



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

**BT3.0+HS, 802.11 BGN 1X1 HT20, GSM850/1900 BAR PHONE W/HOTSPOTS. EDGE
ONLY RX.**

MODEL NUMBER: GT-S5380E

FCC ID: A3LGT5380E

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Prepared for

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NVLAP LAB CODE 200065-0

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Rev.	Issue Date	Revisions	Revised By
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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: BT3.0+HS,802.11BGN 1X1 HT20, GSM850/1900 Bar phone with
hotspots, Edge RX Only.

MODEL: GT-S5380E

SERIAL NUMBER: 02049[#5] (RADIATED), FJ-051-D (CONDUCTED)

DATE TESTED: MARCH 13 - MARCH 27, 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 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, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

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 BT3.0+HS,802.11 BGN 1X1 HT20, GSM850/1900 BAR Phone W/Hotspot. Edge Only RX.

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	17.65	58.21
2412 - 2462	802.11g	23.00	199.53
2412 - 2462	802.11n HT20	21.99	158.12

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of -6 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was WLAN Test Engineering Mode.

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1 GHz and power line conducted emission tests were performed with the EUT transmitting at the channel with highest output power as worst-case scenario.

The fundamental frequency was investigated for the EUT in three orthogonal orientations X,Y, and Z (battery-operated), also for EUT with AC/DC adapter and with headset connected; it was found that the worst-case orientation among them was X orientation with AC/DC adapter and with headset. All final radiated emission testing was performed using the worst-case orientation.

Worst-case data rates used for 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	ATADS20C	RT1C119DS/7-E	DoC
Headset	Samsung	N/A	FS-050A	N/A

I/O CABLES (CONDUCTED SETUP)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	US AC	US 115V	--	Wall adapter
2	AC	1	AC	AC	1.5	Unshielded
3	DC	1	USB	DC	1,3	Unshielded
4	RF In/Out	1	SMA	--	0.1	--

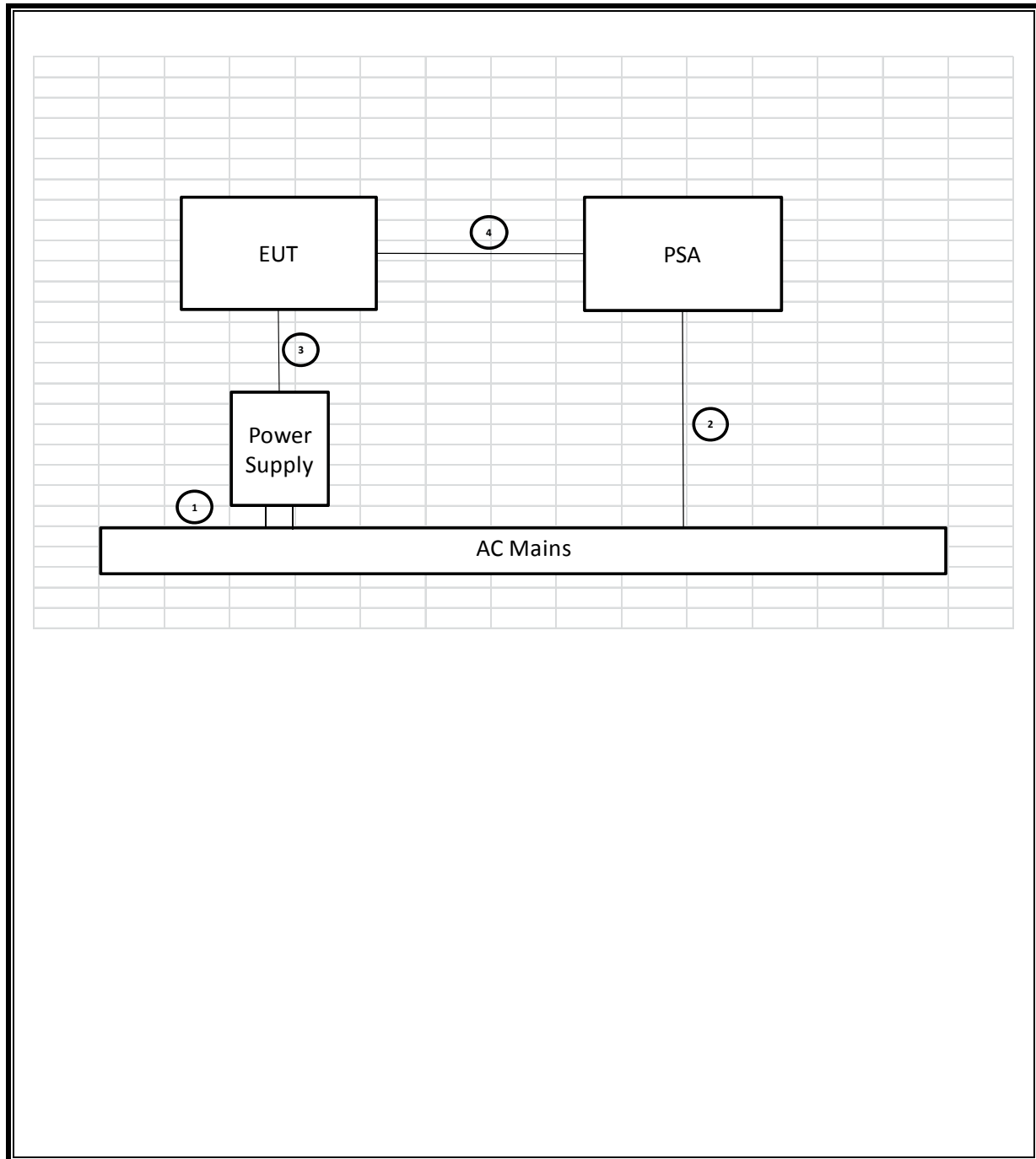
I/O CABLES (RADIATED SETUP)

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

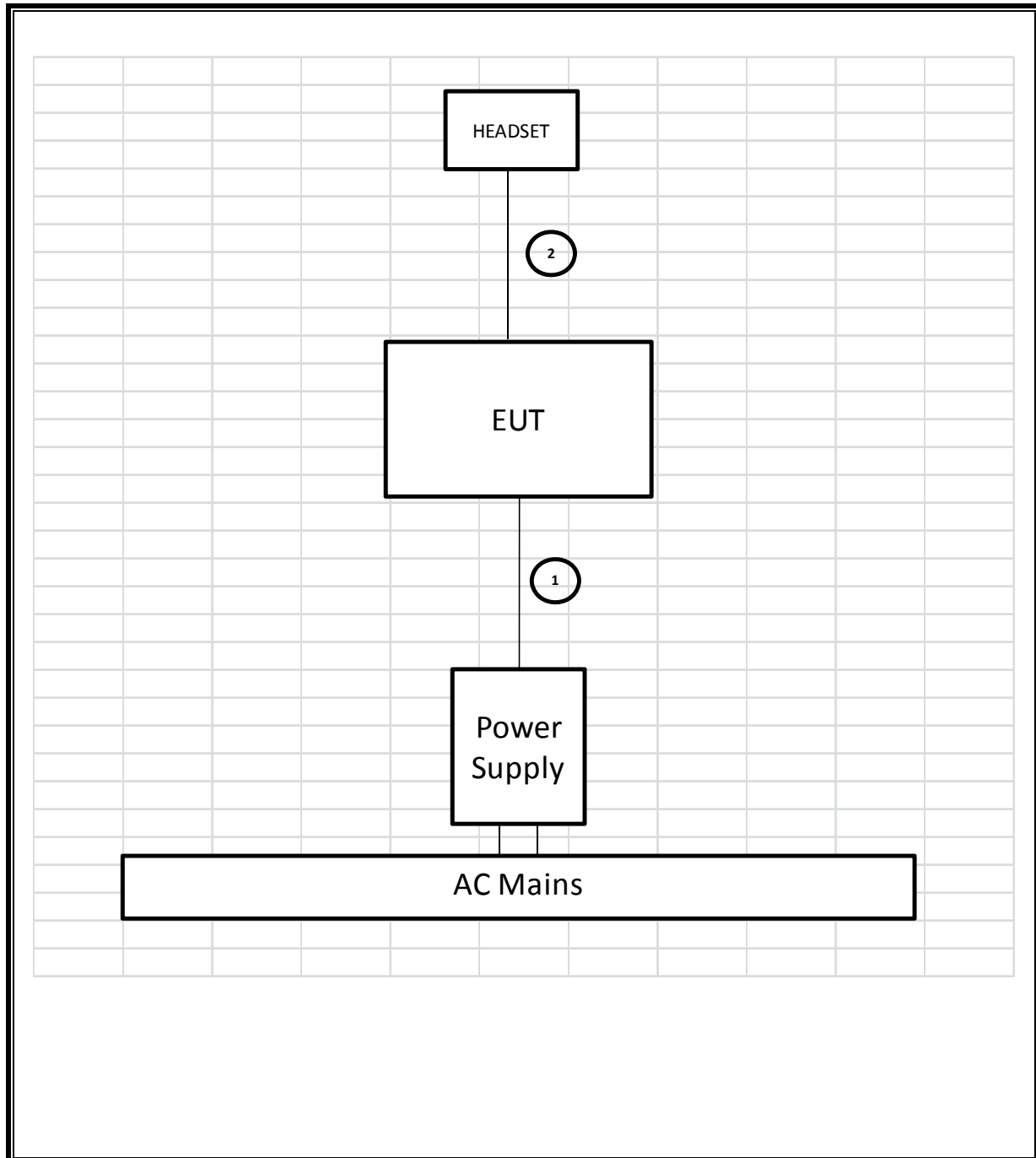
TEST SETUP

The EUT is standalone. Adapter and headset is attached as required by the test.
Test software loaded in the EUT is exercised for testing.

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	E4407B	C01098	01/30/11	04/30/12
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
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	09/02/11	09/02/12
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
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01171	01/26/12	01/26/13
Antenna, Horn, 18 GHz	EMCO	3115	C00872	09/20/11	09/20/12
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	07/28/11	07/28/12
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	07/06/11	07/06/12
LISN, 30 MHz	FCC	50/250-25-2	C00626	12/13/11	12/13/12

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.

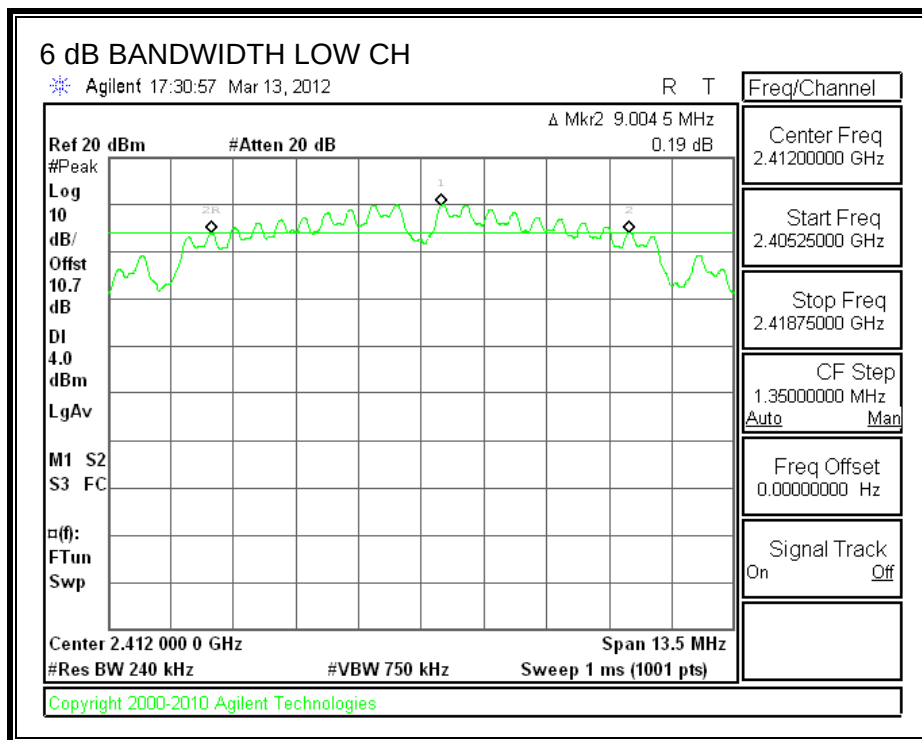
TEST PROCEDURE

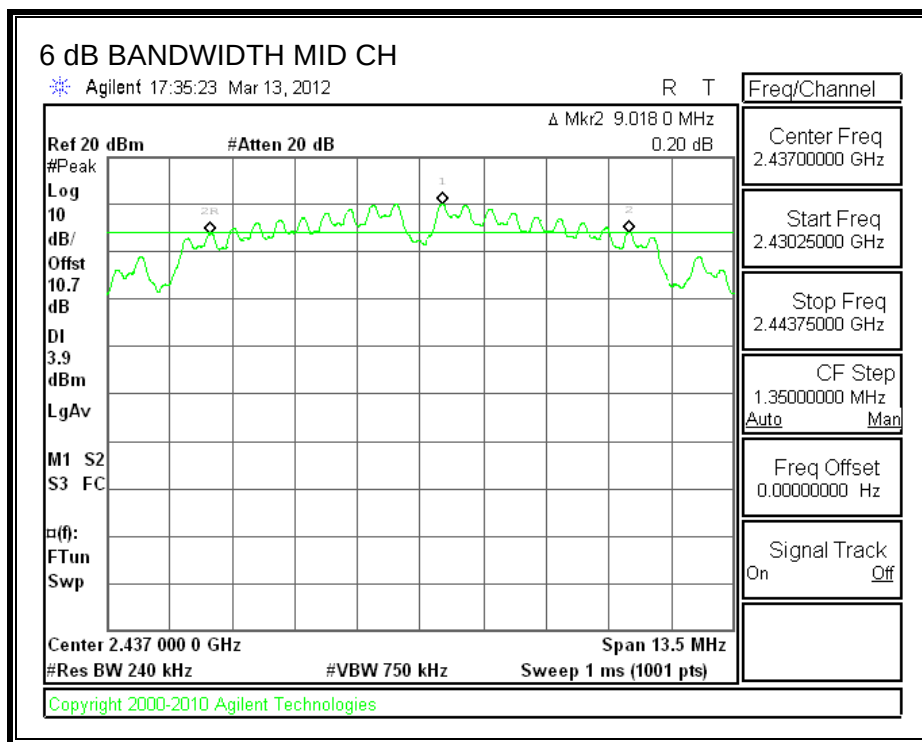
KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

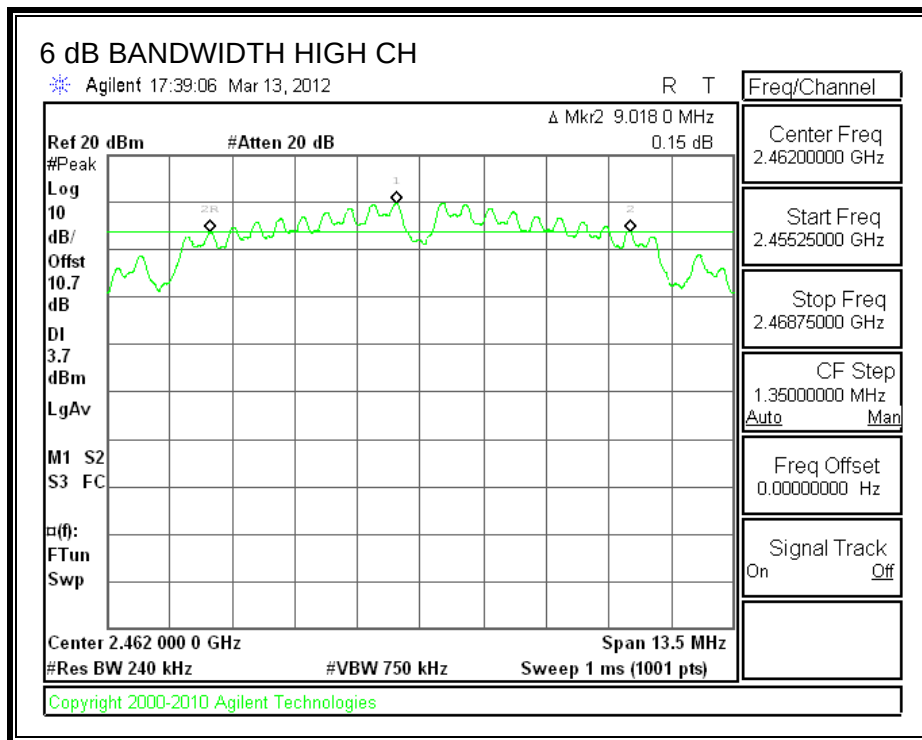
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.0045	0.5
Middle	2437	9.0180	0.5
High	2462	9.0180	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.

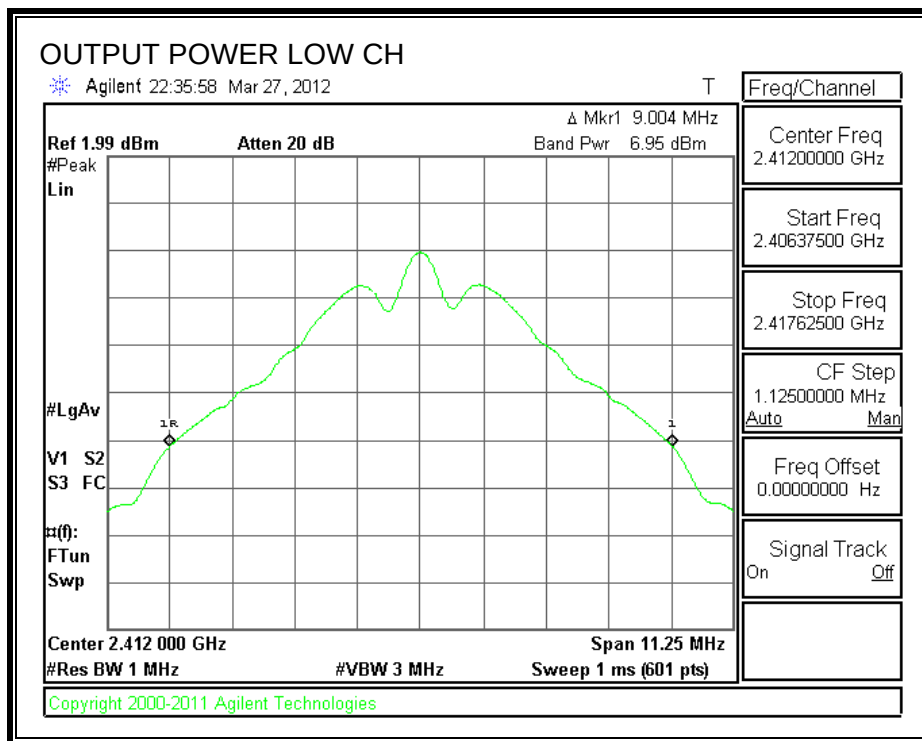
TEST PROCEDURE

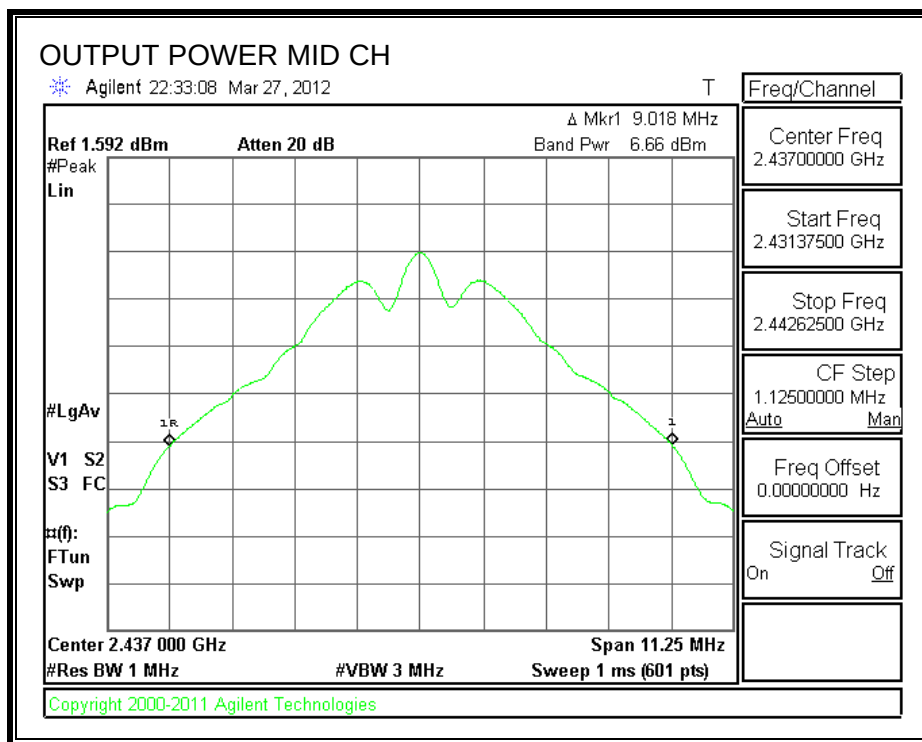
KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

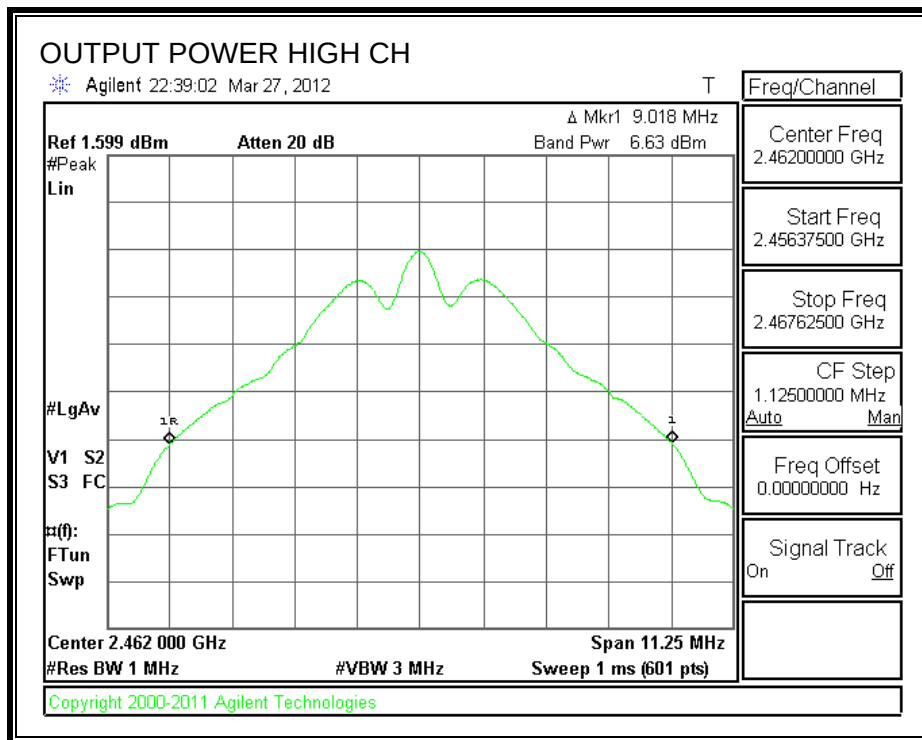
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	6.95	10.7	17.65	30	-12.35
Middle	2437	6.66	10.7	17.36	30	-12.64
High	2462	6.63	10.7	17.33	30	-12.67

