FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/CDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac & NFC

MODEL NUMBER: LG-US991, US991, LGUS991

FCC ID: ZNFUS991

REPORT NUMBER: 15I20405 – E4 REVISION A

ISSUE DATE: April 28, 2015

Prepared for

LG ELECTRONICS MOBILECOMM U.S.A., INC
1000 SYLVAN AVENUE
ENGLEWOOD CLIFFS,
NEW JERSEY, 07632, U.S.A.

Prepared by

UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	4/21/15	Initial Issue	P. Zhang
A	4/28/15	Updated section 5.4	P. Zhang

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	**LG ELECTRONICS MOBILECOMM U.S.A., INC.**
EUT DESCRIPTION:	**GSM/WCDMA/CDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac & NFC.**
MODEL:	**LG-US991, US991, LGUS991**
SERIAL NUMBER:	**0699-0243 (Radiated); 0699-0249 (Conducted)**
DATE TESTED:	**MAR 27 – APR 16, 2015**

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	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:

PENG ZHANG

CONSUMER TECHNOLOGY DIVISION
PROJECT LEAD
UL Verification Services Inc.

Tested By:

JONATHAN HSU

CONSUMER TECHNOLOGY DIVISION
LAB ENGINEER
UL Verification Services Inc.

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.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☒ Chamber A(IC: 2324B-1)	☐ Chamber D(IC: 2324B-4)
☐ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☒ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☒ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

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:

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 26000 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 GSM/WCDMA/CDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac & NFC.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	16.01	39.90
2412 - 2462	802.11g	14.93	31.12
2412 - 2462	802.11n HT20	13.97	24.95
2412 - 2462	802.11ac VHT20	12.1	16.22

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -0.52 dBi.

5.4. 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.

802.11n HT20 mode has a higher power than the 802.11ac VHT20 mode. Conducted testing was performed at the worst case (11n HT20) mode to cover the tests needed for 11ac VHT20 mode.

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

Spots check also performed on SMART COVER and CHARGING DOCK station.

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

802.11b mode: 1 Mbps

802.11g mode: 6 Mbps

802.11a mode: 6 Mbps

802.11n HT20mode: MCS0

802.11ac VHT20mode: MCS0

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	LG	MCS-04WD2	EAY62991904	N/A
Smart Case Cover	LG	LG-P1	DK0227	N/A
Wireless Charger	LG	WCD-110	LF1212625283010049	N/A
Earphone	LG	N/A	N/A	N/A

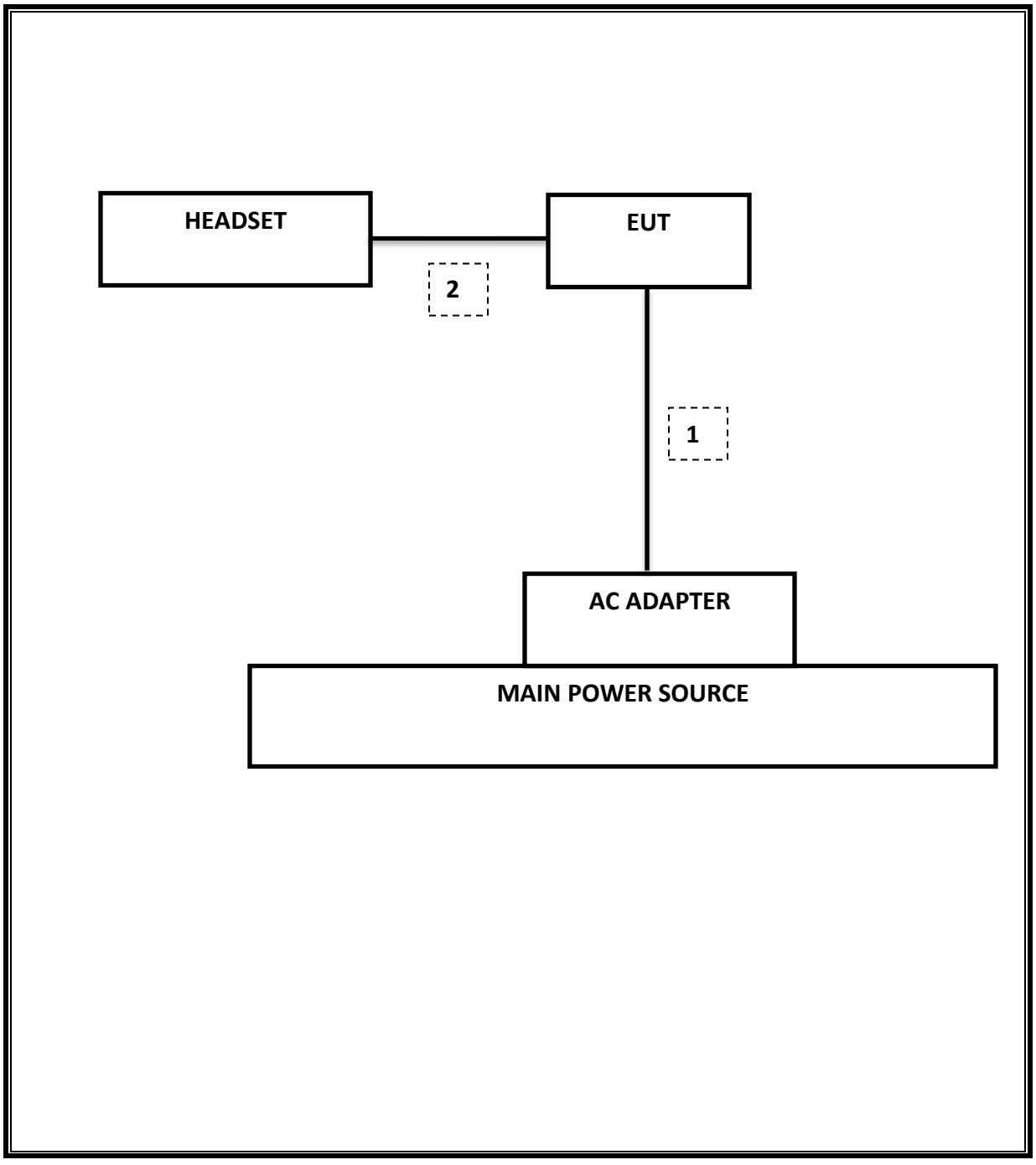
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1m	N/A

TEST SETUP

The EUT is a stand-alone unit during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/15
Spectrum Analyzer,9KHz-40GHz	HP	8564E	C00986	04/01/16
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	08/13/15
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/18/15
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/15
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/15
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/16
Antenna, Horn,18- 26 GHz	ARA	MWH-1826/B	C00946	11/12/15
Antenna, Horn, 26-40 GHz	ARA	MWH-2640	C00891	06/28/15
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/16
RF Preamplifier, 100KHz -> 1300MHz	HP	TBD	C00825	06/01/15
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/16
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	F00351	06/27/15
AC Power Supply, 2,500VA 45-500Hz	Elgar-Ametek	CW2501M	F00013	CNR
RF Preamplifier, 1GHz - 40GHz	Miteq	NSP4000-SP2	C00990	08/20/15
Attenuator / Switch driver	HP	11713A	F00204	CNR
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	F00219	05/23/15
High Pass Filter 5GHz	Micro-Tronics	HPS17542	F00222	05/22/15
High Pass Filter 6GHz	Micro-Tronics	HPM17543	F00224	05/22/15

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Version 9.5, 07/22/14
Conducted Software	UL	UL EMC	Version 9.5, 05/17/14
CLT Software	UL	UL RF	Version 1.0, 02/02/15
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r02:Measurement Procedure AVGPM-G is used for power and AVGPSD-3 is used for power spectral density.

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

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

8. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-210 A8.2(a)	Occupied Band width (6dB)	>500KHz	Conducted	Pass	7.58 MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-38.31 dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	16.01 dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-5.35 dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	54.17 dBuV
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	49.52 dBuV/m

9. ANTENNA PORT TEST RESULTS

9.1. 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

Reference to KDB 558074 D01 DTS Meas Guidance v03r02: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

RESULTS

9.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	7.58	0.5
Mid	2437	8.08	0.5
High	2462	8.09	0.5
Worst		7.58	

9.1.2. 802.11g MODE IN THE 2.4 GHz BAND

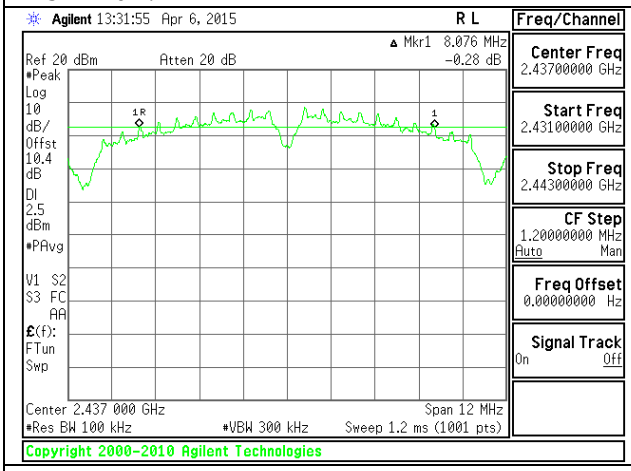
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	14.12	0.5
Mid	2437	16.35	0.5
High	2462	14.63	0.5
Worst		14.12	

9.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

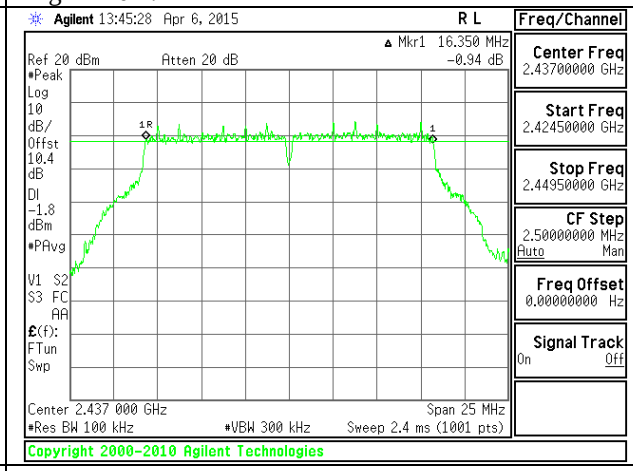
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.08	0.5
Mid	2437	17.63	0.5
High	2462	12.56	0.5
Worst		12.56	

9.1.4. 6 dB BANDWIDTH MID CH PLOTS

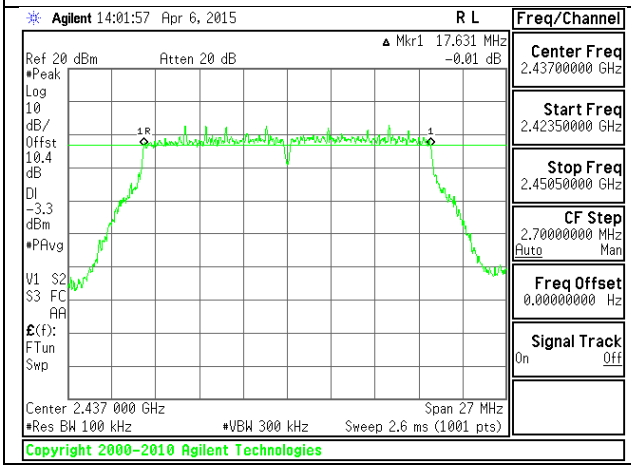
11b HT20 2.4



11g HT20 2.4



11n HT20 2.4



9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	10.77
Mid	2437	10.87
High	2462	10.53
Worst		10.87

9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

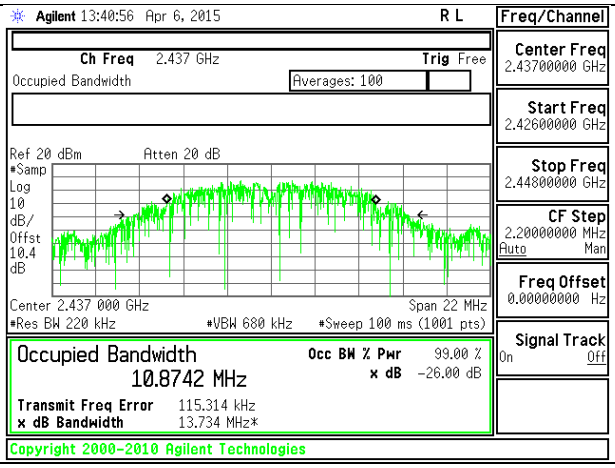
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.20
Mid	2437	16.57
High	2462	16.34
Worst		16.57

9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

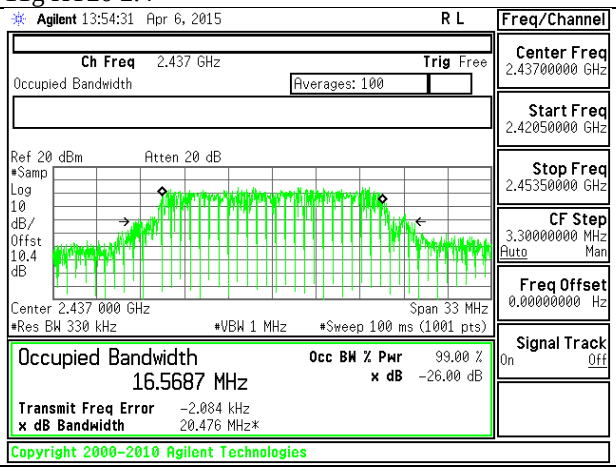
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.38
Mid	2437	17.71
High	2462	17.50
Worst		17.71

9.2.4. 99% BANDWIDTH MID CH PLOTS

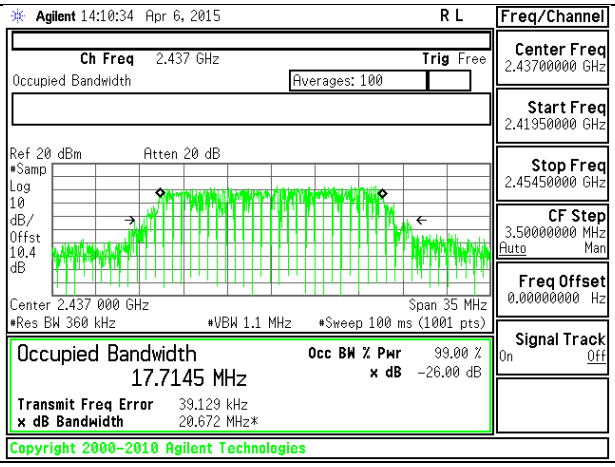
11b HT20 2.4



11g HT20 2.4



11n HT20 2.4



9.3. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

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

DIRECTIONAL ANTENNA GAIN

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

RESULTS

9.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-0.52	30.00	30	36	30.00
Mid	2437	-0.52	30.00	30	36	30.00
High	2462	-0.52	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	15.68	15.68	30.00	-14.32
Mid	2437	16.01	16.01	30.00	-13.99
High	2462	15.79	15.79	30.00	-14.21
Worst			16.01		

9.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-0.52	30.00	30	36	30.00
Mid	2437	-0.52	30.00	30	36	30.00
High	2462	-0.52	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	14.06	14.06	30.00	-15.94
Mid	2437	14.93	14.93	30.00	-15.07
High	2462	14.35	14.35	30.00	-15.65
Worst			14.93		

9.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-0.52	30.00	30	36	30.00
Mid	2437	-0.52	30.00	30	36	30.00
High	2462	-0.52	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	13.11	13.11	30.00	-16.89
Mid	2437	13.97	13.97	30.00	-16.03
High	2462	13.39	13.39	30.00	-16.61
Worst			13.97		

9.3.1. 802.11ac VHT20 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-0.52	30.00	30	36	30.00
Mid	2437	-0.52	30.00	30	36	30.00
High	2462	-0.52	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	11.04	11.04	30.00	-18.96
Mid	2437	12.10	12.10	30.00	-17.90
High	2462	11.42	11.42	30.00	-18.58
Worst			12.10		

9.4. 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

9.4.1. 802.11b MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-5.51	8.0	-13.5
Mid	2437	-5.35	8.0	-13.3
High	2462	-5.93	8.0	-13.9

9.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-8.92	8.0	-16.9
Mid	2437	-9.18	8.0	-17.2
High	2462	-9.14	8.0	-17.1

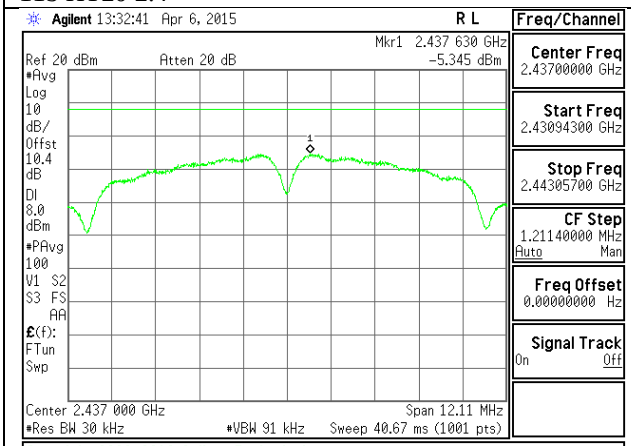
9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

PSD Results

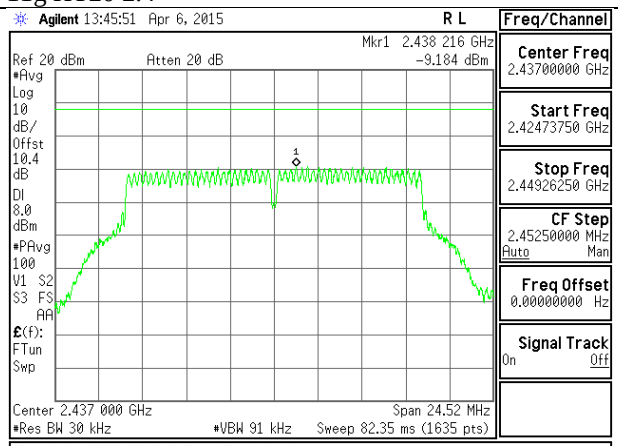
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-11.02	8.0	-19.0
Mid	2437	-11.07	8.0	-19.1
High	2462	-10.69	8.0	-18.7

9.4.4. PSD Chain 0 MID CH PLOTS

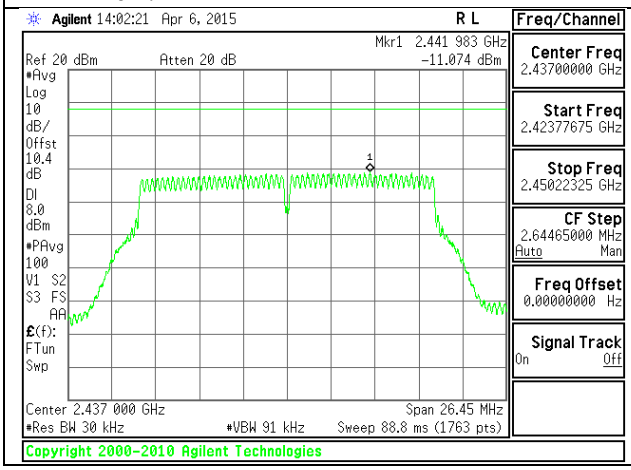
11b HT20 2.4



11g HT20 2.4



11n HT20 2.4



9.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

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

TEST PROCEDURE

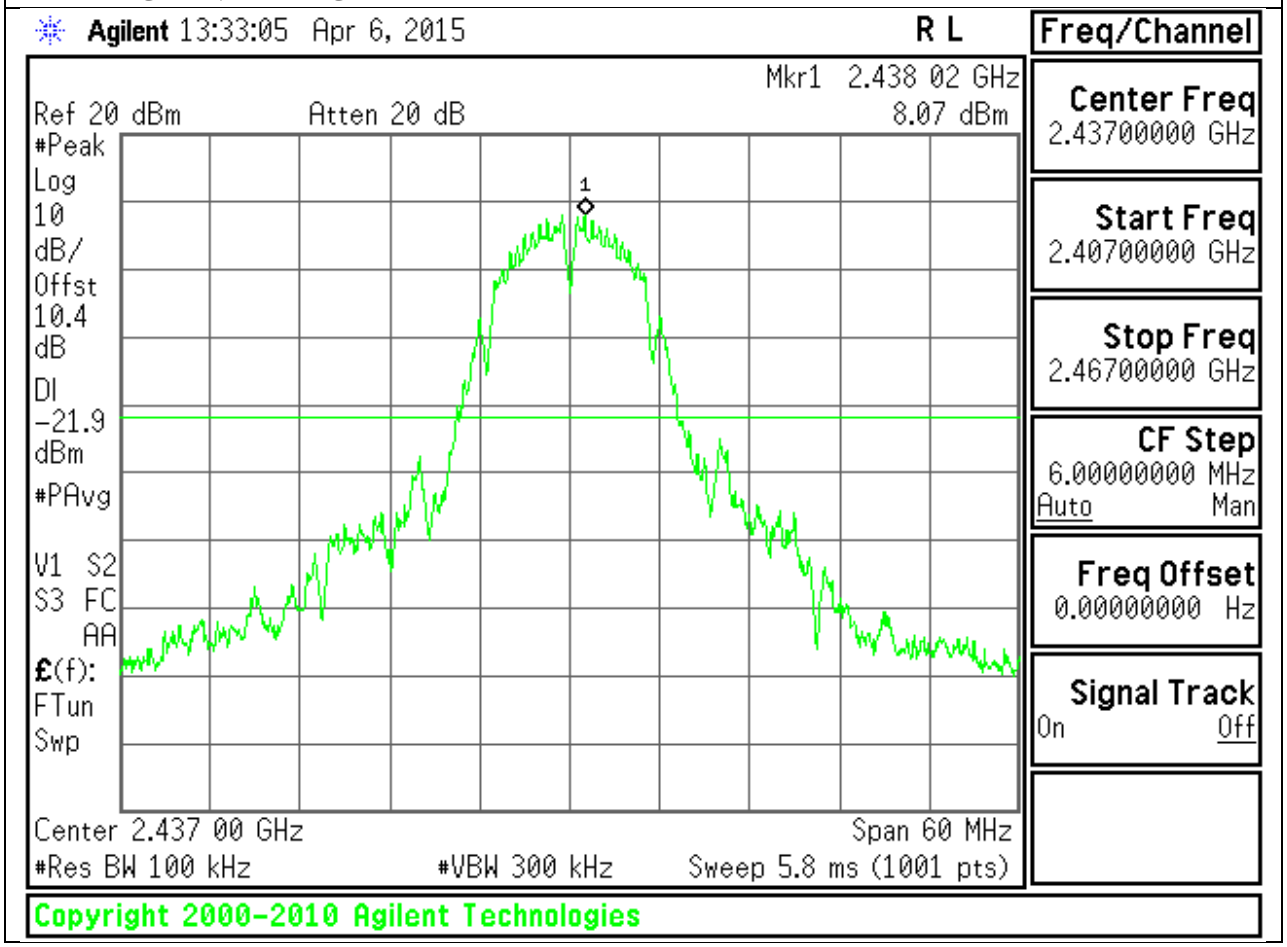
The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

RESULTS

9.5.1. 802.11b MODE IN THE 2.4 GHz BAND

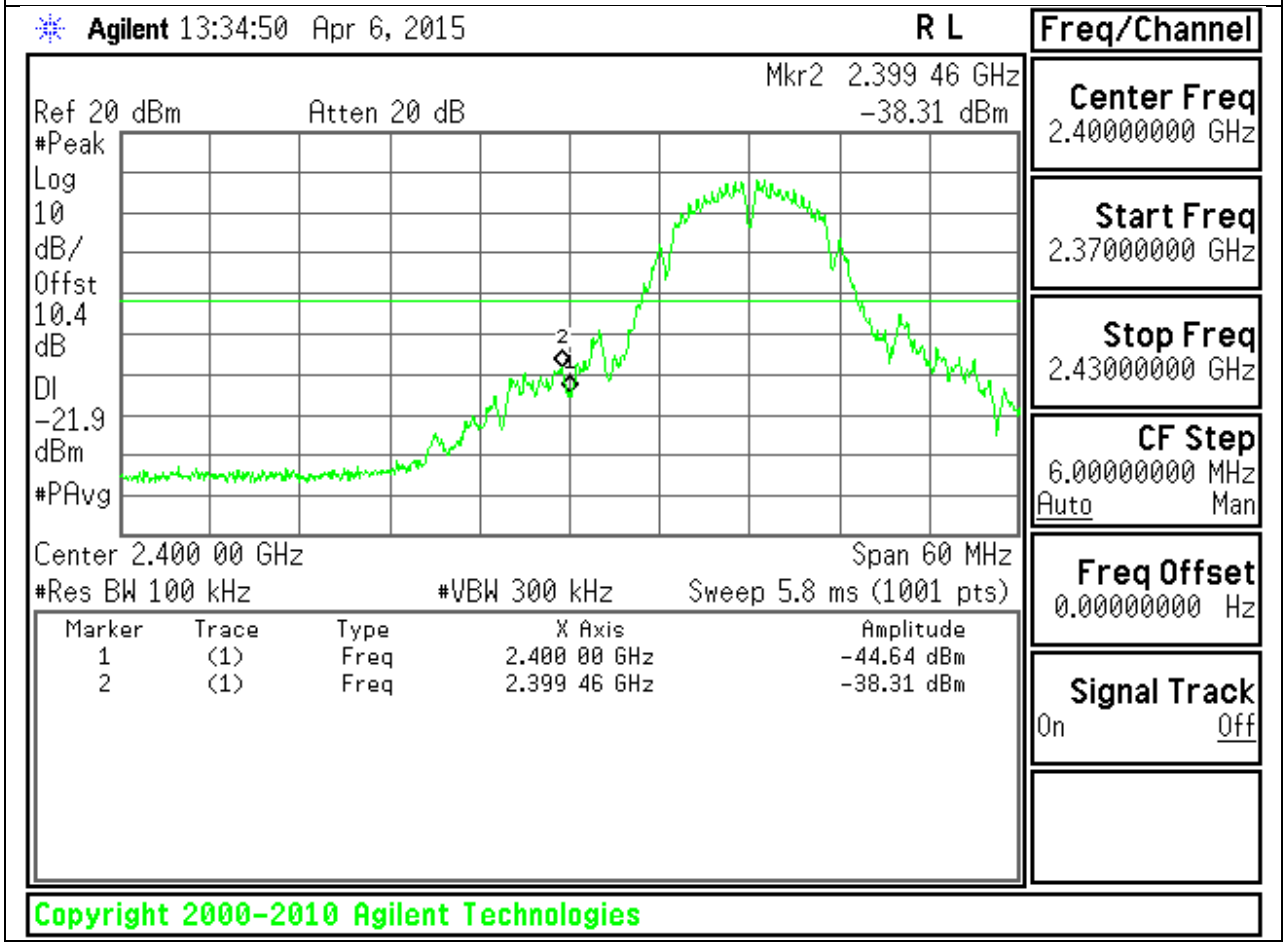
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



