FCC CFR47 PART 15 SUBPART C

BLUETOOTH LOW ENERGY CERTIFICATION TEST REPORT

FOR

CDMA WATCH + Bluetooth, DTS b/g

MODEL NUMBER: LG-VC200, LGVC200, VC200

FCC ID: ZNFVC200

REPORT NUMBER: 15I21066-E3

ISSUE DATE: JULY 27, 2015

Prepared for

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	7/27/15	Initial Issue	

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	LG ELECTRONICS MOBILECOMM U.S.A., INC.
EUT DESCRIPTION:	CDMA WATCH + Bluetooth, DTS b/g
MODEL:	LG-VC200, LGVC200, VC200
SERIAL NUMBER:	1ZRY9 (Conducted), 1ZRY8 (Radiated)
DATE TESTED:	JUNE 24-30, 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.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, and KDB 558074 D01 v03r03, ANSI C63.10-2009 for FCC.

ANSI C63.10-2009 Deviation

Radiated spurious emission above 1GHz EUT height is 1.5m not 0.8m.

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 18000 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 CDMA WATCH + Bluetooth, DTS b/g

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	5.40	3.47

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an LMA antenna, with a maximum gain of -0.14 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.

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.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	LG	STA-U17WD	DS542312055	N/A

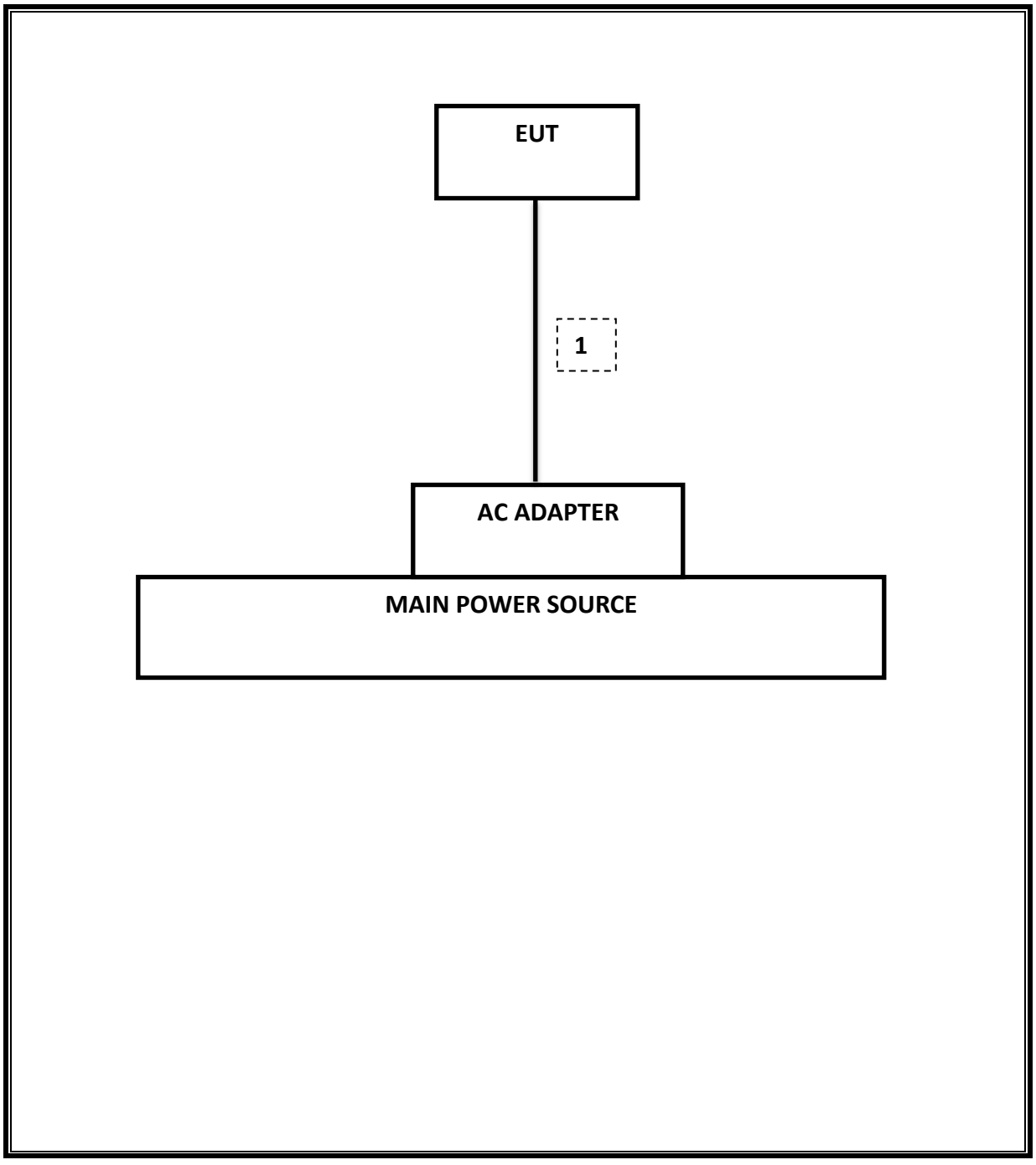
I/O CABLES

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

EUT was set in the Hidden menu mode to enable BLE communications.

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/B	T446	05/12/16
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/16
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 5GHz	Micro-Tronics	LPS17541	F00219	05/23/16
High Pass Filter 6GHz	Micro-Tronics	HPS17542	F00222	05/22/16
High Pass Filter 3GHz	Micro-Tronics	HPM17543	F00224	05/22/16

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. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

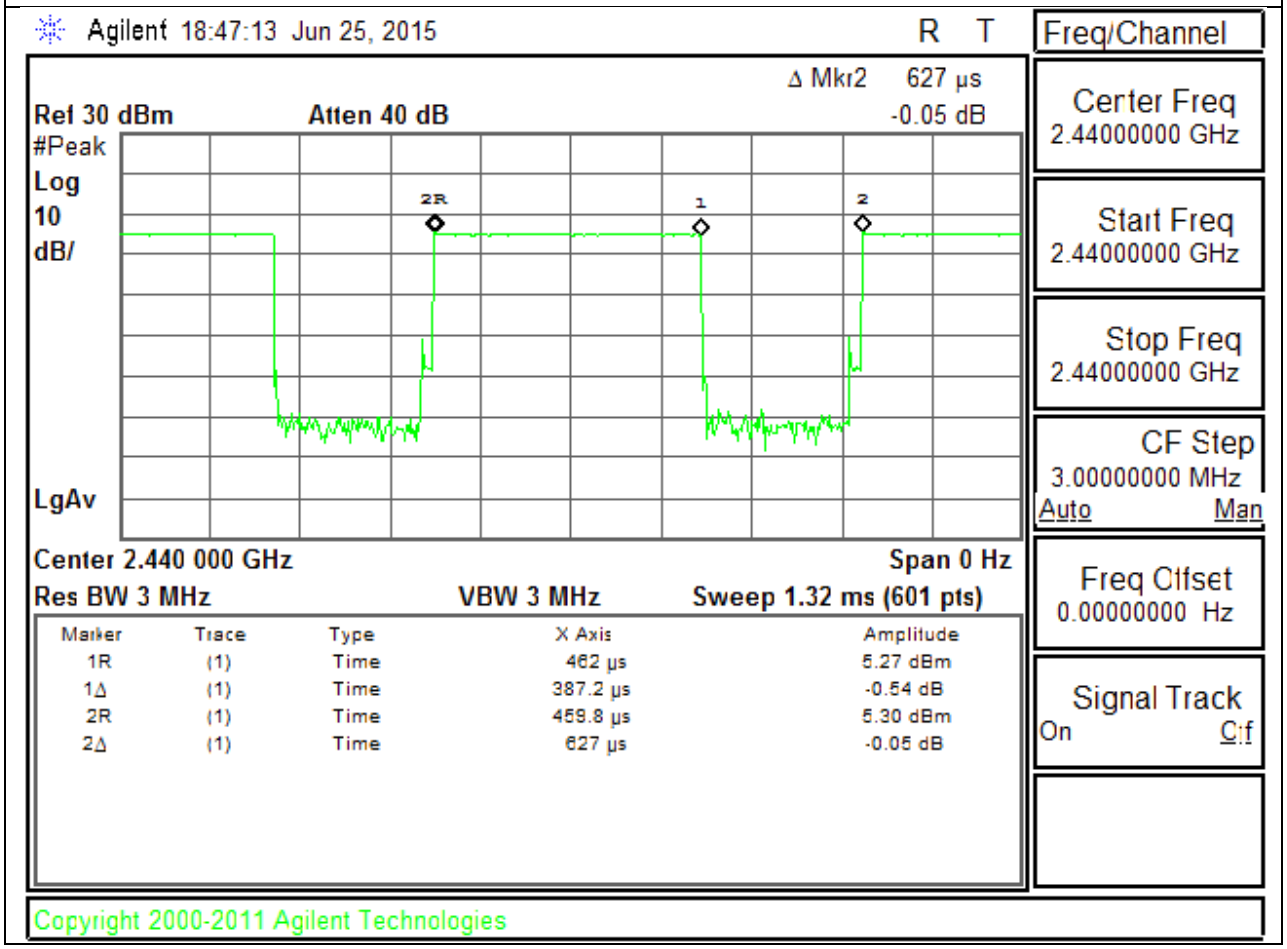
None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
BLE	0.387	0.627	0.618	61.75%	2.09	2.583

BLE Mid Ch



8. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-247 5.2.1	Occupied Band width (6dB)	>500KHz	Conducted	Pass	679.2MHz
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-49.66dBm
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Pass	6.32dBm
15.247	RSS-247 5.2.2	PSD	<8dBm		Pass	-10.22dBm
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass	46.03dBuV
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass	47.47dBuV/m

9. ANTENNA PORT TEST RESULTS

9.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

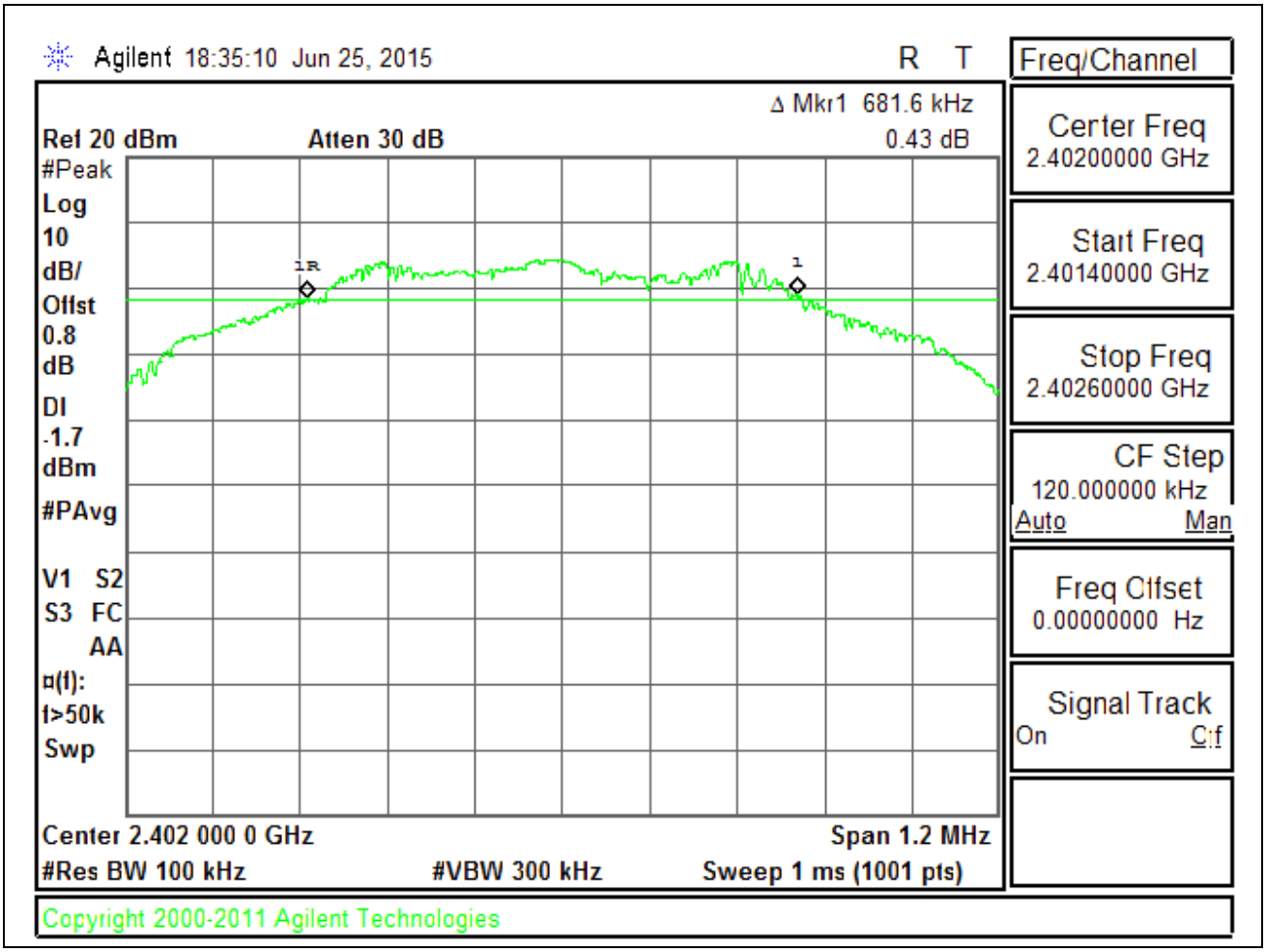
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

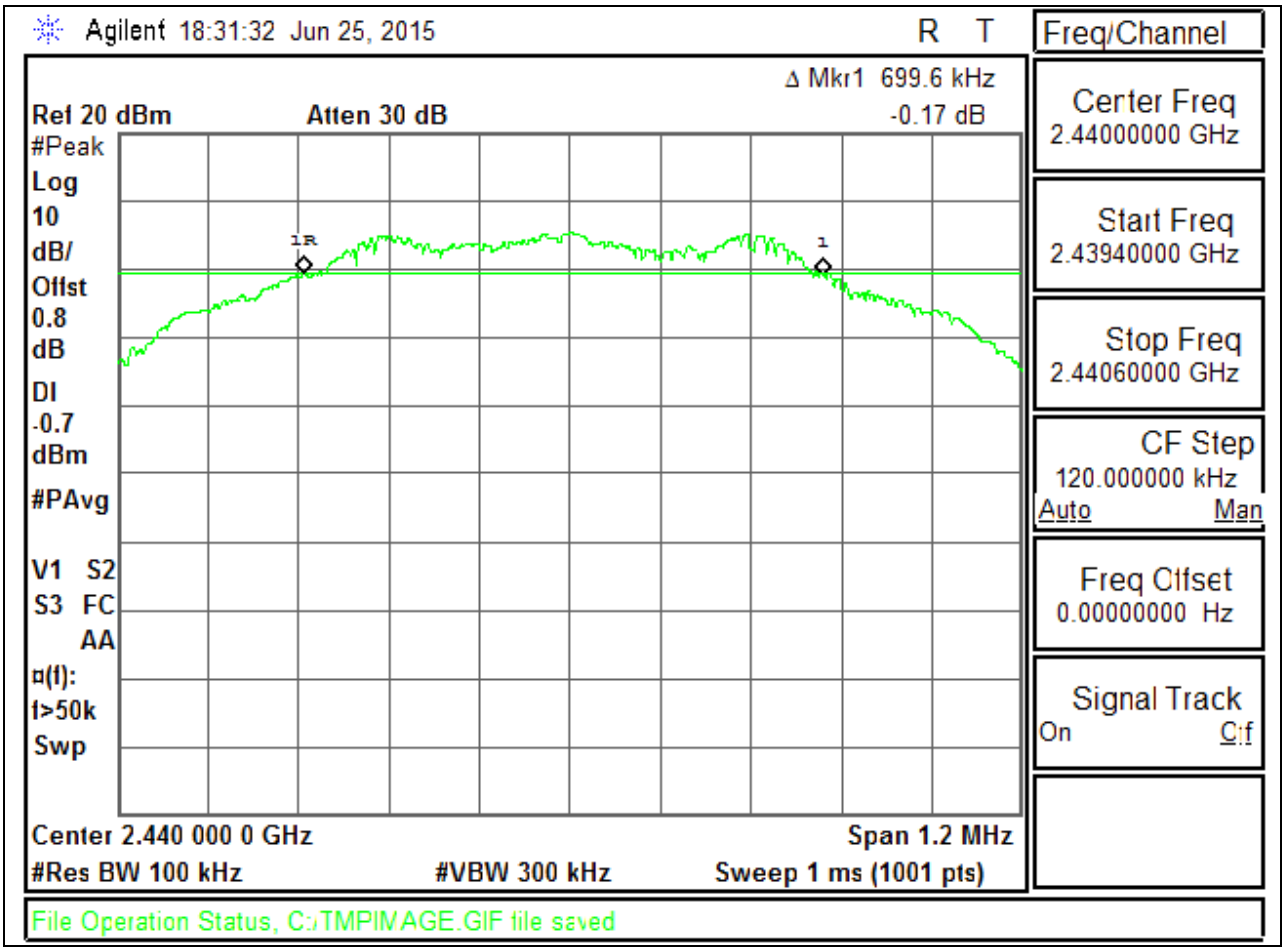
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	681.6	0.5
Middle	2440	699.6	0.5
High	2480	679.2	0.5

