FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CLASS II PERMISSIVE CHANGE
(2.4GHz BAND, 11n HT40)

CERTIFICATION TEST REPORT

FOR

2x2 802.11a/b/g/n +BT Module (SiP)

MODEL NUMBER: QCA6234

FCC ID: PPD-QCA6234
IC: 4104A-QCA6234

REPORT NUMBER: 13U15601-1

ISSUE DATE: July 15, 2013

Prepared for
QUALCOMM ATHEROS, INC.
1700 TECHNOLOGY DRIVE
SAN JOSE, CA 95110

Prepared by
UL VERIFICATION SERVICES INC.
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	07/15/13	Initial	T. LEE

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: QUALCOMM ATHEROS, INC
1700 TECHNOLOGY DRIVE
SAN JOSE, CA 95100

EUT DESCRIPTION: 2x2 802.11a/b/g/n +BT Module (SiP)

MODEL: QCA6234

SERIAL NUMBER: 75720088

DATE TESTED: July 5 – July 14, 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 Verification Services Inc. 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 Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 Verification Services Inc. By:

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UL Verification Services Inc.

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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 Verification Services Inc. 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%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is 2x2 802.11a/b/g/n +BT Module (SiP).

Three board variants are provided, no filter version, 3G filter version and LTE filter version. Test was done to worst case among the three boards.

The radio module is manufactured by Qualcomm Atheros, Inc.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Total power (dBm)	Total power (mW)
2422 - 2452	802.11n HT40 CDD 2TX	25.21	24.17	27.73	593.11

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5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The declared antenna gain is 2dBi, this antenna gain was used for conducted spurious/band-edge calculations.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was ART2-GUI version 2.3, CART version 4.4.

5.5. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

This report adds 2.4GHz 11n HT40 mode.

5.6. WORST-CASE CONFIGURATION AND MODE

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

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

A baseline scan was performed on various data rate modes, it was found that when Peak detector was used for the test item the highest data rate was worst-case, and when the AVG detector was chosen for a certain test item the lowest data rate was worst-case, and since the items with AVG detector had lower margin and they were more critical, lowest data rates, as follows, were selected for performing the final measurements:

802.11n HT40mode: MCS0

Three board variants are provided, no filter version, 3G filter version and LTE filter version. Test was done to worst case among the three boards.

Protocol used for spurious and harmonics was conducted measurements + cabinet radiated emissions with 50 ohm load.

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5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	Lenovo	T410 Thinkpad	R8-V8D76 11/03	DoC
SD Card Express Adapter	Bplus	EC230	1100319	N/A

I/O CABLES

Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC Adapter	Un-Shielded	1m	NA
2	DC	1	DC	Un-Shielded	1.5m	NA
3	AC	1	AC Adapter	Un-Shielded	1m	NA

TEST SETUP

The EUT is installed in a host laptop computer during the tests. Test software exercised the radio card.

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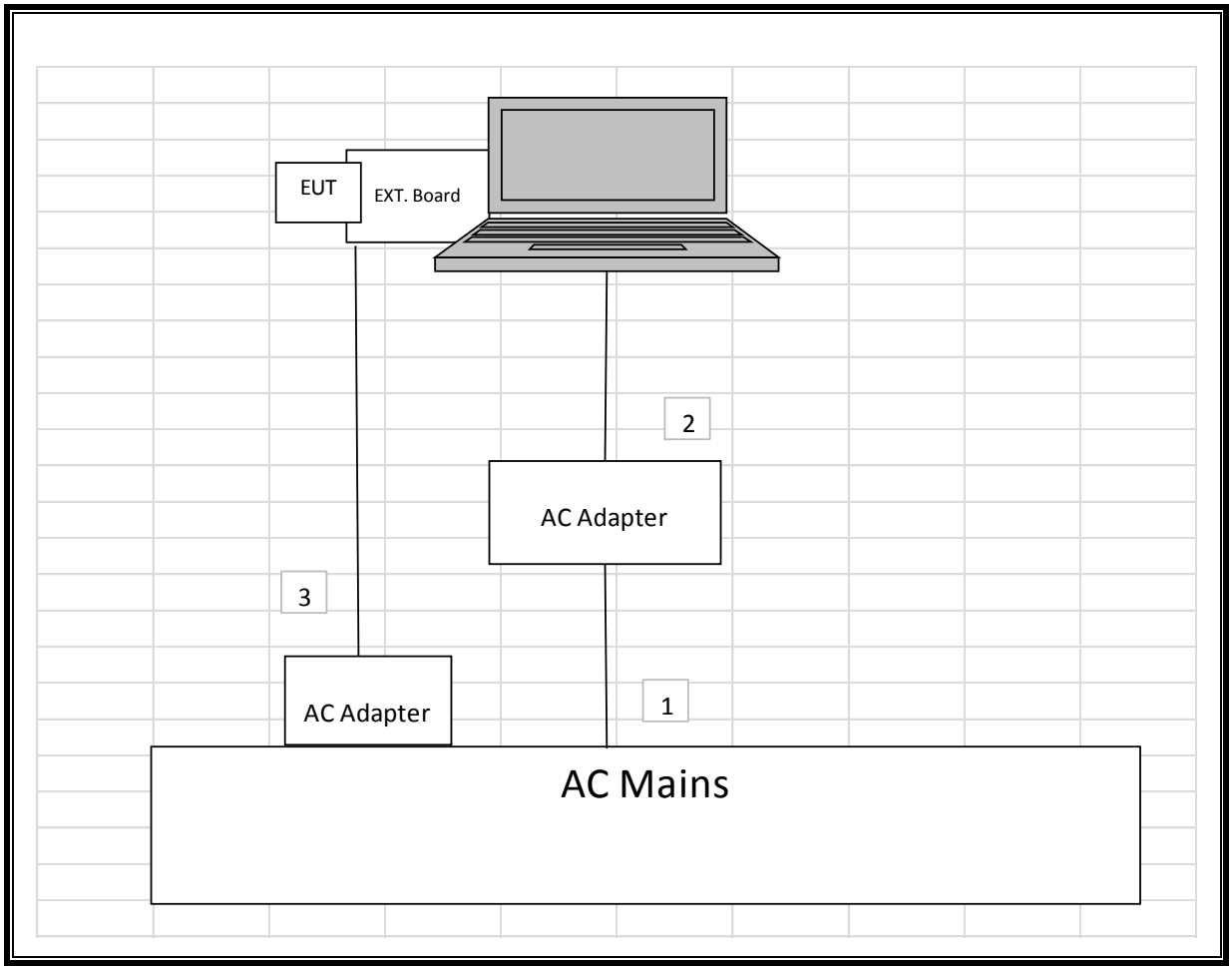
SETUP DIAGRAM FOR TESTS



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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/ T number**	**Cal Date**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent	E4446A	T-85	4/1/2013	4/1/2014
Spectrum Analyzer, 26.5 GHz	Agilent	E4440A	T-199	2/26/2013	2/26/2014
Antenna, Horn, 18 GHz	ETS	3117	T136	2/21/2013	2/21/2014
Horn Antenna, 1-18GHz	ETS Lindgren	3117	T345	2/19/2013	2/19/2014
Preamplifier, 26.5 GHz	Agilent	8449B	T-34	10/19/2012	10/19/2013
P-Series single channel Power Meter	Agilent	N1911A	T-227	10/12/2012	10/12/2013
Peak / Average Power Sensor	Agilent	E9327A	T-228	10/11/2012	10/11/2013

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7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

7.1.1. 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)
802.11n HT40	0.1276	0.1844	0.692	69.2%	1.60	7.837

7.1.2. MEASUREMENT METHOD FOR POWER AND PPSD

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

7.1.3. MEASUREMENT METHOD FOR AVERAGE SPURIOUS EMISSIONS ABOVE 1 GHz

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

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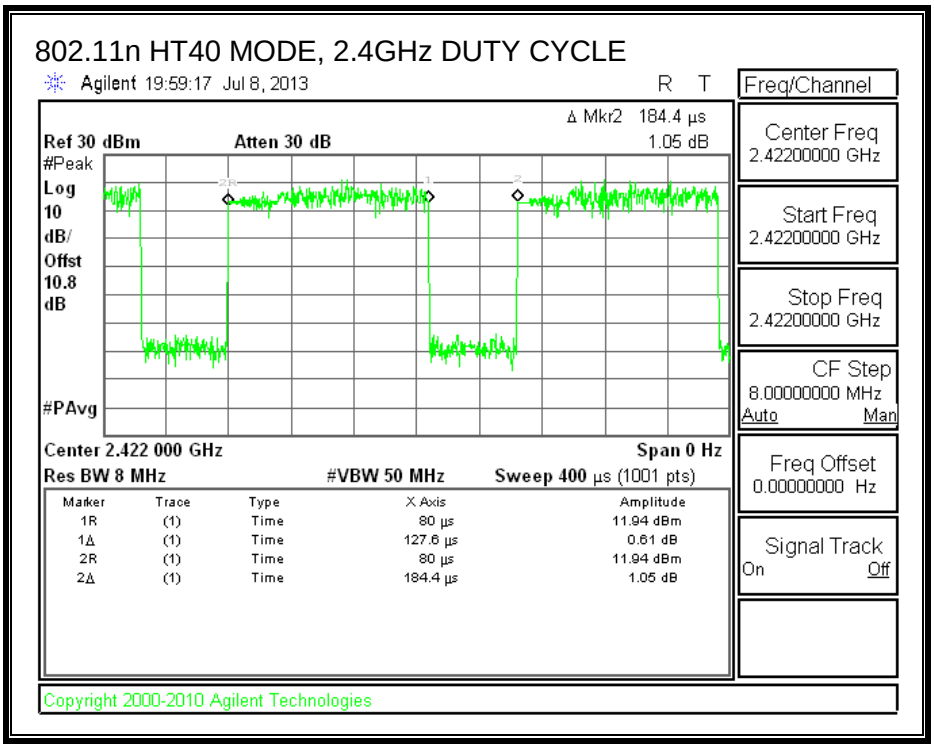
7.1.4. DUTY CYCLE PLOTS



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8. ANTENNA PORT TEST RESULTS

8.1. 802.11n HT40 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 >= 3 x RBW, peak detector and max hold.

RESULTS

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	2422	36.465	36.465	0.5
Mid	2437	36.520	36.520	0.5
High	2452	36.465	36.465	0.5

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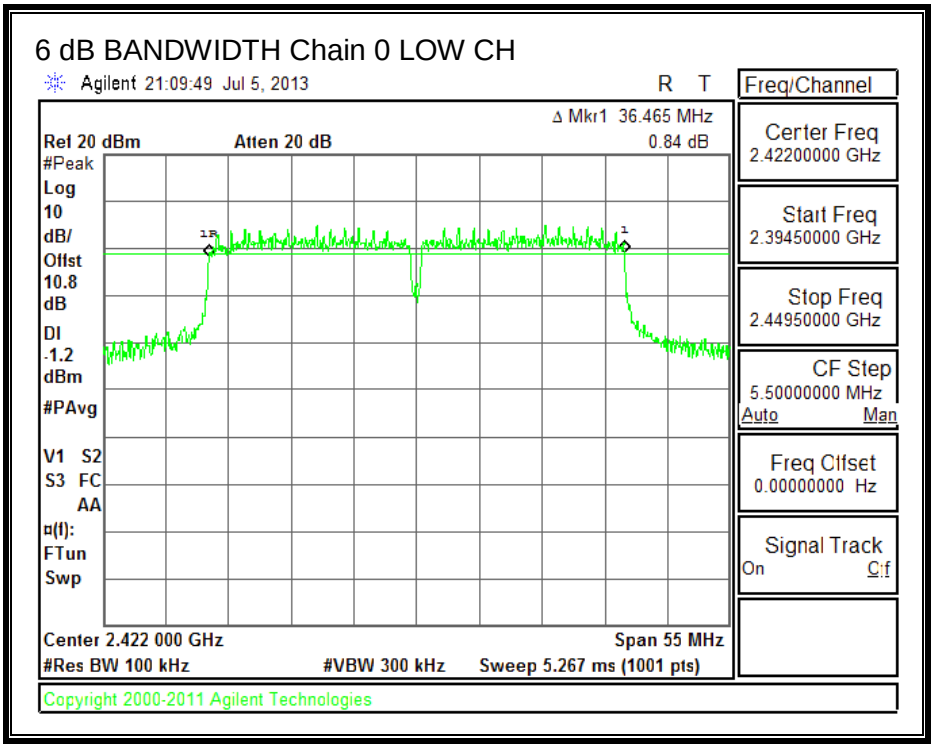
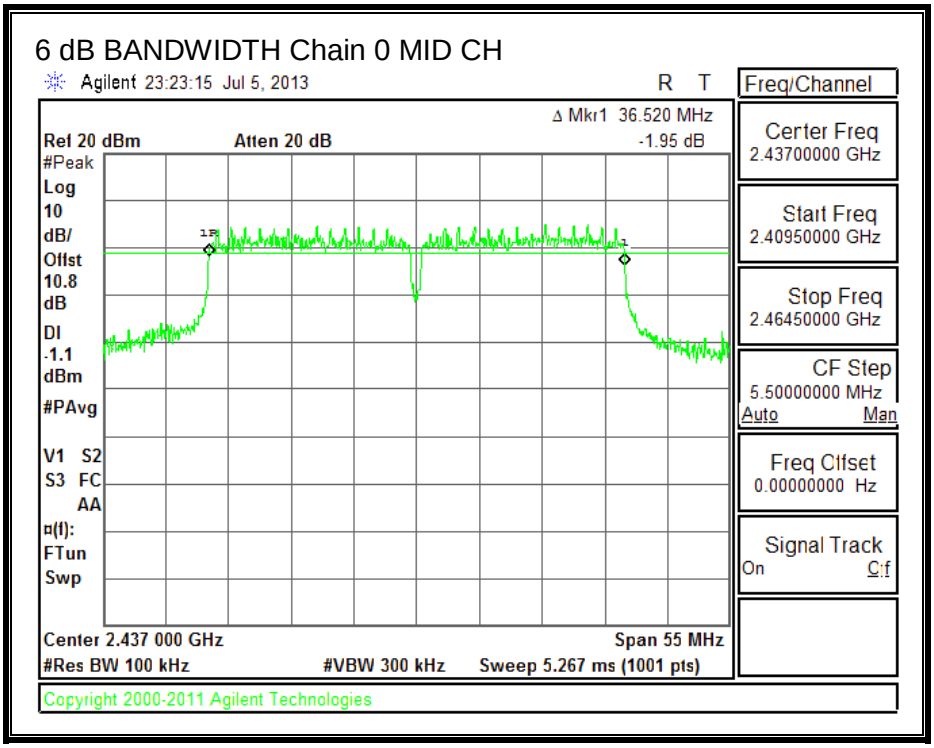
6 dB BANDWIDTH, Chain 0





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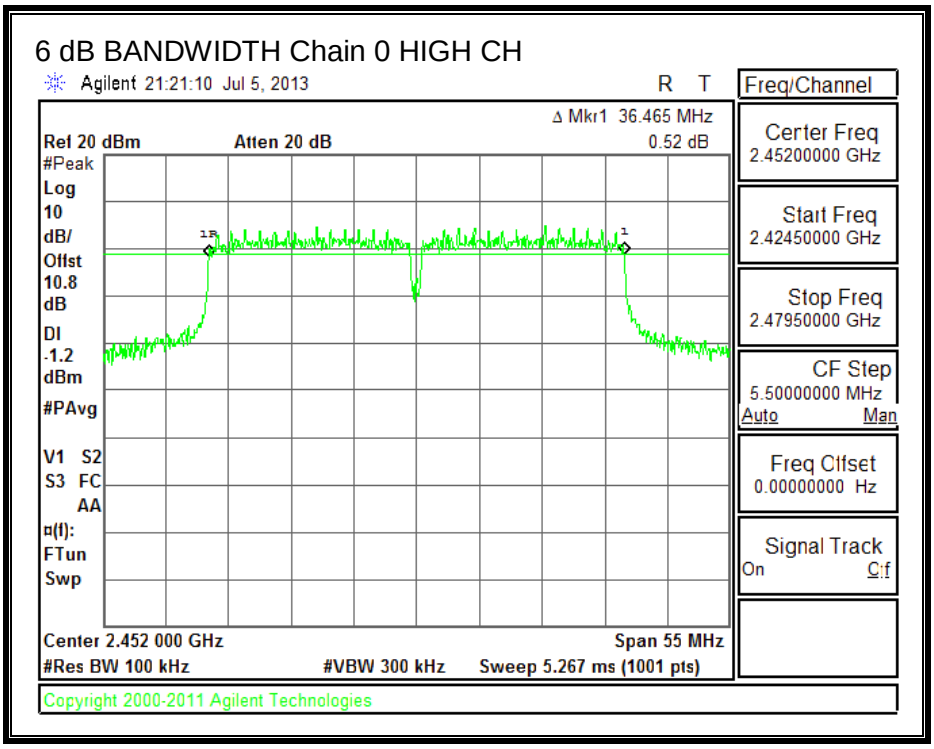
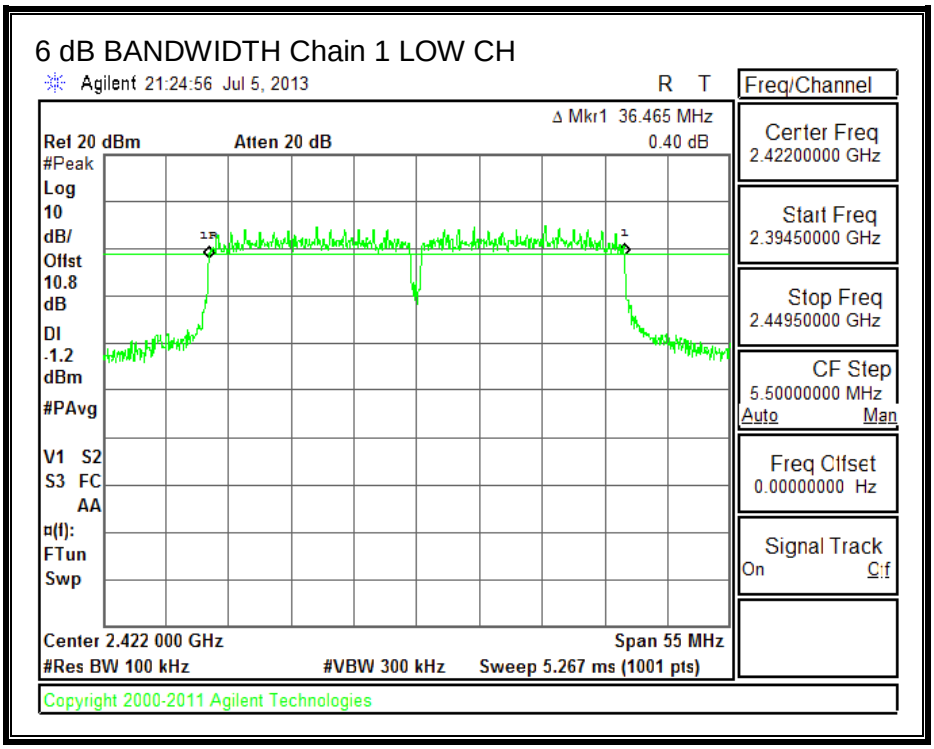


