



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

CERTIFICATION TEST REPORT

FOR

802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card

MODEL NUMBER: BCM943602CS

**FCC ID: QDS-BRCM1080
IC: 4324A-BRCM1080**

REPORT NUMBER: 13U16561-3, Revision A

ISSUE DATE: MAY 30, 2014

Prepared for

**BROADCOM CORPORATION
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NVLAP LAB CODE 200065-0

Revision History

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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION	5
4. CALIBRATION AND UNCERTAINTY	5
4.1. MEASURING INSTRUMENT CALIBRATION	5
4.2. SAMPLE CALCULATION	5
4.3. MEASUREMENT UNCERTAINTY	5
5. EQUIPMENT UNDER TEST	6
5.1. DESCRIPTION OF EUT	6
5.2. MAXIMUM OUTPUT POWER-FIXED	6
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	6
5.4. SOFTWARE AND FIRMWARE	6
5.5. WORST-CASE CONFIGURATION AND MODE	6
5.6. DESCRIPTION OF TEST SETUP_ENTERED	7
6. TEST AND MEASUREMENT EQUIPMENT	9
7. ANTENNA PORT TEST RESULTS	10
7.1. 6 dB BANDWIDTH	10
7.2. 99% BANDWIDTH	13
7.3. OUTPUT POWER	16
7.4. AVERAGE POWER	19
7.5. POWER SPECTRAL DENSITY	20
7.6. CONDUCTED SPURIOUS EMISSIONS	23
8. RADIATED TEST RESULTS	27
8.1. LIMITS AND PROCEDURE	27
8.2. BLUETOOTH LOW ENERGY MODE IN THE 2.4 GHz BAND	28
8.3. WORST-CASE 18_26 GHz	38
8.4. WORST-CASE BELOW 1 GHz	39
9. AC POWER LINE CONDUCTED EMISSIONS	41
10. SETUP PHOTOS	44

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: BROADCOM CORPORATION
190 MATHILDA PLACE
SUNNYVALE, CA 94086, U.S.A.

EUT DESCRIPTION: 802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card

MODEL: BCM943602CS

SERIAL NUMBER: P301 SN: 333 (Radiated Sample) and 339 (Conducted Sample)

DATE TESTED: March 05 to April 08, 2014

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:



FRANK IBRAHIM
PROGRAM MANAGER
UL Verification Services Inc.

Tested By:



THANH PHAM
EMC LAB ENGINEER
UL Verification Services Inc.

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 Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

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 an 802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card.

The radio module is manufactured by Broadcom.

5.2. MAXIMUM OUTPUT POWER-FIXED

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	3.003	2.00

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The EUT utilizes an 802.11a/b/g/n/ac WLAN/BT antenna with a maximum gain of 4.82 dBi for BT.

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Broadcom, Ver. 5.6.0.9020.

The test utility software used during testing was Broadcom Bluetooth, Ver.: 1.8.4.7.

5.5. WORST-CASE CONFIGURATION AND MODE

EUT is for desktop applications; there is only one orientation for the antenna, the EUT was tested with normal antenna orientation.

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.

Chain J1 (WiFi 3) is used for testing BLE.

Based on client's input, there is no colocation among different radios.

5.6. DESCRIPTION OF TEST SETUP_ENTERED

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Dell	Latitude E6400	2477655473	DoC
AC Adapter	Dell	DA90PE3-00	CN-0WTC00V-48661	DoC
Catalyst PCIe. Board	Enterprises Inc.	NA	NA	N/A
X29T	Broadcom	BCM94331C5AD	P300	N/A
Laptop	Dell	Latitude E6400	6MYFMJ1	DoC
AC Adapter	Dell	PA2 /CF745	CN-0CF745-48661	DoC
Catalyst PCIe. Board	Enterprises Inc.	NA	NA	N/A
X29T	Broadcom	BCM94331C5AD	P300	N/A

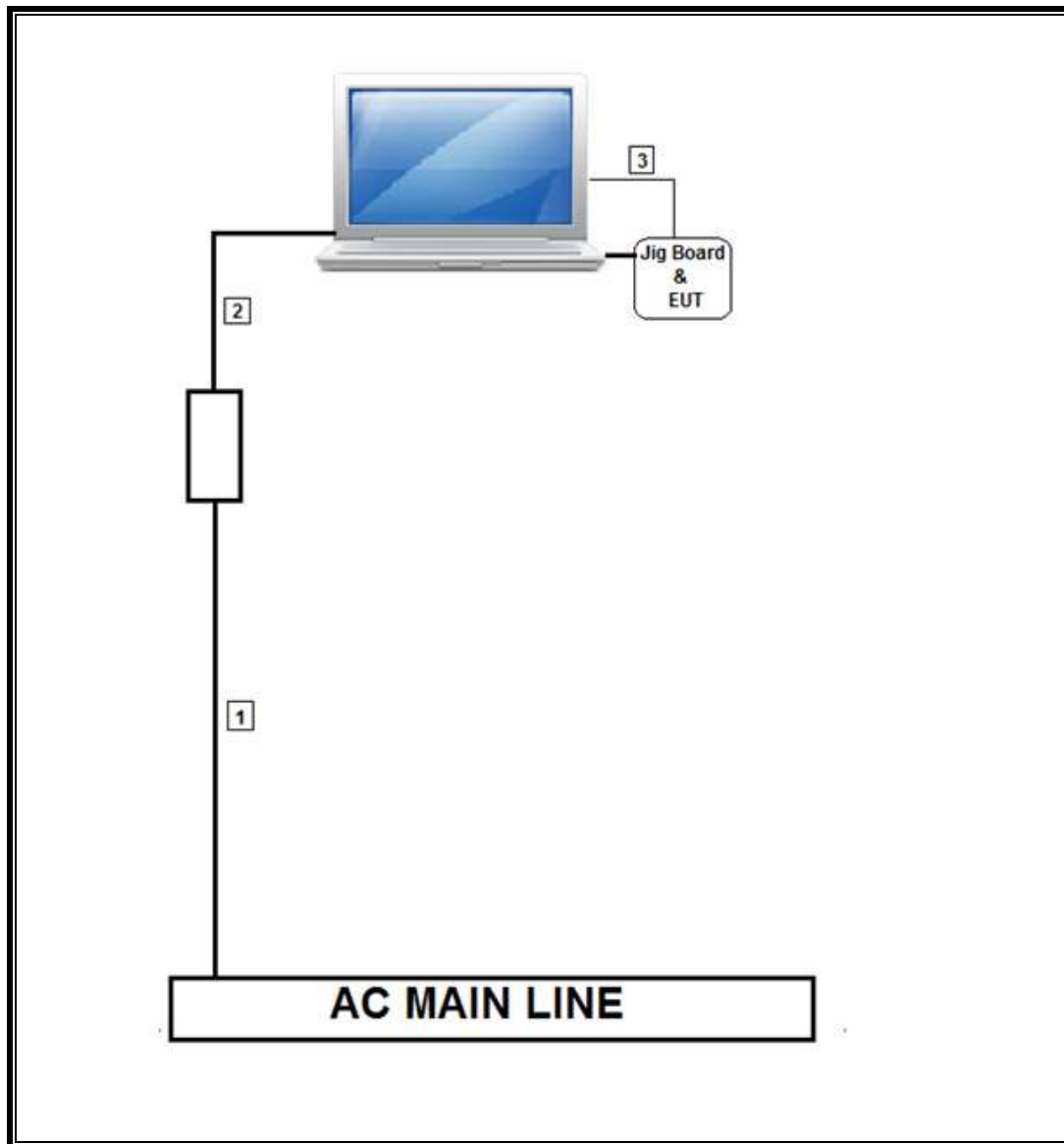
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	US 115V	Un-Shielded	1.0m	NA
2	DC	1	DC	Un-Shielded	0.8m	NA
3	USB	1	USB	Un-Shielded	0.8m	NA

TEST SETUP

The EUT was tested as an external module that installed on an USB to test JIG board connected to a host Laptop PC via USB cable. 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
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01161	05/07/13	05/07/14
PXA Signal Analyzer	Agilent	N9030A	T339	12/10/13	12/10/14
Horn Antenna, 1GHz-18GHz	ETS Lindgren	3117	T119	01/06/14	01/06/15
Antenna, Horn, 18 GHz	EMCO	3115	C01218	01/18/14	01/18/15
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/14/13	11/14/14
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/22/13	08/22/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	10/19/13	10/19/14
Peak Power Meter	Agilent / HP	N1921A	T309	12/12/13	12/12/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/16/14	01/16/15
5GHz Low Pass Filter	Micro-Tronics	LPS17541	F00219	06/26/13	06/26/14
3GHz High Pass Filter	Micro-Tronics	HPS17542	F00222	06/26/13	06/26/14
6GHz High Pass Filter	Micro-Tronics	HPM17543	F00224	06/26/13	06/26/14

7. ANTENNA PORT TEST RESULTS

7.1. 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.

