



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

**BLUETOOTH LOW ENERGY
CERTIFICATION TEST REPORT**

FOR

WLAN 802.11bgn 2.4GHz 1x1 and Bluetooth LE v4.0 Bridge

MODEL NUMBER: CA-FYX100

**FCC ID: MHIFYX-1
IC: 3681C-FYX1**

REPORT NUMBER: 12U14684-16

ISSUE DATE: APRIL 26, 2013

Prepared for
**CARD ACCESS, INC
11778 SOUTH ELECTION ROAD
SUITE 260
DRAPER, UT 84020, U.S.A.**

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	04/26/13	Initial Issue	F. Ibrahim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: CARD ACCESS, INC
11778 SOUTH ELECTION ROAD
SUITE 260
DRAPER, UT 84020, U.S.A.

EUT DESCRIPTION: WLAN 802.11bgn 2.4GHz 1x1 and Bluetooth LE v4.0 Bridge

MODEL: CA-FYX100

SERIAL NUMBER: CONDUCTED (CB1), RADIATED (RF1)

DATE TESTED: February 4th -7th, 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.

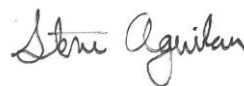
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this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



FRANK IBRAHIM
WiSE PROGRAM MANAGER
UL CCS

Tested By:



STEVE AGUILAR
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

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

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

4.3. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a WLAN 802.11bgn 2.4GHz 1x1 and Bluetooth LE v4.0 Bridge.

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)
2402-2480	BLE	3.19	2.08

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a stamped metal monopole antenna, with a maximum gain of 2.1 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 7505443.

The EUT driver software installed during testing was PuTTY Configuration rev. 0.62 and PuTTY rev 1.19.4.

5.5. 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.

WiFi is co-located with BT as follows:

WLAN and BT radios transmit at the same time, but not sharing the same antenna.

Protocol used for harmonics and spurious in the restricted bands was radiated for EUT with antenna.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	IBM	1871	L3-AWBA6	D of C
Power Supply	IBM	08K8204	11508k8204Z6LV3BW5NO	D of C
Development Board	Card Access Eng.	PCA-Gondola	5C	--

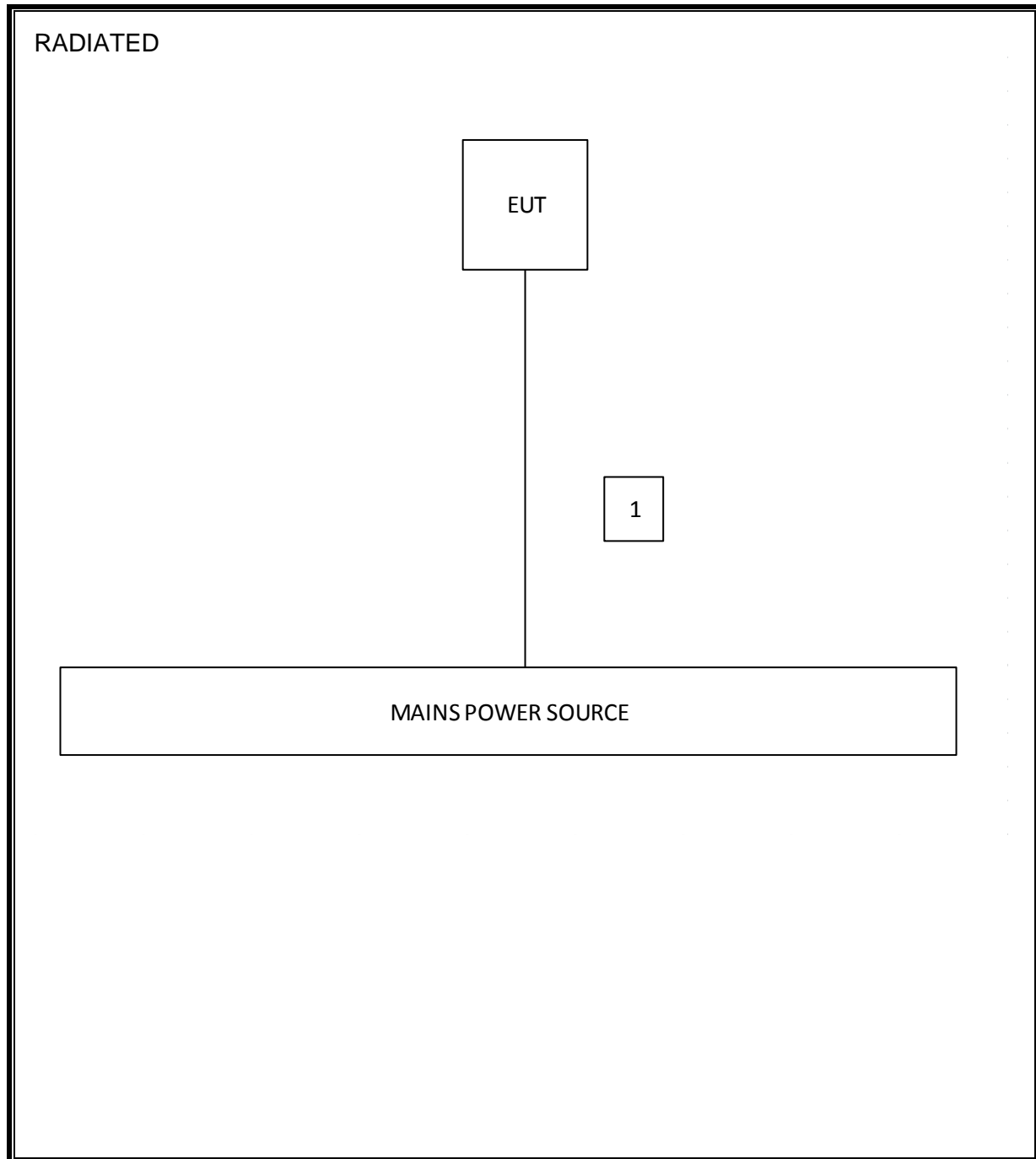
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC,3P	Unshielded	1.8	3 prong
2	AC	1	AC,2P	Unshielded	1.9	2 prong
3	AC	1	AC,2P	Unshielded	2	3 prong
4	DC	1	Barrel	Shielded	1.8	Ferrite on Laptop side
5	LAN	1	RJ45	Unshielded	0.8	Ferrite on Laptop side
6	USB	1	USB to mini	Shielded	1	Testing only
7	RF	1	U.FL to SMA	Shielded	0.3	Testing only

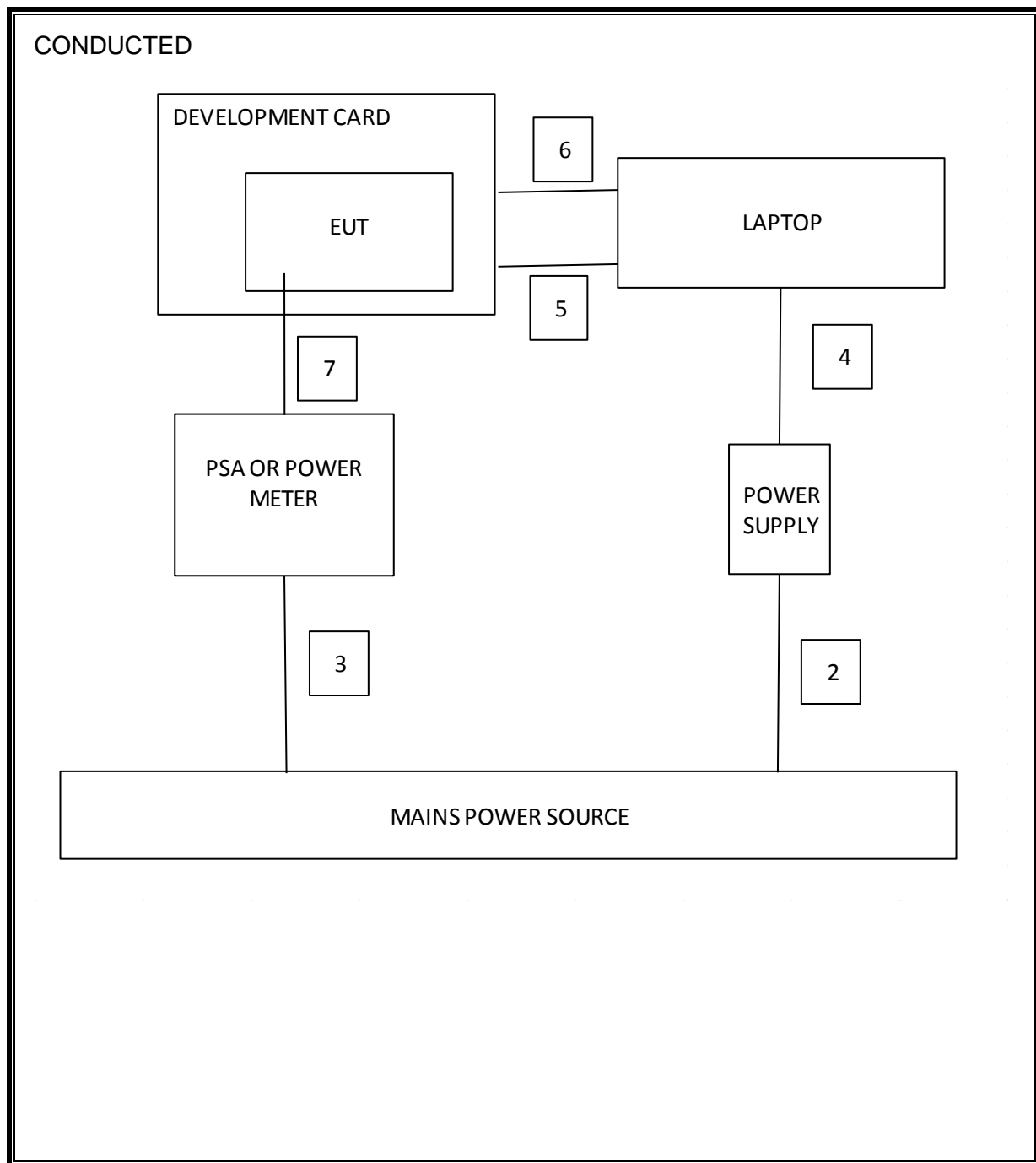
TEST SETUP

The EUT is a stand -alone device.

SETUP DIAGRAM FOR TESTS



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
Power Meter	Agilent / HP	N1911A	--	07/27/12	07/27/13
Peak / Average Power Sensor	Agilent / HP	E9323A	--	07/26/12	07/26/13
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	03/22/12	03/22/13
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	02/16/12	02/16/13
Antenna, Horn, 18 GHz	EMCO	3115	C00872	12/11/12	12/11/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	10/19/12	10/19/13
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	08/08/12	08/08/13
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00996	05/11/12	05/11/13
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/12	10/25/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/12	10/22/13
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01011	03/23/12	03/23/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/28/13	01/28/14
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/08/12	08/08/13
LISN, 30 MHz	FCC	50/250-25-2	C00626	01/14/13	01/14/14
Antenna, Horn, 18 GHz	ETS	3117	C01006	12/11/12	12/11/13
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	10/21/12	10/21/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	10/22/12	10/22/13
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/14/12	11/14/13

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME, DUTY CYCLE

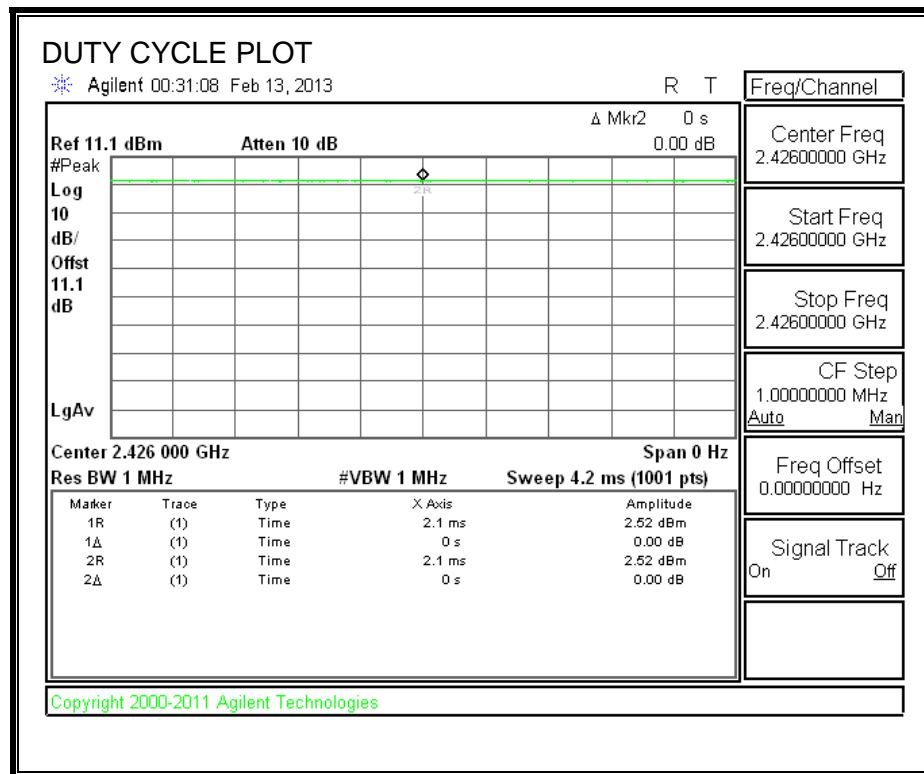
LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
BLE	4.20	4.20	1.000	100.0%	0.00



7.2. 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.

