



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

**CERTIFICATION TEST REPORT**

**FOR**

**TABLET DEVICE**

**MODEL NUMBER: A1567**

**FCC ID: BCGA1567**

**IC: 579C-A1567**

**REPORT NUMBER: 14U18207-E9, Revision A**

**ISSUE DATE: SEPTEMBER 5, 2014**

*Prepared for*

**APPLE, INC.**

**1 INFINITE LOOP**

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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>
---	09/02/14	Initial Issue	F. de Anda
A	09/12/14	Update section 5.2	F. de Anda

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** APPLE, INC.  
1 INFINITE LOOP  
CUPERTINO, CA 95014, U.S.A.

**EUT DESCRIPTION:** TABLET DEVICE

**MODEL:** A1567

**SERIAL NUMBER:** DLXMX08RG4M9 (Conducted); DLXMX00VG4MF (Radiated)

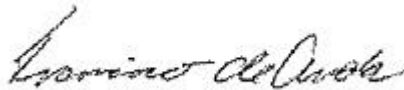
**DATE TESTED:** 07/14/2014-07/25/2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services 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 and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services 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:



FRANCISCO DE ANDA  
Project Lead  
UL Verification Services Inc.

Tested By:



JOE VANG  
Lab Technician  
UL Verification Services Inc

## 2. TEST METHODOLOGY

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

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 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 type="checkbox"/> Chamber A	<input checked="" type="checkbox"/> Chamber D
<input type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E
<input type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F
	<input type="checkbox"/> Chamber G
	<input type="checkbox"/> Chamber H

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

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

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

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

### 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 1000 MHz	±4.94 dB

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a tablet with multimedia functions (music, application support, and video), Cellular GSM/GPRS/EGPRS/CDMA2000 1xRTT/1x Advanced/EVDO Rev.A/EVDO Rev.B /WCDMA /HSPA+/DC-HSDPA/LTE FDD & Carrier Aggregation/TDD/TD-SCDMA radio, IEEE 802.11a/b/g/n/ac radio, and Bluetooth radio. The rechargeable battery is not user accessible.

### 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	8.97	7.89

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Band (GHz)	Antenna Gain	
	Antenna B	Antenna C
2.4	-7.72	-1.55

### 5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 12B331.

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## 5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was including headset, AC charger and the mode and channel with the highest output power.

The worst-position was the EUT with highest emissions. To determine the worst-case, the EUT is a portable device that has three orientations; therefore X, Y and Z orientations have been investigated with AC adapter and Headset, and the worst case was found to be Y (Landscape) position without AC adapter and headset.

EUT supports BT/BLE operation on antenna B or antenna C. Output power is same for both ports. Antenna C has higher gain than B; therefore, testing was performed on antenna C only.

There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The WiFi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

Baseline testing was performed on the two variants to determine the worst case on all conducted power and radiated emissions.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC/DC adapter	Apple	A1357	N/A	NA
Earphone	Apple	NA	NA	NA
Laptop	Apple	A1278	C02HJ0A7DTY4	NA
DC power supply	Sorensen	XT 15-4	1319A02780	NA

### I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	SMA	Un-Shielded	0.2	To spectrum Analyzer
2	USB	1	USB	Shielded	1	N/A
3	DC	1	DC	Un-shielded	0.8	N/A

### I/O CABLES (RADIATED ABOVE 1 GHZ)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
None used						

### I/O CABLES (AC POWER CONDUCTED TEST and below 1 GHZ)

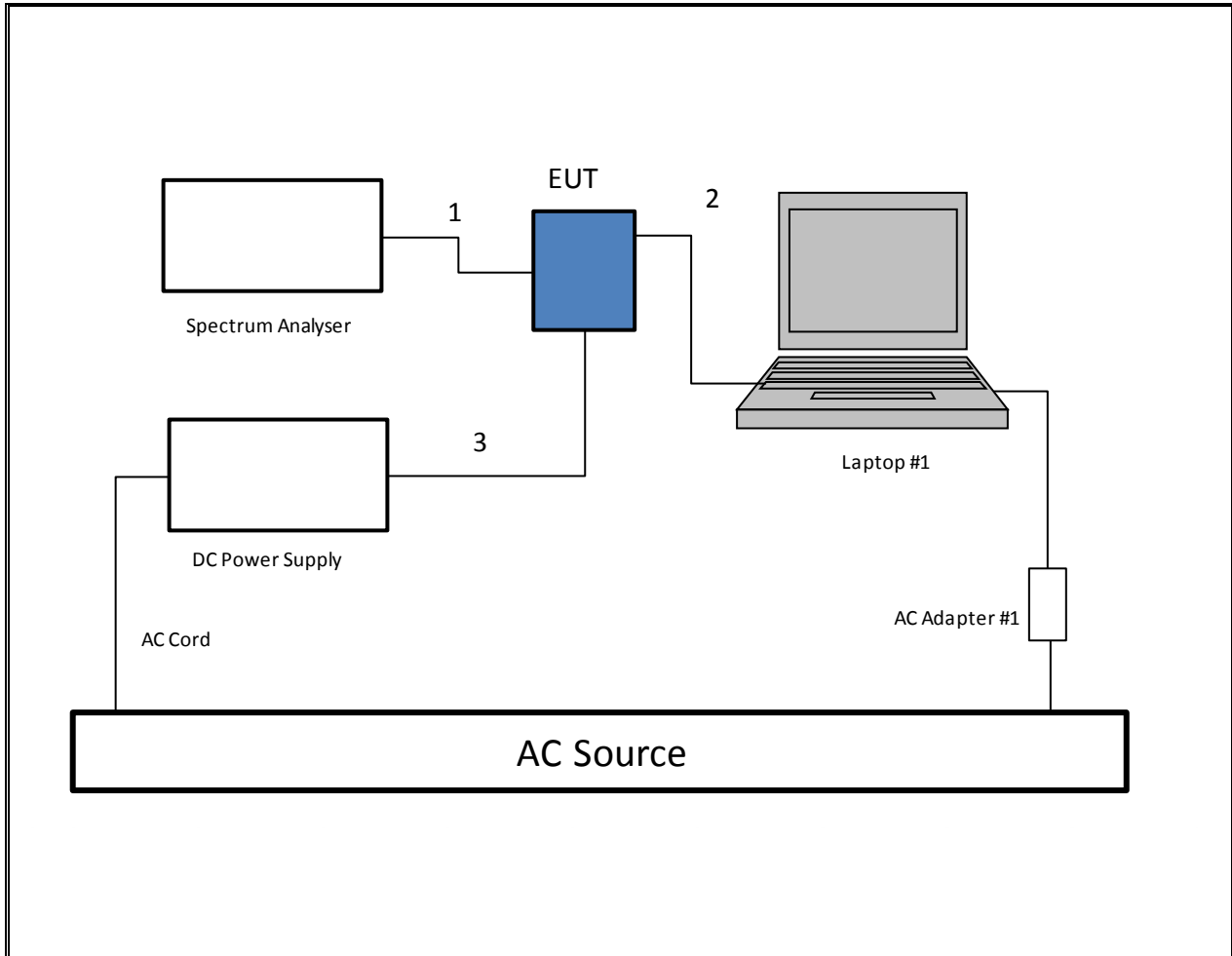
I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	US115	Un-Shielded	0.8	NA
2	DC	1	lightning	Un-Shielded	1	NA
3	Audio	1	Jack	Un-Shielded	0.5	NA



**TEST SETUP- CONDUCTED PORT**

The EUT was tested connected to a host Laptop via USB cable adapter and spectrum analyzer to antenna port. Test software exercised the EUT.

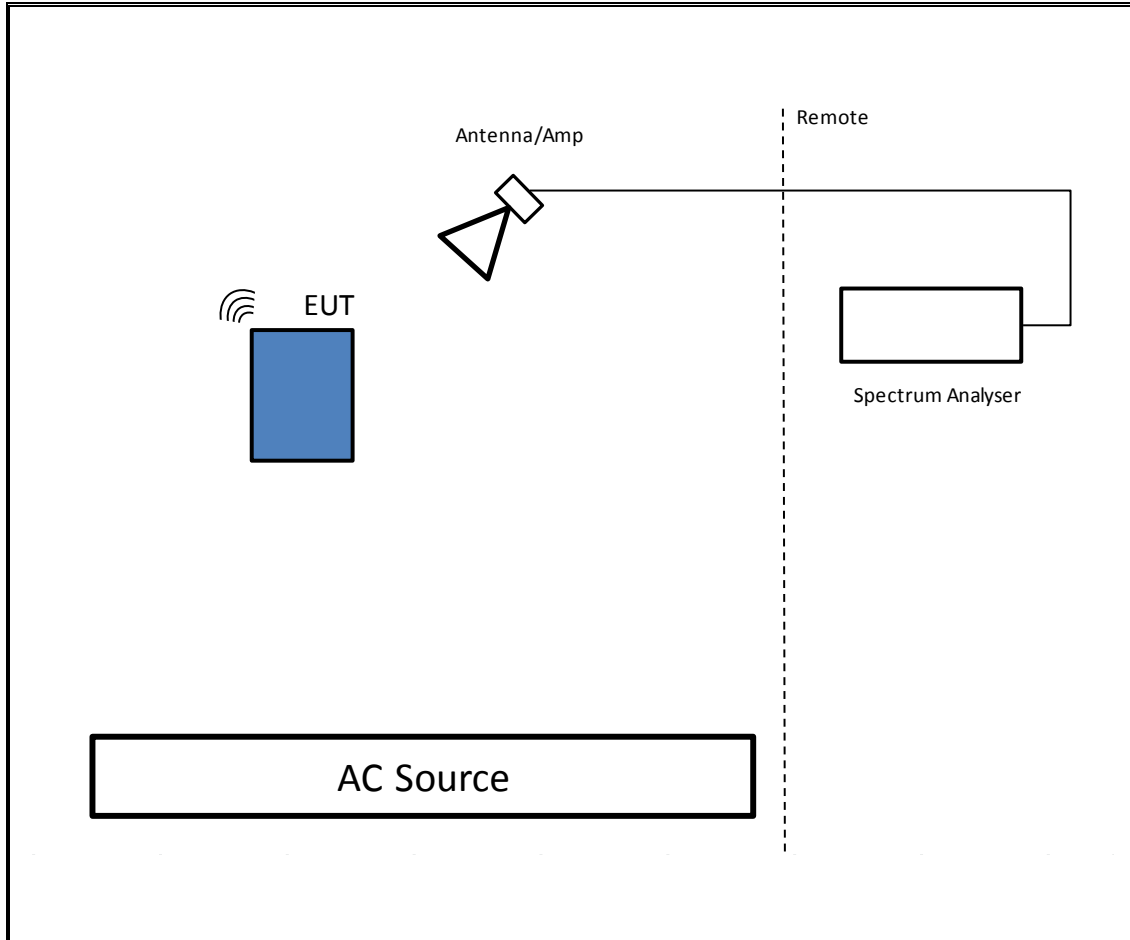
**SETUP DIAGRAM**



**TEST SETUP- RADIATED-ABOVE 1 GHZ**

The EUT was tested battery powered. Test software exercised the EUT.

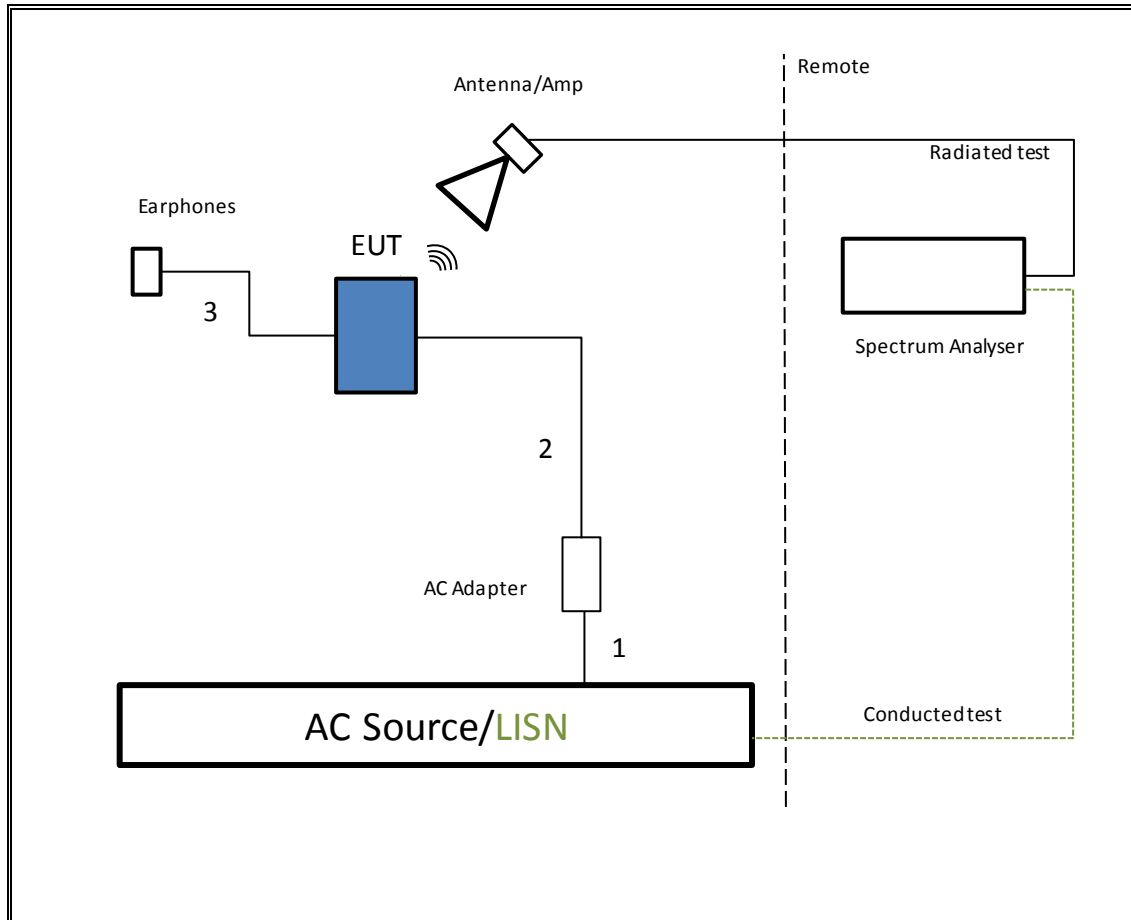
**SETUP DIAGRAM**



**TEST SETUP- BELOW 1GHZ & AC LINE CONDUCTED TESTS**

The EUT was tested with earphones connected and powered by AC adapter. Test software exercised the EUT.