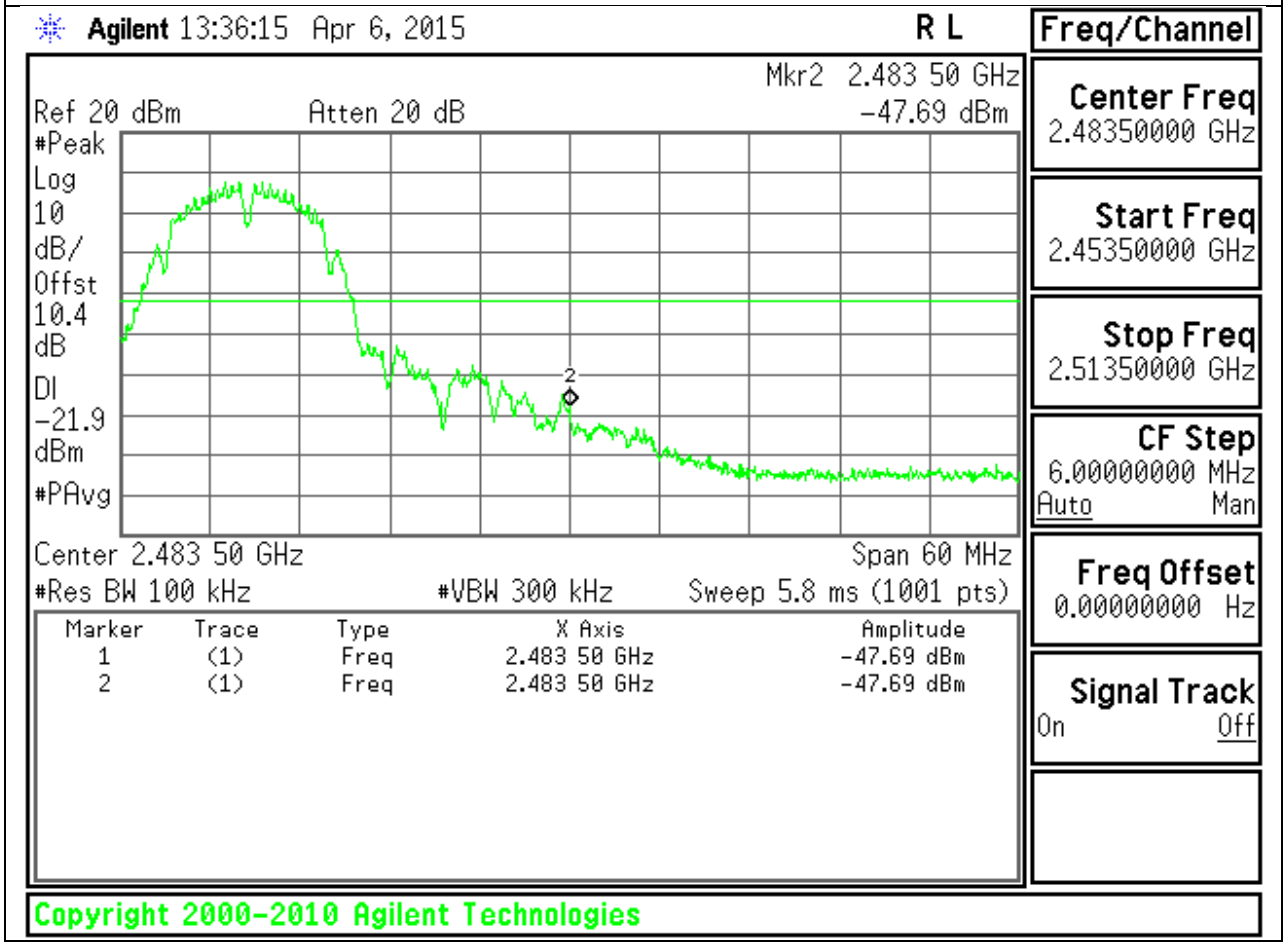
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



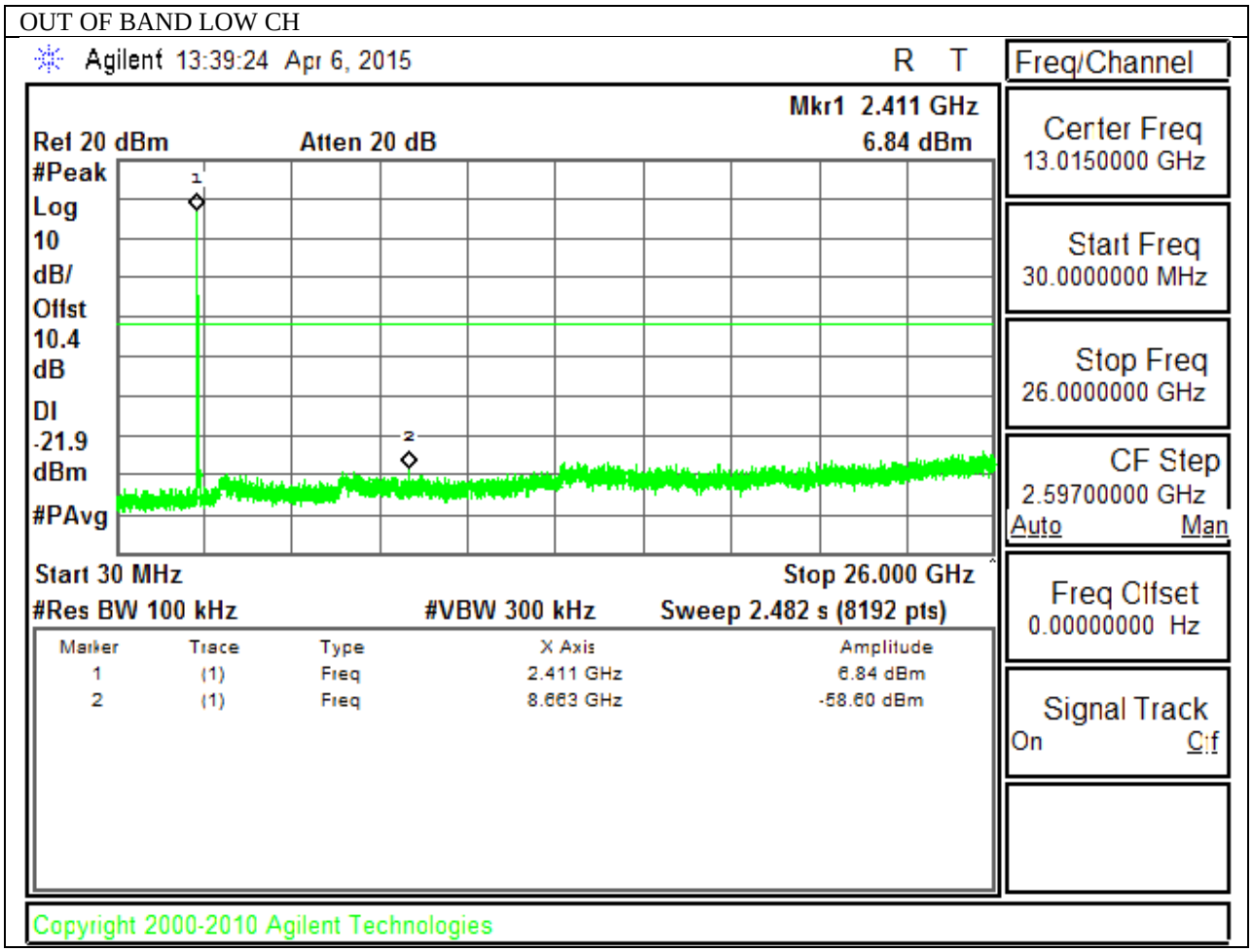
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

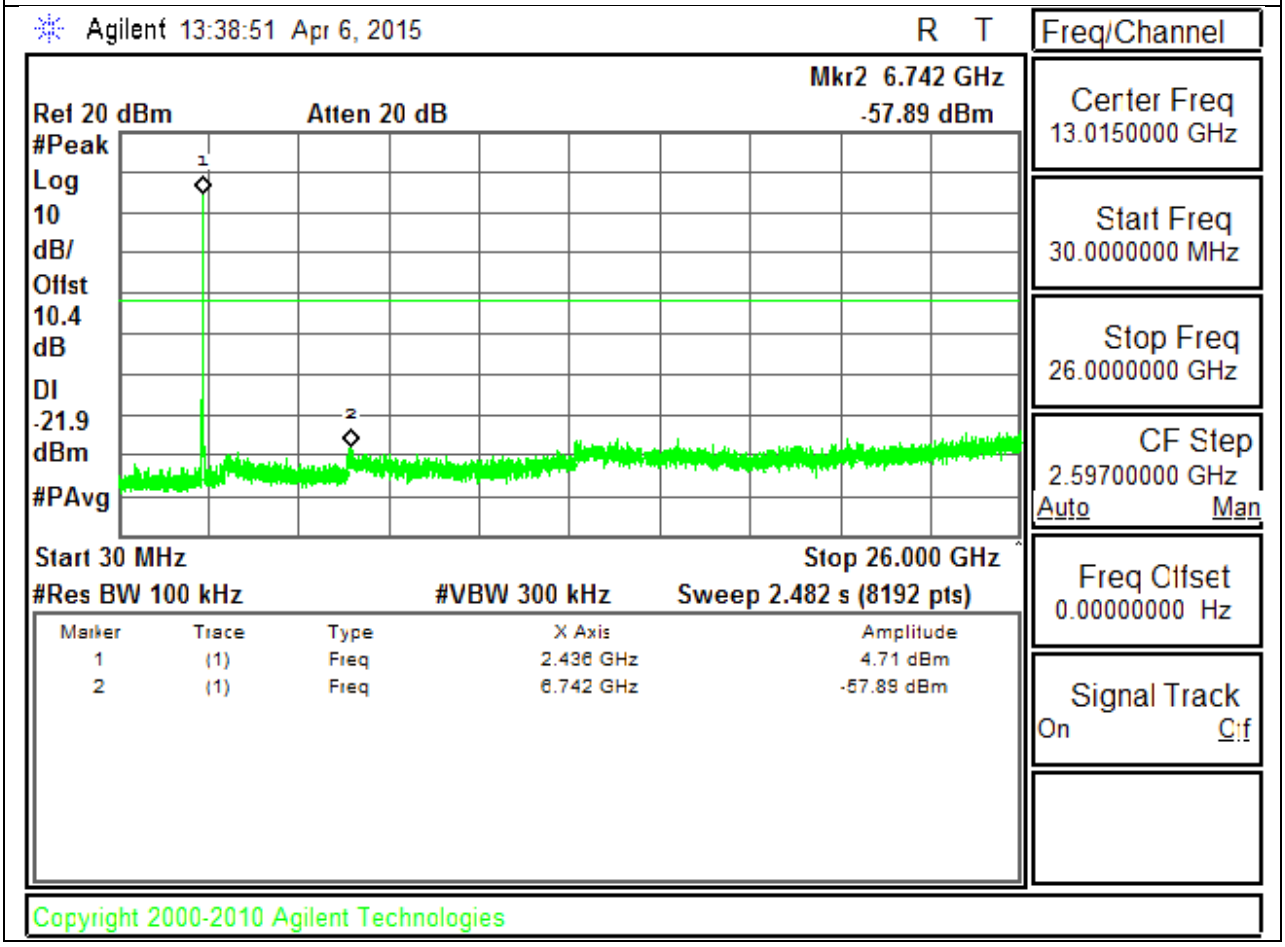


OUT-OF-BAND EMISSIONS

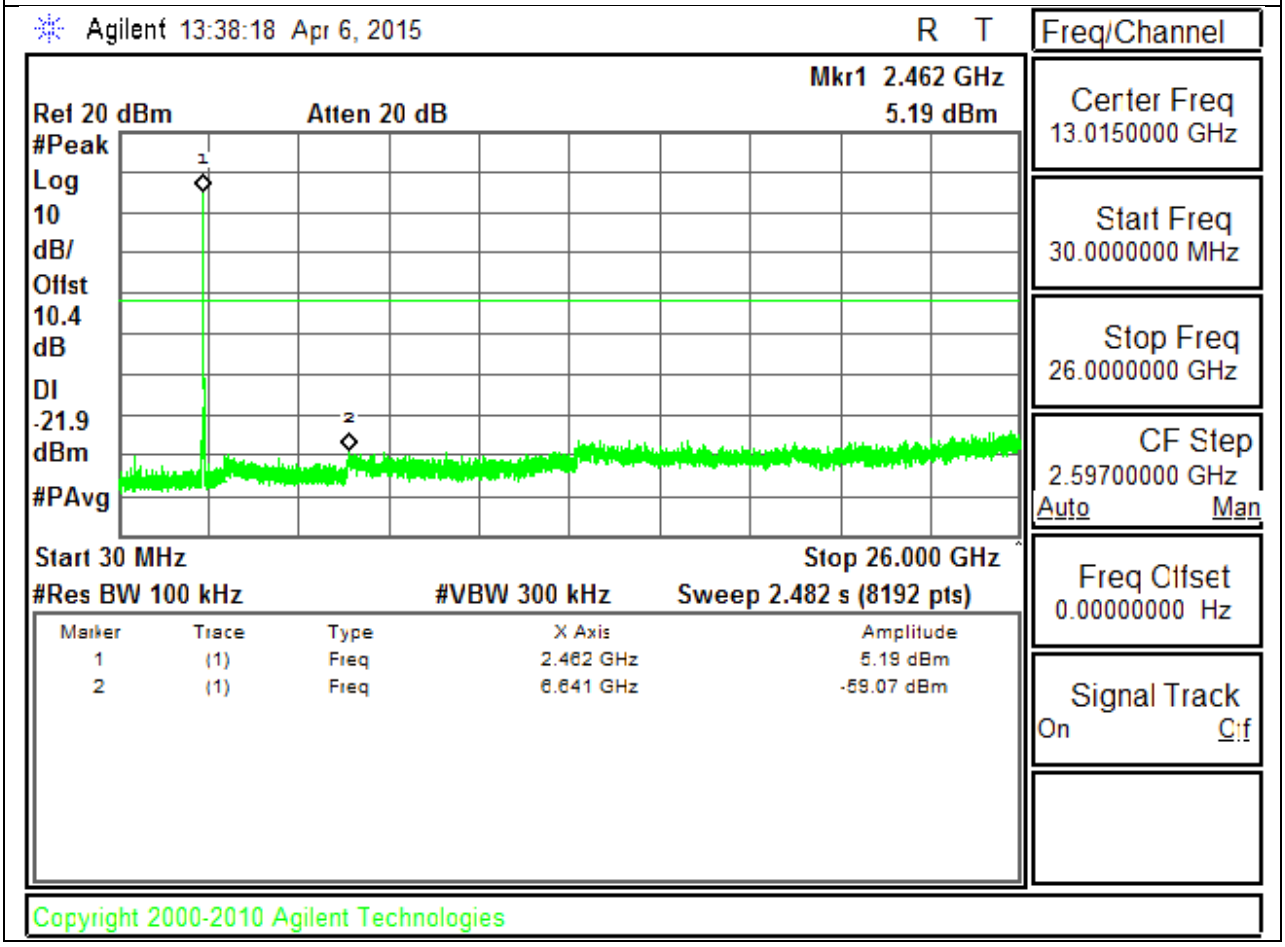
OUT OF BAND LOW CH



OUT OF BAND MID CH



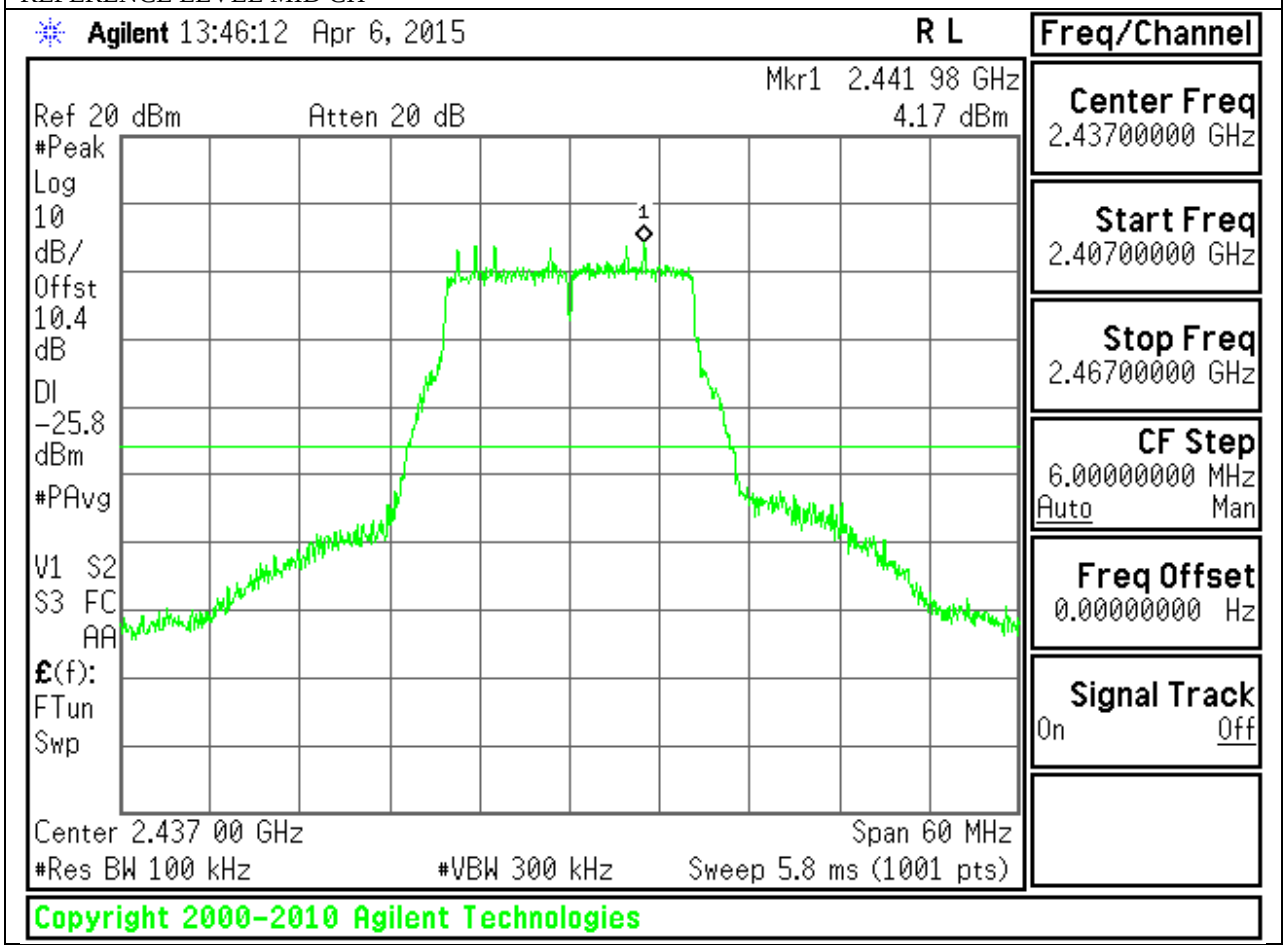
OUT OF BAND HIGH CH



9.5.2. 802.11g MODE IN THE 2.4 GHz BAND

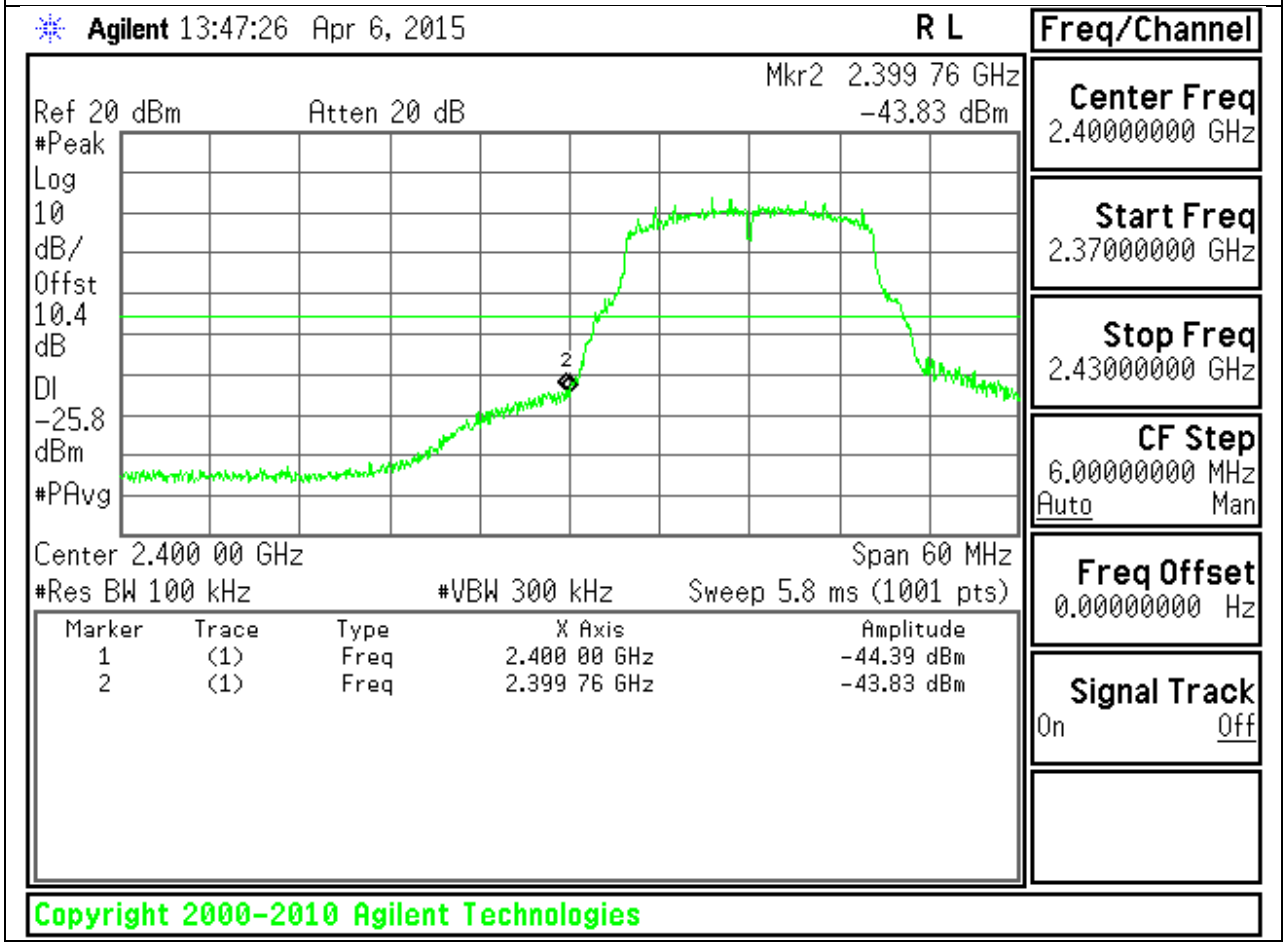
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



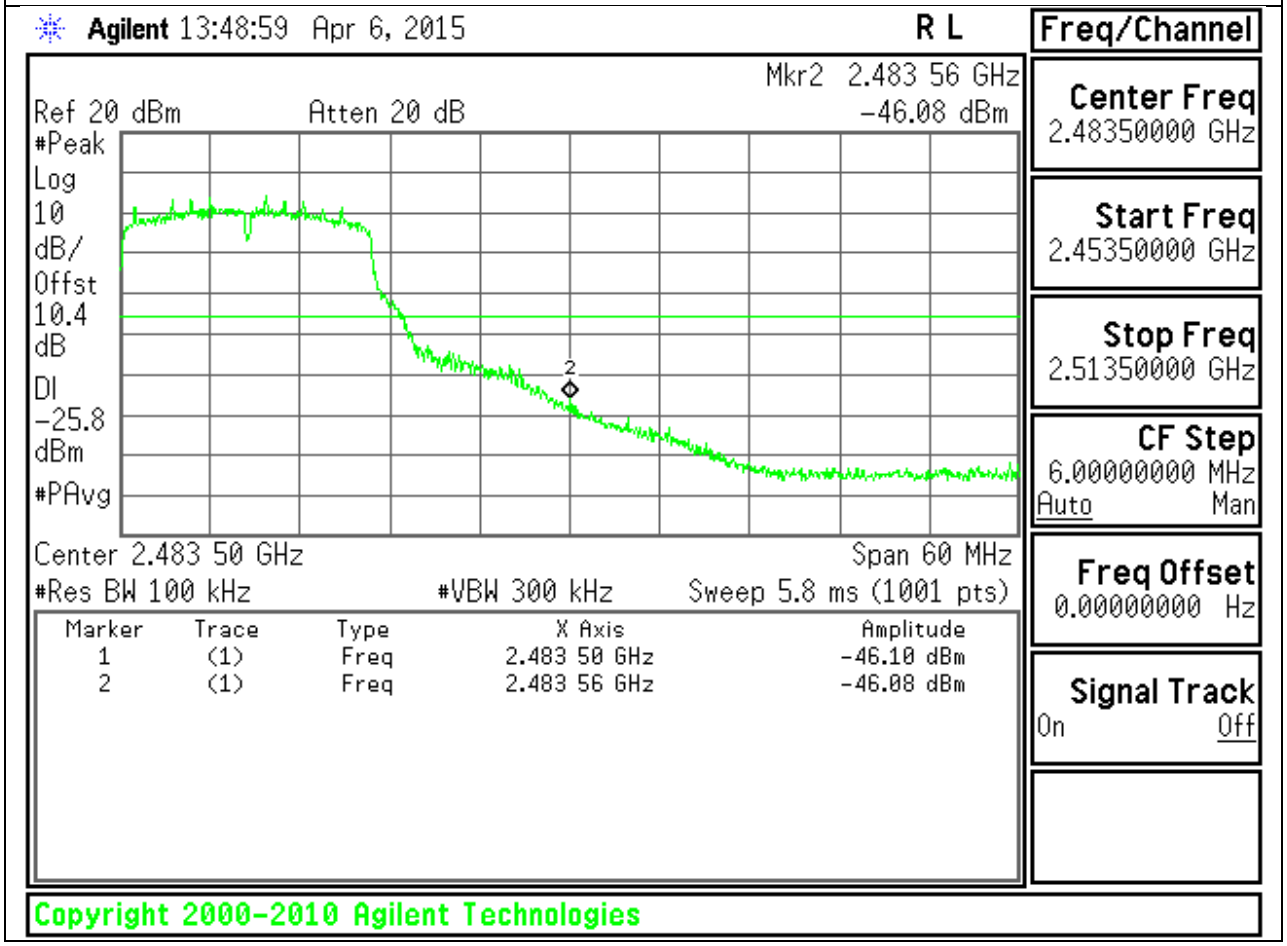
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



