



FCC CFR47 PART 15 SUBPART C

BLUETOOTH LOW ENERGY

CERTIFICATION TEST REPORT

FOR

LTE Watch + BLUETOOTH and WLAN 2.4GHz b/g/n & NFC

MODEL NUMBER: LG-W200V, LGW200V, W200V, LG-W200VW, LGW200VW, W200VW

FCC ID: ZNFW200V

REPORT NUMBER: 15I21799-E3V2

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Prepared for

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NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	9/28/15	Initial Issue	
V2	9/30/15	Updated Section 2 & 8.2	V. Tran

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1. ATTESTATION OF TEST RESULTS

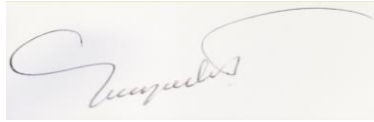
COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC.
EUT DESCRIPTION: LTE Smart Watch + Bluetooth and WLAN 2.4GHz b/g/n & NFC
MODEL: LG-W200V, LGW200V, W200V, LG-W200VW, LGW200VW, W200VW
SERIAL NUMBER: 0a930e7384e9da39 (Conducted); 0a930d208484da47 (Radiated)
DATE TESTED: SEPTEMBER 17 – 21, 2015

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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Tested By:



CHARLES VERGONIO
CONSUMER TECHNOLOGY DIVISION
WISE 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, KDB 558074 D01 v03r03, ANSI C63.10-2013 for FCC.

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
<input checked="" type="checkbox"/> Chamber A(IC: 2324B-1)	<input type="checkbox"/> Chamber D(IC: 2324B-4)
<input type="checkbox"/> Chamber B(IC: 2324B-2)	<input type="checkbox"/> Chamber E(IC: 2324B-5)
<input checked="" type="checkbox"/> Chamber C(IC: 2324B-3)	<input type="checkbox"/> Chamber F(IC: 2324B-6)
	<input type="checkbox"/> Chamber G(IC: 2324B-7)
	<input type="checkbox"/> 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:

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

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 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 LTE Watch with Bluetooth and WLAN 2.4GHz b/g/n & NFC.

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	9.67	9.27

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -4.7 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	MCS-02WR	RA71011271	N/A

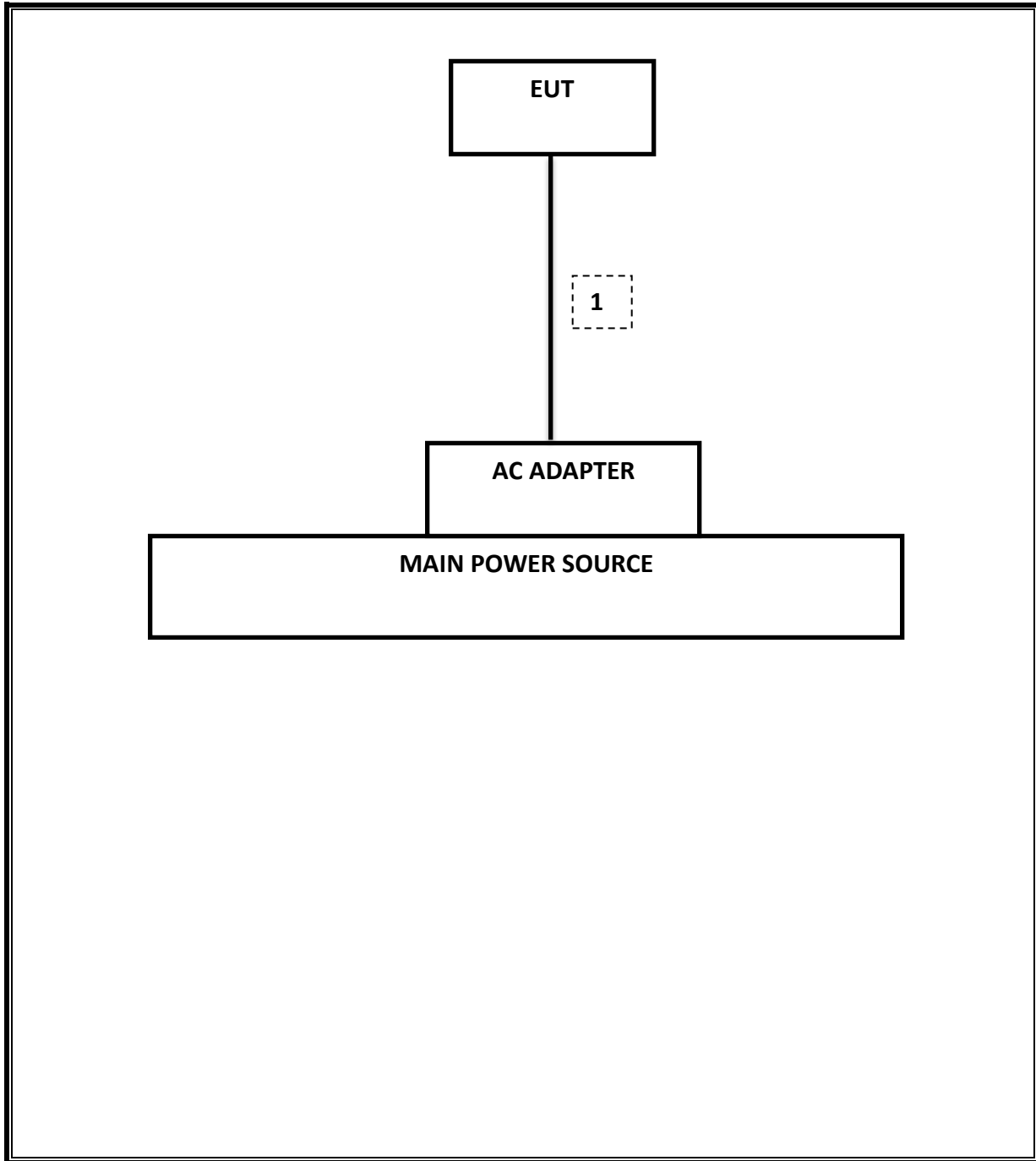
I/O CABLES

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 BLE 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
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01171	02/13/16
Antenna, Horn, 18GHz	EMCO	3115	C00783	10/25/15
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/14/15
RF Preamplifier, 100KHz -> 1300MHz	HP	8447D	T10	01/06/16
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/16
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	F00351	06/27/16
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/15
CBT Bluetooth Tester	R & S	CBT	None	07/12/16
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/15
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/15
LISN, 30 MHz	FCC	50/250-25-2	C00626	01/14/16
Reject Filter, 2.4GHz	Micro-Tronics	BRM50702	N02684	CNR
Radiated Software	UL	UL EMC	Ver 9.5, July 22, 2014	
Conducted Software	UL	UL EMC	Ver 9.5, May 17 2012	
CLT Software	UL	UL RF	Ver 1.0, Feb 2 2015	
Antenna Port Software	UL	UL RF	Ver 2.1.1.1, Jan 20 2015	

7. 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	0.682MHz
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-51.30dBm
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Pass	9.67dBm
15.247	RSS-247 5.2.2	PSD	<8dBm		Pass	-8.72dBm
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass	47.86dBuV(PK)
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass	43.16dBuV/m

8. ANTENNA PORT TEST RESULTS

8.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

TEST PROCEDURE

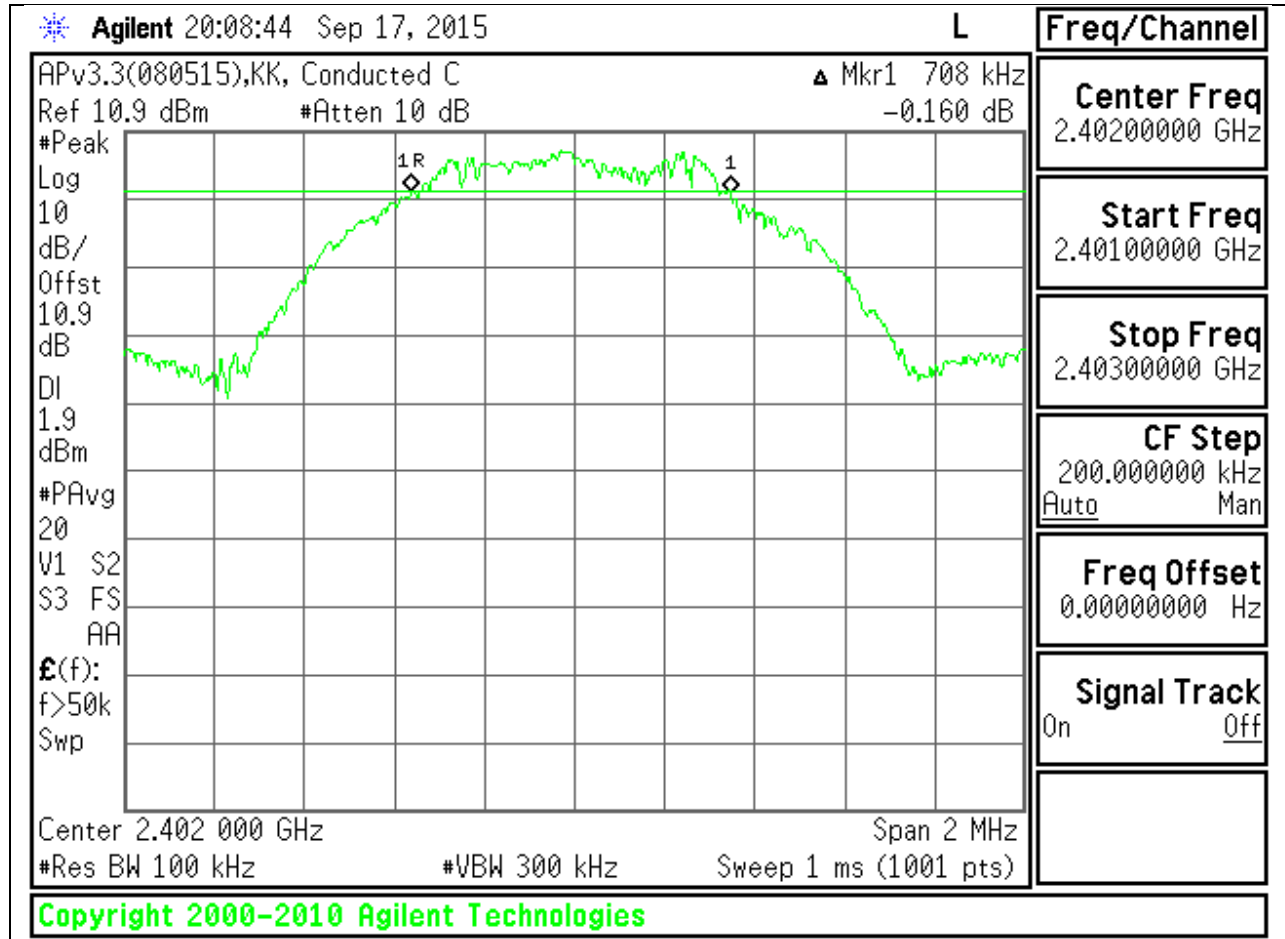
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

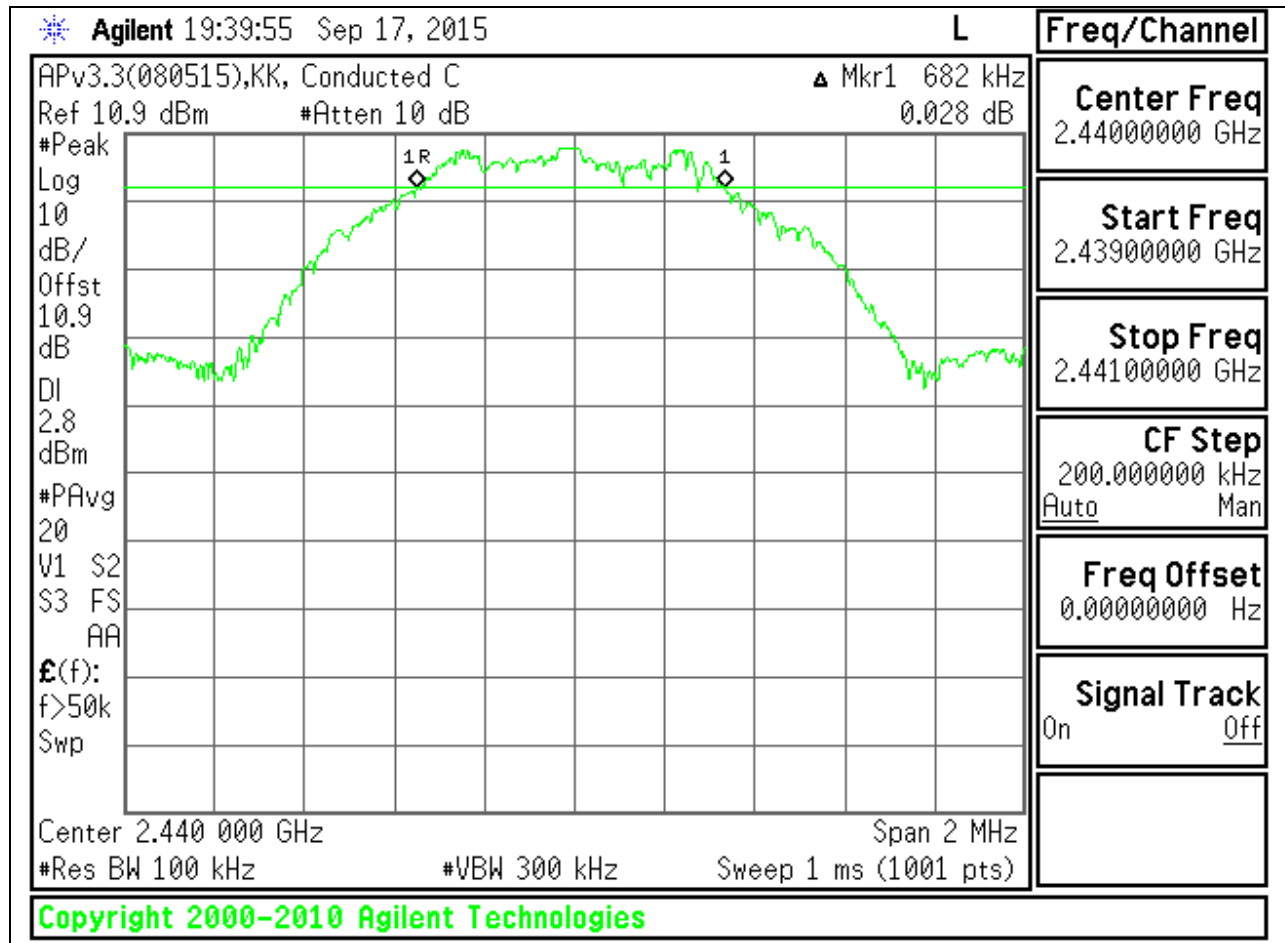
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.708	0.5
Middle	2440	0.682	0.5
High	2480	0.714	0.5