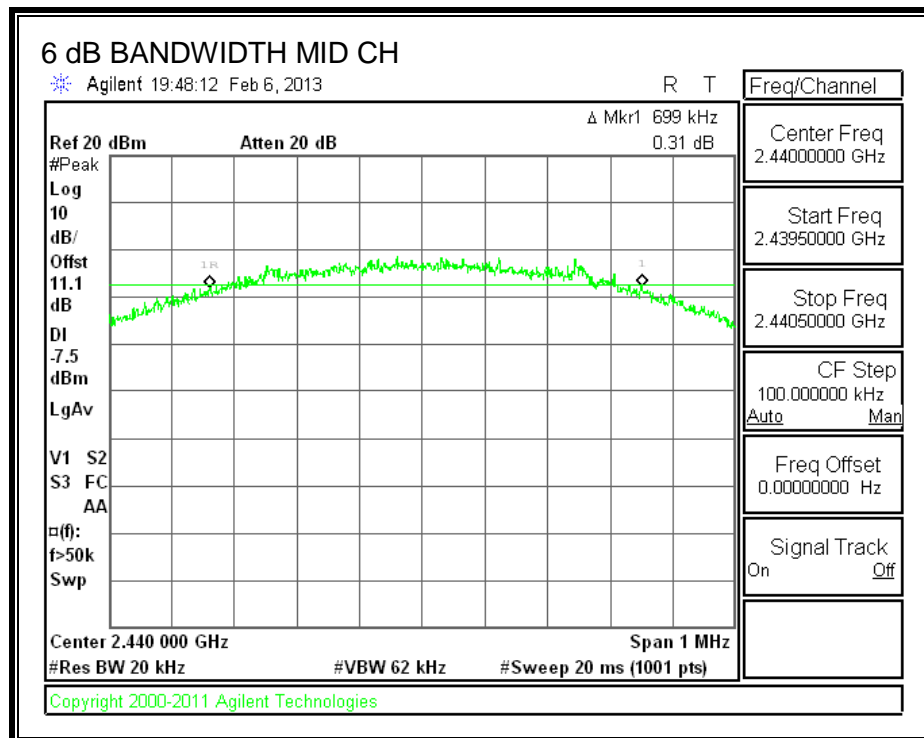
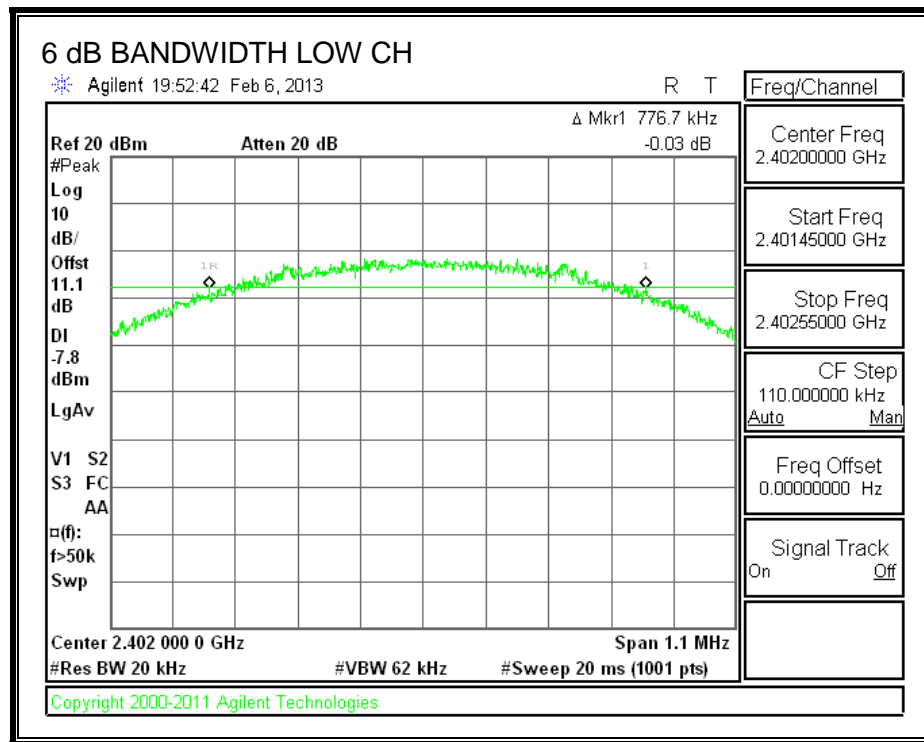
TEST PROCEDURE

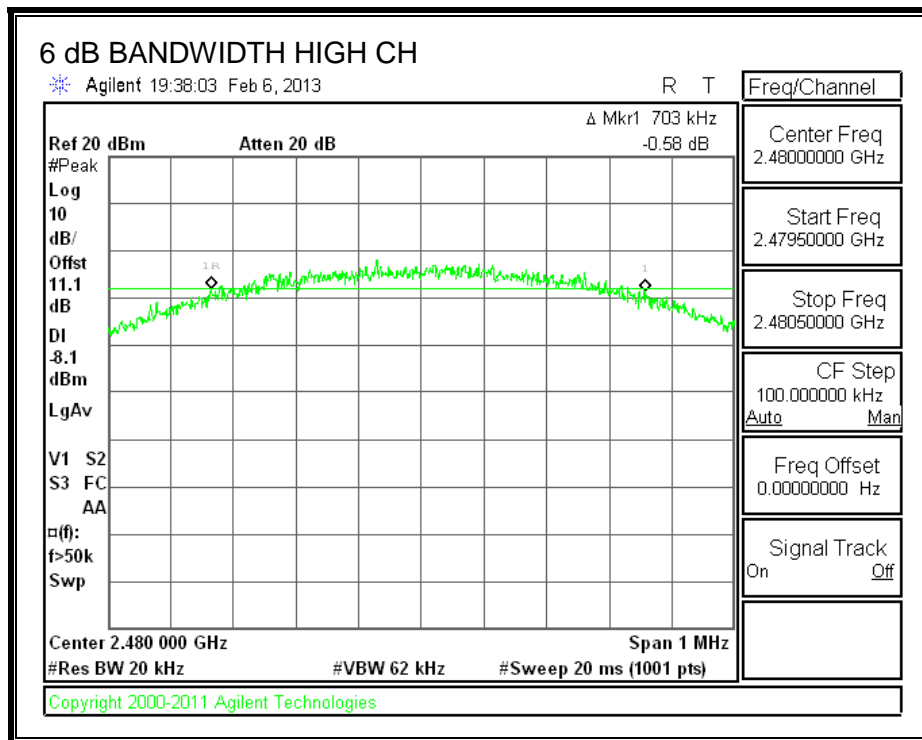
KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.7767	0.5
Middle	2440	0.6990	0.5
High	2480	0.7030	0.5

6 dB BANDWIDTH





7.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

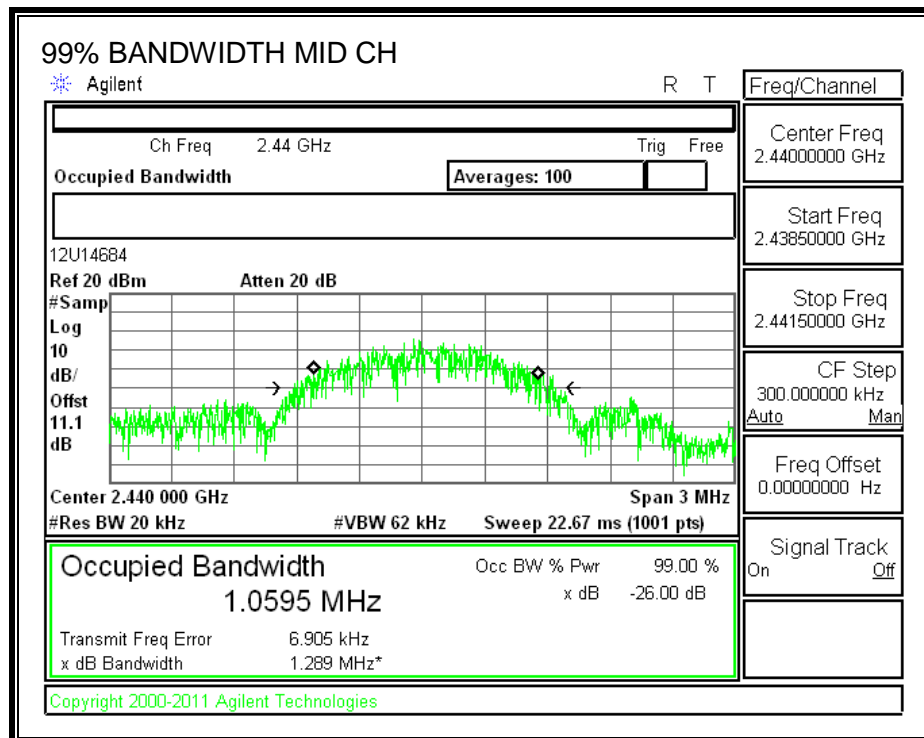
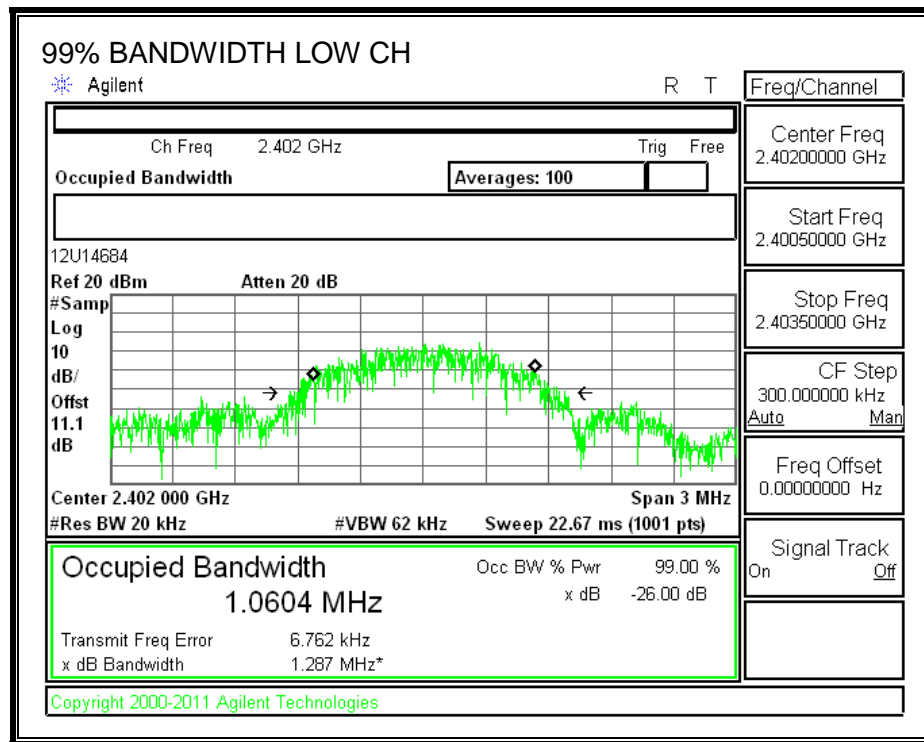
TEST PROCEDURE

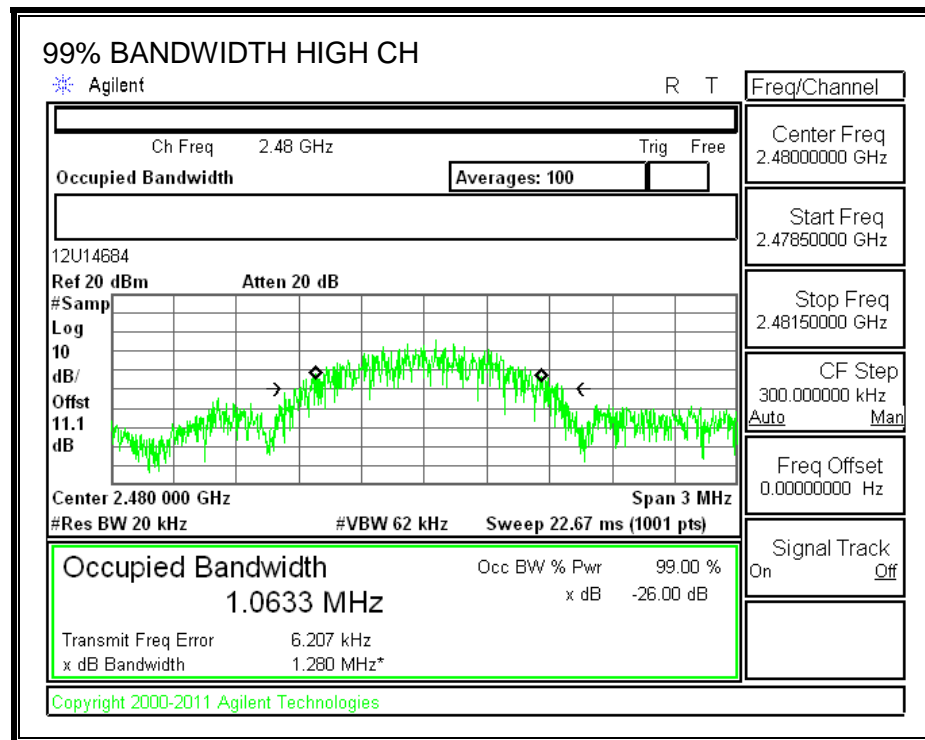
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0604
Middle	2440	1.0595
High	2480	1.0633