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 10.7 dB (including 10 dB pad and 0.7dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency	Power
	(MHz)	(dBm)
Low	2412	14.32
Middle	2437	14.27
High	2462	14.10

7.1.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

TEST PROCEDURE

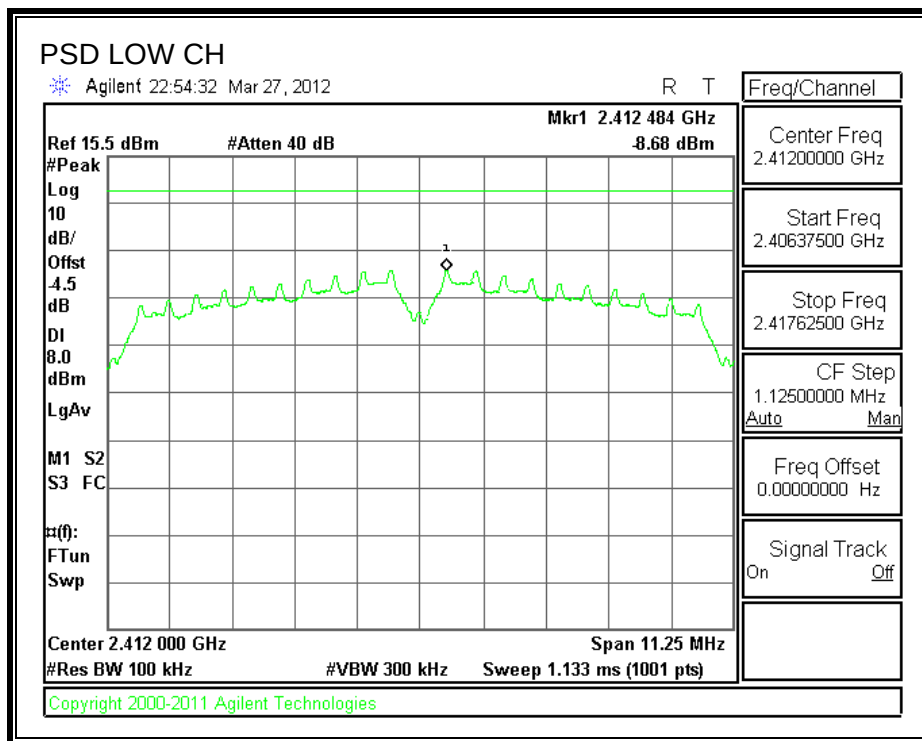
KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

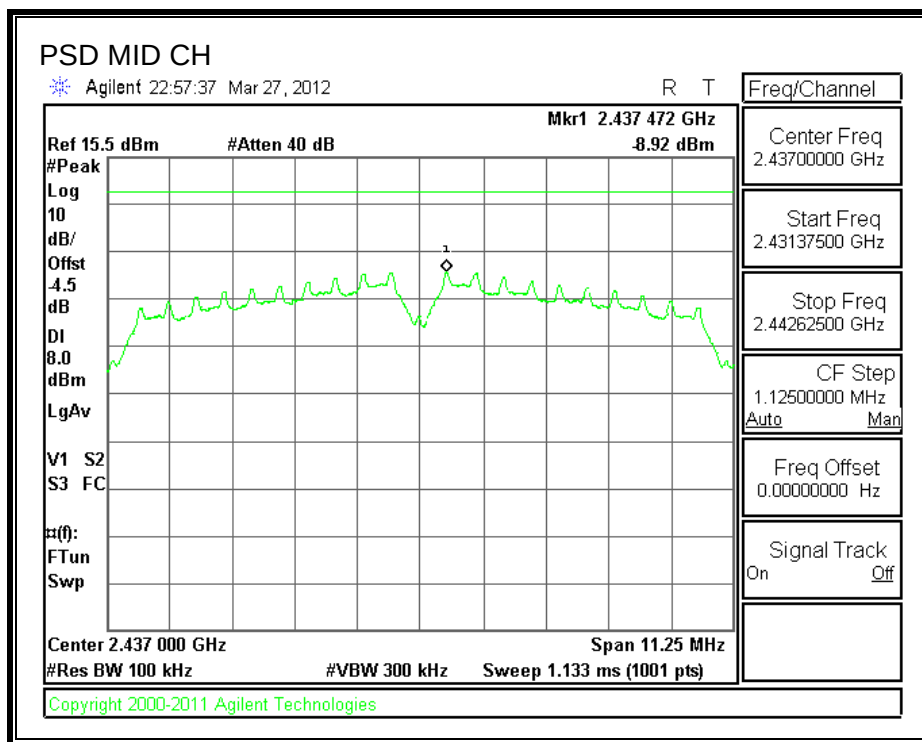
Note: Analyzer Offset = Attenuator + cable loss + $10\log(3\text{kHz}/100\text{kHz})$
= $10 + 0.7 + (-15.2)$
= -4.5dB

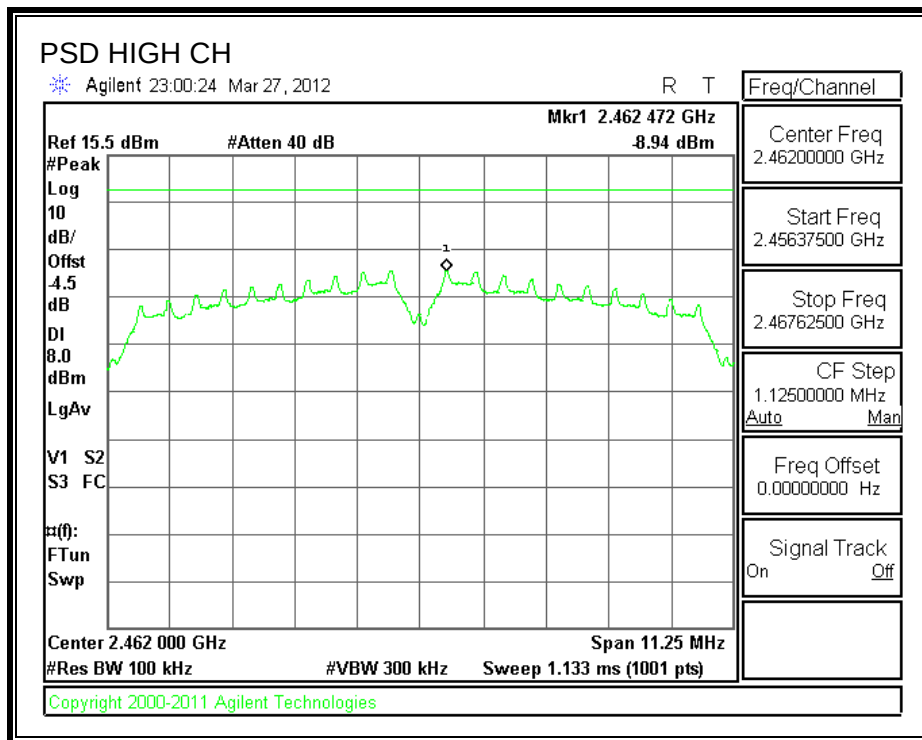
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-8.68	8	-16.68
Middle	2437	-8.92	8	-16.92
High	2462	-8.94	8	-16.94

POWER SPECTRAL DENSITY







7.1.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

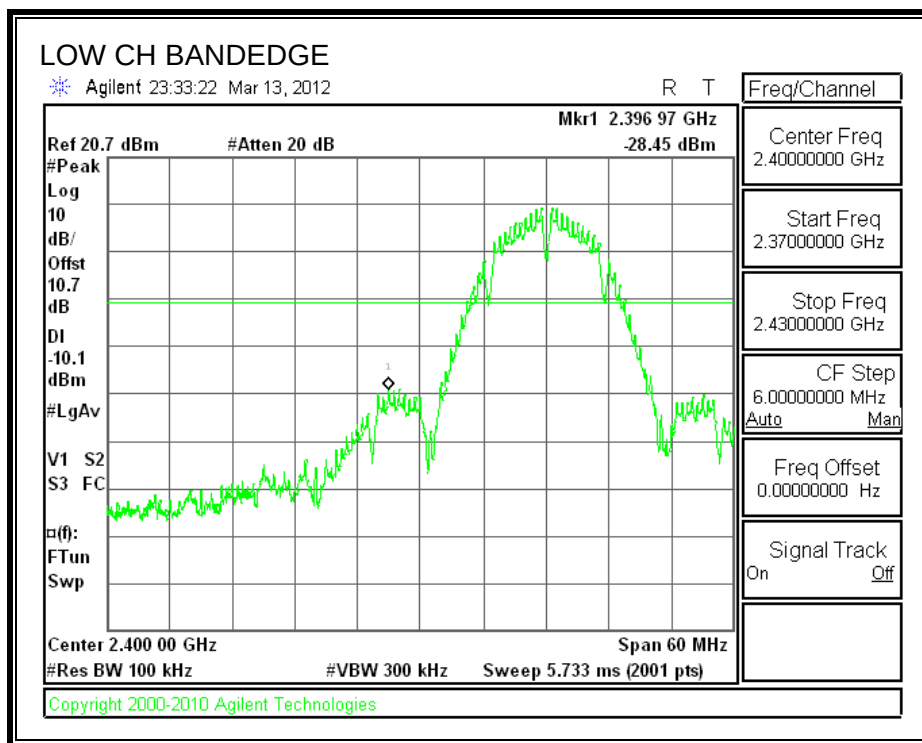
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

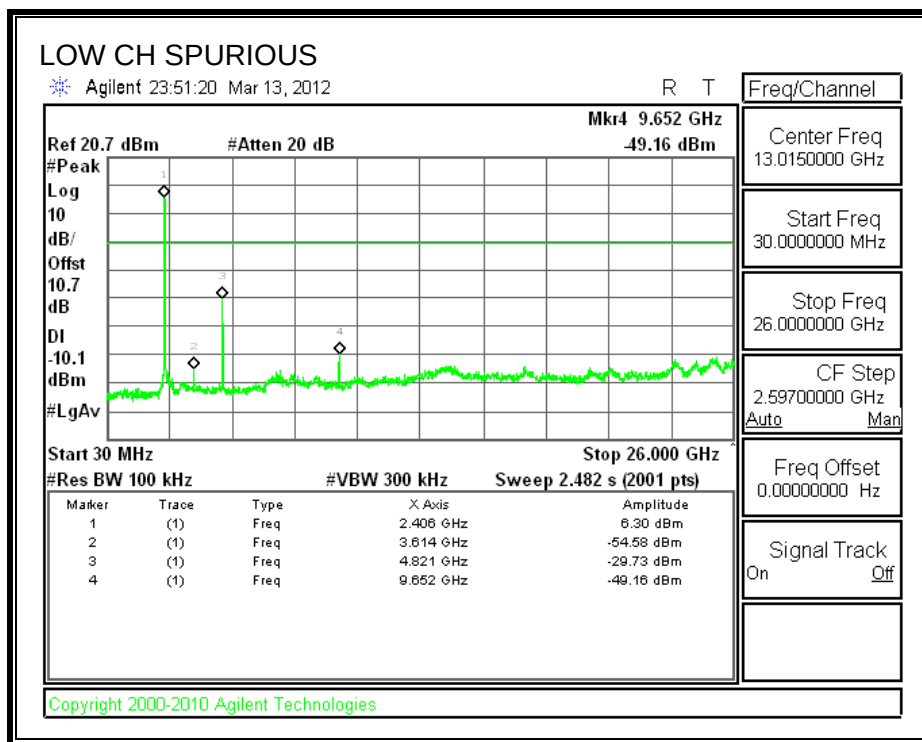
TEST PROCEDURE

KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

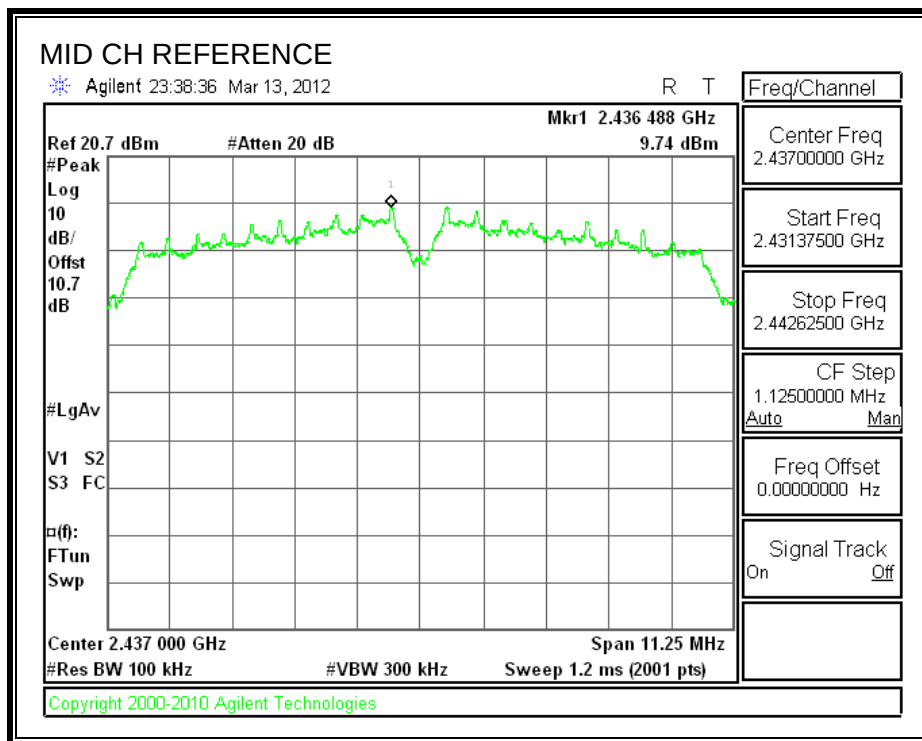
RESULTS

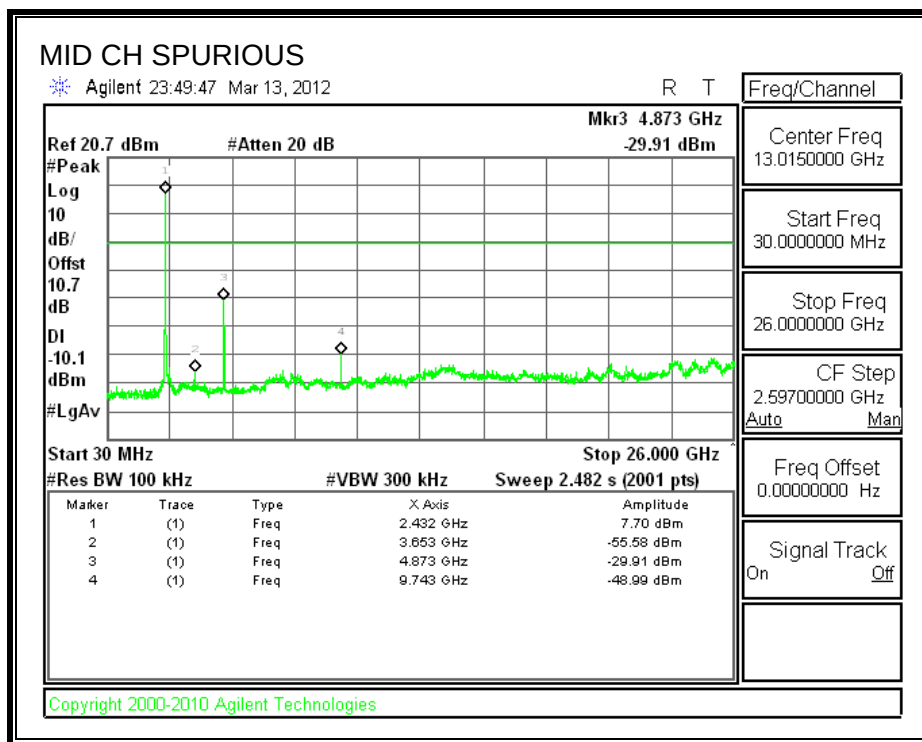
SPURIOUS EMISSIONS, LOW CHANNEL



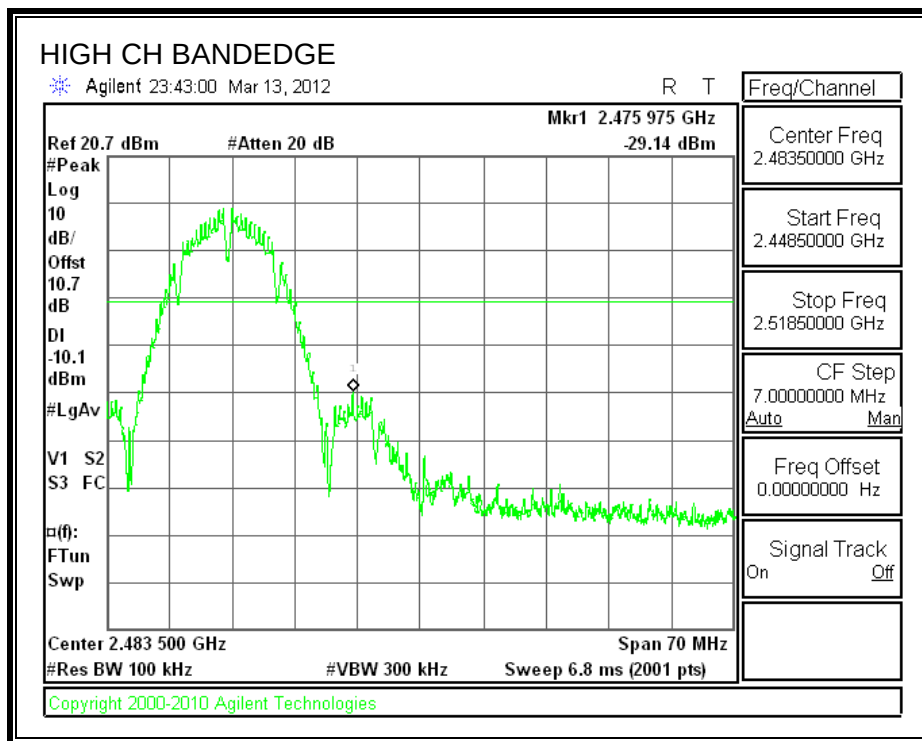


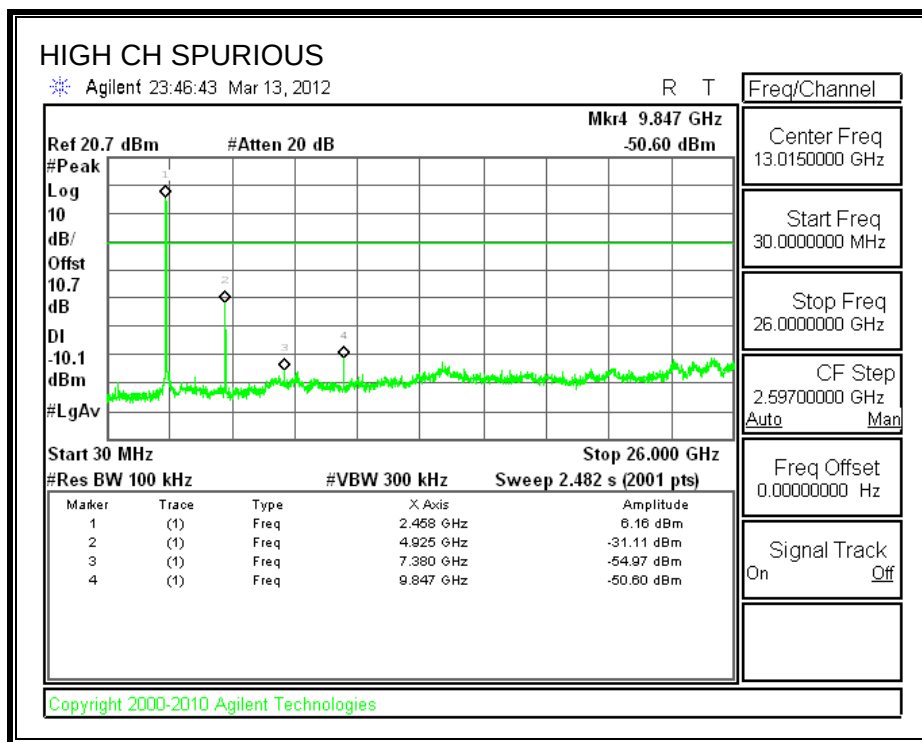
SPURIOUS EMISSIONS, MID CHANNEL





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.

