



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

BLUETOOTH LOW ENERGY
CERTIFICATION TEST REPORT

FOR

PORTABLE COMPUTER

MODEL NUMBER: A1534

FCC ID: BCGA1534
IC: 579C-A1534

REPORT NUMBER: 14U18574-E2, VERSION B

ISSUE DATE: FEBRUARY 12, 2015

Prepared for
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NVLAP®

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Revision History

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--	01/23/2015	Initial Issue	F. DeAnda
--	02/12/2015	Revised report to address TCB's questions	T. Chu

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	6
4.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	6
4.2. <i>SAMPLE CALCULATION</i>	6
4.3. <i>MEASUREMENT UNCERTAINTY</i>	7
5. EQUIPMENT UNDER TEST	8
5.1. <i>DESCRIPTION OF EUT</i>	8
5.2. <i>MAXIMUM OUTPUT POWER</i>	8
5.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	8
5.4. <i>SOFTWARE AND FIRMWARE</i>	8
5.5. <i>WORST-CASE CONFIGURATION AND MODE</i>	8
5.6. <i>DESCRIPTION OF TEST SETUP</i>	9
6. TEST AND MEASUREMENT EQUIPMENT	13
7. MEASUREMENT METHODS	14
8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS	15
8.1. <i>ON TIME AND DUTY CYCLE RESULTS</i>	15
8.2. <i>DUTY CYCLE PLOTS</i>	15
9. ANTENNA PORT TEST RESULTS	16
9.1. <i>6 dB BANDWIDTH</i>	16
9.2. <i>99% BANDWIDTH</i>	18
9.3. <i>OUTPUT POWER</i>	20
9.4. <i>AVERAGE POWER</i>	22
9.5. <i>POWER SPECTRAL DENSITY</i>	23
9.6. <i>CONDUCTED SPURIOUS EMISSIONS</i>	25
10. RADIATED TEST RESULTS	29
10.1. <i>LIMITS</i>	29
10.2. <i>TRANSMITTER ABOVE 1 GHz</i>	30
10.3. <i>WORST-CASE BELOW 1 GHz</i>	40
10.4. <i>WORST-CASE ABOVE 18 GHz</i>	42

11. AC POWER LINE CONDUCTED EMISSIONS	44
12. SETUP PHOTOS	49

1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: PORTABLE COMPUTER

MODEL: A1534

SERIAL NUMBER: C02N900CFYFG (CONDUCTED), C02N900LG17D (RADIATED)

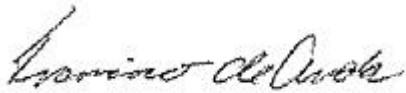
DATE TESTED: 09/25/2014 – 02/12/2015

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 4	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Verification Services Inc. By:



FRANCISCO DE ANDA
PROJECT LEAD
UL Verification Services Inc.

Tested By:



JOE VANG
EMC ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4, 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 type="checkbox"/> Chamber D
<input type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E
<input type="checkbox"/> Chamber C	<input checked="" type="checkbox"/> Chamber F
	<input checked="" type="checkbox"/> Chamber G
	<input type="checkbox"/> Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

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
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Laptop Device with Bluetooth and WLAN Radios (AC 80 MHZ Beam-Forming)

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	7.60	5.76

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an inverted-F Antenna (IFA), with a maximum gain of 2.24 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 4.30f9.

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission, 30-1000MHz and 18-26GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

All testing was performed with the EUT in normal use orientation as described by the manufacturer.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC/ DC Adapter	Apple Inc.	A1540	C4H433700AZFPWW1E	N/A
Earphone	Apple Inc.	N/A	N/A	N/A

I/O CABLES (CONDUCTED TEST)

