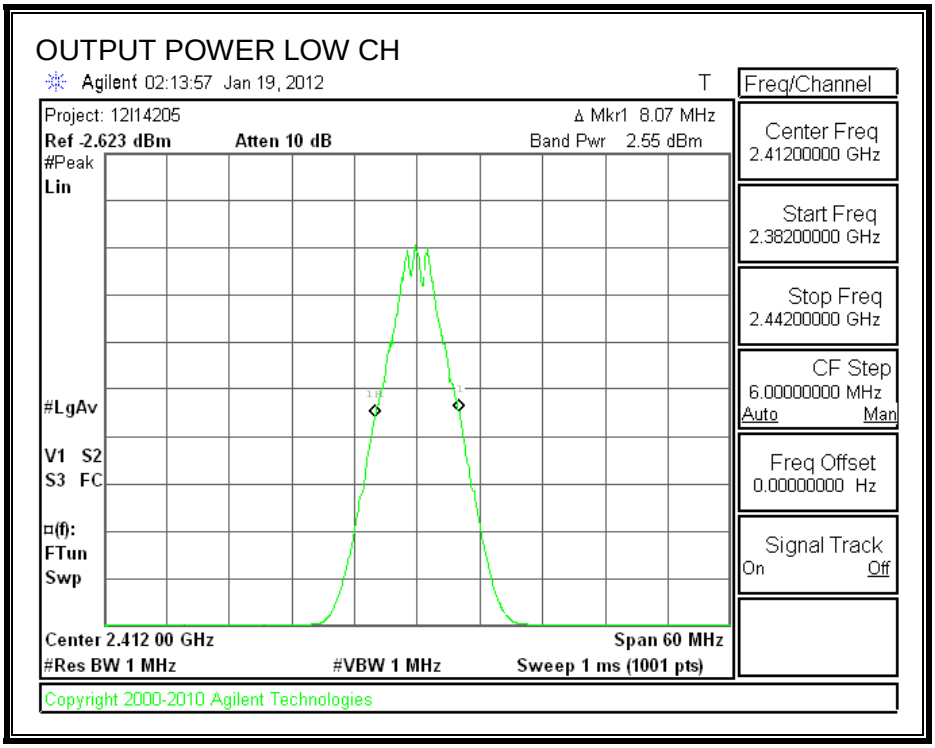
TEST PROCEDURE

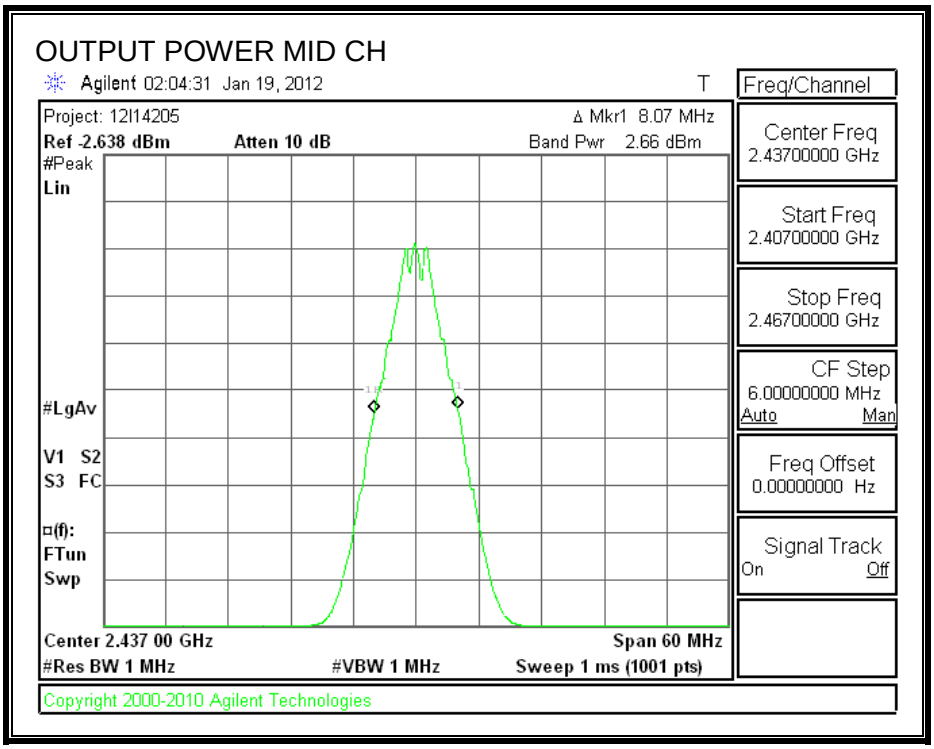
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

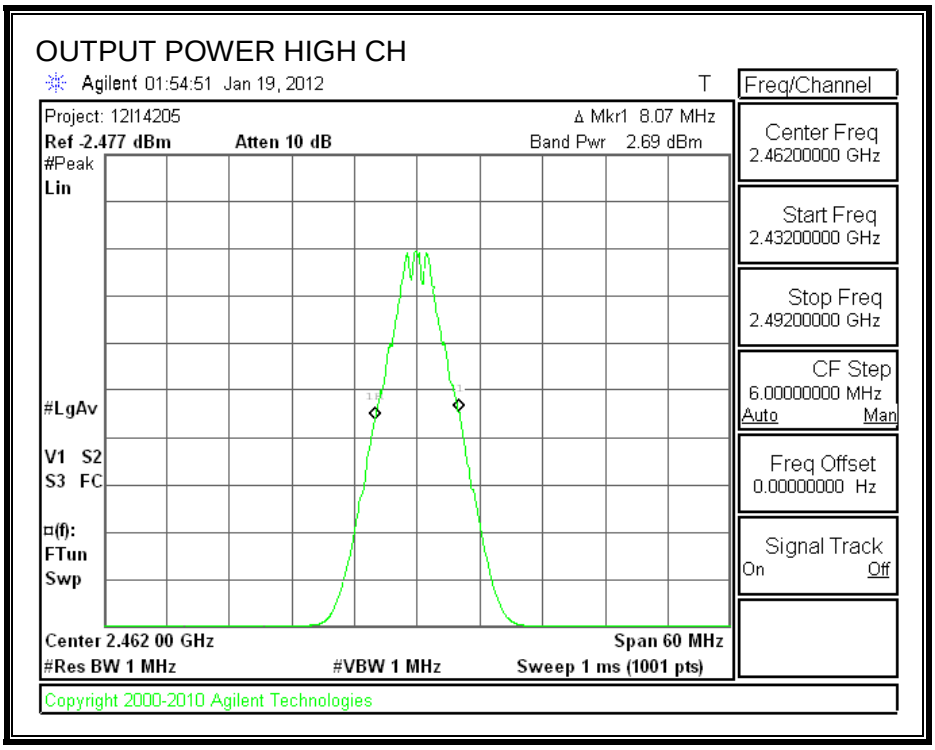
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	2.55	10.64	13.19	30	-16.81
Middle	2437	2.66	10.64	13.30	30	-16.70
High	2462	2.69	10.64	13.33	30	-16.67

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 11.88 dB (including 10 dB pad and 1.88 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Frequency (MHz)	Power (dBm)
2412	11.68
2437	11.69
2462	11.66

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.

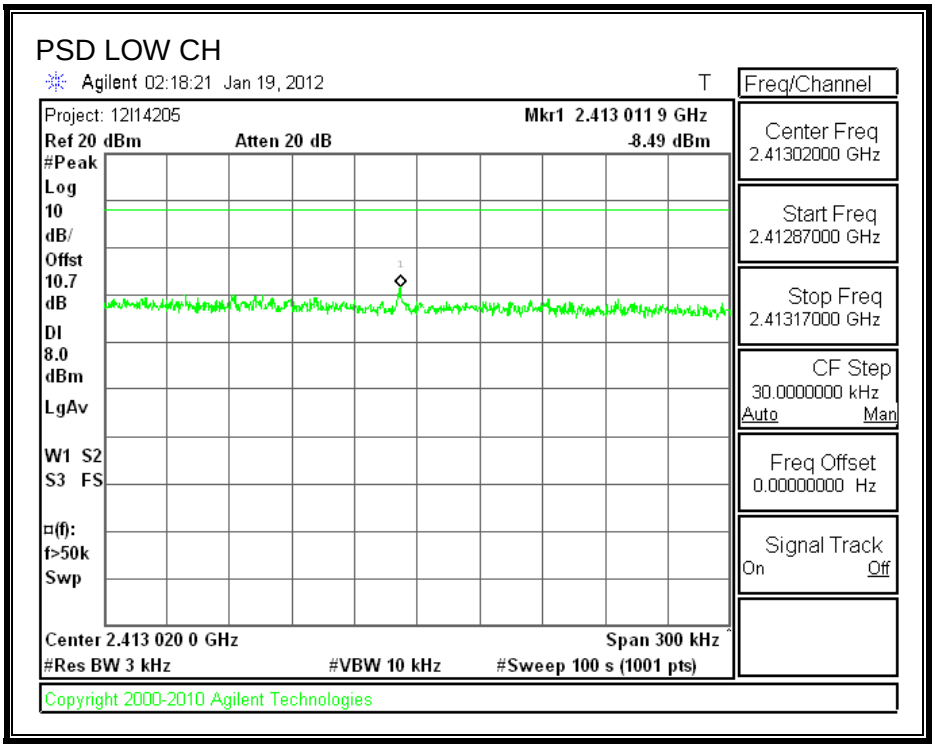
TEST PROCEDURE

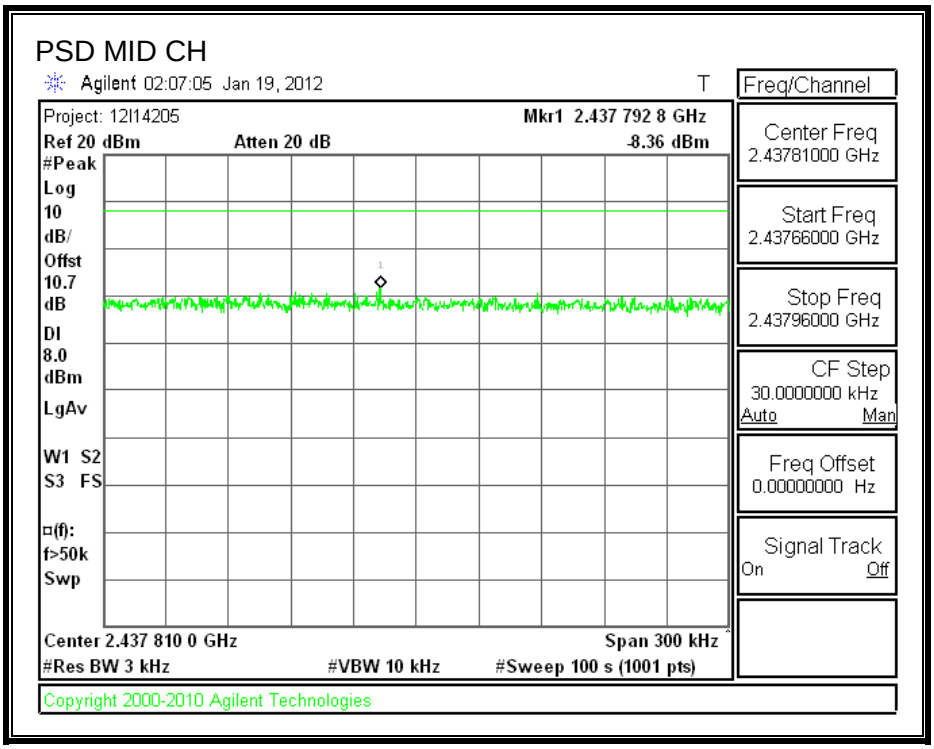
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

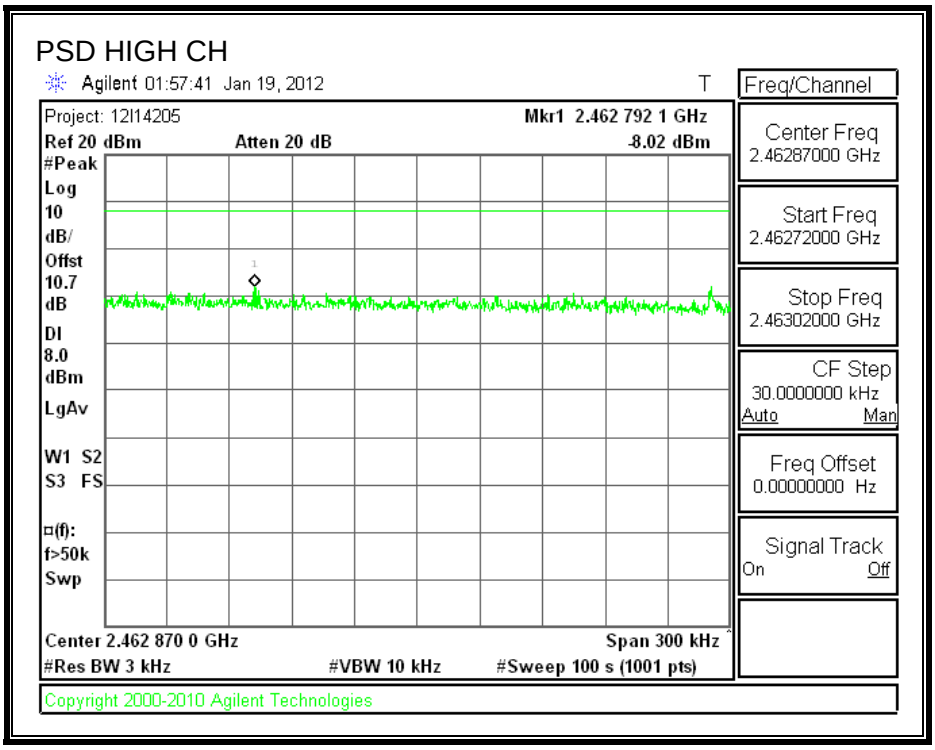
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-8.49	8	-16.49
Middle	2437	-8.36	8	-16.36
High	2462	-8.02	8	-16.02

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.

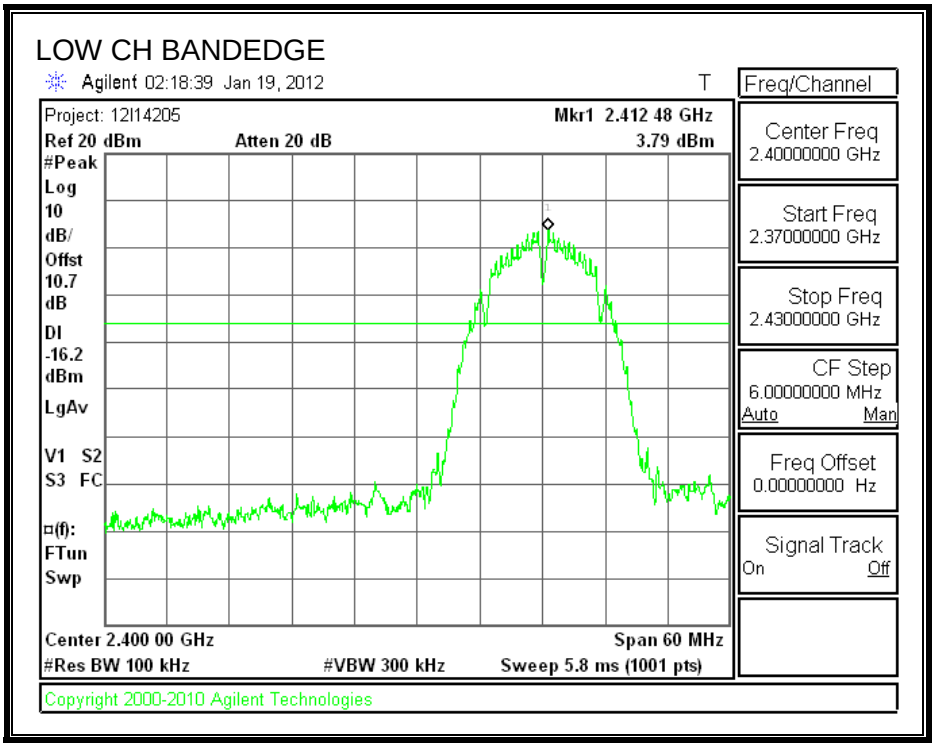
TEST PROCEDURE

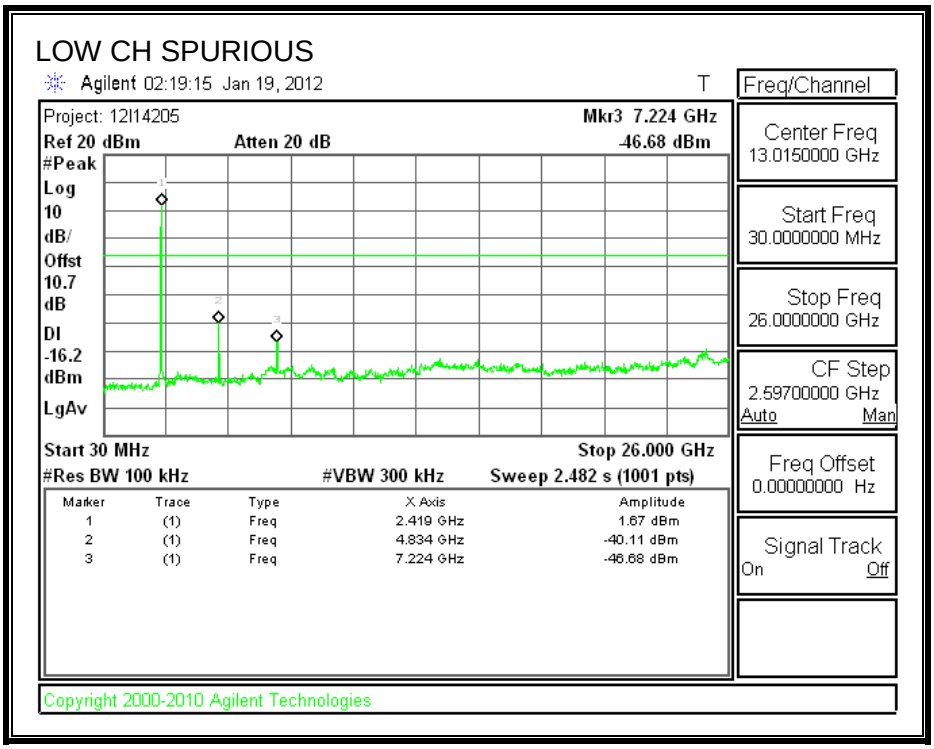
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