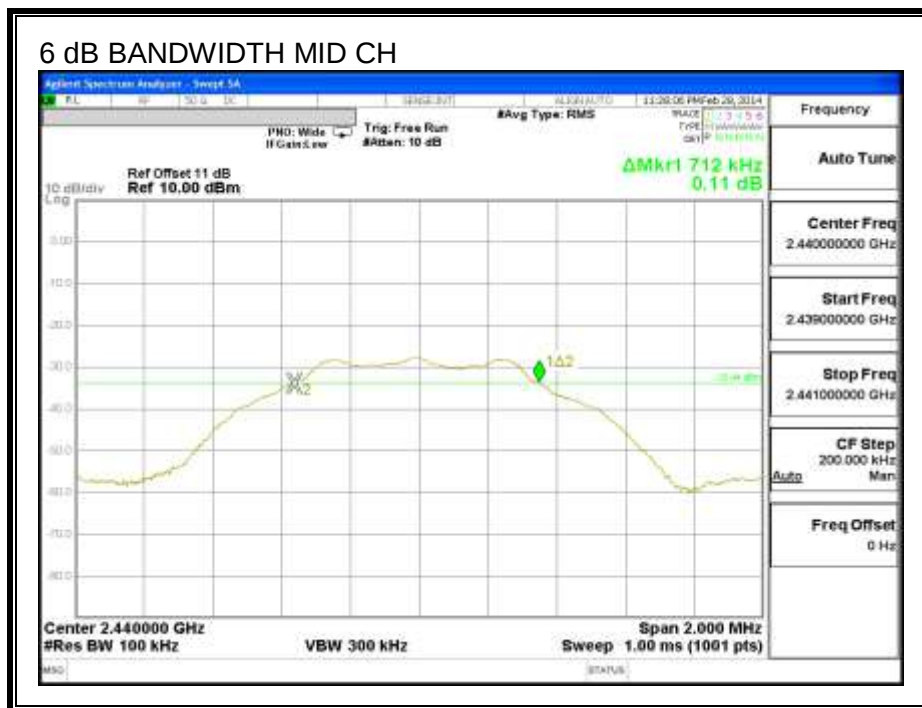
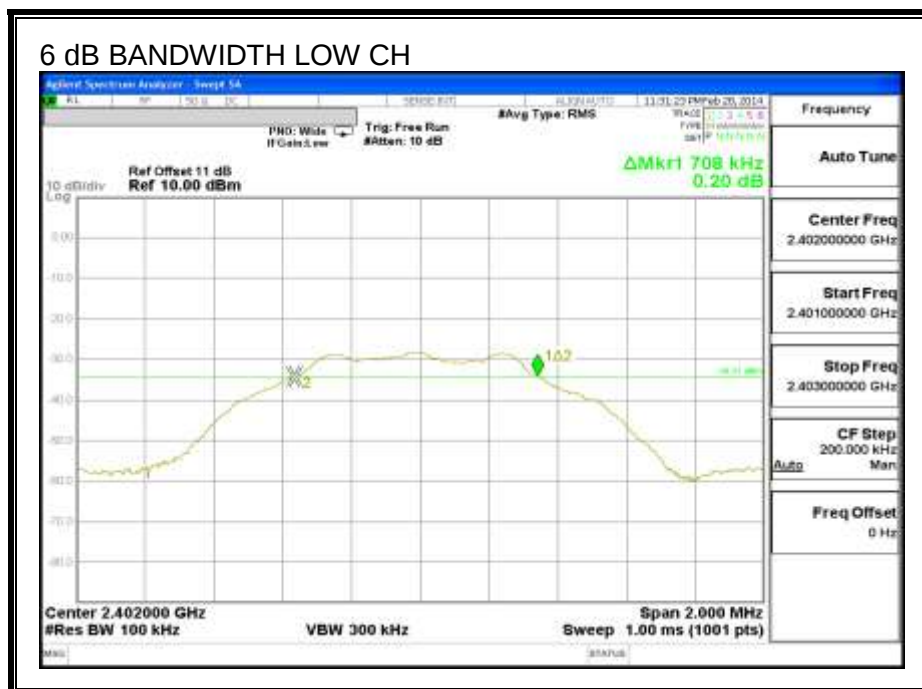
TEST PROCEDURE

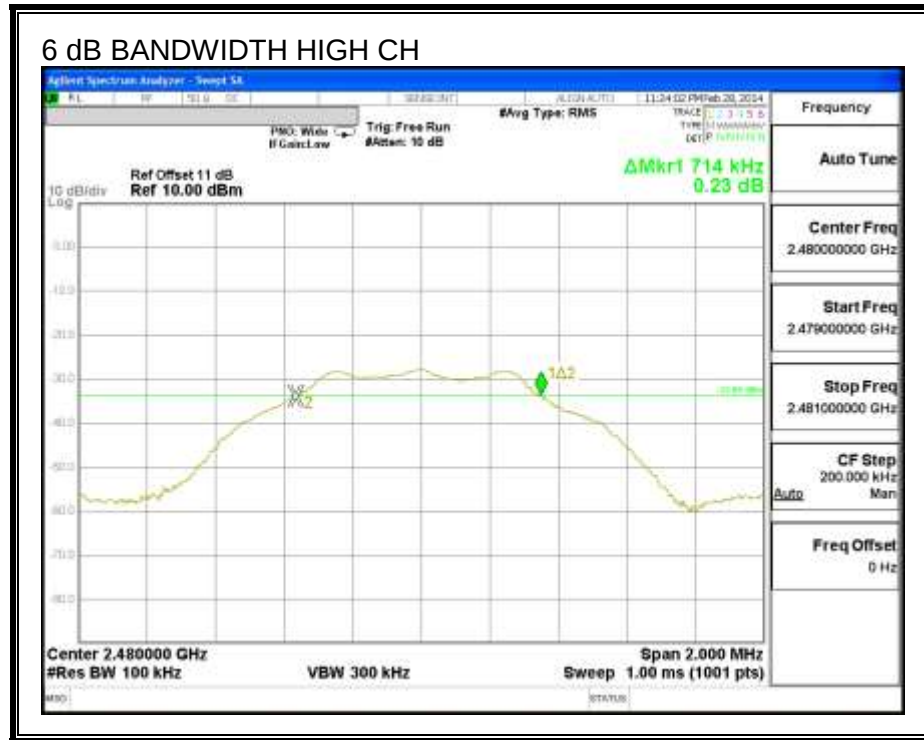
KDB 558074 D01 v03r01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.7080	0.5
Middle	2440	0.7120	0.5
High	2480	0.7140	0.5

6 dB BANDWIDTH





7.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

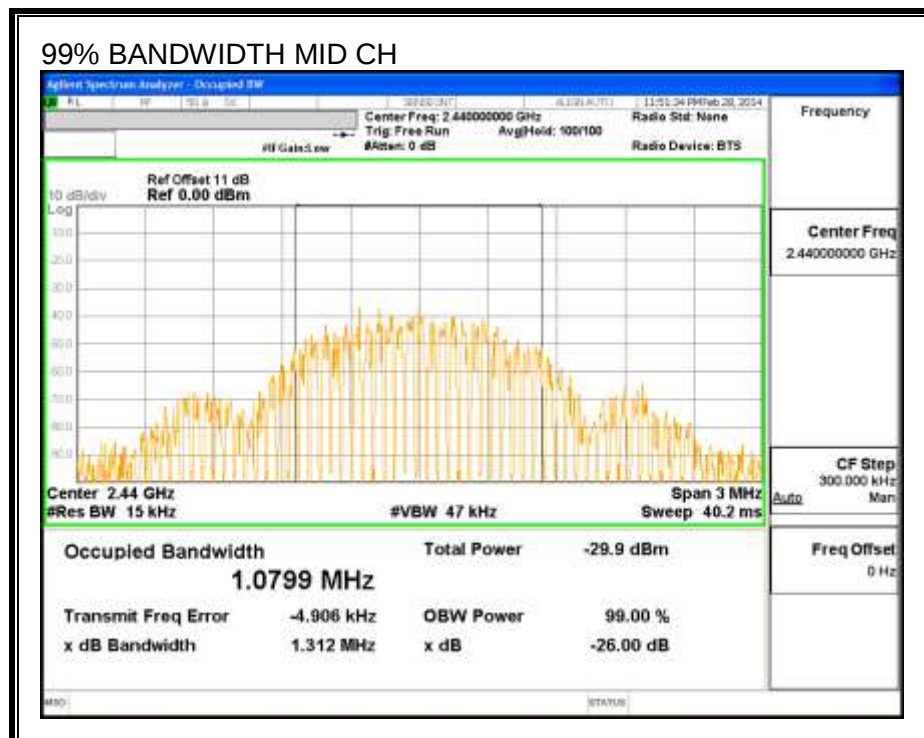
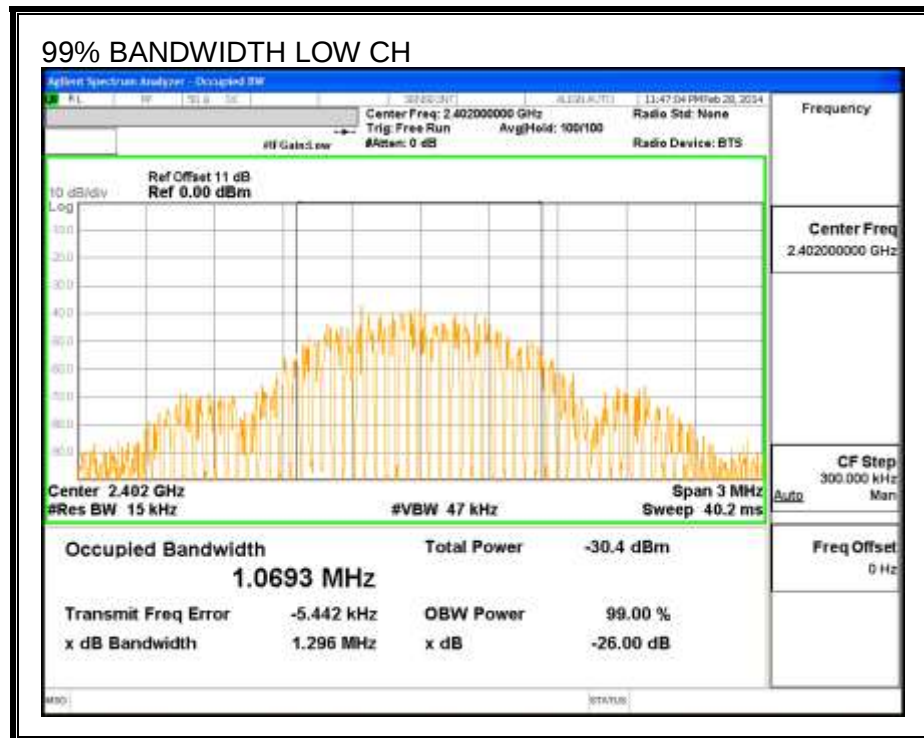
TEST PROCEDURE

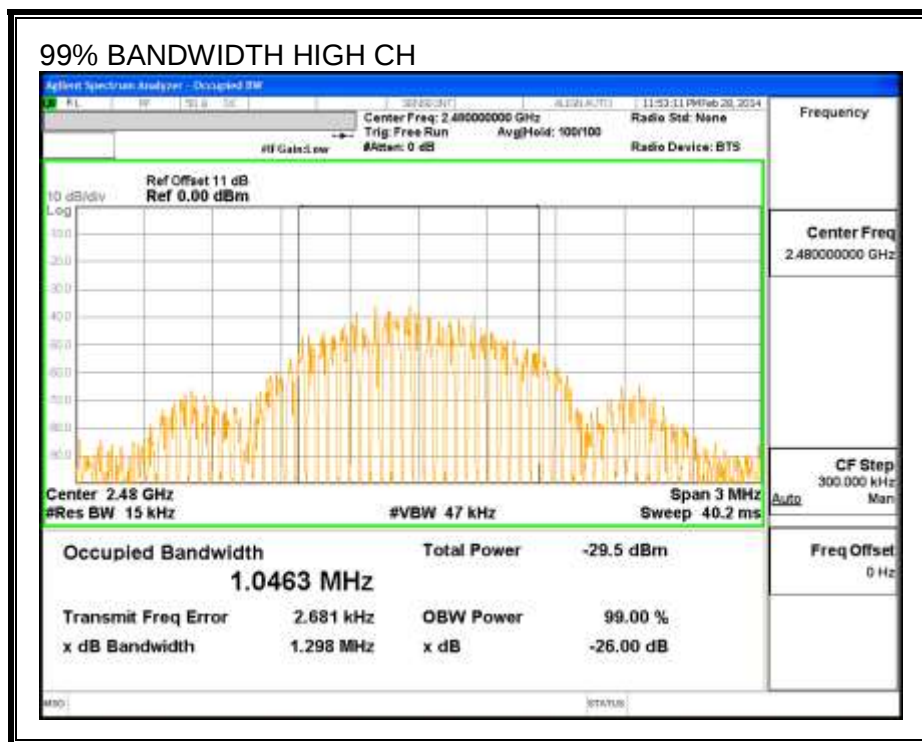
KDB 558074 D01 v03r01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0693
Middle	2440	1.0799
High	2480	1.0463

99% BANDWIDTH





7.3. 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.

