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

CERTIFICATION WLAN TEST REPORT

FOR

HANDS-FREE WIRELESS COMPUTING HEADSET CONTAINING BT v 2.1 + EDR and 802.11b/g RADIO

MODEL NUMBER: 30-00818-04

FCC ID: ZAOGOLDENI350
IC: 9529A- GOLDENI350

REPORT NUMBER: 10U13572-4, Revision B

ISSUE DATE: MARCH 18, 2011

Prepared for
Kopin Display Corporation
200 John Hancock Road
Taunton, MA 02780

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	02/18/11	Initial Issue	F. Ibrahim
A	03/16/11	Revised client address	A. Zaffar
B	03/18/11	Removed MPE section	A. Zaffar

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Kopin Display Corporation
200 John Hancock Road
Taunton, MA 02780

EUT DESCRIPTION: HANDS-FREE WIRELESS COMPUTING HEADSET CONTAINING BT v 2.1 + EDR and 802.11b/g RADIO

MODEL: 30-00818-04

SERIAL NUMBER: 12

DATE TESTED: FEBRUARY 1-4, 2011

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C (WLAN)	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8 (WLAN)	Pass
INDUSTRY CANADA RSS-GEN Issue 3 (WLAN)	Pass

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

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

Approved & Released For UL CCS By:

FRANK IBRAHIM
EMC SUPERVISOR
UL CCS

Tested By:

THANH NGUYEN
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a HANDS-free wireless computing headset containing BT v 2.1 + EDR and 802.11b/g radio. The unit is manufactured by Kopin.

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	10.70	11.75
2412 - 2462	802.11g	16.80	47.86

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Patch antenna, with a maximum gain of 4 dBi.

5.4. SOFTWARE AND FIRMWARE

WLAN: 1) Murata-SyChip Wi-Fi Firmware: 9.70.7.0
2) Murata-SyChip Wi-Fi Driver 0.4.3.8

Bluetooth: 3) Stonestreet One Bluetopia Stack for WinCE: version 2.1.3.5

SyChip WLAN8686 FCC Test Utility for CE
Tool Version: 0.1.0.1.
This application was loaded onto the EUT and remotely controlled through USB using the SOTI – Pocket Controller Pro.

SOTI – Pocket Controller Pro:
Version 6.02
This application installs on the PC and on the EUT. It allows the Golden-I WinCE device to be controlled by the desktop PC through USB using ActiveSync or Windows Mobile Device Center. It simplifies configuring the EUT for compliance testing by using the PC's mouse and big screen to navigate the WinCE's menus.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

Radiated Emissions below 1 GHz was performed with the EUT set to transmit at the channel with highest output power.

11b: 1 Mbps
11g: 6 Mbps

EUT only has one orientation; it was placed in that orientation as shown in the setup photos.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

EUT is a stand-alone device and has no peripherals.

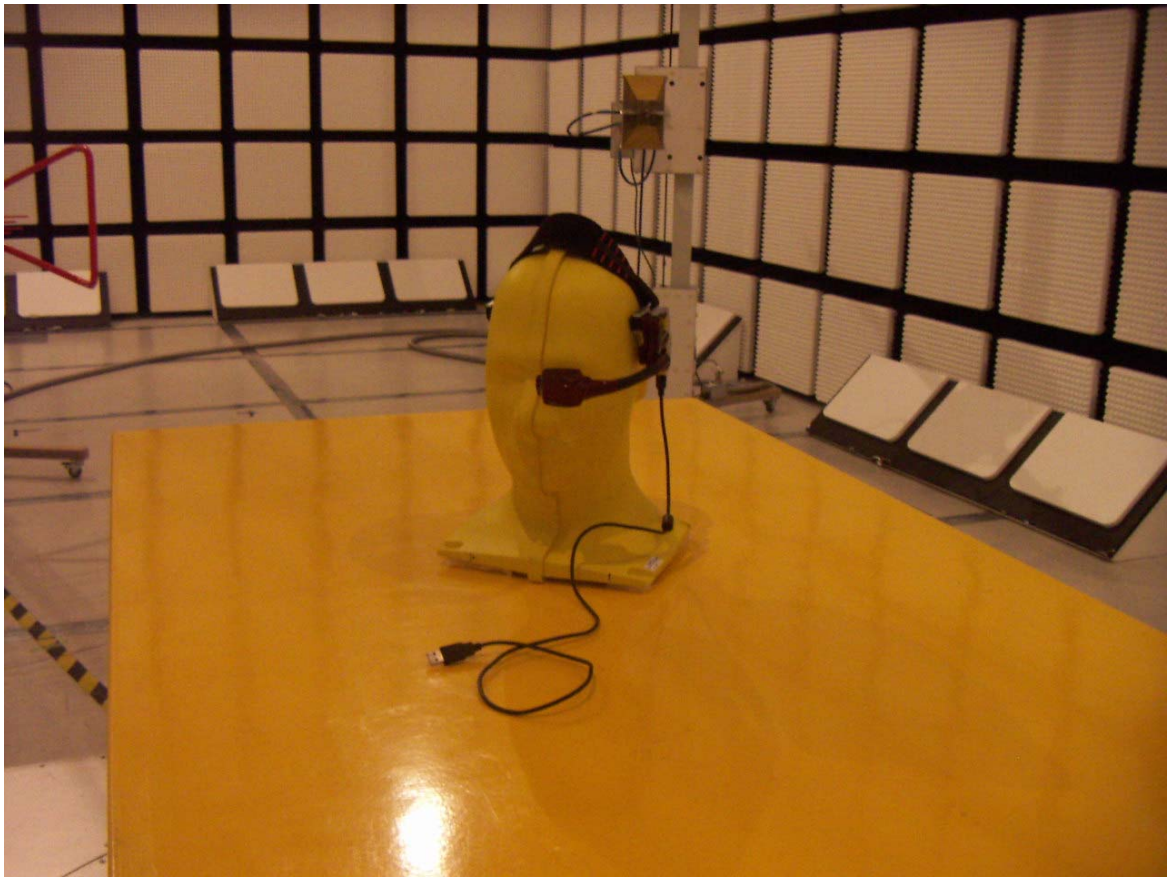
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	USB	1	USB	shielded	1m	Ferite bead at both sides

TEST SETUP

The EUT is a stand alone device, a host laptop computer used to activate the EUT and then it was taken out of the chamber during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**Asset**	**Cal Date**	**Cal Due**
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	01/14/10	12/18/11
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/27/10	01/27/12
PSA Series Spectrum Analyzer	Agilent / HP	E4446A	C01069	01/05/10	04/05/11
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	08/05/10	12/17/11
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	10/29/10	10/29/11
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	10/29/10	10/29/11
EMI Receiver	R & S	ESHS 20	N02396	06/08/09	05/06/11
Antenna, Horn, 18 GHz	EMCO	3115	C00945	06/24/10	06/24/11
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	CNR	CNR

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.

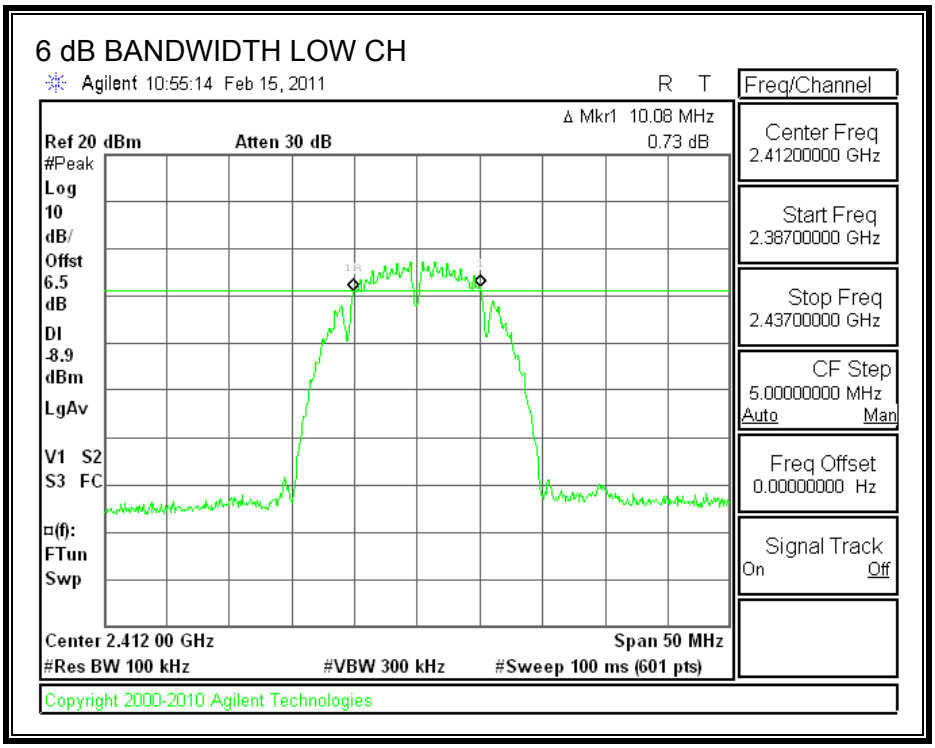
TEST PROCEDURE

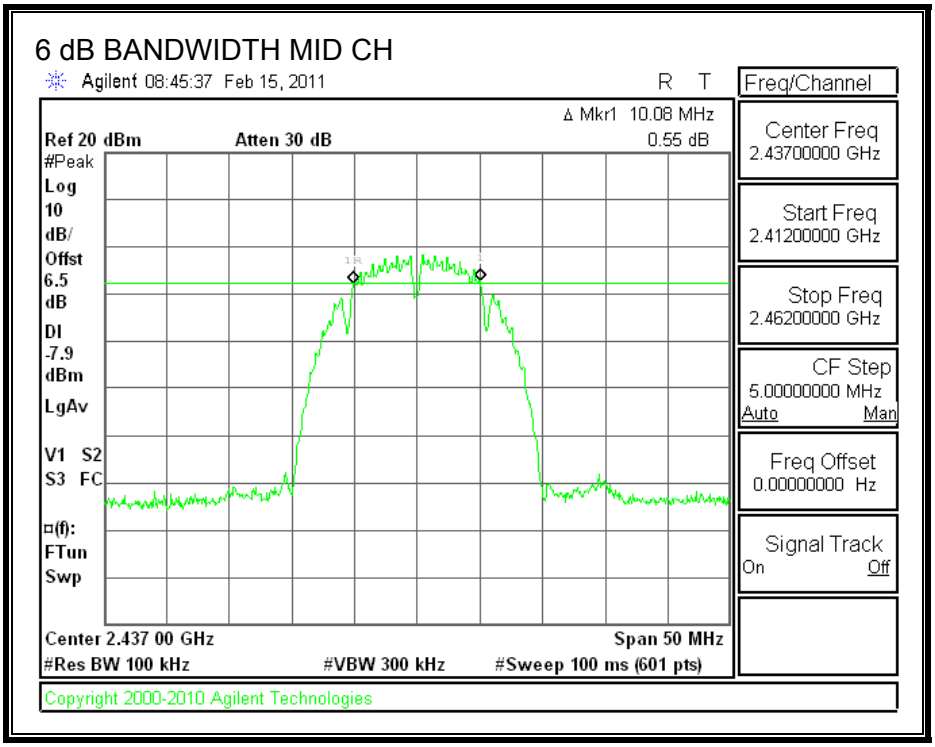
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

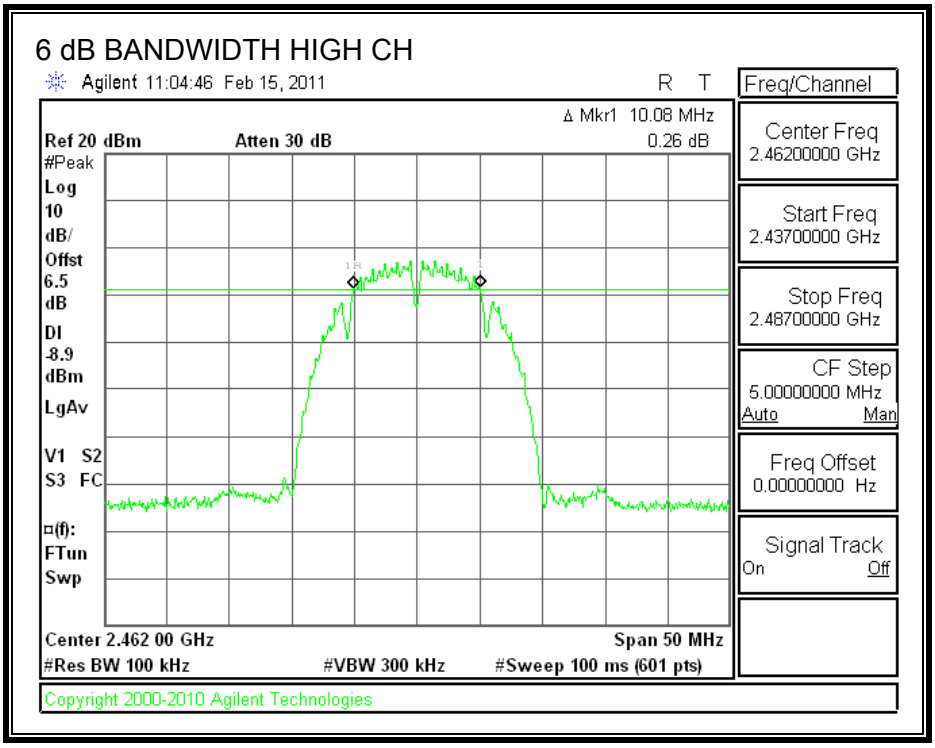
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	10.08	0.5
Middle	2437	10.08	0.5
High	2462	10.08	0.5