6 dB BANDWIDTH, Chain 1



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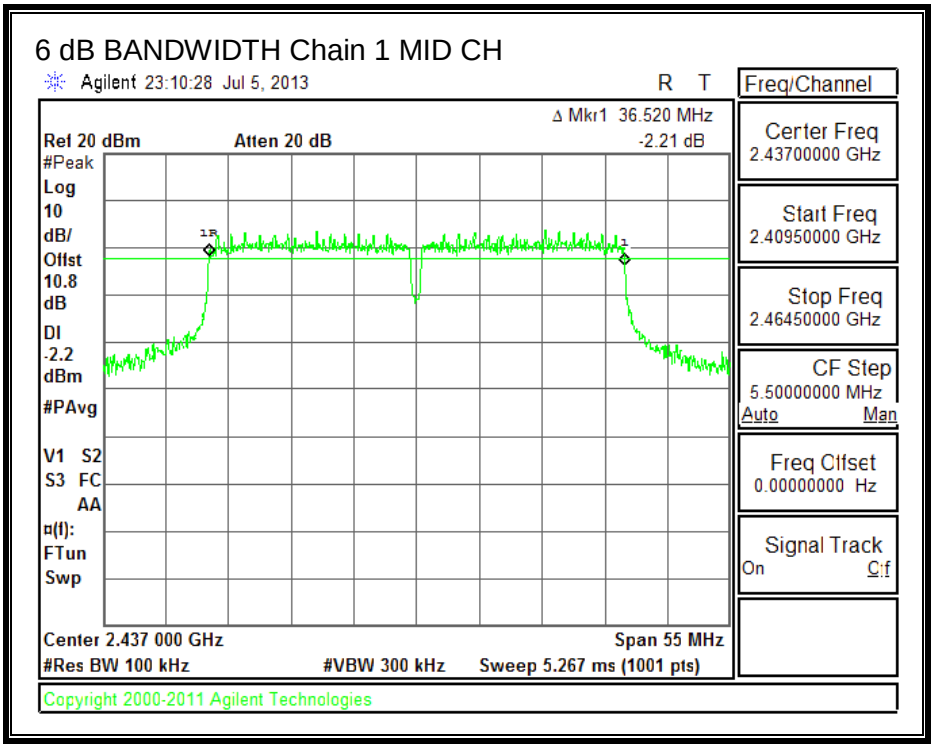
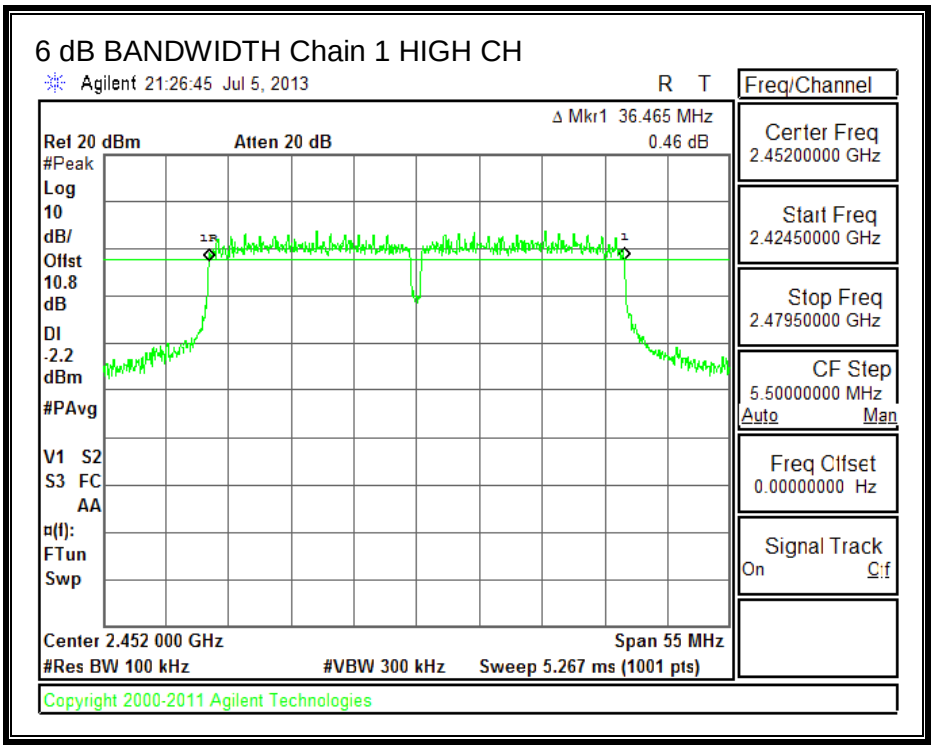
6 dB BANDWIDTH Chain 1 MID CH



6 dB BANDWIDTH Chain 1 HIGH CH



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8.1.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2422	35.4799	35.6147
Mid	2437	35.6627	35.1666
High	2452	35.7054	35.6542

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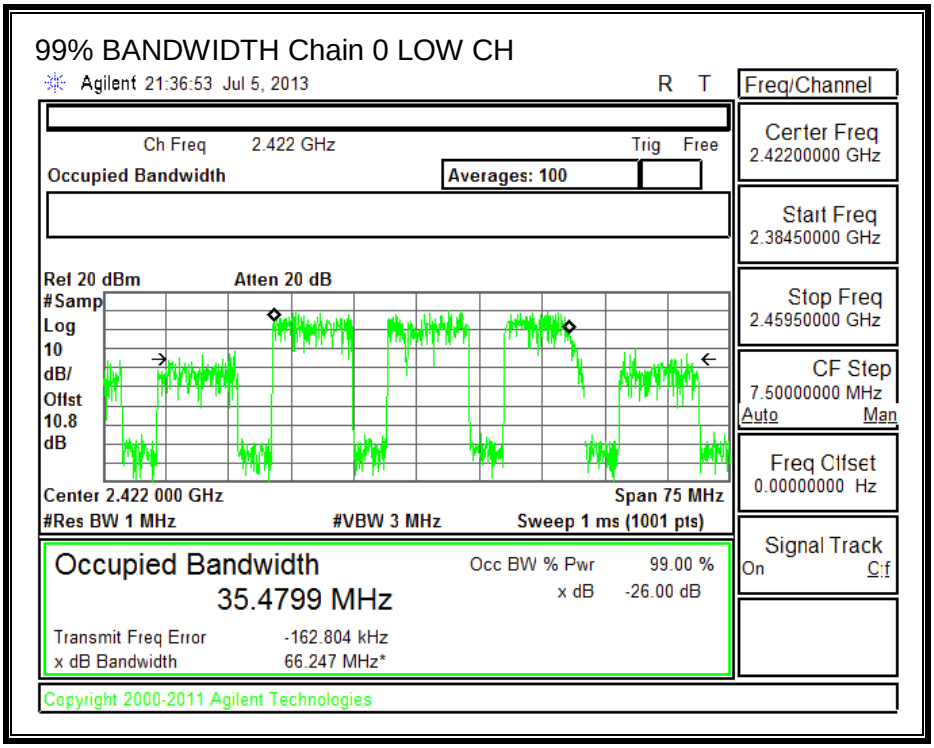
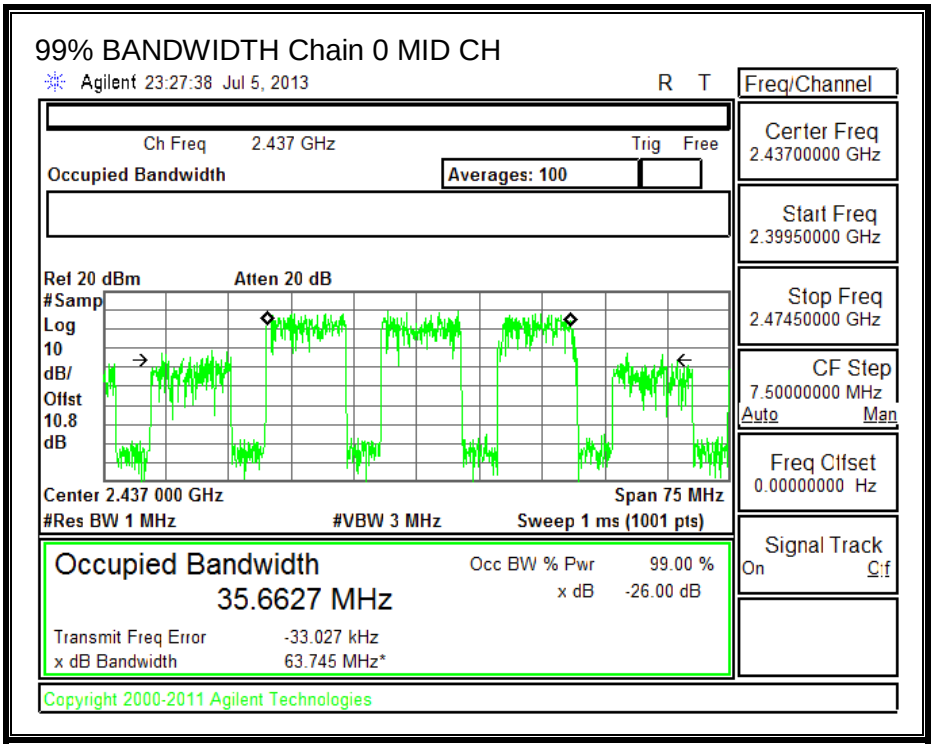
99% BANDWIDTH, Chain 0





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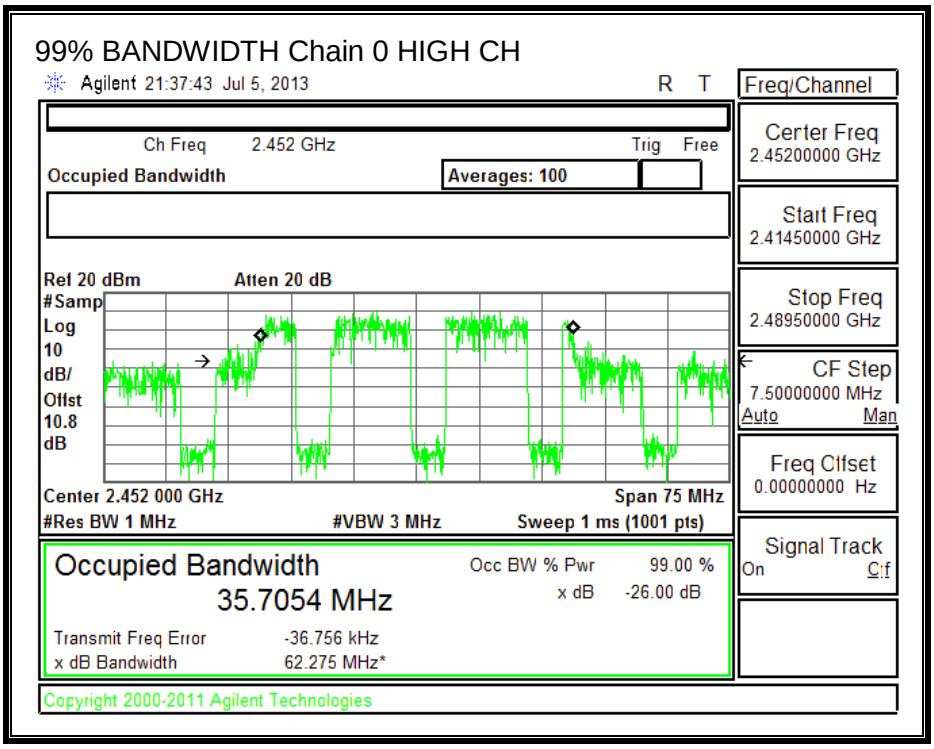
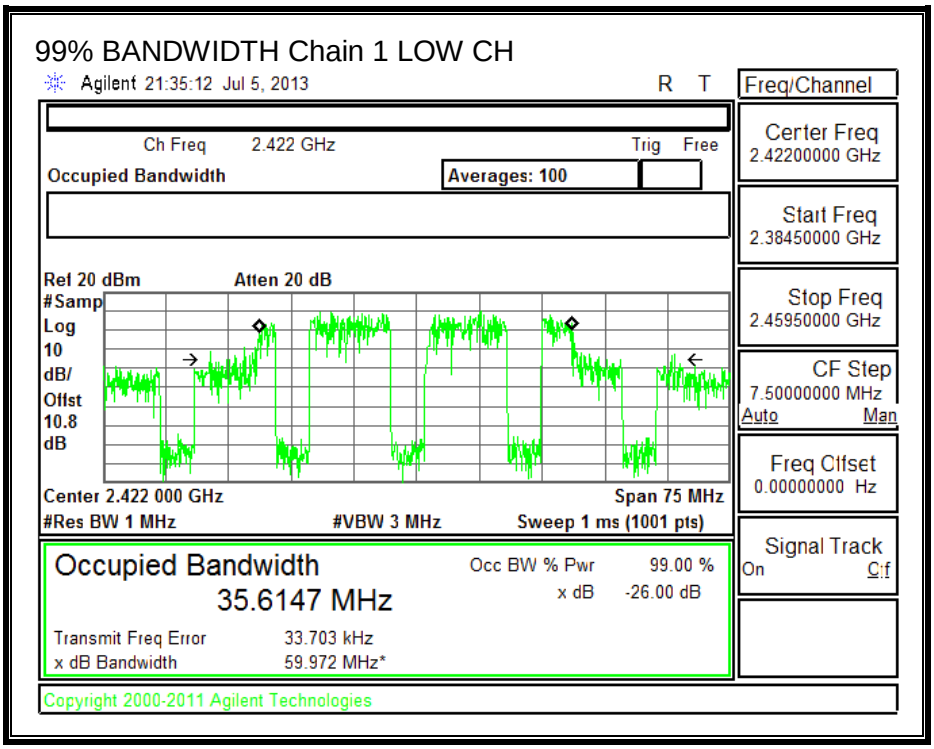


99% BANDWIDTH, Chain 1



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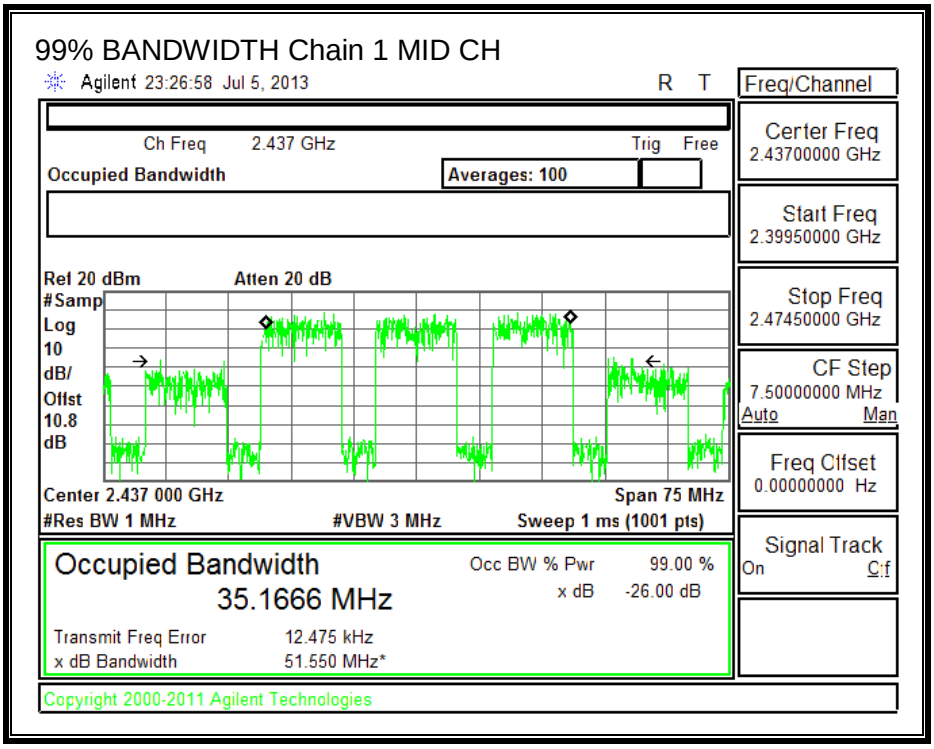

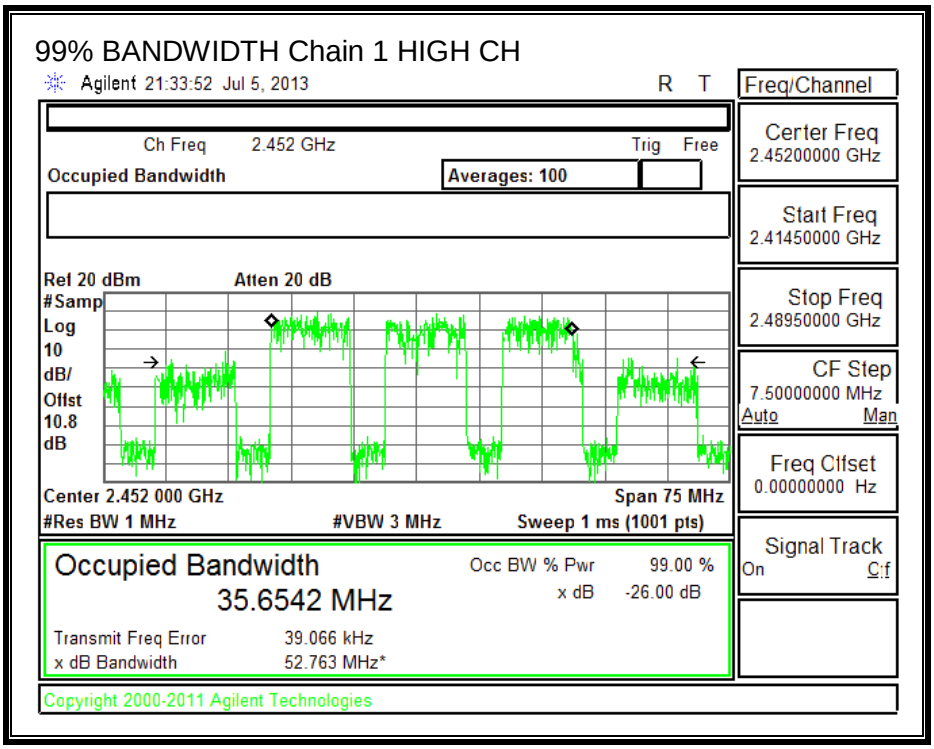

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8.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.8 dB (including 10 dB pad and 0.8 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	2422	11.94	11.54	14.75
Mid	2437	16.63	15.71	19.20
High	2452	12.94	11.56	15.31

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8.1.4. 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

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.00	2.00	2.00

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RESULTS

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2422	2.00	30.00	30	36	30.00
Mid	2437	2.00	30.00	30	36	30.00
High	2452	2.00	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2422	20.93	20.62	23.78	30.00	-6.22
Mid	2437	25.21	24.17	27.73	30.00	-2.27
High	2452	21.72	20.37	24.11	30.00	-5.89

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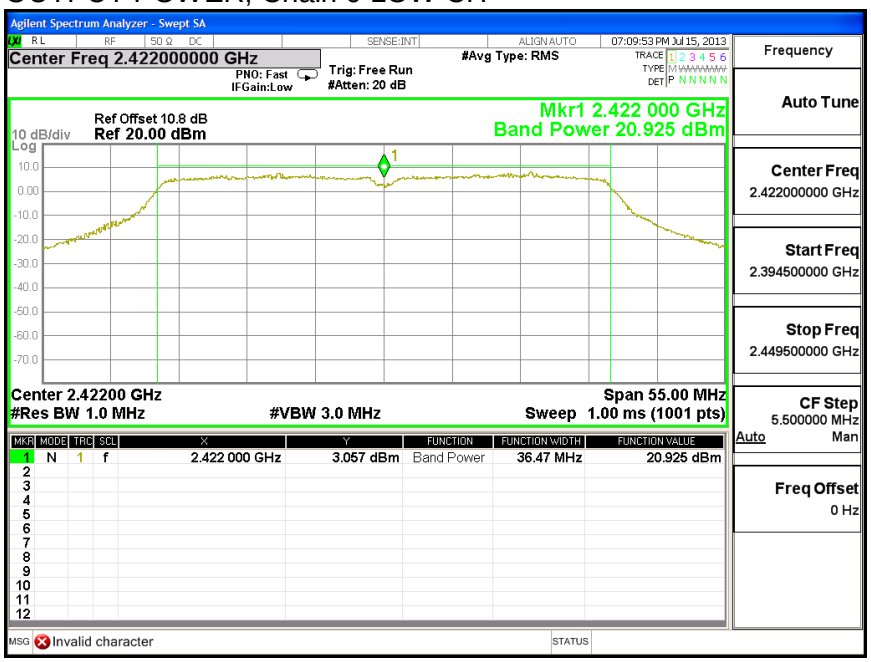
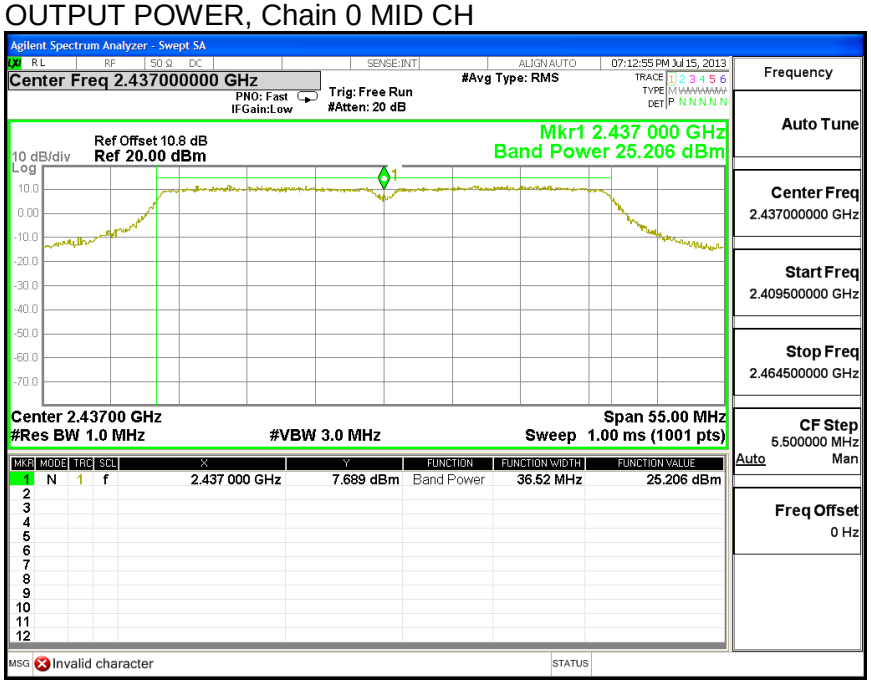
OUTPUT POWER, Chain 0