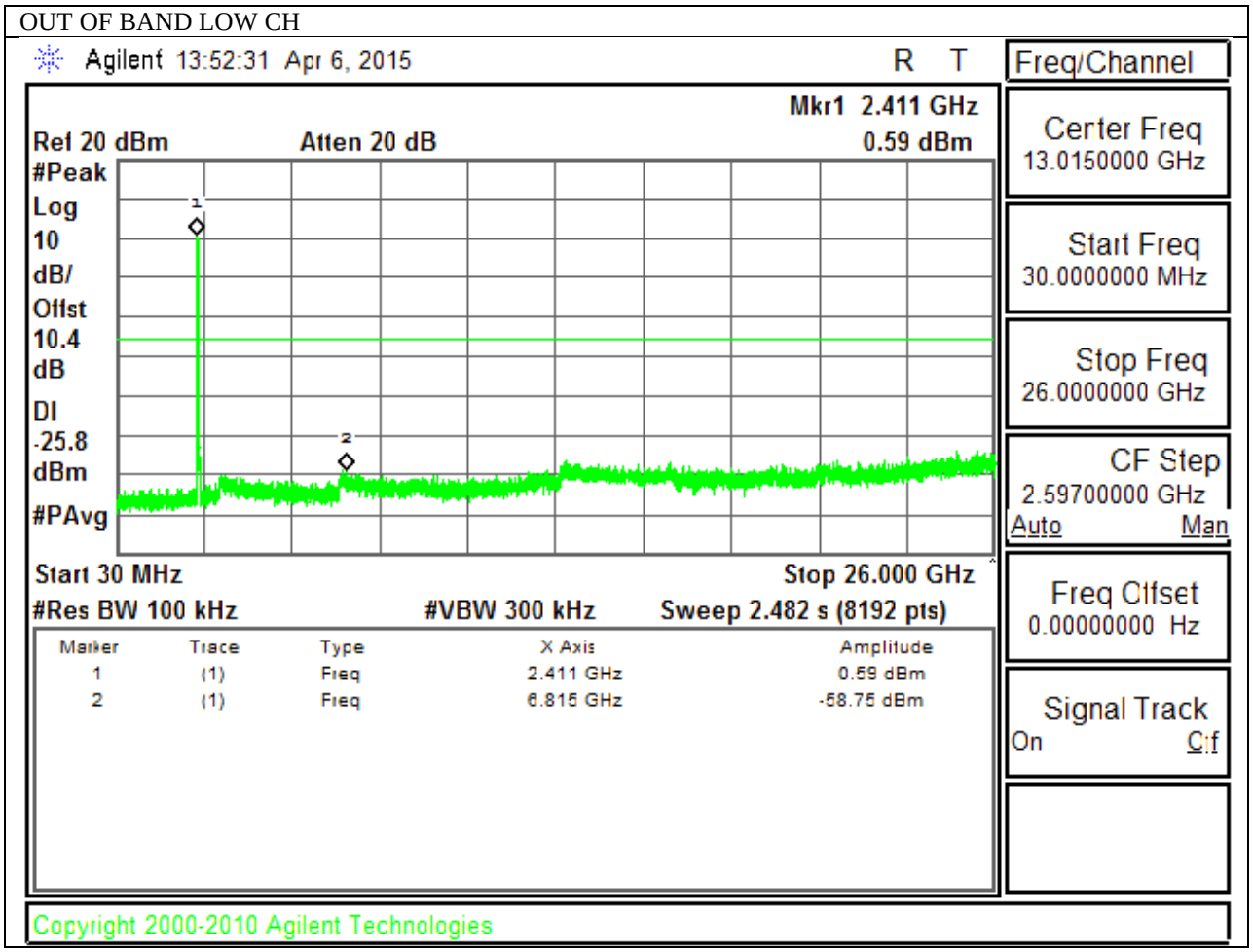
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

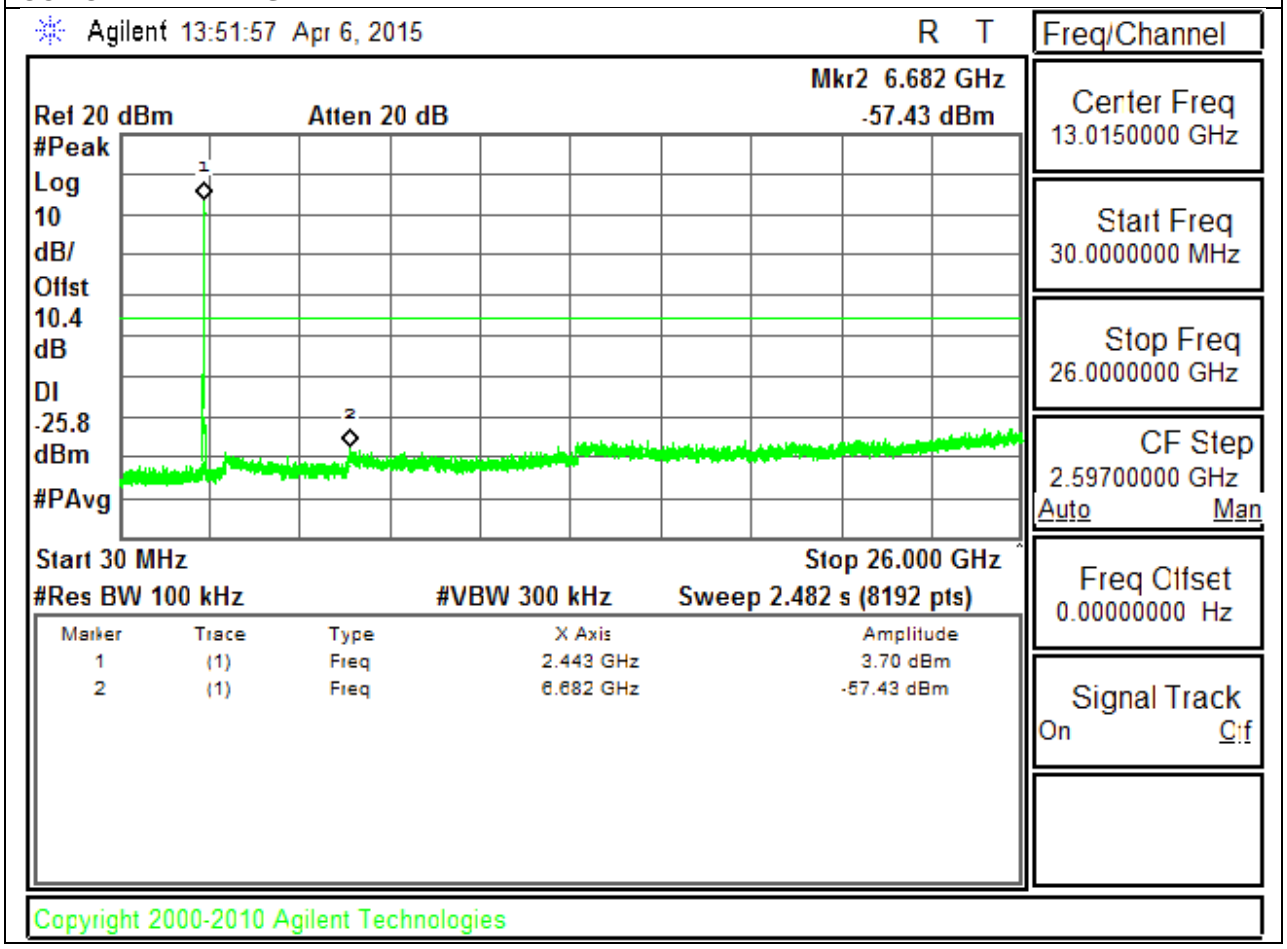


OUT-OF-BAND EMISSIONS

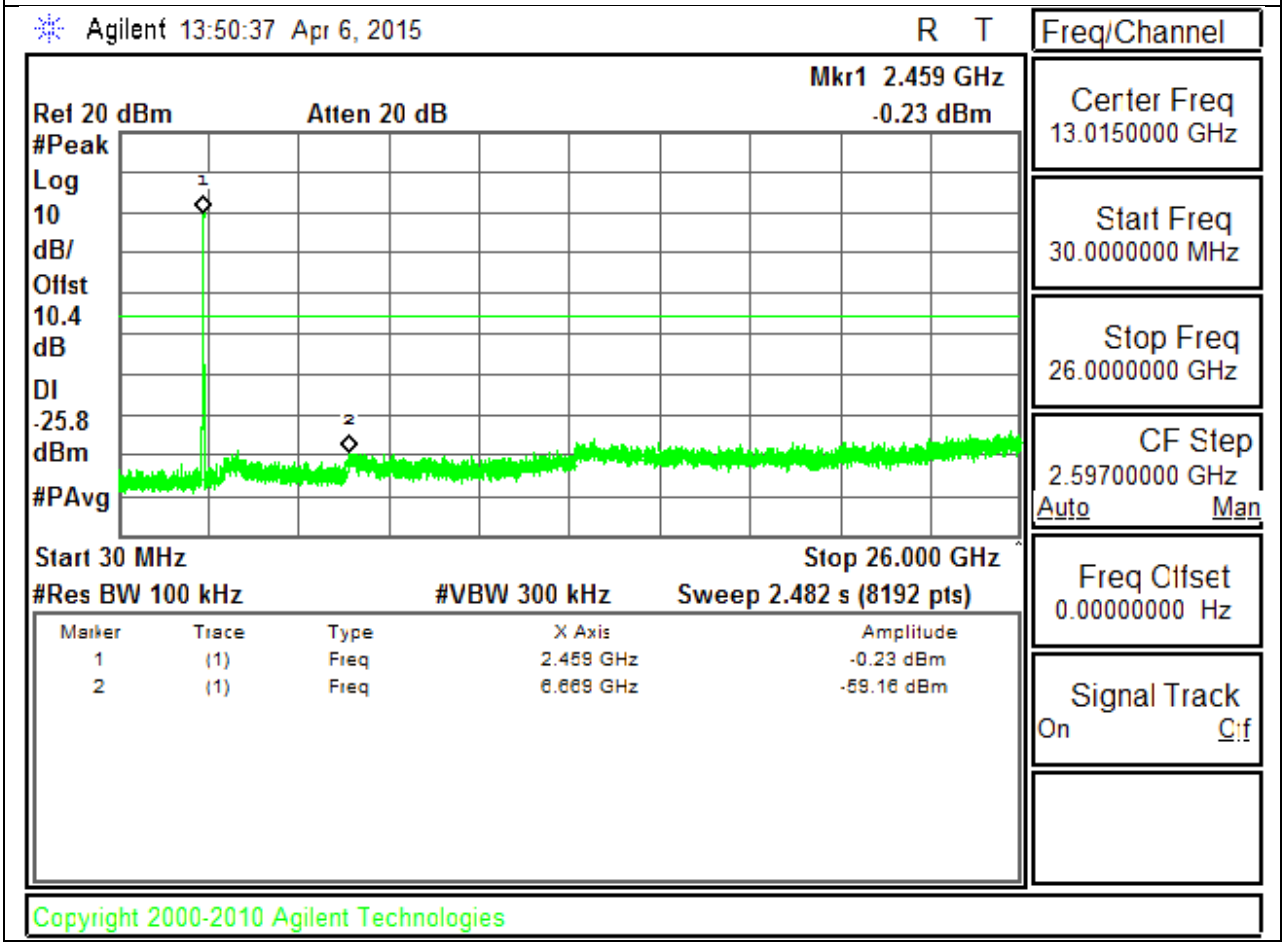
OUT OF BAND LOW CH



OUT OF BAND MID CH



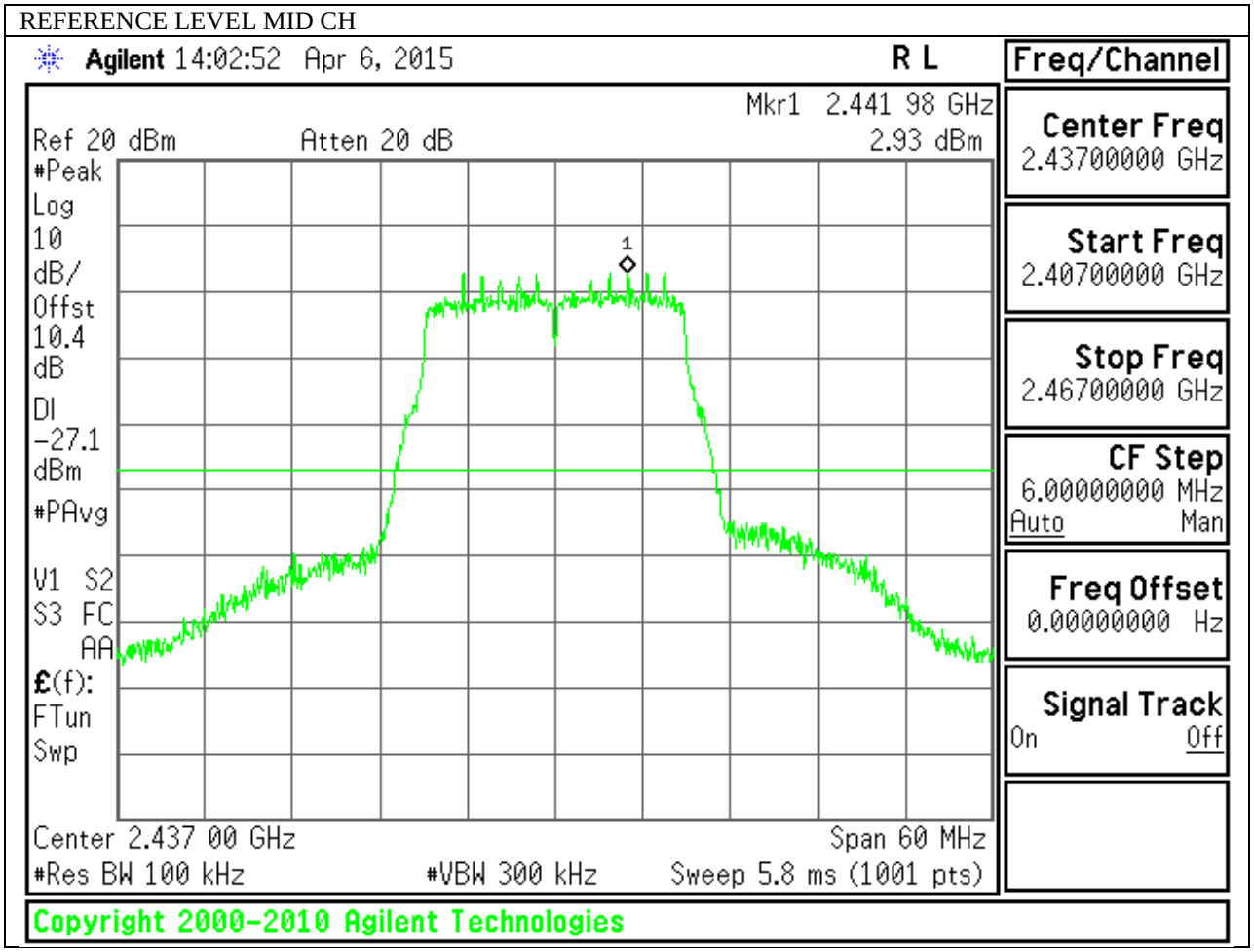
OUT OF BAND HIGH CH



9.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

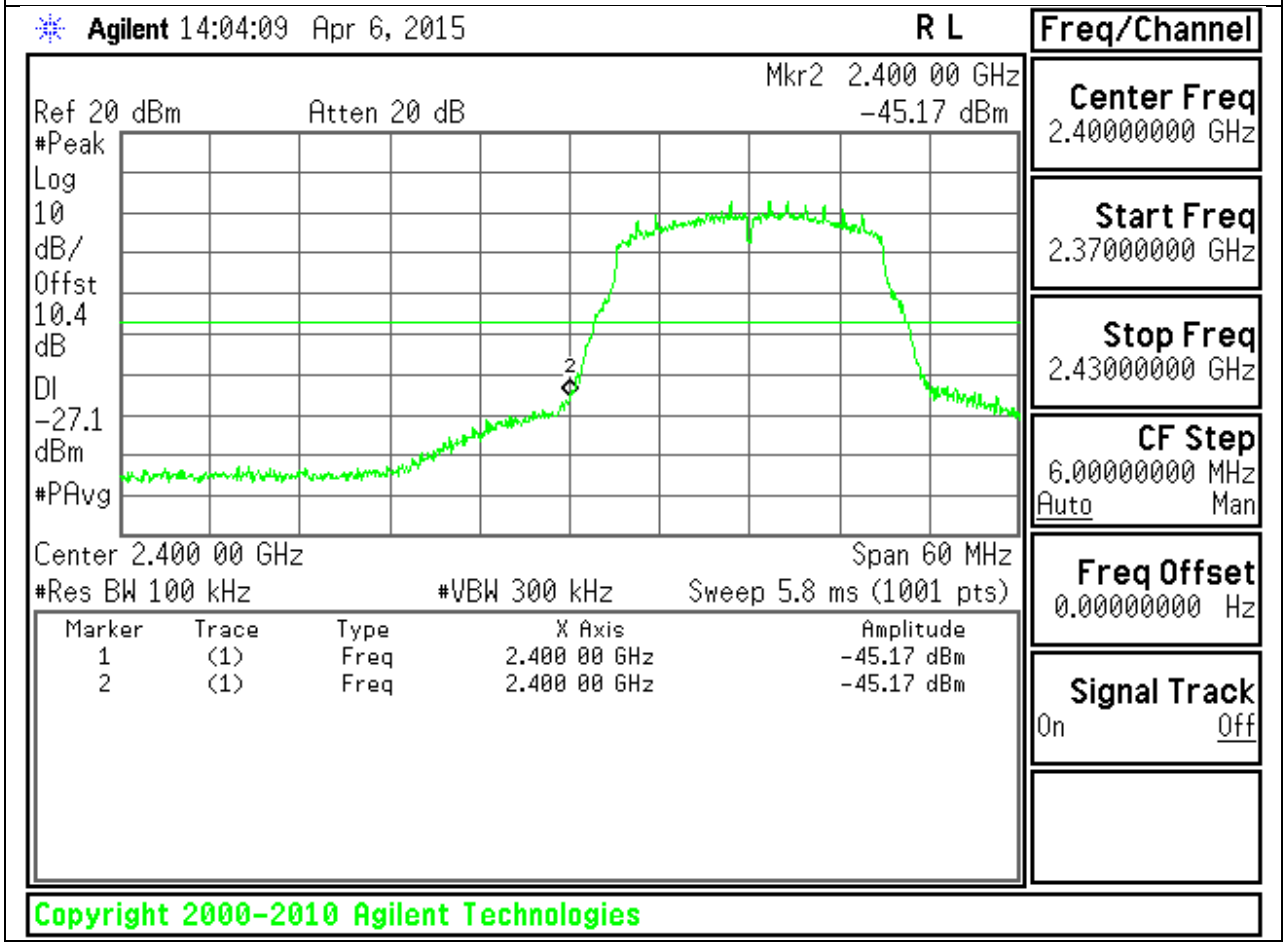
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



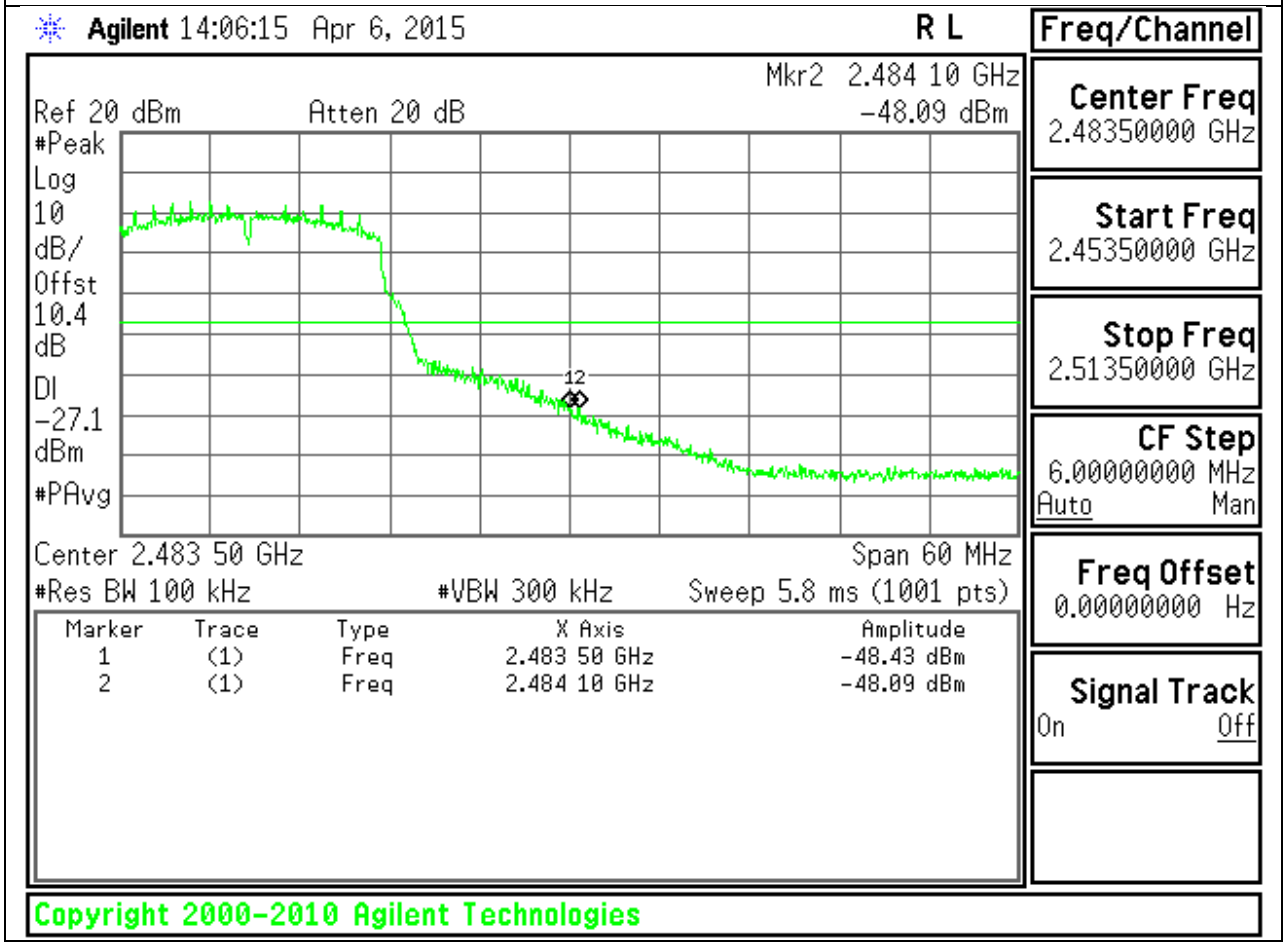
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