6 dB BANDWIDTH







7.1.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

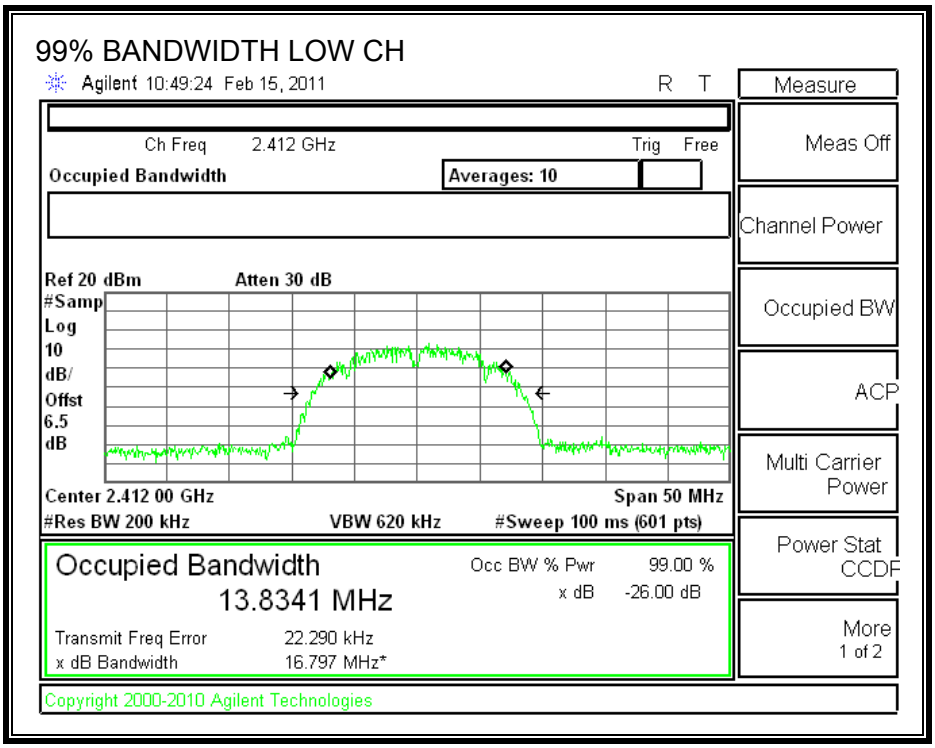
TEST PROCEDURE

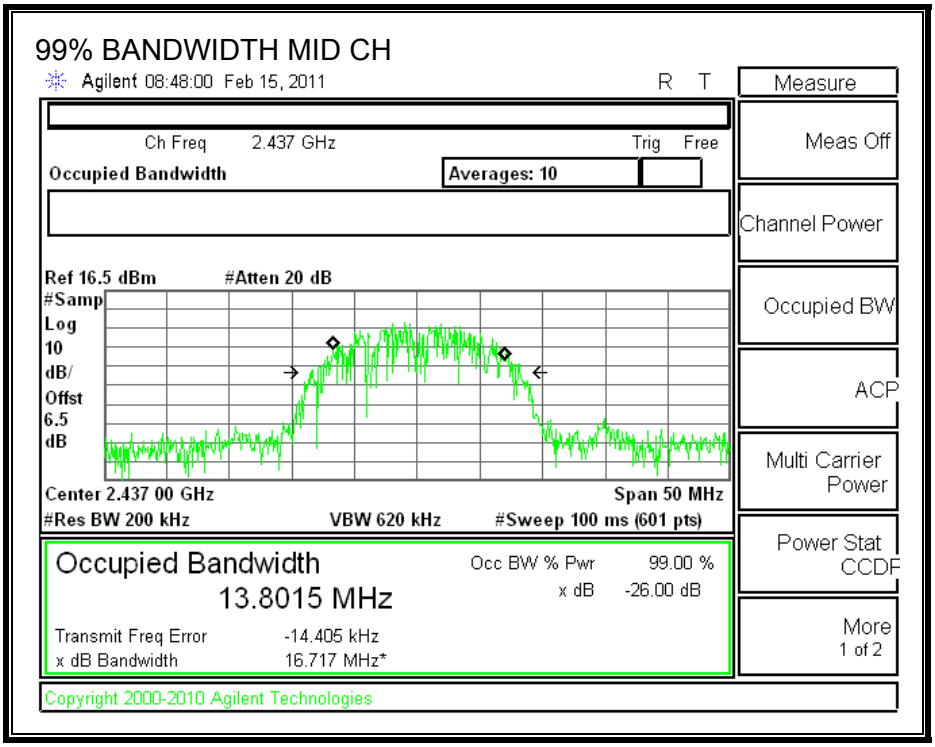
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

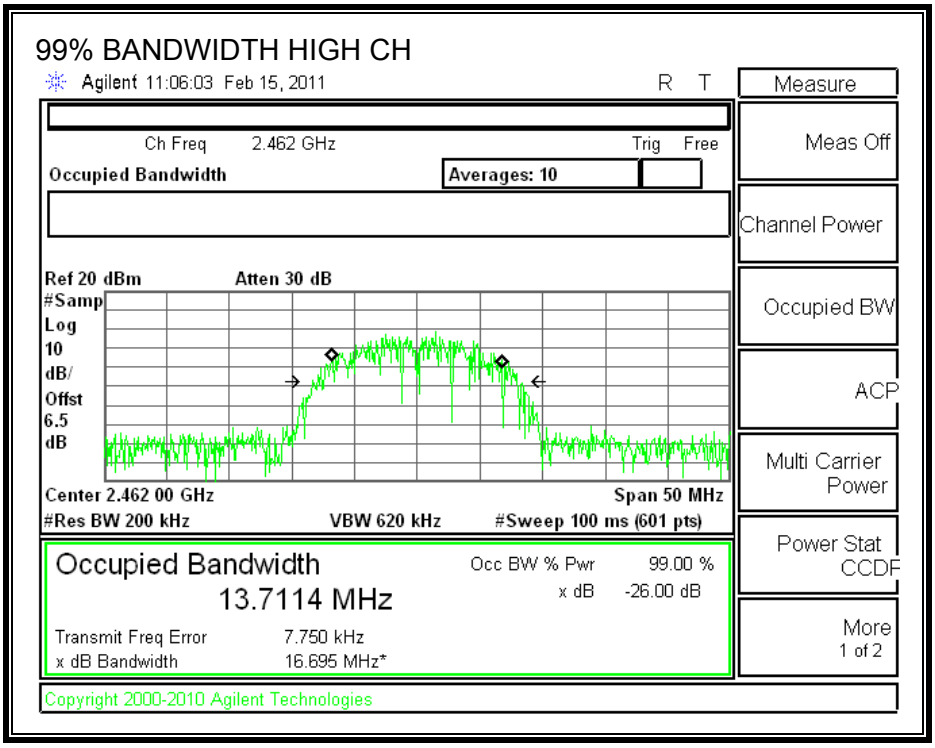
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.8341
Middle	2437	13.8015
High	2462	13.7114

99% BANDWIDTH







7.1.3. 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 wide bandwidth Peak Power Meter.

RESULTS

Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	9.35	30	-20.65
Middle	2437	10.5	30	-19.50
High	2462	10.7	30	-19.30

7.1.4. 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 6.5 dB (including 6 dB pad and 0.5 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	7.42
Middle	2437	8.28
High	2462	8.14

7.1.5. 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.

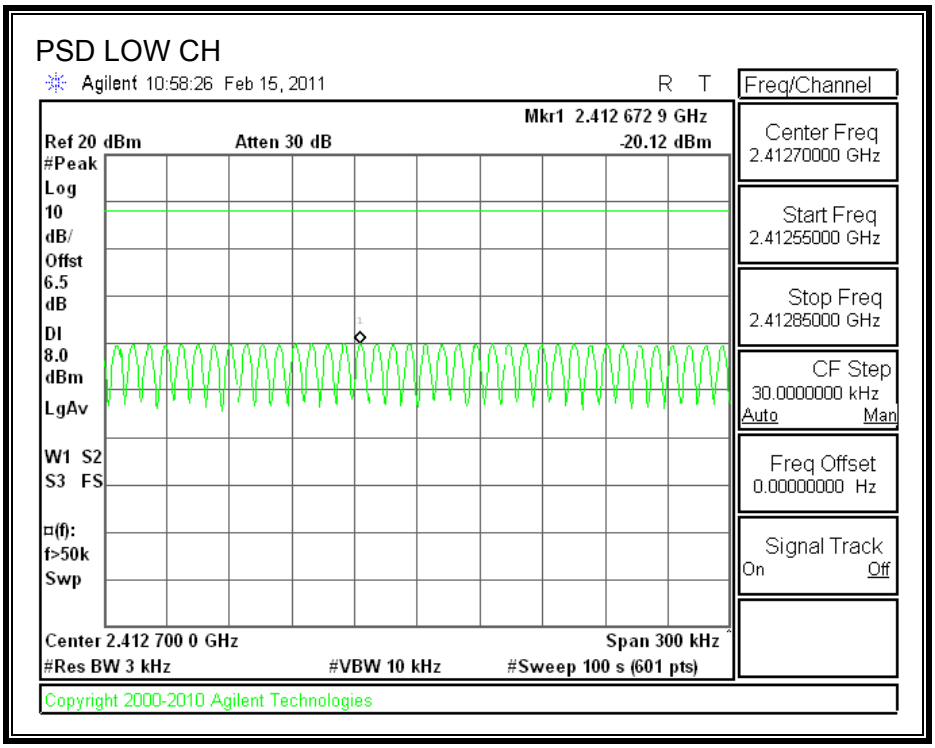
TEST PROCEDURE

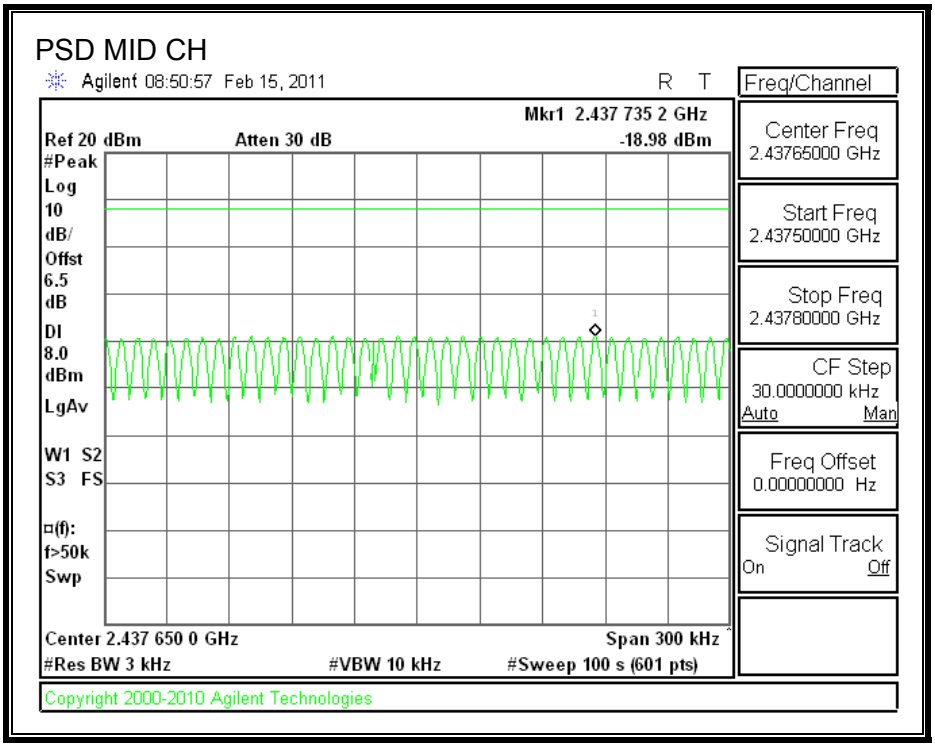
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

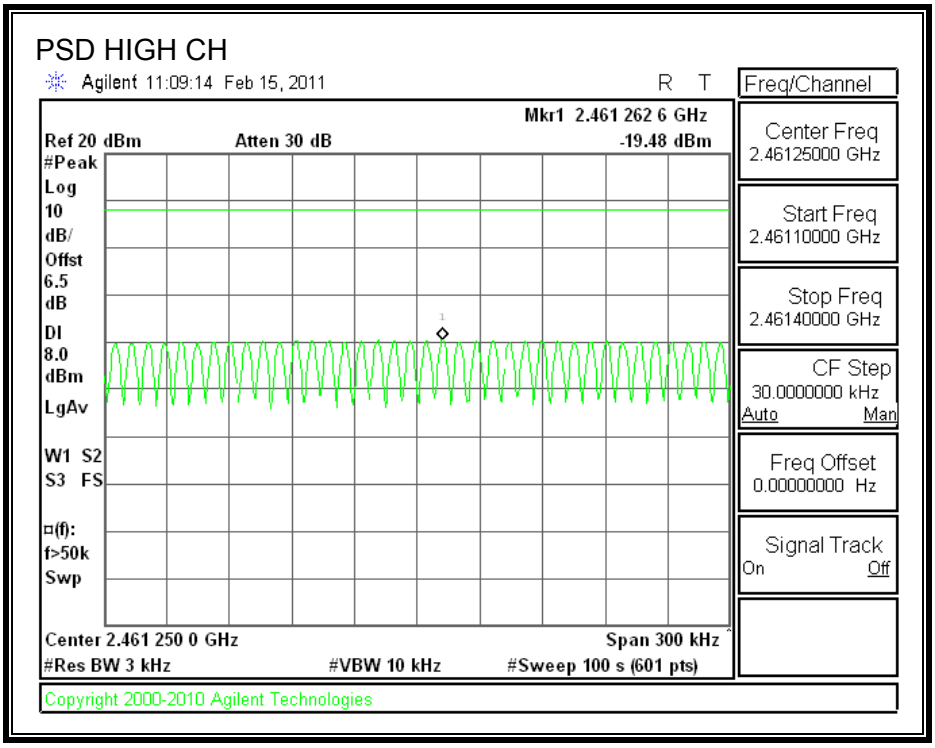
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-20.12	8	-28.12
Middle	2437	-18.98	8	-26.98
High	2462	-19.48	8	-27.48

POWER SPECTRAL DENSITY







7.1.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

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

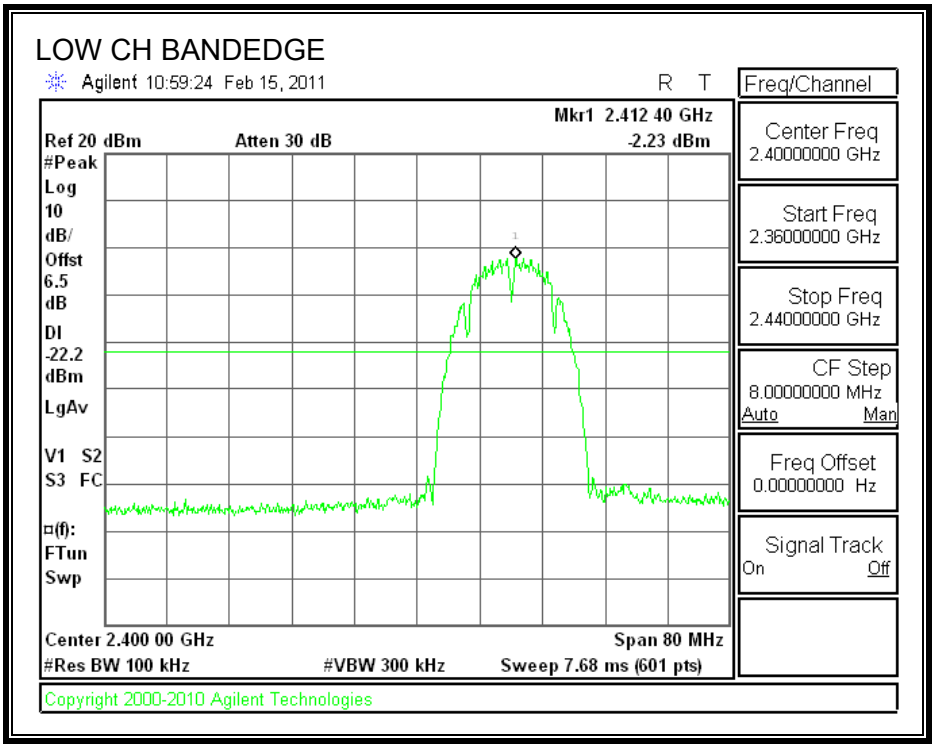
TEST PROCEDURE

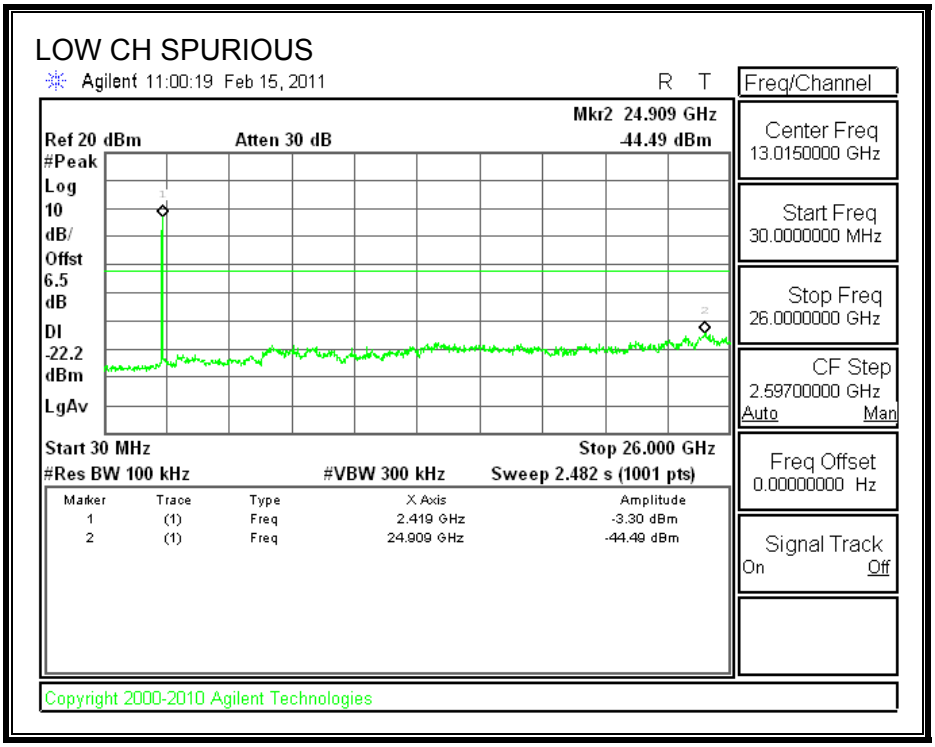
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