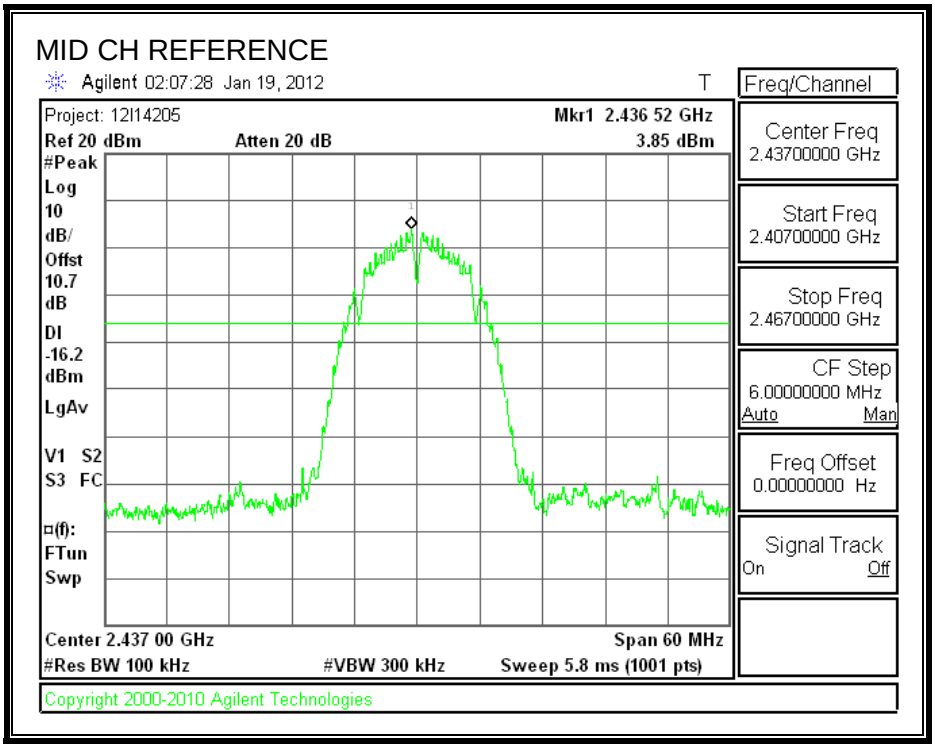
RESULTS

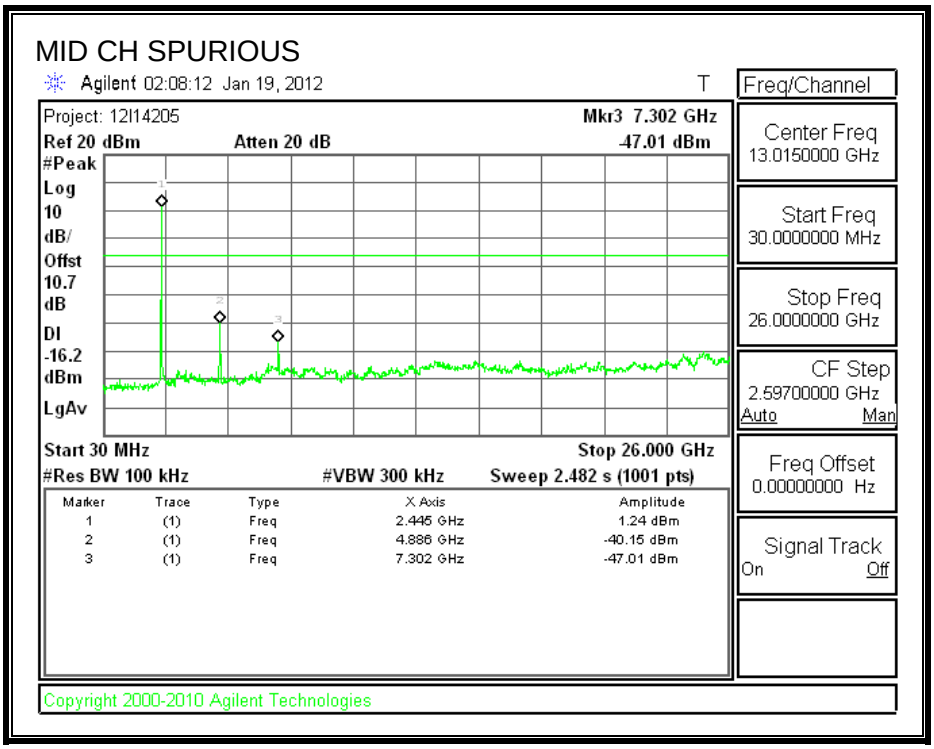
SPURIOUS EMISSIONS, LOW CHANNEL



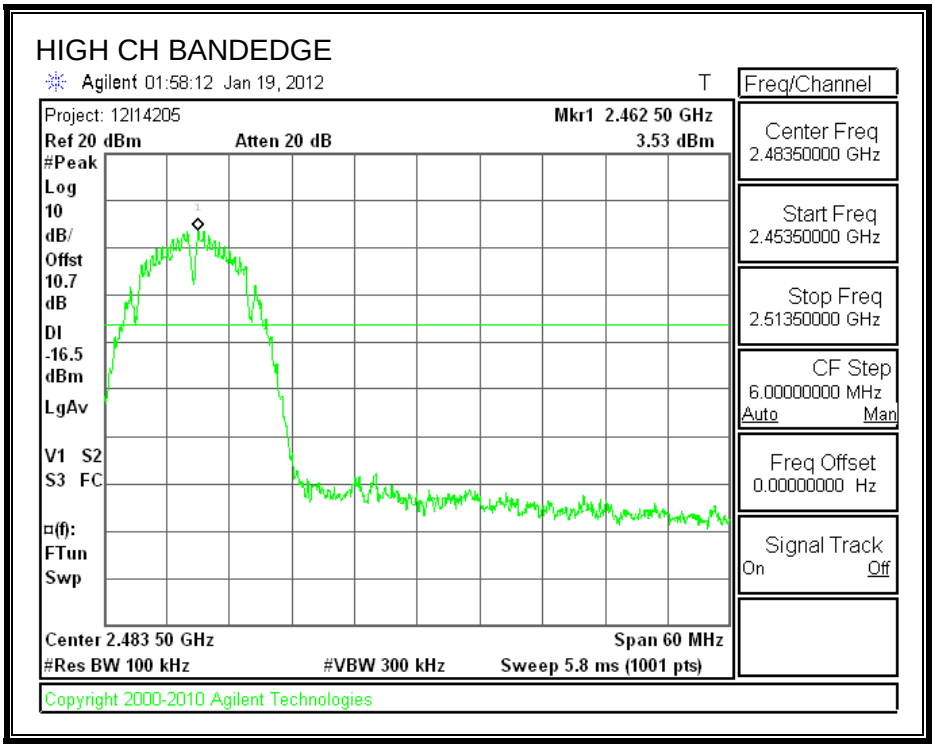


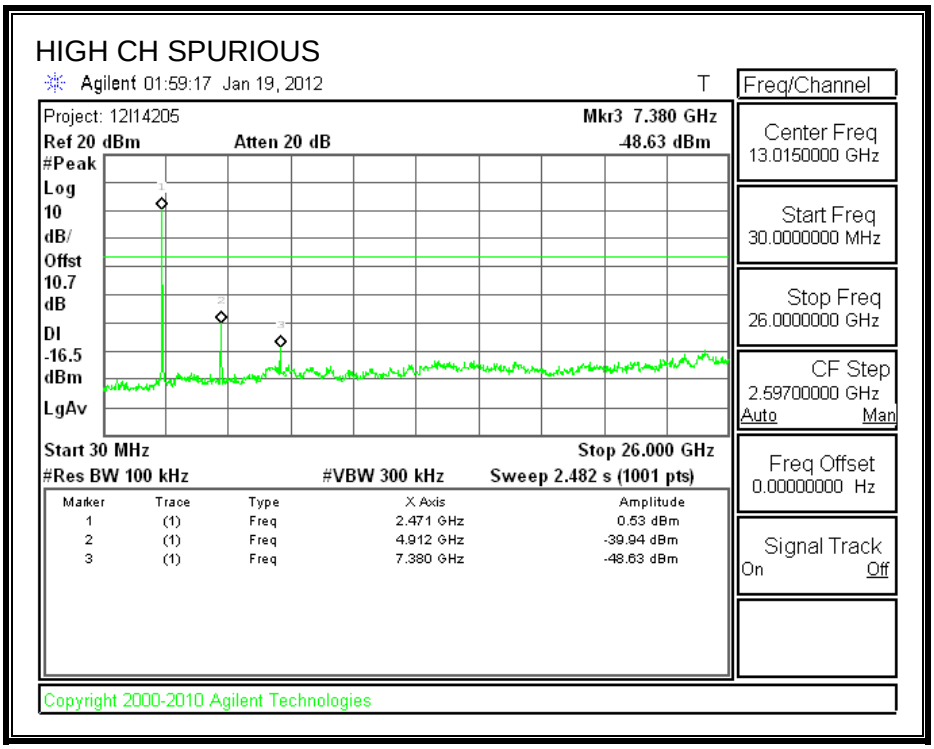
SPURIOUS EMISSIONS, MID CHANNEL





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.

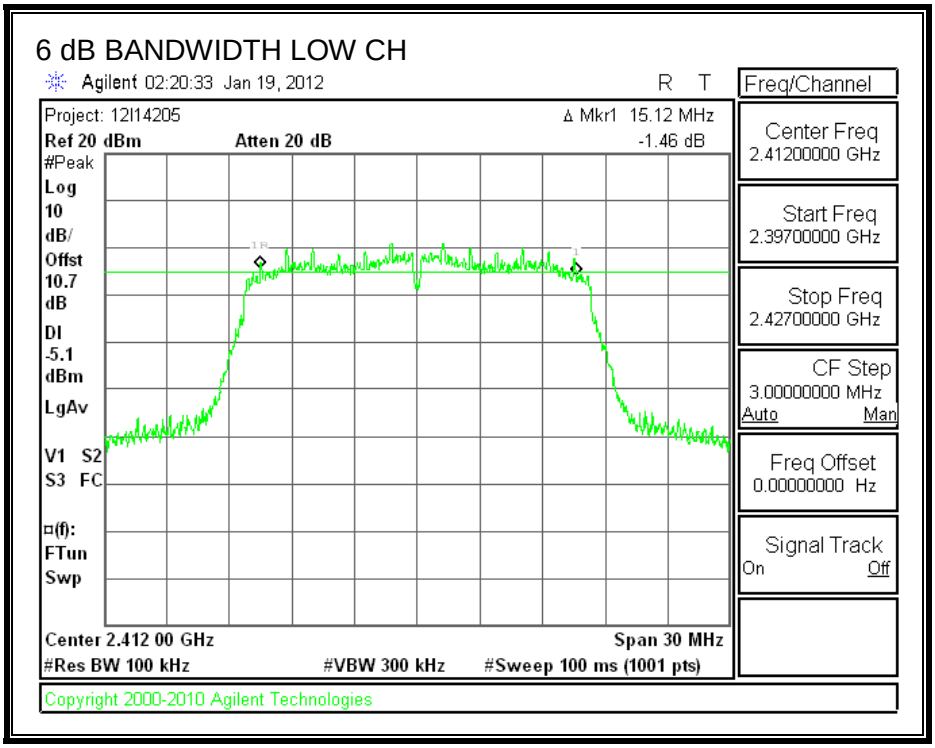
TEST PROCEDURE

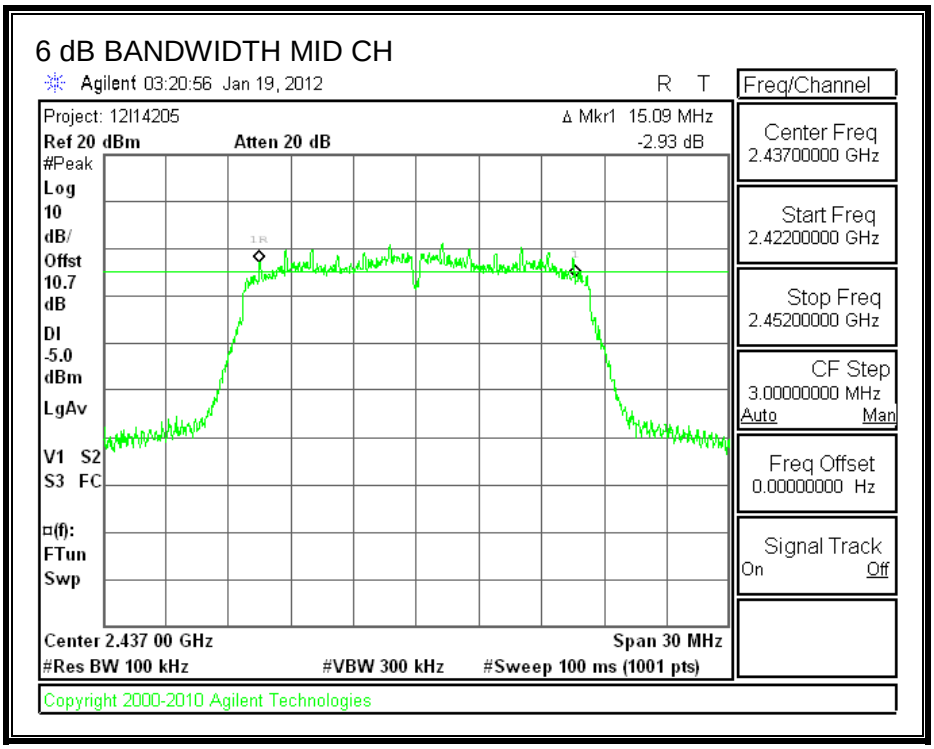
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

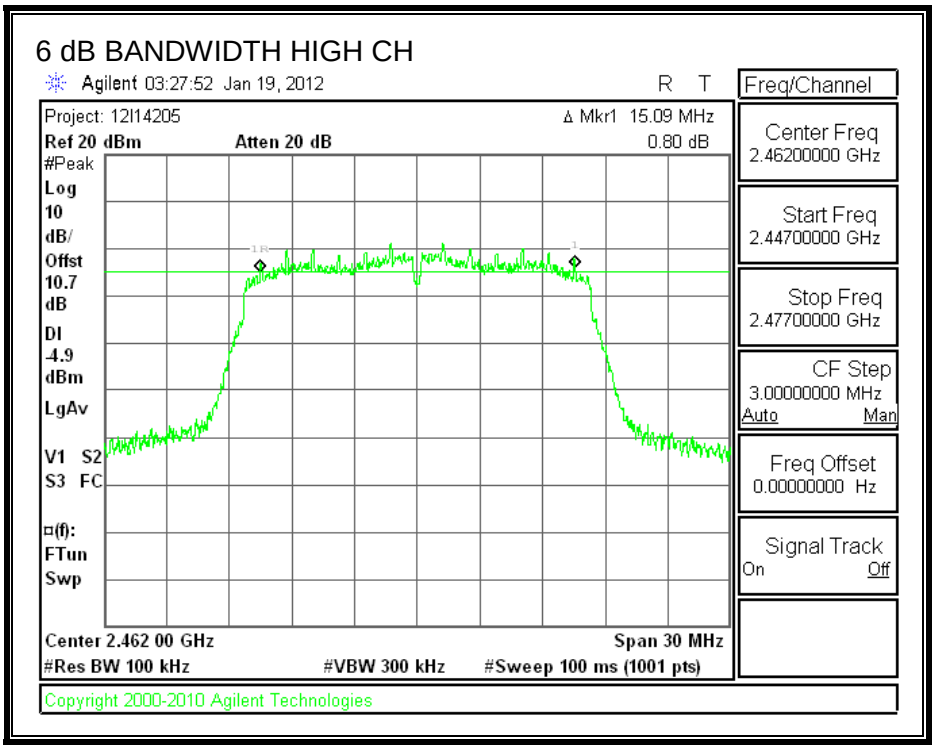
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.12	0.5
Middle	2437	15.09	0.5
High	2462	15.09	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.

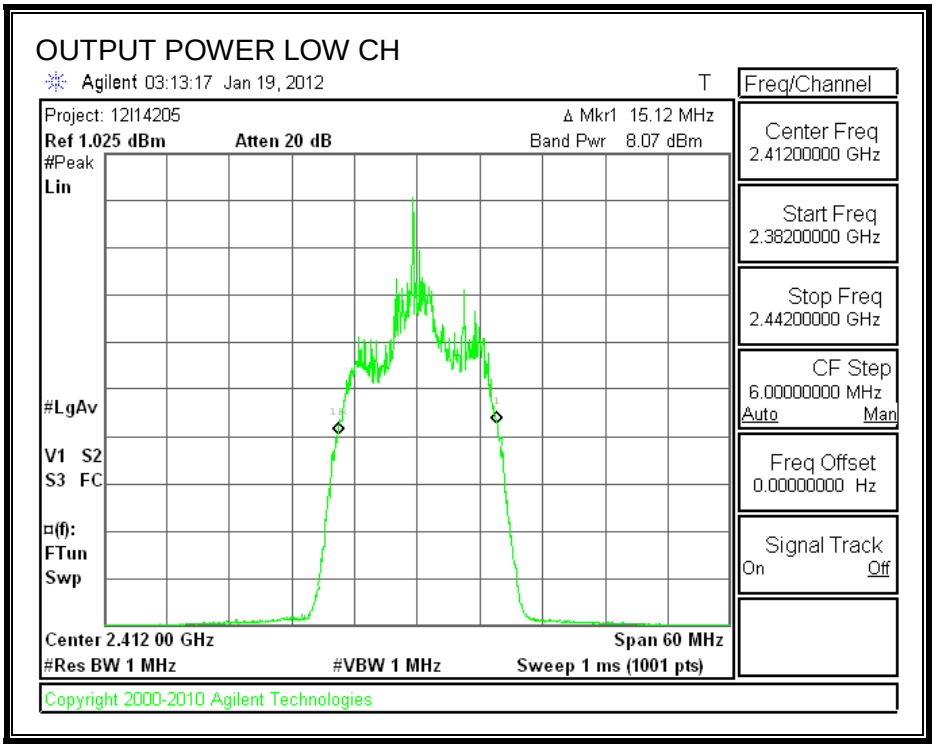
TEST PROCEDURE

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.

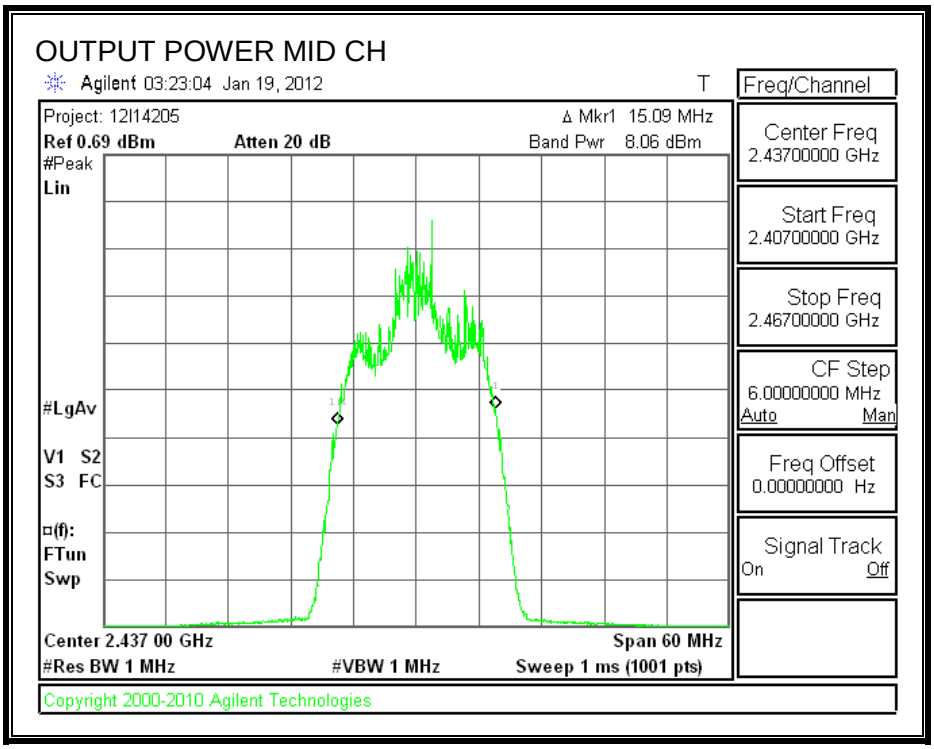
RESULTS

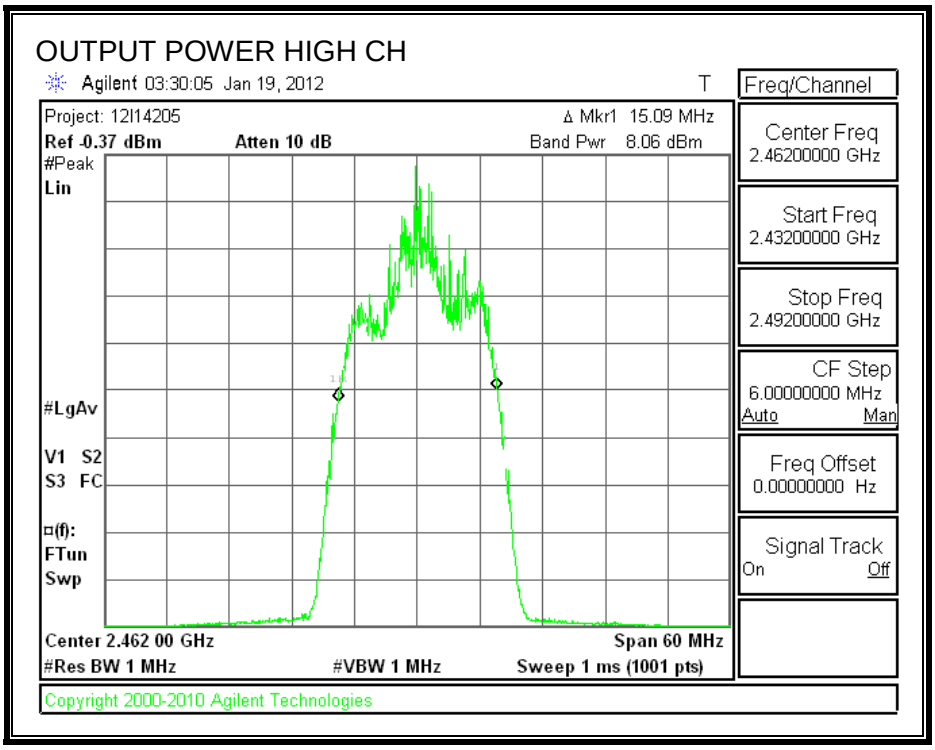
Channel	Frequency (MHz)	Peak Power Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	8.07	10.64	18.71	30	-11.29
Middle	2437	8.06	10.64	18.70	30	-11.30
High	2462	8.06	10.64	18.70	30	-11.30

OUTPUT POWER



OUTPUT POWER MID CH





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 11.88 dB (including 10 dB pad and 1.88 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Frequency (MHz)	Power (dBm)
2412	11.52
2437	11.67
2462	11.74

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.