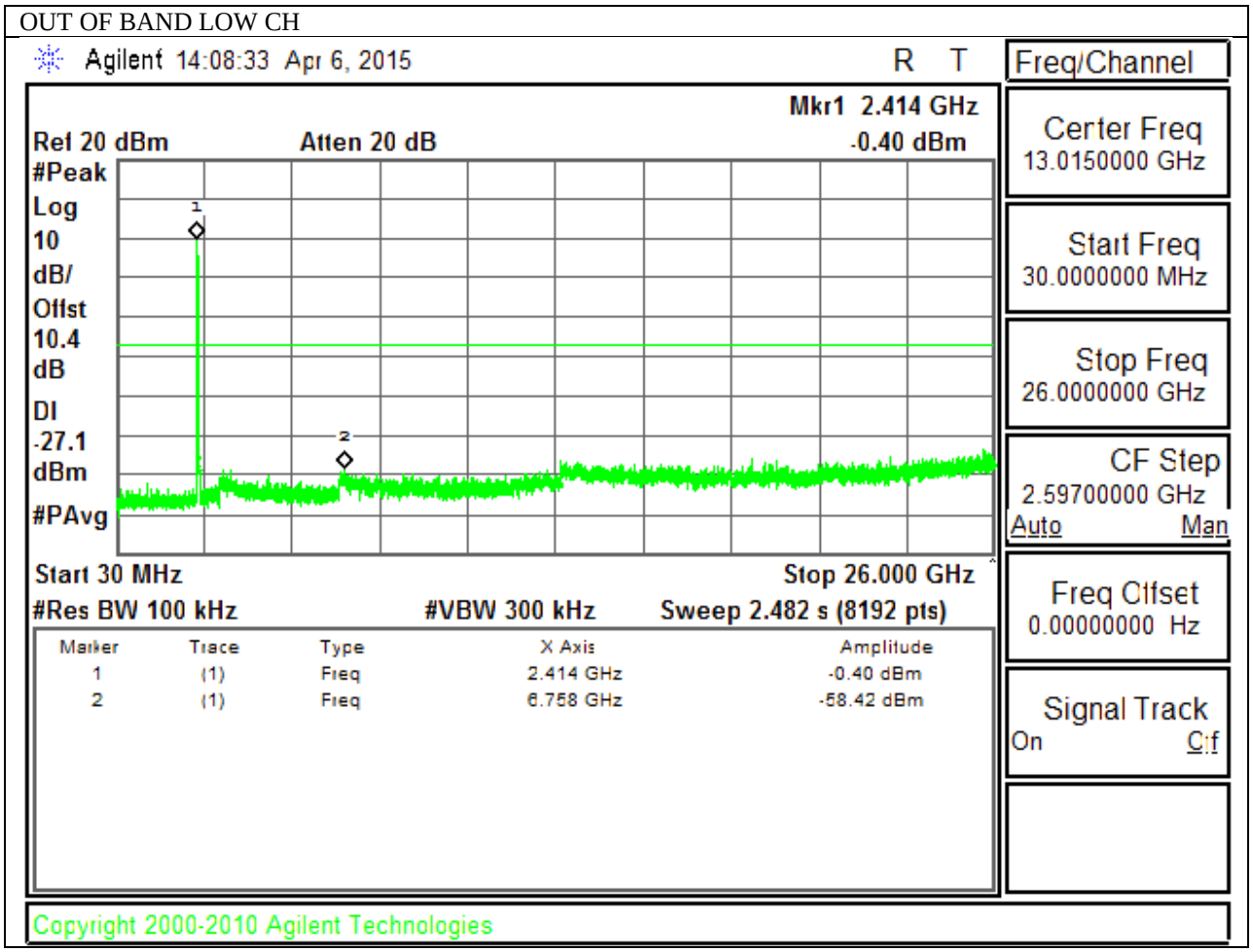
HIGH CHANNEL BANDEDGE

AUTHORIZED BAND EDGE HIGH CH

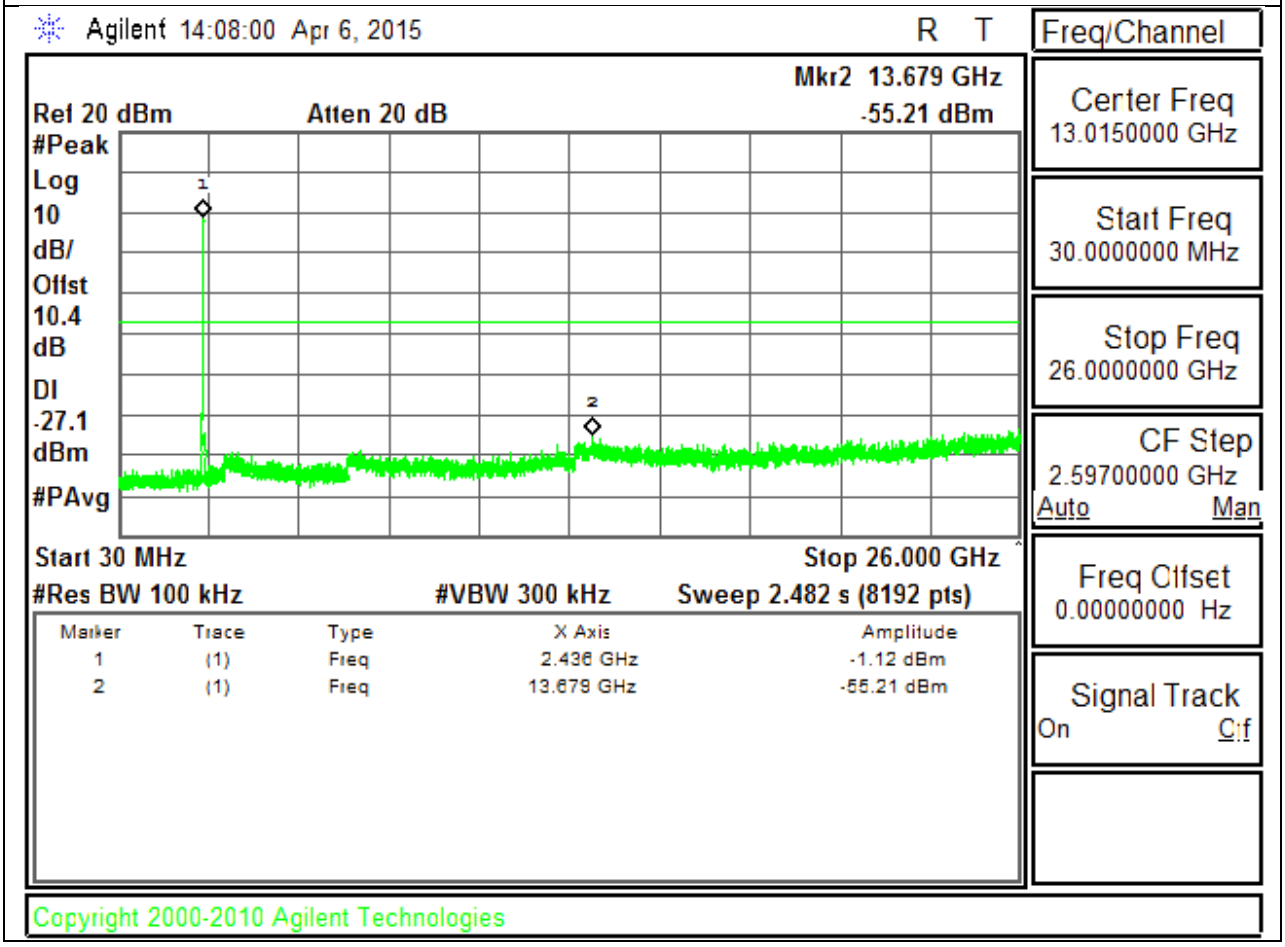


OUT-OF-BAND EMISSIONS

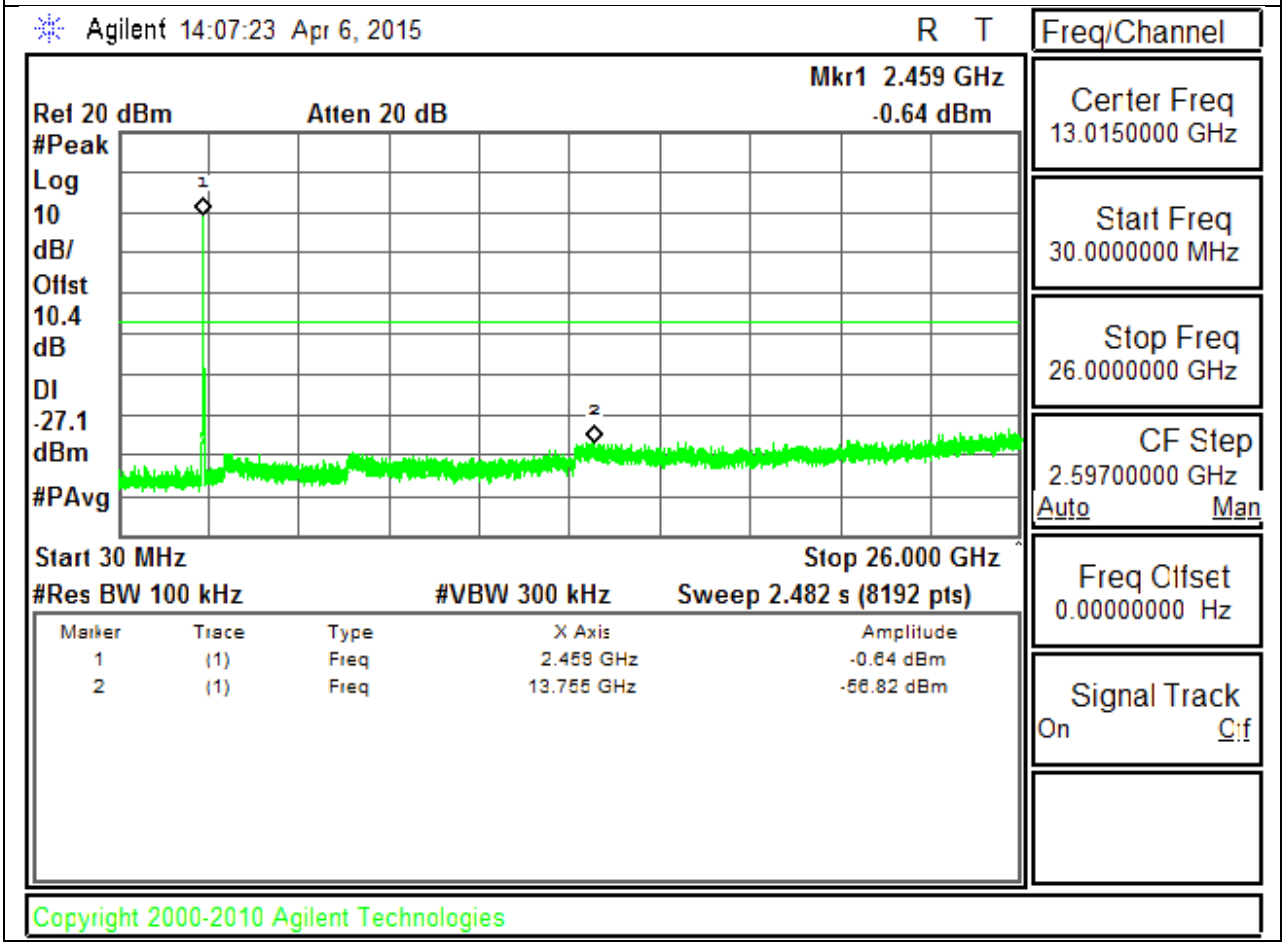
OUT OF BAND LOW CH



OUT OF BAND MID CH



OUT OF BAND HIGH CH



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN Clause 8.9 (Transmitter)

IC RSS-GEN Clause 7 (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 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor= 10log (1/x) For this sample B mode = 0dB (duty cycle >98%); G mode = 0.27dB; N mode = 0.27dB.

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.

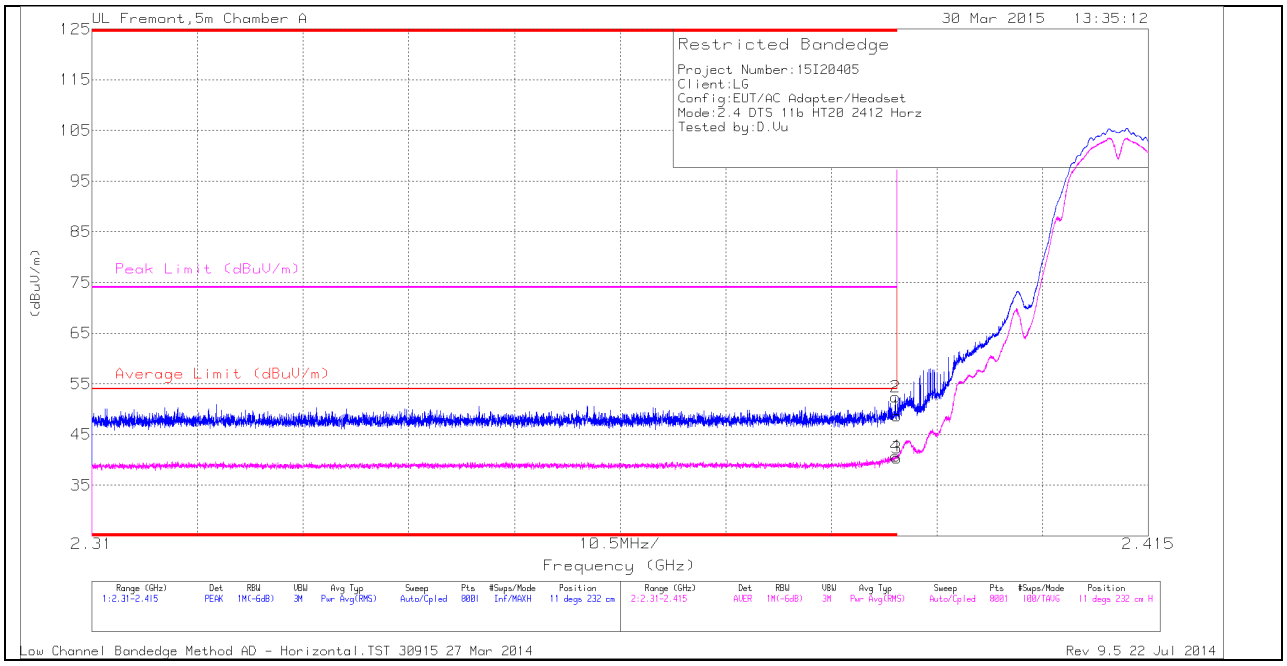
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

10.2. TRANSMITTER ABOVE 1 GHz

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

RESTRICTED BANDEDGE (LOW CHANNEL)

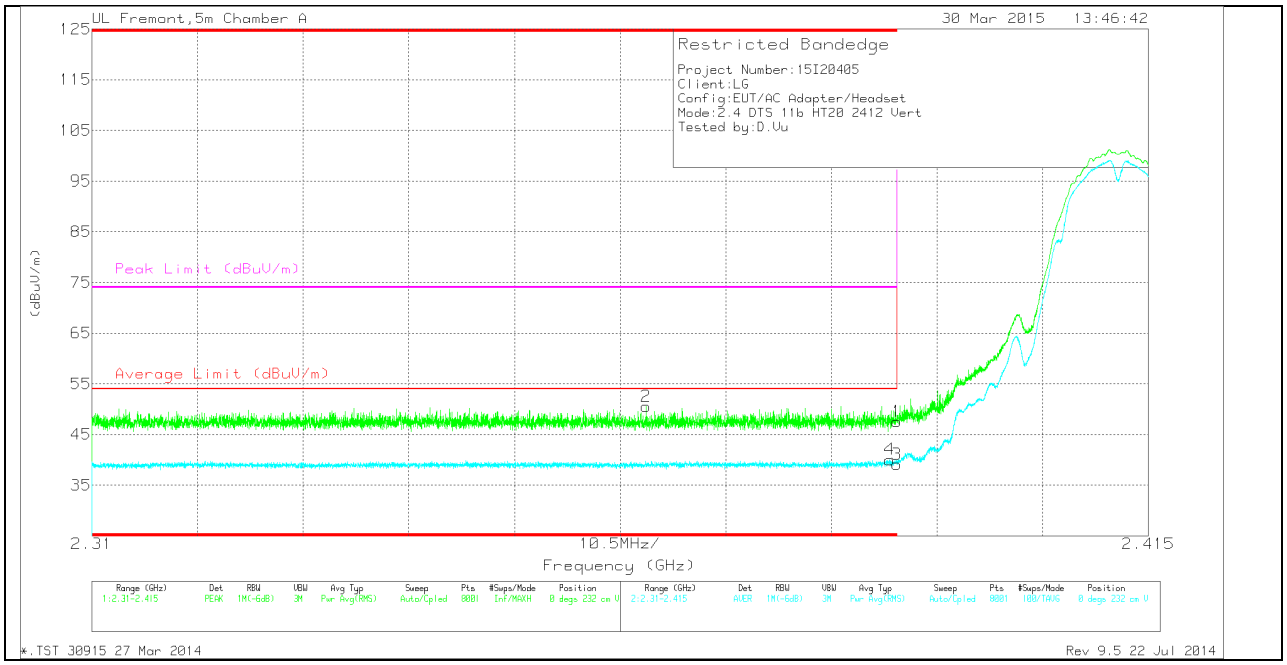
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	38.89	PK	32	-22.2	0	48.69	-	-	74	-25.31	11	232	H
2	* 2.39	42.56	PK	32	-22.2	0	52.36	-	-	74	-21.64	11	232	H
3	* 2.39	30.26	RMS	32	-22.2	0	40.33	54	-13.67	-	-	11	232	H
4	* 2.39	30.65	RMS	32	-22.2	0	40.72	54	-13.28	-	-	11	232	H

VERTICAL PEAK AND AVERAGE PLOT

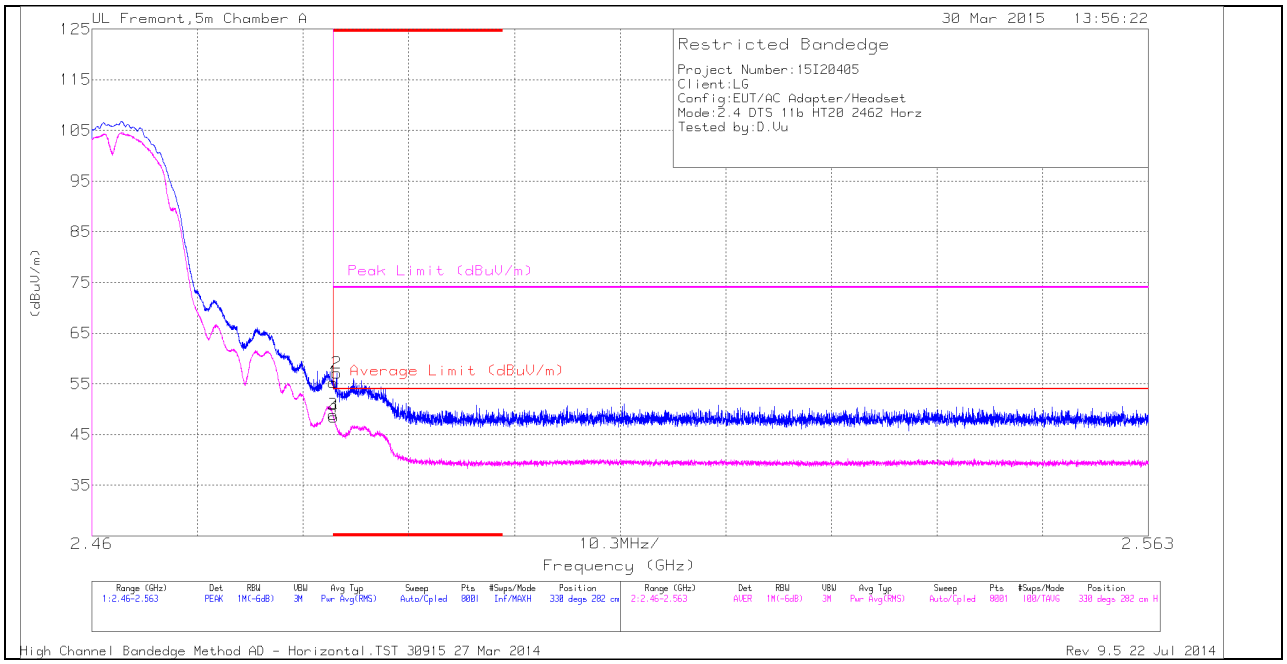


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	37.71	PK	32	-22.2	0	47.51	-	-	74	-26.49	0	232	V
2	* 2.365	40.83	PK	31.9	-22.2	0	50.53	-	-	74	-23.47	0	232	V
3	* 2.39	29.07	RMS	32	-22.2	0	39.14	54	-14.86	-	-	0	232	V
4	* 2.389	29.98	RMS	32	-22.2	0	40.05	54	-13.95	-	-	0	232	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

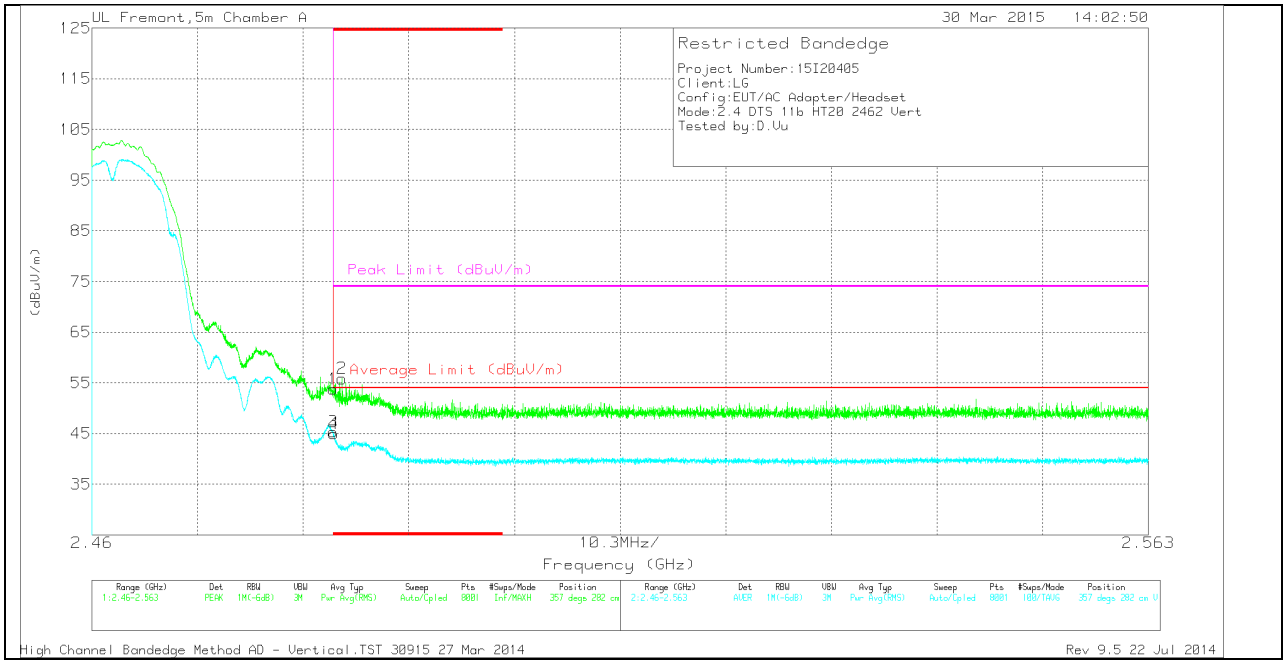
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	45.05	PK	32.1	-21.9	0	55.25	-	-	74	-18.75	330	282	H
2	* 2.484	46.88	PK	32.1	-21.9	0	57.08	-	-	74	-16.92	330	282	H
3	* 2.484	38.42	RMS	32.1	-21.9	0	48.89	54	-5.11	-	-	330	282	H
4	* 2.484	38	RMS	32.1	-21.9	0	48.47	54	-5.53	-	-	330	282	H

VERTICAL PEAK AND AVERAGE PLOT

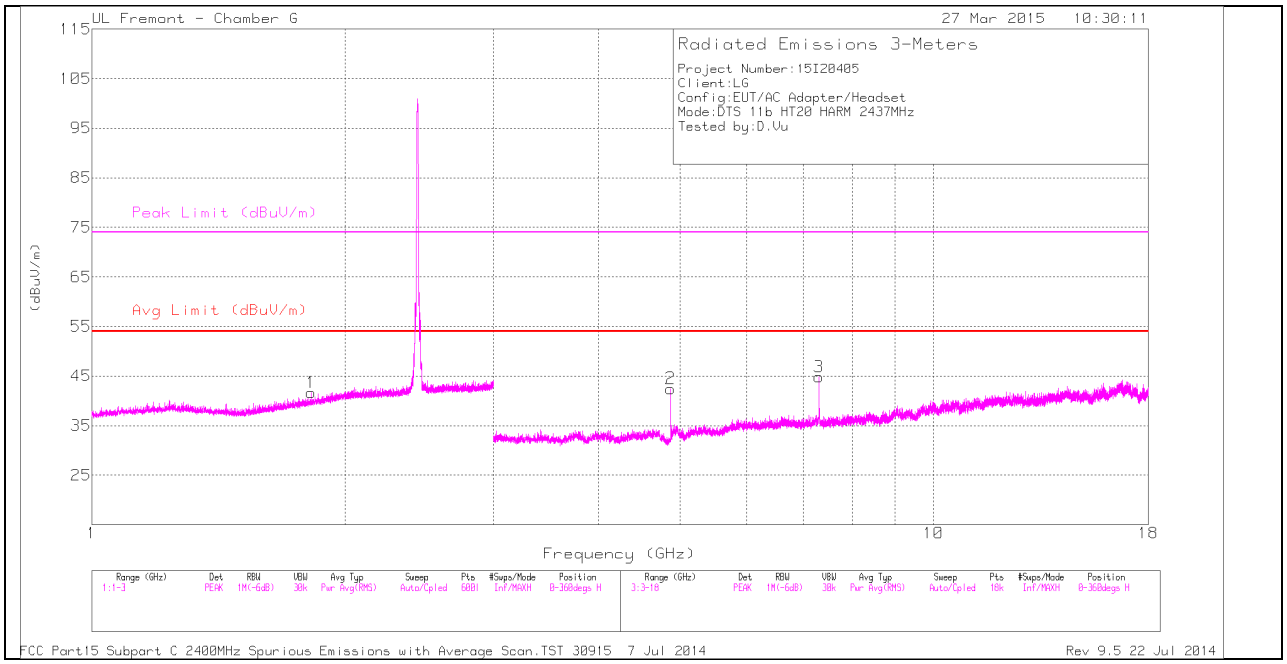


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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	43.55	PK	32.1	-21.9	0	53.75	-	-	74	-20.25	357	282	V
2	* 2.484	45.62	PK	32.1	-21.9	0	55.82	-	-	74	-18.18	357	282	V
3	* 2.484	34.81	RMS	32.1	-21.9	0	45.28	54	-8.72	-	-	357	282	V
4	* 2.484	34.5	RMS	32.1	-21.9	0	44.97	54	-9.03	-	-	357	282	V

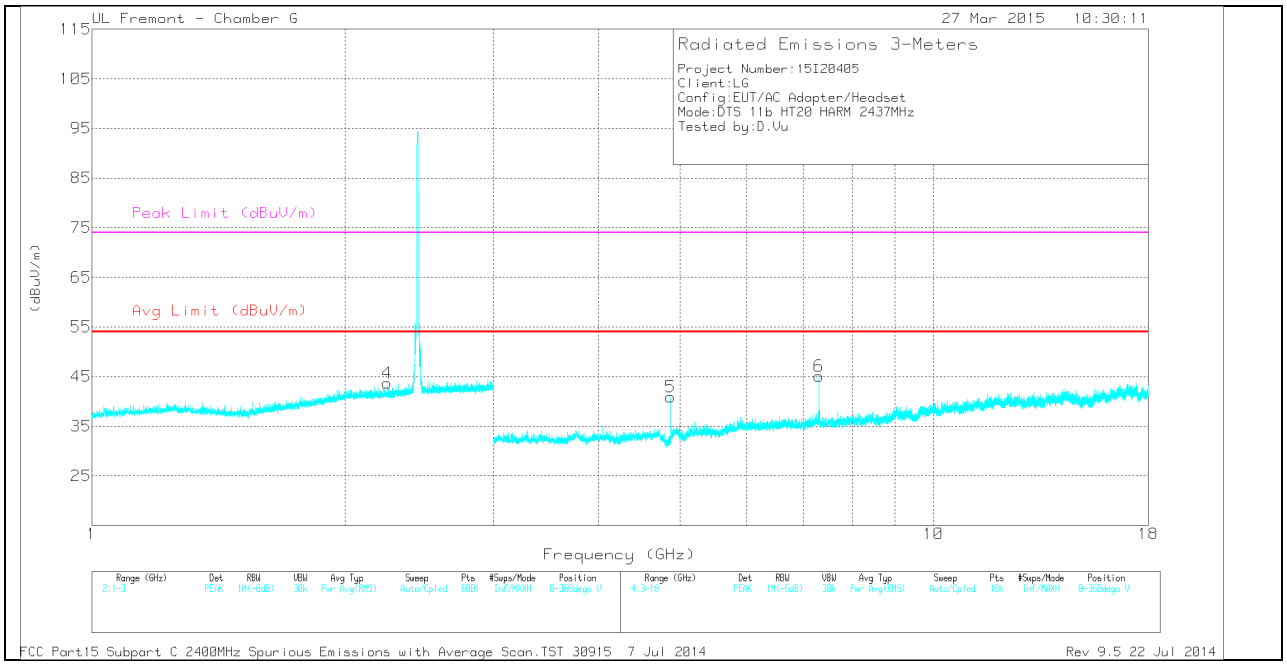
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.244	37.32	PK	31.5	-25.1	0	43.72	-	-	74	-30.28	0-360	201	V
2	* 4.874	41.49	PK	34.1	-33.1	0	42.49	-	-	74	-31.51	0-360	201	H
3	* 7.31	40.28	PK	35.6	-31	0	44.88	-	-	74	-29.12	0-360	101	H
5	* 4.874	39.88	PK	34.1	-33.1	0	40.88	-	-	74	-33.12	0-360	201	V
6	* 7.311	40.62	PK	35.6	-31.1	0	45.12	-	-	74	-28.88	0-360	201	V
1	1.823	36.96	PK	30.1	-25.4	0	41.66	-	-	-	-	0-360	101	H

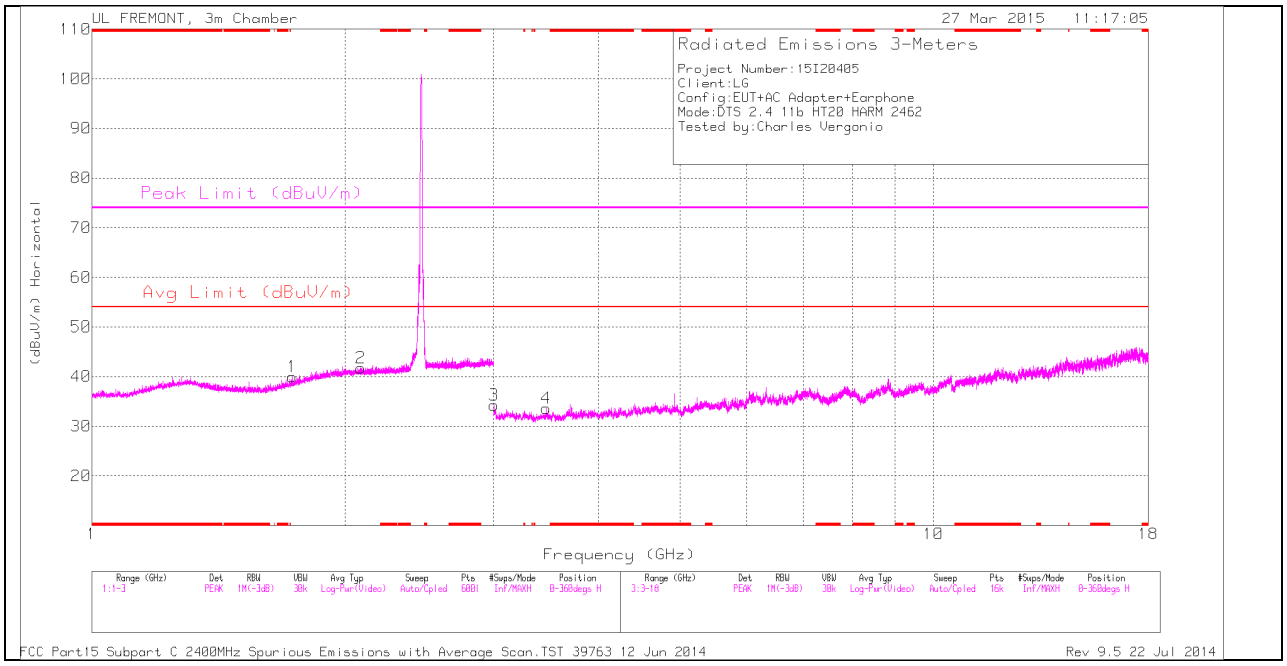
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	41.39	PK2	34.1	-33.1	0	42.39	-	-	74	-31.61	0	202	H
* 4.874	32.19	MAv1	34.1	-33.1	0	33.19	54	-20.81	-	-	0	202	H
* 7.311	45.54	PK2	35.6	-31.1	0	50.04	-	-	74	-23.96	0	202	V
* 7.312	38.04	MAv1	35.6	-31.1	0	42.54	54	-11.46	-	-	0	202	V