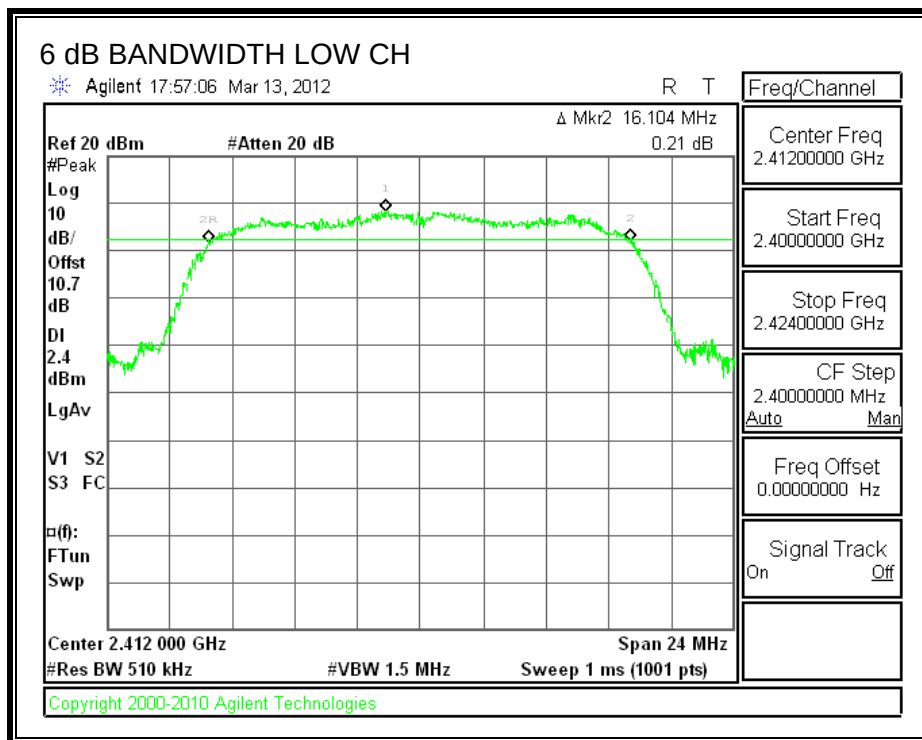
TEST PROCEDURE

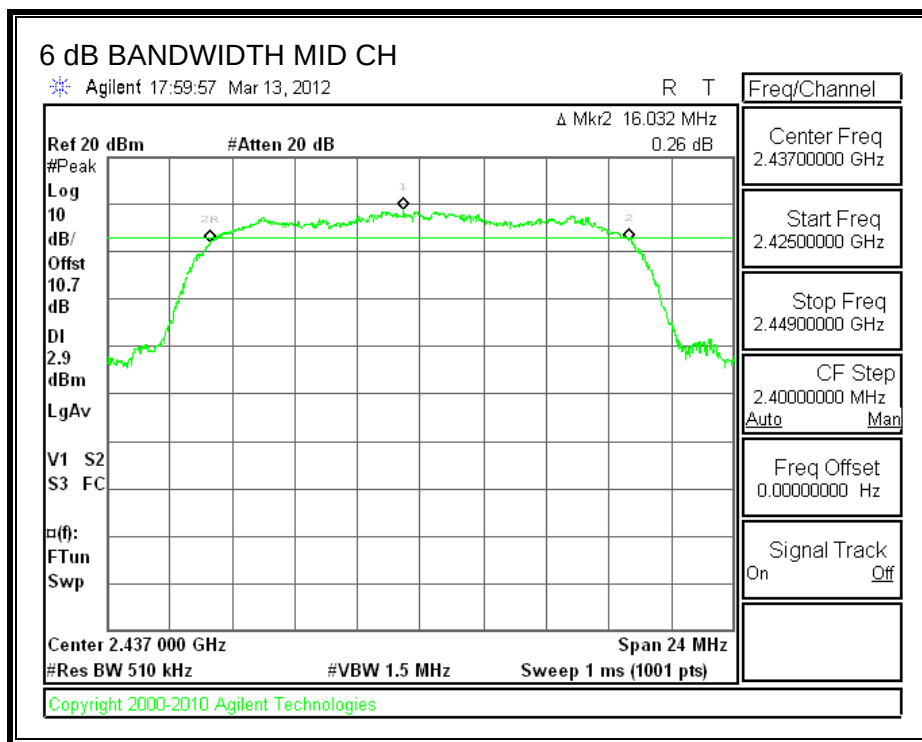
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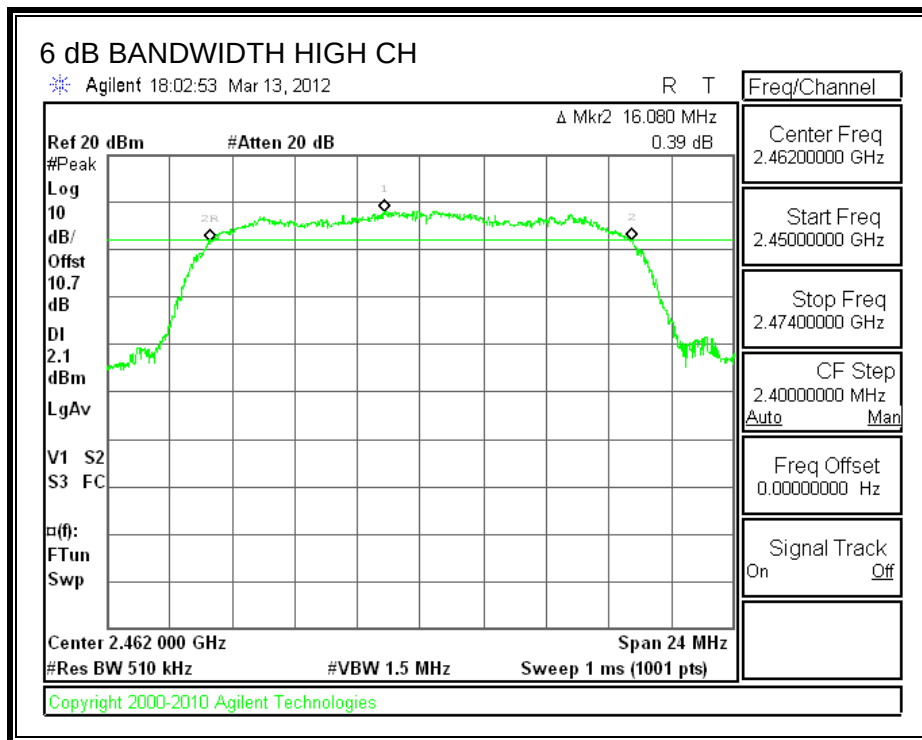
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.104	0.5
Middle	2437	16.032	0.5
High	2462	16.080	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.

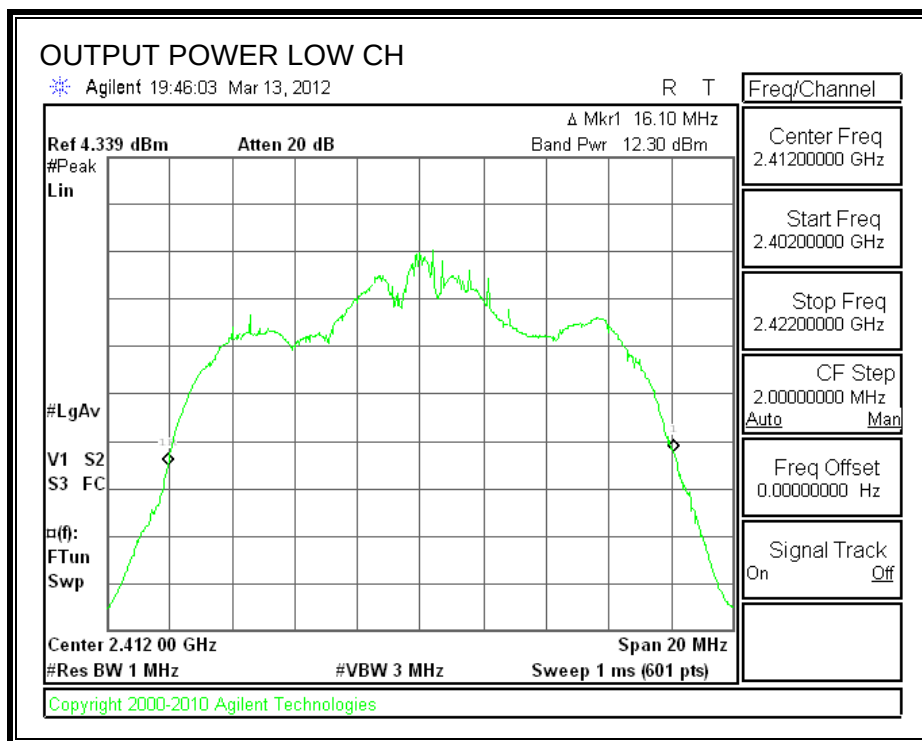
TEST PROCEDURE

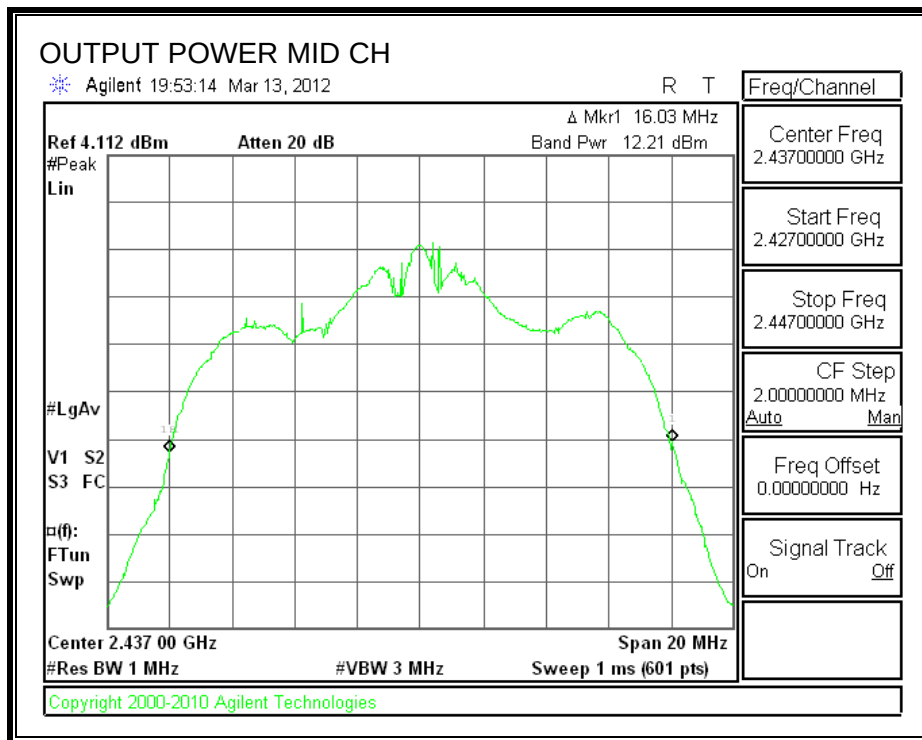
KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12

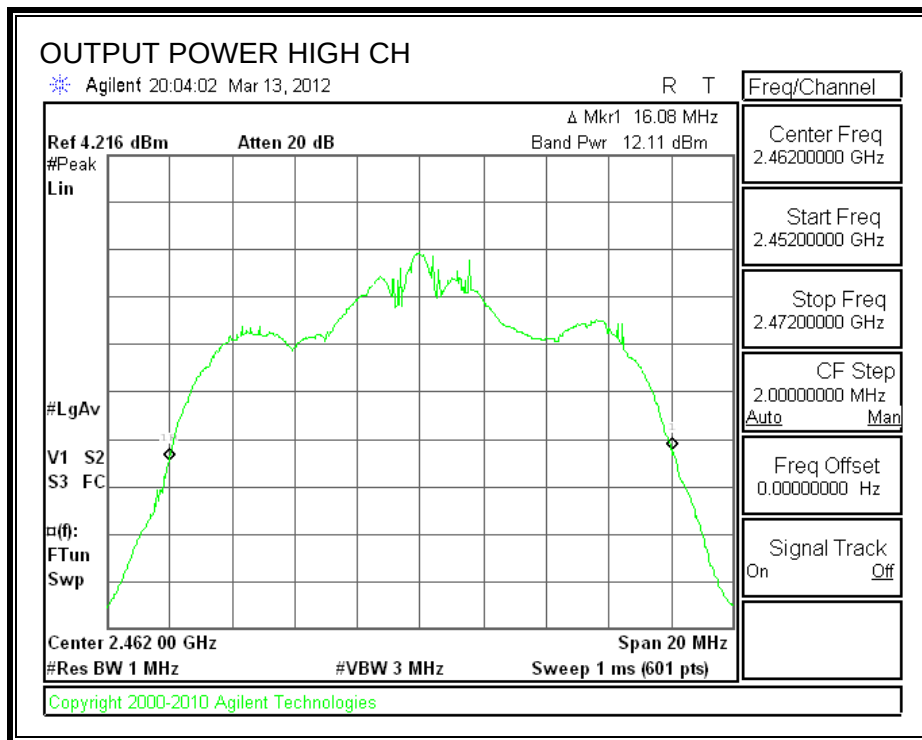
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	12.30	10.7	23.00	30	-7.00
Middle	2437	12.21	10.7	22.91	30	-7.09
High	2462	12.11	10.7	22.81	30	-7.19

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 10 dB (including 10 dB pad and 0.7 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	14.40
Middle	2437	14.37
High	2462	14.20

7.2.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

TEST PROCEDURE

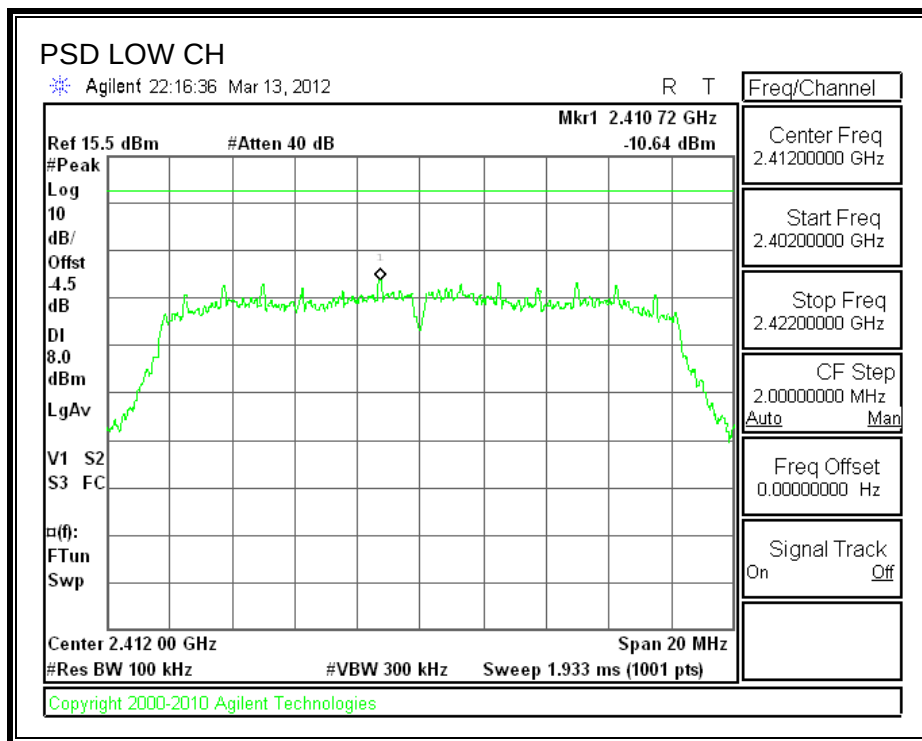
KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

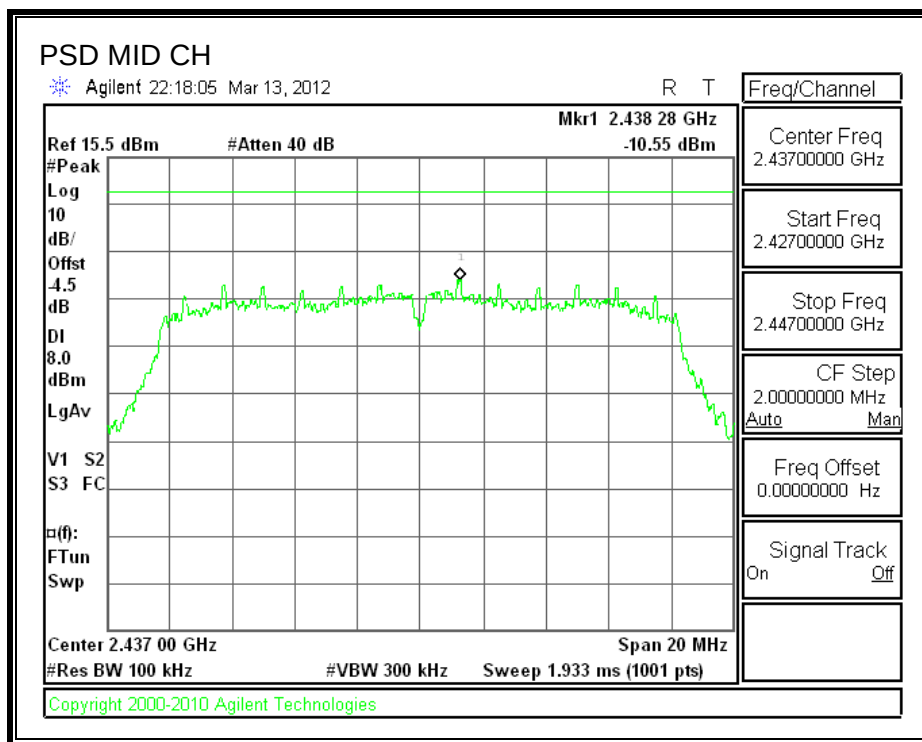
Note: Analyzer Offset = Attenuator + cable loss + $10\log(3\text{kHz}/100\text{kHz})$
= $10 + 0.7 + (-15.2)$
= -4.5dB

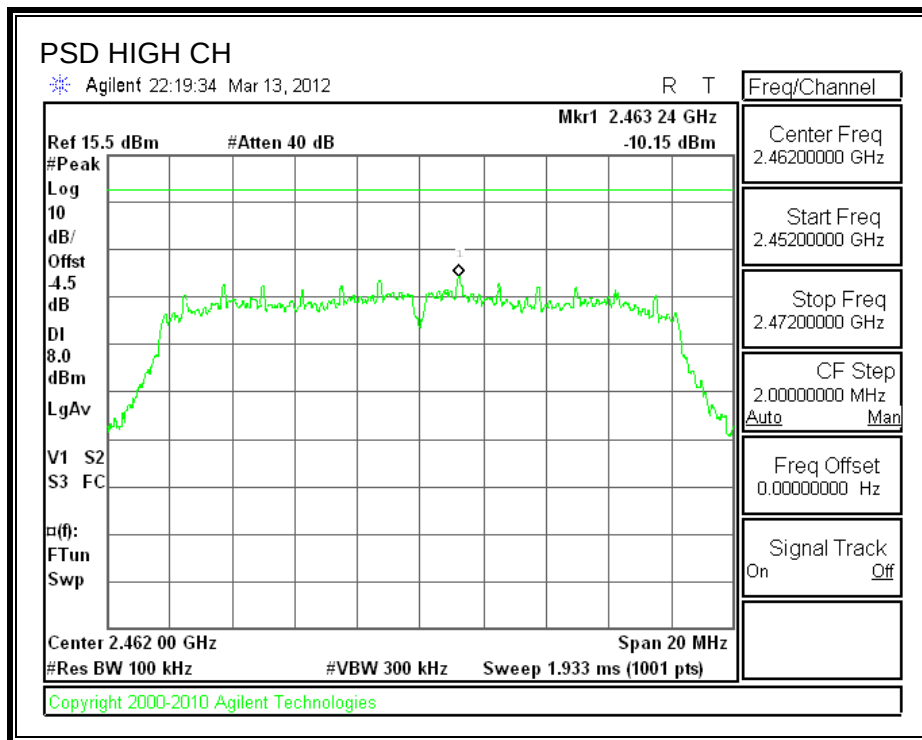
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.64	8	-18.64
Middle	2437	-10.55	8	-18.55
High	2462	-10.15	8	-18.15

POWER SPECTRAL DENSITY







7.2.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

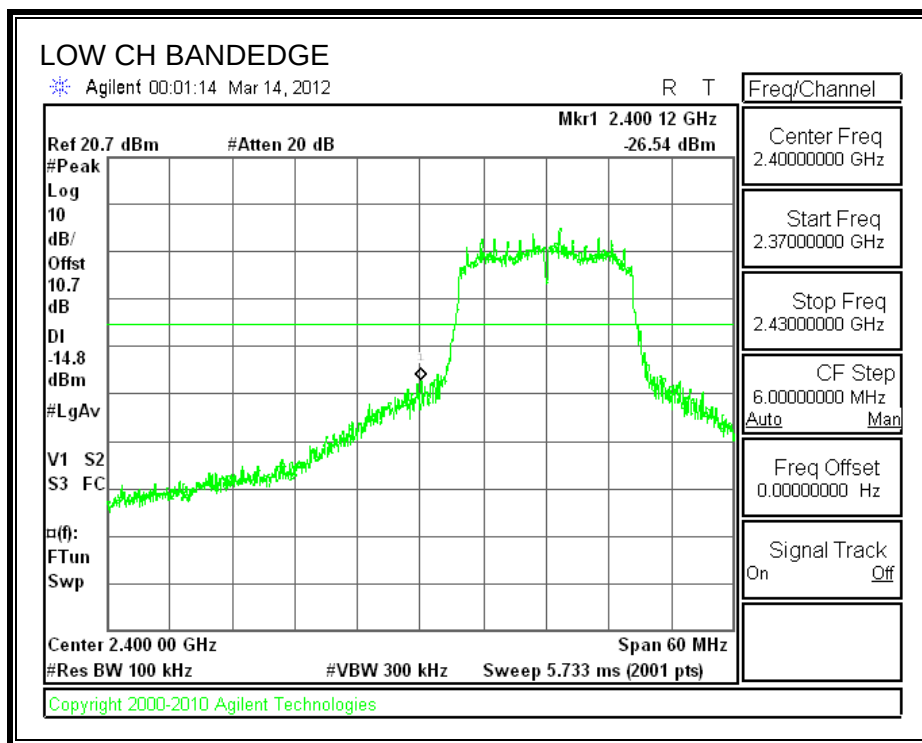
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