6 dB BANDWIDTH PLOTS

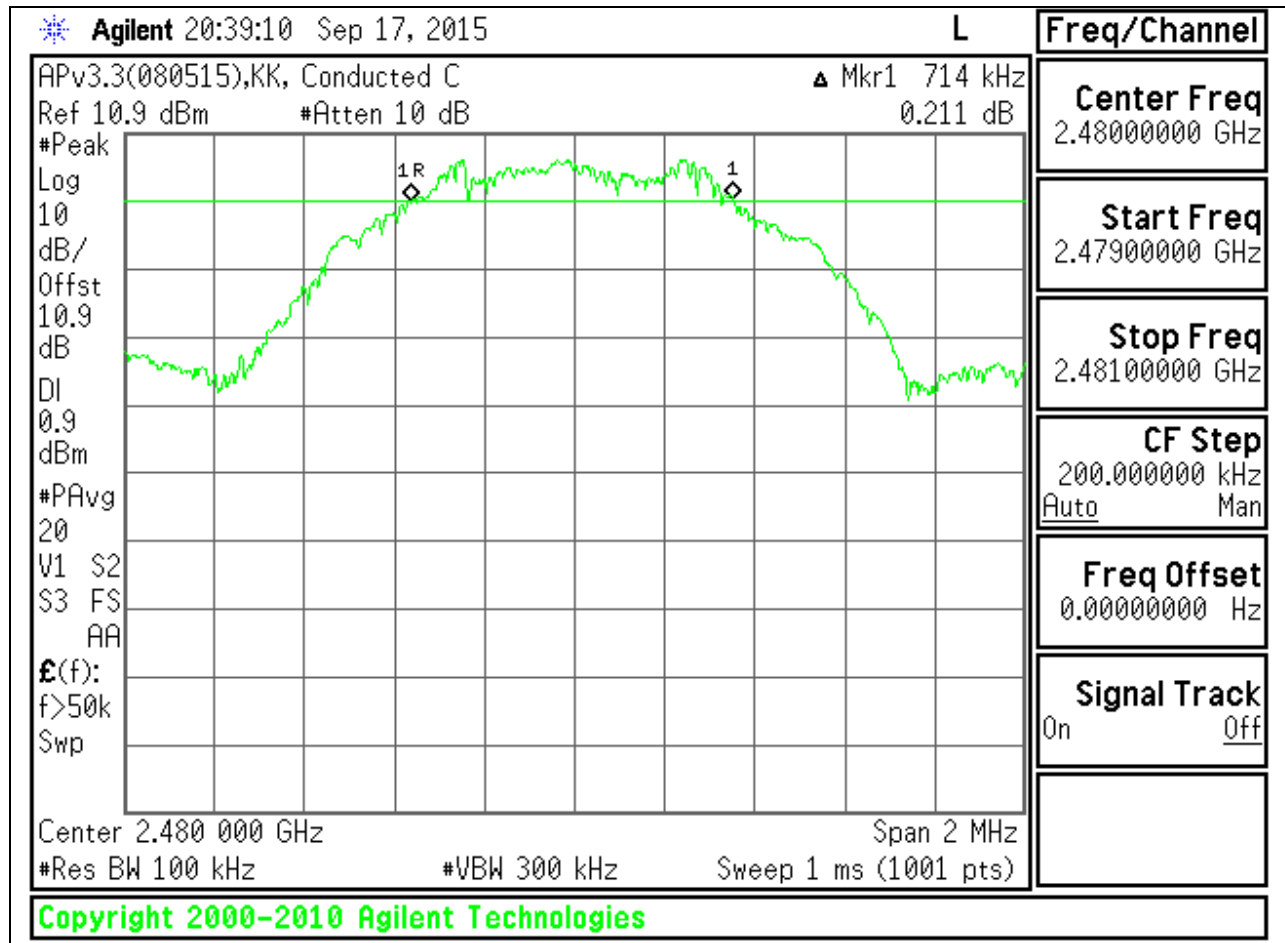
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

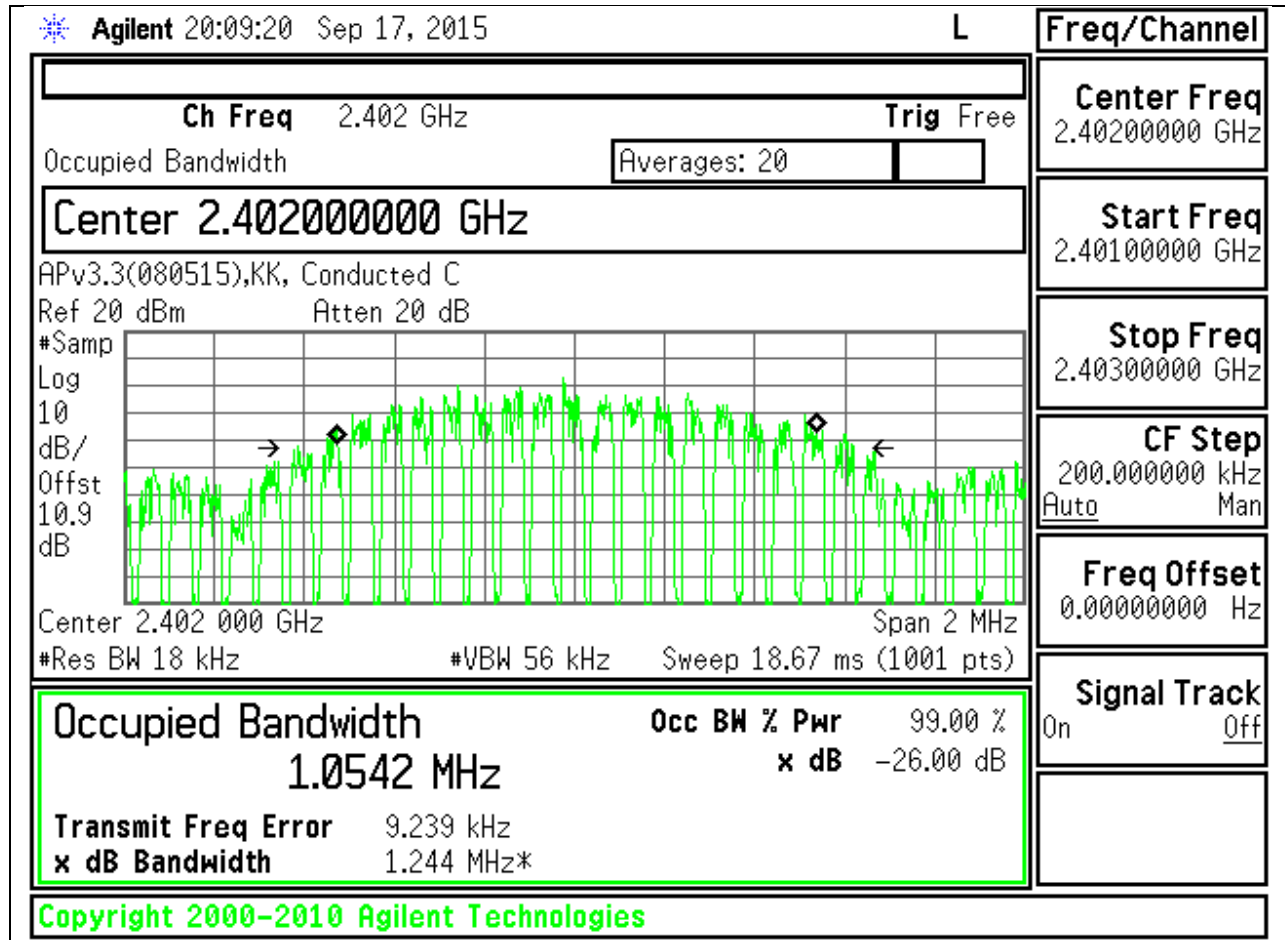
Reference to RSS-Gen 6.6 requirements and ANSI C63.10 (6.9.3) test procedures: The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

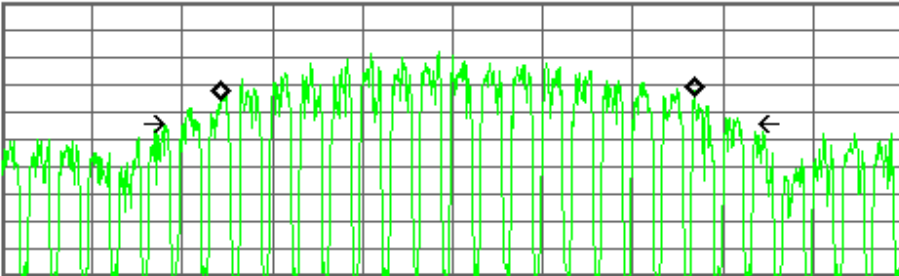
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0540
Middle	2440	1.0520
High	2480	1.0550

99% BANDWIDTH PLOTS

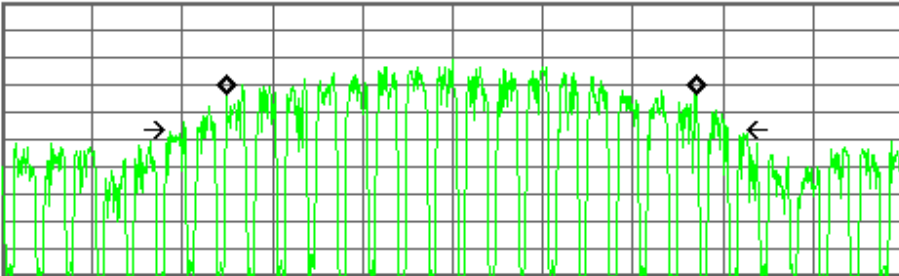
LOW CHANNEL



MID CHANNEL

* Agilent 19:40:41 Sep 17, 2015 L		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Freq/Channel</td></tr> <tr><td style="padding: 2px;">Center Freq 2.44000000 GHz</td></tr> <tr><td style="padding: 2px;">Start Freq 2.43900000 GHz</td></tr> <tr><td style="padding: 2px;">Stop Freq 2.44100000 GHz</td></tr> <tr><td style="padding: 2px;">CF Step 200.000000 kHz Auto Man</td></tr> <tr><td style="padding: 2px;">Freq Offset 0.00000000 Hz</td></tr> <tr><td style="padding: 2px;">Signal Track On Off</td></tr> </table>	Freq/Channel	Center Freq 2.44000000 GHz	Start Freq 2.43900000 GHz	Stop Freq 2.44100000 GHz	CF Step 200.000000 kHz Auto Man	Freq Offset 0.00000000 Hz	Signal Track On Off
Freq/Channel									
Center Freq 2.44000000 GHz									
Start Freq 2.43900000 GHz									
Stop Freq 2.44100000 GHz									
CF Step 200.000000 kHz Auto Man									
Freq Offset 0.00000000 Hz									
Signal Track On Off									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Ch Freq 2.44 GHz</td> <td style="padding: 2px;">Trig Free</td> </tr> <tr> <td colspan="2" style="padding: 2px;">Occupied Bandwidth Averages: 20</td> </tr> </table>		Ch Freq 2.44 GHz	Trig Free	Occupied Bandwidth Averages: 20					
Ch Freq 2.44 GHz	Trig Free								
Occupied Bandwidth Averages: 20									
<p>APv3.3(080515),KK, Conducted C Ref 20 dBm Atten 20 dB #Samp Log 10 dB/ Offst 10.9 dB</p>  <p style="text-align: center;">Center 2.440 000 GHz Span 2 MHz #Res BW 18 kHz #VBW 56 kHz Sweep 18.67 ms (1001 pts)</p>									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Occupied Bandwidth 1.0527 MHz</td> <td style="padding: 2px;">Occ BW % Pwr 99.00 %</td> </tr> <tr> <td style="padding: 2px;">Transmit Freq Error 8.987 kHz</td> <td style="padding: 2px;">x dB -26.00 dB</td> </tr> <tr> <td style="padding: 2px;">x dB Bandwidth 1.239 MHz*</td> <td></td> </tr> </table>		Occupied Bandwidth 1.0527 MHz	Occ BW % Pwr 99.00 %	Transmit Freq Error 8.987 kHz	x dB -26.00 dB	x dB Bandwidth 1.239 MHz*			
Occupied Bandwidth 1.0527 MHz	Occ BW % Pwr 99.00 %								
Transmit Freq Error 8.987 kHz	x dB -26.00 dB								
x dB Bandwidth 1.239 MHz*									
<p style="color: green;">Copyright 2000-2010 Agilent Technologies</p>									

HIGH CHANNEL

* Agilent 20:39:42 Sep 17, 2015 L		Freq/Channel
Ch Freq 2.48 GHz Trig Free Occupied Bandwidth Averages: 20		Center Freq 2.48000000 GHz
APv3.3(080515),KK, Conducted C Ref 20 dBm Atten 20 dB		Start Freq 2.47900000 GHz
#Samp Log 10 dB/ Offst 10.9 dB		Stop Freq 2.48100000 GHz
		CF Step 200.000000 kHz Auto Man
Center 2.480 000 GHz Span 2 MHz #Res BW 18 kHz #VBW 56 kHz #Sweep 18.67 ms (1001 pts)		Freq Offset 0.00000000 Hz
Occupied Bandwidth Occ BW % Pwr 99.00 % 1.0550 MHz x dB -26.00 dB		Signal Track On Off
Transmit Freq Error 13.943 kHz x dB Bandwidth 1.243 MHz*		
Copyright 2000-2010 Agilent Technologies		

8.3. 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

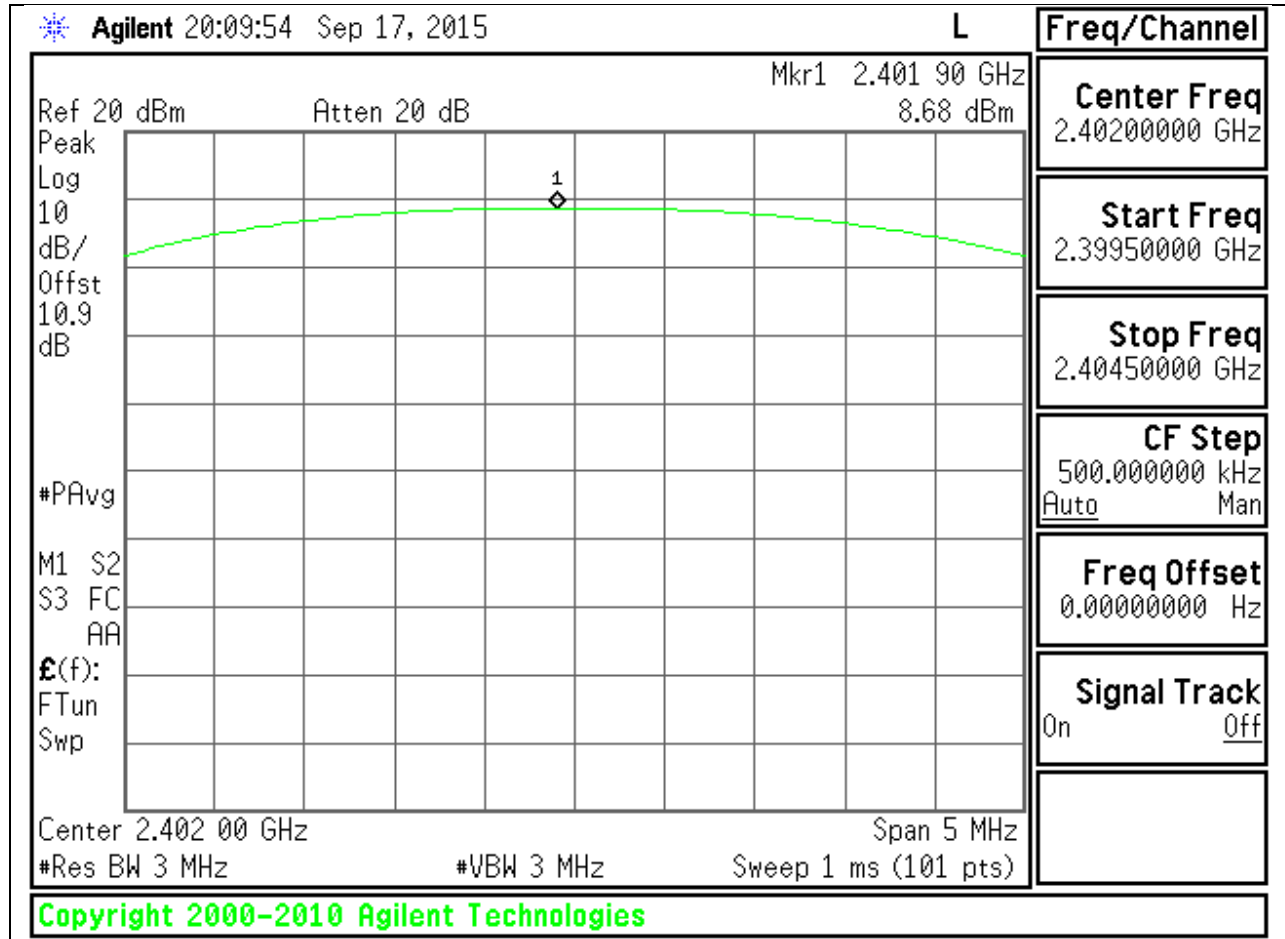
Peak power is measured using KDB558074 D01 DTS Meas Guidance v03r03 utilizing spectrum analyzer.