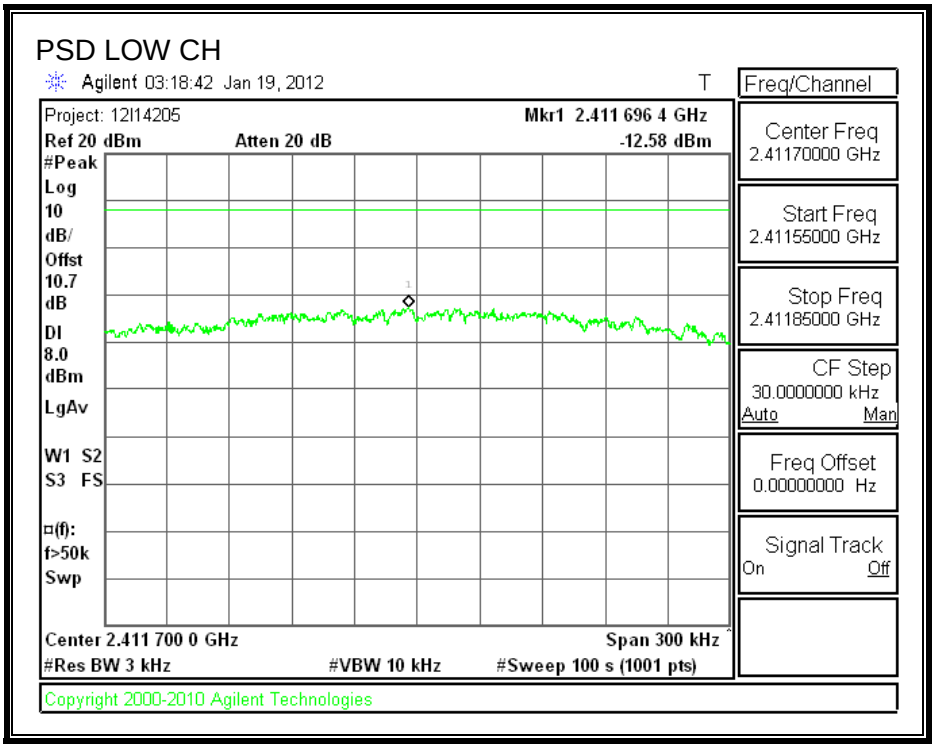
TEST PROCEDURE

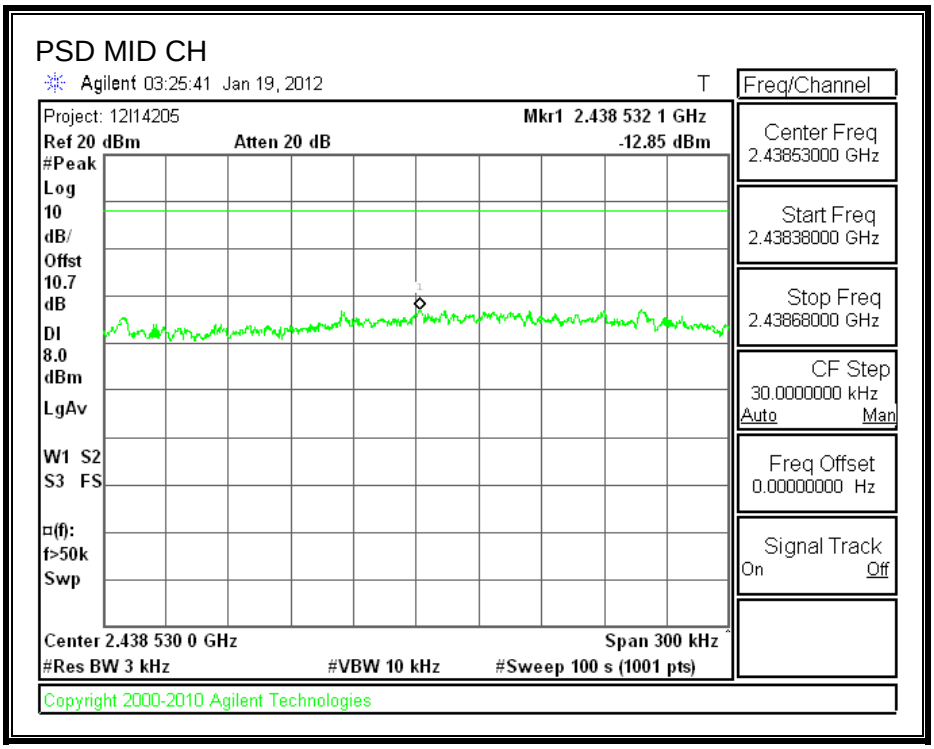
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

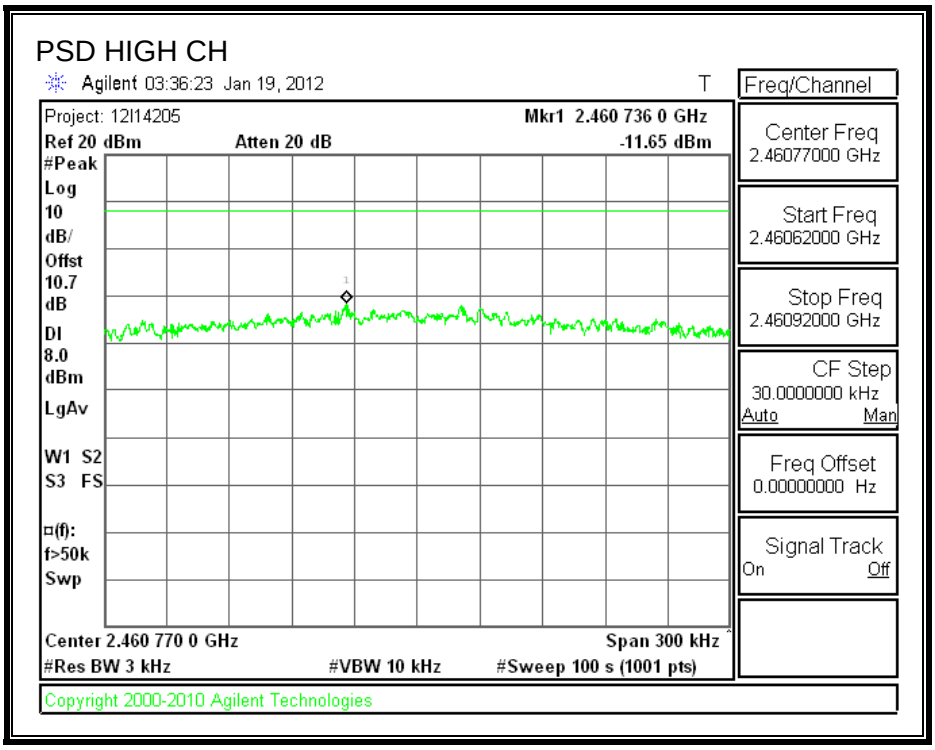
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-12.58	8	-20.58
Middle	2437	-12.85	8	-20.85
High	2462	-11.65	8	-19.65

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.

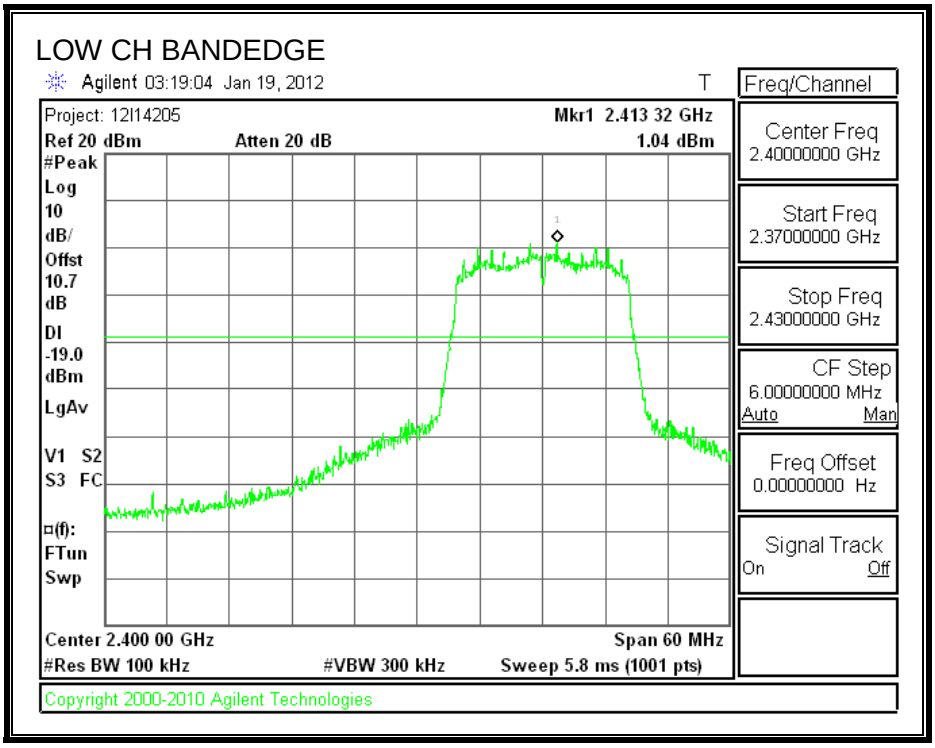
TEST PROCEDURE

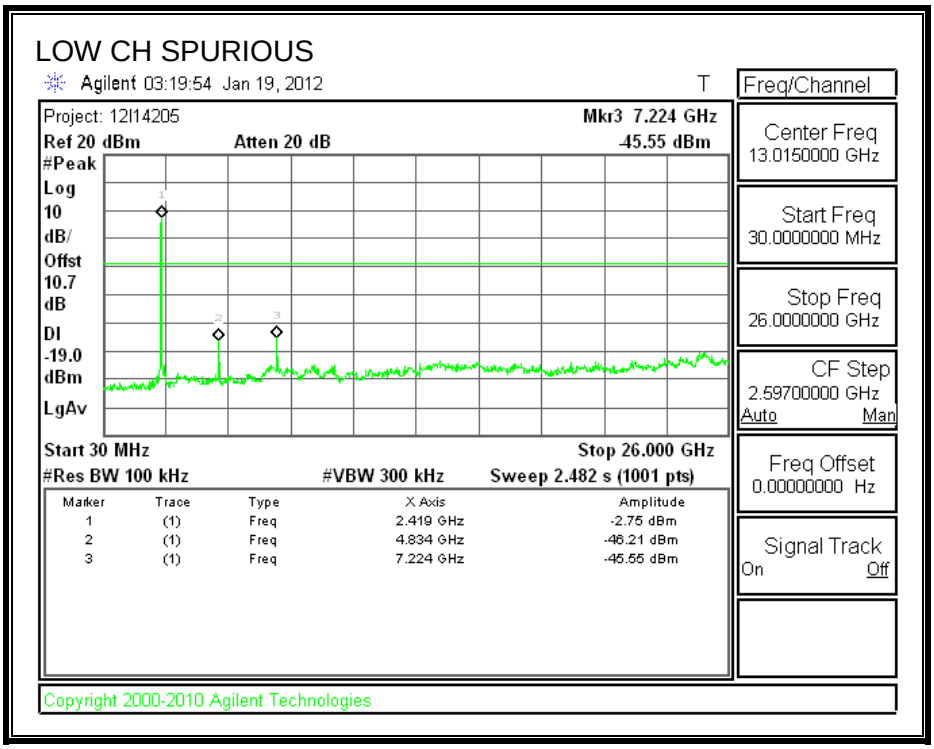
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

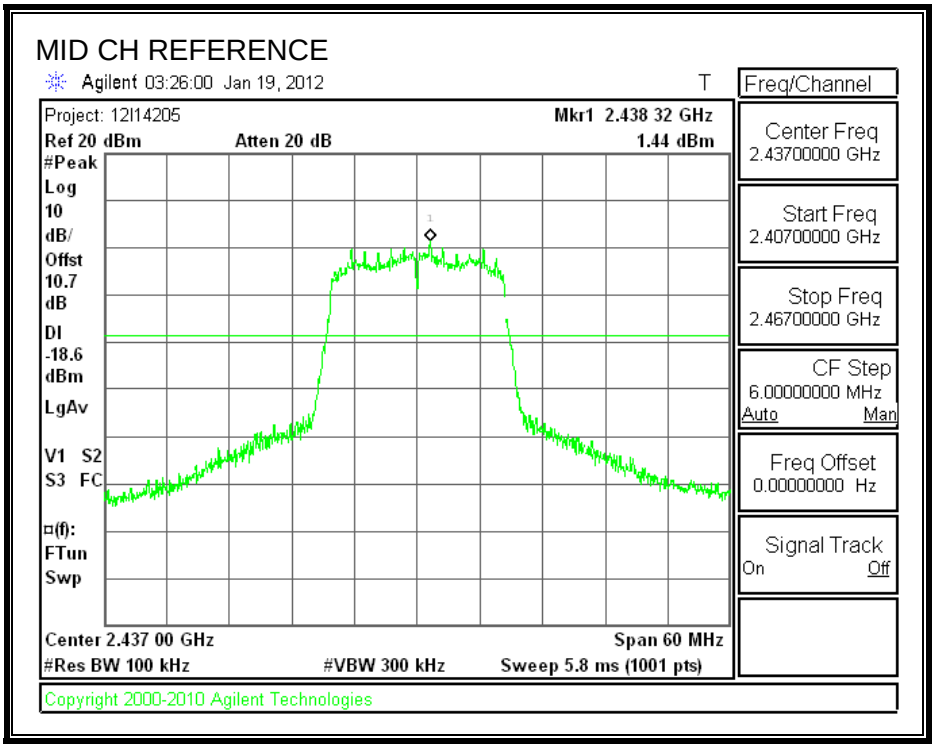
RESULTS

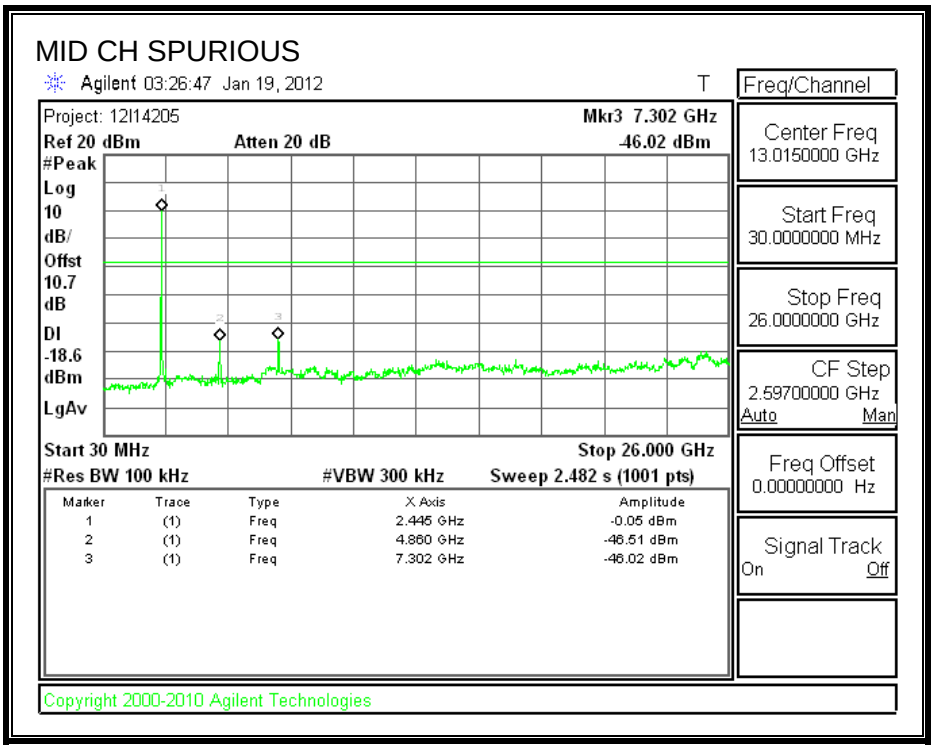
SPURIOUS EMISSIONS, LOW CHANNEL



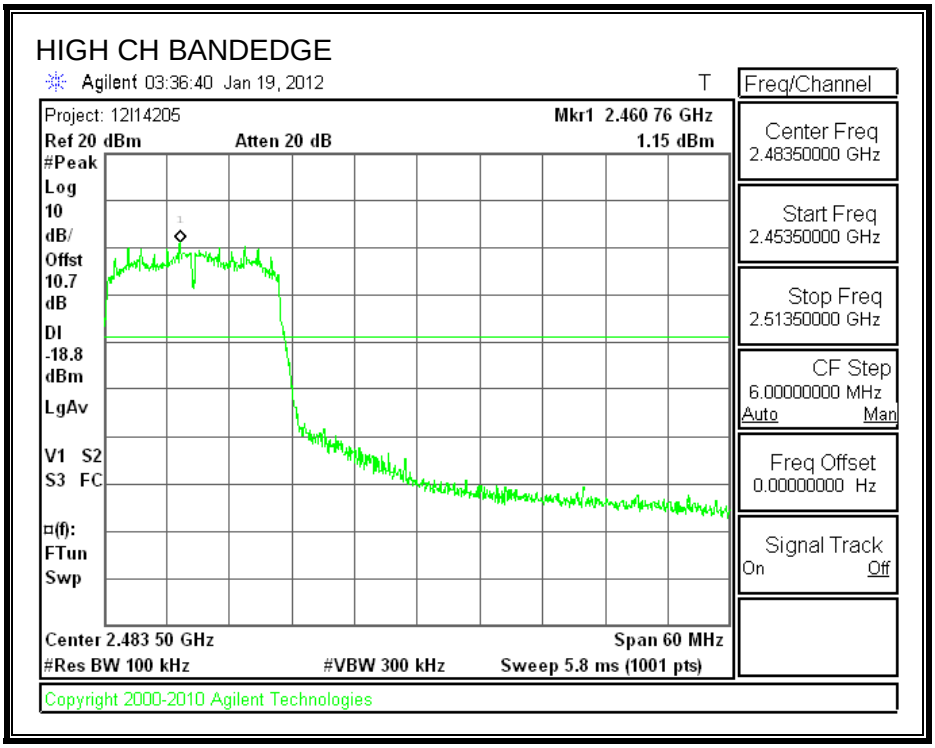


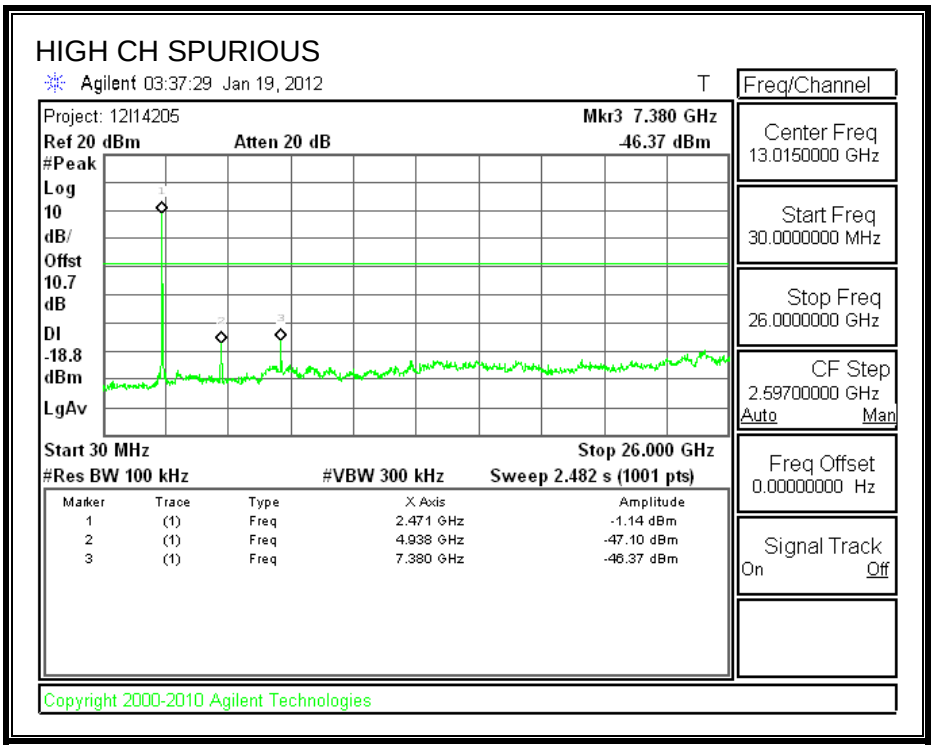
SPURIOUS EMISSIONS, MID CHANNEL





SPURIOUS EMISSIONS, HIGH CHANNEL





7.3. 802.11n HT20 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.