6 dB BANDWIDTH PLOTS

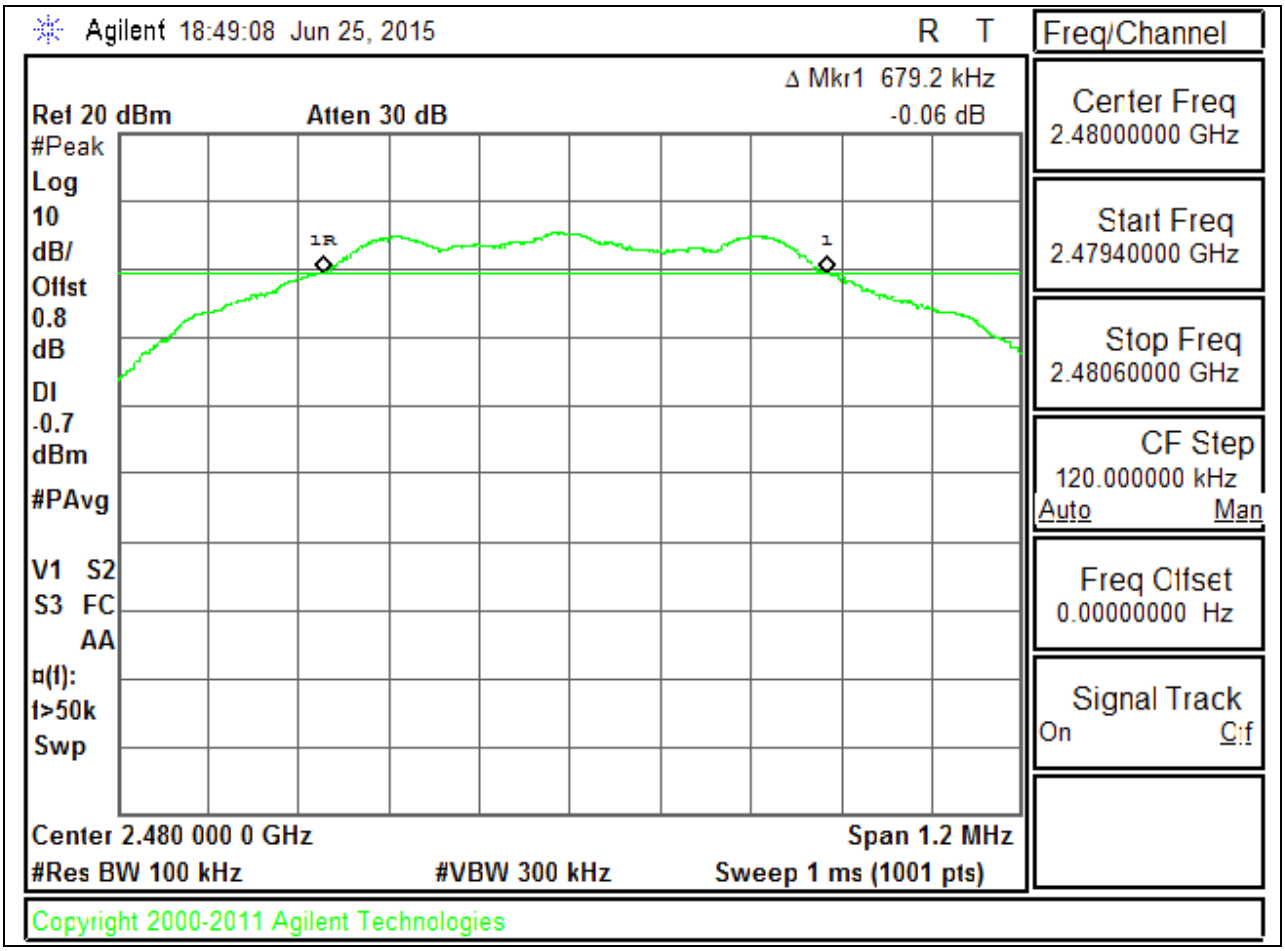
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

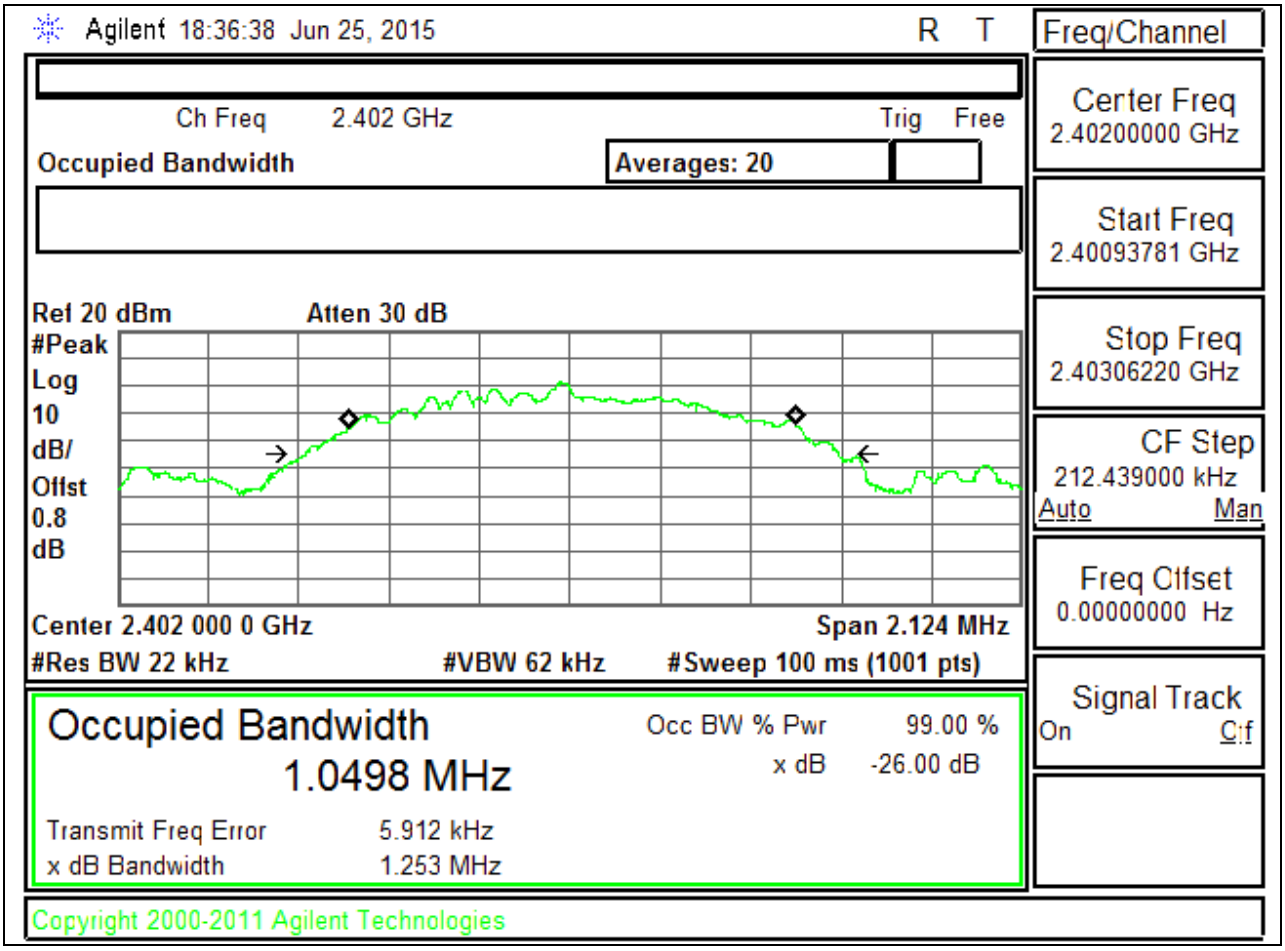
Reference to KDB558074 D01 DTS Meas Guidance v03r02: The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

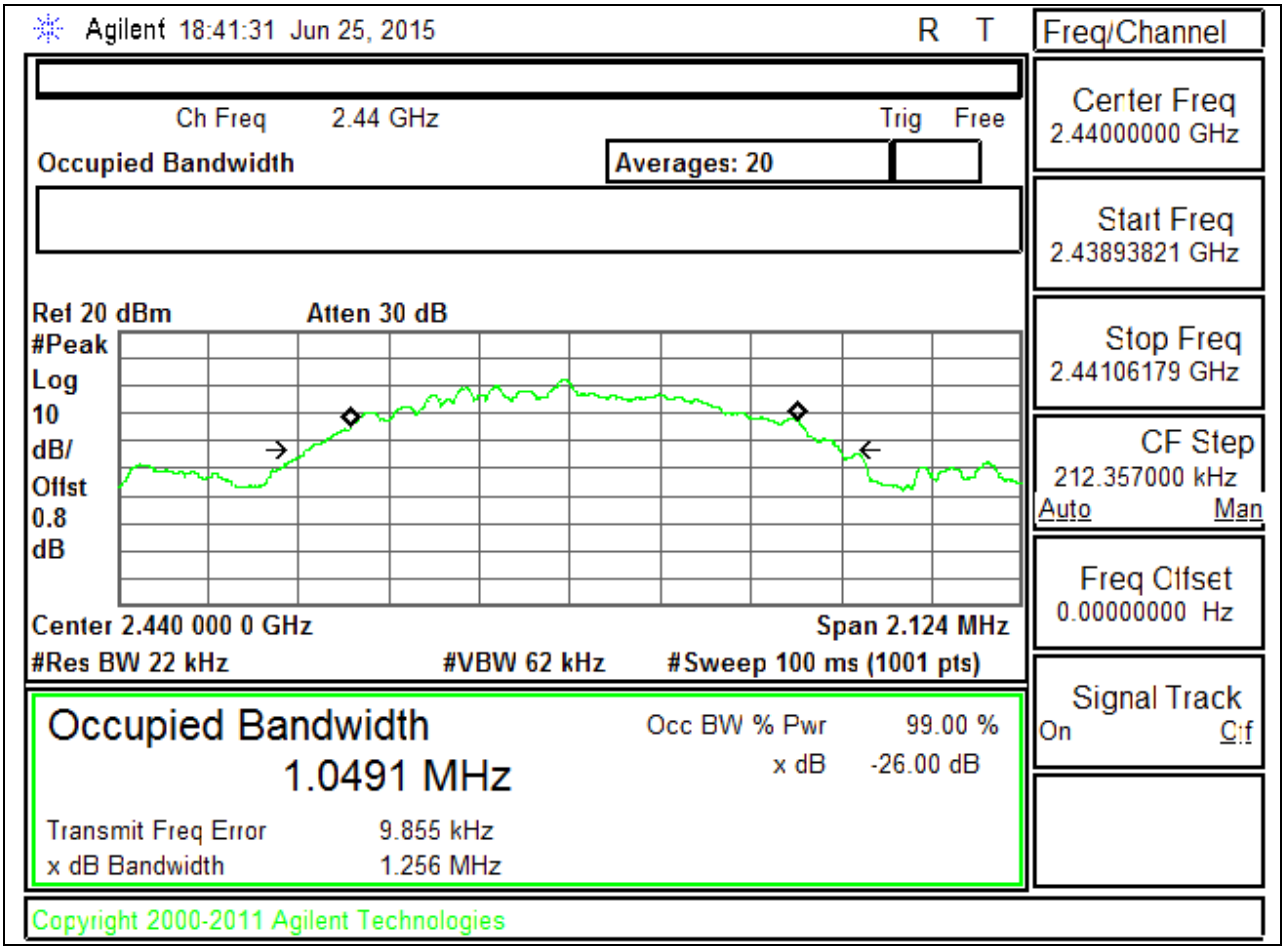
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.050
Middle	2440	1.049
High	2480	1.050

99% BANDWIDTH PLOTS

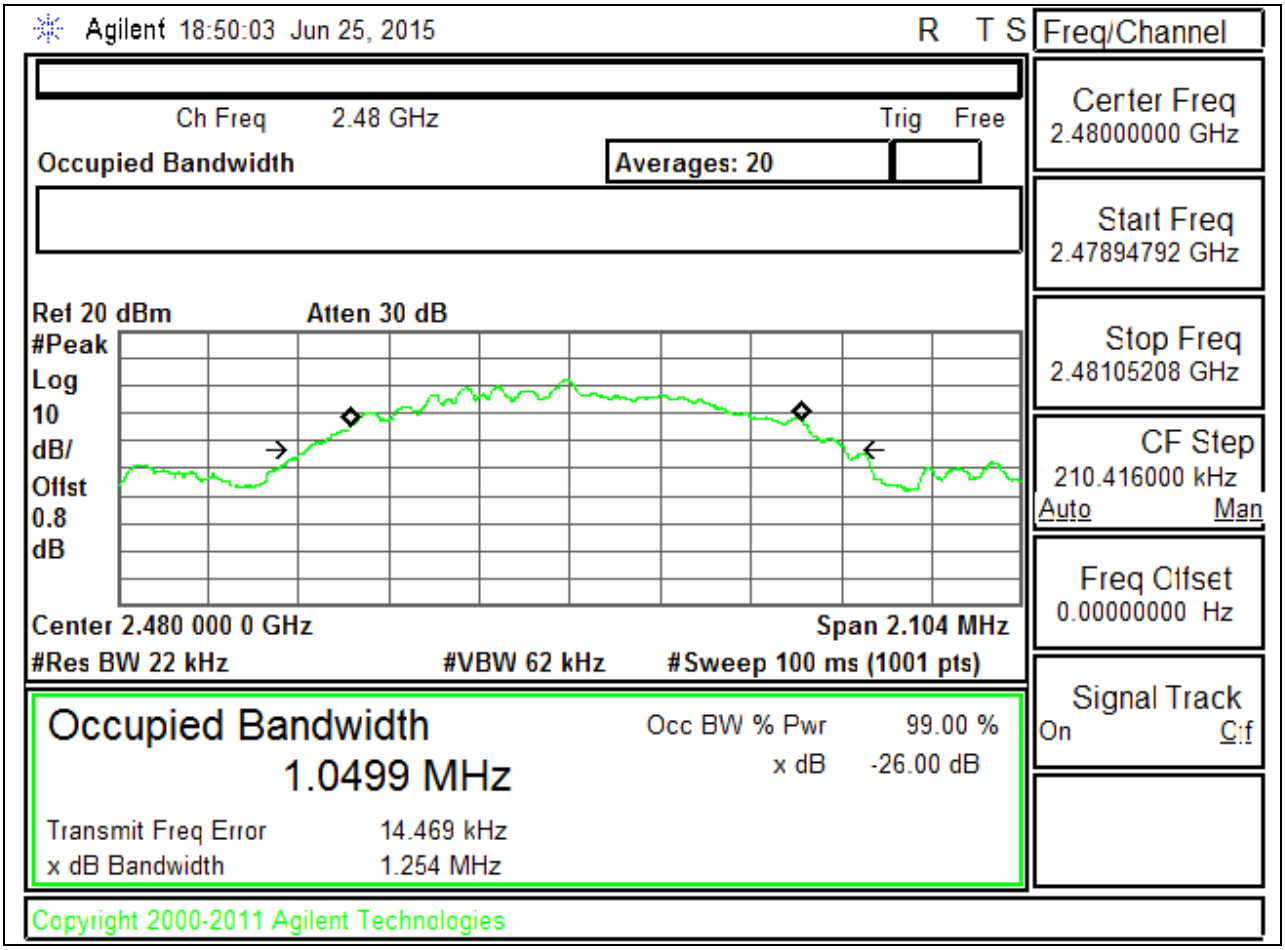
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