**SETUP DIAGRAM**



## 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, Horn, 18 GHz	ETS Lindgren	3117	00165318	04/04/15
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/26/14
Wideband Power Sensor	Agilent	N1921A	F00360	09/30/14
Peak Power Meter	Agilent / HP	N1911A	F00025	05/06/15
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY53310593	05/07/15
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A-544	RENTAL	05/02/15
Antenna, Bilog, 2 GHz	Sunol Sciences	JB3	A051314-2	05/14/15
Preamplifier, 1300 MHz (T835)	Sonoma	310	N02891	12/30/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	F00167	03/25/15
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	F00092	09/05/14
LISN, 30 MHz	FCC	LISN-50/250-25-2	C00626	01/14/15
Filter, LPF 5GHz	Micro-Tronics	LPS17541	F00174	08/24/14
RF-Amplifier 1-18Ghz	Miteq	AFS42-00101800-25-s-	F00005	08/24/14

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## 7. MEASUREMENT METHODS

6 dB BW: KDB 558074 D01.

Output Power: KDB 558074 D01.

Power Spectral Density: KDB 558074 D01.

Out-of-band emissions in non-restricted bands: KDB 558074 D01.

Out-of-band emissions in restricted bands: KDB 558074 D01.

## 8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

### LIMITS

None; for reporting purposes only.

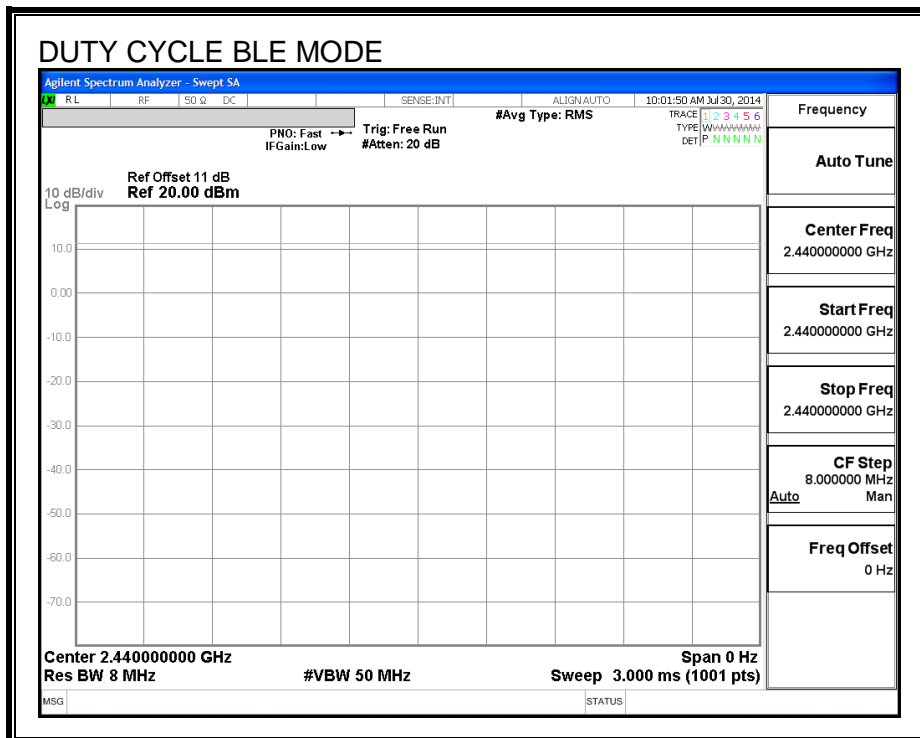
### PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

### 8.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
BLE	1.000	1.000	1.000	100.0%	0.000	1.000

#### 8.1.1. DUTY CYCLE PLOTS



## 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.

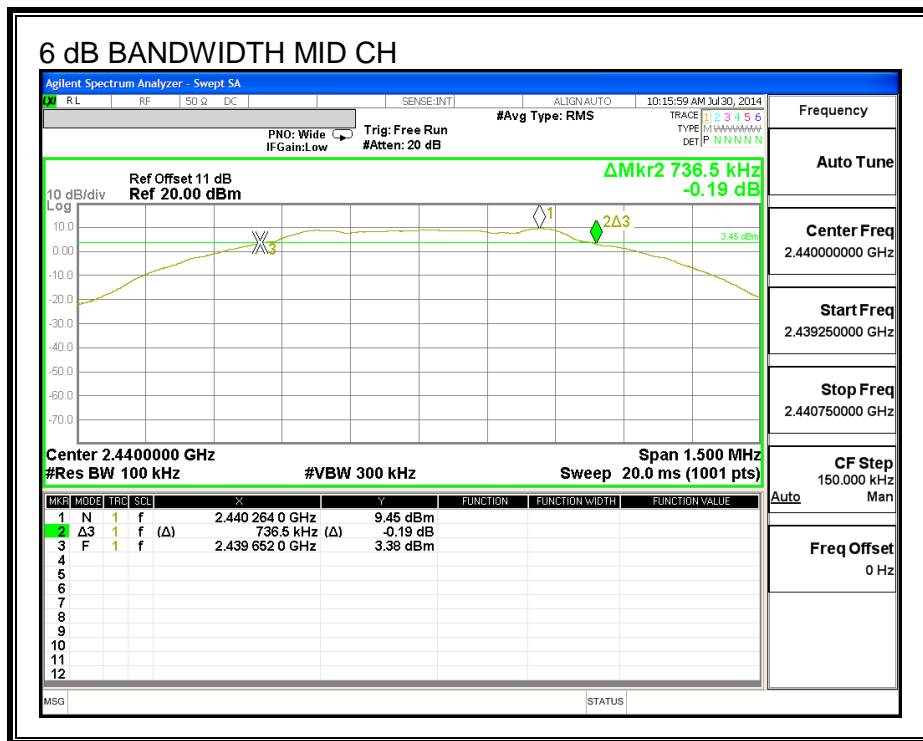
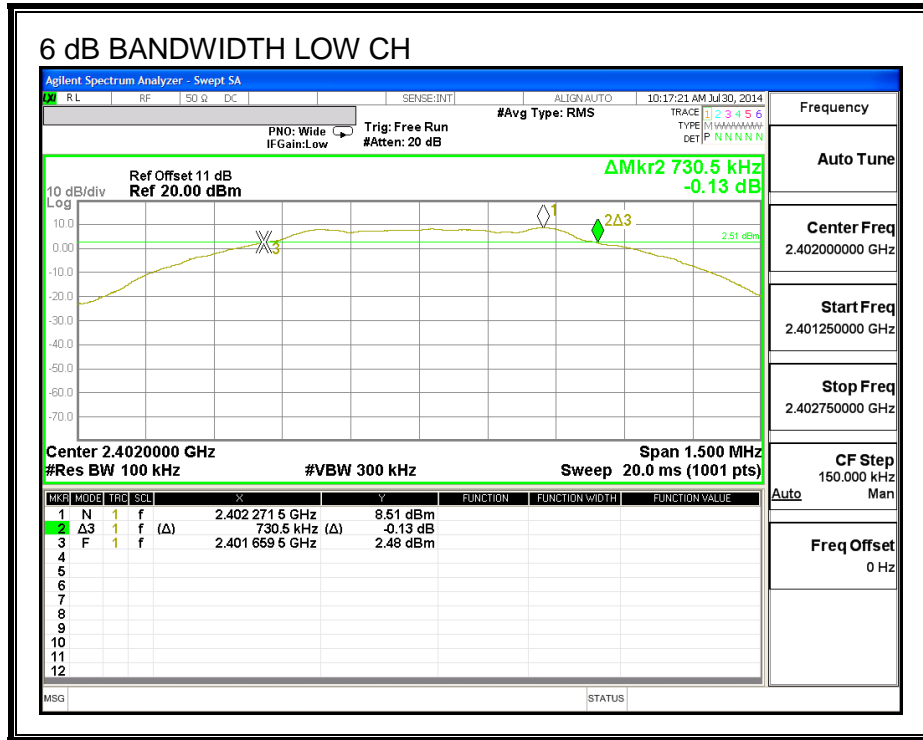
#### TEST PROCEDURE

KDB 558074 D01 v01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

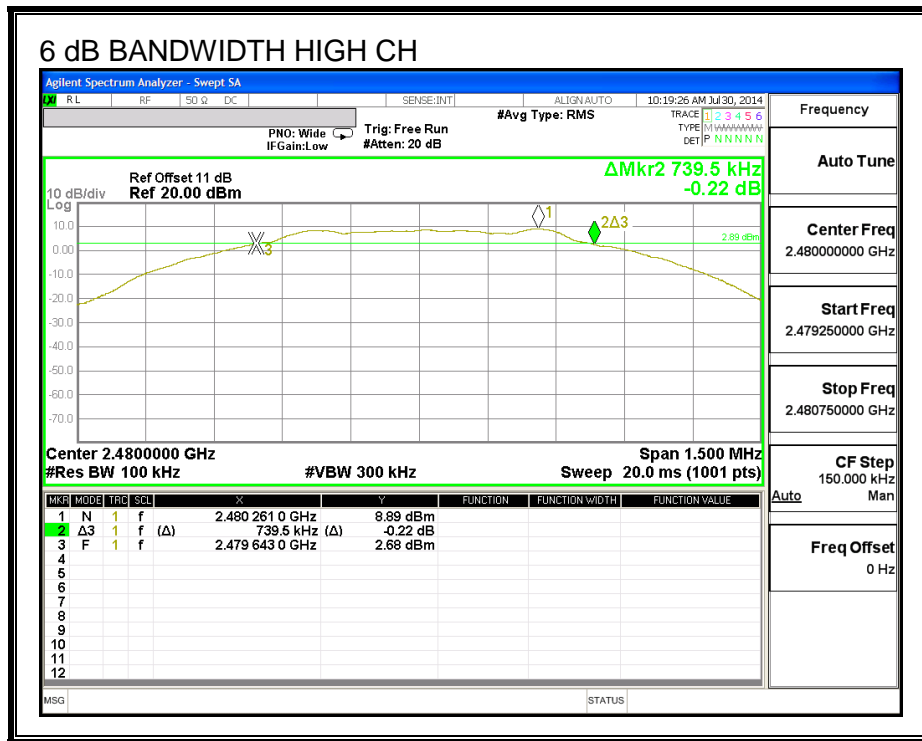
#### RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (KHz)	Minimum Limit (KHz)
Low	2402	730.5	500.0
Middle	2440	736.5	500.0
High	2480	739.5	500.0

**6 dB BANDWIDTH**







## 9.2. 99% BANDWIDTH

### LIMIT

None; for reporting purposes only.

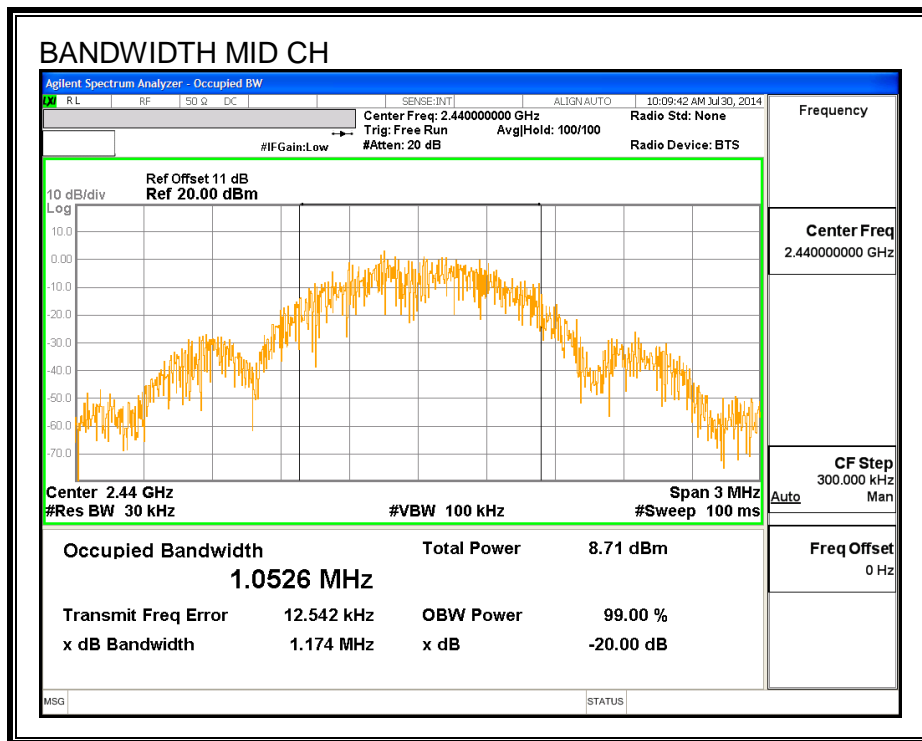
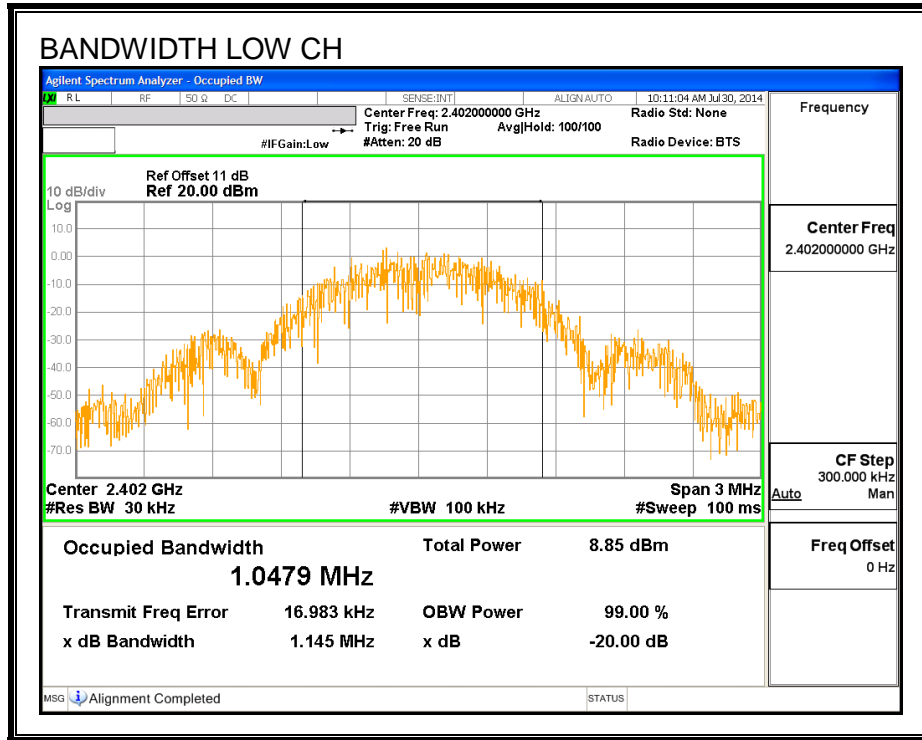
### TEST PROCEDURE