99% BANDWIDTH





7.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

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

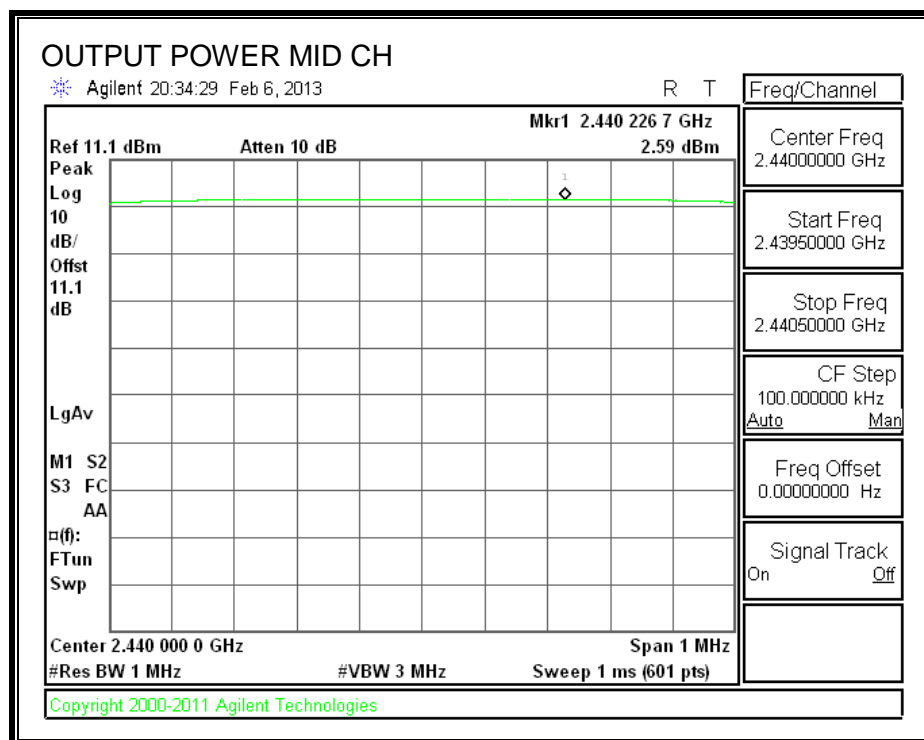
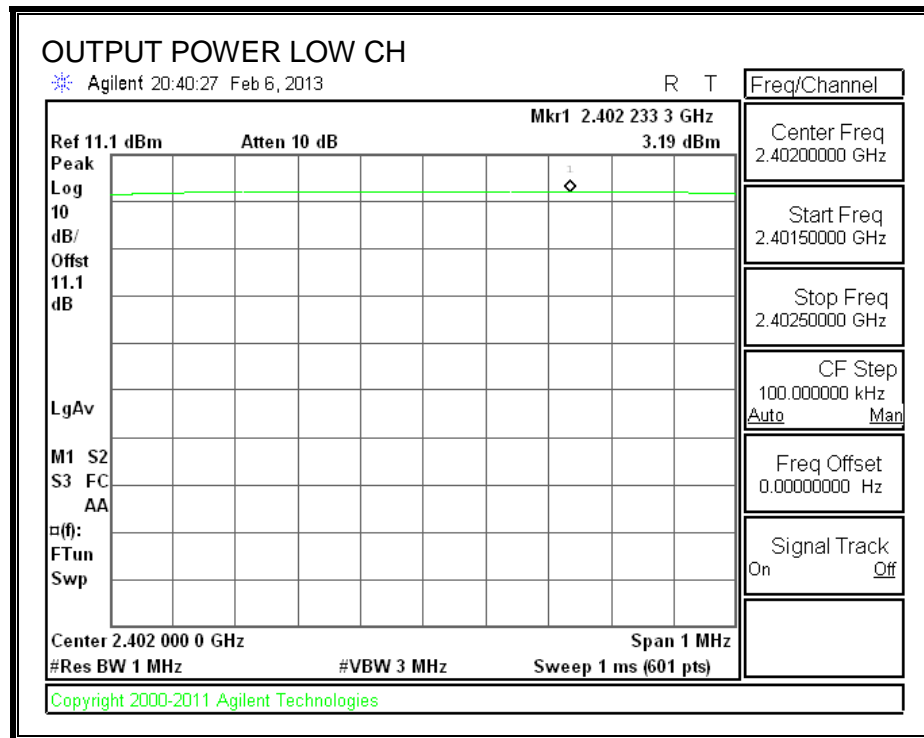
TEST PROCEDURE

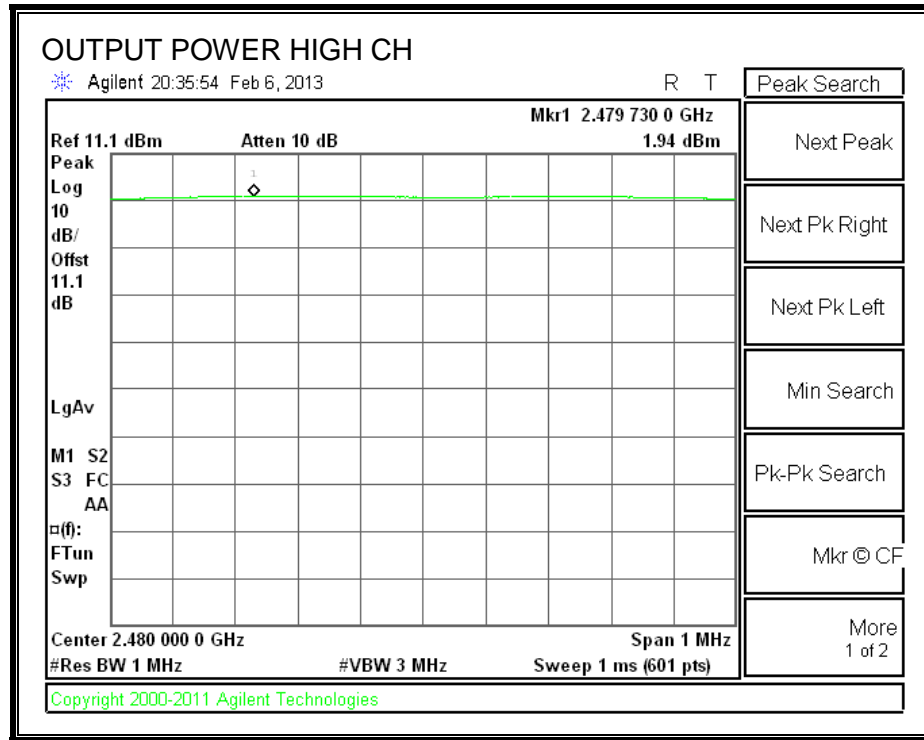
KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	3.19	30	-26.81
Middle	2440	2.59	30	-27.41
High	2480	1.94	30	-28.06

OUTPUT POWER





7.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

RESULTS

The cable assembly insertion loss of 11.1 dB (including 10 dB pad and 1.1 dB cable/adapter) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	3.08
Middle	2440	2.51
High	2480	1.85

7.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

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

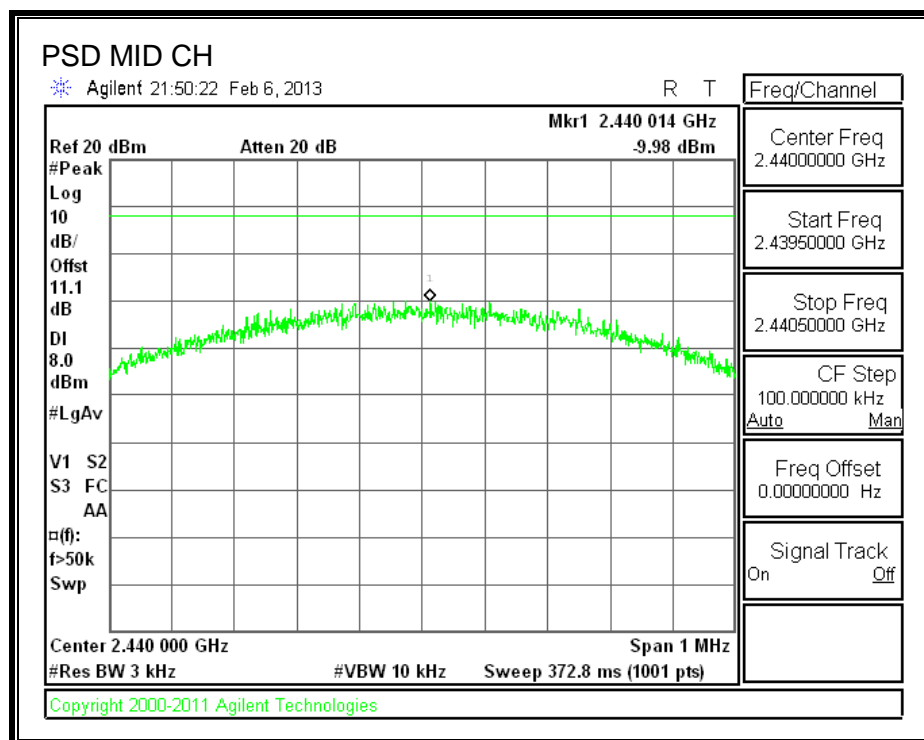
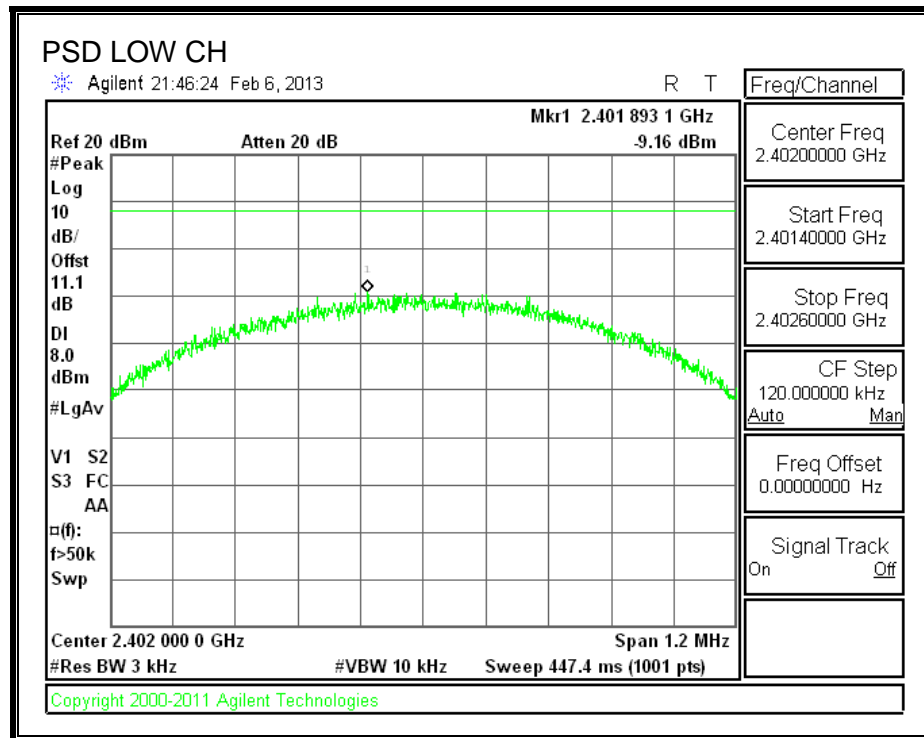
TEST PROCEDURE