OUTPUT POWER, Chain 0 LOW CH



OUTPUT POWER, Chain 0 MID CH



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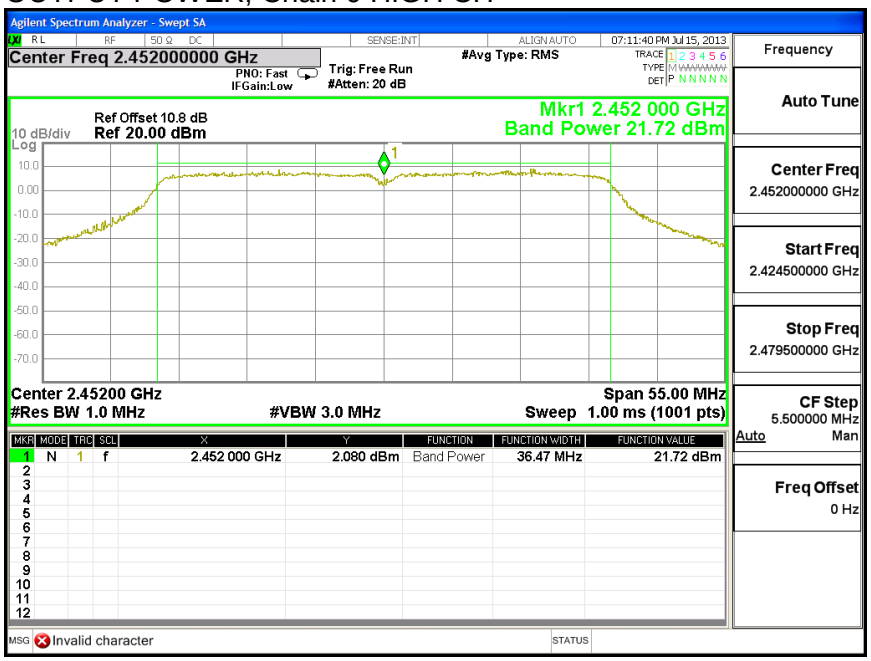
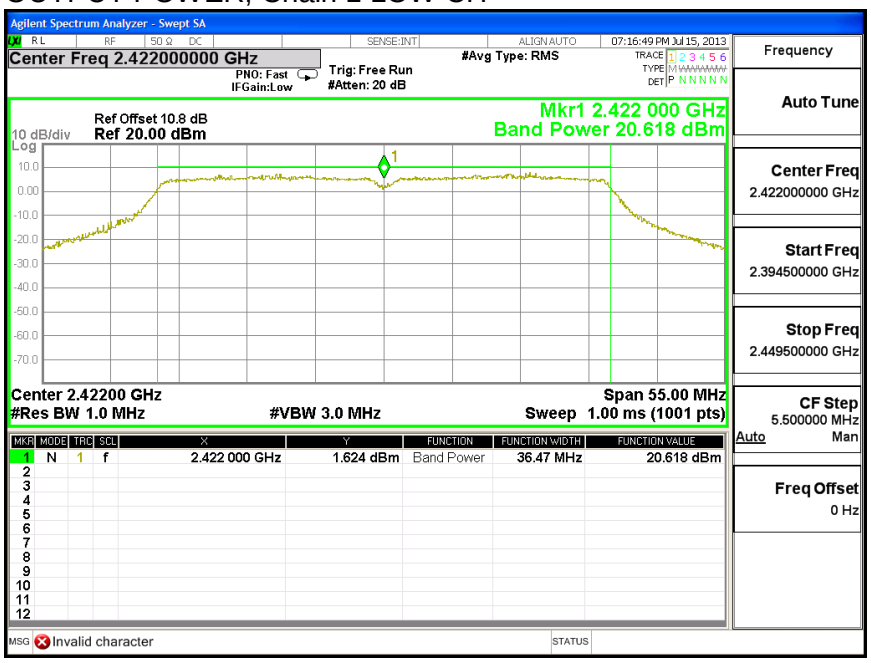
OUTPUT POWER, Chain 0 HIGH CH



OUTPUT POWER, Chain 1

OUTPUT POWER, Chain 1 LOW CH



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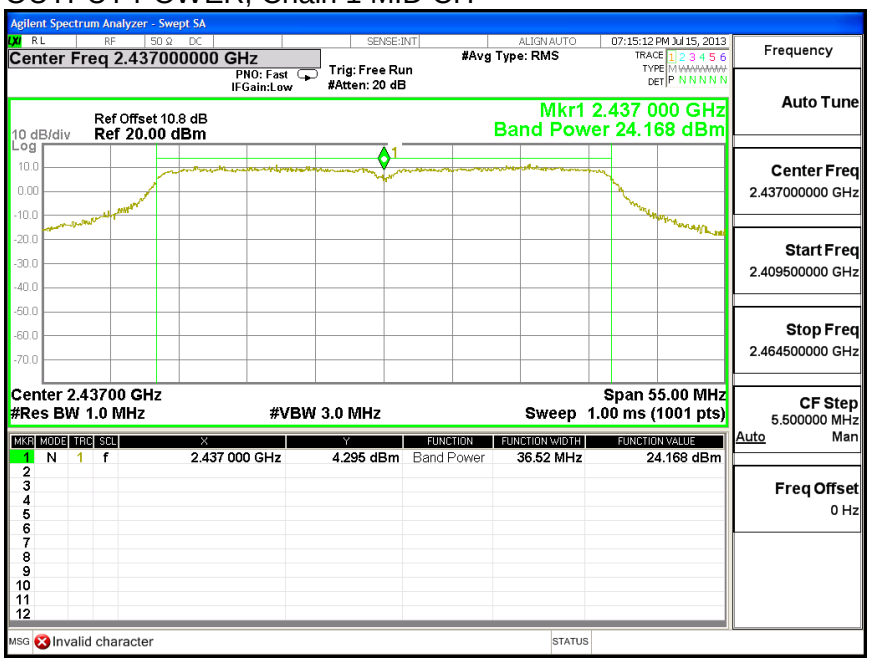
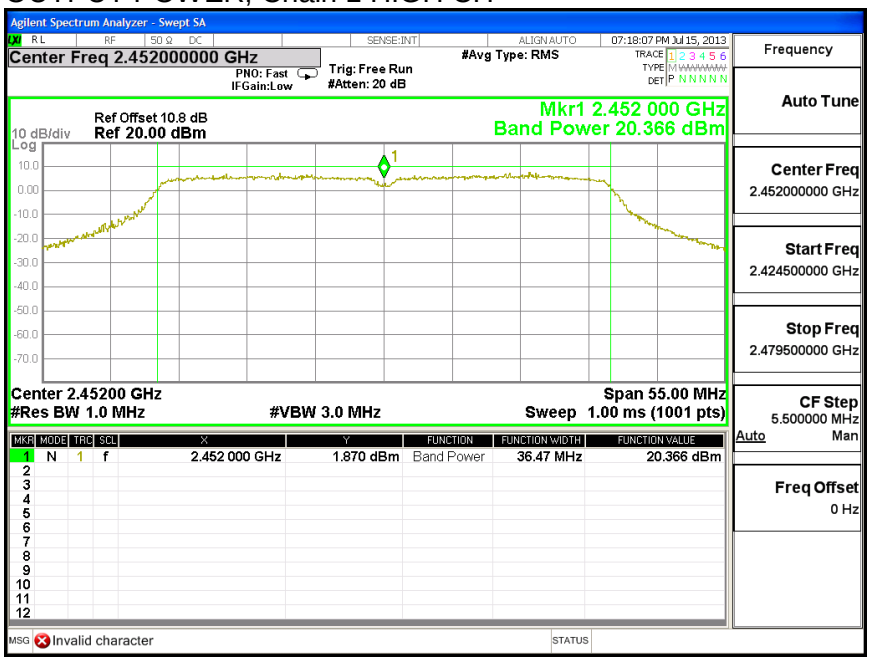
OUTPUT POWER, Chain 1 MID CH



OUTPUT POWER, Chain 1 HIGH CH



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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)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2422	-9.48	-9.25	-6.35	8.0	-14.4
Mid	2437	-9.71	-10.17	-6.92	8.0	-14.9
High	2452	-10.34	-10.67	-7.49	8.0	-15.5

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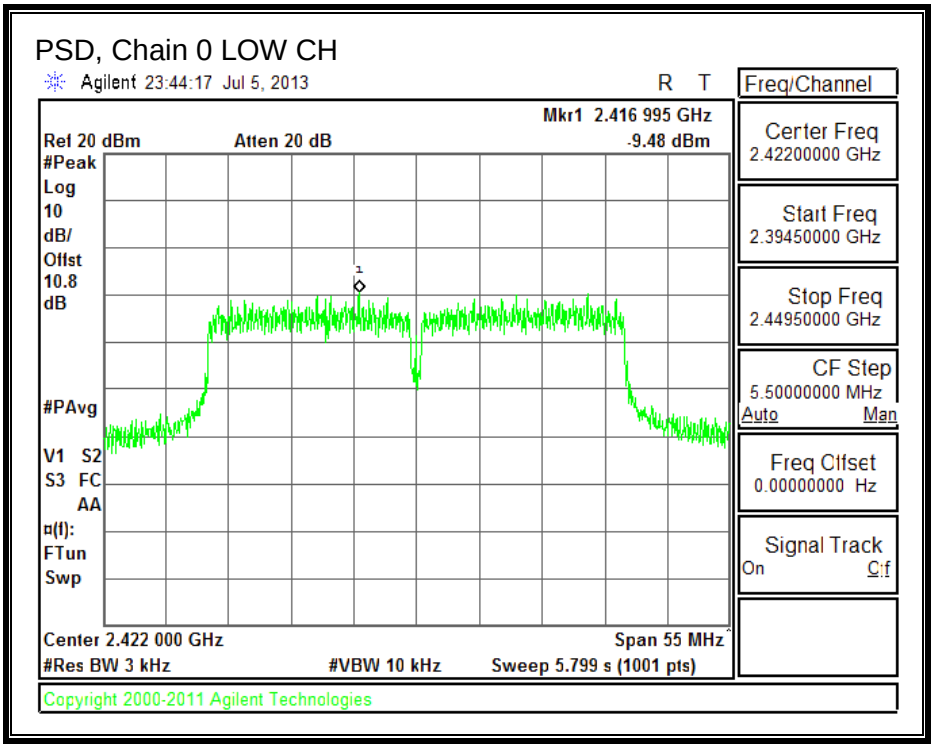
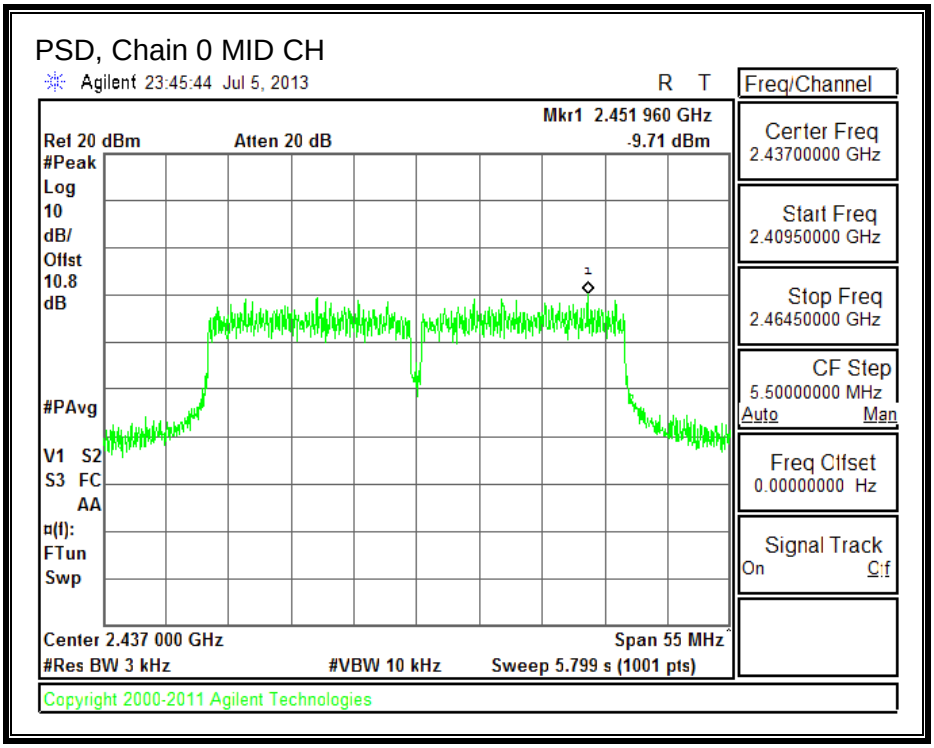
PSD, Chain 0





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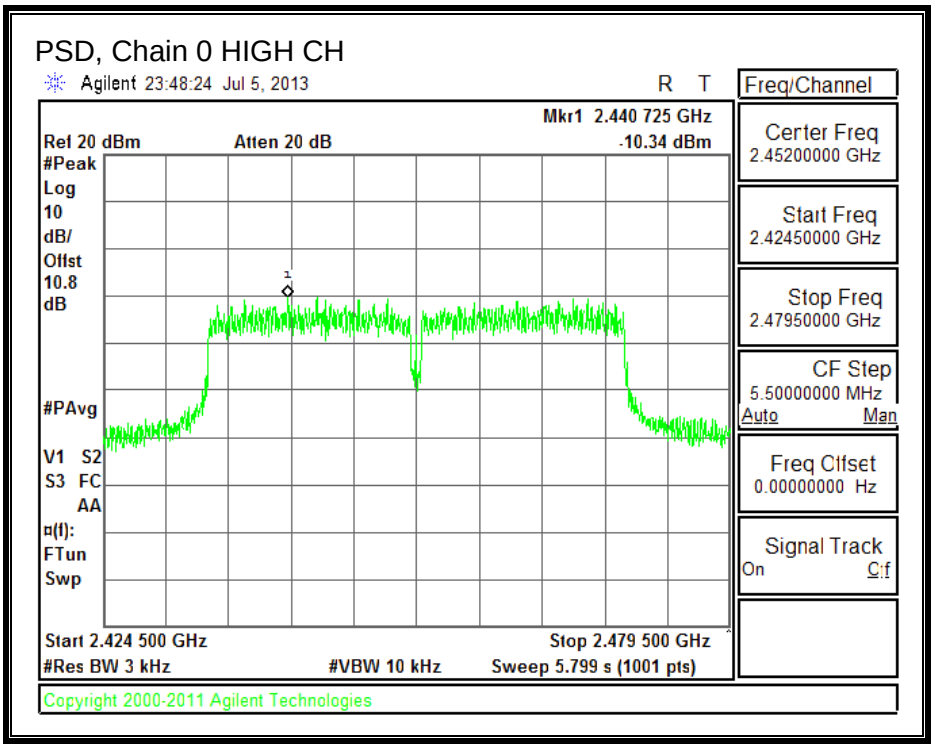
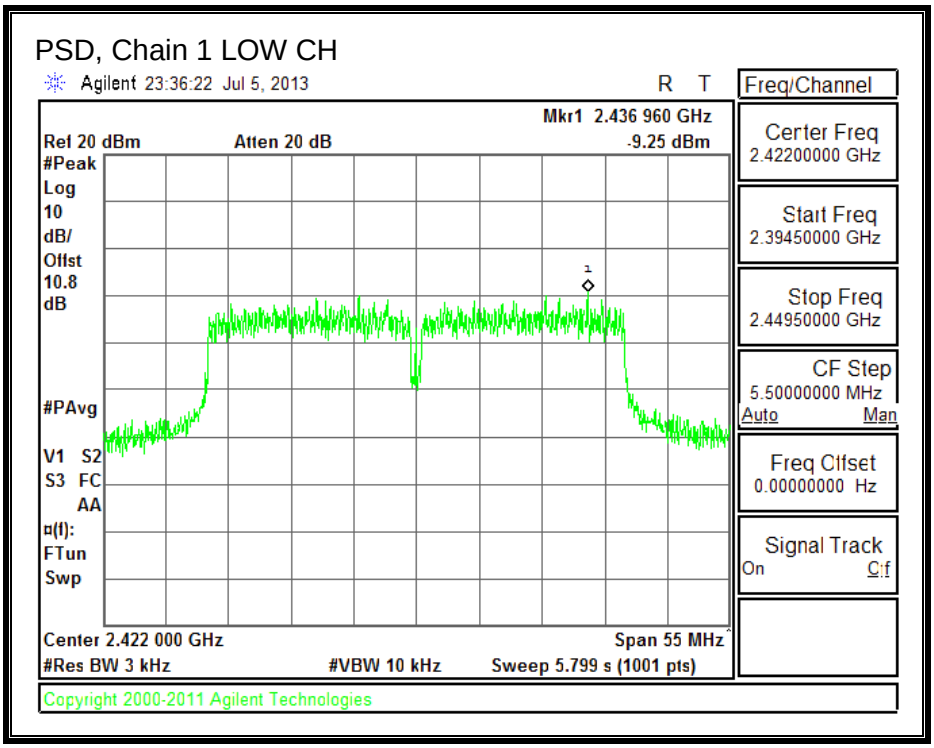


PSD, Chain 1



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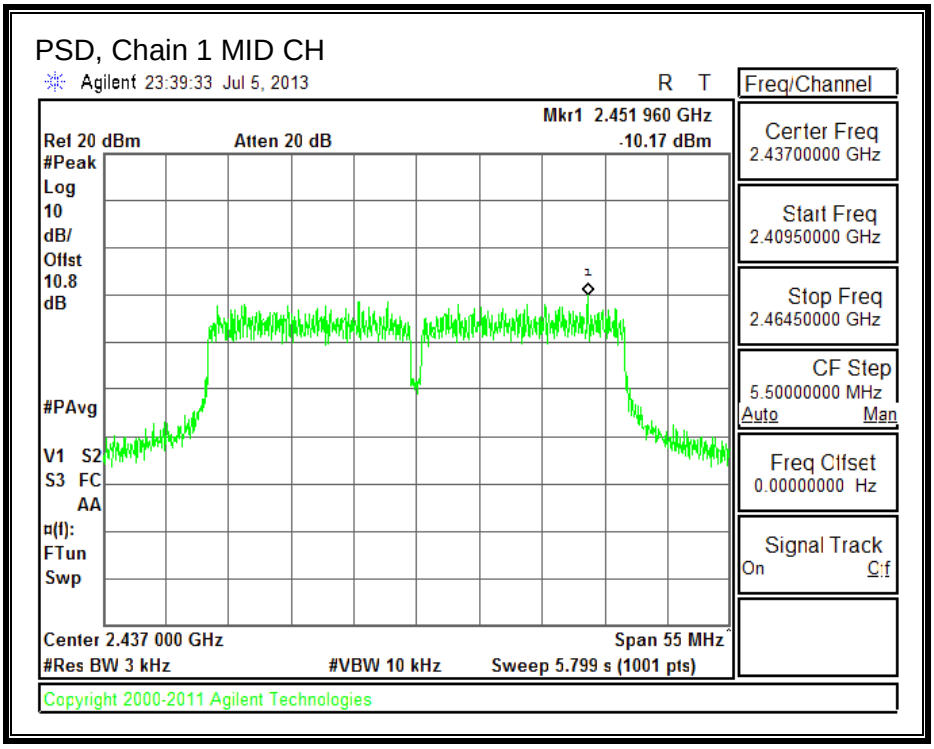
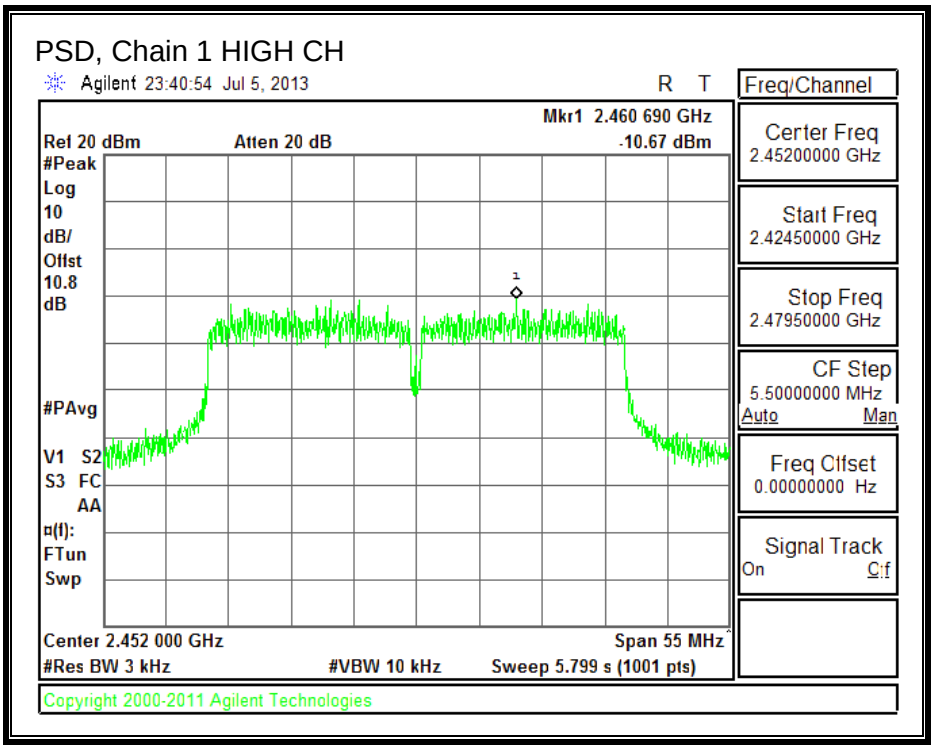
PSD, Chain 1 MID CH



PSD, Chain 1 HIGH CH



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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.