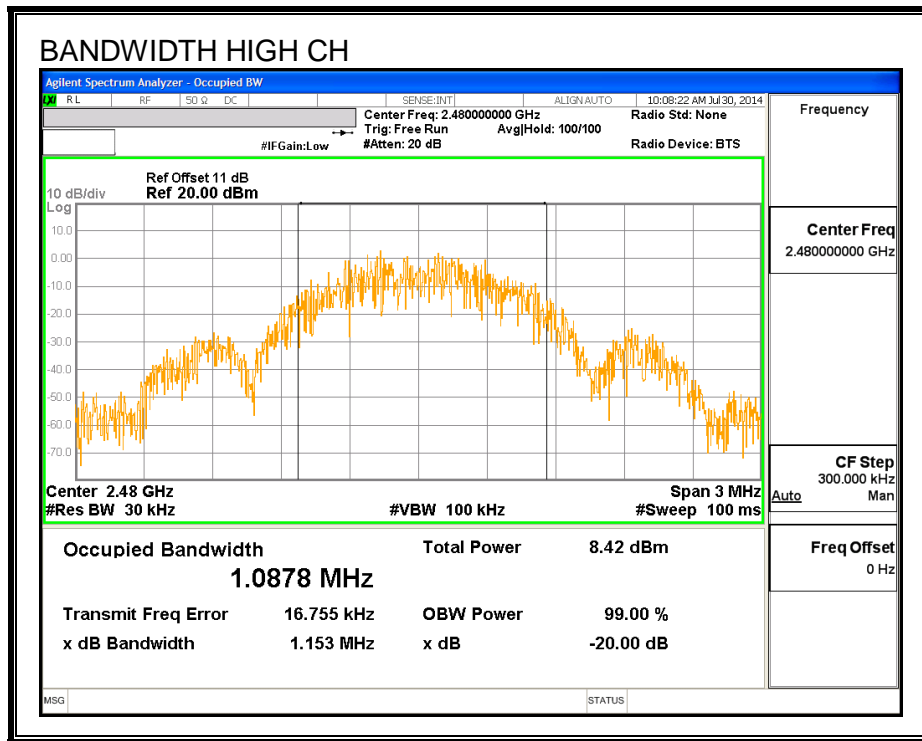
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

### RESULTS

Frequency (MHz)	99% Bandwidth (MHz)
2402	1.0479
2440	1.0526
2480	1.0878

**99% BANDWIDTH**





### 9.3. OUTPUT POWER

#### LIMIT

§15.247 (b) (1)

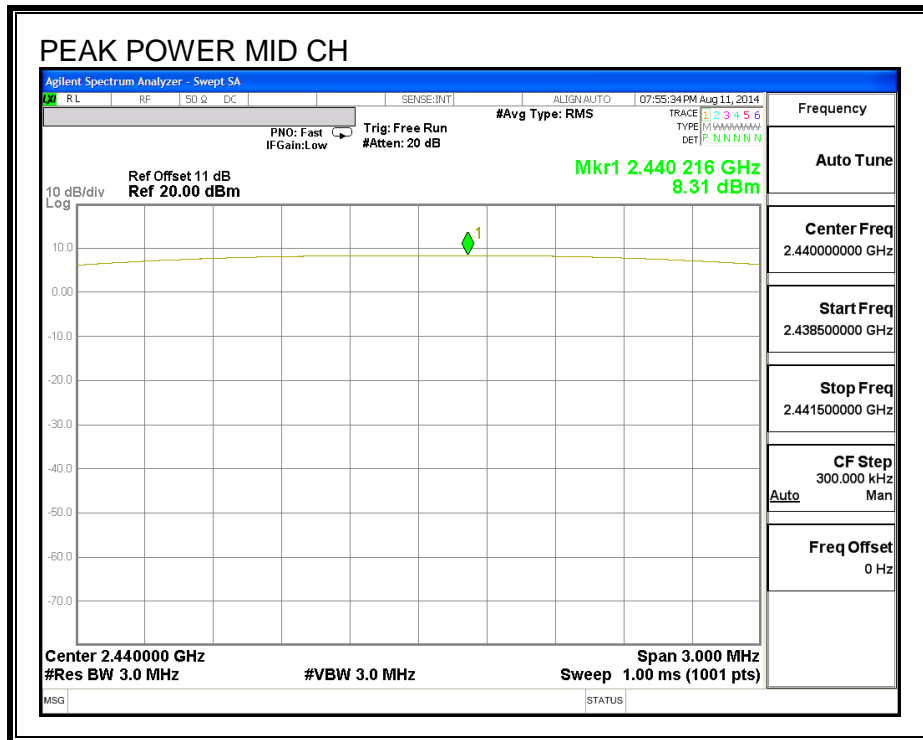
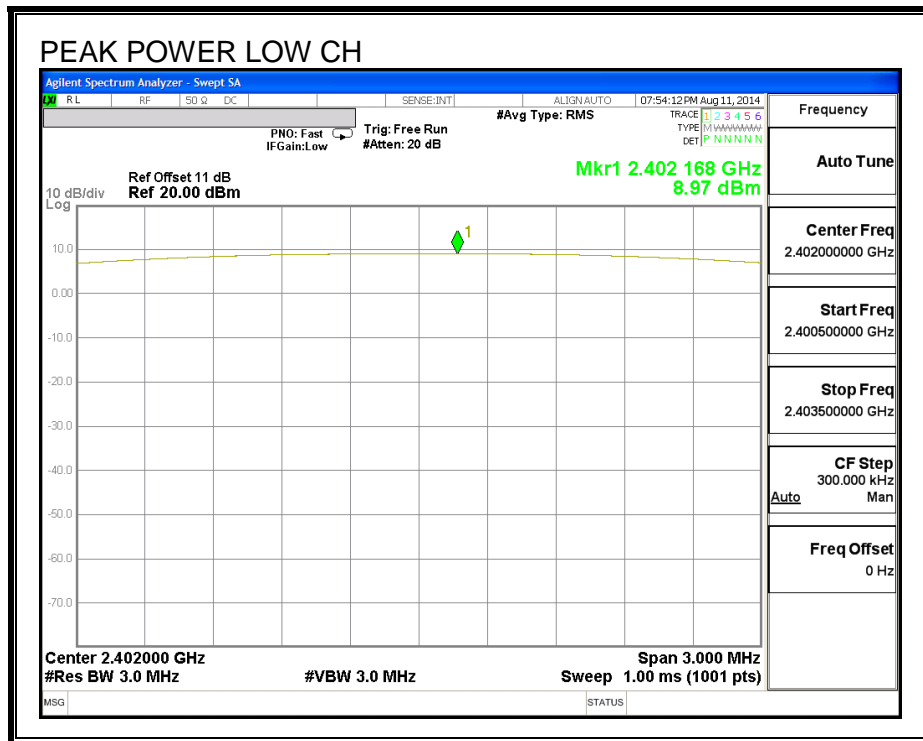
The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm.

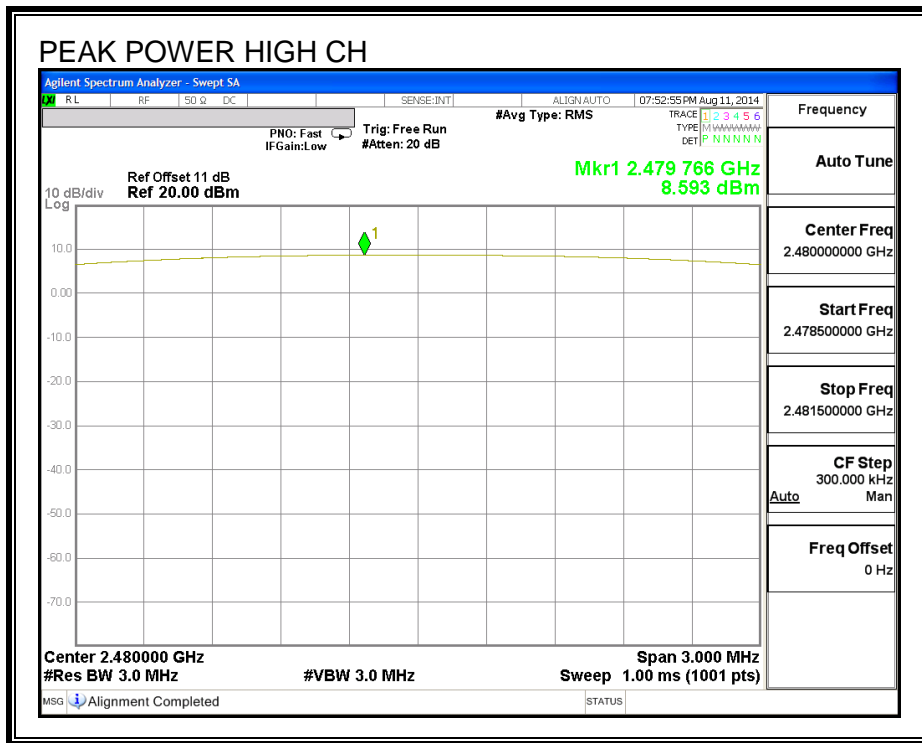
#### TEST PROCEDURE

KDB 558074 D01 v01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

#### RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.97	30	-21.03
Middle	2440	8.31	30	-21.69
High	2480	8.59	30	-21.41





## 9.4. AVERAGE POWER

### LIMIT

None; for reporting purposes only.

### TEST PROCEDURE

The transmitter output is connected to a power meter.

### RESULTS

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.78
Middle	2440	8.10
High	2480	8.42



## 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.

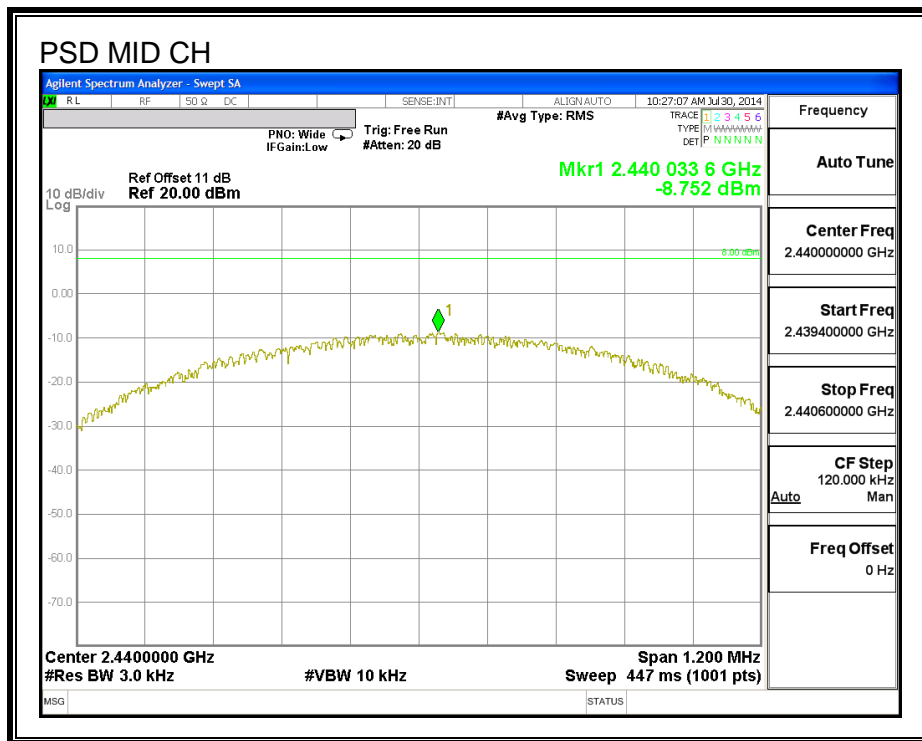
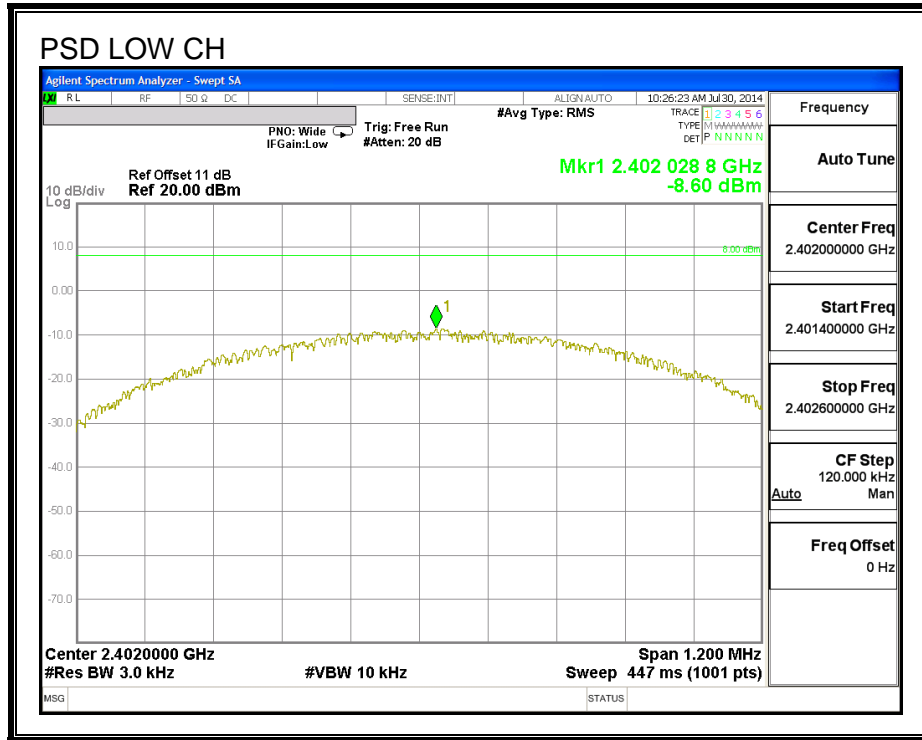
### TEST PROCEDURE