RESULTS

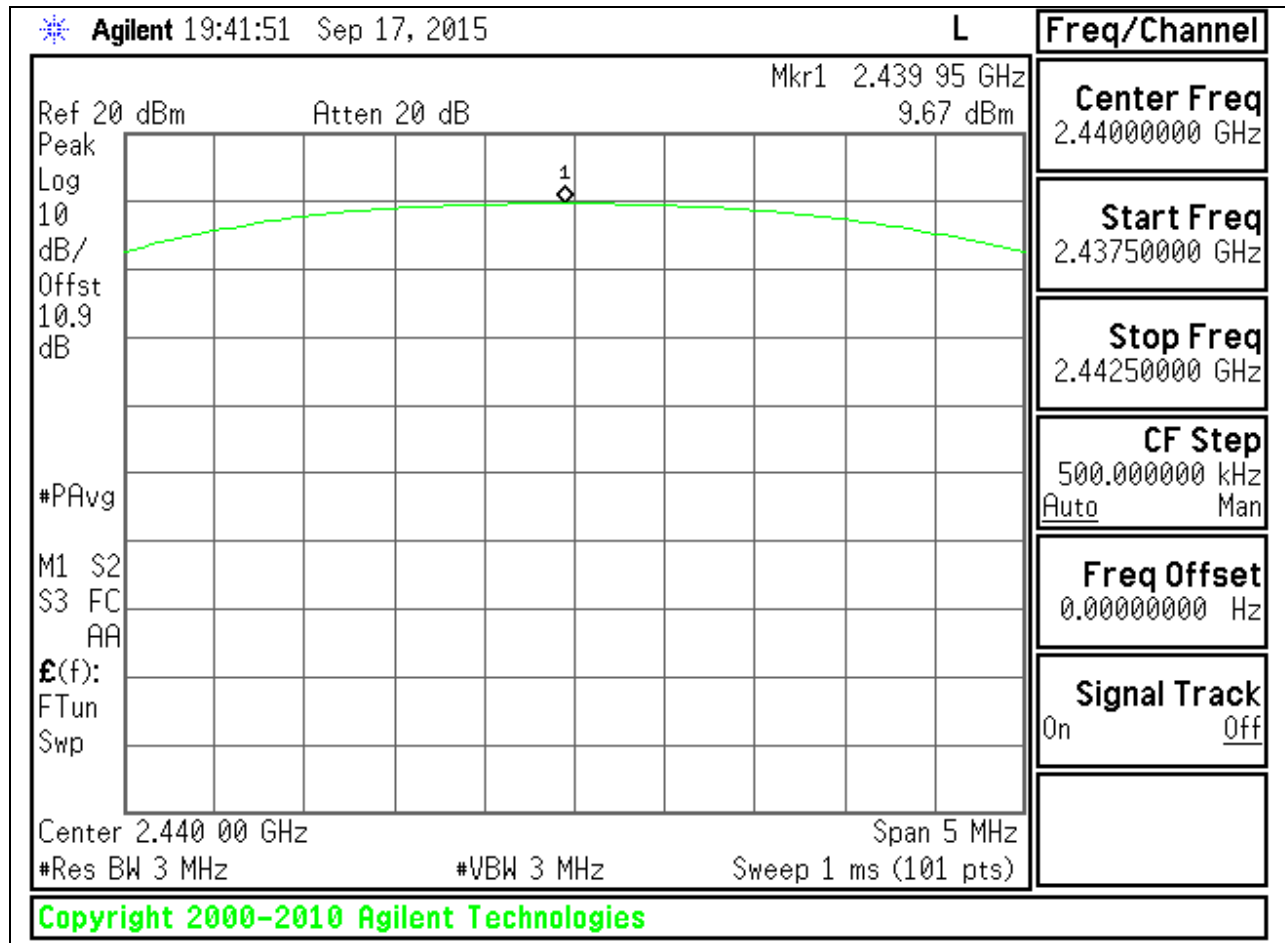
Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.68	30	-21.32
Middle	2440	9.67	30	-20.33
High	2480	8.25	30	-21.75

OUTPUT POWER PLOTS

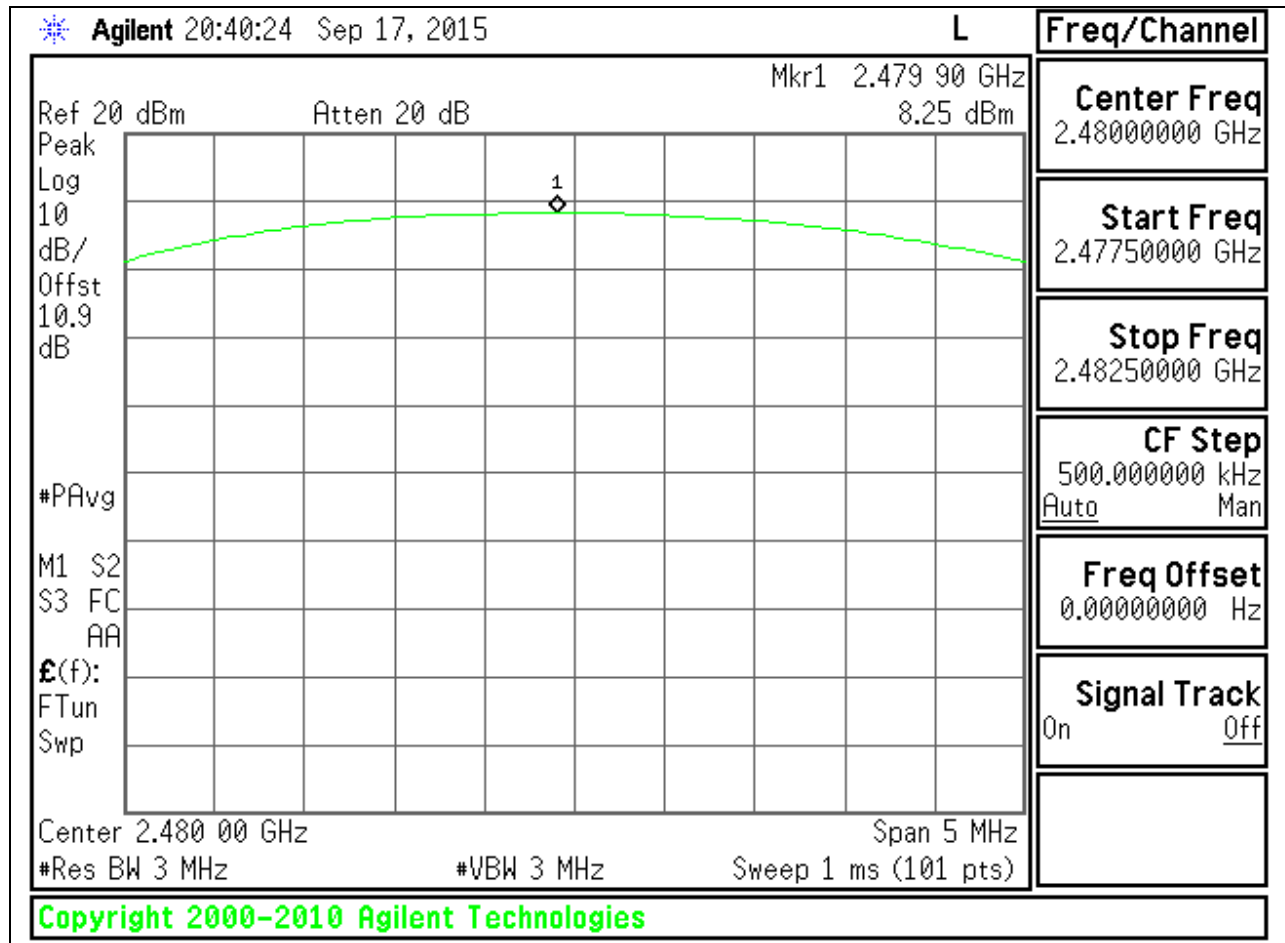
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.4. 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 10 dB (including 10 dB pad) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	7.5
Middle	2440	8.4
High	2480	6.8

8.5. 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

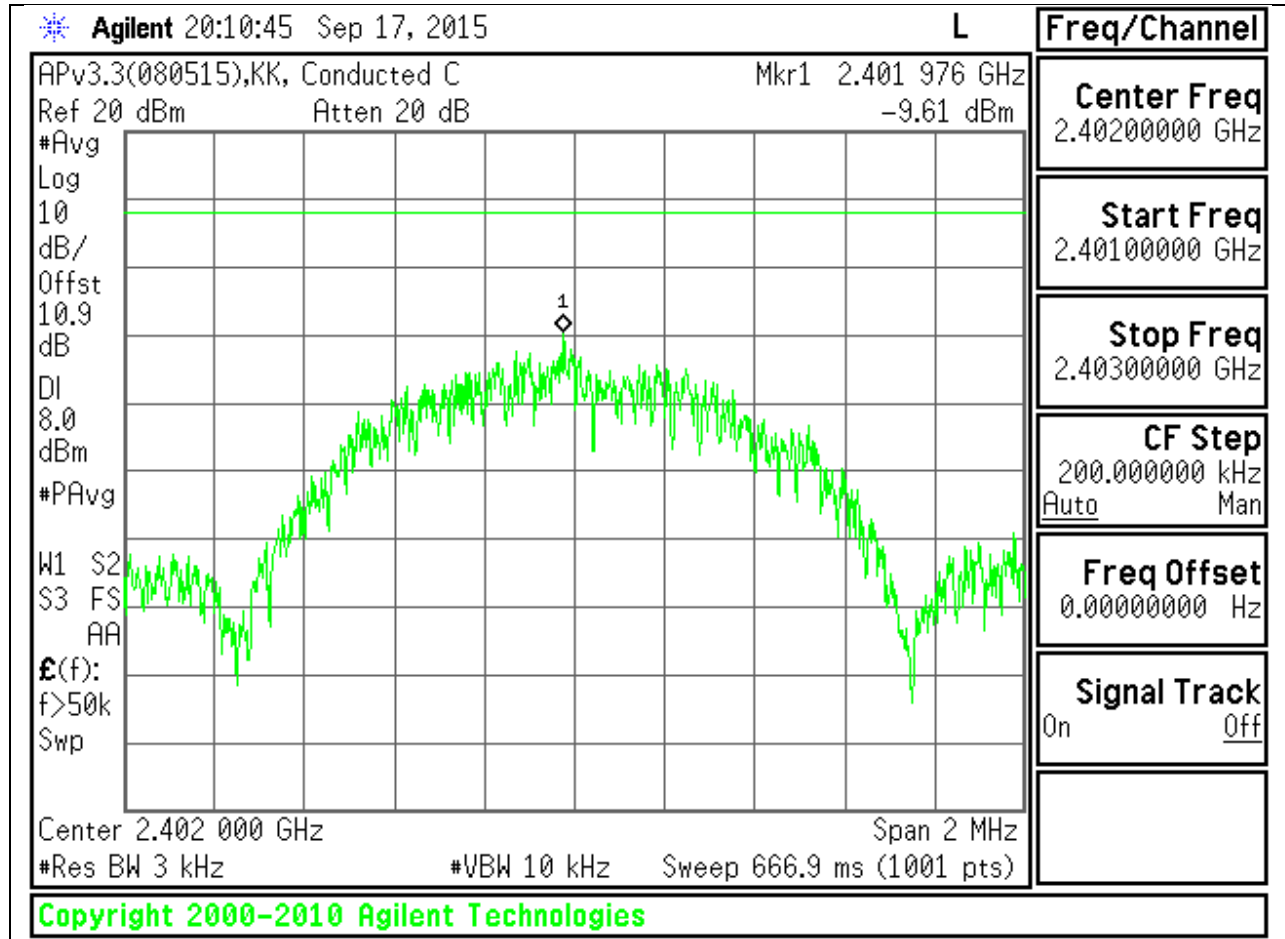
Power Spectral Density was performed utilizing the "Method PKPSD (Peak PSD)" under KDB558074 D01 DTS Meas Guidance v03r03.