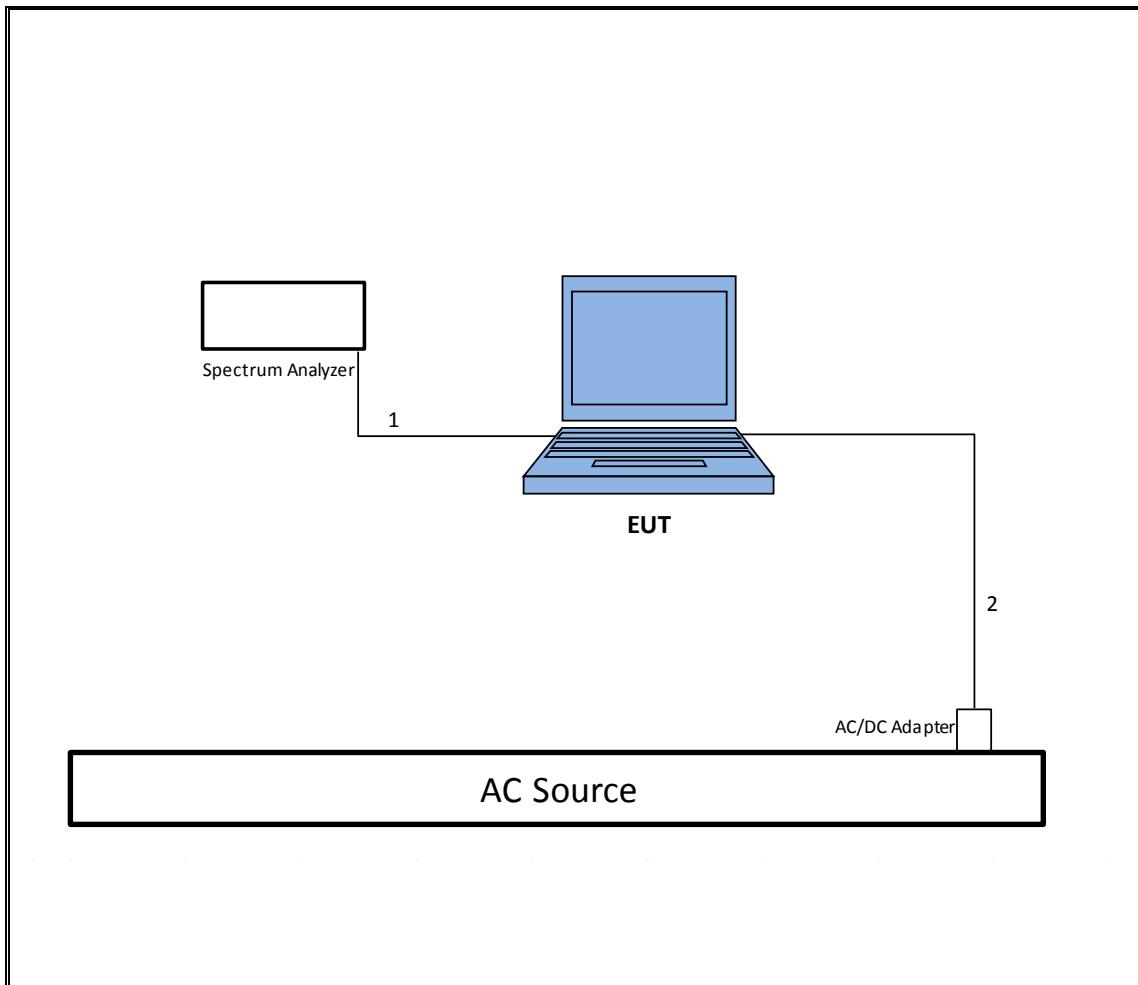
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	2	SMA	Un-Shielded	0.2	To Spectrum Analyzer
2	DC	1	Lightning	Un-Shielded	2	

I/O CABLES (RADIATED AND AC POWER CONDUCTED TEST)