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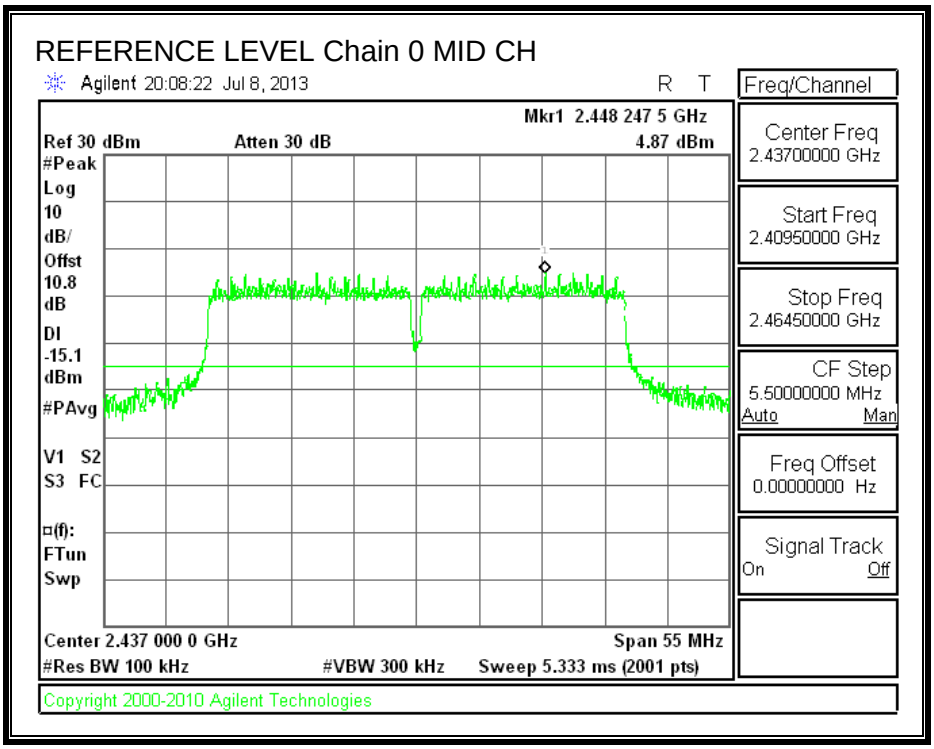
RESULTS

IN-BAND REFERENCE LEVEL, Chain 0



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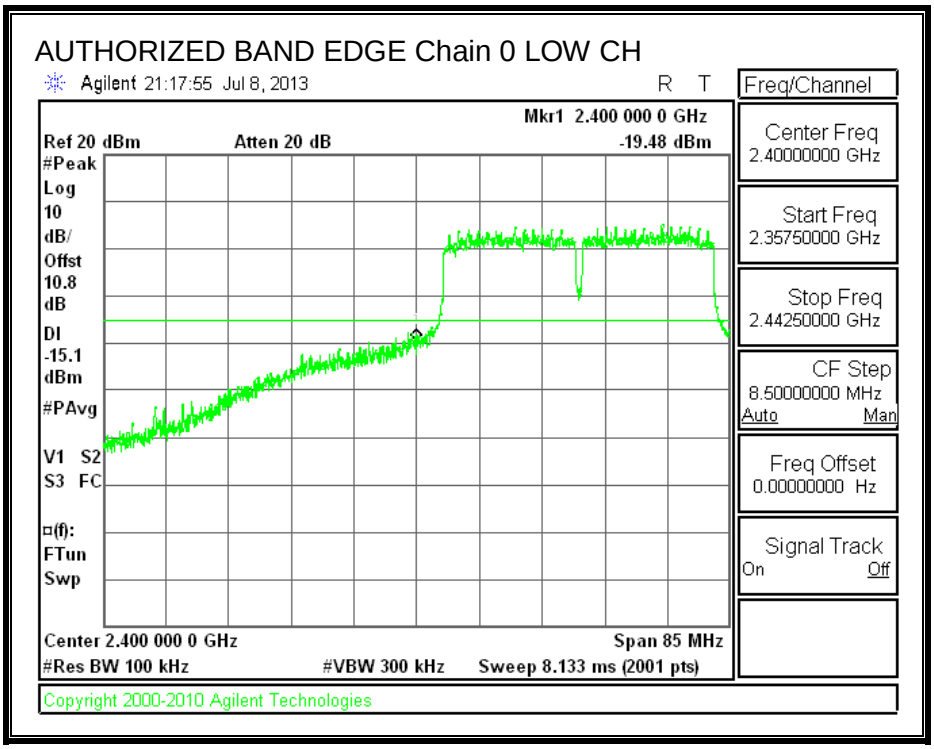
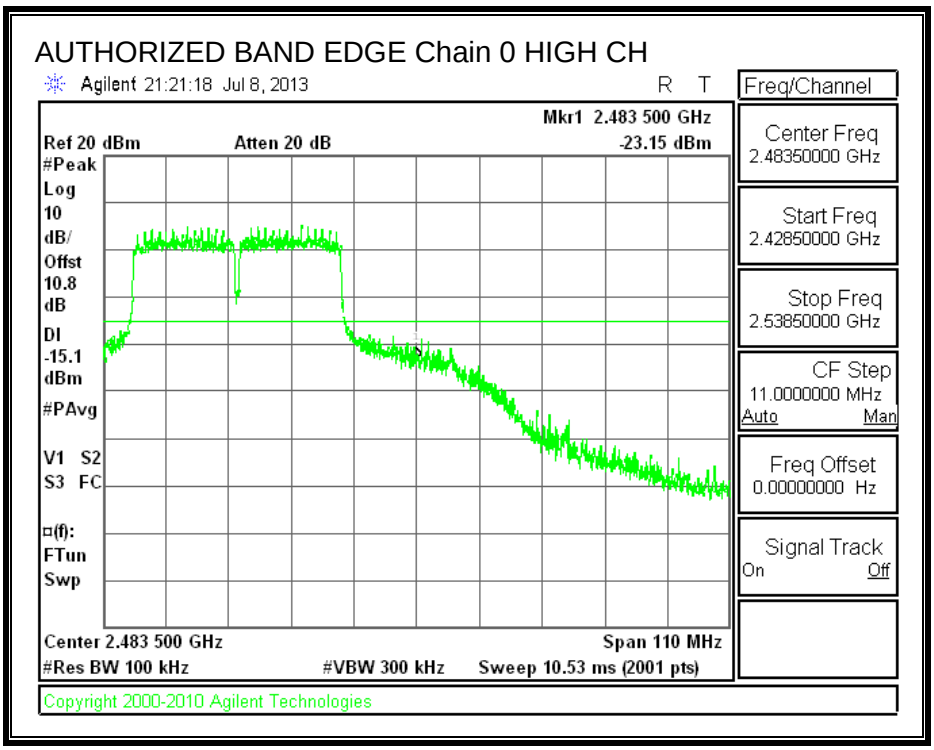
LOW CHANNEL BANDEDGE, Chain 0



HIGH CHANNEL BANDEDGE, Chain 0



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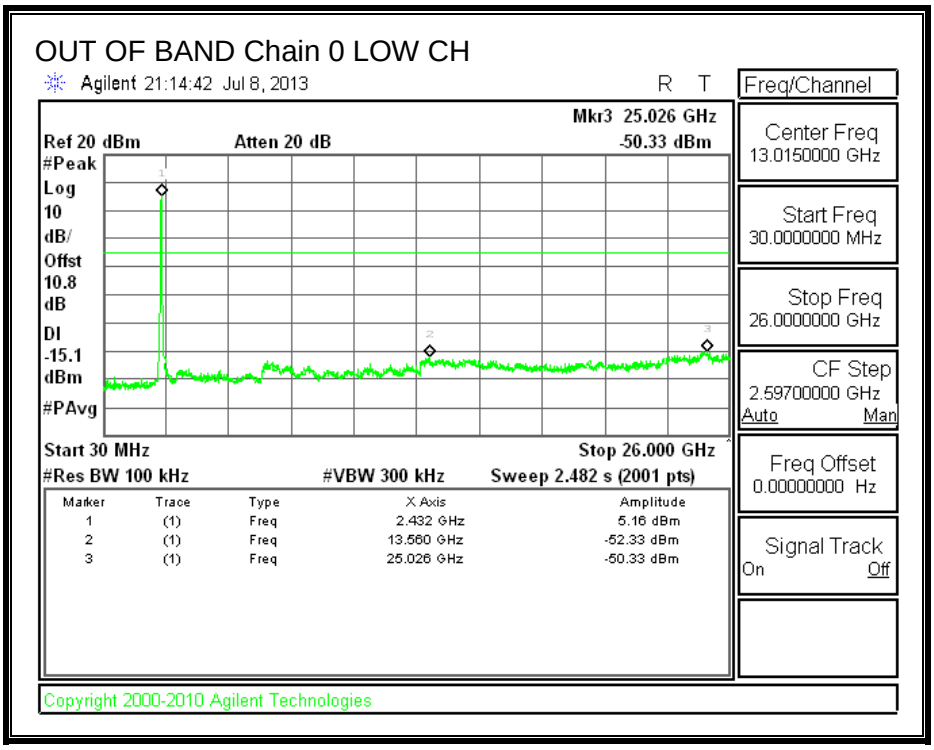
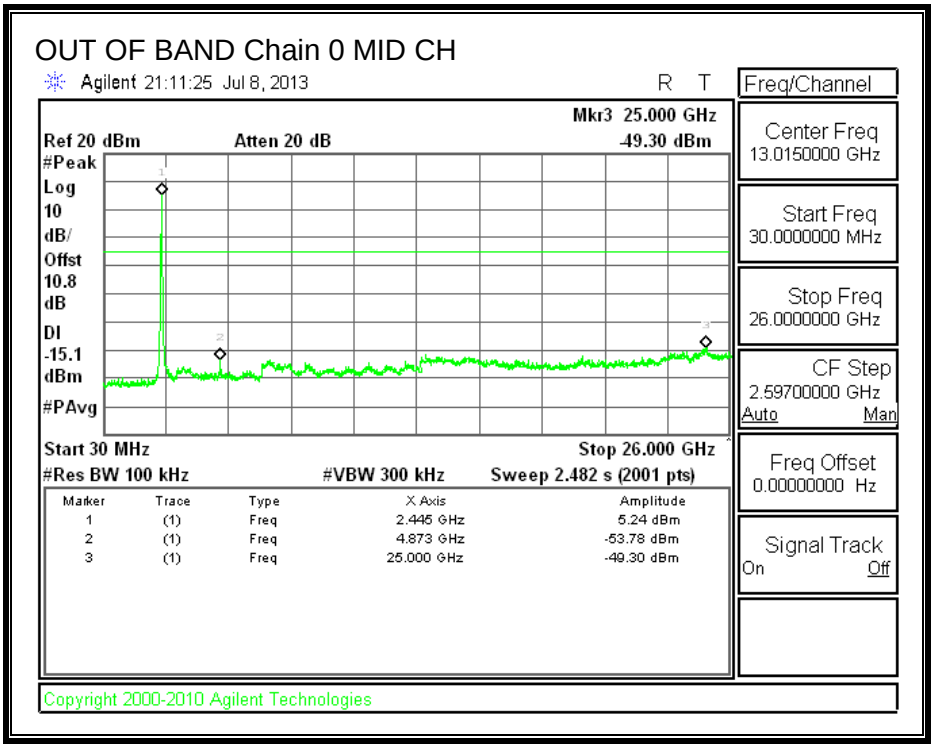
OUT-OF-BAND EMISSIONS, Chain 0





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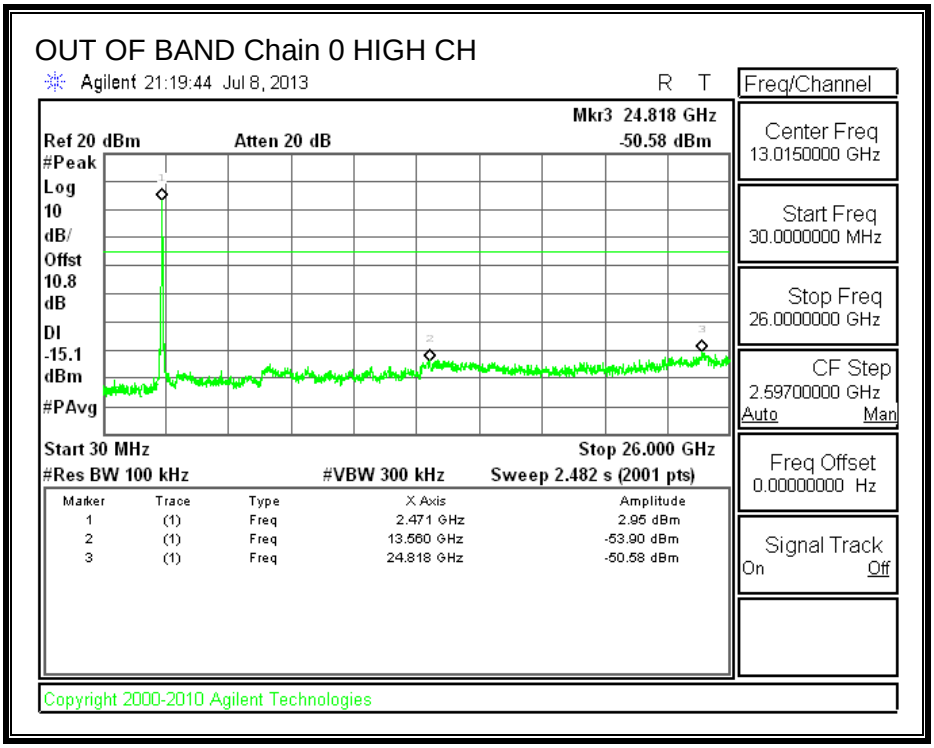

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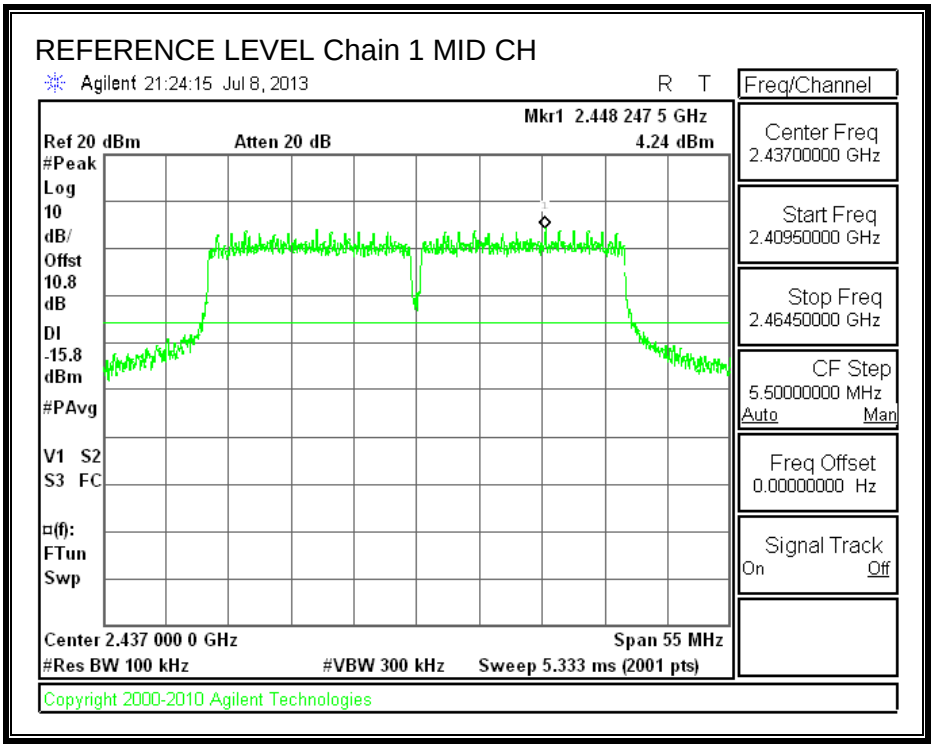
IN-BAND REFERENCE LEVEL, Chain 1



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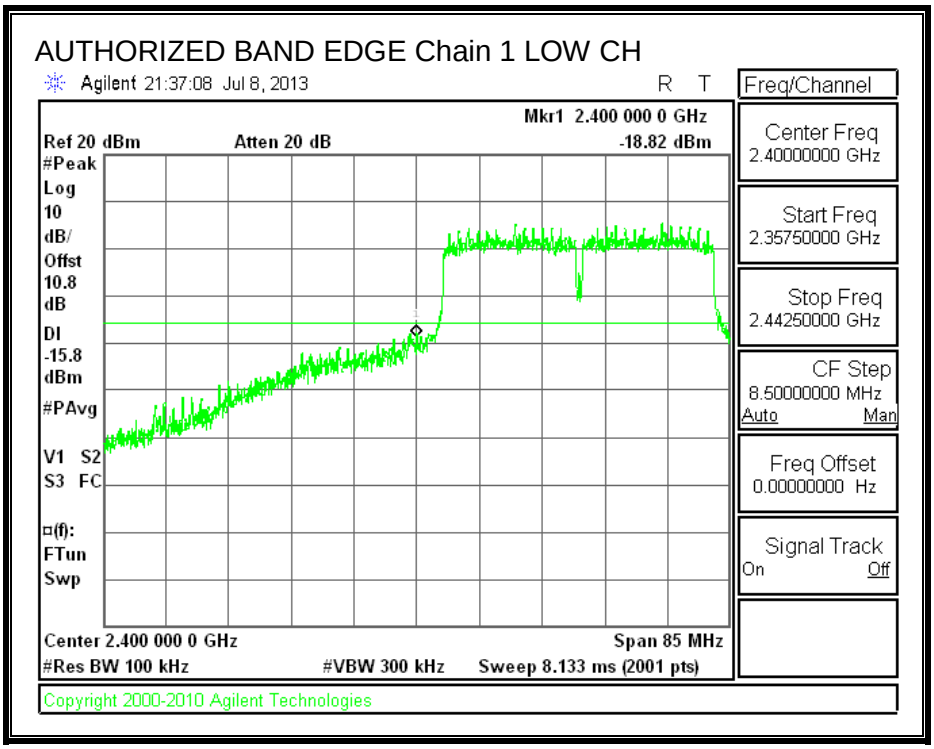
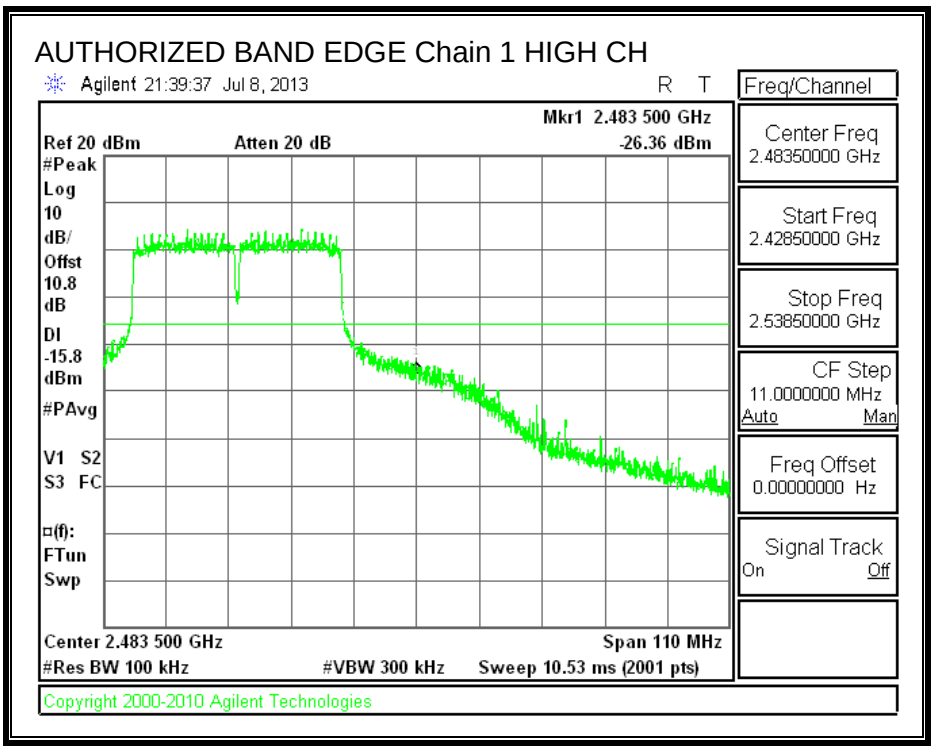
LOW CHANNEL BANDEDGE, Chain 1



