



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8**

CERTIFICATION TEST REPORT

FOR

TABLET

MODEL NUMBER: BP710A

FCC ID: PSZ-BP710A

IC: 1000F-BP710A

REPORT NUMBER: 12U14748-1, REVISION C

ISSUE DATE: APRIL 2, 2013

Prepared for

**INTEL CORPORATION
2200 MISSION COLLEGE BLVD.
SANTA CLARA, CA 95054-1549, USA**

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

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--	3/6/2013	Initial Issue	T. LEE
A	3/18/2013	Corrections to report.	G. Persons
B	3/28/2013	Correction to model number on Attestation page	G. Persons
C	4/2/2013	Correction to address	G. Persons

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: INTEL CORPORATION
2200 MISSION COLLEGE BLVD.
SANTA CLARA, CA 95054-1549, USA

EUT DESCRIPTION: Tablet

MODEL: BP710A

SERIAL NUMBER: YKB311604755 (Radiated unit), YKB311605082 (Conducted unit)

DATE TESTED: FEBRUARY 2 to March 5, 2013

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	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
WISE PROGRAM MANAGER
UL CCS

TOM C HEN
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2009, 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 a tablet with 802.11b/g/n and Bluetooth.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	16.82	48.08
2412 - 2462	802.11g	22.4	173.78
2412 - 2462	802.11n HT20	22.13	163.31

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a chip antenna, with a maximum gain of 2.5 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was YKB JB 11976

5.5. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, and it was found that Y orientation is worst-case orientation; therefore, final radiated testing was performed with the EUT in the Y orientation.

For Radiated Emissions below 1 GHz and Power line Conducted Emissions, the channel with the highest conducted output power was selected as a worst-case scenario.

Based on the baseline scan, the worst-case data rates were:

All final tests in the 802.11b mode were made at 1 Mb/s.

All final tests in the 802.11g mode were made at 6 Mb/s.

All final tests in the 802.11n HT20 mode were made at MCS0

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

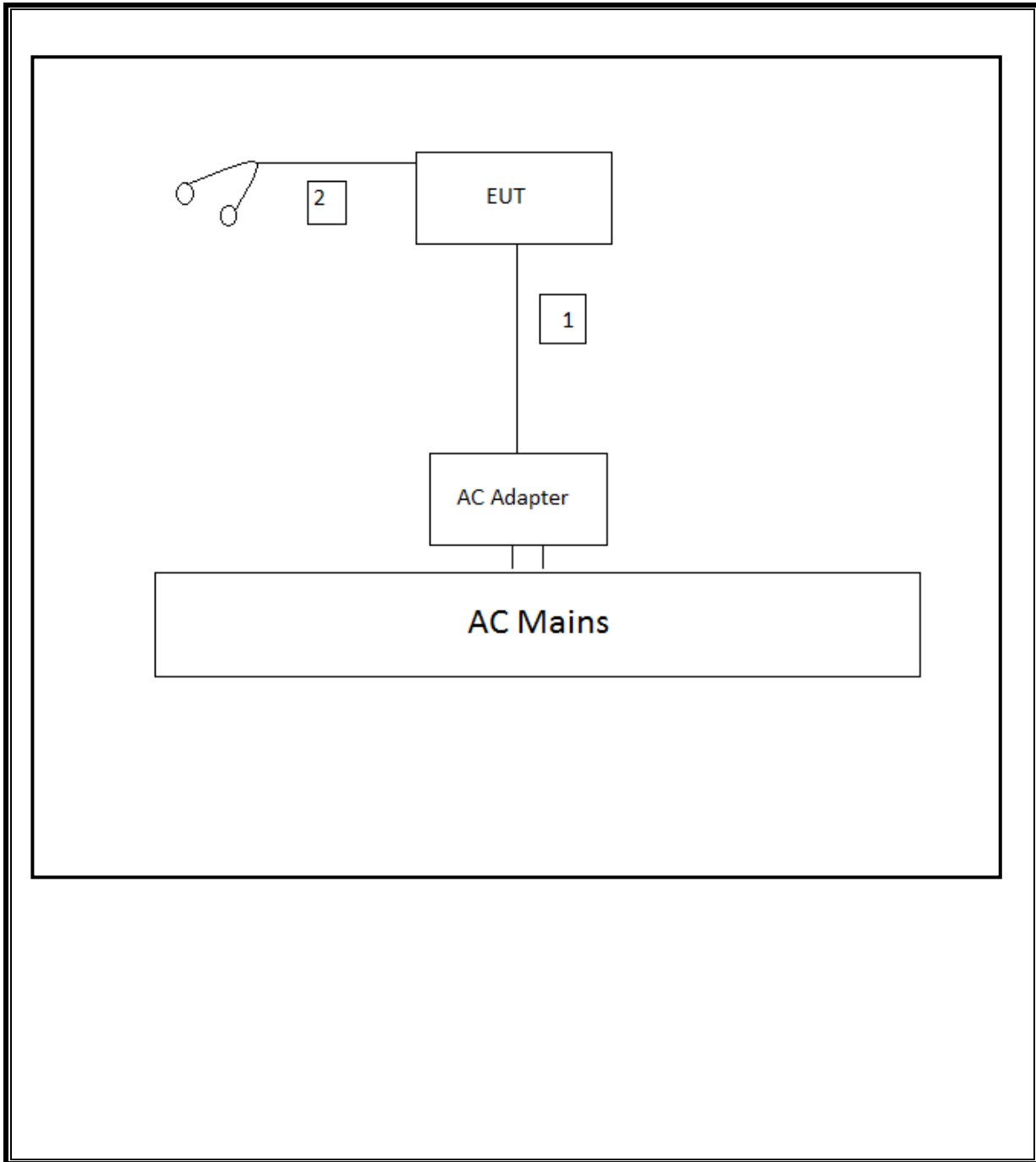
PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Intel	S11A02	130300073060	DoC
Power Splitter	Krytar	158010	99250	N/A
Headset	N/A	N/A	N/A	N/A

I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	MINI USB	UN-SHELDED	0.7m	N/A
2	AUDIO	1	MINI JACK	UN-SHELDED	1.0m	N/A

TEST SETUP

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	11/11/13
Antenna, Horn, 18 GHz	EMCO	3115	C00945	10/06/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	11/11/13
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	03/23/13
Horn Antenna, 26.5 GHz	ARA	MWH-1826/B	C00589	04/23/13
Reject Filter, 2.0-2.9 GHz	Micro-Tronics	BRM50702	N02684	CNR
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/14
E-Series Power Sensor 9 kHz~18 GHz	Agilent	E9304A	1260847C	05/23/13
P-Series single channel Power Meter	Agilent / HP	N1911A	T229	07/27/13
Reject Filter, 5.725-5.825 GHz	Micro-Tronics	BRC13192	N02676	CNR
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	CNR
Highpass Filter, 7.6 GHz	Micro-Tronics	HPM13195	N02682	CNR
EMI Test Receiver, 30MHz	R & S	ESHS 20	N02396	08/08/13
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	01/14/14

7. MEASUREMENT METHODS

KDB 558074 Measurement Procedure PK2 is used for power and PKPSD is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

7.1. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
802.11b	8.40	8.44	0.995	99.5%	0.00	0.010
802.11g	1.40	1.43	0.979	97.9%	0.09	0.716
802.11n HT20	1.31	1.34	0.977	97.7%	0.10	0.766

MEASUREMENT METHOD FOR POWER AND PPSD

The Duty Cycle is greater than or equal to 98% therefore KDB 789033 Method SA-1 is used.

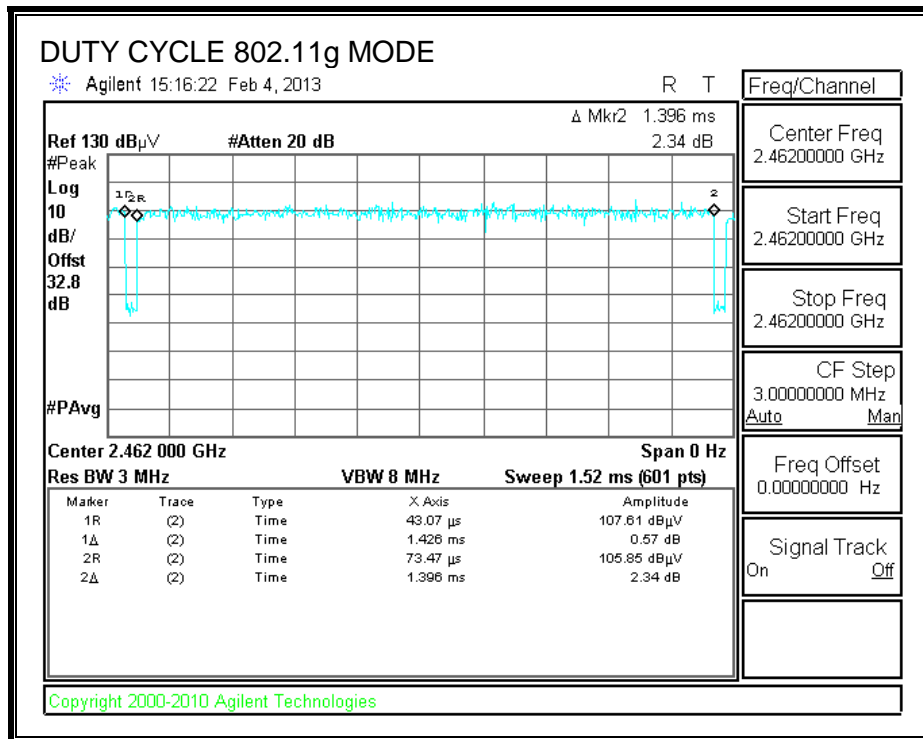
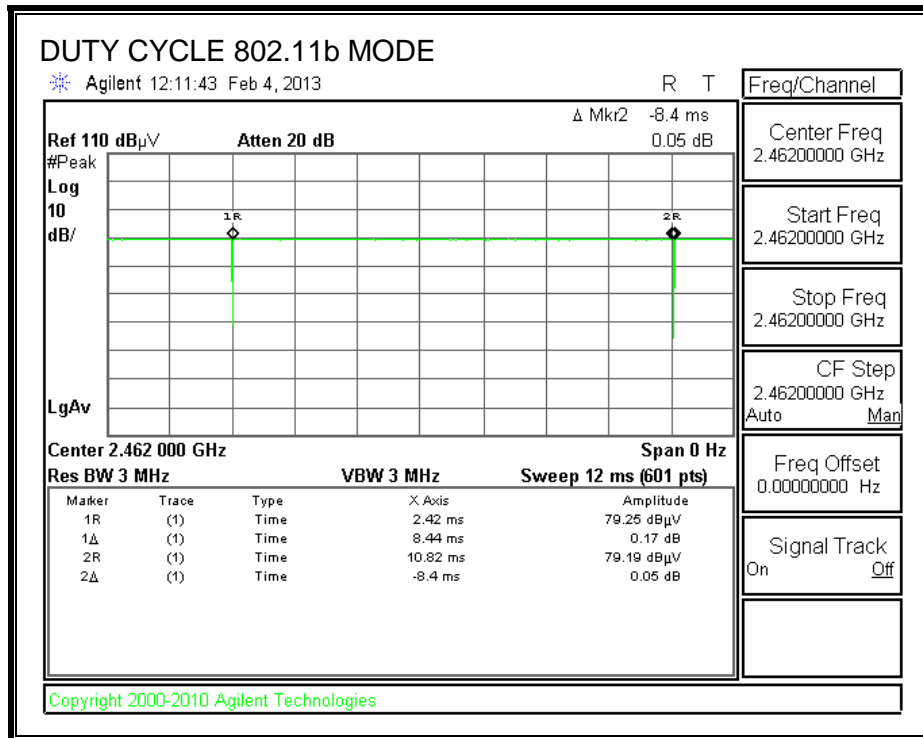
The Duty Cycle is less than 98% therefore KDB 789033 Method SA-2 is used.

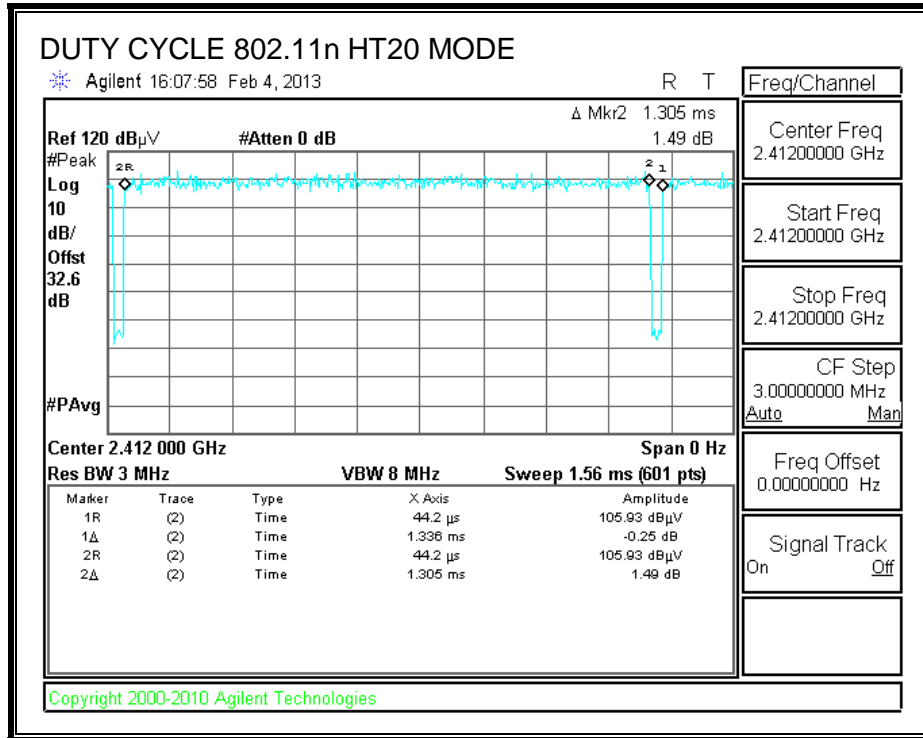
MEASUREMENT METHOD FOR AVERAGE SPURIOUS EMISSIONS ABOVE 1 GHz

The Duty Cycle is greater than or equal to 98%, KDB 789033 Method AD with Power RMS Averaging is used.

The Duty Cycle is less than 98% and consistent, KDB 789033 Method AD with Power RMS Averaging and duty cycle correction is used.

DUTY CYCLE PLOTS





8. ANTENNA PORT TEST RESULTS

8.1. 802.11b MODE IN THE 2.4 GHz BAND

8.1.1. 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.

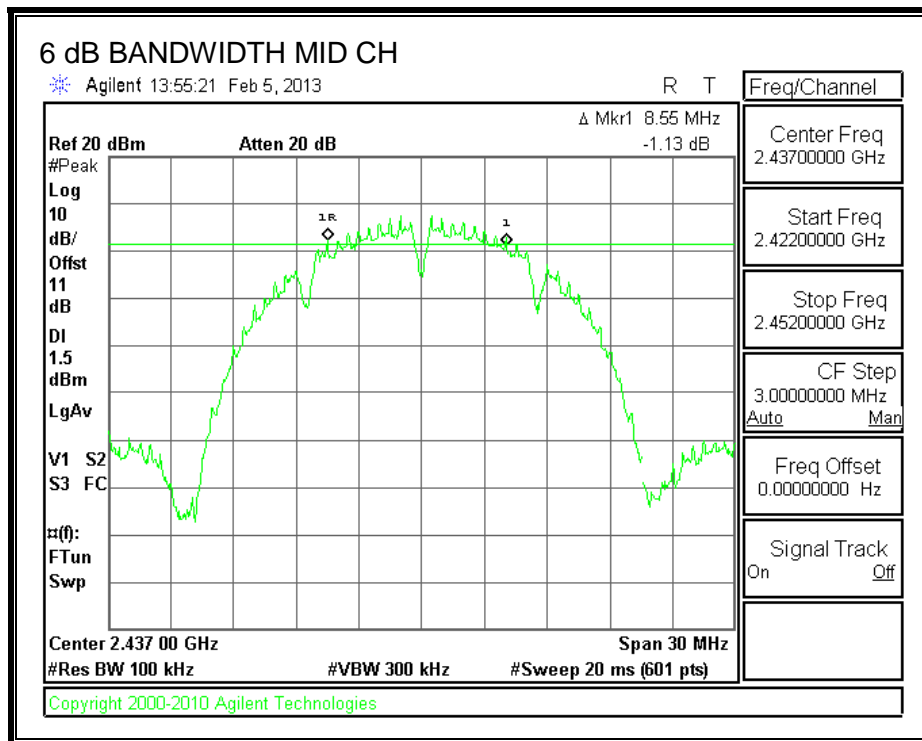
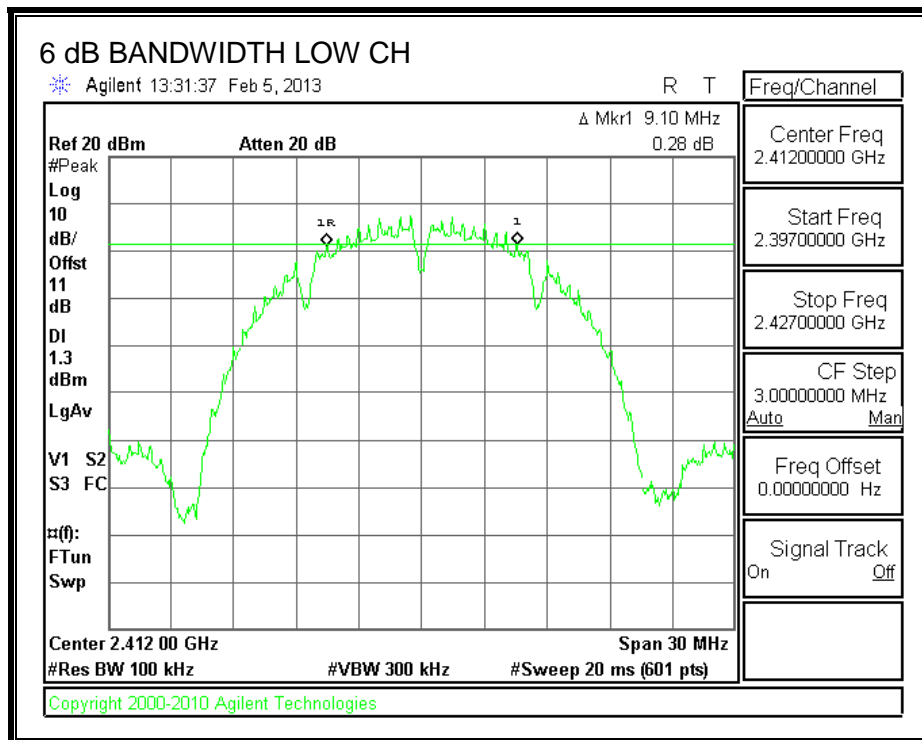
TEST PROCEDURE

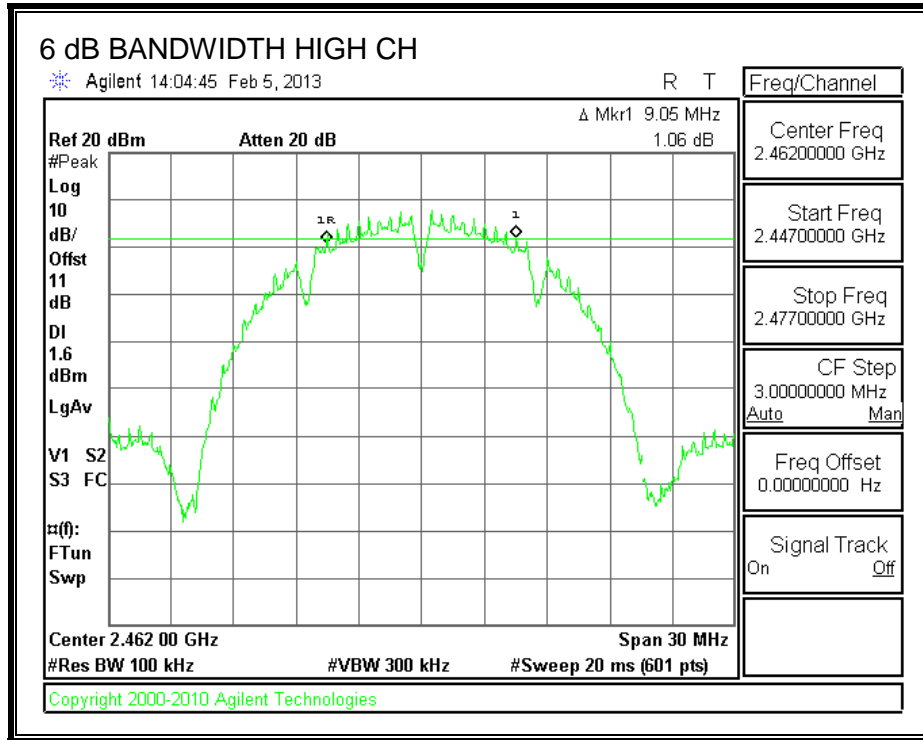
The transmitter output is connected to a spectrum analyzer with the RBW set between 1% and 5% of the EBW, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.100	0.5
Mid	2437	8.550	0.5
High	2462	9.050	0.5

6 dB BANDWIDTH





8.1.2. 99% BANDWIDTH

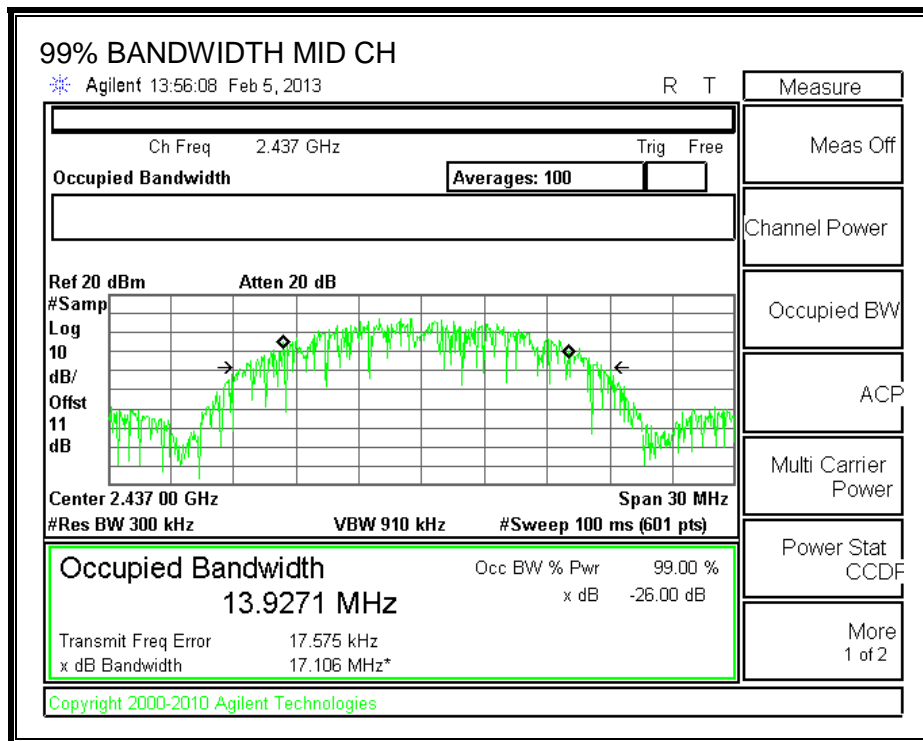
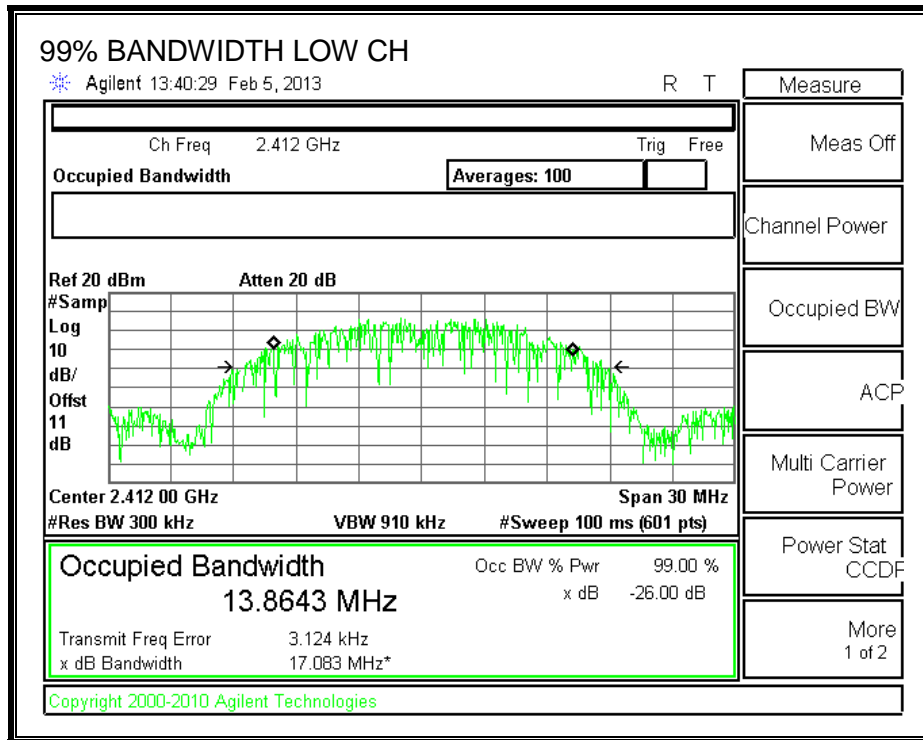
LIMITS