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

TEST PROCEDURE

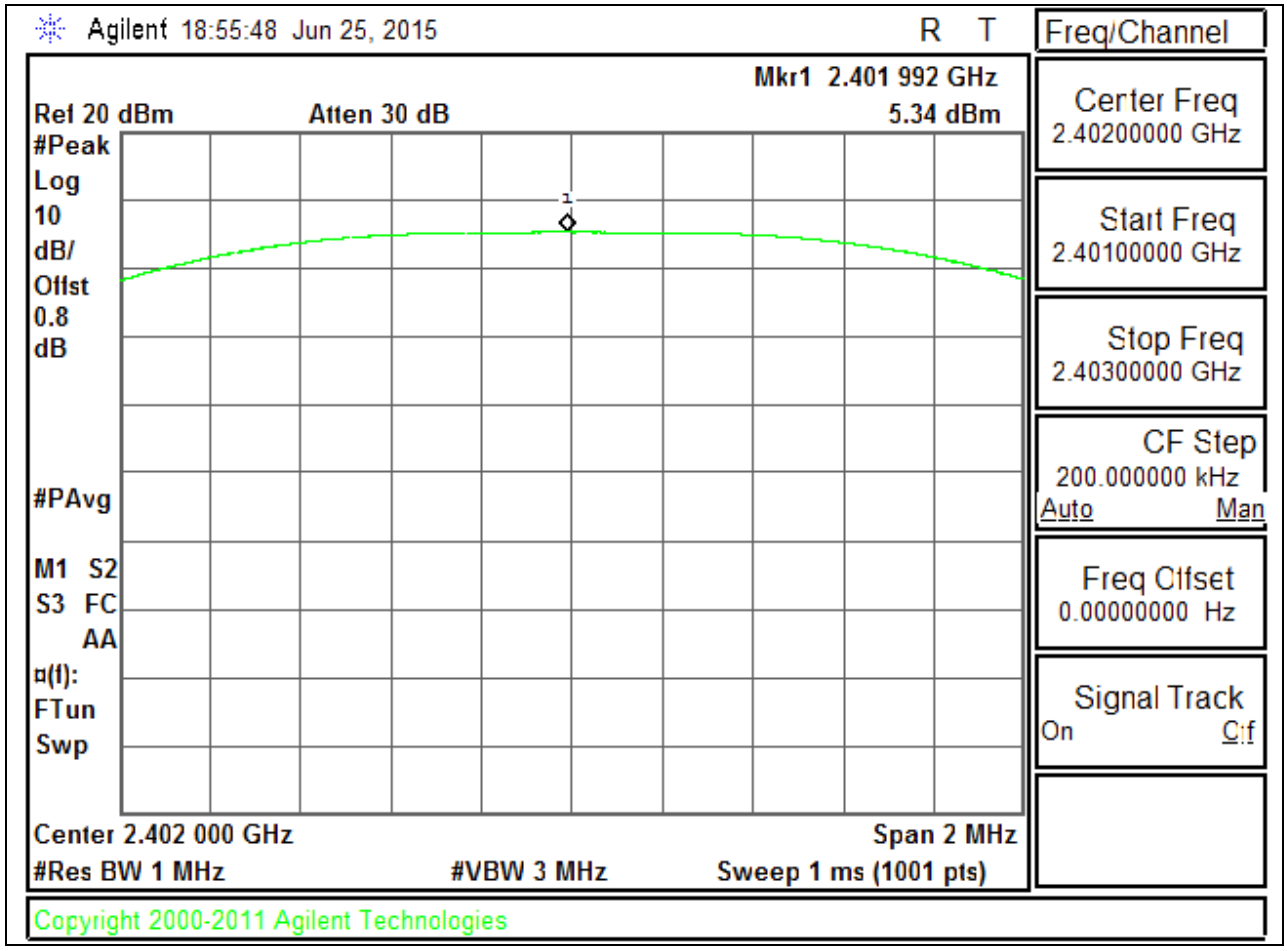
Peak power is measured using KDB558074 D01 DTS Meas Guidance v03r02 utilizing spectrum analyzer.

RESULTS

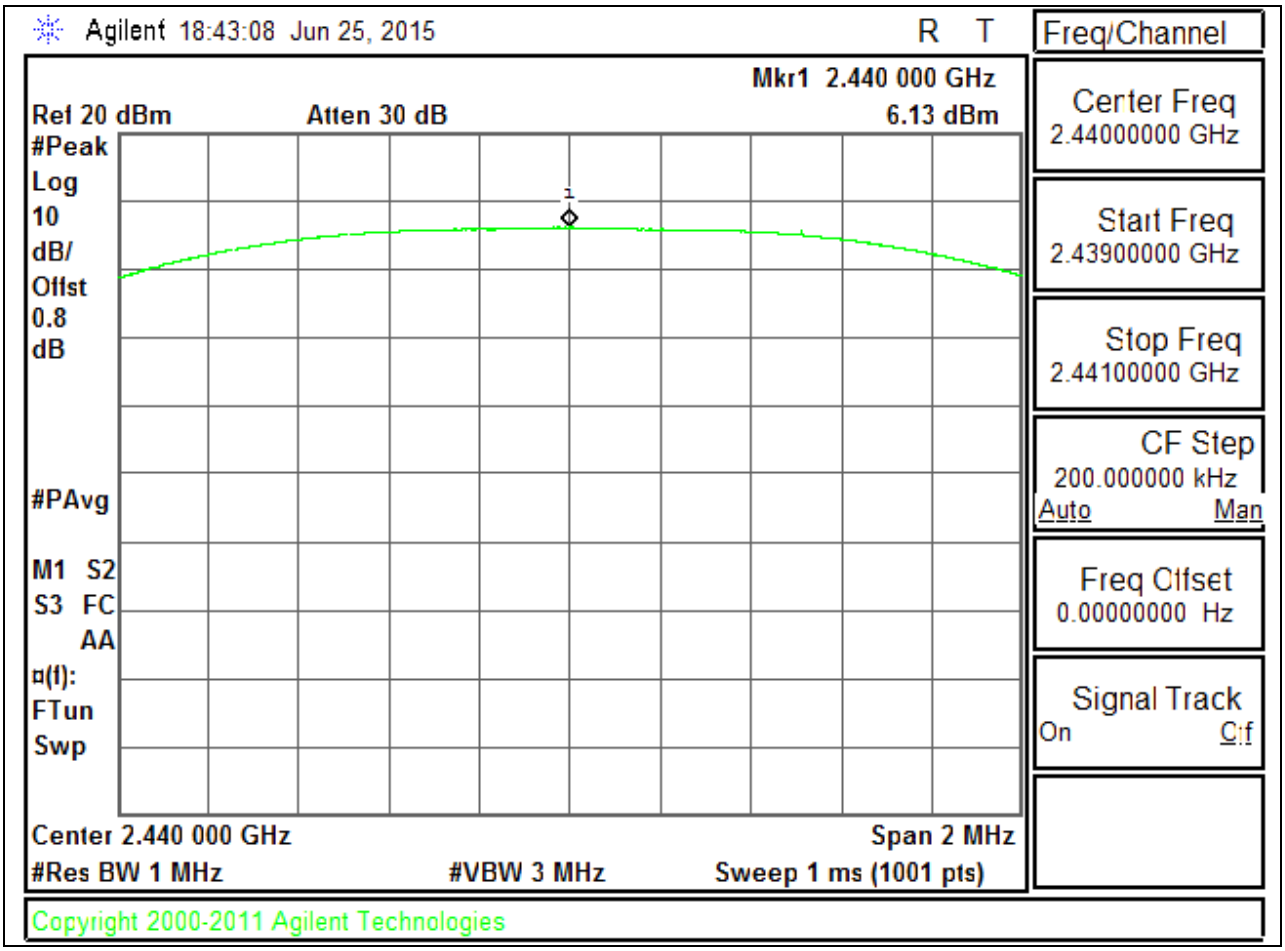
Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	5.34	30	-24.660
Middle	2440	6.13	30	-23.870
High	2480	6.32	30	-23.680

OUTPUT POWER PLOTS

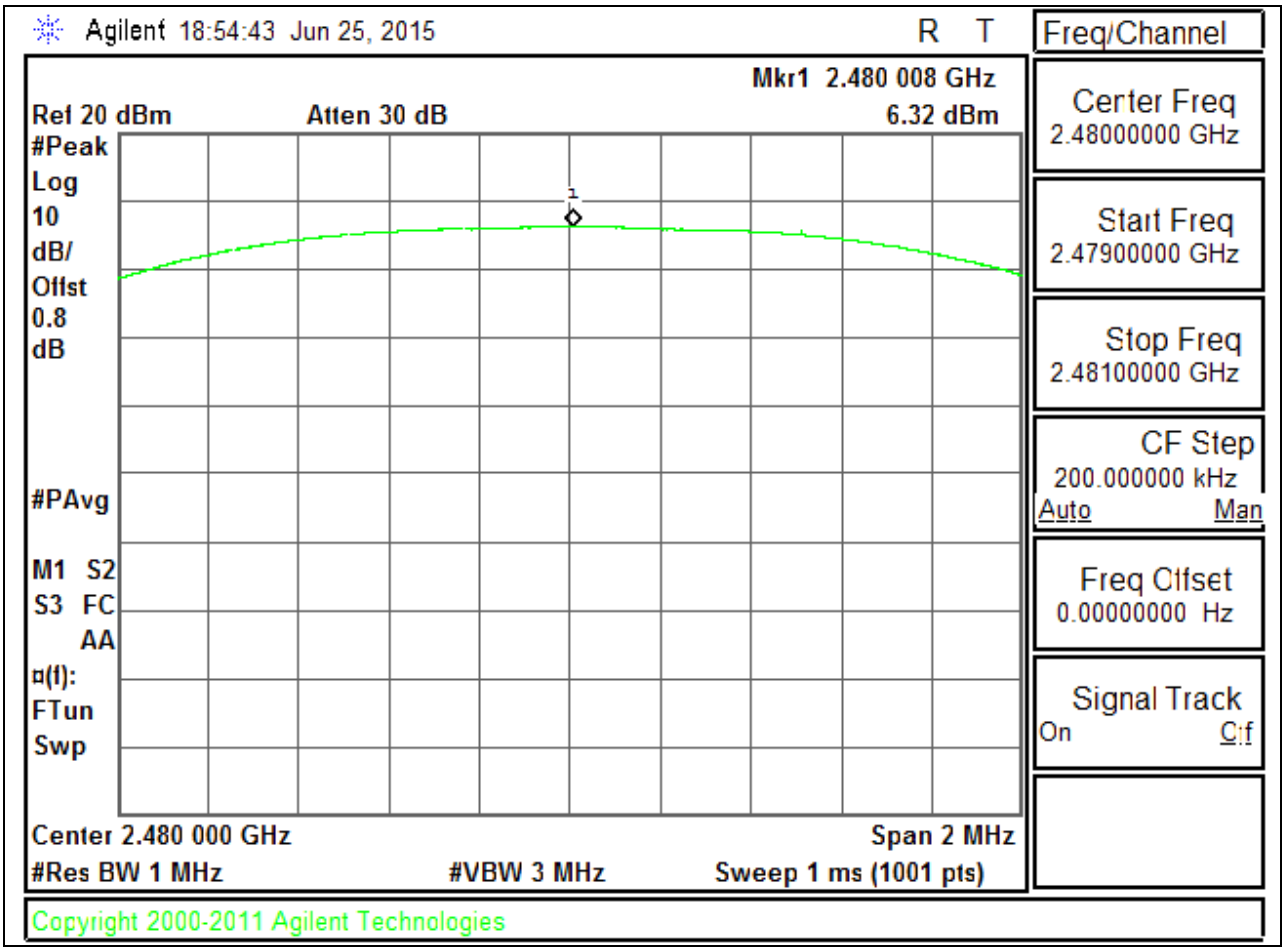
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



9.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	3.98
Middle	2440	5.24
High	2480	5.40

9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

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

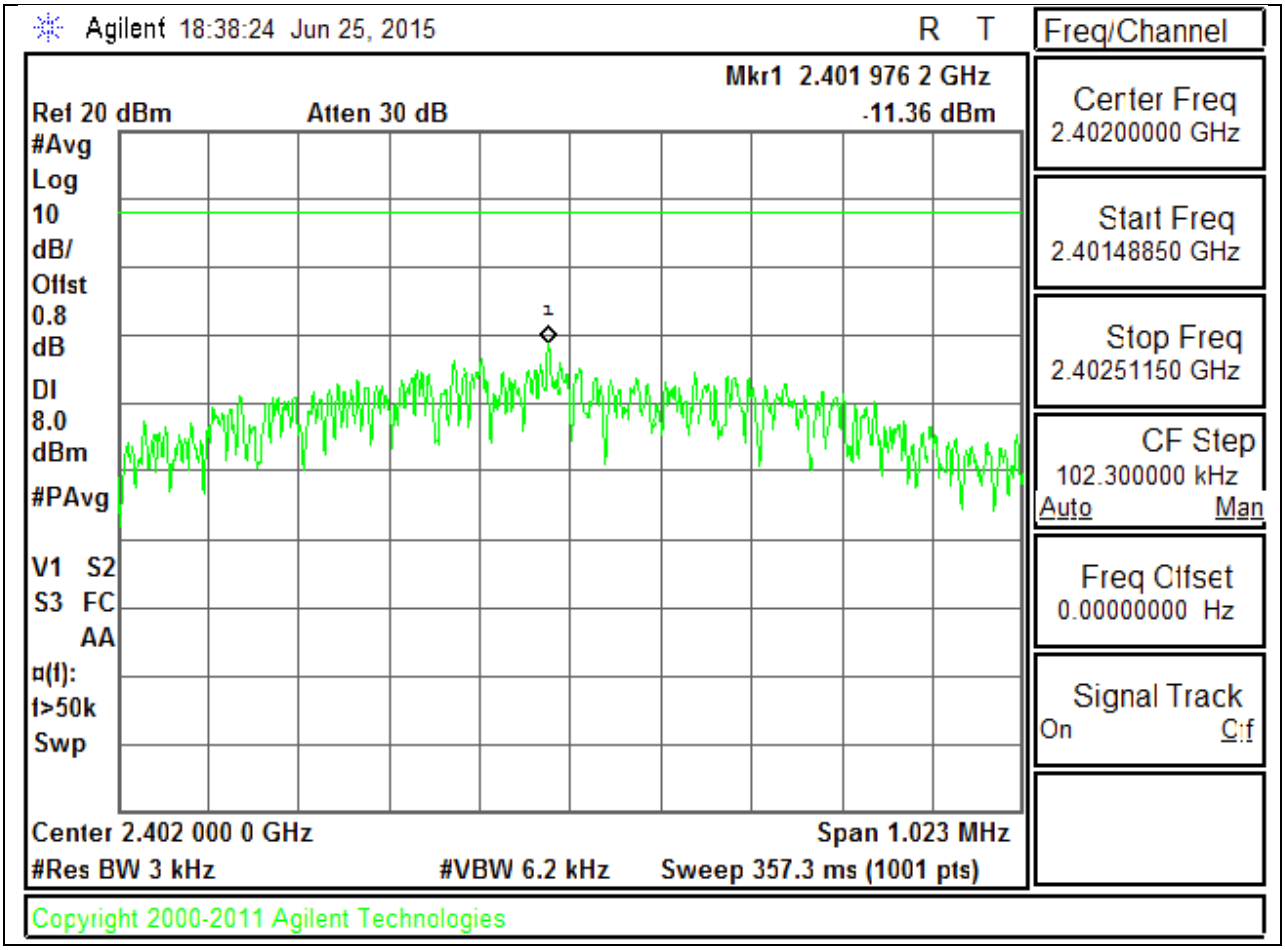
Power Spectral Density was performed utilizing the "Method PKPSD (Peak PSD)" under KDB558074 D01 DTS Meas Guidance v03r02.