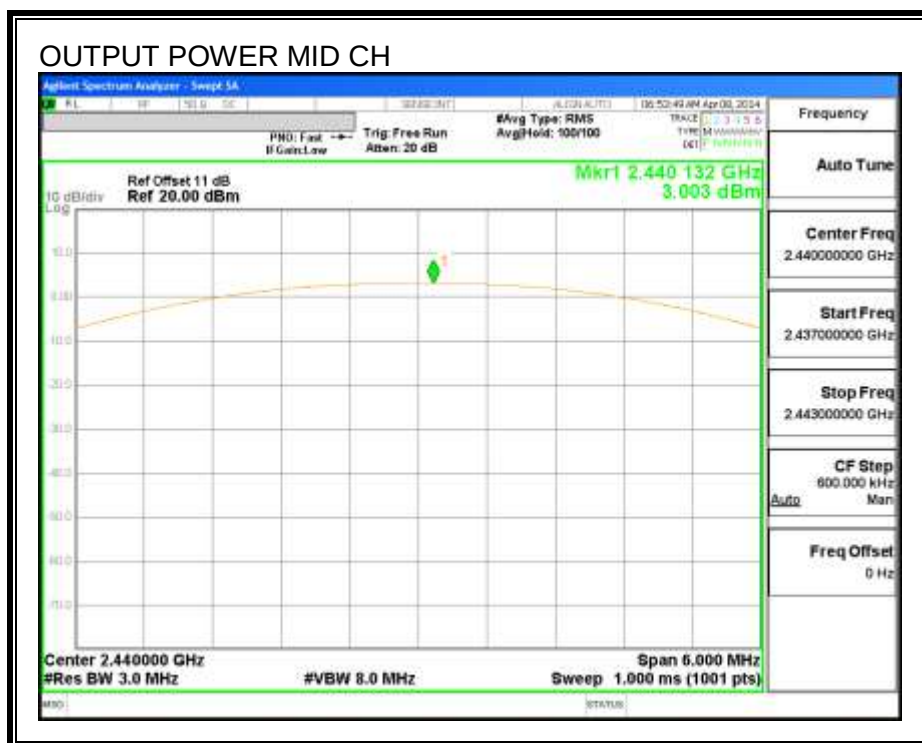
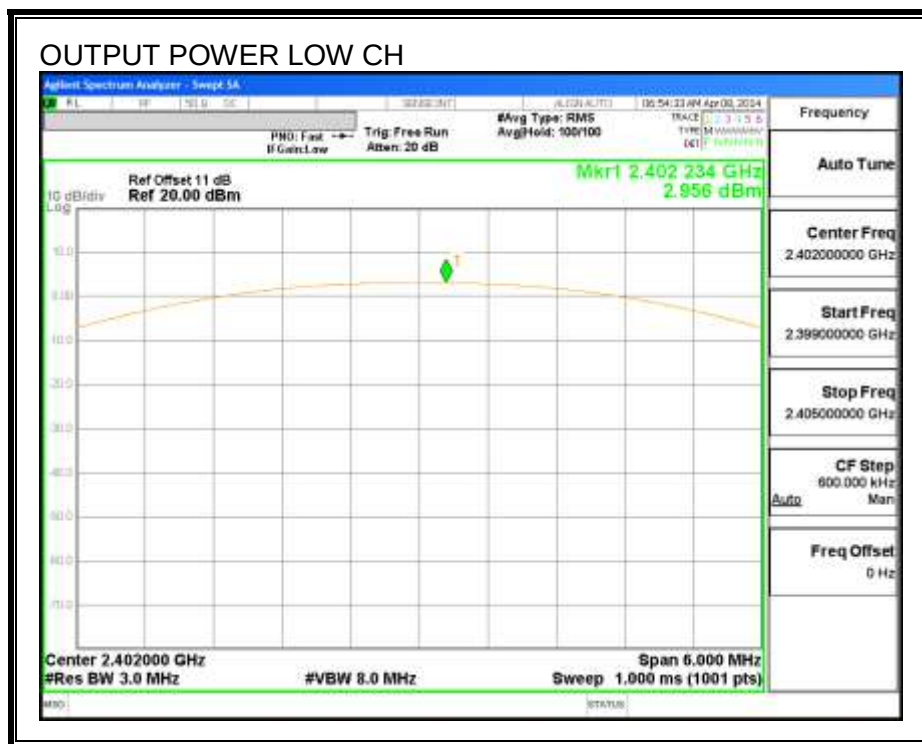
TEST PROCEDURE

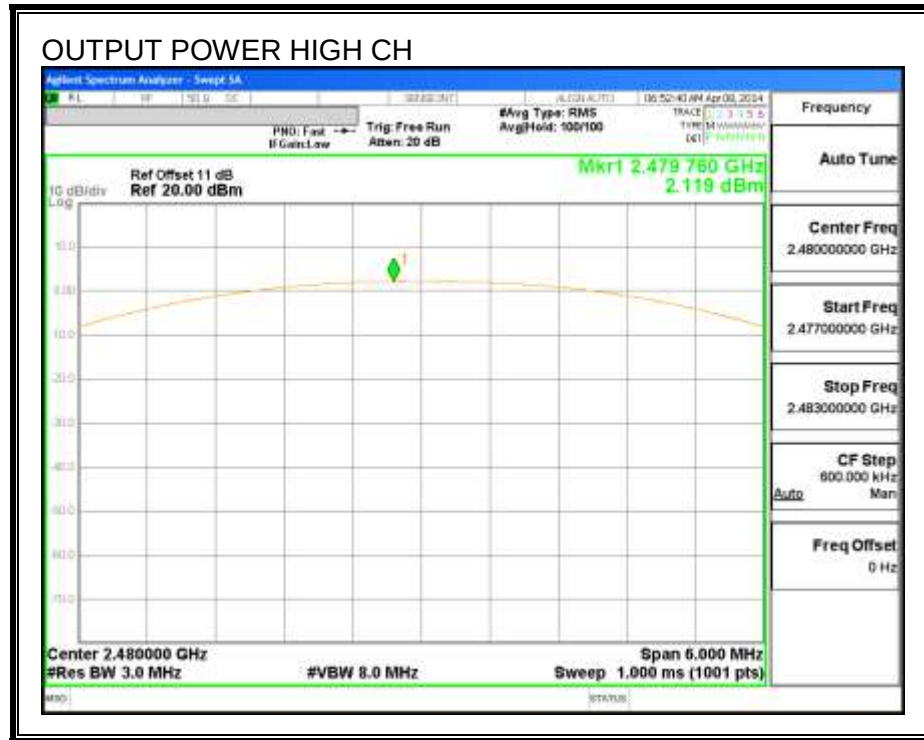
KDB 558074 D01 v03r01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	2.956	30	-27.044
Middle	2440	3.003	30	-26.997
High	2480	2.119	30	-27.881

OUTPUT POWER





7.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

The cable assembly insertion loss of 10.7 dB was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	2.67
Middle	2440	2.89
High	2480	1.83

7.5. 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.

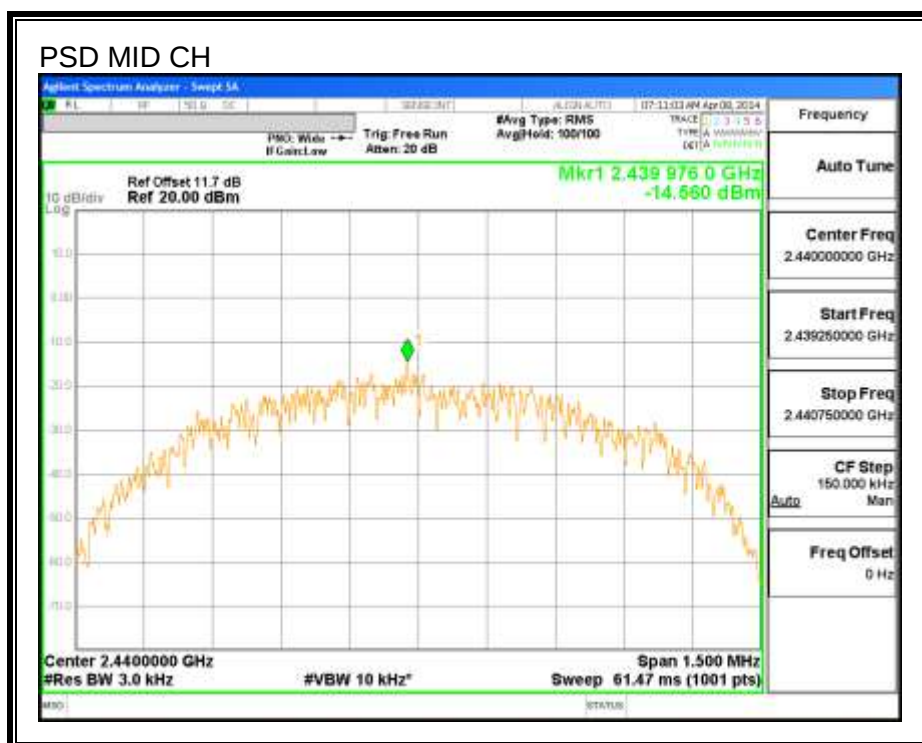
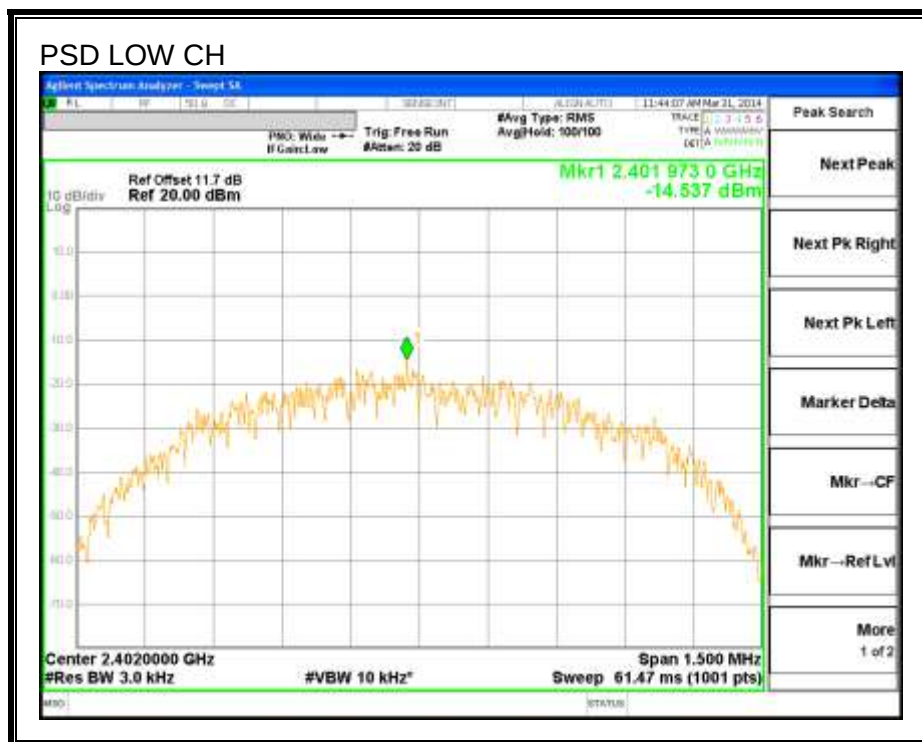
TEST PROCEDURE

