



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

**BT3.0, 802.11 B/G/N 1X1 HT20, GSM/WCDMA 850/1900MHZ, BAR PHONE WITH
HOTSPOTS AND VOIP SUPPORTED**

MODEL NUMBER: GT-B7810L

FCC ID: A3LGTB7810L

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Prepared for

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416, MAETAN 3-DONG, YEONGTONG-GU
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NVLAP LAB CODE 200065-0

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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, 802.11b/g/n 1x1 HT20, GSM/WCDMA 850/1900MHz, Bar
Phone with HOTSPOTS and VOIP supported

MODEL: GT-B7810L

SERIAL NUMBER: FJ-171-D (Conducted) & FJ-171-C (Radiated)

DATE TESTED: JULY 13 - 18, 2012

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

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.

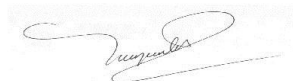
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this 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:

Tested By:



TIM LEE
STAFF ENGINEER
UL CCS



VIEN TRAN
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:

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

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, 802.11b/g/n 1x1 HT20, GSM/WCDMA 850/1900MHz, Bar Phone with HOTSPOTS and VOIP supported.

The manufacturer of the radio module is 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	17.92	61.94
2412 - 2462	802.11g	20.72	118.03
2412 - 2462	802.11n HT20	17.92	61.94

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of 4.0 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was B7810L.010.

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 Y orientation with AC/DC adapter and with headset. All final radiated emission testing was performed using the worst-case orientation.

Based on preliminary testing, the nominal output power is reduced as the data rate increases, the data rates tested represent the highest power and worst-case with respect to EMC performance.

Worst-case data rates 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	ETA0U10JBS	FJ-066B	DoC
Headset	Samsung	EHS61ASFWE	FJ-171-A	N/A

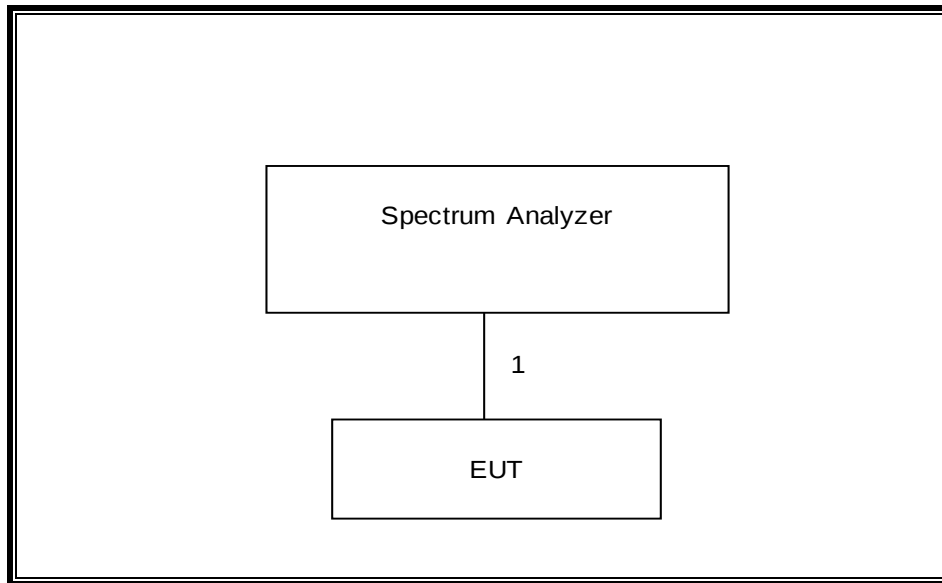
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1, 2	DC Power	1	Mini-USB	Shielded	1.2 m	NA
3	Audio	1	Mini-Jack	Un-Shielded	1.5 m	NA

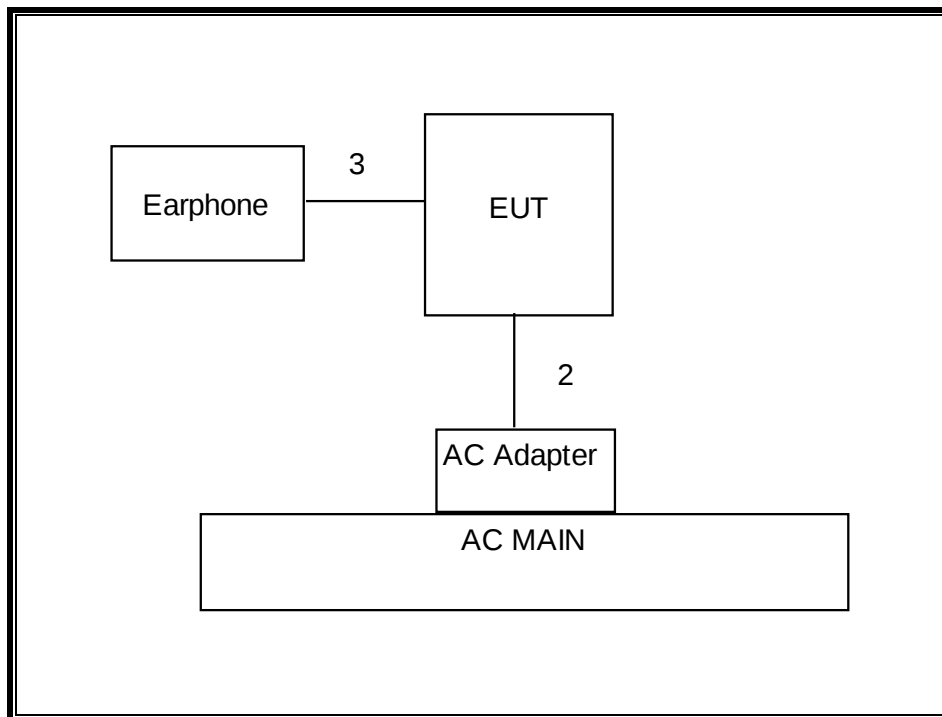
TEST SETUP

The EUT is a standalone device.

SETUP DIAGRAM FOR CONDUCTED TESTS



RADIATED 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, 44 GHz	Agilent / HP	E4446A	C01069	12/15/11	12/15/12
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	09/02/11	09/02/12
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/19/11	08/19/13
Antenna, Horn, 18 GHz	EMCO	3115	C00872	09/20/11	09/20/12
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	07/28/11	07/28/12
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/12	06/14/13
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C00989	01/26/12	01/26/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	11/11/11	11/11/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	11/11/11	11/11/12
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/02/11	08/02/12
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRC13192	N02683	CNR	CNR
LISN, 30 MHz	FCC	50/250-25-2	C00626	12/13/11	12/13/12
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/11	12/13/12
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	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)

IC RSS-210 A8.2 (a)

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

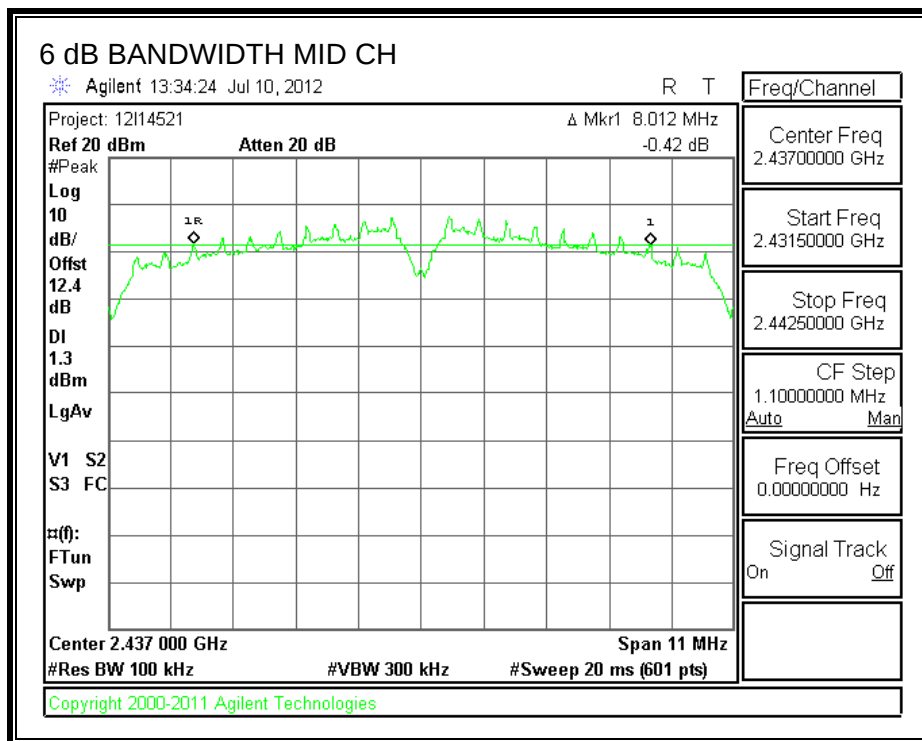
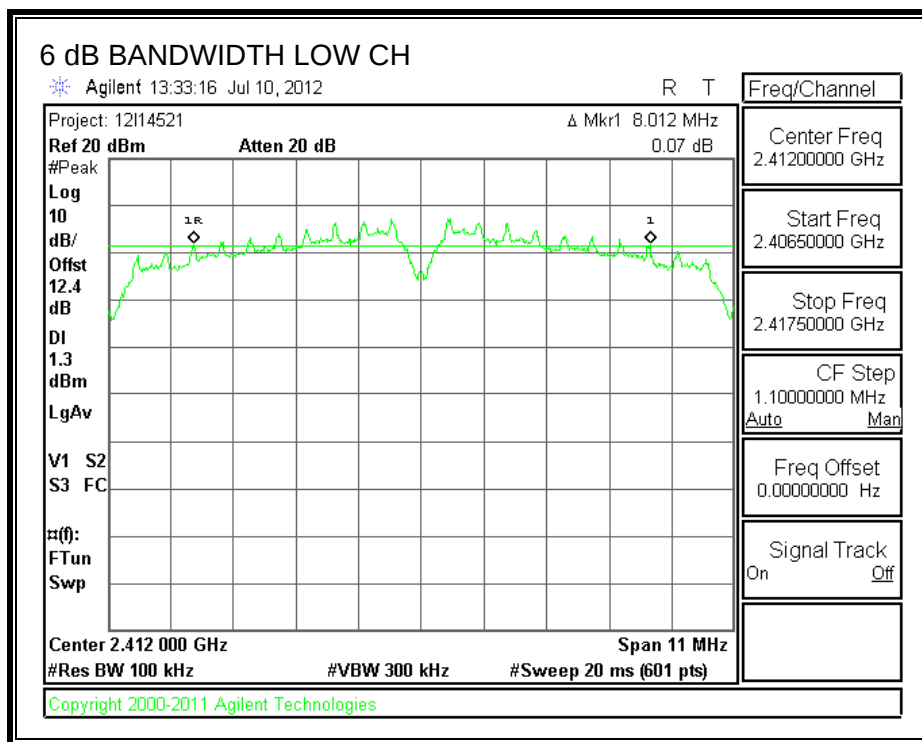
TEST PROCEDURE

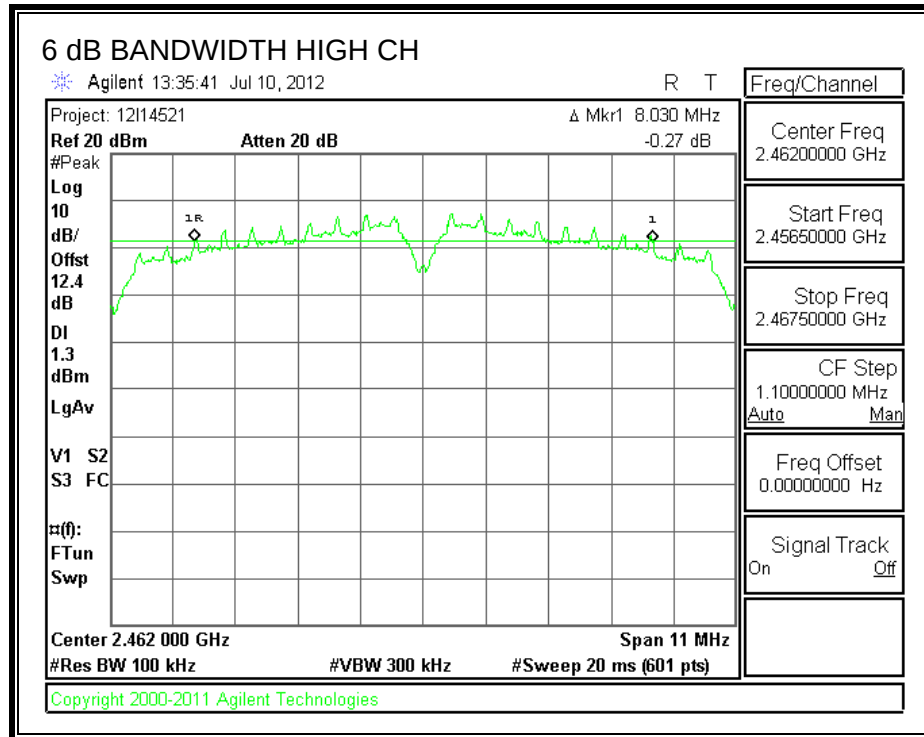
The transmitter output is connected to a spectrum analyzer.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.0120	0.5
Middle	2437	8.0120	0.5
High	2462	8.0300	0.5

6 dB BANDWIDTH





7.1.1. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

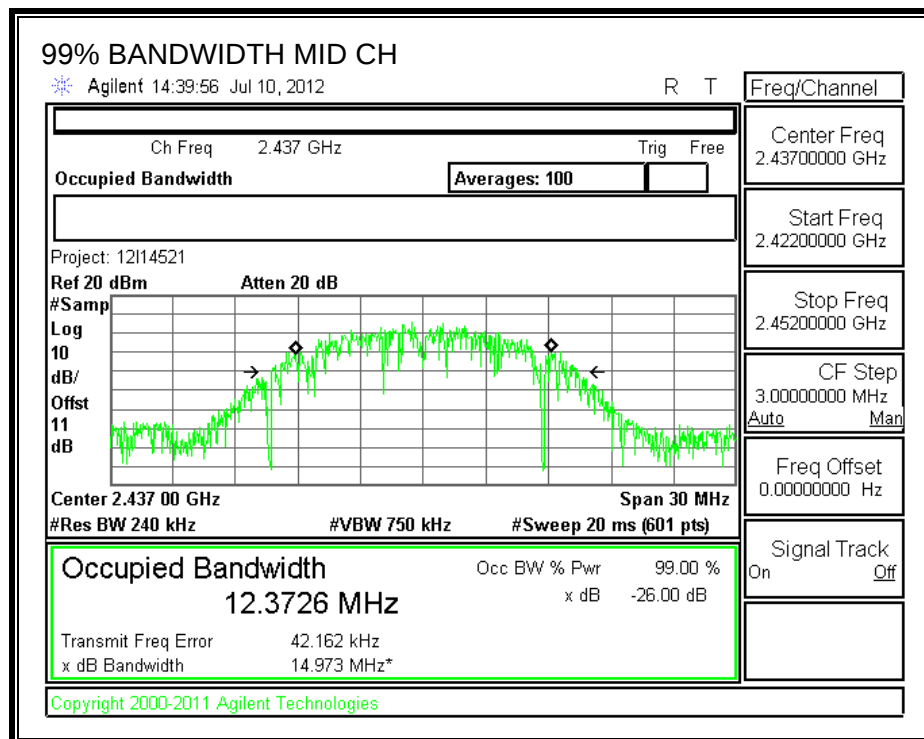
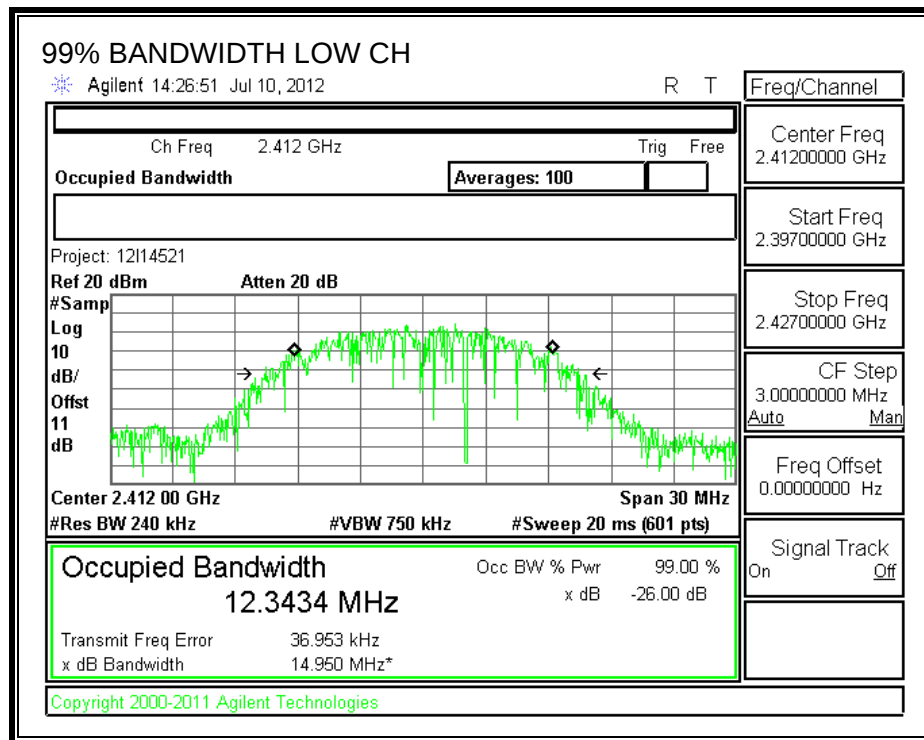
TEST PROCEDURE

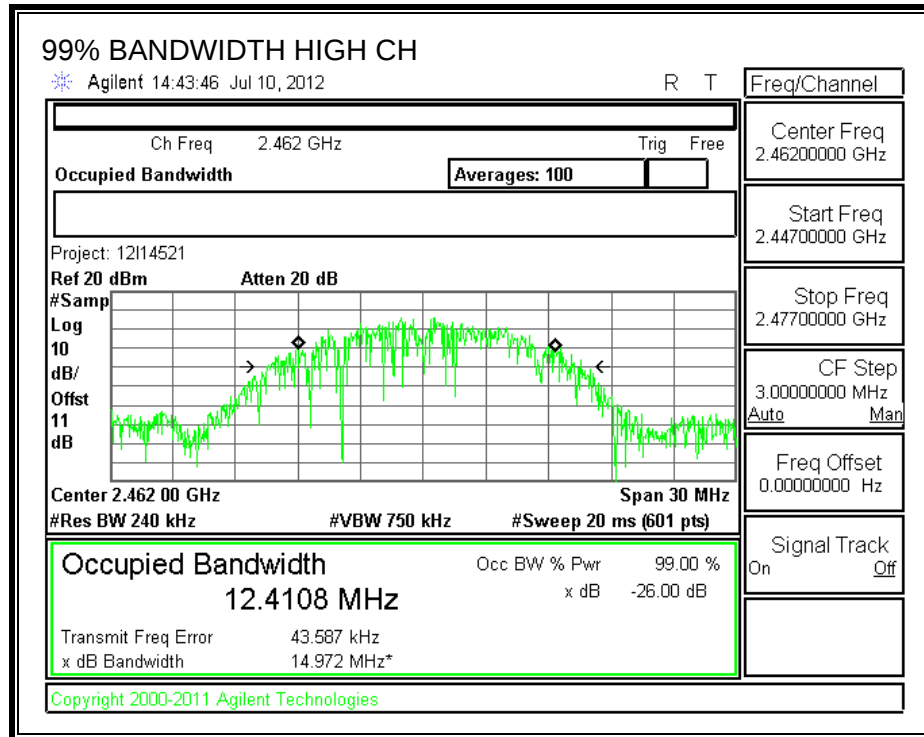
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	12.3434
Middle	2437	12.3726
High	2462	12.4108

99% BANDWIDTH





7.1.1. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

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

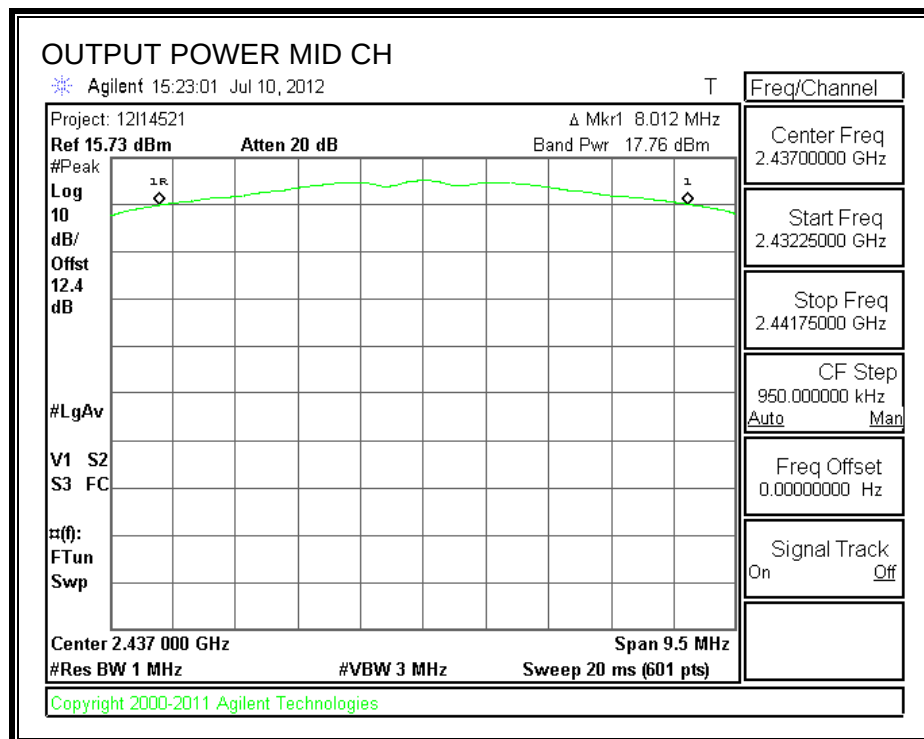
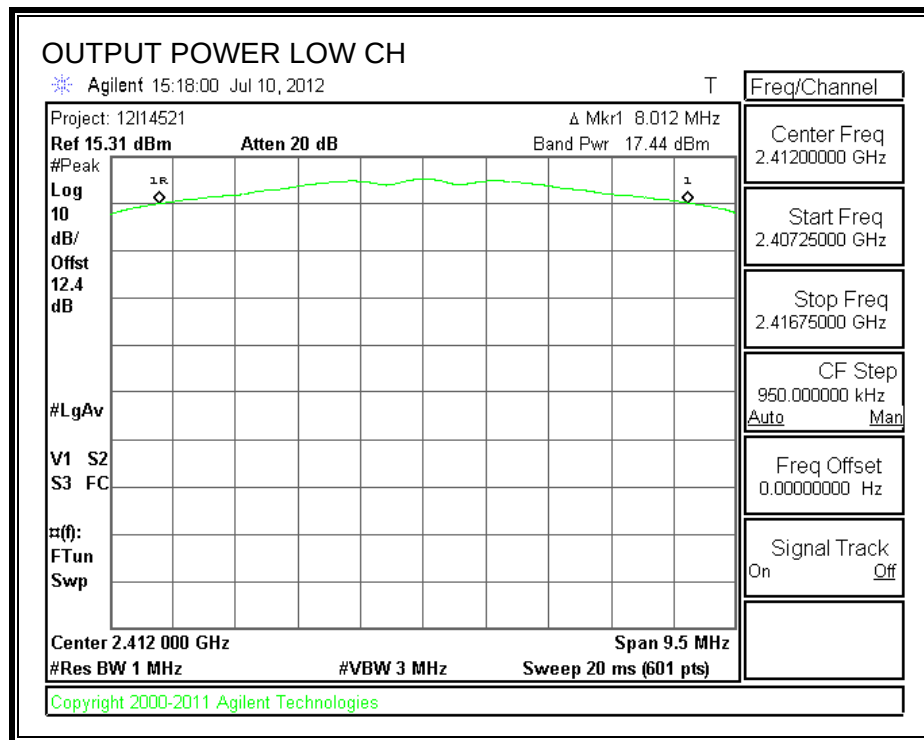
TEST PROCEDURE

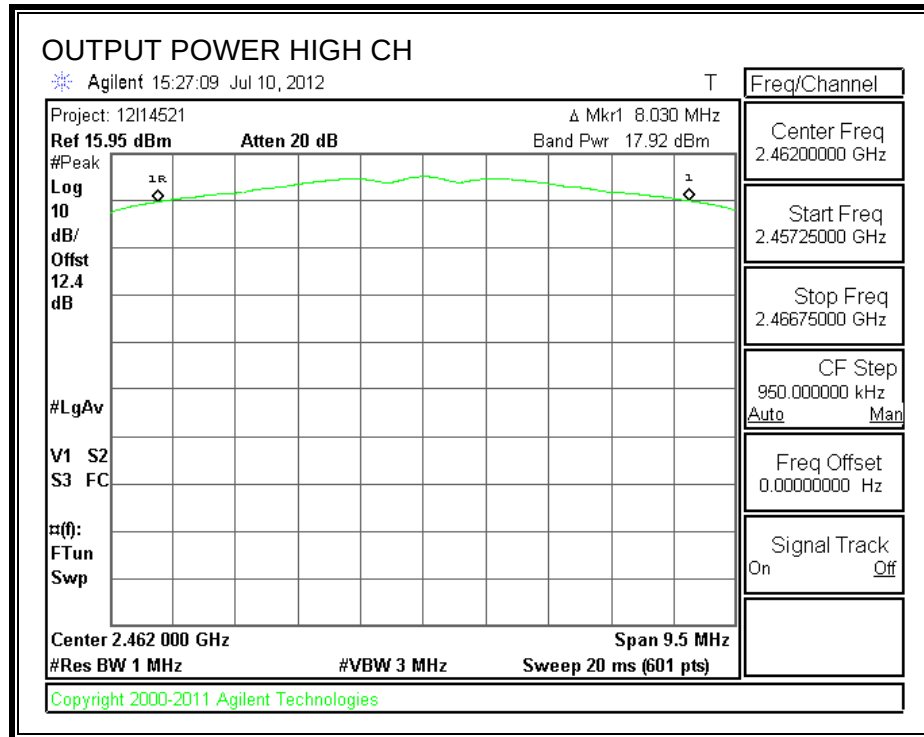
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2412	17.440	30	-12.560
Middle	2437	17.760	30	-12.240
High	2462	17.920	30	-12.080