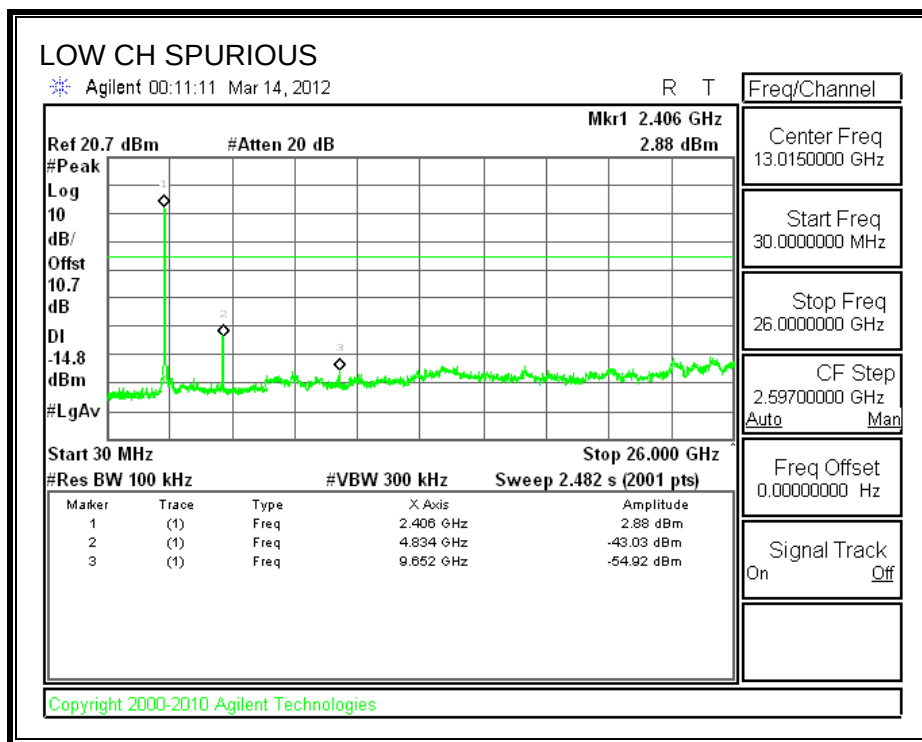
TEST PROCEDURE

KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

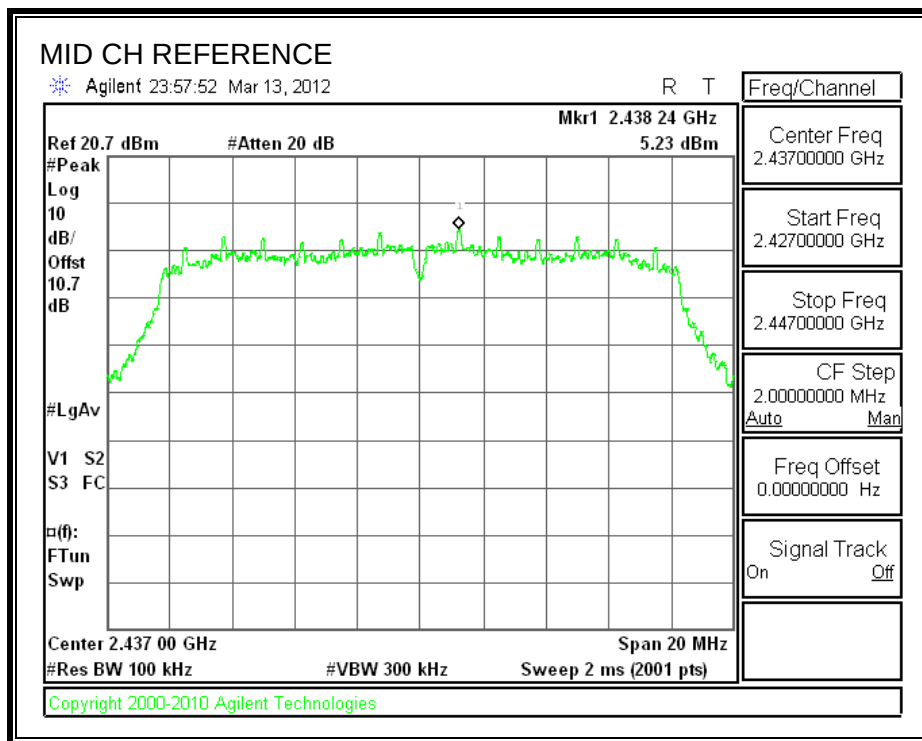
RESULTS

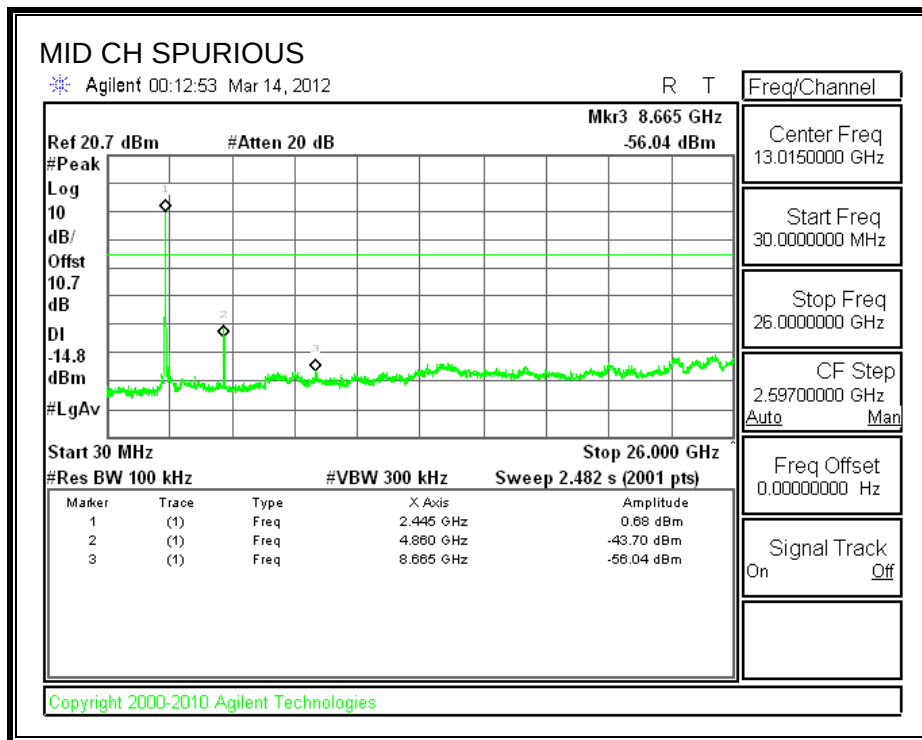
SPURIOUS EMISSIONS, LOW CHANNEL



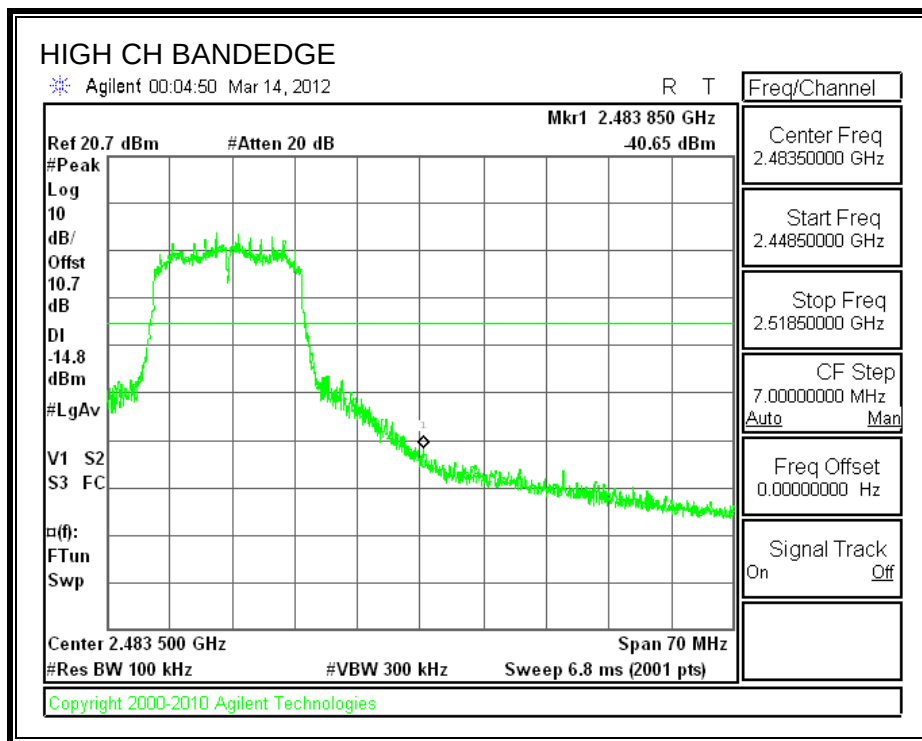


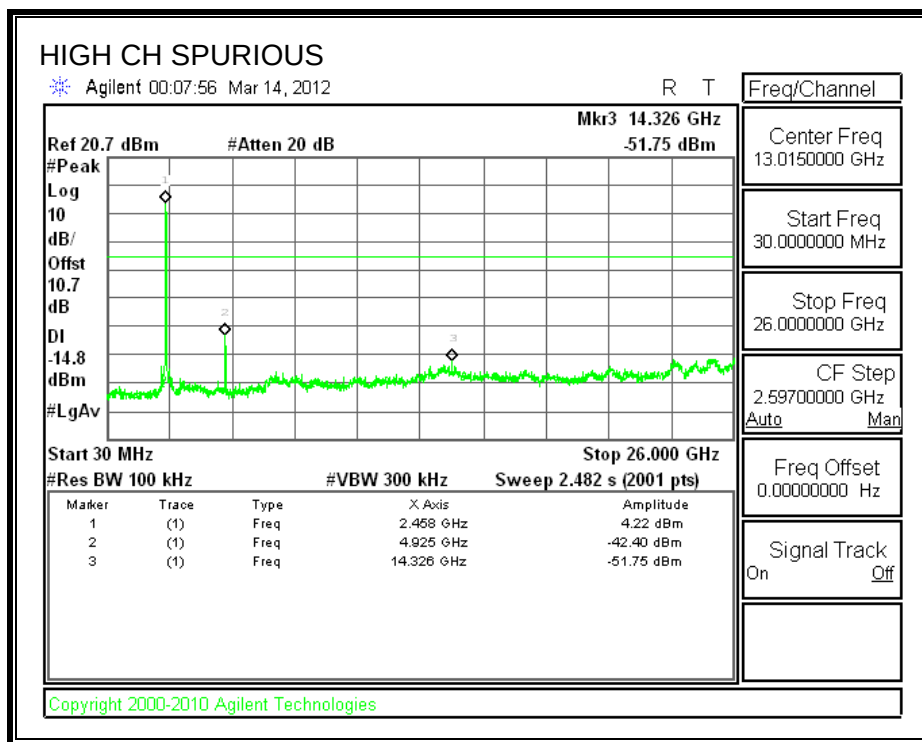
SPURIOUS EMISSIONS, MID CHANNEL





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.

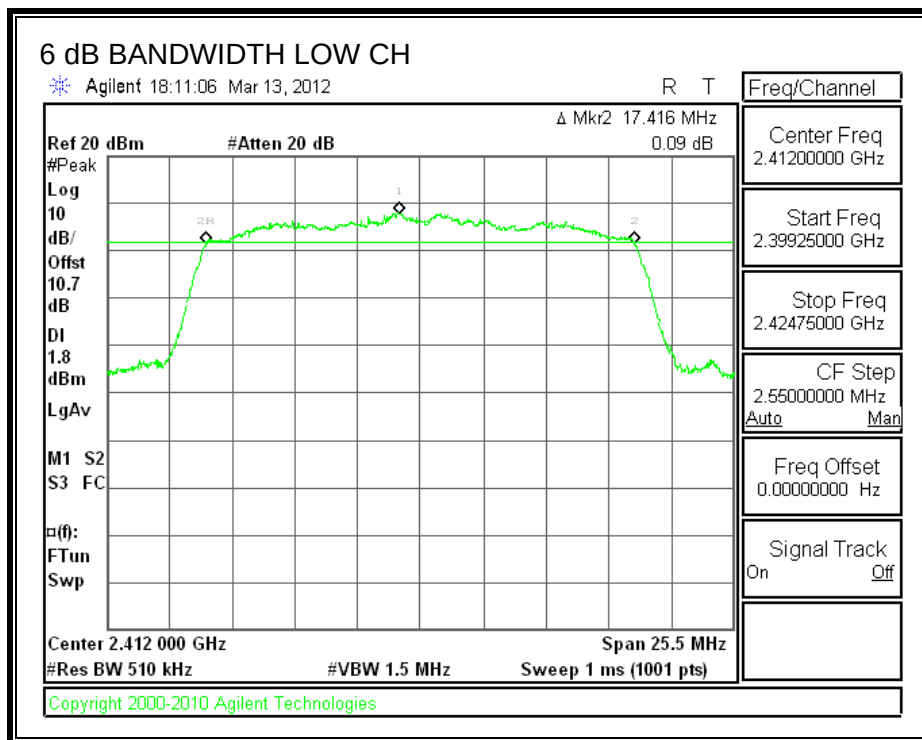
TEST PROCEDURE

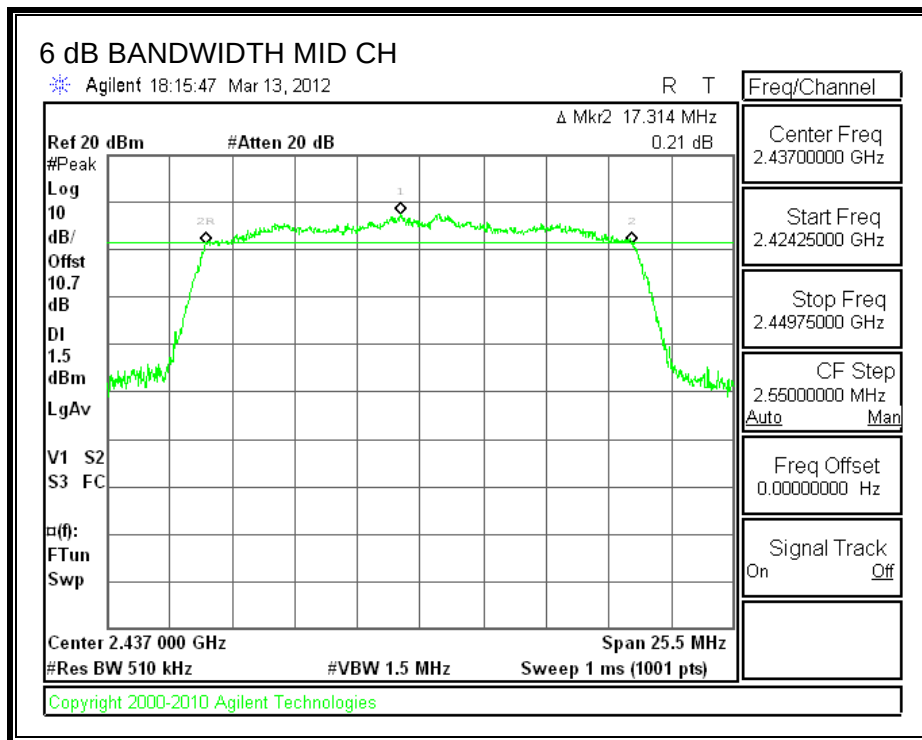
KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

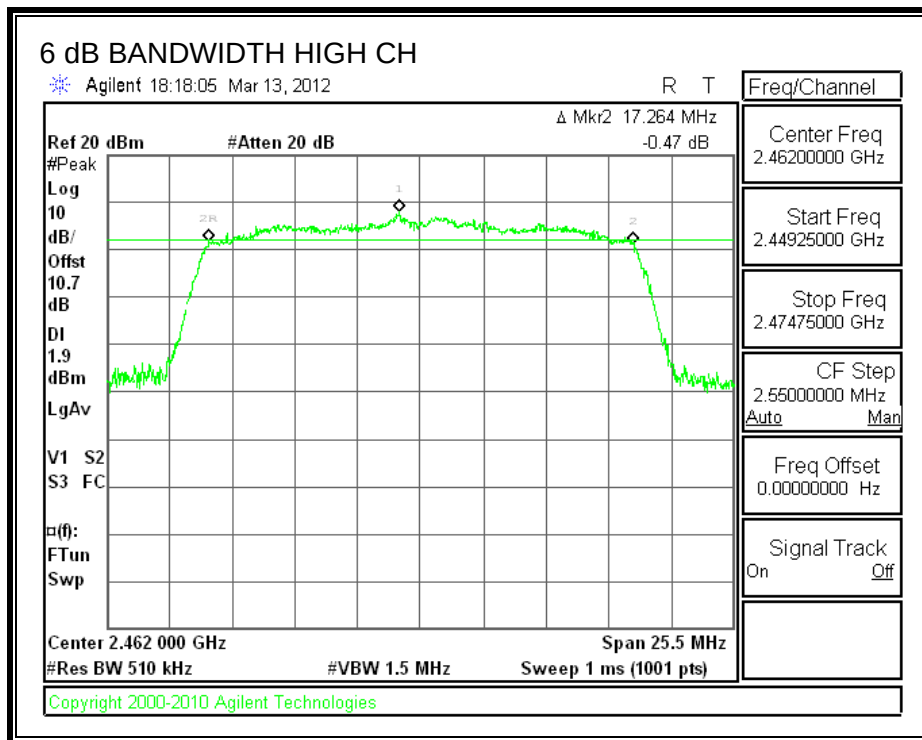
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.416	0.5
Middle	2437	17.314	0.5
High	2462	17.264	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.

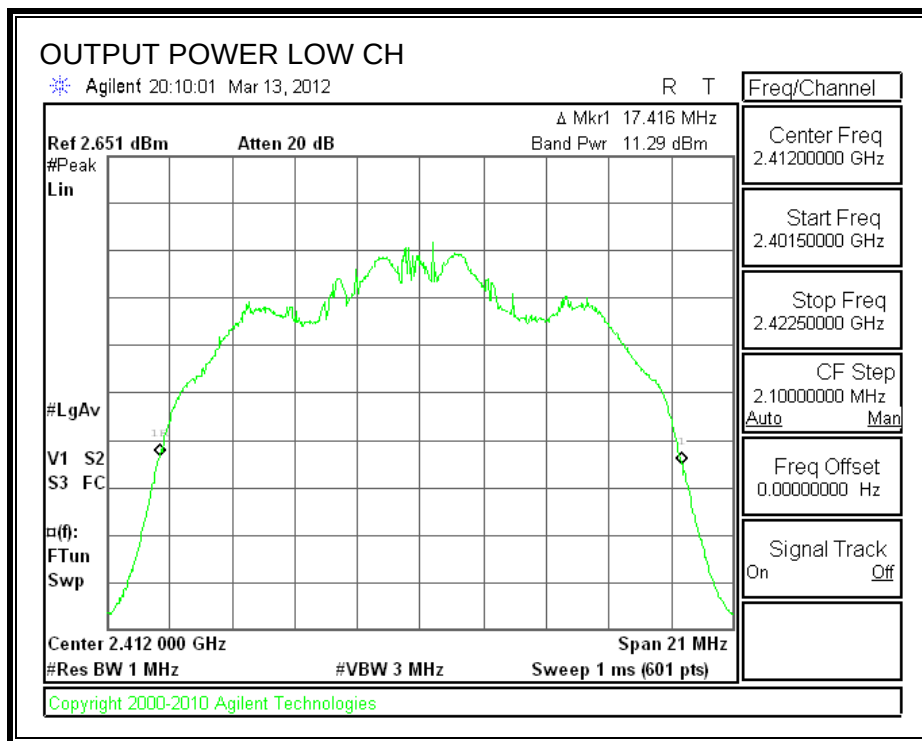
TEST PROCEDURE

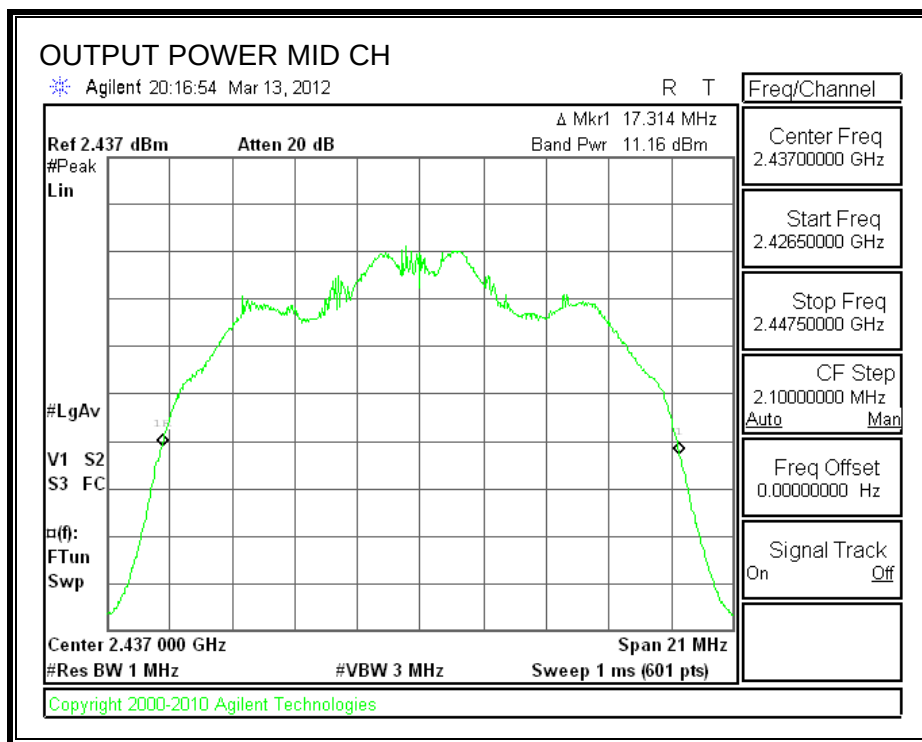
KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

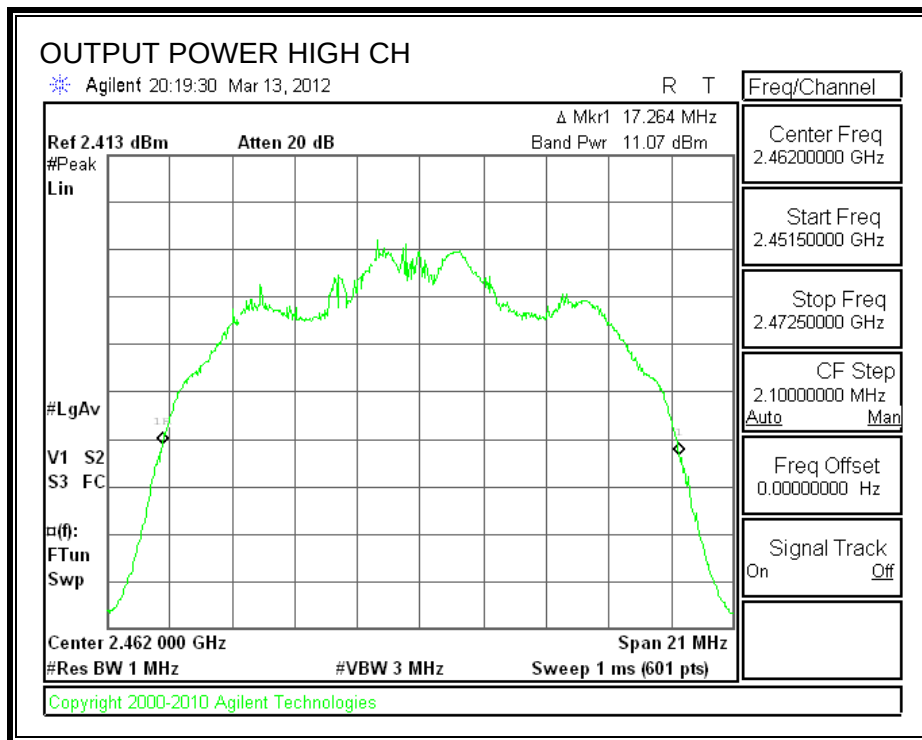
RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Attenuator and Cable Offset (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	11.29	10.7	21.99	30	-8.01
Middle	2437	11.16	10.7	21.86	30	-8.14
High	2462	11.07	10.7	21.77	30	-8.23

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 10 dB (including 10 dB pad and 0.7 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	13.27
Middle	2437	13.22
High	2462	13.02

7.3.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

TEST PROCEDURE

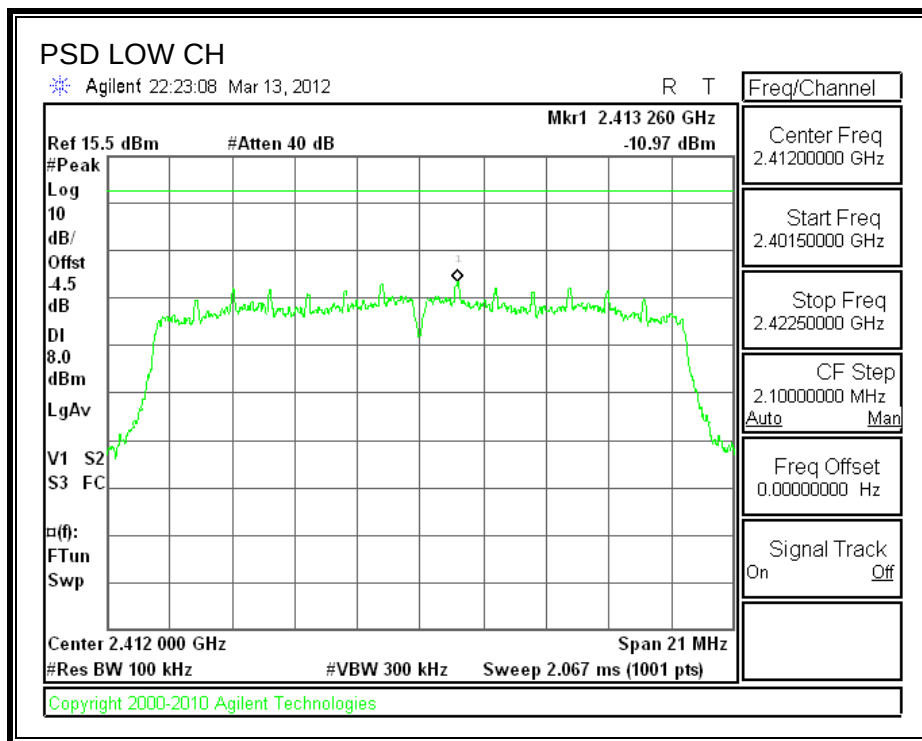
KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