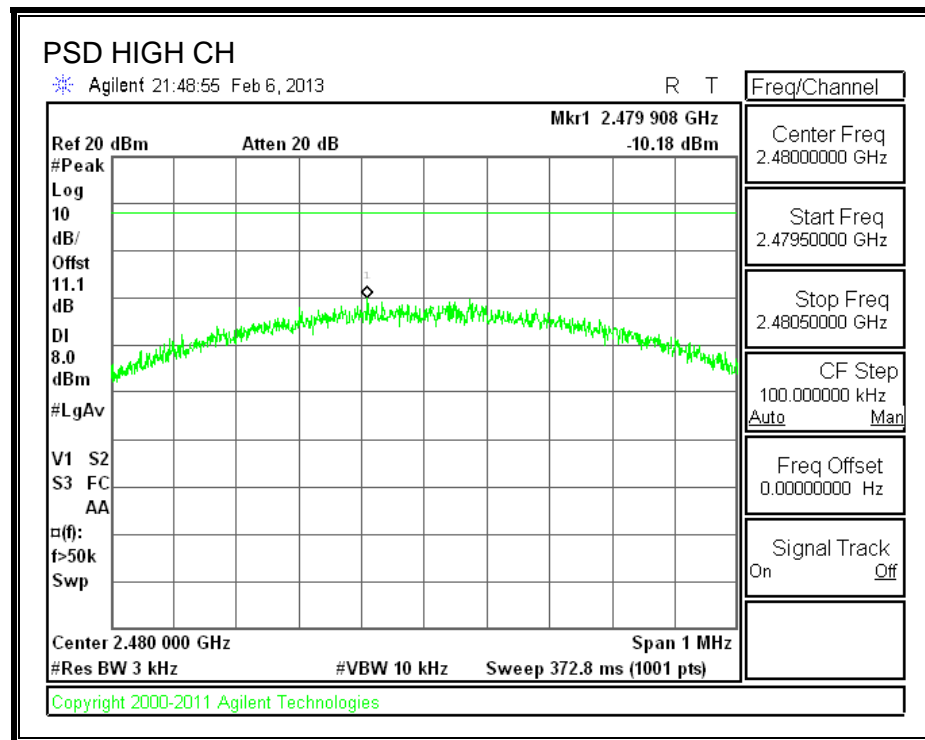
KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-9.16	8	-17.16
Middle	2440	-9.98	8	-17.98
High	2480	-10.18	8	-18.18

POWER SPECTRAL DENSITY





7.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

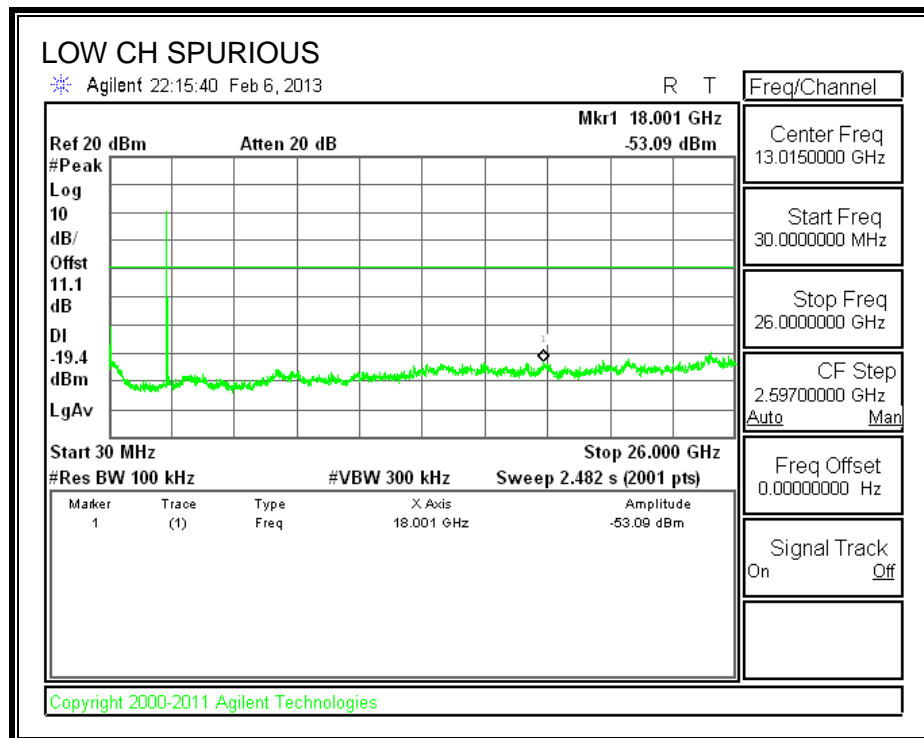
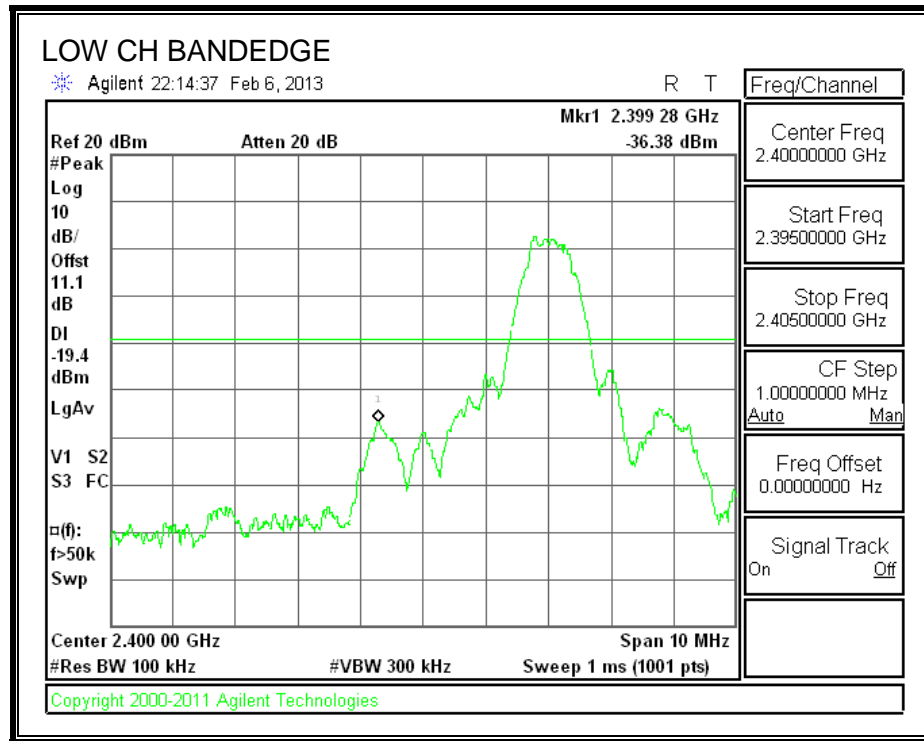
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

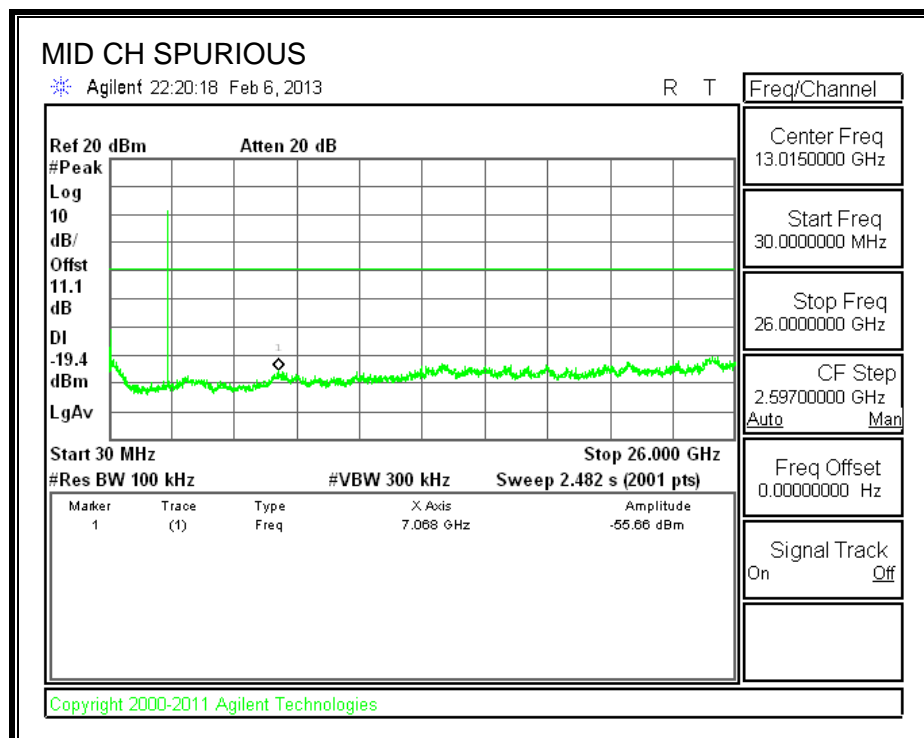
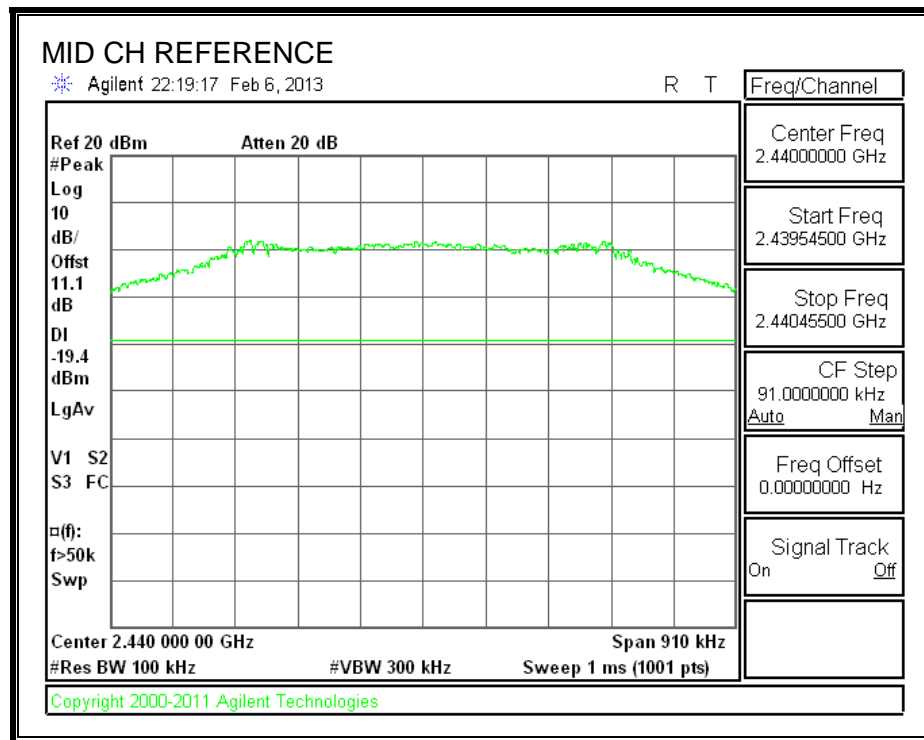
KDB 558074 D01 DTS Meas Guidance v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247", dated 10/04/2012.

RESULTS

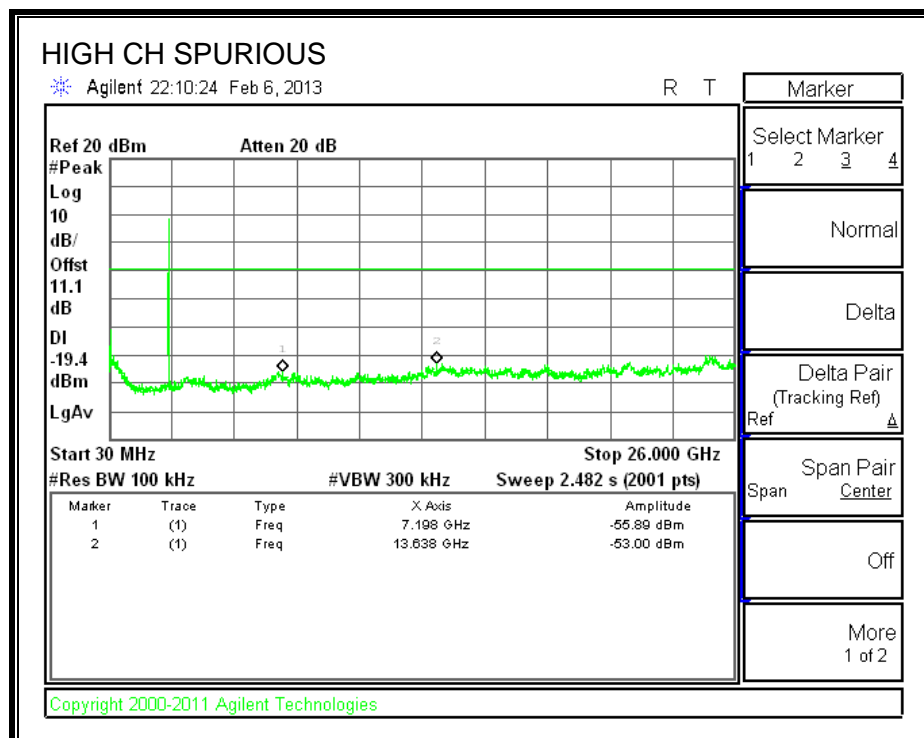
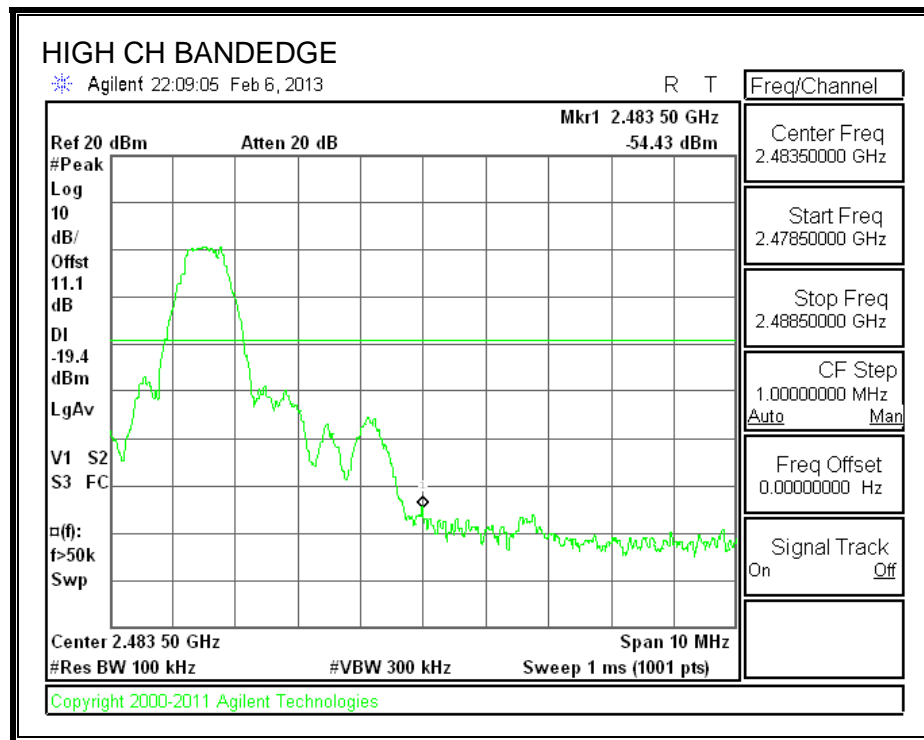
SPURIOUS EMISSIONS, LOW CHANNEL



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.