OUTPUT POWER





7.1.1. 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 12.36 dB (including 12.06 dB pad and 0.3 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	AV power (dBm)
Low	2412	15.32
Middle	2437	15.07
High	2462	15.18

7.1.1. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

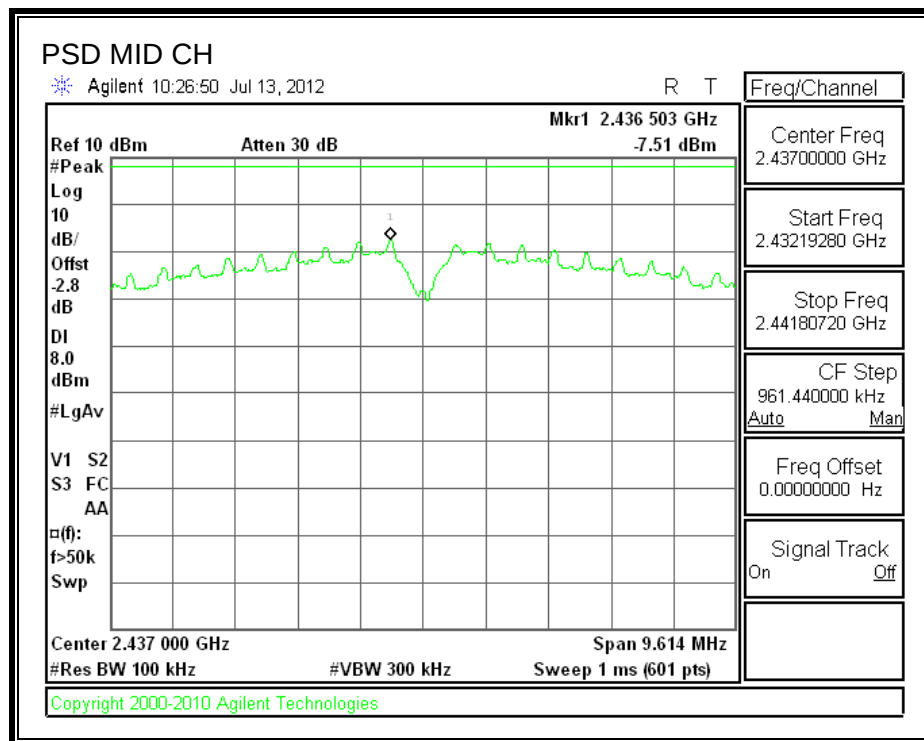
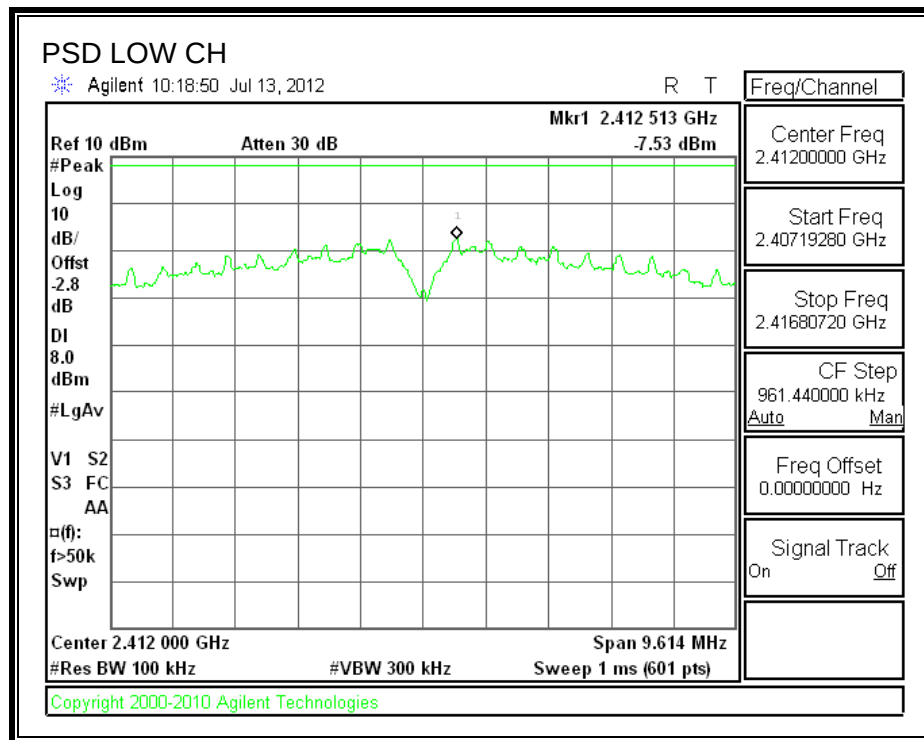
KDB 558074 D01 V01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 01/18/2012.

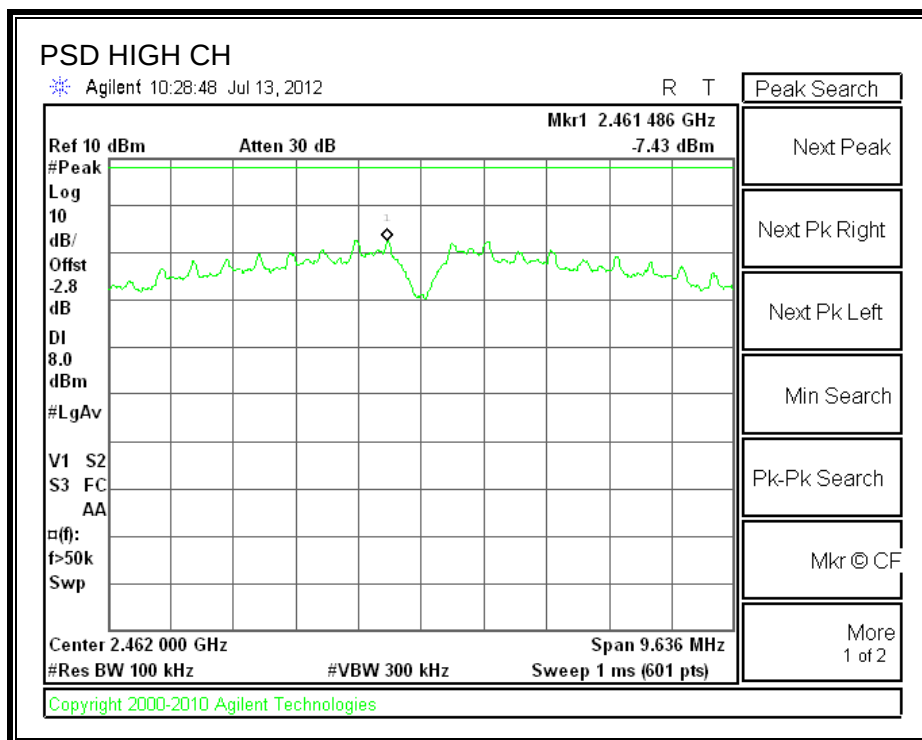
RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-7.53	8	-15.53
Middle	2437	-7.51	8	-15.51
High	2462	-7.43	8	-15.43

Note: The spectrum analyzer offset = attenuator loss + cable loss + $10 \log(3/100 \text{ kHz}) = -2.80$ dB

POWER SPECTRAL DENSITY





7.1.1. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

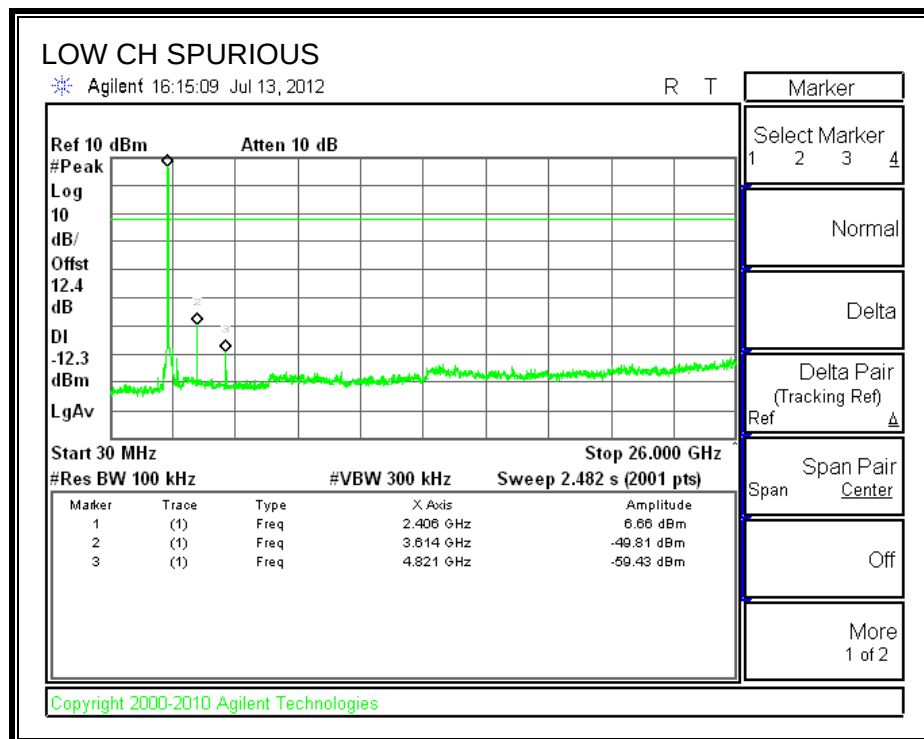
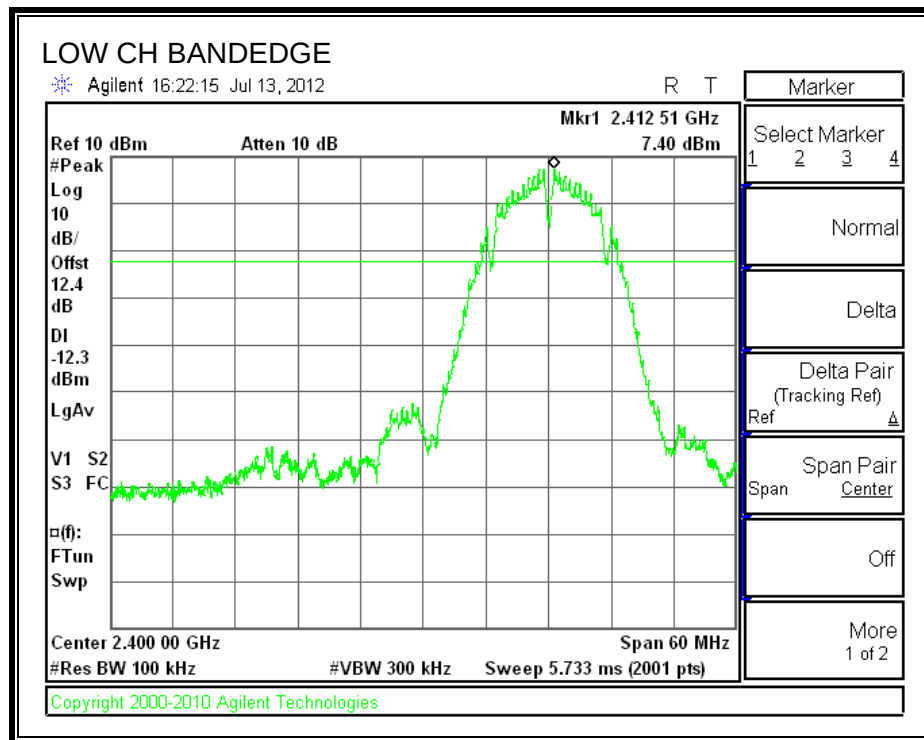
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

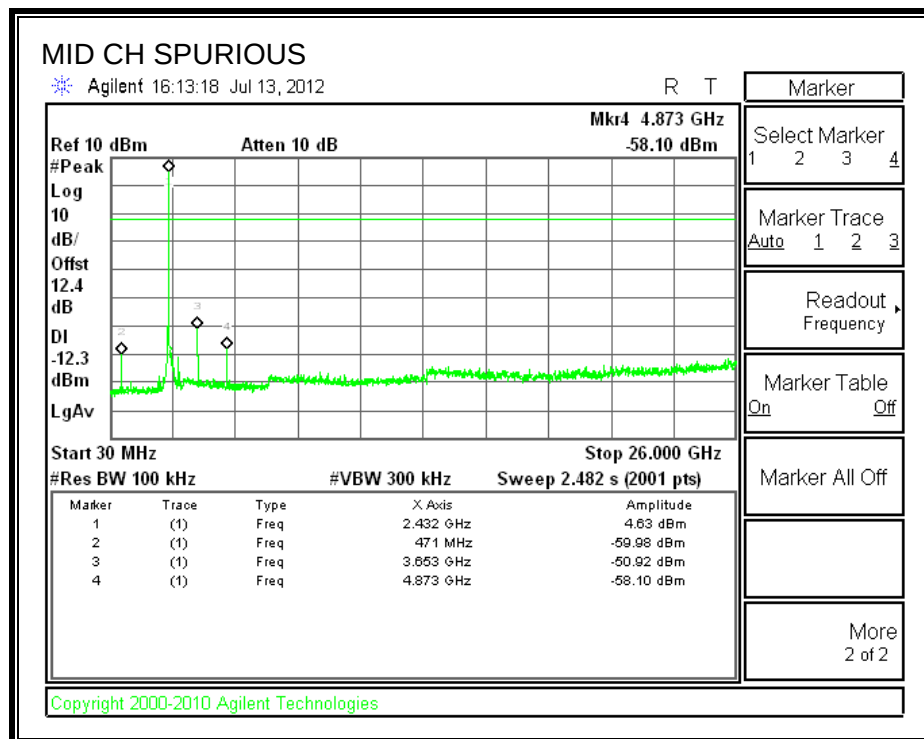
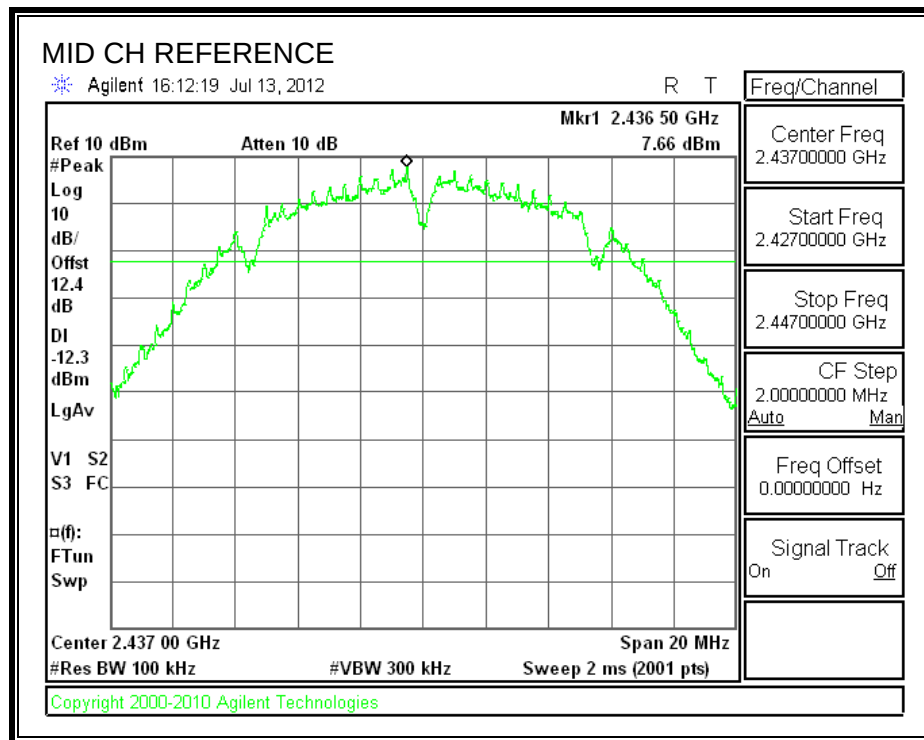
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

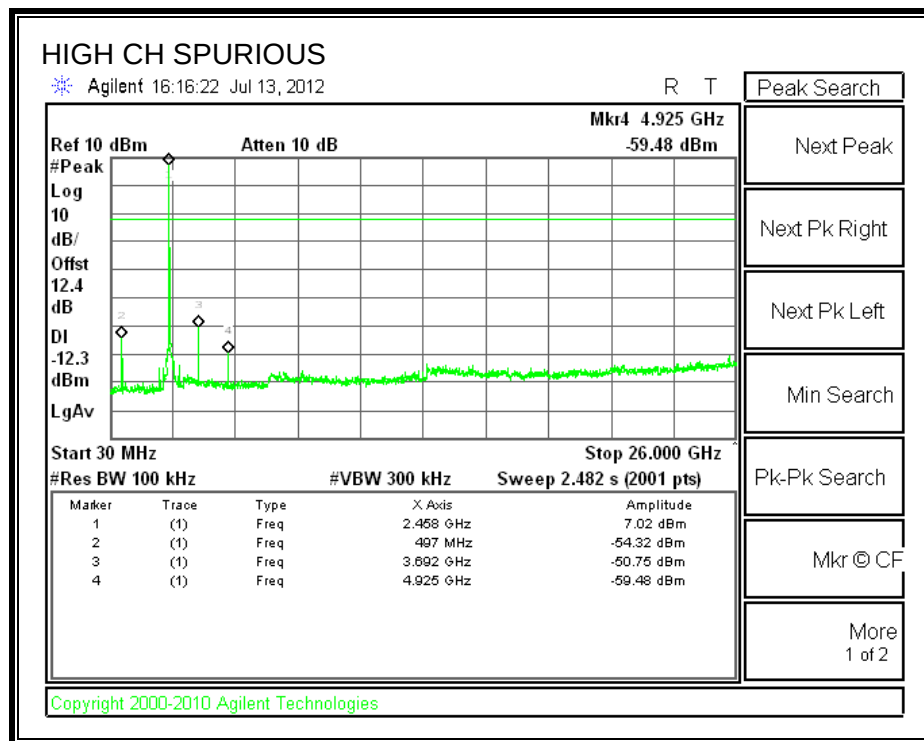
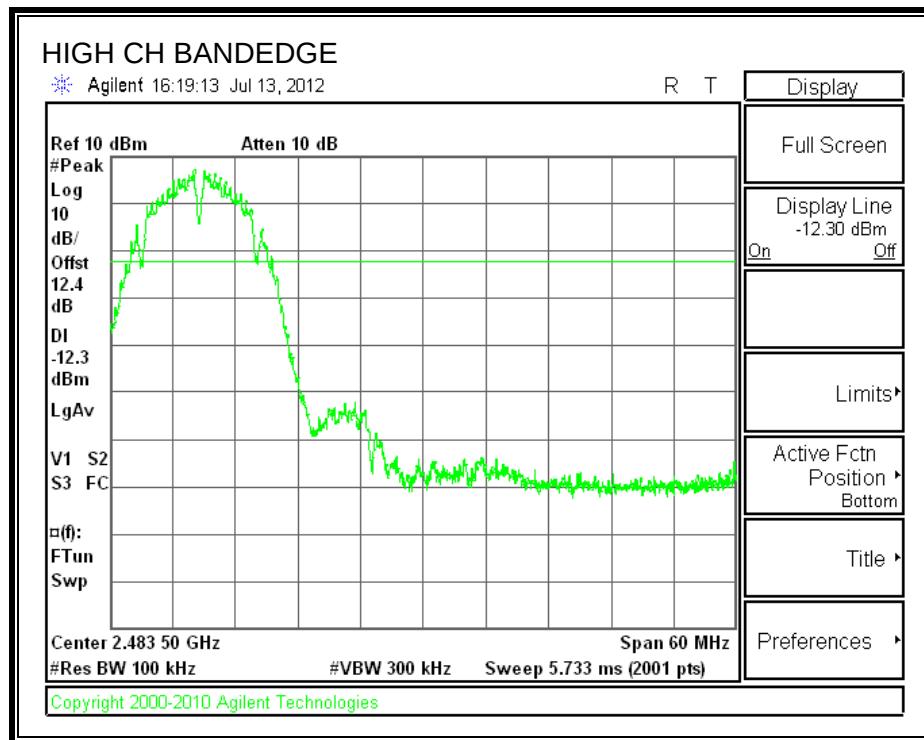
SPURIOUS EMISSIONS, LOW CHANNEL



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)

IC RSS-210 A8.2 (a)

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

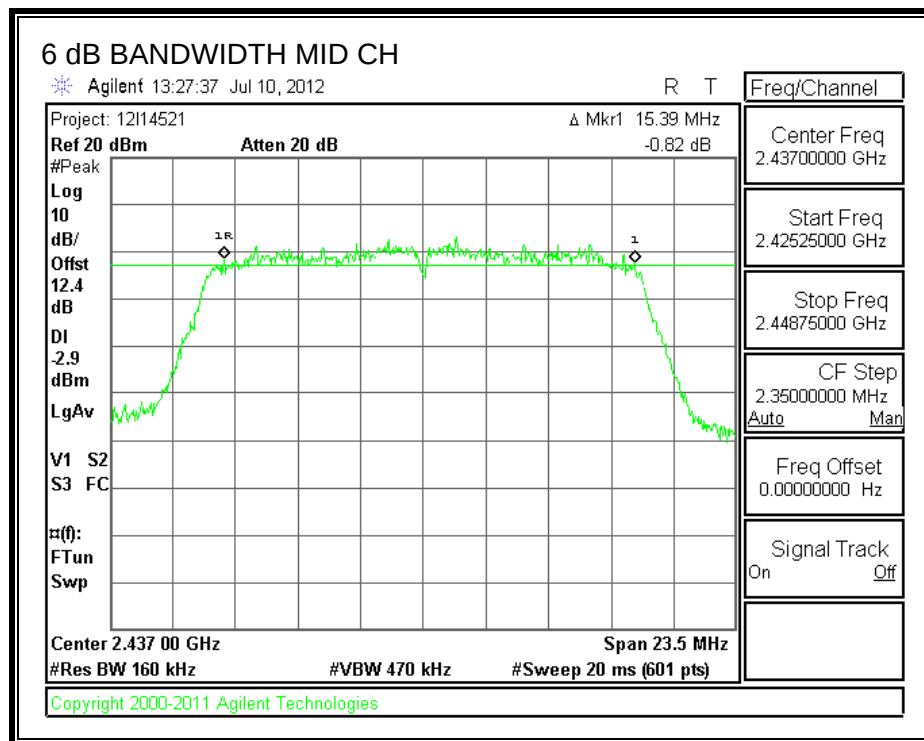
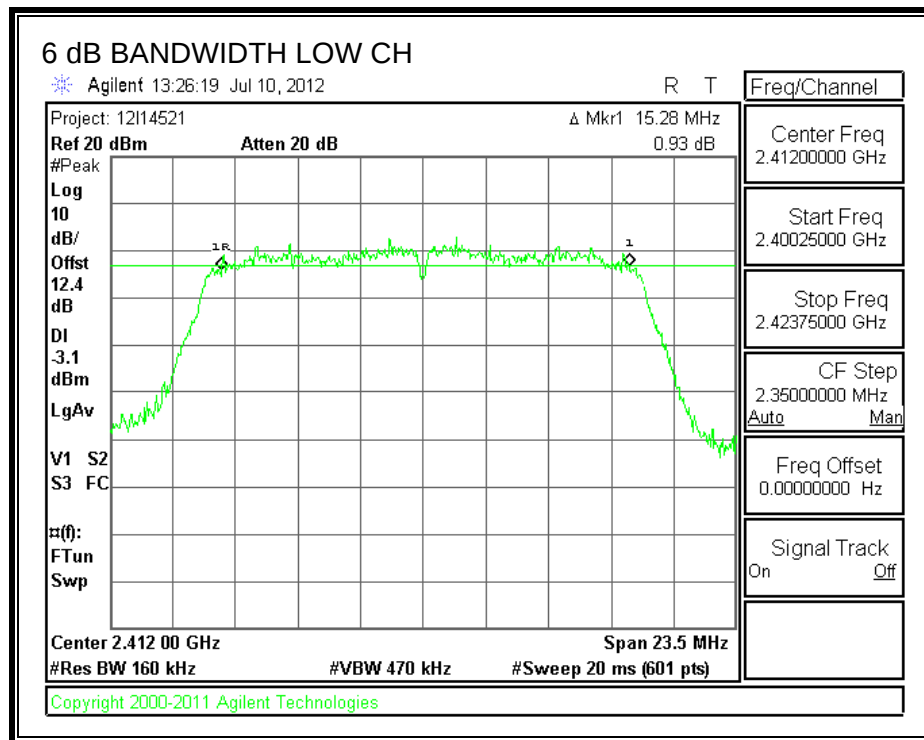
TEST PROCEDURE