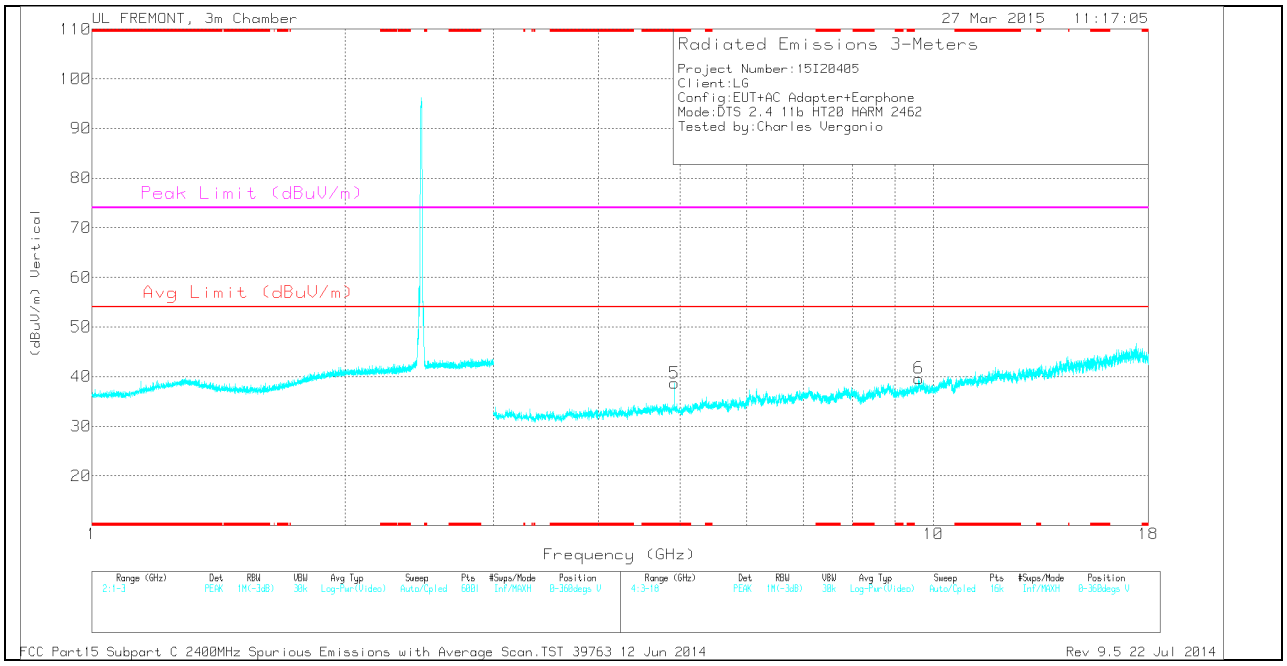
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 4.924	35.11	PK	34	-30.4	38.71	-	-	74	-35.29	0-360	200	V
1	1.731	33.96	PK	29.4	-23.4	39.96	-	-	-	-	0-360	100	H
2	2.087	33.3	PK	31.5	-23.1	41.7	-	-	-	-	0-360	100	H
3	3.005	32.53	PK	32.7	-31	34.23	-	-	-	-	0-360	100	H
4	3.466	31.82	PK	32.8	-31	33.62	-	-	-	-	0-360	200	H
6	9.611	28.25	PK	36.7	-25.3	39.65	-	-	-	-	0-360	100	V

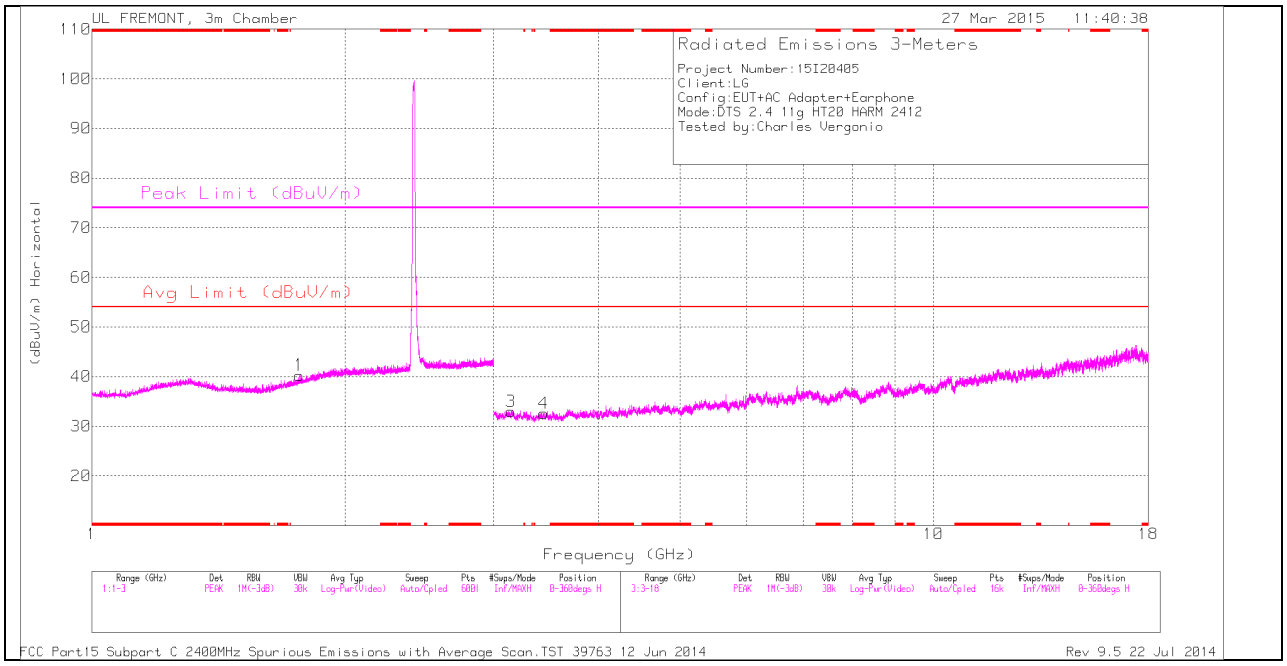
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.924	43	PK2	34	-30.4	46.6	-	-	74	-27.4	147	131	V
* 4.924	34.26	MAv1	34	-30.4	37.86	54	-16.14	-	-	147	131	V

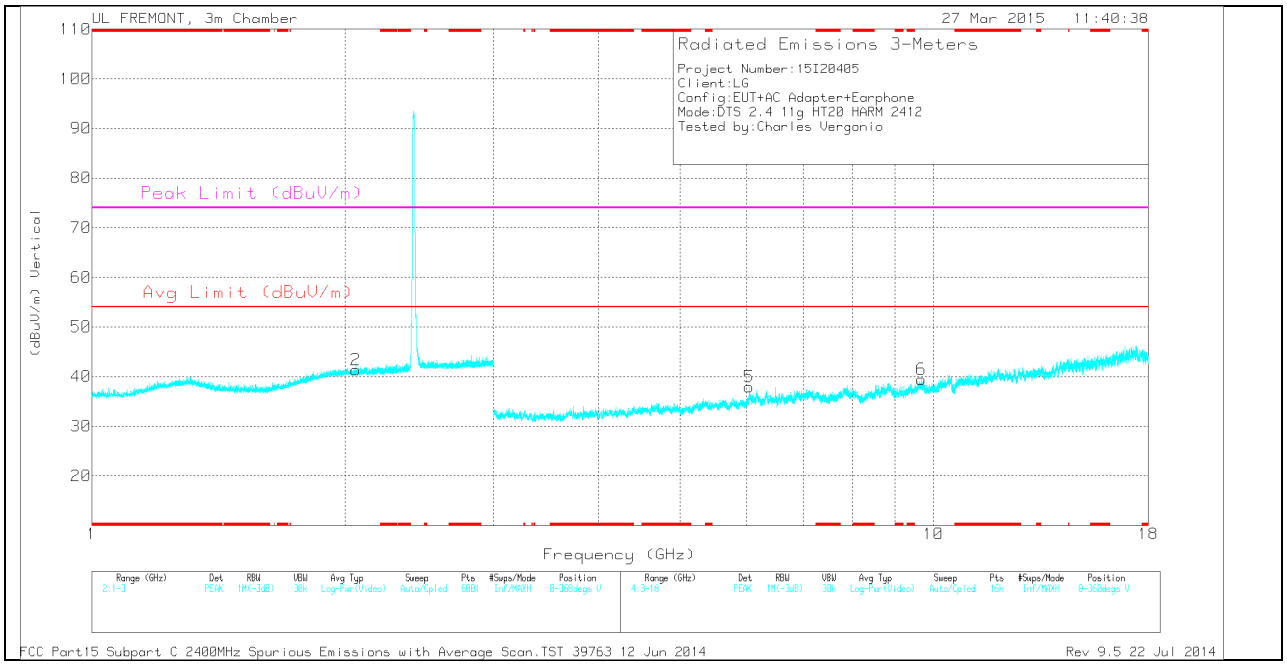
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	1.764	33.88	PK	29.8	-23.4	40.28	-	-	-	-	0-360	200	H
2	2.06	32.94	PK	31.5	-23.1	41.34	-	-	-	-	0-360	100	V
3	3.147	31.31	PK	32.7	-31	33.01	-	-	-	-	0-360	100	H
4	3.443	31.46	PK	32.7	-31.5	32.66	-	-	-	-	0-360	200	H
5	6.039	32.01	PK	35.2	-29.3	37.91	-	-	-	-	0-360	100	V
6	9.669	27.93	PK	36.8	-25.3	39.43	-	-	-	-	0-360	100	V

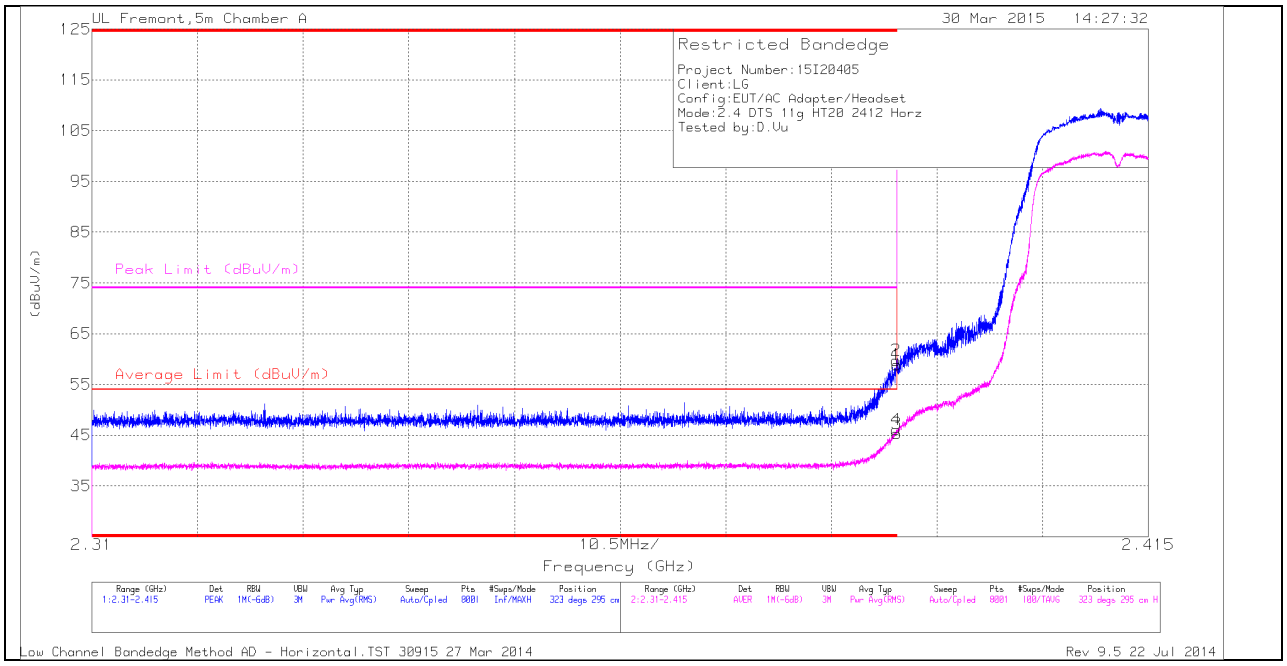
PK - Peak detector

FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

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

RESTRICTED BANDEDGE (LOW CHANNEL)

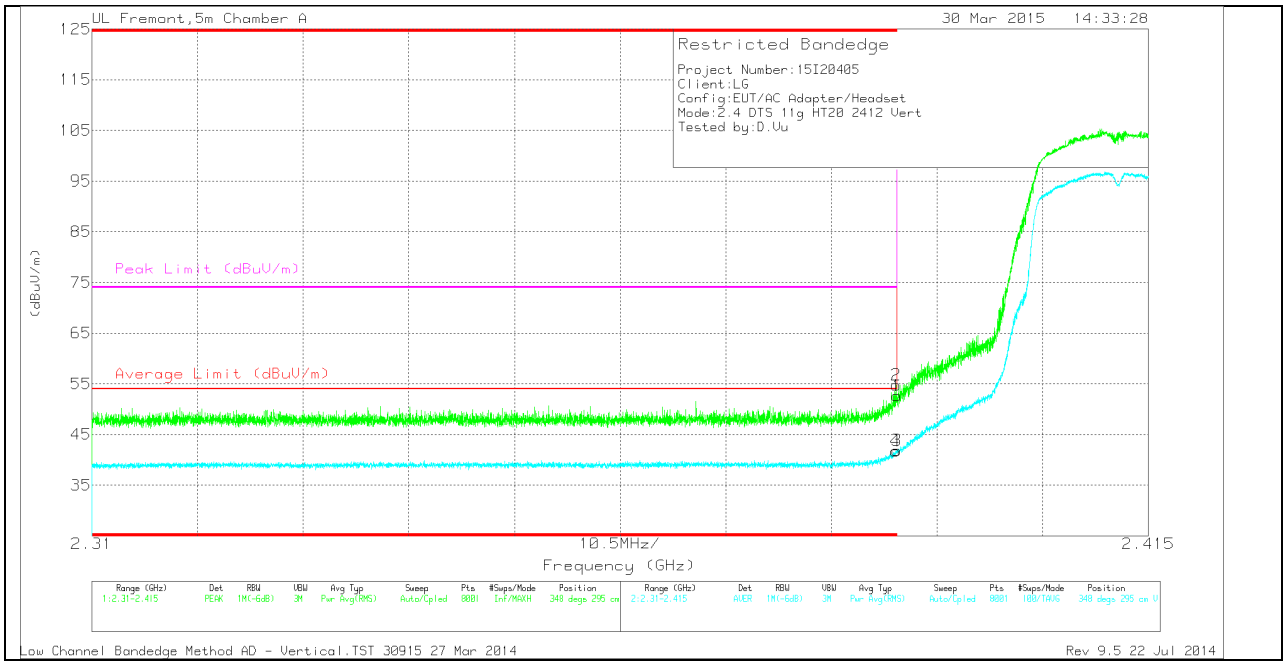
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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	49.04	PK	32	-22.2	0	58.84	-	-	74	-15.16	323	295	H
2	* 2.39	49.9	PK	32	-22.2	0	59.7	-	-	74	-14.3	323	295	H
3	* 2.39	35.3	RMS	32	-22.2	.27	45.37	54	-8.63	-	-	323	295	H
4	* 2.39	35.97	RMS	32	-22.2	.27	46.04	54	-7.96	-	-	323	295	H

VERTICAL PEAK AND AVERAGE PLOT

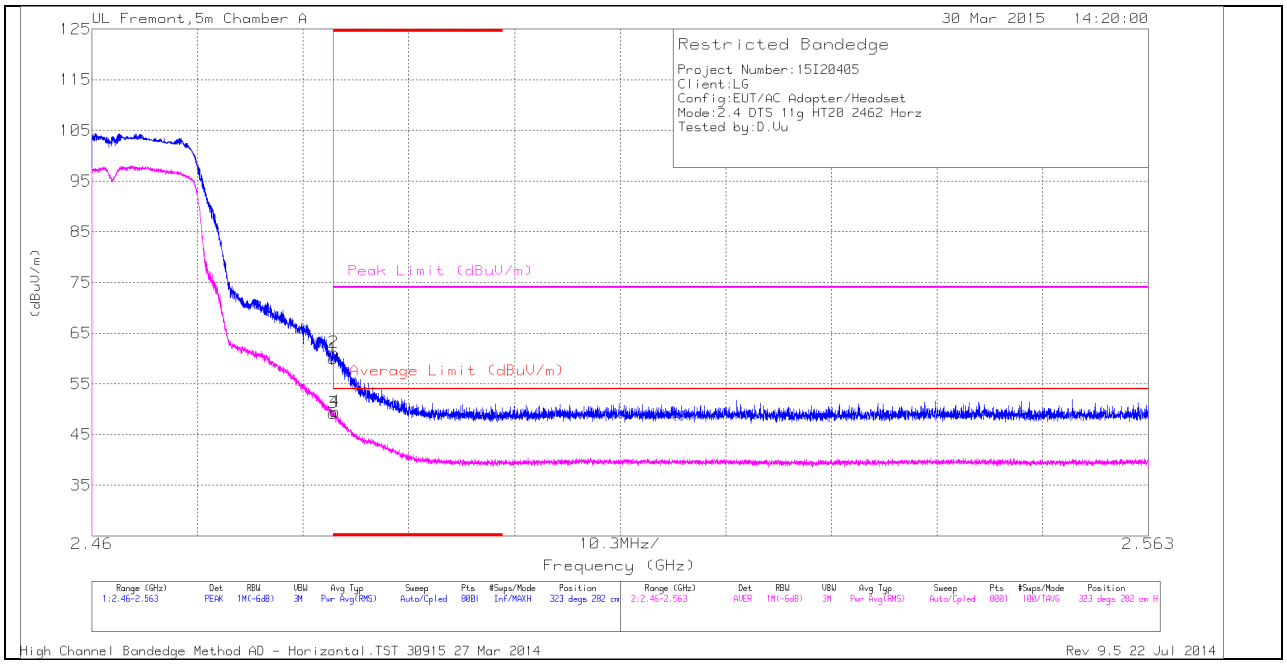


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	42.8	PK	32	-22.2	0	52.6	-	-	74	-21.4	348	295	V
2	* 2.39	44.97	PK	32	-22.2	0	54.77	-	-	74	-19.23	348	295	V
3	* 2.39	31.77	RMS	32	-22.2	.27	41.84	54	-12.16	-	-	348	295	V
4	* 2.39	31.69	RMS	32	-22.2	.27	41.76	54	-12.24	-	-	348	295	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

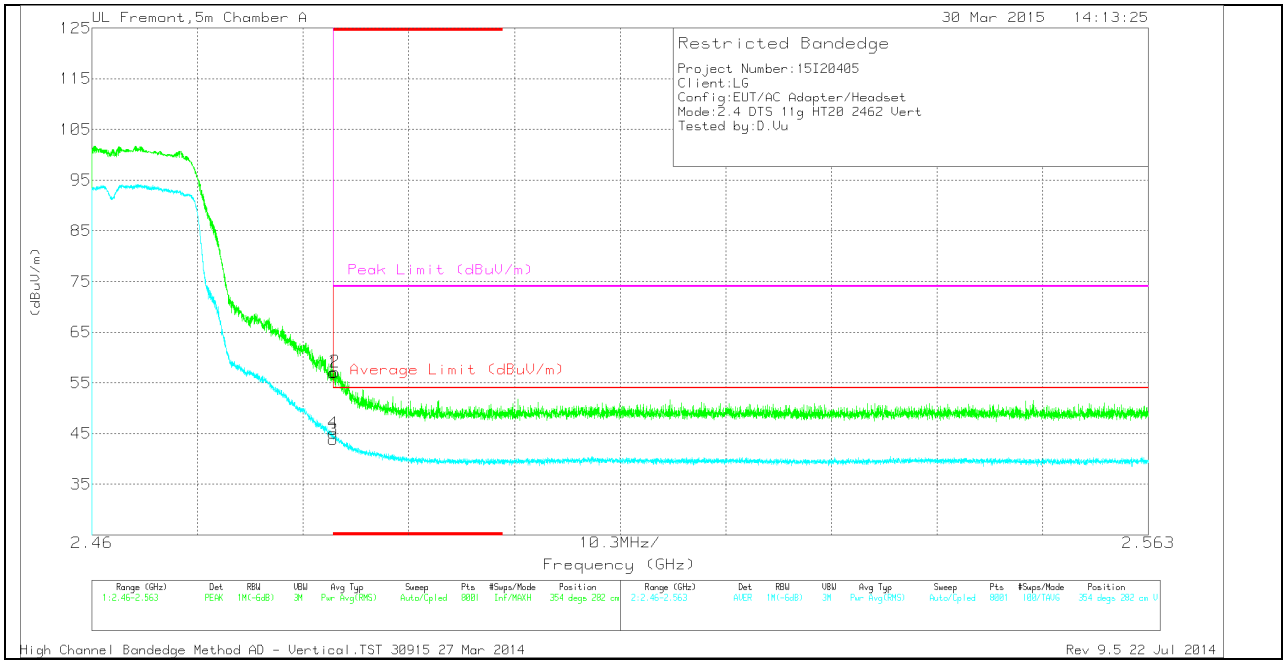
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	49.76	PK	32.1	-21.9	0	59.96	-	-	74	-14.04	323	282	H
2	* 2.484	51.07	PK	32.1	-21.9	0	61.27	-	-	74	-12.73	323	282	H
3	* 2.484	38.77	RMS	32.1	-21.9	.27	49.24	54	-4.76	-	-	323	282	H
4	* 2.484	39.05	RMS	32.1	-21.9	.27	49.52	54	-4.48	-	-	323	282	H

VERTICAL PEAK AND AVERAGE PLOT

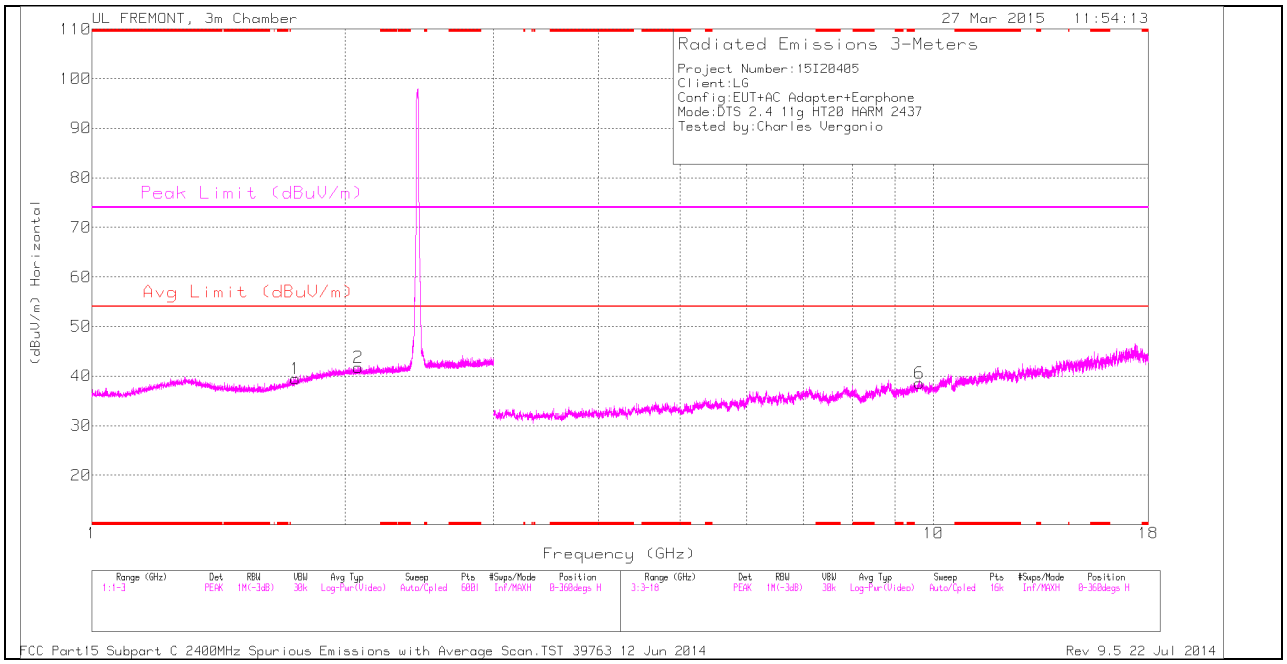


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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	46.82	PK	32.1	-21.9	0	57.02	-	-	74	-16.98	354	282	V
2	* 2.484	46.98	PK	32.1	-21.9	0	57.18	-	-	74	-16.82	354	282	V
3	* 2.484	33.38	RMS	32.1	-21.9	.27	43.85	54	-10.15	-	-	354	282	V
4	* 2.484	34.55	RMS	32.1	-21.9	.27	45.02	54	-8.98	-	-	354	282	V