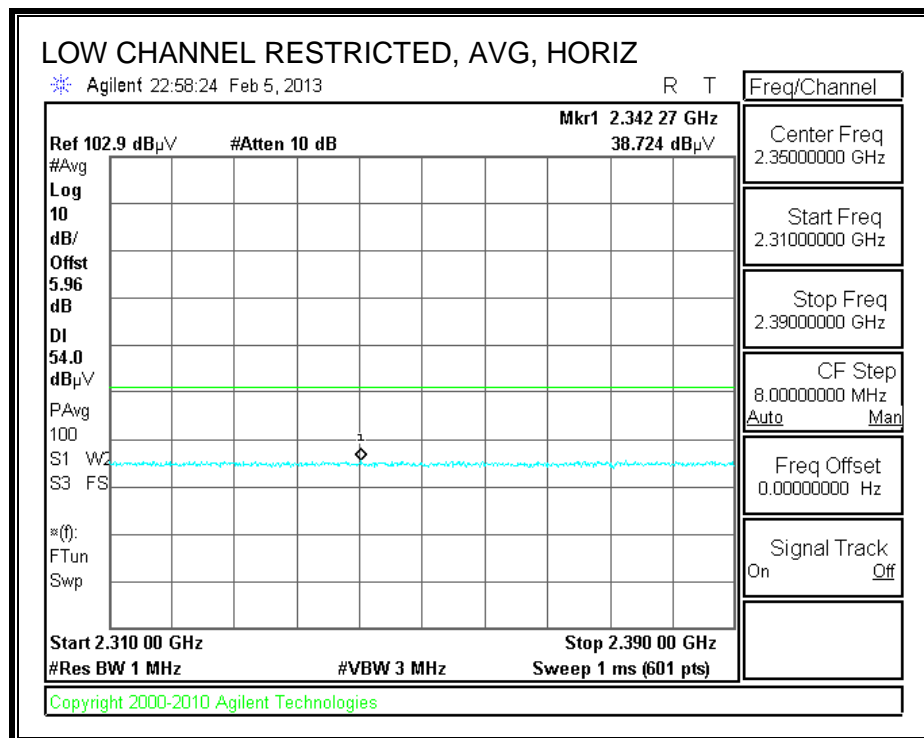
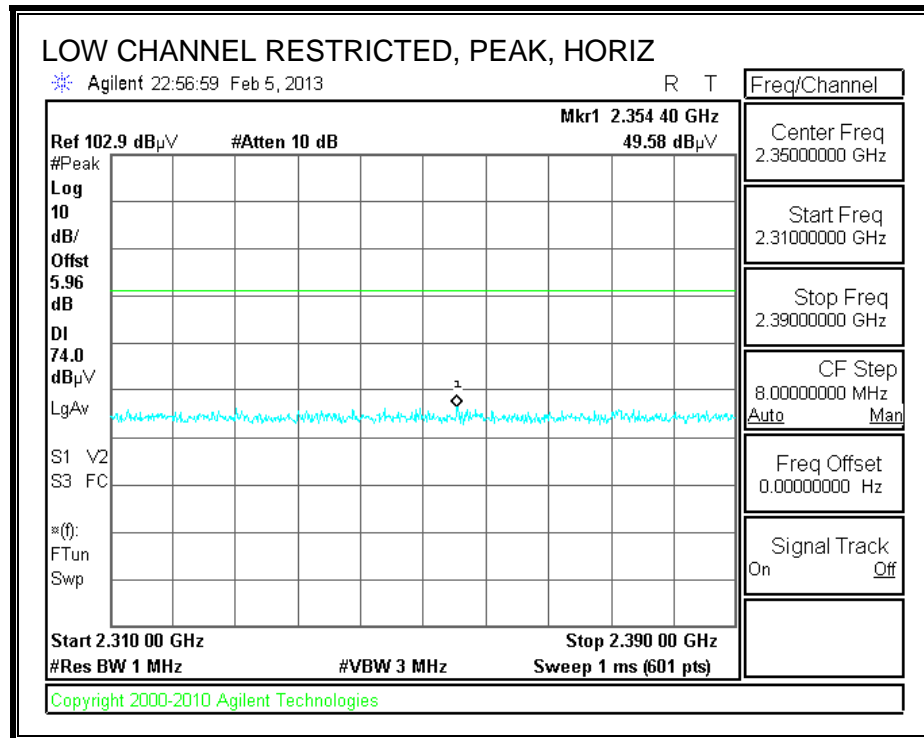
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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.

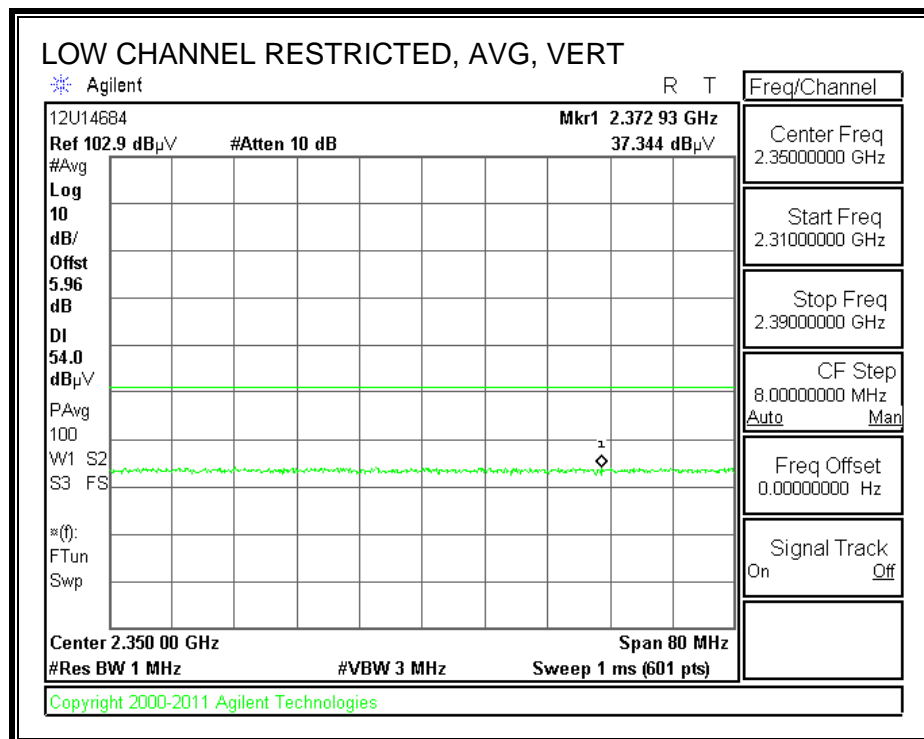
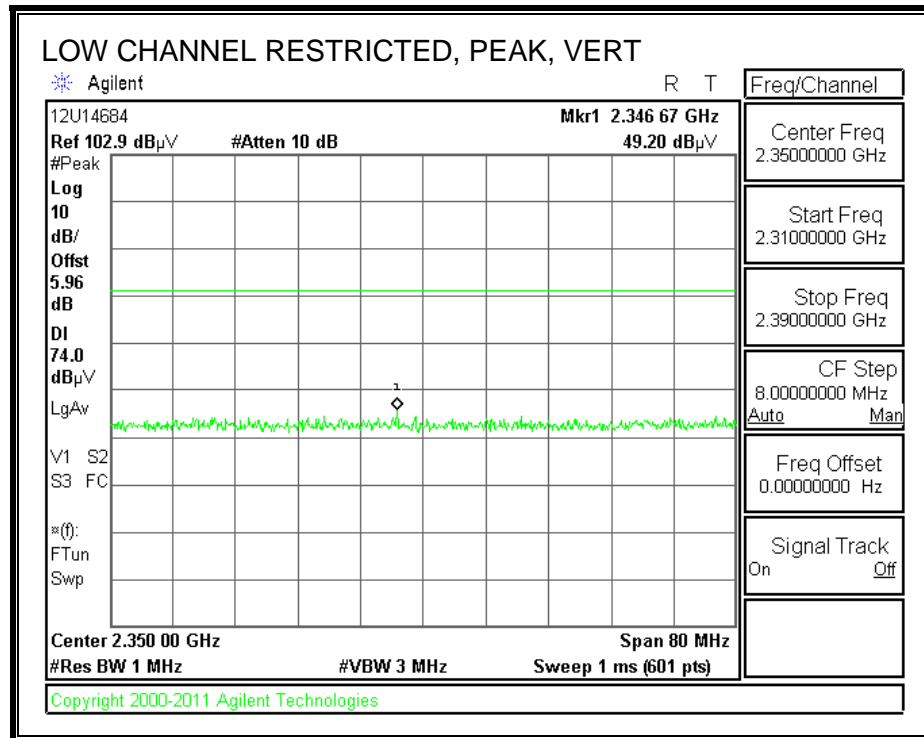
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

8.2. TRANSMITTER ABOVE 1 GHz

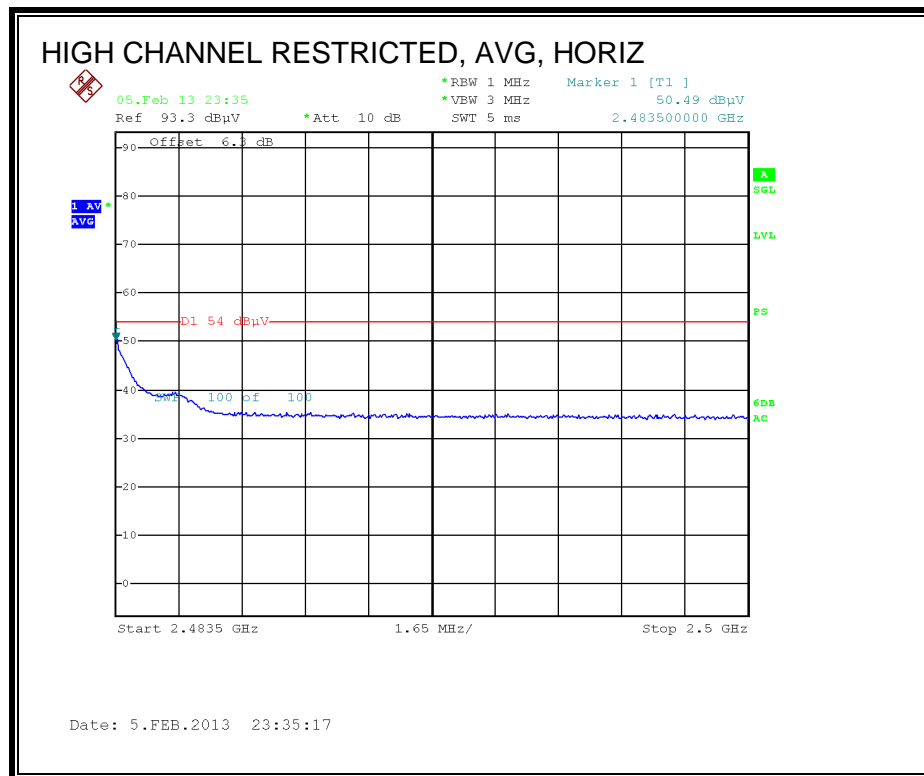
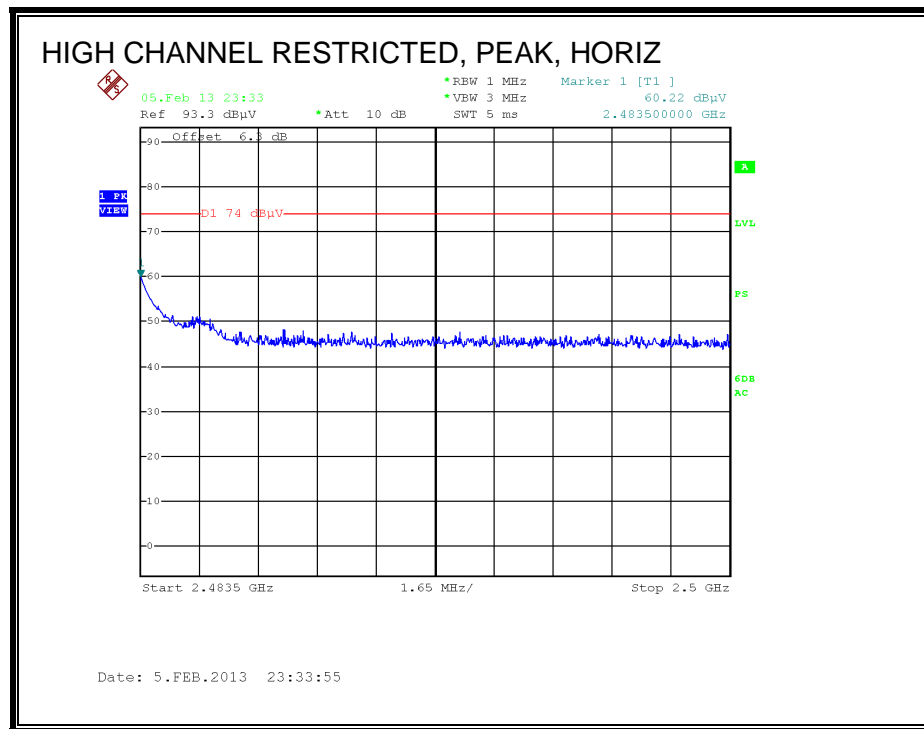
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