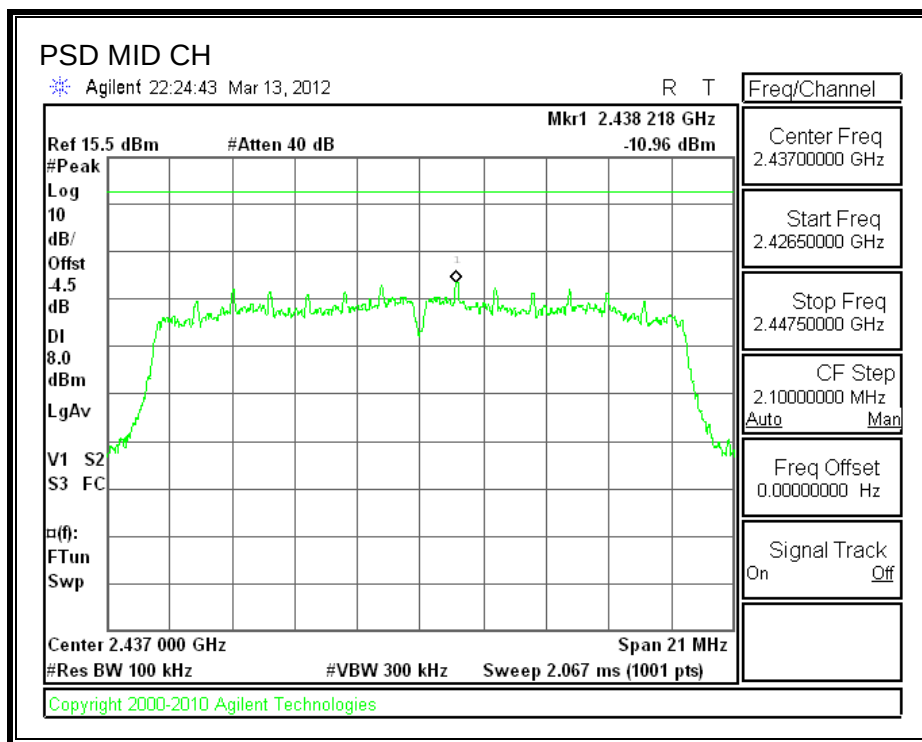
Note: Analyzer Offset = Attenuator + cable loss + $10\log(3\text{kHz}/100\text{kHz})$
= $10 + 0.7 + (-15.2)$
= -4.5dB

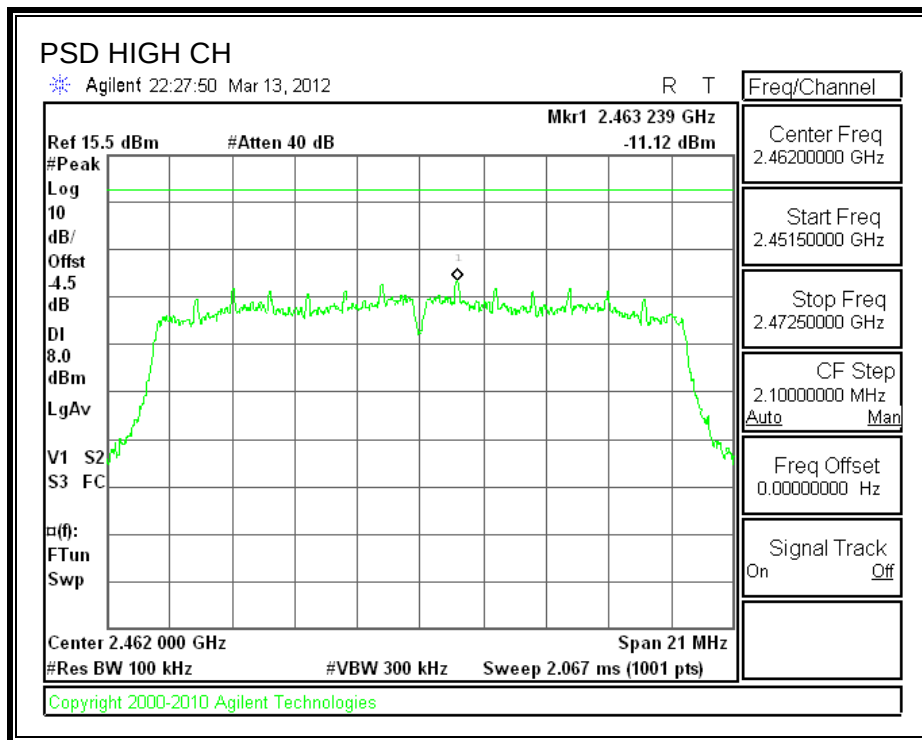
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.97	8	-18.97
Middle	2437	-10.96	8	-18.96
High	2462	-11.12	8	-19.12

POWER SPECTRAL DENSITY







7.3.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

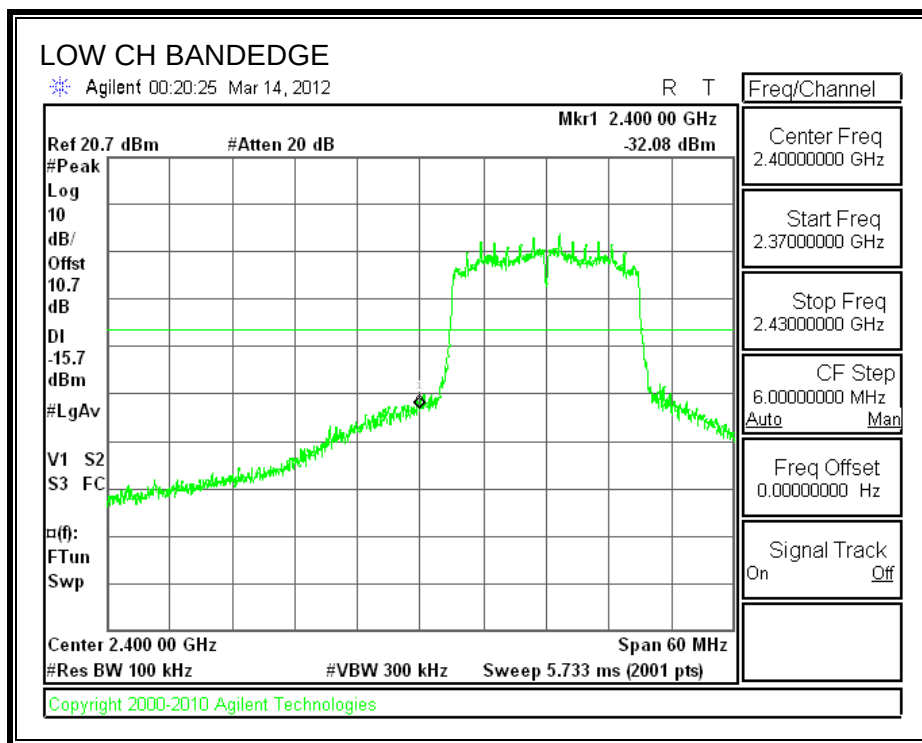
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

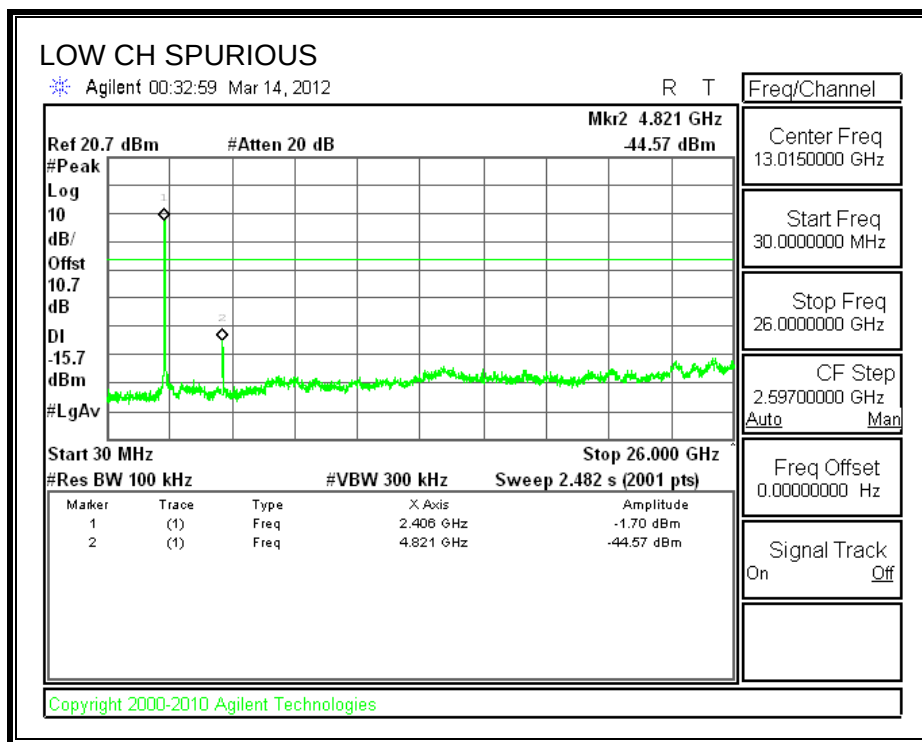
TEST PROCEDURE

KDB 558074 D01 DTS Measurement Guidance V01 dated 01-18-12.

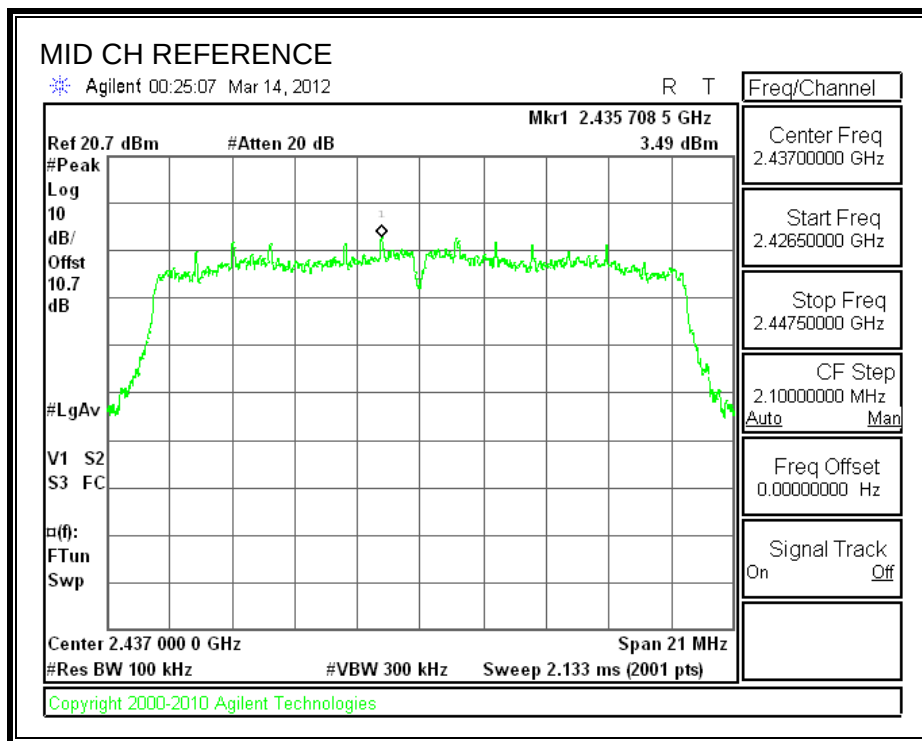
RESULTS

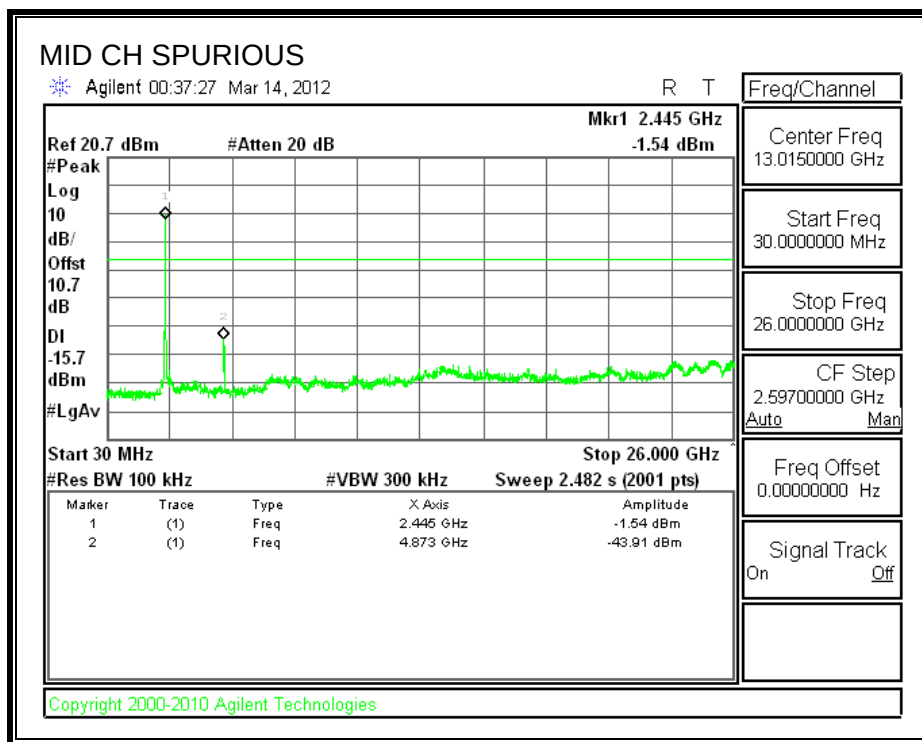
SPURIOUS EMISSIONS, LOW CHANNEL



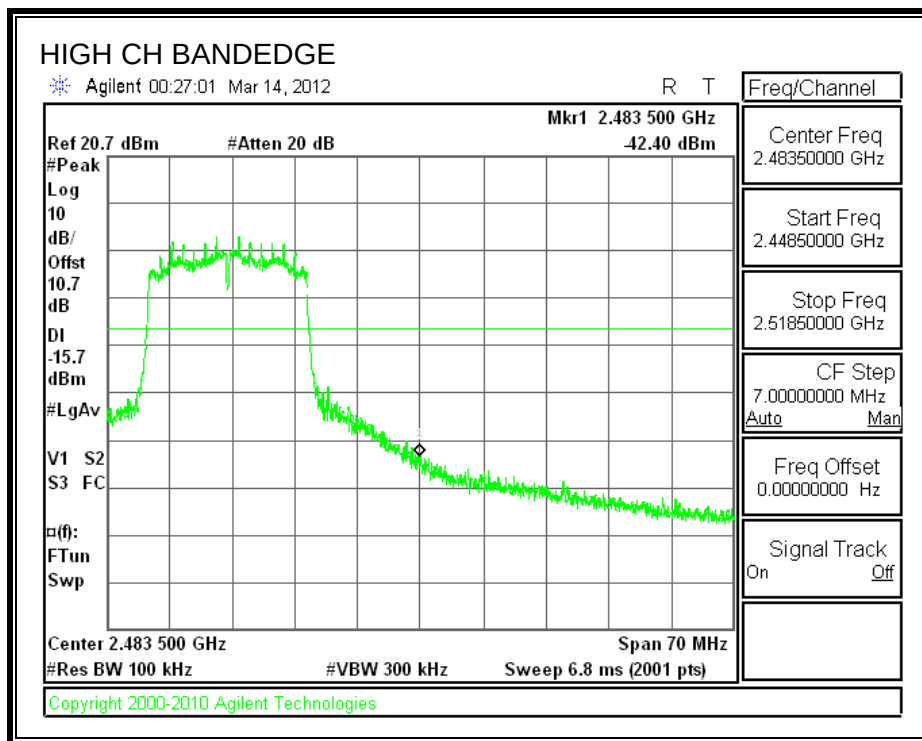


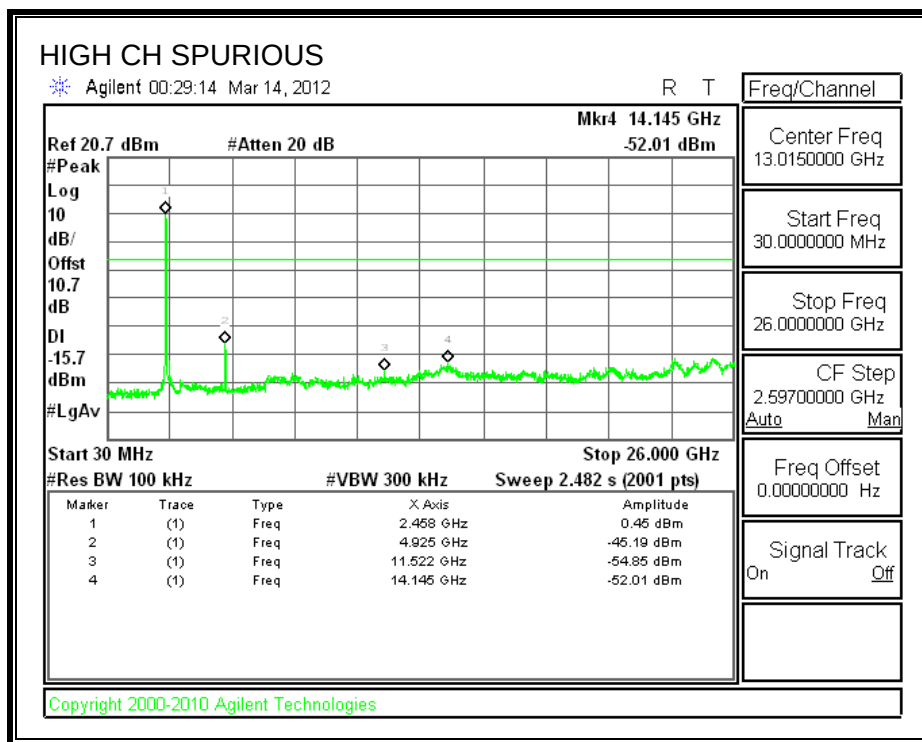
SPURIOUS EMISSIONS, MID CHANNEL





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 C63.10. 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.

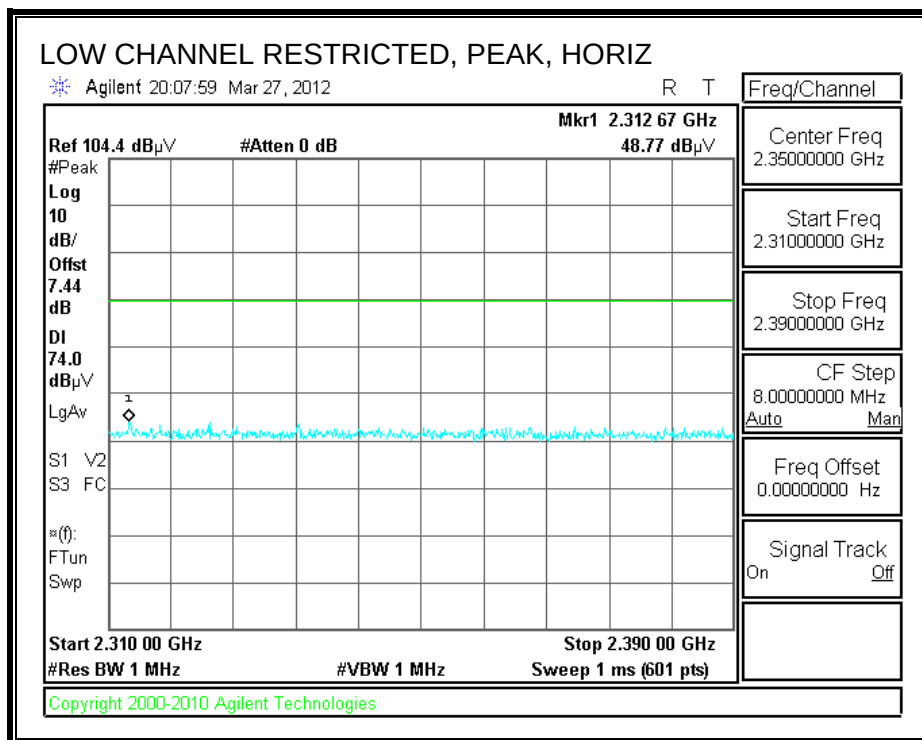
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

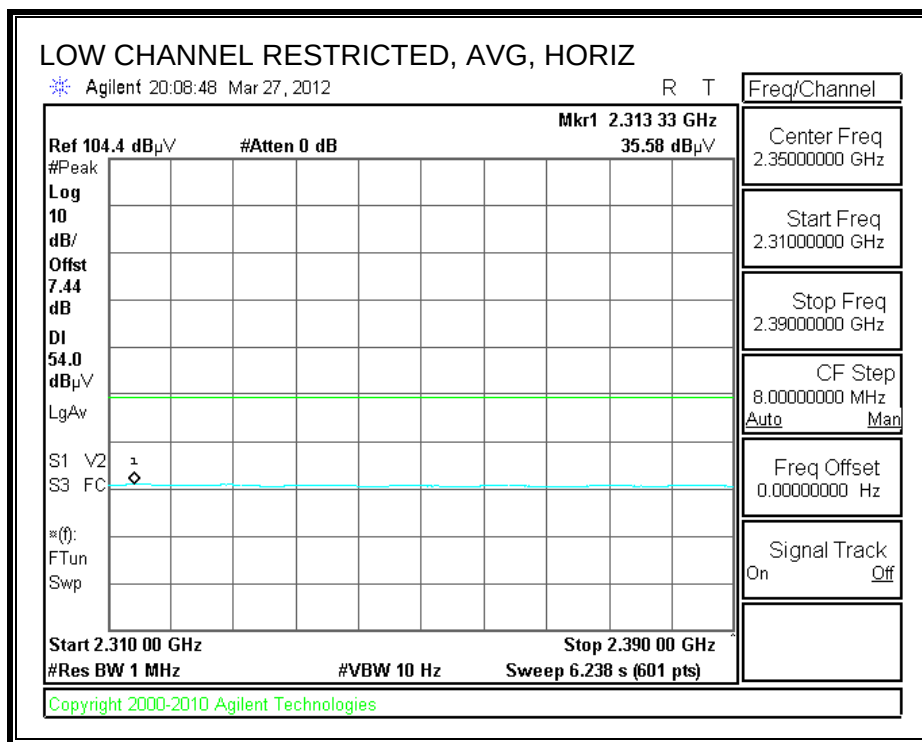
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

8.2. TRANSMITTER ABOVE 1 GHz

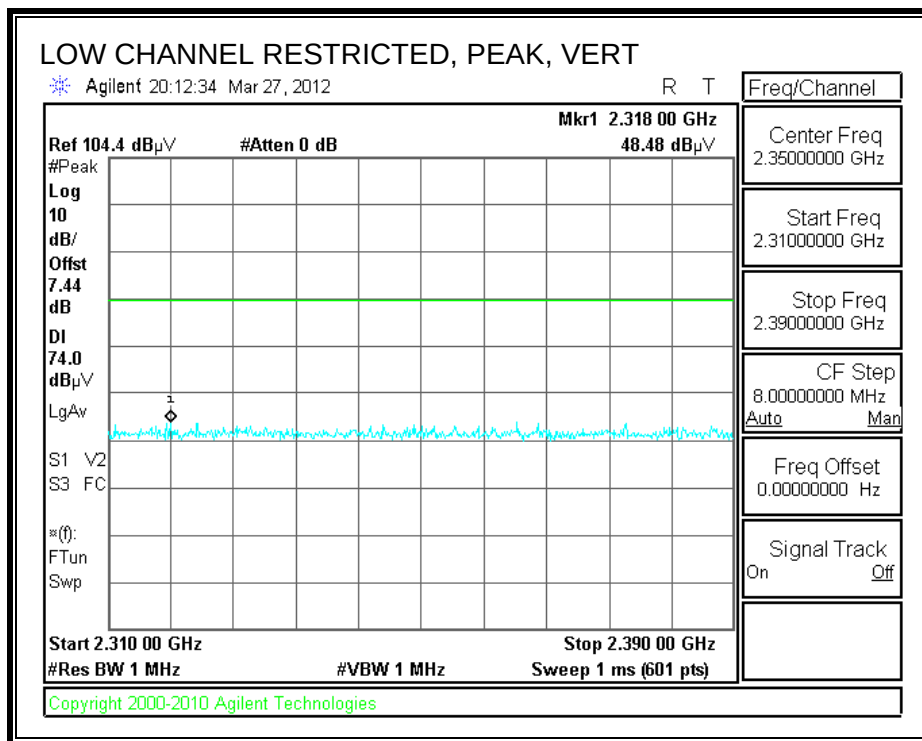
8.2.1. TX ABOVE 1 GHz FOR 802.11b 1TX MODE IN THE 2.4 GHz BAND