RESULTS

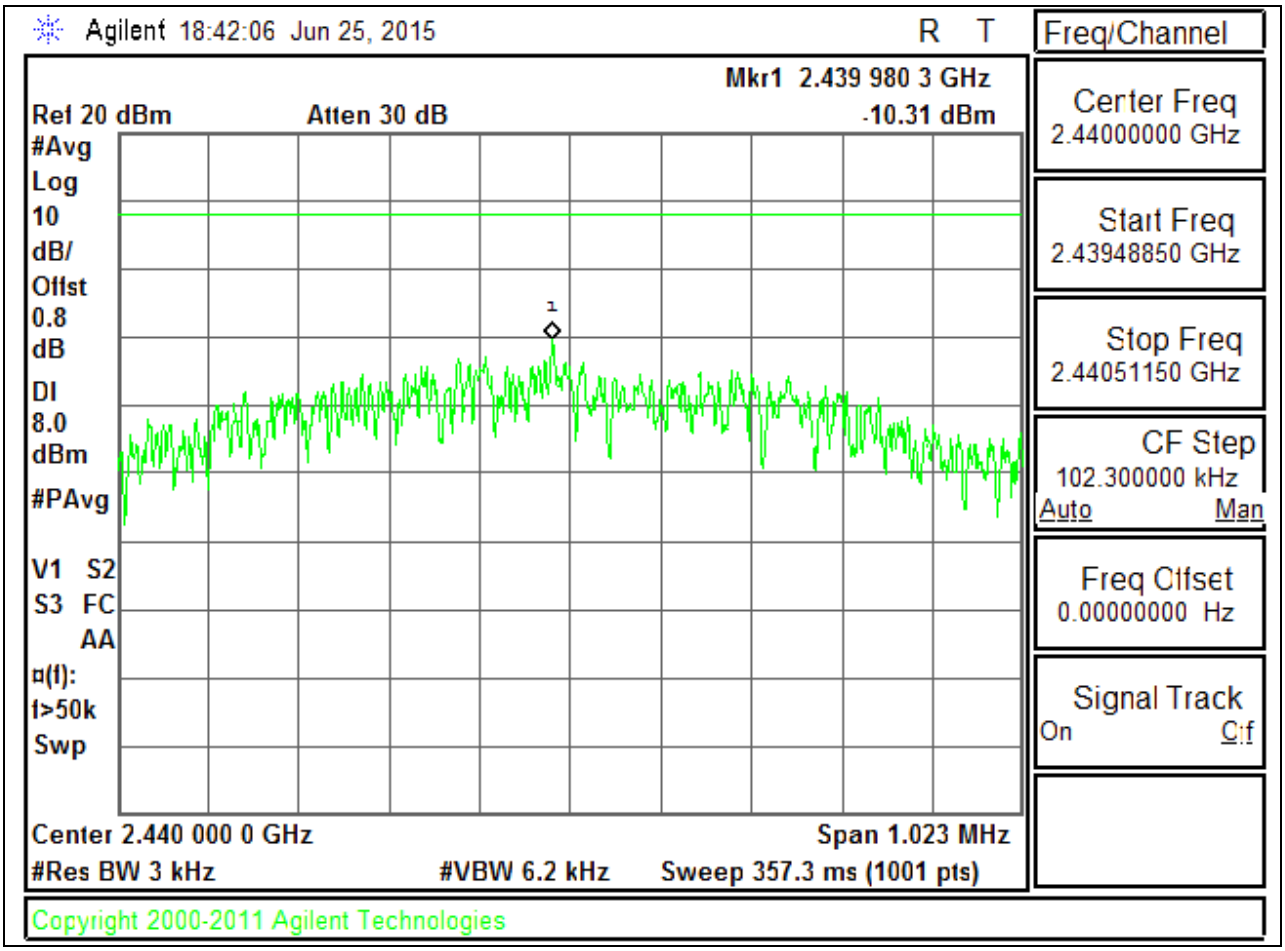
Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-11.36	8	-19.36
Middle	2440	-10.31	8	-18.31
High	2480	-10.22	8	-18.22

POWER SPECTRAL DENSITY PLOTS

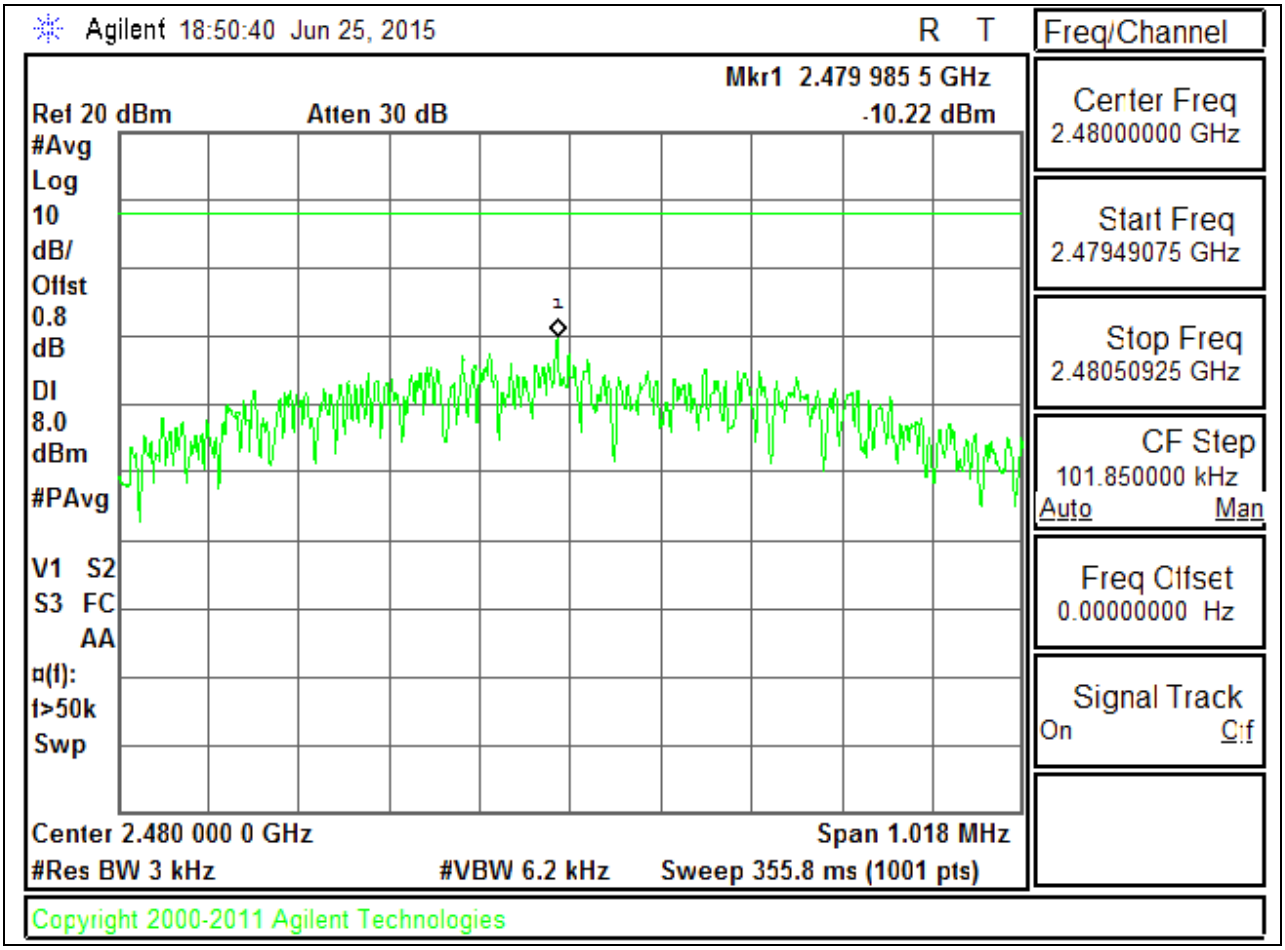
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

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

TEST PROCEDURE

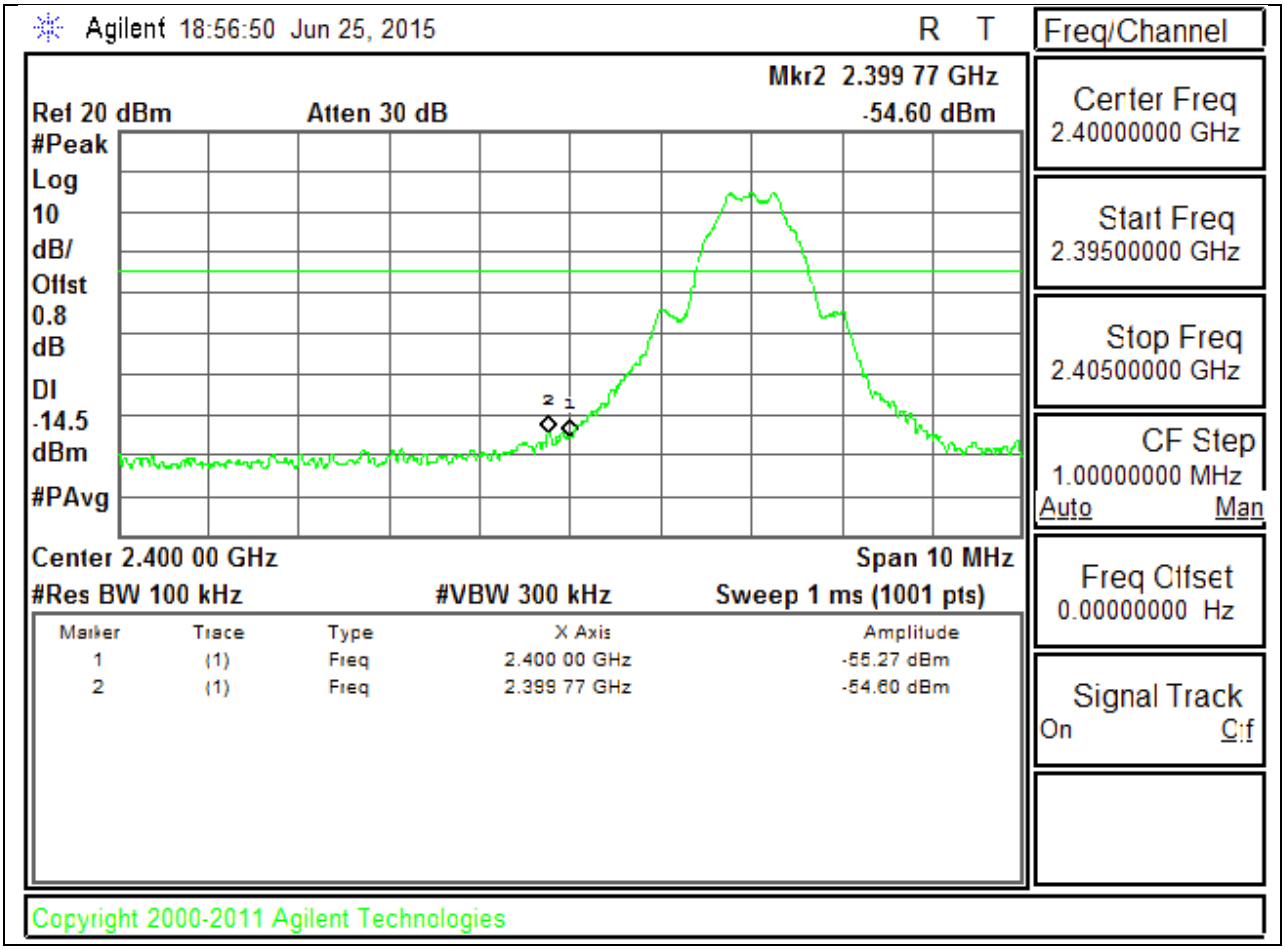
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

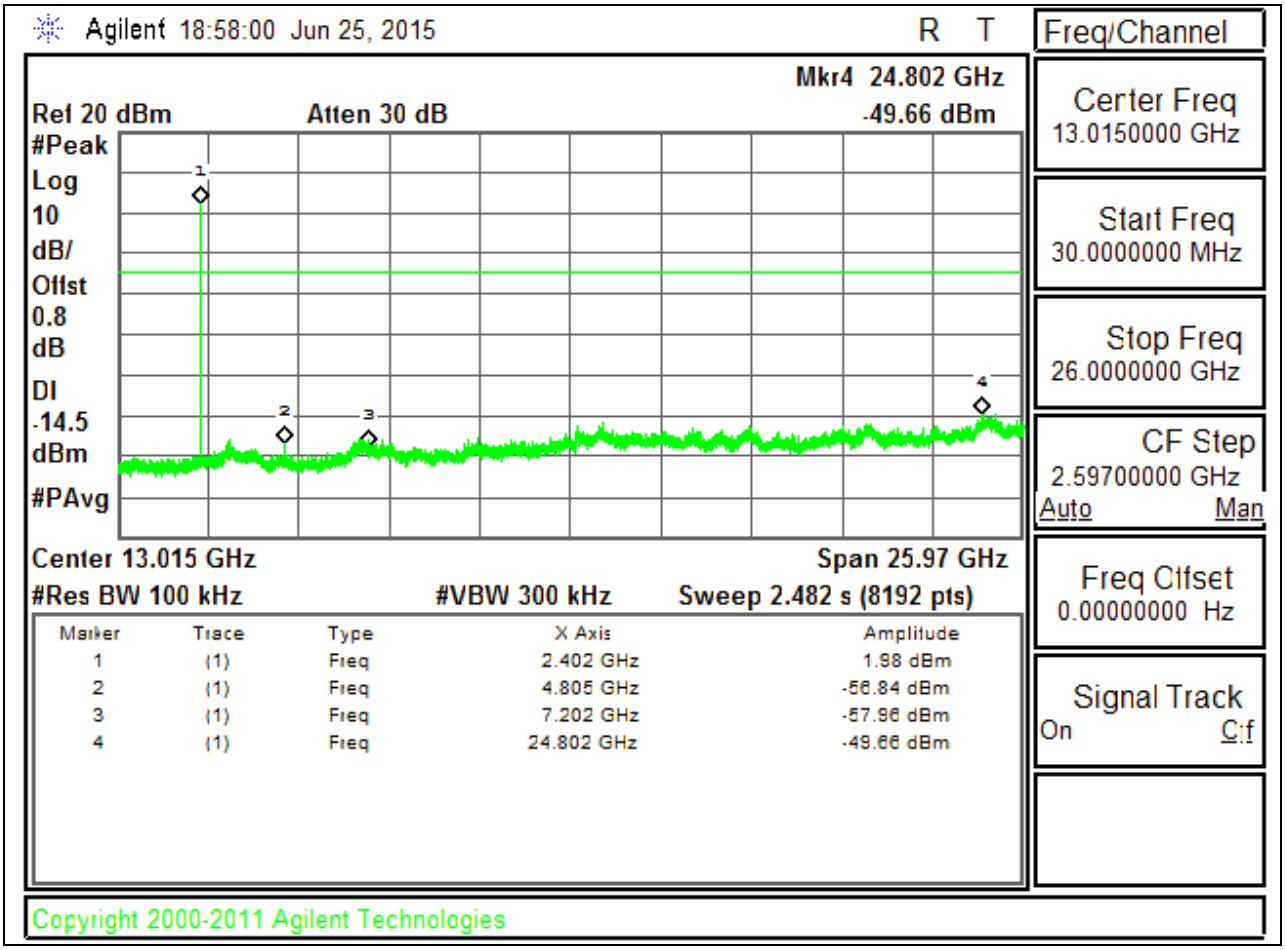
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE

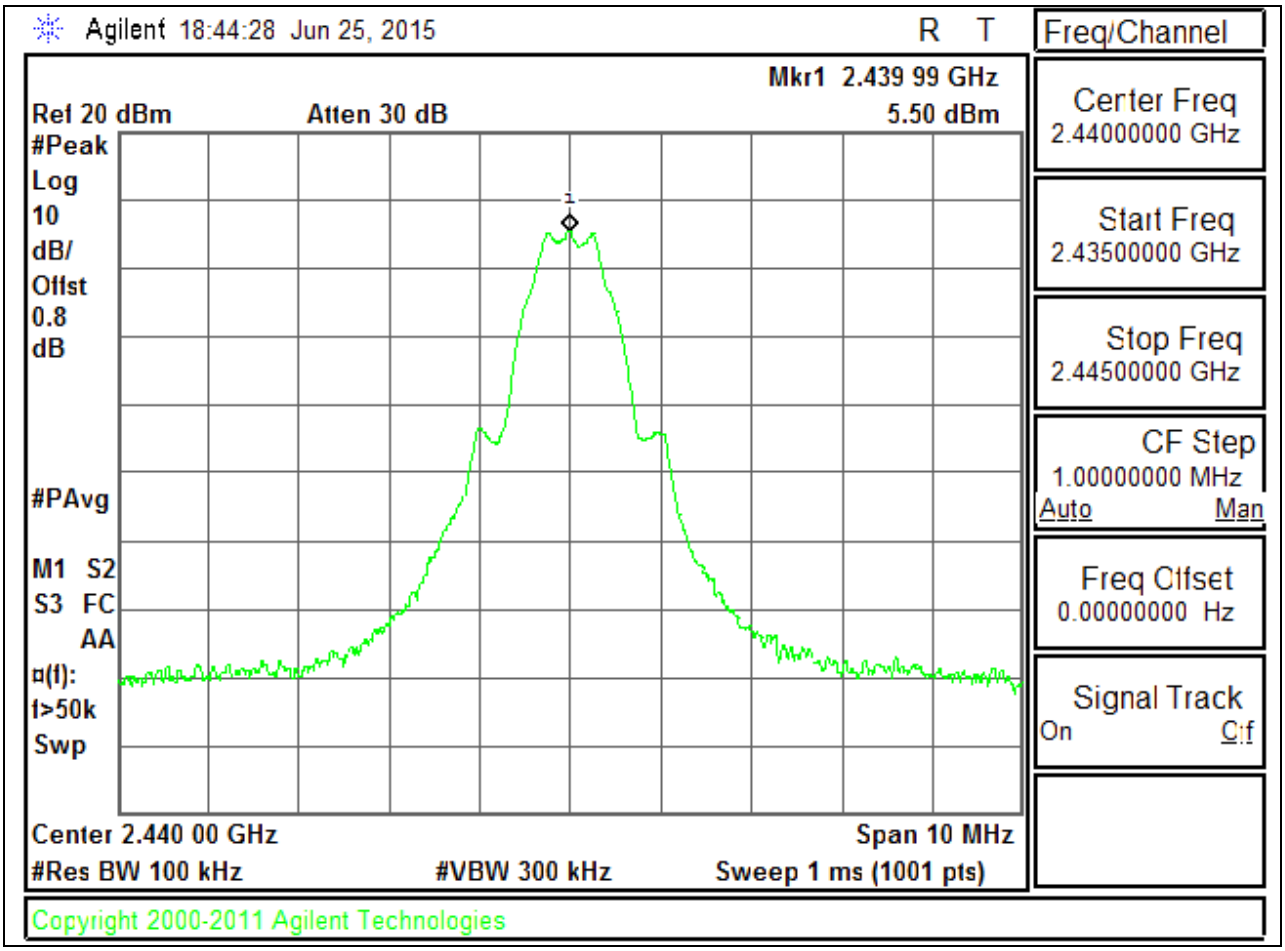


LOW CHANNEL SPURIOUS

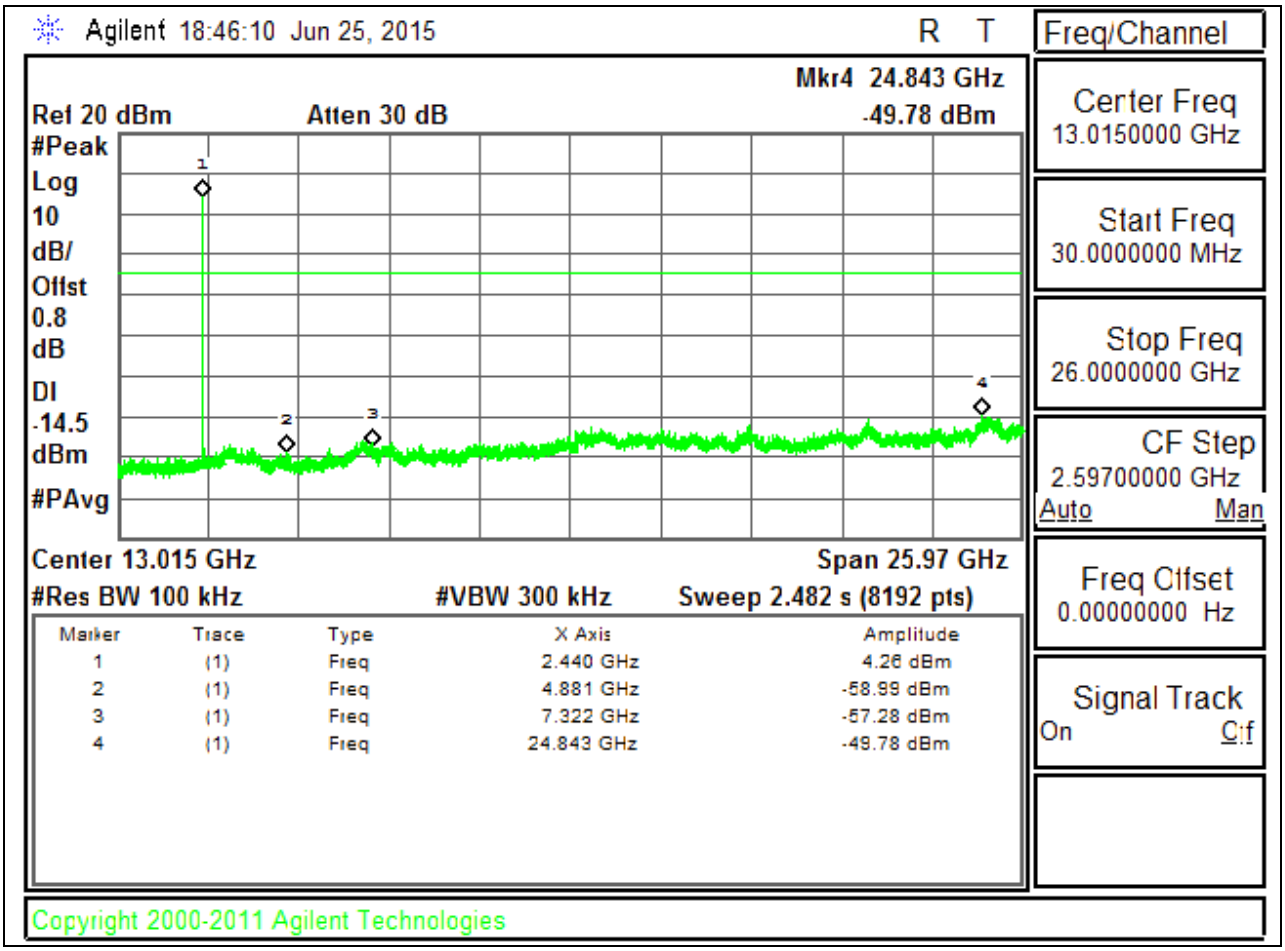


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL REFERENCE

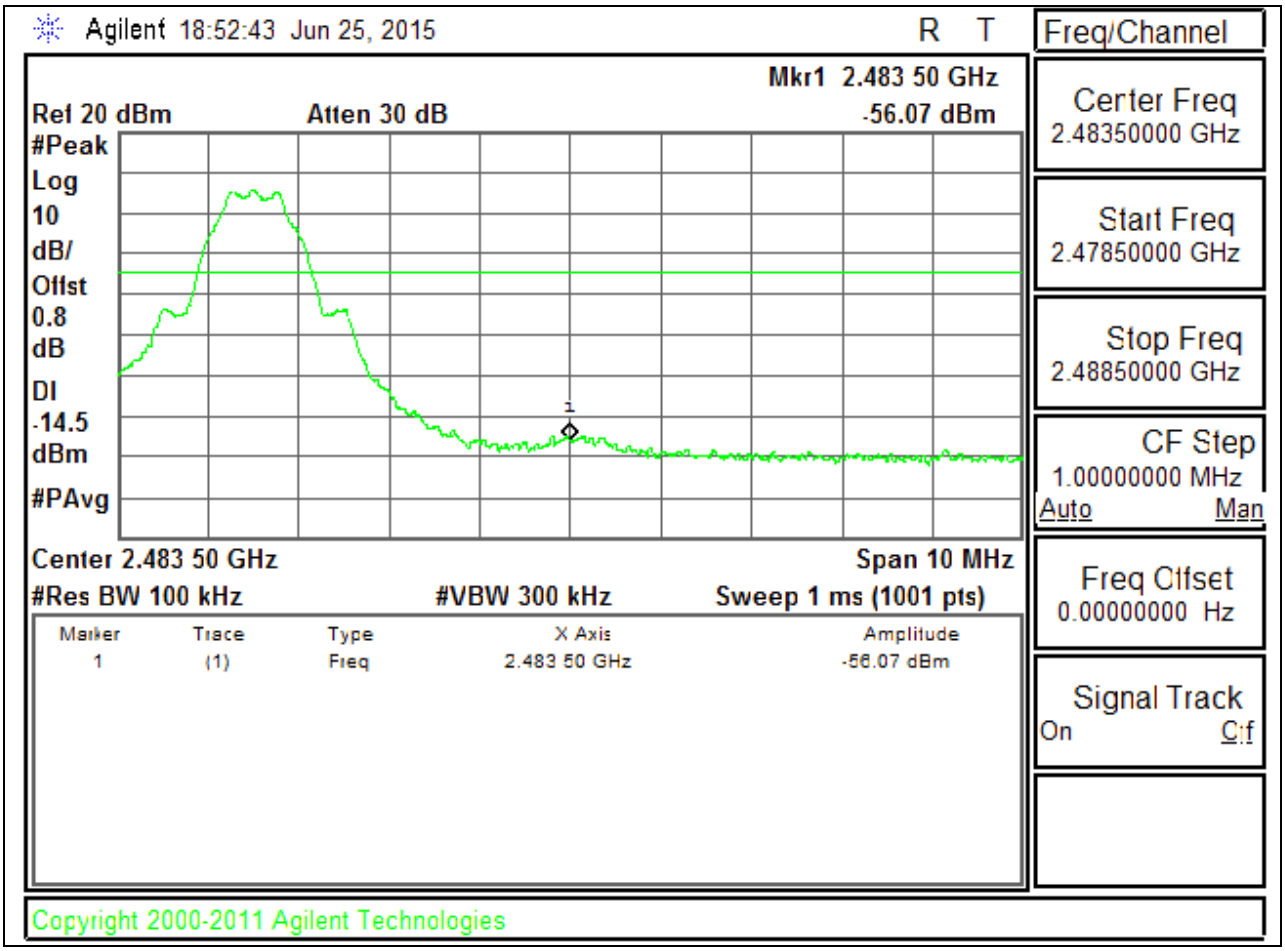


MID CHANNEL SPURIOUS

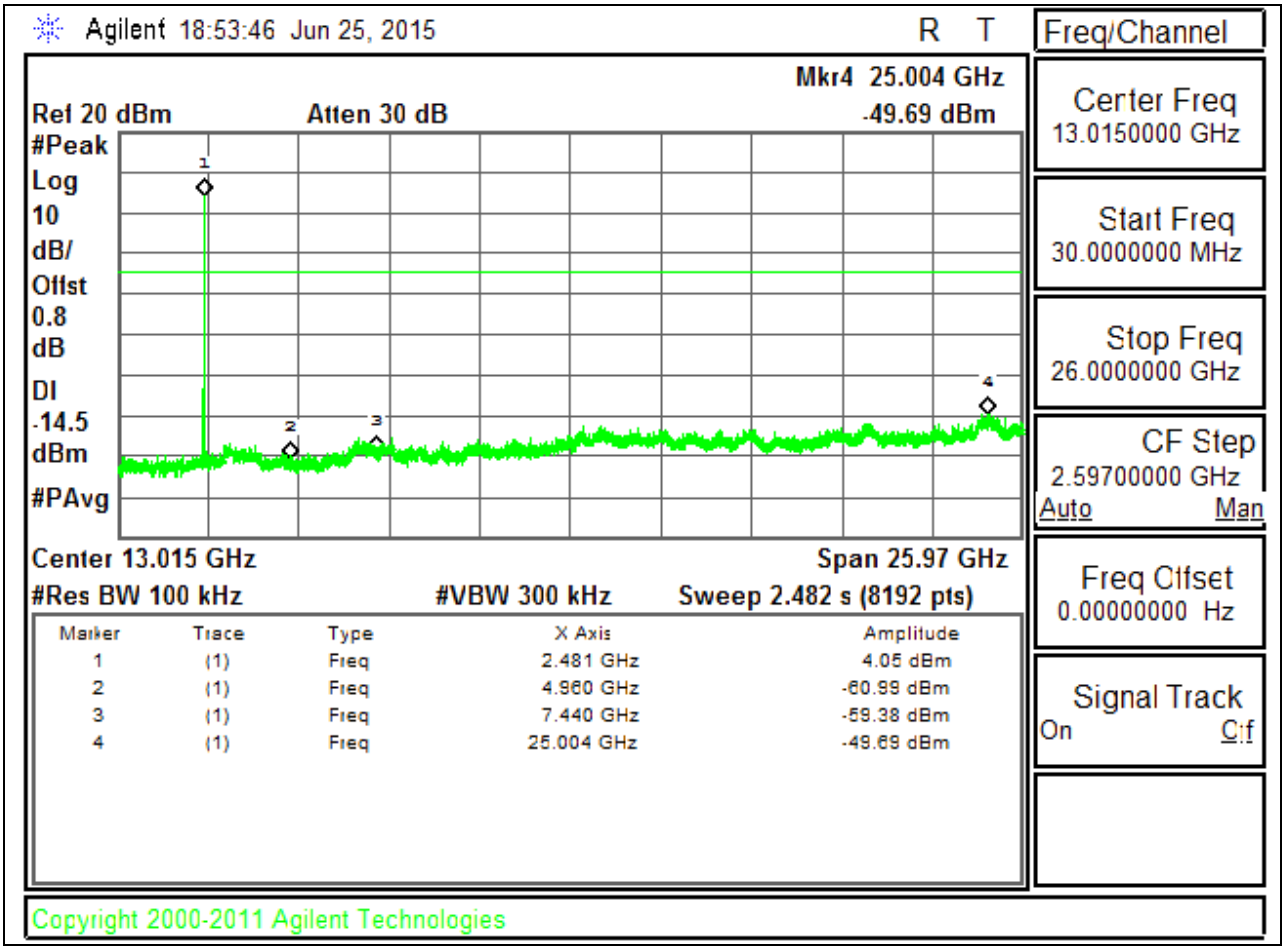


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE



HIGH CHANNEL SPURIOUS



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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 for below 1GHz and 150cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. 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 add duty cycle factor for average measurements. Duty cycle factor = 10 log (1/x). For this sample: DCF = 10log (1/0.62)= 2.07dB

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.