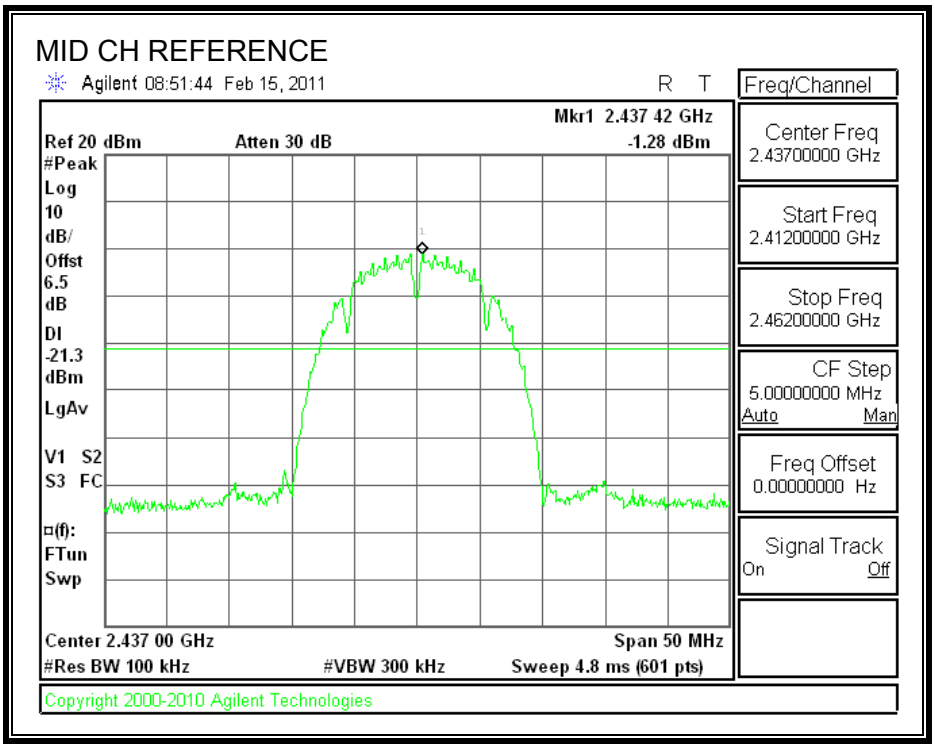
RESULTS

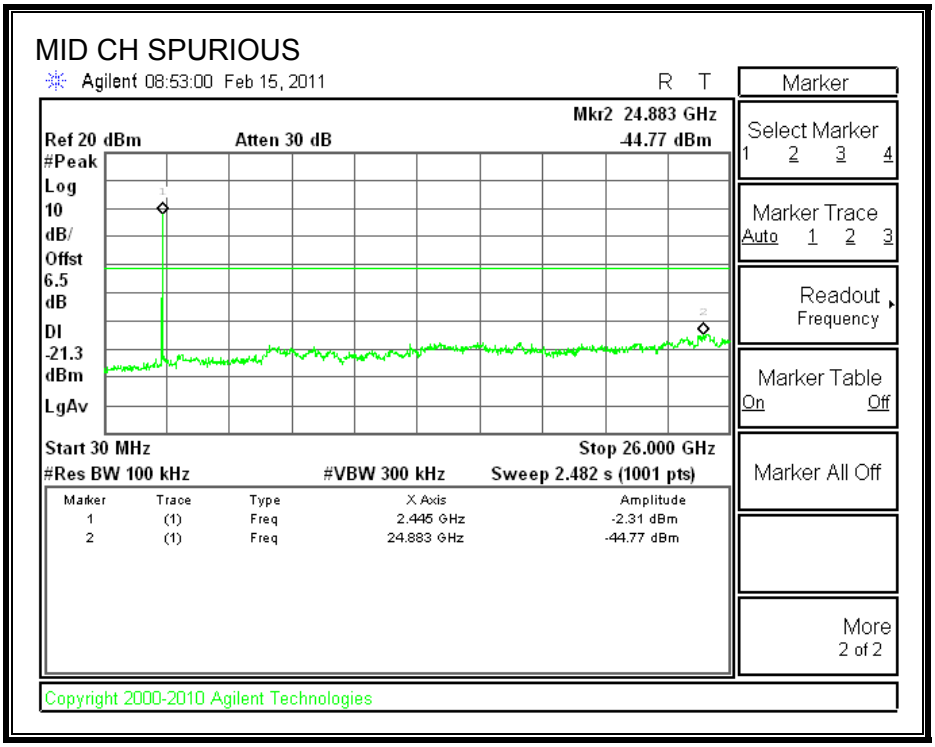
SPURIOUS EMISSIONS, LOW CHANNEL



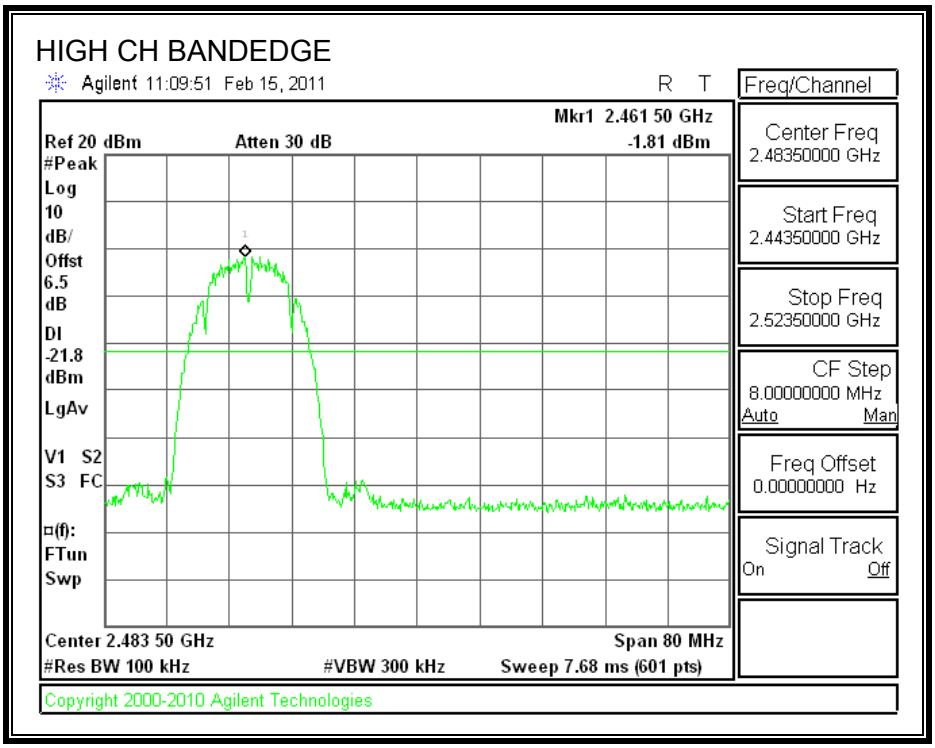


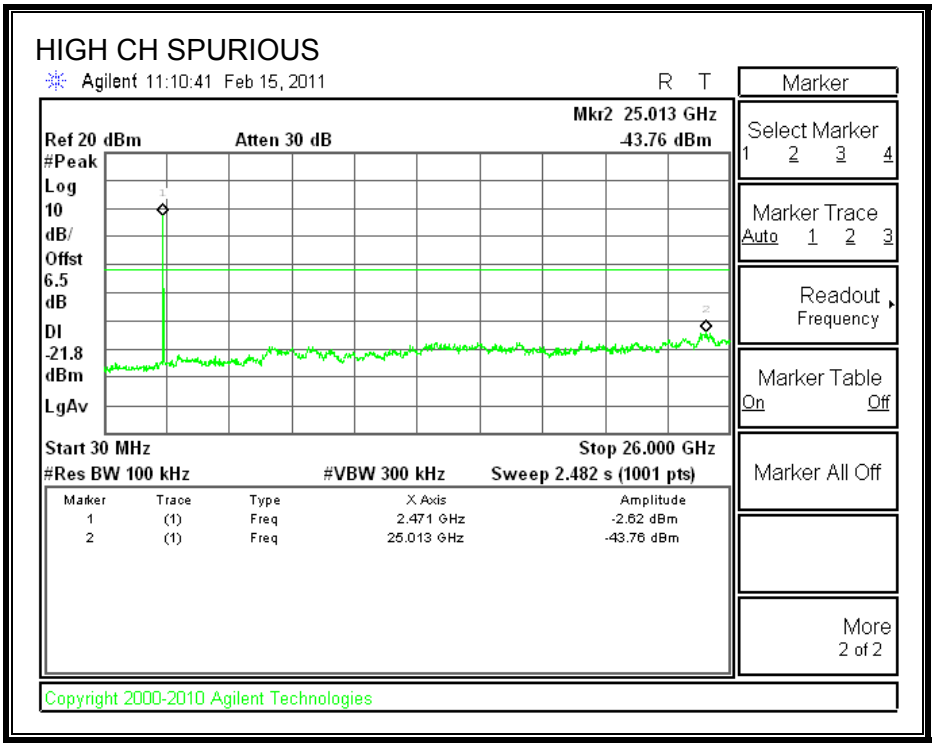
SPURIOUS EMISSIONS, MID CHANNEL





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.

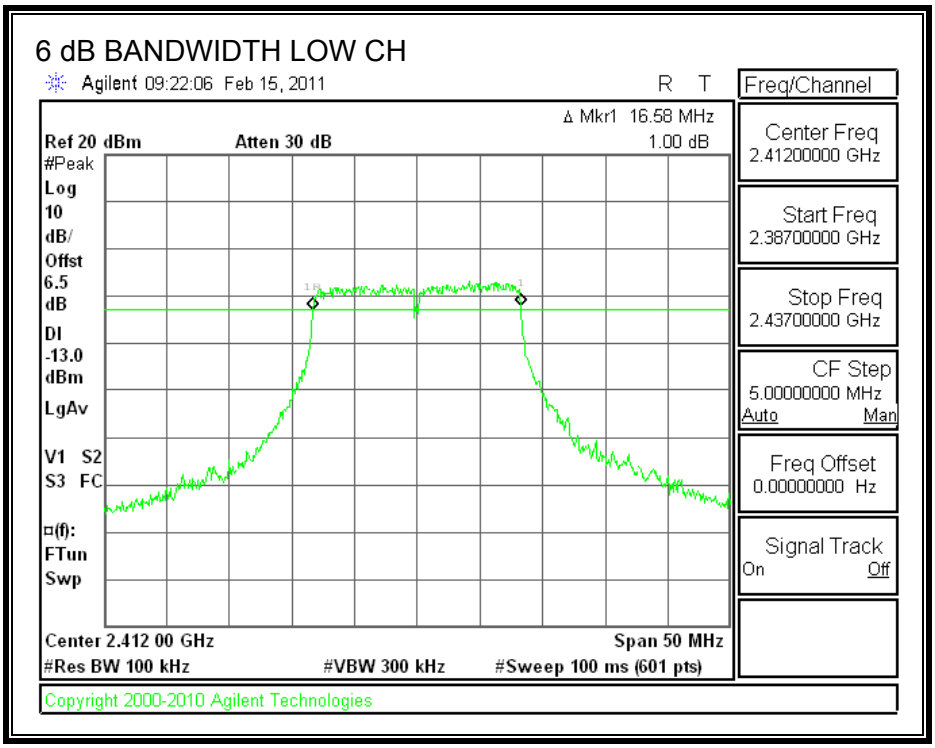
TEST PROCEDURE

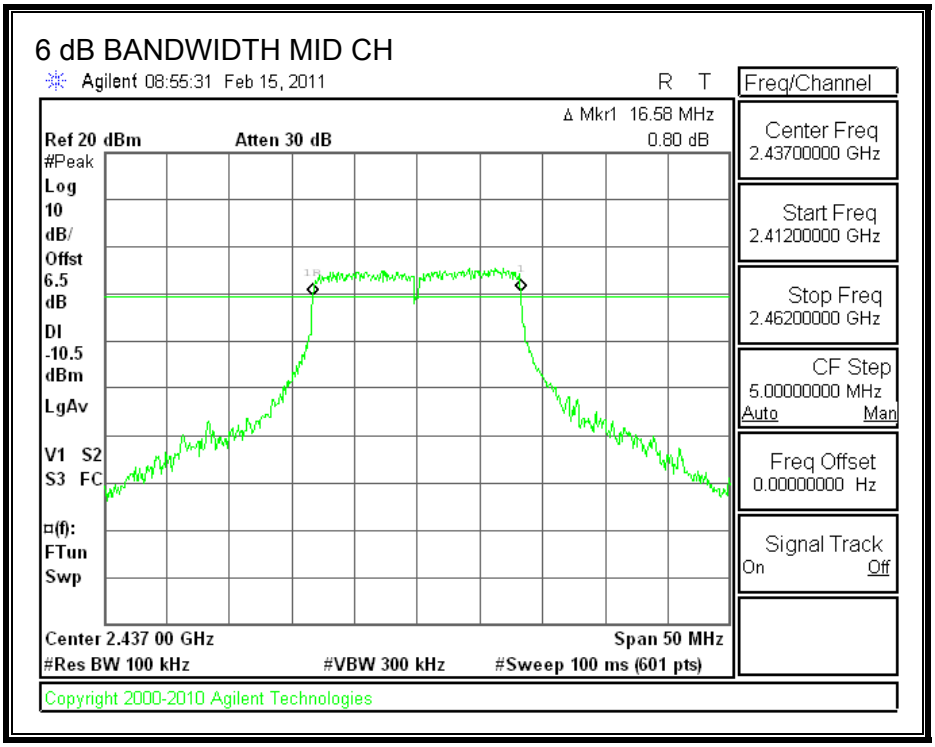
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

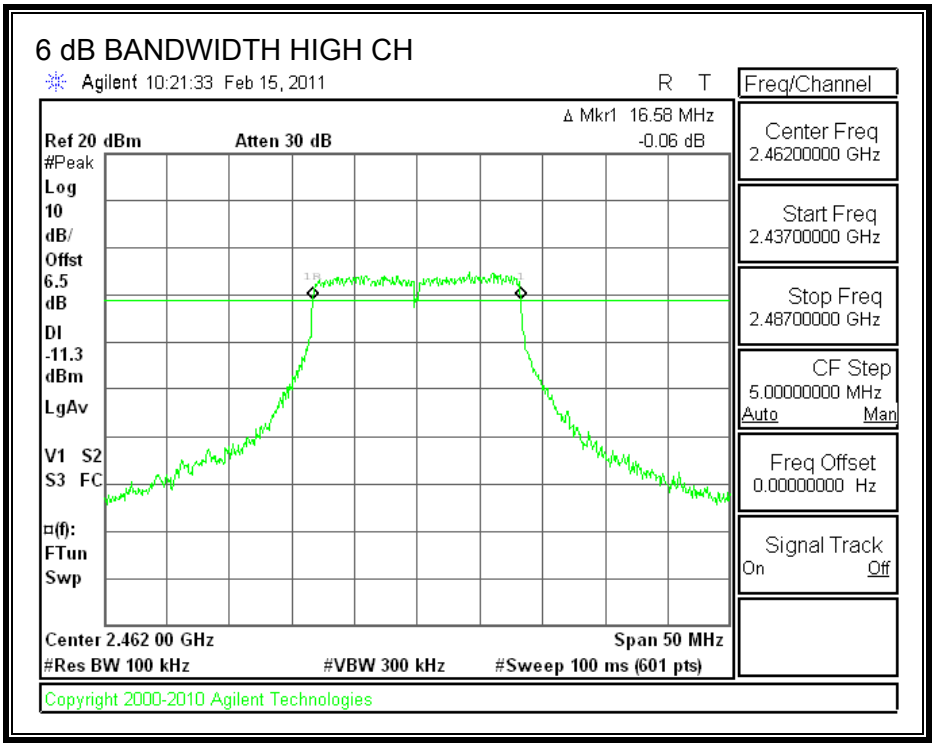
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.58	0.5
Middle	2437	16.58	0.5
High	2462	16.58	0.5