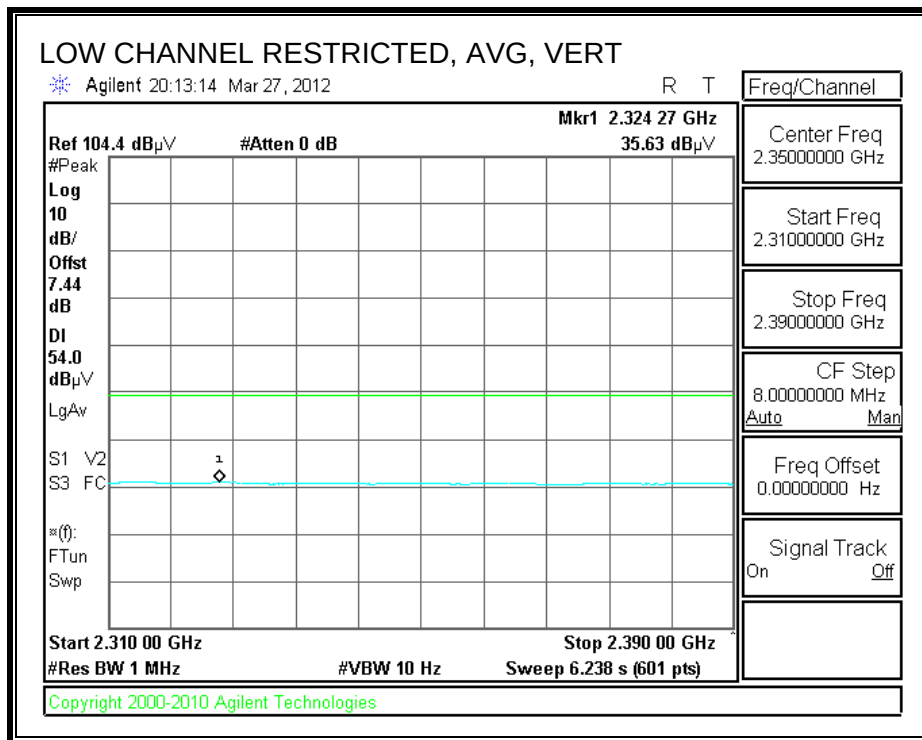
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



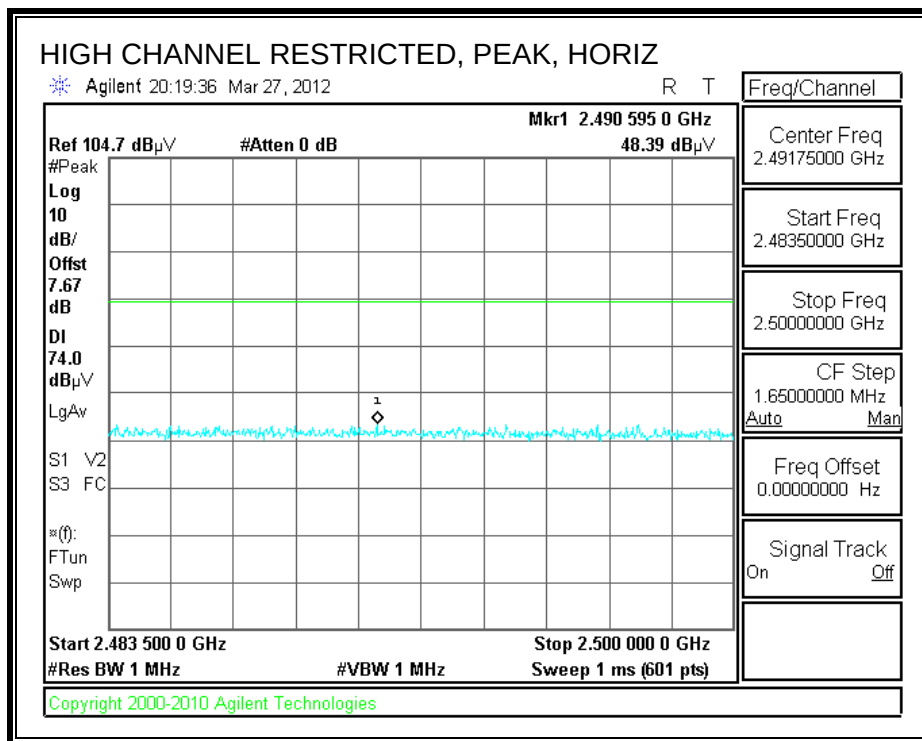


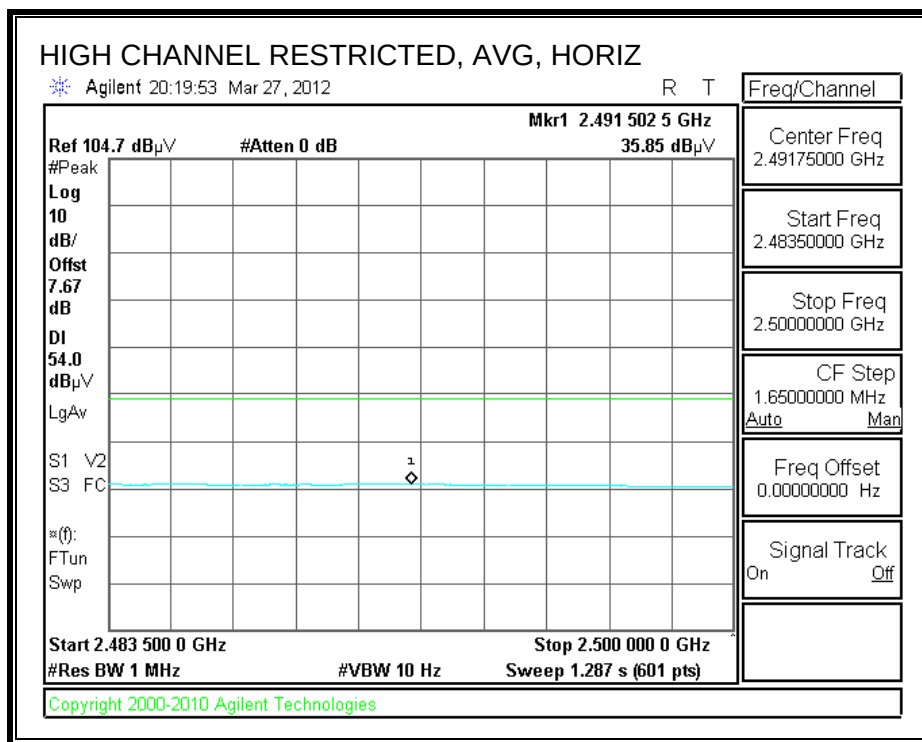
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



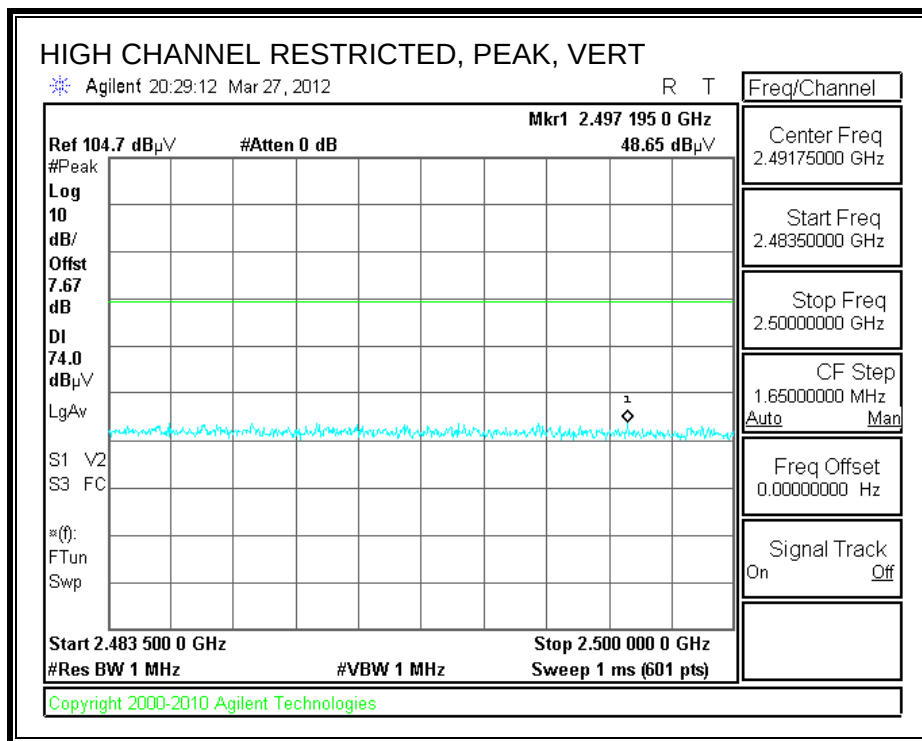


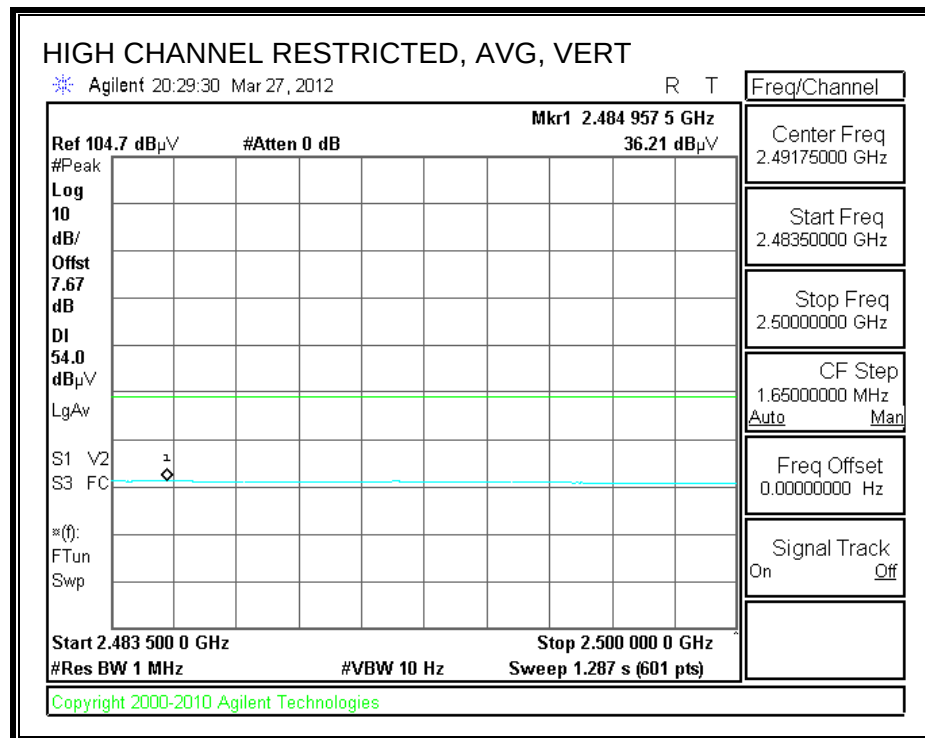
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



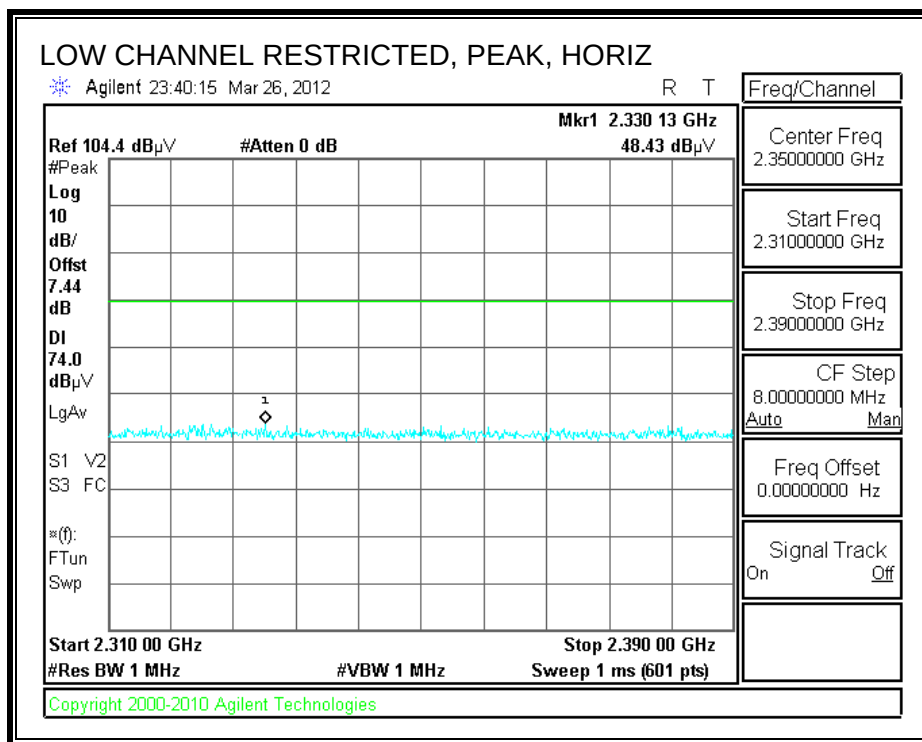


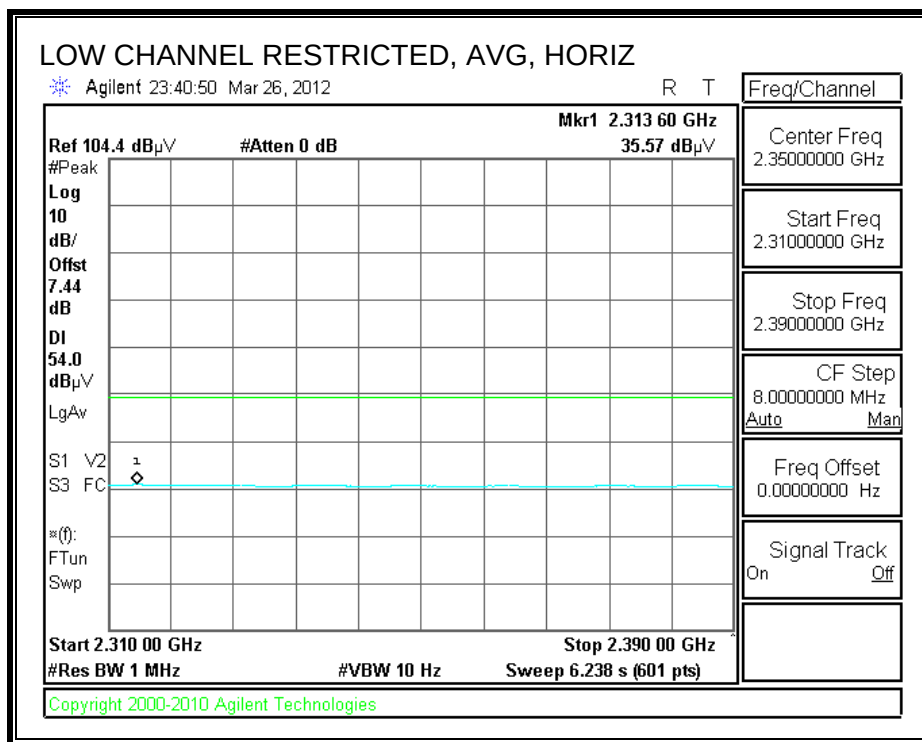
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement																
Compliance Certification Services, Fremont 3m Chamber																
Company:		Samsung Electronics														
Project #:		12I14320														
Date:		3/27/2012														
Test Engineer:		S.Aguilar														
Configuration:		TX WLAN, Unit #5														
Mode:		11B														
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T60; S/N: 2238 @3m			T34 HP 8449B						T89; ARA 18-26GHz; S/N:1049			FCC 15.205				
Hi Frequency Cables																
3' cable 22807700			12' cable 22807600			20' cable 22807500			HPF			Reject Filter		Peak Measurements		
3' cable 22807700			12' cable 22807600			20' cable 22807500						R_001		RBW= 1MHz, VBW=3MHz		
Average Measurements																
RBW=1MHz ; VBW=10Hz																
f	Dist	Read Pk	Read Avg.	AF	CL	Amp	D Corr	Fldr	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes	
GHz	(m)	dBuV	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	(V/H)	
Low Channel (2412 MHz)																
4.824	3.0	38.4	30.3	33.1	6.8	-34.1	0.0	0.0	44.2	36.1	74	54	-29.8	-17.9		
4.824	3.0	41.3	36.2	33.1	6.8	-34.1	0.0	0.0	47.1	42.0	74	54	-26.9	-12.0		
Mid Channel (2437 MHz)																
4.874	3.0	42.0	36.7	33.2	6.8	-34.0	0.0	0.0	47.9	42.6	74	54	-26.1	-11.4		
4.874	3.0	44.1	39.8	33.2	6.8	-34.0	0.0	0.0	50.0	45.7	74	54	-24.0	-8.3		
7.311	3.0	35.9	22.8	36.3	9.1	-33.1	0.0	0.0	48.2	35.0	74	54	-25.8	-19.0		
7.311	3.0	35.7	22.8	36.3	9.1	-33.1	0.0	0.0	48.0	35.0	74	54	-26.0	-19.0		
High Channel (2462 MHz)																
4.924	3.0	41.7	36.7	33.2	6.8	-34.0	0.0	0.0	47.7	42.7	74	54	-26.3	-11.3		
4.924	3.0	45.4	41.2	33.2	6.8	-34.0	0.0	0.0	51.4	47.2	74	54	-22.6	-6.8		
7.386	3.0	35.6	22.3	36.4	9.1	-33.1	0.0	0.0	48.0	34.8	74	54	-26.0	-19.2		
7.386	3.0	35.8	22.4	36.4	9.1	-33.1	0.0	0.0	48.3	34.8	74	54	-25.7	-19.2		
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												

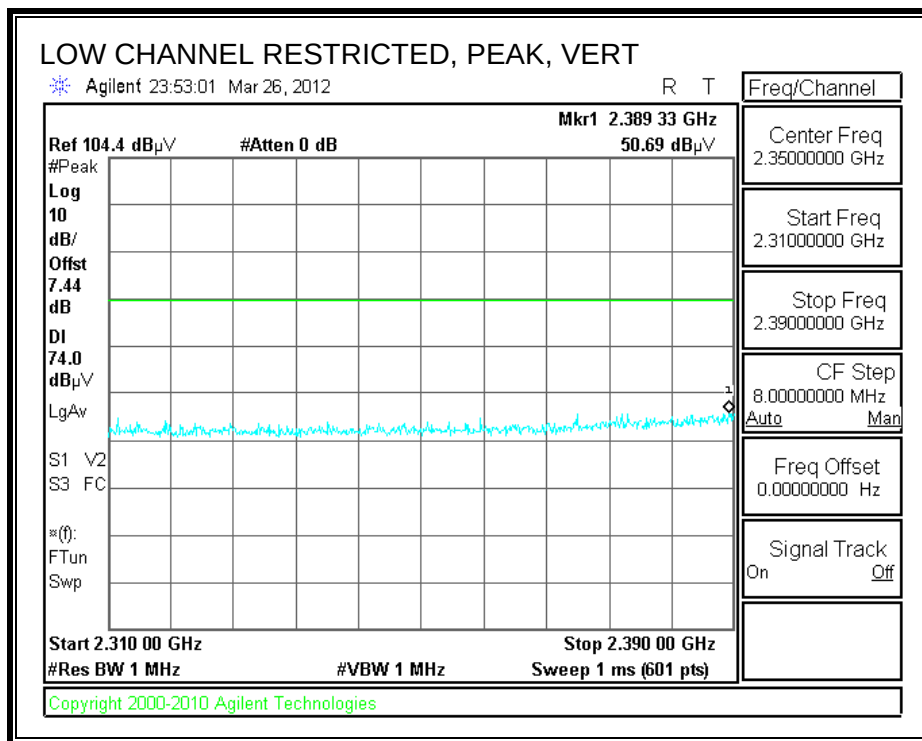
8.2.2. TX ABOVE 1 GHz FOR 802.11g 1TX MODE IN THE 2.4 GHz BAND

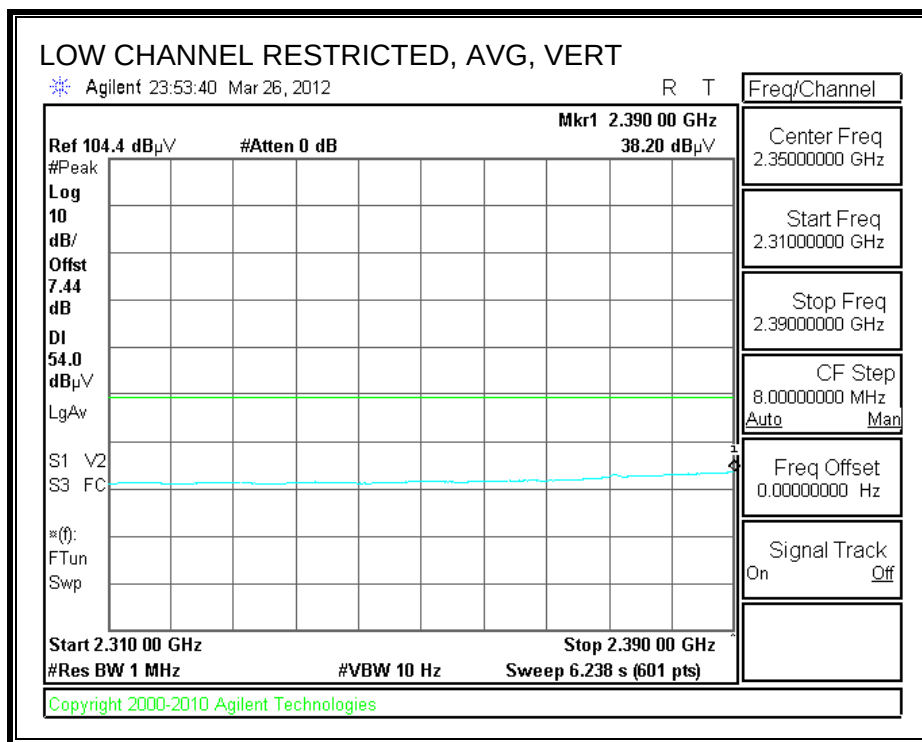
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