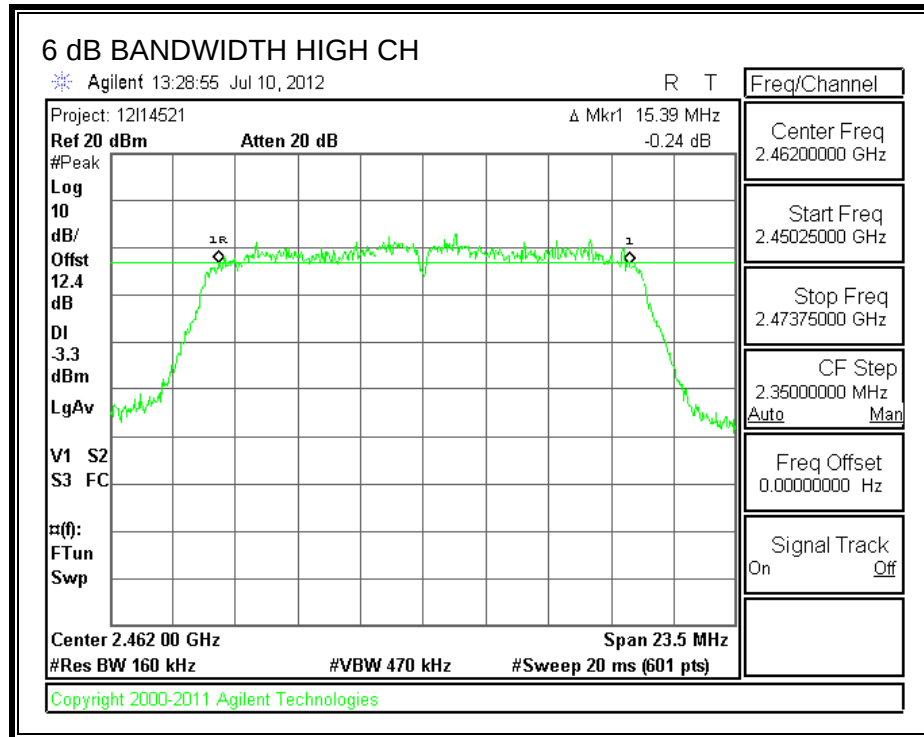
The transmitter output is connected to a spectrum analyzer.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.2800	0.5
Middle	2437	15.3900	0.5
High	2462	15.3900	0.5

6 dB BANDWIDTH





7.2.1. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

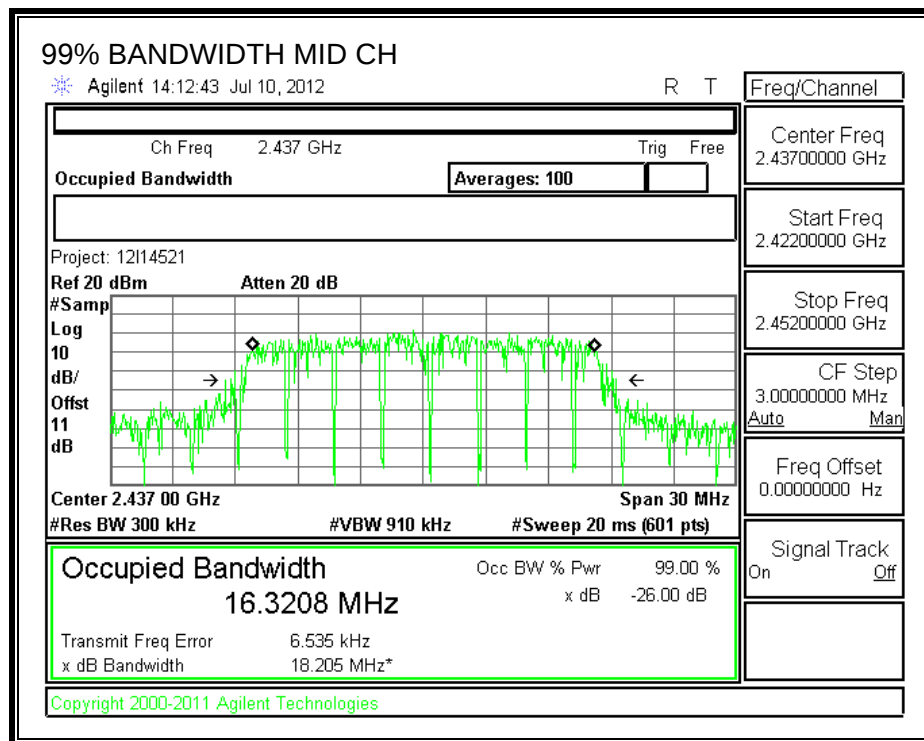
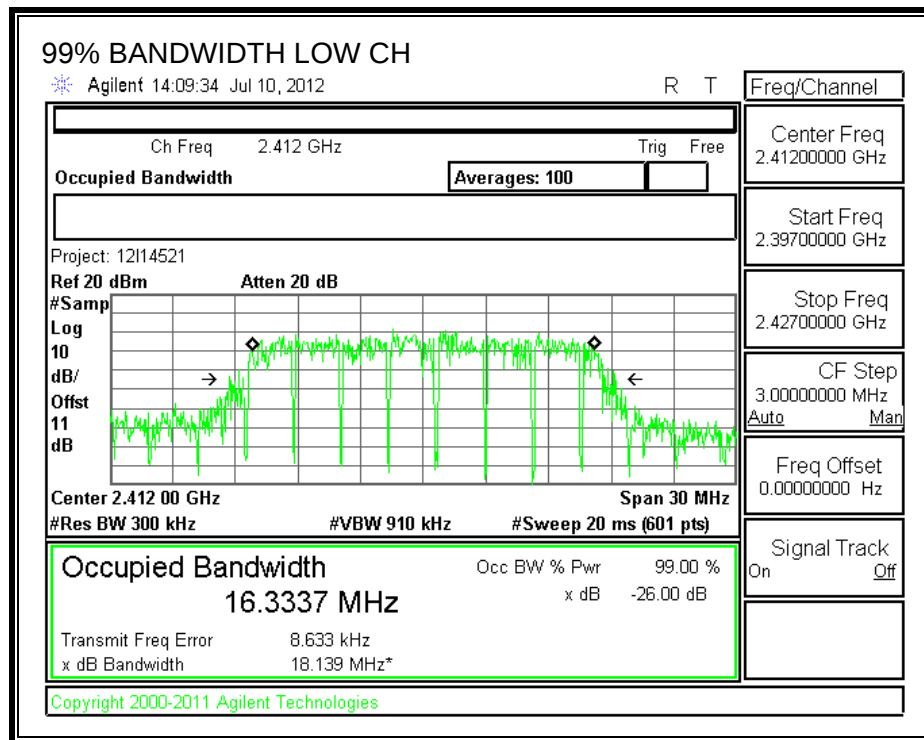
TEST PROCEDURE

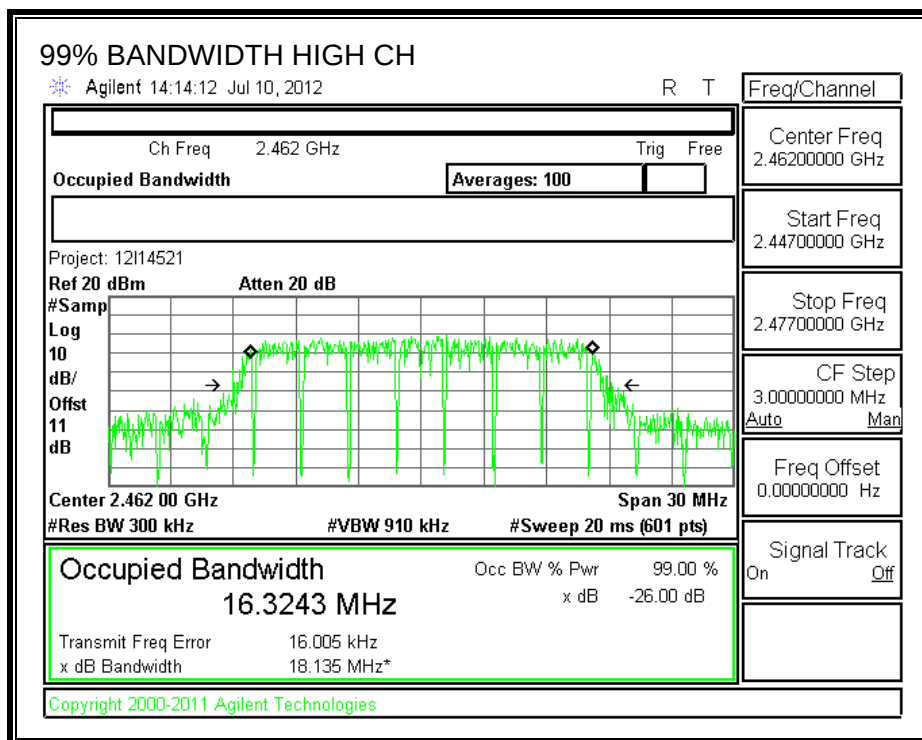
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.3337
Middle	2437	16.3208
High	2462	16.3243

99% BANDWIDTH





7.2.1. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

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

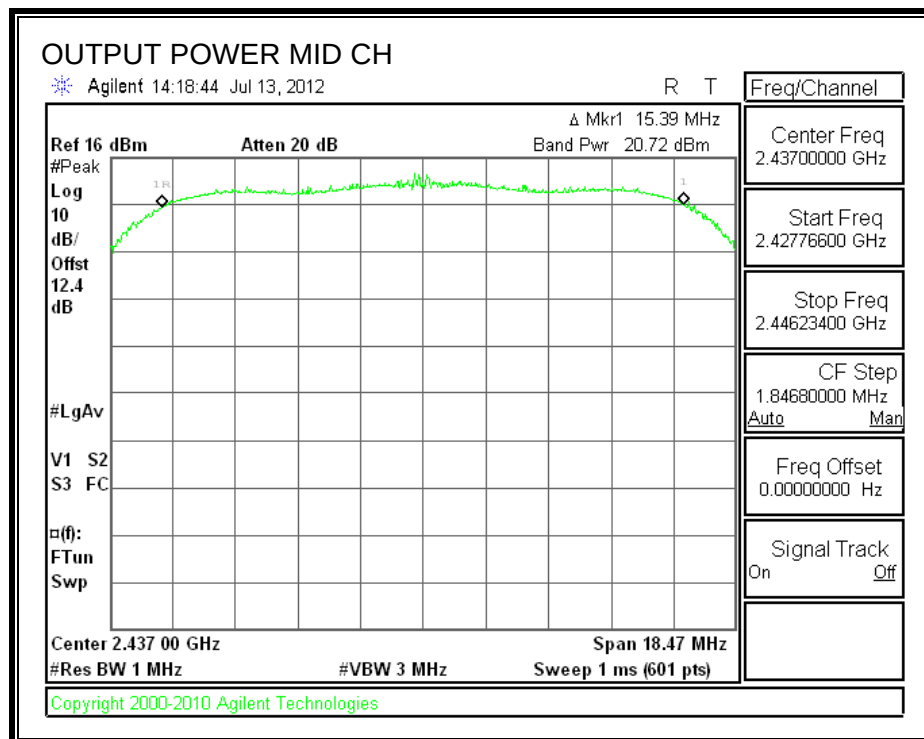
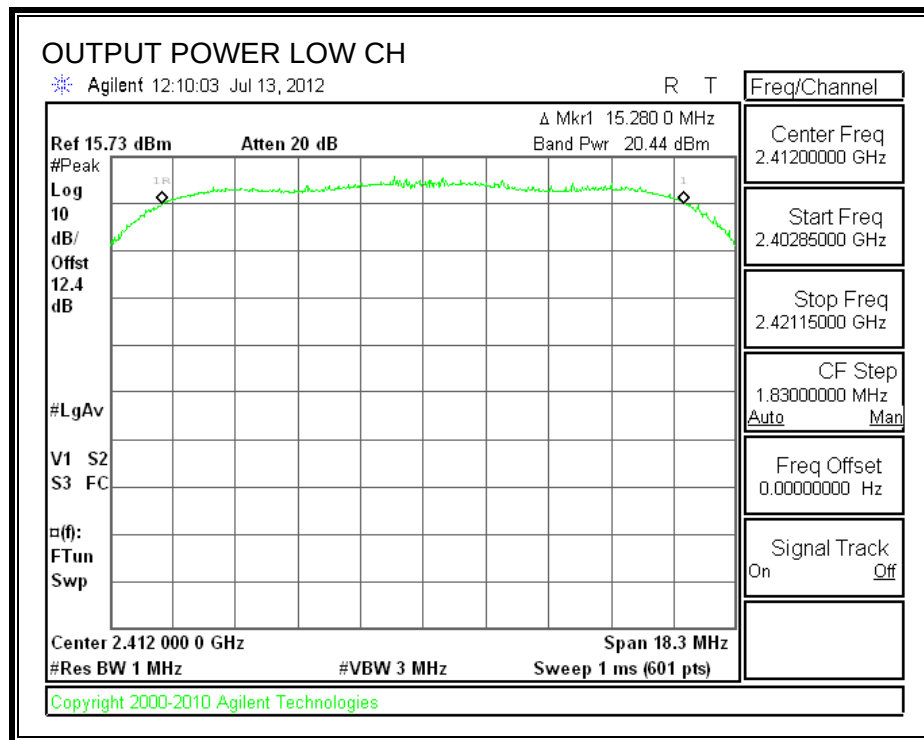
TEST PROCEDURE

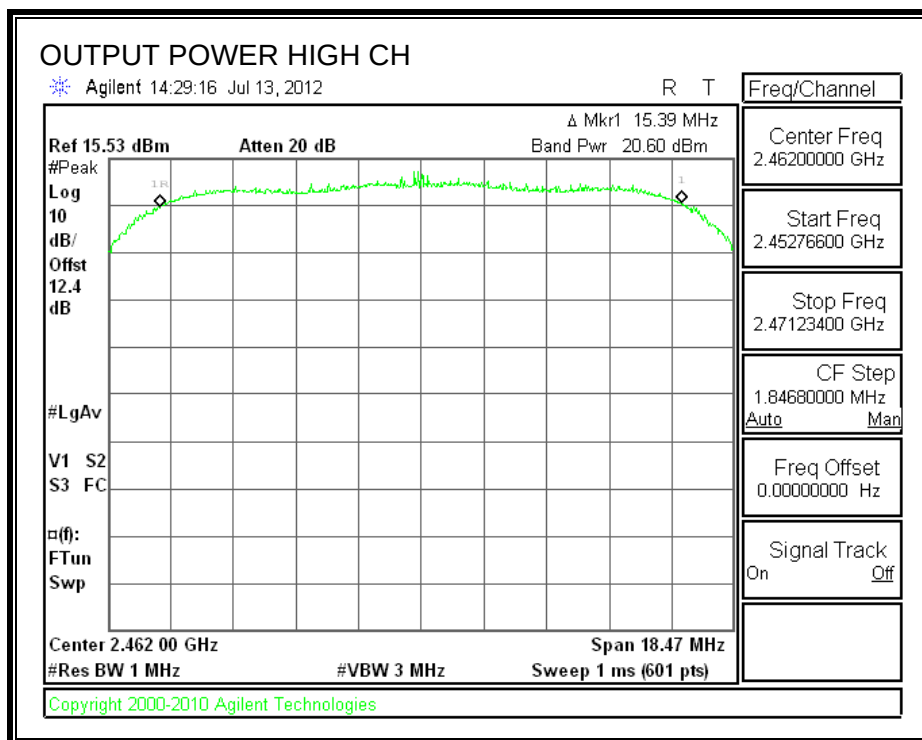
KDB 558074 D01 V01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 01/18/2012.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2412	20.44	30	-9.56
Middle	2437	20.72	30	-9.28
High	2462	20.60	30	-9.40

OUTPUT POWER





7.2.1. 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 12.36 dB (including 12.06 dB pad and 0.30 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	12.08
Middle	2437	12.18
High	2462	12.05

7.2.1. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

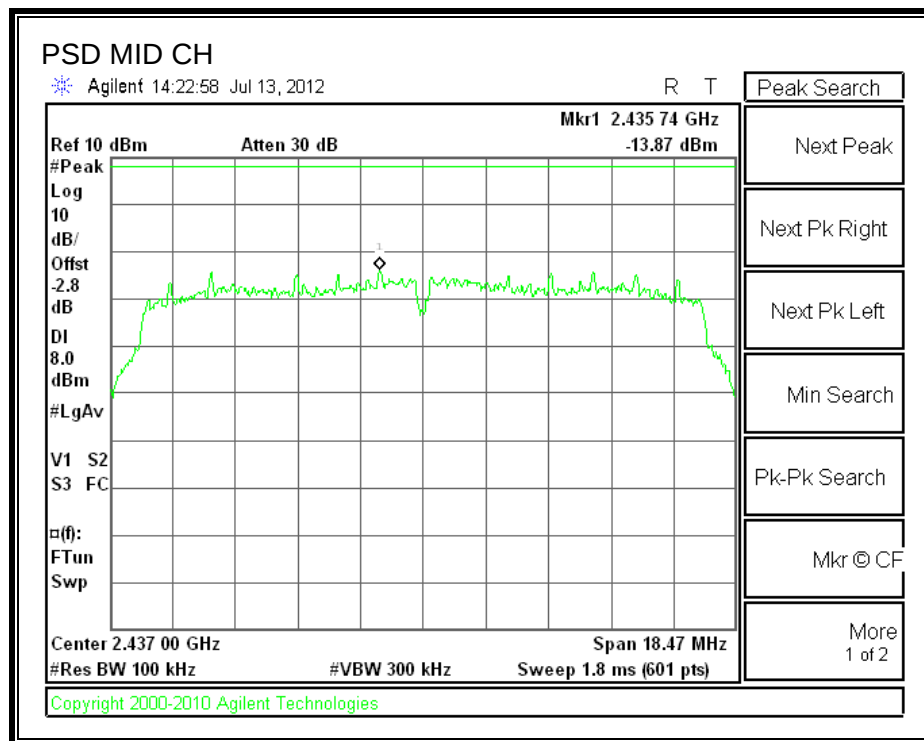
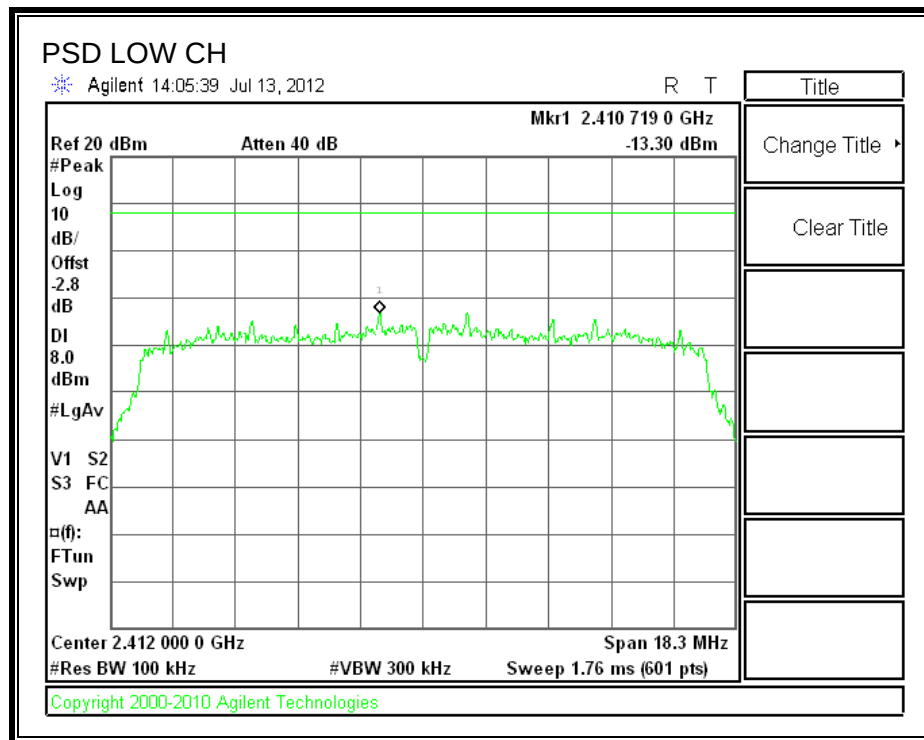
KDB 558074 D01 V01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 01/18/2012.

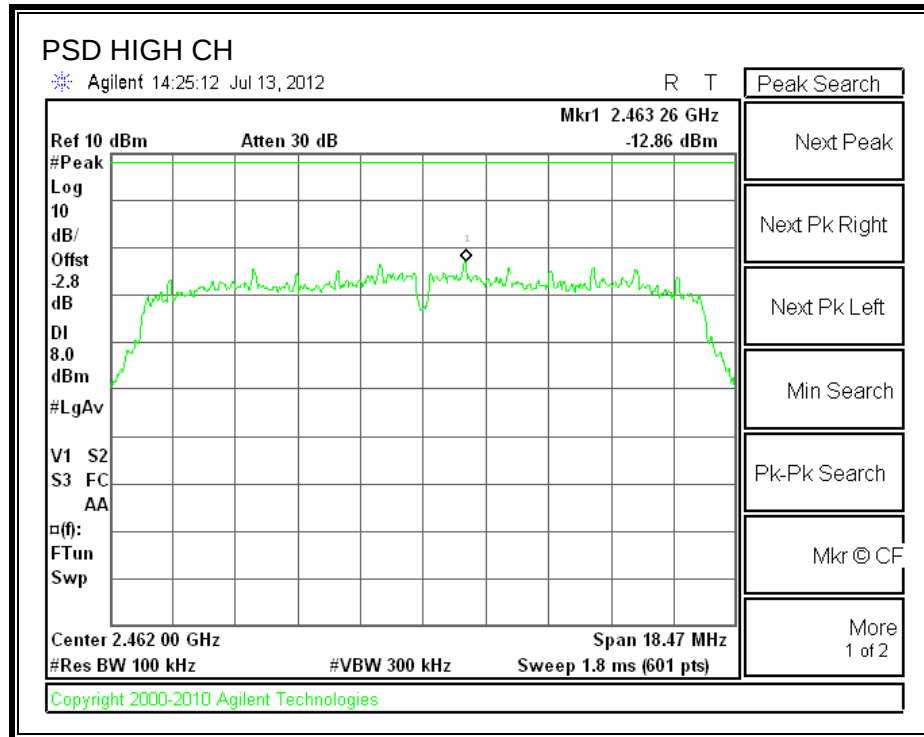
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-13.30	8	-21.30
Middle	2437	-13.87	8	-21.87
High	2462	-12.86	8	-20.86

Note: The spectrum analyzer offset = attenuator loss + cable loss + $10 \log(3/100 \text{ kHz}) = -2.8 \text{ dB}$

POWER SPECTRAL DENSITY





7.2.1. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

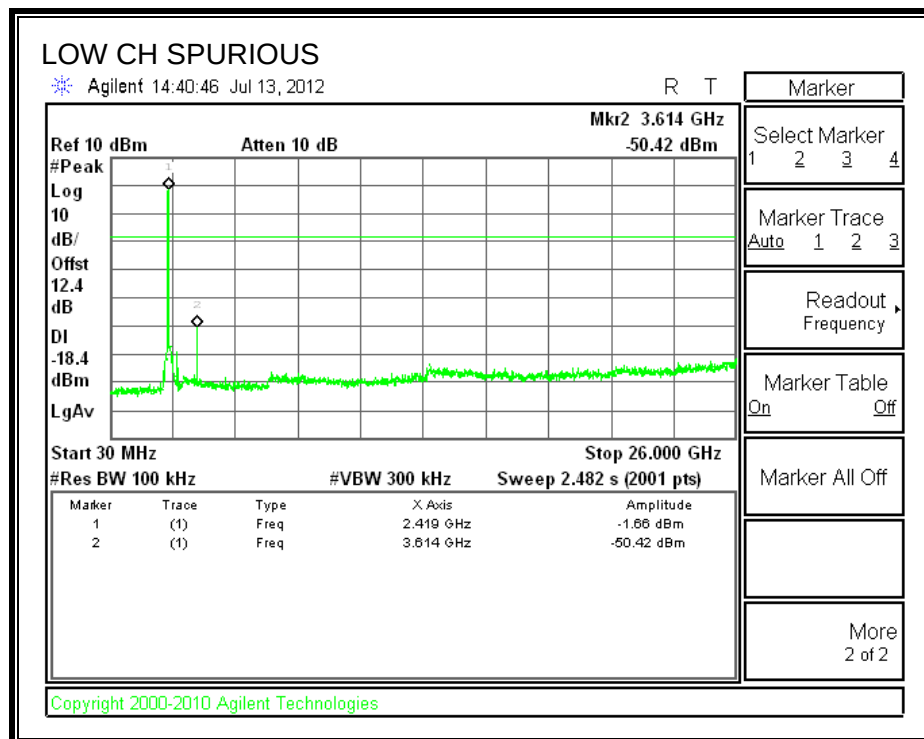
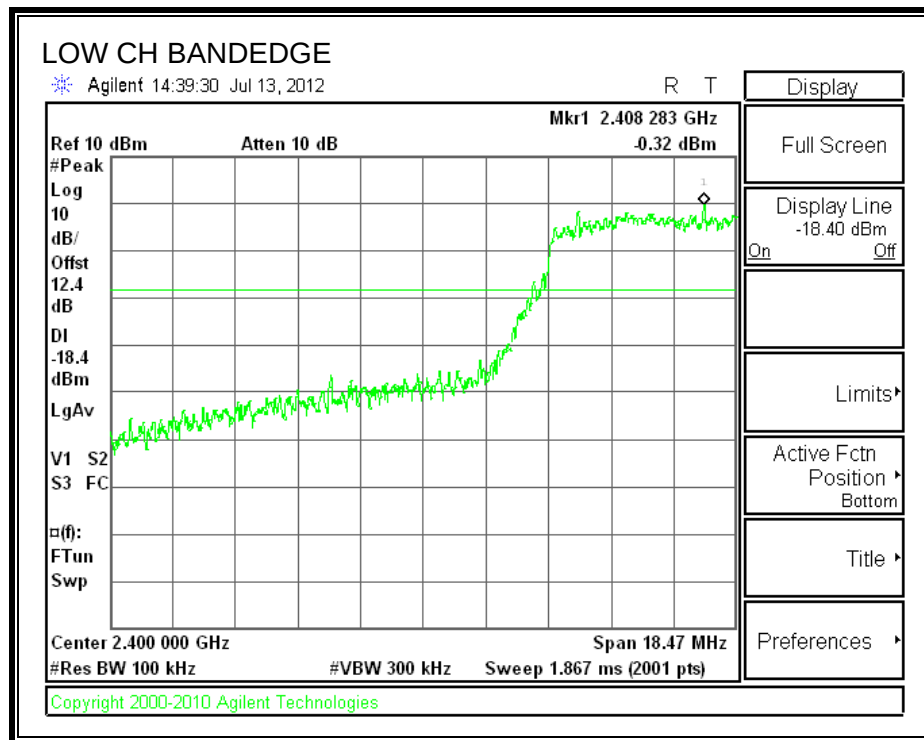
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