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

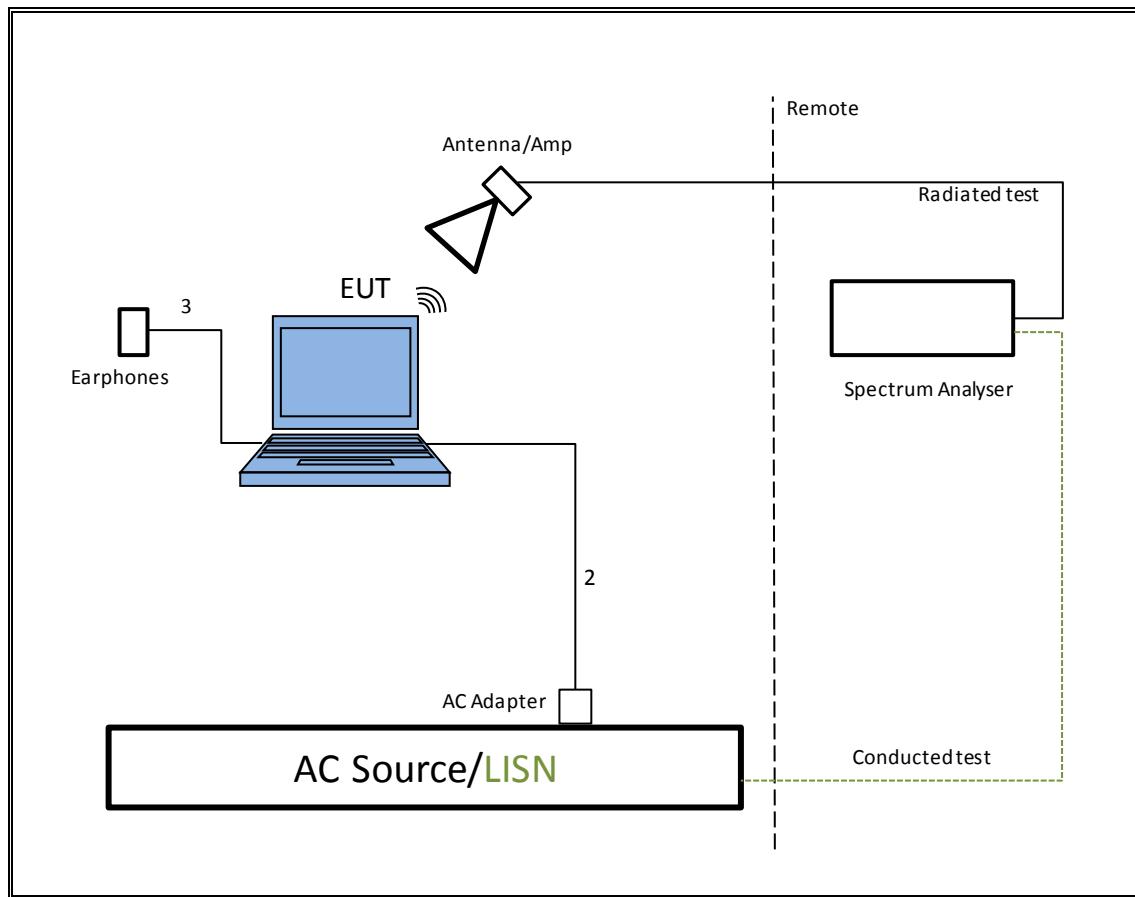
TEST SETUP- CONDUCTED PORT

The EUT was tested connected to spectrum analyzer via antenna port. Test software exercised the EUT.