HIGH CHANNEL BANDEDGE, Chain 1



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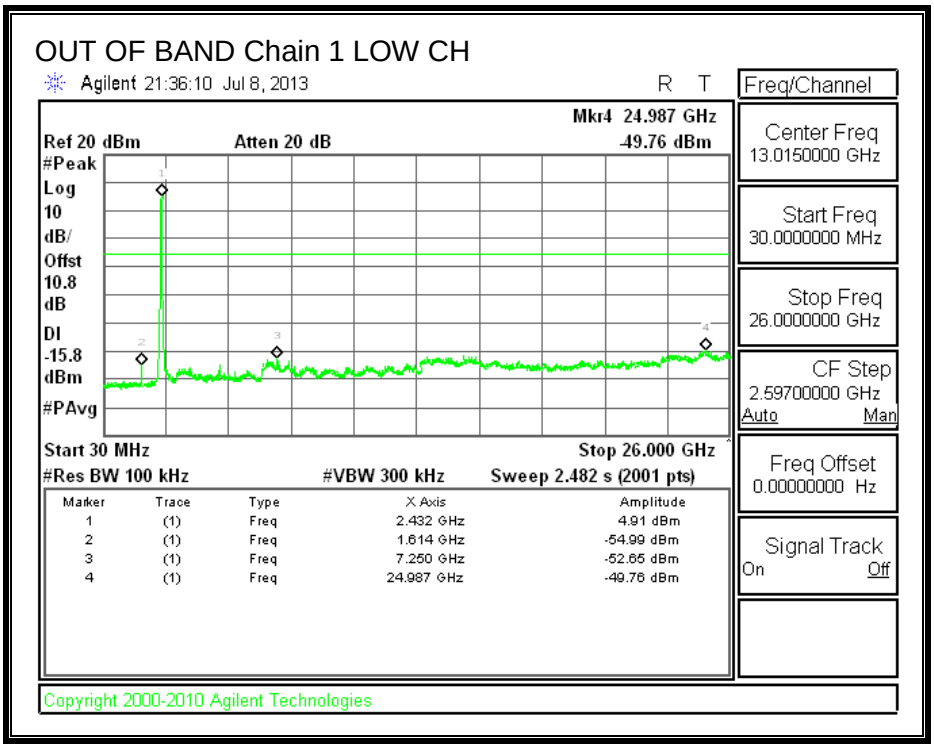
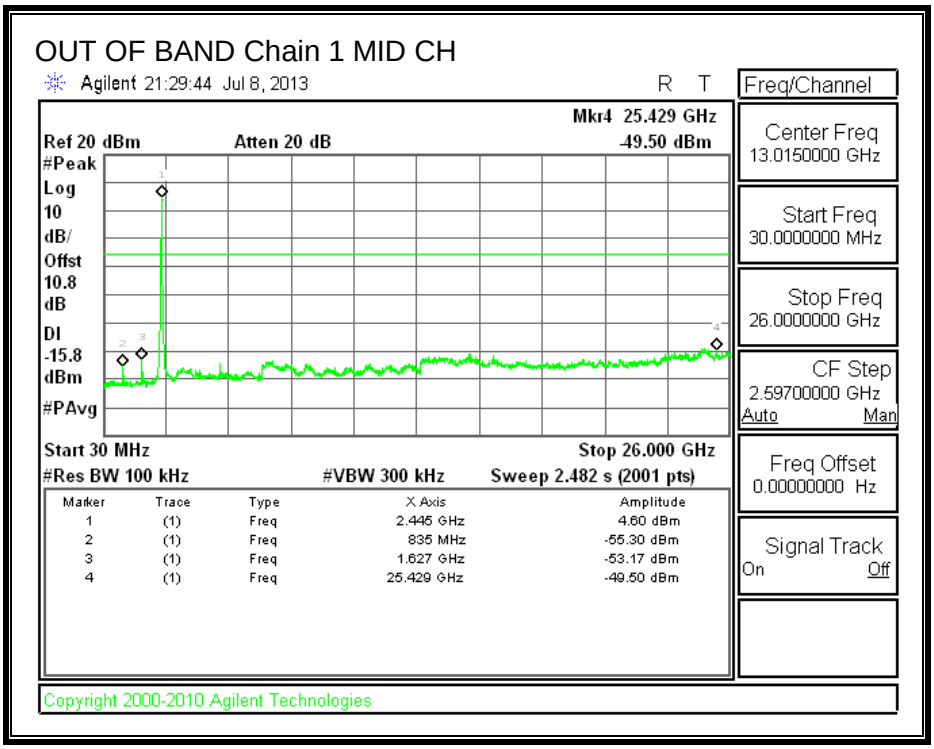
OUT OF BAND Chain 1 LOW CH



OUT OF BAND Chain 1 MID CH



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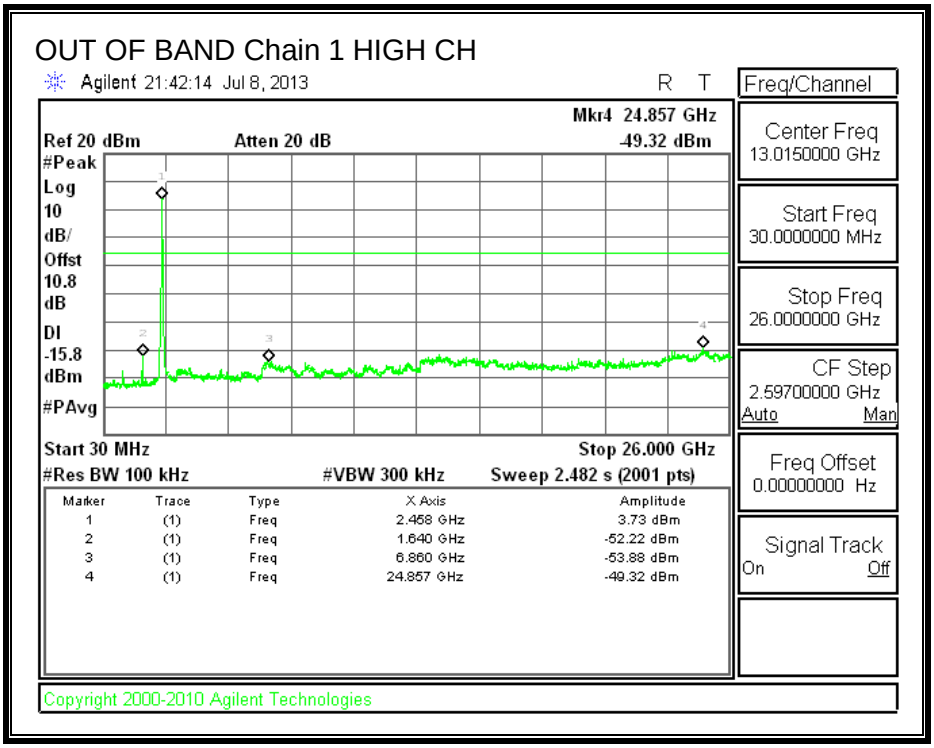

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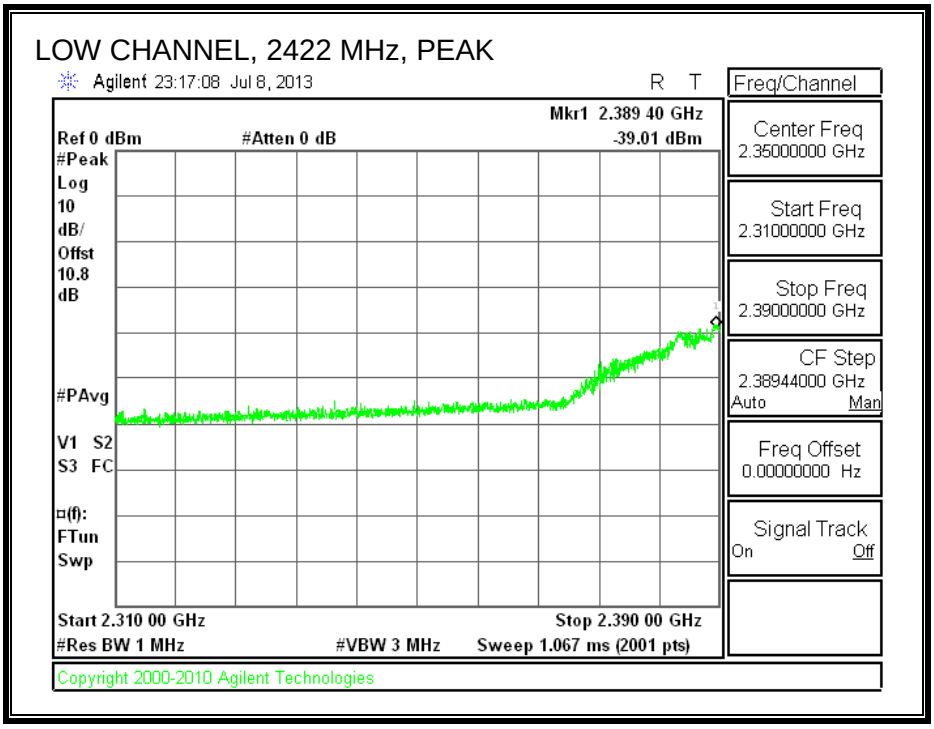
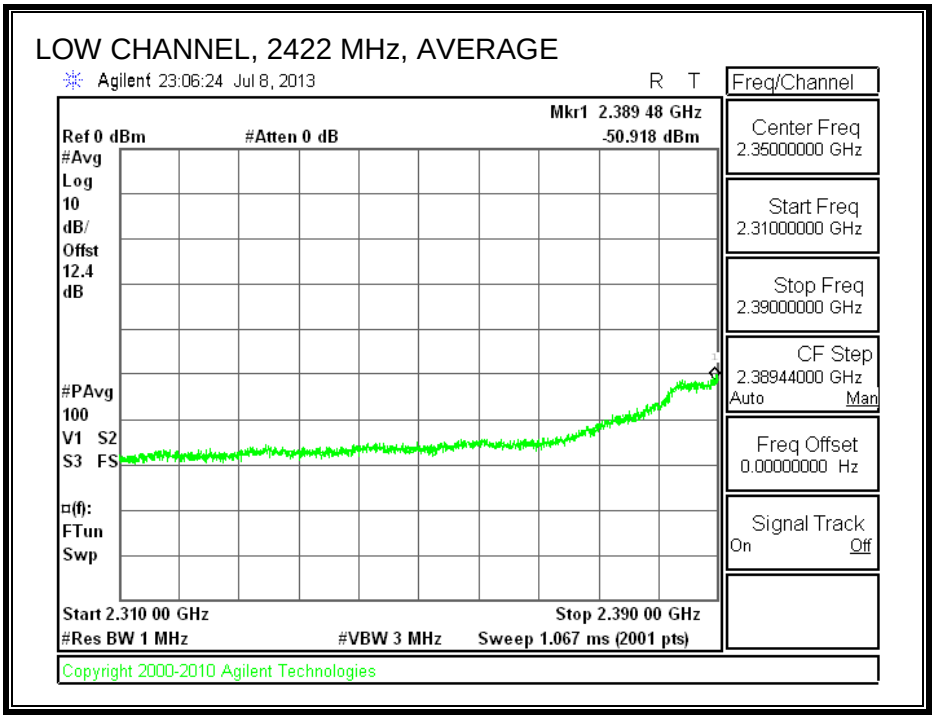
8.1.7. CONDUCTED BE AND SPURIOUS IN RESTRICTED BAND

RESTRICTED BANDEDGE

CHAIN 0





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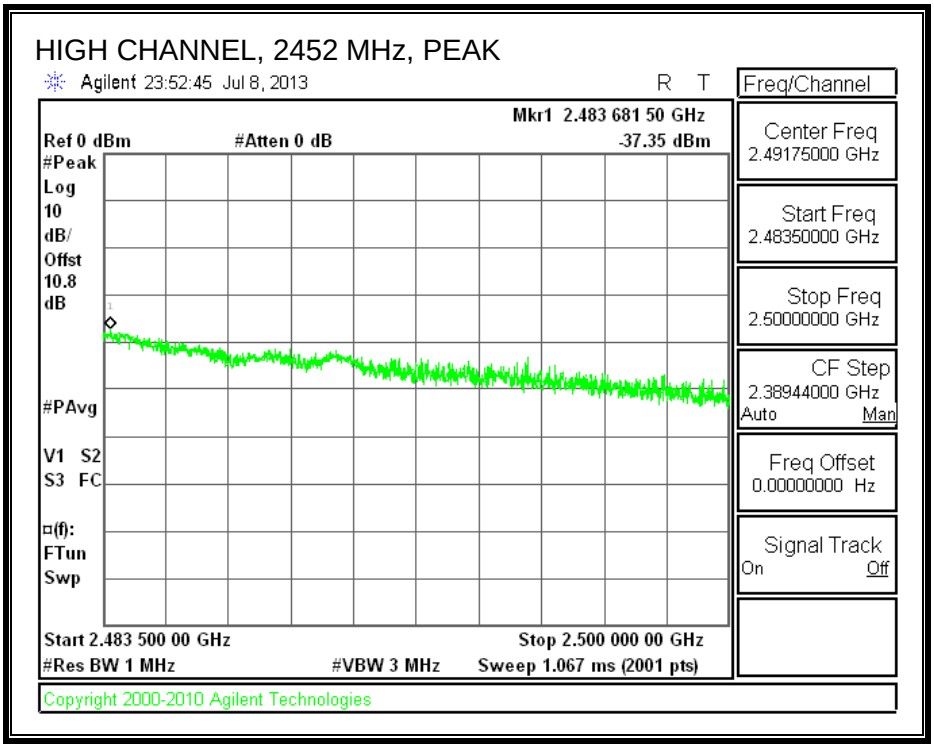
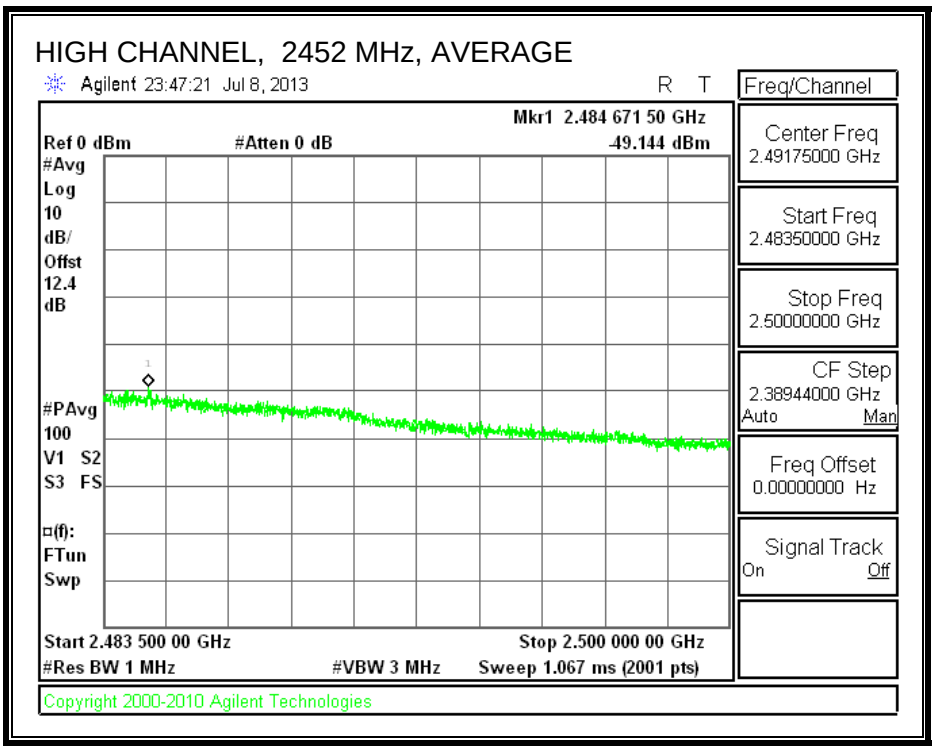
HIGH CHANNEL, 2452 MHz, PEAK



HIGH CHANNEL, 2452 MHz, AVERAGE



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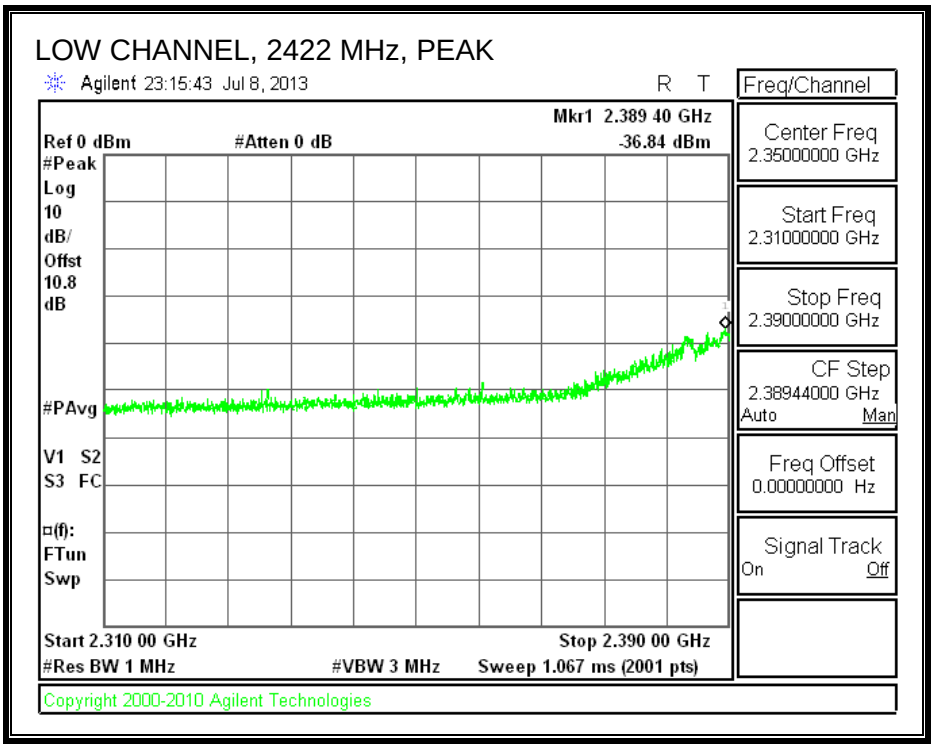
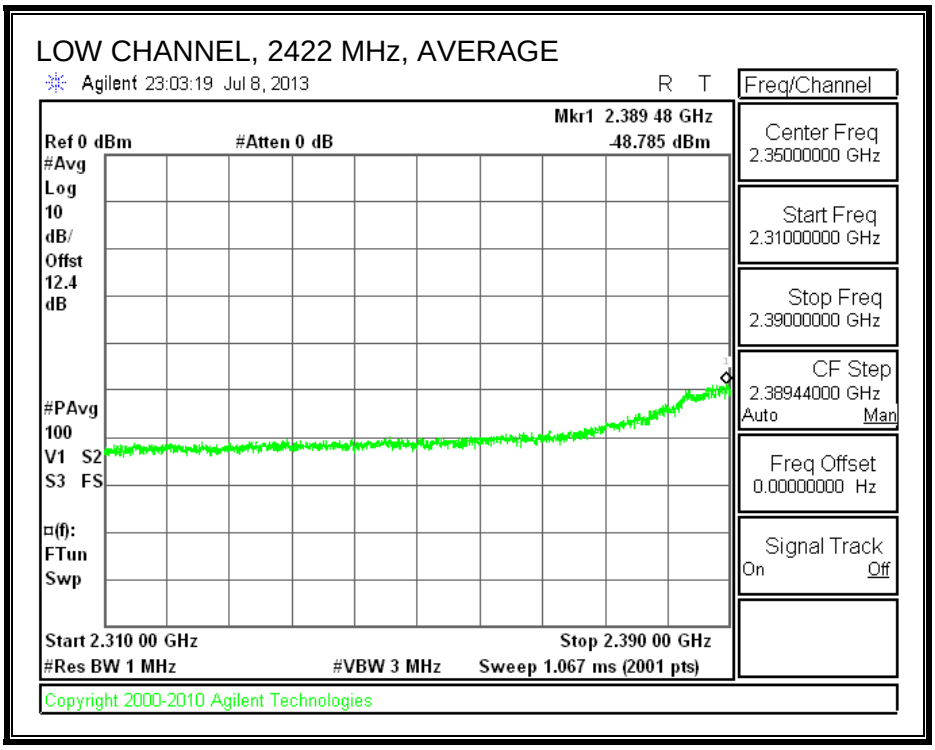
CHAIN 1





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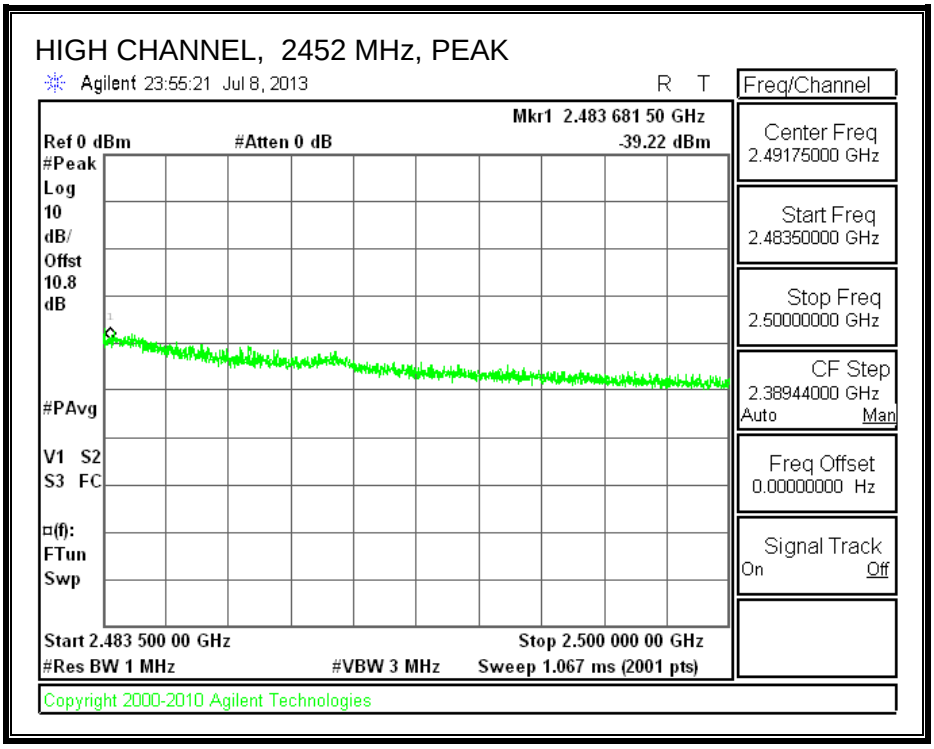
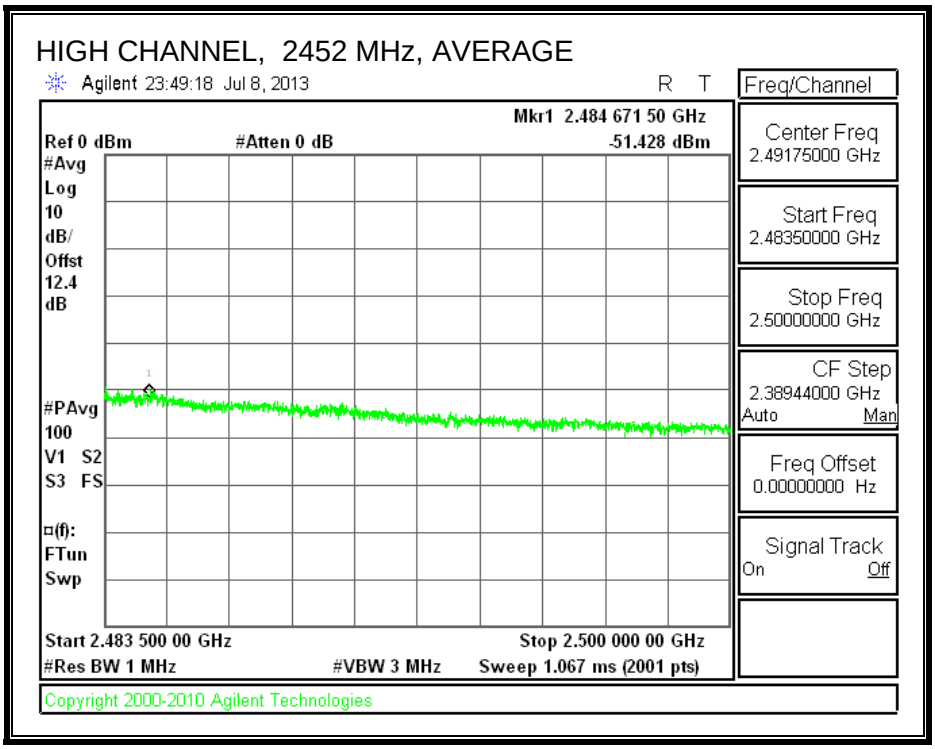
HIGH CHANNEL, 2452 MHz, PEAK



HIGH CHANNEL, 2452 MHz, AVERAGE



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RESTRICTED BANDEDGE DATA

2TX Conducted BE for FCC DTS (in the restricted bands)

Date:	7/8/2013
Test Engineer:	Chris Xiong
Client:	Qualcomm Atheros
Project Number:	13U15601 C2PC
Configuration:	TX
Mode of operation:	2.4GHz 11n HT40

Note: if the PK margin is greater than 20 dB, there is no need to get AVG reading.