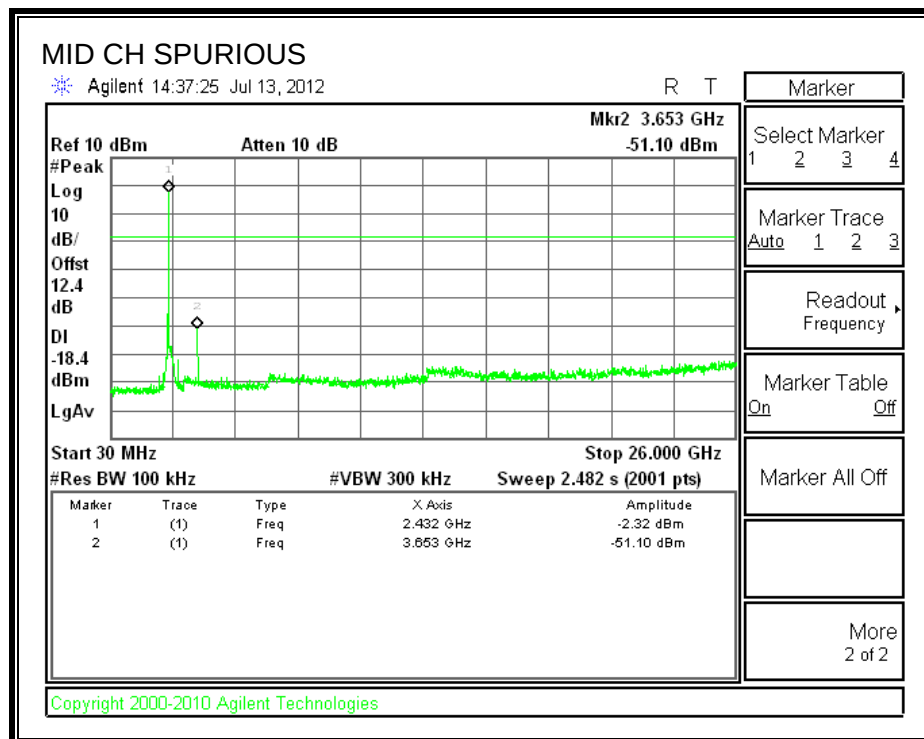
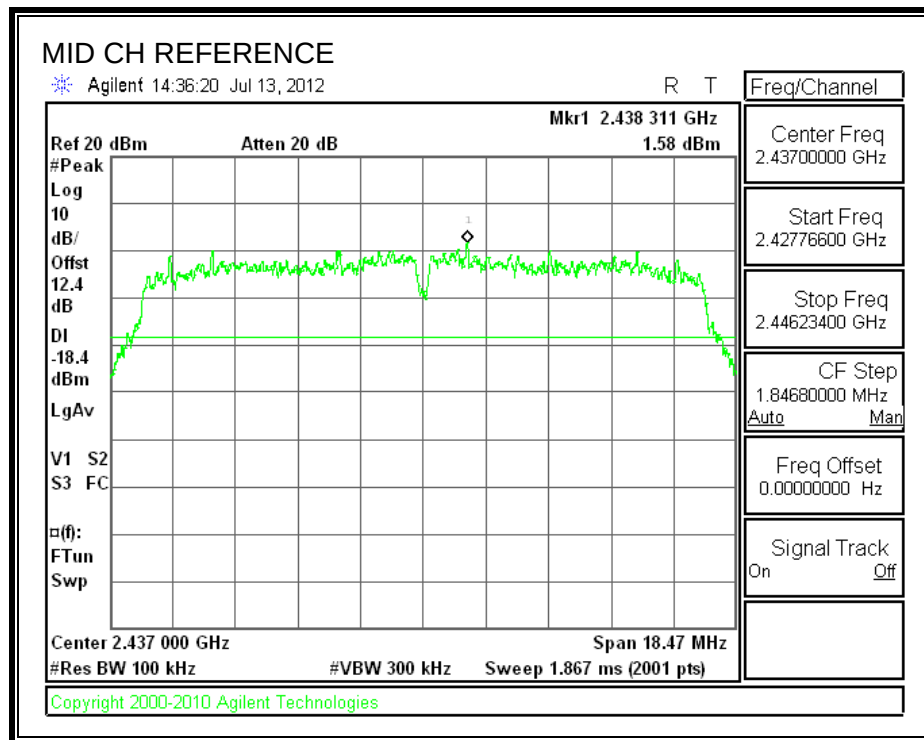
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

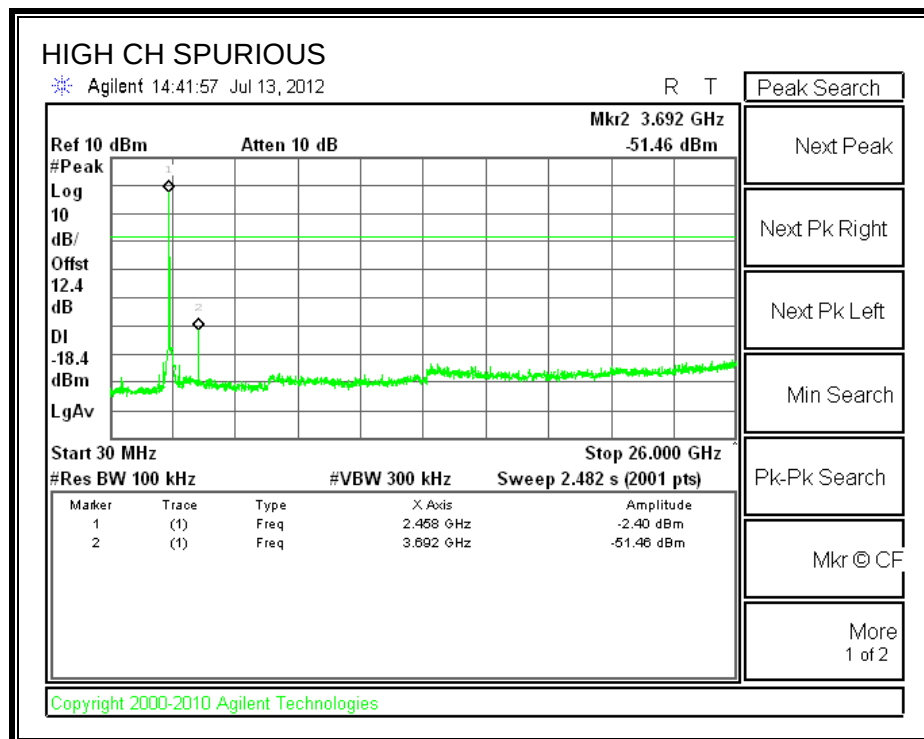
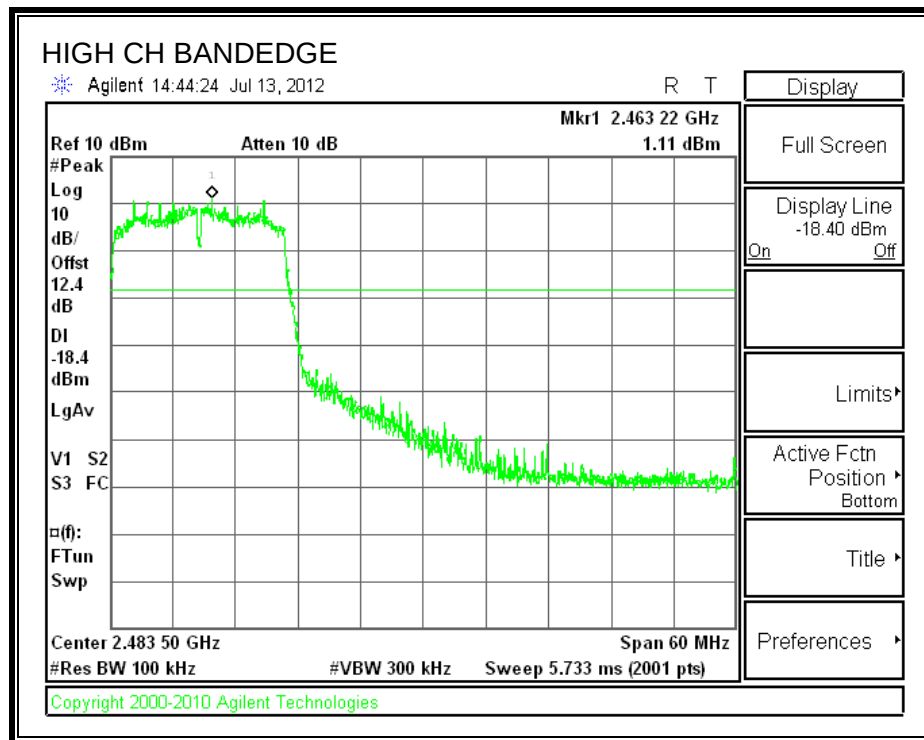
SPURIOUS EMISSIONS, LOW CHANNEL



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)

IC RSS-210 A8.2 (a)

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

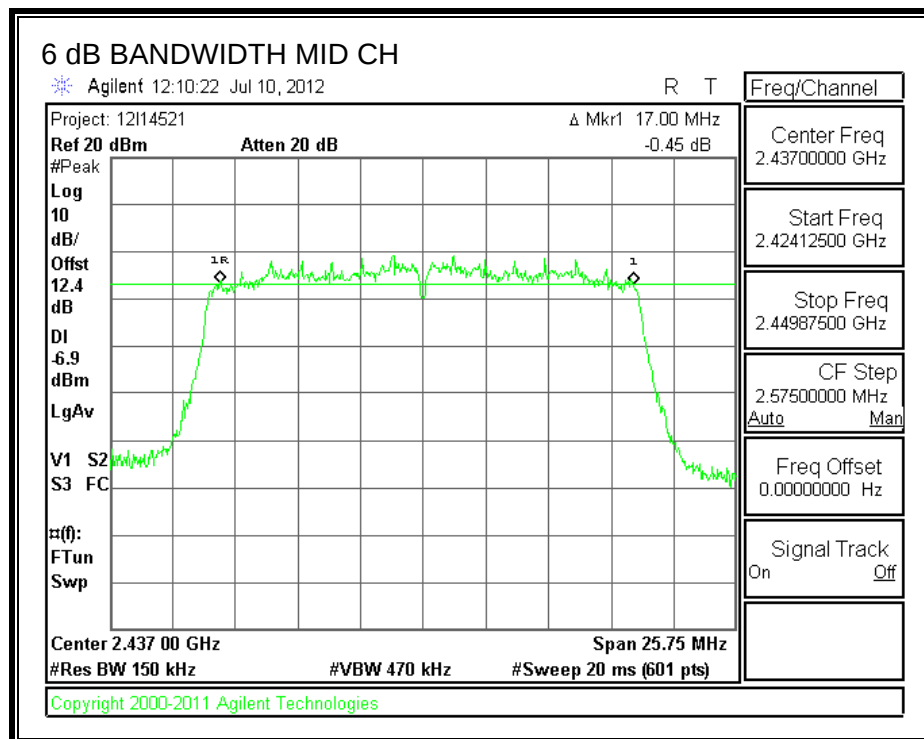
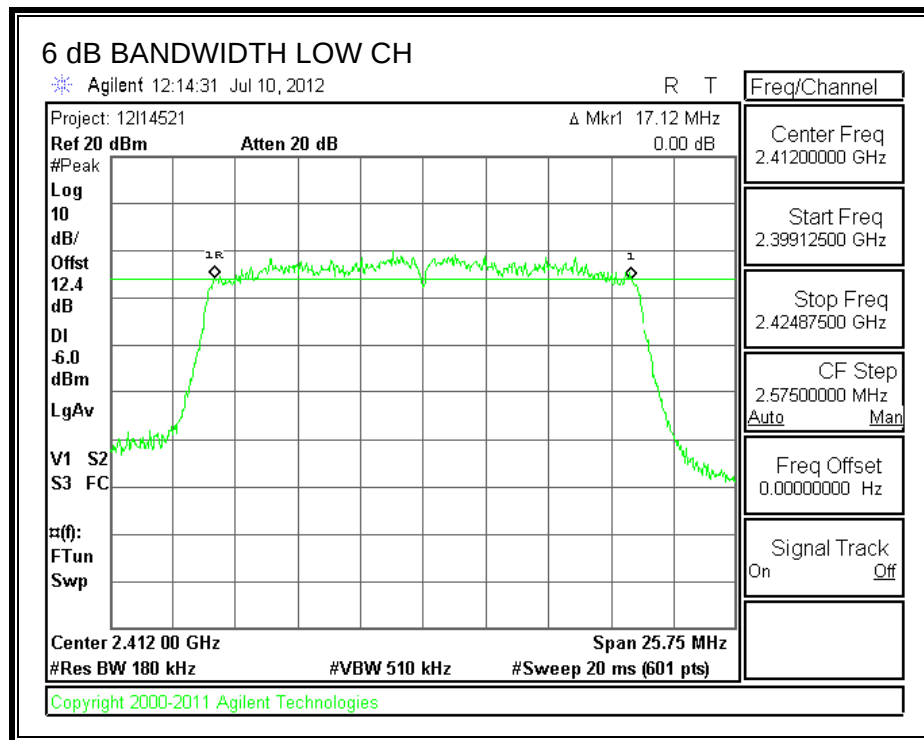
TEST PROCEDURE

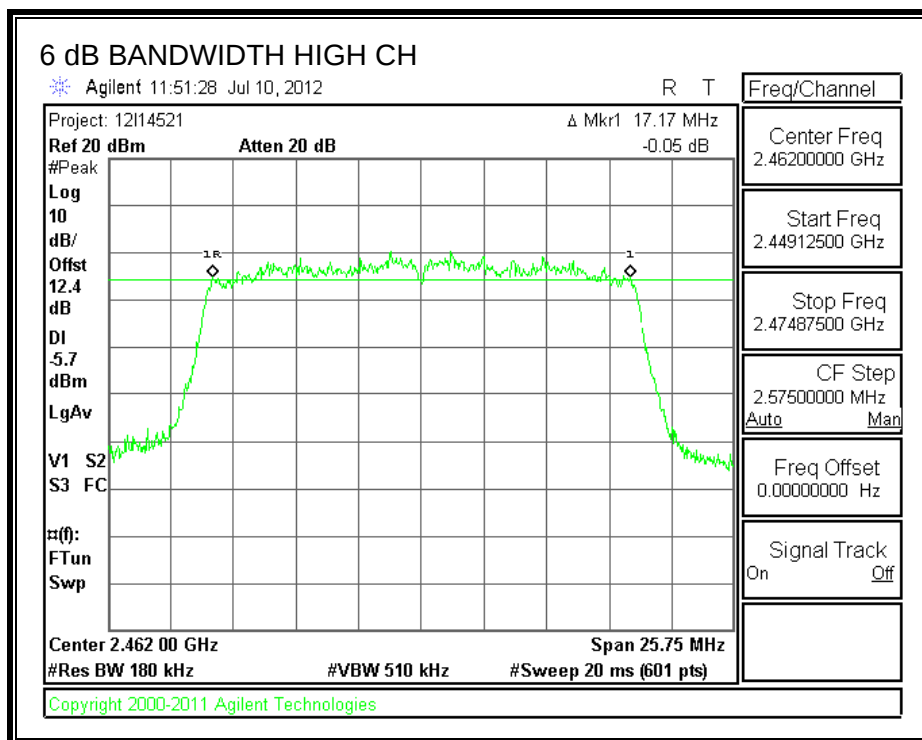
The transmitter output is connected to a spectrum analyzer.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.1200	0.5
Middle	2437	17.0000	0.5
High	2462	17.1700	0.5

6 dB BANDWIDTH





7.3.1. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

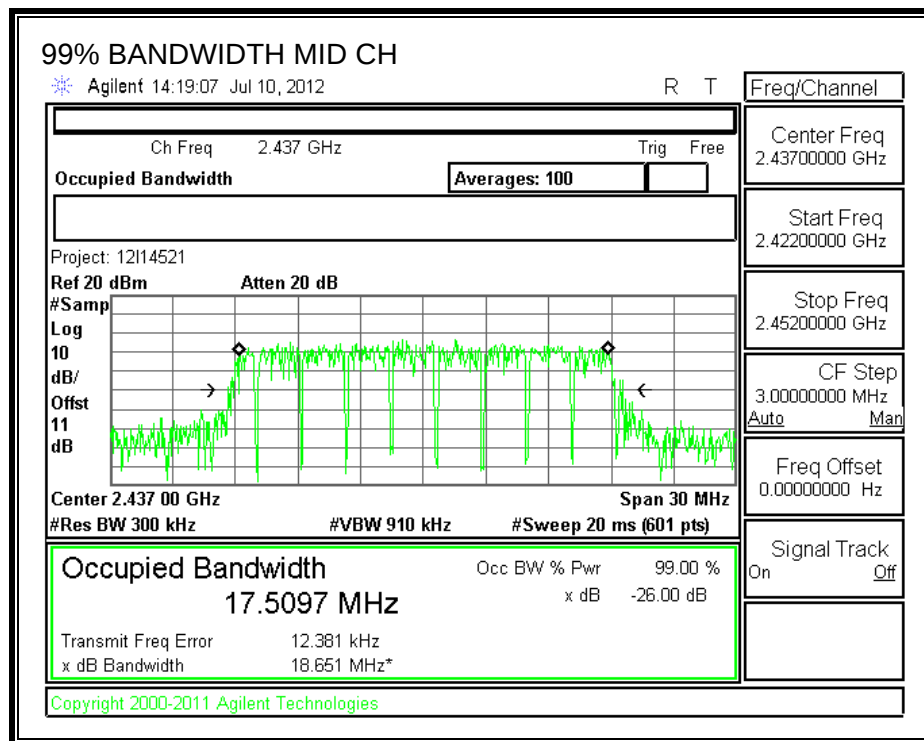
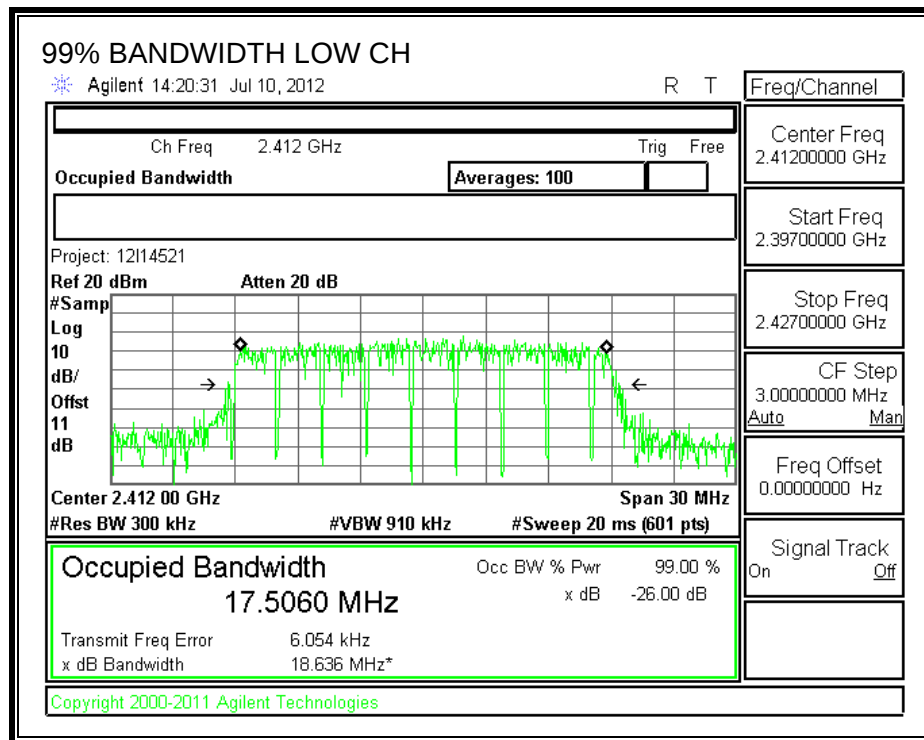
TEST PROCEDURE

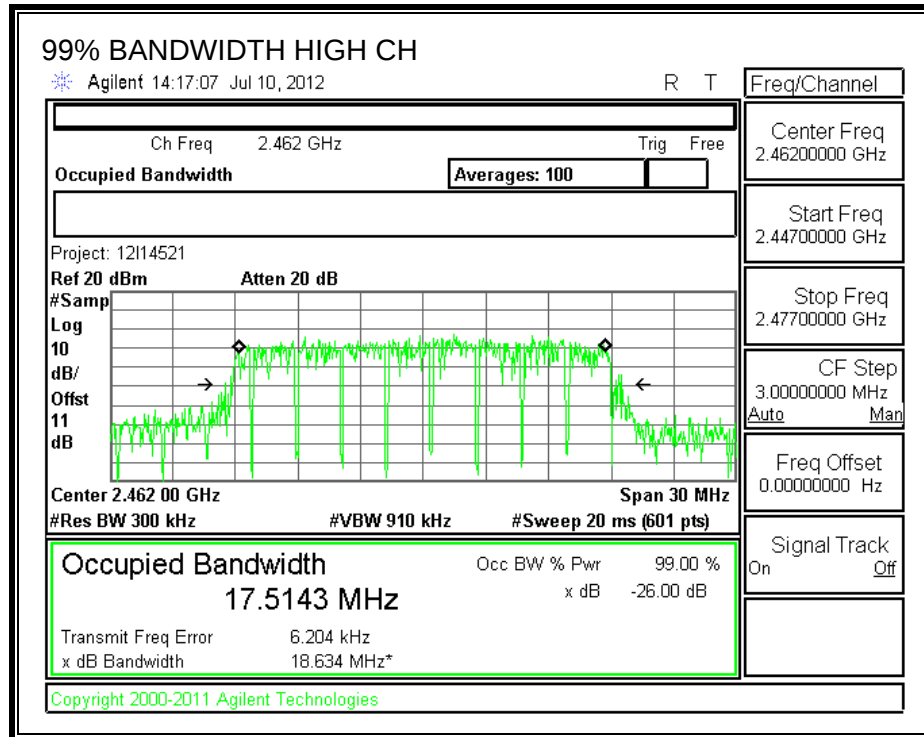
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.506
Middle	2437	17.5097
High	2462	17.5143

99% BANDWIDTH





7.3.1. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

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

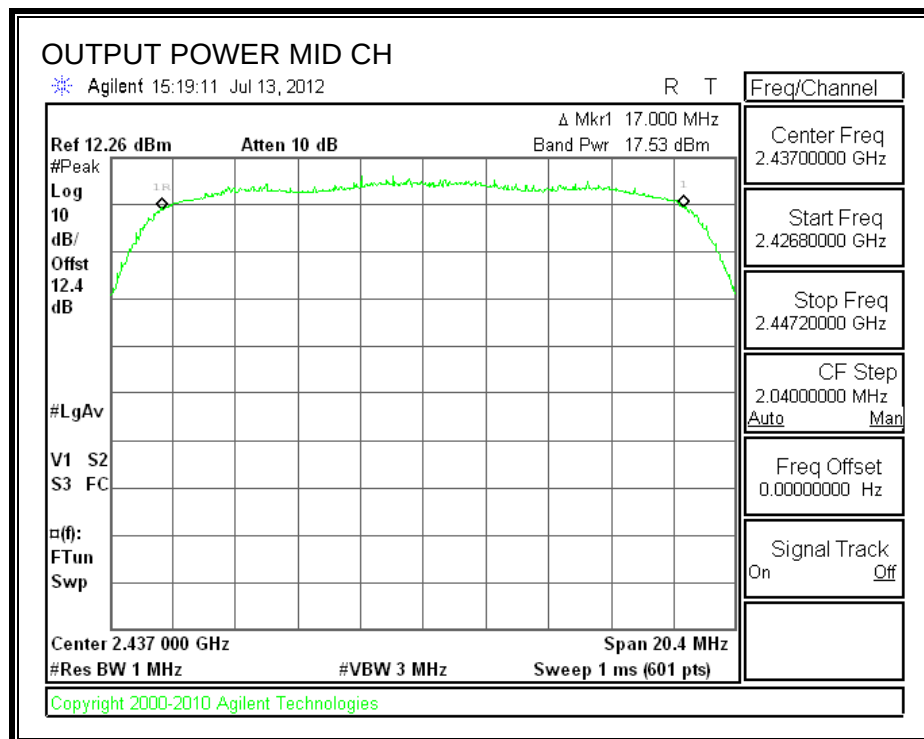
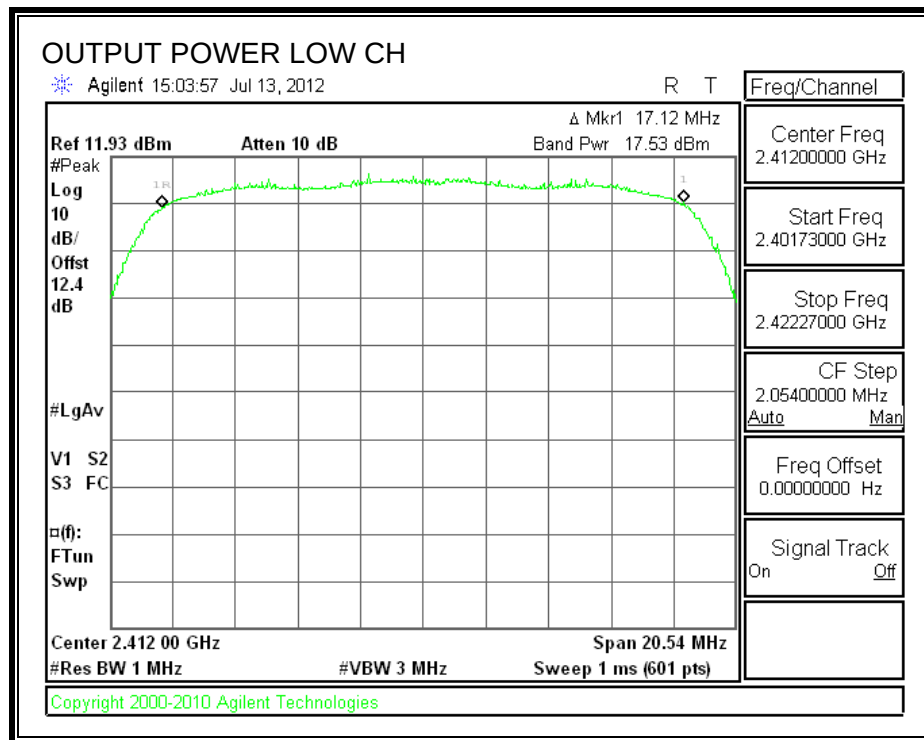
TEST PROCEDURE