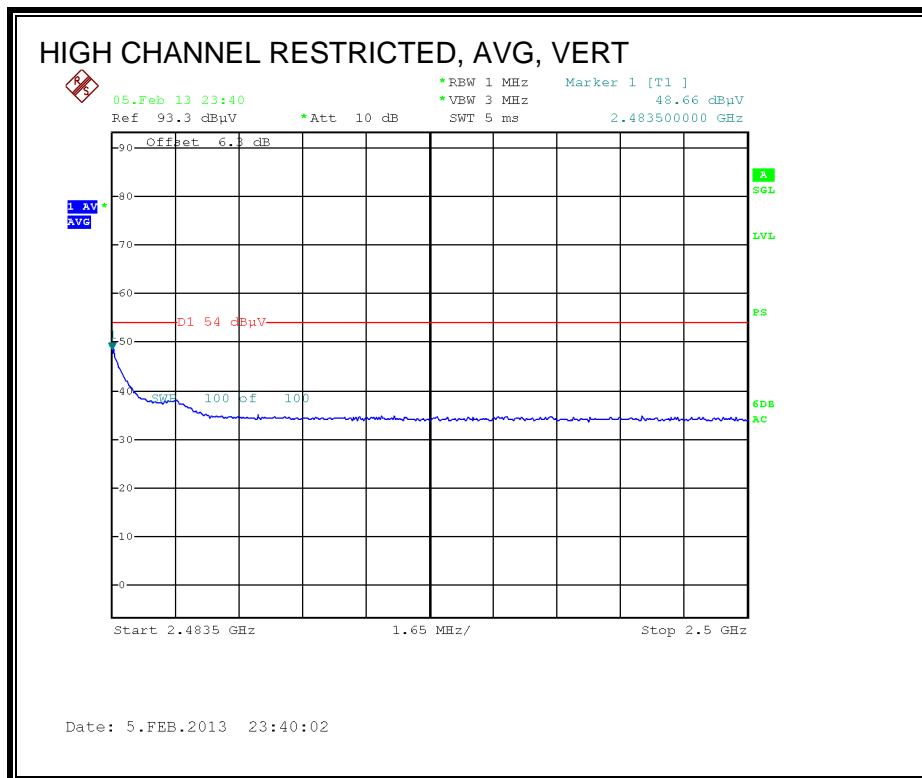
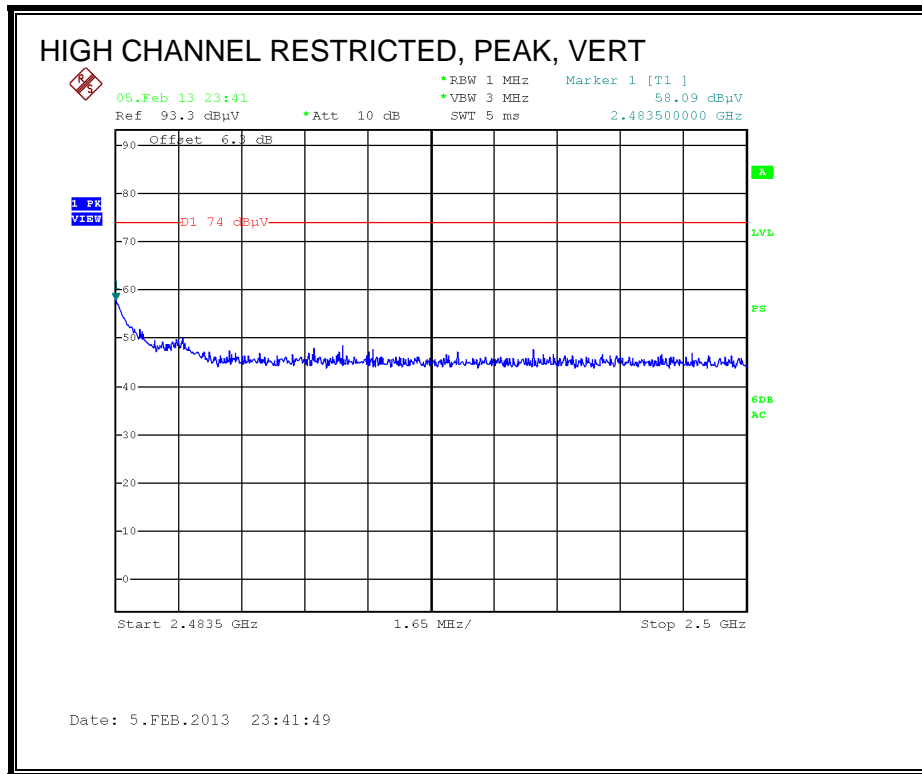
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



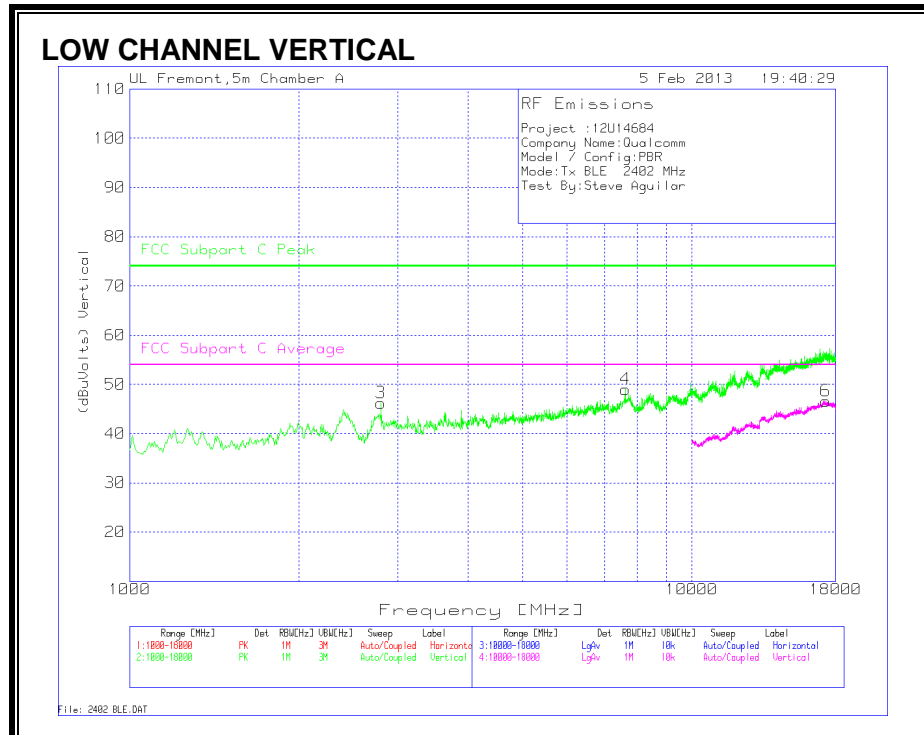
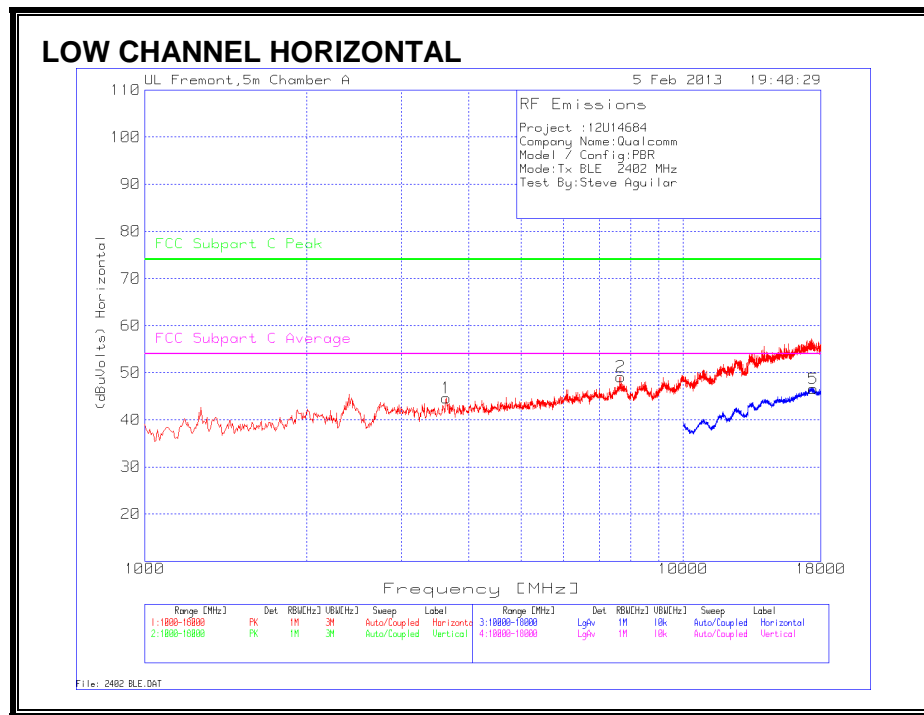
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