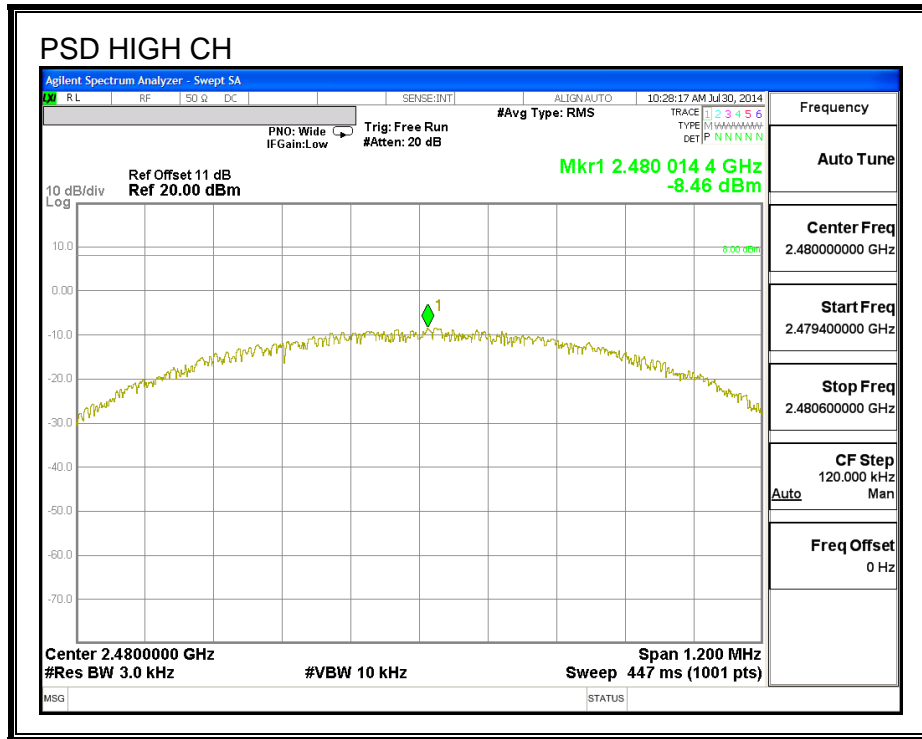
KDB 558074 D01 v01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

### RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-8.60	8	-16.60
Middle	2440	-8.75	8	-16.75
High	2480	-8.46	8	-16.46

**POWER SPECTRAL DENSITY**





## **9.6. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

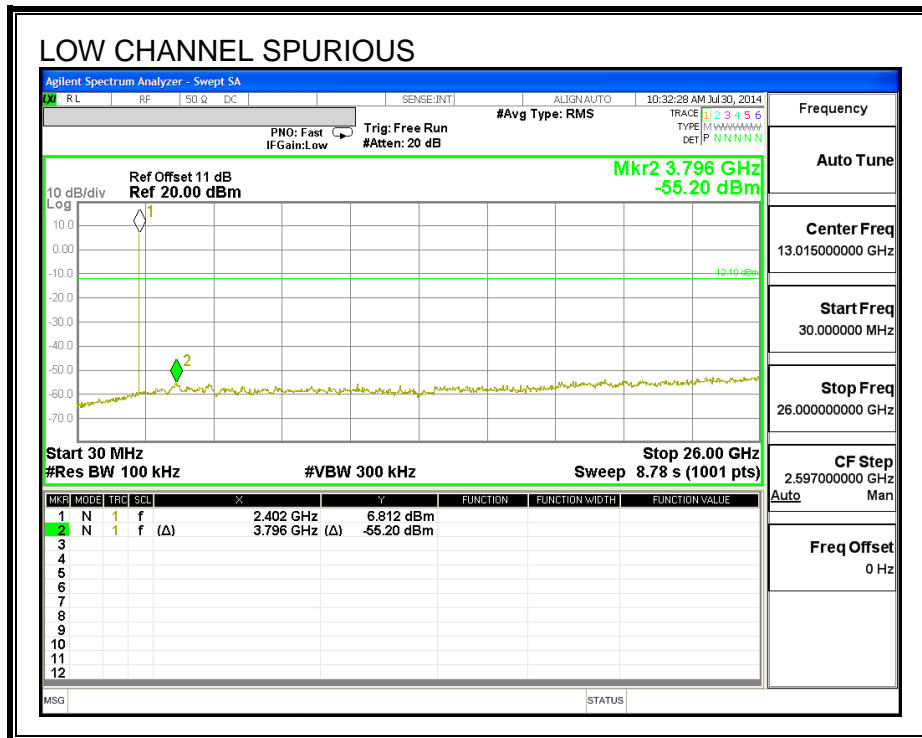
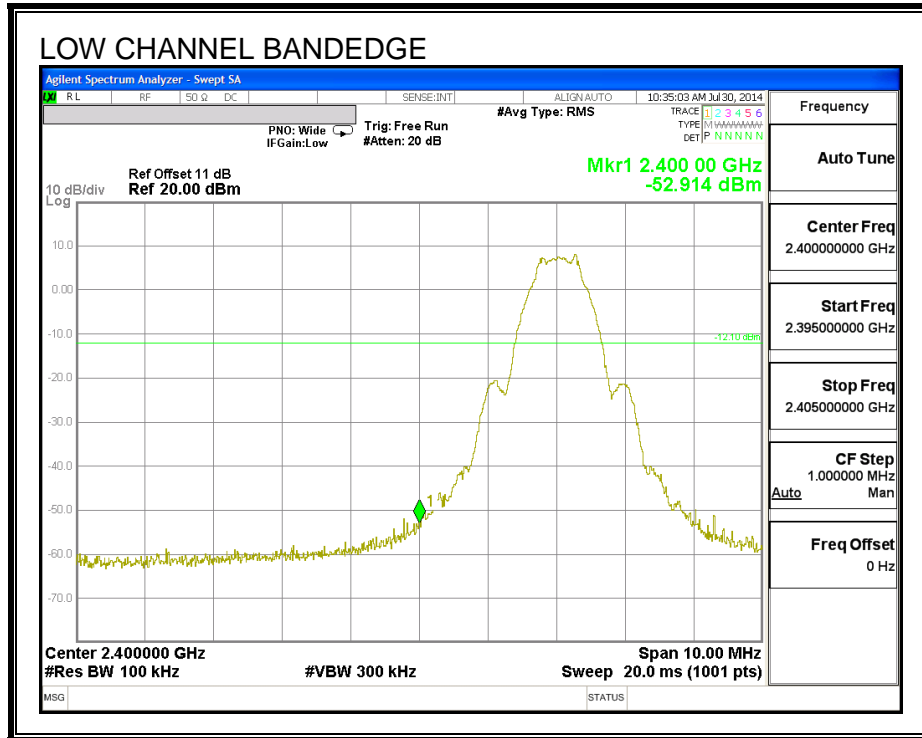
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

### **TEST PROCEDURE**

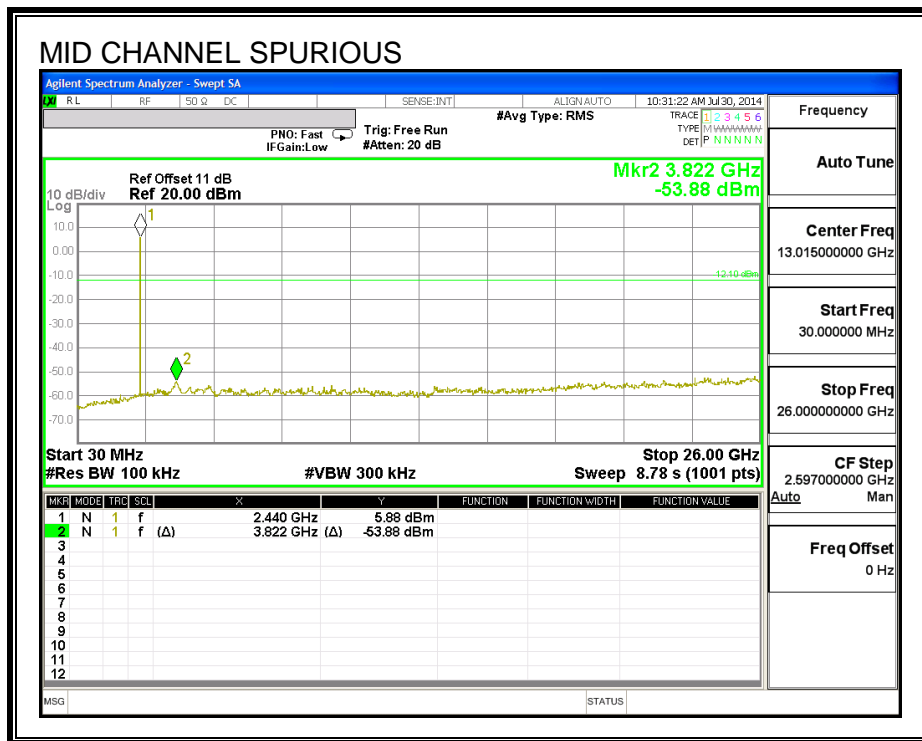
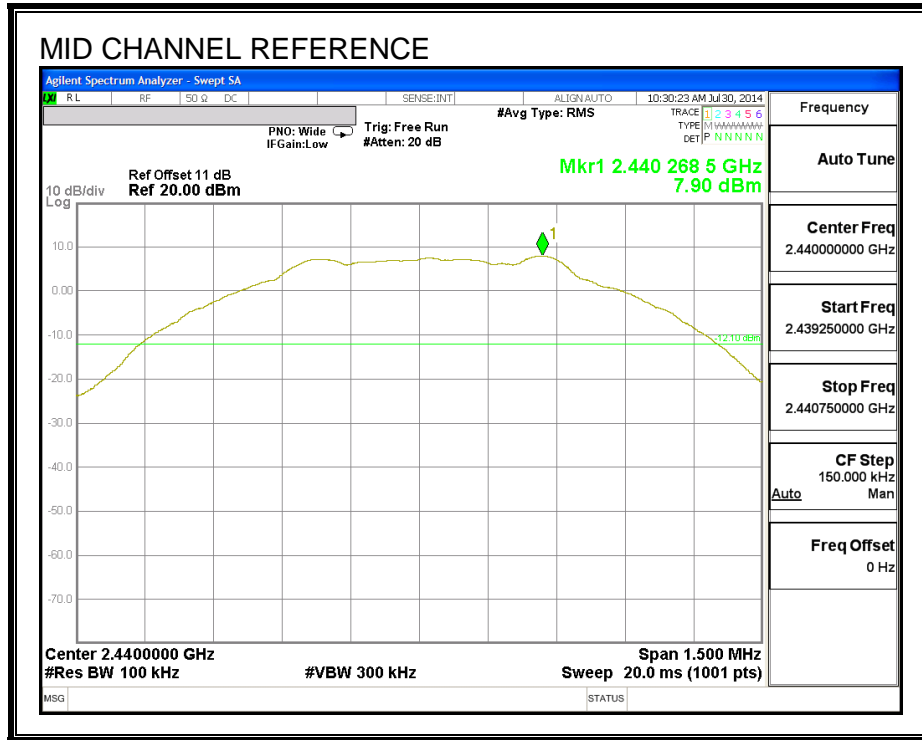
KDB 558074 D01 v01 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247".

**RESULTS**

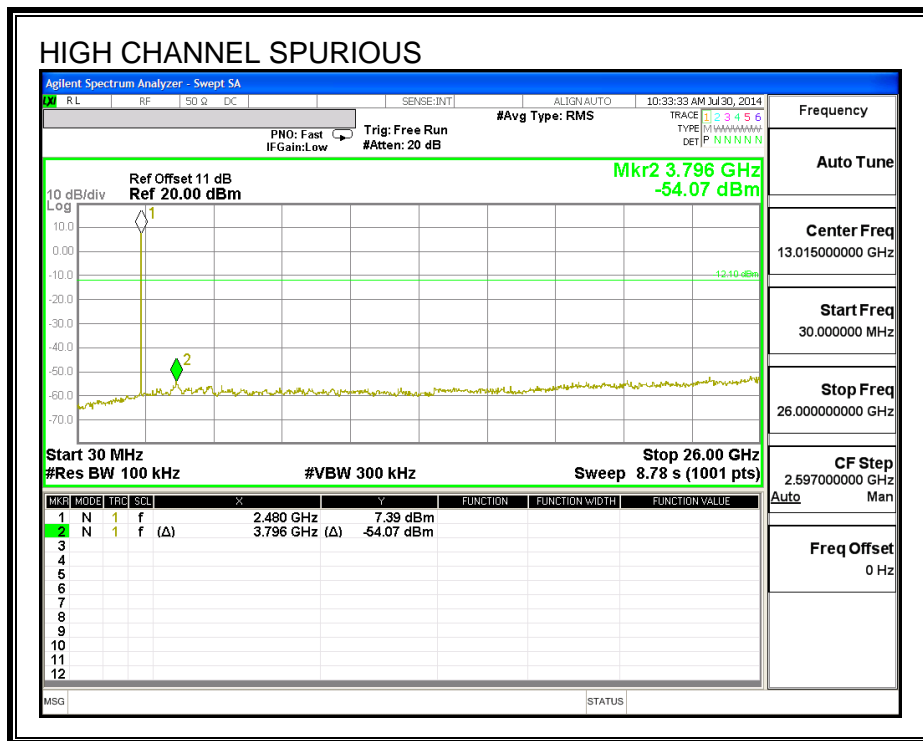
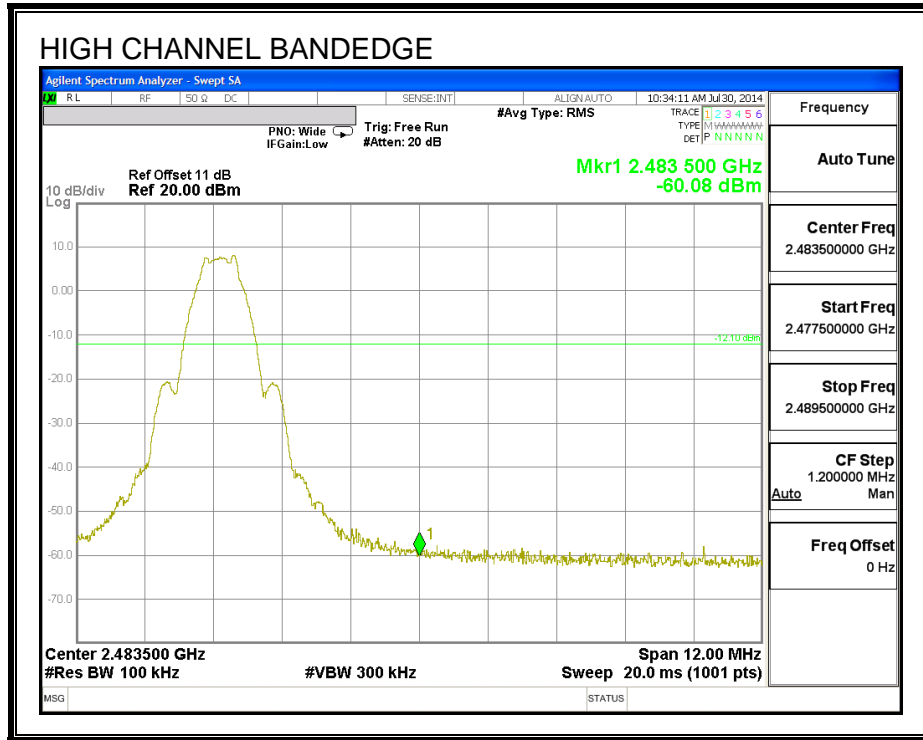
**SPURIOUS EMISSIONS, LOW CHANNEL**