6 dB BANDWIDTH







7.2.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

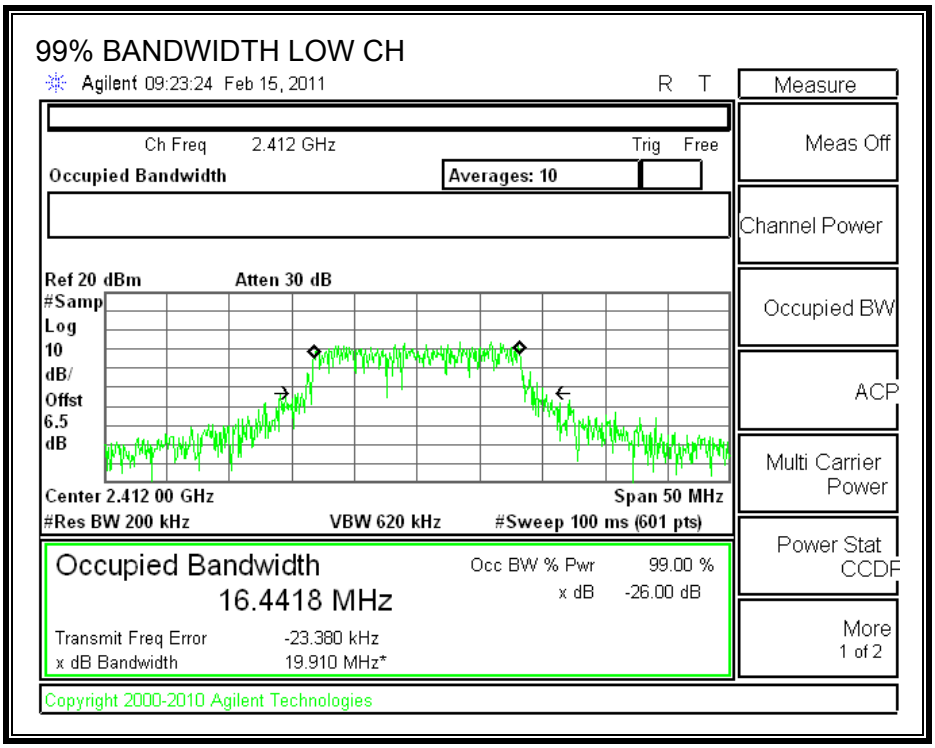
TEST PROCEDURE

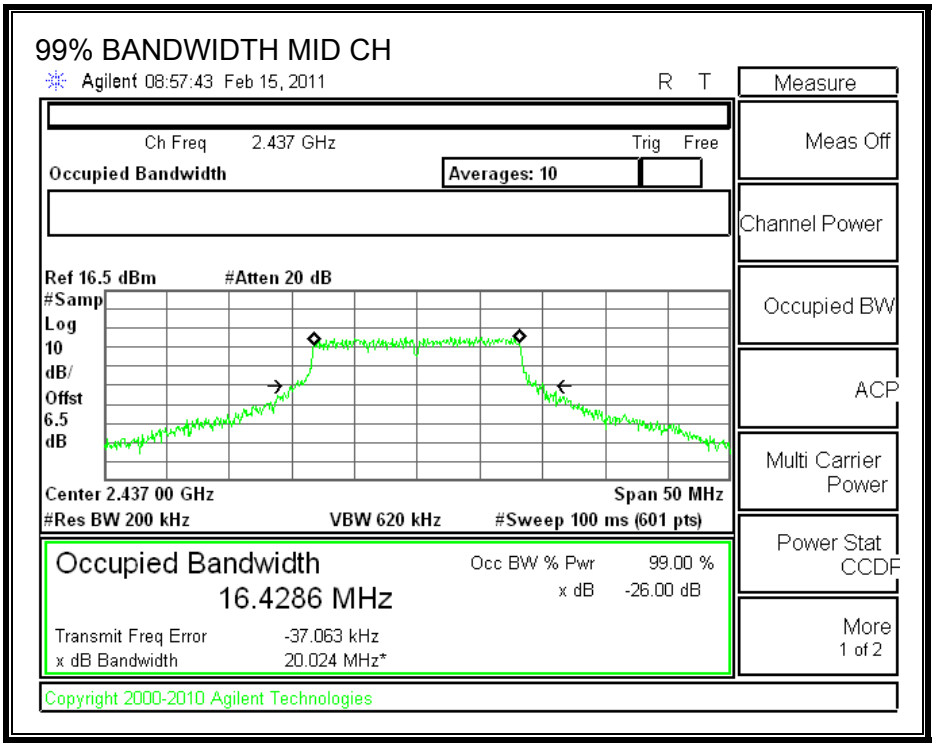
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

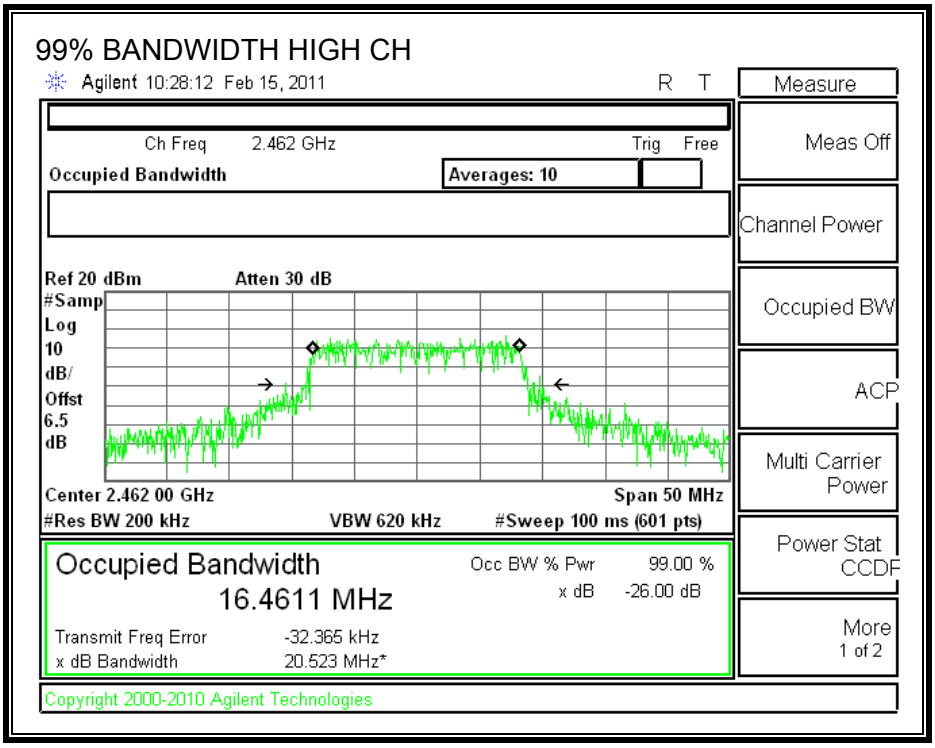
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.4418
Middle	2437	16.4286
High	2462	16.4611

99% BANDWIDTH







7.2.3. 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 wide bandwidth Peak Power Meter.

RESULTS

Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	15.2	30	-14.80
Middle	2437	16.5	30	-13.50
High	2462	16.8	30	-13.20

7.2.4. 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 6.5 dB (including 10 dB pad and .5 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	7.16
Middle	2437	8.20
High	2462	8.25

7.2.5. 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.

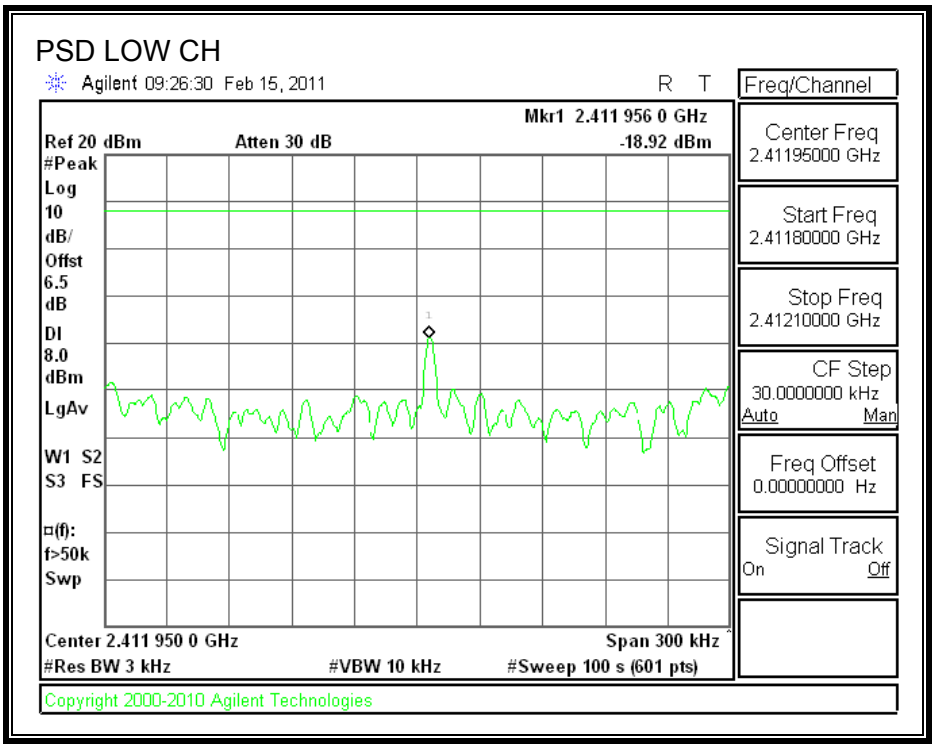
TEST PROCEDURE

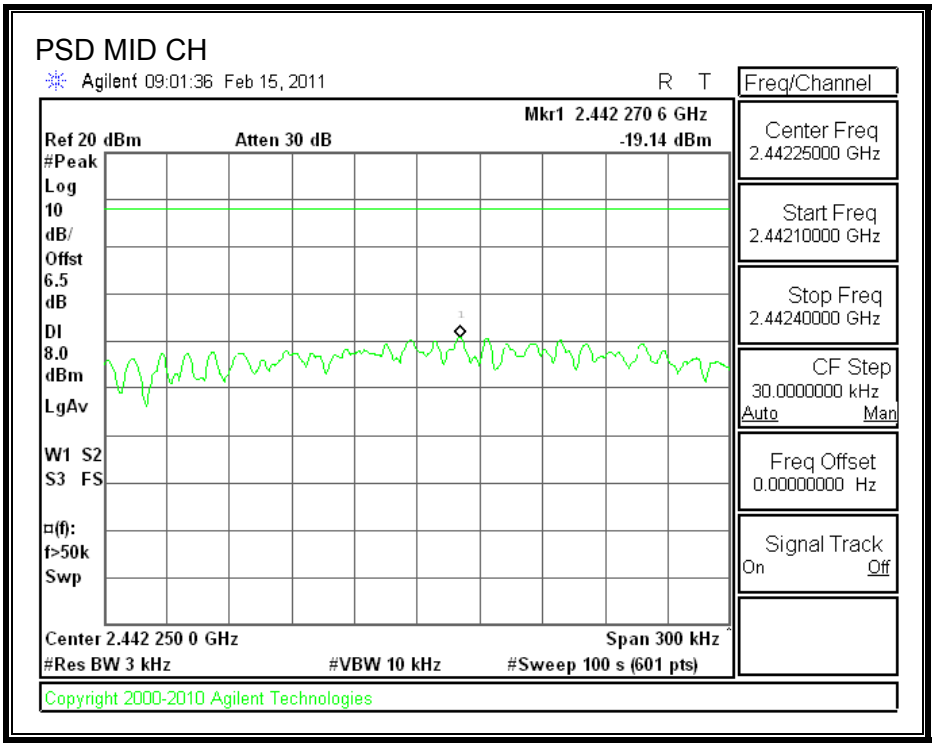
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

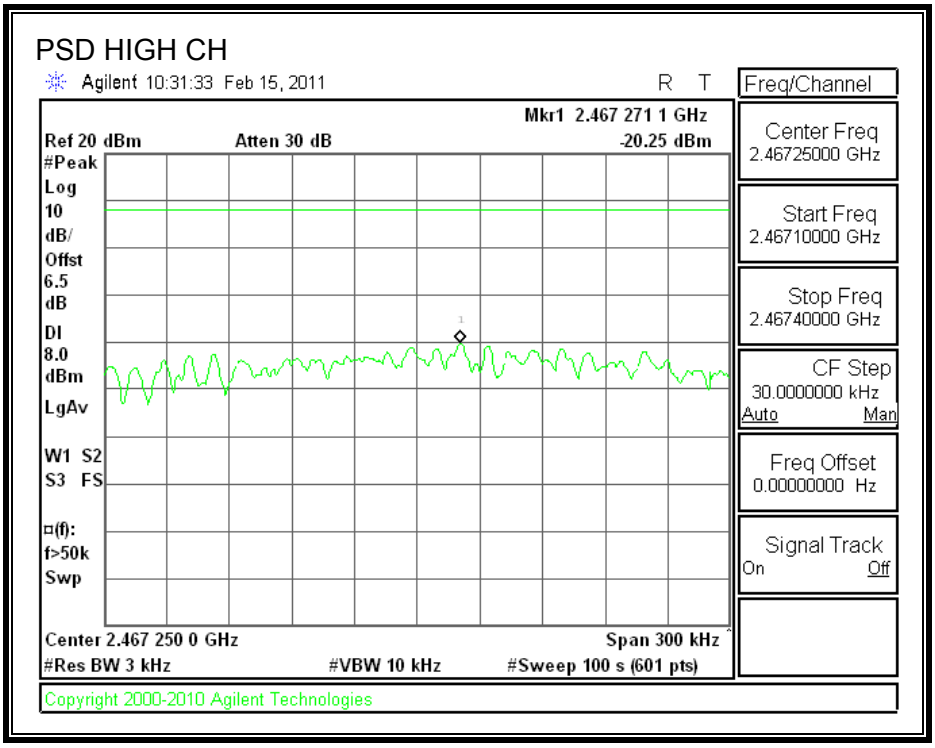
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-18.92	8	-26.92
Middle	2437	-19.14	8	-27.14
High	2462	-20.25	8	-28.25