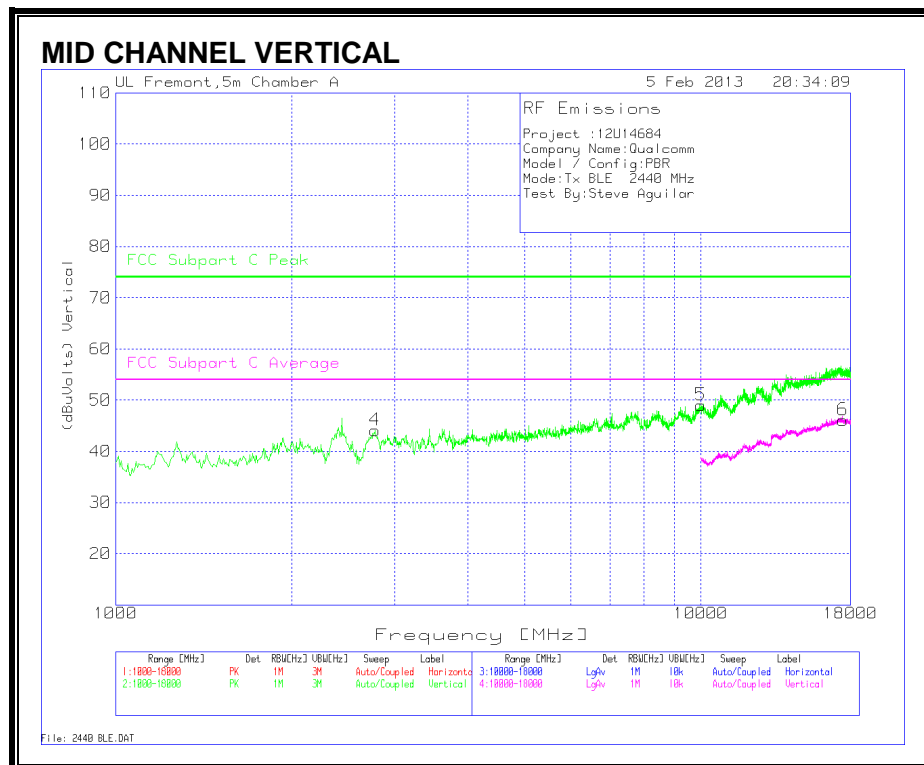
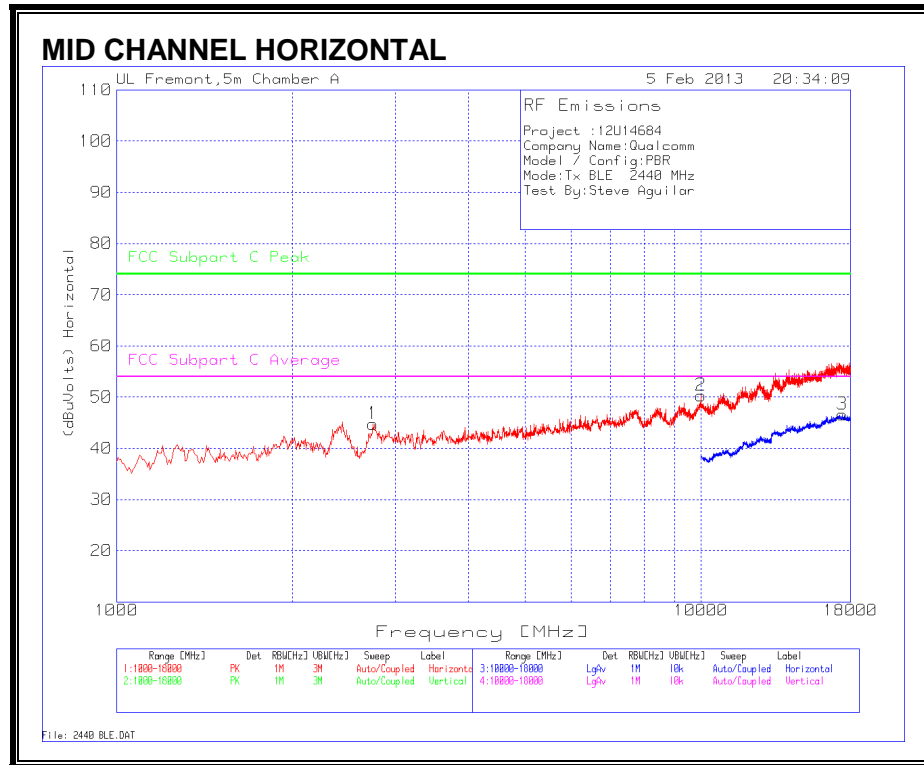


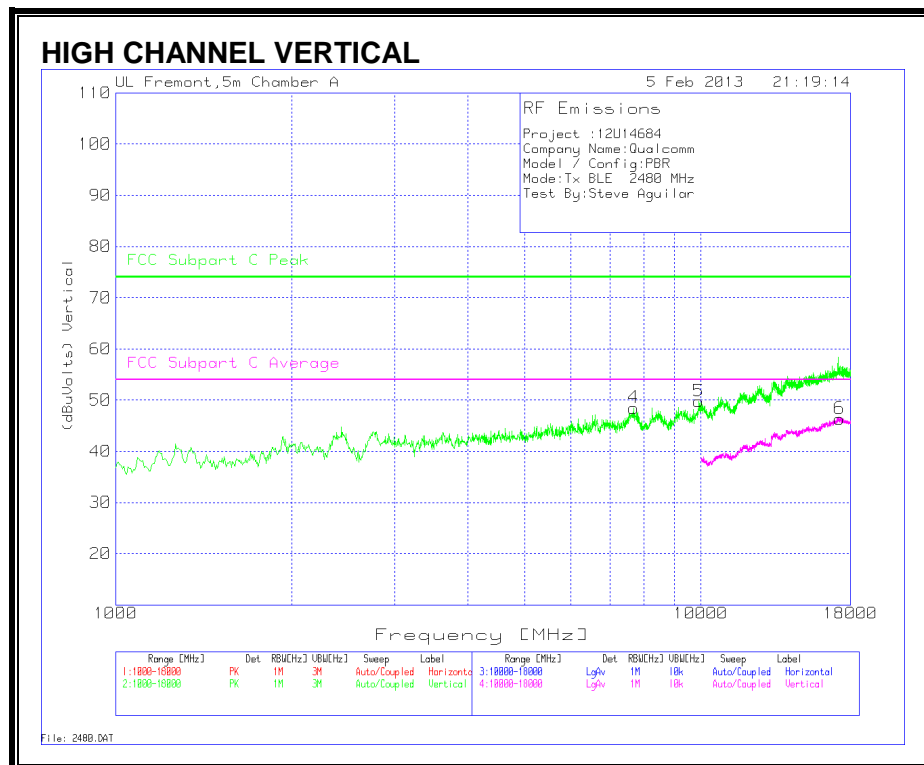
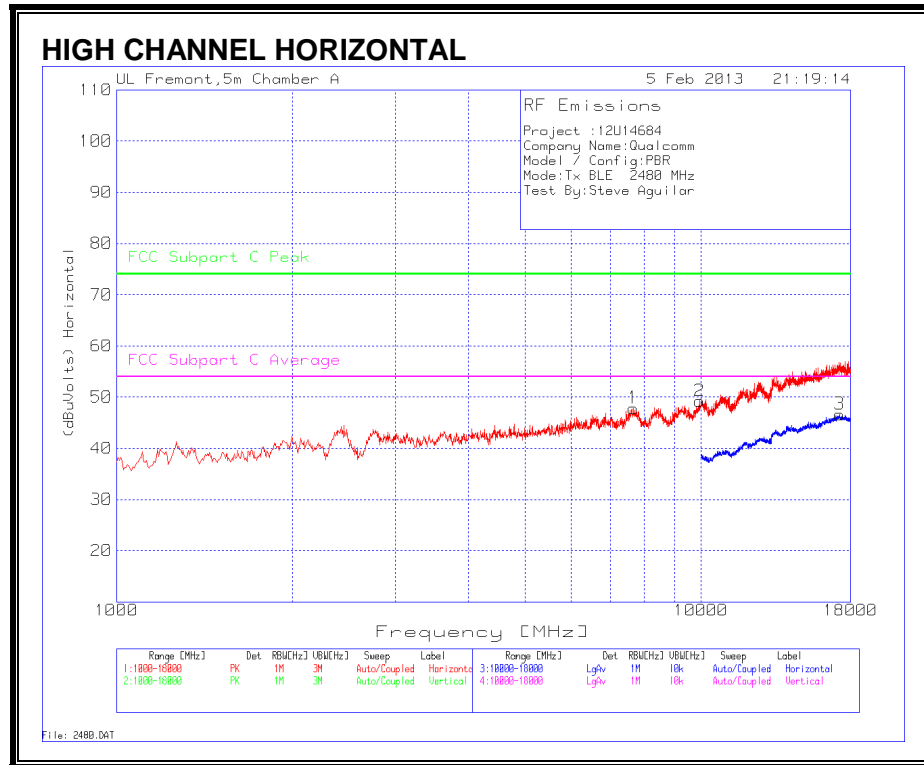
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS







HORIZONTAL AND VERTICAL DATA

Project: 12U14684
Company Name: Qualcomm
Model: PBR
Mode: Tx BLE
Test By: Steve Aguilar

LOW CHANNEL (2402 MHZ)

Marker No.	Frequency (MHz)	Reading (dB/uV)	Antenna factor (dB)	3ft Cable loss (dB)	Pre-amp gain (dB)	25ft Cable loss (dB)	12ft Cable loss (dB)	Filter loss (dB)	Corr Peak (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Limit (dbuV/m)	Avg Margin (dB)	Polarity
1	3627.582	41.54	33.1	0.4	-36.2	3.6	1.7	0.5	44.64	74	-29.36	54	-9.36	Horz
2	7665.223	39.78	35.8	0.7	-35.8	5.4	2.8	0.5	49.18	74	-24.82	54	-4.82	Horz
5	17436.282	25.05	41.3	1.2	-34.5	8.6	4.4	0.5	46.55	74	-27.45	54	-7.45	Horz
3	2800.799	45.03	32.7	0.4	-36.8	3	1.4	0.5	46.23	74	-27.77	54	-7.77	Vert
4	7614.257	39.58	35.8	0.7	-35.8	5.4	2.8	0.5	48.98	74	-25.02	54	-5.02	Vert
6	17288.356	25.13	41.2	1.2	-34.4	8.6	4.4	0.5	46.63	74	-27.37	54	-7.37	Vert

MID CHANNEL (2440 MHZ)

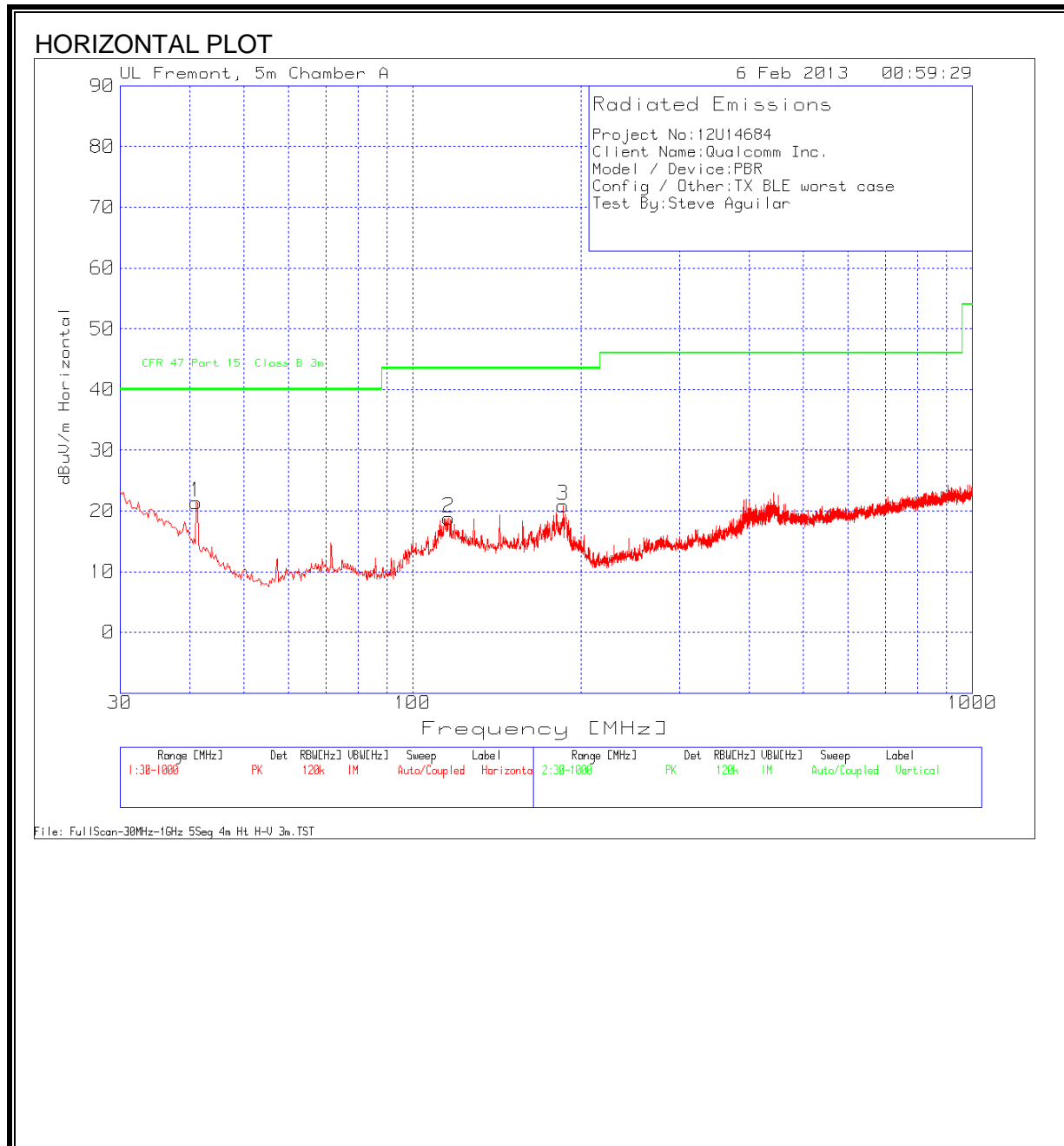
Marker No.	Frequency (MHz)	Reading (dB/uV)	Antenna factor (dB)	3ft Cable loss (dB)	Pre-amp gain (dB)	25ft Cable loss (dB)	12ft Cable loss (dB)	Filter loss (dB)	Corr Peak (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Limit (dbuV/m)	Avg Margin (dB)	Polarity
1	2744.171	43.6	32.7	0.4	-36.8	3	1.4	0.5	44.8	74	-29.2	54	-9.2	Horz
2	9998.334	38.88	37	0.8	-36.4	6.3	3.2	0.5	50.28	74	-23.72	54	-3.72	Horz
3	17436.282	25.07	41.3	1.2	-34.5	8.6	4.4	0.5	46.57	74	-27.43	54	-7.43	Horz
4	2772.485	42.89	32.7	0.4	-36.8	3	1.4	0.5	44.09	74	-29.91	54	-9.91	Vert
5	9992.672	37.61	37	0.8	-36.4	6.3	3.2	0.5	49.01	74	-24.99	54	-4.99	Vert
6	17496.252	24.64	41.3	1.2	-34.6	8.6	4.4	0.5	46.04	74	-27.96	54	-7.96	Vert