RESULTS

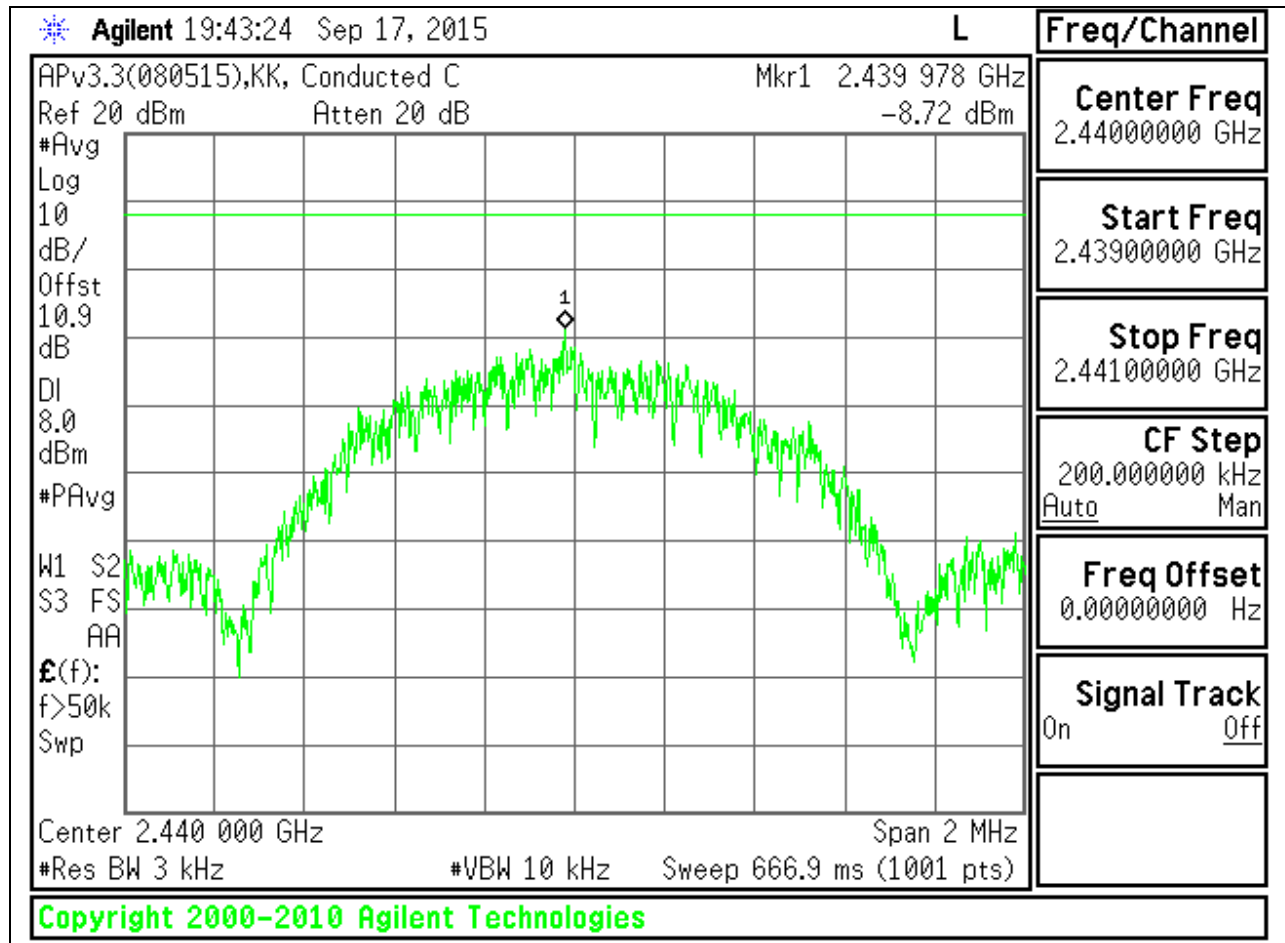
Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-9.61	8	-17.61
Middle	2440	-8.72	8	-16.72
High	2480	-10.05	8	-18.05

POWER SPECTRAL DENSITY PLOTS

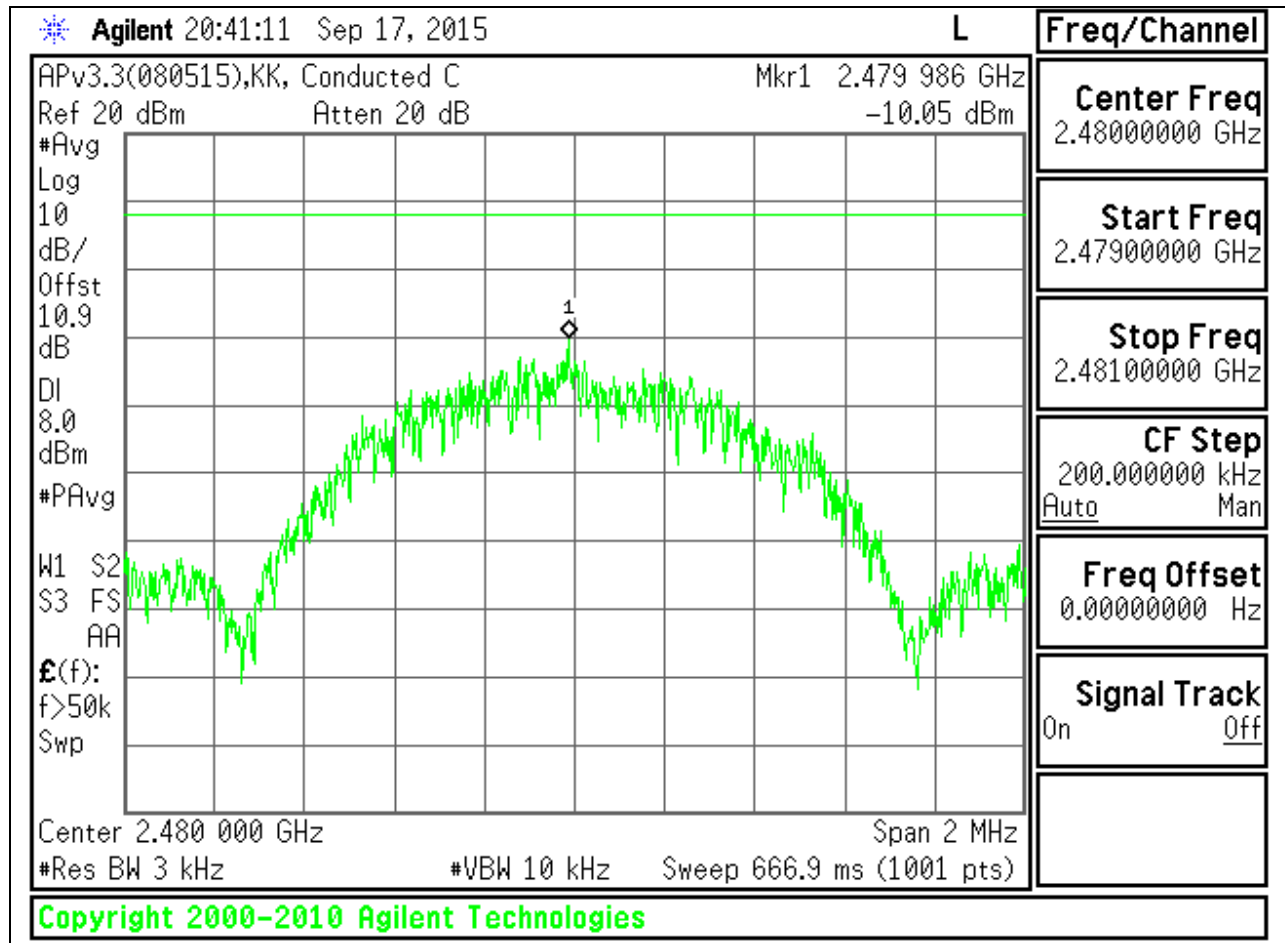
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



8.6. 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

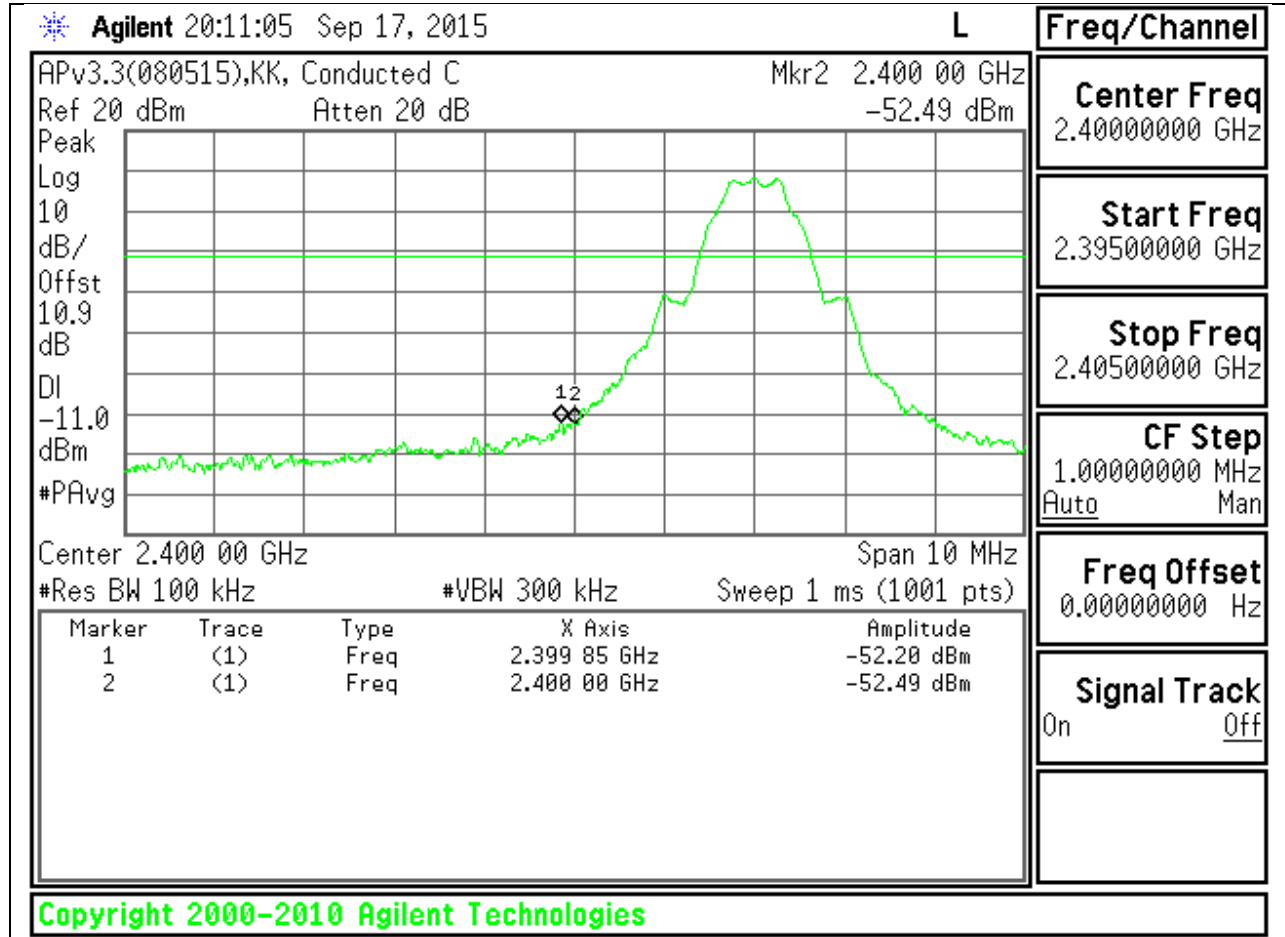
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

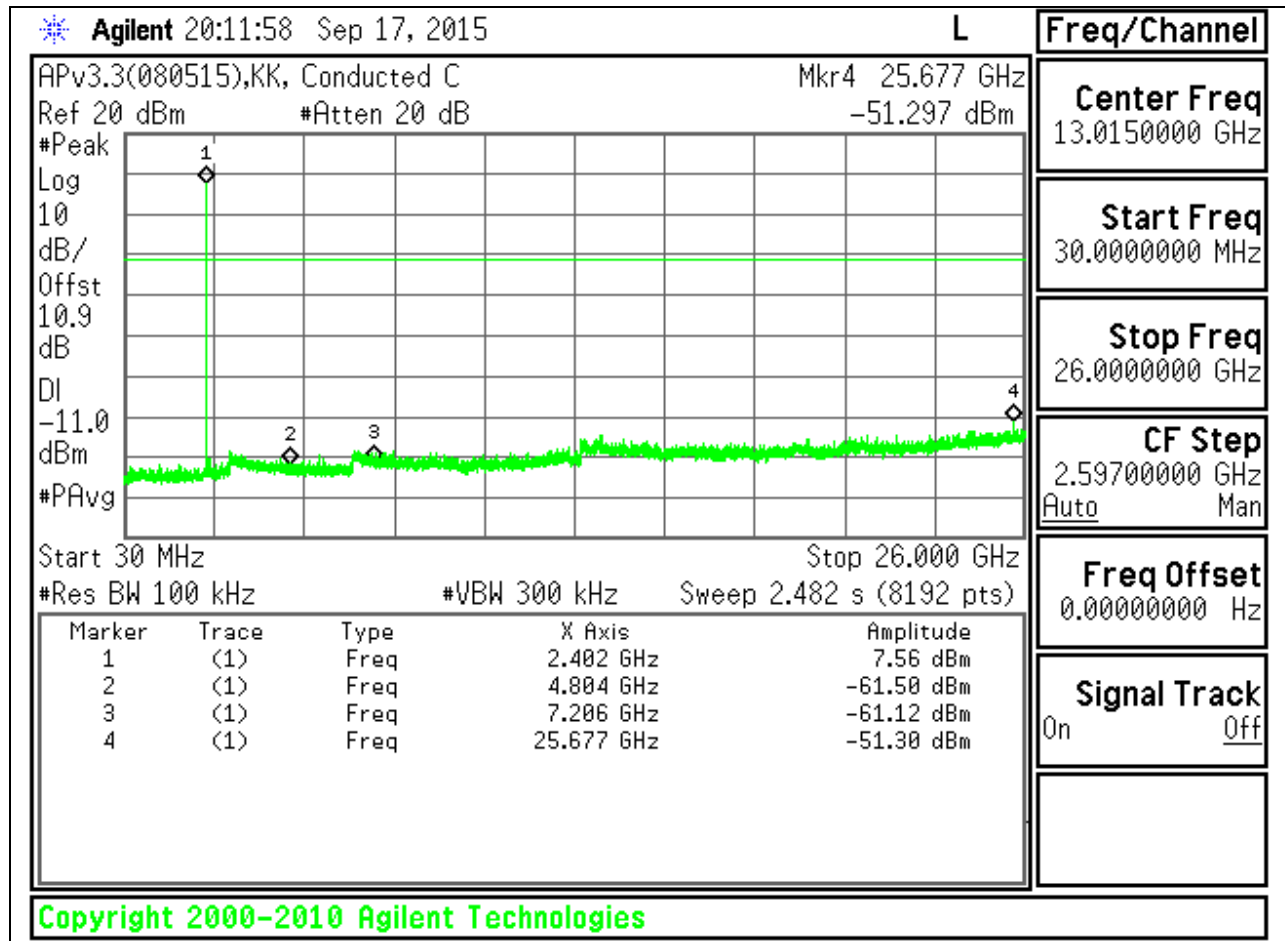
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE

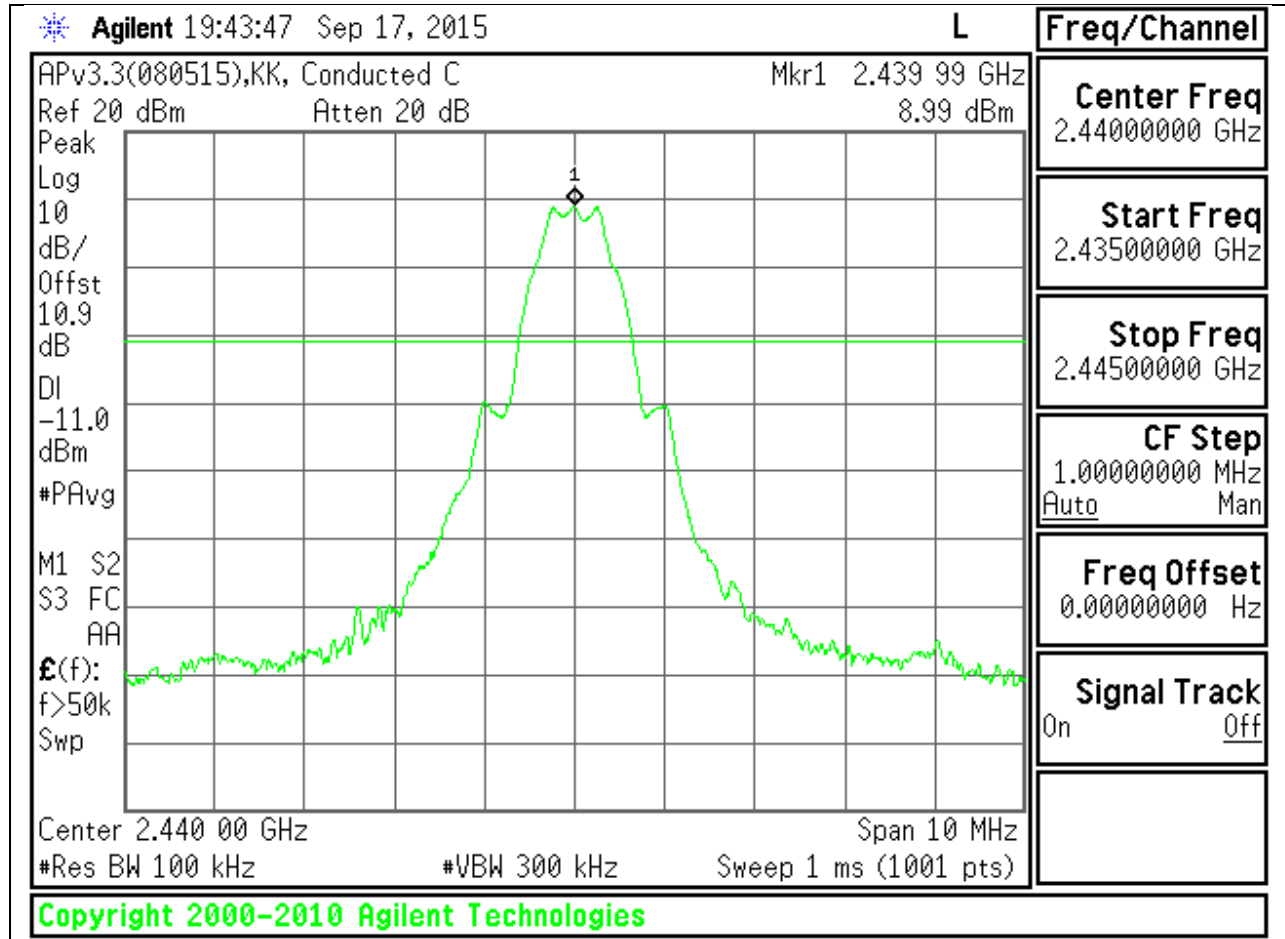


LOW CHANNEL SPURIOUS

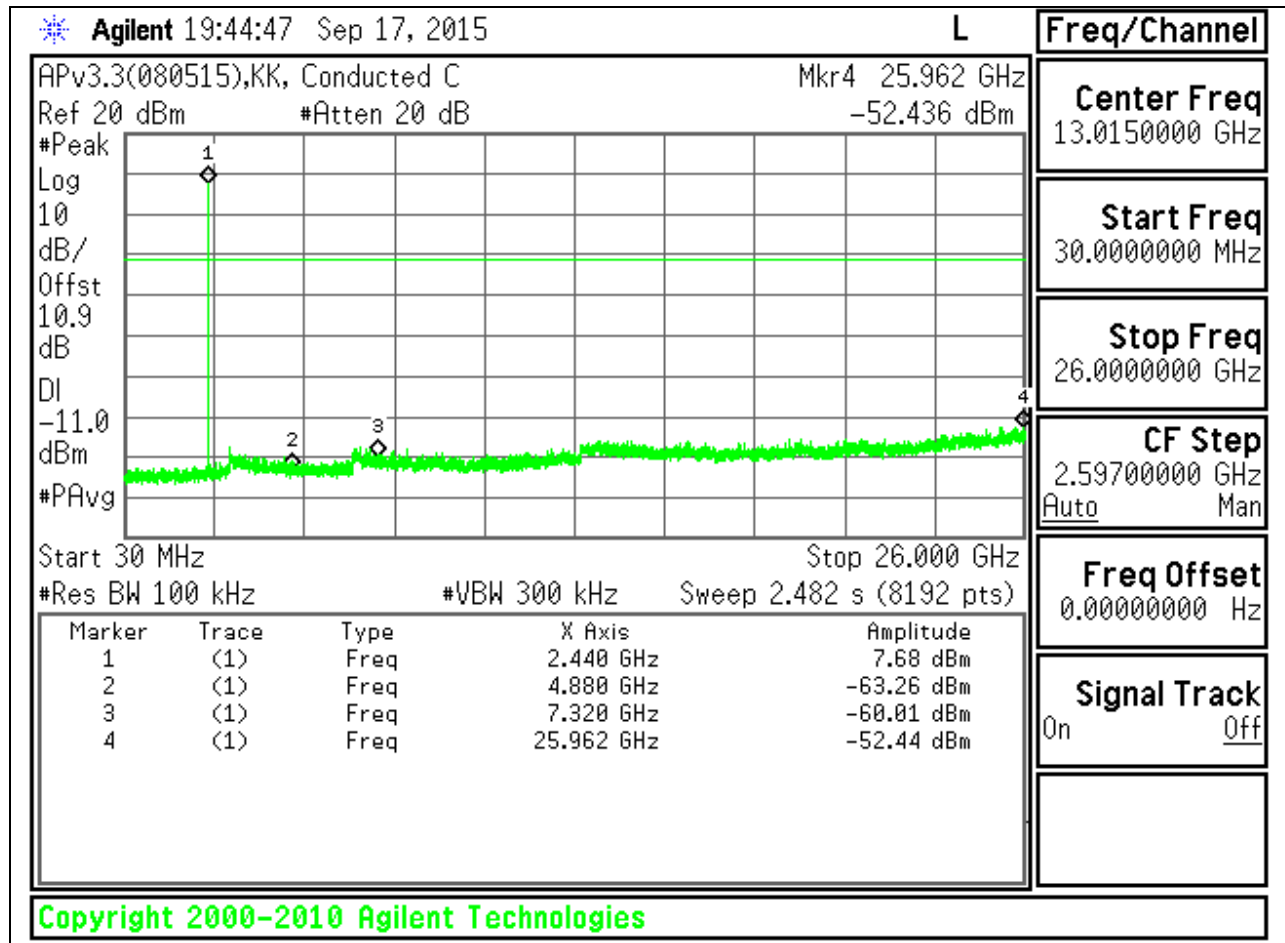


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL REFERENCE

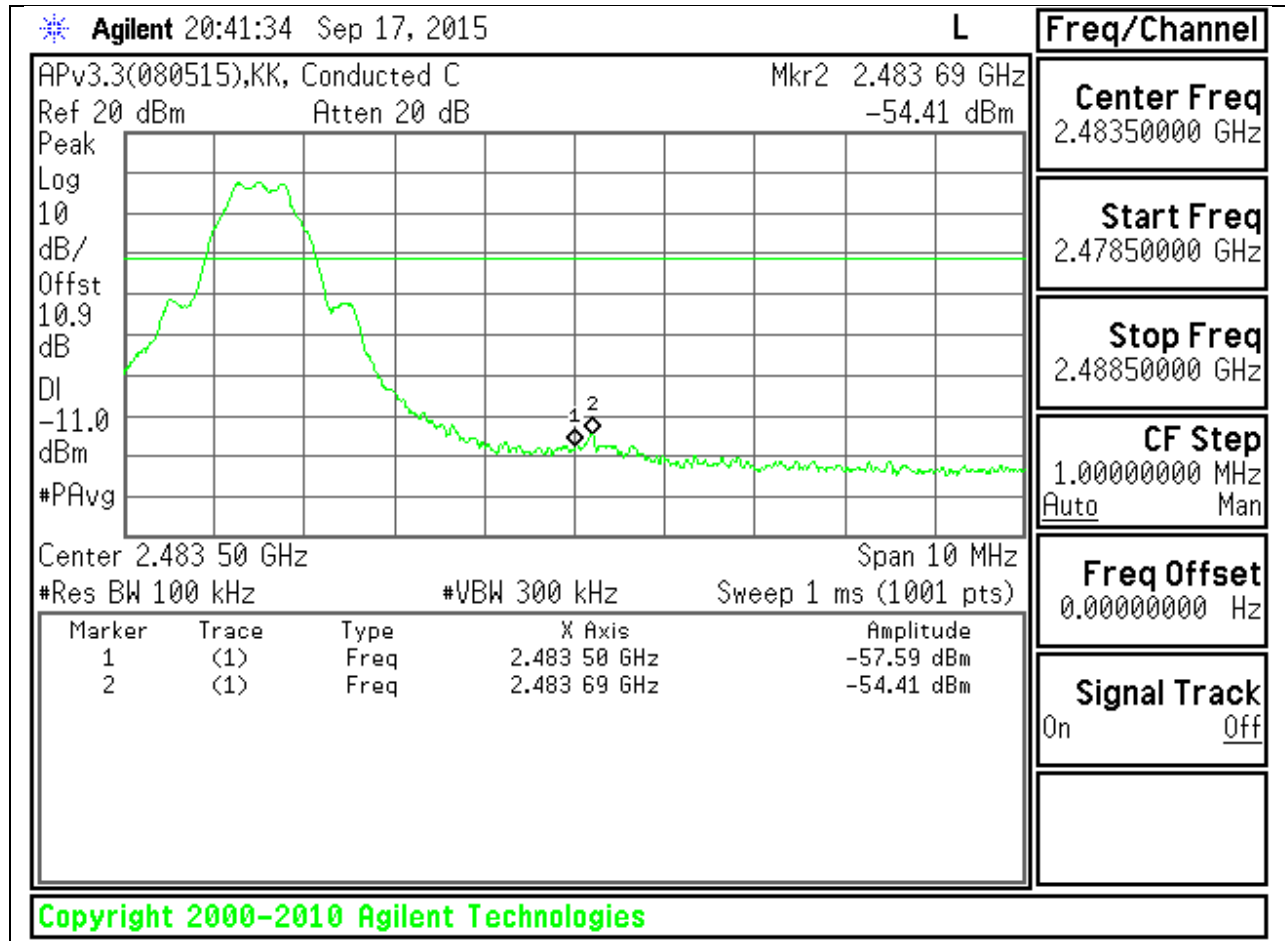


MID CHANNEL SPURIOUS

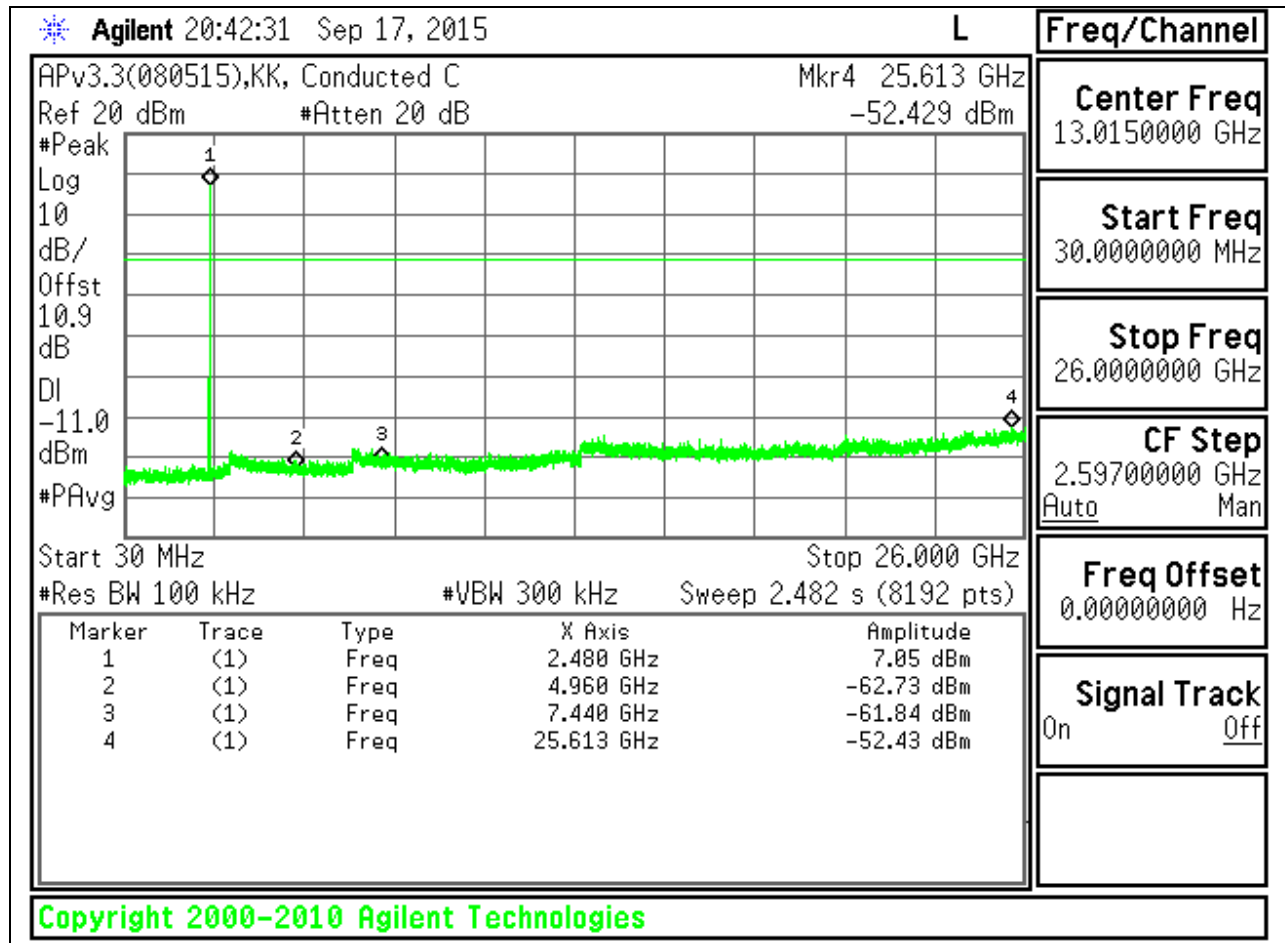


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE



HIGH CHANNEL SPURIOUS



9. RADIATED TEST RESULTS

9.1. 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 = $10 \log(1/0.625) = 2.04$ dB

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.