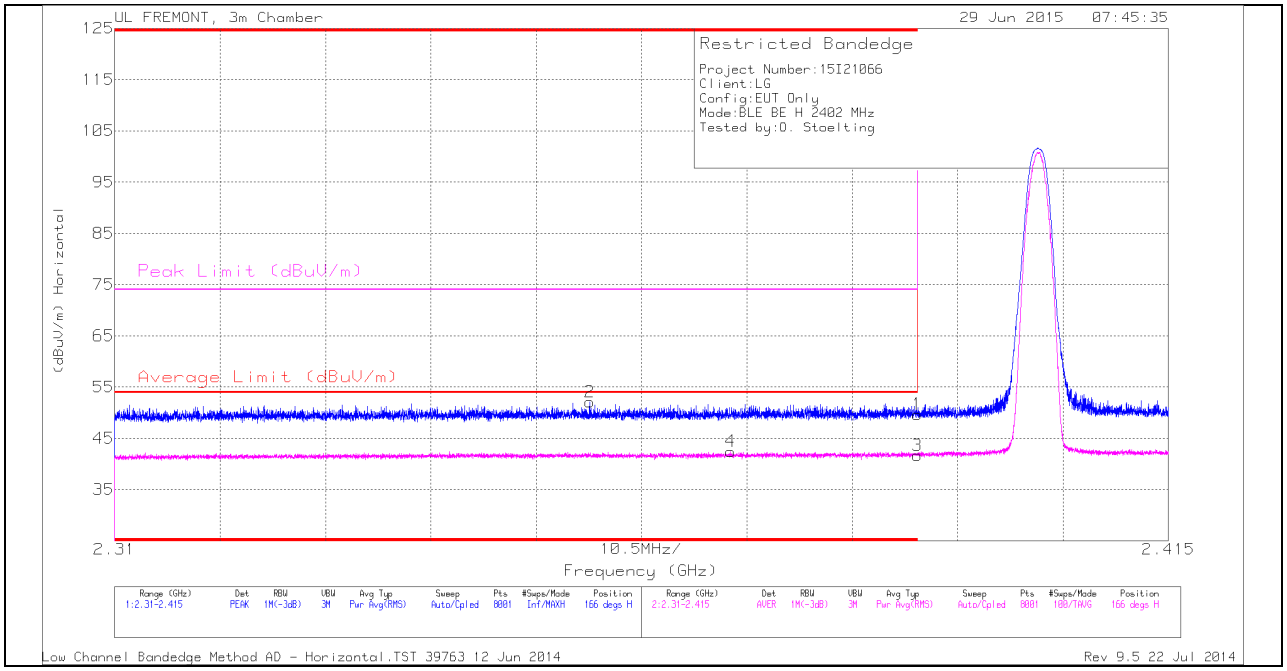
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

10.2. TRANSMITTER ABOVE 1 GHz

RESTRICTED BANDEDGE (LOW CHANNEL)

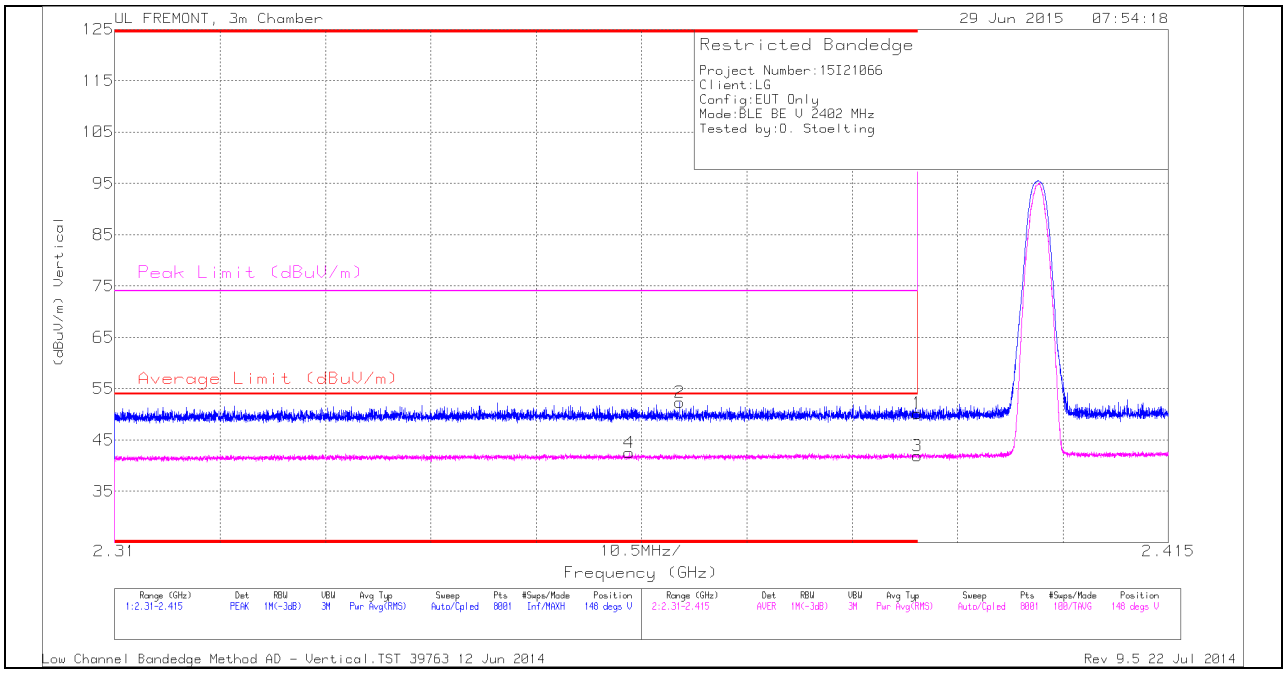
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
2	* 2.357	42.57	PK	31.9	-22.4	0	52.07	-	-	74	-21.93	166	326	H
4	* 2.371	30.87	RMS	31.9	-22.4	2.09	42.46	54	-11.54	-	-	166	326	H
1	* 2.39	40.08	PK	32	-22.4	0	49.68	-	-	74	-24.32	166	326	H
3	* 2.39	29.94	RMS	32	-22.4	2.09	41.63	54	-12.37	-	-	166	326	H

VERTICAL PEAK AND AVERAGE PLOT

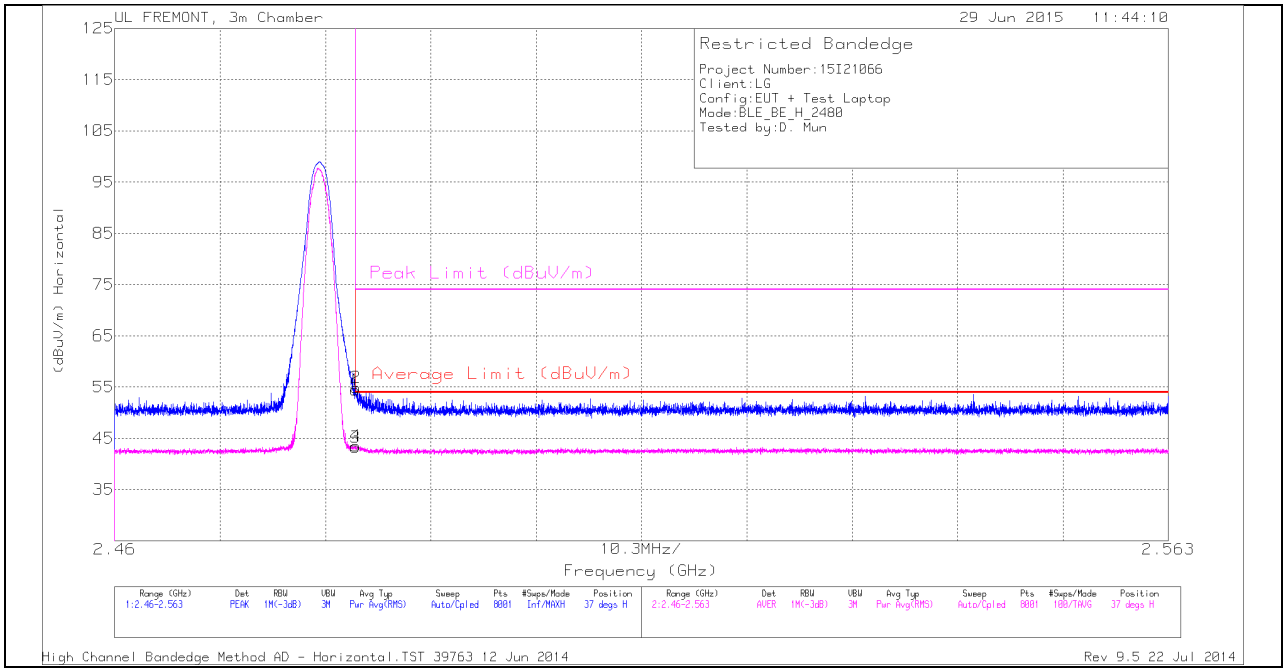


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
4	* 2.361	31.01	RMS	31.9	-22.5	2.09	42.5	54	-11.5	-	-	148	363	V
2	* 2.366	42.96	PK	31.9	-22.5	0	52.36	-	-	74	-21.64	148	363	V
1	* 2.39	40.57	PK	32	-22.4	0	50.17	-	-	74	-23.83	148	363	V
3	* 2.39	30.21	RMS	32	-22.4	2.09	41.9	54	-12.1	-	-	148	363	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

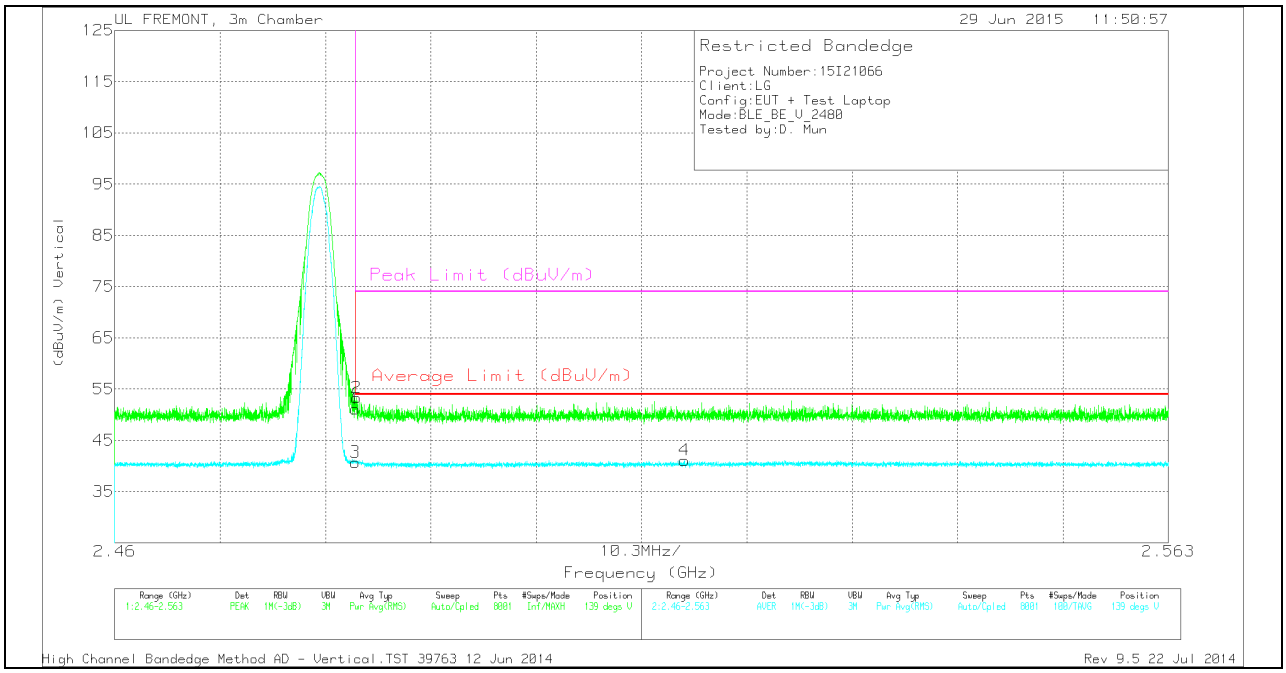
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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	44.2	PK	32.3	-22.1	0	54.4	-	-	74	-19.6	37	396	H
2	2.484	44.73	PK	32.3	-22.1	0	54.93	-	-	74	-19.07	37	396	H
3	2.484	30.99	RMS	32.3	-22.1	2.09	43.28	54	-10.72	-	-	37	396	H
4	2.484	31.18	RMS	32.3	-22.1	2.09	43.47	54	-10.53	-	-	37	396	H

VERTICAL PEAK AND AVERAGE PLOT

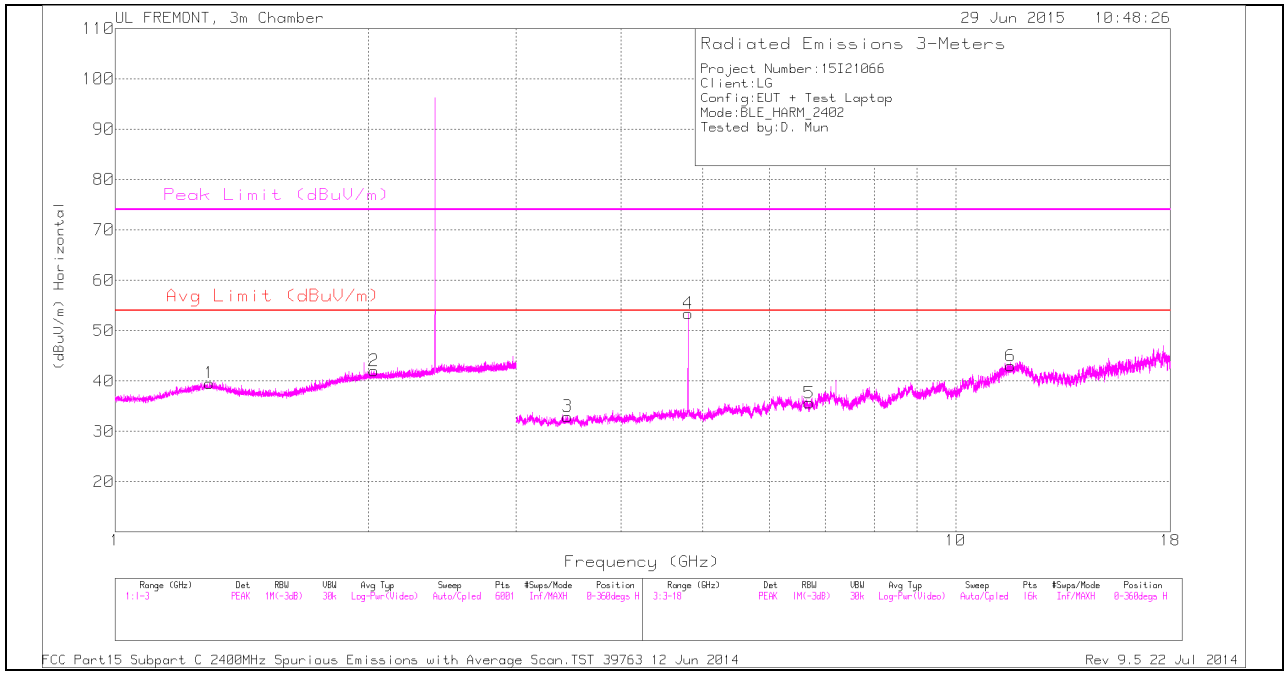


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/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	40.92	PK	32.3	-22.1	51.12	-	-	74	-22.88	139	301	V
2	2.484	43.09	PK	32.3	-22.1	53.29	-	-	74	-20.71	139	301	V
3	2.484	30.53	RMS	32.3	-22.1	40.73	54	-13.27	-	-	139	301	V
4	2.516	30.92	RMS	32.3	-22.1	41.12	54	-12.88	-	-	139	301	V