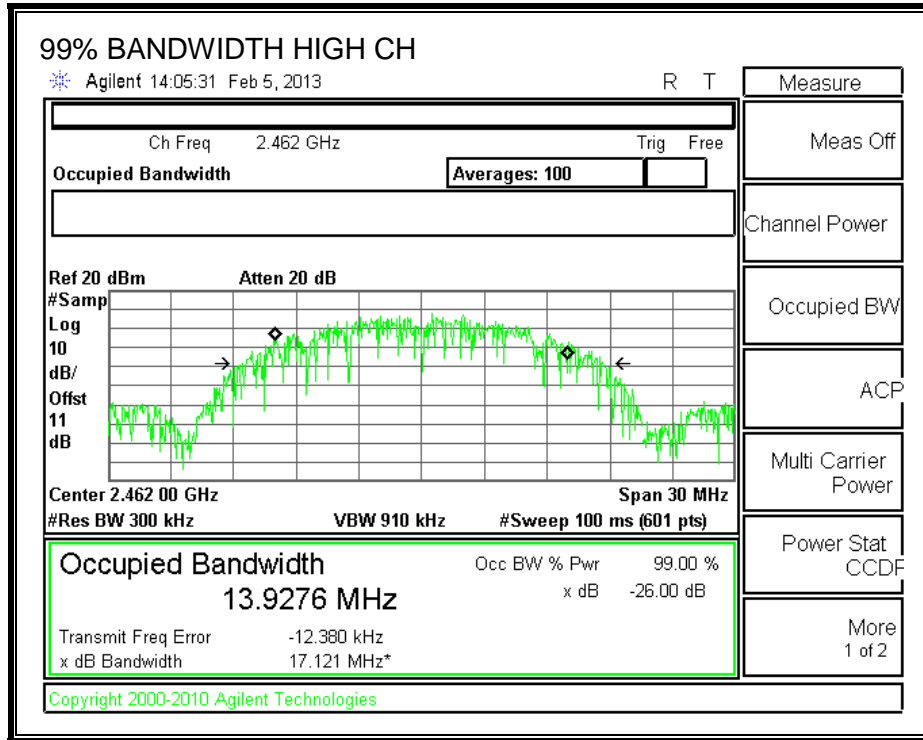
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.8643
Mid	2437	13.9271
High	2462	13.9276

99% BANDWIDTH





8.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	2412	13.73
Mid	2437	13.56
High	2462	13.98

8.1.4. MAXIMUM OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

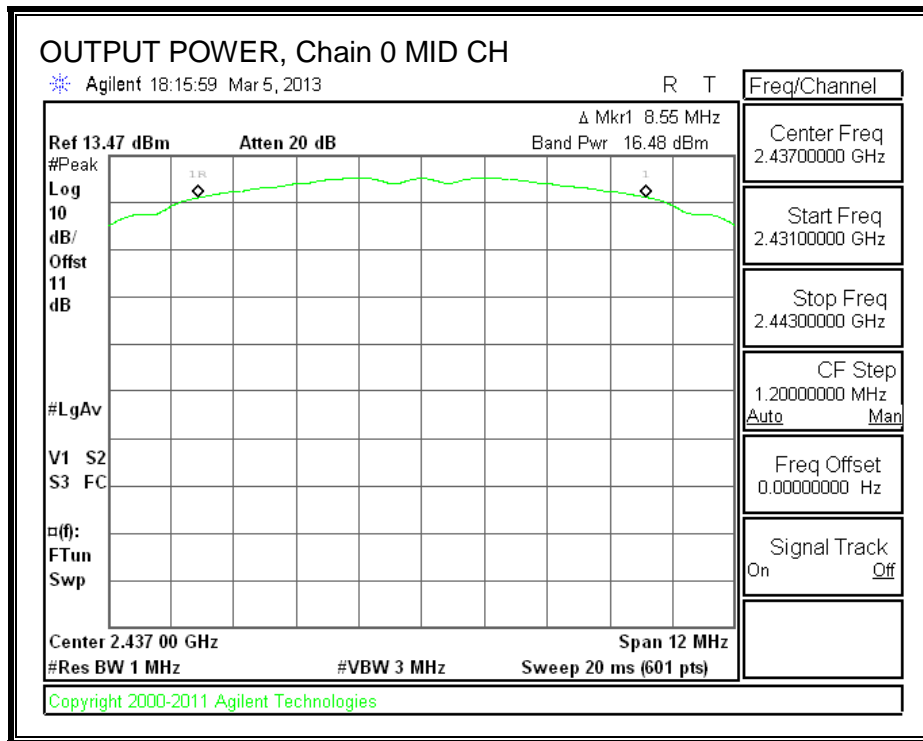
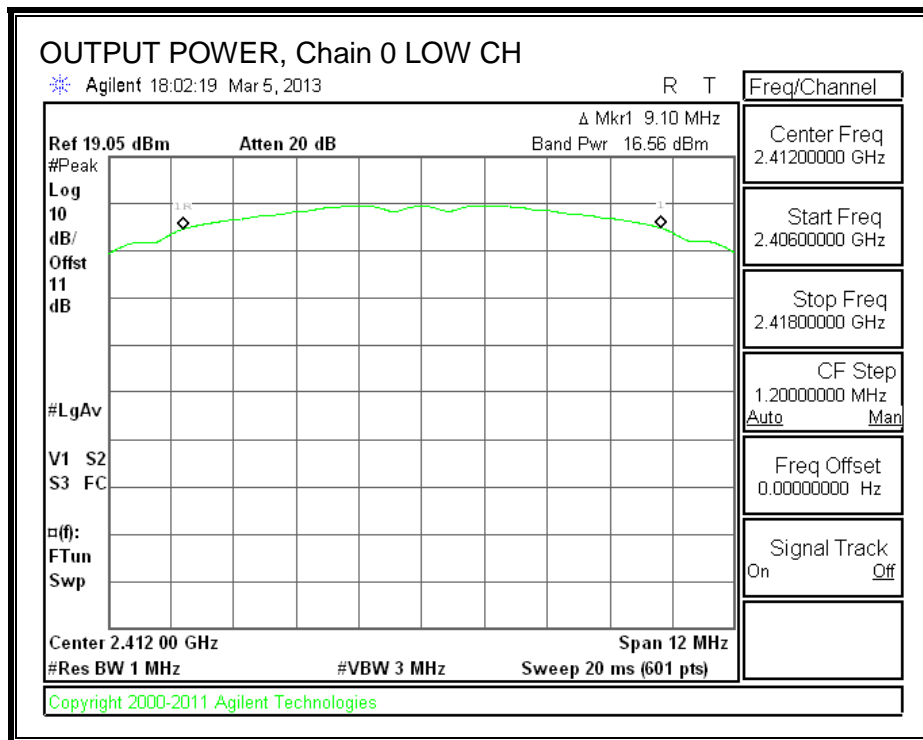
Limits

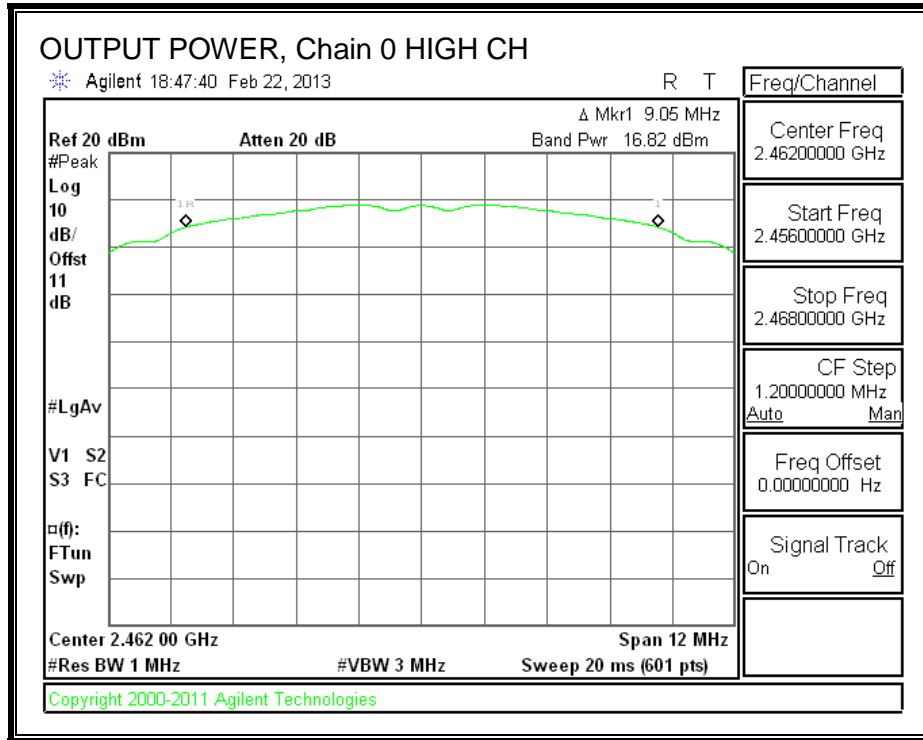
Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.50	30.00	30	36	30.00
Mid	2437	2.50	30.00	30	36	30.00
High	2462	2.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	16.56	16.56	30.00	-13.44
Mid	2437	16.48	16.48	30.00	-13.52
High	2462	16.82	16.82	30.00	-13.18

OUTPUT POWER, Chain 0





8.1.5. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

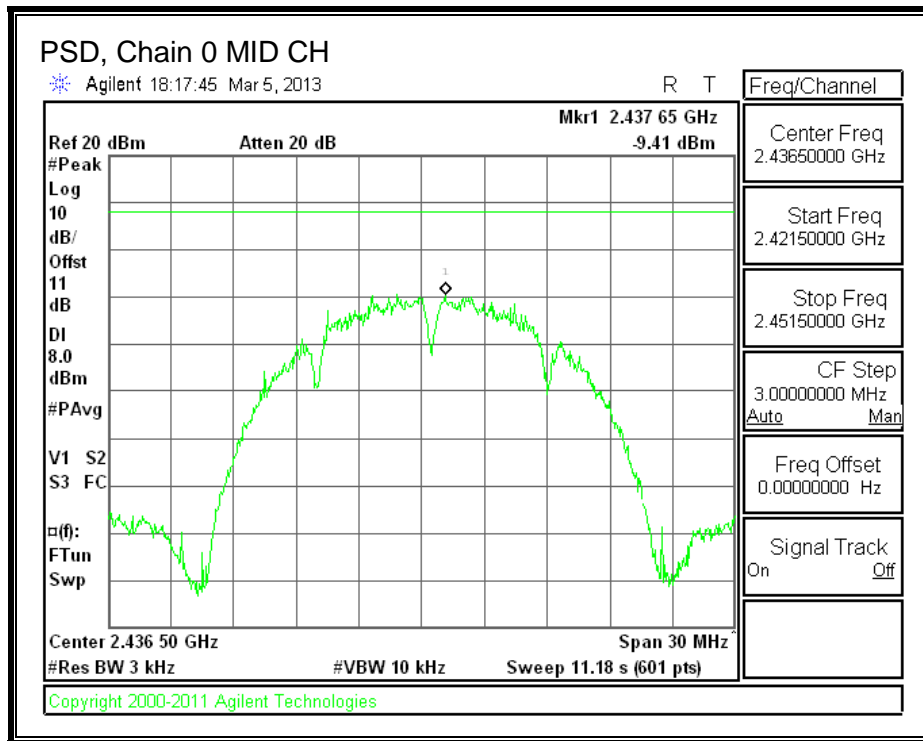
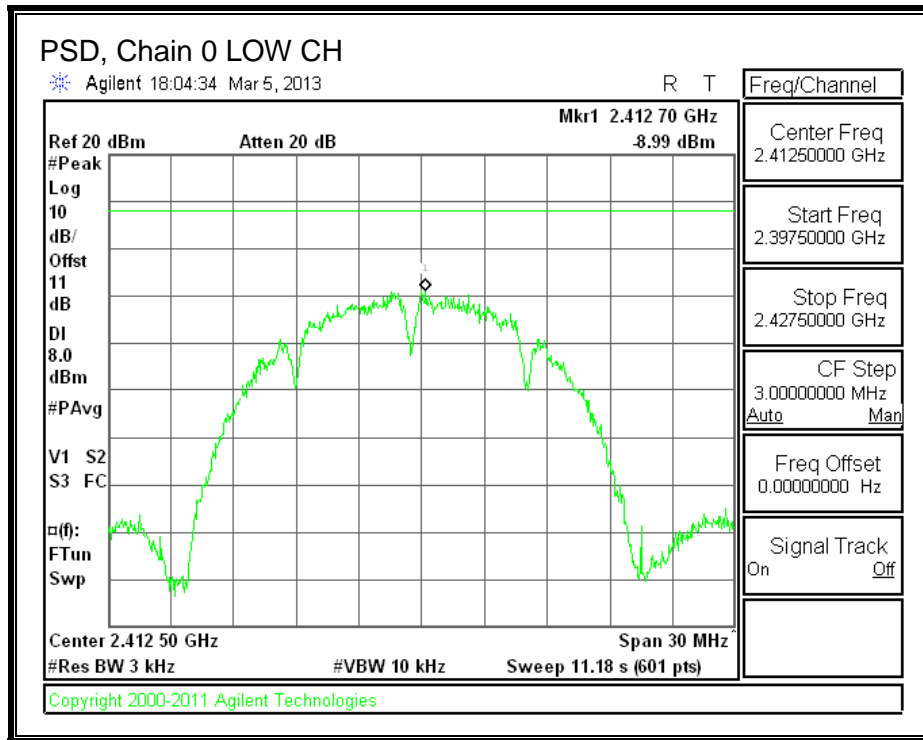
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

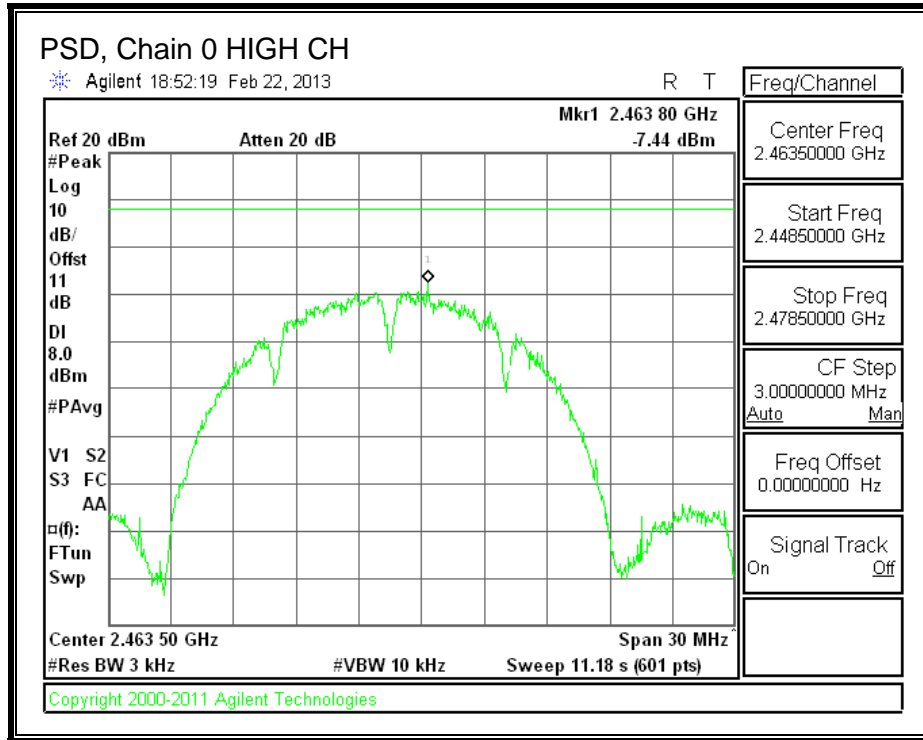
RESULTS

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-8.99	8.0	-17.0
Mid	2437	-9.41	8.0	-17.4
High	2462	-7.44	8.0	-15.4

PSD, Chain 0





8.1.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

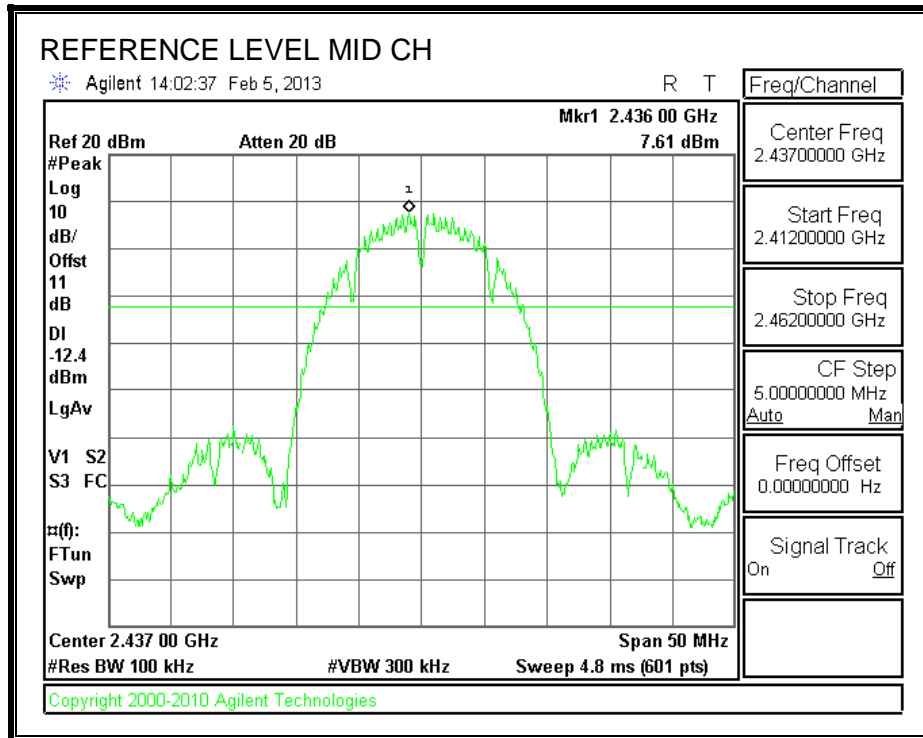
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

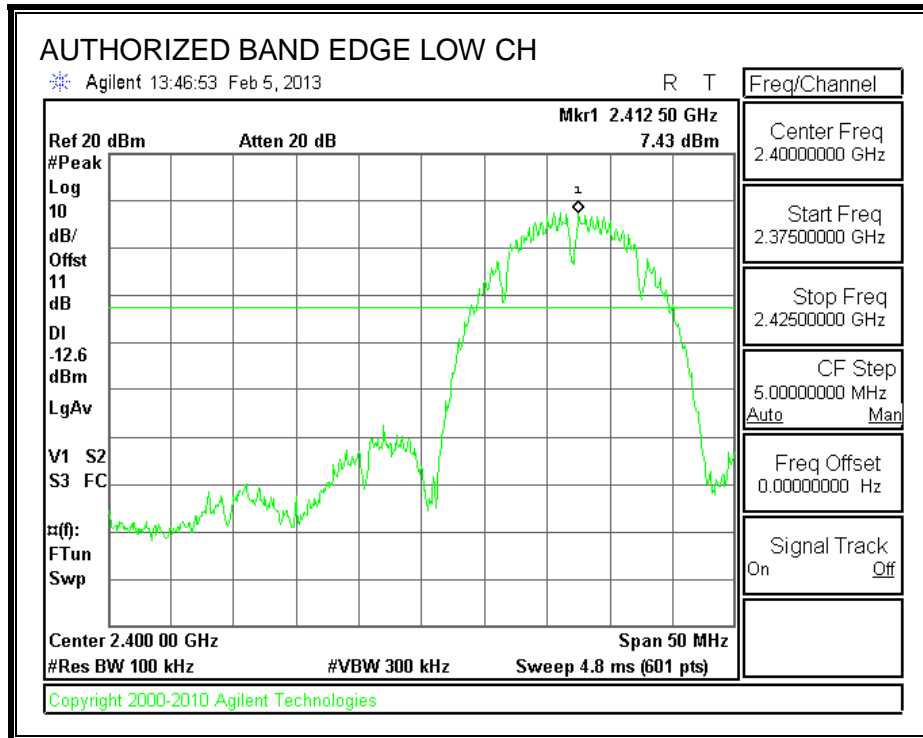
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

RESULTS

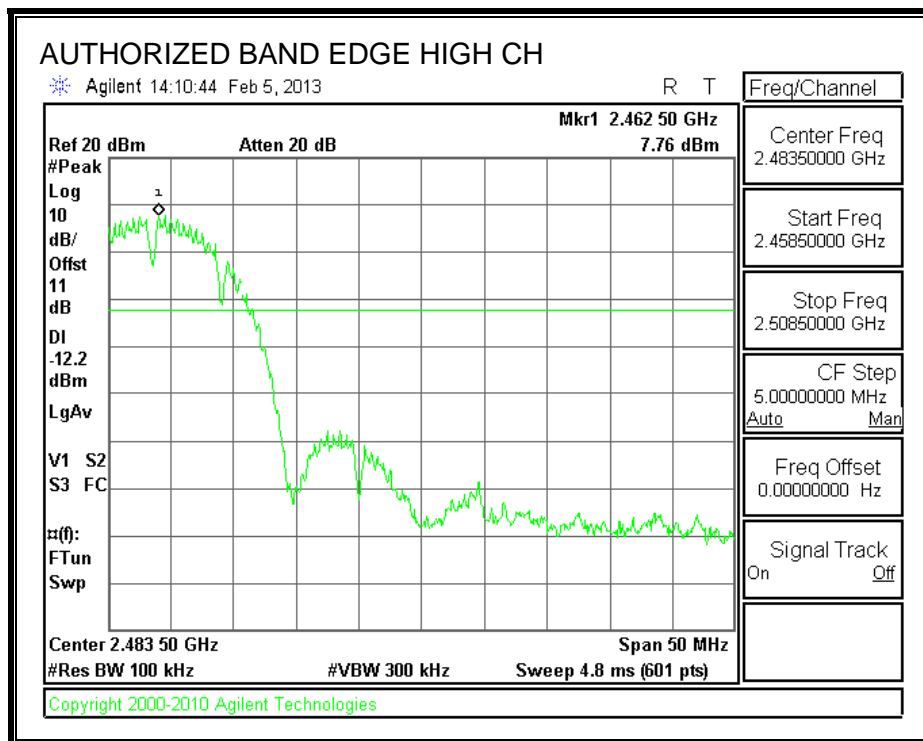
IN-BAND REFERENCE LEVEL



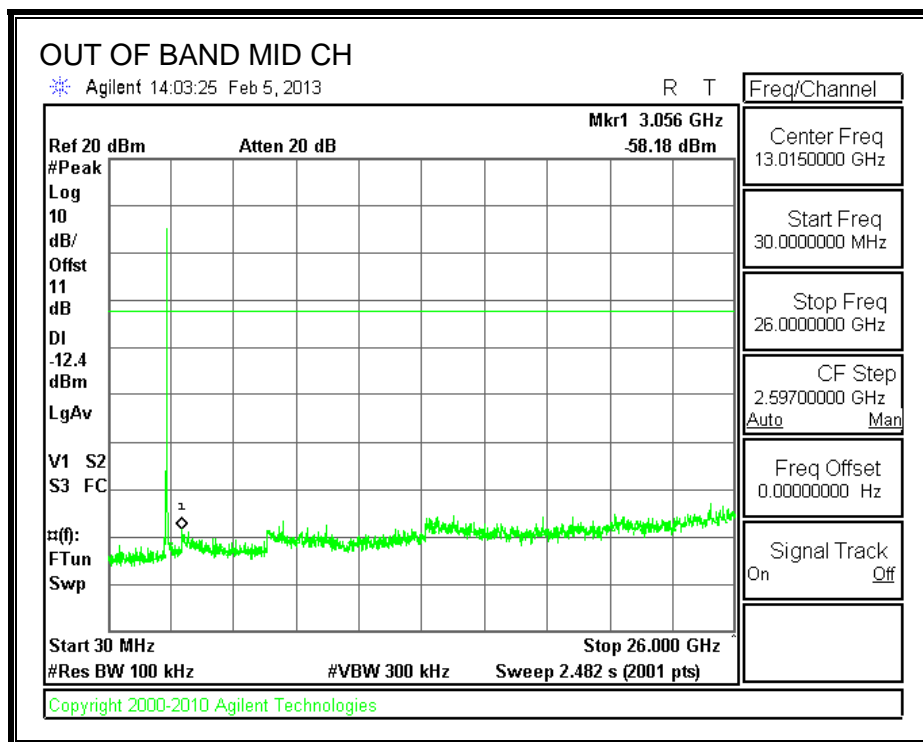
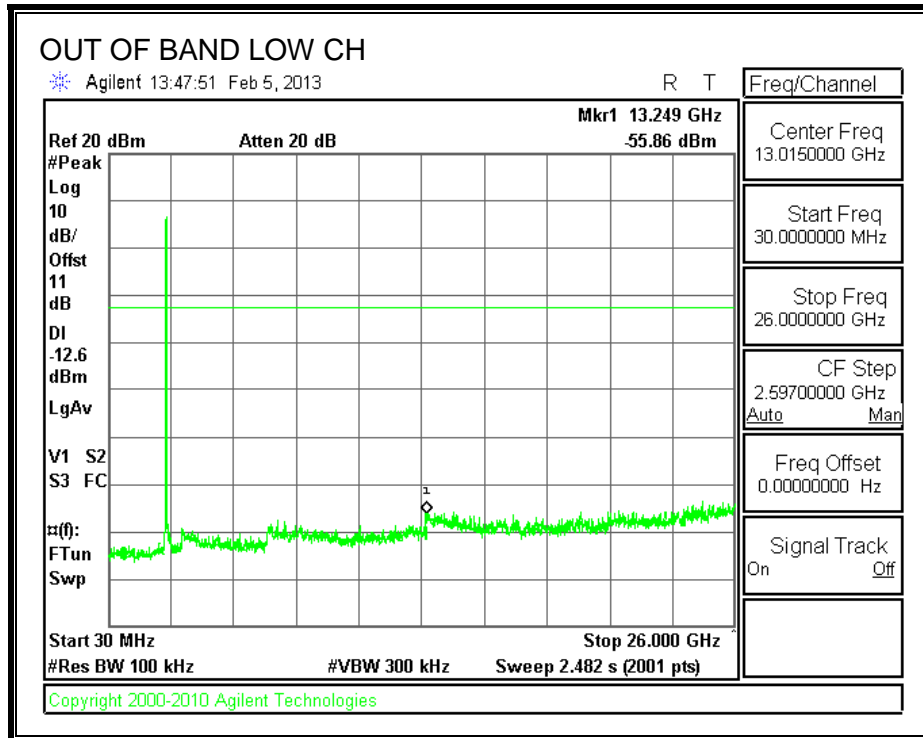
LOW CHANNEL BANDEDGE