Channel	Frequency (GHz)	PSA PK Reading Chain 0 (dBm)	PSA PK Reading Chain 1 (dBm)	AG/Chain (dBi)	PK EIRP (dBm)	PK E-field Limit (dBm)	PK E-field Margin (dB)	Software Setting	AVG Power Meter Reading - Chain 0 (dBm)	AVG Power Meter Reading - Chain 1 (dBm)
3	2389.4	-39.01	-36.84	2	-29.77	-21.2	-8.57	9.50	5.31	5.54
9	2483.67325	-37.35	-39.22	2	-30.16	-21.2	-8.96	5.00	5.66	4.78

Channel	Frequency (MHz)	PSA AVG Reading Chain 0 (dBm)	PSA AVG Reading Chain 1 (dBm)	AG/Chain (dBi)	AVG EIRP (dBm)	AVG E-field Limit (dBm)	AVG E-field Margin (dB)	Software Setting	AVG Power Meter Reading - Chain 0 (dBm)	AVG Power Meter Reading - Chain 1 (dBm)
3	2389.48	-50.918	-48.785	2	-41.70	-41.2	-0.50	5.5	5.31	5.54
9	2484.6715	-49.114	-51.428	2	-42.10	-41.2	-0.90	5.0	5.66	4.78

Note: Duty Cycle Correction Factor already added to AVG Reading. DCCF= 0.160

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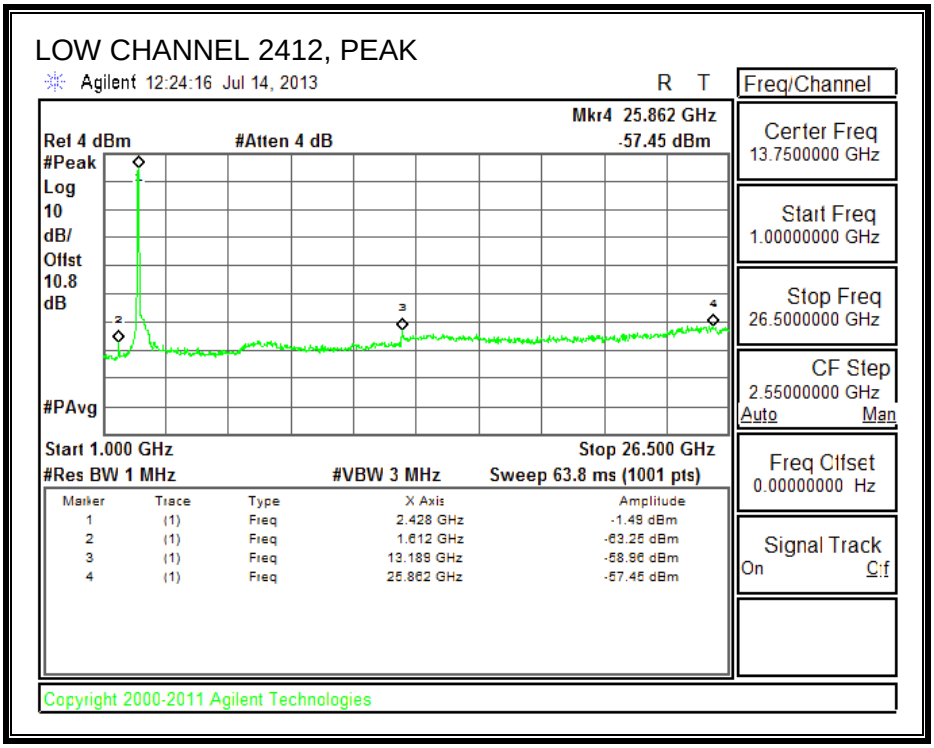
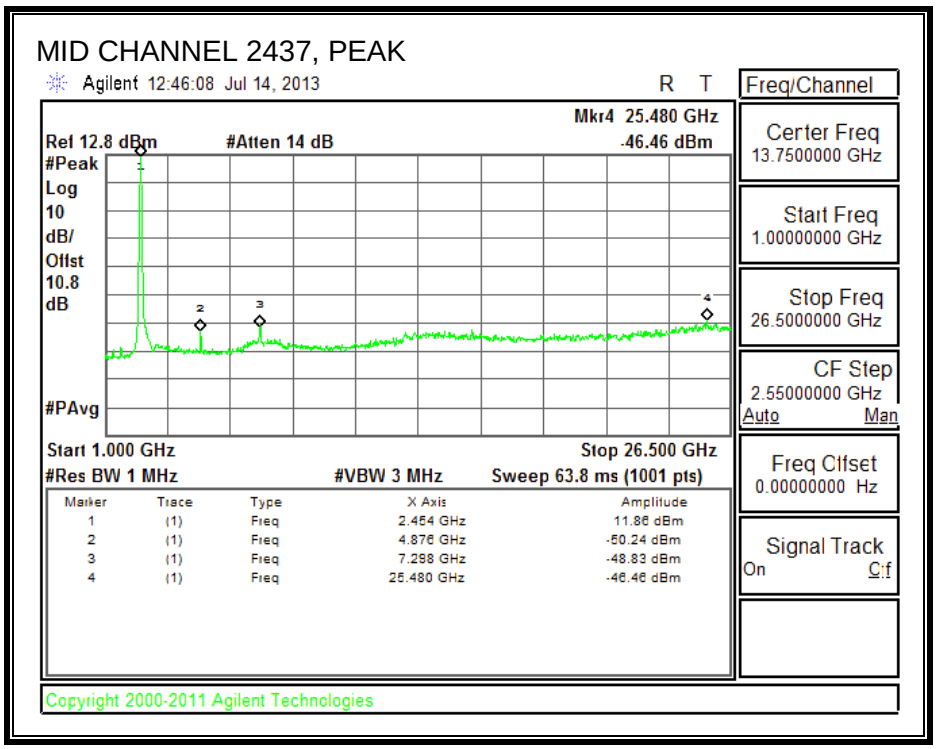
HARMONICS AND SPURIOUS

CHAIN 0





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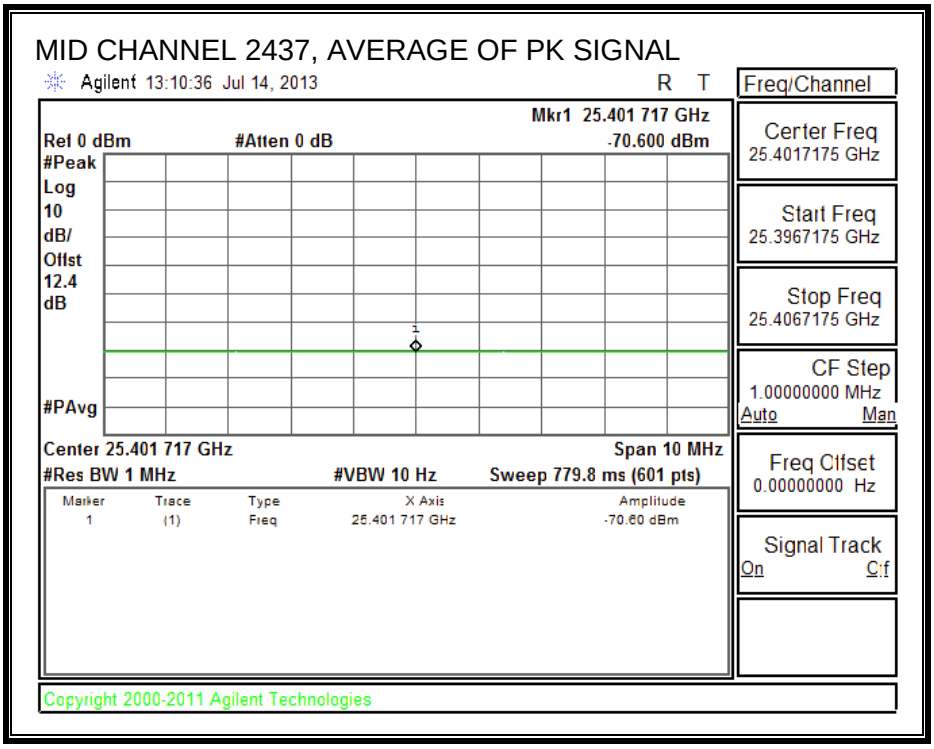
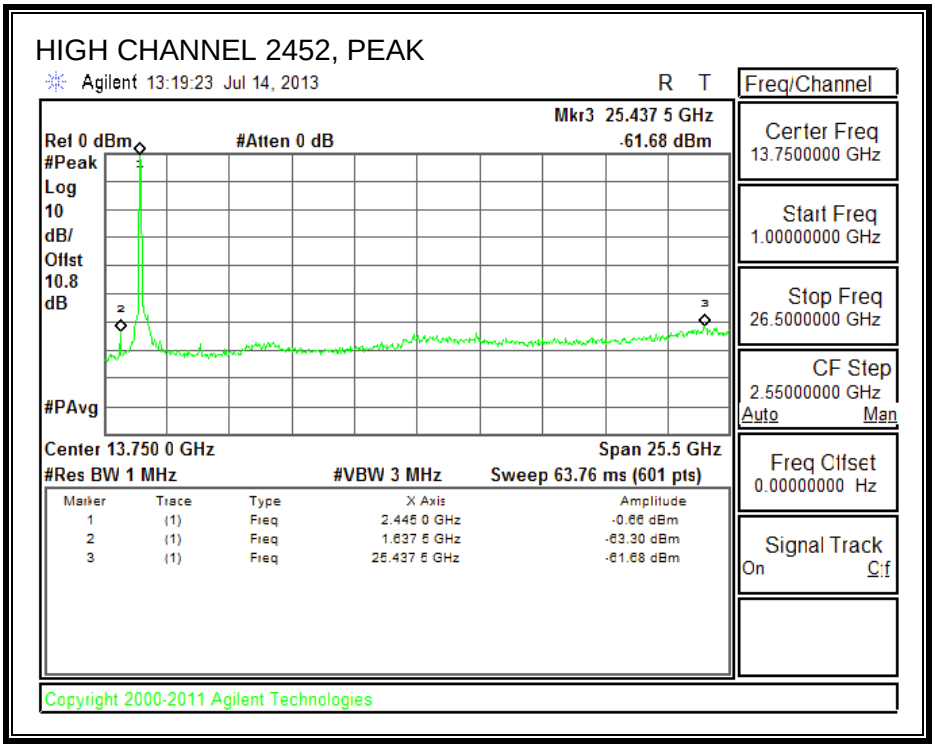
MID CHANNEL 2437, AVERAGE OF PK SIGNAL



HIGH CHANNEL 2452, PEAK



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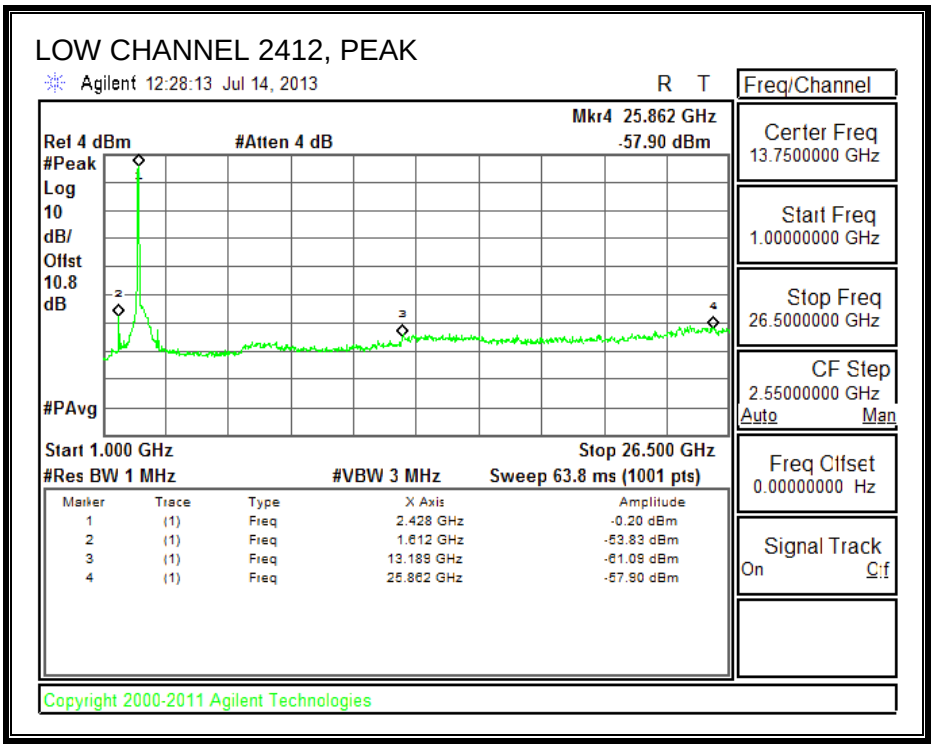
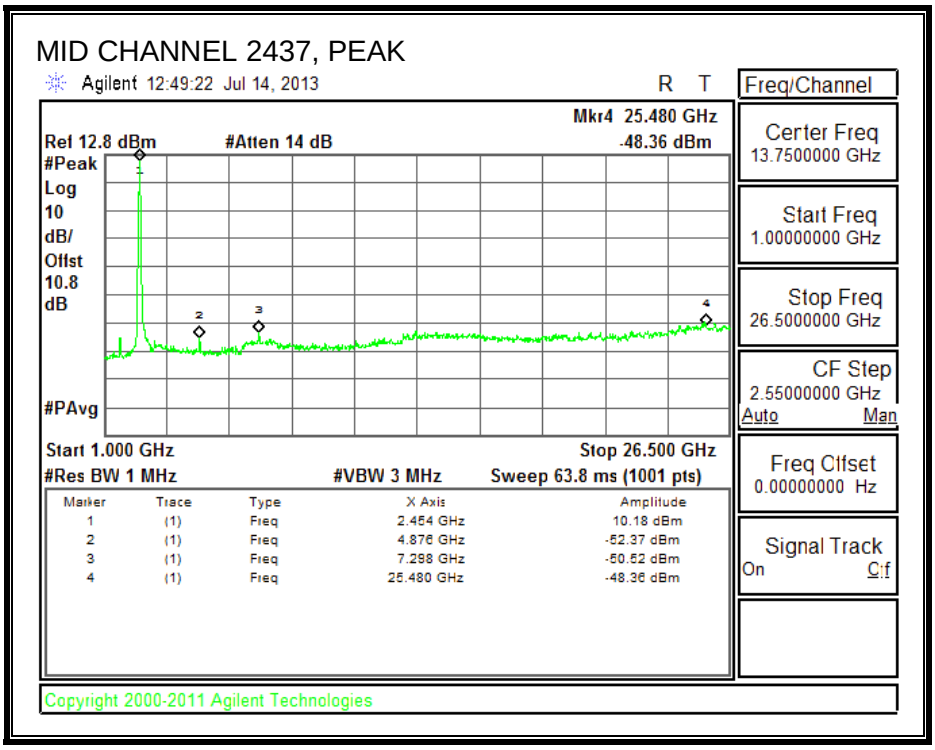
CHAIN 1





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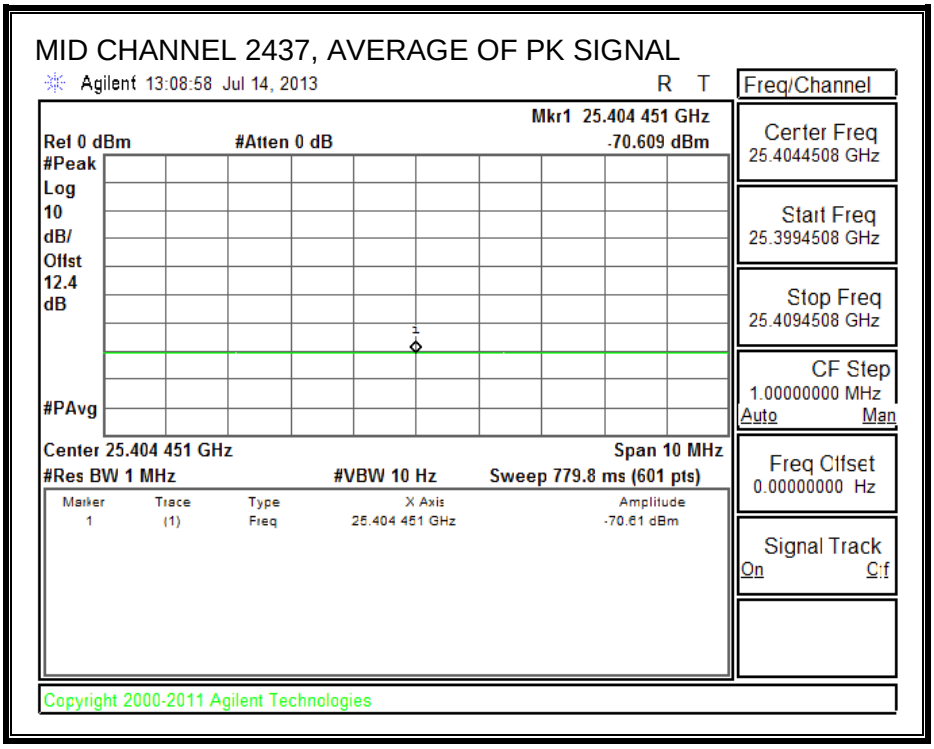

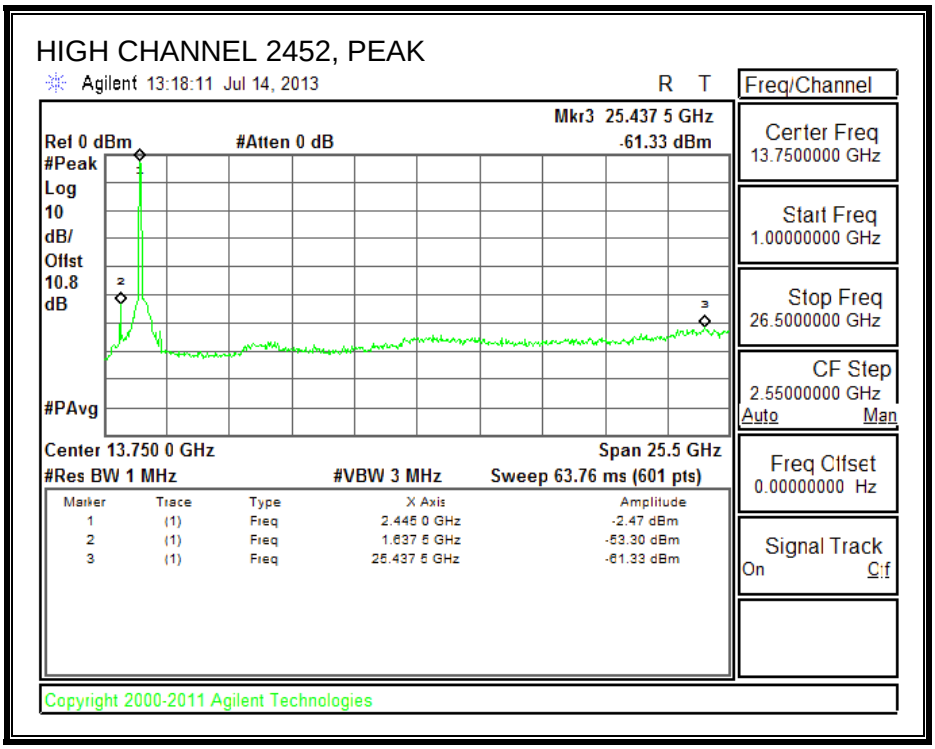

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HARMONICS AND SPURIOUS DATA

2TX Conducted SPUR for FCC DTS (in the restricted bands)

Date:	7/8/2013
Test Engineer:	Chris Xiong
Client:	Qualcomm Atheros
Project Number:	13U15601 C2PC
Configuration:	TX
Mode of operation:	2.4GHz 11n HT40

Note: if the PK margin is greater than 20 dB, there is no need to get AVG reading.