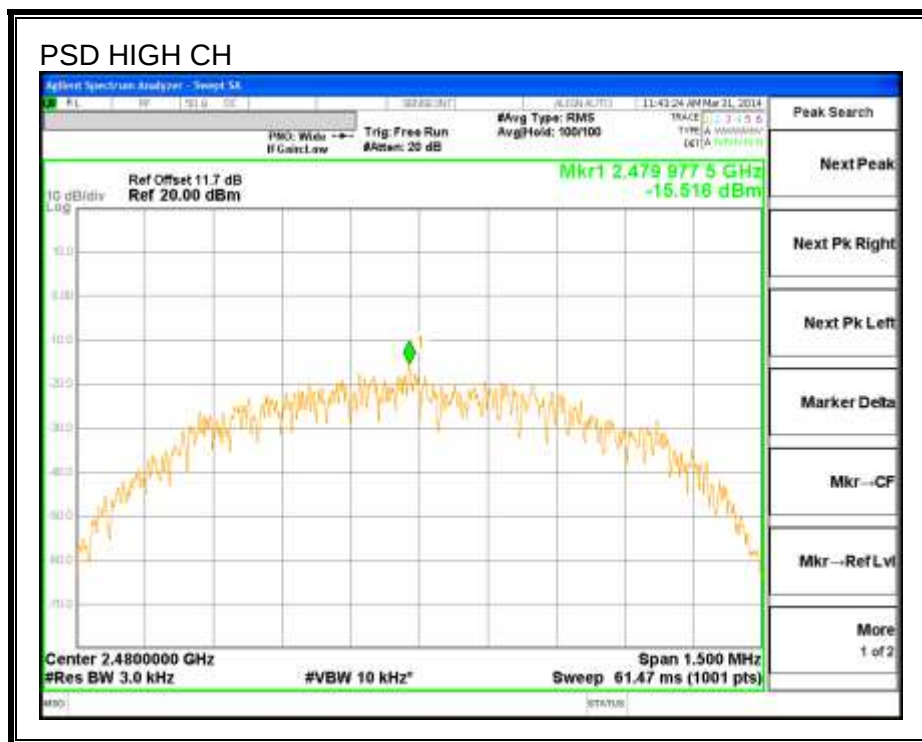
KDB 558074 D01 v03r01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-14.537	8	-22.54
Middle	2440	-14.560	8	-22.56
High	2480	-15.516	8	-23.52

POWER SPECTRAL DENSITY





7.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

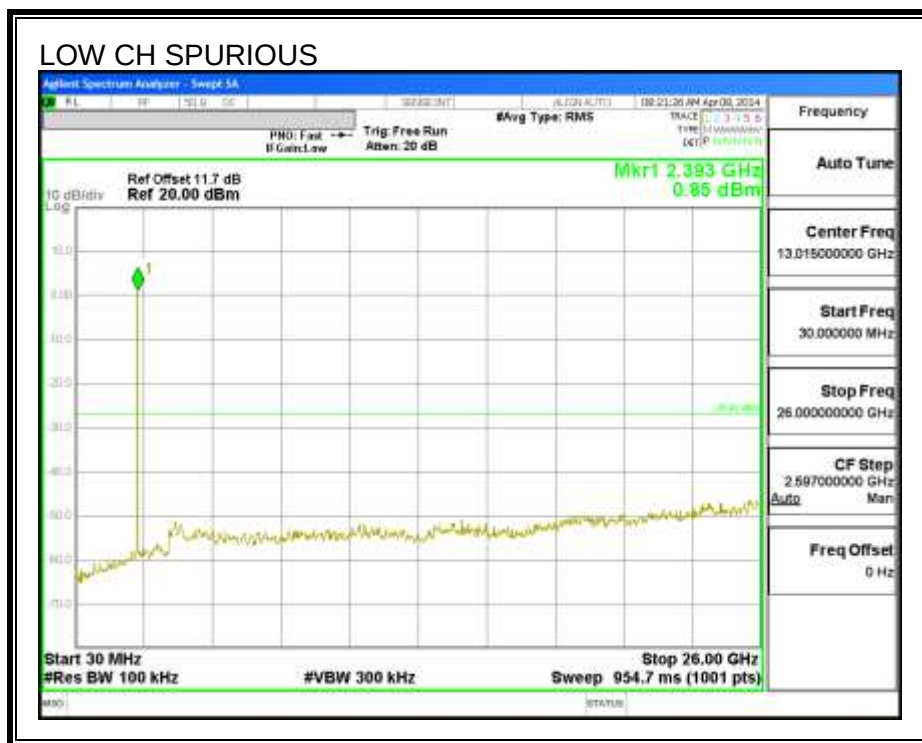
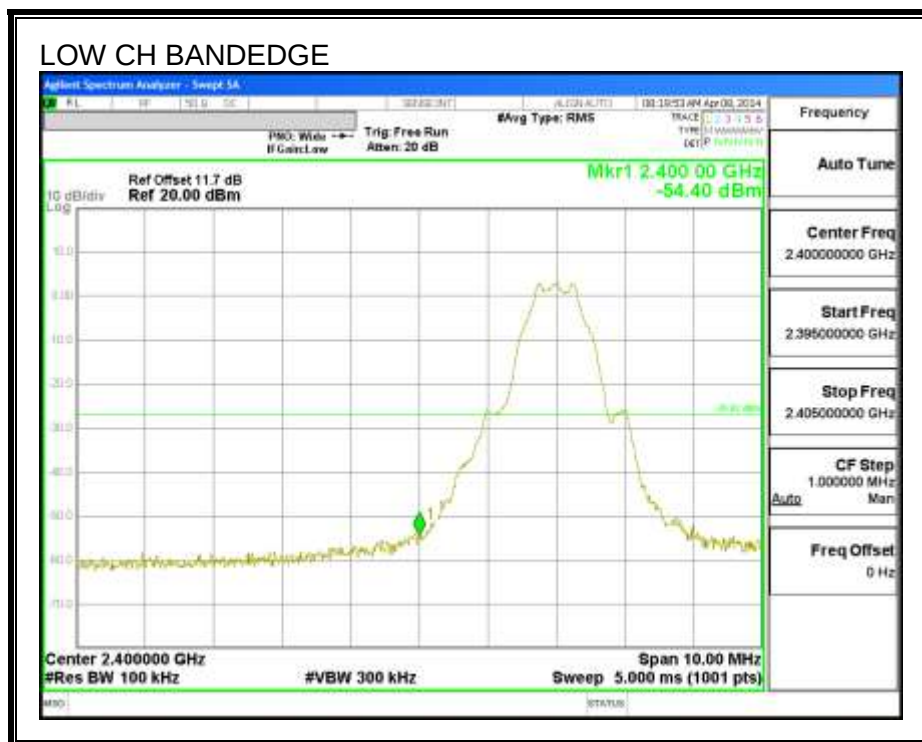
FCC §15.247 (d)

IC RSS-210 A8.5

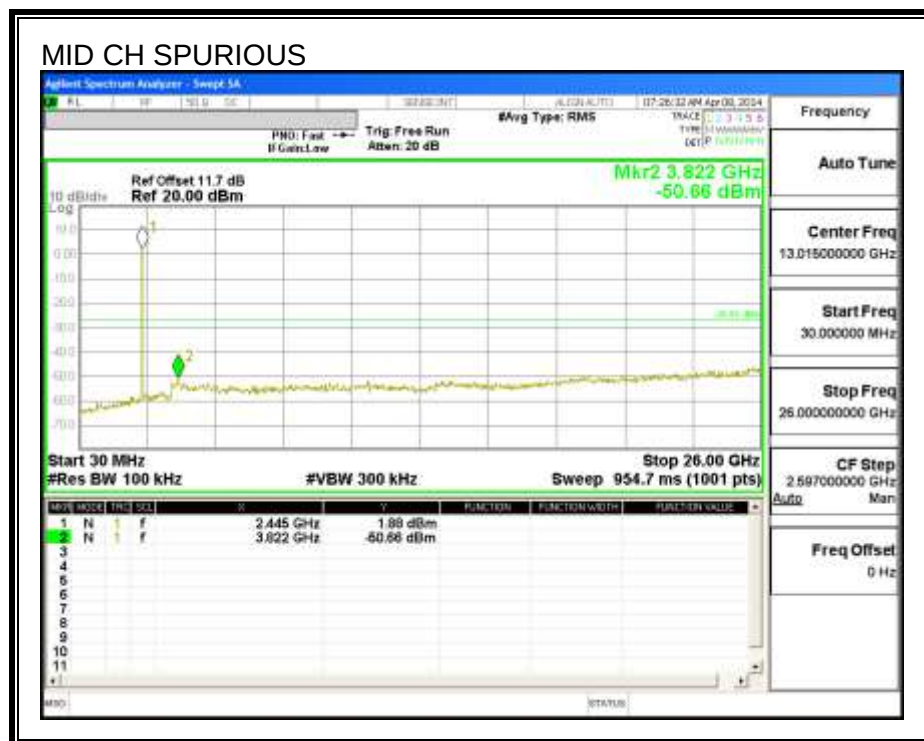
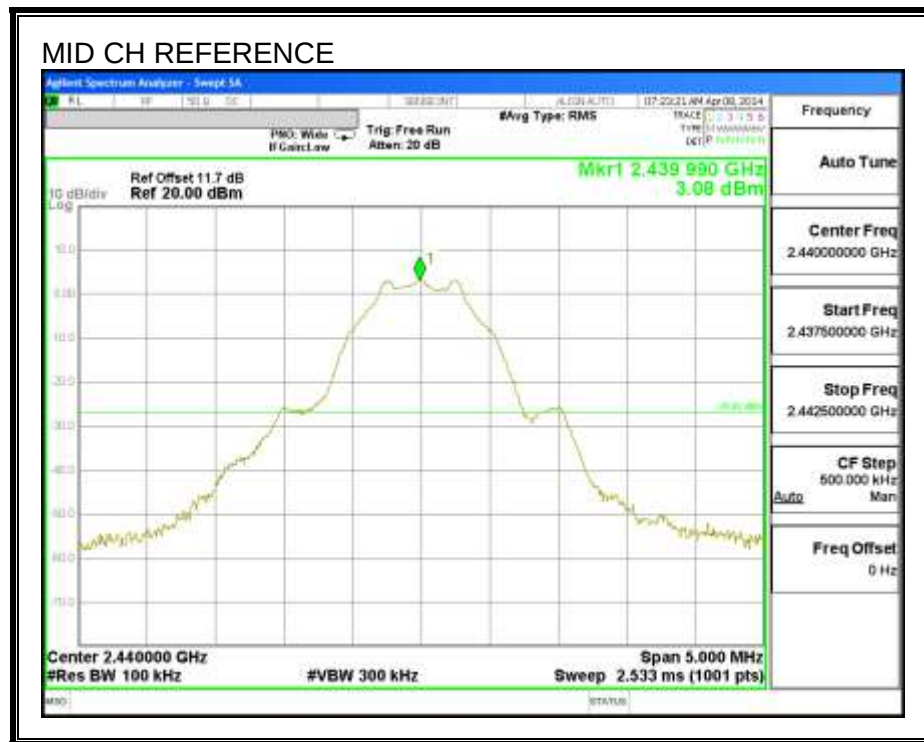
TEST PROCEDURE