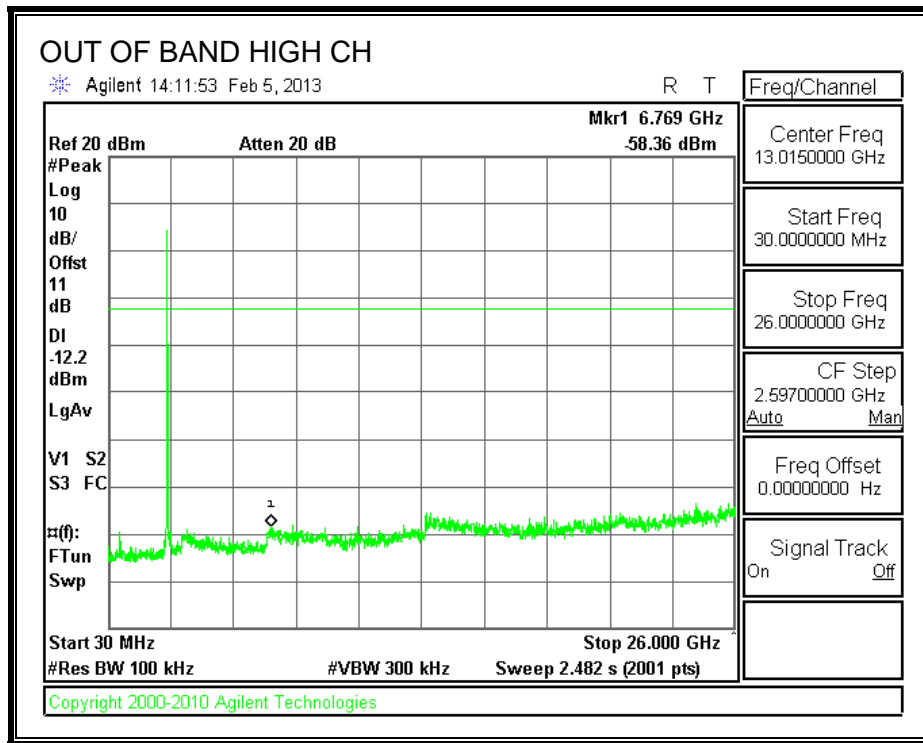


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS





8.2. 802.11g MODE IN THE 2.4 GHz BAND

8.2.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

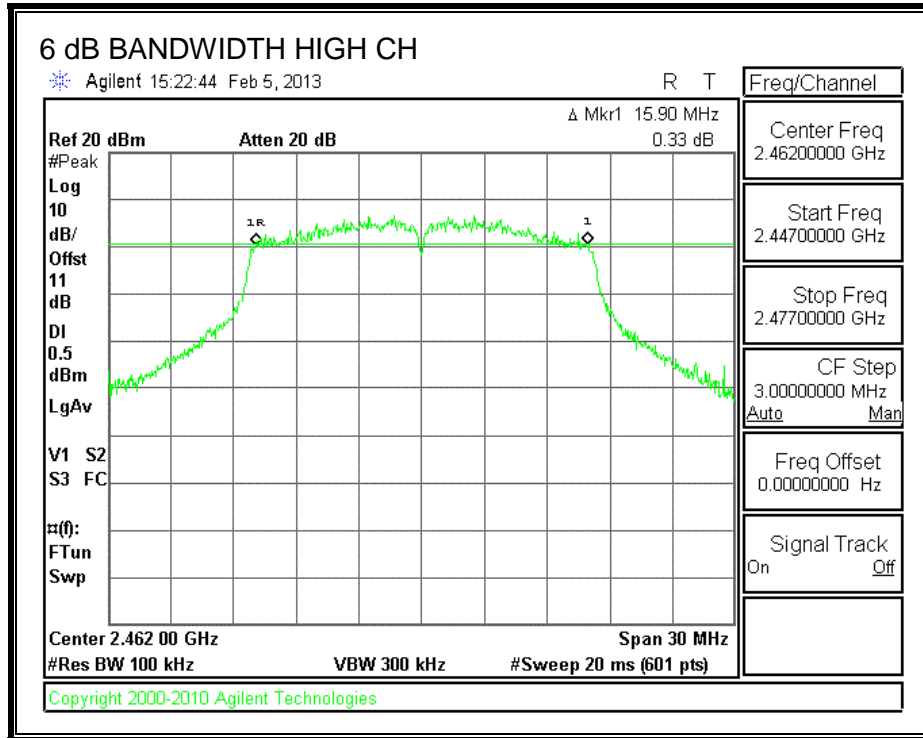
The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer with the RBW set between 1% and 5% of the EBW, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.100	0.5
Mid	2437	15.150	0.5
High	2462	15.900	0.5



8.2.2. 99% BANDWIDTH

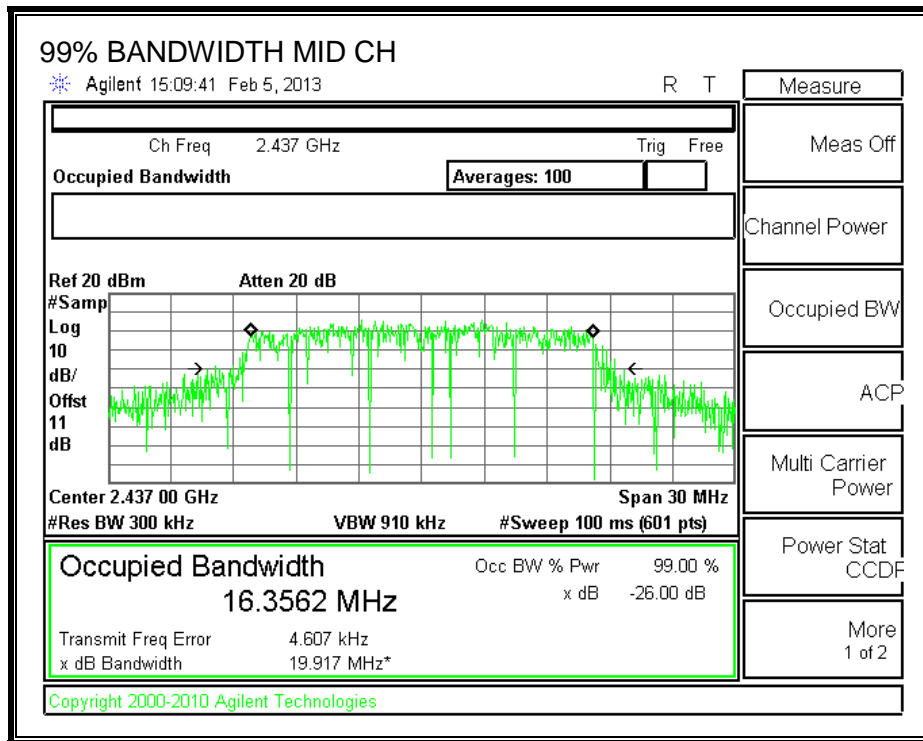
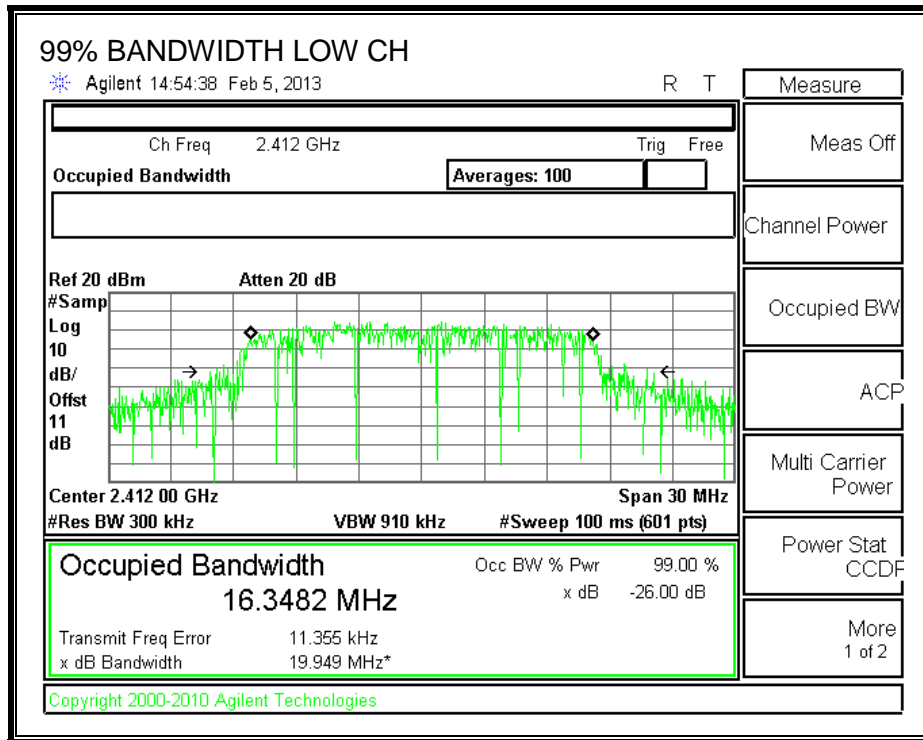
LIMITS

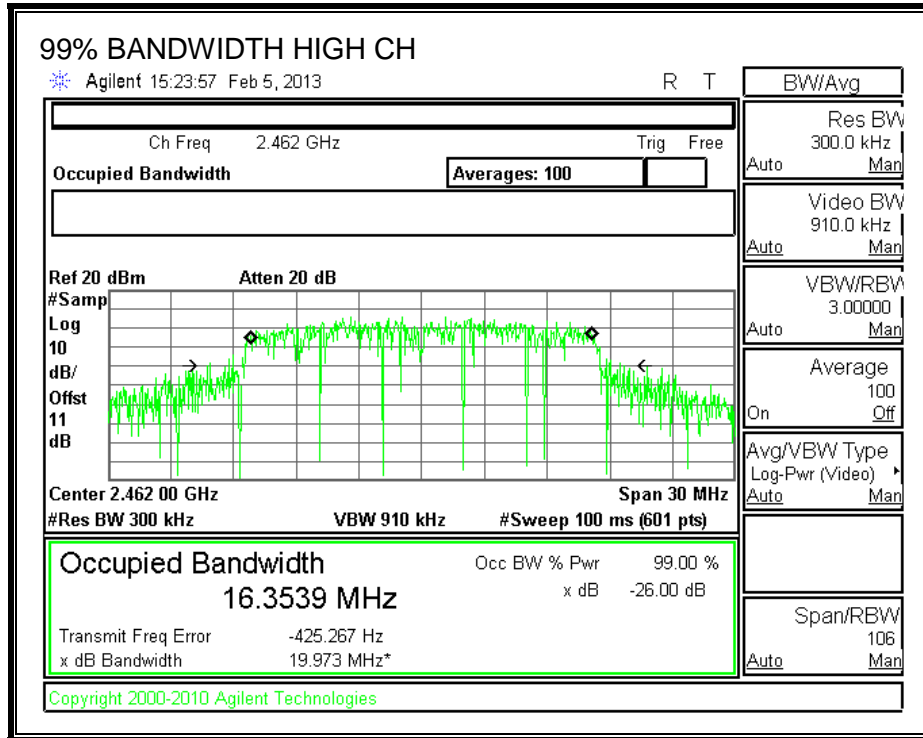
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.3482
Mid	2437	16.3562
High	2462	16.3539

99% BANDWIDTH





8.2.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	2412	13.45
Mid	2437	13.63
High	2462	13.79

8.2.4. MAXIMUM OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

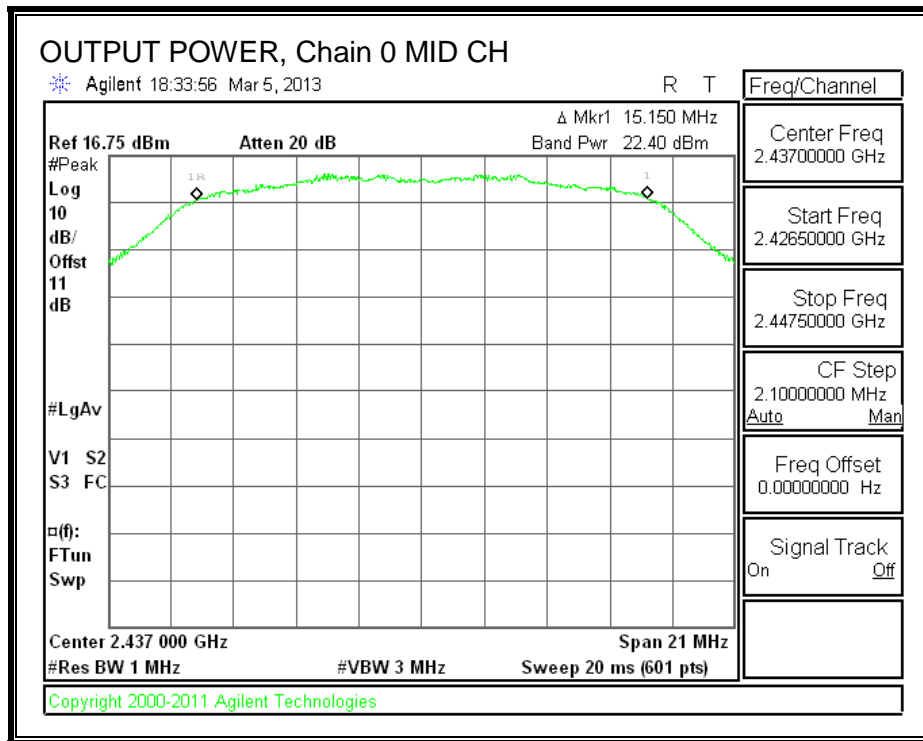
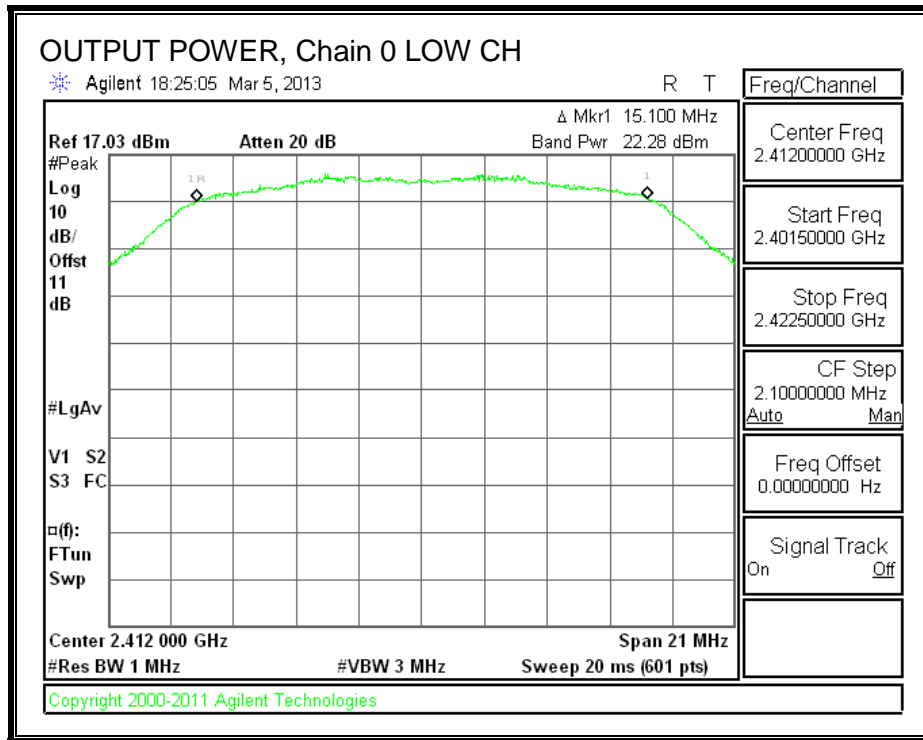
Limits

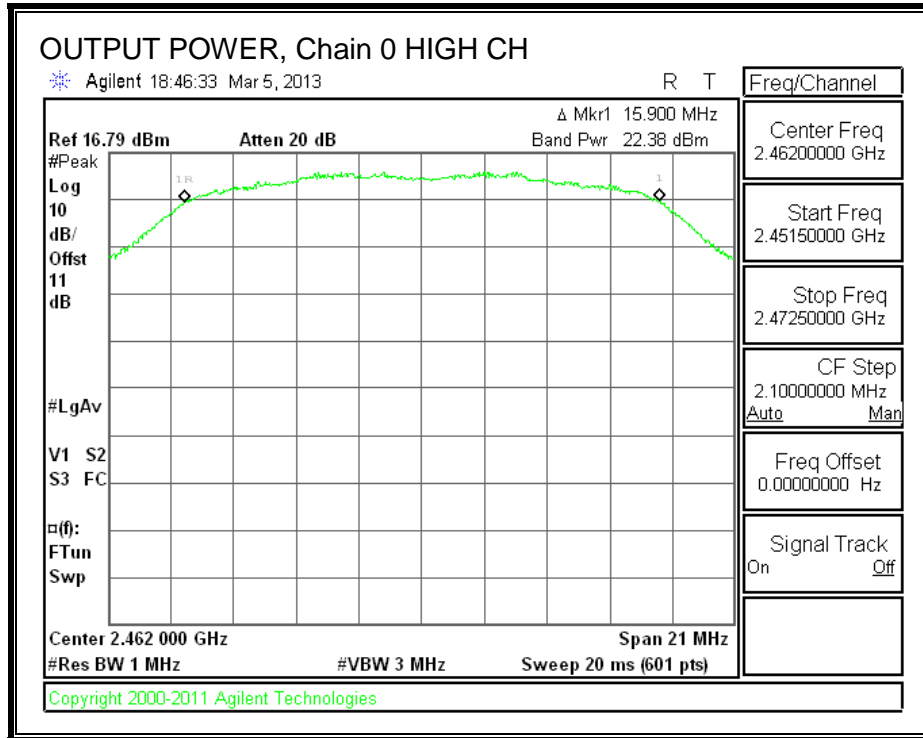
Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.50	30.00	30	36	30.00
Mid	2437	2.50	30.00	30	36	30.00
High	2462	2.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	22.28	22.28	30.00	-7.72
Mid	2437	22.40	22.40	30.00	-7.60
High	2462	22.38	22.38	30.00	-7.62

OUTPUT POWER, Chain 0





8.2.5. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

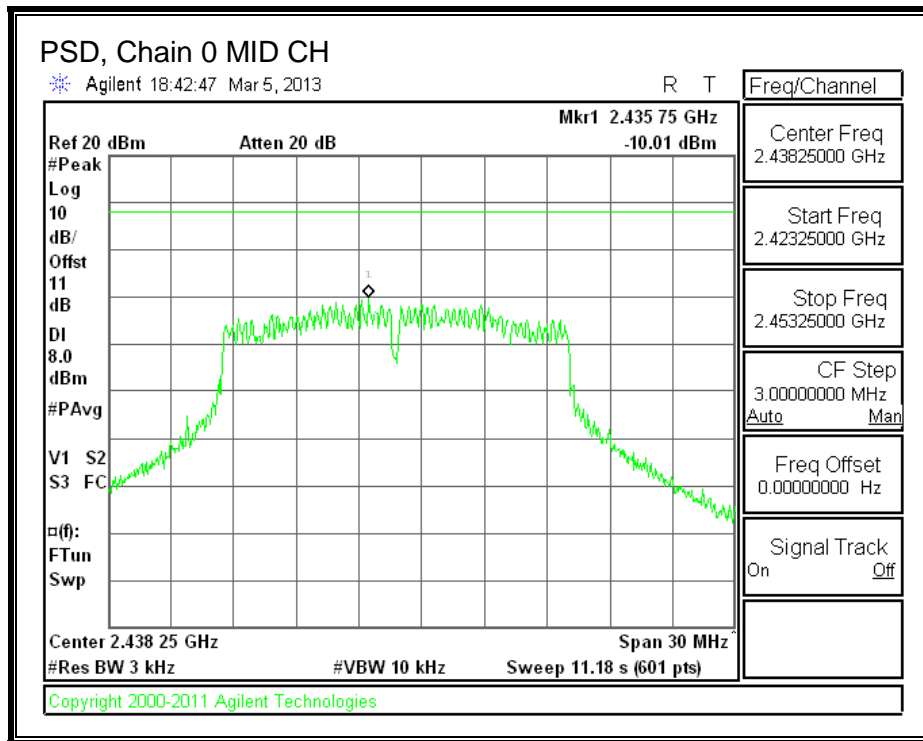
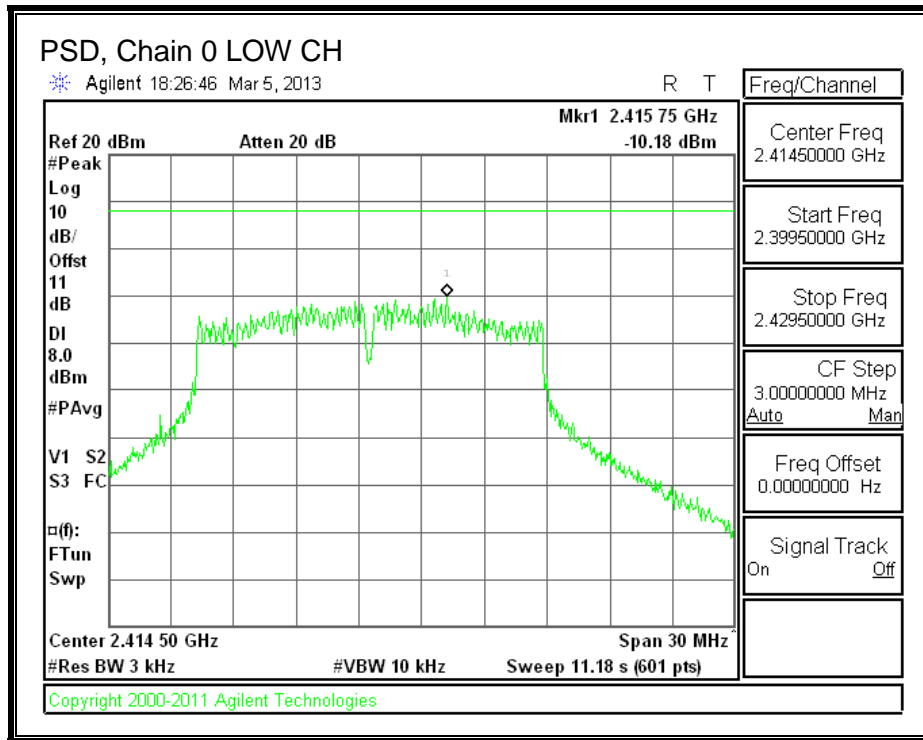
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

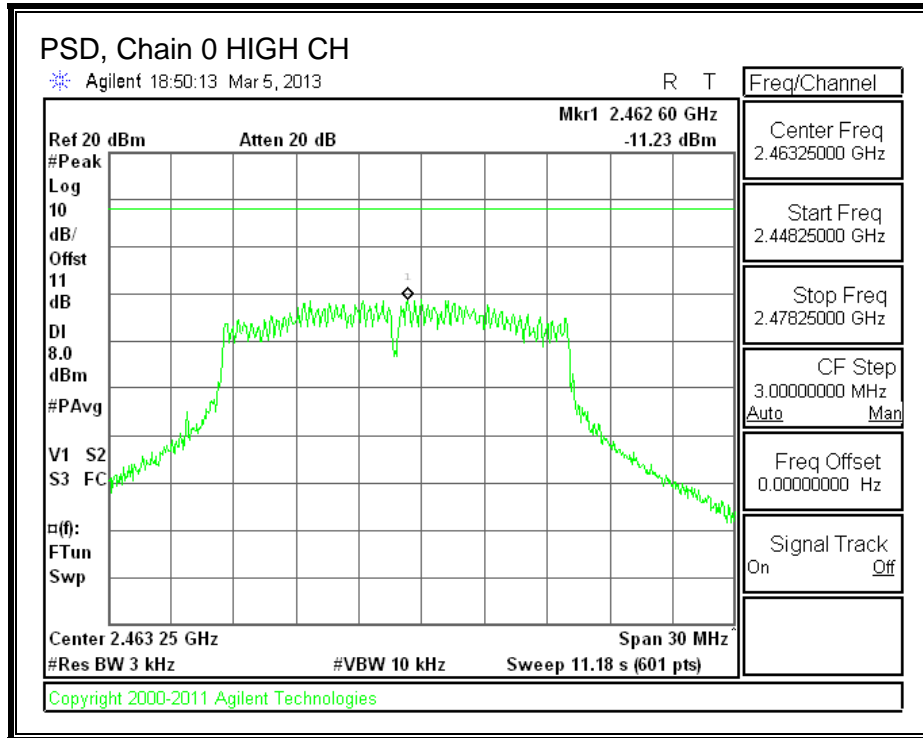
RESULTS

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.18	8.0	-18.2
Mid	2437	-10.01	8.0	-18.0
High	2462	-11.23	8.0	-19.2