Channel	Frequency (GHz)	PSA PK Reading Chain 0 (dBm)	PSA PK Reading Chain 1 (dBm)	AG/Chain (dBi)	PK EIRP (dBm)	PK E-field Limit (dBm)	PK E-field Margin (dB)	Software Setting	AVG Power Meter Reading - Chain 0 (dBm)	AVG Power Meter Reading - Chain 1 (dBm)
3 (2422)	1.612	-53.83	-63.25	2	-48.35	-21.2	-27.15	5.50	5.31	5.54
3 (2422)	13.189	-61.09	-58.96	2	-51.88	-21.2	-30.68	5.50	5.31	5.54
3 (2422)	25.862	-57.9	-57.45	2	-49.65	-21.2	-28.45	5.50	5.31	5.54
6 (2437)	4.876	-50.24	-52.37	2	-43.16	-21.2	-21.96	18.00	18.52	17.36
6 (2437)	7.298	-48.83	-50.52	2	-41.57	-21.2	-20.37	18.00	18.52	17.36
6 (2437)	25.48	-46.46	-48.36	2	-39.29	-21.2	-18.09	18.00	18.52	17.36
9 (2452)	1.6375	-63.3	-53.3	2	-47.88	-21.2	-26.68	5.00	5.66	4.78
9 (2452)	25.4375	-61.68	-61.33	2	-53.48	-21.2	-32.28	5.00	5.66	4.78

Channel	Frequency (MHz)	PSA AVG Reading Chain 0 (dBm)	PSA AVG Reading Chain 1 (dBm)	AG/Chain (dBi)	AVG EIRP (dBm)	AVG E-field Limit (dBm)	AVG E-field Margin (dB)	Software Setting	AVG Power Meter Reading - Chain 0 (dBm)	AVG Power Meter Reading - Chain 1 (dBm)
6 (2437)	25.48	-70.6	-70.609	2.00	-62.5842	-41.20	-21.38	18.00	18.52	17.36

Note: Duty Cycle Correction Factor already added AVG Reading. DCCF= 0.160

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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.

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701J
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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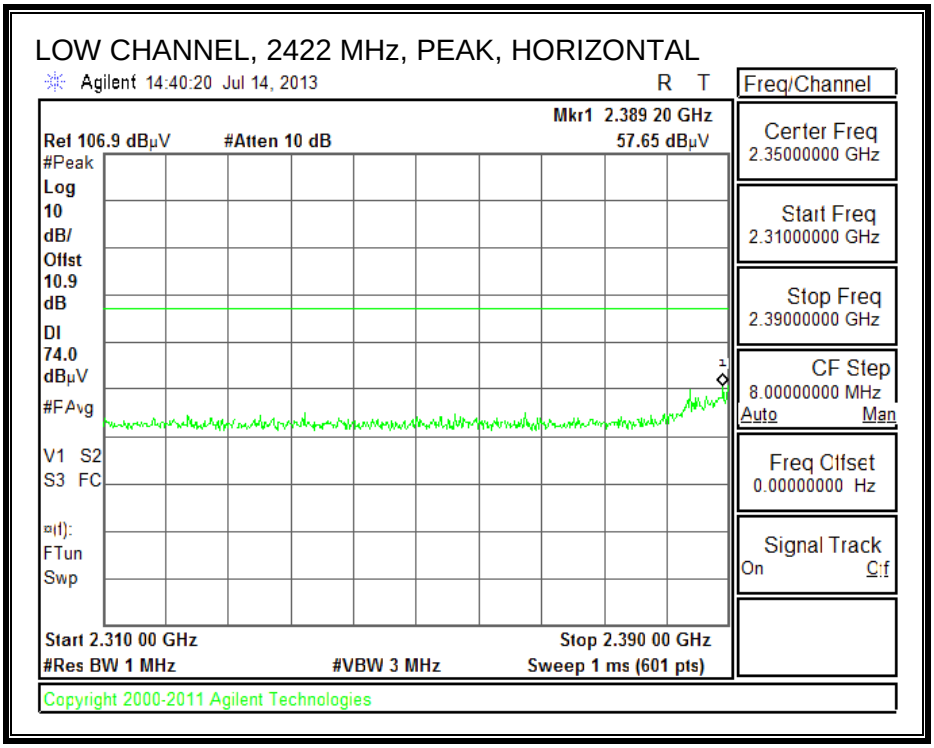
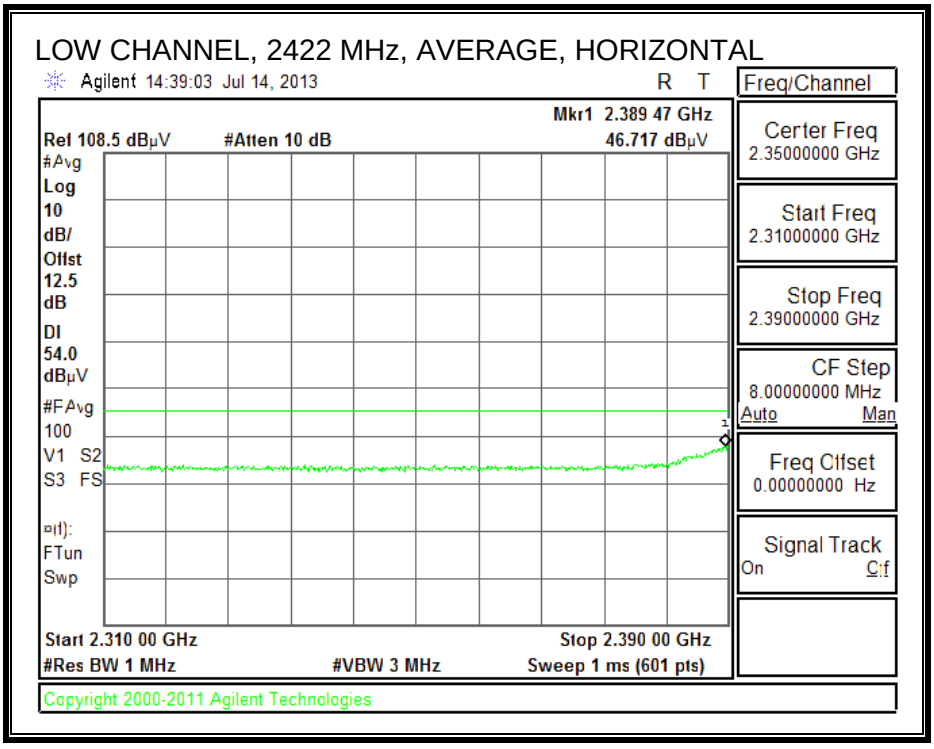
9.2. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 2.4 GHz BAND with EBJ antenna

RESTRICTED BANDEDGE





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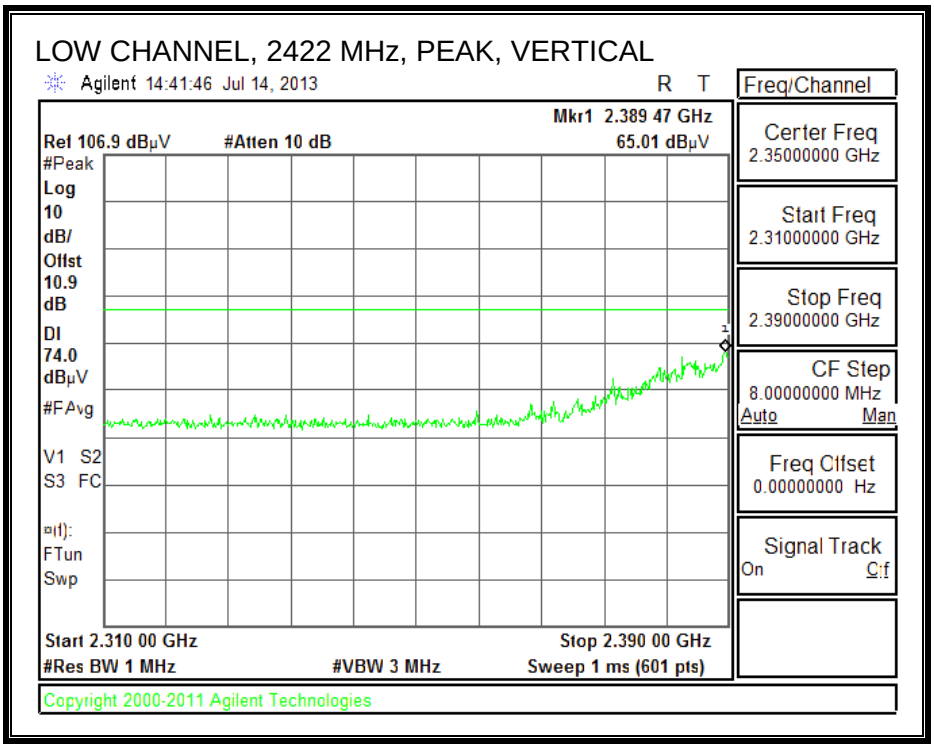
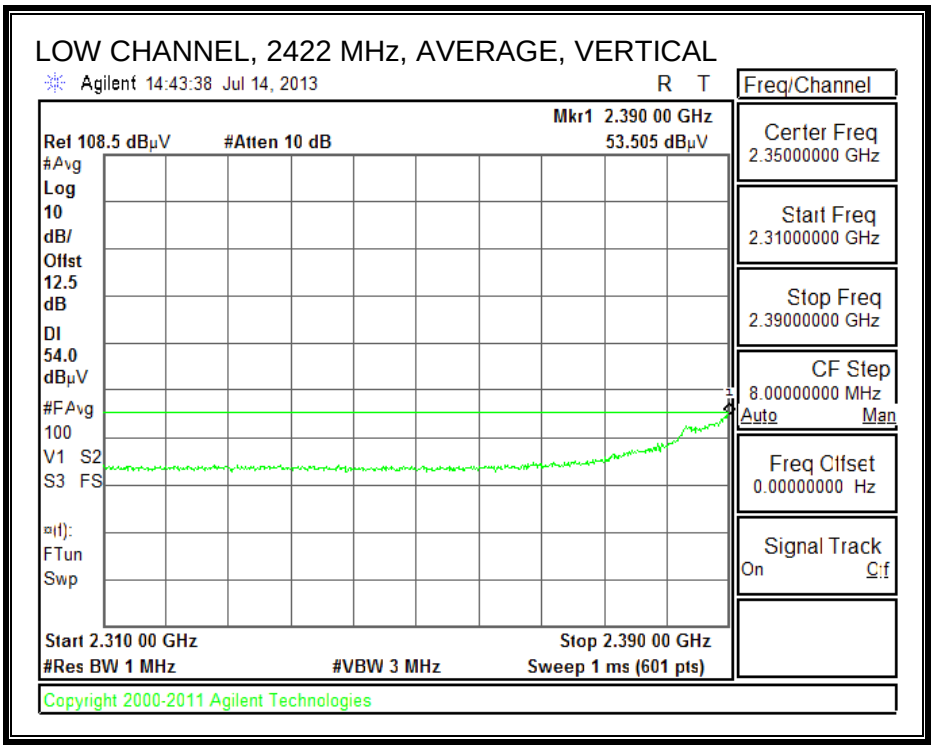
LOW CHANNEL, 2422 MHz, PEAK, VERTICAL



LOW CHANNEL, 2422 MHz, AVERAGE, VERTICAL



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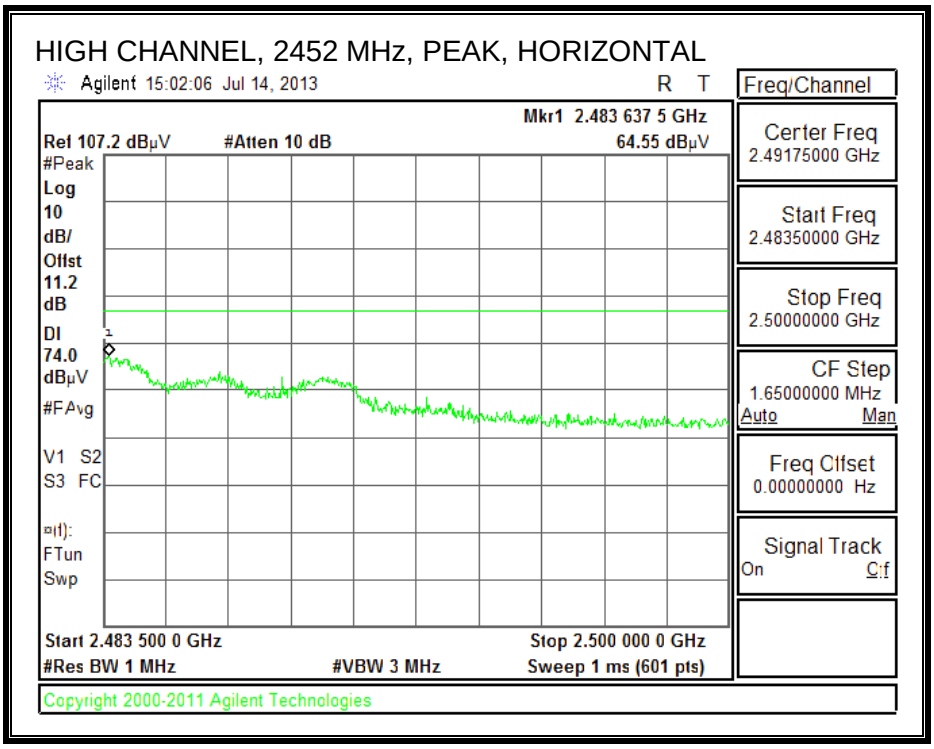
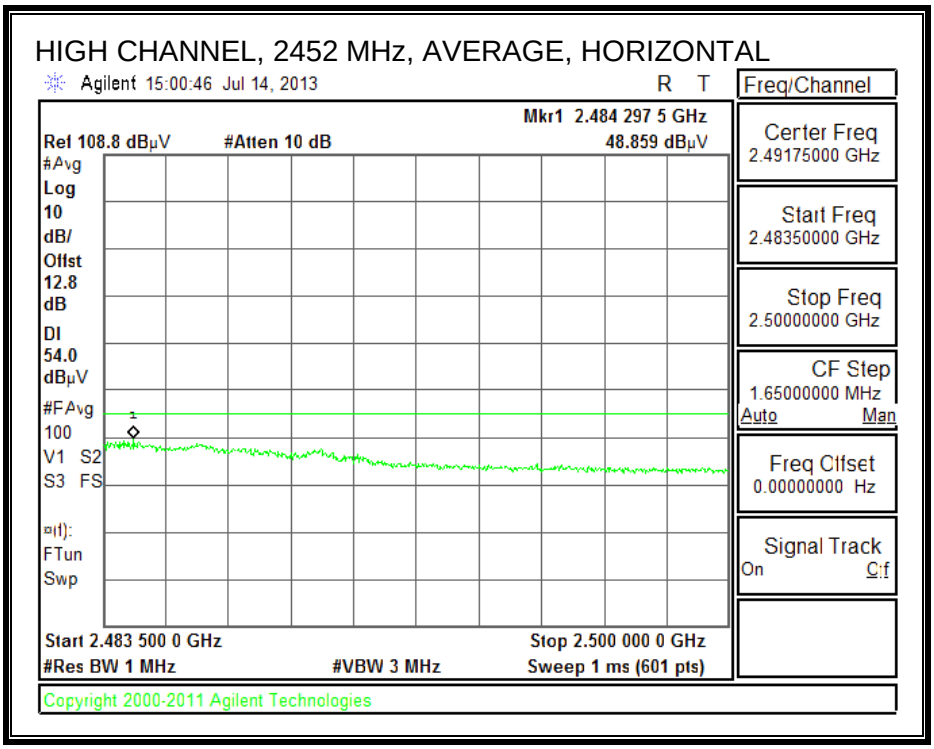
HIGH CHANNEL, 2452 MHz, PEAK, HORIZONTAL



HIGH CHANNEL, 2452 MHz, AVERAGE, HORIZONTAL



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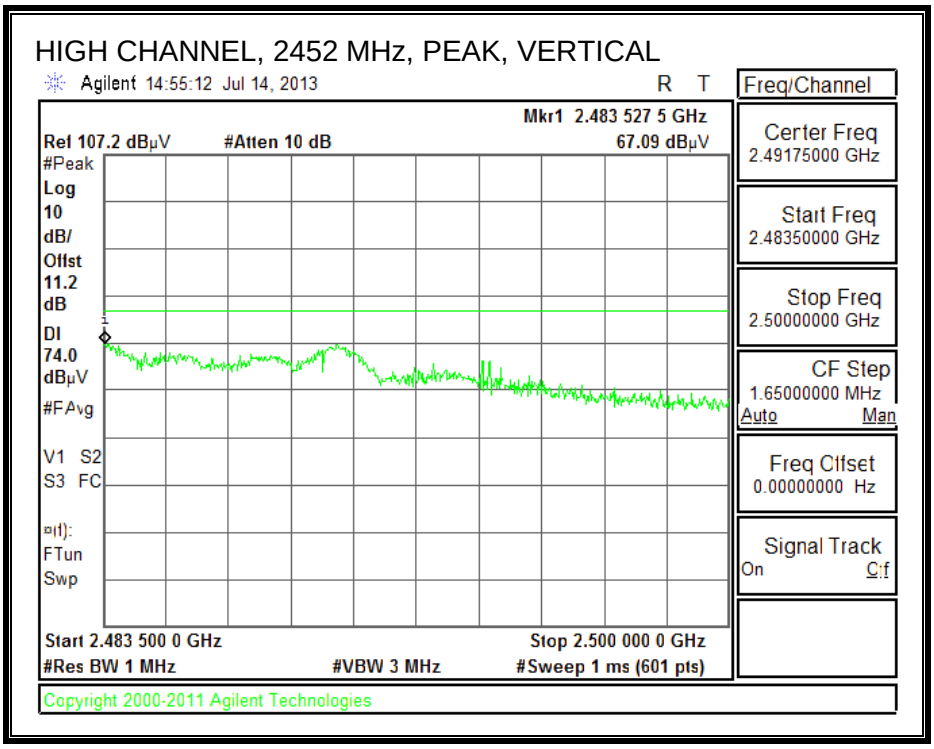
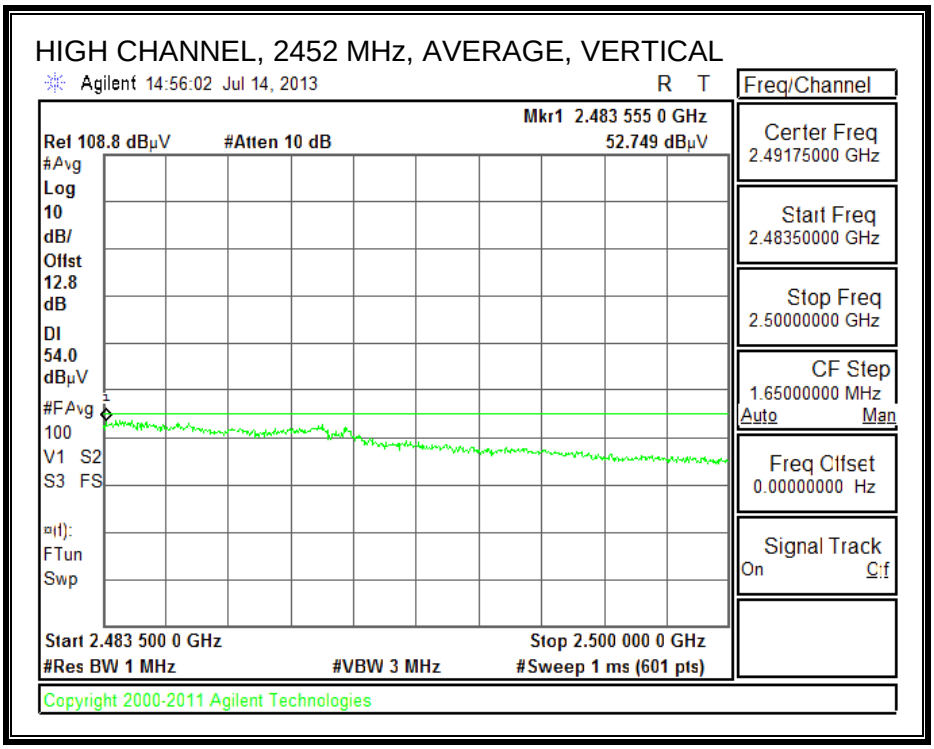
HIGH CHANNEL, 2452 MHz, PEAK, VERTICAL