KDB 558074 D01 v02 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

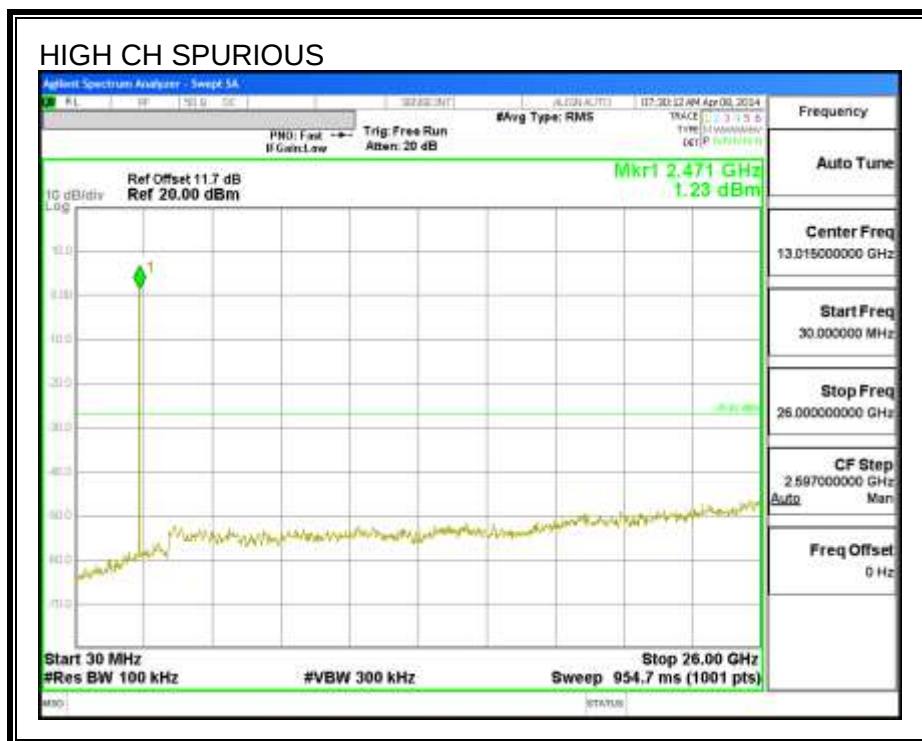
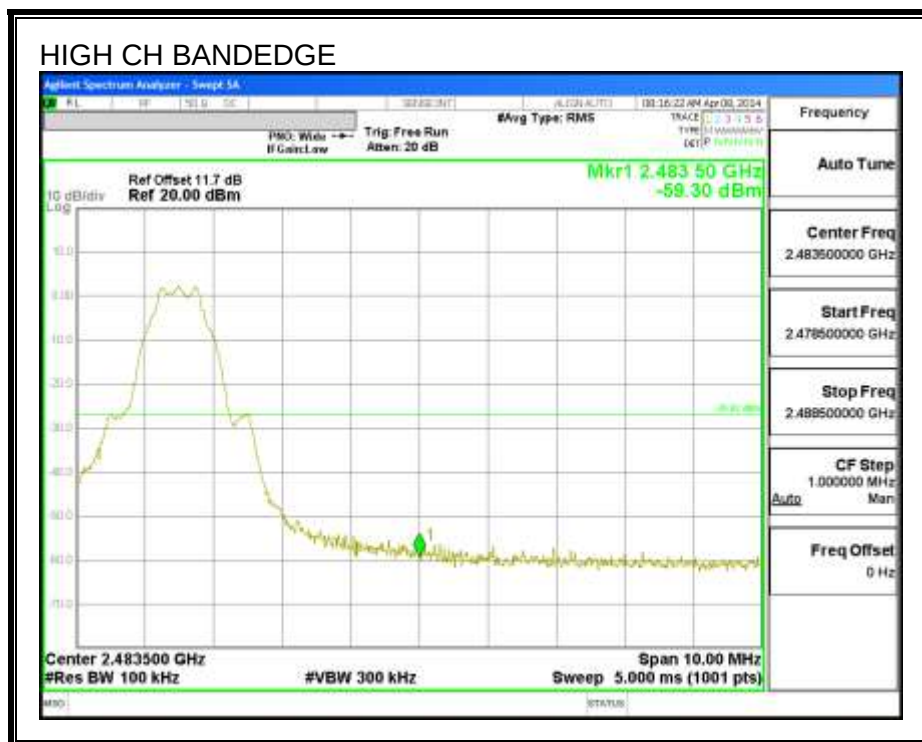
SPURIOUS EMISSIONS, LOW CHANNEL



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.

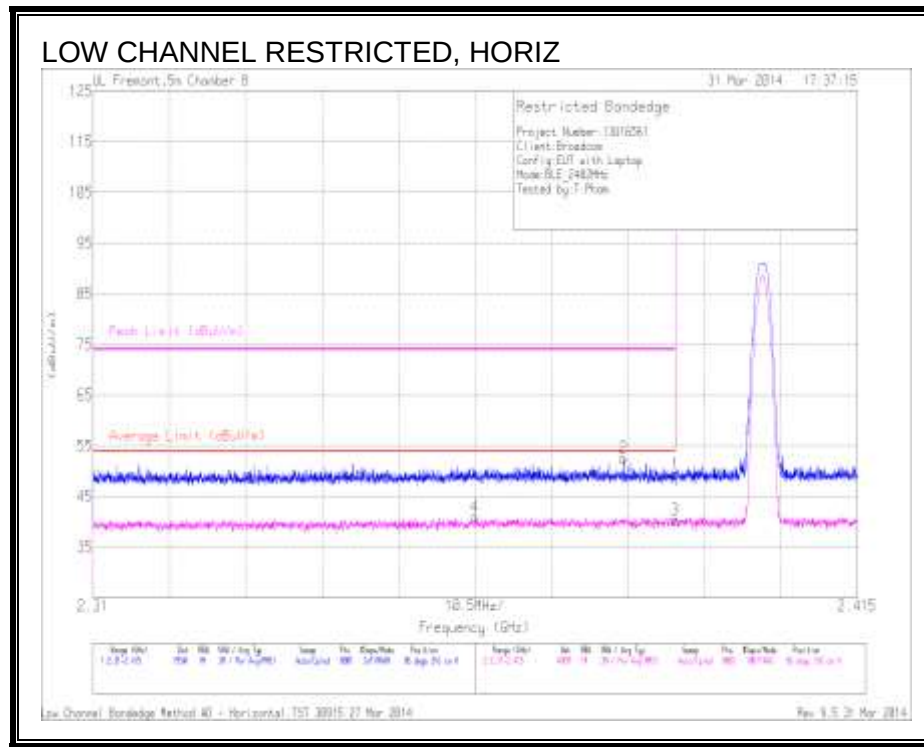
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, video bandwidth is set to 3 MHz, then Peak detection mode is set for peak measurements and Avg detection mode is used for average measurements.

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

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

8.2. BLUETOOTH LOW ENERGY MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.25	PK	32.1	-22.9	49.45	-	-	74	-24.55	96	316	H
2	* 2.383	43.39	PK	32.1	-22.9	52.59	-	-	74	-21.41	96	316	H
3	* 2.39	31.21	RMS	32.1	-22.9	40.41	54	-13.59	-	-	96	316	H
4	* 2.362	31.92	RMS	32	-22.9	41.02	54	-12.98	-	-	96	316	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

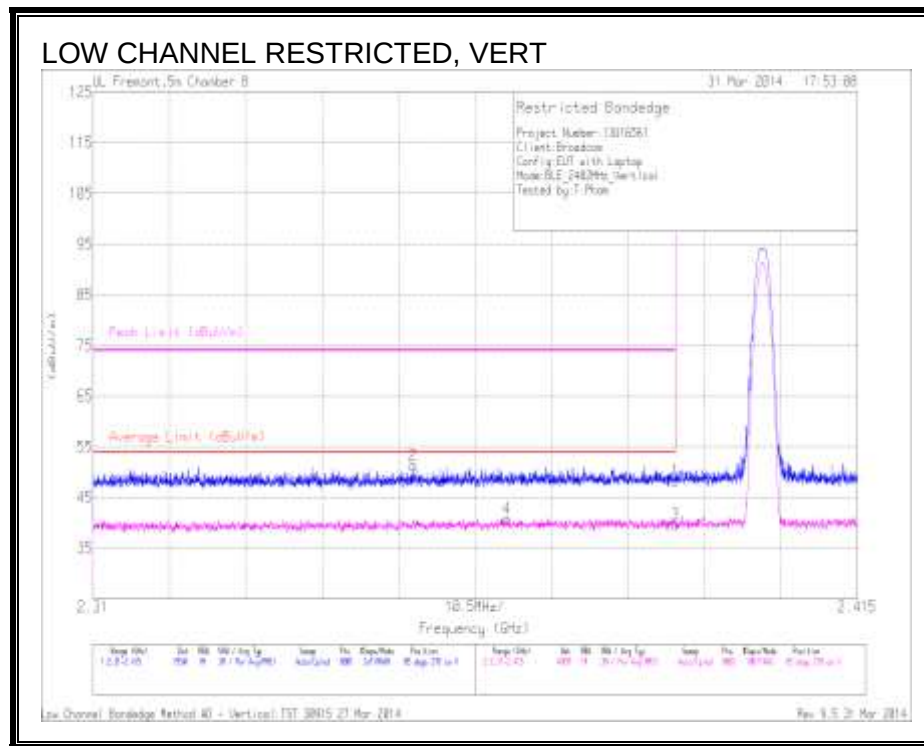
PK - Peak detector

RMS - RMS detection

Low Channel Bandedge Method AD - Horizontal.TST 30915 27 Mar 2014

Rev 9.5 31 Mar 2014

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.06	PK	32.1	-22.9	48.26	-	-	74	-25.74	85	278	V
2	* 2.354	42.42	PK	31.9	-23	51.32	-	-	74	-22.68	85	278	V
3	* 2.39	30.59	RMS	32.1	-22.9	39.79	54	-14.21	-	-	85	278	V
4	* 2.367	31.68	RMS	32	-22.8	40.88	54	-13.12	-	-	85	278	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