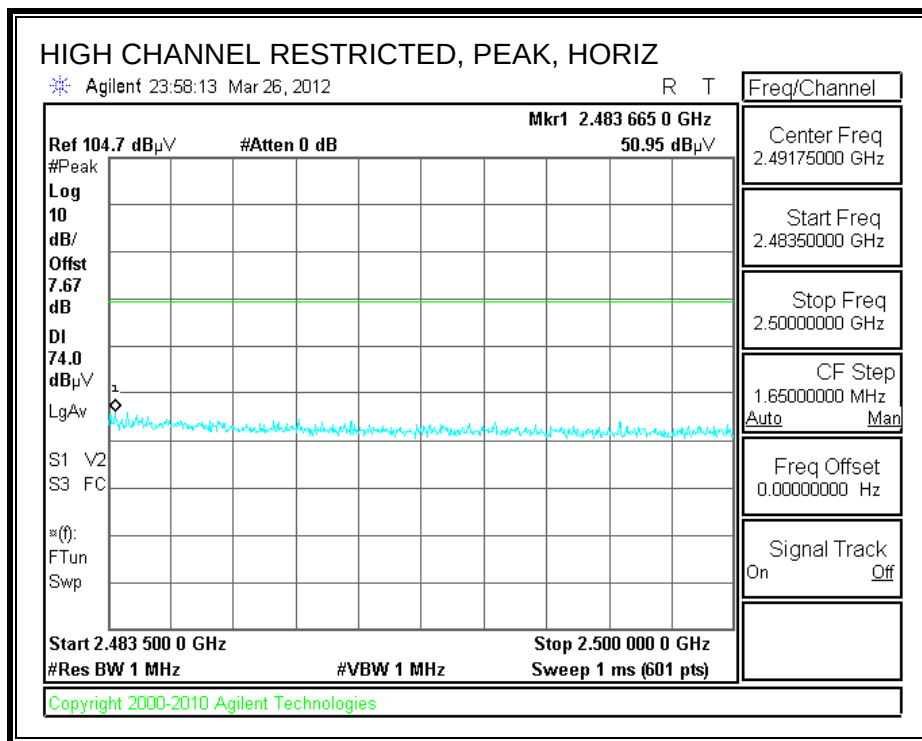


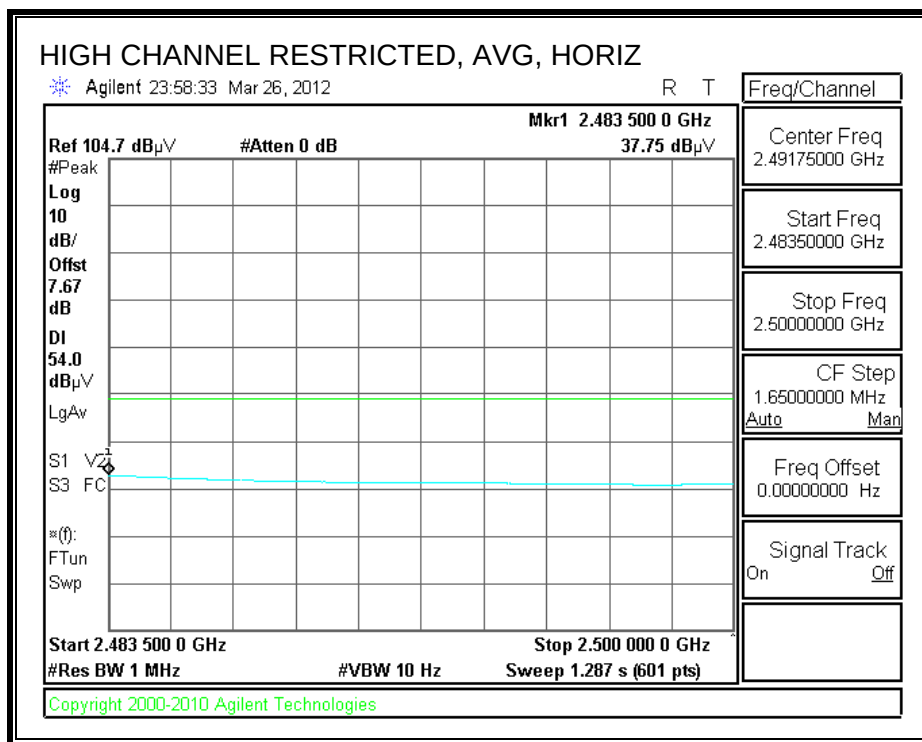
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



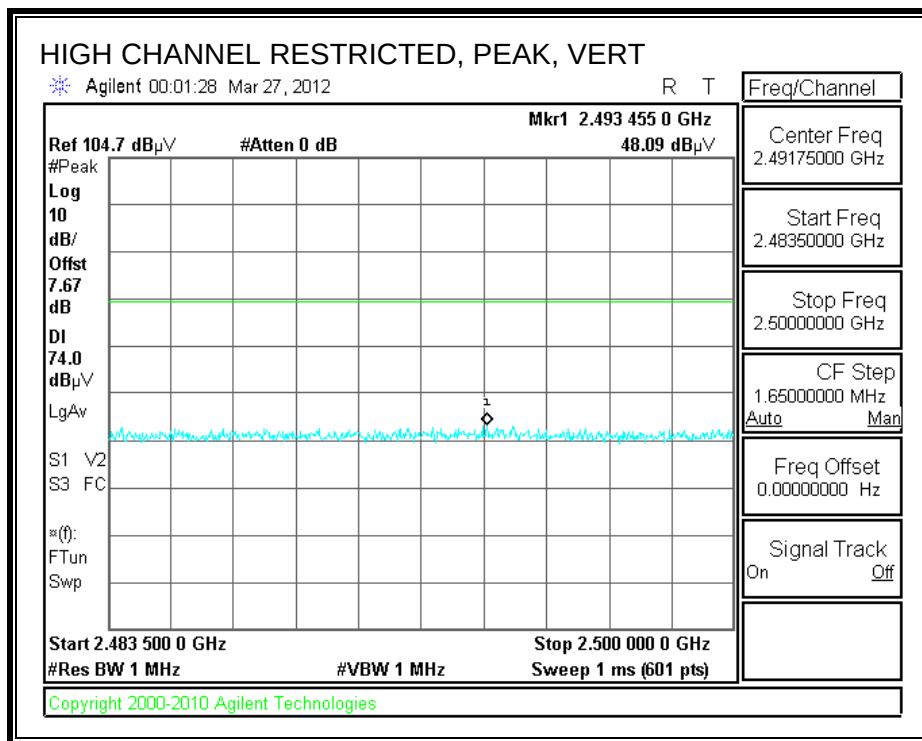


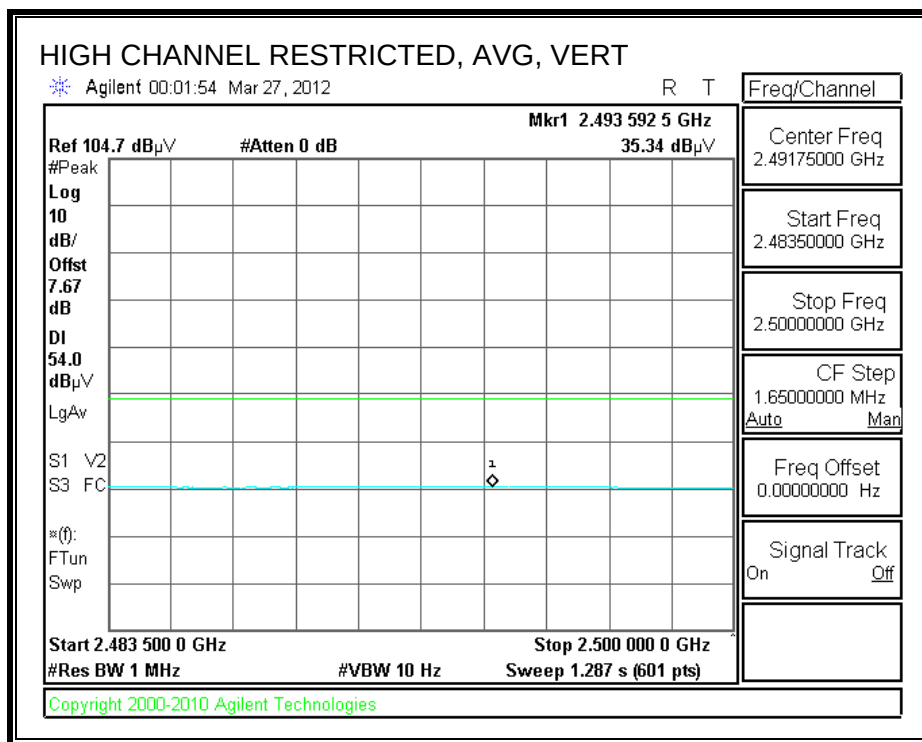
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



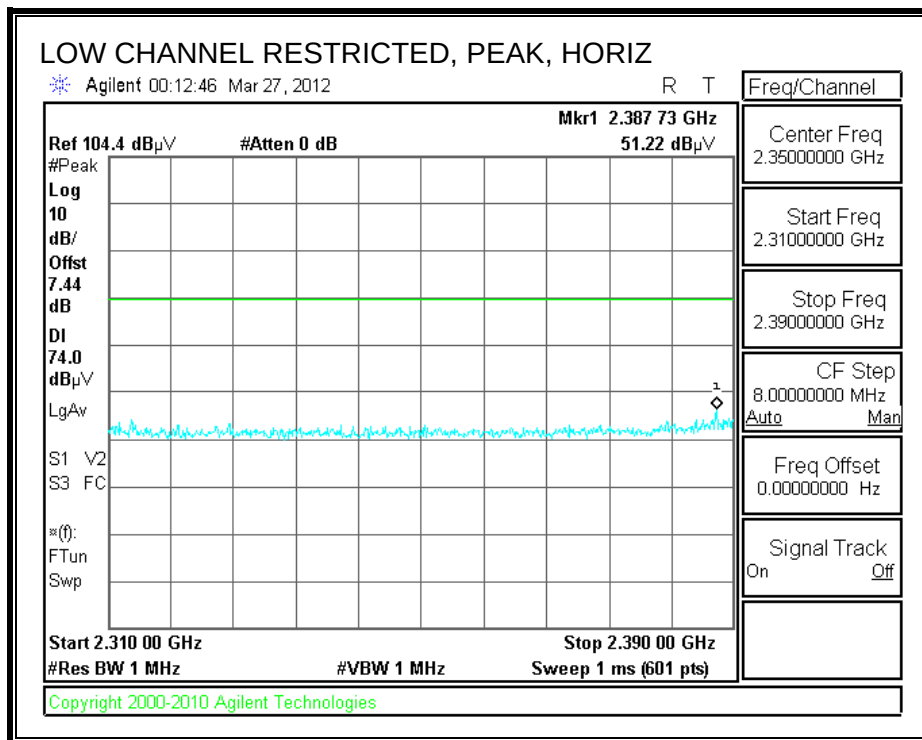


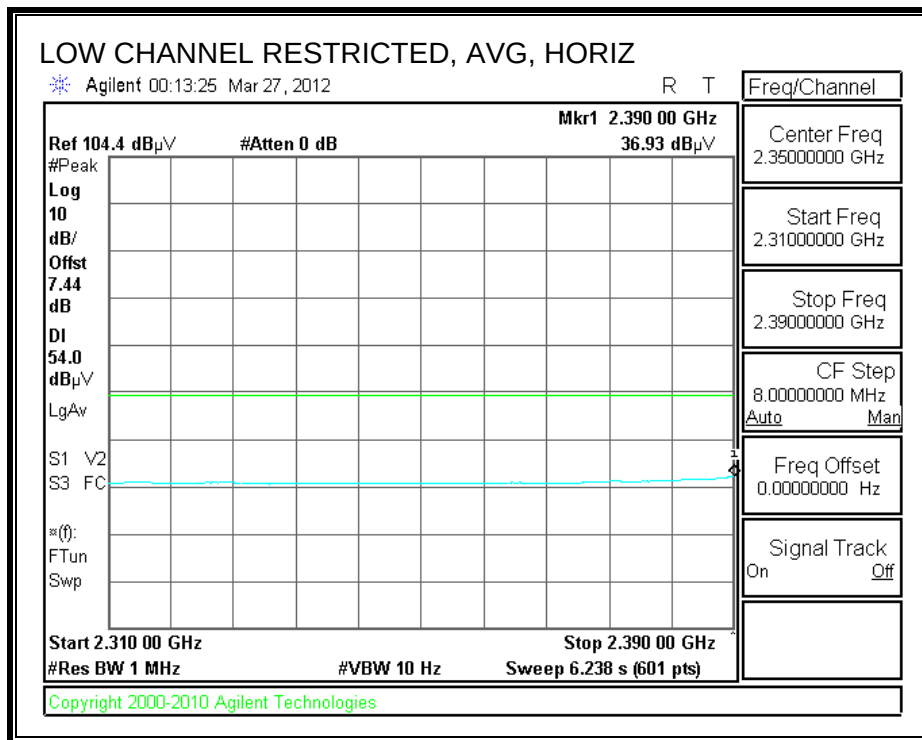
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 3m Chamber															
Company:		Samsung Electronics													
Project #:		12i14320													
Date:		3/26/2012													
Test Engineer:		S.Aguilar													
Configuration:		TX WLAN, Unit #5													
Mode:		11G													
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T60; S/N: 2238 @3m		T34 HP 8449B				T89; ARA 18-26GHz; S/N:1049		FCC 15.205							
Hi Frequency Cables															
3' cable 22807700		12' cable 22807600		20' cable 22807500		HPF		Reject Filter		Peak Measurements RBW= 1MHz, VBW=3MHz Average Measurements RBW=1MHz ; VBW=10Hz					
3' cable 22807700		12' cable 22807600		20' cable 22807500				R_001							
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 Channel (2412 MHz)															
4.824	3.0	43.0	28.8	33.1	6.8	-34.1	0.0	0.0	48.9	34.6	74	54	-25.1	-19.4	
4.824	3.0	50.2	35.0	33.1	6.8	-34.1	0.0	0.0	56.1	40.8	74	54	-17.9	-13.2	
Mid Channel (2437 MHz)															
4.874	3.0	46.6	30.7	33.2	6.8	-34.0	0.0	0.0	52.5	36.7	74	54	-21.5	-17.3	
4.874	3.0	47.9	33.0	33.2	6.8	-34.0	0.0	0.0	53.9	38.9	74	54	-20.1	-15.1	
7.311	3.0	35.9	22.8	36.3	9.1	-33.1	0.0	0.0	48.1	35.1	74	54	-25.9	-18.9	
7.311	3.0	36.4	22.9	36.3	9.1	-33.1	0.0	0.0	48.7	35.1	74	54	-25.3	-18.9	
High Channel (2462 MHz)															
4.924	3.0	45.4	30.2	33.2	6.8	-34.0	0.0	0.0	51.4	36.2	74	54	-22.6	-17.8	
4.924	3.0	51.4	36.1	33.2	6.8	-34.0	0.0	0.0	57.4	42.1	74	54	-16.6	-11.9	
7.386	3.0	35.8	22.6	36.4	9.1	-33.1	0.0	0.0	48.2	35.0	74	54	-25.8	-19.0	
7.386	3.0	39.4	24.4	36.4	9.1	-33.1	0.0	0.0	51.8	36.8	74	54	-22.2	-17.2	
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												

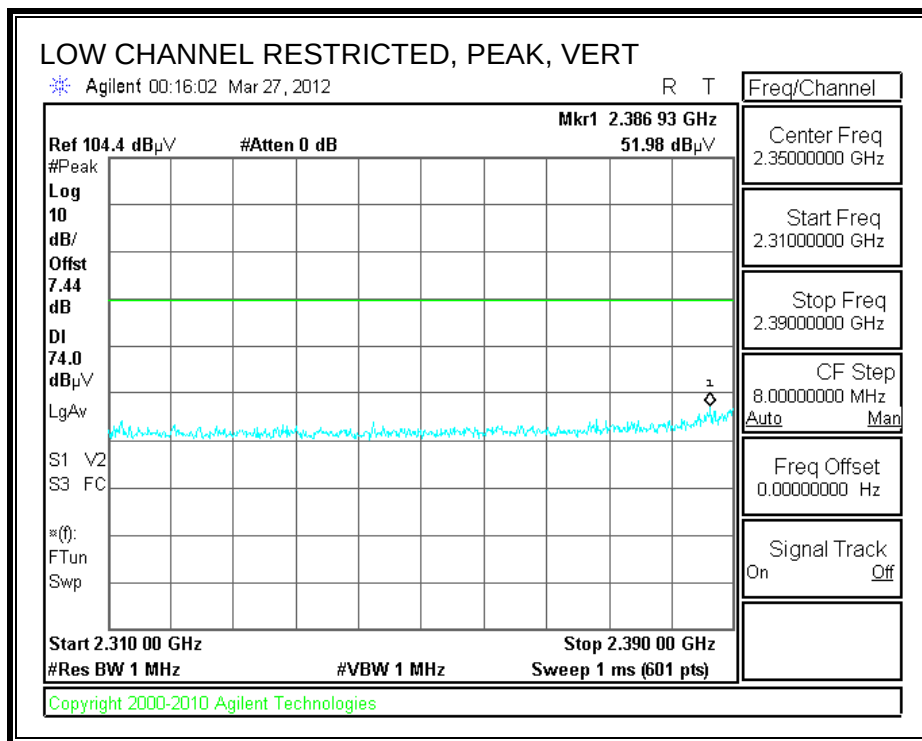
8.2.3. TX ABOVE 1 GHz FOR 802.11n HT20 1TX MODE IN THE 2.4 GHz BAND

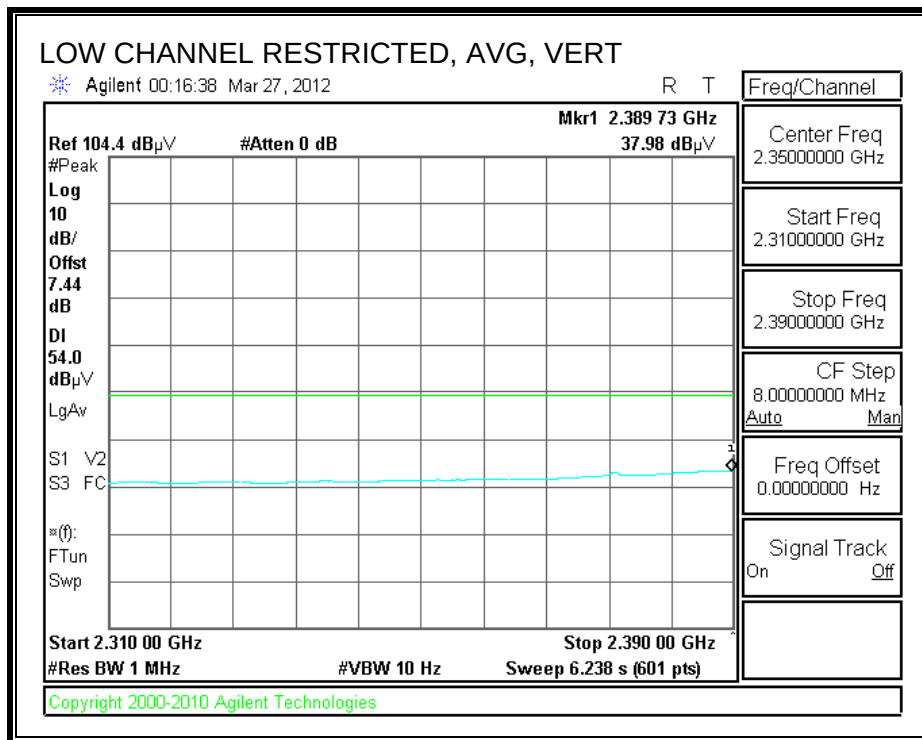
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



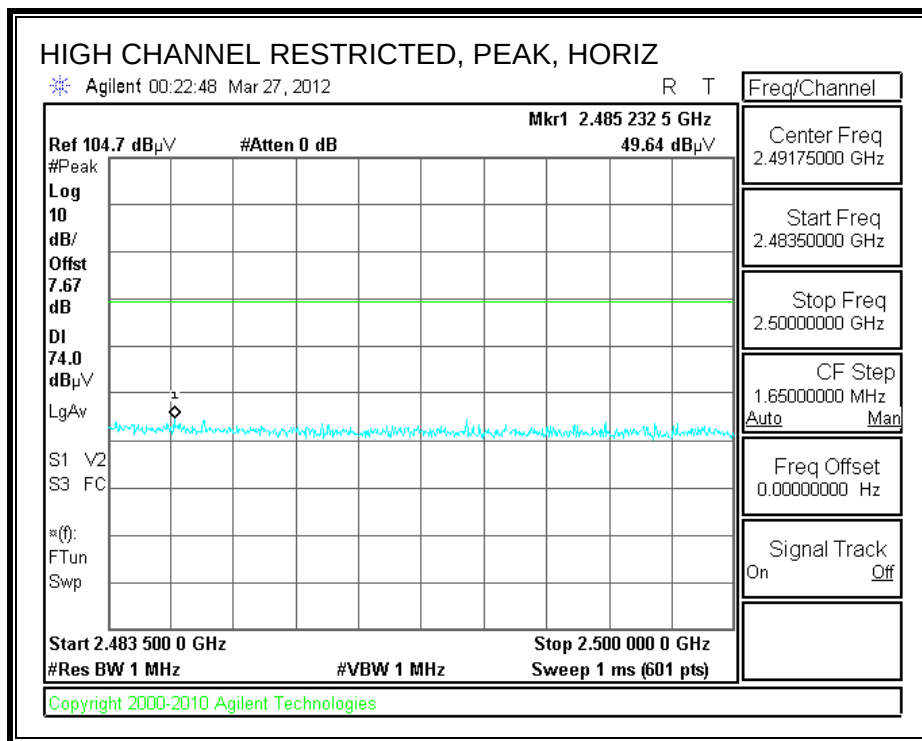


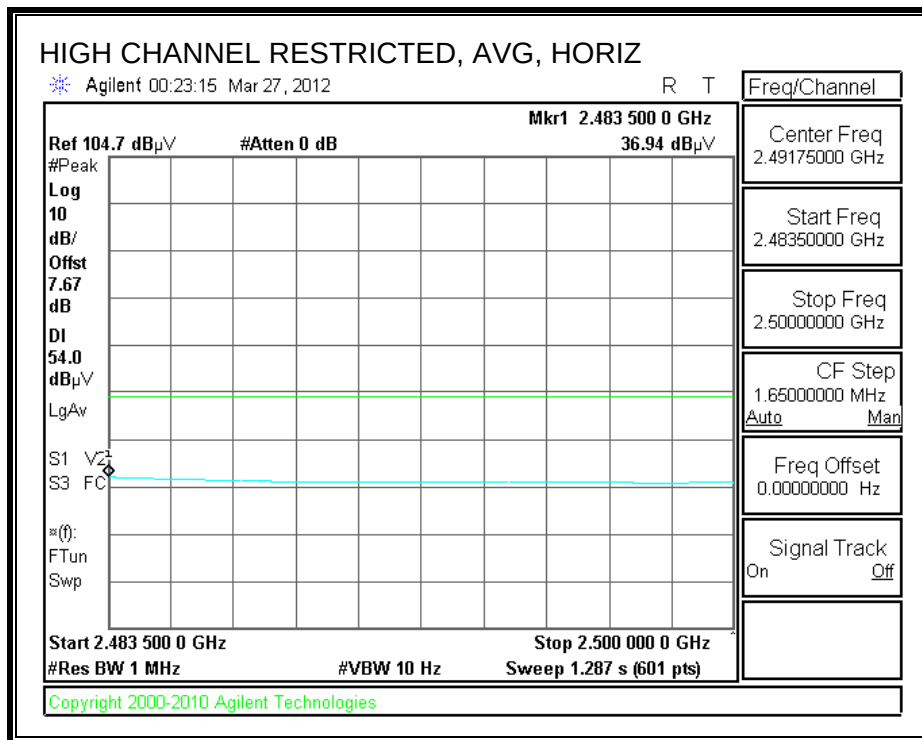
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