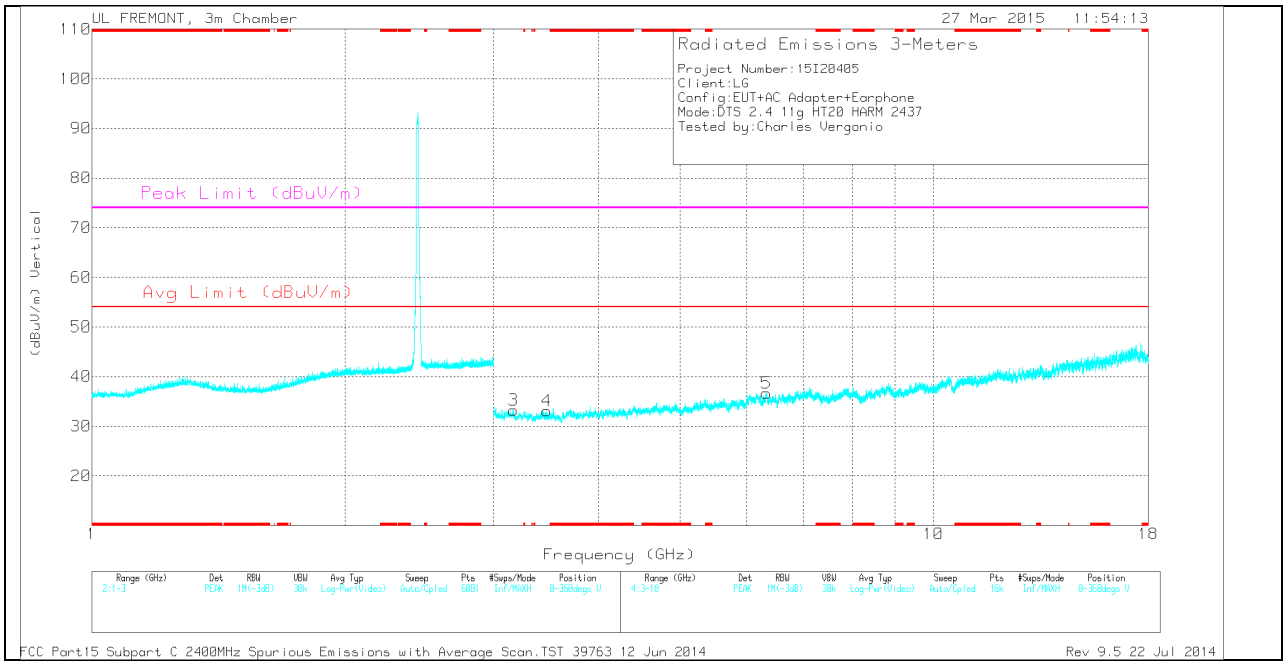
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

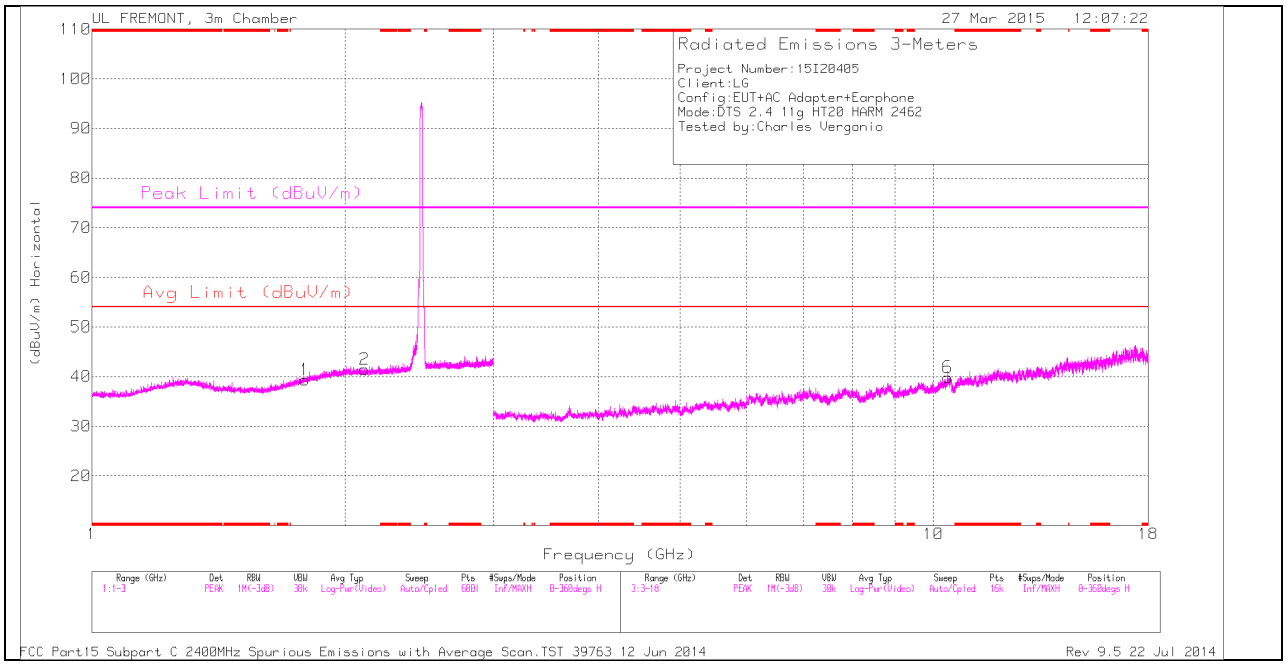
TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	1.747	33.28	PK	29.6	-23.4	39.48	-	-	-	-	0-360	100	H
2	2.072	33.36	PK	31.5	-23.1	41.76	-	-	-	-	0-360	100	H
3	3.17	31.68	PK	32.7	-31.1	33.28	-	-	-	-	0-360	200	V
4	3.471	31.52	PK	32.8	-31.2	33.12	-	-	-	-	0-360	200	V
5	6.332	30.42	PK	35.4	-29.1	36.72	-	-	-	-	0-360	100	V
6	9.629	27.24	PK	36.7	-25.4	38.54	-	-	-	-	0-360	200	H

PK - Peak detector

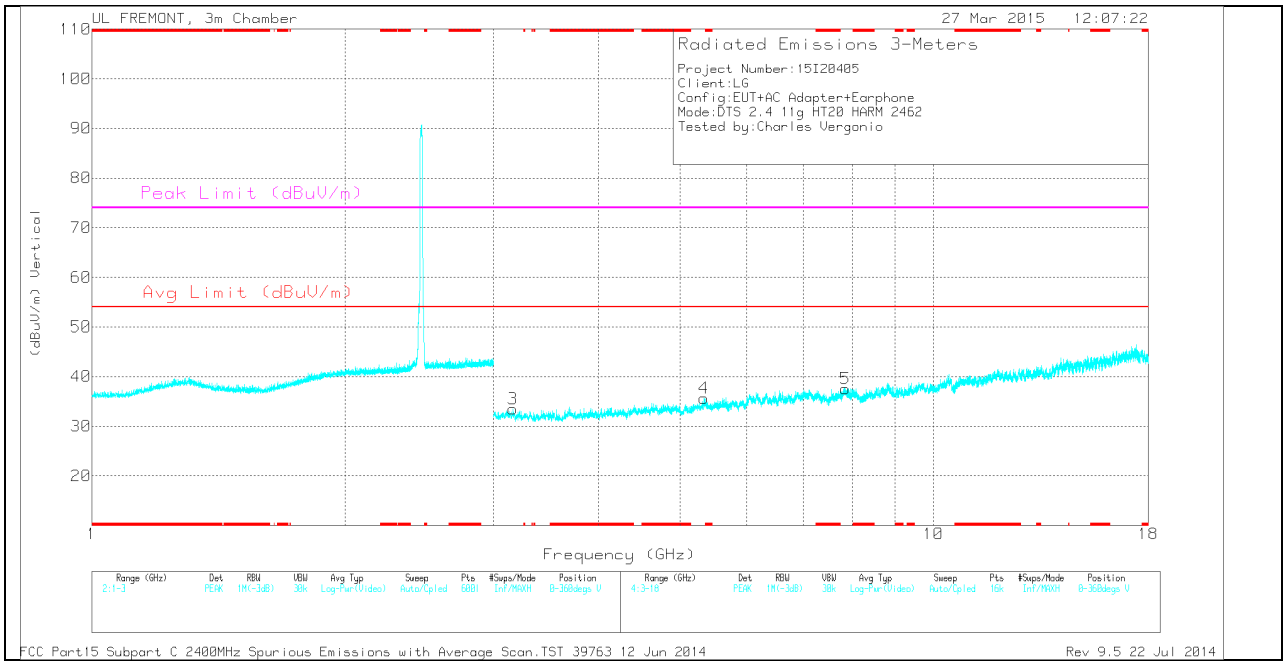
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

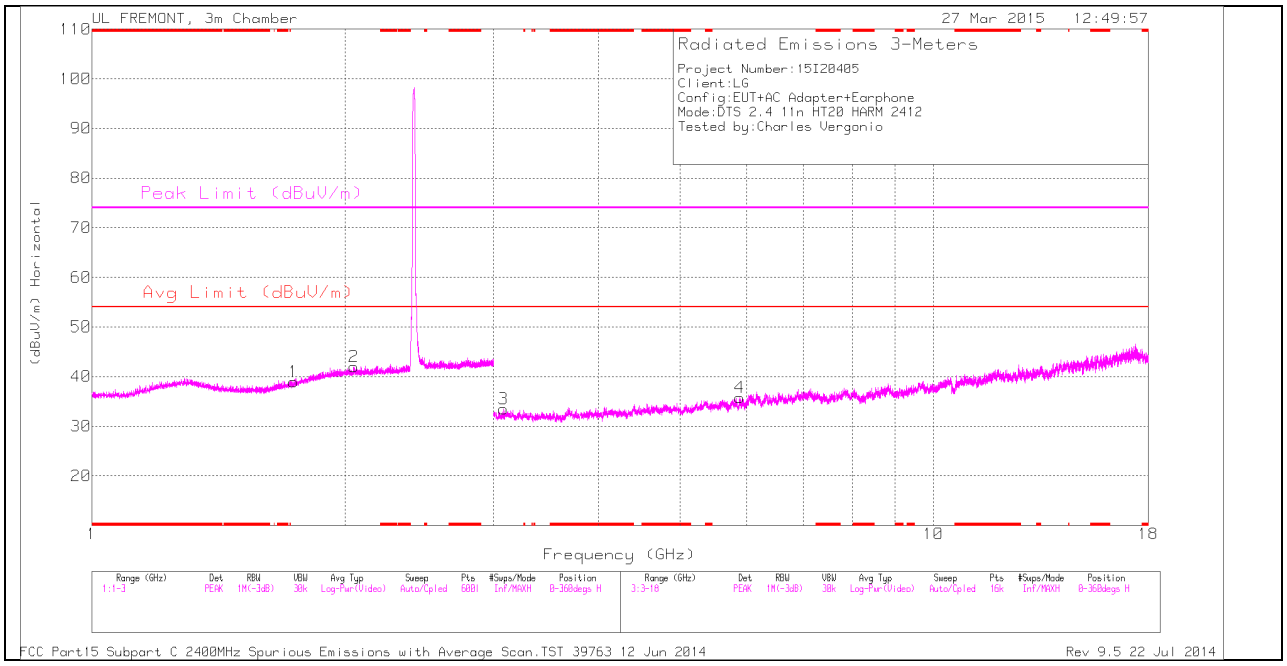
TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	1.792	32.69	PK	30.1	-23.4	39.39	-	-	-	-	0-360	100	H
2	2.108	33.01	PK	31.5	-23	41.51	-	-	-	-	0-360	200	H
3	3.162	31.77	PK	32.7	-31	33.47	-	-	-	-	0-360	200	V
4	5.339	31.29	PK	34.5	-30.1	35.69	-	-	-	-	0-360	100	V
5	7.855	29.12	PK	35.8	-27.4	37.52	-	-	-	-	0-360	100	V
6	10.396	28	PK	37.3	-25.4	39.9	-	-	-	-	0-360	200	H

PK - Peak detector

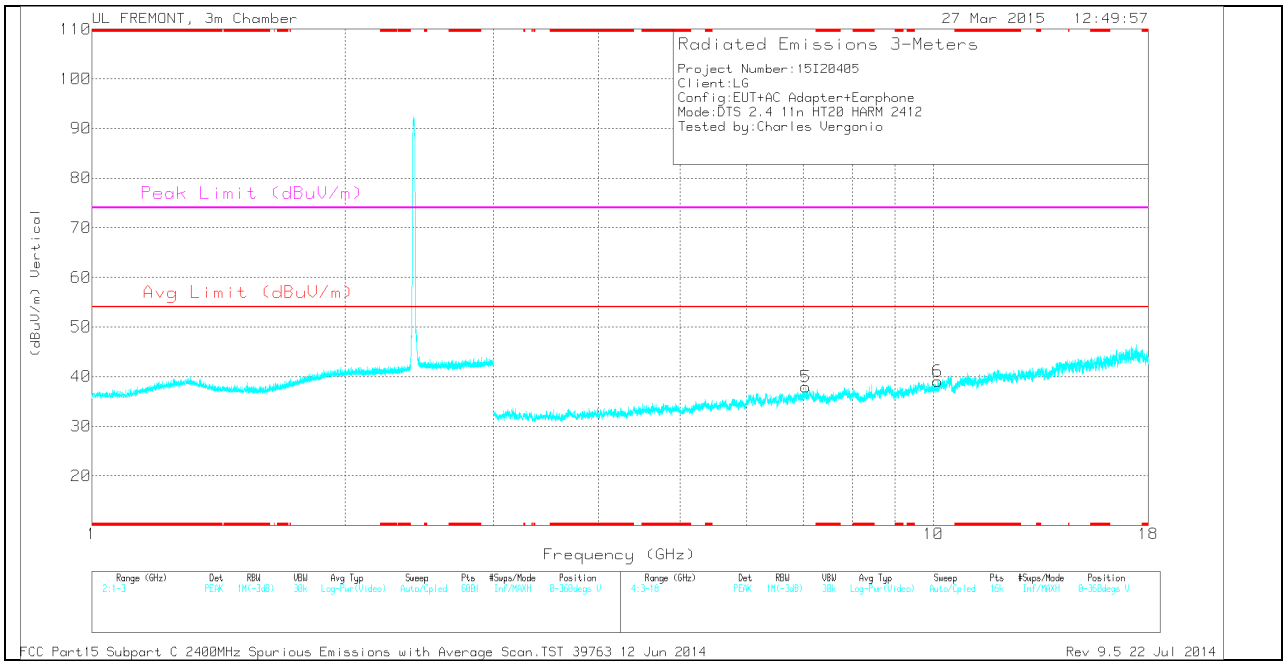
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	1.735	32.94	PK	29.4	-23.4	38.94	-	-	-	-	0-360	200	H
2	2.047	33.71	PK	31.5	-23.2	42.01	-	-	-	-	0-360	100	H
3	3.085	32.43	PK	32.8	-31.7	33.53	-	-	-	-	0-360	200	H
4	5.881	30.56	PK	35	-29.8	35.76	-	-	-	-	0-360	100	H
5	7.051	30.99	PK	35.6	-28.6	37.99	-	-	-	-	0-360	200	V
6	10.111	27.45	PK	37	-25.4	39.05	-	-	-	-	0-360	100	V

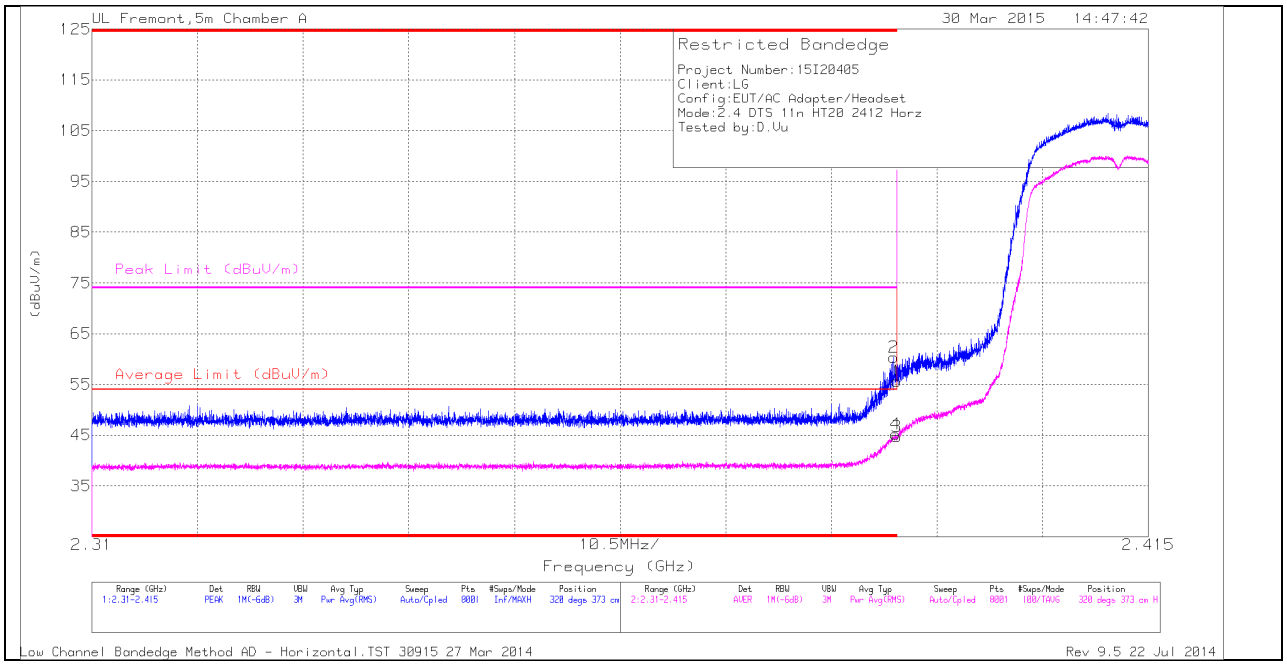
PK - Peak detector

FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

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

RESTRICTED BANDEDGE (LOW CHANNEL)

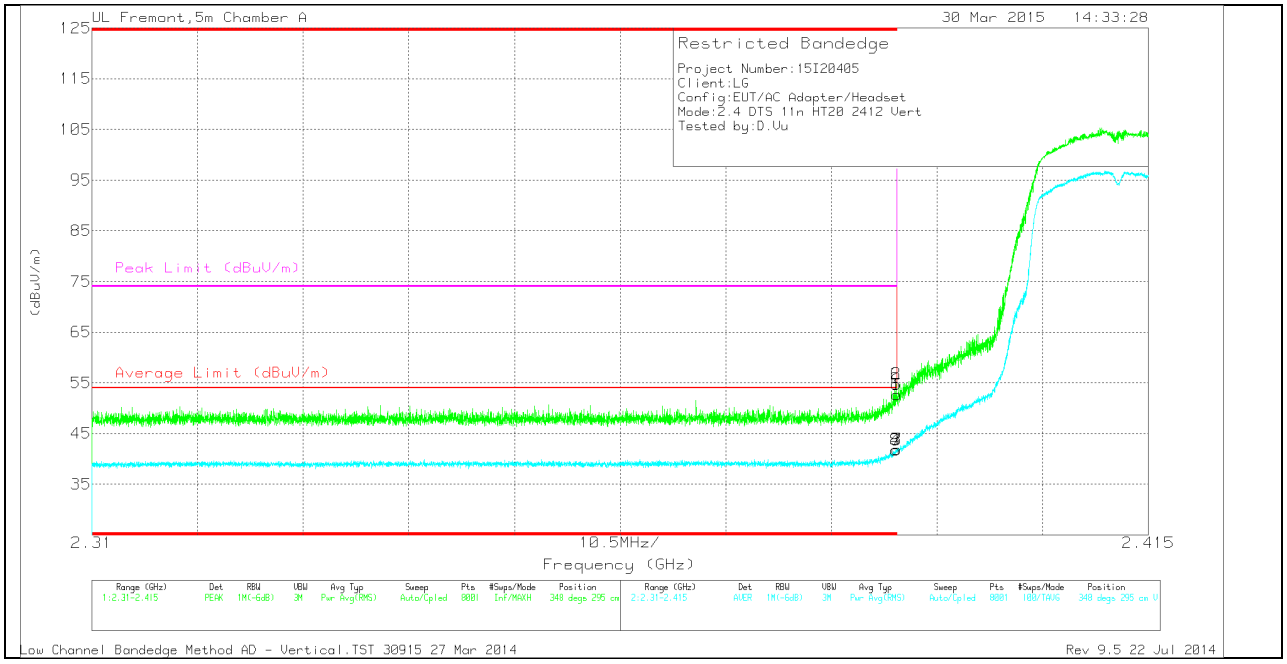
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	45.84	PK	32	-22.2	0	55.64	-	-	74	-18.36	320	373	H
2	* 2.39	50.51	PK	32	-22.2	0	60.31	-	-	74	-13.69	320	373	H
3	* 2.39	34.6	RMS	32	-22.2	.27	44.67	54	-9.33	-	-	320	373	H
4	* 2.39	35.1	RMS	32	-22.2	.27	45.17	54	-8.83	-	-	320	373	H

VERTICAL PEAK AND AVERAGE PLOT

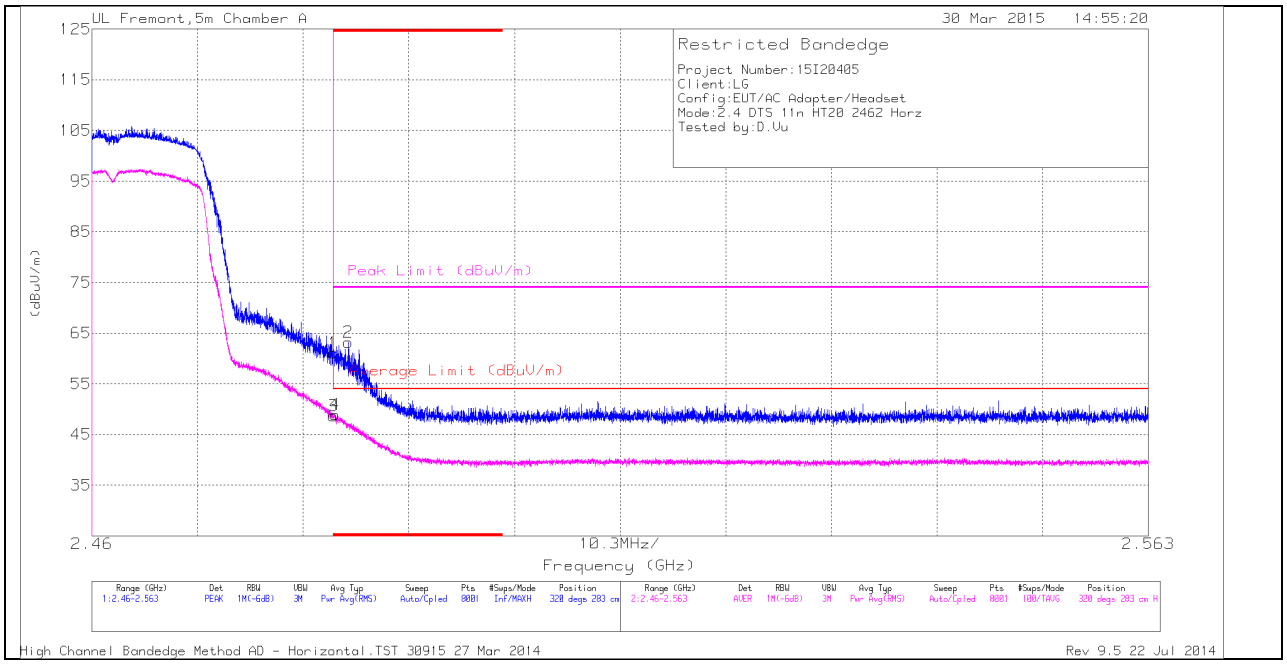


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	42.8	PK	32	-22.2	0	52.6	-	-	74	-21.4	348	295	V
2	* 2.39	44.97	PK	32	-22.2	0	54.77	-	-	74	-19.23	348	295	V
3	* 2.39	31.77	RMS	32	-22.2	.27	41.84	54	-12.16	-	-	348	295	V
4	* 2.39	31.69	RMS	32	-22.2	.27	41.76	54	-12.24	-	-	348	295	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

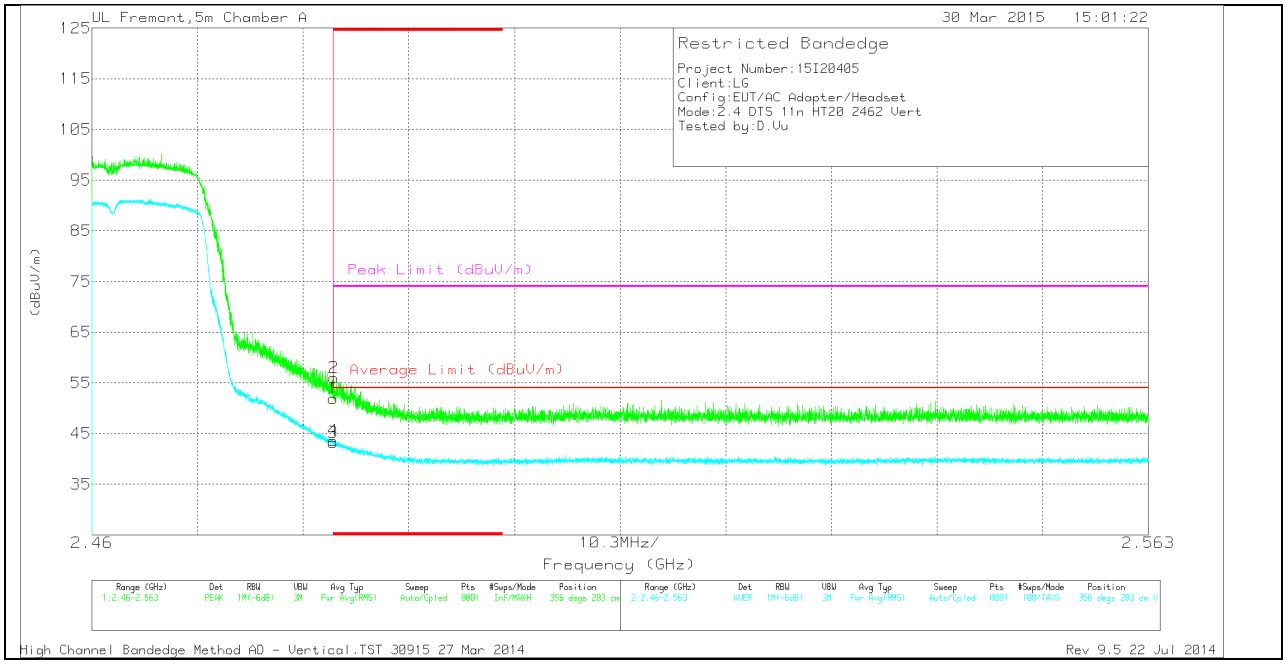
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	DC Corr (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	50.93	PK	32.1	-21.9	0	61.13	-	-	74	-12.87	320	283	H
2	* 2.485	53.04	PK	32.1	-21.9	0	63.24	-	-	74	-10.76	320	283	H
3	* 2.484	38.22	RMS	32.1	-21.9	.27	48.69	54	-5.31	-	-	320	283	H
4	* 2.484	38.5	RMS	32.1	-21.9	.27	48.97	54	-5.03	-	-	320	283	H