**SPURIOUS EMISSIONS, MID CHANNEL**



**SPURIOUS EMISSIONS, HIGH CHANNEL**



## 10. RADIATED TEST RESULTS

### 10.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

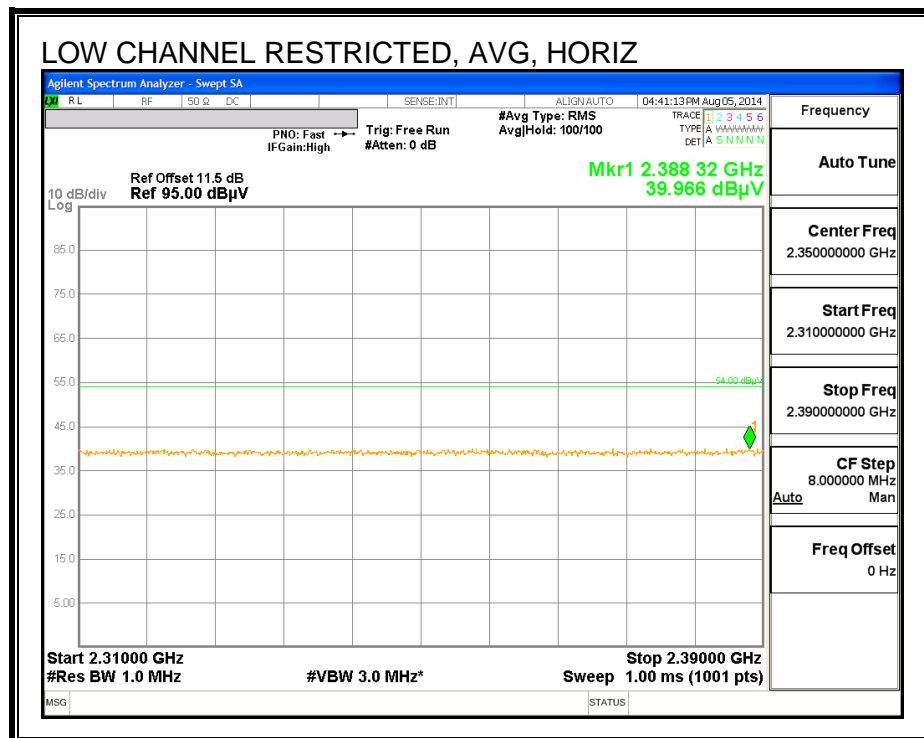
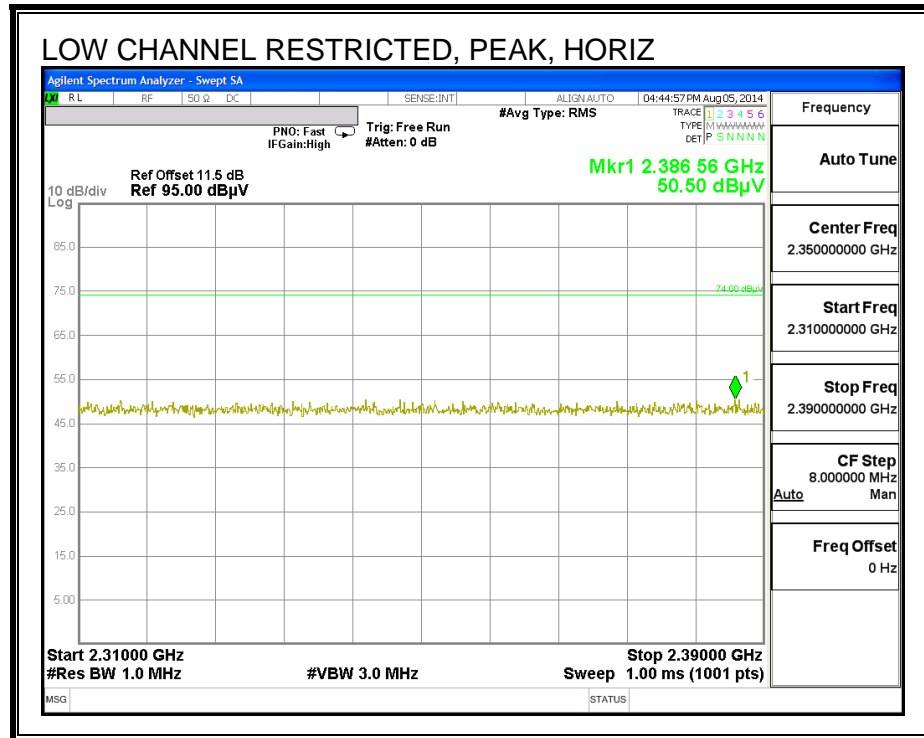
For 2.4 GHz band, the spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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

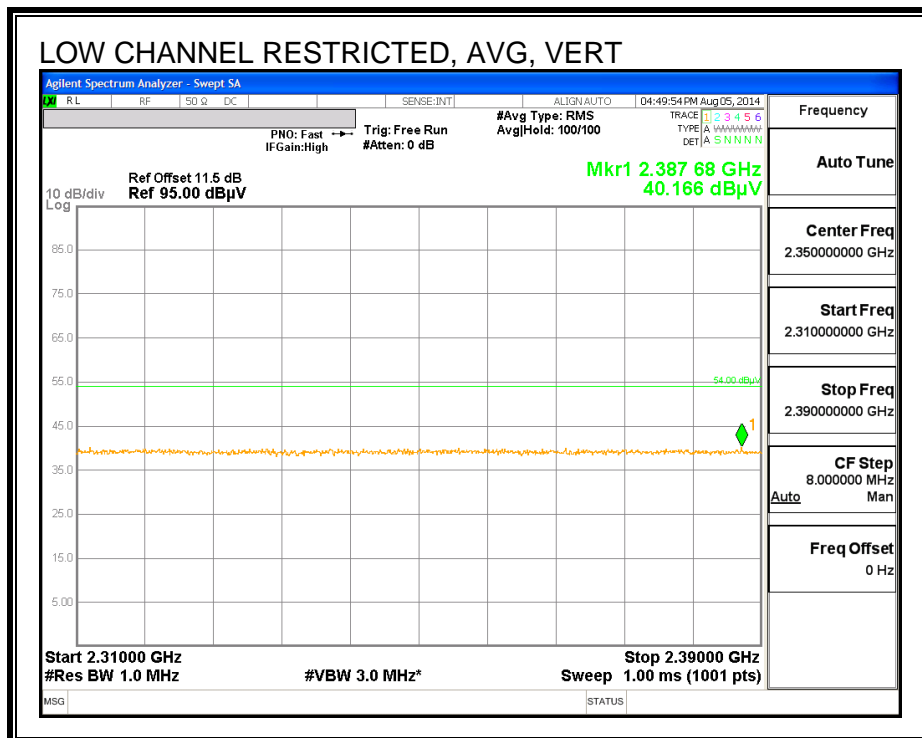
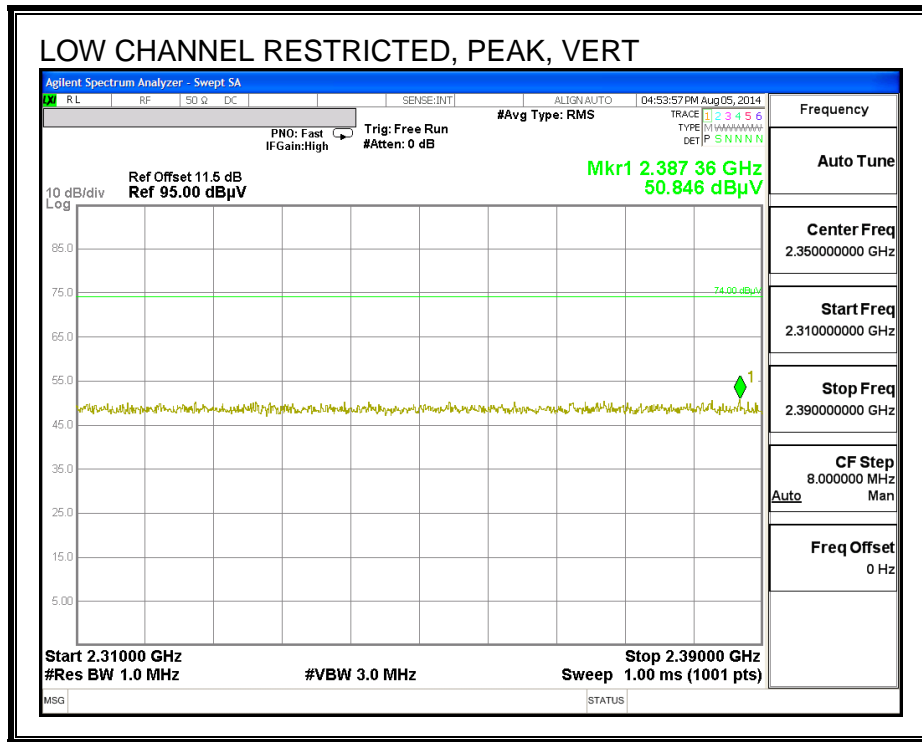


## 10.2. TRANSMITTER ABOVE 1 GHz

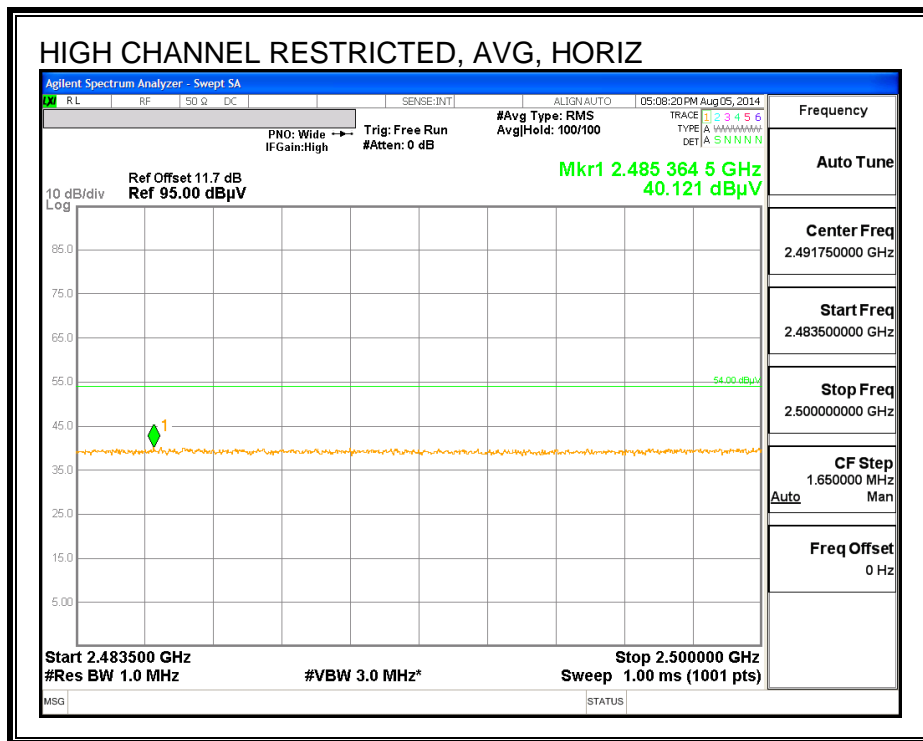
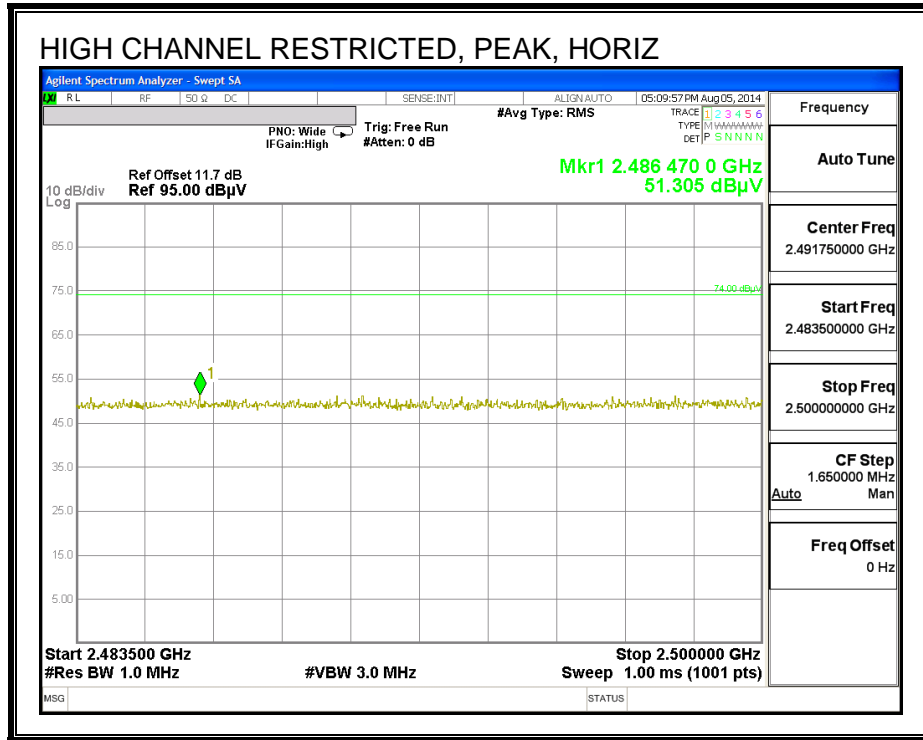
### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