PSD, Chain 0





8.2.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

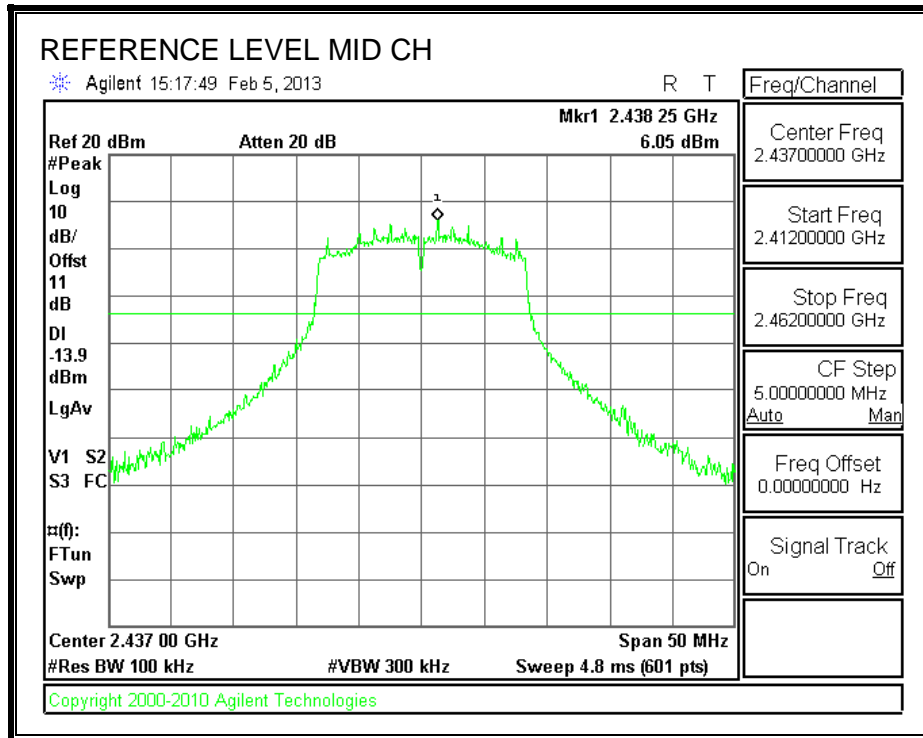
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

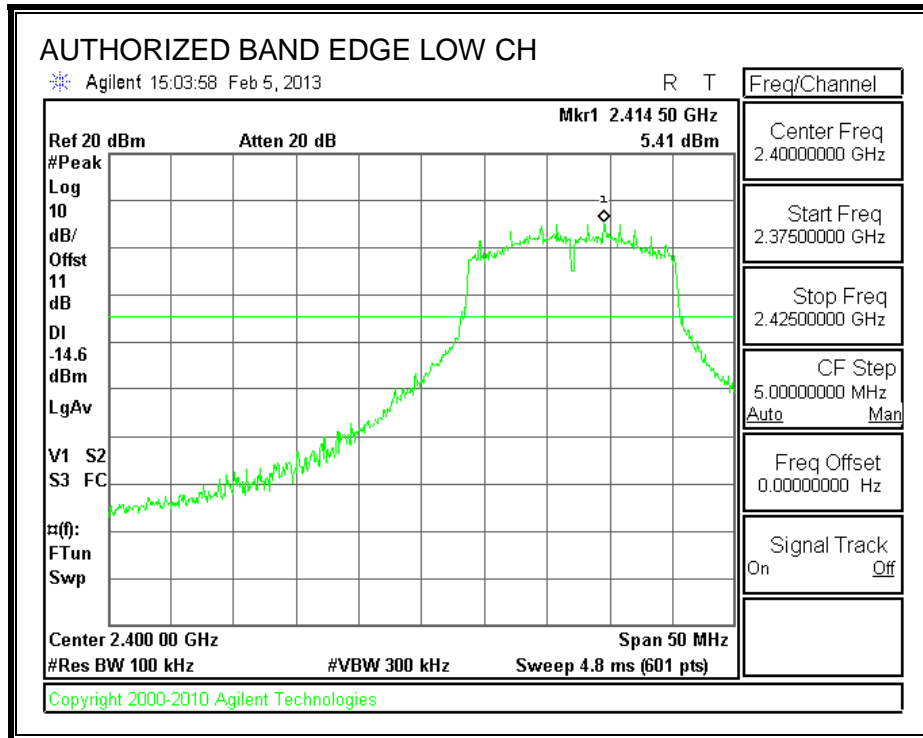
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

RESULTS

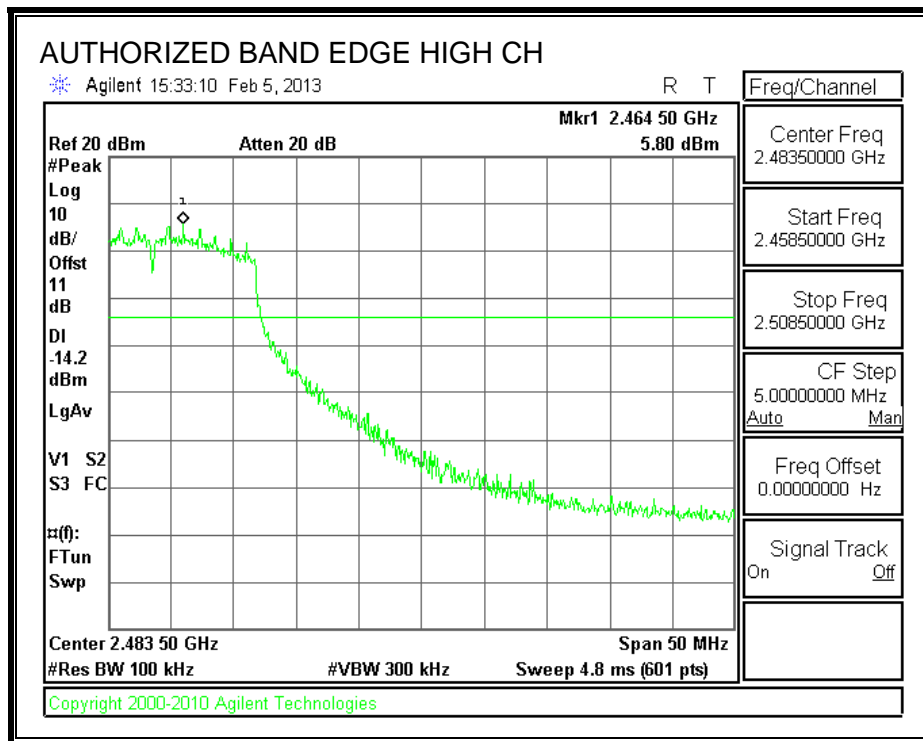
IN-BAND REFERENCE LEVEL



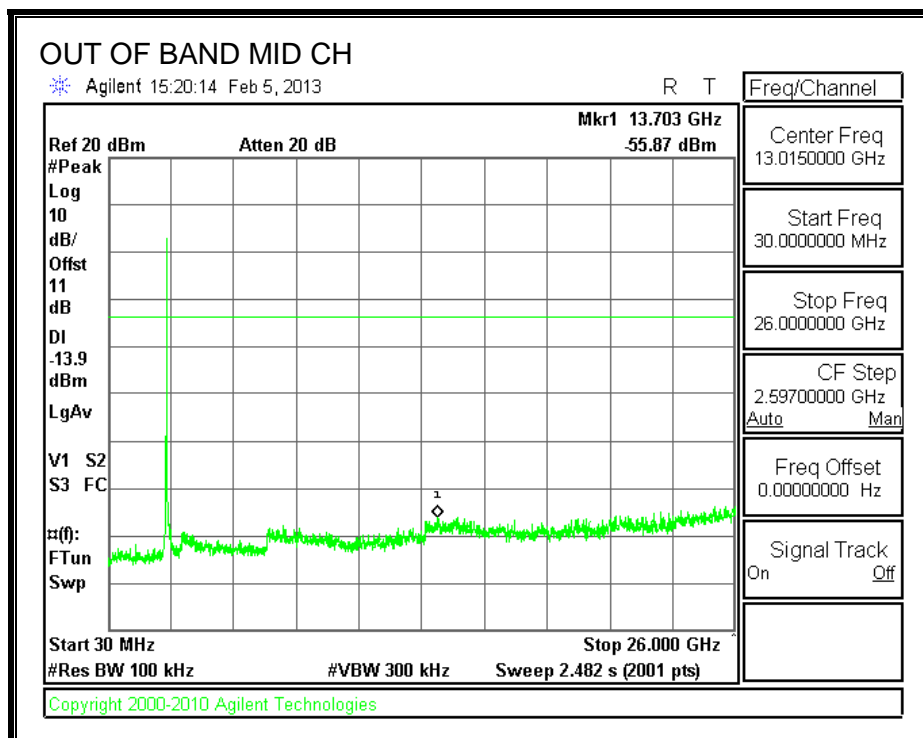
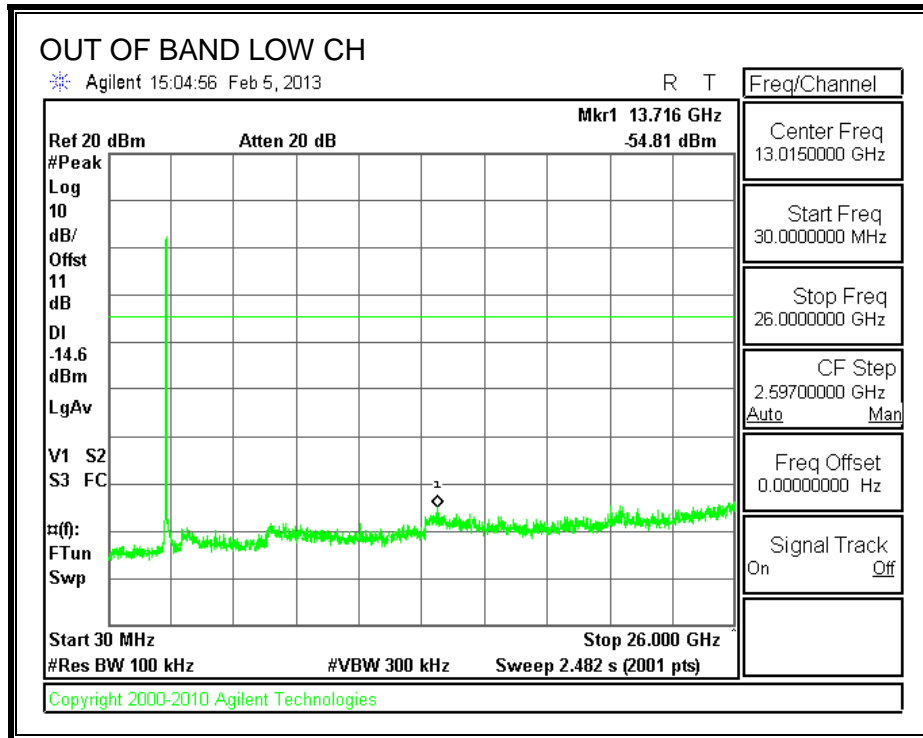
LOW CHANNEL BANDEDGE

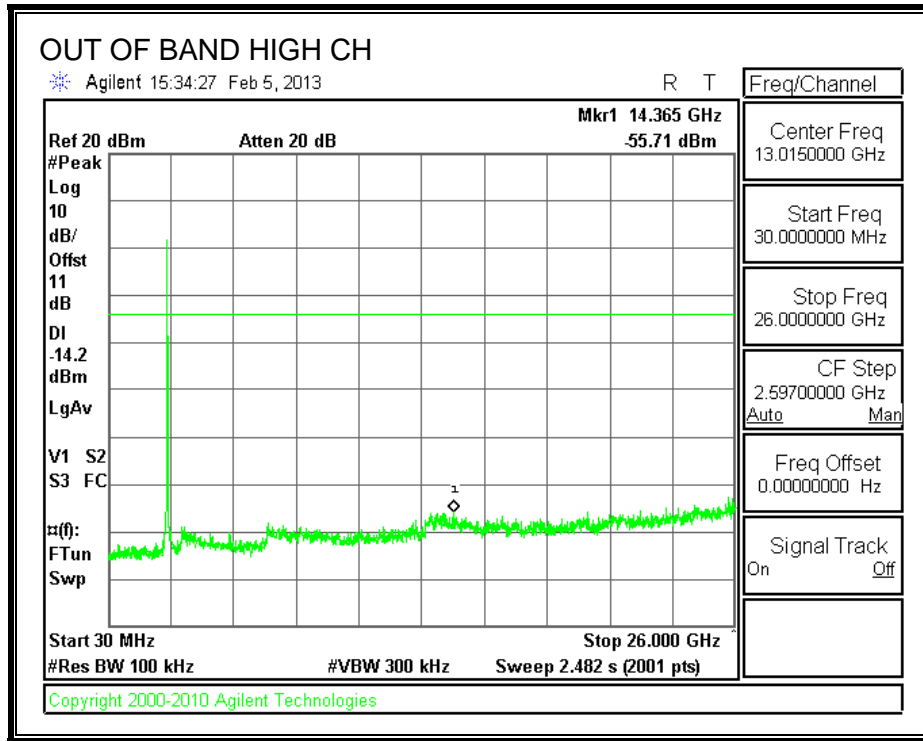


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS





8.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

8.3.1. 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.

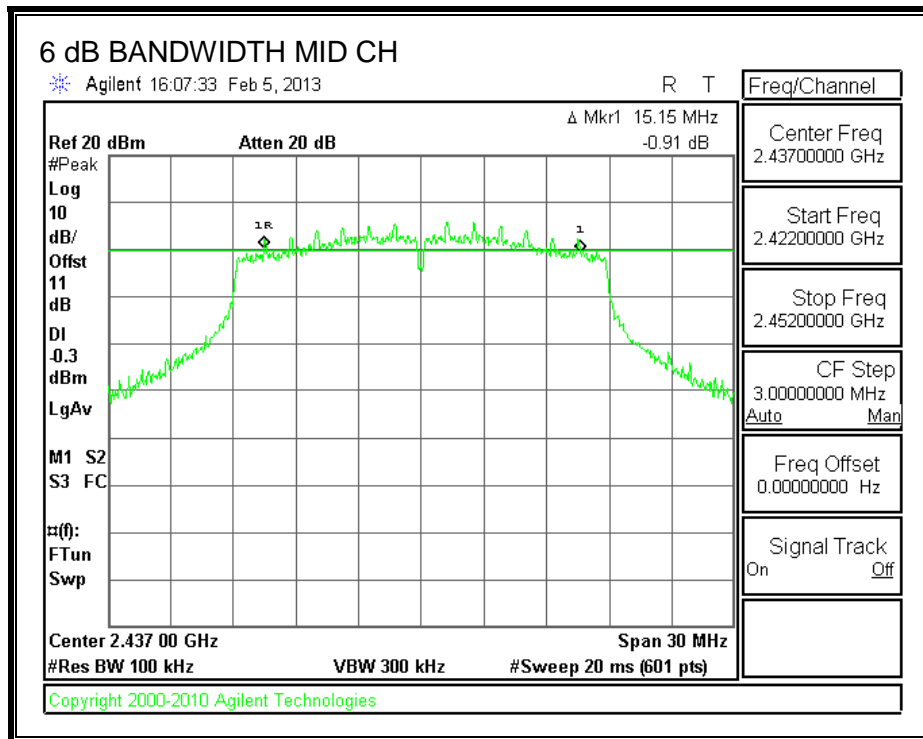
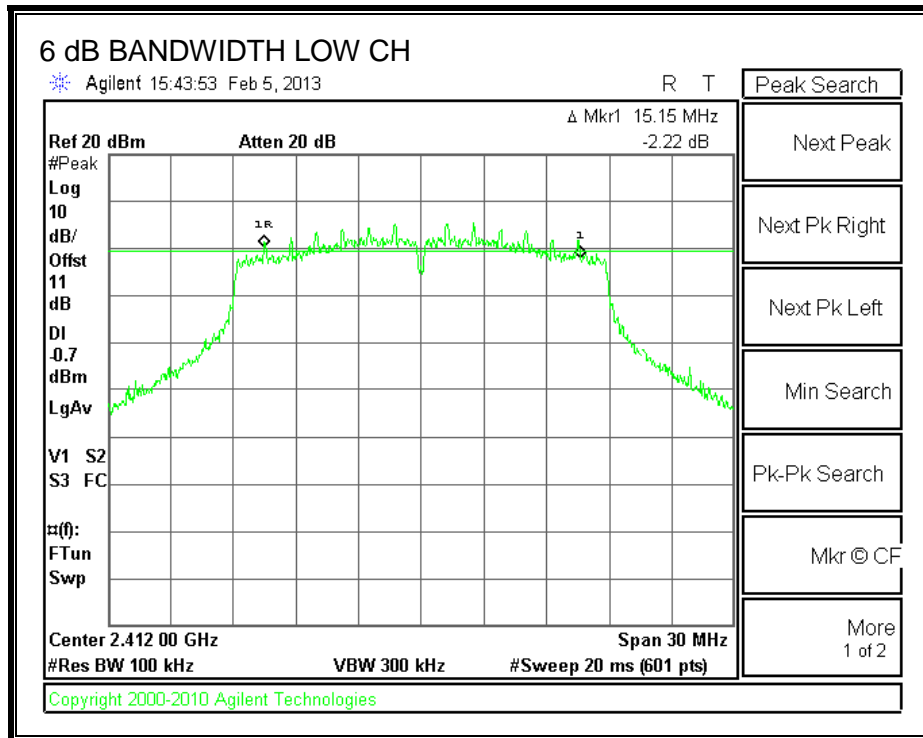
TEST PROCEDURE

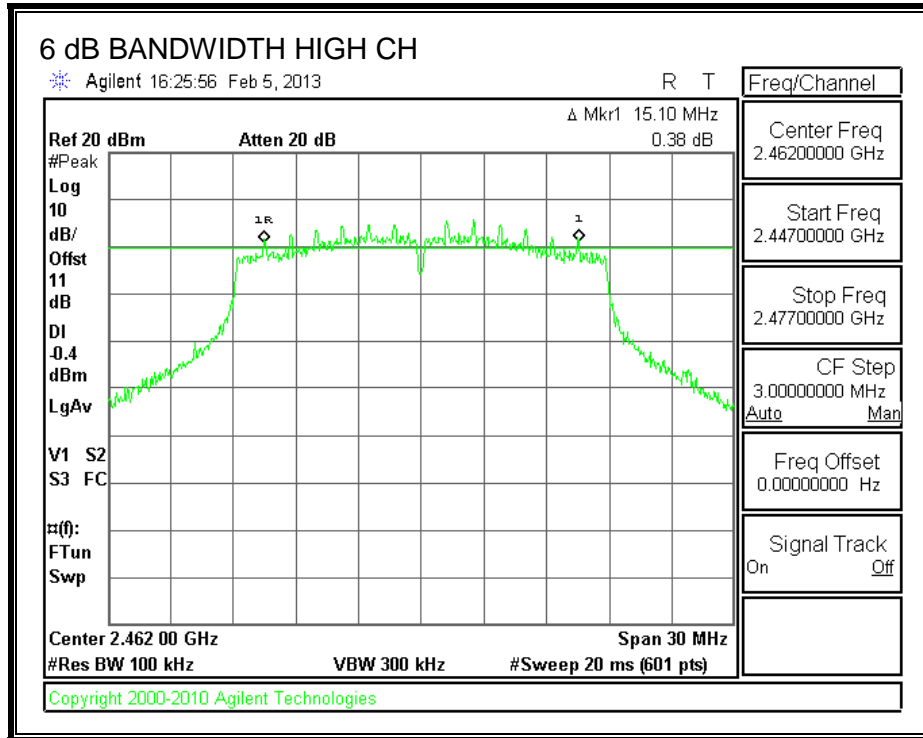
The transmitter output is connected to a spectrum analyzer with the RBW set between 1% and 5% of the EBW, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.150	0.5
Mid	2437	15.150	0.5
High	2462	15.100	0.5

6 dB BANDWIDTH





8.3.2. 99% BANDWIDTH

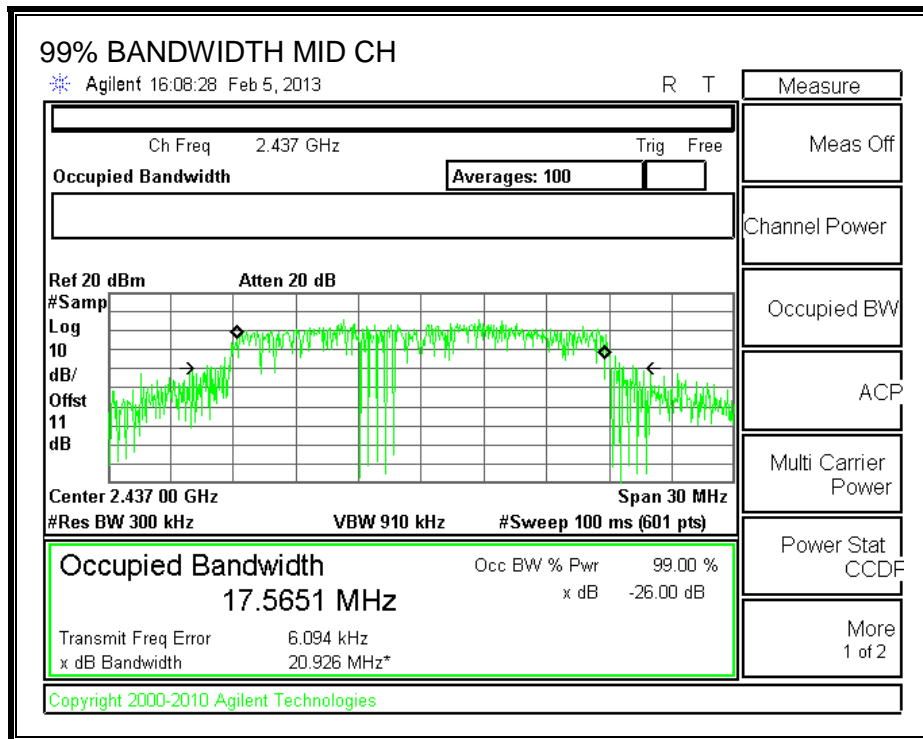
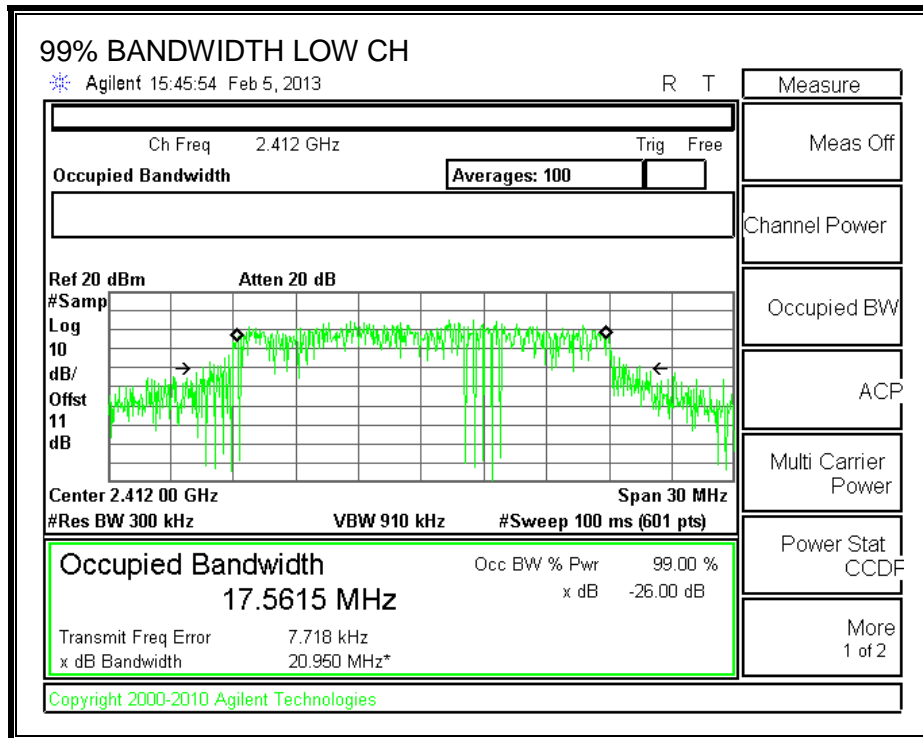
LIMITS