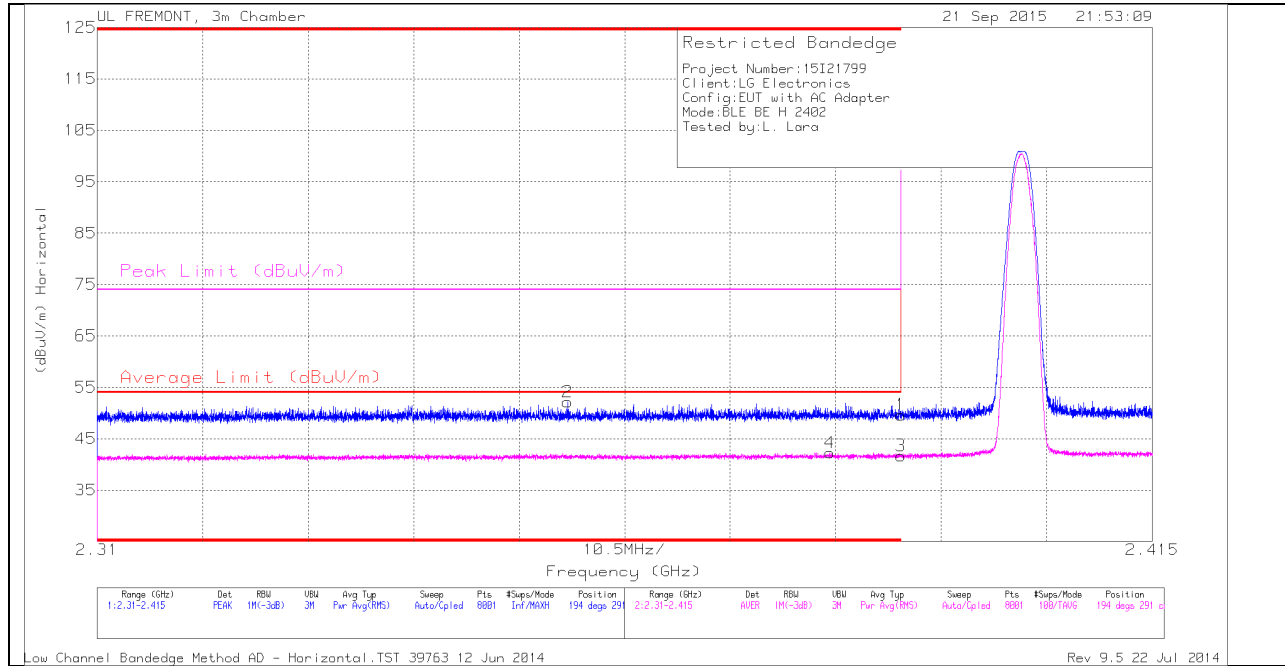
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

9.2. TRANSMITTER ABOVE 1 GHz

RESTRICTED BANDEGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

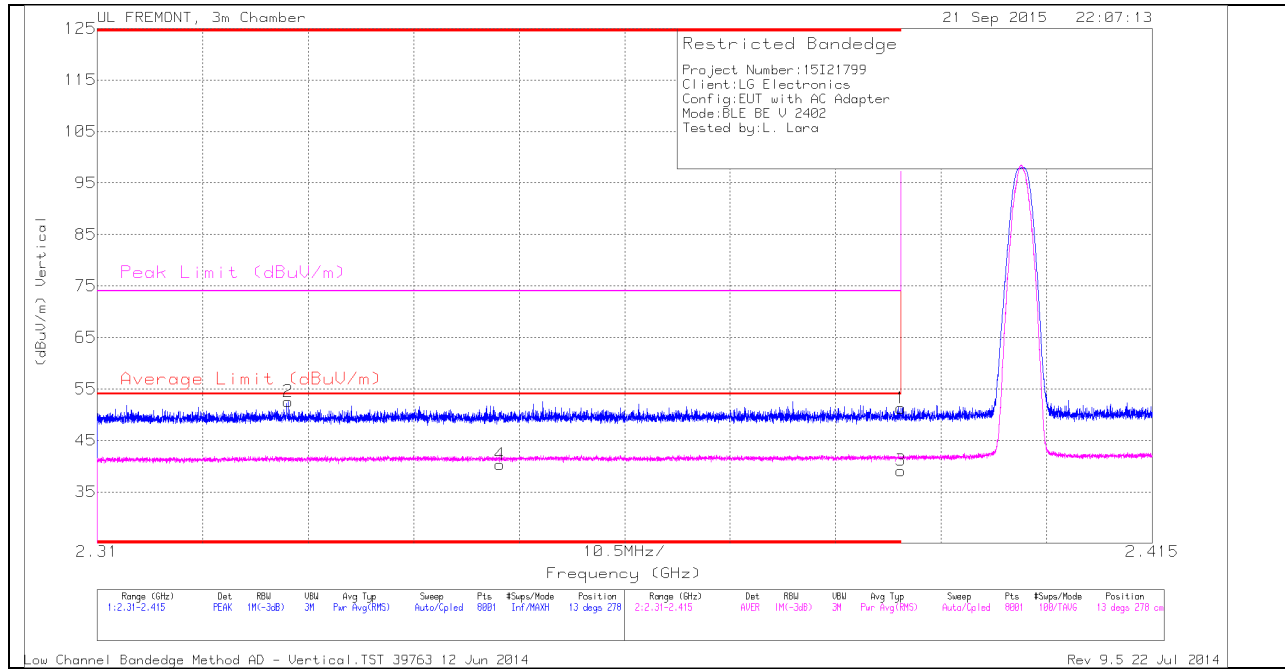
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.357	42.77	PK	31.8	-22.4	0	52.17	-	-	74	-21.83	194	291	H
4	* 2.383	30.62	RMS	32	-22.4	2.04	42.26	54	-11.74	-	-	194	291	H
1	* 2.39	40.05	PK	32	-22.4	0	49.65	-	-	74	-24.35	194	291	H
3	* 2.39	30.03	RMS	32	-22.4	2.04	41.67	54	-12.33	-	-	194	291	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

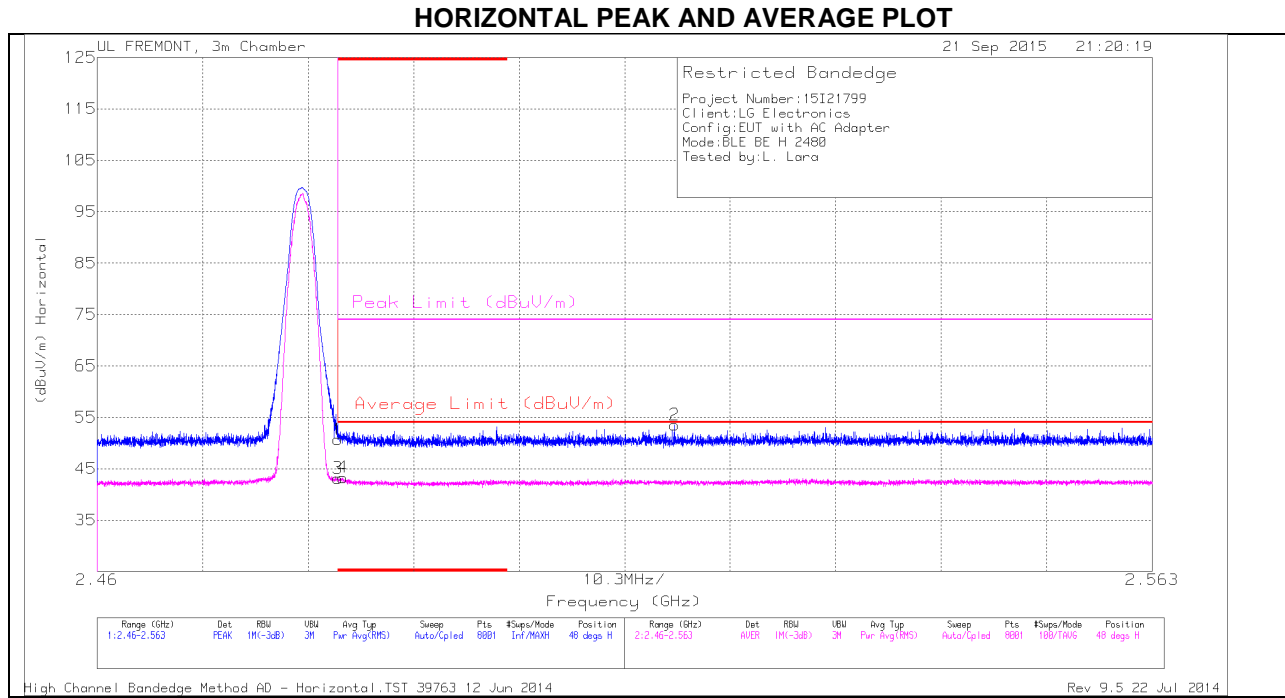
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/Fitter (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.329	43.27	PK	31.7	-22.4	0	52.57	-	-	74	-21.43	13	278	V
4	* 2.35	31.03	RMS	31.8	-22.5	2.04	42.37	54	-11.63	-	-	13	278	V
1	* 2.39	41.66	PK	32	-22.4	0	51.26	-	-	74	-22.74	13	278	V
3	* 2.39	29.55	RMS	32	-22.4	2.04	41.19	54	-12.81	-	-	13	278	V

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

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)



HORIZONTAL DATA

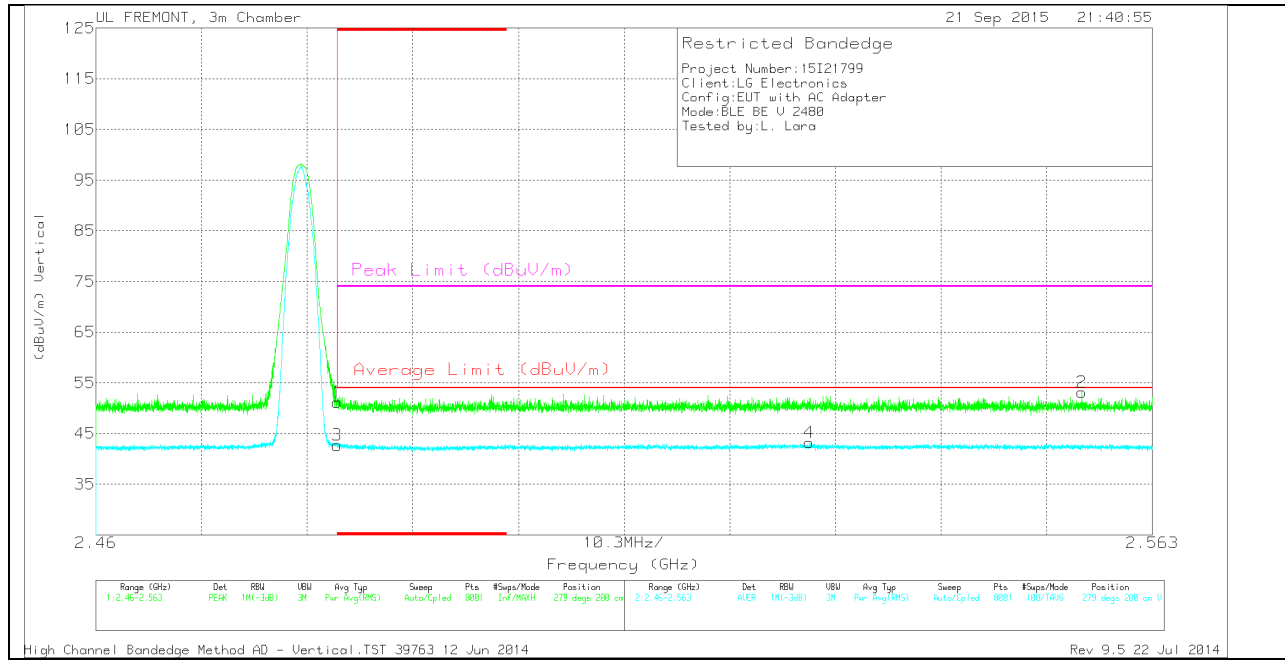
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/Fit r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	40.5	PK	32.3	-22.1	0	50.7	-	-	74	-23.3	48	108	H
3	* 2.484	30.92	RMS	32.3	-22.1	2.04	43.16	54	-10.84	-	-	48	108	H
4	* 2.484	31.06	RMS	32.3	-22.1	2.04	43.3	54	-10.7	-	-	48	108	H
2	2.516	43.32	PK	32.3	-22.1	0	53.52	-	-	74	-20.48	48	108	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/Filter/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	40.97	PK	32.3	-22.1	0	51.17	-	-	74	-22.83	279	200	V
3	* 2.484	30.42	RMS	32.3	-22.1	2.04	42.66	54	-11.34	-	-	279	200	V
4	2.53	30.72	RMS	32.4	-22	2.04	43.16	54	-10.84	-	-	279	200	V
2	2.556	42.75	PK	32.4	-22	0	53.15	-	-	74	-20.85	279	200	V

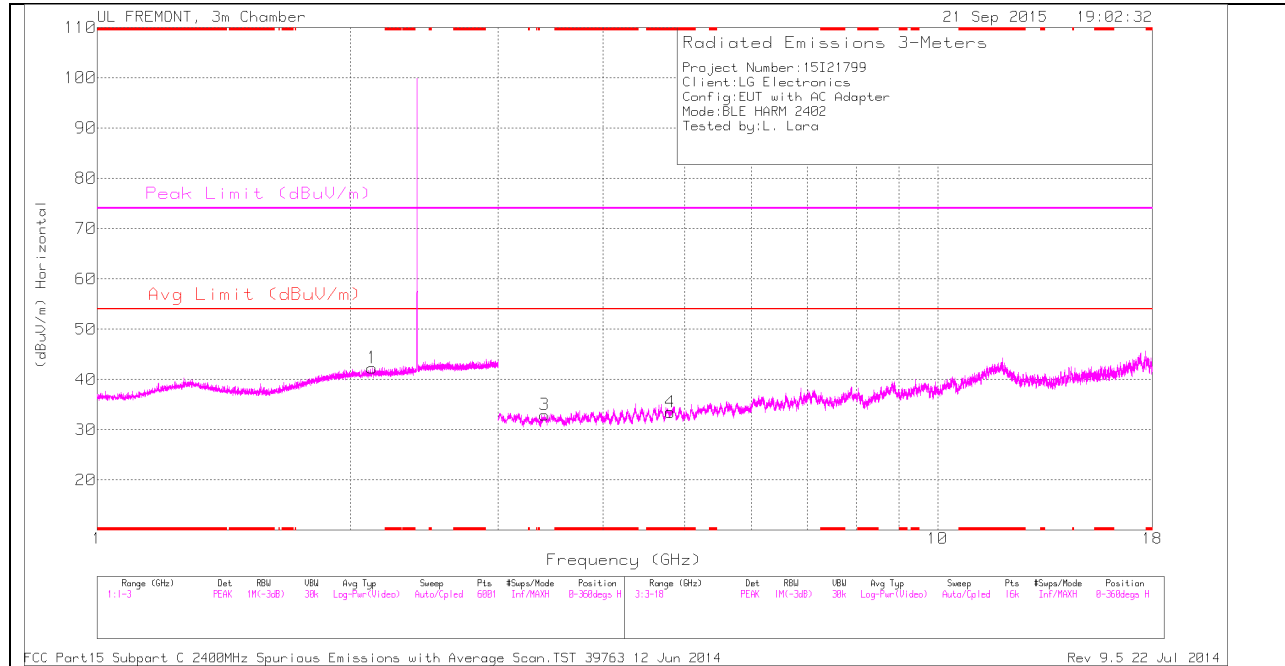
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