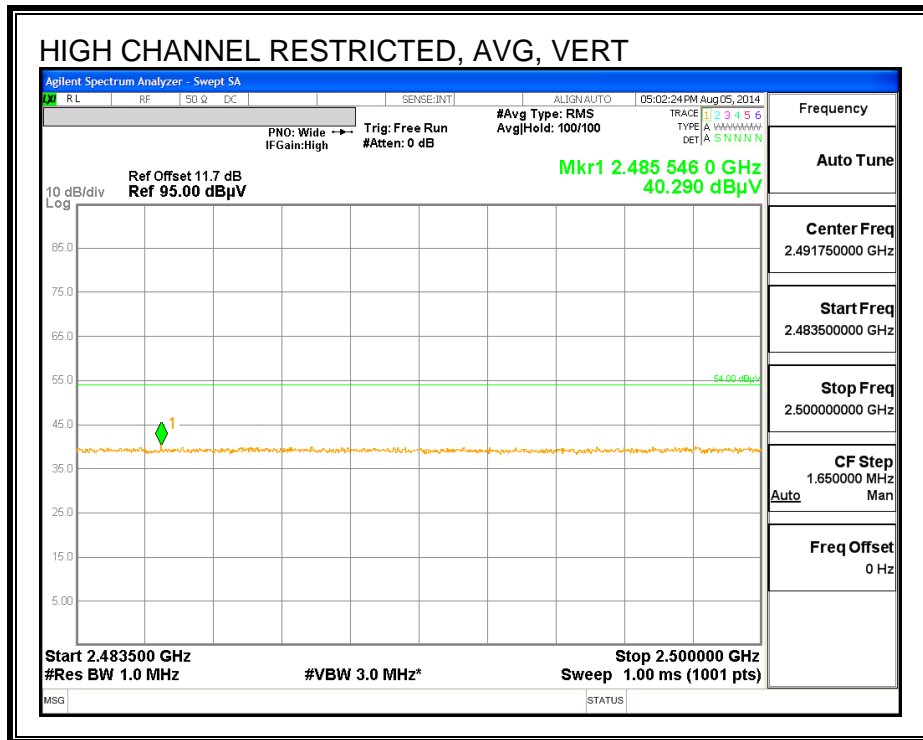
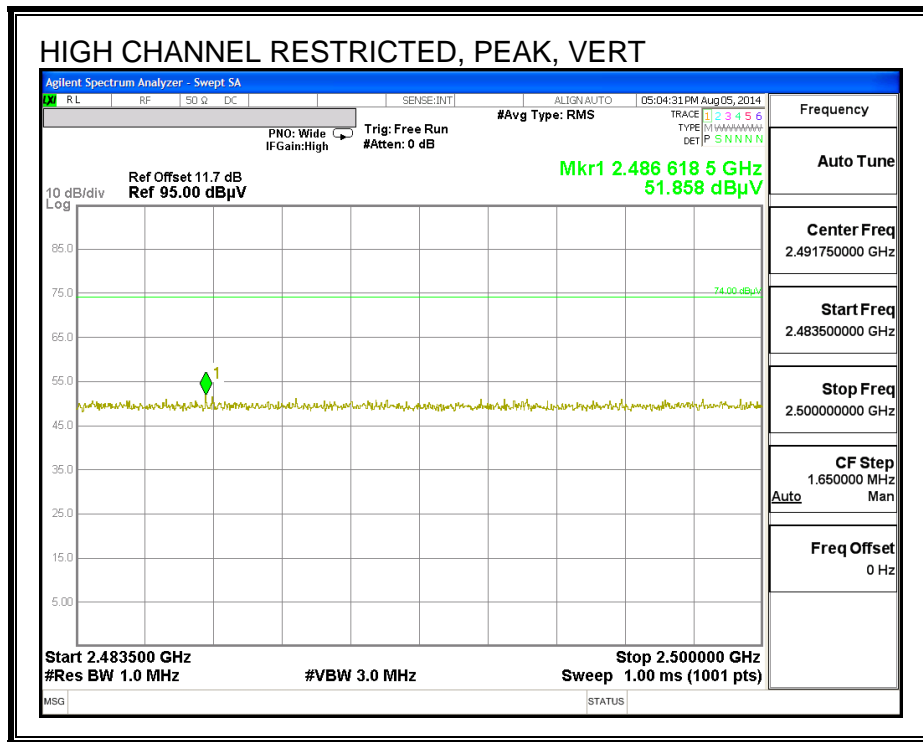
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



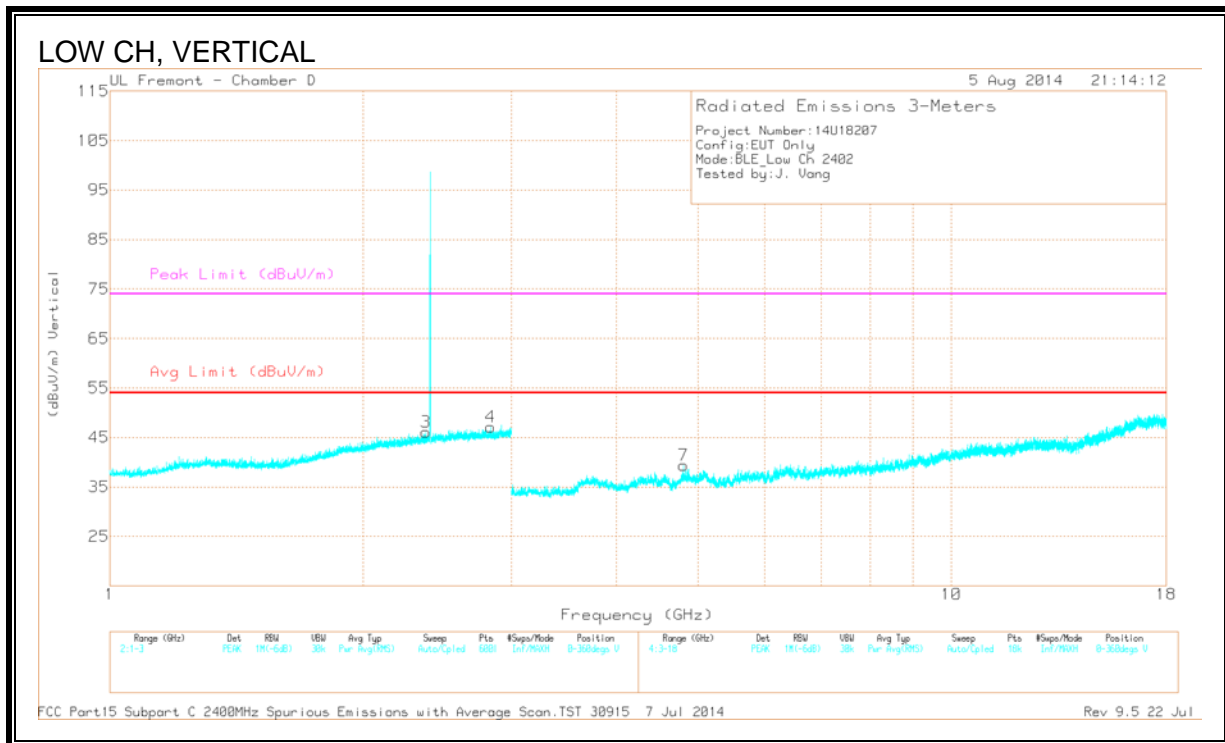
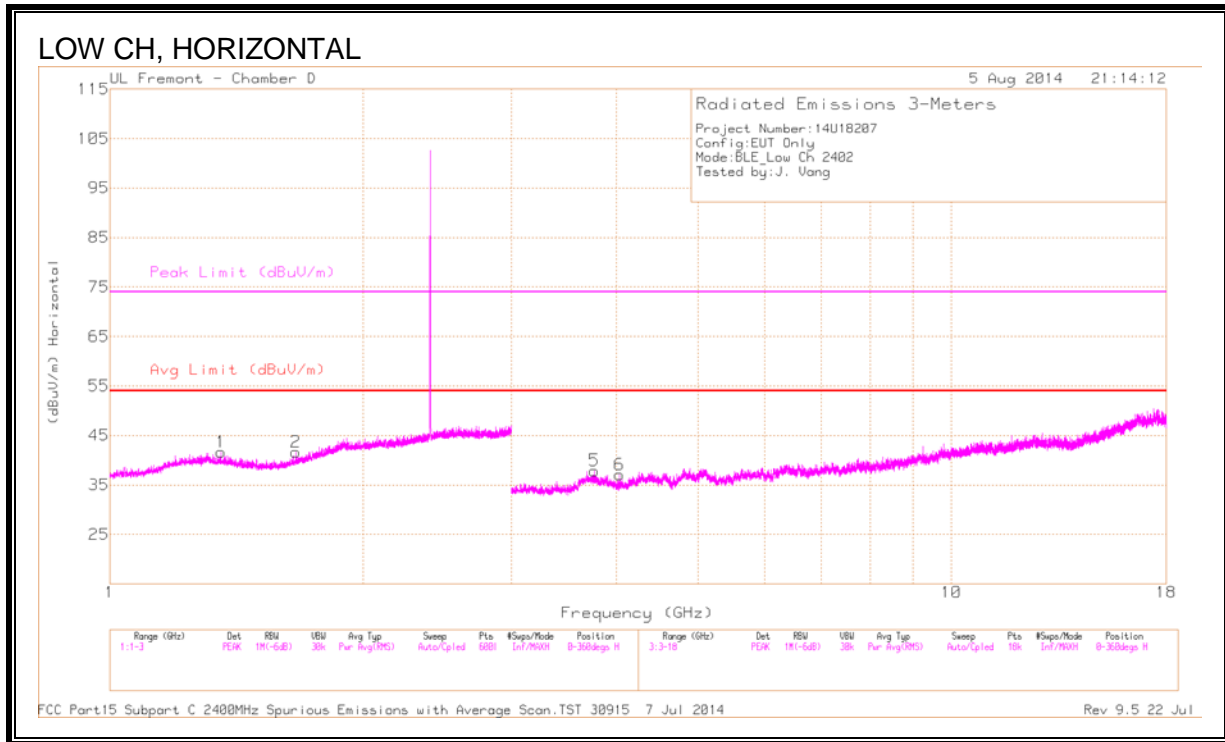
**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



**LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS**



**DATA**

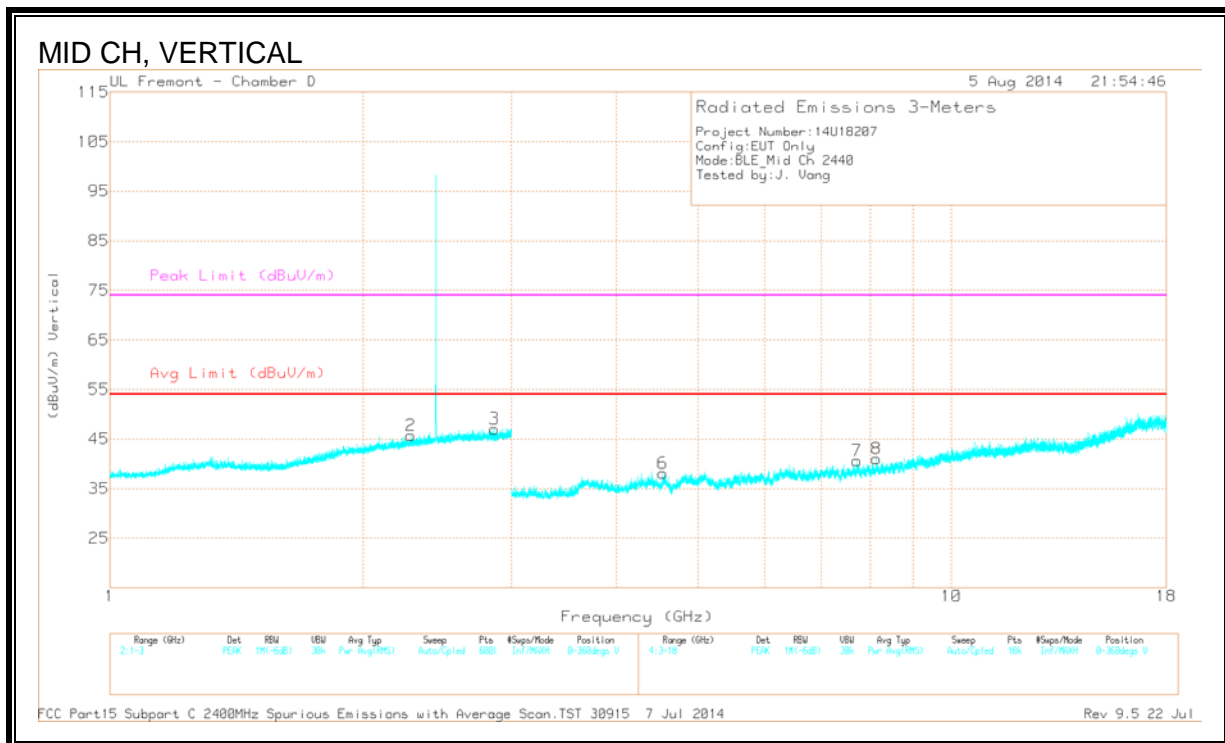
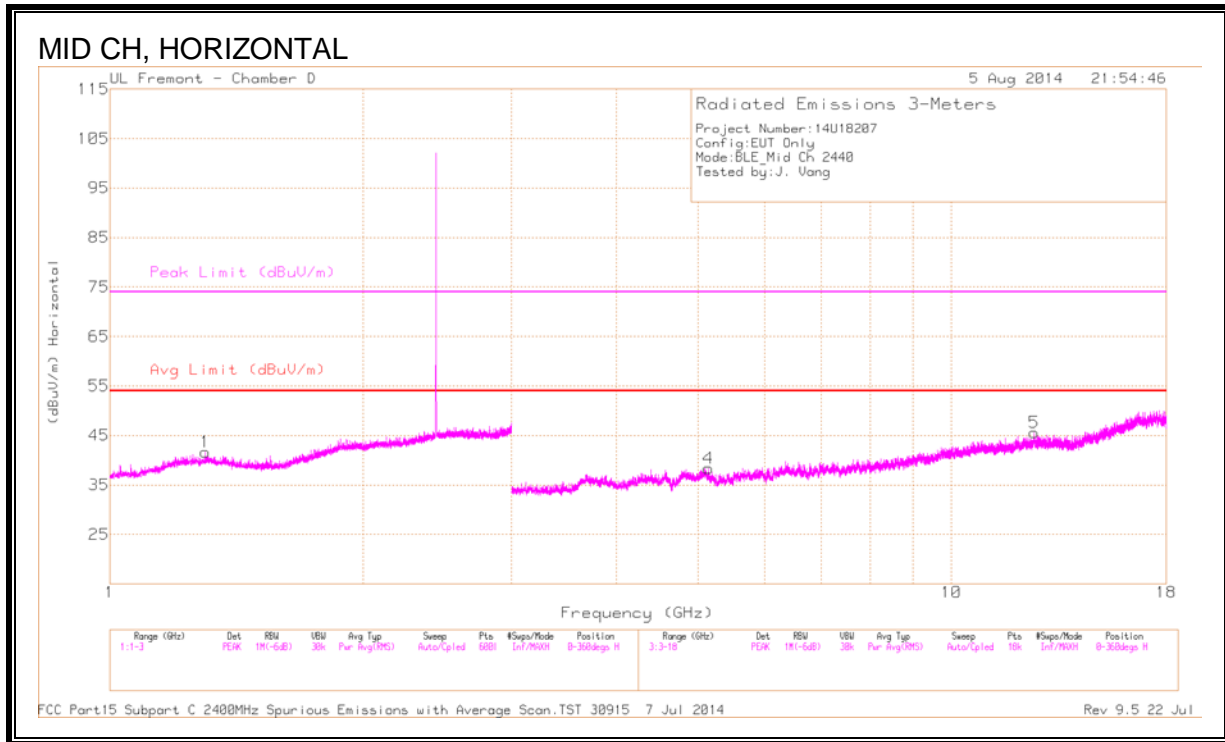
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.353	41.7	PK3	28.7	-21.9	48.5	-	-	74	-25.5	72	152	H
	* 1.353	28.64	VB10	28.7	-21.9	35.44	54	-18.56	-	-	72	152	H
2	* 1.665	41.49	PK3	28.7	-21.4	48.79	-	-	74	-25.21	345	298	H
	* 1.665	28.47	VB10	28.7	-21.4	35.77	54	-18.23	-	-	345	298	H
3	* 2.375	41.28	PK3	32.1	-20.7	52.68	-	-	74	-21.32	53	273	V
	* 2.375	28.46	VB10	32.1	-20.7	39.86	54	-14.14	-	-	53	273	V
4	* 2.834	41.1	PK3	32.5	-20	53.6	-	-	74	-20.4	47	204	V
	* 2.835	28.22	VB10	32.6	-20	40.82	54	-13.18	-	-	47	204	V
5	* 3.762	39.12	PK3	33.3	-28.5	43.92	-	-	74	-30.08	294	153	H
	* 3.762	25.59	VB10	33.3	-28.5	30.39	54	-23.61	-	-	294	153	H
6	* 4.034	38.37	PK3	33.4	-28.2	43.57	-	-	74	-30.43	347	296	H
	* 4.036	25.21	VB10	33.4	-28.2	30.41	54	-23.59	-	-	347	296	H
7	* 4.804	41.6	PK3	34.2	-27.1	48.7	-	-	74	-25.3	11	277	V
	* 4.804	32.47	VB10	34.2	-27.1	39.57	54	-14.43	-	-	11	277	V