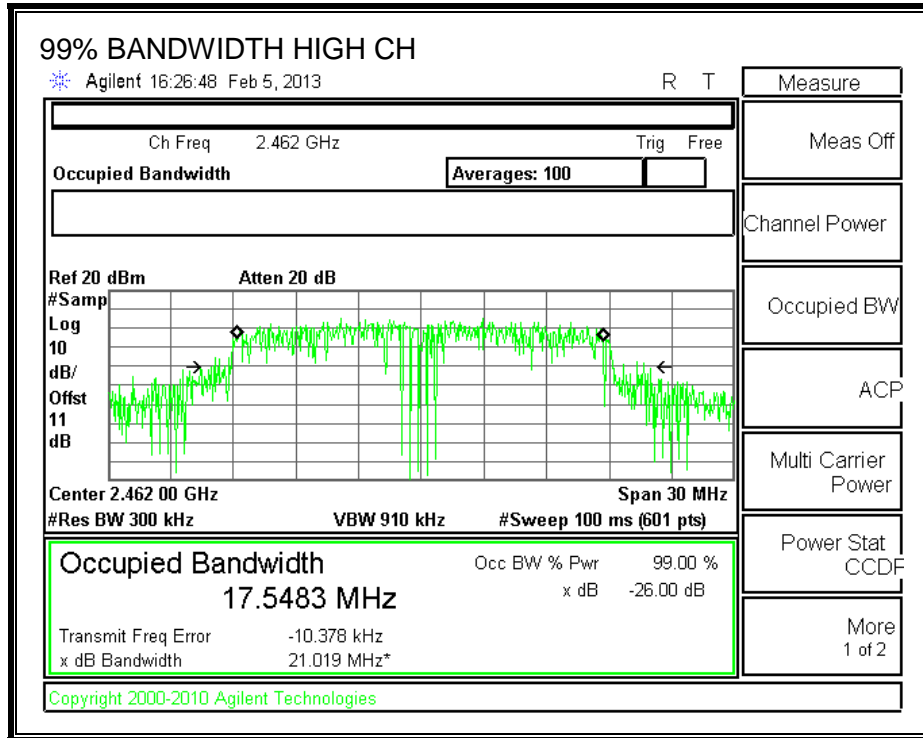
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.5615
Mid	2437	17.5651
High	2462	17.5483

99% BANDWIDTH





8.3.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	2412	13.55
Mid	2437	13.61
High	2462	13.51

8.3.4. MAXIMUM OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

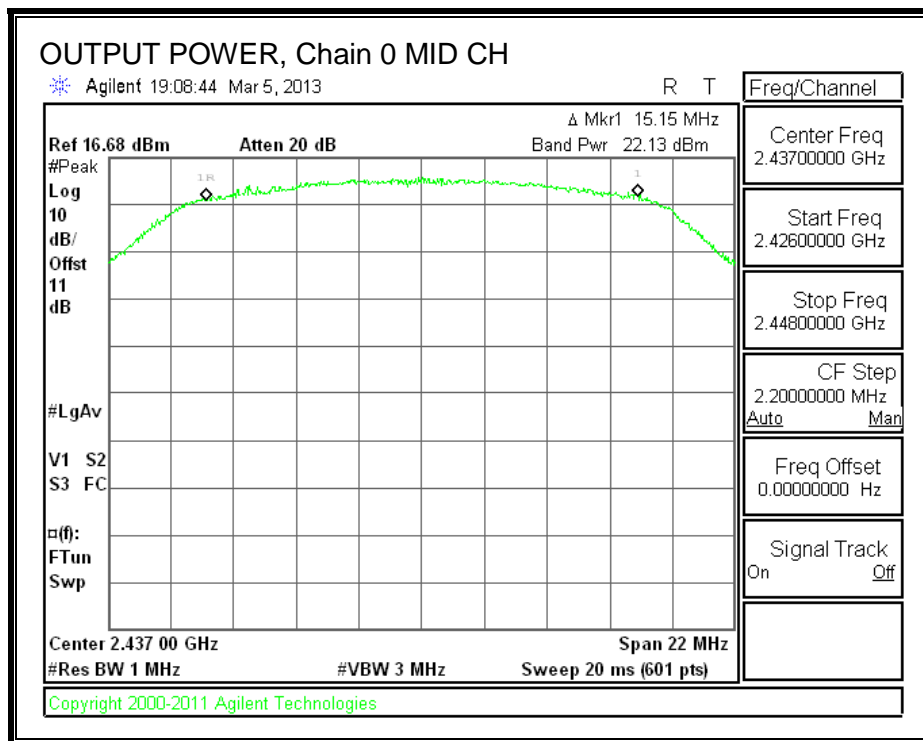
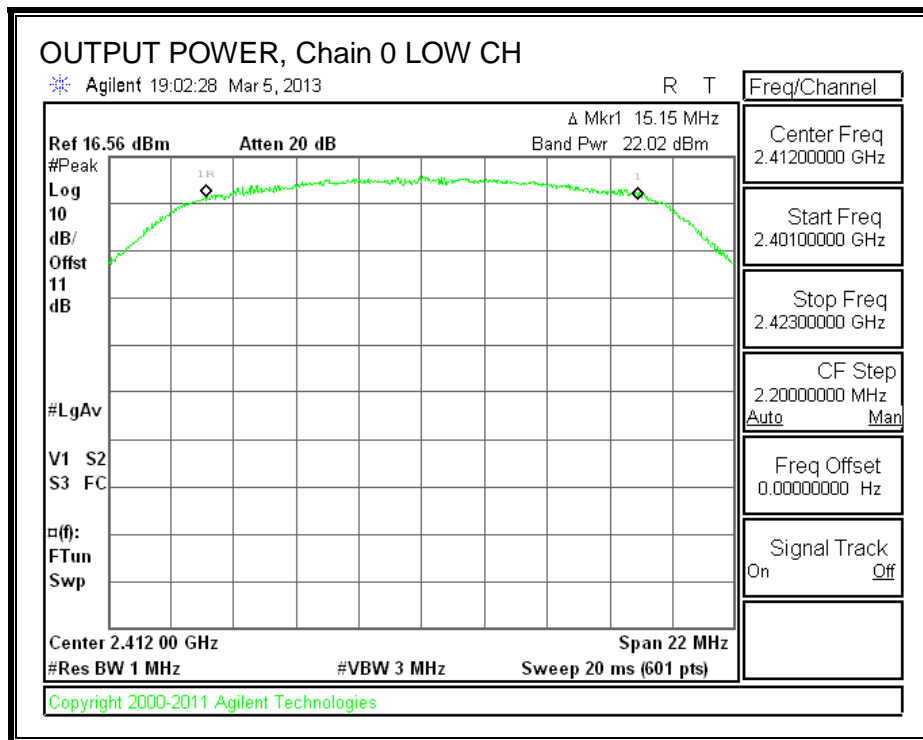
Limits

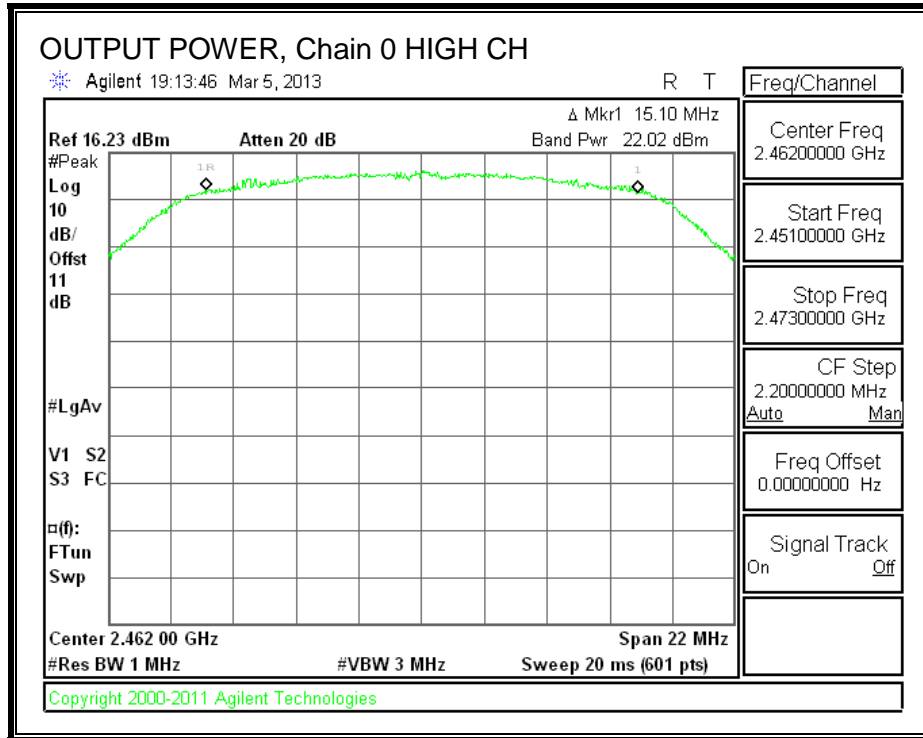
Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.50	30.00	30	36	30.00
Mid	2437	2.50	30.00	30	36	30.00
High	2462	2.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	22.02	22.02	30.00	-7.98
Mid	2437	22.13	22.13	30.00	-7.87
High	2462	22.02	22.02	30.00	-7.98

OUTPUT POWER, Chain 0





8.3.5. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

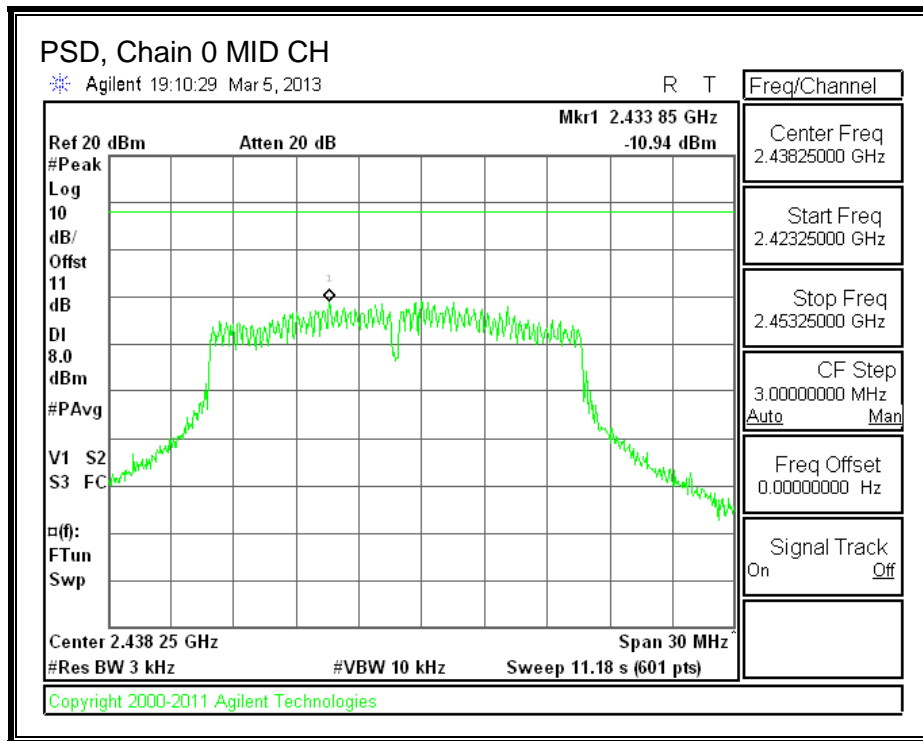
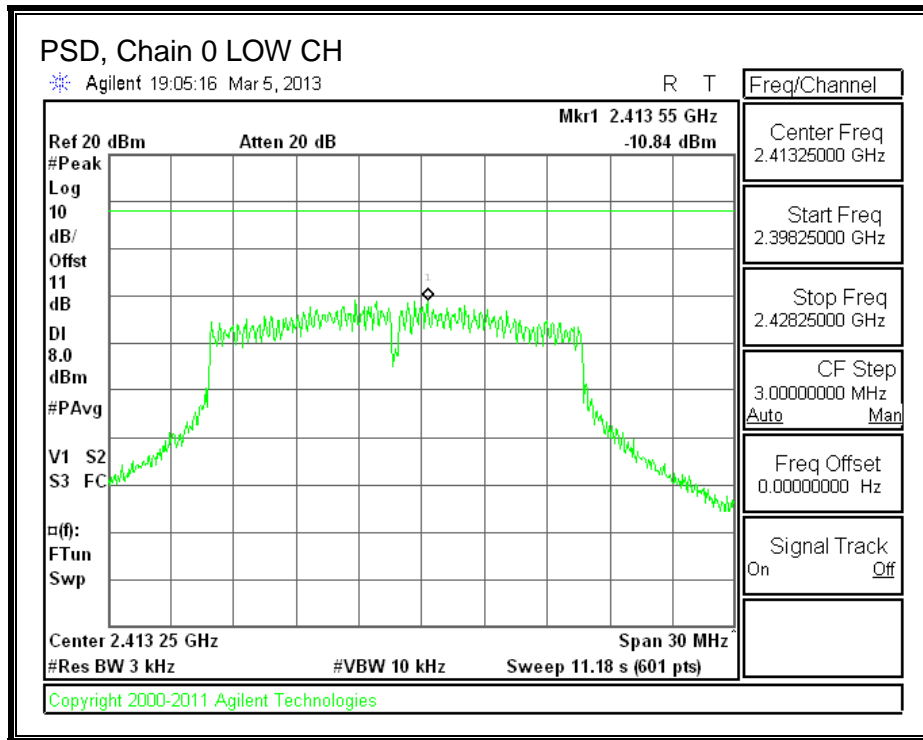
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

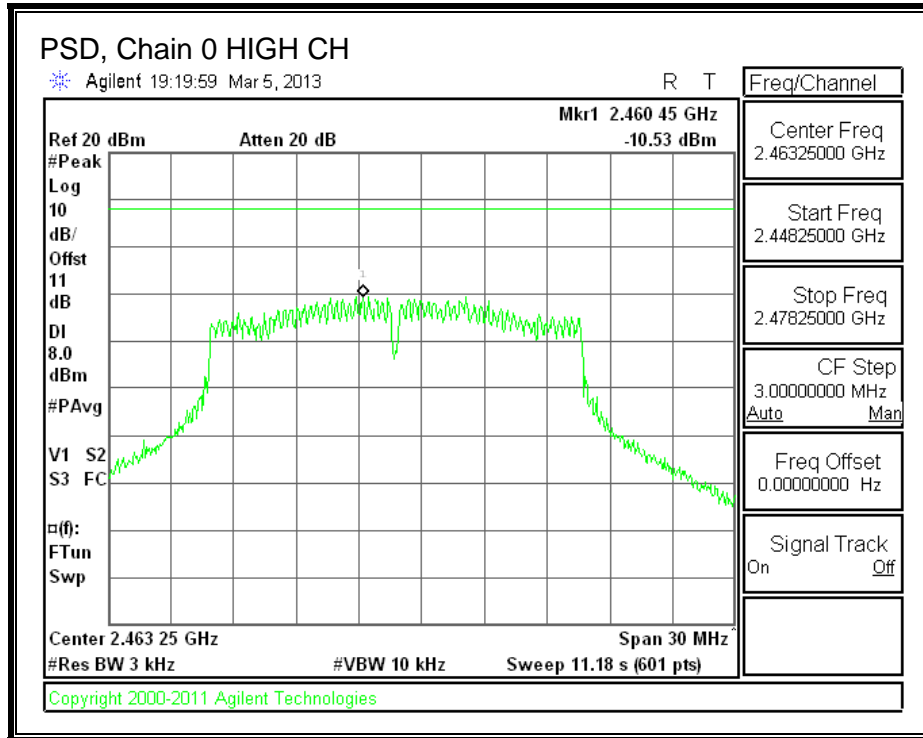
RESULTS

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.84	8.0	-18.8
Mid	2437	-10.94	8.0	-18.9
High	2462	-10.53	8.0	-18.5

PSD, Chain 0





8.3.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

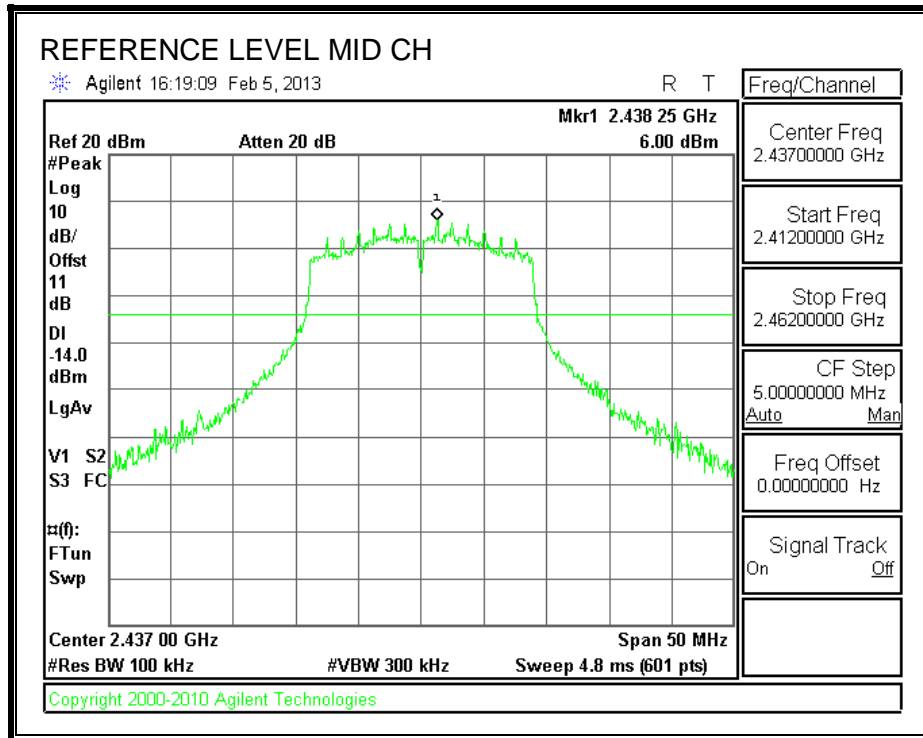
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

TEST PROCEDURE

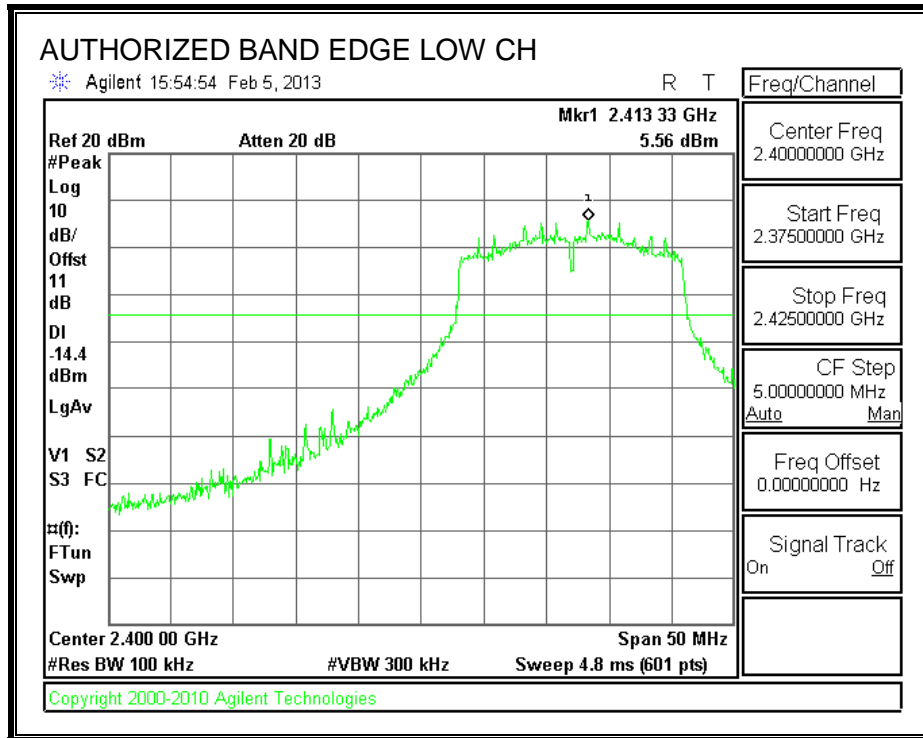
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

RESULTS

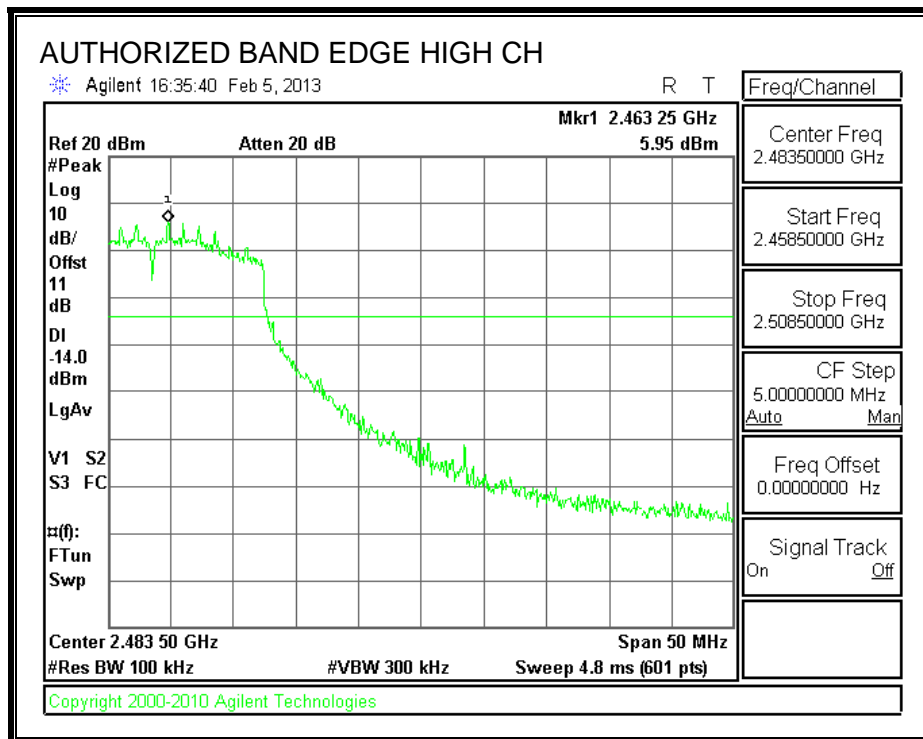
IN-BAND REFERENCE LEVEL



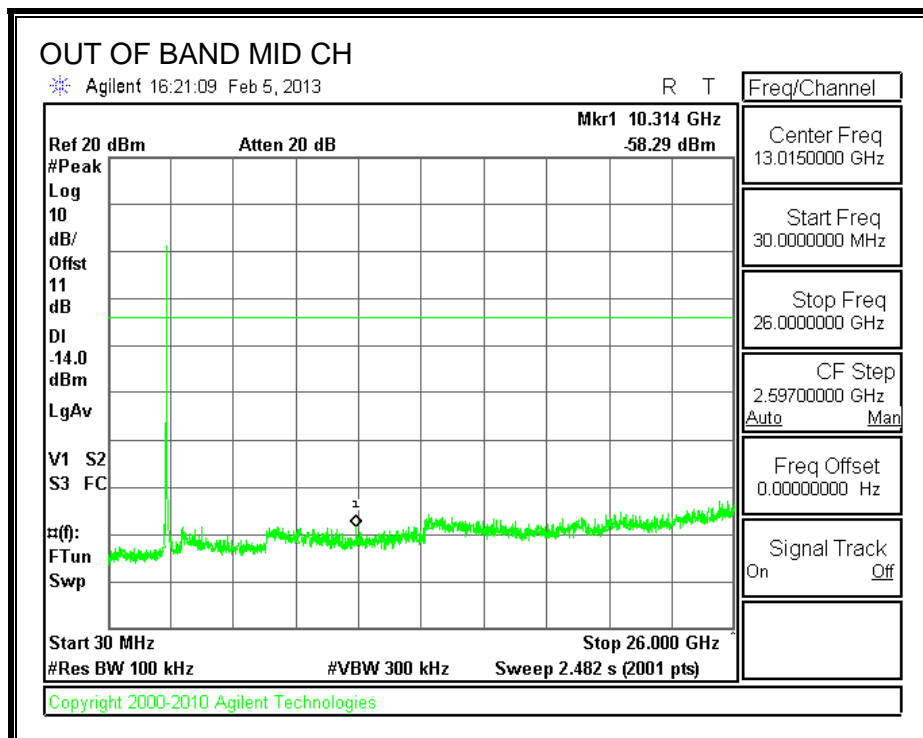
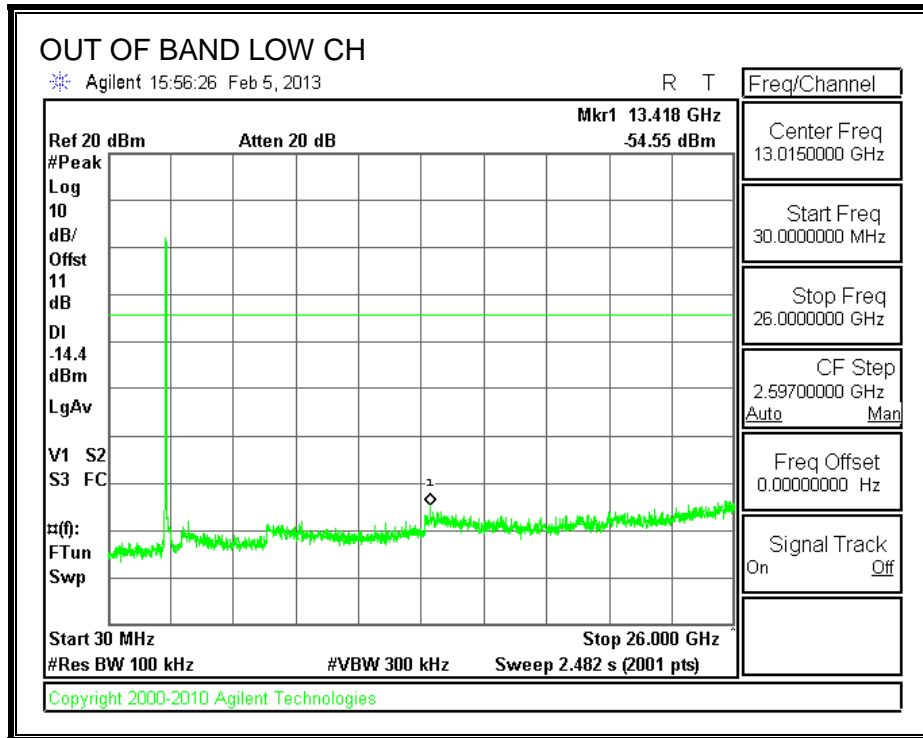
LOW CHANNEL BANDEDGE

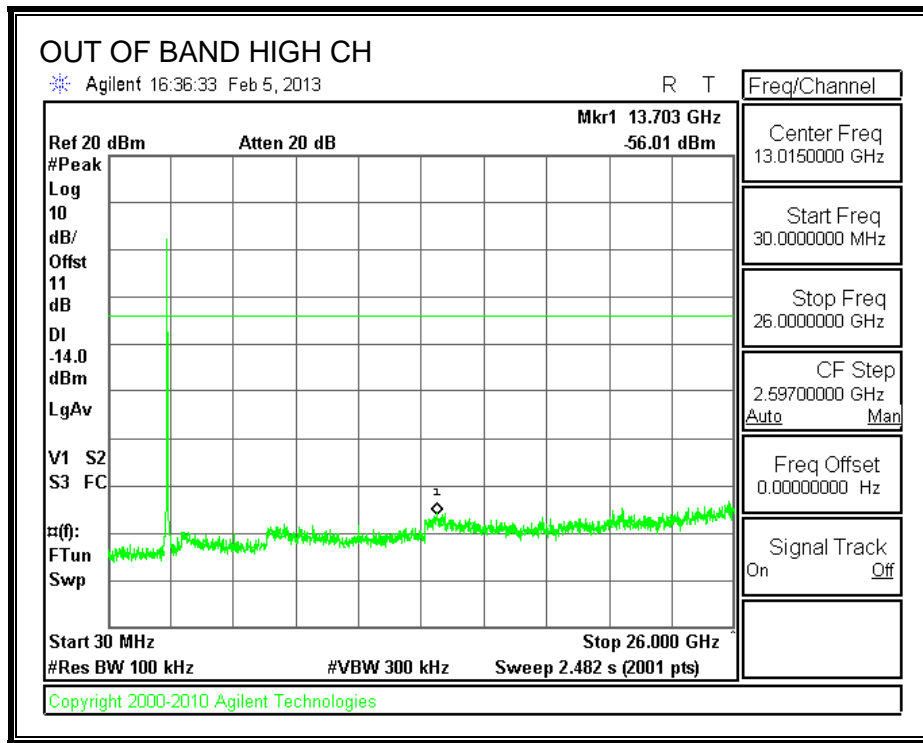


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS





9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

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.