POWER SPECTRAL DENSITY







7.2.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

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

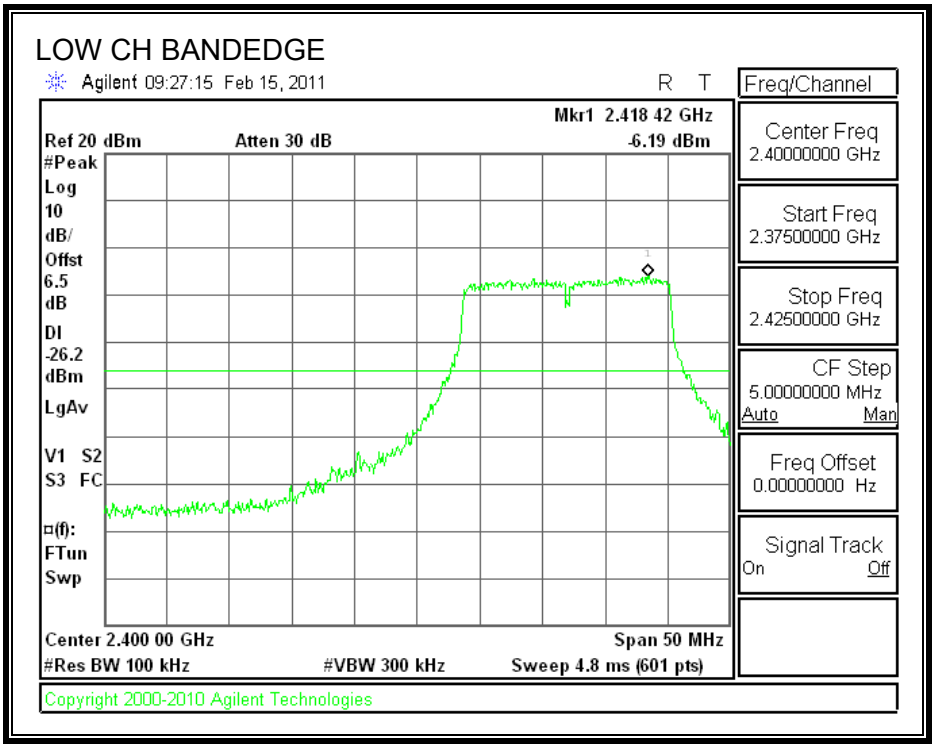
TEST PROCEDURE

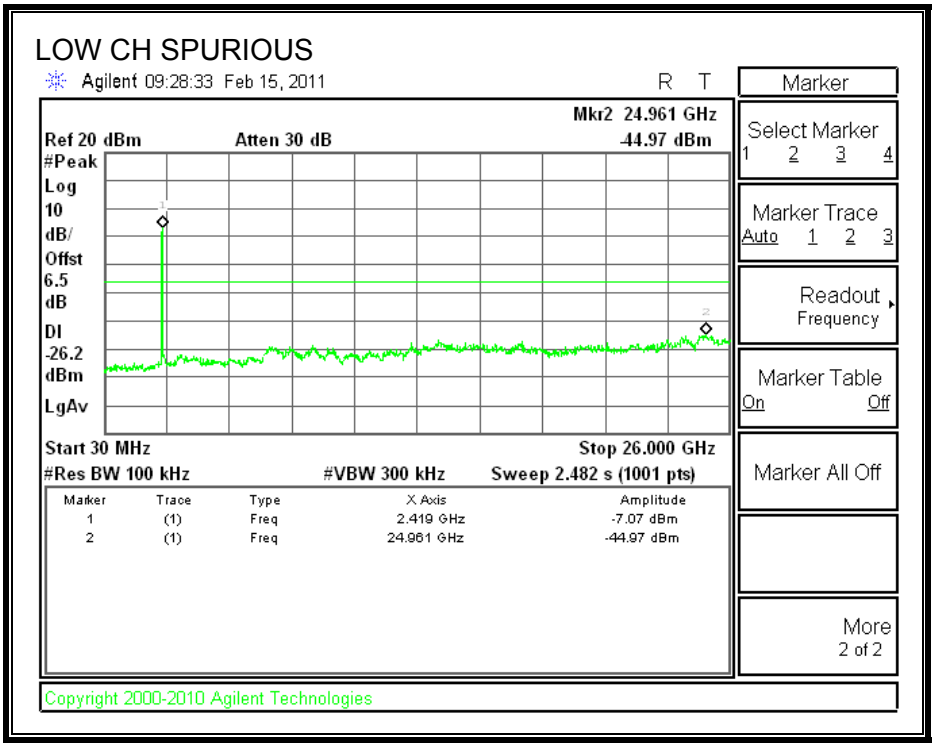
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

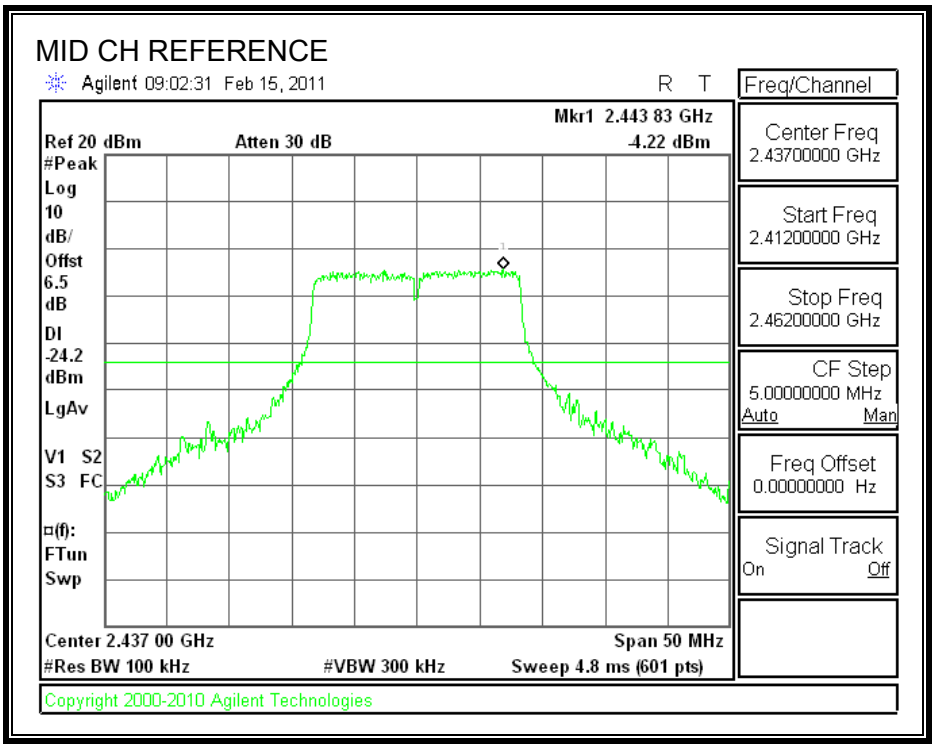
RESULTS

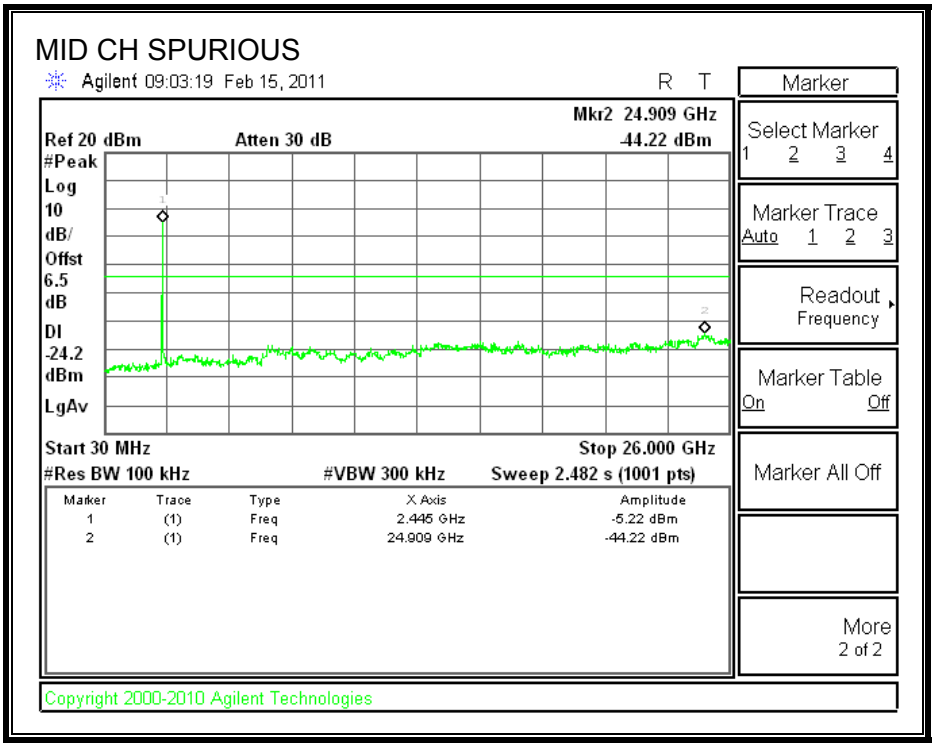
SPURIOUS EMISSIONS, LOW CHANNEL



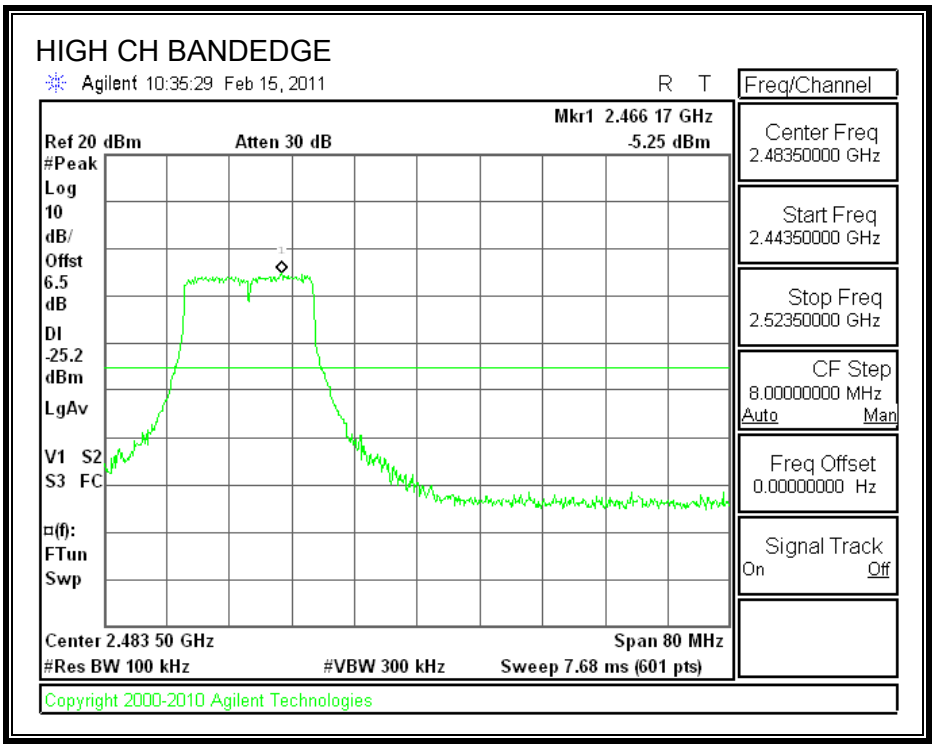


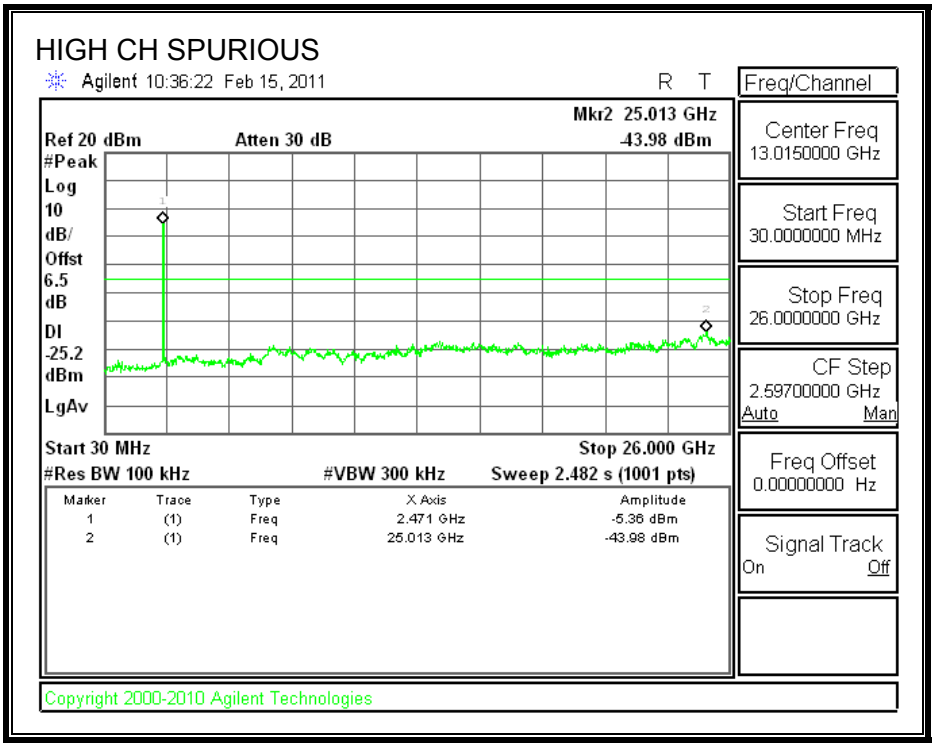
SPURIOUS EMISSIONS, MID CHANNEL





SPURIOUS EMISSIONS, HIGH CHANNEL





8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

TEST PROCEDURE

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

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

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

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

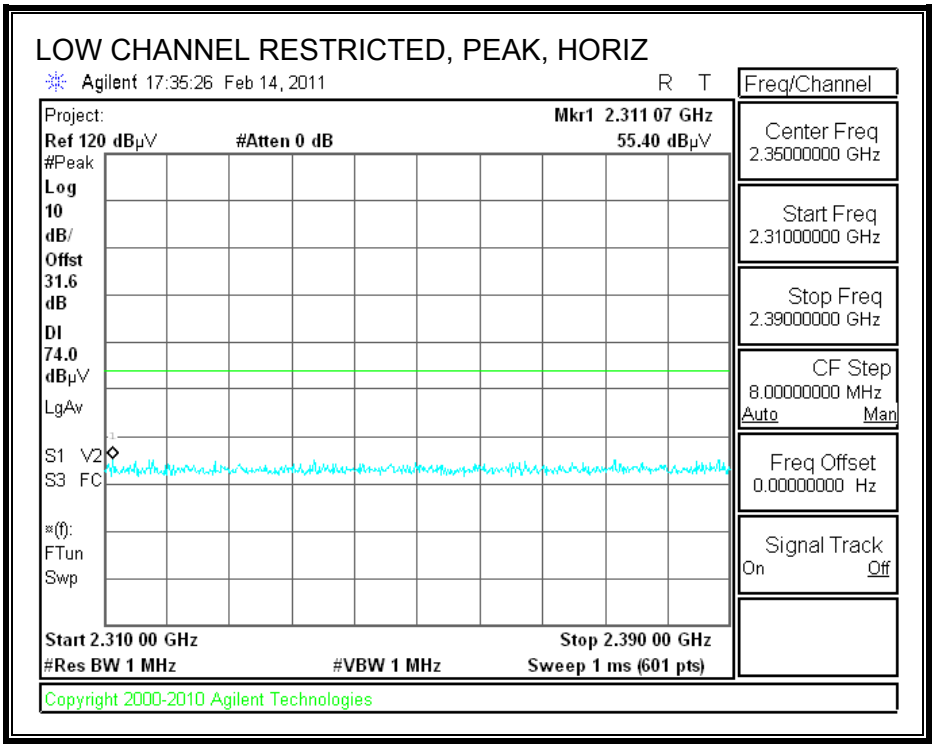
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