RMS - RMS detection

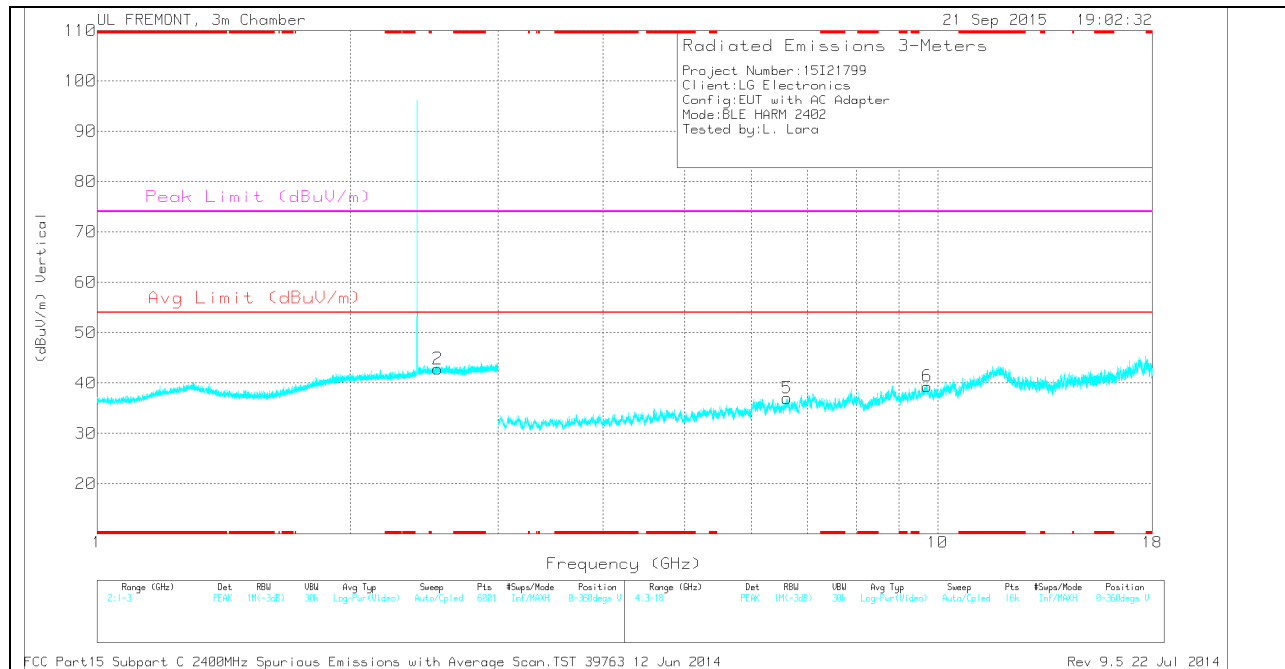
HARMONICS AND SPURIOUS EMISSIONS

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/Ftr /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	* 4.805	28.89	PK	34	-29.4	0	33.49	-	-	74	-40.51	0-360	200	H
1	2.124	33.02	PK	31.5	-22.2	0	42.32	-	-	-	-	0-360	100	H
2	2.543	32.31	PK	32.4	-21.9	0	42.81	-	-	-	-	0-360	200	V
3	3.407	31.17	PK	32.7	-30.9	0	32.97	-	-	-	-	0-360	200	H
5	6.618	29.19	PK	35.6	-27.8	0	36.99	-	-	-	-	0-360	200	V
6	9.724	26.84	PK	36.8	-24.3	0	39.34	-	-	-	-	0-360	100	V

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

PK - Peak detector

Radiated Emissions

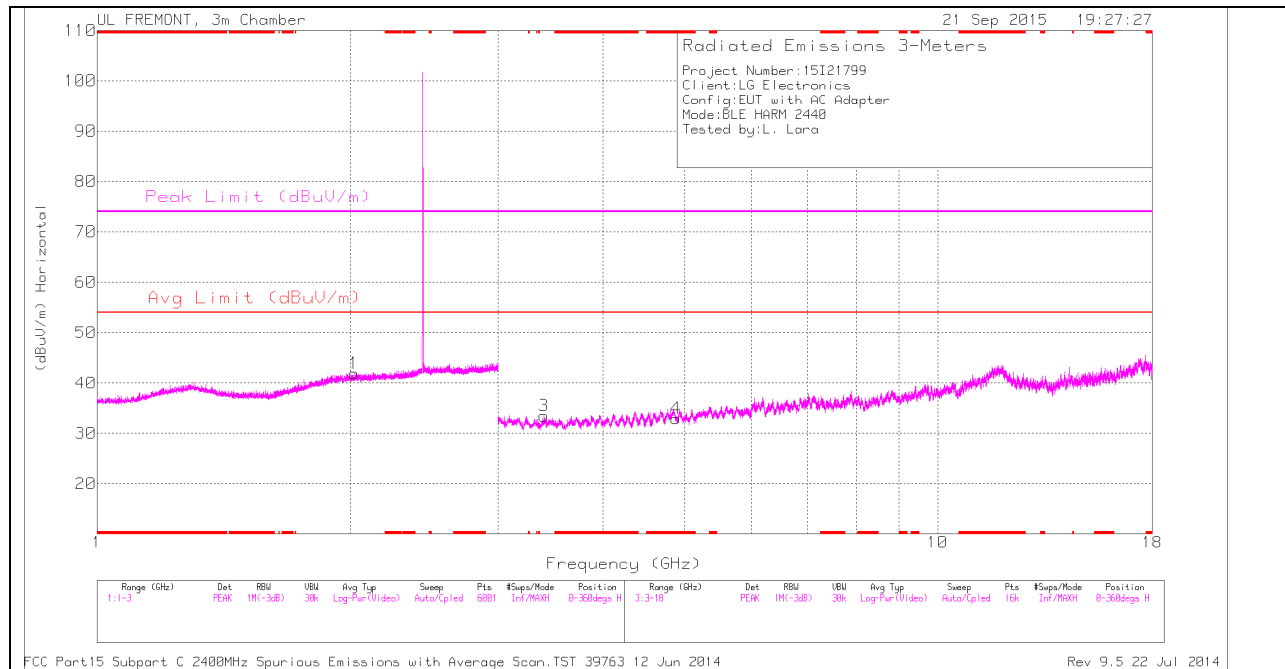
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.805	39.93	PK2	34	-29.4	0	44.53	-	-	74	-29.47	49	106	H
* 4.803	27.22	MAv1	34	-29.4	2.04	33.86	54	-20.14	-	-	49	106	H

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

PK2 - KDB558074 Method: Maximum Peak

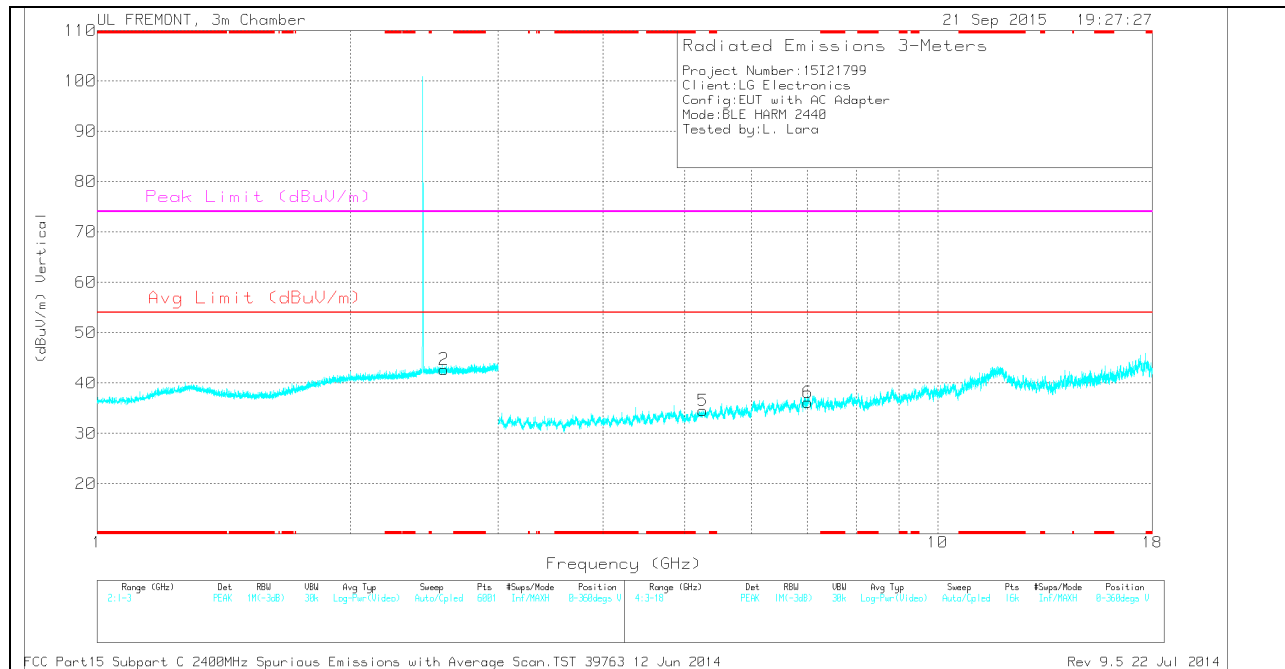
MAv1 - KDB558074 Option 1 Maximum RMS Average

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/Filtr/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	* 4.881	28.03	PK	34	-29.1	0	32.93	-	-	74	-41.07	0-360	200	H
1	2.021	32.92	PK	31.5	-22.5	0	41.92	-	-	-	-	0-360	100	H
2	2.585	32.27	PK	32.4	-22	0	42.67	-	-	-	-	0-360	200	V
3	3.403	31.78	PK	32.7	-31	0	33.48	-	-	-	-	0-360	100	H
5	5.256	30.11	PK	34.4	-30	0	34.51	-	-	-	-	0-360	200	V
6	7.008	28.93	PK	35.6	-28.4	0	36.13	-	-	-	-	0-360	100	V

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

PK - Peak detector

Radiated Emissions

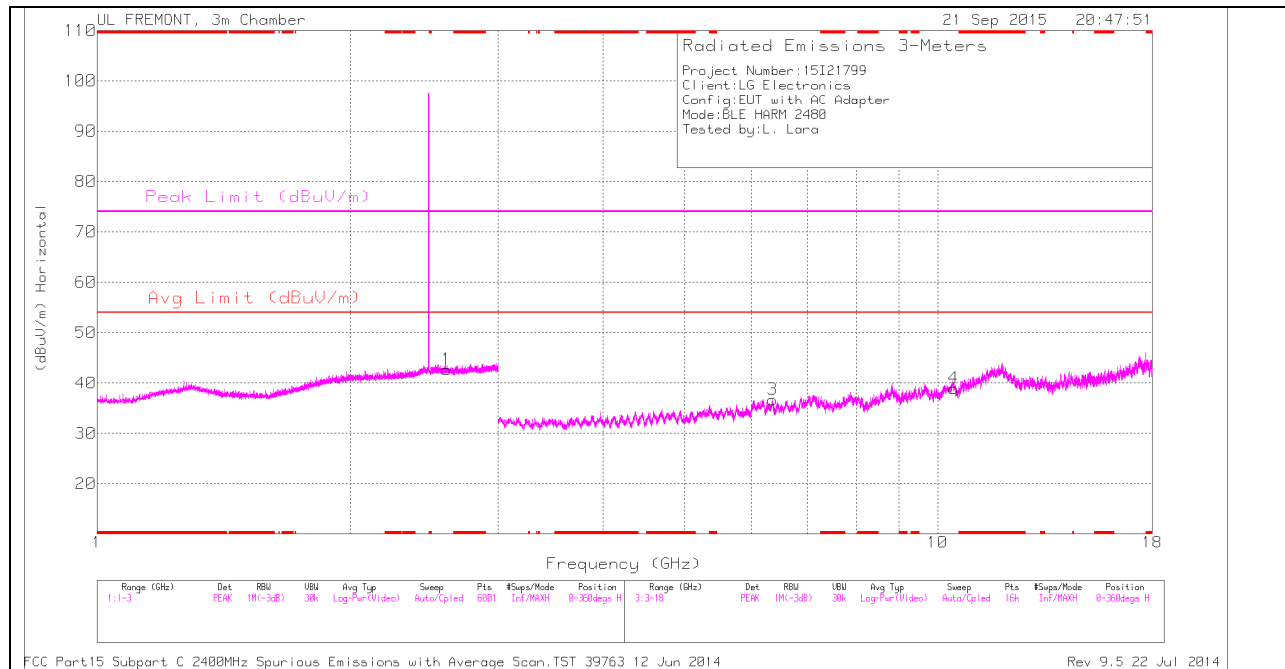
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.879	38.83	PK2	34	-29.1	0	43.73	-	-	74	-30.27	232	110	H
* 4.88	26.88	MAv1	34	-29.1	2.04	33.82	54	-20.18	-	-	232	110	H

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

PK2 - KDB558074 Method: Maximum Peak

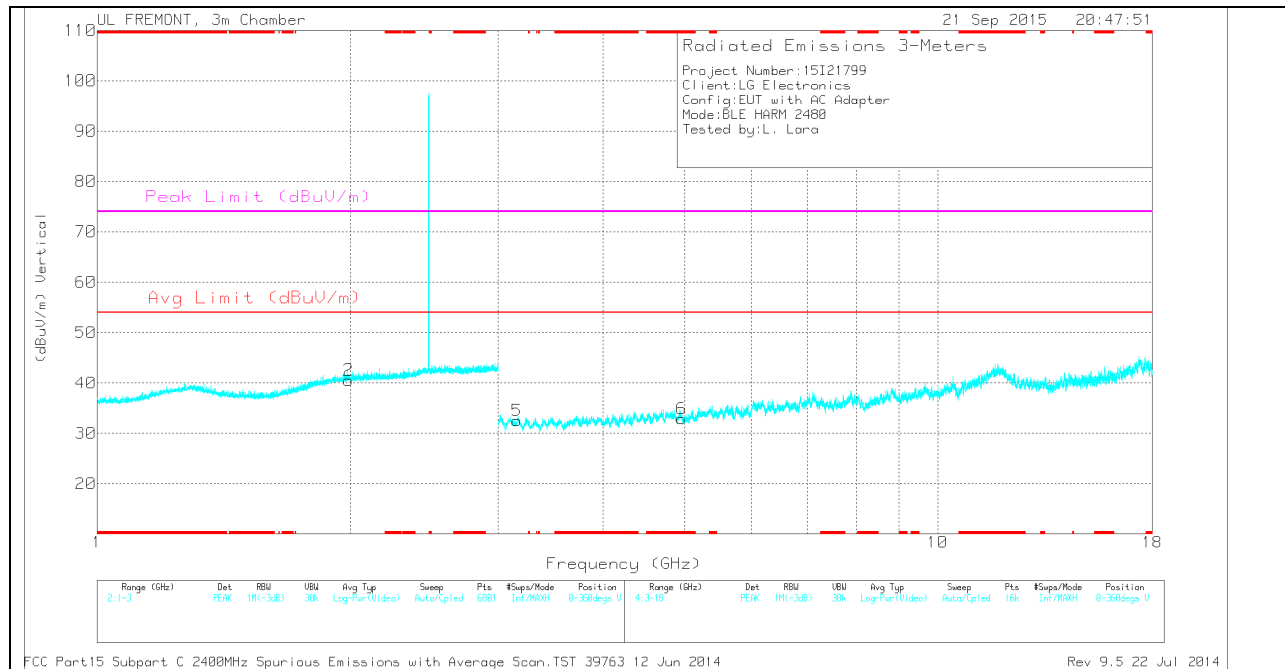
MAv1 - KDB558074 Option 1 Maximum RMS Average

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/Cb/Ftr /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
6	* 4.96	29.18	PK	34	-30.3	0	32.88	-	-	74	-41.12	0-360	200	V
2	1.991	31.54	PK	31.5	-22.5	0	40.54	-	-	-	-	0-360	200	V
1	2.605	32.3	PK	32.4	-22	0	42.7	-	-	-	-	0-360	200	H
5	3.157	30.3	PK	32.7	-30.5	0	32.5	-	-	-	-	0-360	200	V
3	6.364	29.21	PK	35.5	-28	0	36.71	-	-	-	-	0-360	200	H
4	10.446	25.56	PK	37.4	-24	0	38.96	-	-	-	-	0-360	100	H