HIGH CHANNEL (2480 MHZ)

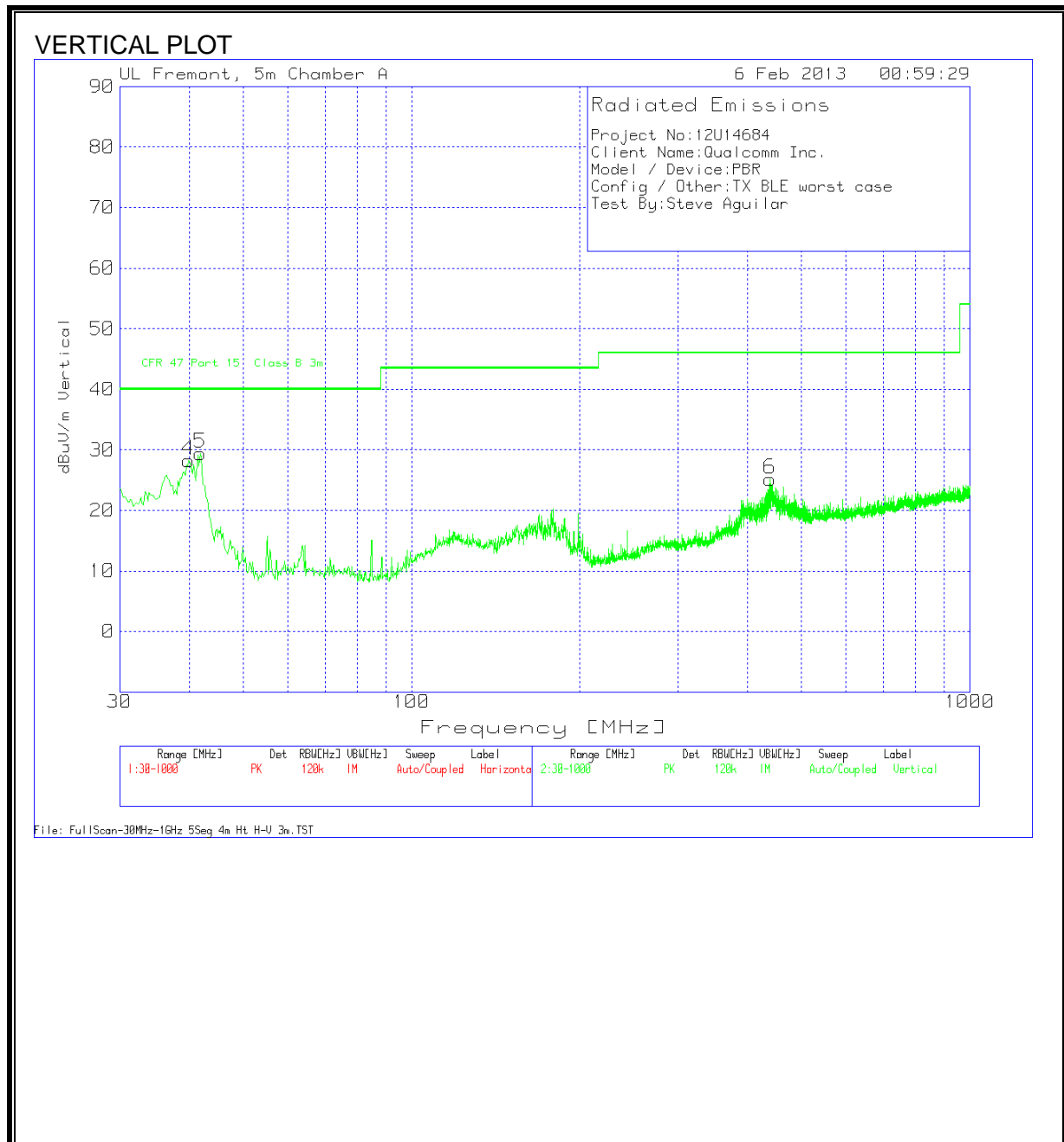
Marker No.	Frequency (MHz)	Reading (dB/uV)	Antenna factor (dB)	3ft Cable loss (dB)	Pre-amp gain (dB)	25ft Cable loss (dB)	12ft Cable loss (dB)	Filter loss (dB)	Corr Peak (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Limit (dbuV/m)	Avg Margin (dB)	Polarity
1	7659.56	38.42	35.8	0.7	-35.8	5.4	2.8	0.5	47.82	74	-26.18	54	-6.18	Horz
2	9941.706	37.89	36.9	0.8	-36.4	6.3	3.2	0.5	49.19	74	-24.81	54	-4.81	Horz
3	17260.37	25.07	41.2	1.2	-34.3	8.5	4.4	0.5	46.57	74	-27.43	54	-7.43	Horz
4	7670.886	39.09	35.8	0.7	-35.8	5.4	2.8	0.5	48.49	74	-25.51	54	-5.51	Vert
5	9919.054	38.32	36.9	0.8	-36.3	6.3	3.2	0.5	49.72	74	-24.28	54	-4.28	Vert
6	17260.37	24.79	41.2	1.2	-34.3	8.5	4.4	0.5	46.29	74	-27.71	54	-7.71	Vert

8.3. WORST-CASE BELOW 1 GHz

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



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



HORIZONTAL AND VERTICAL DATA

Project No:12U14684
Client Name:Qualcomm
Model /Device:PBR
Config /Other:TX Mode BLE, Worst case
Test By:Steve Aguilar

Horizontal 30 - 1000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector	Pre Amp Factor [dB]	Antenna Factor [dB/m]	Corrected [dB(uV/m)]	Class B limit [dB(uV/m)]	Margin [dB]	Height [cm]
1	41.0492	36.34	PK	13.3	-28.2	21.44	40	-18.56	200
2	116.0671	33.39	PK	13.6	-28.1	18.89	43.5	-24.61	300
3	186.0452	37.72	PK	11.2	-28	20.92	43.5	-22.58	200

Vertical 30 - 1000MHz

Marker No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector	Pre Amp Factor [dB]	Antenna Factor [dB/m]	Corrected [dB(uV/m)]	Class B limit [dB(uV/m)]	Margin [dB]	Height [cm]
4	39.8861	42.47	PK	14	-28.2	28.27	40	-11.73	100
5	41.8245	45.05	PK	12.6	-28.2	29.45	40	-10.55	200
6	438.4313	36.29	PK	16.7	-27.8	25.19	46	-20.81	100

PK - Peak detector
QP - Quasi-Peak detector
LnAv - Linear Average detector
LgAv - Log Average detector
Av - Average detector
CAV - CISPR Average detector

RMS - RMS detection
CRMS - CISPR RMS detection
TAVG - Trace Averaging RMS detection
Text File: 30-1000 WLAN.TXT
File: 12u14648 WLAN 30-1000.DAT

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 [*]	56 to 46 [*]
0.5-5	56	46
5-30	60	50

^{*} Decreases with the logarithm of the frequency.

TEST PROCEDURE

ANSI C63.4

RESULTS

6 WORST EMISSIONS

Company Name: Qualcomm
Project: 12U14684
Model/Device: PBR
Date: 2/1/2013
Configuraiton: TX, BLE , Worst case
Test Voltage/Frequency: 120VAC/ 60Hz
Tested by: Steve Aguilar

Line-L1 .15 - 30MHz

Test Frequency [MHz]	Meter Reading [dBuV]	Detector Type	LISN [dB]	Cables [dB]	Corrected [dB(uV)]	Class B QP Limit	QP Margin	Class B Av Limit [dB(uV)]	Av Margin [dB]
0.465	32.85	PK	0.1	0	32.95	56.6	-23.65	-	-
0.465	22.06	Av	0.1	0	22.16	-	-	46.6	-24.44
0.573	38.05	PK	0.1	0	38.15	56	-17.85	-	-
0.573	27.74	Av	0.1	0	27.84	-	-	46	-18.16
3.228	32.64	PK	0.1	0.1	32.84	56	-23.16	-	-
3.228	21.09	Av	0.1	0.1	21.29	-	-	46	-24.71

Line-L2 .15 - 30MHz

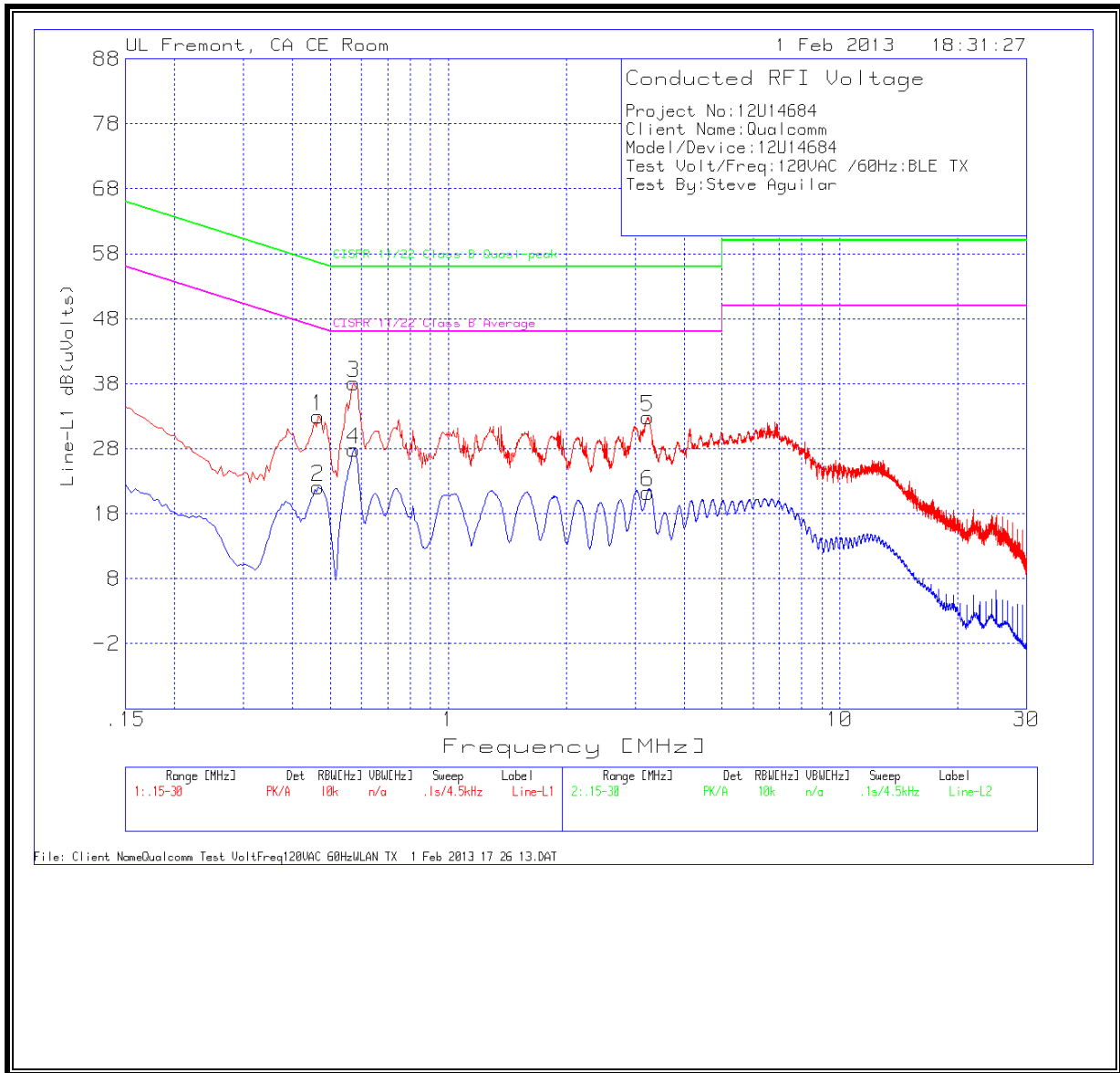
Test Frequency [MHz]	Meter Reading [dBuV]	Detector Type	LISN [dB]	Cables [dB]	Corrected [dB(uV)]	Class B QP Limit	QP Margin	Class B Av Limit [dB(uV)]	Av Margin [dB]
0.4695	29.88	PK	0.1	0	29.98	56.5	-26.52	-	-
0.4695	19.67	Av	0.1	0	19.77	-	-	46.5	-26.73
0.5775	35.71	PK	0.1	0	35.81	56	-20.19	-	-
0.5775	26.03	Av	0.1	0	26.13	-	-	46	-19.87
3.237	30.44	PK	0.1	0.1	30.64	56	-25.36	-	-
3.237	19.04	Av	0.1	0.1	19.24	-	-	46	-26.76

PK - Peak detector

QP - Quasi-Peak detector

Av - Average detector

LINE 1 RESULTS



LINE 2 RESULTS