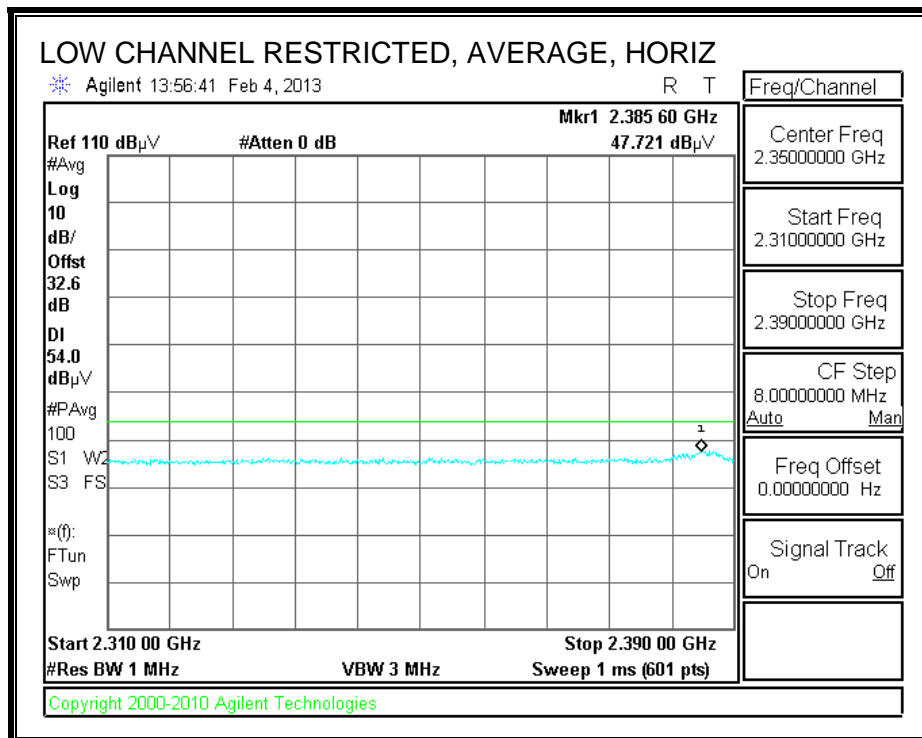
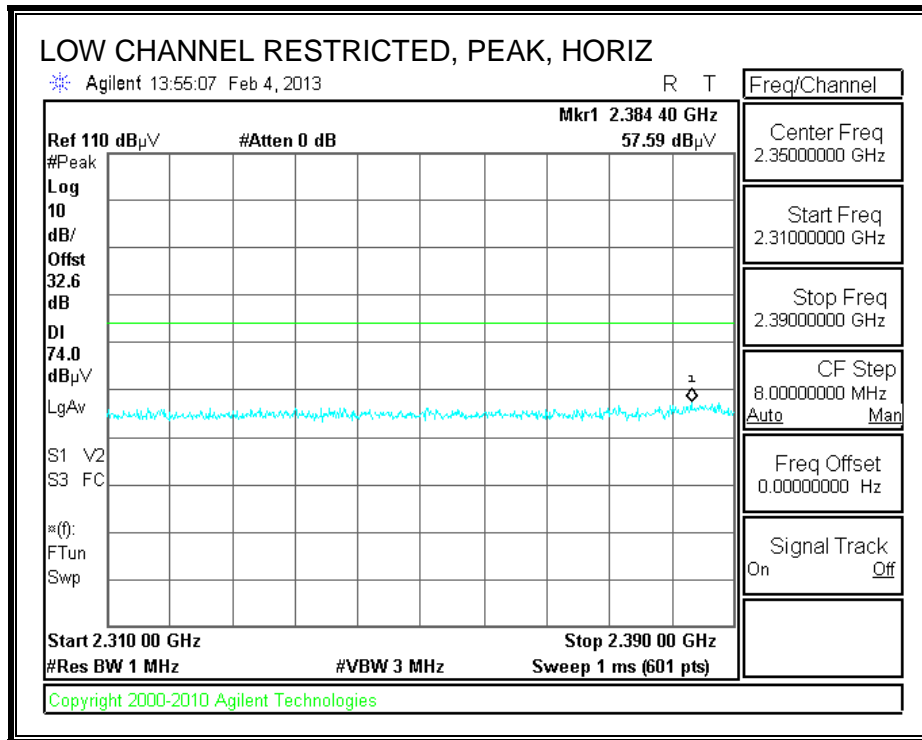
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 1 MHz for peak measurements and as applicable for average measurements.

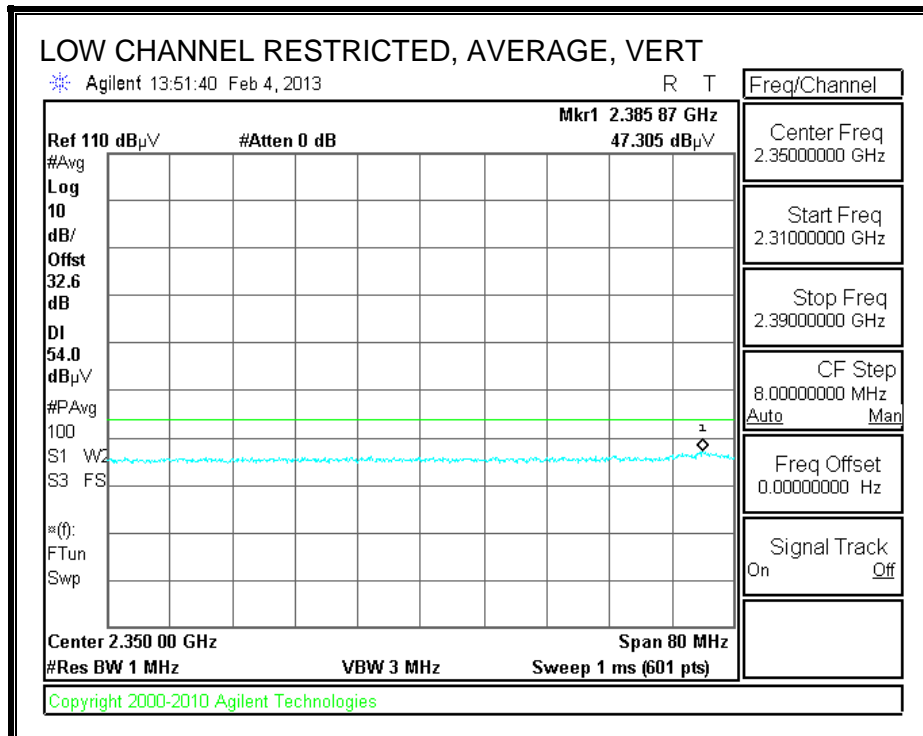
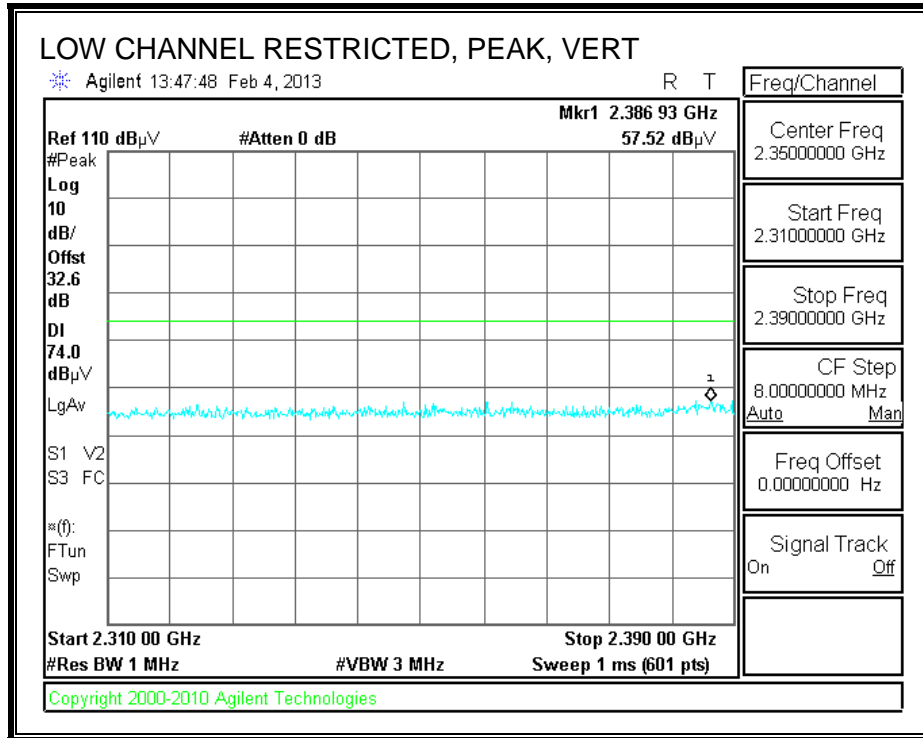
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

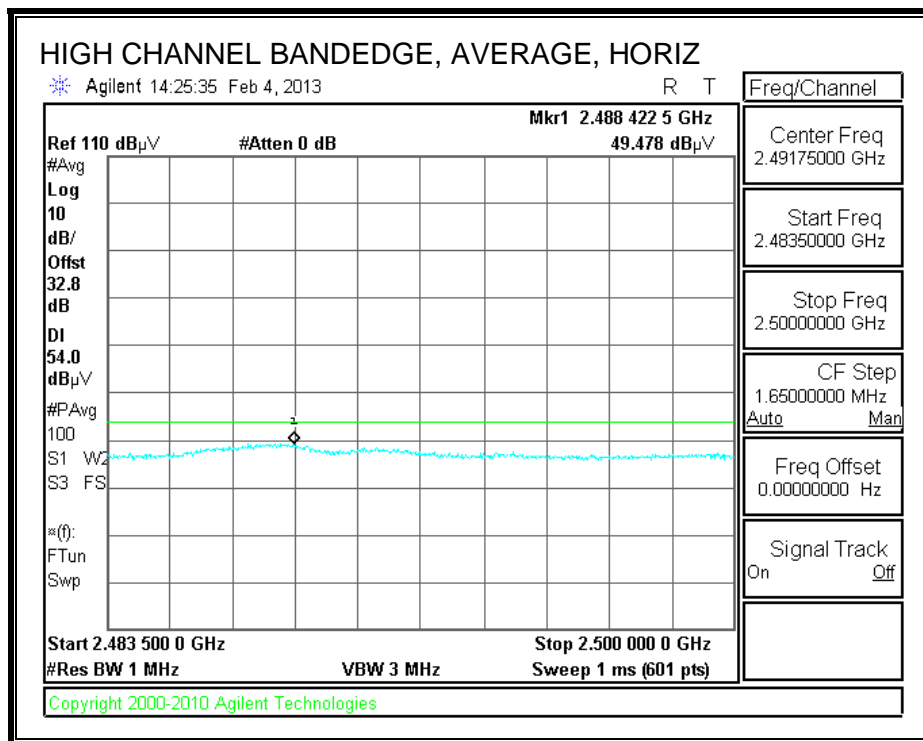
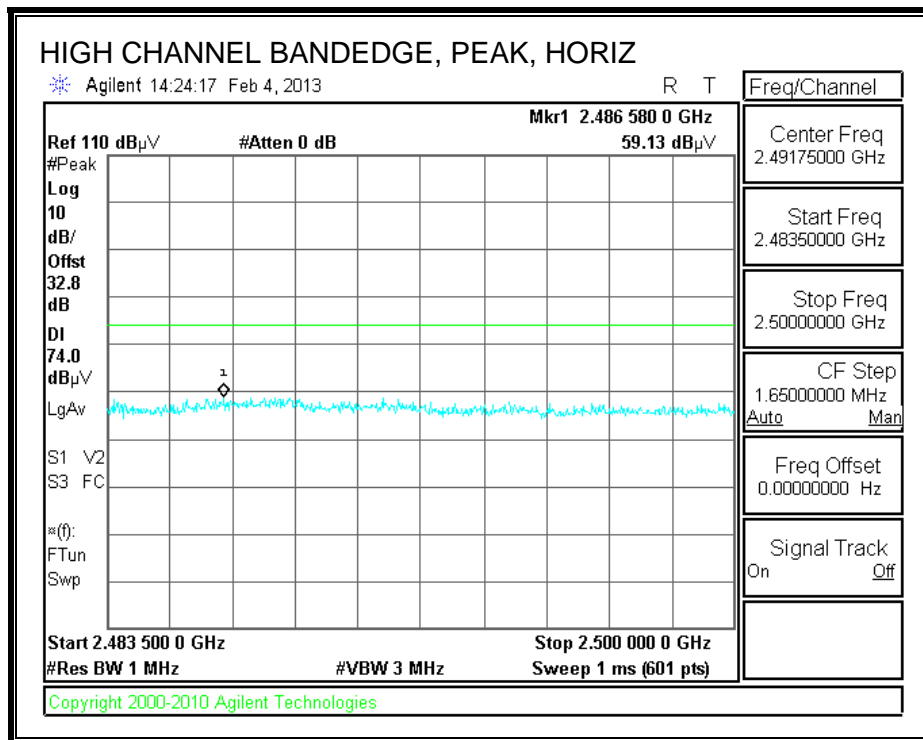
9.2. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

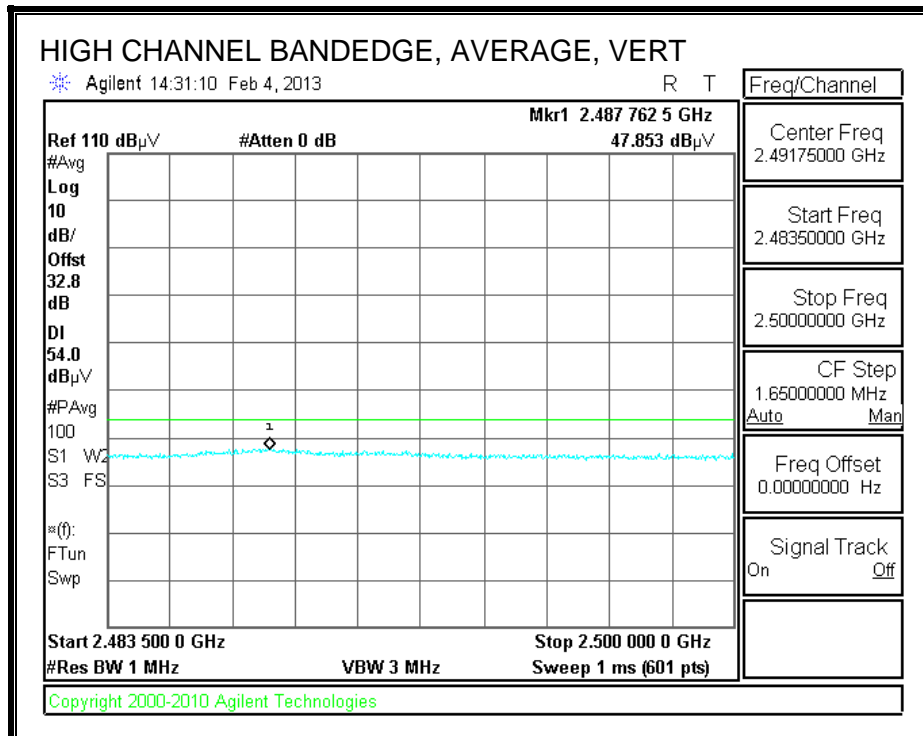
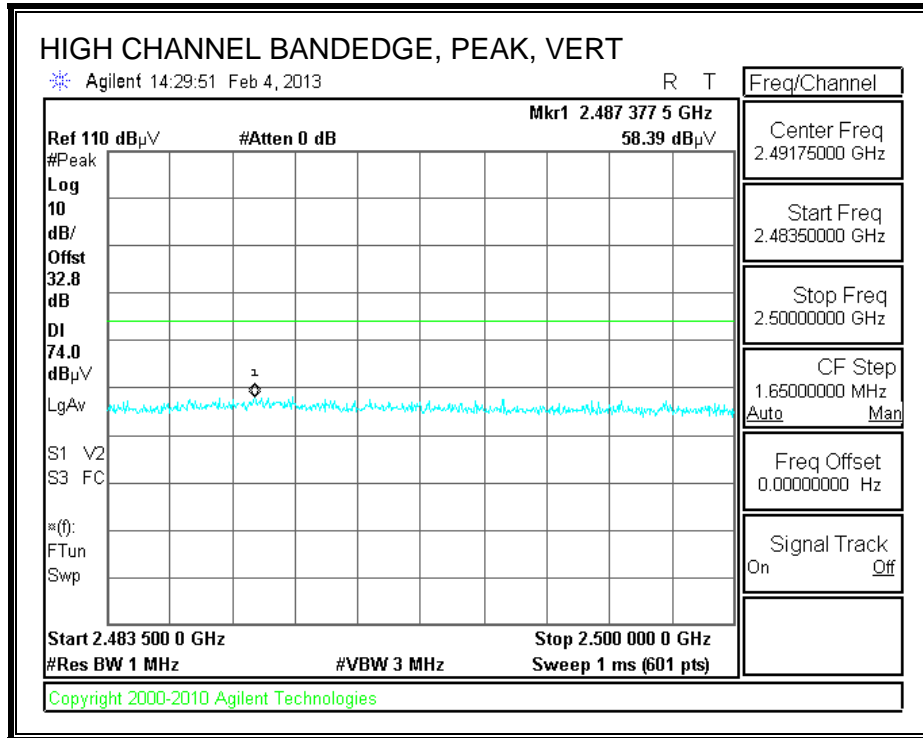
RESTRICTED BANDEDGE (LOW CHANNEL)





AUTHORIZED BANDEDGE (HIGH CHANNEL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
 Date: 02/05/13
 Project #: 12U14748
 Company: Intel Inc.
 Test Target: FCC Class B
 Mode Oper: 802.11b, TX 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

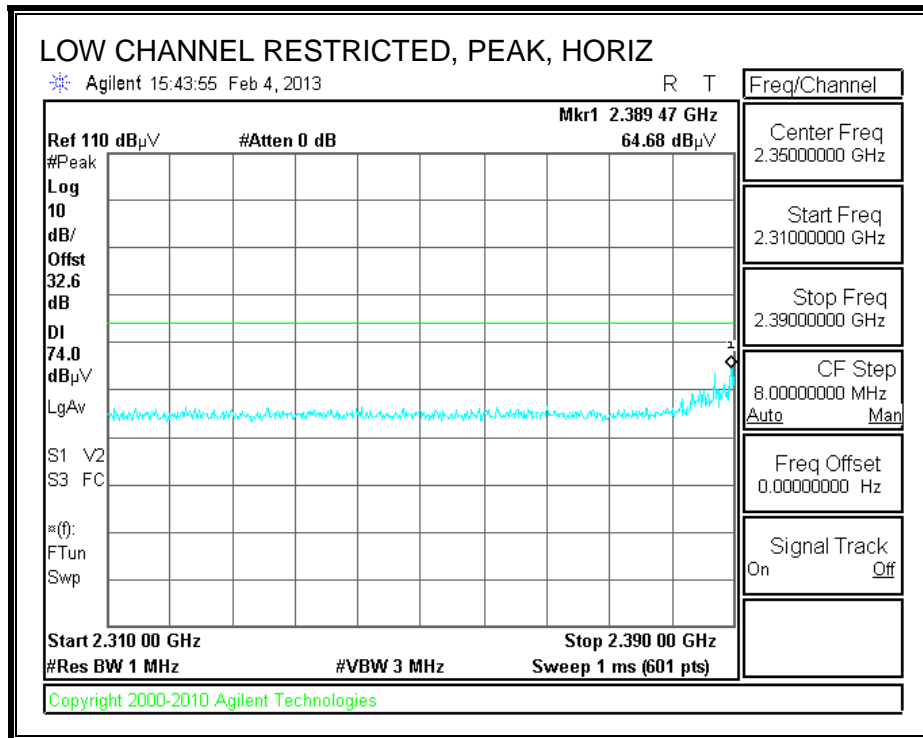
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz													
4.824	3.0	36.9	33.1	6.8	-34.1	0.0	0.0	42.8	74.0	-31.2	V	P	
4.824	3.0	26.5	33.1	6.8	-34.1	0.0	0.0	32.3	54.0	-21.7	V	A	
4.824	3.0	36.6	33.1	6.8	-34.1	0.0	0.0	42.5	74.0	-31.5	H	P	
4.824	3.0	26.4	33.1	6.8	-34.1	0.0	0.0	32.3	54.0	-21.7	H	A	
2437 MHz													
4.874	3.0	36.1	33.2	6.8	-34.0	0.0	0.0	42.0	74.0	-32.0	H	P	
4.874	3.0	25.8	33.2	6.8	-34.0	0.0	0.0	31.8	54.0	-22.2	H	A	
4.874	3.0	36.1	33.2	6.8	-34.0	0.0	0.0	42.0	74.0	-32.0	V	P	
4.874	3.0	25.9	33.2	6.8	-34.0	0.0	0.0	31.8	54.0	-22.2	V	A	
2462 MHz 11b													
4.924	3.0	36.4	33.2	6.8	-34.0	0.0	0.0	42.5	74.0	-31.5	V	P	
4.924	3.0	30.8	33.2	6.8	-34.0	0.0	0.0	36.8	54.0	-17.2	V	A	
4.924	3.0	36.0	33.2	6.8	-34.0	0.0	0.0	42.0	74.0	-32.0	H	P	
4.924	3.0	25.8	33.2	6.8	-34.0	0.0	0.0	31.8	54.0	-22.2	H	A	