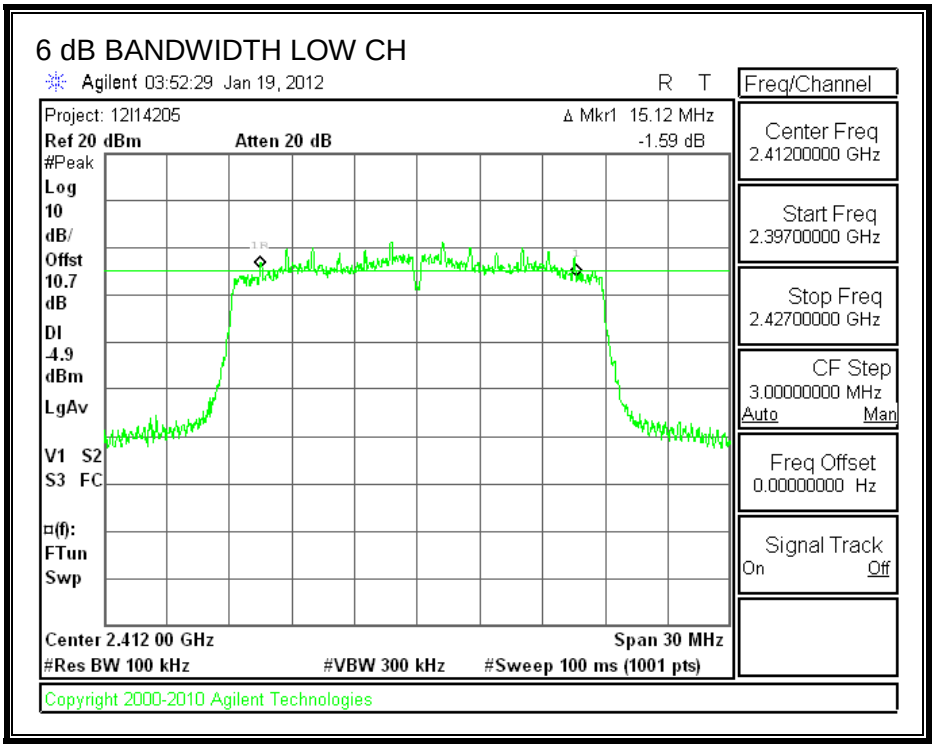
TEST PROCEDURE

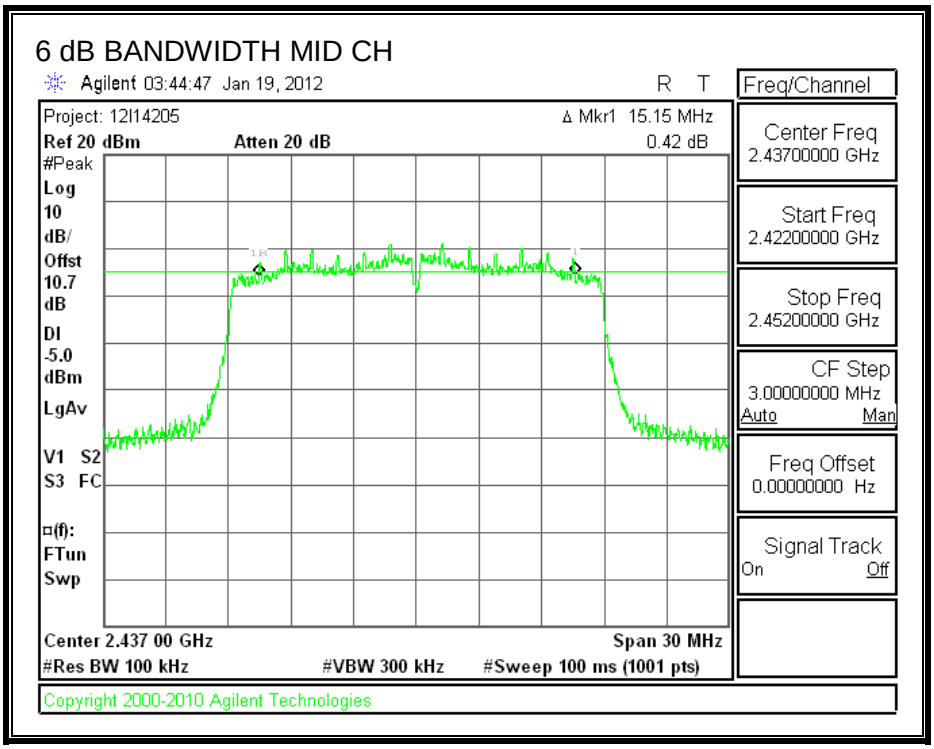
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

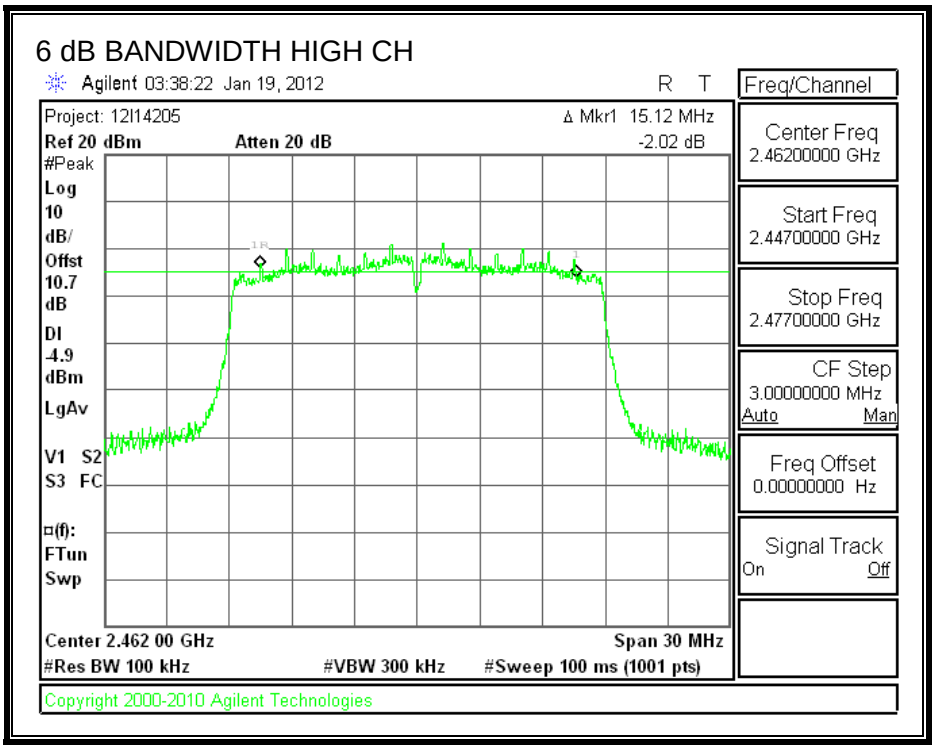
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.12	0.5
Middle	2437	15.15	0.5
High	2462	15.12	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.

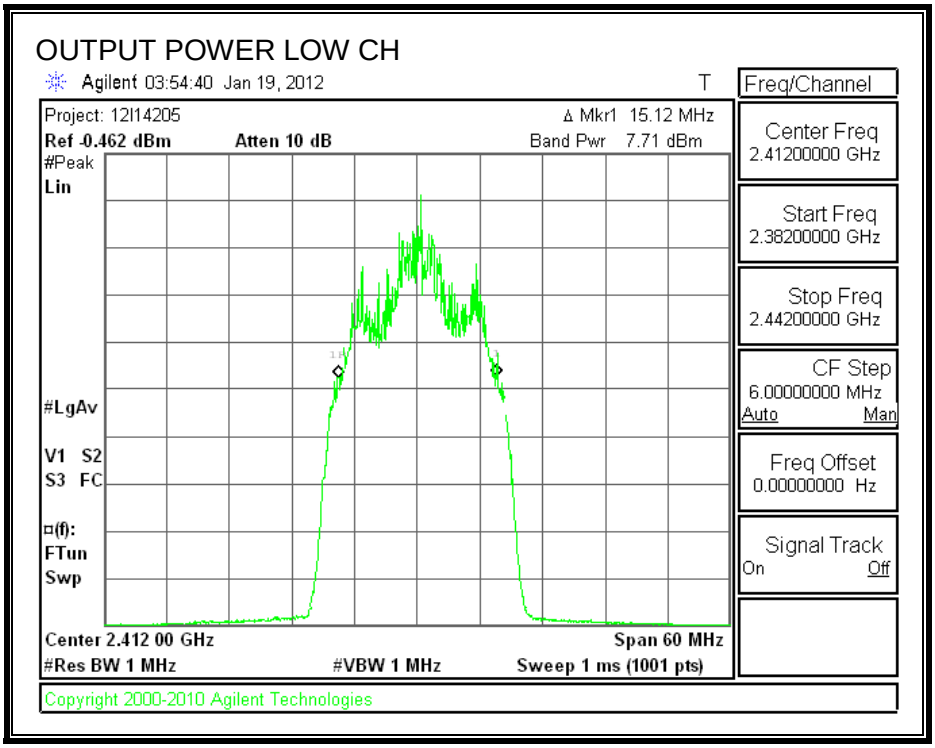
TEST PROCEDURE

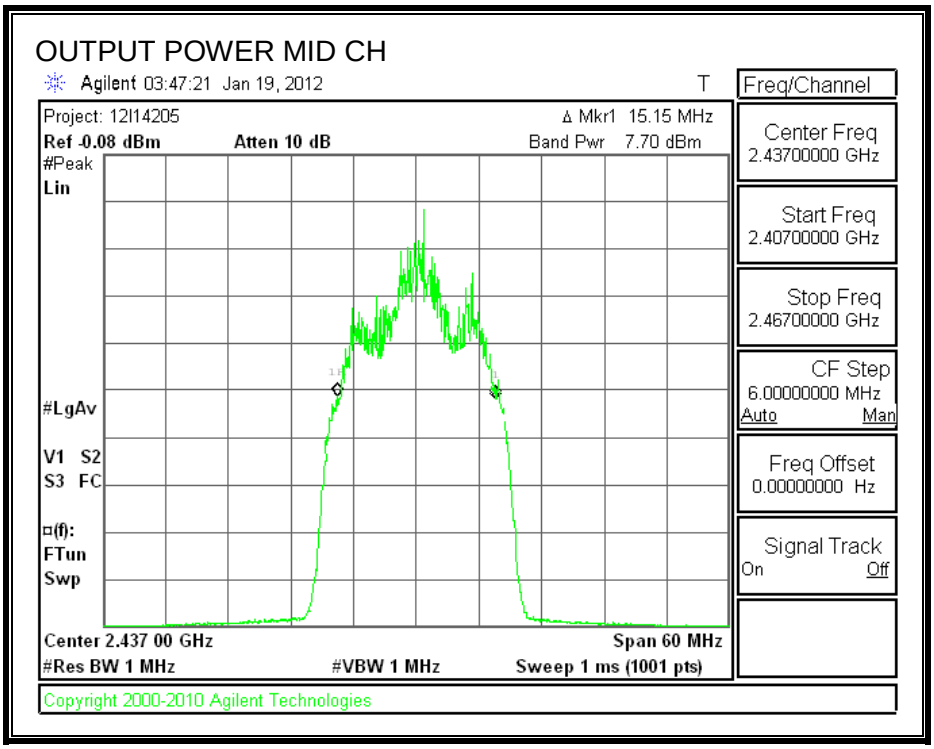
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

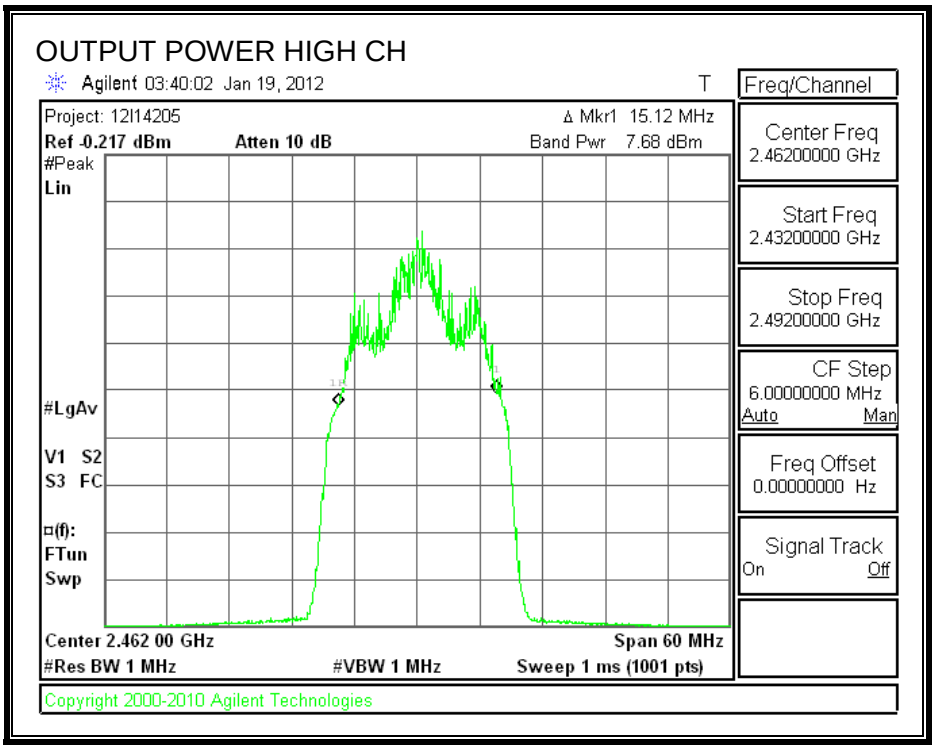
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	7.71	10.64	18.35	30	-11.65
Middle	2437	7.70	10.64	18.34	30	-11.66
High	2462	7.68	10.64	18.32	30	-11.68

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 11.88 dB (including 10 dB pad and 1.88 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Frequency (MHz)	Power (dBm)
2412	11.46
2437	11.45
2462	11.46

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.

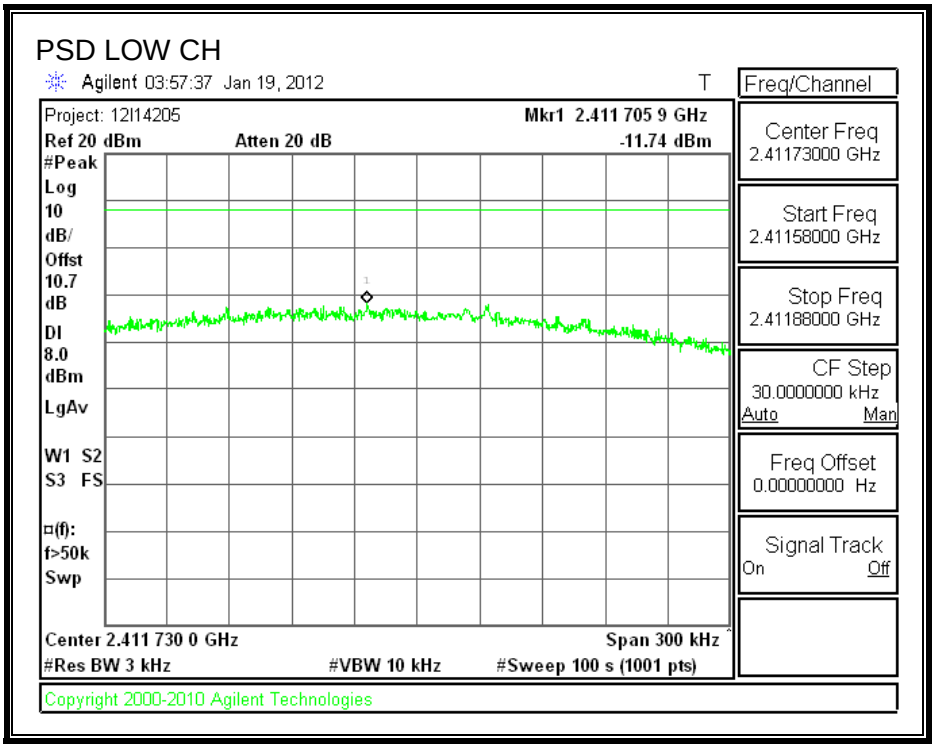
TEST PROCEDURE

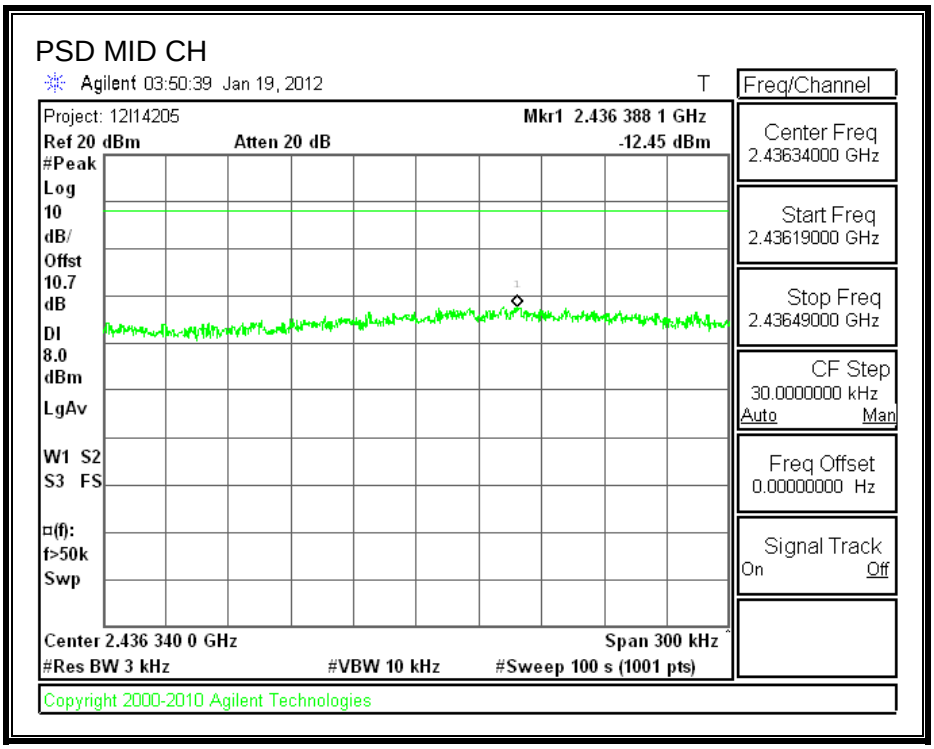
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

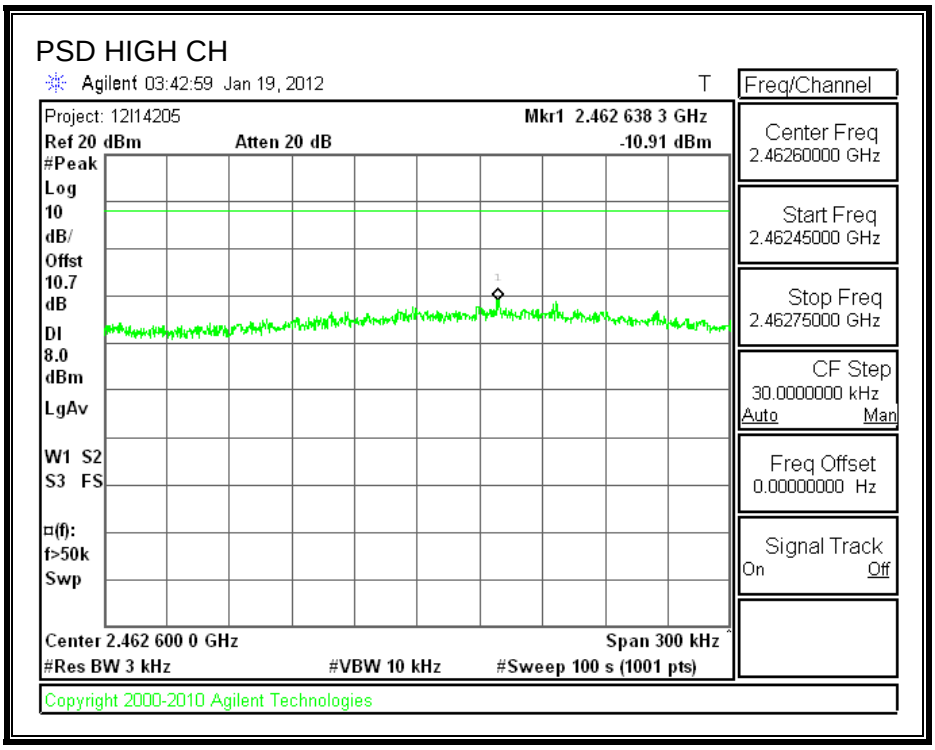
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-11.74	8	-19.74
Middle	2437	-12.45	8	-20.45
High	2462	-10.91	8	-18.91

POWER SPECTRAL DENSITY







7.3.5. 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.

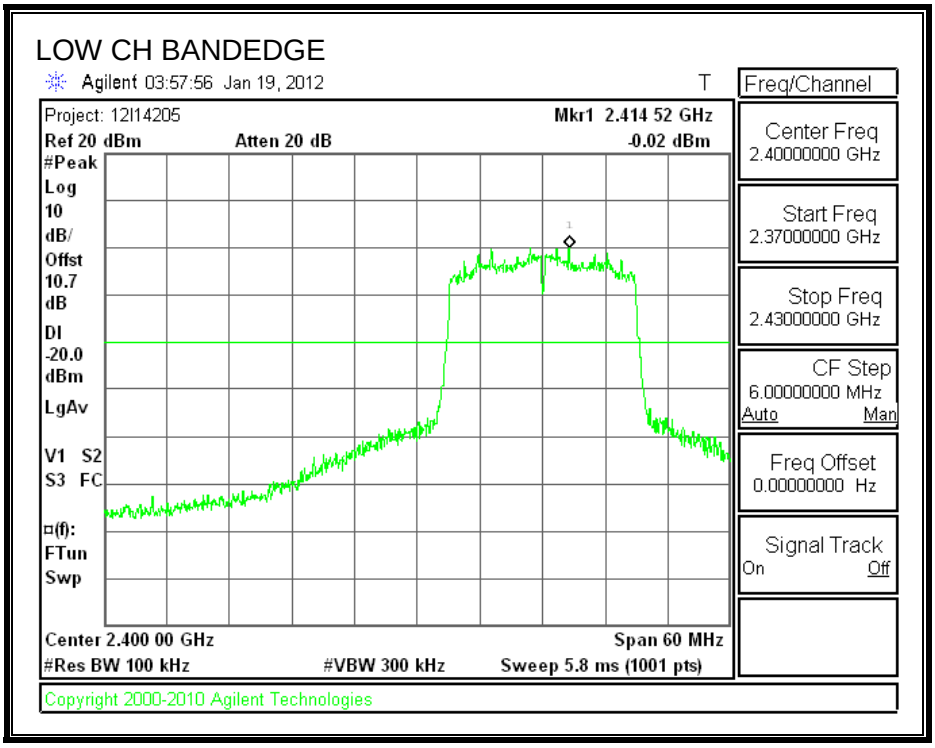
TEST PROCEDURE

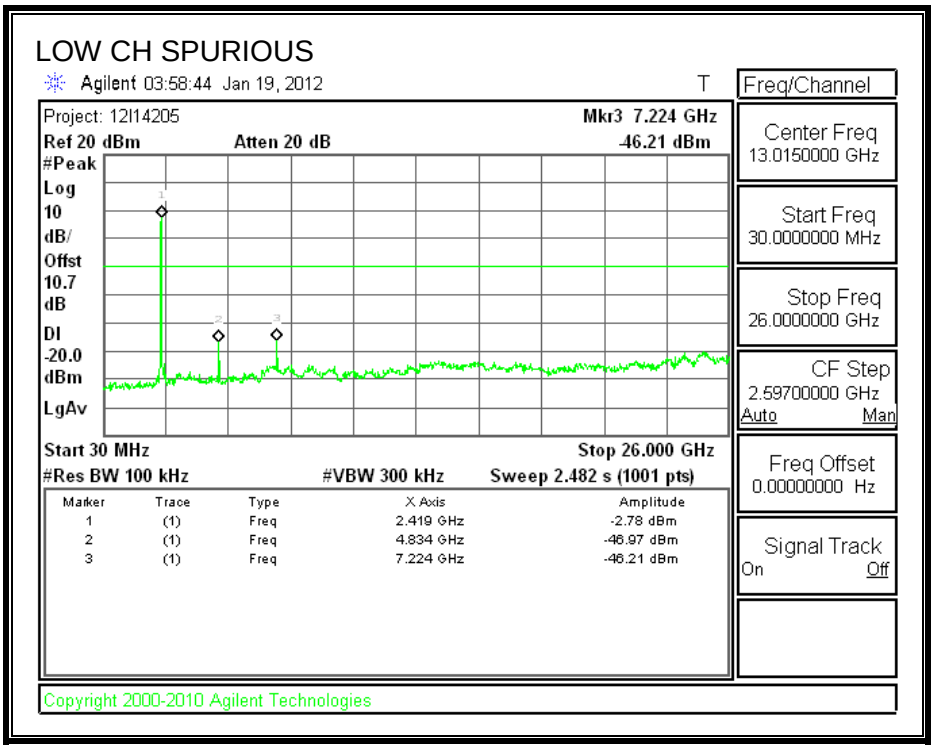
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