HIGH CHANNEL, 2452 MHz, AVERAGE, VERTICAL



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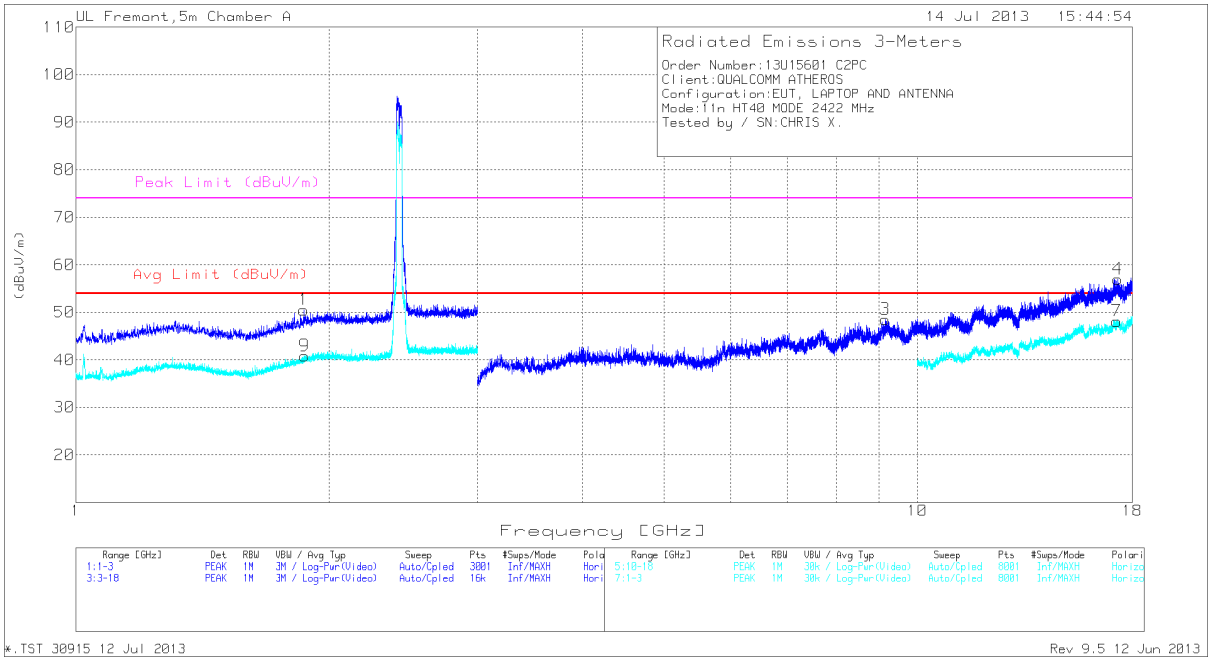
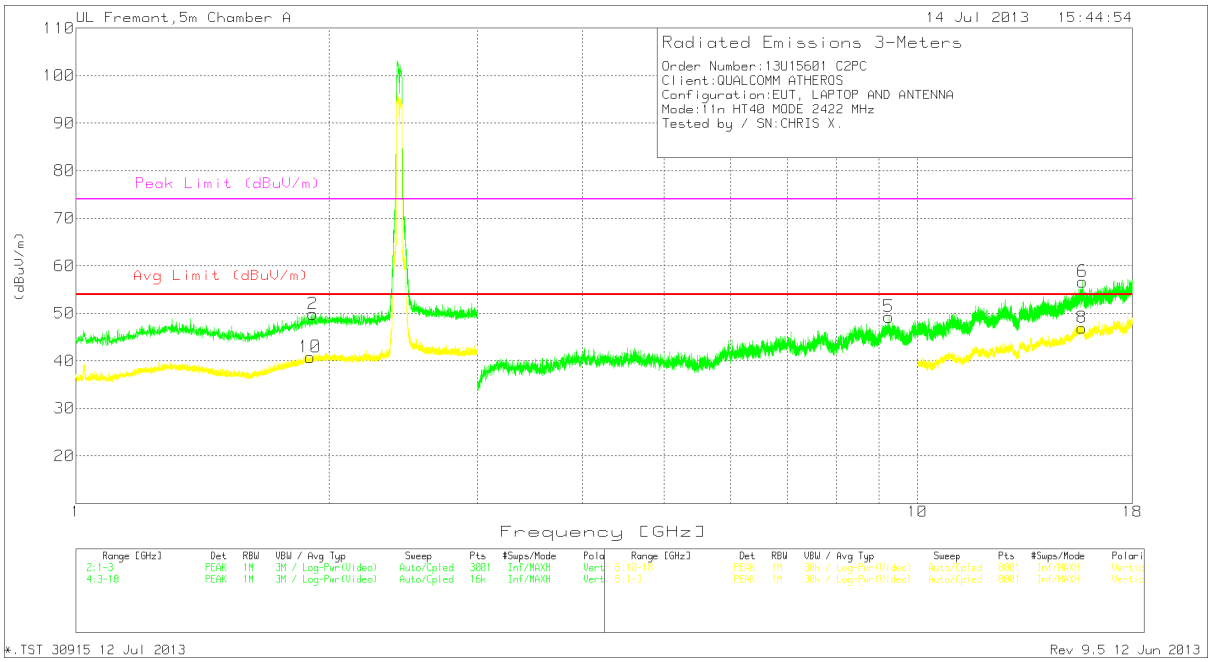
HARMONICS AND SPURIOUS EMISSIONS

11n HT40 MODE, 2422 MHz

HORIZONTAL PLOT



VERTICAL PLOT



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HORIZONTAL AND VERTICAL DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.865	43.03	PK	31.3	-23.8	50.53	53.97	-3.44	74	-23.47	0-360	100	H
1.912	41.99	PK	31.7	-23.8	49.89	53.97	-4.08	74	-24.11	0-360	200	V
9.159	35.7	PK	36.1	-23.3	48.5	53.97	-5.47	74	-25.5	0-360	200	H
17.292	35.77	PK	41	-19.8	56.97	**53.97**	**3**	74	-17.03	0-360	100	H
9.247	36.76	PK	36.2	-23.7	49.26	53.97	-4.71	74	-24.74	0-360	200	V
15.712	36.55	PK	40.4	-20.3	56.65	**53.97**	**2.68**	74	-17.35	0-360	100	V
17.251	26.64	PK	41	-19.5	48.14	53.97	-5.83	74	-25.86	0-360	100	H
15.691	26.94	PK	40.4	-20.4	46.94	53.97	-7.03	74	-27.06	0-360	100	V
1.871	33.2	PK	31.3	-23.7	40.8	53.97	-13.17	74	-33.2	0-360	200	H
1.898	32.97	PK	31.7	-23.9	40.77	53.97	-13.2	74	-33.23	0-360	200	V

PK - Peak detector

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
9.153	25.77	MAv 1	36.1	-23.5	38.37	53.97	-15.6	74	-35.63	315	103	H
15.704	25.7	MAv 1	40.4	-20.3	45.8	53.97	-8.17	74	-28.2	216	345	V

MAv1 - Maximum RMS Average

NOTE: All other frequencies were not in the restricted band aside from 9.153GHz and 15.704GHz,

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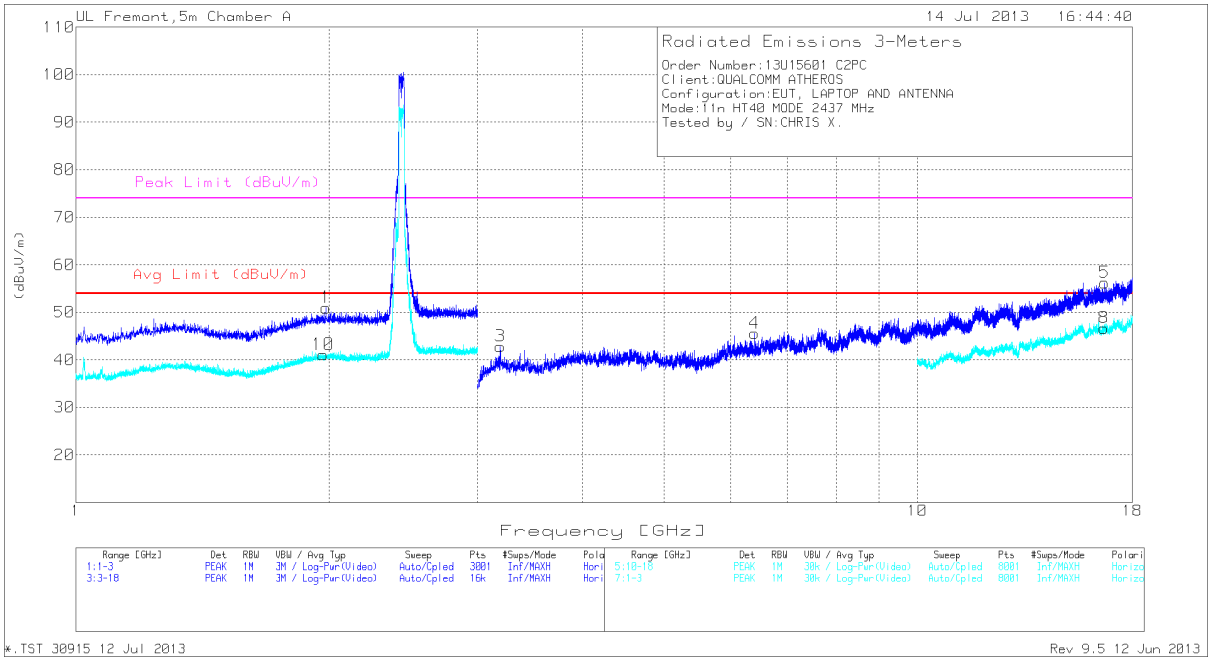
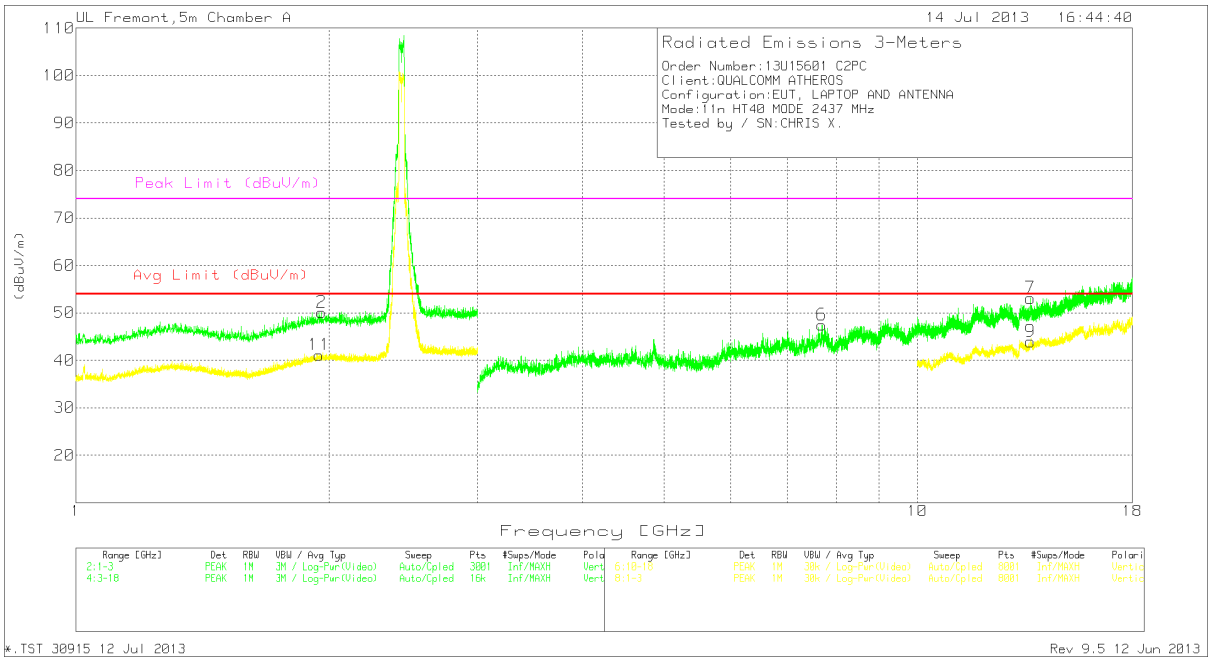
11n HT40 MODE, 2437 MHz

HORIZONTAL PLOT



VERTICAL PLOT



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HORIZONTAL AND VERTICAL DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.981	42.67	PK	31.9	-23.6	50.97	53.97	-3	74	-23.03	0-360	100	H
1.959	41.98	PK	31.8	-23.7	50.08	53.97	-3.89	74	-23.92	0-360	100	V
3.193	40.36	PK	33.5	-31	42.86	53.97	-11.11	74	-31.14	0-360	200	H
6.402	37.88	PK	35.5	-27.8	45.58	53.97	-8.39	74	-28.42	0-360	100	H
16.689	34.44	PK	40.7	-18.9	56.24	**53.97**	**2.27**	74	-17.76	0-360	200	H
7.697	36.66	PK	35.5	-24.7	47.46	53.97	-6.51	74	-26.54	0-360	200	V
13.625	35.09	PK	38.8	-20.8	53.09	53.97	-.88	74	-20.91	0-360	100	V
16.653	25.88	PK	40.7	-19.9	46.68	53.97	-7.29	74	-27.32	0-360	200	H
13.617	26.14	PK	38.8	-21	43.94	53.97	-10.03	74	-30.06	0-360	100	V
1.967	32.8	PK	31.8	-23.5	41.1	53.97	-12.87	74	-32.9	0-360	200	H
1.946	33.22	PK	31.8	-23.9	41.12	53.97	-12.85	74	-32.88	0-360	200	V

PK - Peak detector

NOTE: All marked frequencies were not in the restricted band. No average measurements needed.

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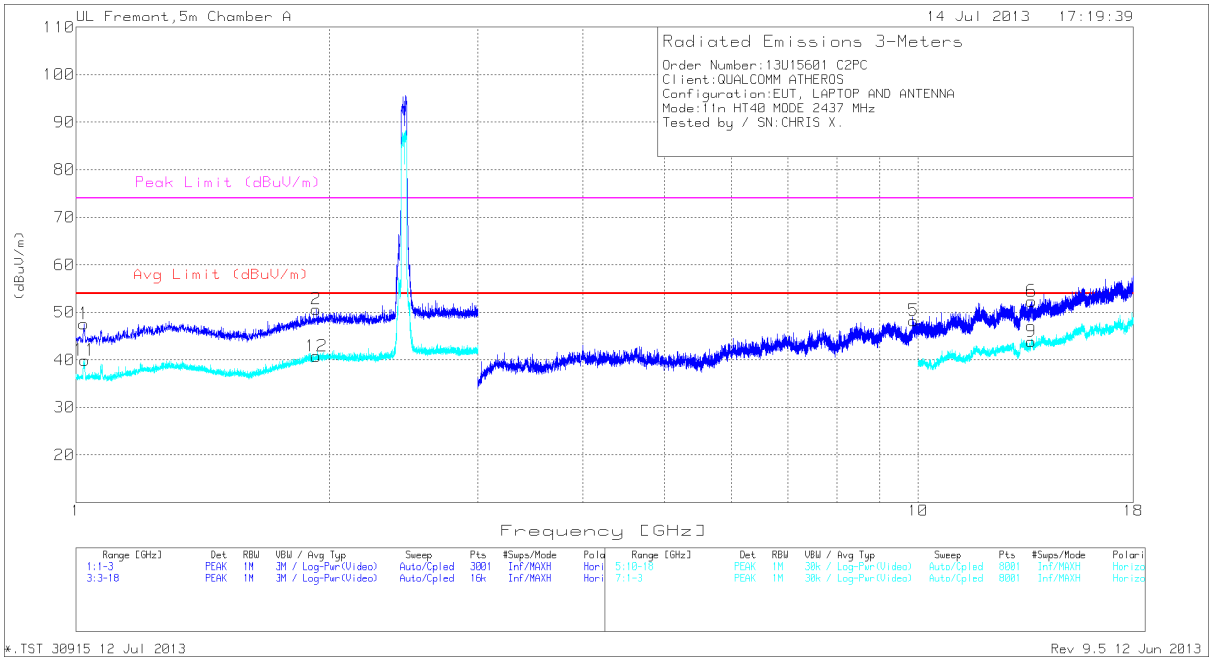
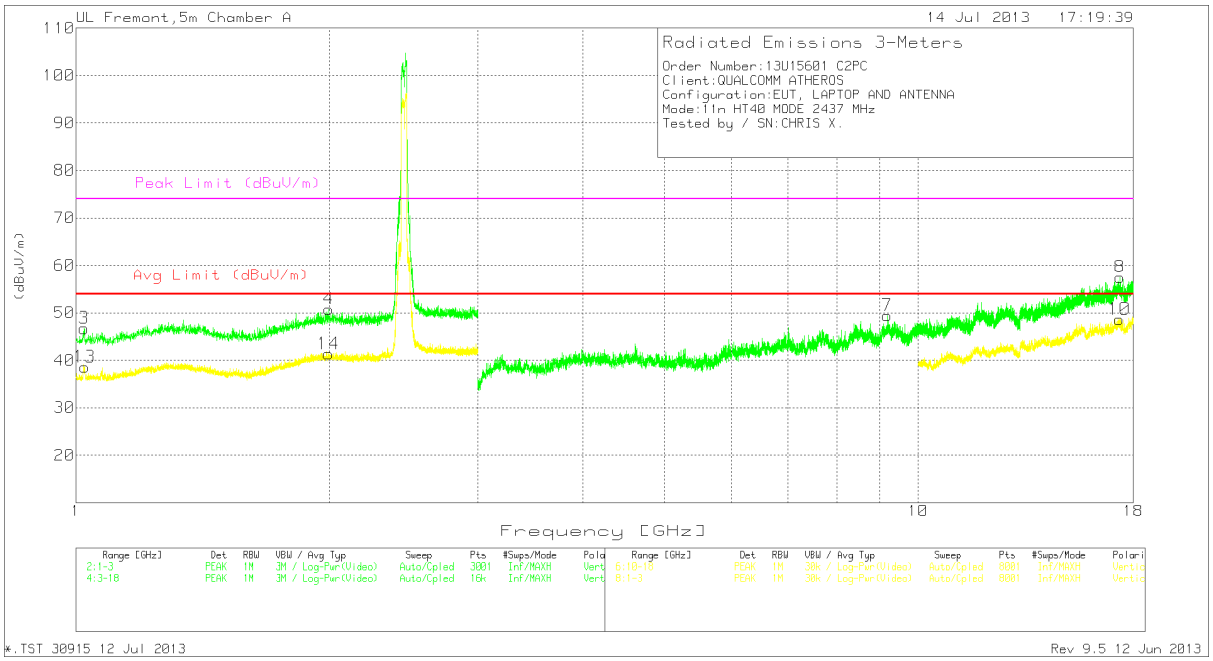
11n HT40 MODE, 2452 MHz

HORIZONTAL PLOT



VERTICAL PLOT



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HORIZONTAL AND VERTICAL DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.022	45.16	PK	28.1	-25.7	47.56	53.97	-6.41	74	-26.44	0-360	200	H
1.928	42.65	PK	31.8	-23.8	50.65	53.97	-3.32	74	-23.35	0-360	200	H
1.023	44.32	PK	28.1	-25.7	46.72	53.97	-7.25	74	-27.28	0-360	200	V
1.995	42.48	PK	31.9	-23.6	50.78	53.97	-3.19	74	-23.22	0-360	100	V
9.876	33.16	PK	37	-21.9	48.26	53.97	-5.71	74	-25.74	0-360	100	H
13.633	34.02	PK	38.8	-20.5	52.32	53.97	-1.65	74	-21.68	0-360	200	H
9.185	36.3	PK	36.1	-23	49.4	53.97	-4.57	74	-24.6	0-360	200	V
17.363	36.03	PK	40.9	-19.4	57.53	53.97	3.56	74	-16.47	0-360	100	V
13.617	26.06	PK	38.8	-21	43.86	53.97	-10.11	74	-30.14	0-360	200	H
17.328	27.25	PK	41	-19.6	48.65	53.97	-5.32	74	-25.35	0-360	200	V
1.024	37.52	PK	28.1	-25.7	39.92	53.97	-14.05	74	-34.08	0-360	200	H
1.929	32.76	PK	31.8	-23.8	40.76	53.97	-13.21	74	-33.24	0-360	100	H
1.024	36.2	PK	28.1	-25.7	38.6	53.97	-15.37	74	-35.4	0-360	200	V
1.994	33.04	PK	31.9	-23.6	41.34	53.97	-12.63	74	-32.66	0-360	200	V

PK - Peak detector

NOTE: All marked frequencies were not in the restricted band. No average measurements needed.

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