VERTICAL PEAK AND AVERAGE PLOT

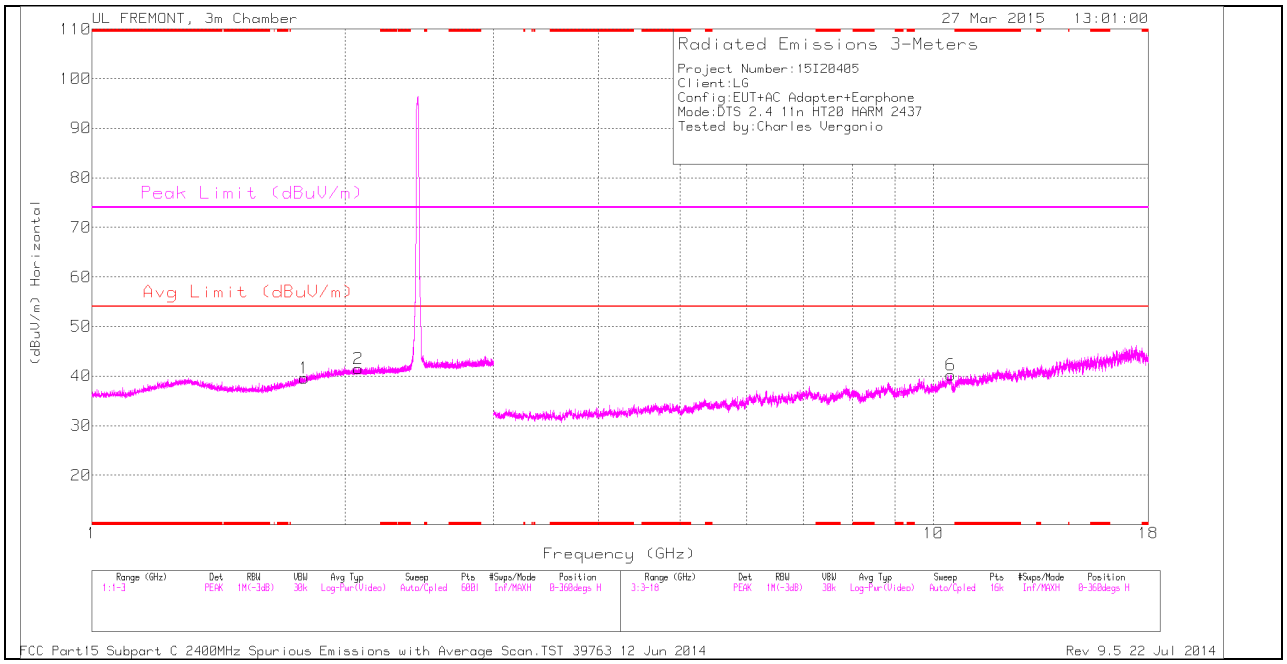


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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	41.67	PK	32.1	-21.9	0	51.87	-	-	74	-22.13	356	283	V
2	* 2.484	45.85	PK	32.1	-21.9	0	56.05	-	-	74	-17.95	356	283	V
3	* 2.484	32.78	RMS	32.1	-21.9	.27	43.25	54	-10.75	-	-	356	283	V
4	* 2.484	33.17	RMS	32.1	-21.9	.27	43.64	54	-10.36	-	-	356	283	V

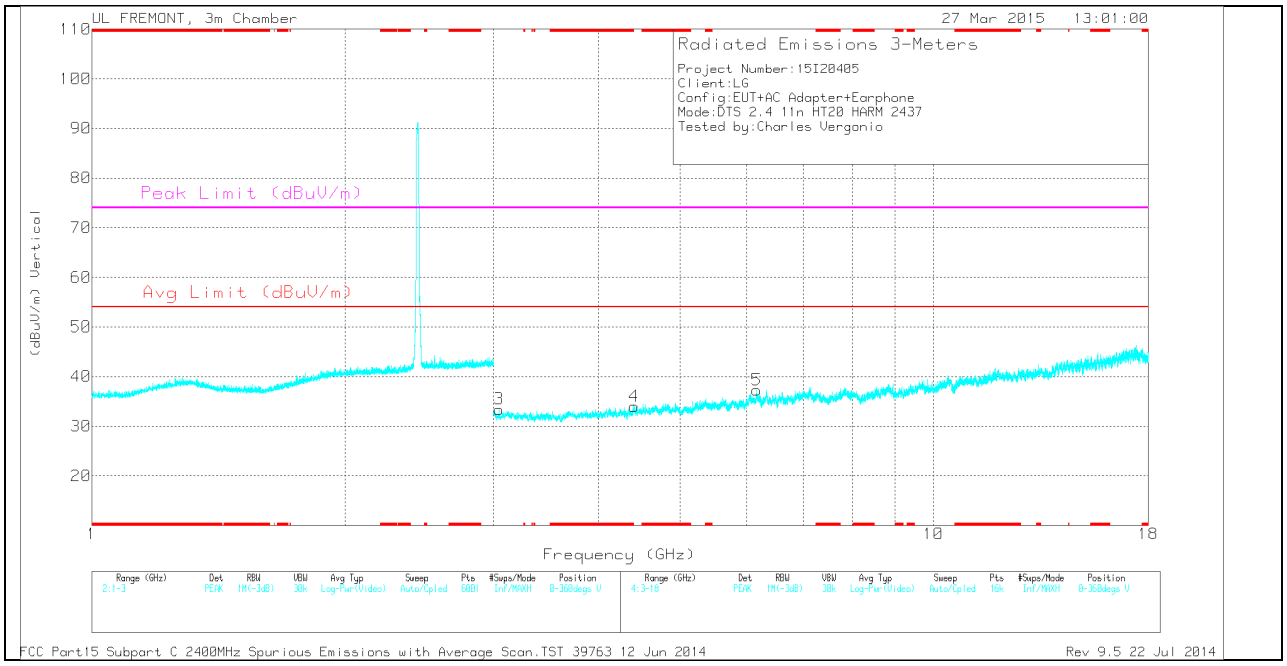
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

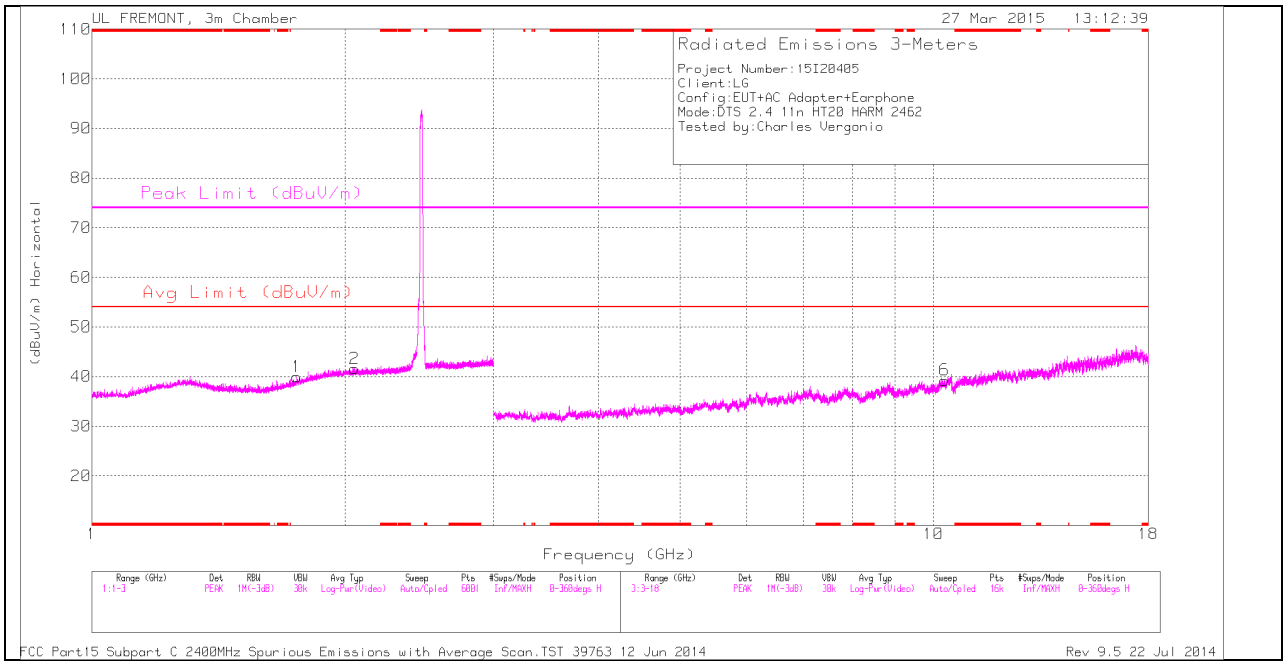
TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	1.787	32.94	PK	30.1	-23.4	39.64	-	-	-	-	0-360	200	H
2	2.072	33.06	PK	31.5	-23.1	41.46	-	-	-	-	0-360	200	H
3	3.045	32.13	PK	32.7	-31.4	33.43	-	-	-	-	0-360	200	V
4	4.41	30.54	PK	33.7	-30.2	34.04	-	-	-	-	0-360	100	V
5	6.163	31.84	PK	35.3	-29.8	37.34	-	-	-	-	0-360	100	V
6	10.484	28.17	PK	37.4	-25.3	40.27	-	-	-	-	0-360	100	H

PK - Peak detector

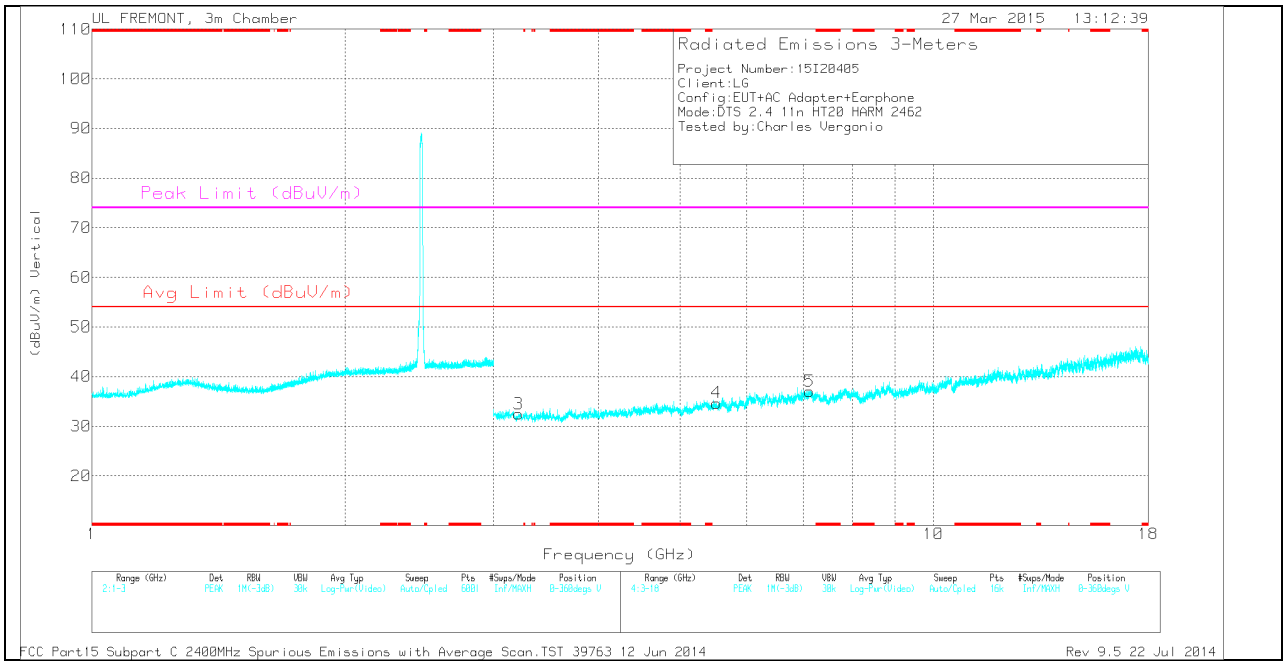
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

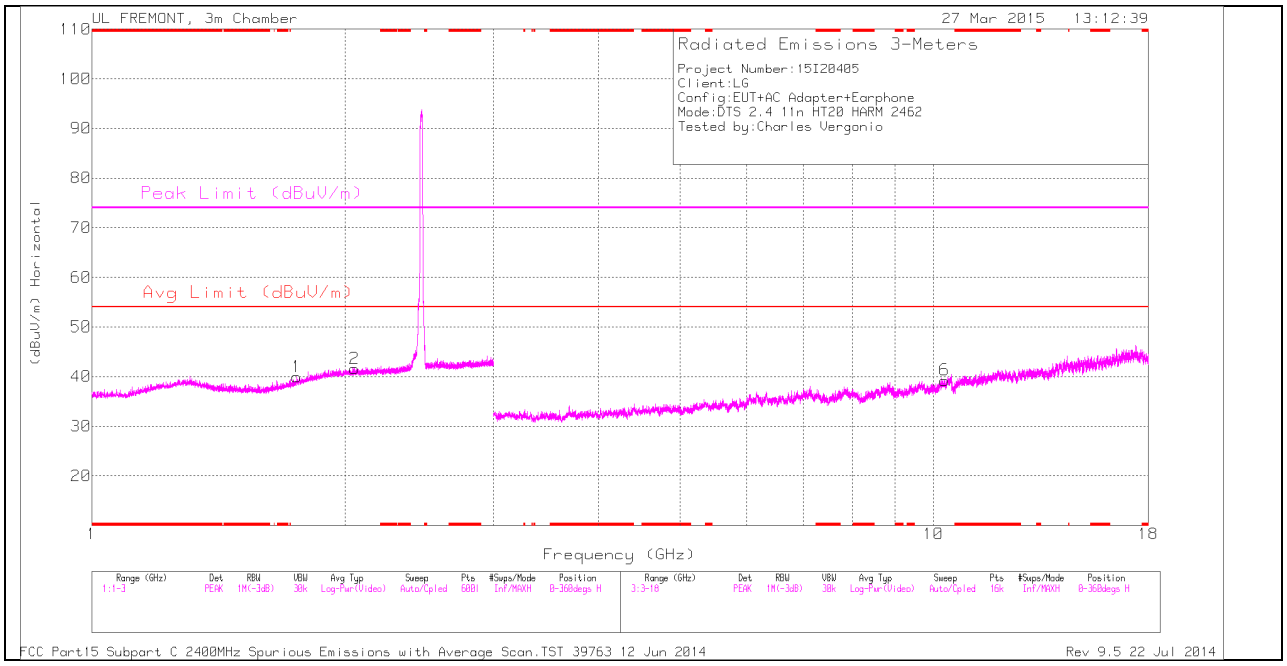
TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/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	1.752	33.73	PK	29.6	-23.4	39.93	-	-	-	-	0-360	200	H
2	2.053	33.19	PK	31.5	-23.1	41.59	-	-	-	-	0-360	100	H
3	3.211	31.22	PK	32.6	-31.3	32.52	-	-	-	-	0-360	200	V
4	5.524	30.4	PK	34.6	-30.3	34.7	-	-	-	-	0-360	200	V
5	7.121	29.45	PK	35.6	-28	37.05	-	-	-	-	0-360	100	V
6	10.306	27.67	PK	37.1	-25.5	39.27	-	-	-	-	0-360	100	H

PK - Peak detector

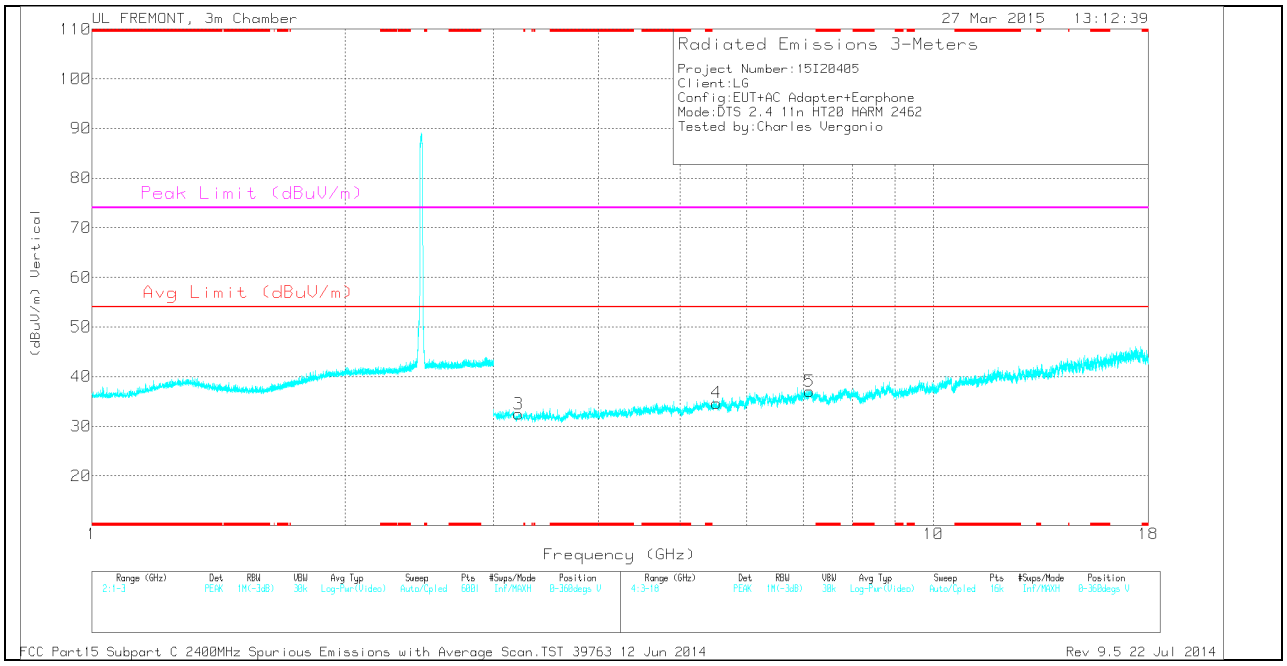
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Trace Markers

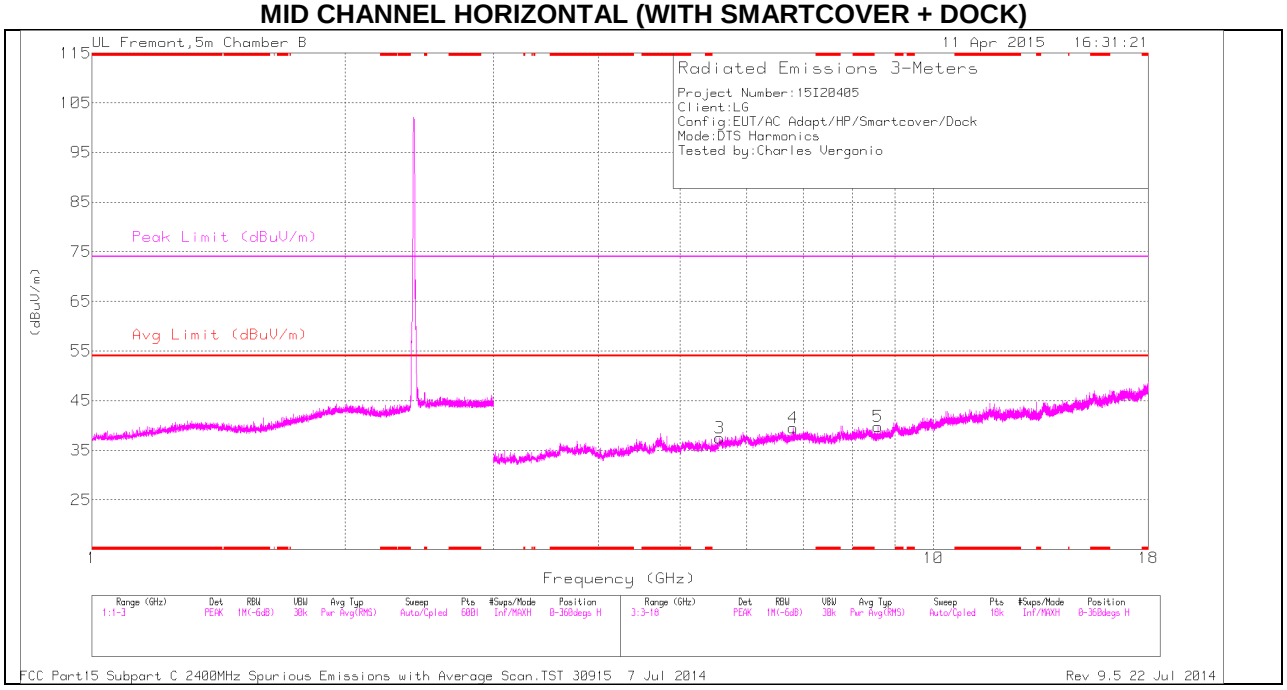
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.752	33.73	PK	29.6	-23.4	39.93	-	-	-	-	0-360	200	H
2	2.053	33.19	PK	31.5	-23.1	41.59	-	-	-	-	0-360	100	H
3	3.211	31.22	PK	32.6	-31.3	32.52	-	-	-	-	0-360	200	V
4	5.524	30.4	PK	34.6	-30.3	34.7	-	-	-	-	0-360	200	V
5	7.121	29.45	PK	35.6	-28	37.05	-	-	-	-	0-360	100	V
6	10.306	27.67	PK	37.1	-25.5	39.27	-	-	-	-	0-360	100	H

PK - Peak detector

FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 39763 12 Jun 2014

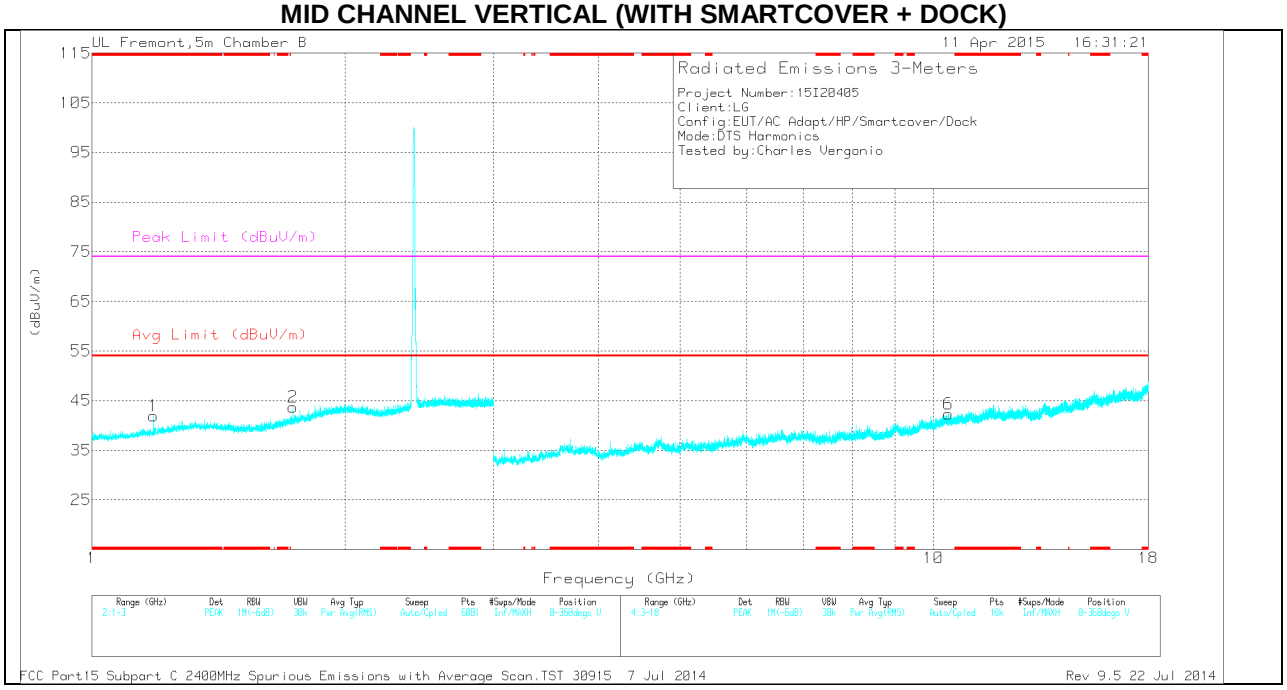
Rev 9.5 22 Jul 2014

MID CHANNEL HORIZONTAL (WITH SMARTCOVER + DOCK)



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL (WITH SMARTCOVER + DOCK)



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA (WITH SMARTCOVER + DOCK)

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/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	* 1.183	37.87	PK	28.3	-24.3	41.87	-	-	74	-32.13	0-360	200	V
2	1.733	36.94	PK	30.1	-23.3	43.74	-	-	-	-	0-360	101	V
3	5.572	32.38	PK	34.7	-29.6	37.48	-	-	-	-	0-360	200	H
4	6.816	31.02	PK	36	-27.5	39.52	-	-	-	-	0-360	101	H
5	8.591	30.05	PK	35.7	-26	39.75	-	-	-	-	0-360	101	H
6	10.412	27.95	PK	37.4	-23.1	42.25	-	-	-	-	0-360	200	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.181	42.99	PK2	28.3	-24.3	46.99	-	-	74	-27.01	138	161	V
* 1.184	31.34	MAv1	28.3	-24.3	35.34	54	-18.66	-	-	138	161	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

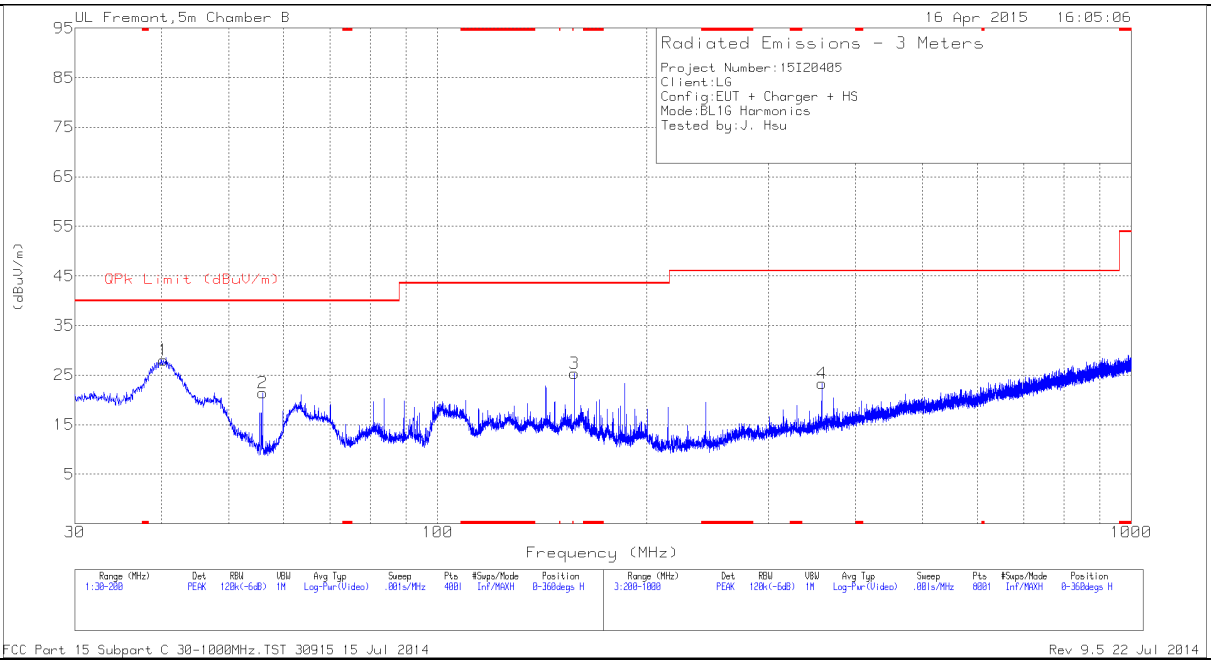
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