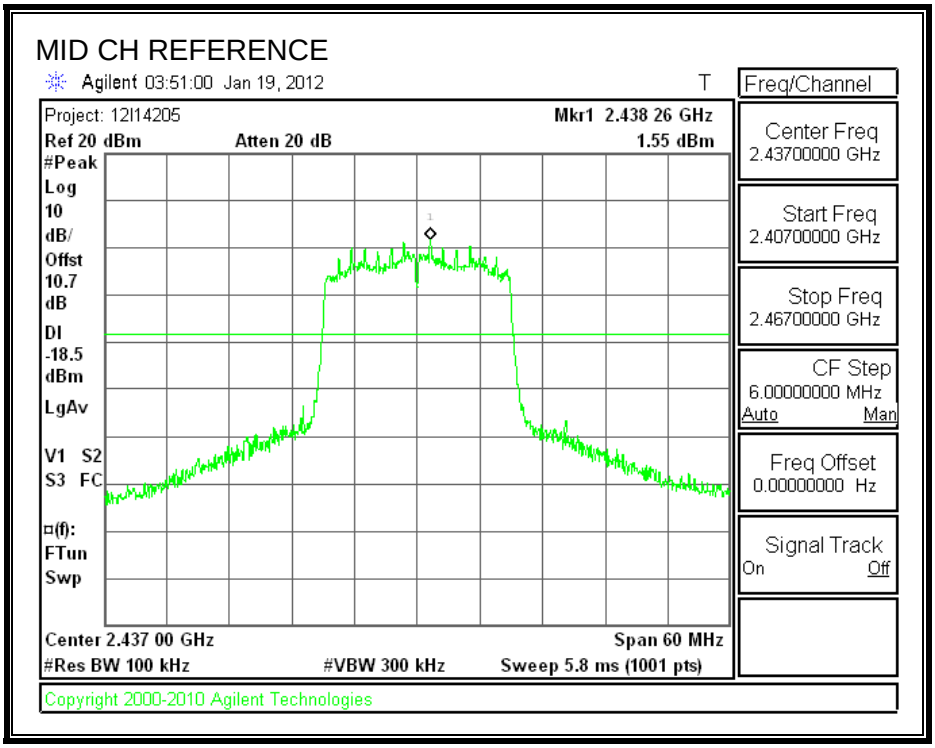
RESULTS

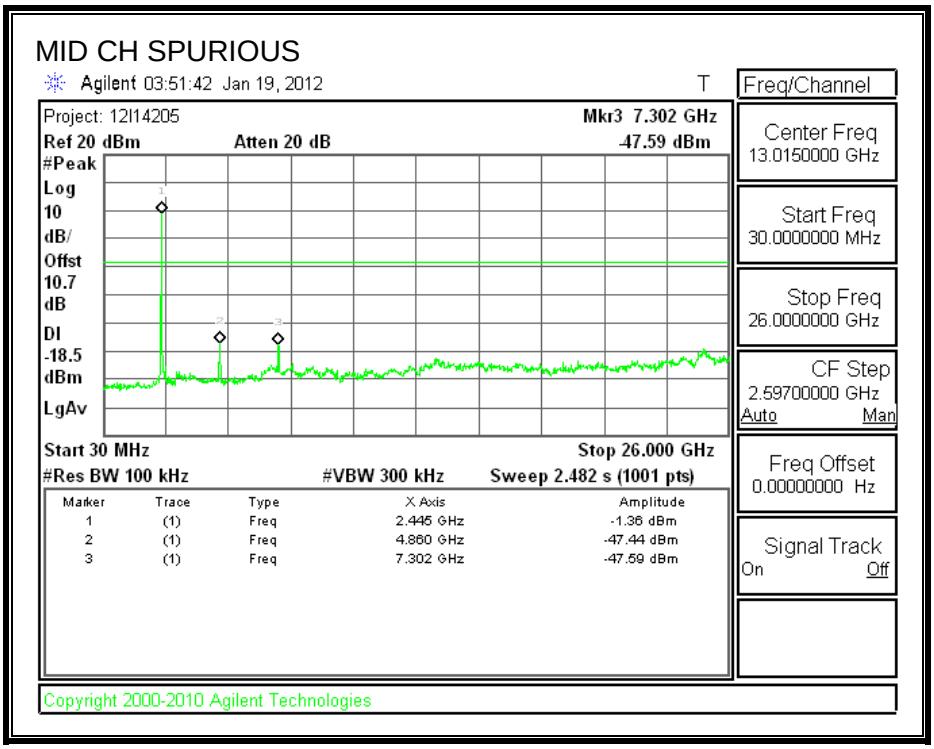
SPURIOUS EMISSIONS, LOW CHANNEL



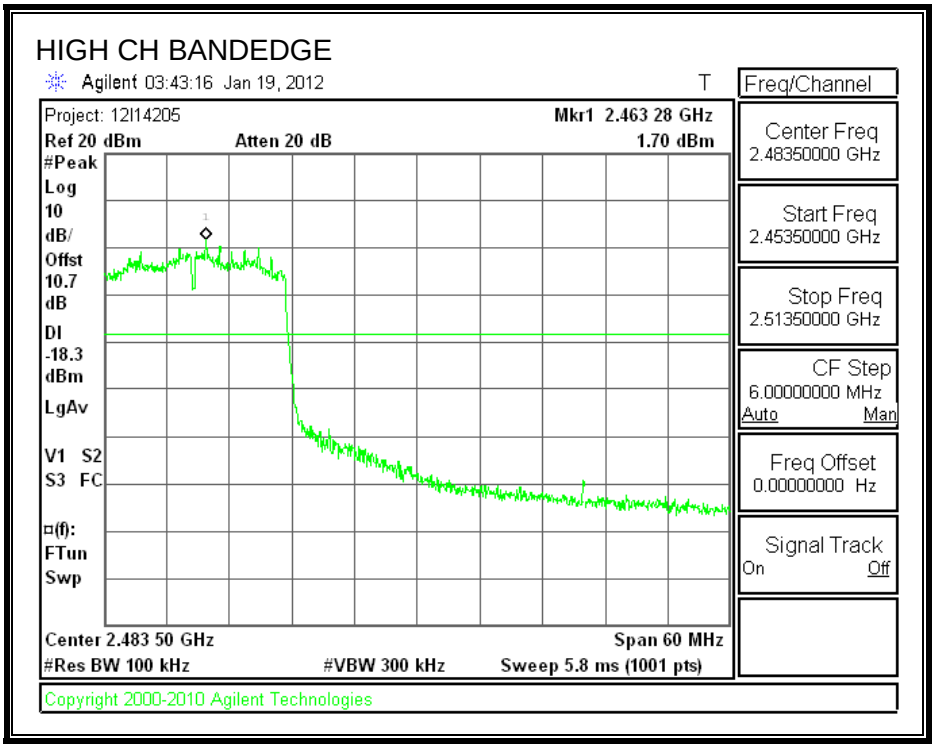


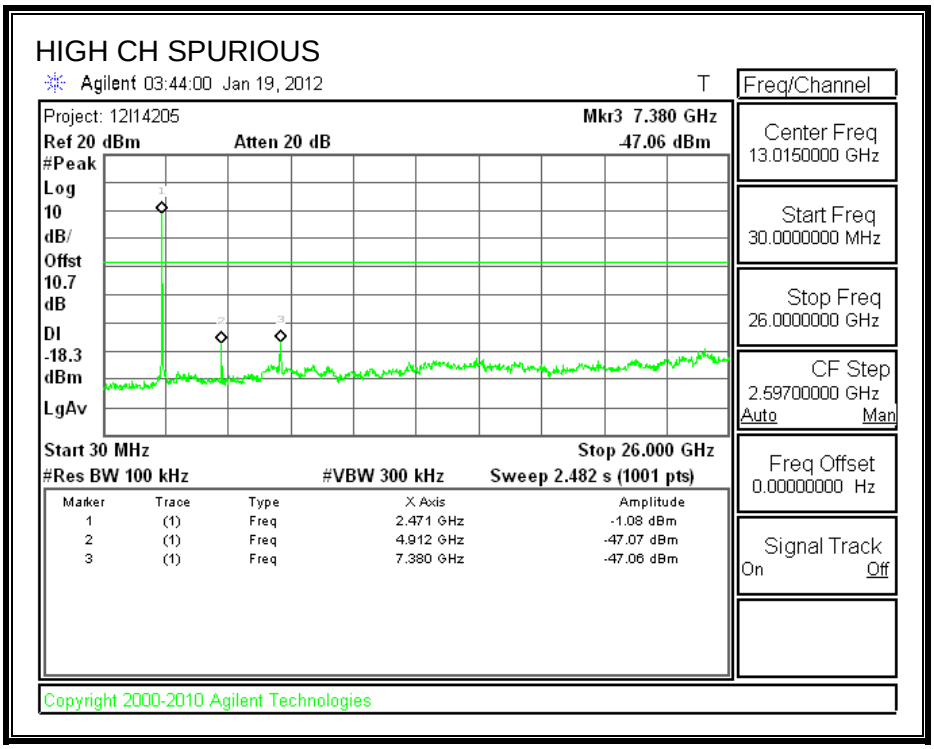
SPURIOUS EMISSIONS, MID CHANNEL





SPURIOUS EMISSIONS, HIGH CHANNEL





8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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.

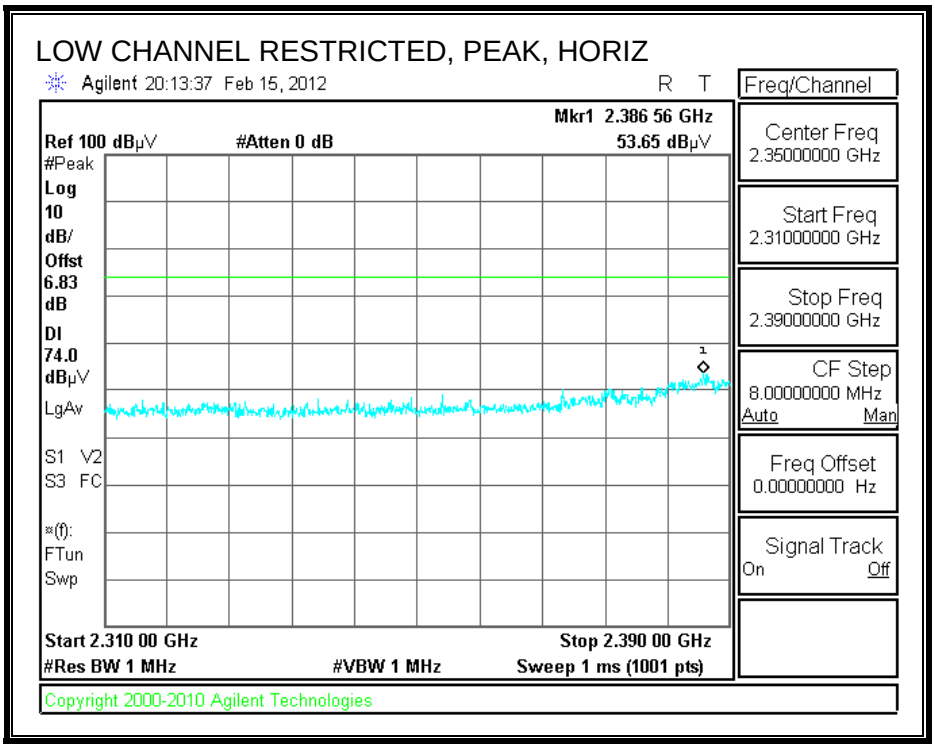
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

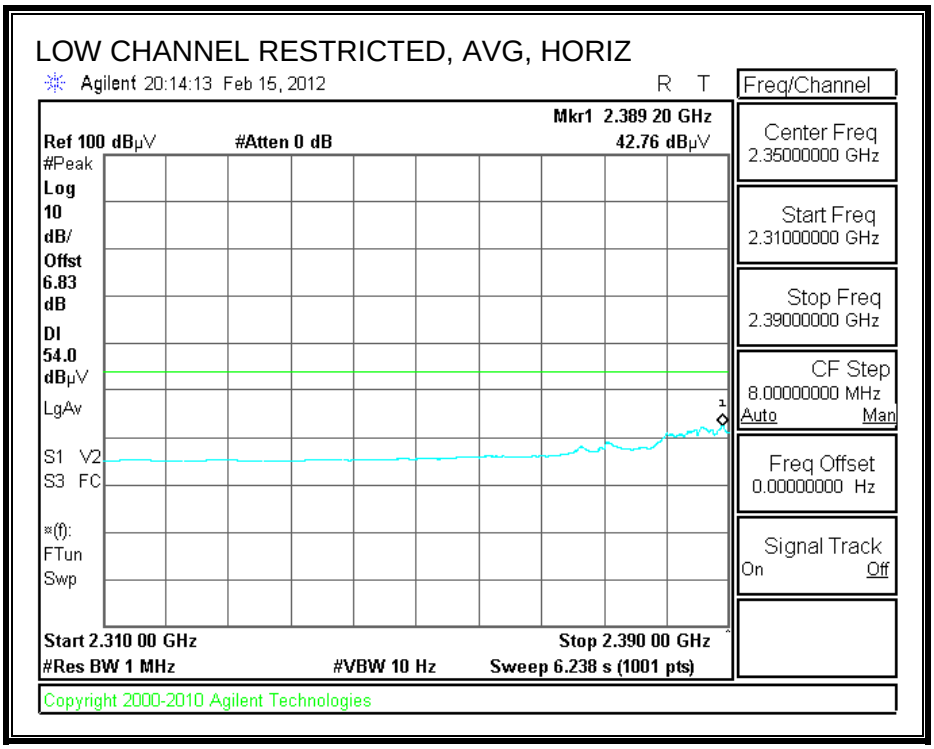
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

8.2. TRANSMITTER ABOVE 1 GHz

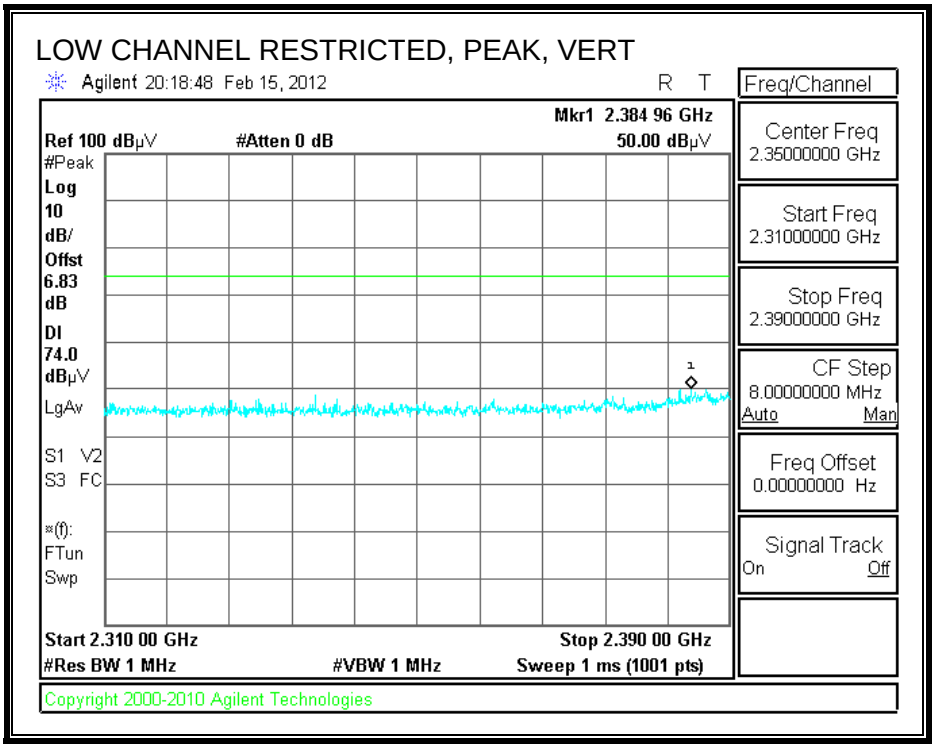
8.2.1. TX ABOVE 1 GHz FOR 802.11b MODE IN THE 2.4 GHz BAND

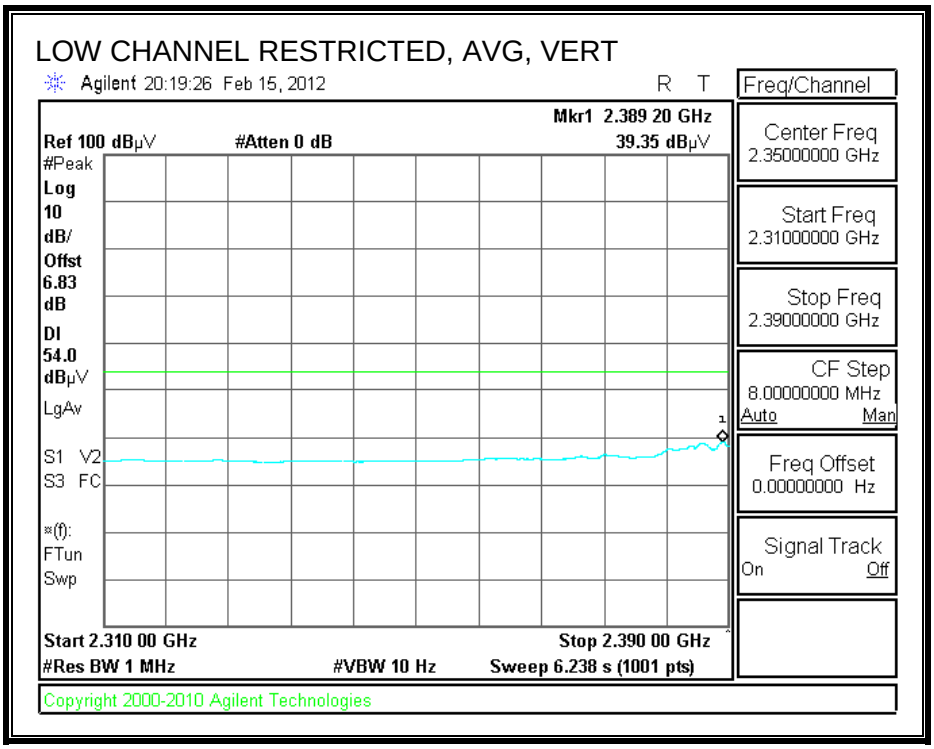
RESTRICTED BANDEDG (LOW CHANNEL, HORIZONTAL)