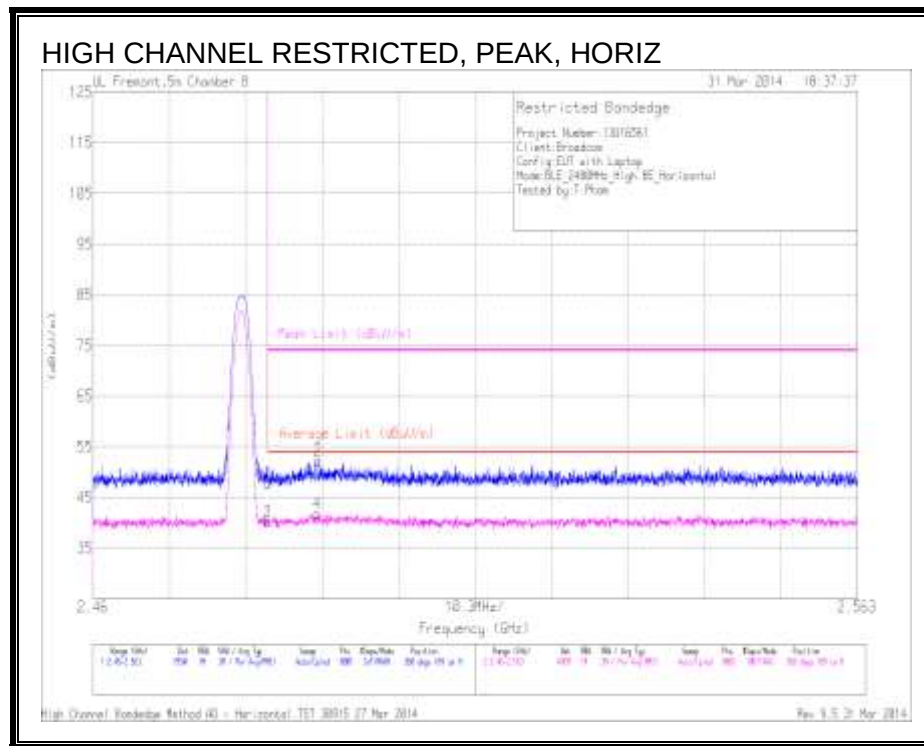
PK - Peak detector

RMS - RMS detection

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Rev 9.5 31 Mar 2014

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.14	PK	32.4	-22.6	47.94	-	-	74	-26.06	360	189	H
2	* 2.49	42.48	PK	32.4	-22.6	52.28	-	-	74	-21.72	360	189	H
3	* 2.484	30.43	RMS	32.4	-22.6	40.23	54	-13.77	-	-	360	189	H
4	* 2.49	32.04	RMS	32.4	-22.6	41.84	54	-12.16	-	-	360	189	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

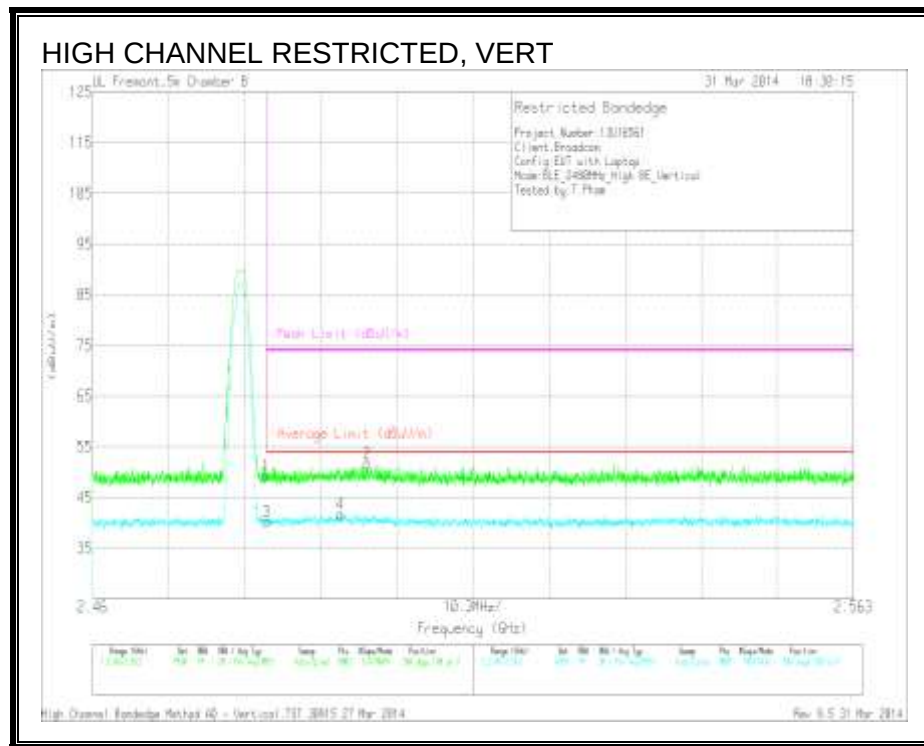
PK - Peak detector

RMS - RMS detection

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Rev 9.5 31 Mar 2014

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.47	PK	32.4	-22.6	49.27	-	-	74	-24.73	304	190	V
2	* 2.497	41.97	PK	32.4	-22.7	51.67	-	-	74	-22.33	304	190	V
3	* 2.484	30.45	RMS	32.4	-22.6	40.25	54	-13.75	-	-	304	190	V
4	* 2.494	32.05	RMS	32.4	-22.7	41.75	54	-12.25	-	-	304	190	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

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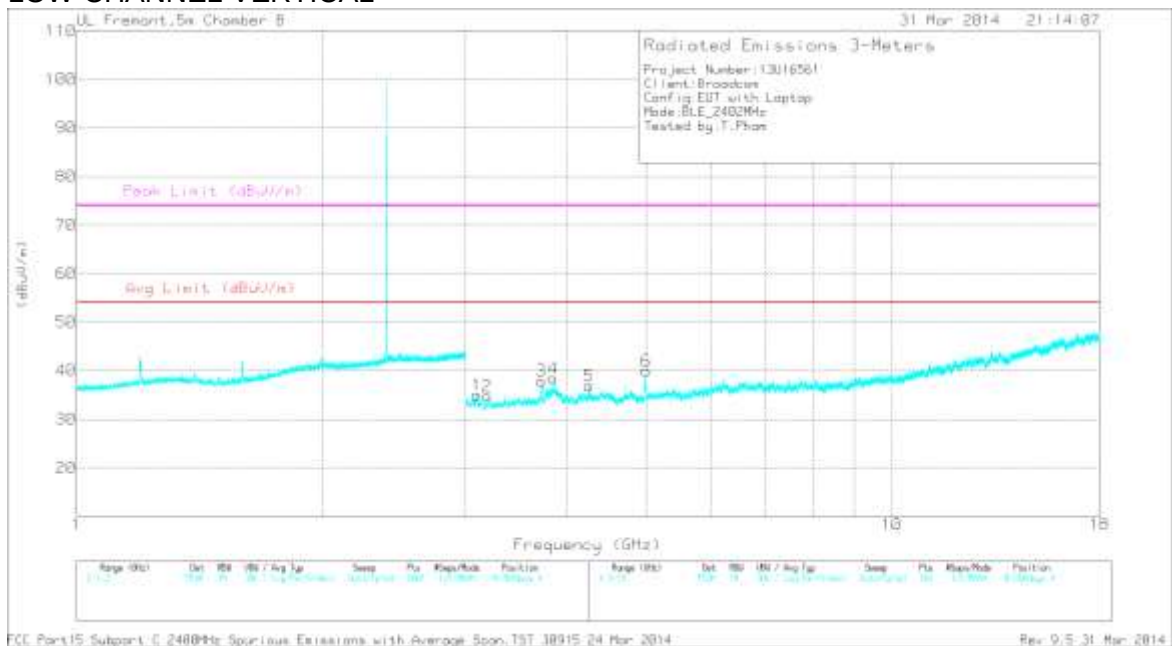
Rev 9.5 31 Mar 2014

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7	* 4.978	31.87	PK	34.2	-29.9	36.17	-	-	74	-37.83	0-360	201	H
8	* 4.255	32.72	PK	33.6	-30.8	35.52	-	-	74	-38.48	0-360	201	H
9	* 3.718	33.45	PK	33.4	-31.3	35.55	-	-	74	-38.45	0-360	201	H
10	* 3.861	32.61	PK	33.7	-30.2	36.11	-	-	74	-37.89	0-360	201	H
3	* 3.718	35.83	PK	33.4	-31.3	37.93	-	-	74	-36.07	0-360	202	V
4	* 3.843	34.91	PK	33.7	-30.2	38.41	-	-	74	-35.59	0-360	202	V
5	* 4.251	34.13	PK	33.6	-30.8	36.93	-	-	74	-37.07	0-360	202	V
6	* 4.997	35.16	PK	34.2	-29.4	39.96	-	-	74	-34.04	0-360	202	V
1	3.097	33.65	PK	32.9	-31.5	35.05	-	-	-	-	0-360	202	V
2	3.192	33.26	PK	32.8	-31.3	34.76	-	-	-	-	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.865	40.65	PK2	33.7	-30.2	44.15	-	-	74	-29.85	242	301	H
* 3.875	30.85	MAV1	33.8	-30.2	34.45	54	-19.55	-	-	242	301	H
* 4.254	42.37	PK2	33.6	-30.8	45.17	-	-	74	-28.83	121	188	H
* 4.264	30.89	MAV1	33.6	-30.9	33.59	54	-20.41	-	-	121	188	H
* 3.729	47.73	PK2	33.4	-31.6	49.53	-	-	74	-24.47	302	239	V
* 3.727	34.56	MAV1	33.4	-31.5	36.46	54	-17.54	-	-	302	239	V
* 3.843	43.48	PK2	33.7	-30.2	46.98	-	-	74	-27.02	302	204	V
* 3.843	34.31	MAV1	33.7	-30.2	37.81	54	-16.19	-	-	302	204	V
* 4.255	43.07	PK2	33.6	-30.8	45.87	-	-	74	-28.13	331	360	V
* 4.254	31.91	MAV1	33.6	-30.8	34.71	54	-19.29	-	-	331	360	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