10.3. WORST-CASE BELOW 1 GHz

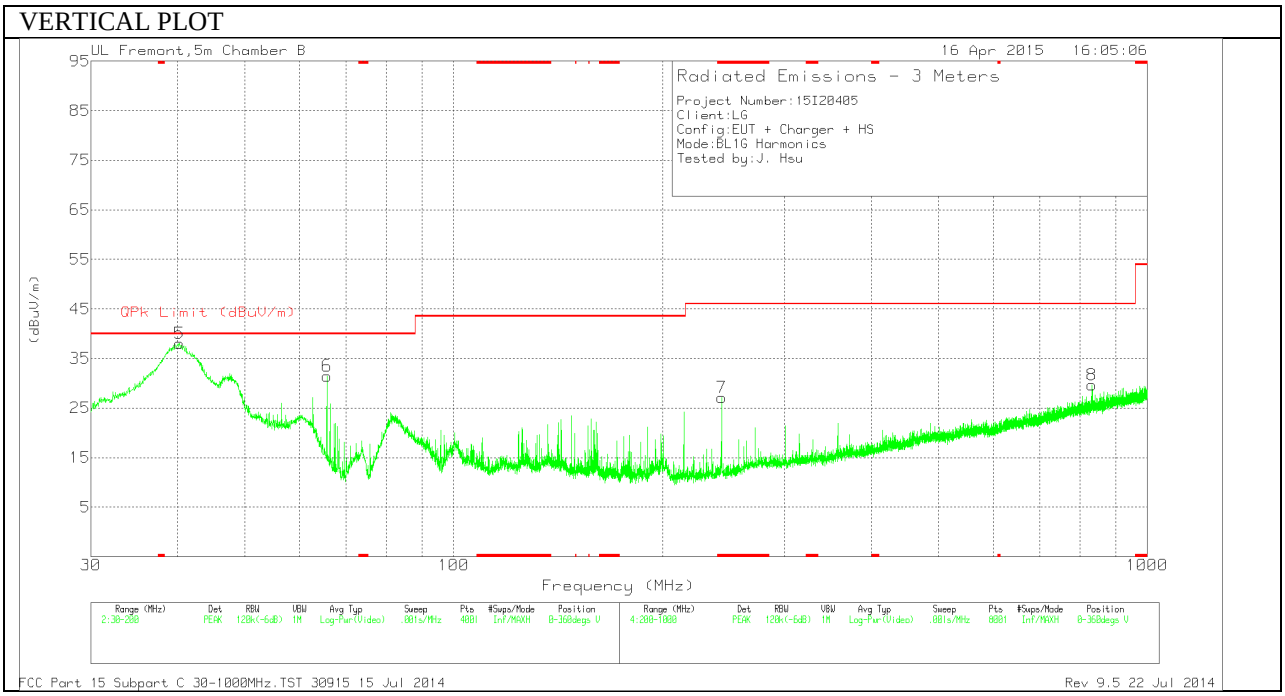
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



Below 1G Data

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7	* 243.4	42.03	PK	11.6	-26.5	27.13	46.02	-18.89	0-360	200	V
1	40.2425	42.87	PK	13.9	-28.8	27.97	40	-12.03	0-360	400	H
5	40.2425	52.95	PK	13.9	-28.8	38.05	40	-1.95	0-360	101	V
2	55.9675	42.73	PK	7.3	-28.6	21.43	40	-18.57	0-360	400	H
6	65.6575	52.1	PK	7.9	-28.5	31.5	40	-8.5	0-360	101	V
3	157.5	40.45	PK	12.3	-27.4	25.35	43.52	-18.17	0-360	100	H
4	357.9	34.47	PK	14.8	-25.9	23.37	46.02	-22.65	0-360	200	H
8	832.5	31.28	PK	21.9	-23.5	29.68	46.02	-16.34	0-360	200	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
40.711	49.54	QP	13.5	-28.8	34.24	40	-5.76	5	101	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

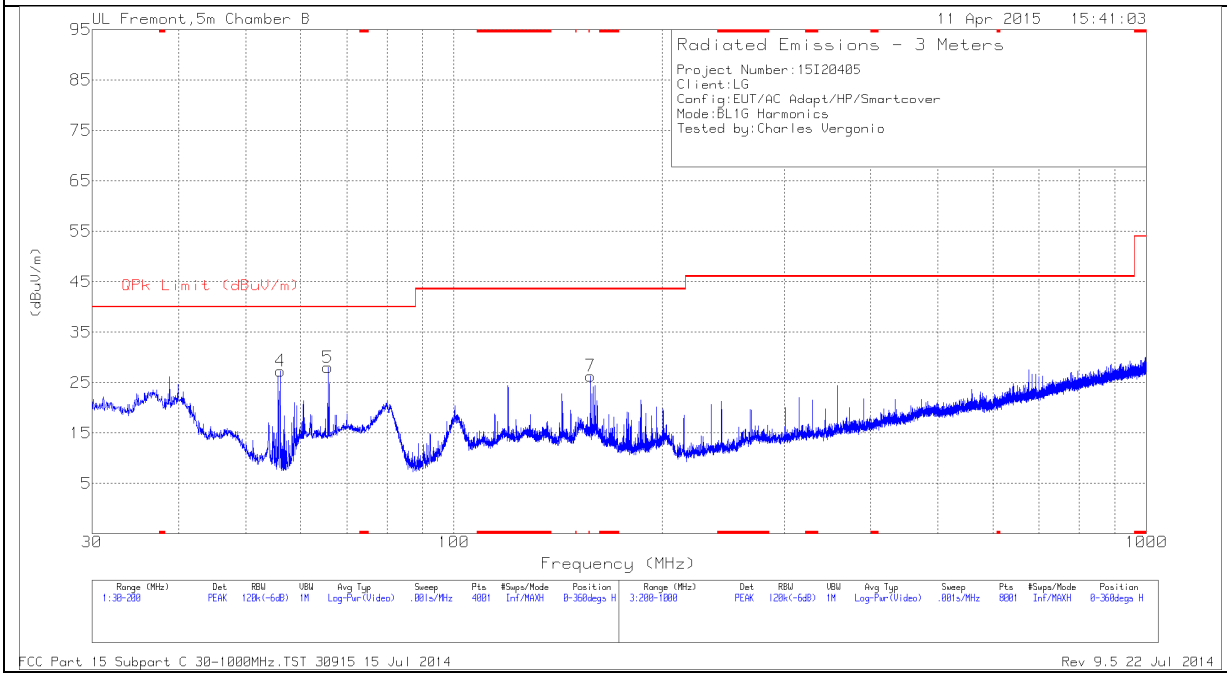
QP - Quasi-Peak detector

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

Rev 9.5 22 Jul 2014

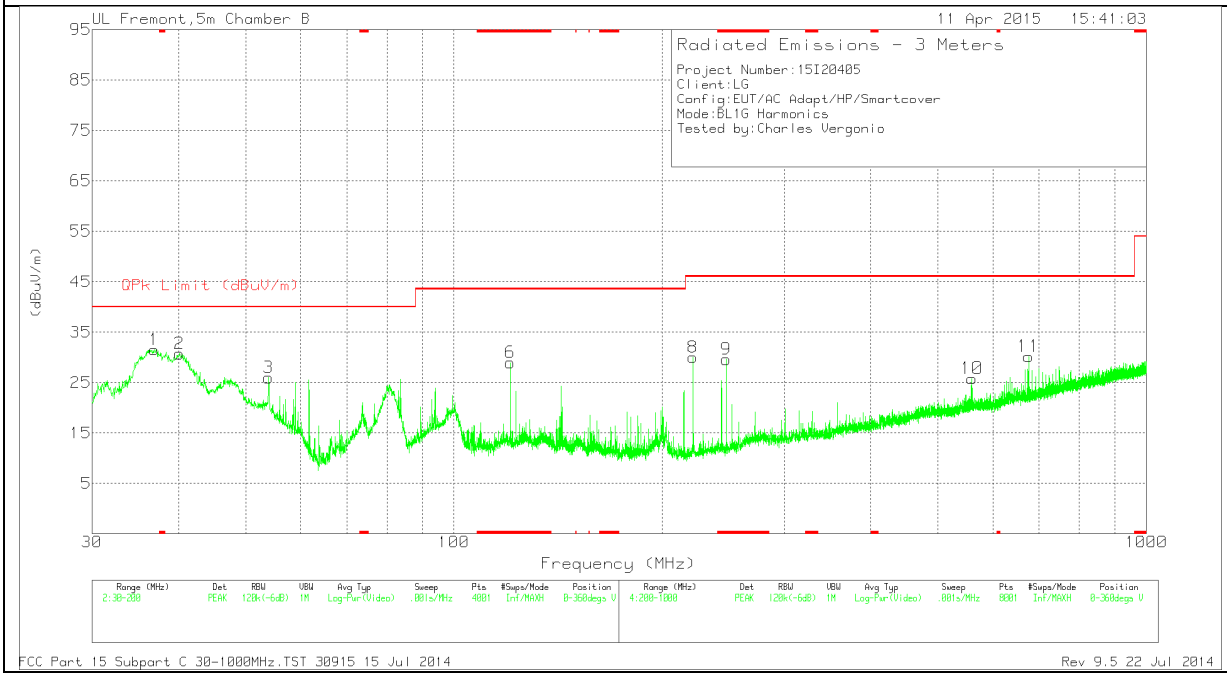
SPURIOUS EMISSIONS 30 TO 1000 MHz (WITH SMARTCOVER, HORIZONTAL)

HORIZONTAL PLOT



SPURIOUS EMISSIONS 30 TO 1000 MHz (WITH SMARTCOVER, VERTICAL)

VERTICAL PLOT



Below 1G Data (With Smartcover)

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 120.61	42.77	PK	14.1	-27.9	28.97	43.52	-14.55	0-360	101	V
9	* 247.4	44.51	PK	11.6	-26.5	29.61	46.02	-16.41	0-360	101	V
1	36.885	44.09	PK	16.2	-28.8	31.49	40	-8.51	0-360	101	V
2	40.115	45.53	PK	14	-28.8	30.73	40	-9.27	0-360	101	V
3	53.97	47.18	PK	7.4	-28.6	25.98	40	-14.02	0-360	101	V
4	56.1375	48.59	PK	7.3	-28.6	27.29	40	-12.71	0-360	300	H
5	65.7425	48.63	PK	7.9	-28.5	28.03	40	-11.97	0-360	400	H
7	157.5	41.4	PK	12.3	-27.4	26.3	43.52	-17.22	0-360	200	H
8	221.4	46.03	PK	10.7	-26.7	30.03	46.02	-15.99	0-360	300	V
10	560	32.72	PK	18.7	-25.6	25.82	46.02	-20.2	0-360	101	V
11	676	35.1	PK	19.9	-24.8	30.2	46.02	-15.82	0-360	200	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

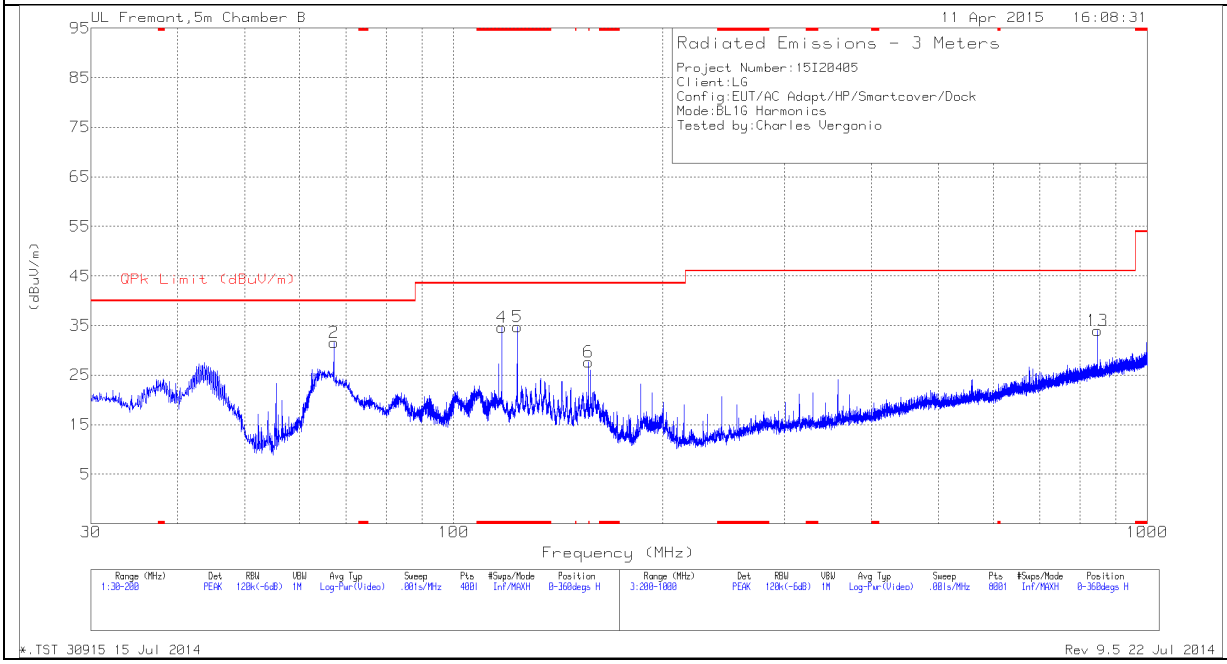
PK - Peak detector

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

Rev 9.5 22 Jul 2014

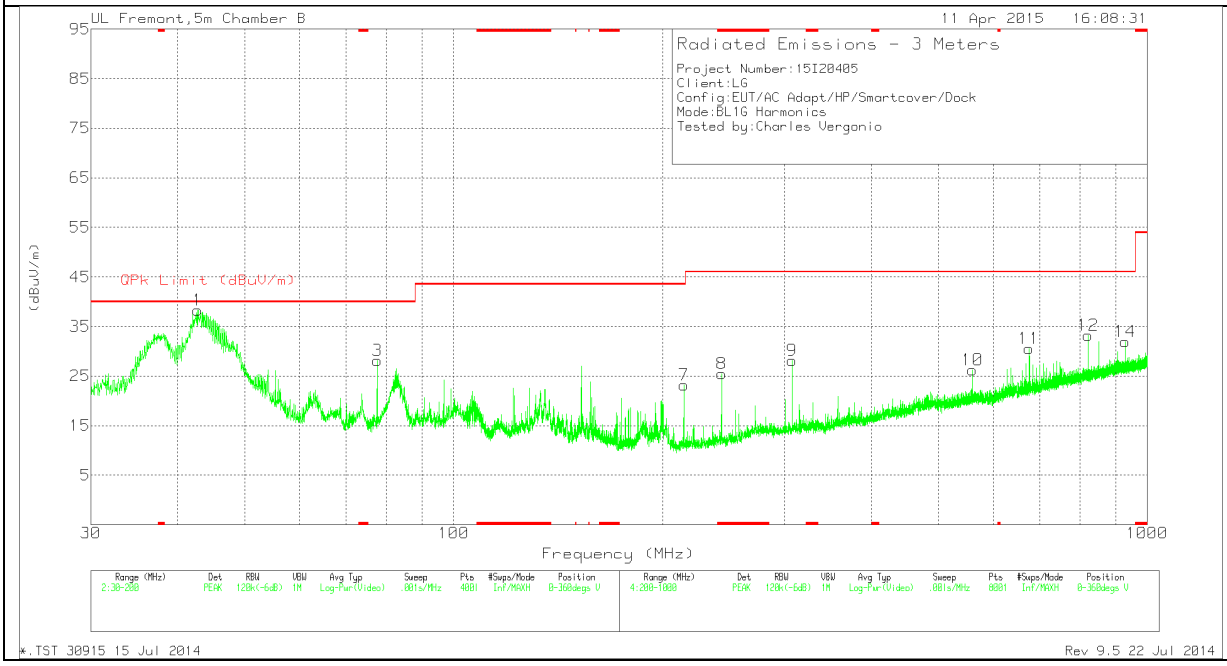
SPURIOUS EMISSIONS 30 TO 1000 MHz (WITH SMARTCOVER + DOCK, HORIZONTAL)

HORIZONTAL PLOT



SPURIOUS EMISSIONS 30 TO 1000 MHz (WITH SMARTCOVER + DOCK, VERTICAL)

VERTICAL PLOT



Below 1G Data (With Smartcove r+ Dock)

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 117.3375	48.77	PK	13.8	-27.9	34.67	43.52	-8.85	0-360	200	H
5	* 123.5425	48.39	PK	14.2	-27.8	34.79	43.52	-8.73	0-360	200	H
8	* 243.4	40.37	PK	11.6	-26.5	25.47	46.02	-20.55	0-360	300	V
1	42.7925	54.89	PK	12.1	-28.7	38.29	40	-1.71	0-360	101	V
2	67.1875	52.03	PK	8	-28.5	31.53	40	-8.47	0-360	400	H
3	77.6	48.71	PK	7.7	-28.3	28.11	40	-11.89	0-360	101	V
6	156.5225	42.74	PK	12.3	-27.4	27.64	43.52	-15.88	0-360	300	H
7	214.8	39.37	PK	10.6	-26.8	23.17	43.52	-20.35	0-360	200	V
9	307.4	40.44	PK	13.7	-26	28.14	46.02	-17.88	0-360	200	V
10	560	33.12	PK	18.7	-25.6	26.22	46.02	-19.8	0-360	101	V
11	676	35.47	PK	19.9	-24.8	30.57	46.02	-15.45	0-360	300	V
12	821.9	35.16	PK	21.7	-23.6	33.26	46.02	-12.76	0-360	101	V
13	848	35.42	PK	22	-23.4	34.02	46.02	-12	0-360	200	H
14	930	31.91	PK	22.7	-22.7	31.91	46.02	-14.11	0-360	101	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
42.893	50.56	QP	12	-28.7	33.86	40	-6.14	341	117	V

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

QP - Quasi-Peak detector

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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 C63.10 2009.

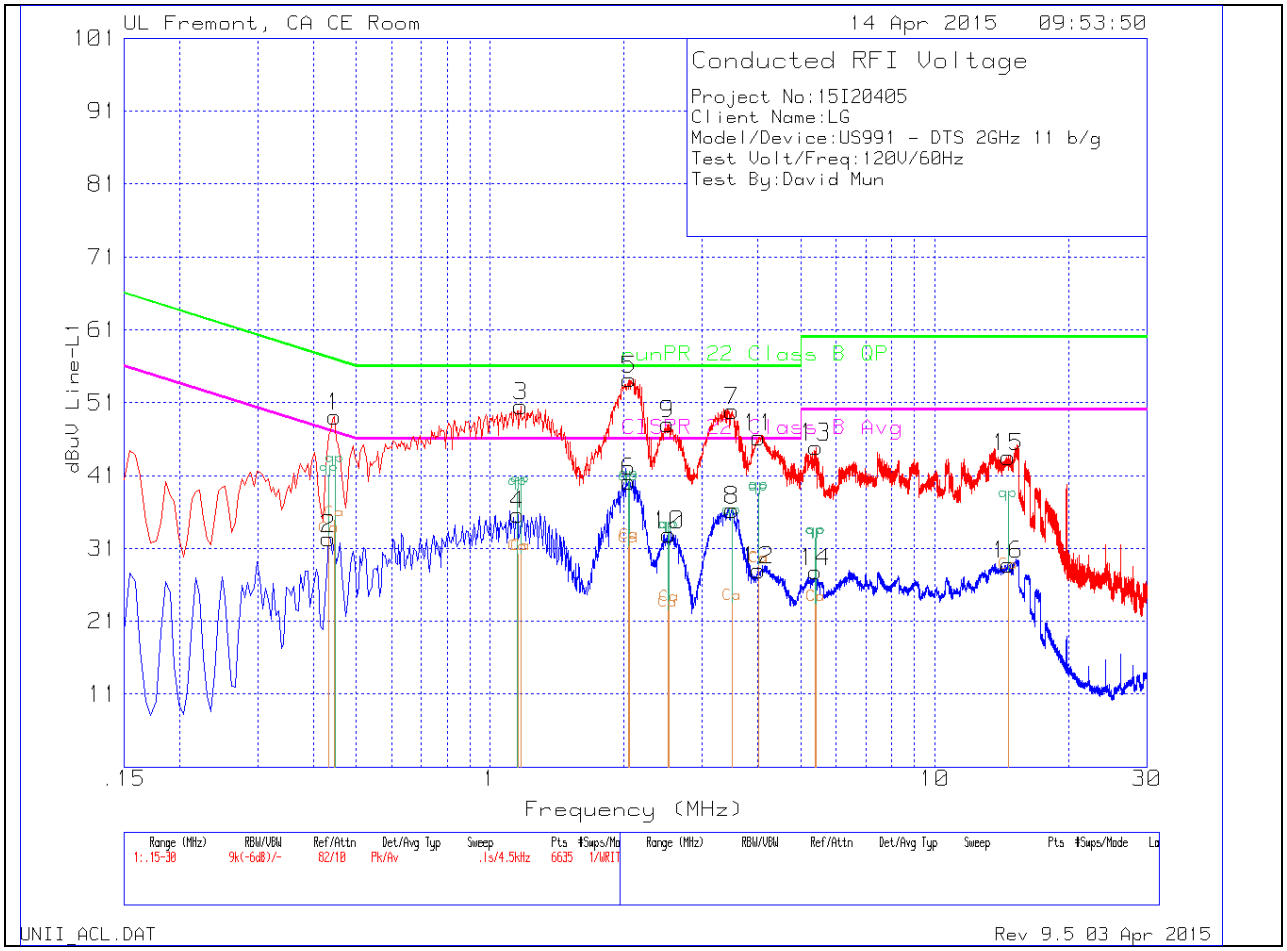
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

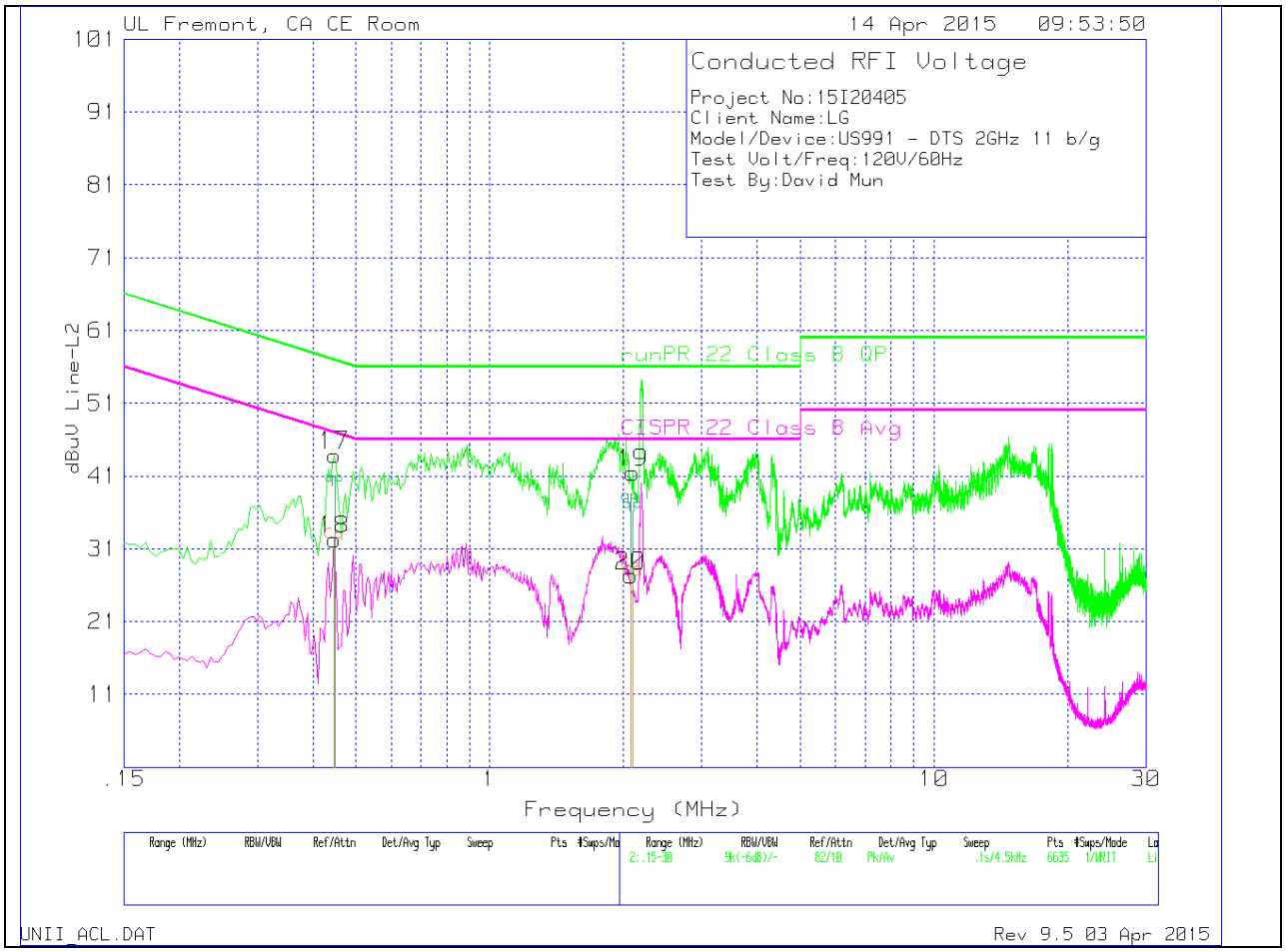
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	runPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.447	48.69	Pk	.4	0	49.09	56.93	-7.84	-	-
2	.4335	31.94	Av	.4	0	32.34	-	-	47.19	-14.85
3	1.1715	50.22	Pk	.2	.1	50.52	56	-5.48	-	-
4	1.1535	35.41	Av	.2	0	35.61	-	-	46	-10.39
5	2.0535	53.87	Pk	.2	.1	54.17	56	-1.83	-	-
6	2.049	39.87	Av	.2	.1	40.17	-	-	46	-5.83
7	3.498	49.57	Pk	.2	.1	49.87	56	-6.13	-	-
8	3.498	35.93	Av	.2	.1	36.23	-	-	46	-9.77
9	2.508	47.73	Pk	.2	.1	48.03	56	-7.97	-	-
10	2.526	32.56	Av	.2	.1	32.86	-	-	46	-13.14
11	4.02	45.94	Pk	.2	.1	46.24	56	-9.76	-	-
12	4.0155	27.68	Av	.2	.1	27.98	-	-	46	-18.02
13	5.406	44.58	Pk	.2	.1	44.88	60	-15.12	-	-
14	5.3925	27.48	Av	.2	.1	27.78	-	-	50	-22.22
15	14.6265	43.14	Pk	.2	.2	43.54	60	-16.46	-	-
16	14.6265	28.36	Av	.2	.2	28.76	-	-	50	-21.24

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	runPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
17	.447	43.45	Pk	.4	0	43.85	56.93	-13.08	-	-
18	.447	31.87	Av	.4	0	32.27	-	-	46.93	-14.66
19	2.0985	41.15	Pk	.2	.1	41.45	56	-14.55	-	-
20	2.076	27.01	Av	.2	.1	27.31	-	-	46	-18.69

Pk - Peak detector

Av - Average detection