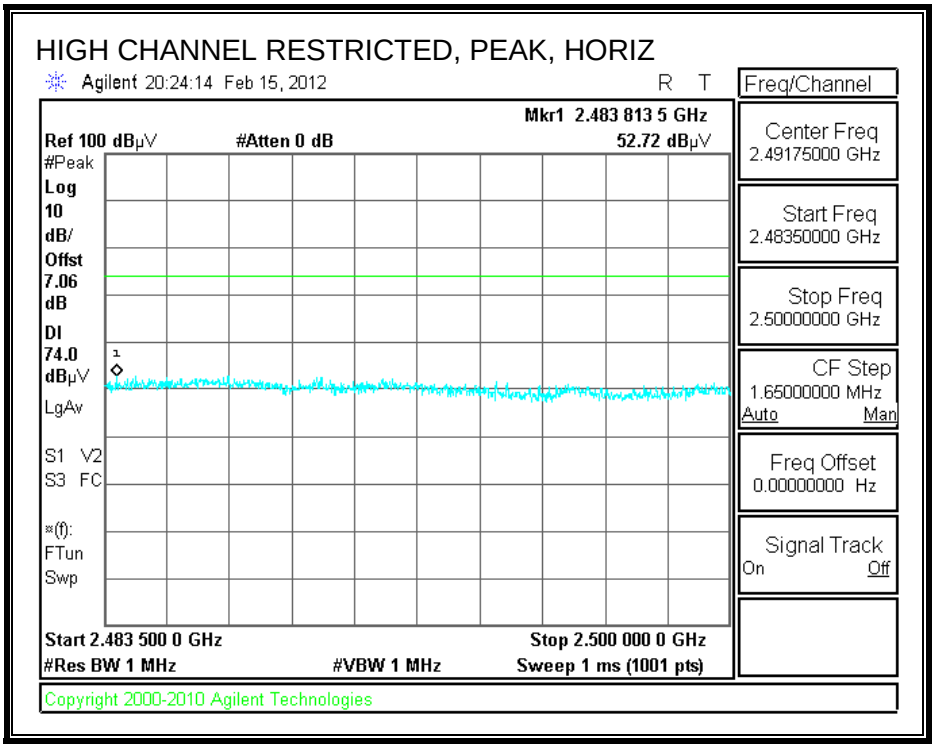


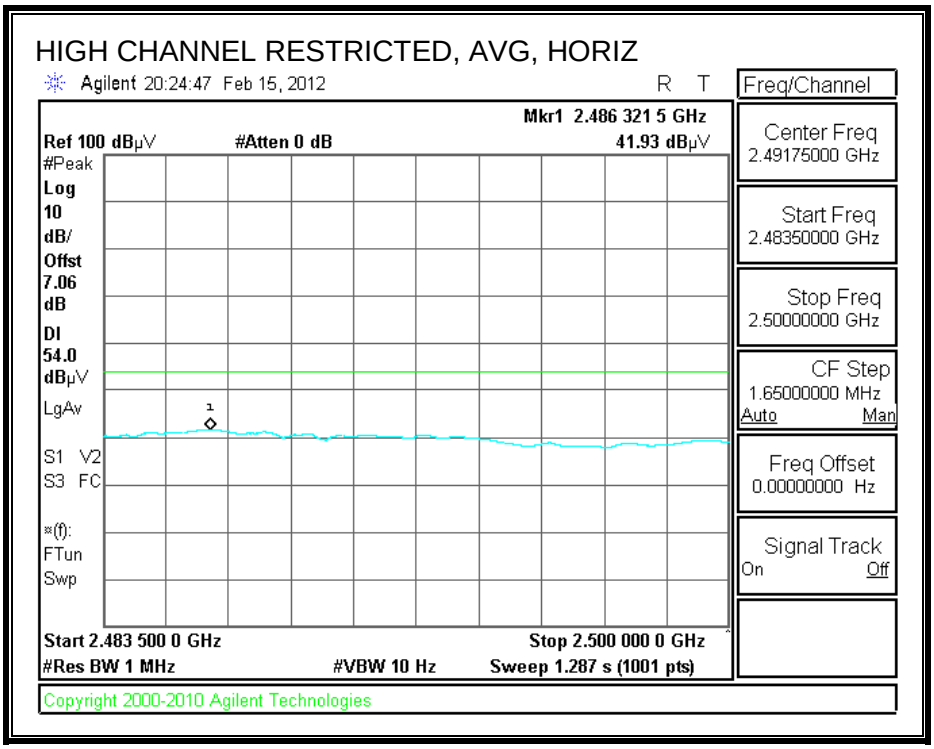
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



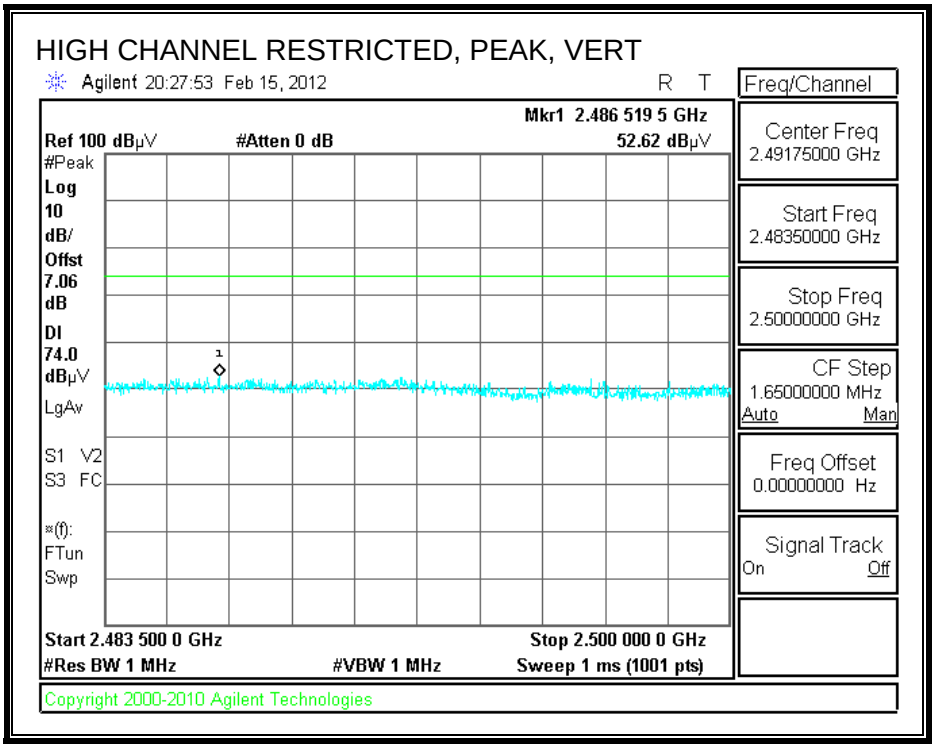


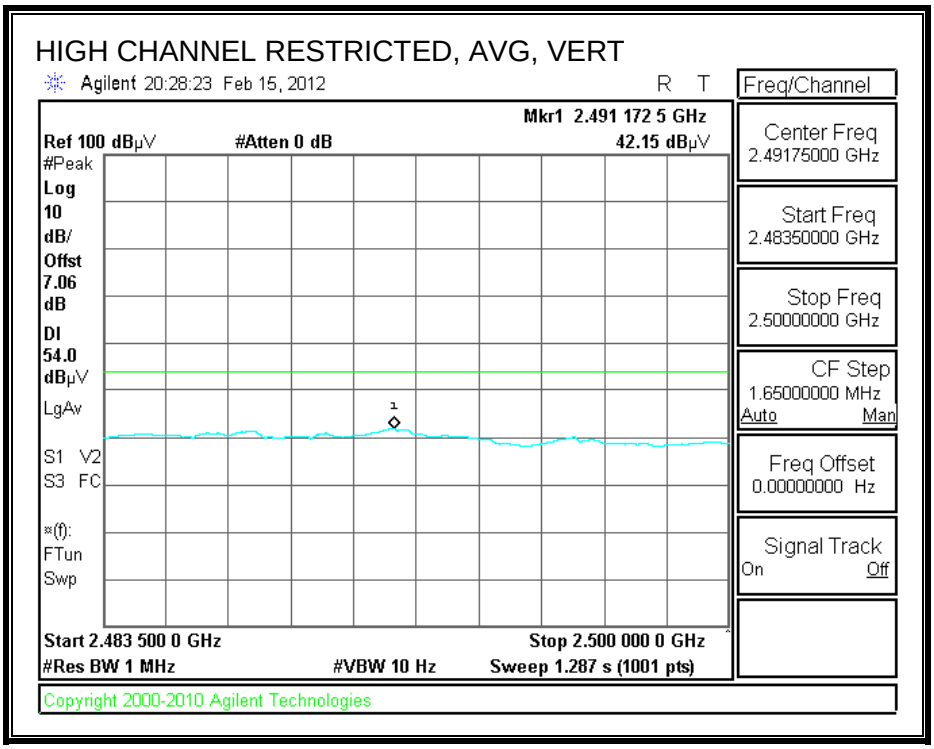
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

RADIATED ABOVE 1 GHz

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Company: Samsung Electronics
Project #: 12I14206
Date: 2/15/2012
Test Engineer: Steve Aguilar
Configuration: EUT with headset (Unit S/N 3006)
Mode: TX b Mode

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			FCC 15.209

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

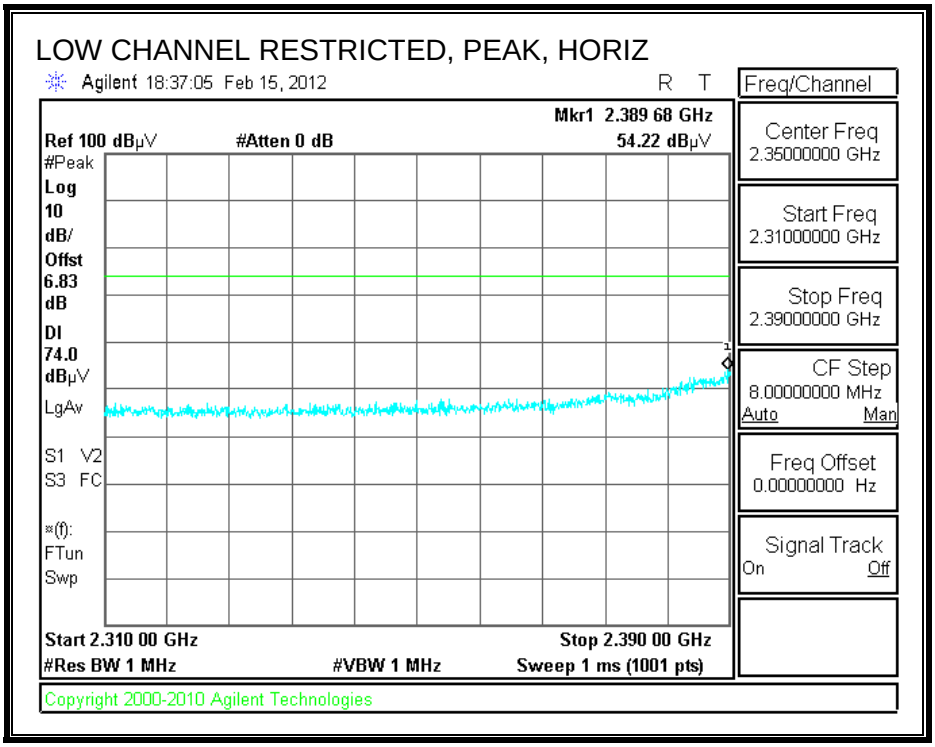
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel (2412 MHz)															
4.824	3.0	42.3	37.3	33.1	6.8	-34.1	0.0	0.0	48.1	43.2	74	54	-25.9	-10.8	H
4.824	3.0	41.6	36.6	33.1	6.8	-34.1	0.0	0.0	47.4	42.5	74	54	-26.6	-11.5	V
12.060	3.0	33.4	21.4	39.4	11.9	-32.3	0.0	0.0	52.4	40.4	74	54	-21.6	-13.6	H
12.060	3.0	33.5	21.3	39.4	11.9	-32.3	0.0	0.0	52.5	40.3	74	54	-21.5	-13.7	V
															V
Mid Channel (2437 MHz)															
4.874	3.0	41.6	37.4	33.2	6.8	-34.0	0.0	0.0	47.5	43.3	74	54	-26.5	-10.7	H
4.874	3.0	42.2	37.3	33.2	6.8	-34.0	0.0	0.0	48.1	43.2	74	54	-25.9	-10.8	V
7.311	3.0	36.9	25.6	36.3	9.1	-33.1	0.0	0.0	49.1	37.9	74	54	-24.9	-16.1	H
7.311	3.0	35.7	23.1	36.3	9.1	-33.1	0.0	0.0	48.0	35.4	74	54	-26.0	-18.6	V
12.185	3.0	33.3	21.3	39.4	12.0	-32.3	0.0	0.0	52.3	40.3	74	54	-21.7	-13.7	H
12.185	3.0	33.5	21.3	39.4	12.0	-32.3	0.0	0.0	52.6	40.4	74	54	-21.4	-13.6	V
High Channel (2462 Mhz)															
4.924	3.0	45.1	42.3	33.2	6.8	-34.0	0.0	0.0	51.1	48.3	74	54	-22.9	-5.7	H
4.924	3.0	43.2	39.3	33.2	6.8	-34.0	0.0	0.0	49.2	45.3	74	54	-24.8	-8.7	V
7.386	3.0	36.3	26.1	36.4	9.1	-33.1	0.0	0.0	48.7	38.5	74	54	-25.3	-15.5	H
7.386	3.0	35.4	22.8	36.4	9.1	-33.1	0.0	0.0	47.8	35.2	74	54	-26.2	-18.8	V
12.310	3.0	33.4	21.1	39.4	12.0	-32.3	0.0	0.0	52.5	40.2	74	54	-21.5	-13.8	H
12.310	3.0	33.6	21.2	39.4	12.0	-32.3	0.0	0.0	52.8	40.3	74	54	-21.2	-13.7	V

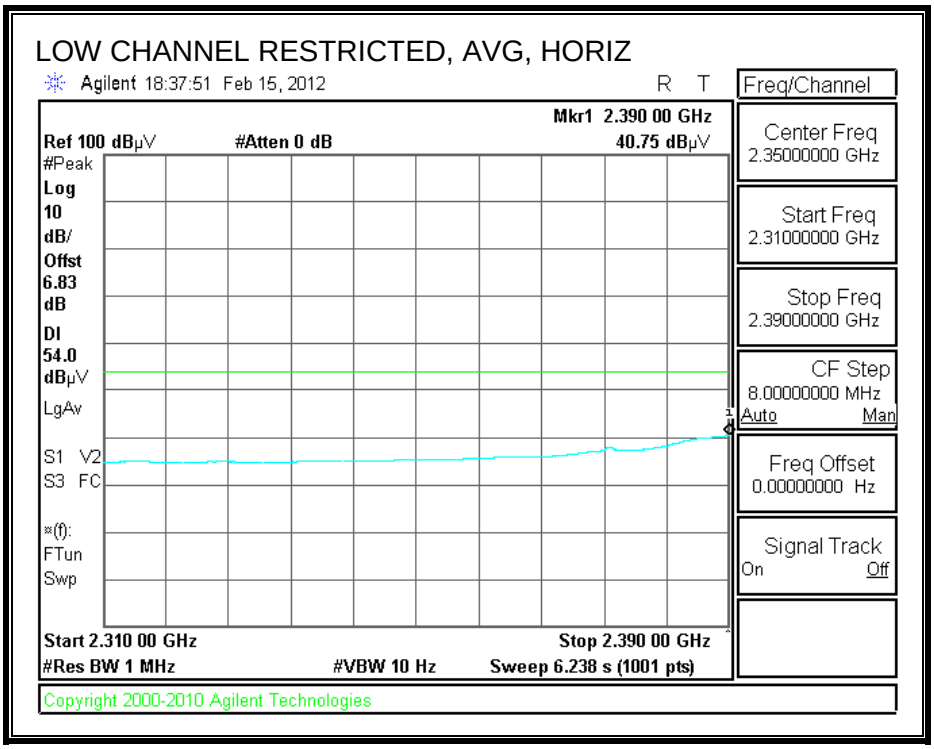
Rev. 07.08.11

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		

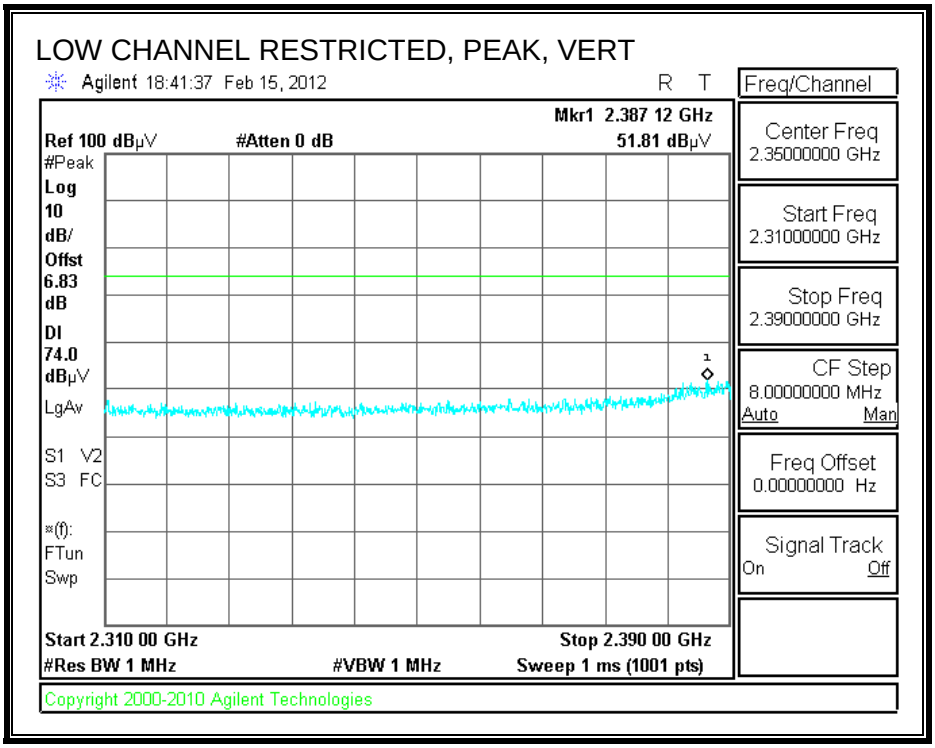
8.2.2. TX ABOVE 1 GHz FOR 802.11g MODE IN THE 2.4 GHz BAND

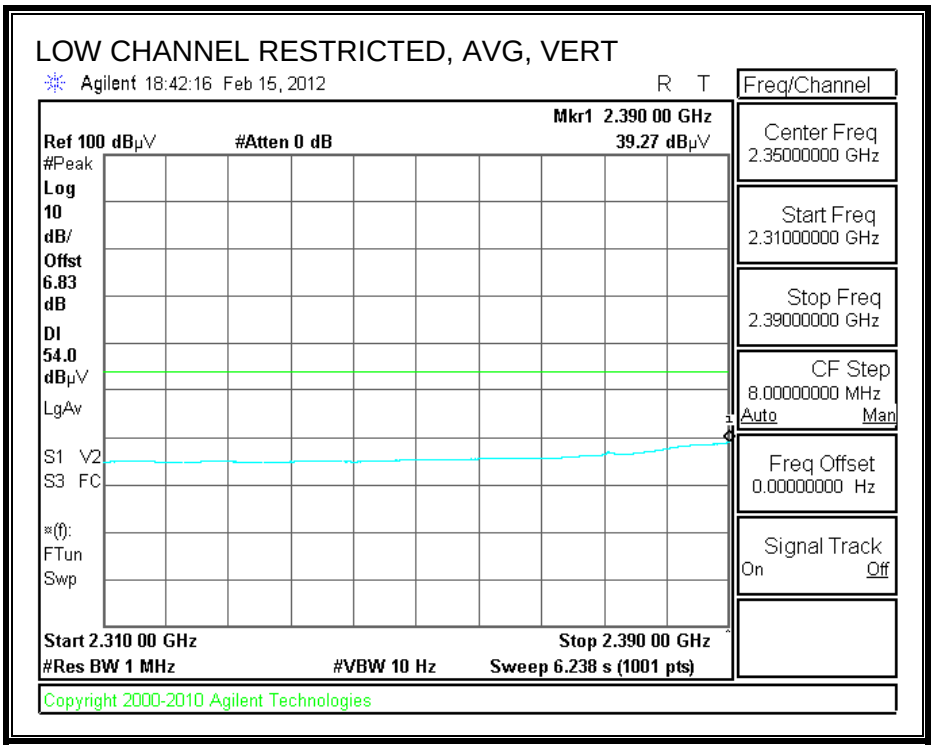
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



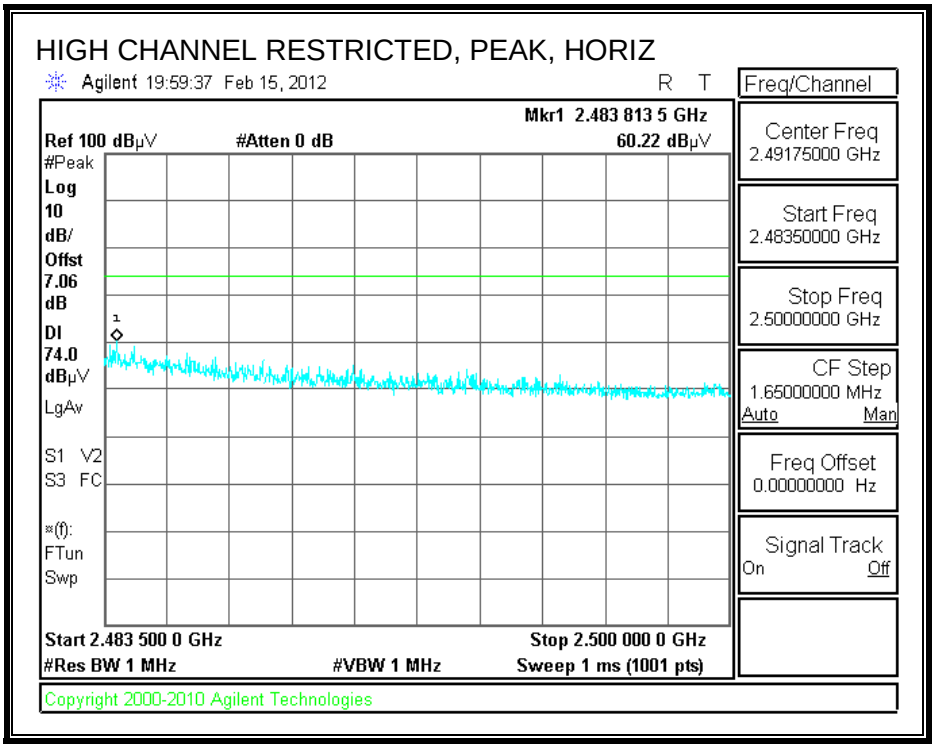


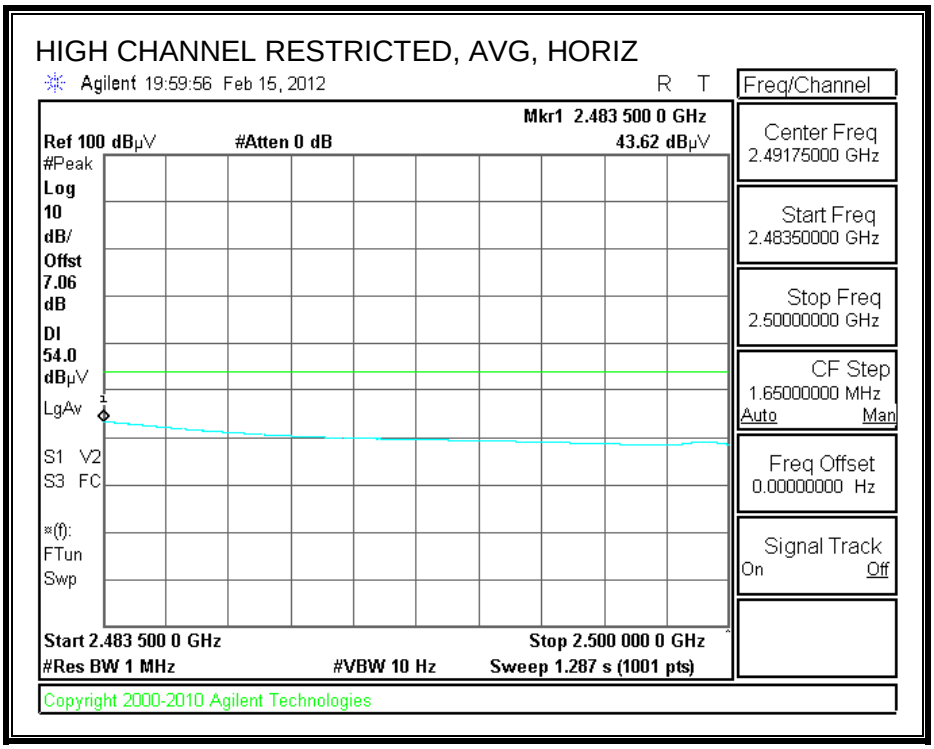
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