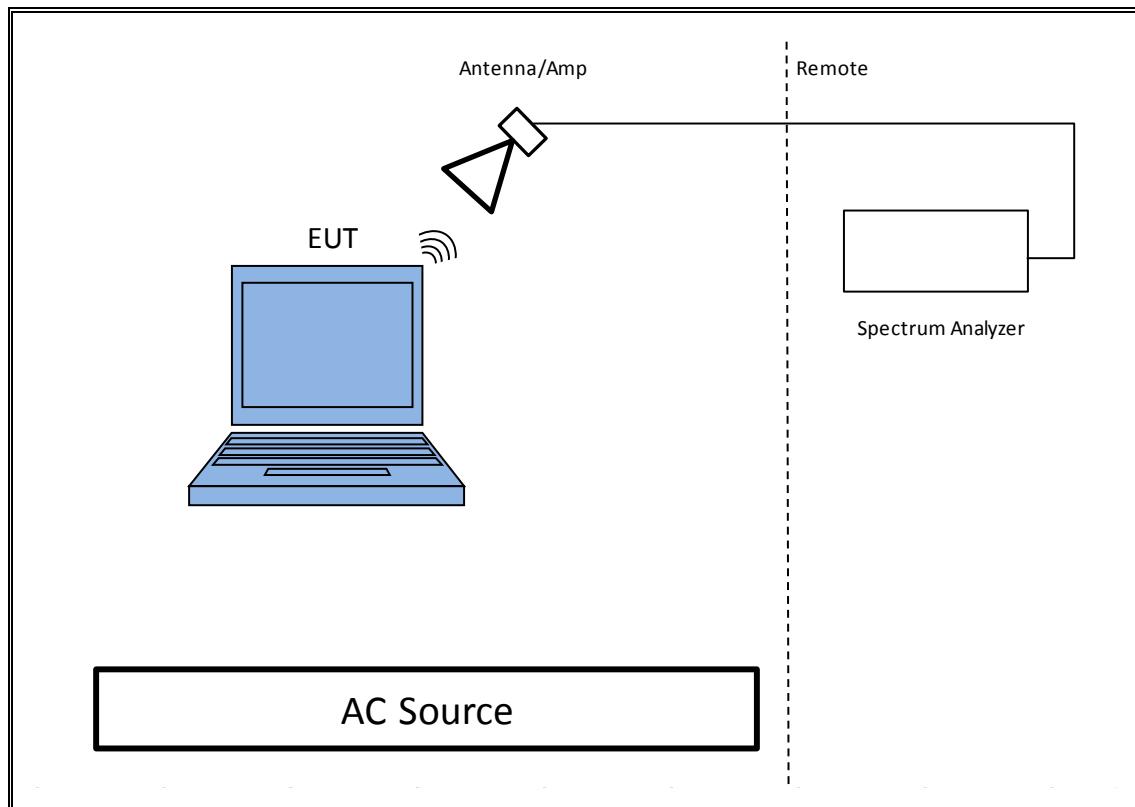
TEST SETUP- RADIATED BELOW 1 GHz & AC LINE CONDUCTED TESTS

The EUT's test software exercised the radio card.



TEST SETUP- RADIATED ABOVE 1 GHz

The EUT's test software exercised the radio card.



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	T Number	Cal Due
PXA Signal Analyzer	Agilent	N9030A	T342	06/25/15
Power Meter	Agilent	N1911A	T382	04/09/15
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T862	04/14/15
Antenna, Hybrid 30MHz to 2GHz	Sunol Sciences	JB3	T899	05/14/15
PXA Signal Analyzer 3Hz to 44GHz	Agilent	N9030A	T905	05/17/15
Amplifier, 10KHz to 1GHz	Sonoma	310N	T834	06/05/15
Amplifier, 1 to 18GHz	Miteq	AFS42-00101	T491	06/05/15
PXA Signal Analyzer 3Hz to 44GHz	Agilent	N9030A	T341	02/12/15
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T120	03/20/15
Antenna, Hybrid 30MHz to 2GHz	Sunol Sciences	JB1	T122	04/22/15
Amplifier, 1 to 18GHz	Miteq	AFS42-00101	T742	01/20/15
Amplifier, 10KHz to 1GHz	Sonoma	310N	T173	12/30/14
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	T284	09/16/15
LISN, 30 MHz	FCC	LISN-50/250-25	T24	01/17/15
Amplifier, 1 to 26.5 Ghz	Agilent	8449B	T404	03/25/15
Antenna Horn 18 to 26.5 Ghz	ARA	MWH-1826/B	T89	11/26/14
Spectrum Analyzer	Agilent	8564E	T106	08/06/15

7. MEASUREMENT METHODS

6 dB BW: KDB 558074 D01 v03r02, Section 8.1.

Output Power: KDB 558074 D01 v03r02, Section 9.1.1.

Power Spectral Density: KDB 558074 D01 v03r02, Section 10.2.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v03r02, Section 11.0.

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r02, Section 12.1.

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r02, Section 12.2.