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

PK3 - FHSS Method: Maximum Peak

VB10Hz - FHSS Method: 10Hz Video Bandwidth

**MID CHANNEL HARMONICS AND SPURIOUS EMISSIONS**



**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/ Fitr/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	* 1.299	41.97	PK3	28.8	-22	48.77	-	-	74	-25.23	39	395	H
	* 1.3	28.82	VB10	28.8	-21.9	35.72	54	-18.28	-	-	39	395	H
2	* 2.279	41.66	PK3	31.8	-20.7	52.76	-	-	74	-21.24	249	158	V
	* 2.28	28.42	VB10	31.8	-20.7	39.52	54	-14.48	-	-	249	158	V
3	* 2.866	41.67	PK3	32.6	-20.2	54.07	-	-	74	-19.93	28	185	V
	* 2.864	28.19	VB10	32.6	-20.2	40.59	54	-13.41	-	-	28	185	V
4	* 5.143	38.59	PK3	34.3	-26.9	45.99	-	-	74	-28.01	87	121	H
	* 5.143	25.16	VB10	34.3	-26.9	32.56	54	-21.44	-	-	87	121	H
5	* 12.549	35.37	PK3	39.3	-20.9	53.77	-	-	74	-20.23	119	159	H
	* 12.548	21.67	VB10	39.3	-20.9	40.07	54	-13.93	-	-	119	159	H
6	* 4.538	37.7	PK3	34	-26.5	45.2	-	-	74	-28.8	184	394	V
	* 4.538	24.51	VB10	34	-26.5	32.01	54	-21.99	-	-	184	394	V
7	* 7.726	36.06	PK3	35.8	-24.3	47.56	-	-	74	-26.44	237	145	V
	* 7.726	22.98	VB10	35.8	-24.3	34.48	54	-19.52	-	-	237	145	V
8	* 8.143	36.1	PK3	35.8	-23.7	48.2	-	-	74	-25.8	124	339	V
	* 8.144	22.83	VB10	35.8	-23.6	35.03	54	-18.97	-	-	124	339	V

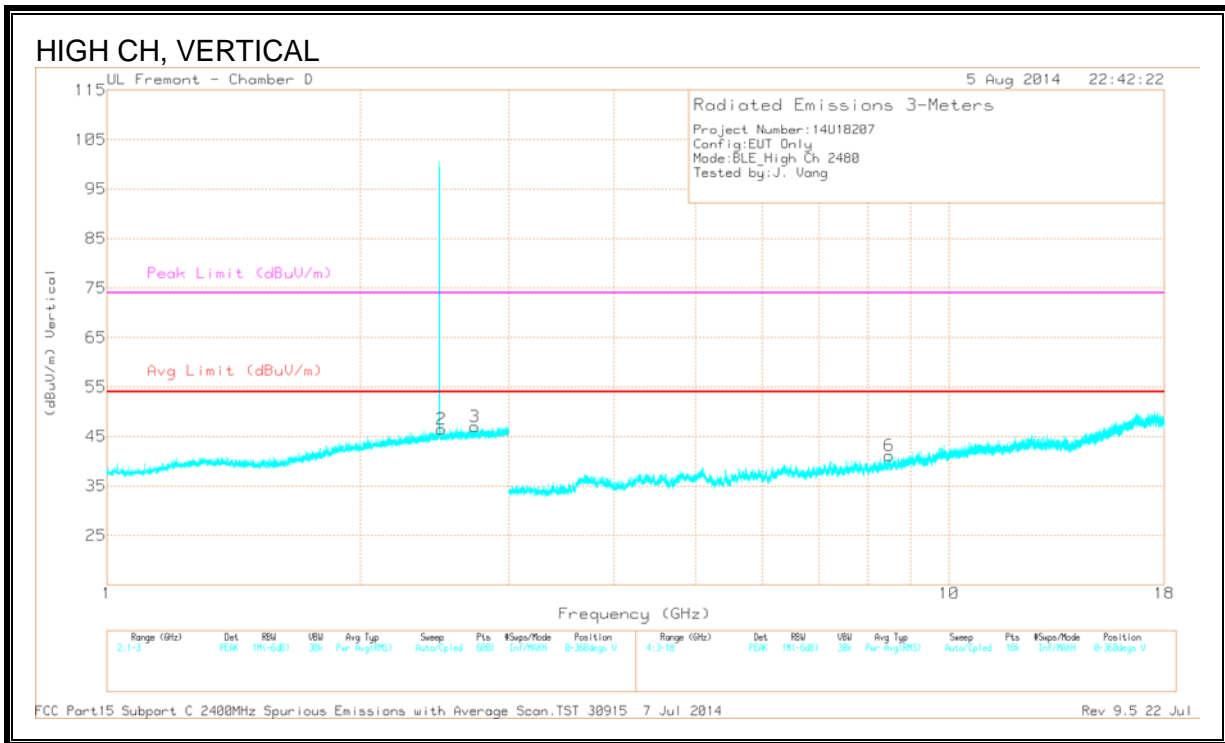
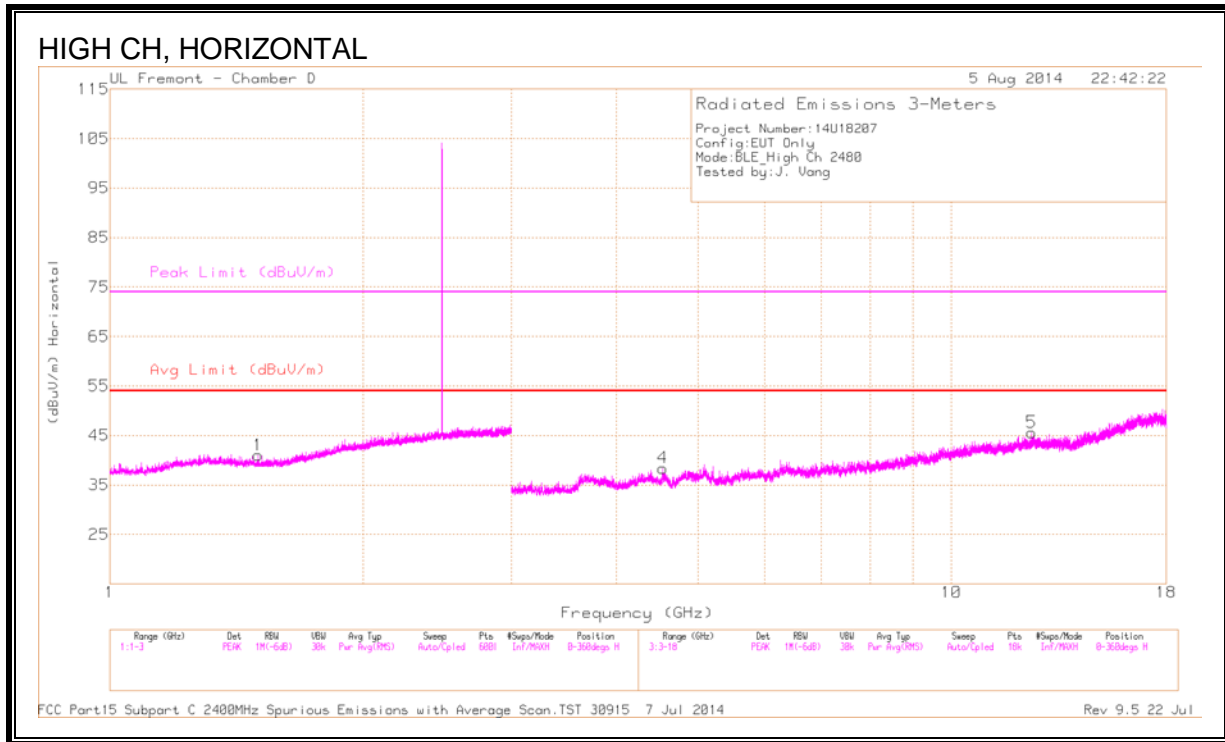
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

VB10Hz - FHSS Method: 10Hz Video Bandwidth



**HIGH CHANNEL HARMONICS AND SPURIOUS EMISSIONS**



**DATA**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT344 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.499	42.17	PK3	28.1	-21.6	48.67	-	-	74	-25.33	175	317	H
	* 1.5	28.41	VB10	28.1	-21.6	34.91	54	-19.09	-	-	175	317	H
2	* 2.495	41.62	PK3	32.3	-20.8	53.12	-	-	74	-20.88	185	184	V
	* 2.495	28.5	VB10	32.3	-20.8	40	54	-14	-	-	185	184	V
3	* 2.736	42.08	PK3	32.4	-20.2	54.28	-	-	74	-19.72	242	217	V
	* 2.735	28.44	VB10	32.4	-20.2	40.64	54	-13.36	-	-	242	217	V
4	* 4.543	37.97	PK3	34	-26.5	45.47	-	-	74	-28.53	16	184	H
	* 4.544	24.37	VB10	34	-26.5	31.87	54	-22.13	-	-	16	184	H
5	* 12.459	35.39	PK3	39.1	-21.4	53.09	-	-	74	-20.91	49	261	H
	* 12.458	21.78	VB10	39.1	-21.4	39.48	54	-14.52	-	-	49	261	H
6	* 8.486	36.03	PK3	35.8	-23.7	48.13	-	-	74	-25.87	101	113	V
	* 8.485	23.1	VB10	35.8	-23.7	35.2	54	-18.8	-	-	101	113	V

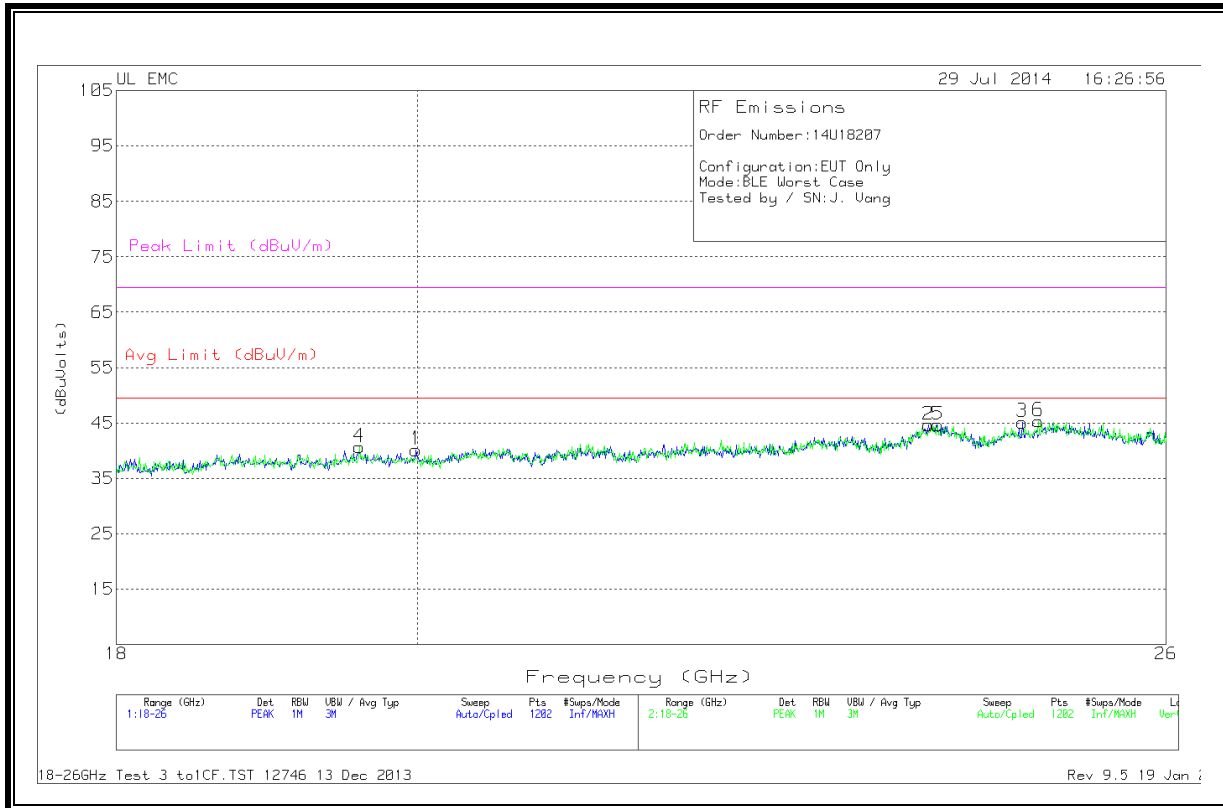
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK3 - FHSS Method: Maximum Peak