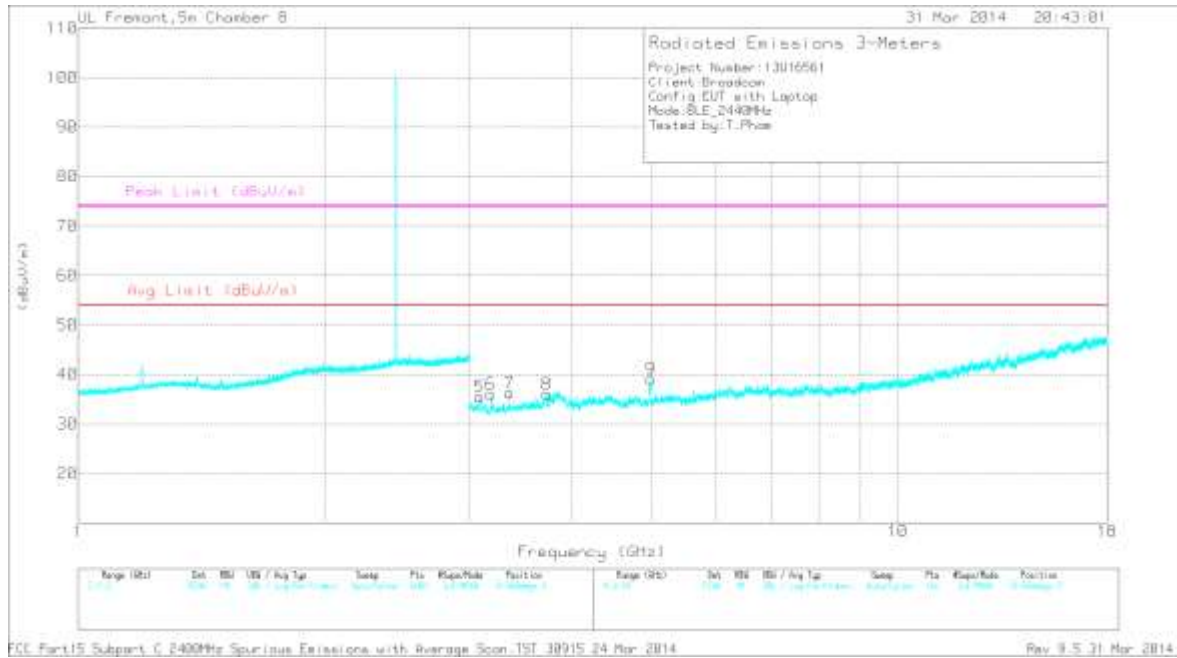
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Rev 9.5 31 Mar 2014

MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 3.717	35.71	PK	33.4	-31.3	37.81	-	-	74	-36.19	0-360	201	H
4	* 4.978	31.78	PK	34.2	-29.9	36.08	-	-	74	-37.92	0-360	201	H
8	* 3.731	34.27	PK	33.4	-31.6	36.07	-	-	74	-37.93	0-360	202	V
9	* 4.997	34.25	PK	34.2	-29.4	39.05	-	-	74	-34.95	0-360	202	V
5	3.086	34.19	PK	32.9	-31.6	35.49	-	-	-	-	0-360	202	V
1	3.097	32.35	PK	32.9	-31.5	33.75	-	-	-	-	0-360	99	H
2	3.186	32.12	PK	32.8	-31.4	33.52	-	-	-	-	0-360	201	H
6	3.187	34.62	PK	32.8	-31.4	36.02	-	-	-	-	0-360	202	V
7	3.36	34.93	PK	32.8	-31.4	36.33	-	-	-	-	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.722	42.32	PK2	33.4	-31.4	44.32	-	-	74	-29.68	251	320	H
* 3.72	31.39	MAv1	33.4	-31.4	33.39	54	-20.61	-	-	251	320	H
* 4.985	41.57	PK2	34.2	-29.8	45.97	-	-	74	-28.03	255	120	H
* 4.979	30.78	MAv1	34.2	-29.9	35.08	54	-18.92	-	-	255	120	H
* 4.986	42.91	PK2	34.2	-29.8	47.31	-	-	74	-26.69	10	288	V
* 4.983	30.89	MAv1	34.2	-29.8	35.29	54	-18.71	-	-	10	288	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

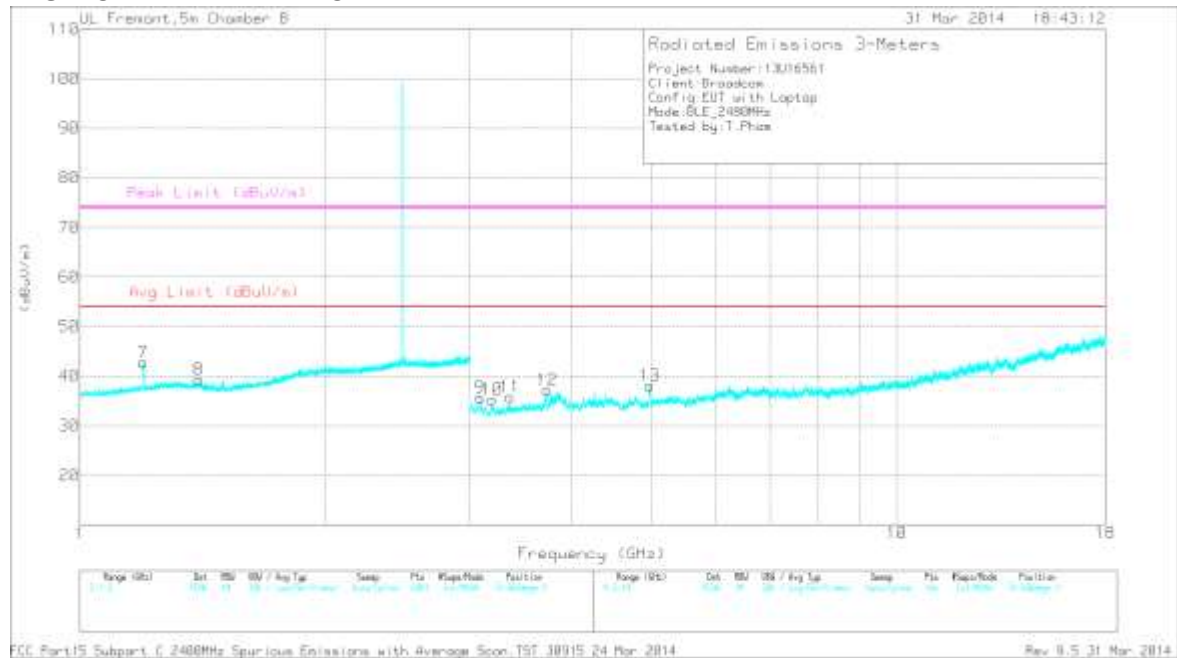
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Rev 9.5 31 Mar 2014

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.195	39.67	PK	28.2	-24.7	43.17	-	-	74	-30.83	0-360	201	H
2	* 1.398	38.43	PK	28.5	-24.5	42.43	-	-	74	-31.57	0-360	99	H
7	* 1.195	39.22	PK	28.2	-24.7	42.72	-	-	74	-31.28	0-360	202	V
8	* 1.398	35.36	PK	28.5	-24.5	39.36	-	-	74	-34.64	0-360	202	V
5	* 3.727	34.24	PK	33.4	-31.5	36.14	-	-	74	-37.86	0-360	201	H
6	* 4.984	31.5	PK	34.2	-29.8	35.9	-	-	74	-38.1	0-360	201	H
12	* 3.73	35.32	PK	33.4	-31.6	37.12	-	-	74	-36.88	0-360	202	V
13	* 4.978	33.75	PK	34.2	-29.9	38.05	-	-	74	-35.95	0-360	202	V
9	3.086	34.36	PK	32.9	-31.6	35.66	-	-	-	-	0-360	202	V
3	3.09	32.92	PK	32.9	-31.5	34.32	-	-	-	-	0-360	99	H
4	3.193	33.06	PK	32.8	-31.3	34.56	-	-	-	-	0-360	201	H
10	3.197	33.73	PK	32.8	-31.3	35.23	-	-	-	-	0-360	202	V
11	3.36	34.34	PK	32.8	-31.4	35.74	-	-	-	-	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.199	45.89	PK2	28.2	-24.7	49.39	-	-	74	-24.61	38	113	H
* 1.198	36.49	MAV1	28.2	-24.7	39.99	54	-14.01	-	-	38	113	H
* 1.399	46.14	PK2	28.5	-24.5	50.14	-	-	74	-23.86	182	368	H
* 1.396	35.6	MAV1	28.5	-24.5	39.6	54	-14.4	-	-	182	368	H
* 1.196	45.84	PK2	28.2	-24.7	49.34	-	-	74	-24.66	333	193	V
* 1.198	34.07	MAV1	28.2	-24.7	37.57	54	-16.43	-	-	333	193	V
* 1.394	43.37	PK2	28.5	-24.5	47.37	-	-	74	-26.63	209	233	V
* 1.399	32.75	MAV1	28.5	-24.5	36.75	54	-17.25	-	-	209	233	V
* 3.724	47.41	PK2	33.4	-31.5	49.31	-	-	74	-24.69	316	313	H
* 3.723	34.62	MAV1	33.4	-31.4	36.62	54	-17.38	-	-	316	313	H
* 4.985	45.59	PK2	34.2	-29.8	49.99	-	-	74	-24.01	322	280	H
* 4.982	33.5	MAV1	34.2	-29.8	37.9	54	-16.1	-	-	322	280	H
* 3.729	45.11	PK2	33.4	-31.6	46.91	-	-	74	-27.09	332	264	V
* 3.725	32.83	MAV1	33.4	-31.5	34.73	54	-19.27	-	-	332	264	V
* 4.981	42.19	PK2	34.2	-29.8	46.59	-	-	74	-27.41	168	338	V
* 4.98	31.2	MAV1	34.2	-29.8	35.6	54	-18.4	-	-	168	338	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 24 Mar 2014