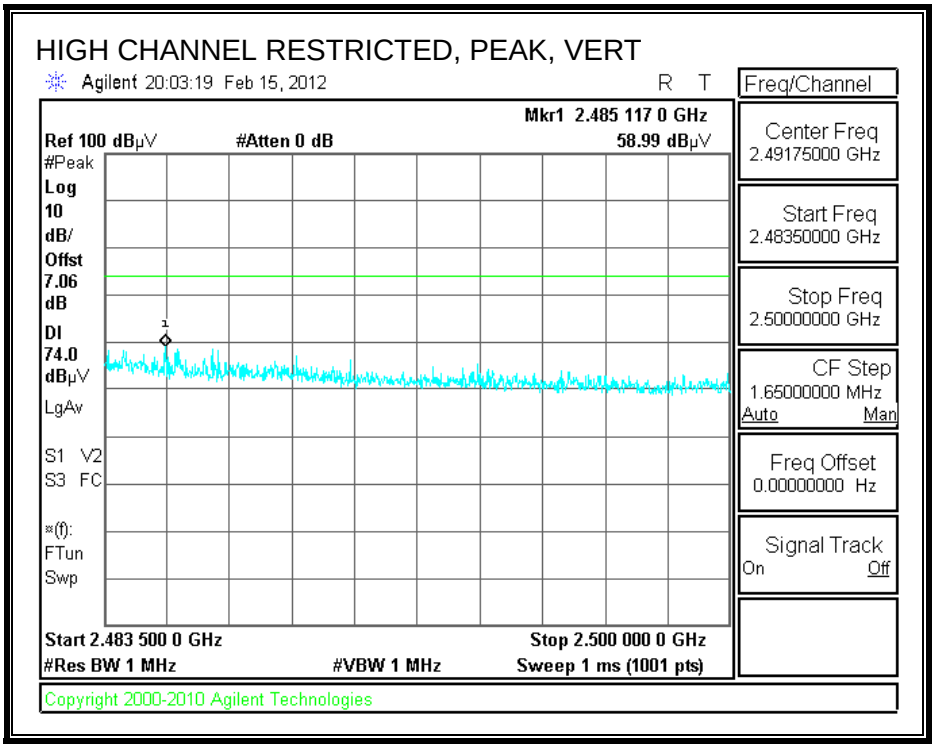


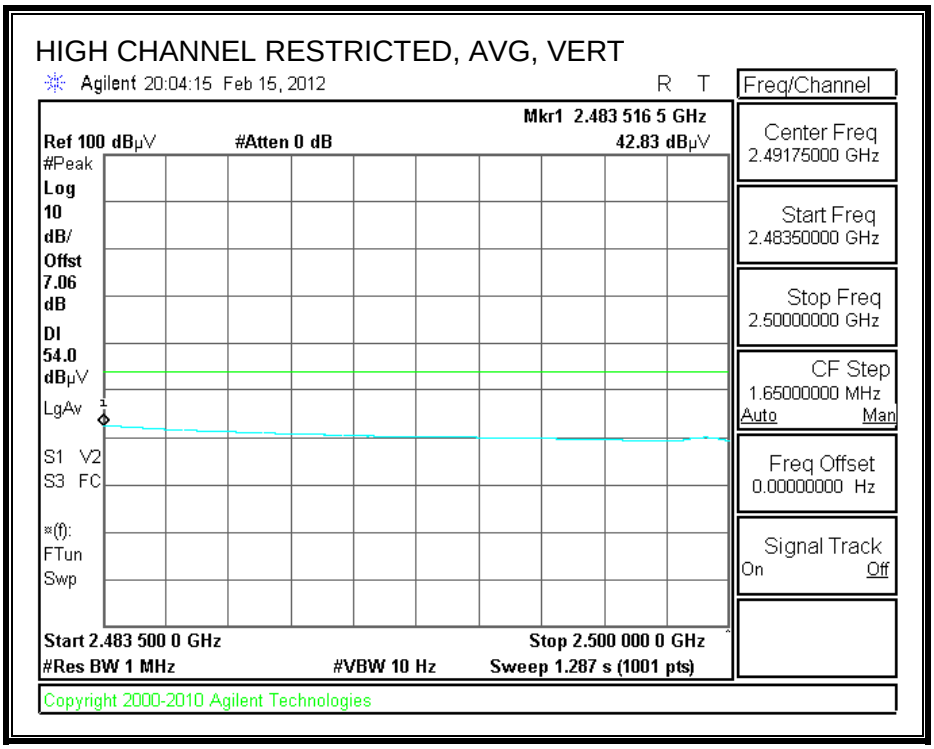
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

RADIATED ABOVE 1 GHz

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Company: Samsung Electronics
Project #: 12I14206
Date: 2/15/2012
Test Engineer: Steve Aguilar
Configuration: EUT with headset (Unit S/N 3006)
Mode: TX g Mode

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			FCC 15.209

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	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 Channel (2412 MHz)															
4.824	3.0	43.2	30.2	33.1	6.8	-34.1	0.0	0.0	49.1	36.0	74	54	-24.9	-18.0	H
4.824	3.0	42.5	29.0	33.1	6.8	-34.1	0.0	0.0	48.3	34.8	74	54	-25.7	-19.2	V
7.236	3.0	42.0	26.6	36.2	9.1	-33.2	0.0	0.0	54.1	38.8	74	54	-19.9	-15.2	H
7.236	3.0	38.6	25.3	36.2	9.1	-33.2	0.0	0.0	50.7	37.4	74	54	-23.3	-16.6	V
															V
Mid Channel (2437 MHz)															
4.874	3.0	45.4	31.9	33.2	6.8	-34.0	0.0	0.0	51.4	37.9	74	54	-22.6	-16.1	H
4.874	3.0	43.6	29.7	33.2	6.8	-34.0	0.0	0.0	49.5	35.6	74	54	-24.5	-18.4	V
7.311	3.0	40.1	26.2	36.3	9.1	-33.1	0.0	0.0	52.4	38.5	74	54	-21.6	-15.5	H
7.311	3.0	36.2	23.6	36.3	9.1	-33.1	0.0	0.0	48.5	35.8	74	54	-25.5	-18.2	V
High Channel (2462 Mhz)															
4.924	3.0	46.8	33.3	33.2	6.8	-34.0	0.0	0.0	52.8	39.4	74	54	-21.2	-14.6	H
4.924	3.0	45.9	31.8	33.2	6.8	-34.0	0.0	0.0	51.9	37.8	74	54	-22.1	-16.2	V
7.386	3.0	41.4	27.0	36.4	9.1	-33.1	0.0	0.0	53.8	39.4	74	54	-20.2	-14.6	H
7.386	3.0	38.1	24.6	36.4	9.1	-33.1	0.0	0.0	50.5	37.1	74	54	-23.5	-16.9	V

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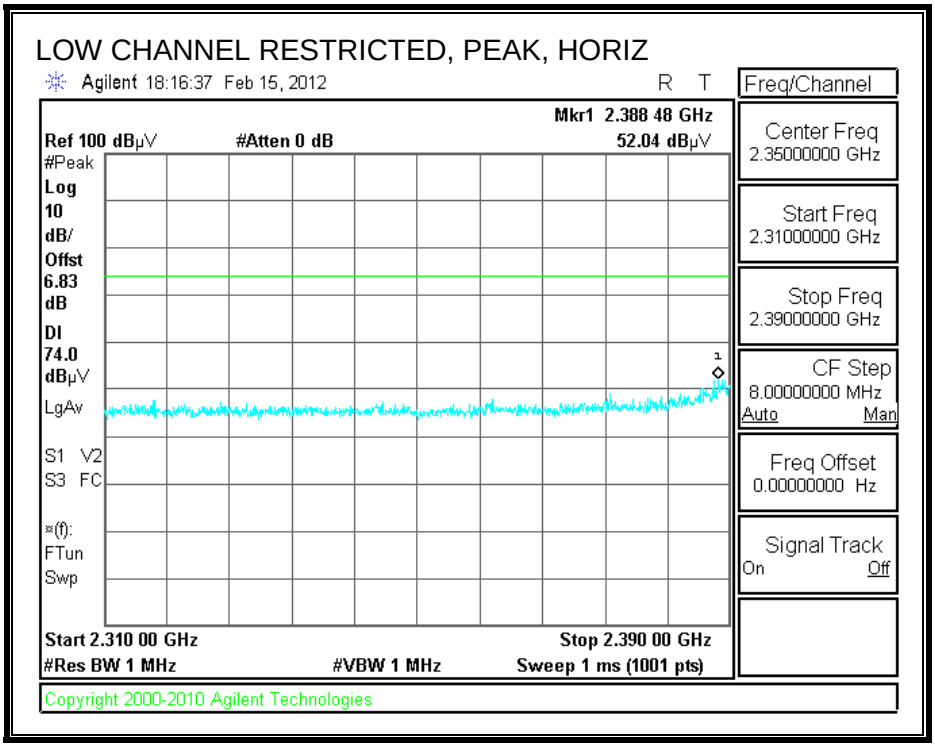
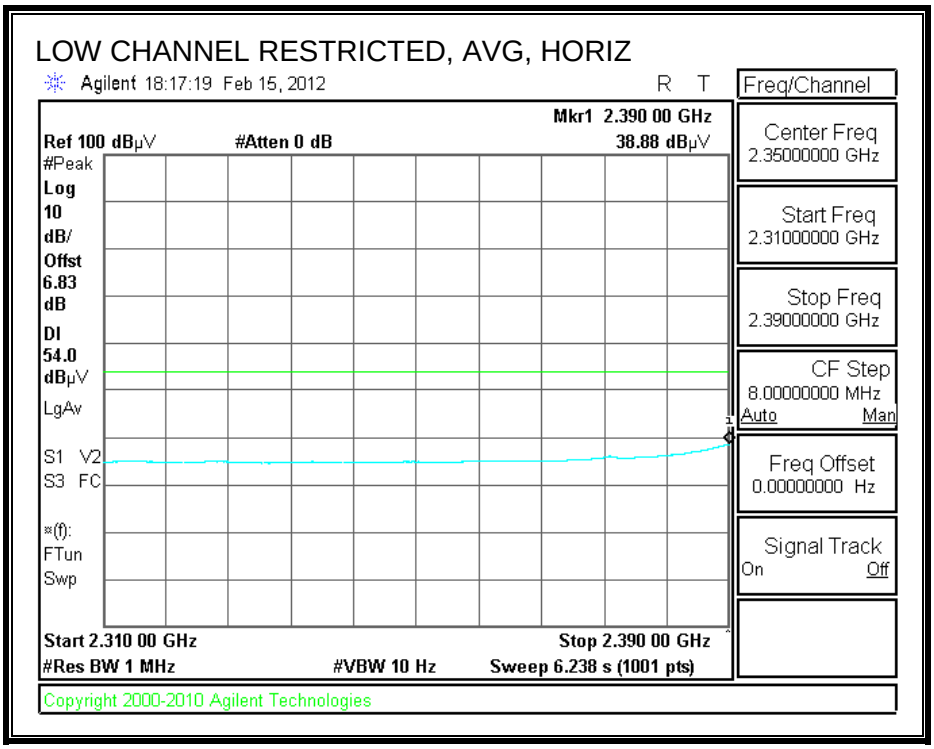
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

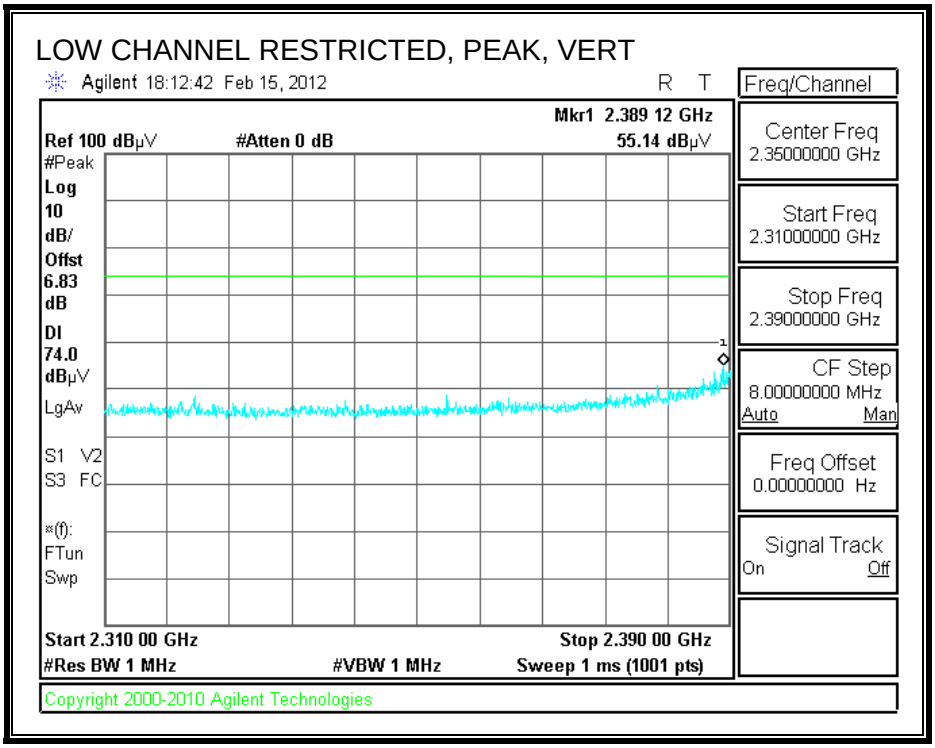
8.2.3. TX ABOVE 1 GHz FOR 802.11n HT20 MODE IN THE 2.4 GHz BAND

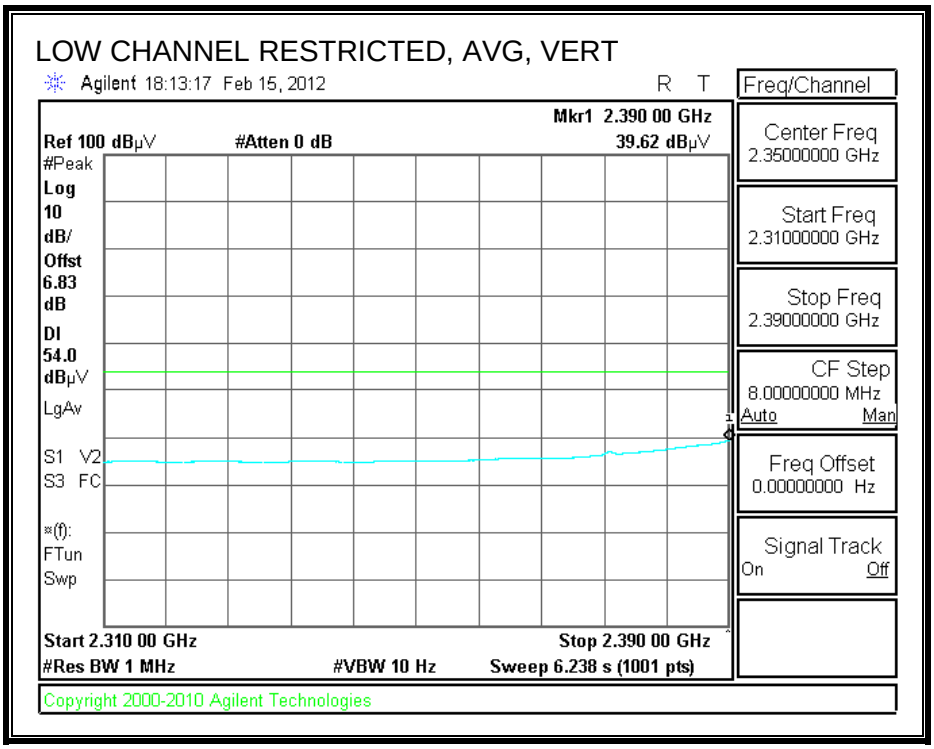
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



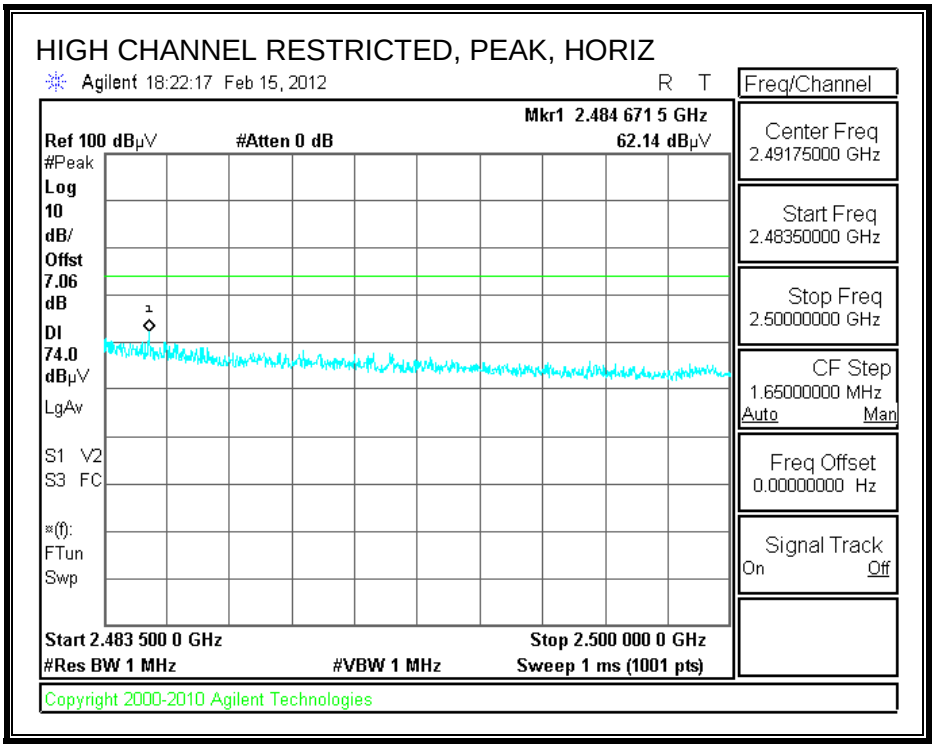


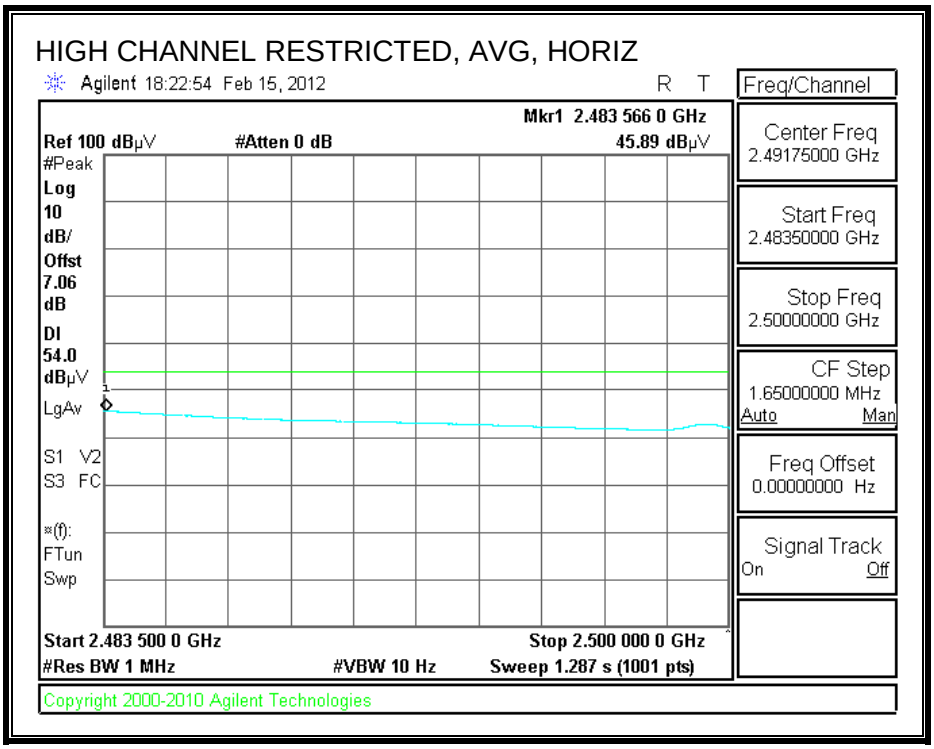
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