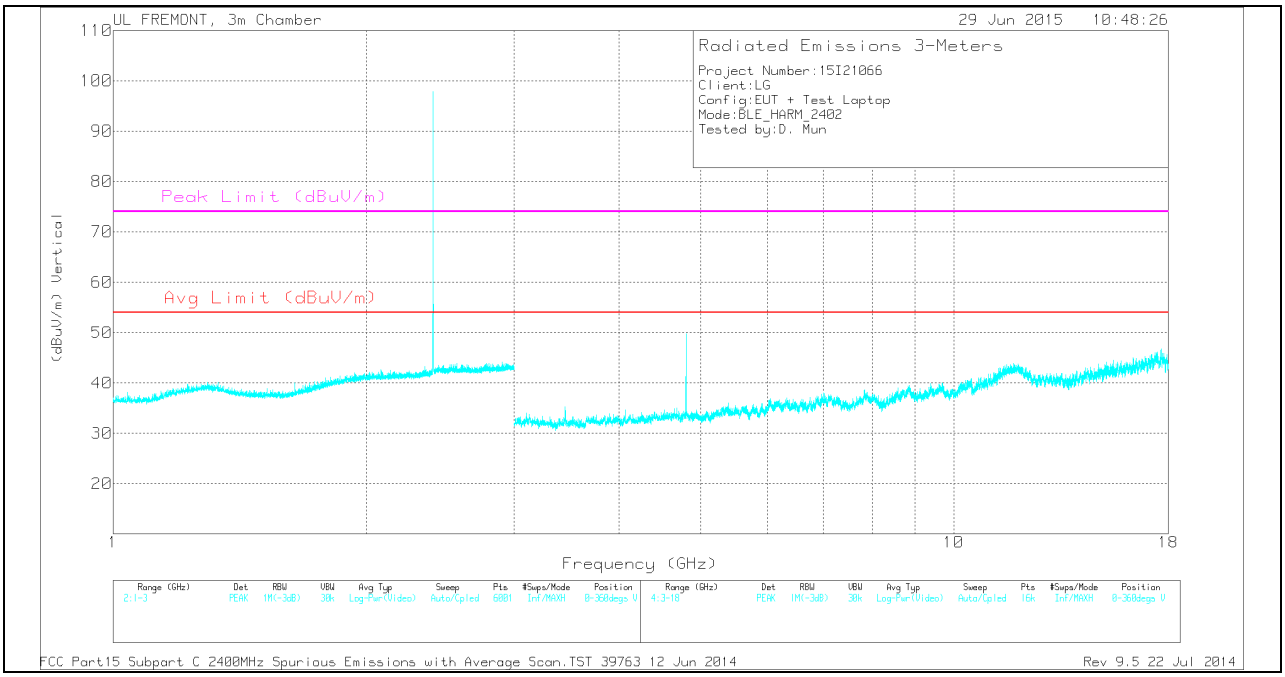
HARMONICS AND SPURIOUS EMISSIONS

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

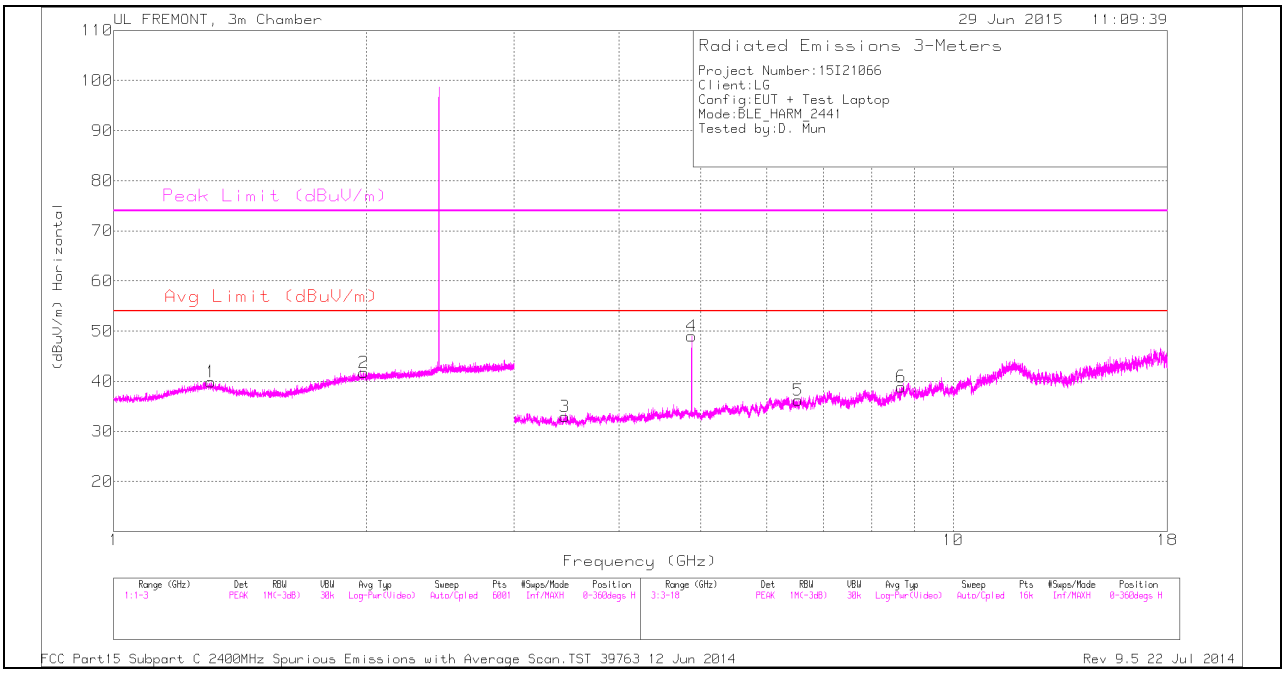
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.294	32.99	PK	29.8	-23.2	0	39.59	-	-	74	-34.41	0-360	100	H
2	2.032	33.04	PK	31.5	-22.5	0	42.04	-	-	-	-	0-360	100	H
3	3.456	30.66	PK	32.8	-30.5	0	32.96	-	-	-	-	0-360	200	H
4	4.805	48.83	PK	34	-29.4	0	53.43	-	-	74	-20.57	0-360	200	H
5	6.695	29.25	PK	35.6	-29.2	0	35.65	-	-	-	-	0-360	200	H
6	11.628	26.62	PK	38.7	-22.3	0	43.02	-	-	74	-30.98	0-360	200	H

PK - Peak detector

RADIATED EMISSIONS

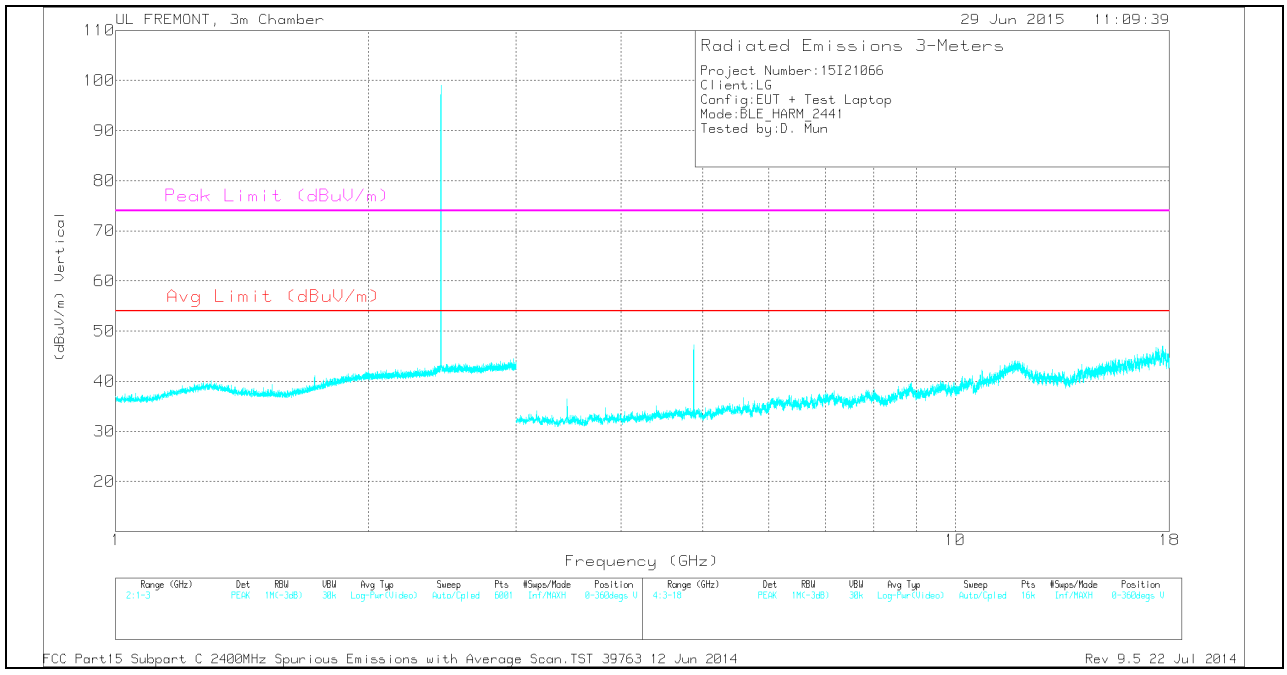
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.293	42.39	PK2	29.8	-23.2	0	48.99	-	-	74	-25.01	360	100	H
1.294	30.96	MAv1	29.8	-23.2	2.09	39.63	54	-14.37	-	-	360	100	H
2.032	30.71	MAv1	31.5	-22.5	2.09	41.78	-	-	-	-	360	100	H
2.033	42.1	PK2	31.5	-22.5	0	51.1	-	-	-	-	360	100	H
3.456	40.25	PK2	32.8	-30.6	0	42.45	-	-	-	-	360	200	H
3.457	29.08	MAv1	32.8	-30.6	2.09	33.35	-	-	-	-	360	200	H
4.803	47.39	PK2	34	-29.4	0	51.99	-	-	74	-22.01	360	200	H
4.804	40.8	MAv1	34	-29.4	2.09	47.47	54	-6.53	-	-	360	200	H
6.694	39.47	PK2	35.6	-29.2	0	45.87	-	-	-	-	360	200	H
6.694	27.98	MAv1	35.6	-29.2	2.09	36.45	-	-	-	-	360	200	H
11.627	36.67	PK2	38.7	-22.3	0	53.07	-	-	74	-20.93	360	200	H
11.627	25.27	MAv1	38.7	-22.3	2.09	43.74	54	-10.26	-	-	360	200	H

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

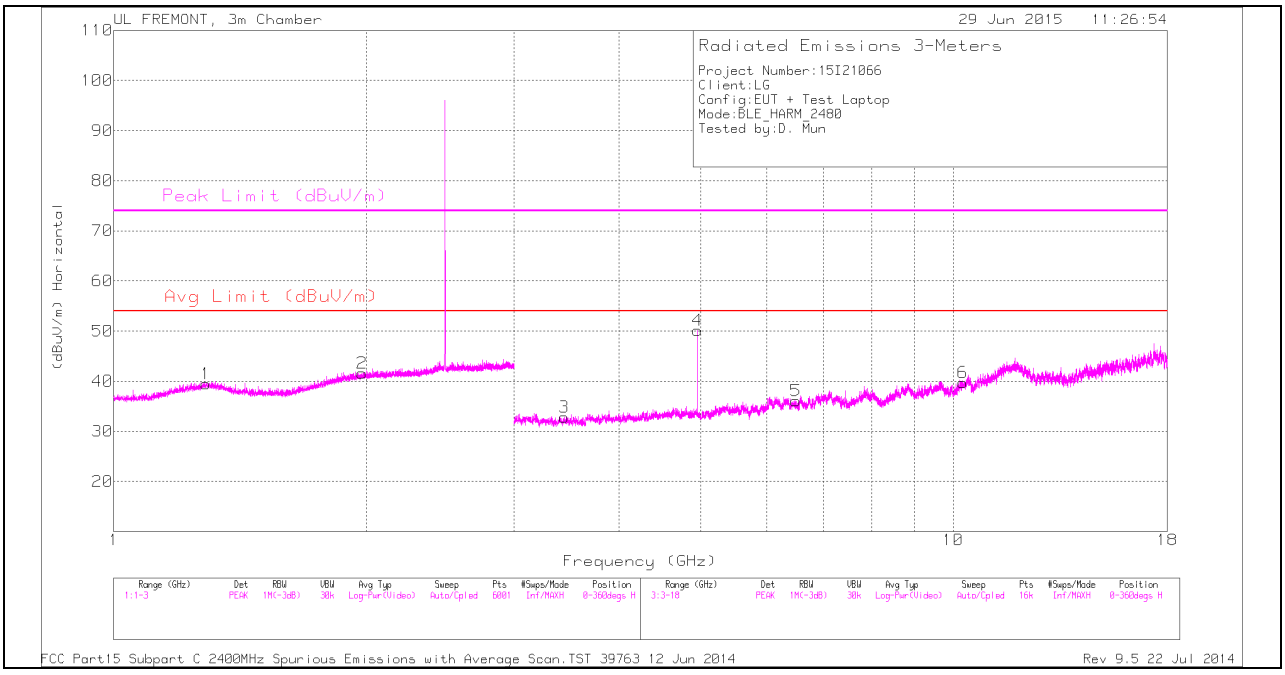
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.306	33.18	PK	29.8	-23.1	0	39.88	-	-	74	-34.12	0-360	100	H
2	1.986	32.73	PK	31.5	-22.5	0	41.73	-	-	-	-	0-360	100	H
3	3.445	30.87	PK	32.7	-30.6	0	32.97	-	-	-	-	0-360	100	H
4	4.88	44.09	PK	34	-29.1	0	48.99	-	-	74	-25.01	0-360	100	H
5	6.54	29.18	PK	35.6	-28.6	0	36.18	-	-	-	-	0-360	100	H
6	8.678	28.78	PK	35.9	-25.8	0	38.88	-	-	-	-	0-360	100	H

PK - Peak detector

RADIATED EMISSIONS

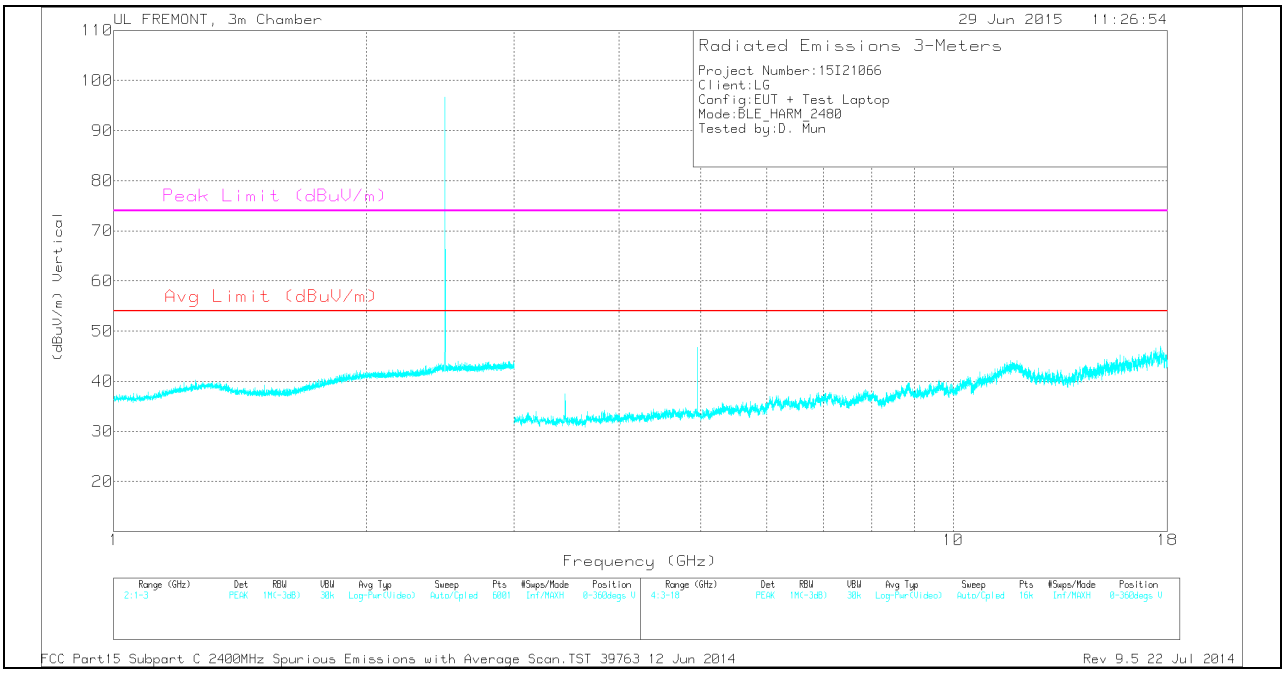
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.305	30.99	MAv1	29.8	-23.1	2.09	39.76	54	-14.24	-	-	360	100	H
1.306	42.78	PK2	29.8	-23.1	0	49.48	-	-	74	-24.52	360	100	H
1.987	30.84	MAv1	31.5	-22.5	2.09	41.91	-	-	-	-	360	100	H
1.988	42.22	PK2	31.5	-22.5	0	51.22	-	-	-	-	360	100	H
3.444	29.33	MAv1	32.7	-30.7	2.09	33.4	-	-	-	-	360	100	H
3.447	40.99	PK2	32.7	-30.6	0	43.09	-	-	-	-	360	100	H
4.88	43.94	PK2	34	-29.1	0	48.84	-	-	74	-25.16	360	100	H
4.88	35.68	MAv1	34	-29.1	2.09	42.65	54	-11.35	-	-	360	100	H
6.538	39.05	PK2	35.6	-28.6	0	46.05	-	-	-	-	360	100	H
6.539	27.59	MAv1	35.6	-28.6	2.09	36.66	-	-	-	-	360	100	H
8.68	36.8	PK2	35.9	-25.8	0	46.9	-	-	-	-	360	100	H
8.68	25.9	MAv1	35.9	-25.8	2.09	38.07	-	-	-	-	360	100	H

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)	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
1	1.287	32.74	PK	29.8	-23.1	0	39.44	-	-	74	-34.56	0-360	100	H
2	1.976	32.81	PK	31.4	-22.6	0	41.61	-	-	-	-	0-360	100	H
3	3.44	30.84	PK	32.7	-30.7	0	32.84	-	-	-	-	0-360	100	H
4	4.96	46.44	PK	34	-30.3	0	50.14	-	-	74	-23.86	0-360	100	H
5	6.497	29.66	PK	35.6	-29.2	0	36.06	-	-	-	-	0-360	100	H
6	10.274	26.7	PK	37.1	-24.1	0	39.7	-	-	-	-	0-360	100	H