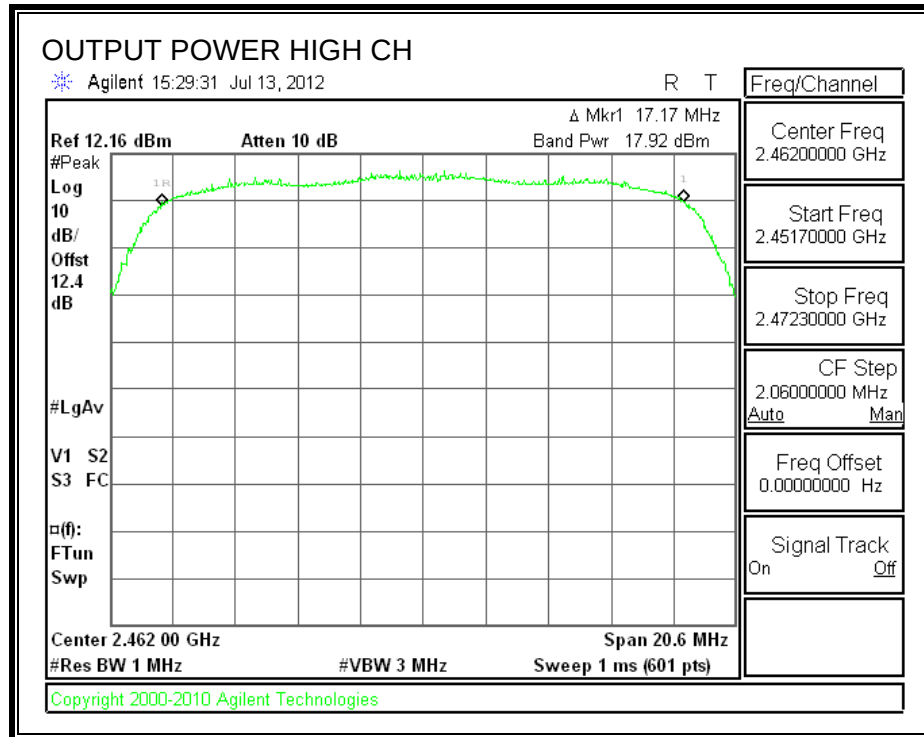
KDB 558074 D01 V01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 01/18/2012.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2412	17.53	30	-12.47
Middle	2437	17.53	30	-12.47
High	2462	17.92	30	-12.08

OUTPUT POWER





7.3.1. 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 12.36 dB (including 12.06 dB pad and 0.30 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	9.28
Middle	2437	8.95
High	2462	9.12

7.3.1. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

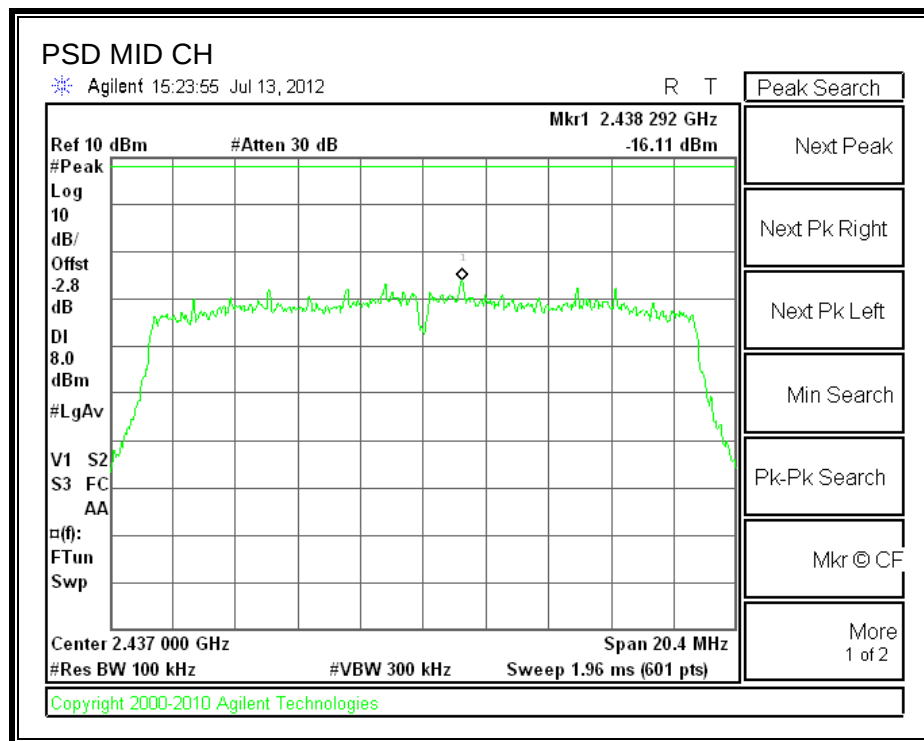
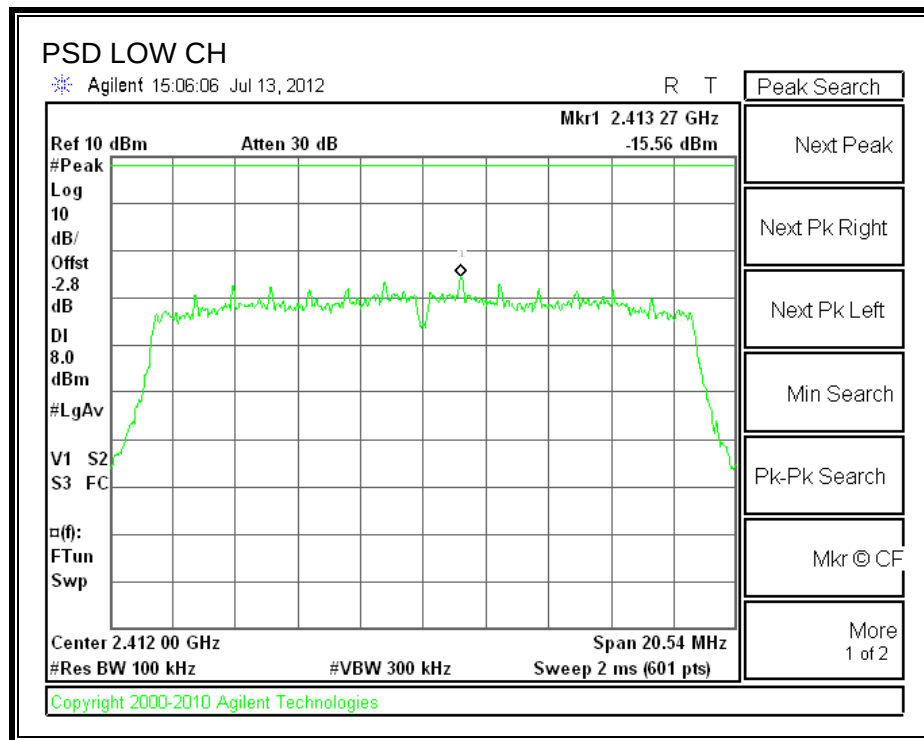
KDB 558074 D01 V01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 01/18/2012.

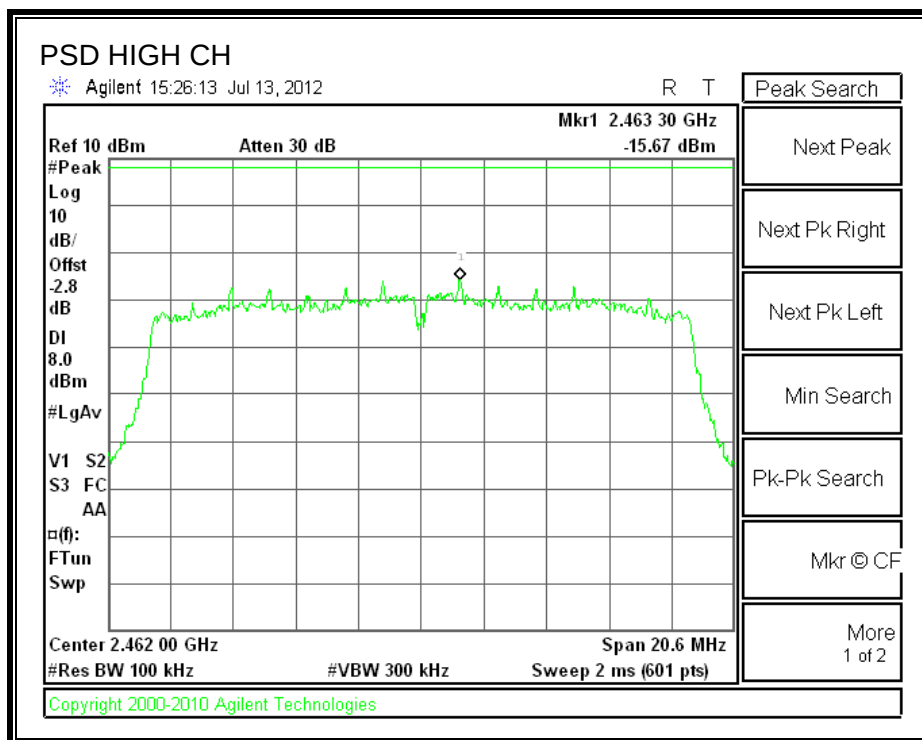
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-15.56	8	-23.56
Middle	2437	-16.11	8	-24.11
High	2462	-15.67	8	-23.67

Note: The spectrum analyzer offset = attenuator loss + cable loss + $10 \log(3/100 \text{ kHz}) = -2.80$ dB

POWER SPECTRAL DENSITY





7.3.1. 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.

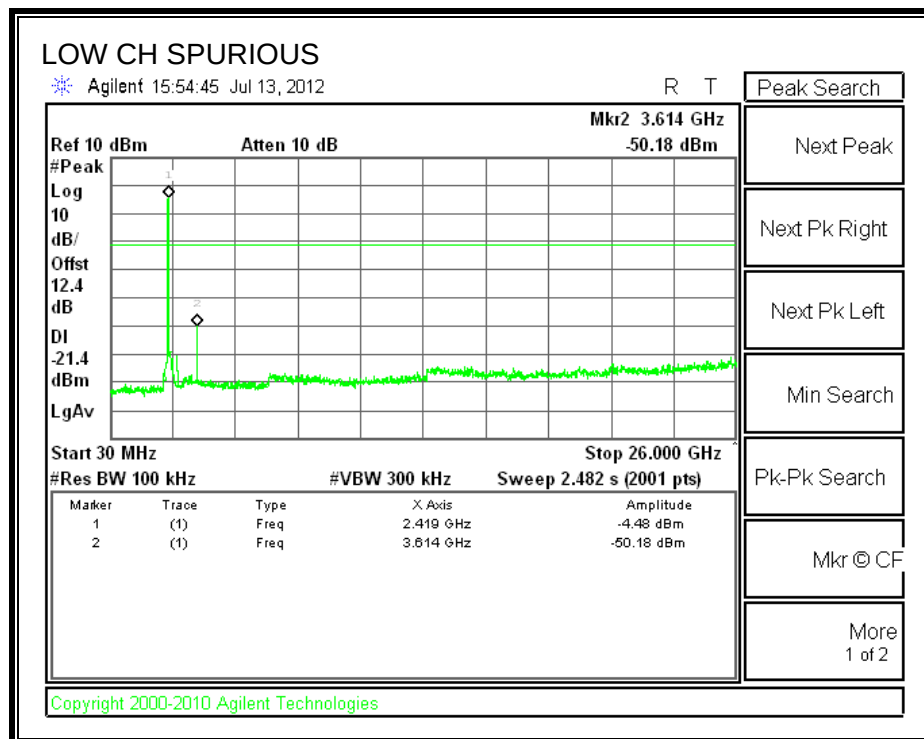
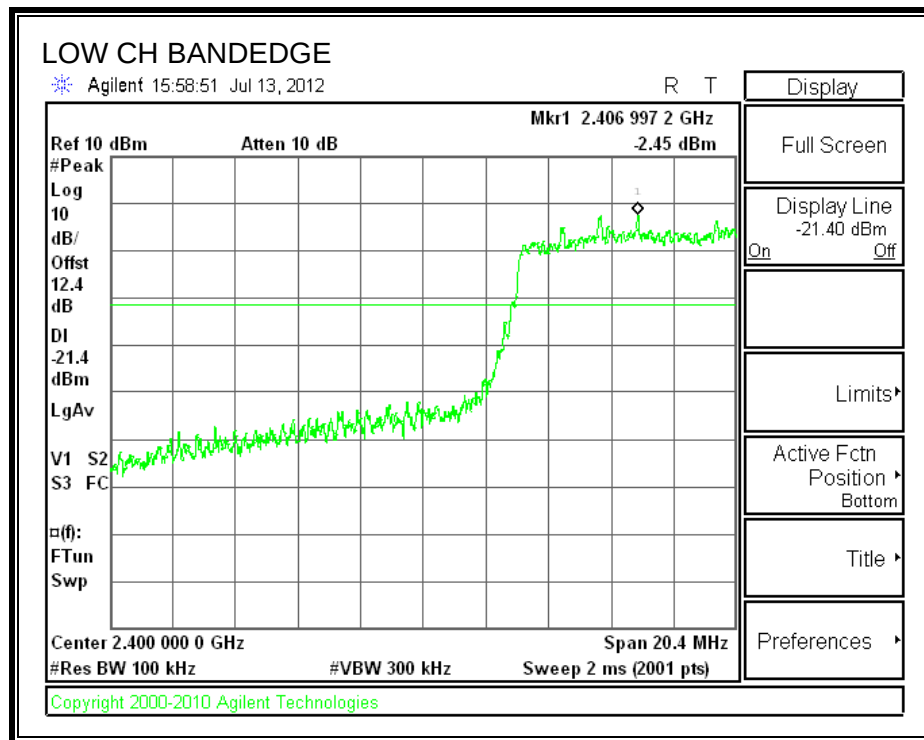
TEST PROCEDURE

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.

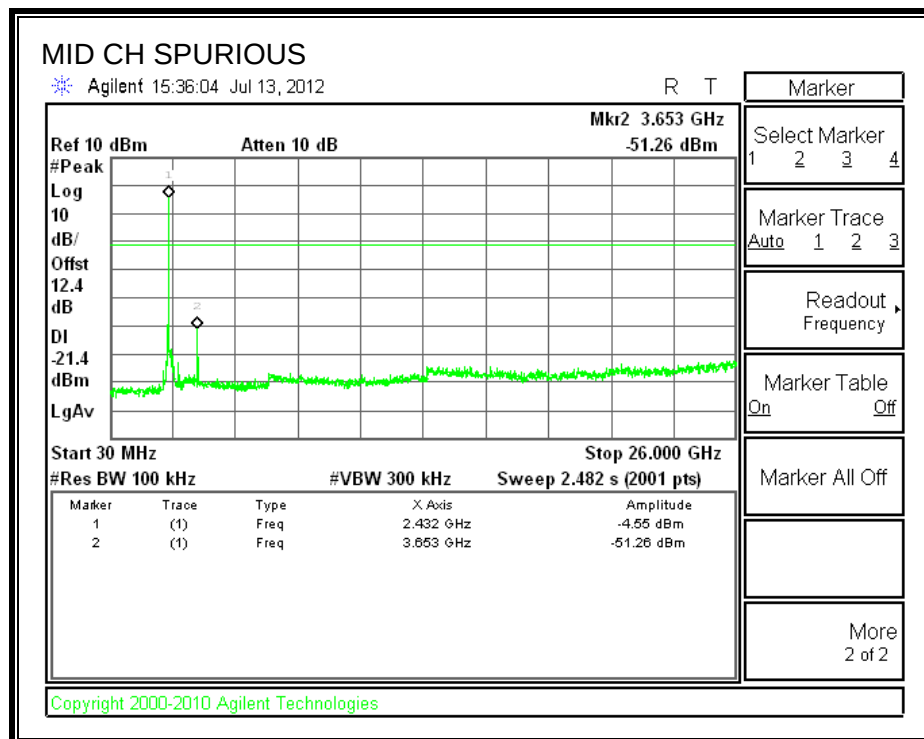
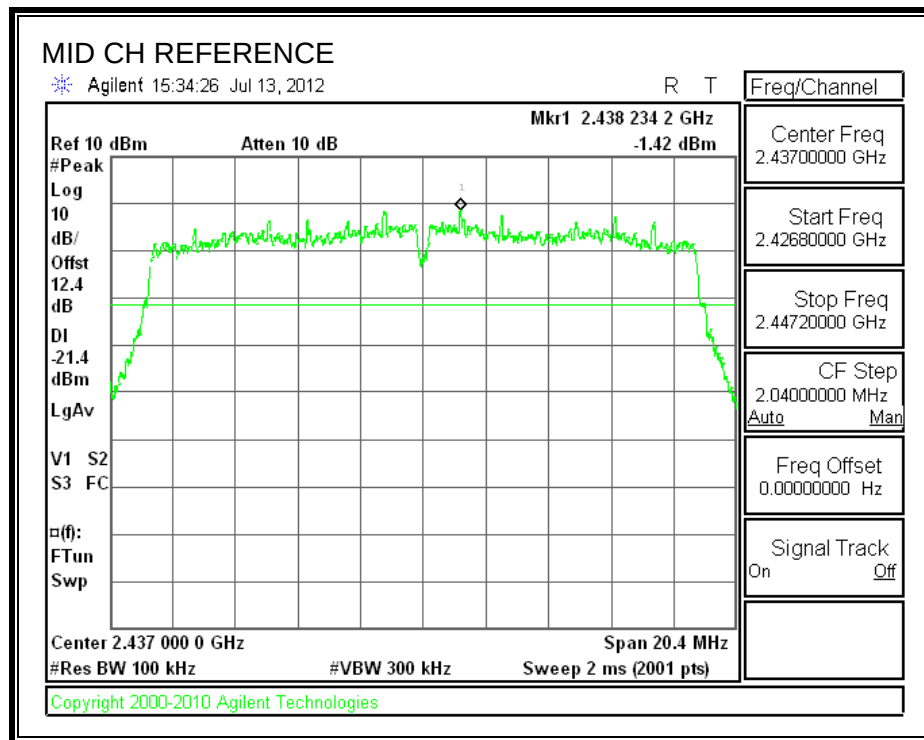
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

KDB 558074 D01 V01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 01/18/2012.

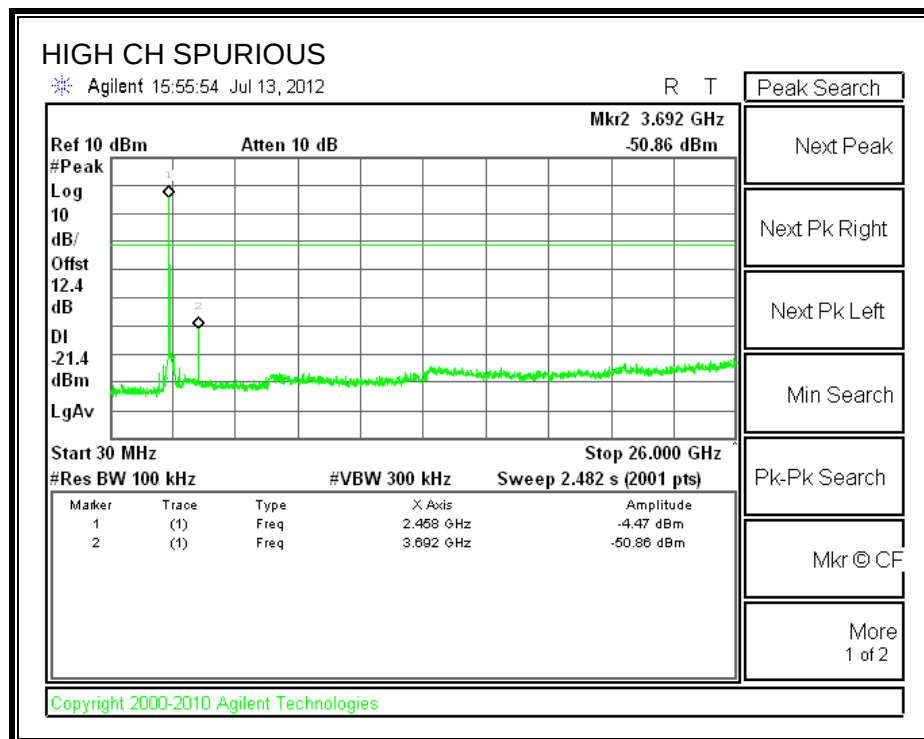
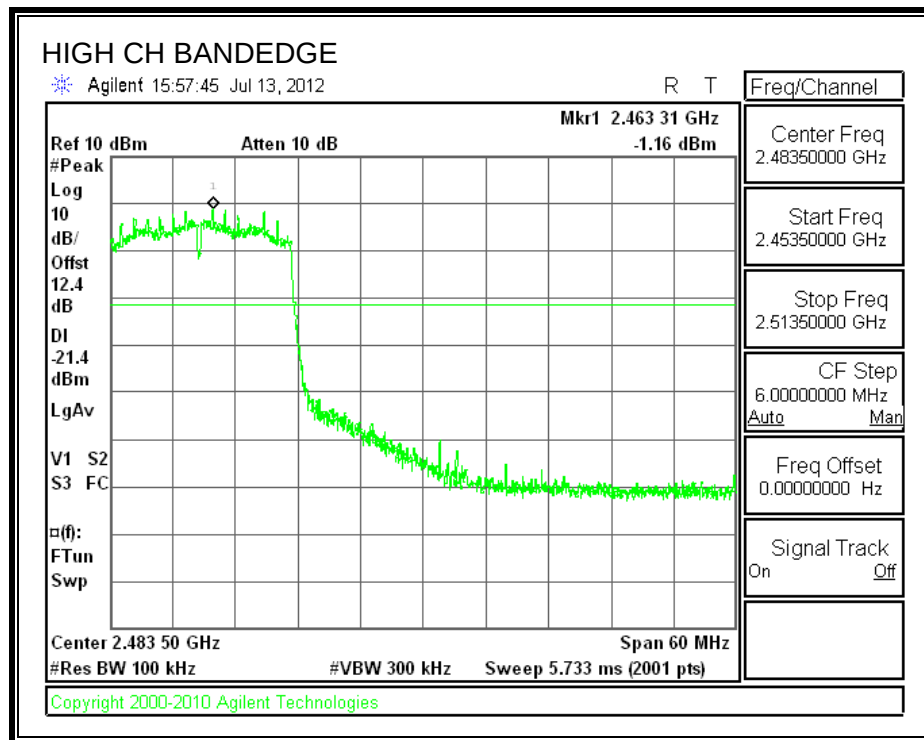
SPURIOUS EMISSIONS, LOW CHANNEL



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.