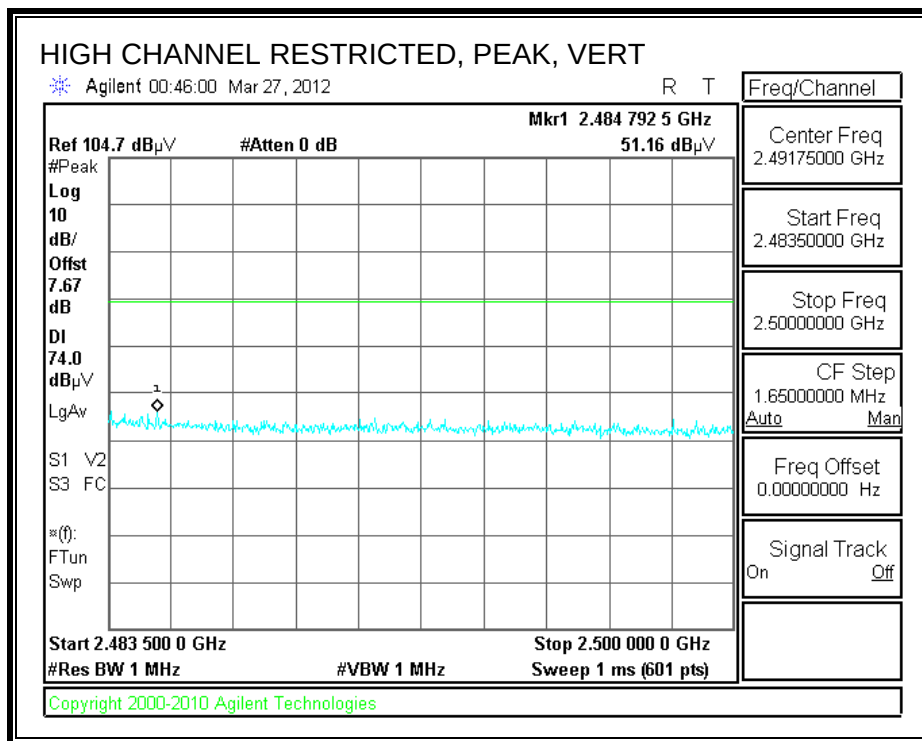


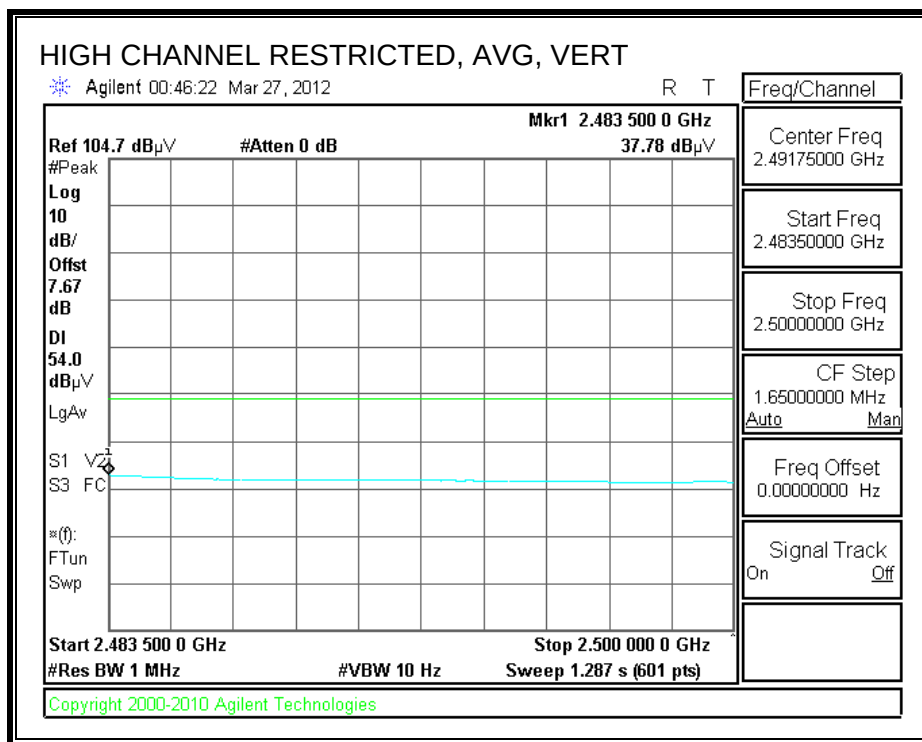
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



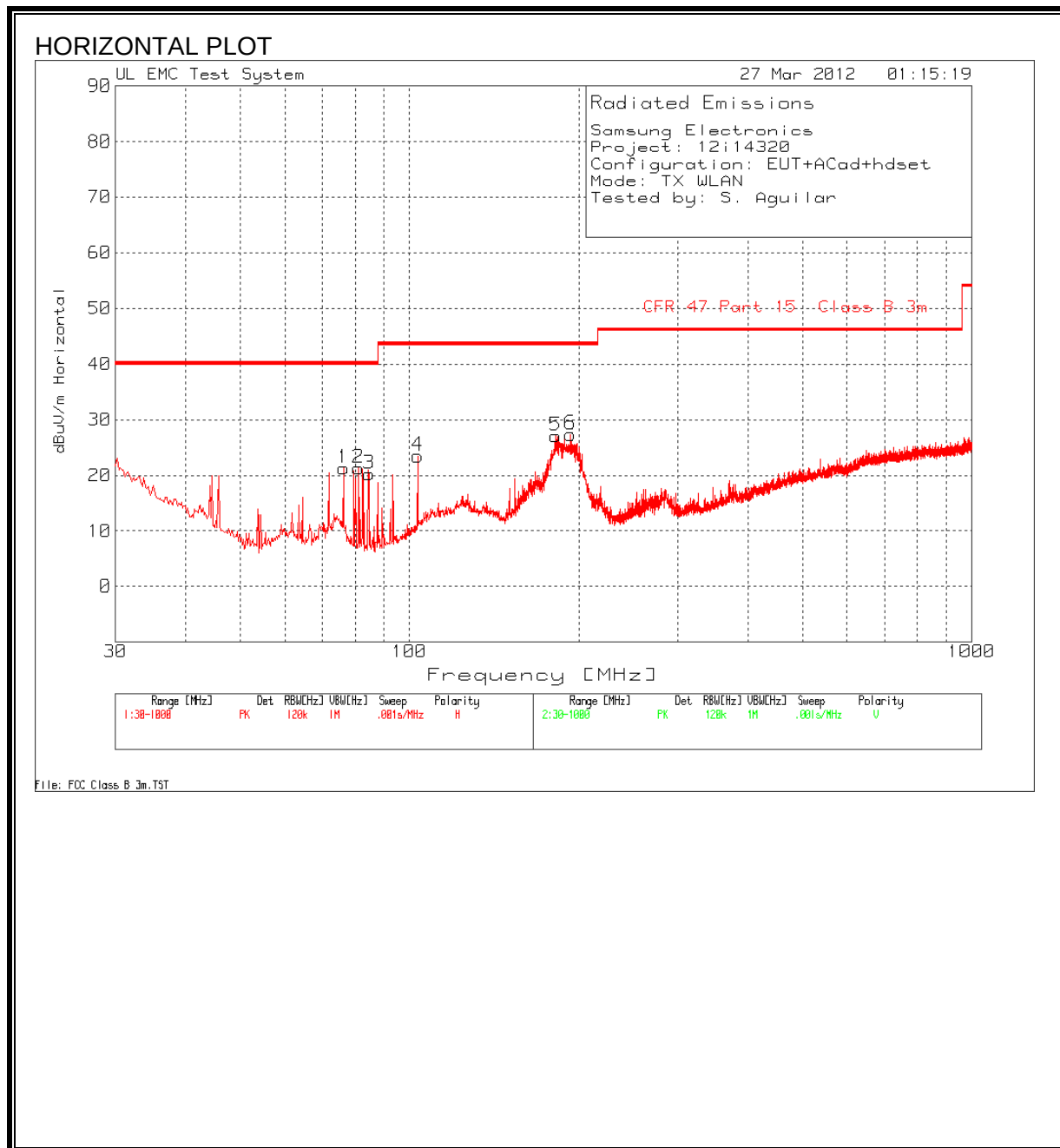


HARMONICS AND SPURIOUS EMISSIONS

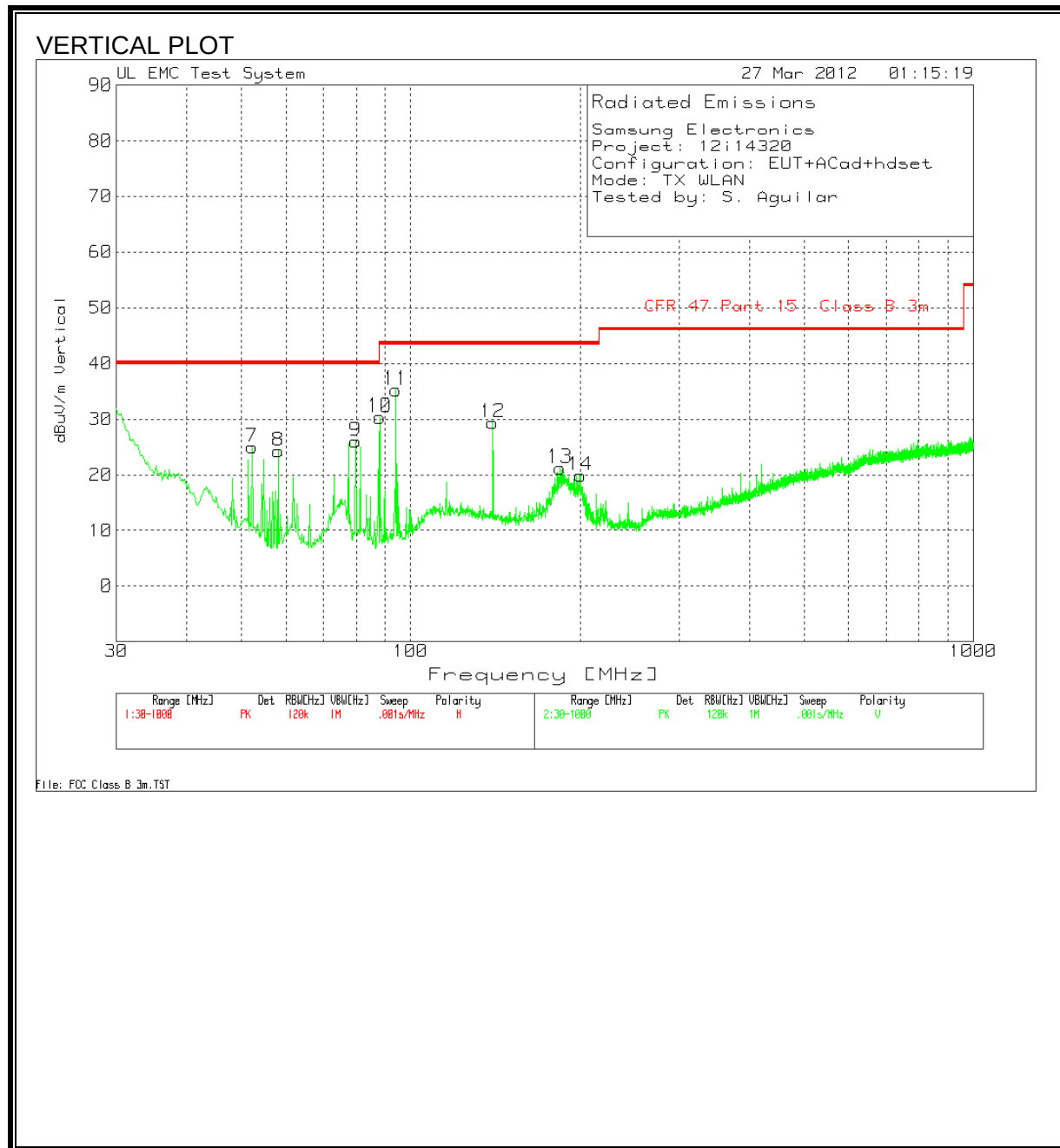
High Frequency Measurement																
Compliance Certification Services, Fremont 3m Chamber																
Company:		Samsung Electronics														
Project #:		12I14320														
Date:		3/26/2012														
Test Engineer:		S.Aguilar														
Configuration:		TX WLAN, Unit #5														
Mode:		11N														
Test Equipment:																
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit								
T60; S/N: 2238 @3m		T34 HP 8449B				T89; ARA 18-26GHz; S/N:1049		FCC 15.205								
Hi Frequency Cables																
3' cable 22807700		12' cable 22807600		20' cable 22807500		HPF		Reject Filter		Peak Measurements RBW= 1MHz, VBW=3MHz Average Measurements RBW=1MHz ; VBW=10Hz						
3' cable 22807700		12' cable 22807600		20' cable 22807500				R_001								
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 Channel (2412 MHz)																
4.824	3.0	37.7	24.3	33.1	6.8	-34.1	0.0	0.0	43.5	30.1	74	54	-30.5	-23.9		
4.824	3.0	42.5	29.4	33.1	6.8	-34.1	0.0	0.0	48.3	35.3	74	54	-25.7	-18.7		
4.824	3.0	44.1	28.0	33.1	6.8	-34.1	0.0	0.0	50.0	33.9	74	54	-24.0	-20.1		
4.824	3.0	49.1	32.1	33.1	6.8	-34.1	0.0	0.0	54.9	37.9	74	54	-19.1	-16.1		
Mid Channel (2437 MHz)																
4.874	3.0	43.3	27.5	33.2	6.8	-34.0	0.0	0.0	49.2	33.4	74	54	-24.8	-20.6		
4.874	3.0	44.4	28.2	33.2	6.8	-34.0	0.0	0.0	50.3	34.2	74	54	-23.7	-19.8		
7.311	3.0	35.9	22.6	36.3	9.1	-33.1	0.0	0.0	48.1	34.8	74	54	-25.9	-19.2		
7.311	3.0	35.5	22.7	36.3	9.1	-33.1	0.0	0.0	47.7	35.0	74	54	-26.3	-19.0		
High Channel (2462 MHz)																
4.924	3.0	36.8	23.9	33.2	6.8	-34.0	0.0	0.0	42.8	29.9	74	54	-31.2	-24.1		
4.924	3.0	36.8	23.9	33.2	6.8	-34.0	0.0	0.0	42.8	30.0	74	54	-31.2	-24.0		
7.386	3.0	35.6	22.4	36.4	9.1	-33.1	0.0	0.0	48.0	34.8	74	54	-26.0	-19.2		
7.386	3.0	37.1	22.9	36.4	9.1	-33.1	0.0	0.0	49.5	35.3	74	54	-24.5	-18.7		
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. 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)



HORIZONTAL AND VERTICAL DATA

Company Name:	Samsung Electronics								
Project:	12I14320	(GT-S5380E)							
Date:	3/26/2012								
Configuraiton:	EUT+ AC ADAPTER + HEADSET								
Mode:	TX, WLAN, worst case								
Tested by:	S.Aguilar								

Test Frequency [MHz]	Meter Reading [dB(μV)]	Detector	Pre Amp Factor [dB]	Antenna Factor [dB/m]	Corrected [dB(μV/m)]	Class B PK limit [dB(μV/m)]	QP Margin [dB]	Height [cm]	Polarity
Range 1 30 - 1000MHz									
76.3289	40.31	PK	-27.1	8.1	21.31	40	-18.69	399	Horz
81.1751	40.57	PK	-27	7.7	21.27	40	-18.73	399	Horz
84.6643	39.92	PK	-27.1	7.4	20.22	40	-19.78	301	Horz
103.4672	39.44	PK	-26.9	10.9	23.44	43.5	-20.06	100	Horz
181.9744	42.67	PK	-26.4	10.8	27.07	43.5	-16.43	201	Horz
193.4113	42.41	PK	-26.4	11.3	27.31	43.5	-16.19	100	Horz
Range 2 30 - 1000MHz									
52.2922	45.01	PK	-27.3	7.3	25.01	40	-14.99	301	Vert
58.1075	44.54	PK	-27.3	7	24.24	40	-15.76	301	Vert
79.8181	45.46	PK	-27.1	7.7	26.06	40	-13.94	201	Vert
88.1535	49.93	PK	-27	7.4	30.33	43.5	-13.17	101	Vert
94.1627	53.95	PK	-27	8.3	35.25	43.5	-8.25	101	Vert
139.9101	42.96	PK	-26.7	13.1	29.36	43.5	-14.14	201	Vert
184.3006	36.8	PK	-26.4	10.8	21.2	43.5	-22.3	201	Vert
200.3897	33.89	PK	-26.2	12.2	19.89	43.5	-23.61	201	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

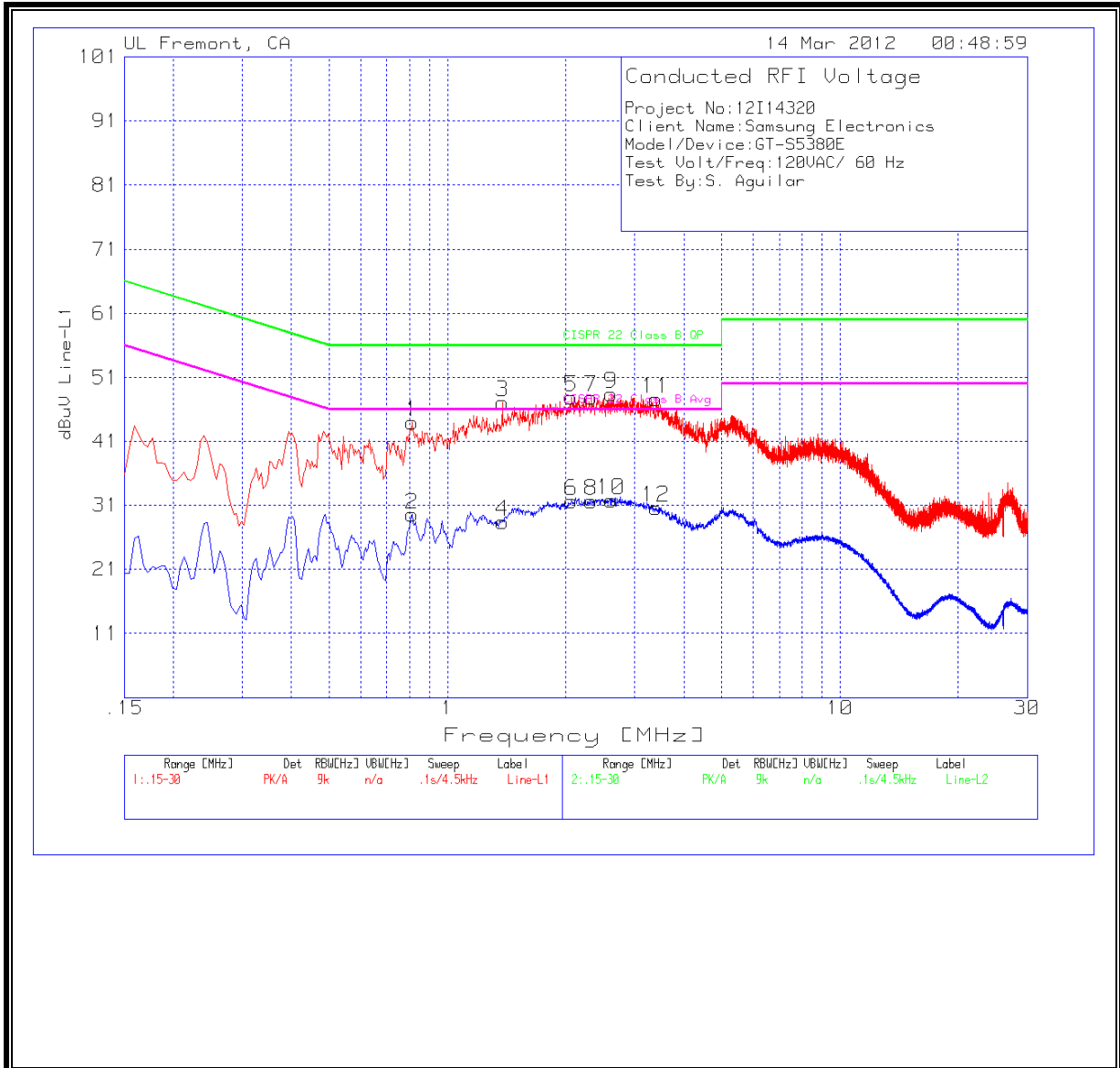
ANSI C63.10

RESULTS

WORST EMISSIONS

Company Name:		Samsung Electronics							
Project:		12I14320							
Date:		3/14/2012							
Configuraiton:		Test Volt/Freq:120VAC/ 60 Hz							
Mode:		TX WLAN , Worst case							
Tested by:		S. Aguilar							
Line-L1 .15 - 30MHz									
Test Frequency [MHz]	Meter Reading [dBuV]	Detector Type	LISN [dB]	Cables [dB]	Corrected [dB(uV)]	Class B QP Limit	QP Margin	Class B Av Limit [dB(uV)]	Av Margin [dB]
0.8115	43.89	PK	0.1	0	43.99	56	-12.01	-	-
0.8115	29.39	Av	0.1	0	29.49	-	-	46	-16.51
1.3785	46.96	PK	0.1	0.1	47.16	56	-8.84	-	-
1.3785	28.21	Av	0.1	0.1	28.41	-	-	46	-17.59
2.067	47.72	PK	0.1	0.1	47.92	56	-8.08	-	-
2.067	31.41	Av	0.1	0.1	31.61	-	-	46	-14.39
2.328	47.76	PK	0.1	0.1	47.96	56	-8.04	-	-
2.328	31.43	Av	0.1	0.1	31.63	-	-	46	-14.37
2.616	48.23	PK	0.1	0.1	48.43	56	-7.57	-	-
2.616	31.61	Av	0.1	0.1	31.81	-	-	46	-14.19
3.399	47.5	PK	0.1	0.1	47.7	56	-8.3	-	-
3.399	30.35	Av	0.1	0.1	30.55	-	-	46	-15.45
Line-L2 .15 - 30MHz									
Test Frequency [MHz]	Meter Reading [dBuV]	Detector Type	LISN [dB]	Cables [dB]	Corrected [dB(uV)]	Class B QP Limit	QP Margin	Class B Av Limit [dB(uV)]	Av Margin [dB]
1.473	43.43	PK	0.1	0.1	43.63	56	-12.37	-	-
1.473	23.16	Av	0.1	0.1	23.36	-	-	46	-22.64
1.905	44.99	PK	0.1	0.1	45.19	56	-10.81	-	-
1.905	24.32	Av	0.1	0.1	24.52	-	-	46	-21.48
2.2245	45.49	PK	0.1	0.1	45.69	56	-10.31	-	-
2.2245	24.9	Av	0.1	0.1	25.1	-	-	46	-20.9
2.616	45.05	PK	0.1	0.1	45.25	56	-10.75	-	-
2.616	25.36	Av	0.1	0.1	25.56	-	-	46	-20.44
2.805	46.33	PK	0.1	0.1	46.53	56	-9.47	-	-
2.805	25.89	Av	0.1	0.1	26.09	-	-	46	-19.91
3.1875	46.03	PK	0.1	0.1	46.23	56	-9.77	-	-
3.1875	25.94	Av	0.1	0.1	26.14	-	-	46	-19.86
PK - Peak detector									
QP - Quasi-Peak detector									
Av - Average detector									

LINE 1 RESULTS



LINE 2 RESULTS