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

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/Ftr /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
* 4.959	40.45	PK2	34	-30.3	0	44.15	-	-	74	-29.85	282	107	V
* 4.96	28.41	MAv1	34	-30.3	2.04	34.15	54	-19.85	-	-	282	107	V

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

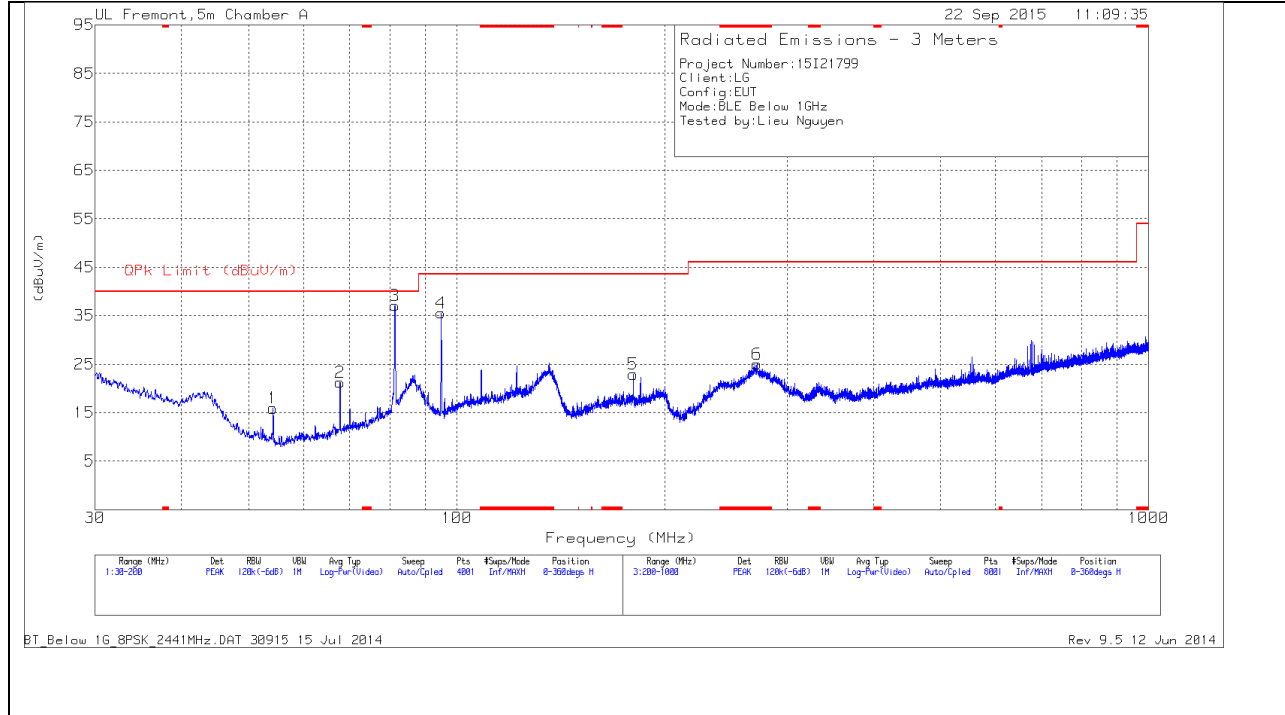
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

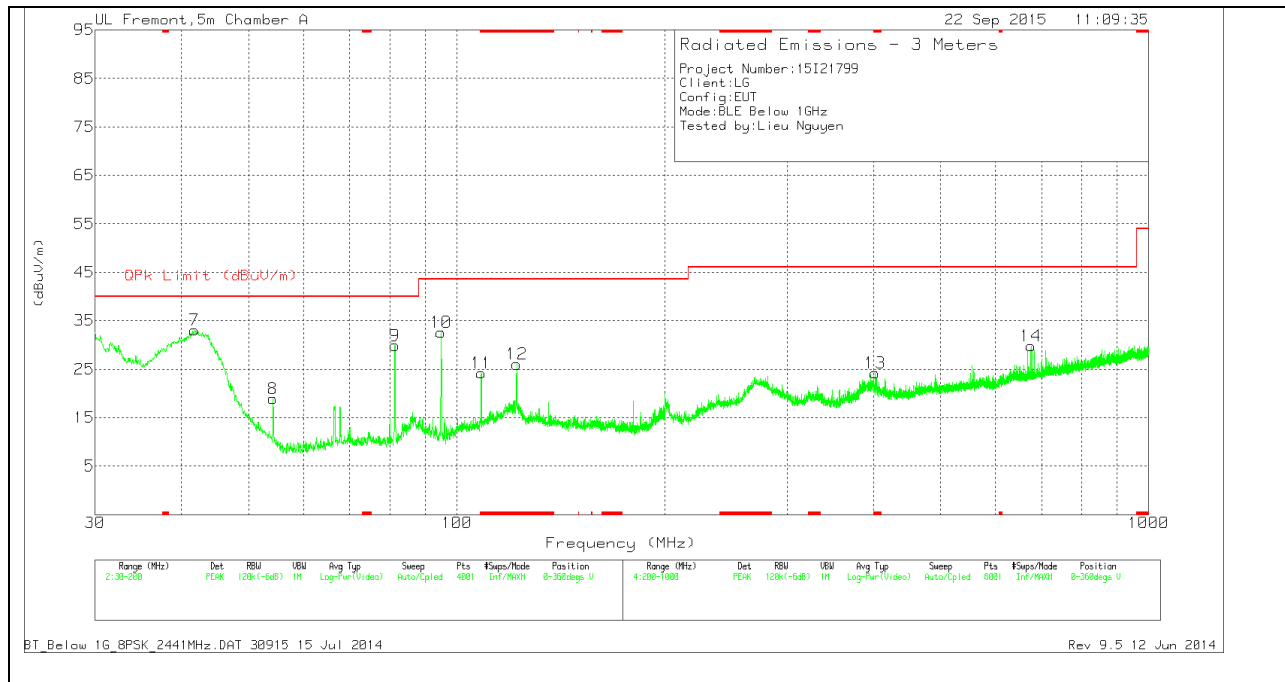
9.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



BELOW 1 GHz TABLE

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
11	* 108.4975	38.38	PK	16.3	-30.5	24.18	43.52	-19.34	0-360	101	V
12	* 122.055	38.72	PK	17.7	-30.4	26.02	43.52	-17.5	0-360	101	V
6	* 271.8	37.32	PK	17.2	-29.5	25.02	46.02	-21	0-360	101	H
13	* 402.5	33.59	PK	19.7	-29.1	24.19	46.02	-21.83	0-360	299	V
7	41.7725	47.53	PK	16.6	-31.1	33.03	40	-6.97	0-360	101	V
1	54.225	35.83	PK	11.1	-31	15.93	40	-24.07	0-360	299	H
8	54.225	38.79	PK	11.1	-31	18.89	40	-21.11	0-360	101	V
2	67.7825	40.23	PK	11.9	-30.9	21.23	40	-18.77	0-360	199	H
3	81.3825	56.47	PK	11.3	-30.7	37.07	40	-2.93	0-360	199	H
9	81.3825	49.28	PK	11.3	-30.7	29.88	40	-10.12	0-360	101	V
4	94.8975	53.47	PK	12.7	-30.6	35.57	43.52	-7.95	0-360	199	H
10	94.8975	50.51	PK	12.7	-30.6	32.61	43.52	-10.91	0-360	101	V
5	179.9825	37.82	PK	15.2	-30.1	22.92	43.52	-20.6	0-360	399	H
14	676	34.31	PK	23.7	-28.2	29.81	46.02	-16.21	0-360	199	V

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

PK - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 115.0122	22.95	QP	17.3	-30.5	9.75	43.52	-33.77	1	199	H
* 114.9534	23.73	QP	17.3	-30.5	10.53	43.52	-32.99	1	102	V
81.3617	37.43	QP	11.3	-30.7	18.03	40	-21.97	1	198	H

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

QP - Quasi-Peak detector

10. 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 C63.10.

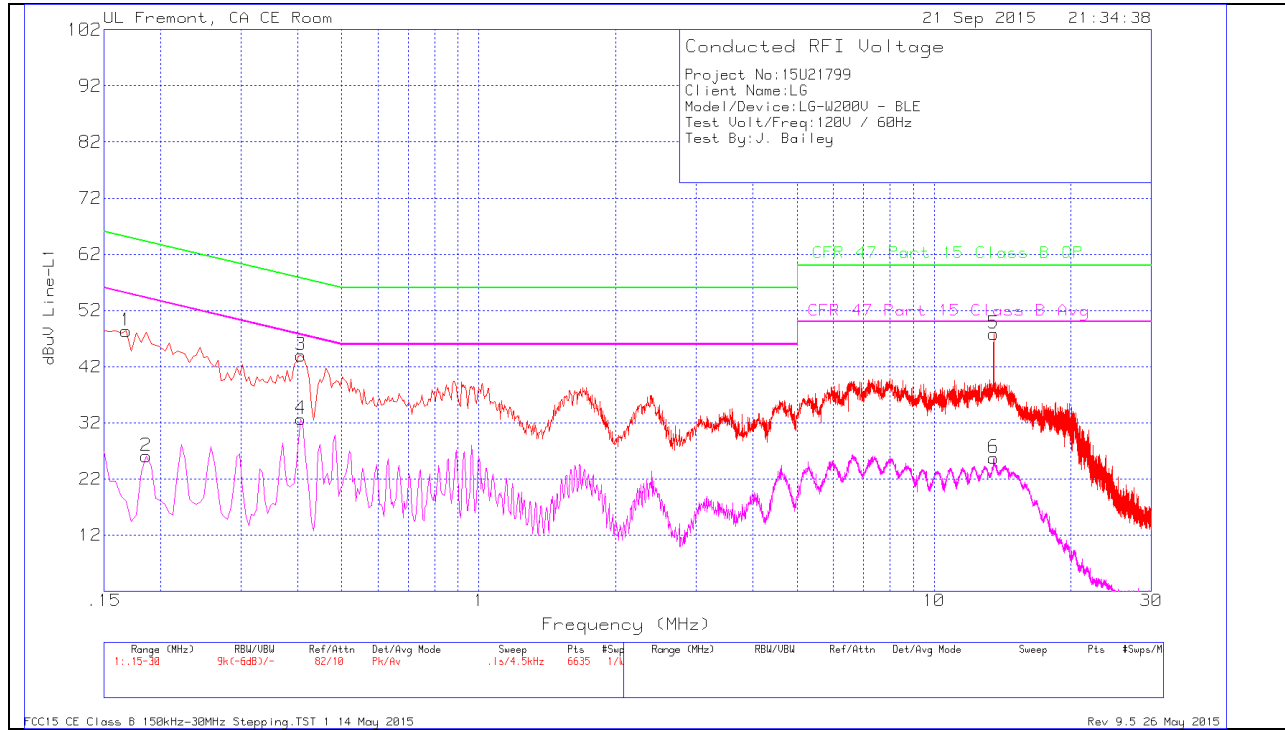
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

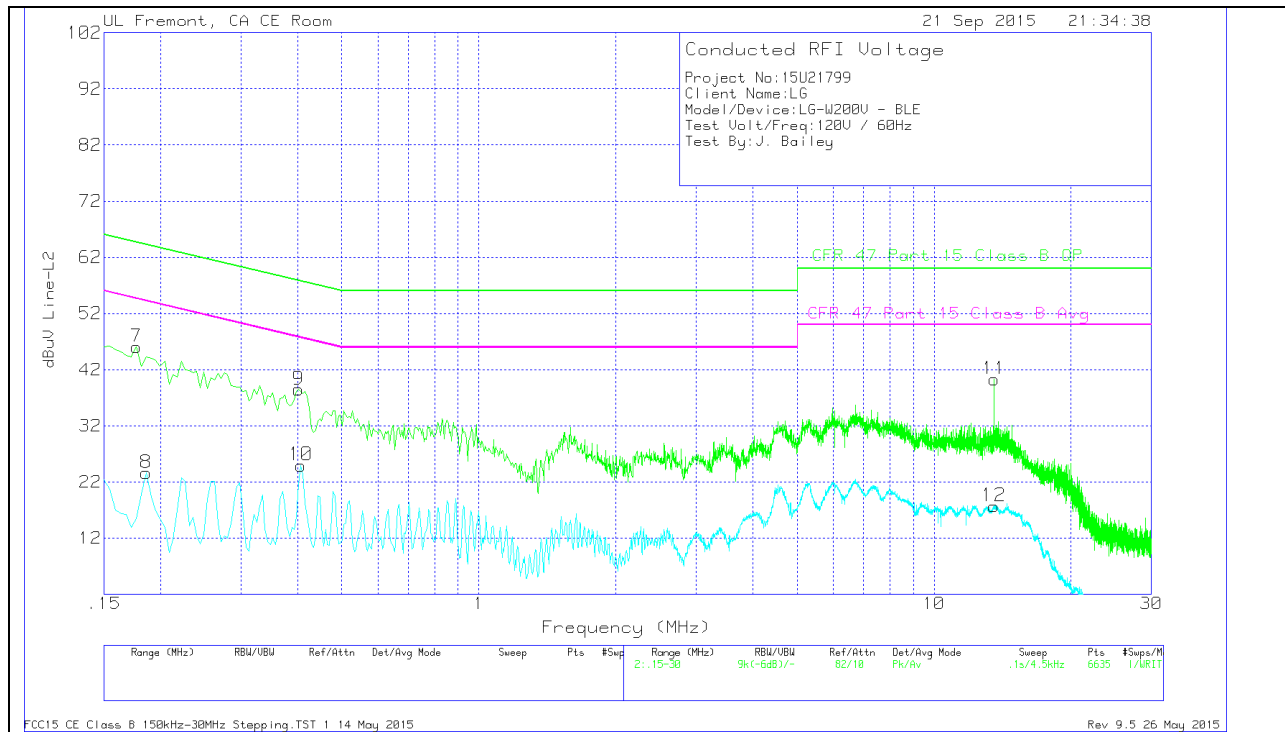
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	Margin (dB)	CFR 47 Part 15 Class B Avg	Margin (dB)
1	.168	47.17	Pk	1.2	0	48.37	65.06	-16.69	-	-
2	.186	25.07	Av	1	0	26.07	-	-	54.21	-28.14
3	.4065	43.64	Pk	.4	0	44.04	57.72	-13.68	-	-
4	.4065	32.27	Av	.4	0	32.67	-	-	47.72	-15.05
5	13.5195	47.46	Pk	.2	.2	47.86	60	-12.14	-	-
6	13.5195	25.35	Av	.2	.2	25.75	-	-	50	-24.25

Pk - Peak detector

Av - Average detection

LINE 2 PLOT



LINE 2 RESULTS

Trace Markers

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)
7	.177	44.88	Pk	1.2	0	46.08	64.63	-18.55	-	-
8	.186	22.52	Av	1.1	0	23.62	-	-	54.21	-30.59
9	.402	38.06	Pk	.4	0	38.46	57.81	-19.35	-	-
10	.4065	24.57	Av	.4	0	24.97	-	-	47.72	-22.75
11	13.56	39.89	Pk	.2	.2	40.29	60	-19.71	-	-
12	13.5375	17.3	Av	.2	.2	17.7	-	-	50	-32.3

Pk - Peak detector

Av - Average detection