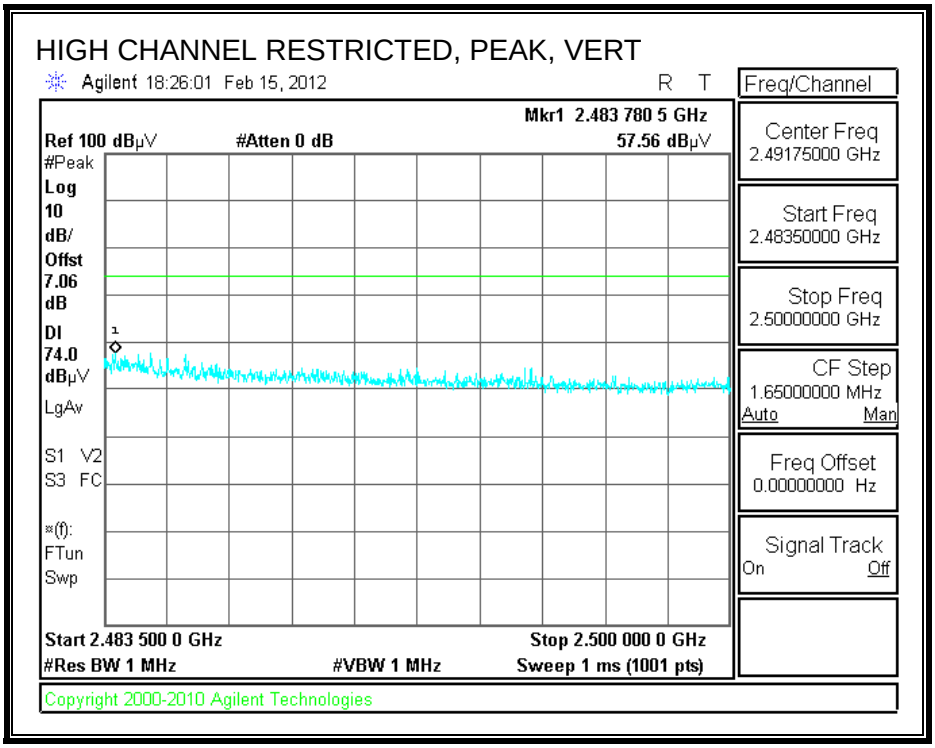


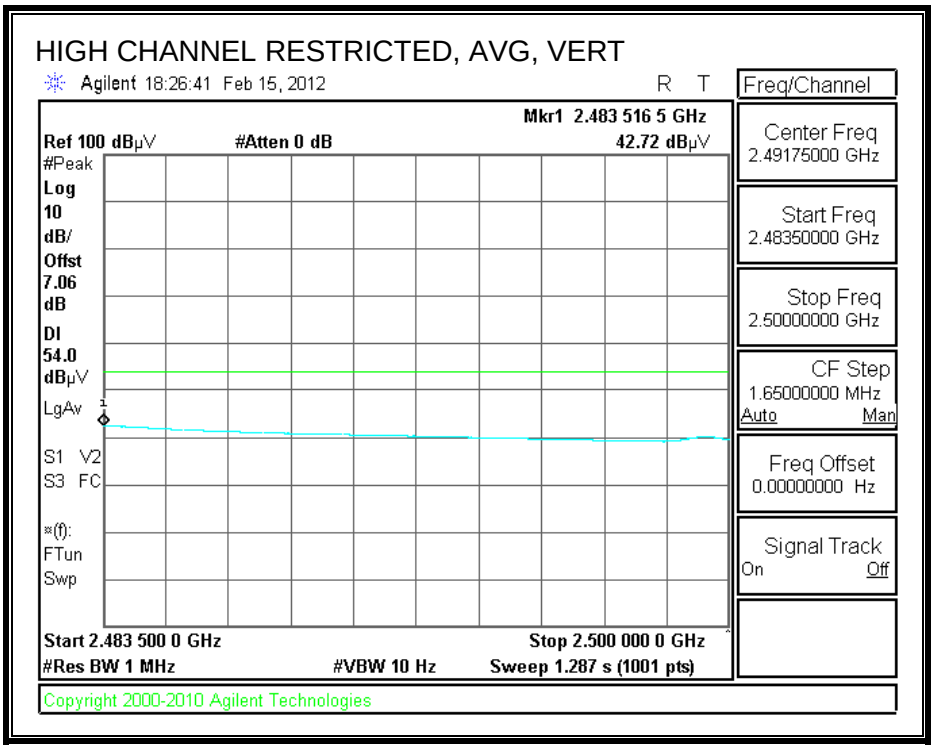
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

RADIATED ABOVE 1 GHz

High Frequency Measurement
Compliance Certification Services, Fremont 3m Chamber

Company: Samsung Electronics
Project #: 12I14206
Date: 2/15/2012
Test Engineer: Steve Aguilar
Configuration: EUT with headset (Unit S/N 3006)
Mode: TX HT20 Mode

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			FCC 15.209

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	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 Channel (2412 MHz)															
4.824	3.0	44.4	30.4	33.1	6.8	-34.1	0.0	0.0	50.3	36.2	74	54	-23.7	-17.8	H
4.824	3.0	42.8	29.4	33.1	6.8	-34.1	0.0	0.0	48.6	35.2	74	54	-25.4	-18.8	V
7.236	3.0	41.2	26.6	36.2	9.1	-33.2	0.0	0.0	53.4	38.7	74	54	-20.6	-15.3	H
7.236	3.0	35.5	23.2	36.2	9.1	-33.2	0.0	0.0	47.6	35.4	74	54	-26.4	-18.6	V
															V
Mid Channel (2437 MHz)															
4.874	3.0	44.5	30.9	33.2	6.8	-34.0	0.0	0.0	50.4	36.9	74	54	-23.6	-17.1	H
4.874	3.0	44.2	29.8	33.2	6.8	-34.0	0.0	0.0	50.2	35.7	74	54	-23.8	-18.3	V
7.311	3.0	38.5	25.2	36.3	9.1	-33.1	0.0	0.0	50.8	37.4	74	54	-23.2	-16.6	H
7.311	3.0	37.7	25.0	36.3	9.1	-33.1	0.0	0.0	50.0	37.3	74	54	-24.0	-16.7	V
High Channel (2462 Mhz)															
4.924	3.0	48.0	32.8	33.2	6.8	-34.0	0.0	0.0	54.0	38.8	74	54	-20.0	-15.2	H
4.924	3.0	43.2	29.8	33.2	6.8	-34.0	0.0	0.0	49.2	35.8	74	54	-24.8	-18.2	V
7.386	3.0	41.3	26.7	36.4	9.1	-33.1	0.0	0.0	53.7	39.1	74	54	-20.3	-14.9	H
7.386	3.0	36.1	23.8	36.4	9.1	-33.1	0.0	0.0	48.5	36.2	74	54	-25.5	-17.8	V

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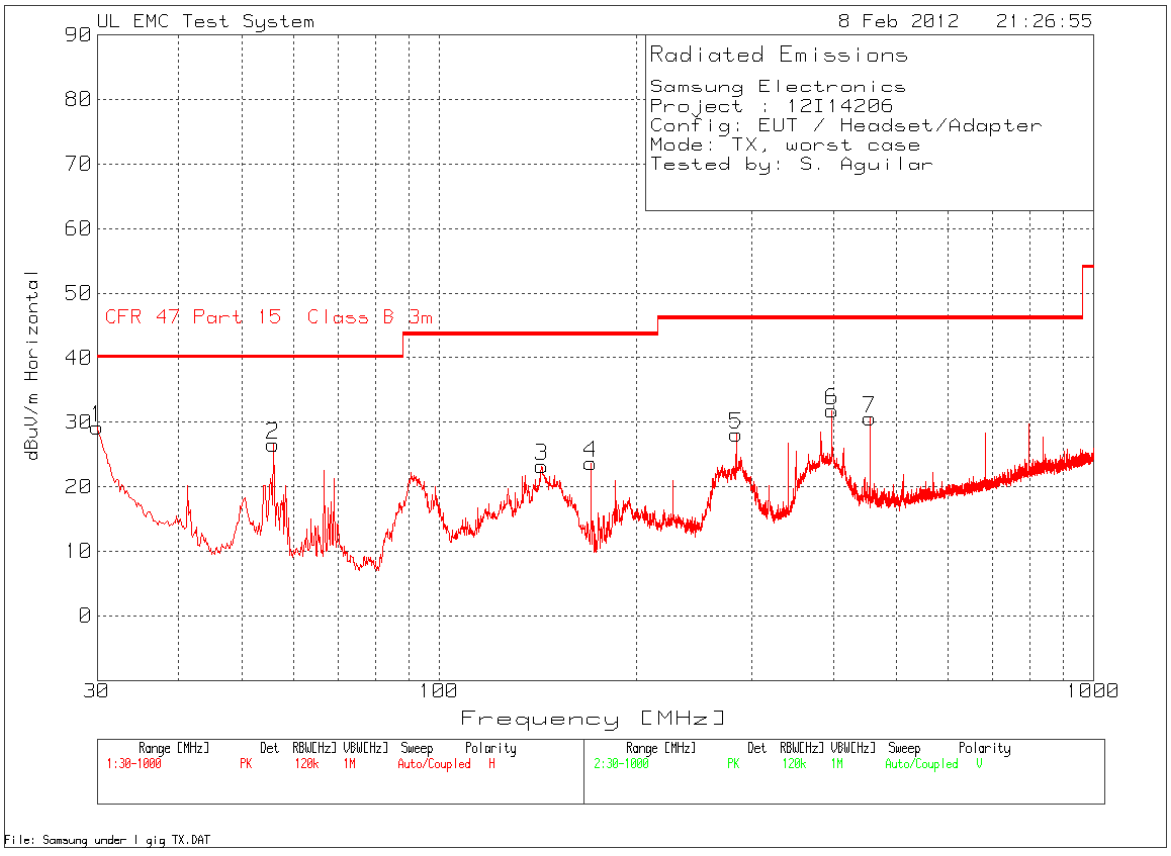
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

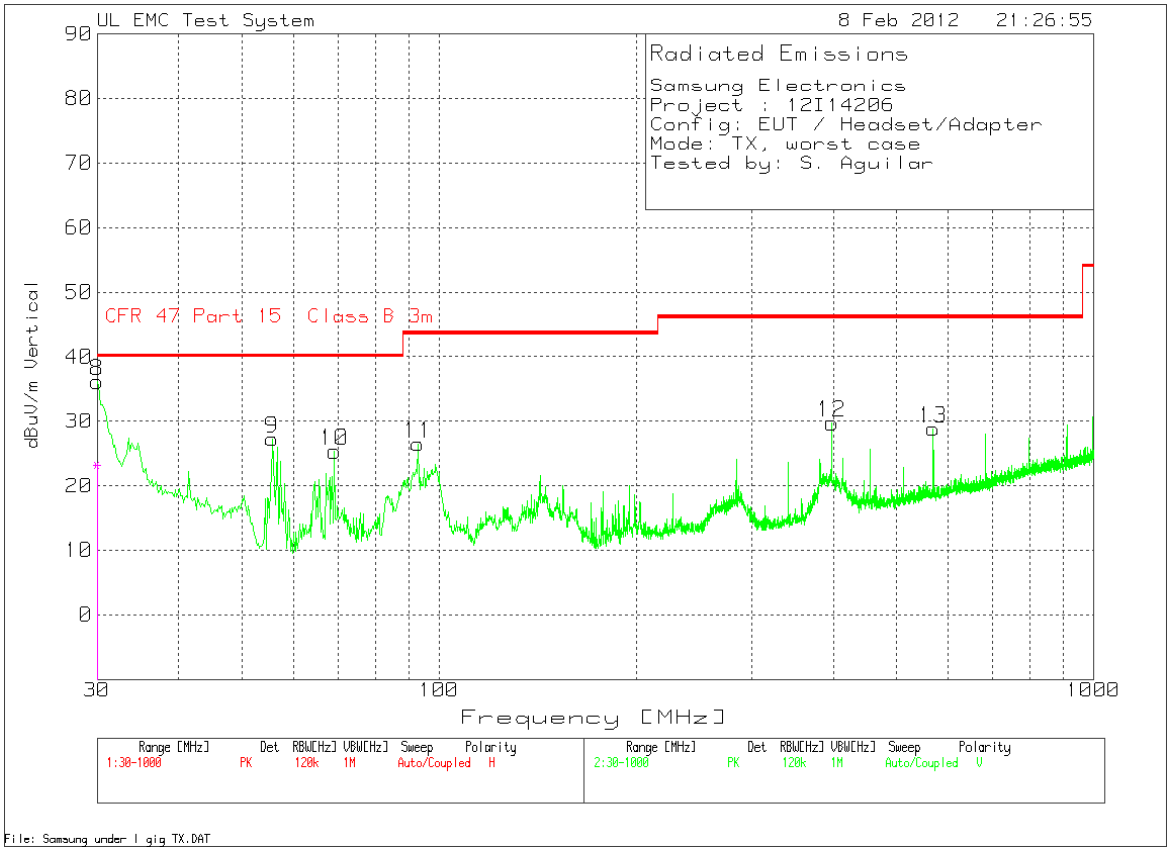
8.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Samsung Electronics
Project : 12I14206
Config: EUT / Heads 2/7/2012
Mode: TX, worst case
Tested by: S. Aguilar

Test Frequency	Meter Reading	Detector	Amplifier [dB]	T130 Bilog [dB]	Corrected dBuV/m	Class B 3m limit	QP Margin	Height [cm]	Polarity
30	38.13	PK	-29.3	20.4	29.23	40	-10.77	100	Horz
55.7814	47.65	PK	-29	7.9	26.55	40	-13.45	400	Horz
143.3993	38.31	PK	-28.1	13	23.21	43.5	-20.29	200	Horz
170.5376	41.39	PK	-27.8	10.1	23.69	43.5	-19.81	200	Horz
284.5184	42.22	PK	-26.9	12.8	28.12	46	-17.88	100	Horz
398.1115	43.74	PK	-26.9	15	31.84	46	-14.16	100	Horz
455.1019	41.63	PK	-27	16	30.63	46	-15.37	200	Horz
30	45.05	PK	-29.3	20.4	36.15	40	-3.85	100	Vert
30.0702	32.13	QP	-29.3	20.3	23.13	40	-16.87	159	Horz
55.5875	48.36	PK	-29	7.9	27.26	40	-12.74	400	Vert
69.1567	46.03	PK	-28.9	8.2	25.33	40	-14.67	100	Vert
92.8058	46.89	PK	-28.6	8.2	26.49	43.5	-17.01	100	Vert
398.1115	41.62	PK	-26.9	15	29.72	46	-16.28	100	Vert
568.8889	37.74	PK	-26.7	17.8	28.84	46	-17.16	100	Vert

PK - Peak detector
QP - Quasi-peak detector

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

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

WORST EMISSIONS

Samsung Electronics
Project: 12I14206
Config: EUT/Headset/Adapter
Mode: TX, Worst Case
Tested by: S. Aguilar

Line-L1 .15 - 30MHz

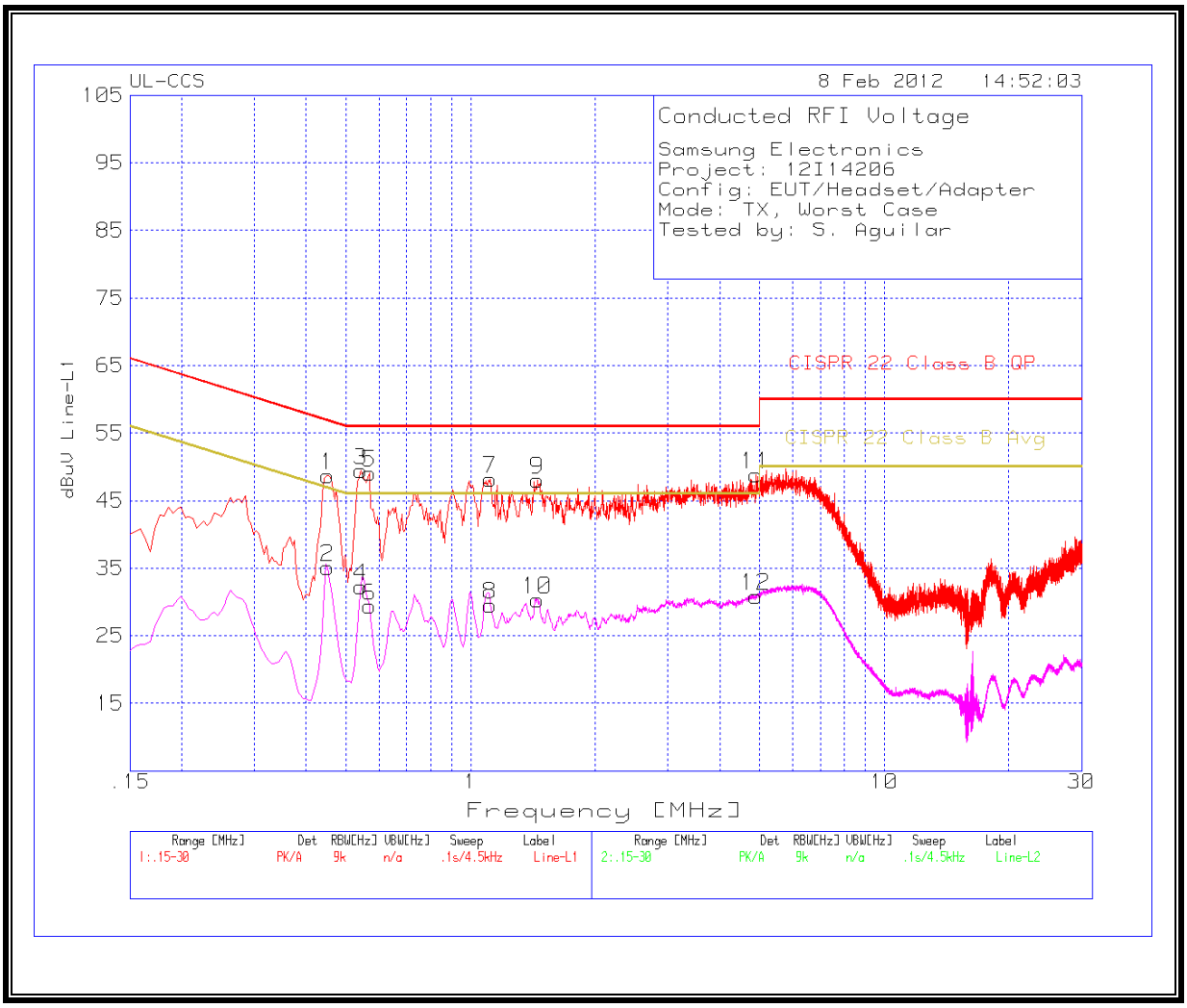
Test Frequency	Meter Reading	Detector	T24 LISN [dB]	Cables [dB]	Corrected dBuV	Class B QP	QP Margin	Class B Avg	Av Margin
0.4515	48.65	PK	0.1	0	48.75	56.8	-8.05	-	-
0.4515	35	Av	0.1	0	35.1	-	-	46.8	-11.7
0.5415	49.31	PK	0.1	0	49.41	56	-6.59	-	-
0.5415	32.14	Av	0.1	0	32.24	-	-	46	-13.76
0.5685	49.03	PK	0.1	0	49.13	56	-6.87	-	-
0.5685	29.25	Av	0.1	0	29.35	-	-	46	-16.65
1.1175	48.04	PK	0.1	0	48.14	56	-7.86	-	-
1.1175	29.45	Av	0.1	0	29.55	-	-	46	-16.45
1.4505	47.86	PK	0.1	0.1	48.06	56	-7.94	-	-
1.4505	30.16	Av	0.1	0.1	30.36	-	-	46	-15.64
4.8885	48.63	PK	0.1	0.1	48.83	56	-7.17	-	-
4.8885	30.62	Av	0.1	0.1	30.82	-	-	46	-15.18

Line-L2 .15 - 30MHz

Test Frequency	Meter Reading	Detector	T24 LISN [dB]	Cables [dB]	Corrected dBuV	Class B QP	QP Margin	Class B Avg	Av Margin
0.4695	47.02	PK	0.1	0	47.12	56.5	-9.38	-	-
0.4695	23.56	Av	0.1	0	23.66	-	-	46.5	-22.84
0.5685	49.39	PK	0.1	0	49.49	56	-6.51	-	-
0.5685	25.29	Av	0.1	0	25.39	-	-	46	-20.61
1.0275	48.15	PK	0.1	0	48.25	56	-7.75	-	-
1.0275	24.24	Av	0.1	0	24.34	-	-	46	-21.66
1.1355	48.83	PK	0.1	0.1	49.03	56	-6.97	-	-
1.1355	24.44	Av	0.1	0.1	24.64	-	-	46	-21.36
1.608	47.87	PK	0.1	0.1	48.07	56	-7.93	-	-
1.608	23.04	Av	0.1	0.1	23.24	-	-	46	-22.76
3.4215	48.18	PK	0.1	0.1	48.38	56	-7.62	-	-
3.4215	24.44	Av	0.1	0.1	24.64	-	-	46	-21.36

PK - Peak detector
QP - Quasi-Peak detector
Av - Average detector

LINE 1 RESULTS



LINE 2 RESULTS