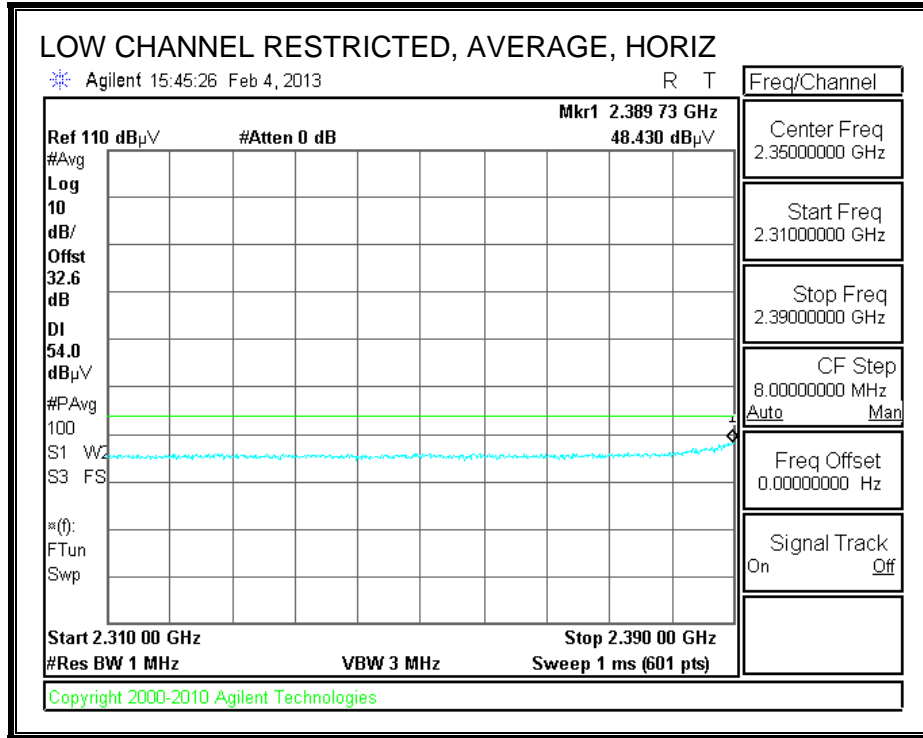
Rev. 4.1.2.7

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

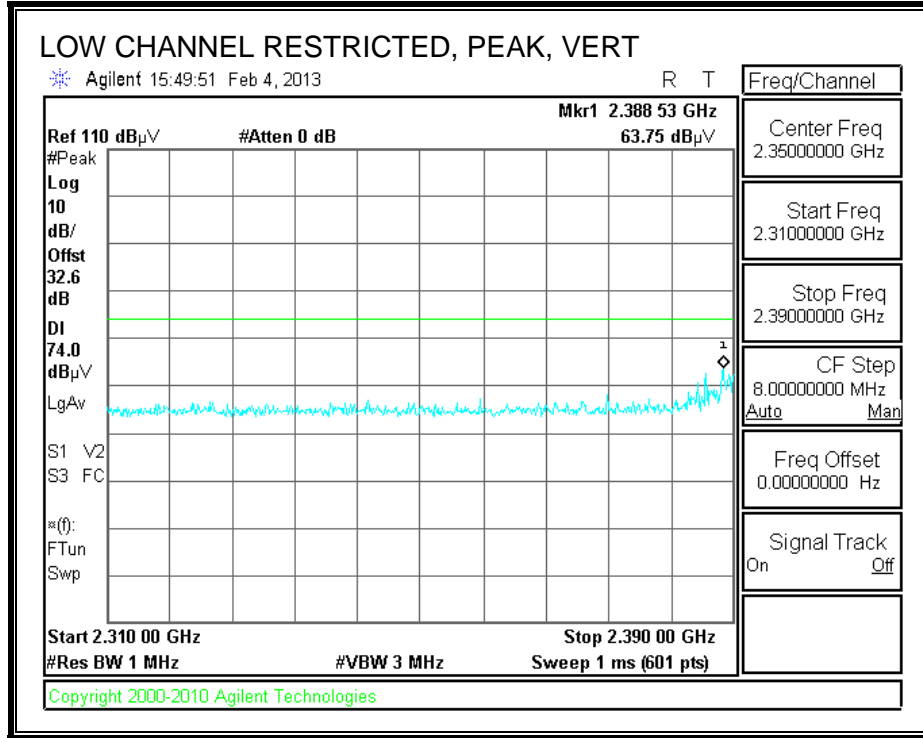
9.3. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

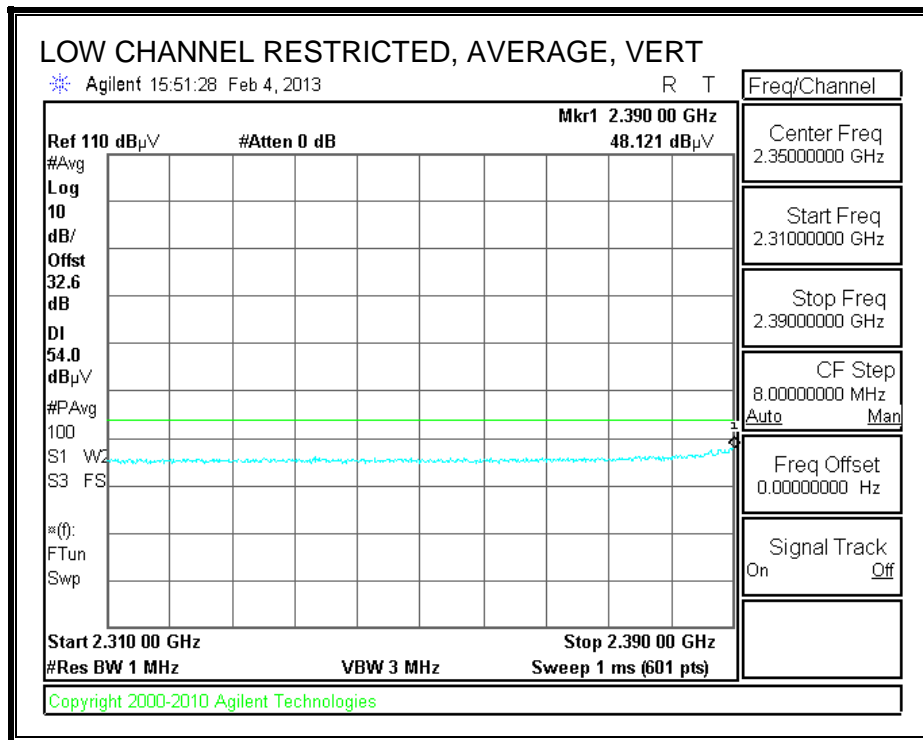
RESTRICTED BANDEDGE (LOW CHANNEL)





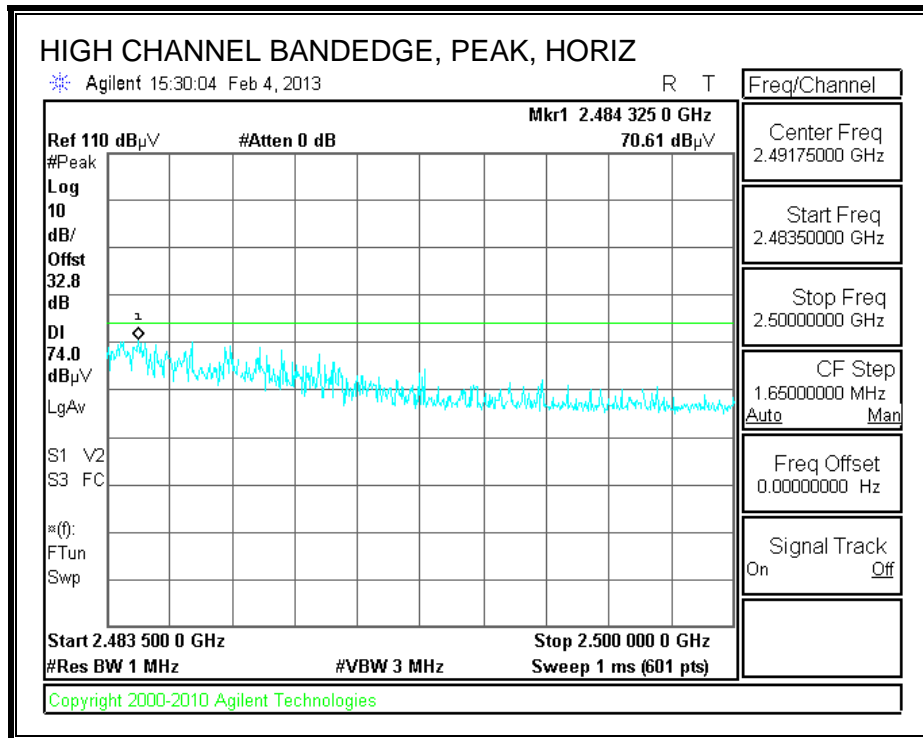
Actual Average = Measured Average + Correction Factor
 = 48.430 dBuV + 0.09
 = 48.52 dBuV

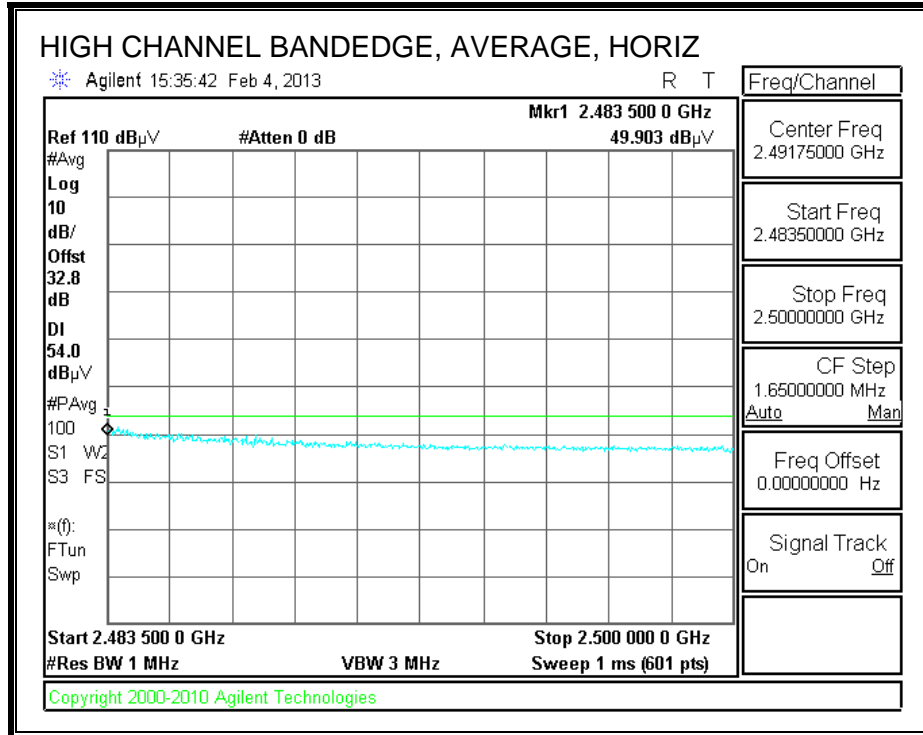




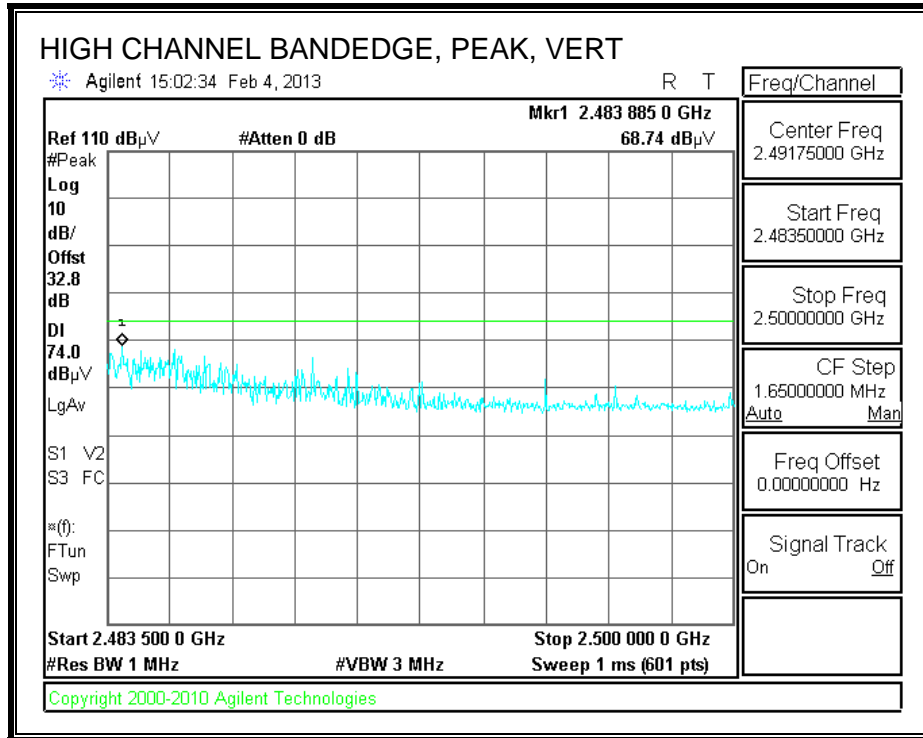
Actual Average = Measured Average + Correction Factor
 = 48.121 dBuV + 0.09
 = 48.211 dBuV

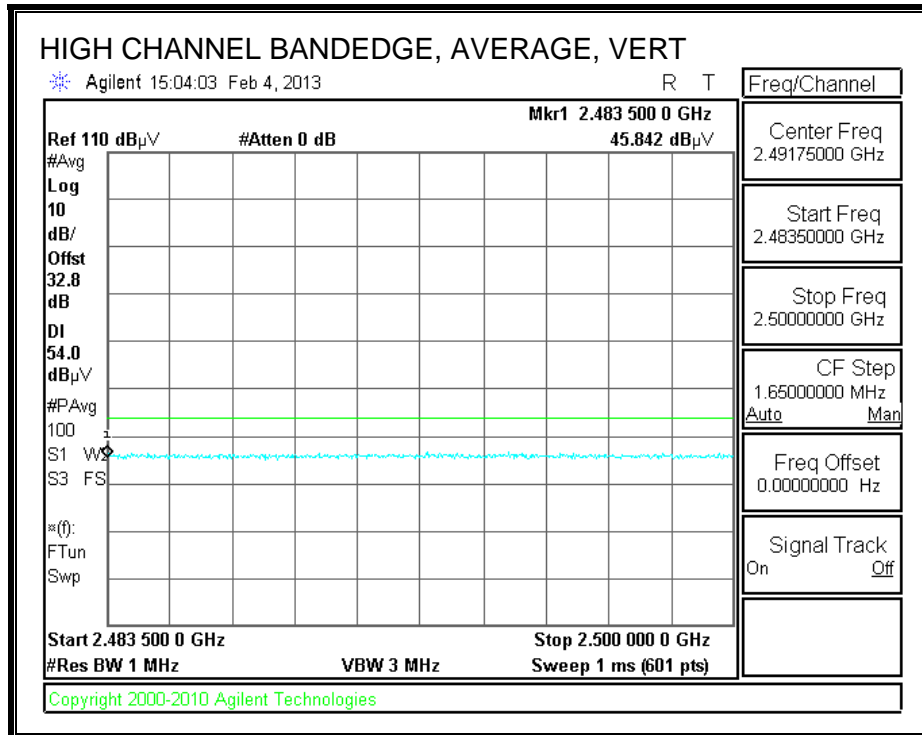
AUTHORIZED BANDEDGE (HIGH CHANNEL)





Actual Average = Measured Average + Correction Factor
 = 49.903 dB μ V + 0.09
 = 49.993 dB μ V





Actual Average = Measured Average + Correction Factor
 = 45.842 dBuV + 0.09
 = 45.932 dBuV

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
 Date: 02/05/13
 Project #: 12U14748
 Company: Intel Inc.
 Test Target: FCC Class B
 Mode Oper: 802.11g, TX 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

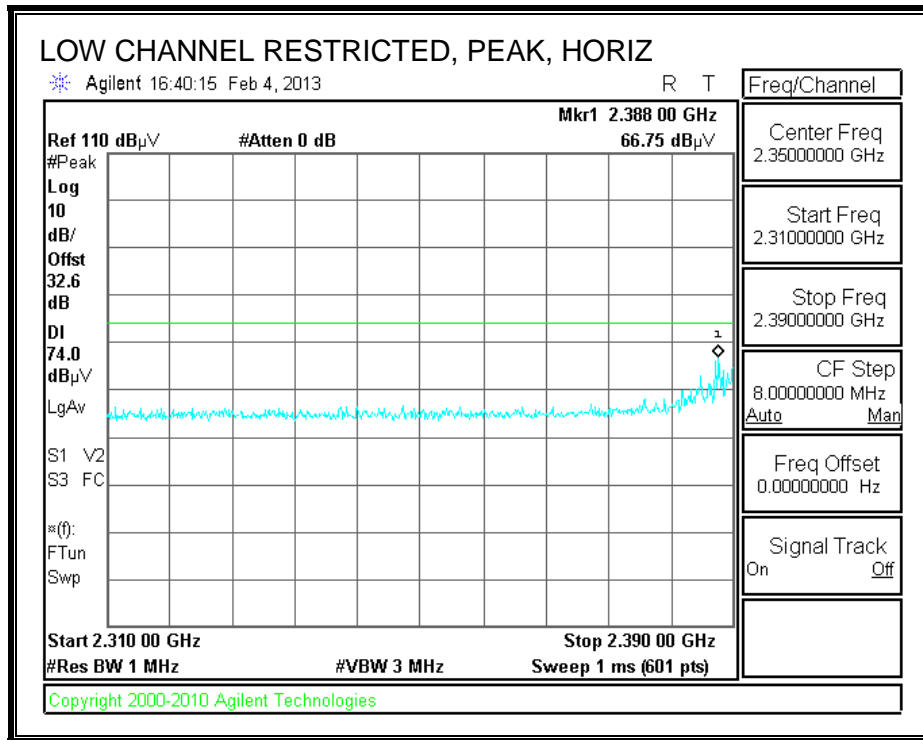
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11g													
4.824	3.0	36.5	33.1	6.8	-34.1	0.1	0.0	42.4	74.0	-31.6	V	P	
4.824	3.0	26.1	33.1	6.8	-34.1	0.1	0.0	32.0	54.0	-22.0	V	A	
4.824	3.0	35.8	33.1	6.8	-34.1	0.1	0.0	41.7	74.0	-32.3	H	P	
4.824	3.0	26.2	33.1	6.8	-34.1	0.1	0.0	32.2	54.0	-21.8	H	A	
2437 MHz 11g													
4.874	3.0	36.0	33.2	6.8	-34.0	0.1	0.0	42.0	74.0	-32.0	H	P	
4.874	3.0	26.0	33.2	6.8	-34.0	0.1	0.0	32.0	54.0	-22.0	H	A	
4.874	3.0	36.5	33.2	6.8	-34.0	0.1	0.0	42.6	74.0	-31.4	V	P	
4.874	3.0	25.6	33.2	6.8	-34.0	0.1	0.0	31.6	54.0	-22.4	V	A	
2462 MHz 11g													
4.924	3.0	36.4	33.2	6.8	-34.0	0.1	0.0	42.5	74.0	-31.5	H	P	
4.924	3.0	25.7	33.2	6.8	-34.0	0.1	0.0	31.8	54.0	-22.2	H	A	
4.924	3.0	35.8	33.2	6.8	-34.0	0.1	0.0	41.9	74.0	-32.1	V	P	
4.924	3.0	29.1	33.2	6.8	-34.0	0.1	0.0	35.3	54.0	-18.8	V	A	

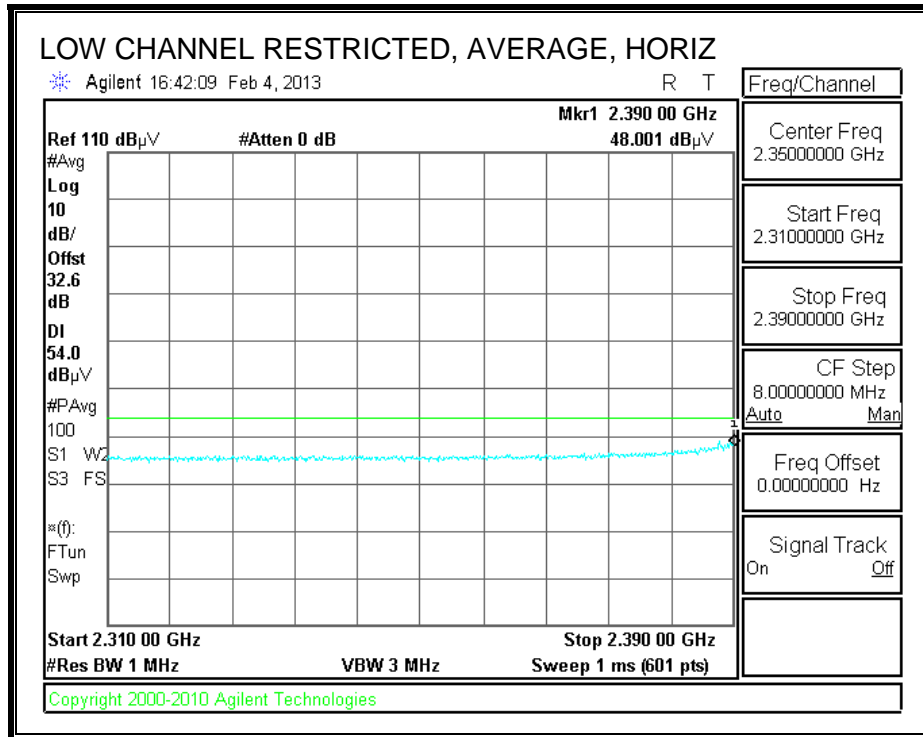
Rev. 4.1.2.7

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

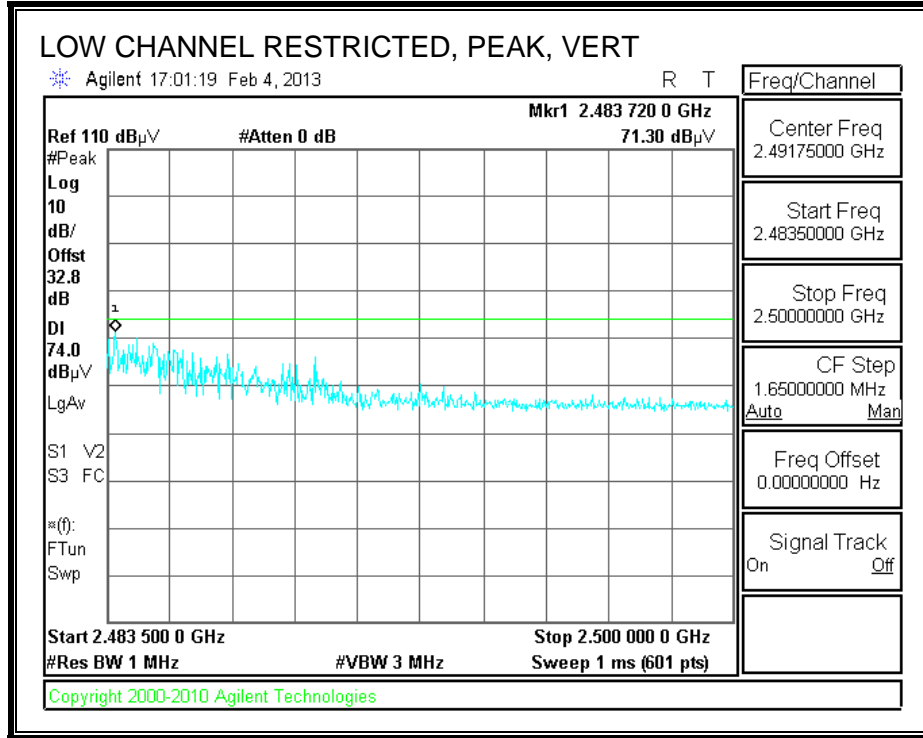
9.4. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

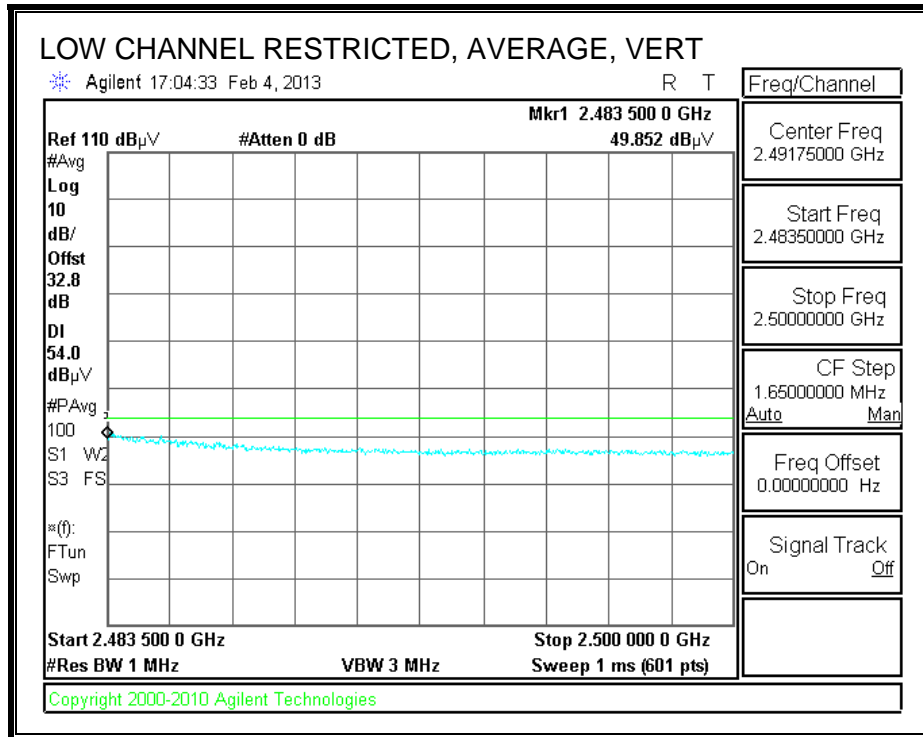
RESTRICTED BANDEDGE (LOW CHANNEL)