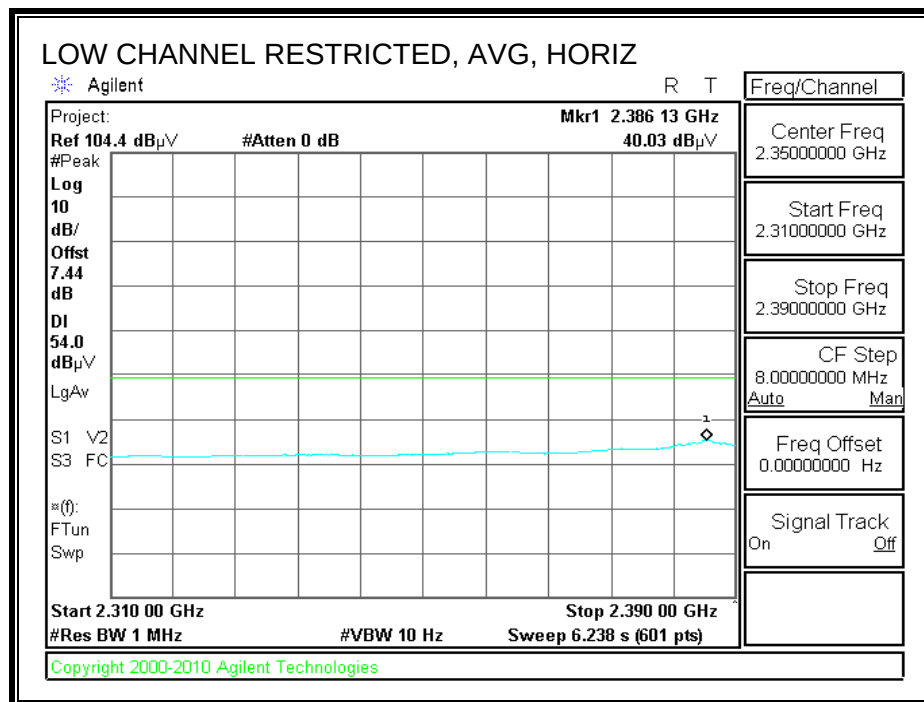
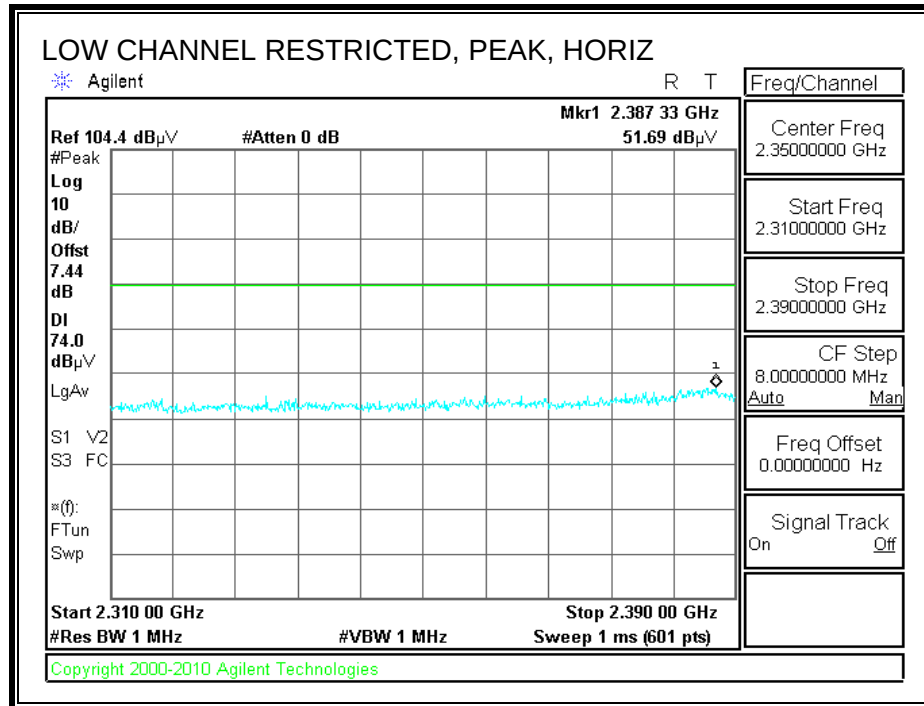
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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.

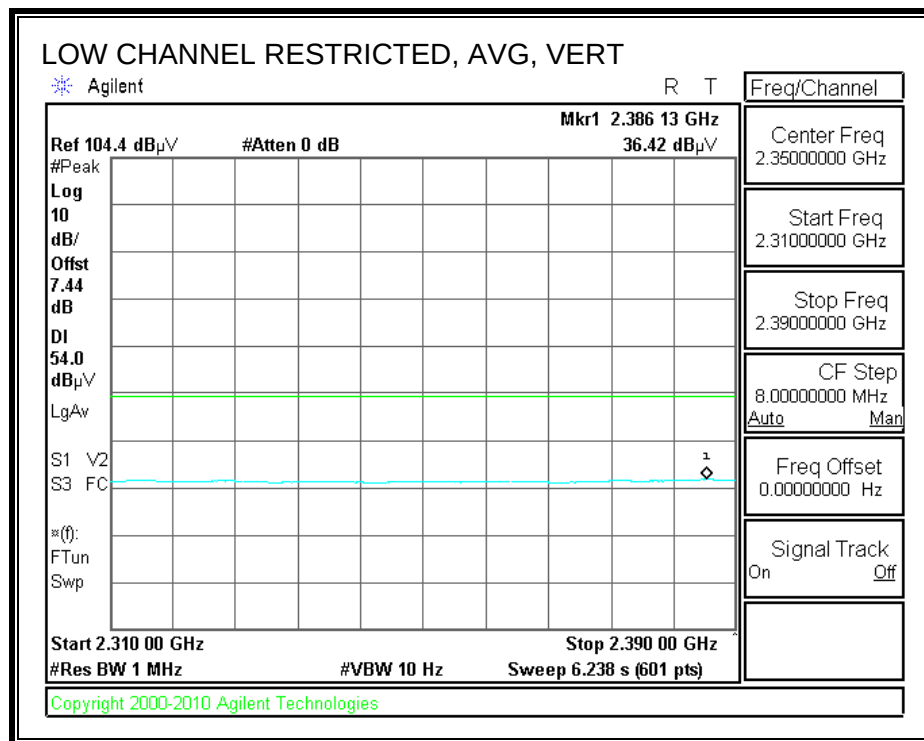
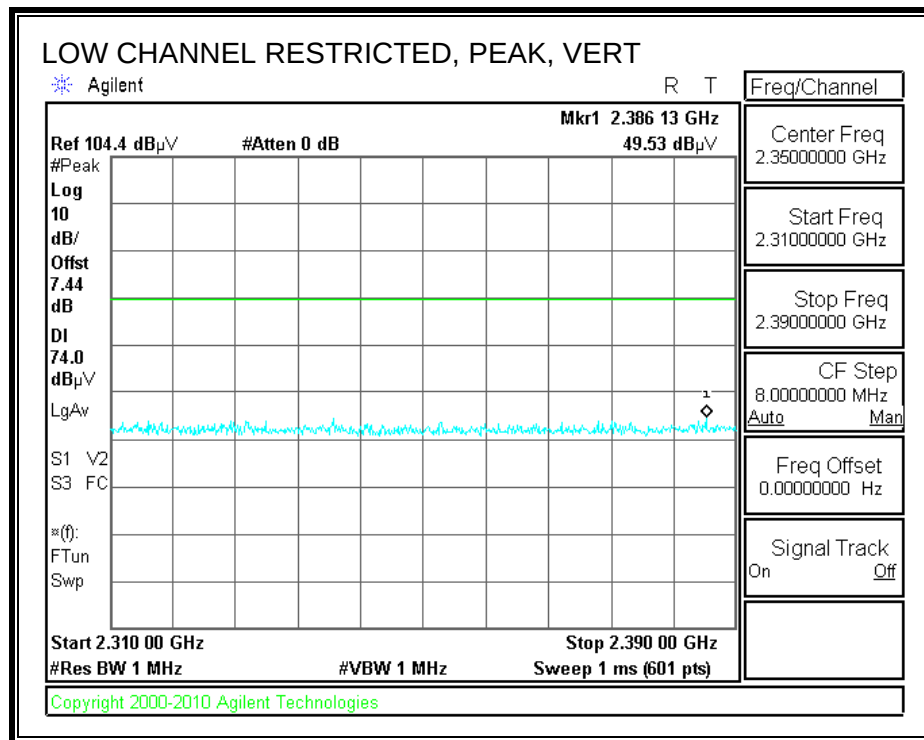
8.2. TRANSMITTER ABOVE 1 GHz

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

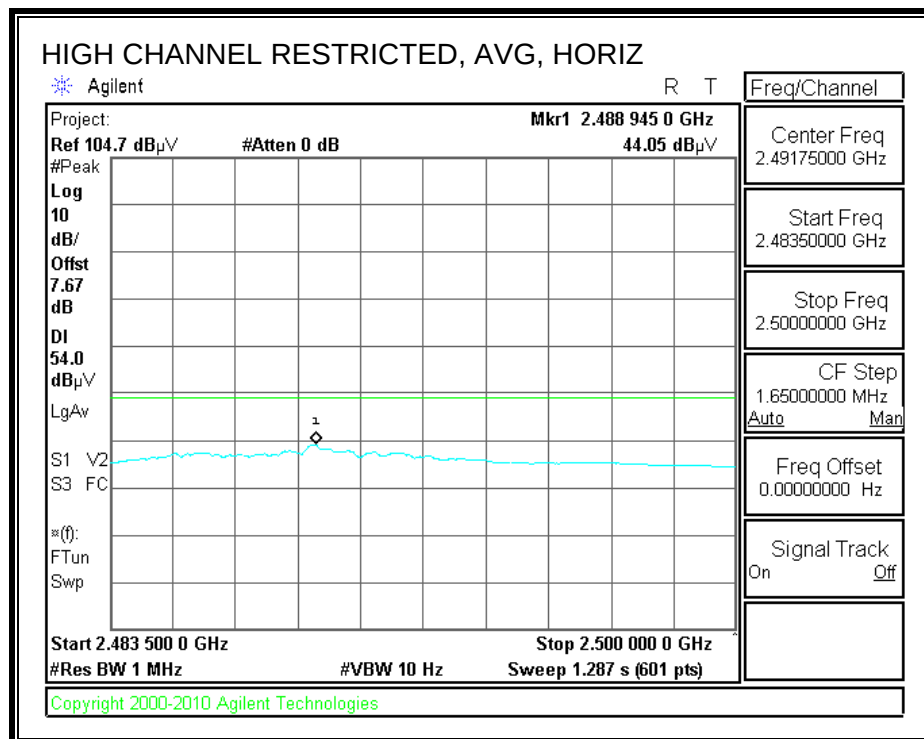
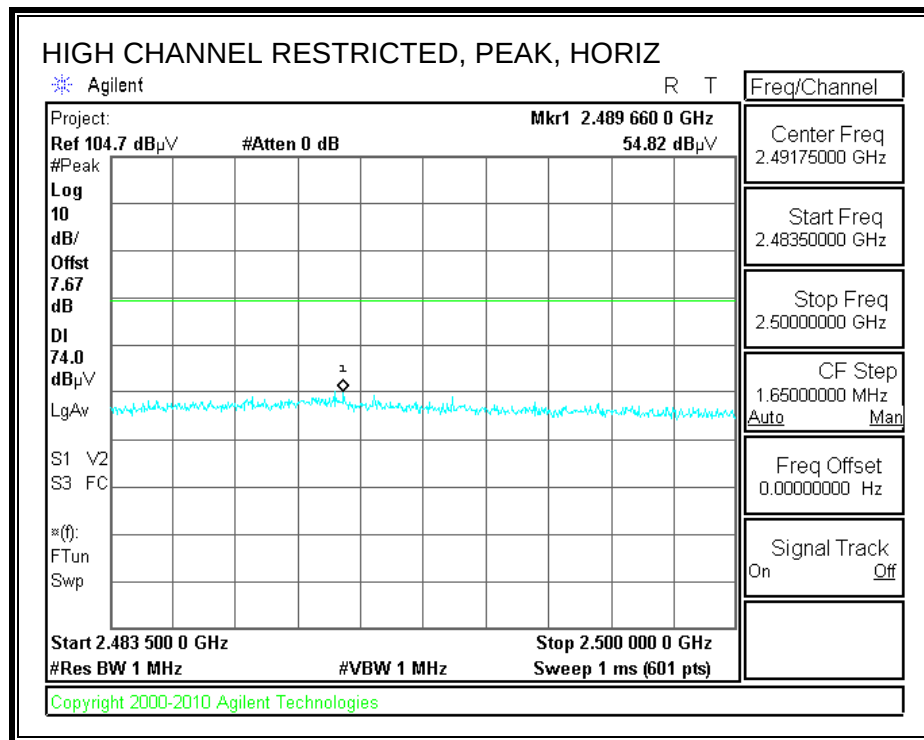
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



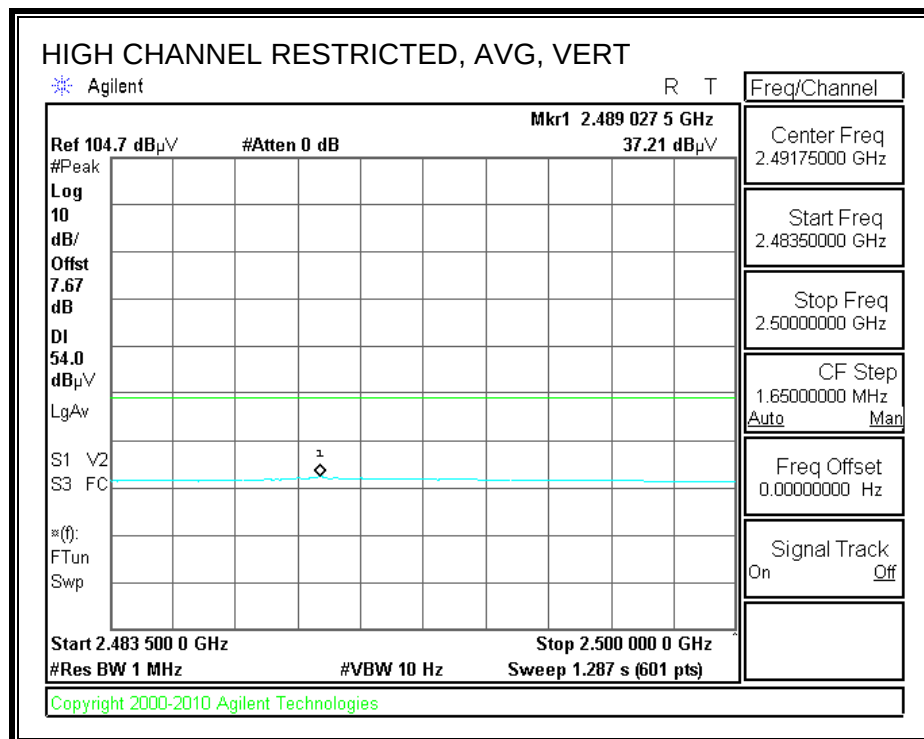
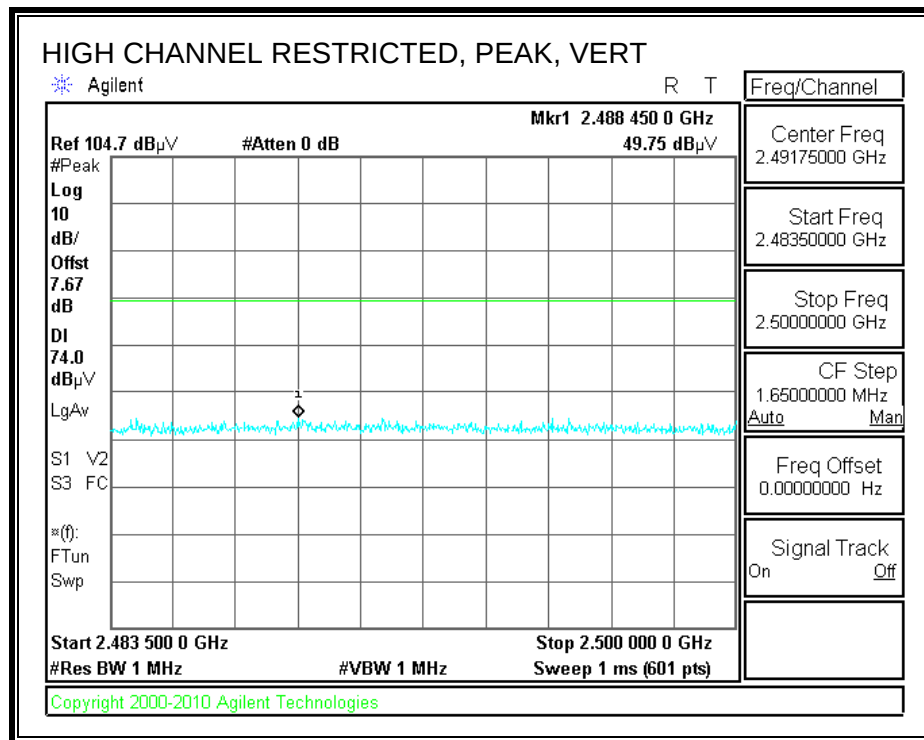
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 07/18/12
Project #: 12I14521
Company: Samsung
Test Target: FCC 15.247
Mode Oper: Tx 11b Mode

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

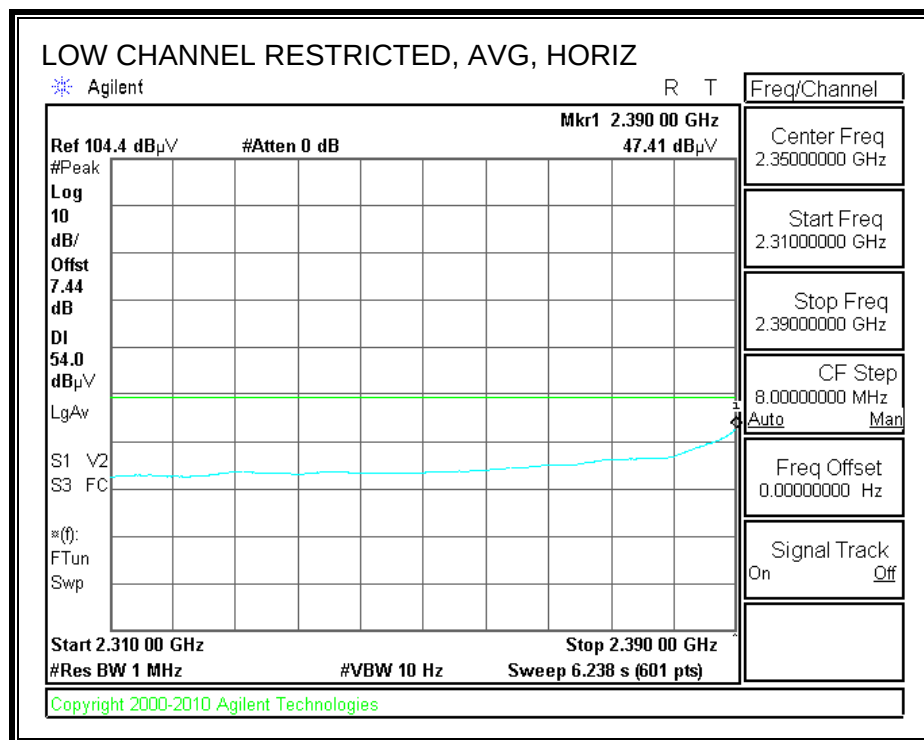
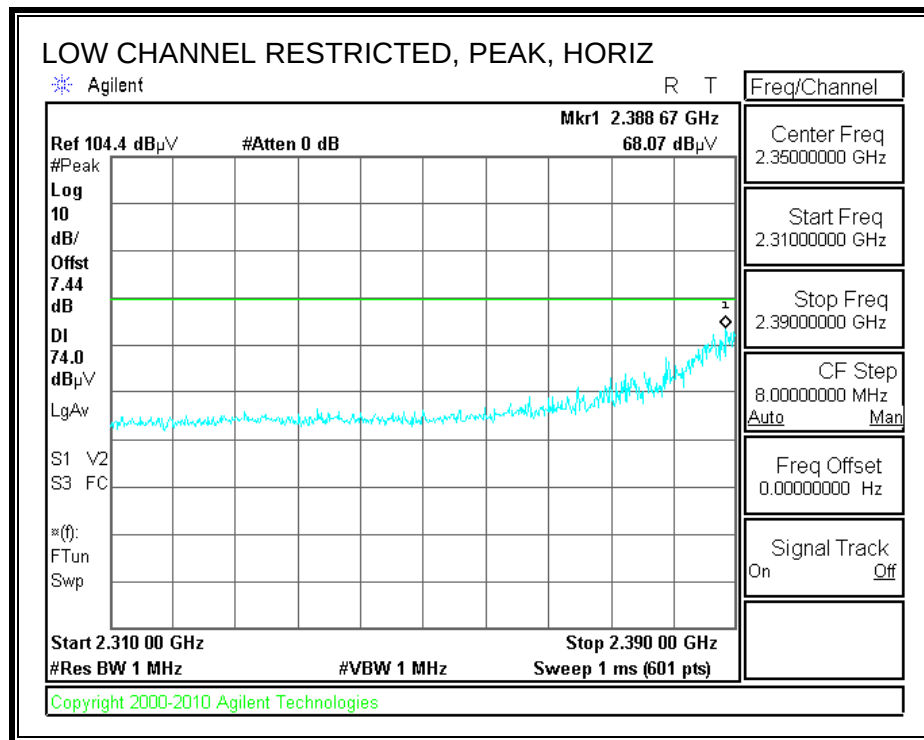
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 2412MHz															
4.824	3.0	41.7	33.1	6.8	-34.1	0.0	0.0	47.6	74.0	-26.4	V	P	103.0	89.0	
4.824	3.0	37.2	33.1	6.8	-34.1	0.0	0.0	43.1	54.0	-10.9	V	A	103.0	89.0	
12.060	3.0	34.3	39.4	11.9	-32.5	0.0	0.0	53.1	74.0	-20.9	V	P	123.0	257.0	
12.060	3.0	22.8	39.4	11.9	-32.5	0.0	0.0	41.6	54.0	-12.4	V	A	123.0	257.0	
4.824	3.0	43.2	33.1	6.8	-34.1	0.0	0.0	49.0	74.0	-25.0	H	P	99.0	155.0	
4.824	3.0	39.4	33.1	6.8	-34.1	0.0	0.0	45.3	54.0	-8.7	H	A	99.0	155.0	
12.060	3.0	37.0	39.4	11.9	-32.5	0.0	0.0	55.8	74.0	-18.2	H	P	99.0	226.0	
12.060	3.0	29.7	39.4	11.9	-32.5	0.0	0.0	48.5	54.0	-5.5	H	A	99.0	226.0	
MID CHANNEL, 2437MHz															
4.874	3.0	41.2	33.2	6.8	-34.0	0.0	0.0	47.1	74.0	-26.9	V	P	100.0	76.0	
4.874	3.0	36.4	33.2	6.8	-34.0	0.0	0.0	42.4	54.0	-11.6	V	A	100.0	76.0	
7.311	3.0	38.1	36.3	9.1	-33.1	0.0	0.0	50.4	74.0	-23.6	V	P	100.0	136.0	
7.311	3.0	28.6	36.3	9.1	-33.1	0.0	0.0	40.8	54.0	-13.2	V	A	100.0	136.0	
12.185	3.0	33.7	39.4	12.0	-32.5	0.0	0.0	52.6	74.0	-21.4	V	P	116.0	0.0	
12.185	3.0	21.7	39.4	12.0	-32.5	0.0	0.0	40.5	54.0	-13.5	V	A	116.0	0.0	
4.874	3.0	42.9	33.2	6.8	-34.0	0.0	0.0	48.8	74.0	-25.2	H	P	100.0	162.0	
4.874	3.0	37.5	33.2	6.8	-34.0	0.0	0.0	43.4	54.0	-10.6	H	A	100.0	162.0	
7.311	3.0	37.6	36.3	9.1	-33.1	0.0	0.0	49.9	74.0	-24.1	H	P	100.0	208.0	
7.311	3.0	29.2	36.3	9.1	-33.1	0.0	0.0	41.4	54.0	-12.6	H	A	100.0	208.0	
12.185	3.0	37.9	39.4	12.0	-32.5	0.0	0.0	56.7	74.0	-17.3	H	P	137.0	235.0	
12.185	3.0	30.7	39.4	12.0	-32.5	0.0	0.0	49.6	54.0	-4.4	H	A	137.0	235.0	
HIGH CHANNEL, 2462MHz															
4.924	3.0	41.2	33.2	6.8	-34.0	0.0	0.0	47.2	74.0	-26.8	V	P	102.0	124.0	
4.924	3.0	35.8	33.2	6.8	-34.0	0.0	0.0	41.8	54.0	-12.2	V	A	102.0	124.0	
7.386	3.0	36.7	36.4	9.1	-33.1	0.0	0.0	49.1	74.0	-24.9	V	P	99.0	139.0	
7.386	3.0	25.9	36.4	9.1	-33.1	0.0	0.0	38.3	54.0	-15.7	V	A	99.0	139.0	
12.310	3.0	34.3	39.4	12.0	-32.5	0.0	0.0	53.2	74.0	-20.8	V	P	176.0	95.0	
12.310	3.0	21.1	39.4	12.0	-32.5	0.0	0.0	40.0	54.0	-14.0	V	A	176.0	95.0	
4.924	3.0	40.3	33.2	6.8	-34.0	0.0	0.0	46.3	74.0	-27.7	H	P	112.0	160.0	
4.924	3.0	35.1	33.2	6.8	-34.0	0.0	0.0	41.1	54.0	-12.9	H	A	112.0	160.0	
7.386	3.0	37.0	36.4	9.1	-33.1	0.0	0.0	49.4	74.0	-24.6	H	P	107.0	71.0	
7.386	3.0	27.1	36.4	9.1	-33.1	0.0	0.0	39.5	54.0	-14.5	H	A	107.0	71.0	
12.310	3.0	36.9	39.4	12.0	-32.5	0.0	0.0	55.8	74.0	-18.2	H	P	134.0	244.0	
12.310	3.0	30.0	39.4	12.0	-32.5	0.0	0.0	48.9	54.0	-5.1	H	A	134.0	244.0	

Rev. 4.1.2.7

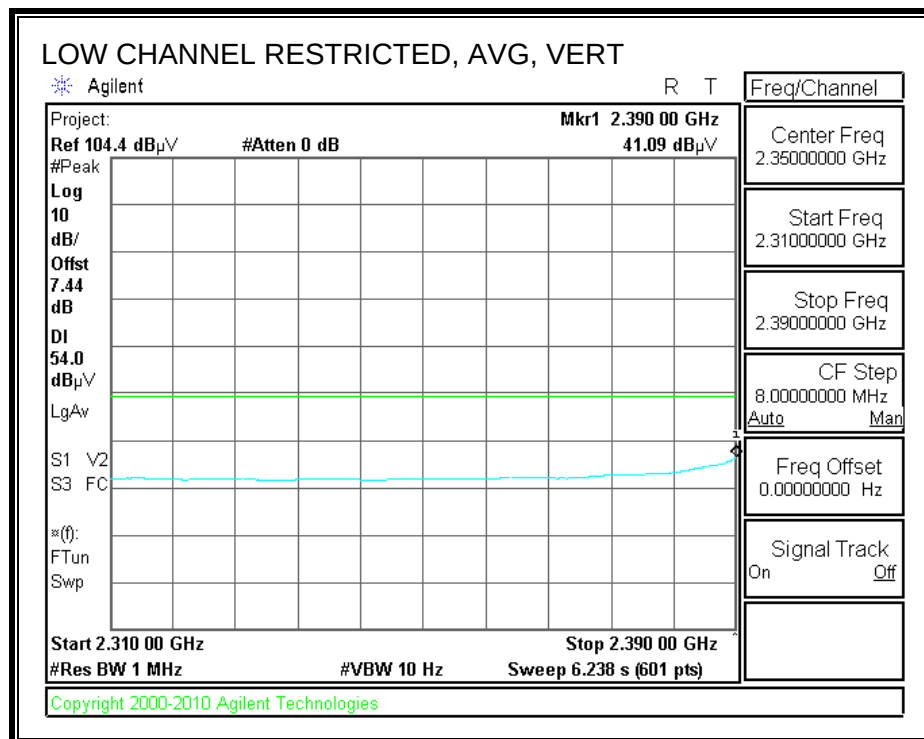
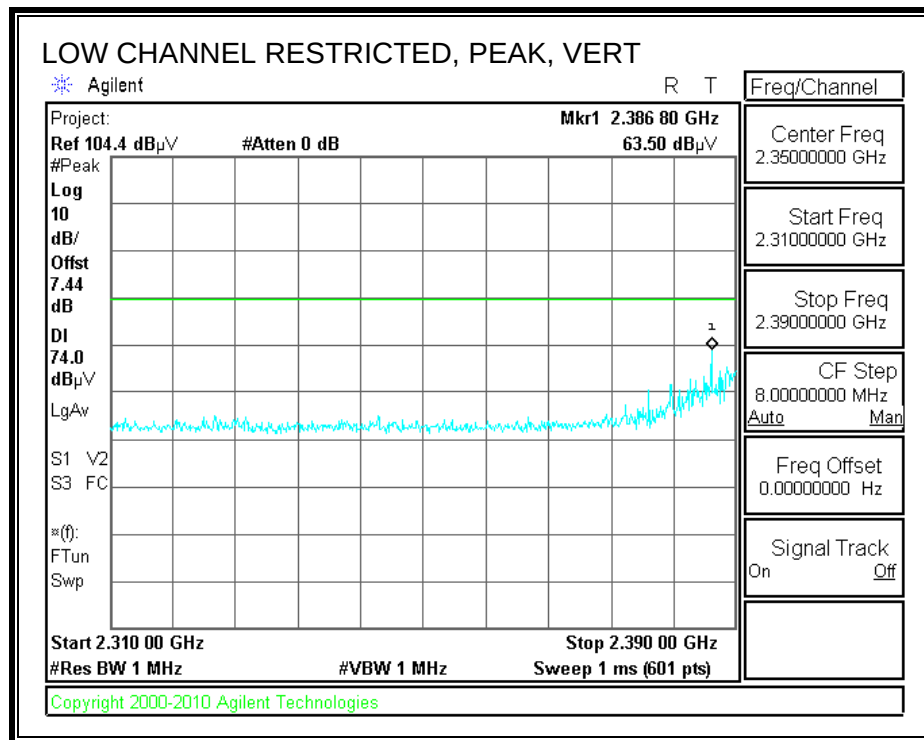
Note: No other emissions were detected above the system noise floor.