PK - Peak detector

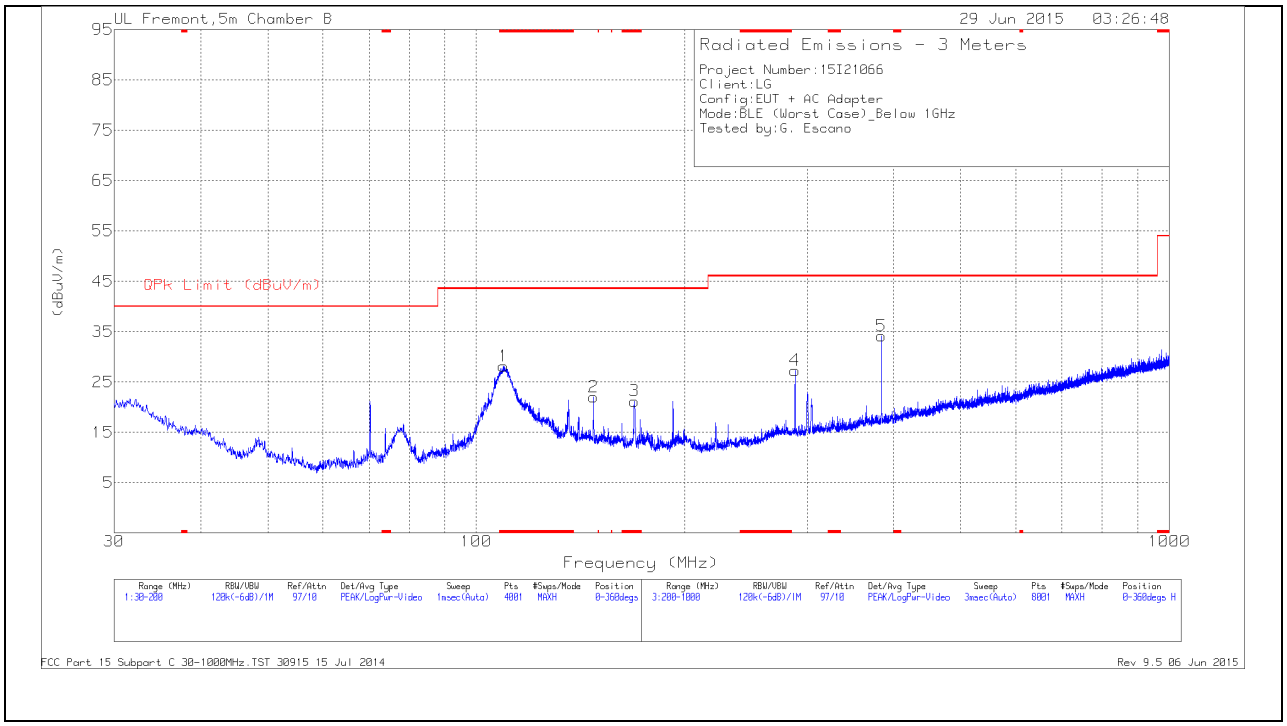
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (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
1.286	43.05	PK2	29.8	-23.1	0	49.75	-	-	74	-24.25	360	100	H
1.286	30.97	MAv1	29.8	-23.1	2.09	39.74	54	-14.26	-	-	360	100	H
1.974	42.64	PK2	31.4	-22.6	0	51.44	-	-	-	-	360	100	H
1.978	30.94	MAv1	31.4	-22.6	2.09	41.81	-	-	-	-	360	100	H
3.44	40.62	PK2	32.7	-30.7	0	42.62	-	-	-	-	360	100	H
3.44	29.26	MAv1	32.7	-30.7	2.09	33.33	-	-	-	-	360	100	H
4.96	44.69	PK2	34	-30.3	0	48.39	-	-	74	-25.61	360	100	H
4.96	35.66	MAv1	34	-30.3	2.09	41.43	54	-12.57	-	-	360	100	H
6.496	39.85	PK2	35.6	-29.2	0	46.25	-	-	-	-	360	100	H
6.498	28.32	MAv1	35.6	-29.2	2.09	36.79	-	-	-	-	360	100	H
10.273	24.54	MAv1	37.1	-24.1	2.09	39.61	-	-	-	-	360	100	H
10.275	37.21	PK2	37.1	-24.1	0	50.21	-	-	-	-	360	100	H

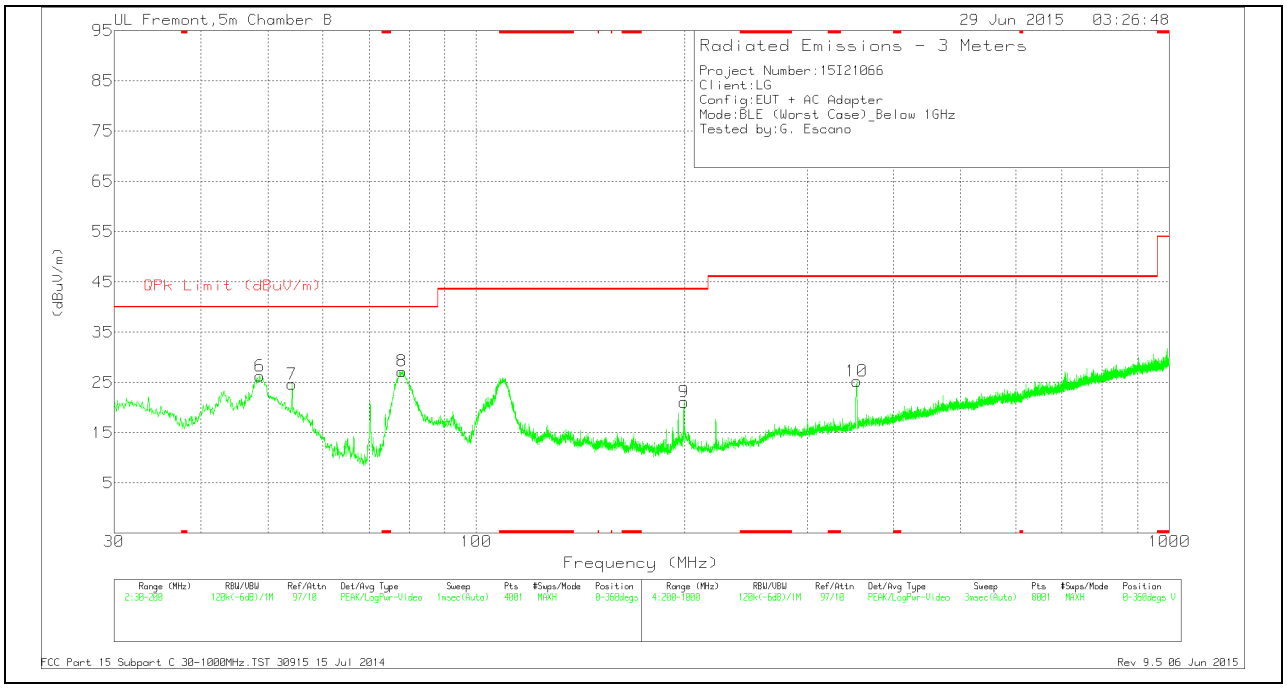
10.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

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
1	* 109.4325	43.52	Pk	12.5	-27.9	28.12	43.52	-15.4	0-360	299	H
3	* 169.1025	36.72	Pk	11.7	-27.2	21.22	43.52	-22.3	0-360	199	H
6	48.7	46.25	Pk	8.6	-28.6	26.25	40	-13.75	0-360	101	V
7	54.225	45.73	Pk	7.4	-28.5	24.63	40	-15.37	0-360	101	V
8	78.0675	47.71	Pk	7.7	-28.2	27.21	40	-12.79	0-360	101	V
2	147.64	36.8	Pk	12.6	-27.4	22	43.52	-21.52	0-360	199	H
9	199.2775	35.41	Pk	12.6	-26.9	21.11	43.52	-22.41	0-360	101	V
4	288.3	39.89	Pk	13.3	-25.9	27.29	46.02	-18.73	0-360	101	H
10	353.9	36.34	Pk	14.6	-25.7	25.24	46.02	-20.78	0-360	101	V
5	384.3	44.74	Pk	15.2	-25.8	34.14	46.02	-11.88	0-360	101	H

PK - Peak detector

11. 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.

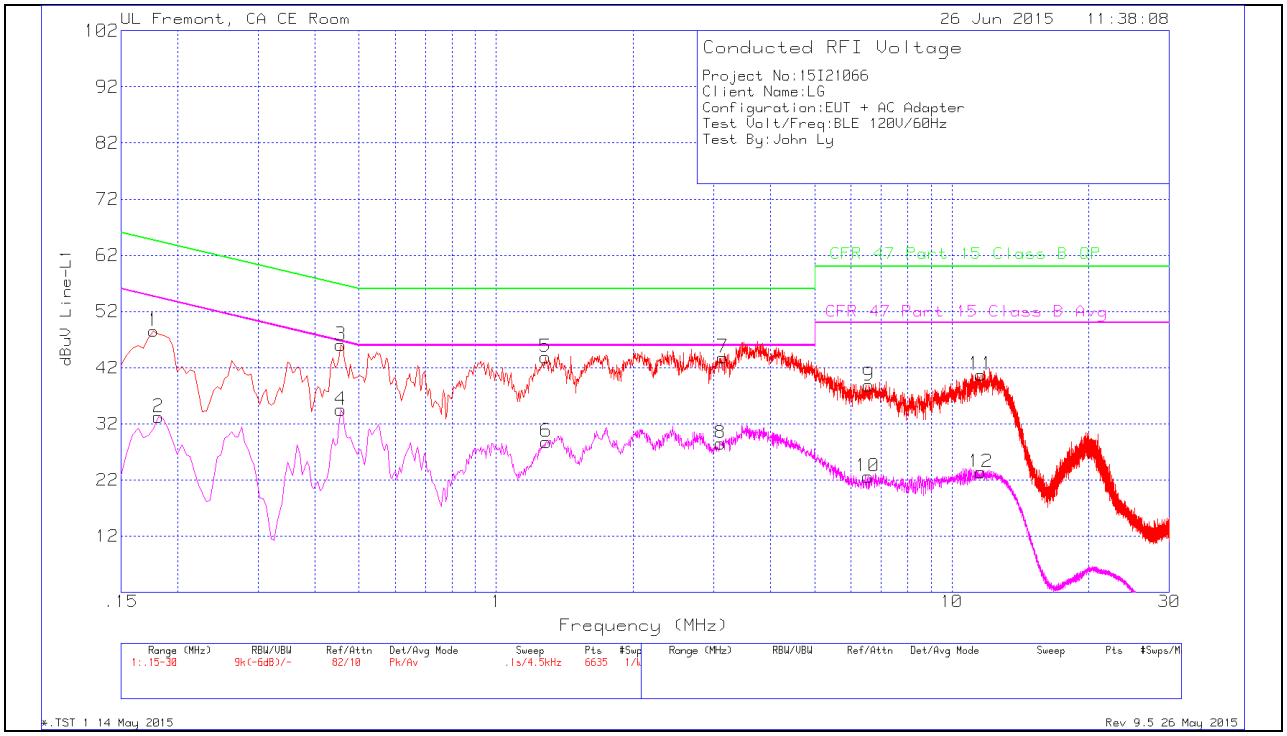
TEST PROCEDURE

ANSI C63.10

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



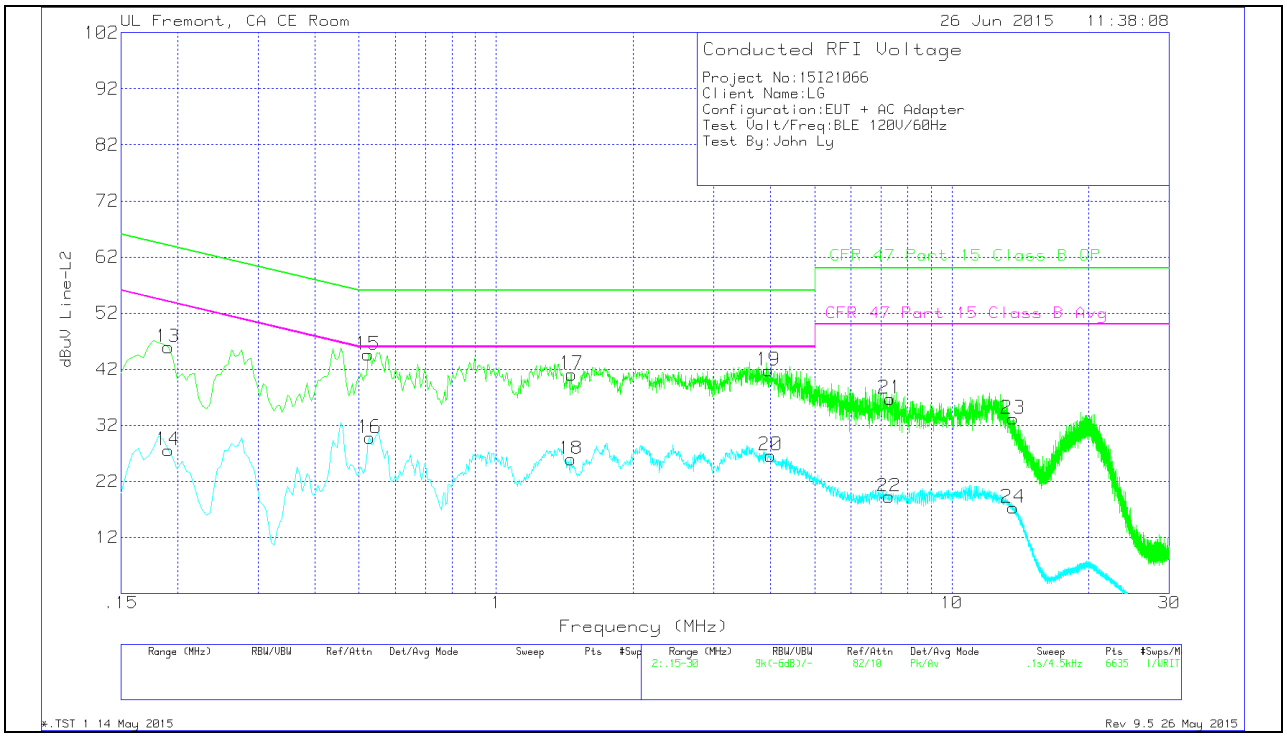
LINE 1 RESULTS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
1	.177	47.46	Pk	1.1	0	48.56	64.63	-16.07		
2	.1815	32.11	Av	1.1	0	33.21	-	-	54.42	-21.21
3	.456	45.63	Pk	.4	0	46.03	56.77	-10.74		
4	.456	34.1	Av	.4	0	34.5	-	-	46.77	-12.27
5	1.284	43.59	Pk	.2	.1	43.89	56	-12.11		
6	1.2885	28.51	Av	.2	.1	28.81	-	-	46	-17.19
7	3.1425	43.52	Pk	.2	.1	43.82	56	-12.18		
8	3.1065	28.23	Av	.2	.1	28.53	-	-	46	-17.47
9	6.567	38.56	Pk	.2	.1	38.86	60	-21.14		
10	6.5445	22.3	Av	.2	.1	22.6	-	-	50	-27.4
11	11.571	40.33	Pk	.2	.2	40.73	60	-19.27		
12	11.589	22.98	Av	.2	.2	23.38	-	-	50	-26.62

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	CFR 47 Part 15 Class B QP	Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
13	.1905	44.83	Pk	1.1	0	45.93	64.01	-18.08		
14	.1905	26.45	Av	1.1	0	27.55	-	-	54.01	-26.46
15	.5235	44.2	Pk	.4	0	44.6	56	-11.4		
16	.528	29.46	Av	.3	0	29.76	-	-	46	-16.24
17	1.464	40.8	Pk	.2	.1	41.1	56	-14.9		
18	1.4595	25.68	Av	.2	.1	25.98	-	-	46	-20.02
19	3.9615	41.46	Pk	.2	.1	41.76	56	-14.24		
20	4.002	26.33	Av	.2	.1	26.63	-	-	46	-19.37
21	7.314	36.45	Pk	.2	.1	36.75	60	-23.25		
22	7.2825	18.97	Av	.2	.1	19.27	-	-	50	-30.73
23	13.641	32.78	Pk	.2	.2	33.18	60	-26.82		
24	13.6365	16.92	Av	.2	.2	17.32	-	-	50	-32.68

Pk - Peak detector

Av - Average detection