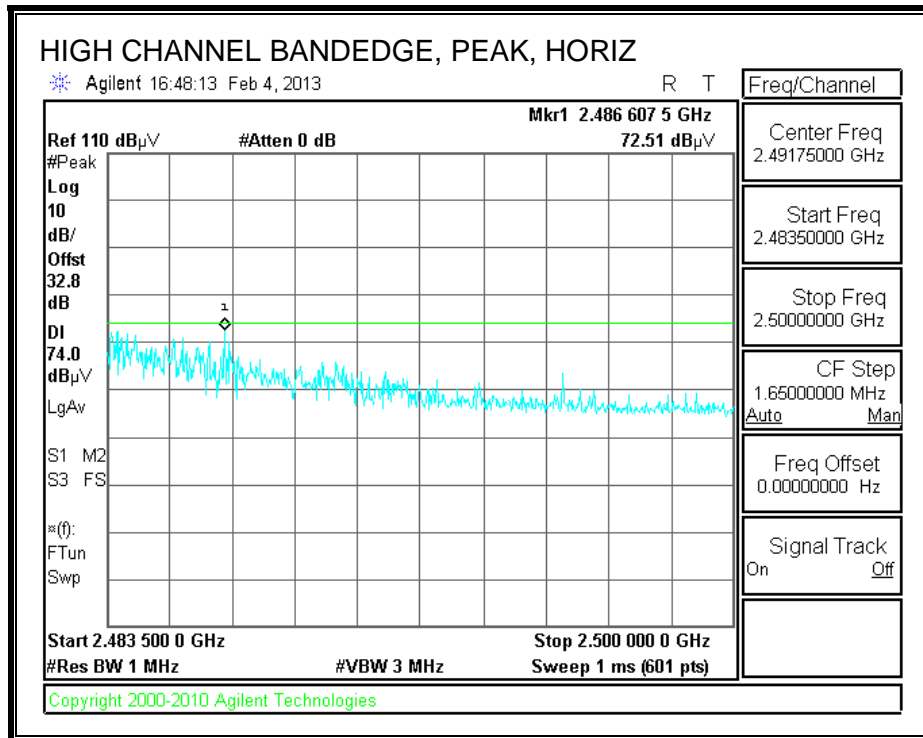
Actual Average = Measured Average + Correction Factor
 = 48.001 dB μ V + 0.1
 = 48.101 dB μ V

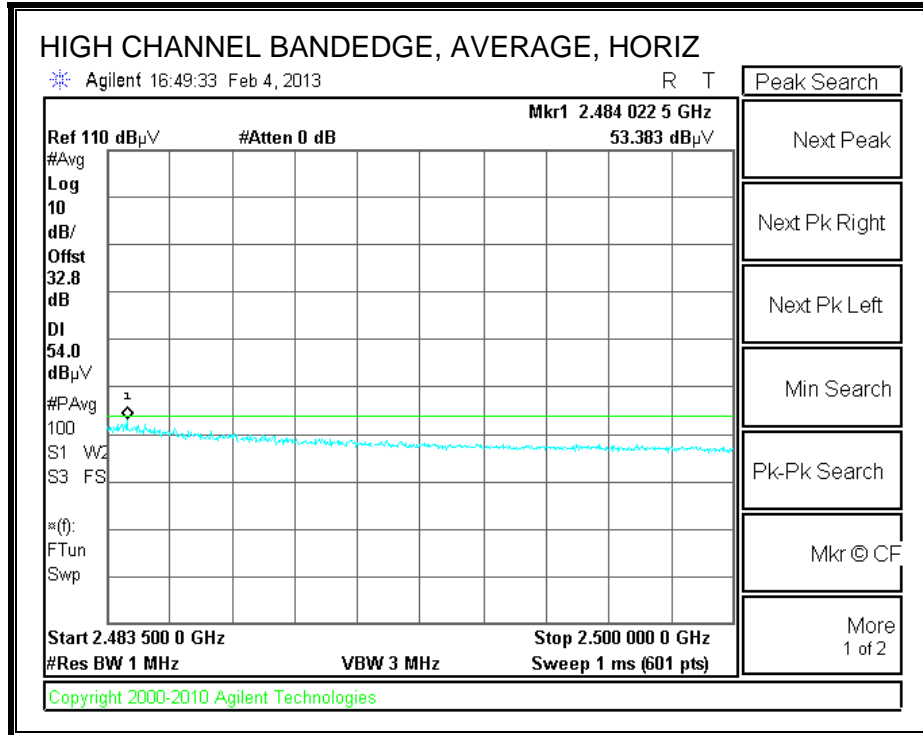




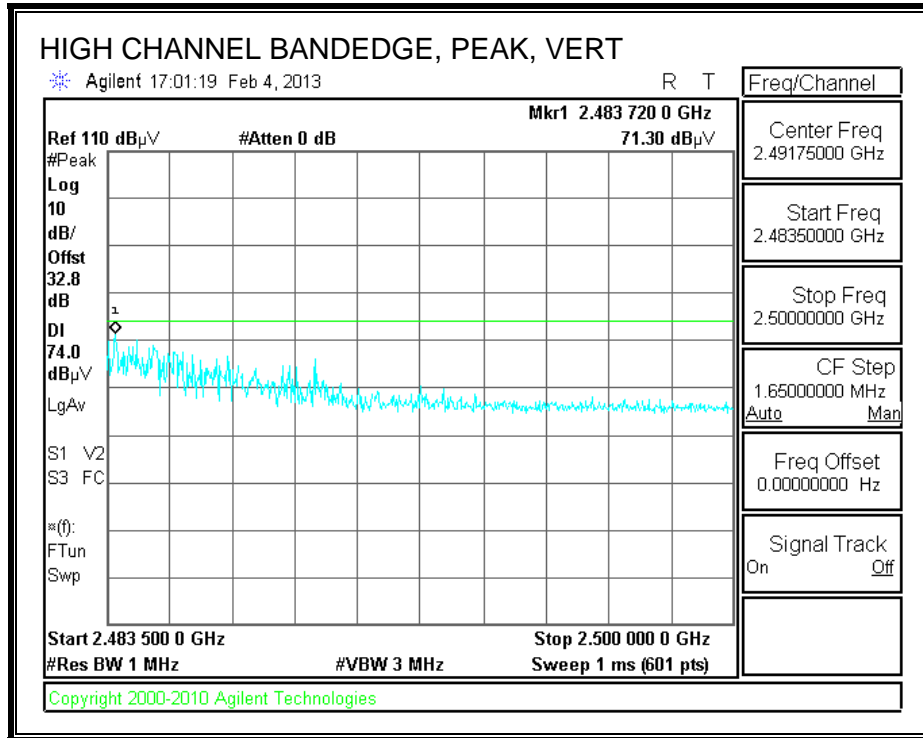
Actual Average = Measured Average + Correction Factor
 = 49.852 dBuV + 0.1
 = 49.952 dBuV

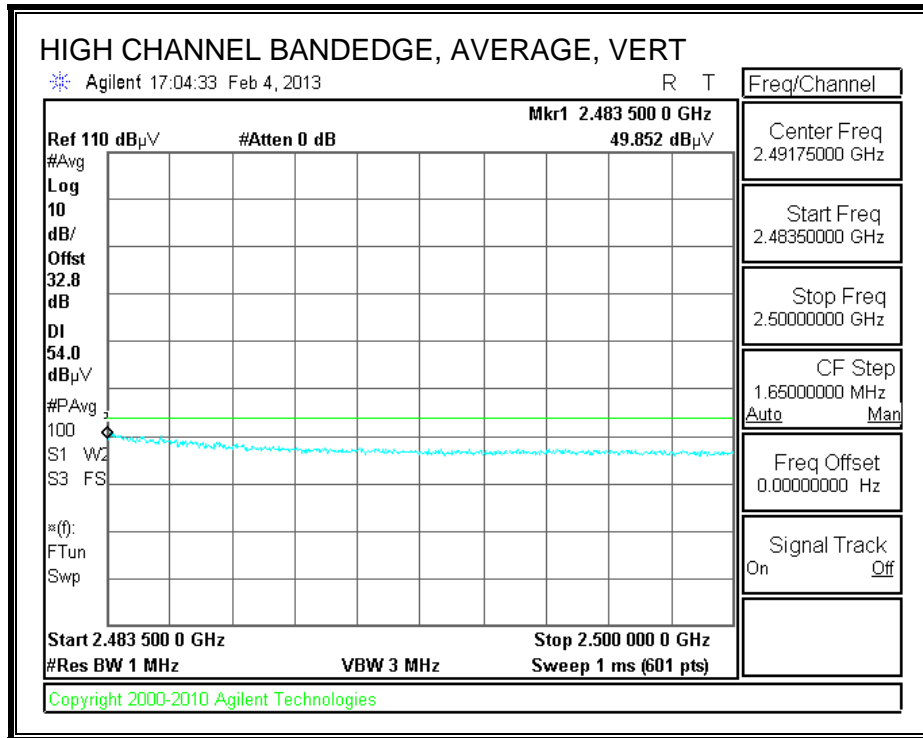
AUTHORIZED BANDEDGE (HIGH CHANNEL)





Actual Average = Measured Average + Correction Factor
 = 53.383 dBuV + 0.1
 = 53.483 dBuV





Actual Average = Measured Average + Correction Factor
 = 49.852 dBuV + 0.1
 = 49.952 dBuV

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
 Date: 02/05/13
 Project #: 12U14748
 Company: Intel Inc.
 Test Target: FCC Class B
 Mode Oper: 802.11n HT20, TX 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

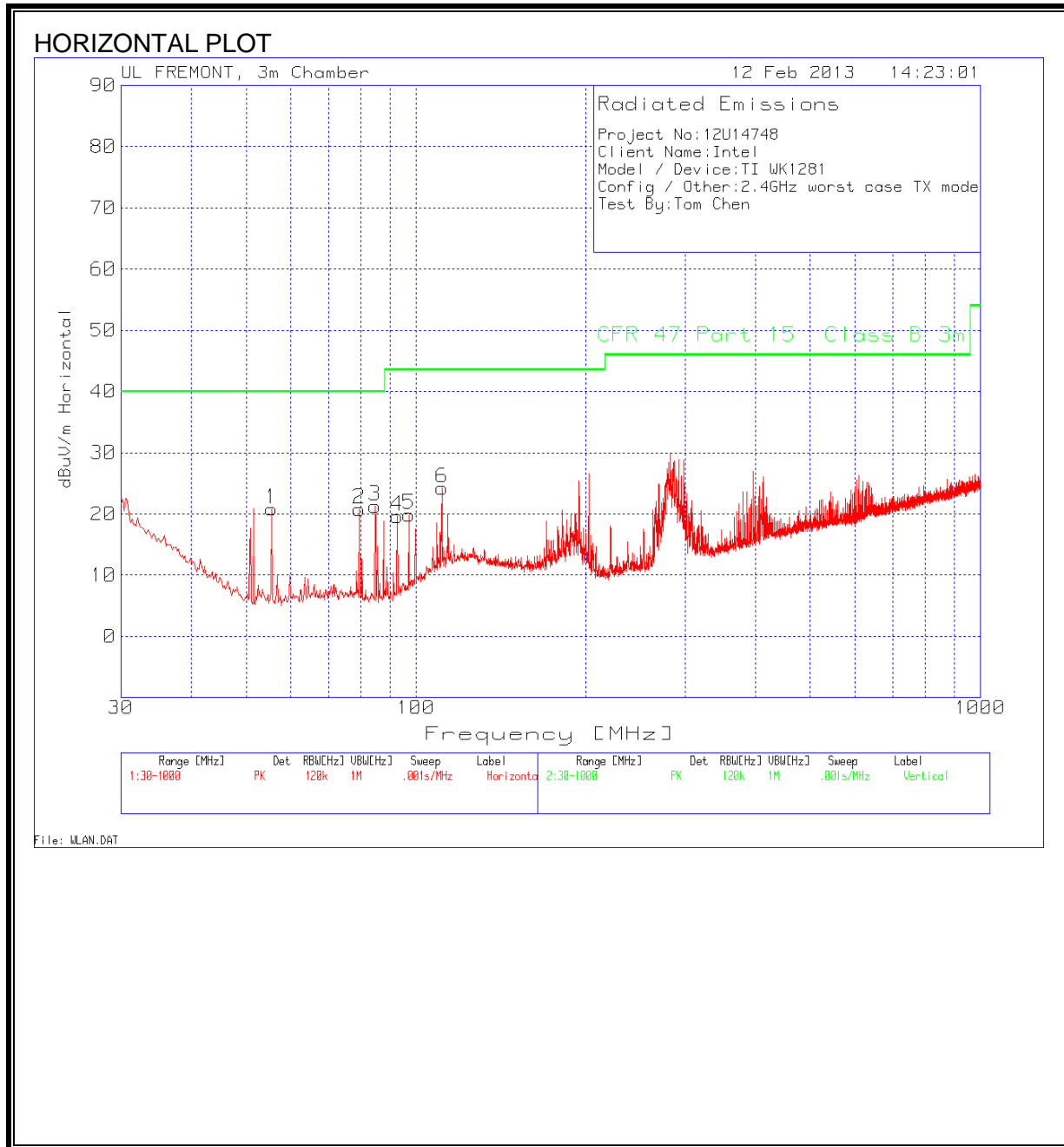
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
2412 MHz 11n HT20													
4.824	3.0	36.5	33.1	6.8	-34.1	0.1	0.0	42.4	74.0	-31.6	H	P	
4.824	3.0	23.8	33.1	6.8	-34.1	0.1	0.0	29.7	54.0	-24.3	H	A	
4.824	3.0	36.7	33.1	6.8	-34.1	0.1	0.0	42.6	74.0	-31.4	V	P	
4.824	3.0	23.4	33.1	6.8	-34.1	0.1	0.0	29.4	54.0	-24.6	V	A	
2437 MHz 11n HT20													
4.874	3.0	36.2	33.2	6.8	-34.0	0.1	0.0	42.3	74.0	-31.8	V	P	
4.874	3.0	23.4	33.2	6.8	-34.0	0.1	0.0	29.4	54.0	-24.6	V	A	
4.874	3.0	36.0	33.2	6.8	-34.0	0.1	0.0	42.0	74.0	-32.0	H	P	
4.874	3.0	23.2	33.2	6.8	-34.0	0.1	0.0	29.2	54.0	-24.8	H	A	
2462 MHz 11n HT20													
4.924	3.0	35.8	33.2	6.8	-34.0	0.1	0.0	42.0	74.0	-32.0	H	P	
4.924	3.0	23.2	33.2	6.8	-34.0	0.1	0.0	29.4	54.0	-24.6	H	A	
4.924	3.0	36.1	33.2	6.8	-34.0	0.1	0.0	42.2	74.0	-31.8	V	P	
4.924	3.0	23.1	33.2	6.8	-34.0	0.1	0.0	29.2	54.0	-24.8	V	A	

Rev. 4.1.2.7

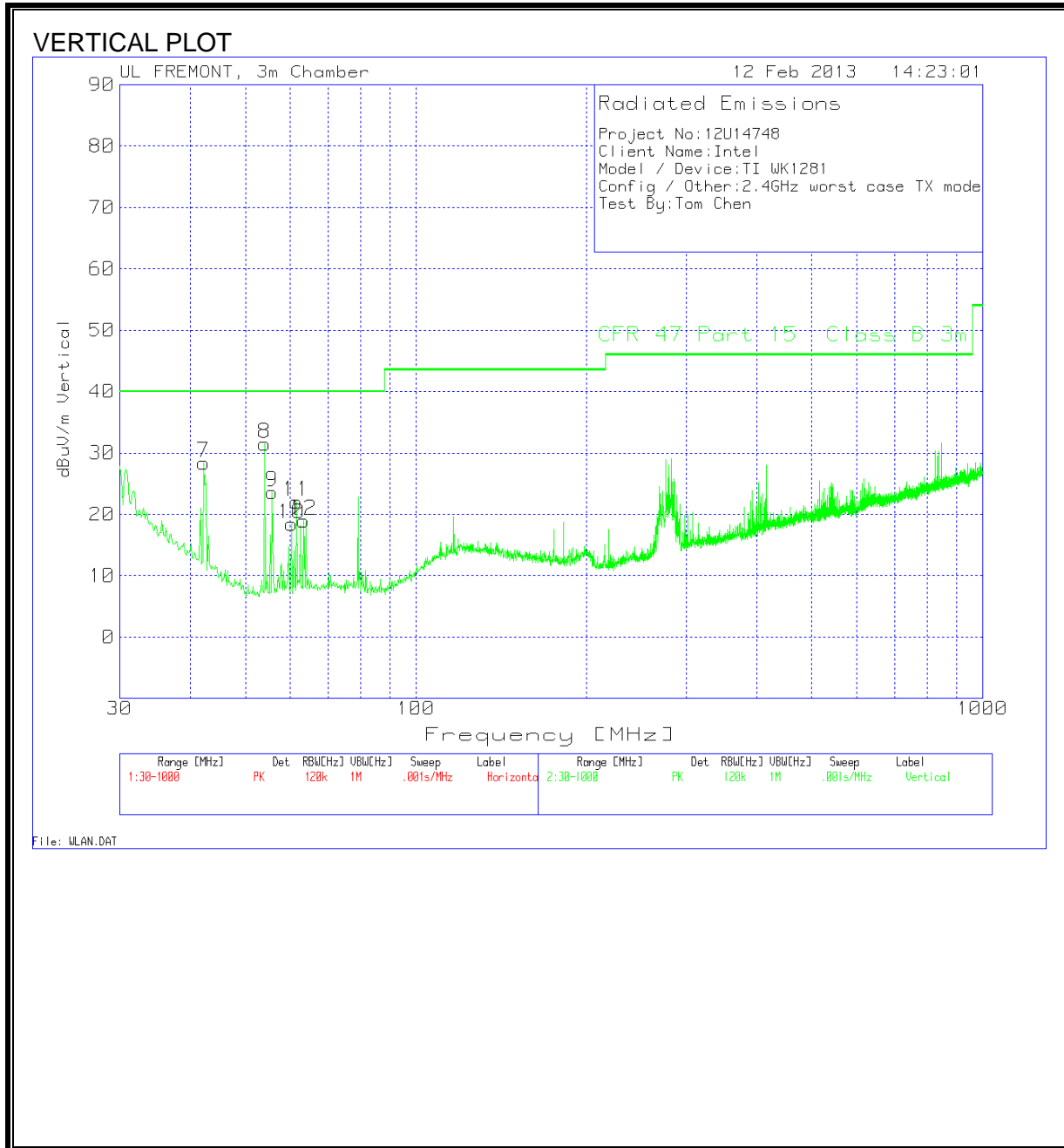
Note: No other emissions were detected above the system noise floor.

9.5. 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:12U14748
 Client Name: Intel
 Model / Device: TI WK1281
 Config / Other: 2.4GHz worst case TX mode
 Test By: Tom Chen

Horizontal 30 - 1000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T130 8-14-12 (dB)	3m Loop (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
1	55.5875	41.14	PK	6.9	-27.2	20.84	40	-19.16	Horz
2	79.4305	40.33	PK	7.5	-27	20.83	40	-19.17	Horz
3	84.6643	41.04	PK	7.2	-27	21.24	40	-18.76	Horz
4	92.6119	38.36	PK	8.1	-26.9	19.56	43.5	-23.94	Horz
5	97.0703	37.35	PK	9.3	-26.8	19.85	43.5	-23.65	Horz
6	111.221	38.2	PK	12.7	-26.7	24.2	43.5	-19.3	Horz

Vertical 30 - 1000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T130 8-14-12 (dB)	3m Loop (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Polarity
7	42.2122	43.92	PK	11.9	-27.4	28.42	40	-11.58	Vert
8	54.0368	51.9	PK	6.8	-27.2	31.5	40	-8.5	Vert
9	55.7814	43.92	PK	6.9	-27.2	23.62	40	-16.38	Vert
10	60.4337	38.19	PK	7.4	-27.2	18.39	40	-21.61	Vert
11	61.5967	41.73	PK	7.6	-27.2	22.13	40	-17.87	Vert
12	63.3413	38.38	PK	7.8	-27.2	18.98	40	-21.02	Vert

10. 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

6 WORST EMISSIONS

Project No:12U14748
 Client Name: Intel Inc.
 Model/Device: TI WK1281, 2.4G worst case
 Test Volt/Freq: 120 VAC/ 60Hz,
 Test By: Tom Chen

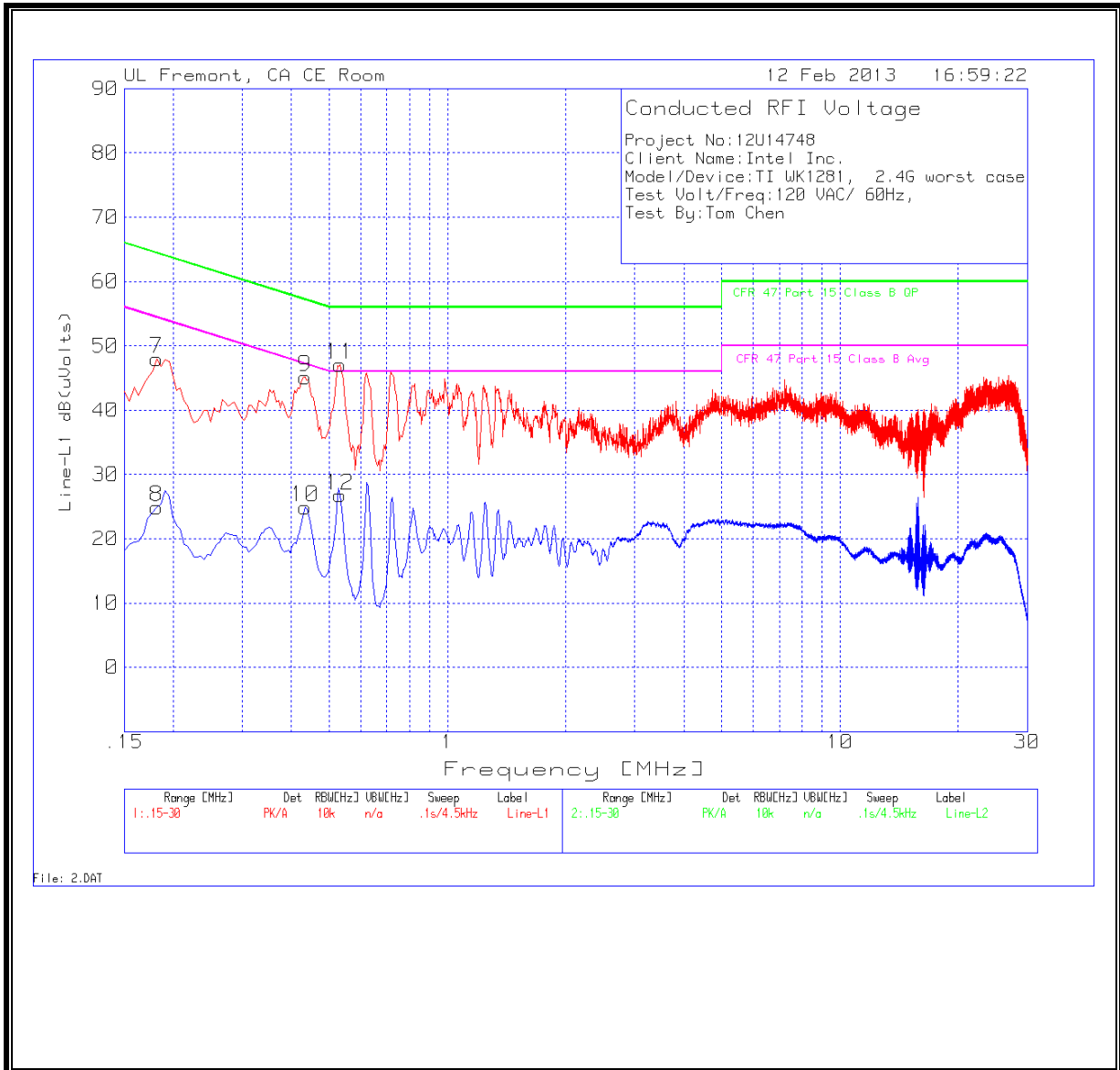
Line-L1 .15 - 30MHz

Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.1815	47.81	PK	0.1	0	47.91	64.4	-16.49	-	-
0.1815	24.76	Av	0.1	0	24.86	-	-	54.4	-29.54
0.4335	45.03	PK	0.1	0	45.13	57.2	-12.07	-	-
0.4335	24.85	Av	0.1	0	24.95	-	-	47.2	-22.25
0.5325	46.97	PK	0.1	0	47.07	56	-8.93	-	-
0.5325	26.66	Av	0.1	0	26.76	-	-	46	-19.24

Line-L2 .15 - 30MHz

Test Frequency	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.1905	49.85	PK	0.1	0	49.95	64	-14.05	-	-
0.1905	29.26	Av	0.1	0	29.36	-	-	54	-24.64
0.5325	49.54	PK	0.1	0	49.64	56	-6.36	-	-
0.5325	31.58	Av	0.1	0	31.68	-	-	46	-14.32
0.7215	47.75	PK	0.1	0	47.85	56	-8.15	-	-
0.7215	27.78	Av	0.1	0	27.88	-	-	46	-18.12

LINE 1 RESULTS



LINE 2 RESULTS