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

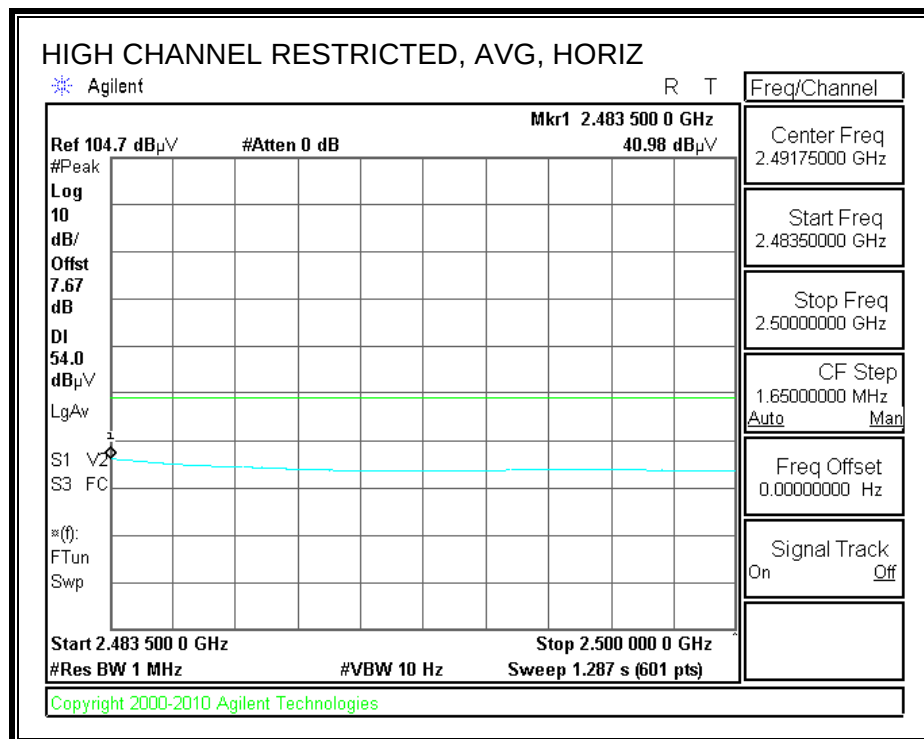
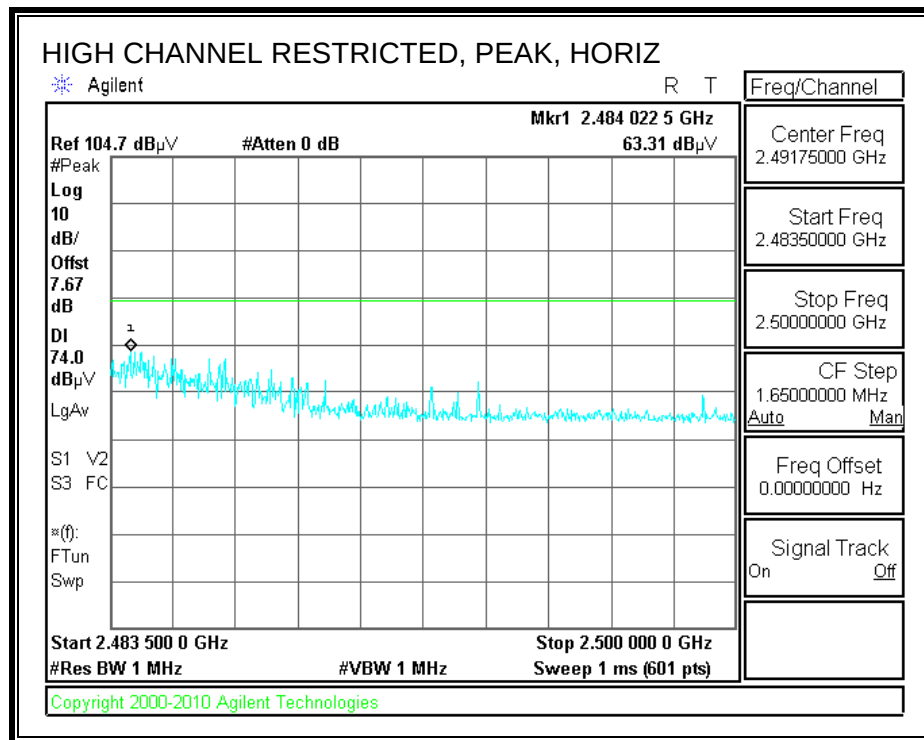
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



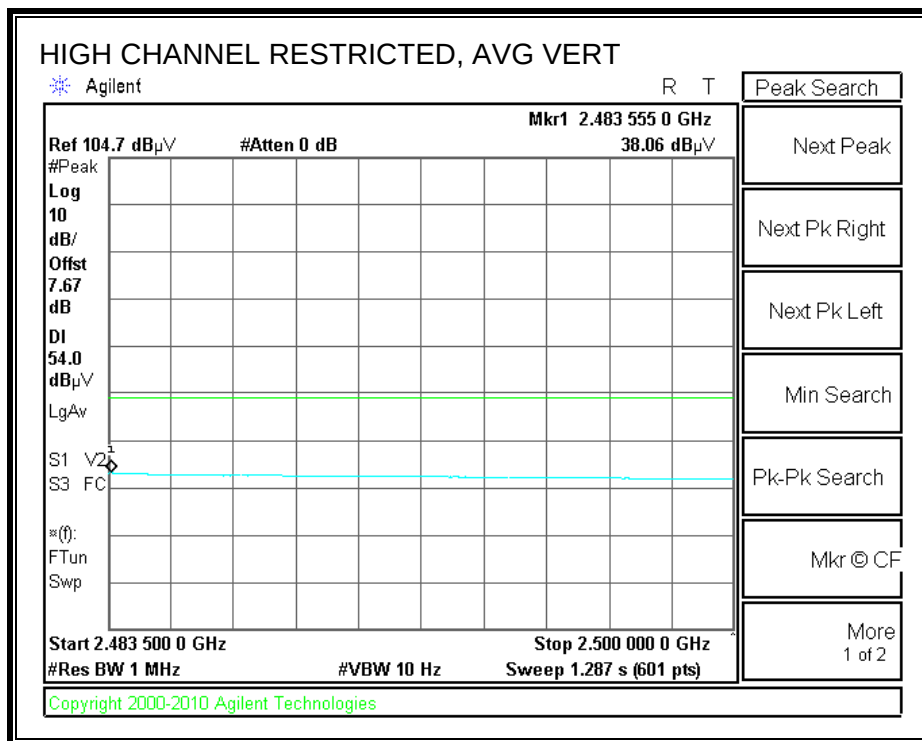
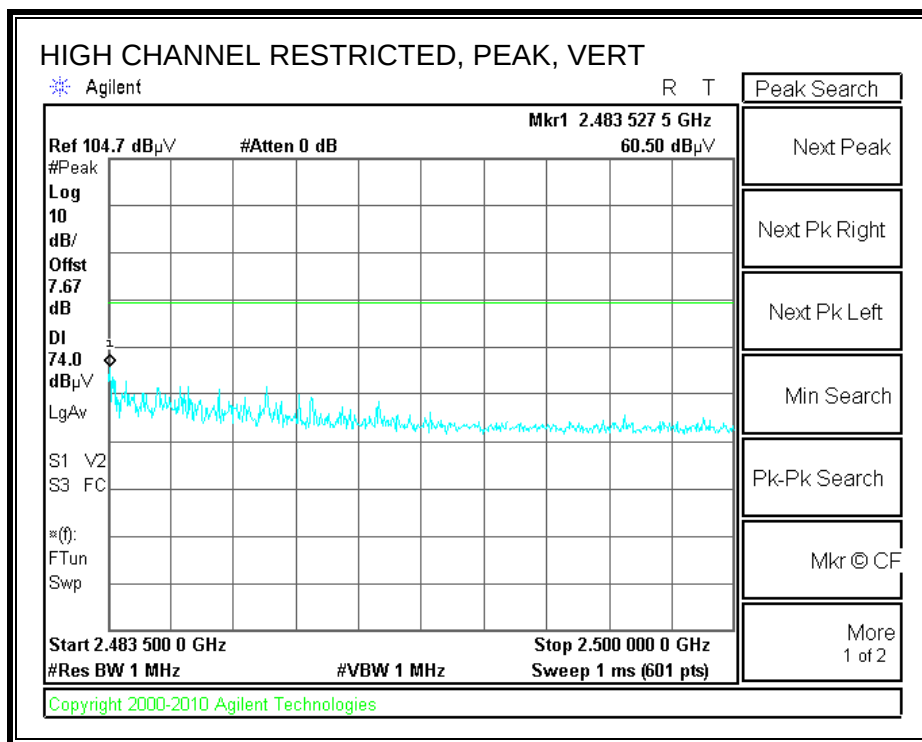
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 07/18/12
Project #: 12I14521
Company: Samsung
Test Target: FCC 15.247
Mode Oper: Tx 11g Mode

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

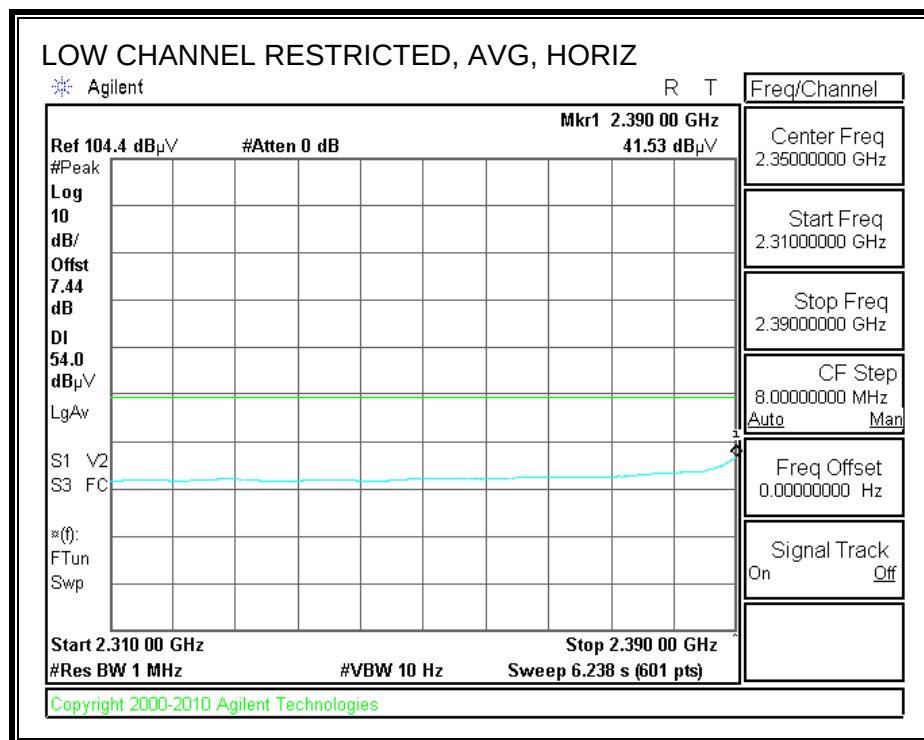
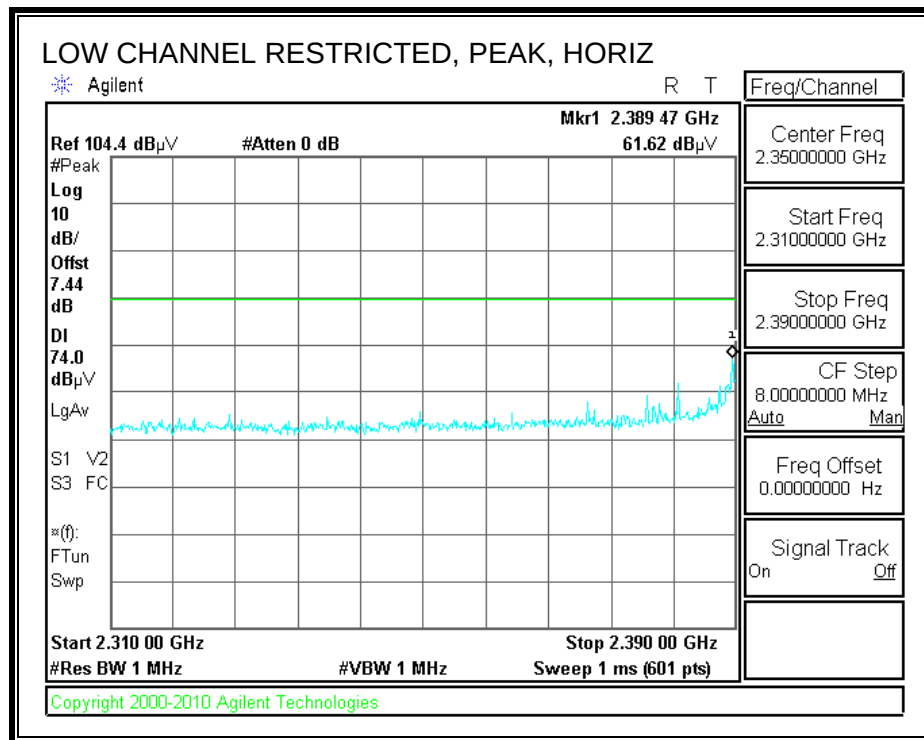
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 2412MHz															
4.824	3.0	37.1	33.1	6.8	-34.1	0.0	0.0	42.9	74.0	-31.1	V	P	141.0	156.0	
4.824	3.0	24.4	33.1	6.8	-34.1	0.0	0.0	30.2	54.0	-23.8	V	A	141.0	156.0	
12.060	3.0	34.2	39.4	11.9	-32.5	0.0	0.0	53.0	74.0	-21.0	V	P	100.0	149.0	
12.060	3.0	21.5	39.4	11.9	-32.5	0.0	0.0	40.3	54.0	-13.7	V	A	100.0	149.0	
4.824	3.0	39.3	33.1	6.8	-34.1	0.0	0.0	45.1	74.0	-28.9	H	P	100.0	163.0	
4.824	3.0	26.8	33.1	6.8	-34.1	0.0	0.0	32.7	54.0	-21.3	H	A	100.0	163.0	
12.060	3.0	33.7	39.4	11.9	-32.5	0.0	0.0	52.5	74.0	-21.5	H	P	171.0	209.0	
12.060	3.0	21.7	39.4	11.9	-32.5	0.0	0.0	40.5	54.0	-13.5	H	A	171.0	209.0	
MID CHANNEL, 2437MHz															
4.874	3.0	36.3	33.2	6.8	-34.0	0.0	0.0	42.2	74.0	-31.8	V	P	182.0	157.0	
4.874	3.0	24.0	33.2	6.8	-34.0	0.0	0.0	29.9	54.0	-24.1	V	A	182.0	157.0	
7.311	3.0	37.0	36.3	9.1	-33.1	0.0	0.0	49.3	74.0	-24.7	V	P	100.0	315.0	
7.311	3.0	23.7	36.3	9.1	-33.1	0.0	0.0	36.0	54.0	-18.0	V	A	100.0	315.0	
4.874	3.0	38.1	33.2	6.8	-34.0	0.0	0.0	44.1	74.0	-29.9	H	P	99.0	152.0	
4.874	3.0	26.0	33.2	6.8	-34.0	0.0	0.0	31.9	54.0	-22.1	H	A	99.0	152.0	
7.311	3.0	37.2	36.3	9.1	-33.1	0.0	0.0	49.5	74.0	-24.5	H	P	101.0	205.0	
7.311	3.0	24.0	36.3	9.1	-33.1	0.0	0.0	36.3	54.0	-17.7	H	A	101.0	205.0	
HIGH CHANNEL, 2462MHz															
4.924	3.0	36.3	33.2	6.8	-34.0	0.0	0.0	42.4	74.0	-31.6	V	P	173.0	218.0	
4.924	3.0	24.0	33.2	6.8	-34.0	0.0	0.0	30.0	54.0	-24.0	V	A	173.0	218.0	
7.386	3.0	35.1	36.4	9.1	-33.1	0.0	0.0	47.5	74.0	-26.5	V	P	103.0	294.0	
7.386	3.0	22.9	36.4	9.1	-33.1	0.0	0.0	35.3	54.0	-18.7	V	A	103.0	294.0	
4.924	3.0	37.3	33.2	6.8	-34.0	0.0	0.0	43.3	74.0	-30.7	H	P	101.0	167.0	
4.924	3.0	24.9	33.2	6.8	-34.0	0.0	0.0	30.9	54.0	-23.1	H	A	101.0	167.0	
7.386	3.0	35.1	36.4	9.1	-33.1	0.0	0.0	47.5	74.0	-26.5	H	P	134.0	97.0	
7.386	3.0	22.9	36.4	9.1	-33.1	0.0	0.0	35.4	54.0	-18.6	H	A	134.0	97.0	

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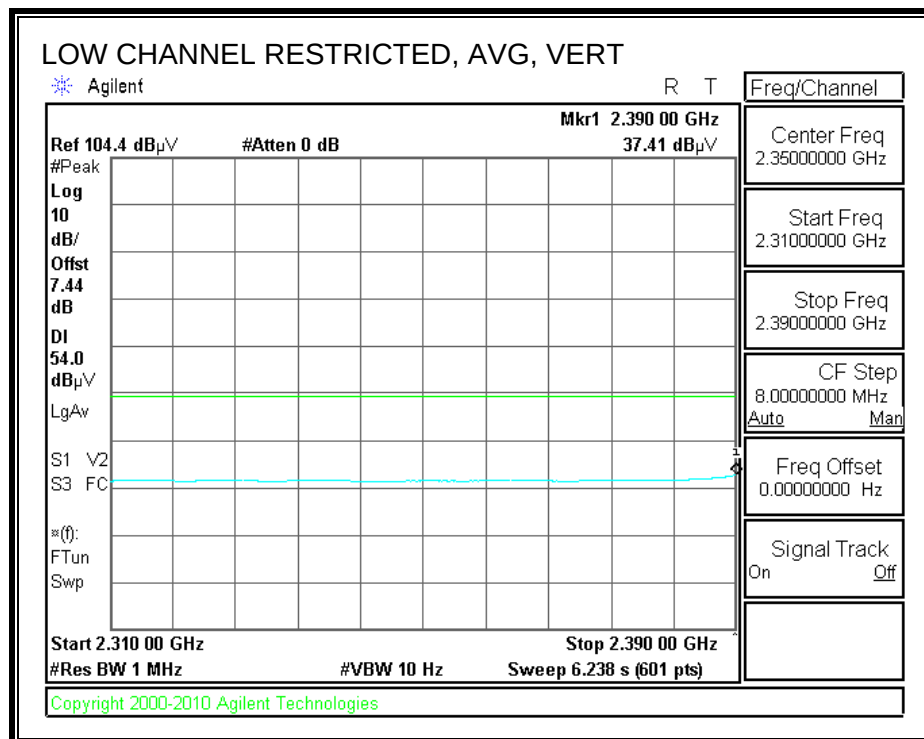
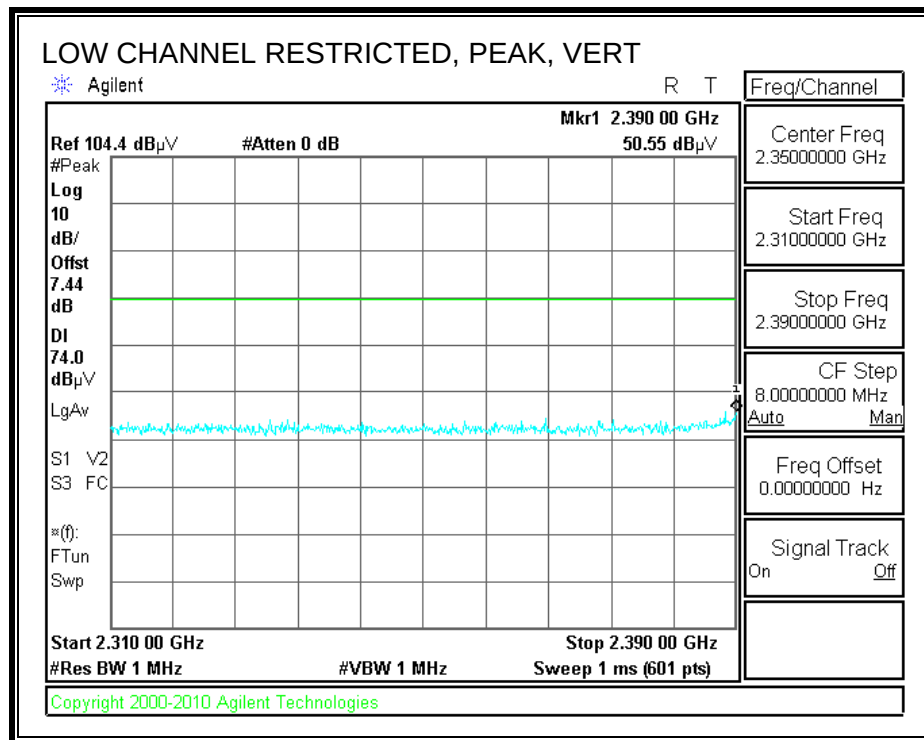
Note: No other emissions were detected above the system noise floor.