Rev 9.5 31 Mar 2014

8.3. WORST-CASE 18_26 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION)



Trace Markers

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T89 (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	19.186	39.33	PK	32.5	-23.5	-9.5	38.83	54	-15.167	74	-35.167
2	22.263	42.5	PK	33.2	-23.2	-9.5	43	54	-11	74	-31
3	24.008	43.37	PK	33.6	-22.8	-9.5	44.67	54	-9.333	74	-29.333
4	19.319	38.8	PK	32.5	-23.8	-9.5	38	54	-16	74	-36
5	22.31	41.3	PK	33.3	-23.1	-9.5	42	54	-12	74	-32
6	25.087	44.5	PK	33.9	-22.9	-9.5	46	54	-8	74	-28

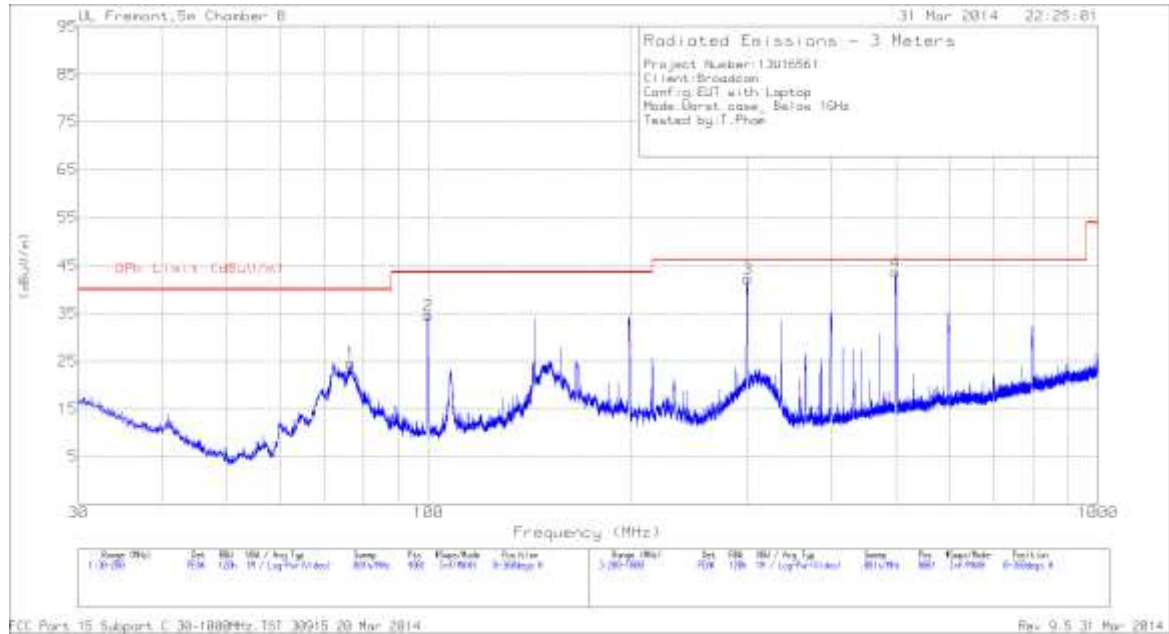
PK - Peak detector

18-26GHz Test.TST 30915 23 Aug 2013 Rev 9.5 19 Jan 2014

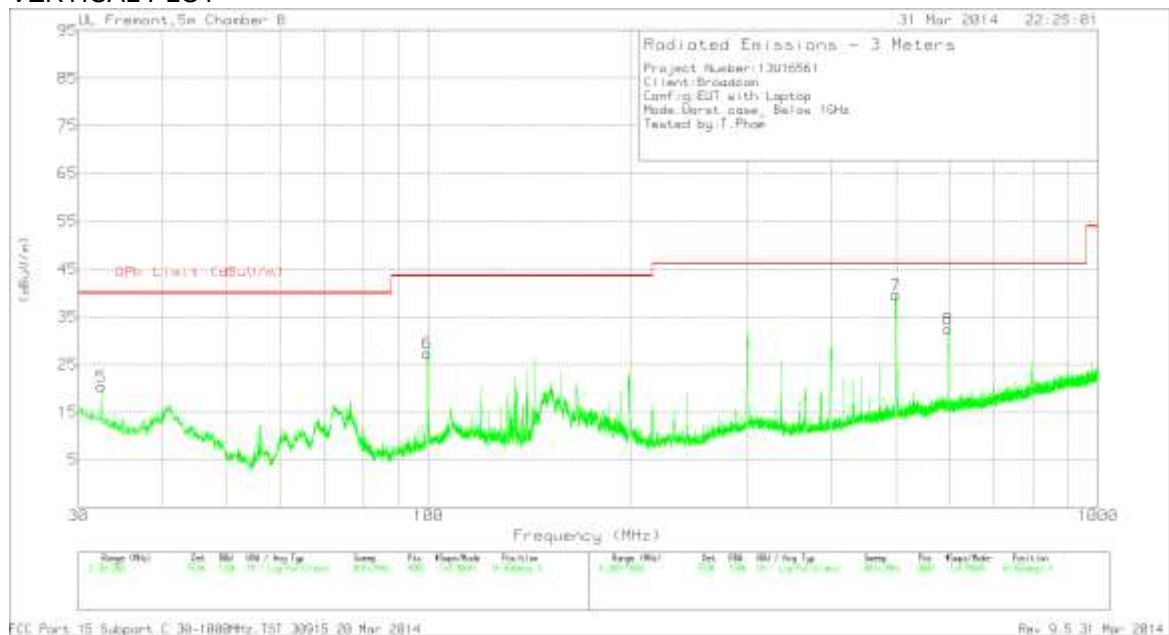
8.4. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



EMISSIONS DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	32.465	30.05	PK	19.2	-28.8	20.45	40	-19.55	0-360	101	V
1	76.4525	44.86	PK	8	-28.3	24.56	40	-15.44	0-360	400	H
6	99.615	45.22	PK	10.2	-28.1	27.32	43.52	-16.2	0-360	101	V
2	99.9125	52.34	PK	10.3	-28.1	34.54	43.52	-8.98	0-360	300	H
3	299.8	55.07	PK	13.2	-26	42.27	46.02	-3.75	0-360	101	H
4	497.9	51.82	PK	17.6	-25.8	43.62	46.02	-2.4	0-360	200	H
7	499.6	47.72	PK	17.7	-25.8	39.62	46.02	-6.4	0-360	101	V
8	597.4	39.33	PK	18.5	-25.4	32.43	46.02	-13.59	0-360	300	V

PK - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
300.024	49.33	QP	13.2	-26	36.53	46.02	-9.49	0	101	H
498.444	38.92	QP	18	-25.7	31.22	46.02	-14.8	158	370	H

QP - Quasi-Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 20 Mar 2014

Rev 9.5 31 Mar 2014

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

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

TEST PROCEDURE

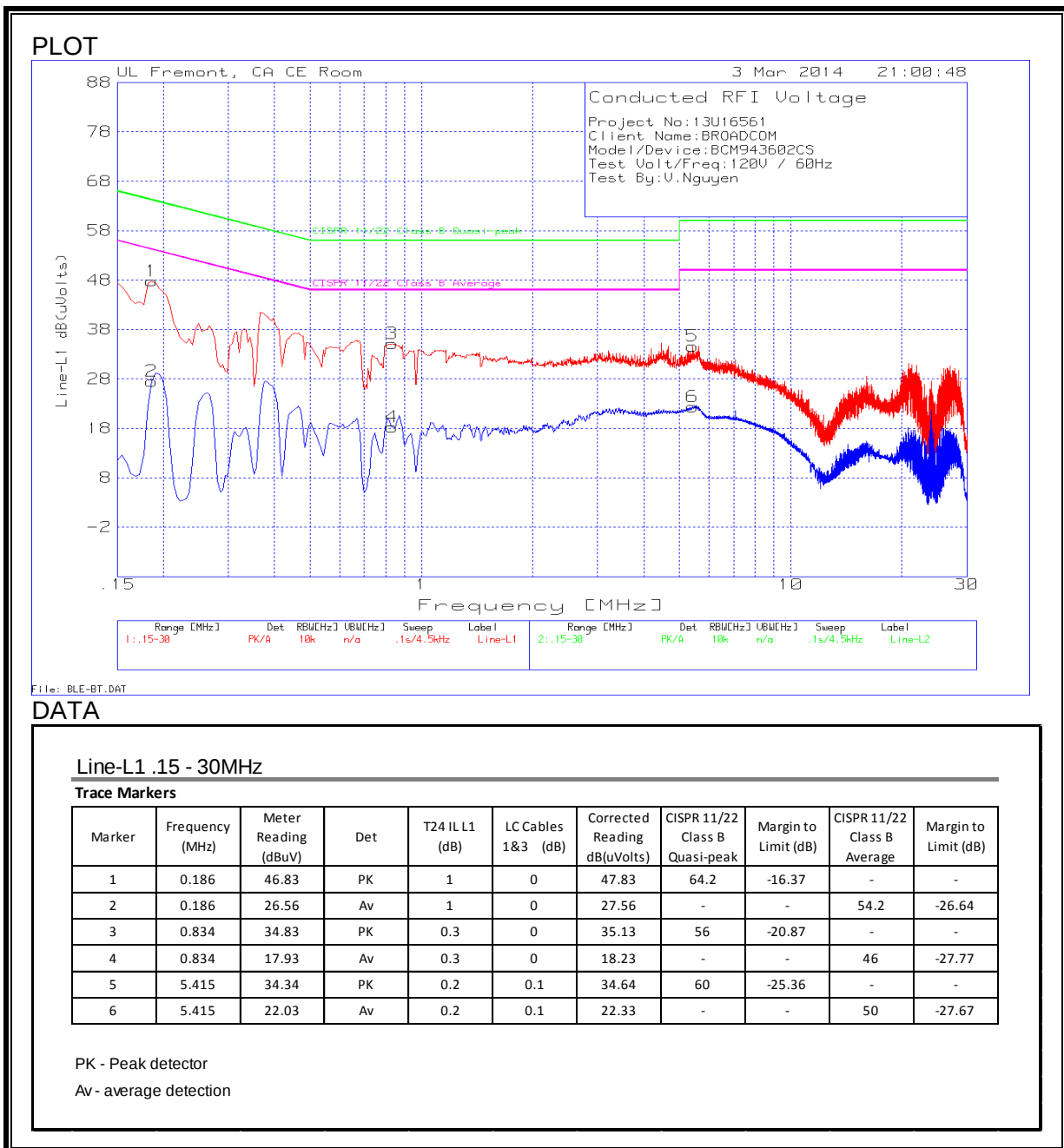
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

6 WORST EMISSIONS

LINE 1 RESULTS



LINE 2 RESULTS