VB10Hz - FHSS Method: 10Hz Video Bandwidth

### 10.3. WORST-CASE ABOVE 18 GHz

#### SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION, HORIZONTAL & VERTICAL)



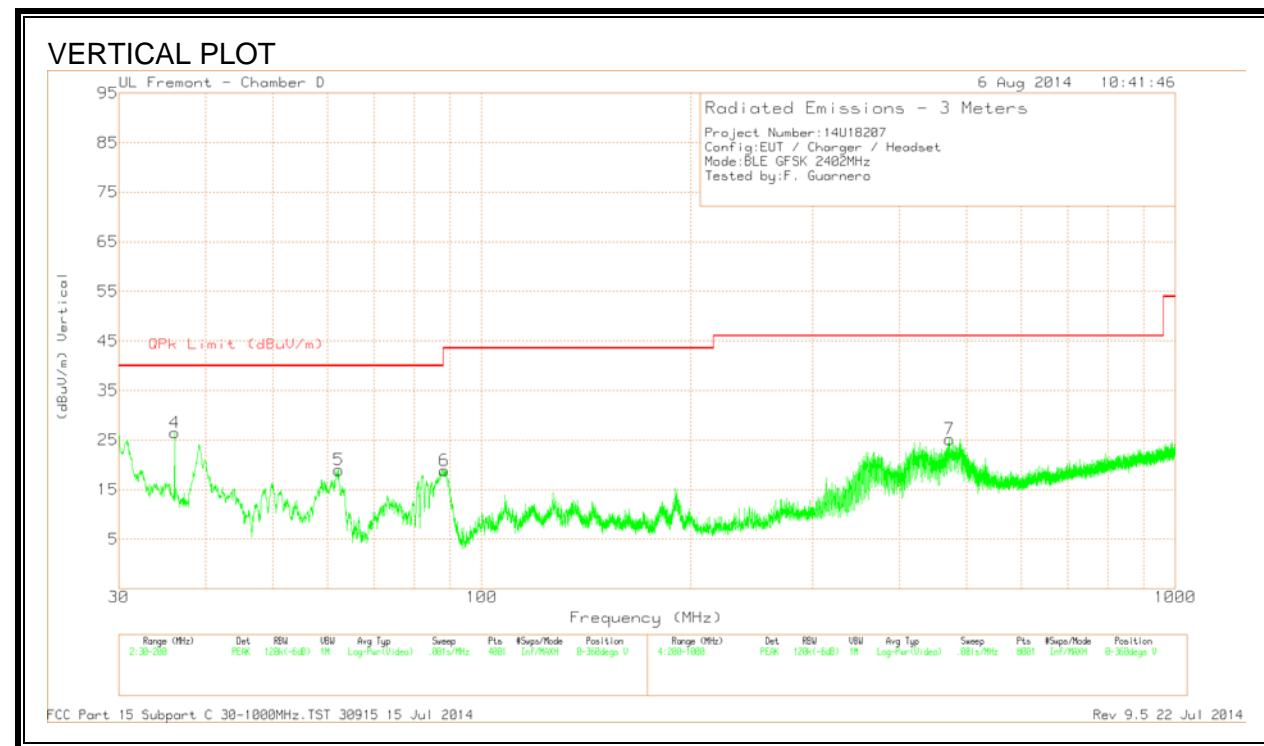
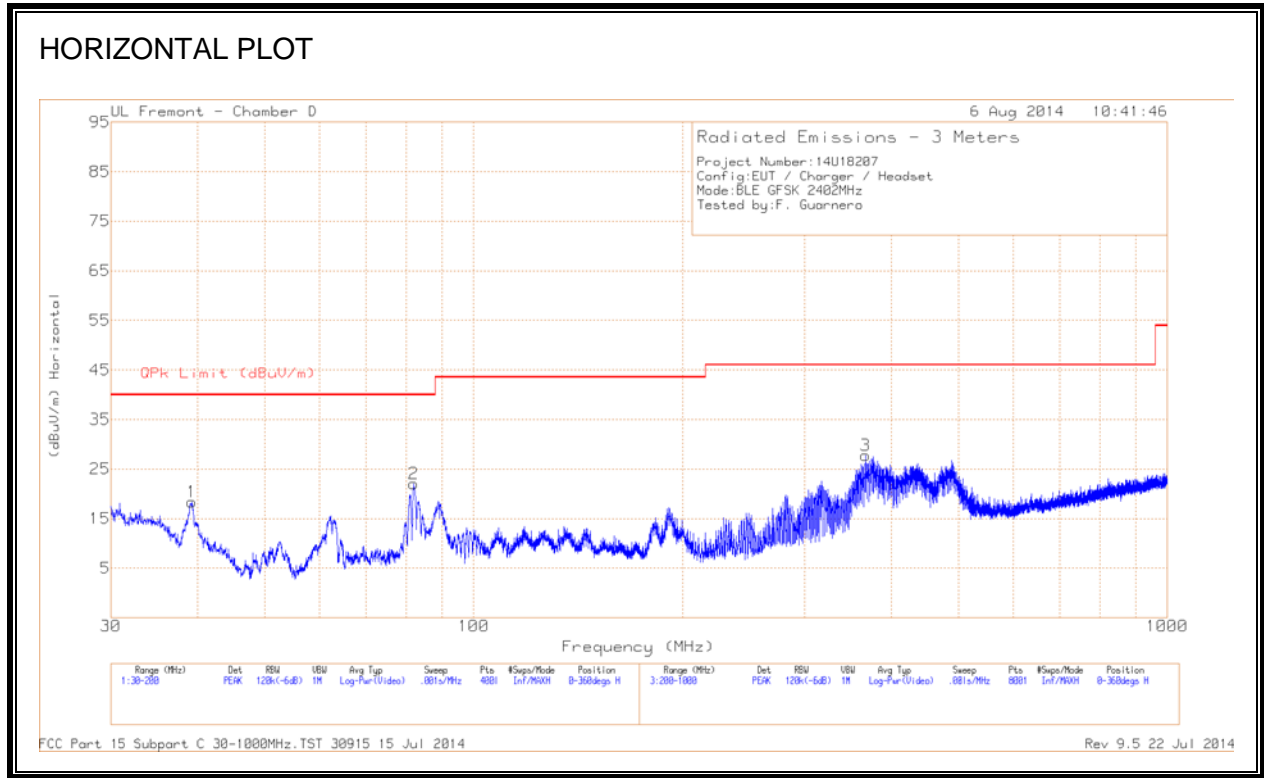
**Data**

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T89 (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	19.992	40.87	PK	32.8	-24	-9.5	40.16	49.5	-9.33	69.5	-29.33
2	23.922	43.27	PK	33.6	-22.7	-9.5	44.66	49.5	-4.83	69.5	-24.83
3	24.721	43.57	PK	34	-22.9	-9.5	45.16	49.5	-4.33	69.5	-24.33
4	19.599	41.47	PK	32.6	-23.9	-9.5	40.66	49.5	-8.83	69.5	-28.83
5	24.002	43.27	PK	33.6	-22.7	-9.5	44.66	49.5	-4.83	69.5	-24.83
6	24.861	43.83	PK	34	-23	-9.5	45.33	49.5	-4.16	69.5	-24.16

PK - Peak detector

### 10.4. WORST-CASE BELOW 1 GHz

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



**DATA**

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Hybrid	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	36.0775	41.16	PK	16.9	-31.6	26.46	40	-13.54	0-360	100	V
1	39.2225	35.56	PK	14.6	-31.8	18.36	40	-21.64	0-360	401	H
5	62.215	42.94	PK	7.8	-31.8	18.94	40	-21.06	0-360	100	V
2	81.935	46.02	PK	7.5	-31.5	22.02	40	-17.98	0-360	202	H
6	88.31	42.5	PK	7.6	-31.2	18.9	43.52	-24.62	0-360	100	V
3	367.5	42.88	PK	15	-30.1	27.78	46.02	-18.24	0-360	100	H
7	472.6	37.46	PK	17.5	-29.8	25.16	46.02	-20.86	0-360	201	V

PK - Peak detector

## 11. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

\*Decreases with the logarithm of the frequency.

### TEST PROCEDURE

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

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

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

**DATA RESULTS**

Line-L1 .15 - 30MHz

<b>Trace Markers</b>										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
1	.1545	40.57	PK	1.3	0	41.87	65.8	-23.93	-	-
2	.1545	31.43	Av	1.3	0	32.73	-	-	55.8	-23.07
3	.204	40.33	PK	.9	0	41.23	63.4	-22.17	-	-
4	.204	32.55	Av	.9	0	33.45	-	-	53.4	-19.95
5	.6045	44.91	PK	.3	0	45.21	56	-10.79	-	-
6	.6045	32.72	Av	.3	0	33.02	-	-	46	-12.98
7	1.6575	35.34	PK	.2	.1	35.64	56	-20.36	-	-
8	1.6575	24.49	Av	.2	.1	24.79	-	-	46	-21.21
9	10.3155	46.98	PK	.2	.2	47.38	60	-12.62	-	-
10	10.3155	29.44	Av	.2	.2	29.84	-	-	50	-20.16
11	27.879	34.28	PK	.3	.3	34.88	60	-25.12	-	-
12	27.879	19.77	Av	.3	.3	20.37	-	-	50	-29.63

PK - Peak detector

Av - average detection

Line-L2 .15 - 30MHz

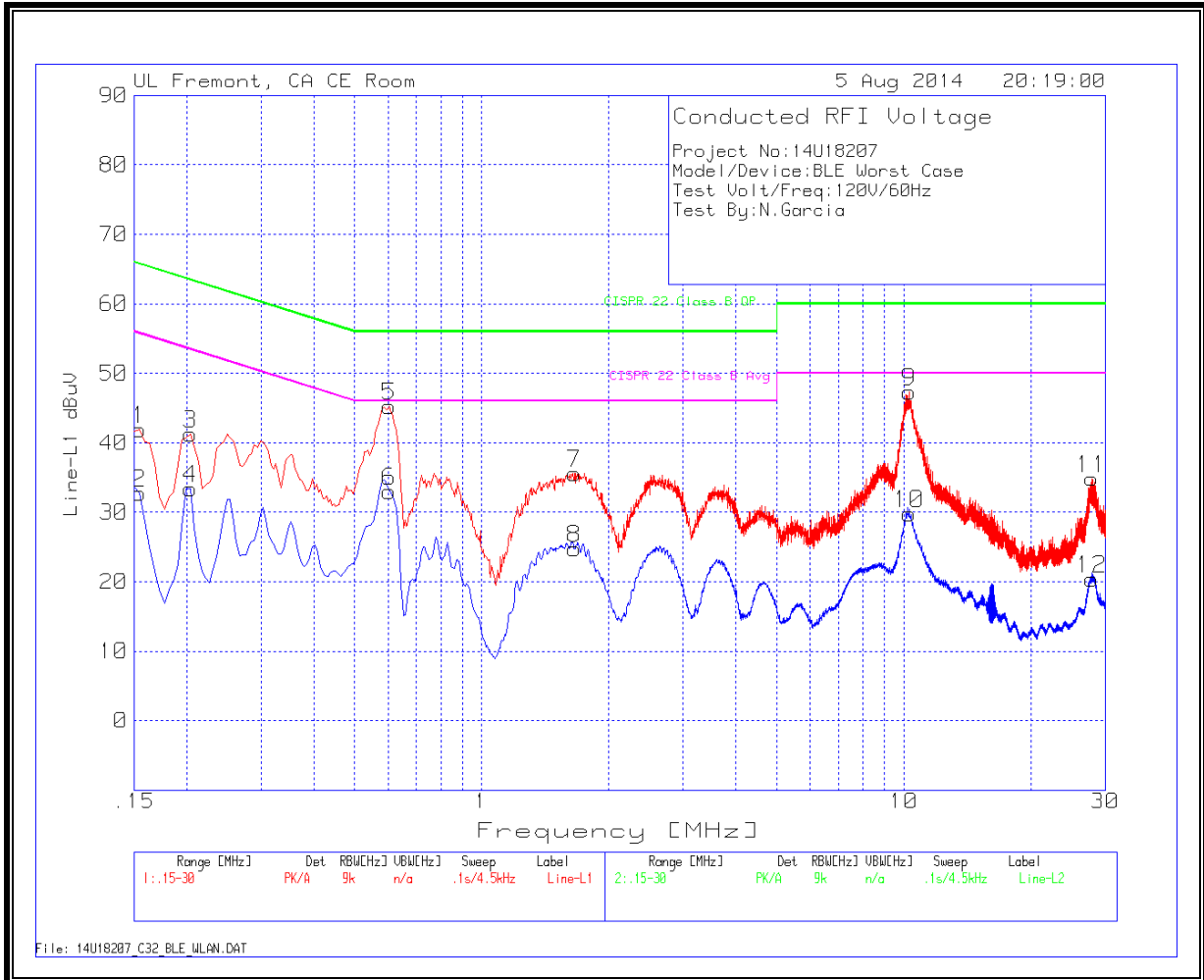
<b>Trace Markers</b>										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
13	.1995	41.53	PK	1	0	42.53	63.6	-21.07	-	-
14	.1995	29.24	Av	1	0	30.24	-	-	53.6	-23.36
15	.2535	41.73	PK	.7	0	42.43	61.6	-19.17	-	-
16	.2535	26.81	Av	.7	0	27.51	-	-	51.6	-24.09
17	.582	40.35	PK	.3	0	40.65	56	-15.35	-	-
18	.582	24.62	Av	.3	0	24.92	-	-	46	-21.08
19	1.635	27.32	PK	.2	.1	27.62	56	-28.38	-	-
20	1.635	11.45	Av	.2	.1	11.75	-	-	46	-34.25
21	2.4675	26.87	PK	.2	.1	27.17	56	-28.83	-	-
22	2.4675	10.33	Av	.2	.1	10.63	-	-	46	-35.37
23	8.133	32.96	PK	.2	.1	33.26	60	-26.74	-	-
24	8.133	22.06	Av	.2	.1	22.36	-	-	50	-27.64

PK - Peak detector

Av - average detection



**LINE 1 PLOT**



**LINE 2 PLOT**