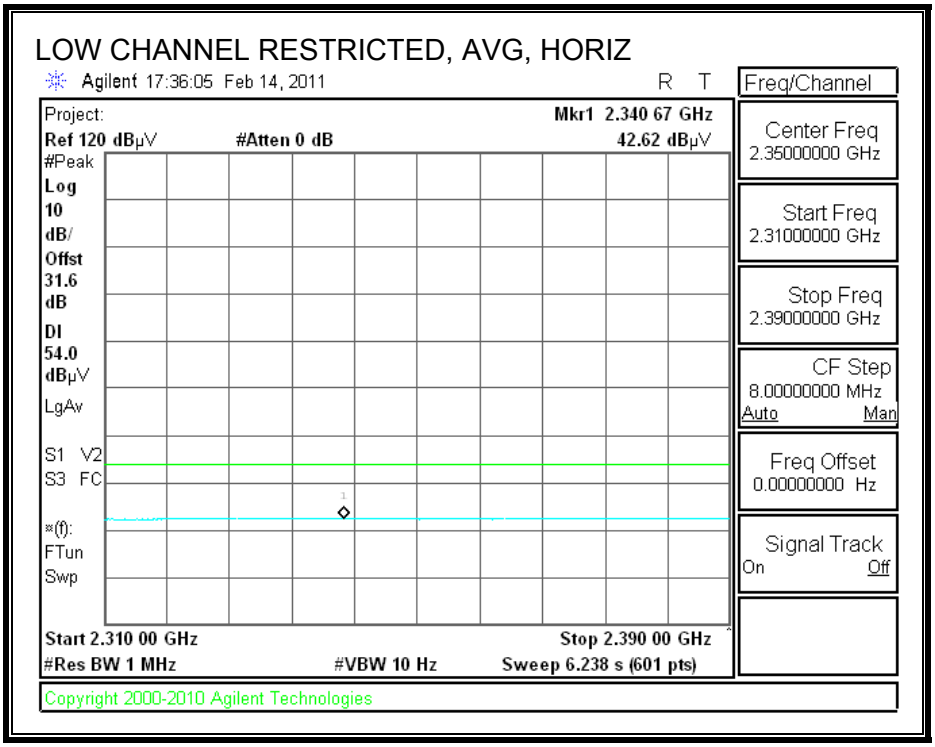
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

8.2. TRANSMITTER ABOVE 1 GHz

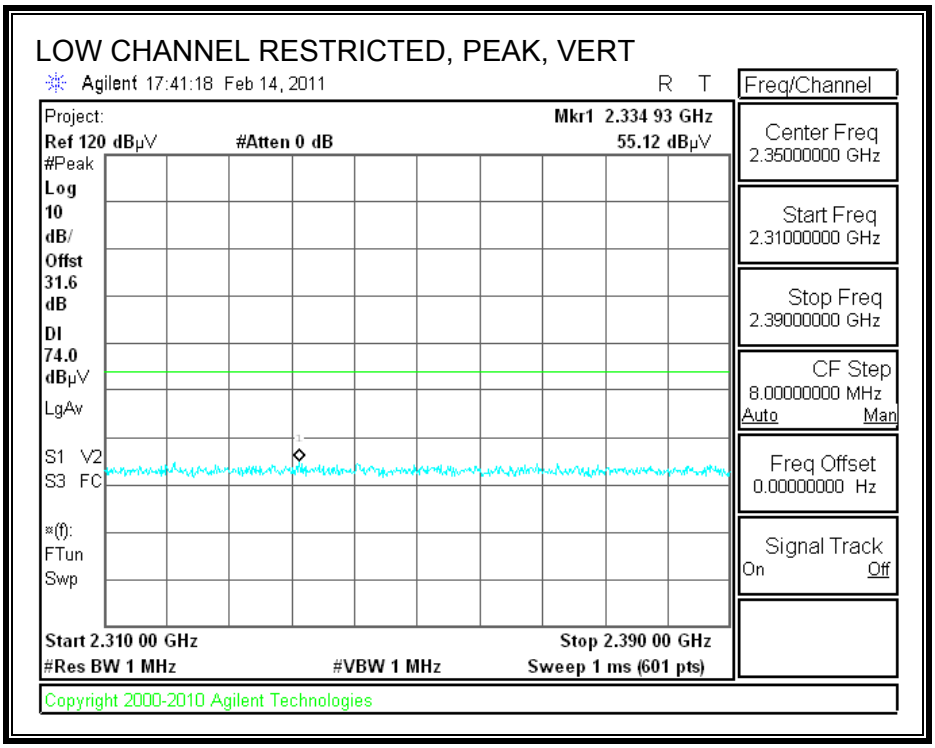
8.2.1. TX ABOVE 1 GHz FOR 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

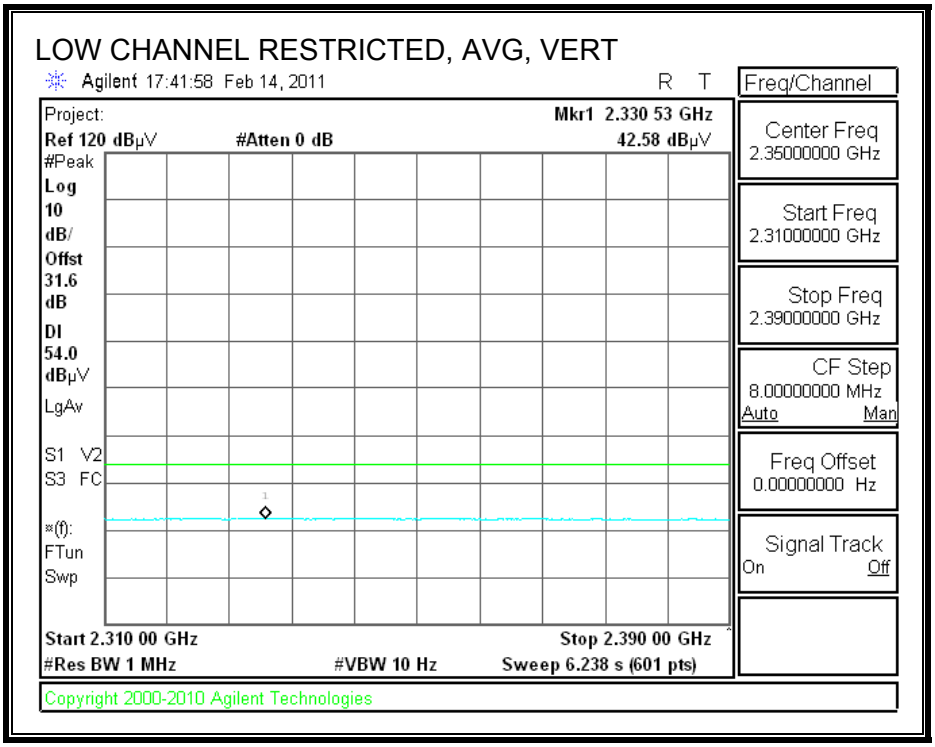




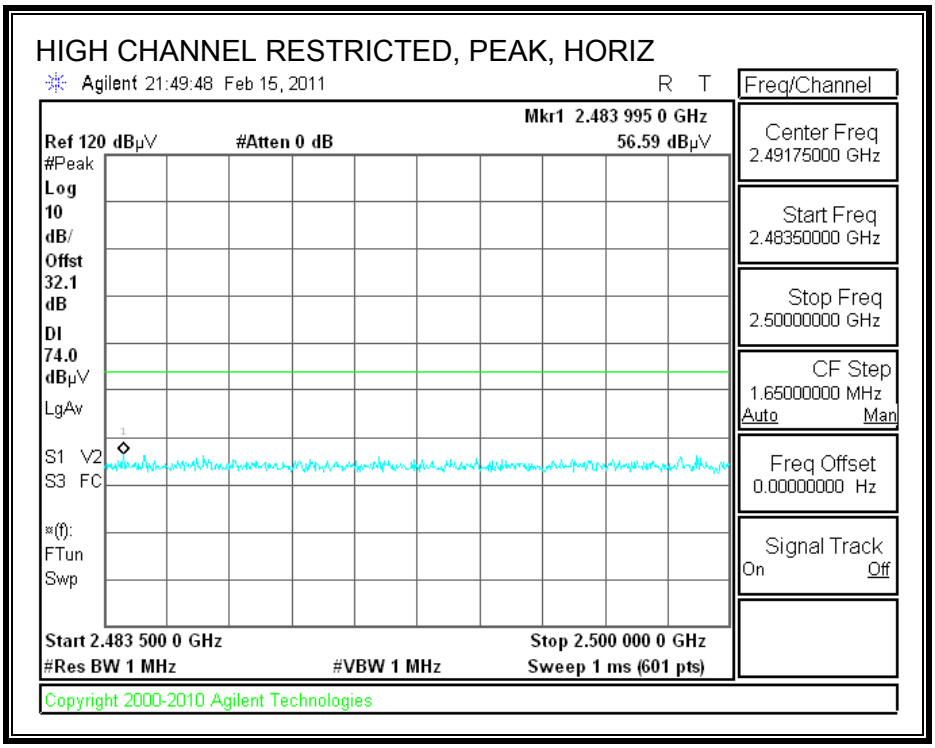
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

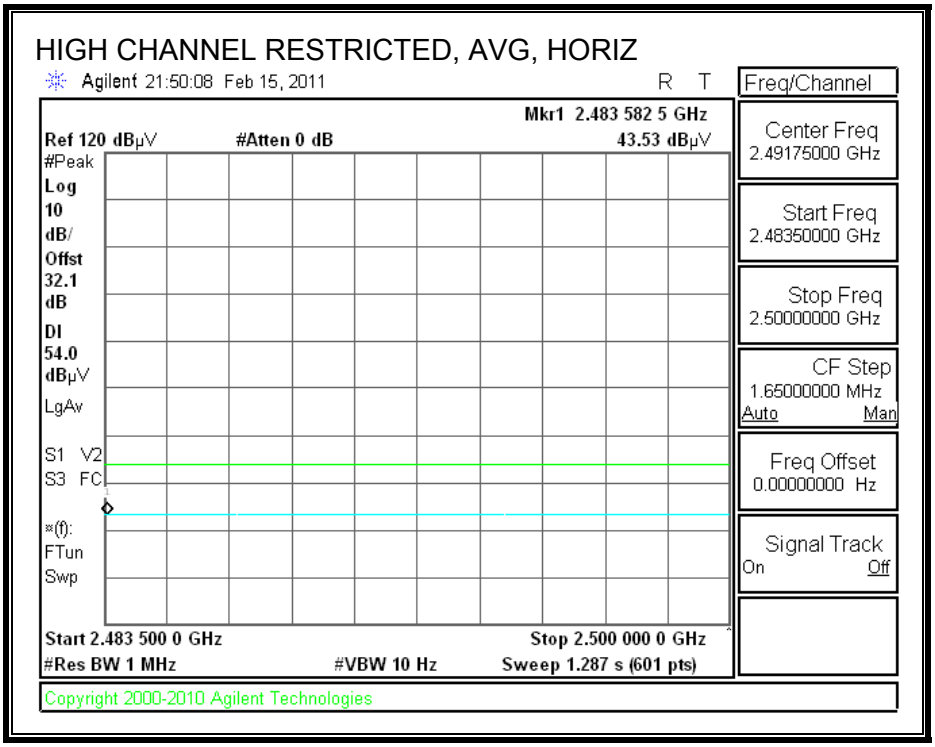


LOW CHANNEL RESTRICTED, AVG, VERT

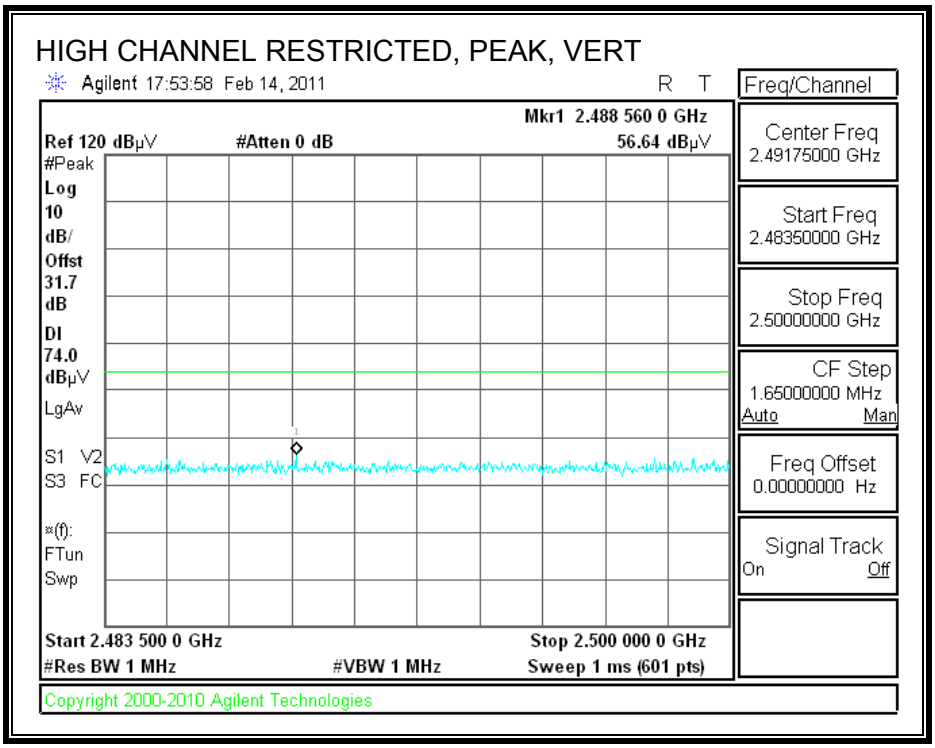


RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

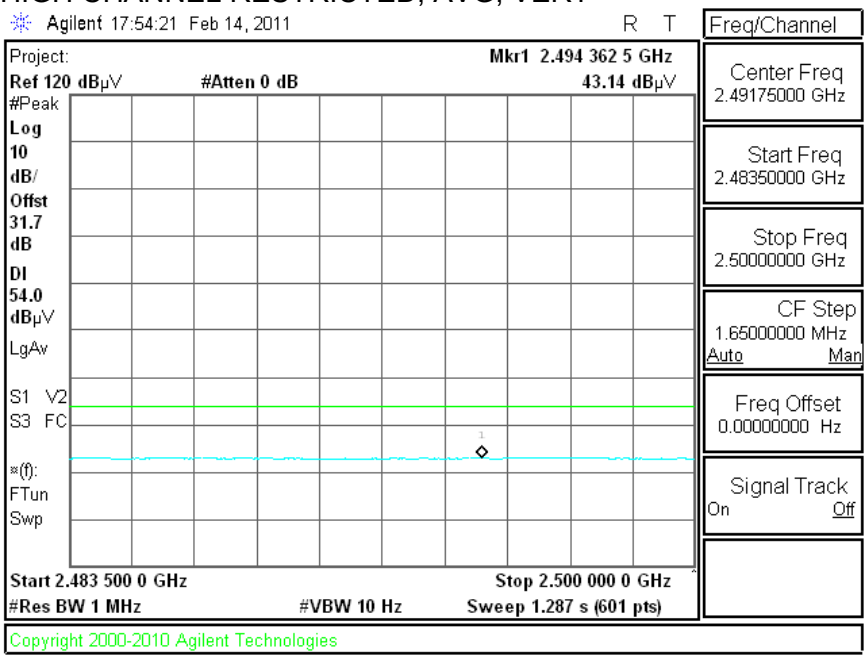




RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HIGH CHANNEL RESTRICTED, AVG, VERT



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Kopin Corporation
Project #: 10U13572
Date: 2/14/2011
Test Engineer: Thanh Nguyen
Configuration: EUT only
Mode: Tx b mode

Test Equipment:

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

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch															
4.824	3.0	41.2	33.5	32.7	5.8	-34.8	0.0	0.0	44.8	37.1	74	54	-29.2	-16.9	V
12.060	3.0	36.1	22.9	38.5	9.8	-32.5	0.0	0.0	51.9	38.7	74	54	-22.1	-15.3	Noise floor
4.824	3.0	39.3	33.6	32.7	5.8	-34.8	0.0	0.0	43.0	37.2	74	54	-31.0	-16.8	H
12.060	3.0	34.9	29.8	38.5	9.8	-32.5	0.0	0.0	50.7	45.6	74	54	-23.3	-8.4	Noise floor
Mid ch															
4.874	3.0	43.7	40.1	32.7	5.8	-34.8	0.0	0.0	47.4	43.8	74	54	-26.6	-10.2	H
7.311	3.0	38.8	29.8	35.5	7.3	-34.1	0.0	0.0	47.4	38.4	74	54	-26.6	-15.6	H
4.874	3.0	41.6	35.3	32.7	5.8	-34.8	0.0	0.0	45.3	39.0	74	54	-28.7	-15.0	V
7.311	3.0	38.1	25.5	35.5	7.3	-34.1	0.0	0.0	46.7	34.1	74	54	-27.3	-19.9	V
High Ch															
4.924	3.0	45.2	41.5	32.7	5.9	-34.8	0.0	0.0	49.0	45.3	74	54	-25.0	-8.7	H
7.386	3.0	41.9	34.1	35.6	7.3	-34.1	0.0	0.0	50.7	42.9	74	54	-23.3	-11.1	H
12.310	3.0	35.0	21.3	38.5	9.9	-32.5	0.0	0.0	50.9	37.2	74	54	-23.1	-16.8	Noise floor
4.924	3.0	45.0	41.0	32.7	5.9	-34.8	0.0	0.0	48.8	44.8	74	54	-25.2	-9.2	V
7.386	3.0	40.0	29.3	35.6	7.3	-34.1	0.0	0.0	48.8	38.1	74	54	-25.2	-15.9	V
12.310	3.0	39.8	30.3	38.5	9.9	-32.5	0.0	0.0	55.7	46.1	74	54	-18.3	-7.9	Noise floor

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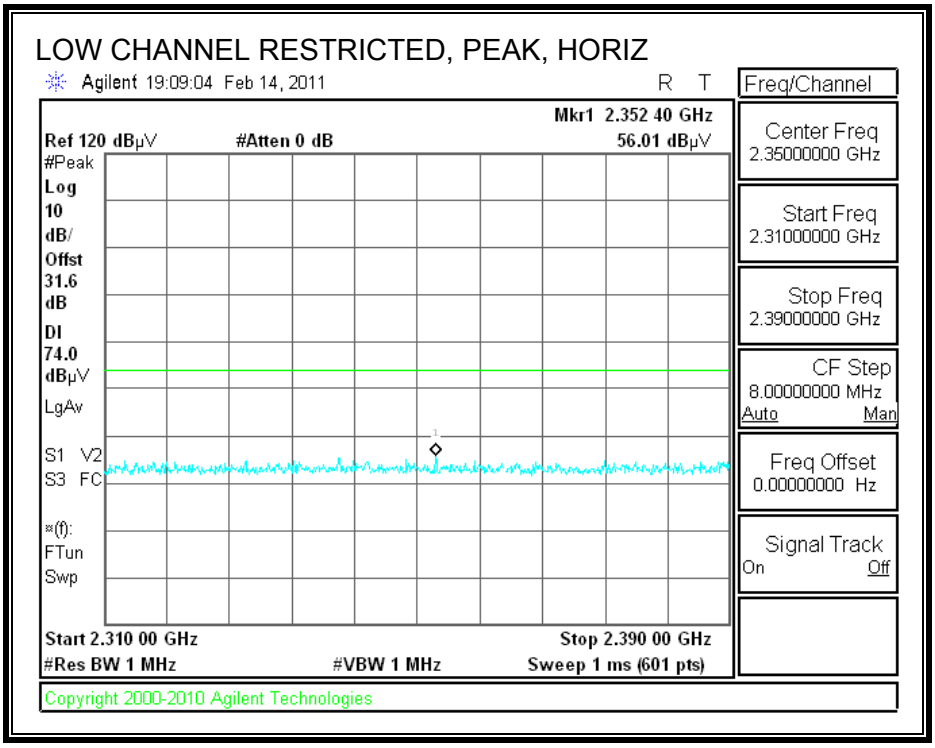
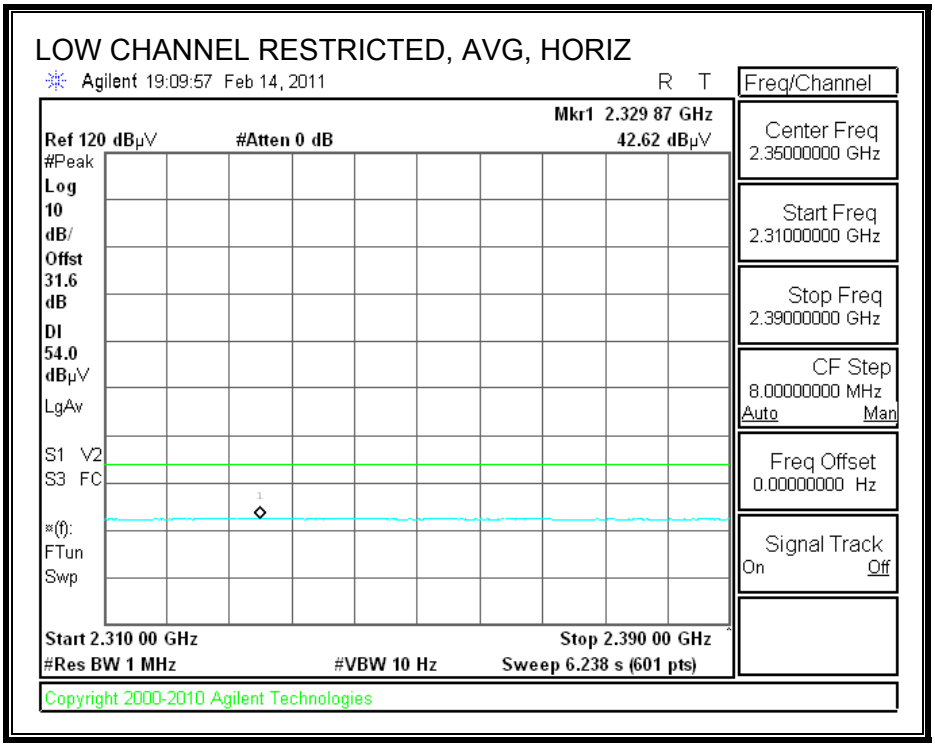
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

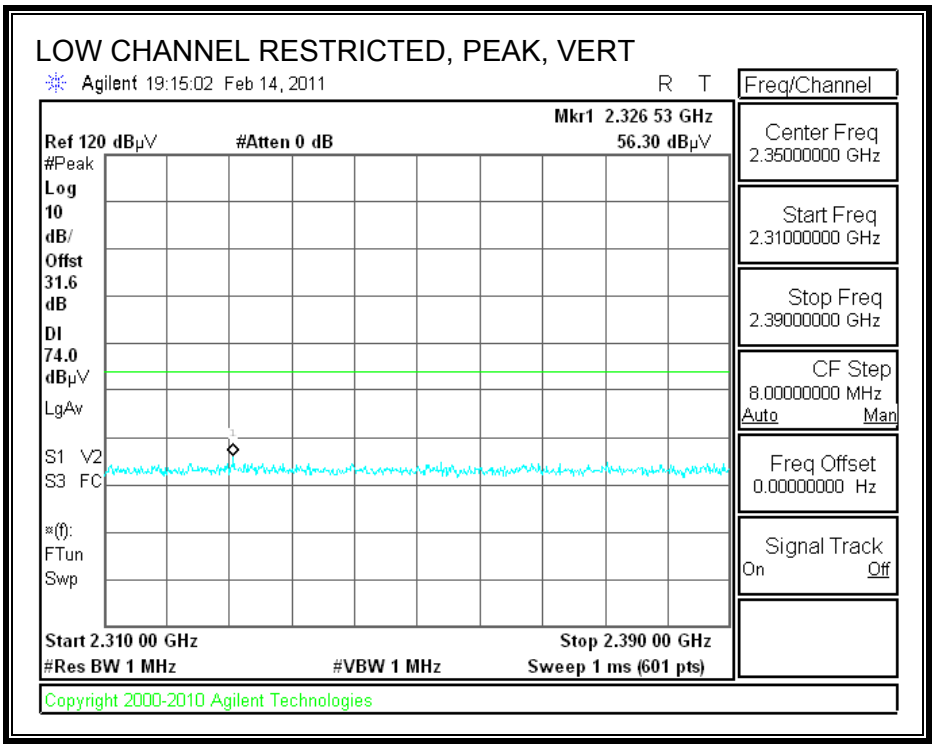
8.2.2. TX ABOVE 1 GHz FOR 802.11g MODE IN THE 2.4 GHz BAND

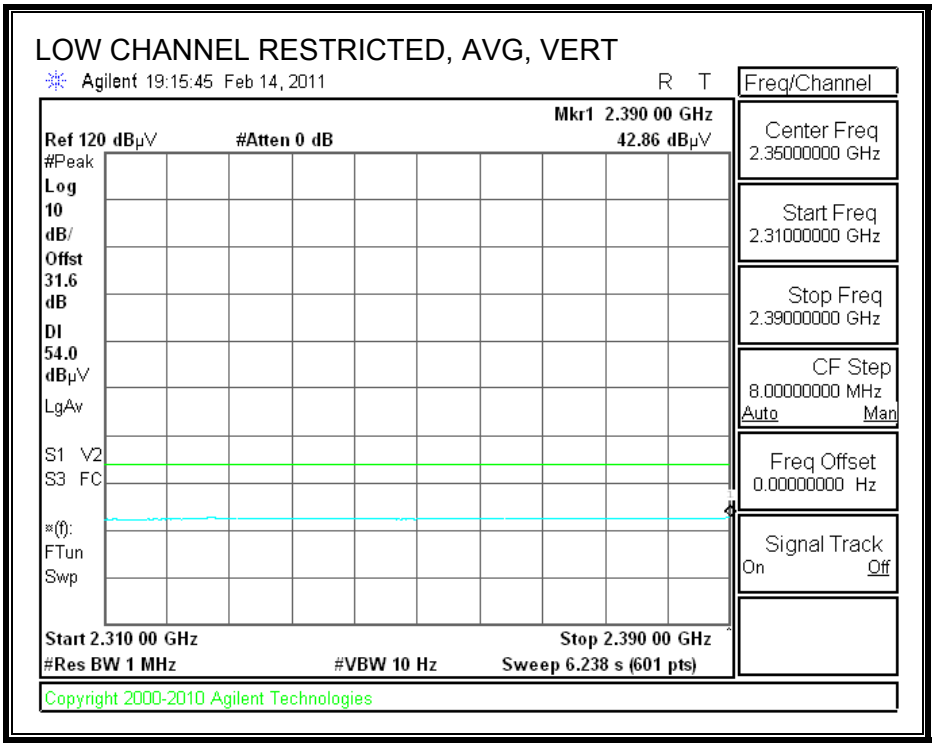
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



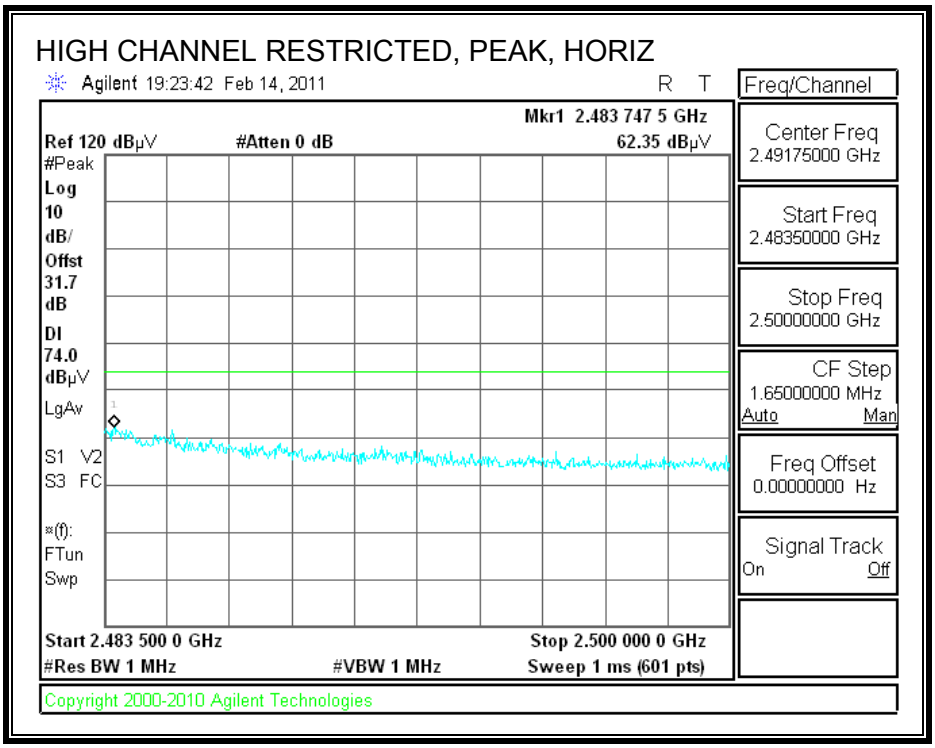


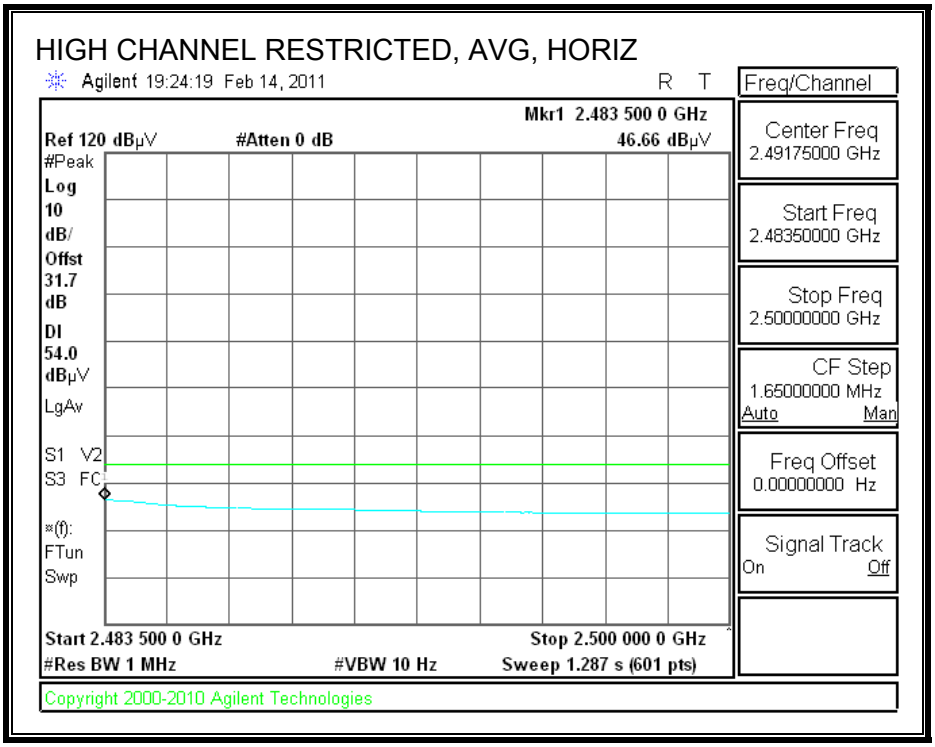
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