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

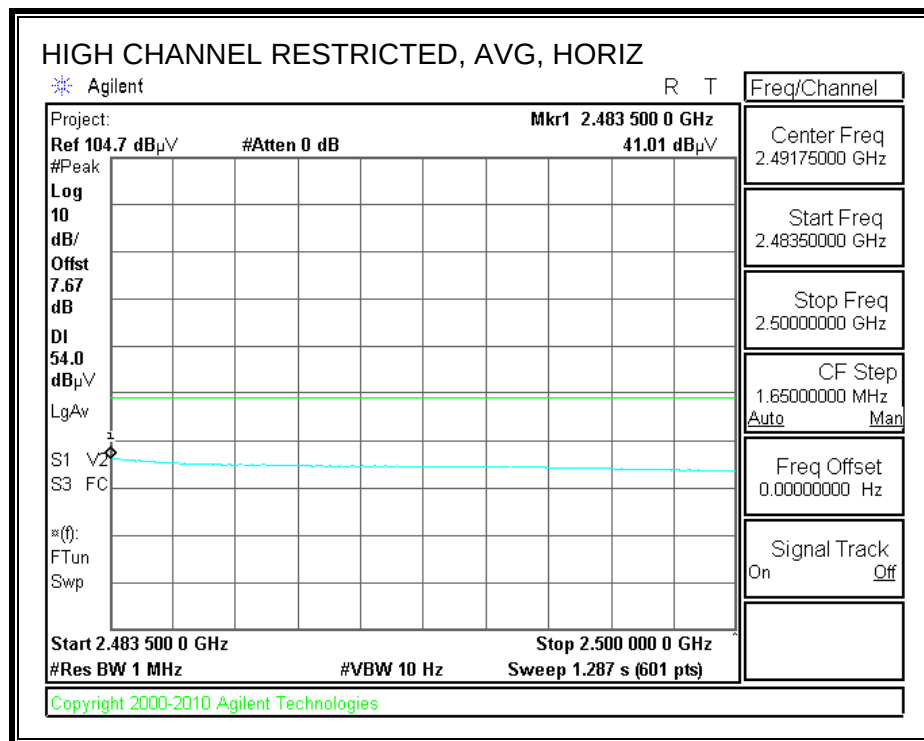
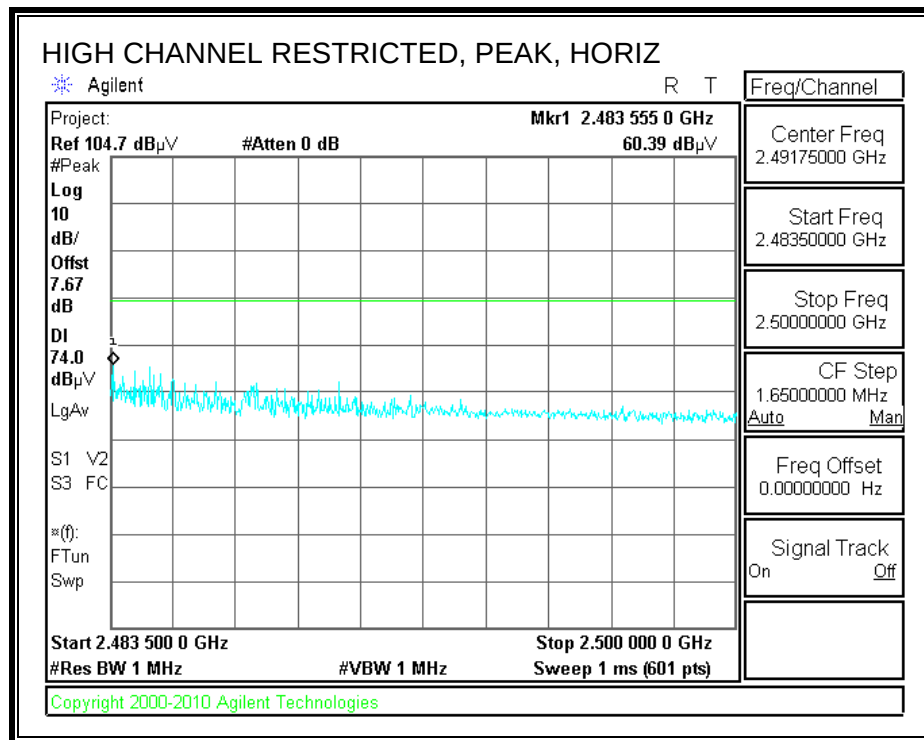
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



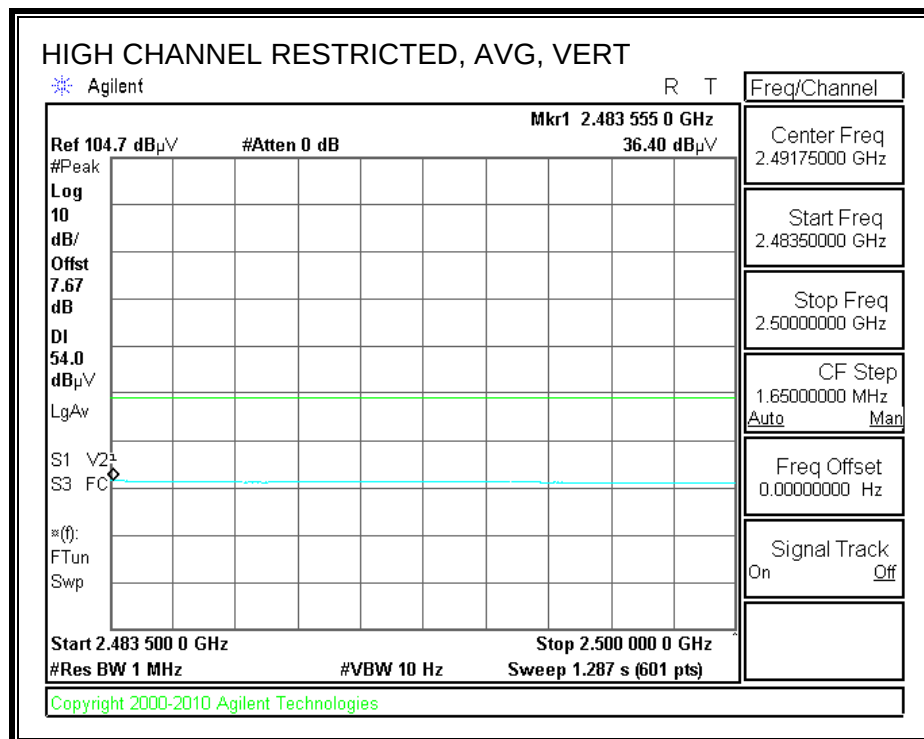
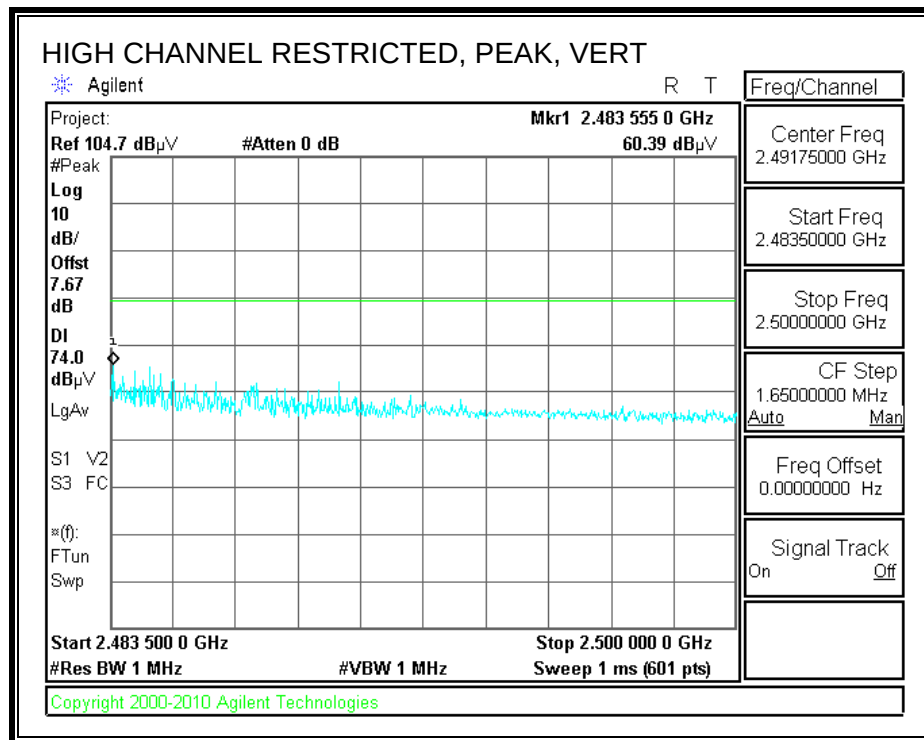
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Vien Tran
Date: 07/18/12
Project #: 12I14521
Company: Samsung
Test Target: FCC 15.247
Mode Oper: Tx 11n HT20 Mode

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

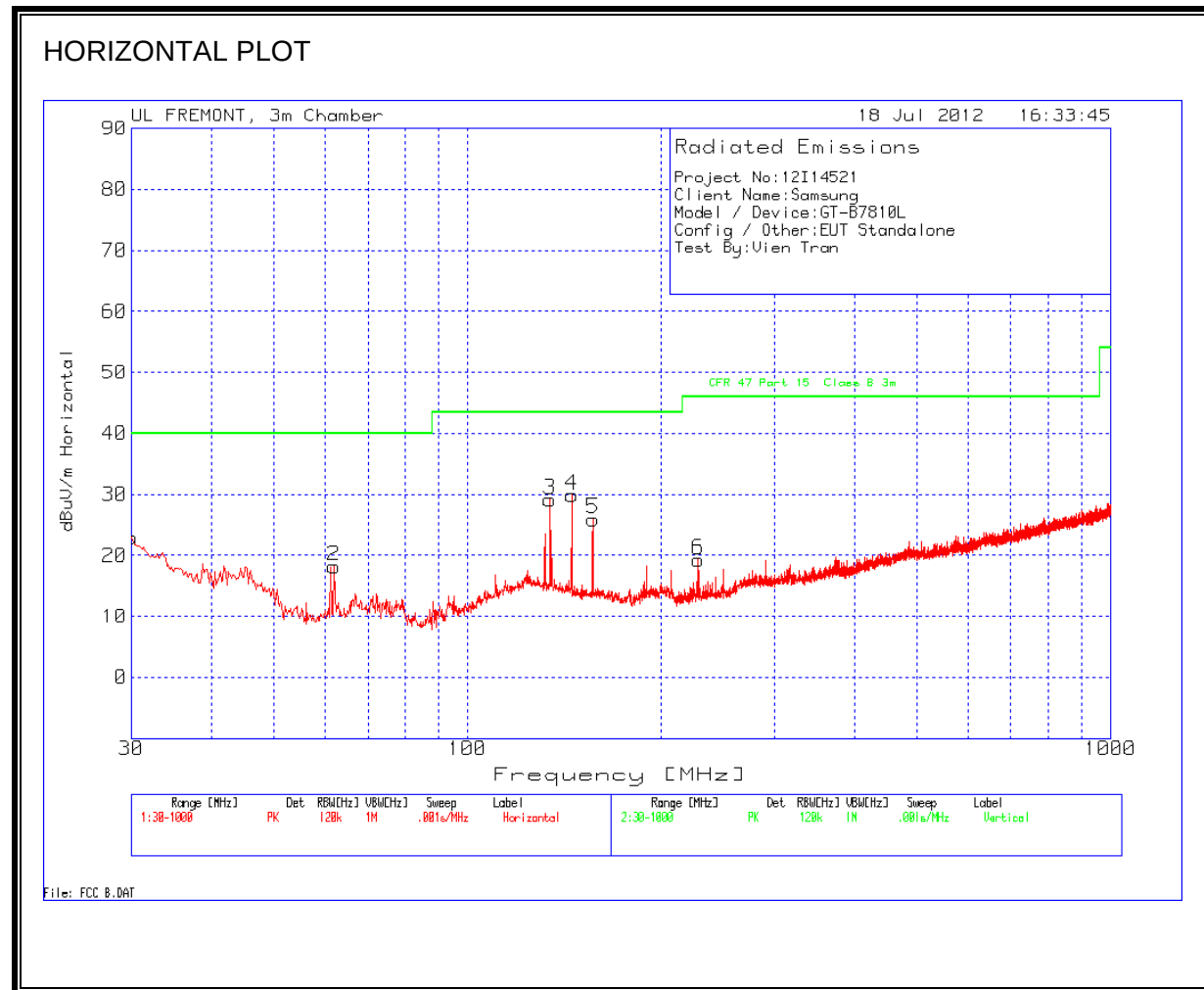
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
LOW CHANNEL, 2412MHz															
4.824	3.0	37.2	33.1	6.8	-34.1	0.0	0.0	43.0	74.0	-31.0	V	P	99.0	74.0	
4.824	3.0	24.6	33.1	6.8	-34.1	0.0	0.0	30.4	54.0	-23.6	V	A	99.0	74.0	
12.060	3.0	34.0	39.4	11.9	-32.5	0.0	0.0	52.8	74.0	-21.2	V	P	134.0	176.0	
12.060	3.0	21.3	39.4	11.9	-32.5	0.0	0.0	40.1	54.0	-13.9	V	A	134.0	176.0	
4.824	3.0	38.0	33.1	6.8	-34.1	0.0	0.0	43.9	74.0	-30.1	H	P	101.0	151.0	
4.824	3.0	25.5	33.1	6.8	-34.1	0.0	0.0	31.3	54.0	-22.7	H	A	101.0	151.0	
12.060	3.0	34.0	39.4	11.9	-32.5	0.0	0.0	52.8	74.0	-21.2	H	P	118.0	188.0	
12.060	3.0	21.4	39.4	11.9	-32.5	0.0	0.0	40.2	54.0	-13.8	H	A	118.0	188.0	
MID CHANNEL, 2437MHz															
4.874	3.0	36.1	33.2	6.8	-34.0	0.0	0.0	42.0	74.0	-32.0	V	P	174.0	69.0	
4.874	3.0	23.8	33.2	6.8	-34.0	0.0	0.0	29.7	54.0	-24.3	V	A	174.0	69.0	
7.311	3.0	35.3	36.3	9.1	-33.1	0.0	0.0	47.5	74.0	-26.5	V	P	180.0	0.0	
7.311	3.0	22.8	36.3	9.1	-33.1	0.0	0.0	35.1	54.0	-18.9	V	A	180.0	0.0	
7.311	3.0	35.0	36.3	9.1	-33.1	0.0	0.0	47.2	74.0	-26.8	H	P	170.0	135.0	
7.311	3.0	22.9	36.3	9.1	-33.1	0.0	0.0	35.2	54.0	-18.8	H	A	170.0	135.0	
4.874	3.0	36.4	33.2	6.8	-34.0	0.0	0.0	42.3	74.0	-31.7	H	P	136.0	230.0	
4.874	3.0	23.9	33.2	6.8	-34.0	0.0	0.0	29.8	54.0	-24.2	H	A	136.0	230.0	
HIGH CHANNEL, 2462MHz															
4.924	3.0	36.7	33.2	6.8	-34.0	0.0	0.0	42.7	74.0	-31.3	V	P	155.0	287.0	
4.924	3.0	24.0	33.2	6.8	-34.0	0.0	0.0	30.0	54.0	-24.0	V	A	155.0	287.0	
7.386	3.0	35.2	36.4	9.1	-33.1	0.0	0.0	47.7	74.0	-26.3	V	P	154.0	287.0	
7.386	3.0	22.7	36.4	9.1	-33.1	0.0	0.0	35.1	54.0	-18.9	V	A	154.0	287.0	
4.924	3.0	36.2	33.2	6.8	-34.0	0.0	0.0	42.2	74.0	-31.8	H	P	127.0	194.0	
4.924	3.0	24.1	33.2	6.8	-34.0	0.0	0.0	30.1	54.0	-23.9	H	A	127.0	194.0	
7.386	3.0	35.7	36.4	9.1	-33.1	0.0	0.0	48.1	74.0	-25.9	H	P	126.0	194.0	
7.386	3.0	22.8	36.4	9.1	-33.1	0.0	0.0	35.2	54.0	-18.8	H	A	126.0	194.0	

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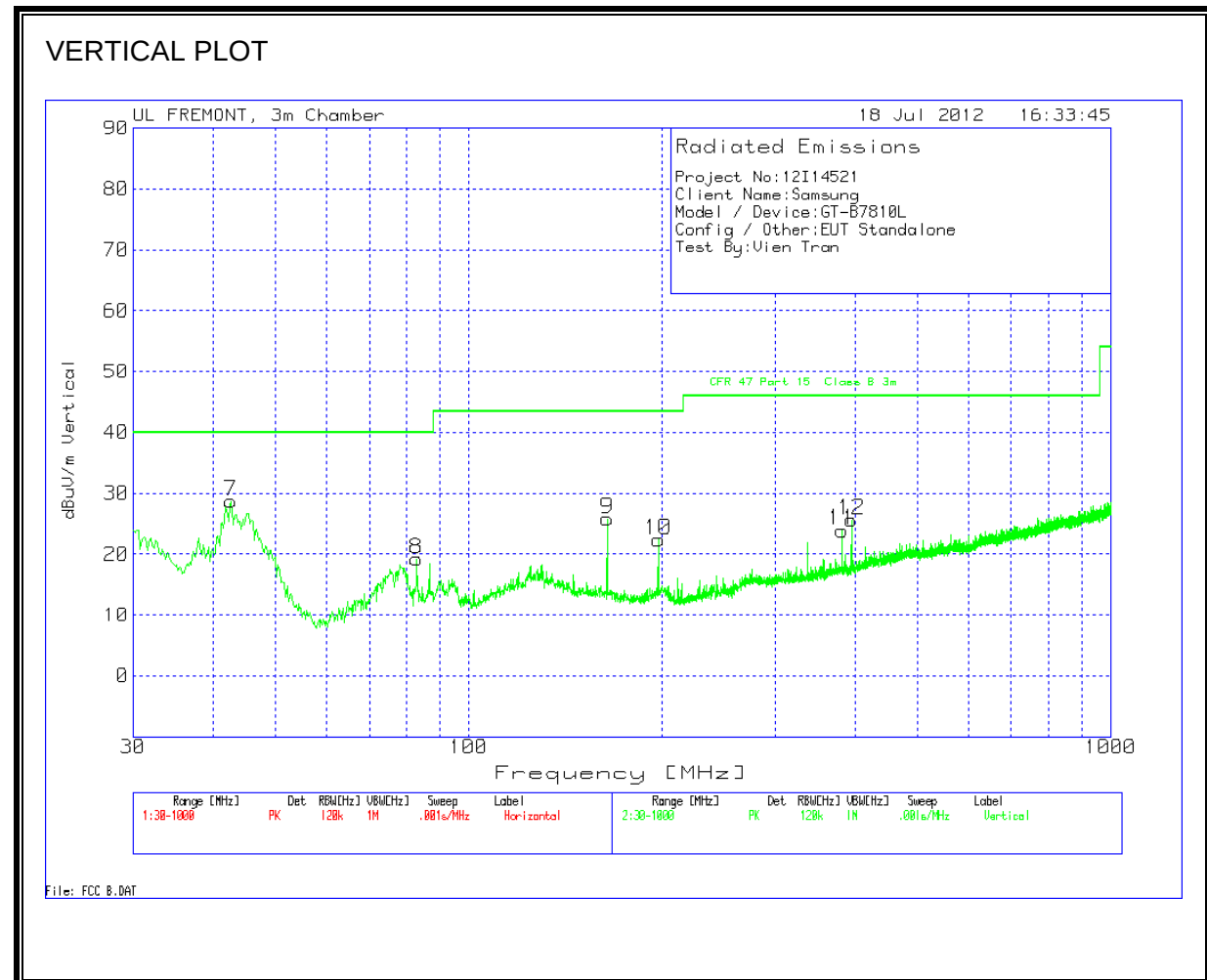
Note: No other emissions were detected above the system noise floor.

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

Project No:12I14521

Client Name:Samsung

Model / Device:GT-B7810L

Config / Other:EUT Standalone

Test By:Vien Tran

Horizontal 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz Chambr 3m Amplified (dB)	Antenna T185 (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
30	29.22	PK	-27.5	21.2	22.92	40.0	-17.08	99	Horz
61.9844	37.91	PK	-27.2	7.5	18.21	40.0	-21.79	300	Horz
134.2886	42.23	PK	-26.5	13.4	29.13	43.5	-14.37	400	Horz
145.3377	43.66	PK	-26.4	12.6	29.86	43.5	-13.64	99	Horz
156.7746	40.02	PK	-26.3	12.2	25.92	43.5	-17.58	300	Horz
228.3034	33.90	PK	-25.6	11.0	19.30	46.0	-26.70	99	Horz

Vertical 30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz Chambr 3m Amplified (dB)	Antenna T185 (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
42.5999	44.21	PK	-27.4	11.9	28.71	40.0	-11.29	100	Vert
82.9197	38.71	PK	-27.0	7.5	19.21	40.0	-20.79	301	Vert
164.3345	40.12	PK	-26.2	11.9	25.82	43.5	-17.68	201	Vert
197.2882	36.47	PK	-25.9	11.8	22.37	43.5	-21.13	201	Vert
381.4408	34.40	PK	-25.5	15.0	23.90	46.0	-22.10	400	Vert
394.4285	36.03	PK	-25.6	15.2	25.63	46.0	-20.37	100	Vert

PK - Peak detector

QP - Quasi-Peak detector

LnAv - Linear Average detector

LgAv - Log Average detector

Av - Average detector

CAV - CISPR Average detector

RMS - RMS detection

CRMS - CISPR RMS detection

Text File: FCC B.TXT

File: FCC B.DAT

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

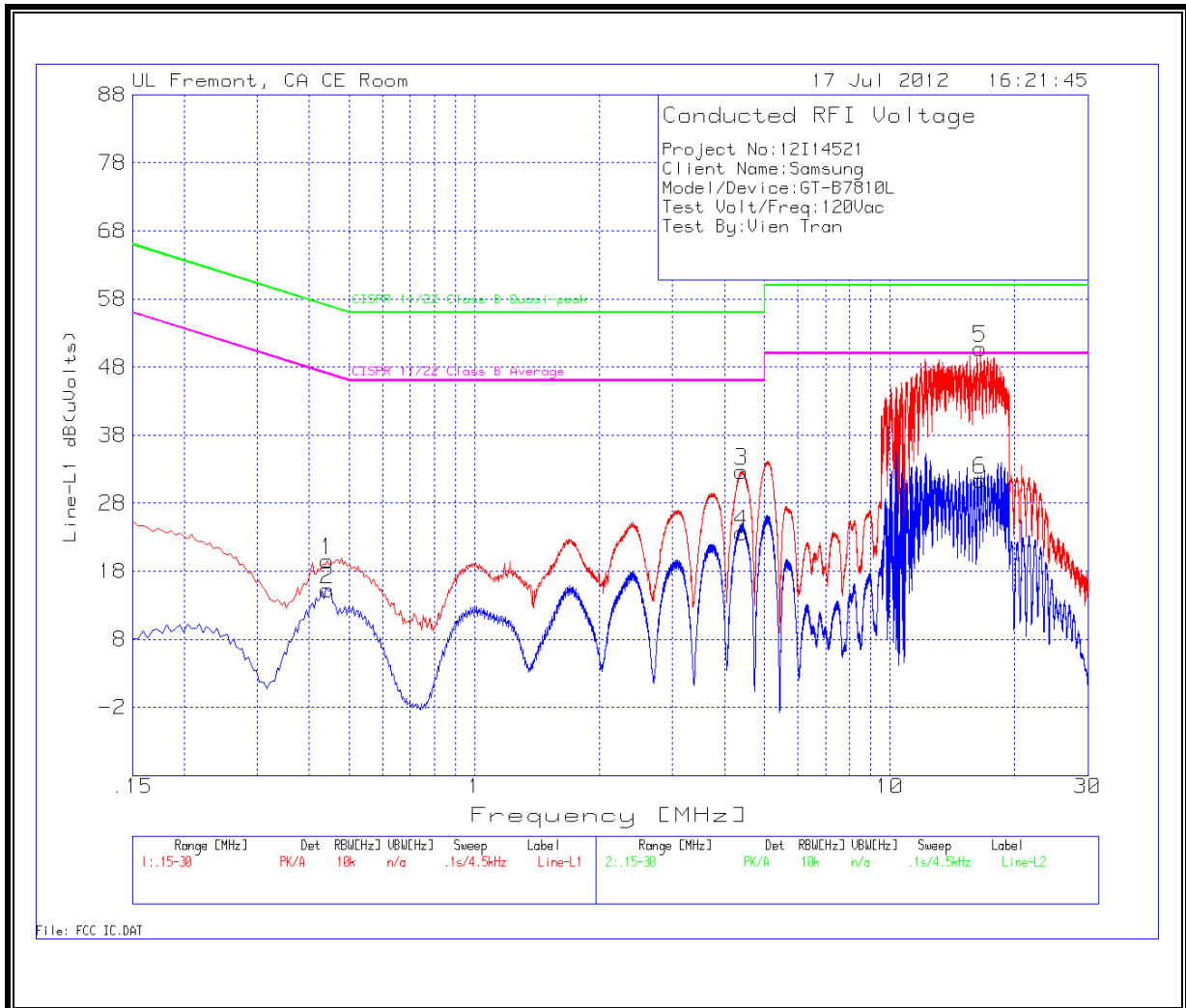
ANSI C63.4

RESULTS

6 WORST EMISSIONS

Project No: 12I14521									
Client Name: Samsung									
Model/Device: GT-B7810L									
Test Volt/Freq: 120Vac									
Test By: Vien Tran									
Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.4425	19.41	PK	0.1	0	19.51	57	-37.49	-	-
0.4425	15.16	Av	0.1	0	15.26	-	-	47.0	-31.74
4.3935	32.53	PK	0.1	0.1	32.73	56	-23.27	-	-
4.3935	23.5	Av	0.1	0.1	23.70	-	-	46.0	-22.3
16.5345	50.31	PK	0.2	0.2	50.71	60	-9.29	-	-
16.5345	31.02	Av	0.2	0.2	31.42	-	-	50.0	-18.58
Line-L2 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.4155	37.06	PK	0.1	0	37.2	57.5	-20.34	-	-
0.4155	24.32	Av	0.1	0	24.4	-	-	47.500	-23.08
4.7400	42.83	PK	0.1	0.1	43.0	56	-12.97	-	-
4.7400	25.76	Av	0.1	0.1	26.0	-	-	46.000	-20.04
18.1770	54.10	PK	0.2	0.2	54.5	60	-5.5	-	-
18.1770	31.84	Av	0.2	0.2	32.2	-	-	50.000	-17.76
PK - Peak detector									
QP - Quasi-Peak detector									
LnAv - Linear Average detector									
LgAv - Log Average detector									
Av - Average detector									
CAV - CISPR Average detector									
RMS - RMS detection									
CRMS - CISPR RMS detection									
Text File: FCC IC.TXT									
File: FCC IC.DAT									

LINE 1 RESULTS



LINE 2 RESULTS