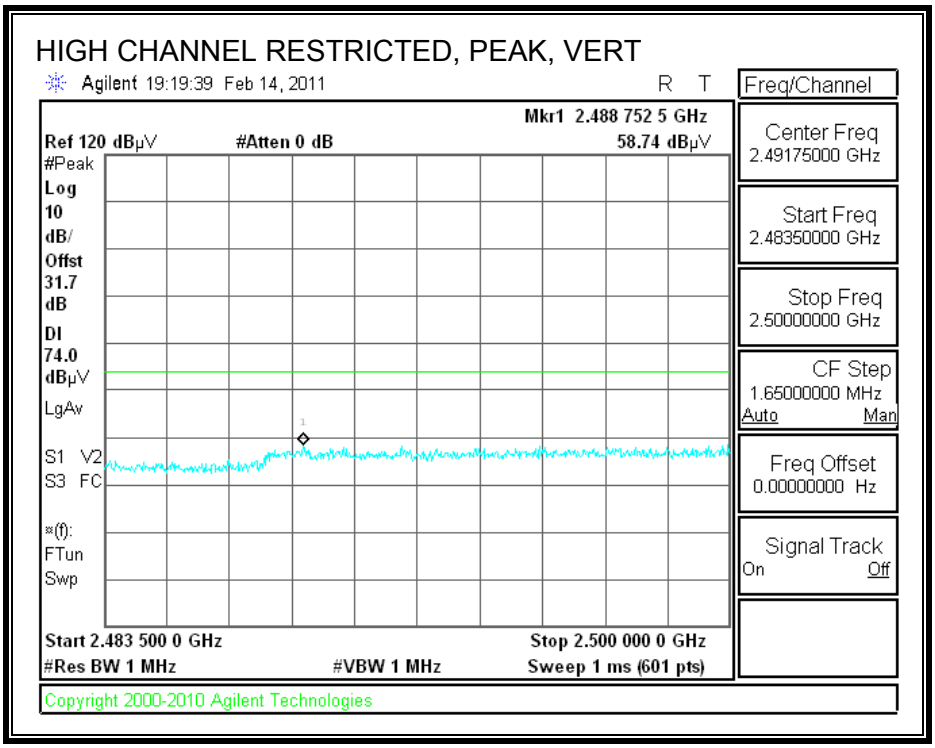


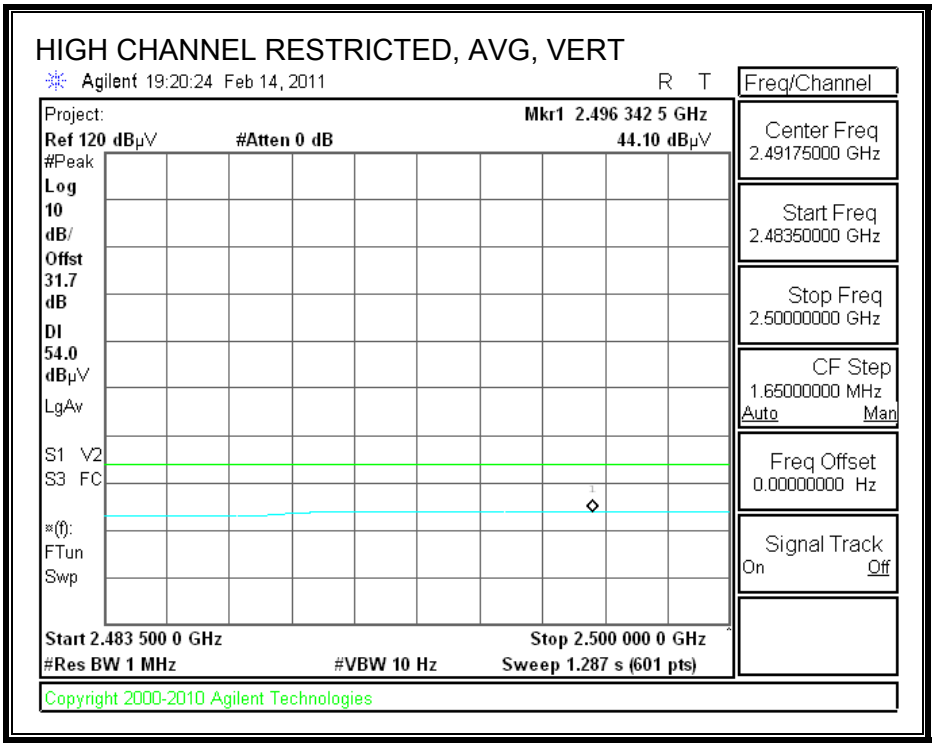
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Kopin Corporation
Project #: 10U13572
Date: 2/14/2011
Test Engineer: Thanh Nguyen
Configuration: EUT only
Mode: Tx g mode

Test Equipment:

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

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch															
4.824	3.0	36.1	24.1	33.0	5.8	-36.5	0.0	0.0	38.5	26.4	74	54	-35.5	-27.6	V
12.060	3.0	33.0	21.4	39.0	9.8	-35.4	0.0	0.0	46.4	34.8	74	54	-27.6	-19.2	V
14.472	3.0	32.7	21.1	40.5	10.8	-35.3	0.0	0.0	48.7	37.2	74	54	-25.3	-16.8	V
4.824	3.0	39.6	31.3	33.0	5.8	-36.5	0.0	0.0	41.9	33.6	74	54	-32.1	-20.4	H
12.060	3.0	34.2	21.5	39.0	9.8	-35.4	0.0	0.0	47.6	34.8	74	54	-26.4	-19.2	H
14.472	3.0	32.4	21.1	40.5	10.8	-35.3	0.0	0.0	48.5	37.2	74	54	-25.5	-16.8	H
Mid ch															
4.874	3.0	43.8	26.3	33.1	5.8	-36.5	0.0	0.0	46.2	28.7	74	54	-27.8	-25.3	H
7.311	3.0	38.3	24.1	35.3	7.3	-36.2	0.0	0.0	44.7	30.4	74	54	-29.3	-23.6	H
12.185	3.0	31.5	21.4	39.0	9.8	-35.4	0.0	0.0	44.9	34.8	74	54	-29.1	-19.2	Noise floor
4.874	3.0	40.1	24.9	33.1	5.8	-36.5	0.0	0.0	42.6	27.4	74	54	-31.4	-26.6	V
7.311	3.0	36.6	23.3	35.3	7.3	-36.2	0.0	0.0	43.0	29.6	74	54	-31.0	-24.4	V
High Ch															
4.924	3.0	43.4	25.8	33.1	5.9	-36.5	0.0	0.0	45.9	28.4	74	54	-28.1	-25.6	H
7.386	3.0	41.1	26.0	35.4	7.3	-36.2	0.0	0.0	47.6	32.5	74	54	-26.4	-21.5	H
12.310	3.0	34.4	21.2	39.0	9.9	-35.4	0.0	0.0	47.9	34.7	74	54	-26.1	-19.3	Noise floor
4.924	3.0	40.9	25.6	33.1	5.9	-36.5	0.0	0.0	43.5	28.2	74	54	-30.5	-25.8	V
7.386	3.0	37.6	26.5	35.4	7.3	-36.2	0.0	0.0	44.1	33.0	74	54	-29.9	-21.0	V
12.310	3.0	33.9	21.1	39.0	9.9	-35.4	0.0	0.0	47.4	34.6	74	54	-26.6	-19.4	Noise floor

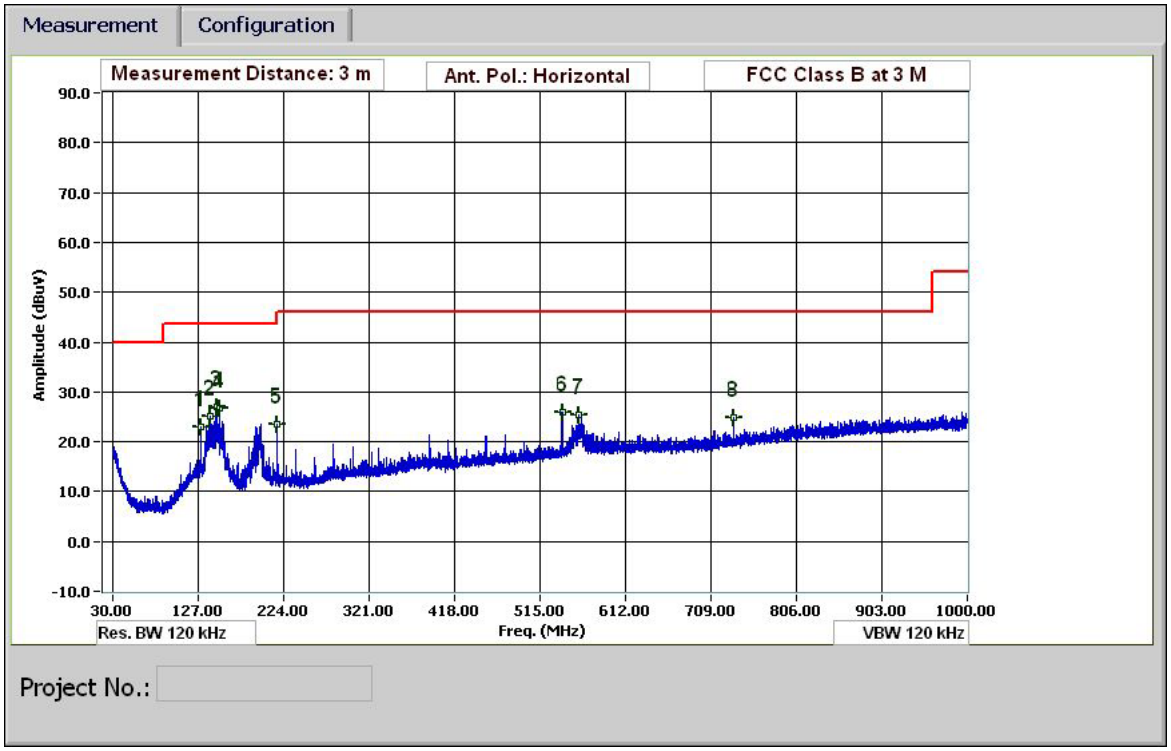
Rev. 07.22.09

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

8.3. WORST-CASE BELOW 1 GHz

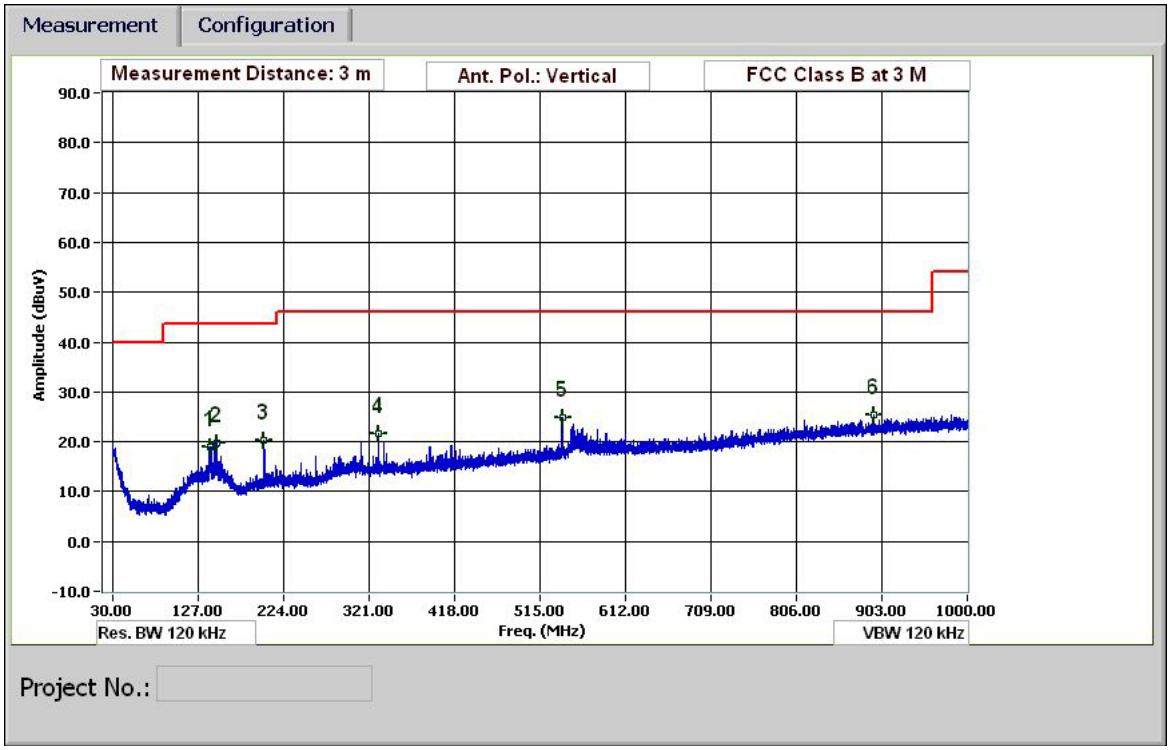
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



TABULAR DATA

30-1000MHz Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Thanh Nguyen
Date: 02/15/11
Project #: 10U13572
Company: Kopin Corporation
Test Target: FCC 15.247
Mode Oper: Transmit worst case

f	Measurement Frequency	Amp	Preamp Gain
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters
Read	Analyzer Reading	Filter	Filter Insert Loss
AF	Antenna Factor	Corr.	Calculated Field Strength
CL	Cable Loss	Limit	Field Strength Limit

Margin — Margin vs. Limit

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Pad dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant. High cm	Table Angle Degree	Notes
NEW POWER															
129.604	3.0	36.2	13.8	0.9	28.0	0.0	0.0	23.0	43.5	-20.5	H	P	100.0	0 - 360	
141.365	3.0	39.0	13.1	1.0	27.9	0.0	0.0	25.1	43.5	-18.4	H	P	100.0	0 - 360	
147.605	3.0	41.1	12.8	1.0	27.8	0.0	0.0	27.1	43.5	-16.4	H	P	100.0	0 - 360	
151.085	3.0	40.9	12.7	1.0	27.8	0.0	0.0	26.8	43.5	-16.7	H	P	100.0	0 - 360	
216.008	3.0	37.9	11.9	1.2	27.4	0.0	0.0	23.6	46.0	-22.4	H	P	100.0	0 - 360	
540.021	3.0	34.9	17.5	2.1	28.6	0.0	0.0	25.8	46.0	-20.2	H	P	100.0	0 - 360	
559.702	3.0	34.0	17.8	2.1	28.6	0.0	0.0	25.3	46.0	-20.7	H	P	100.0	0 - 360	
734.429	3.0	31.1	19.6	2.5	28.4	0.0	0.0	24.8	46.0	-21.2	H	P	100.0	0 - 360	
139.925	3.0	32.9	13.1	1.0	27.9	0.0	0.0	19.1	43.5	-24.4	V	P	100.0	0 - 360	
148.085	3.0	33.9	12.8	1.0	27.8	0.0	0.0	19.9	43.5	-23.6	V	P	100.0	0 - 360	
200.887	3.0	34.6	11.9	1.2	27.4	0.0	0.0	20.3	43.5	-23.2	V	P	100.0	0 - 360	
331.932	3.0	33.8	14.0	1.6	27.6	0.0	0.0	21.7	46.0	-24.3	V	P	100.0	0 - 360	
540.021	3.0	34.0	17.5	2.1	28.6	0.0	0.0	24.9	46.0	-21.1	V	P	100.0	0 - 360	
893.796	3.0	28.6	22.0	2.7	27.9	0.0	0.0	25.4	46.0	-20.6	V	P	100.0	0 - 360	

Rev. 1.27.09
Note: No other emissions were detected above the system noise floor.

8.4. RECEIVER ABOVE 1 GHz

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Kopin Corporation
Project #: 10U13572
Date: 2/3/2011
Test Engineer: Thanh Nguyen
Configuration: EUT only
Mode: Receive

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T144 Miteq 3008A00931			RX RSS 210

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch															
2.160	3.0	47.2	40.8	27.6	3.6	-37.8	0.0	0.0	40.6	34.1	74	54	-33.4	-19.9	H
2.988	3.0	47.4	42.0	30.0	4.3	-37.4	0.0	0.0	44.3	39.0	74	54	-29.7	-15.0	V
Mid ch															
2.160	3.0	50.0	43.7	27.6	3.6	-37.8	0.0	0.0	43.4	37.1	74	54	-30.6	-16.9	H
2.988	3.0	46.9	41.3	30.0	4.3	-37.4	0.0	0.0	43.8	38.3	74	54	-30.2	-15.7	V
High Ch															
2.158	3.0	49.7	44.1	27.6	3.6	-37.8	0.0	0.0	43.0	37.5	74	54	-31.0	-16.5	H
2.988	3.0	45.7	39.1	30.0	4.3	-37.4	0.0	0.0	42.6	36.0	74	54	-31.4	-18.0	V

Rev. 07.22.09

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

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

This test is not applicable because the EUT is only powered by batteries, it connects to USB only for data and not for power; this portion is covered in the FCC digital report number "10U13572-3 FCC15B ITE Report.doc".