8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

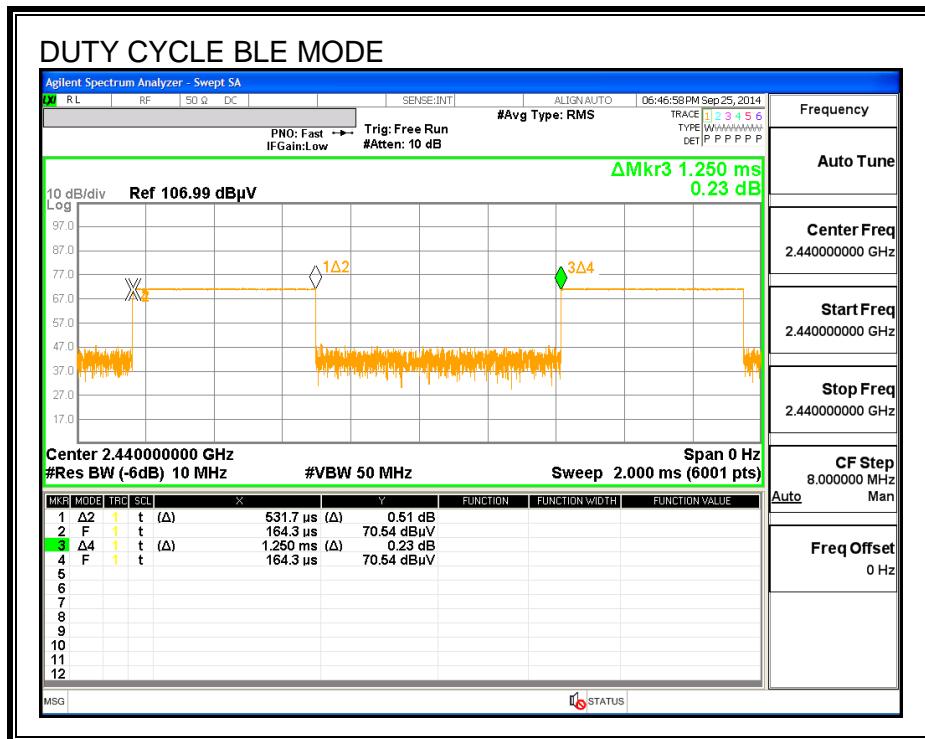
PROCEDURE

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	0.531	1.250	0.425	42.48%	3.72	1.883

8.2. DUTY CYCLE PLOTS



9. ANTENNA PORT TEST RESULTS

9.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

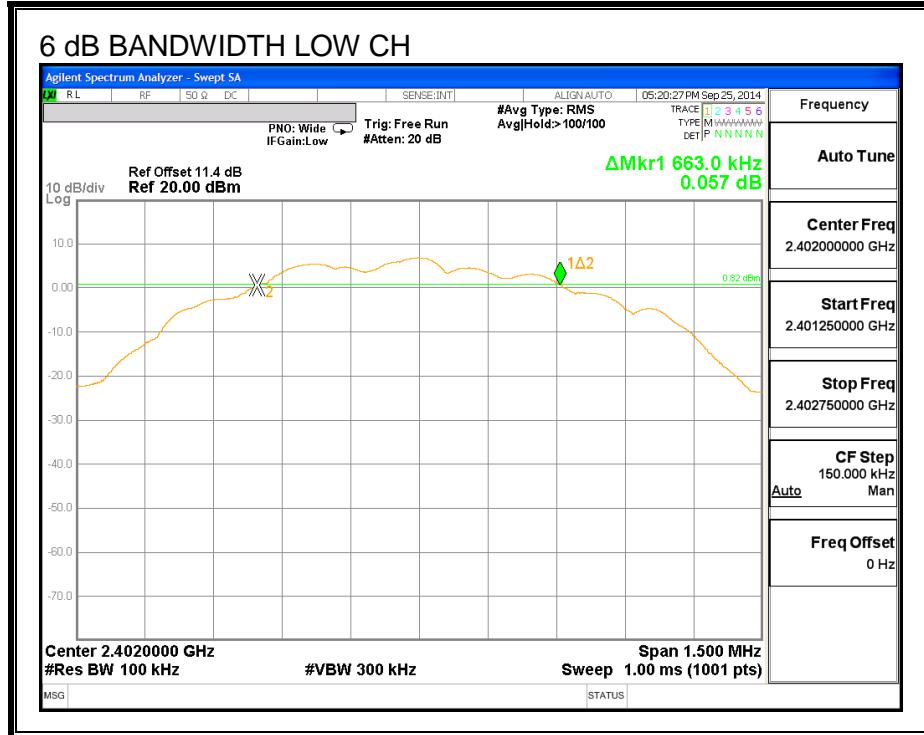
IC RSS-210 A8.2 (a)

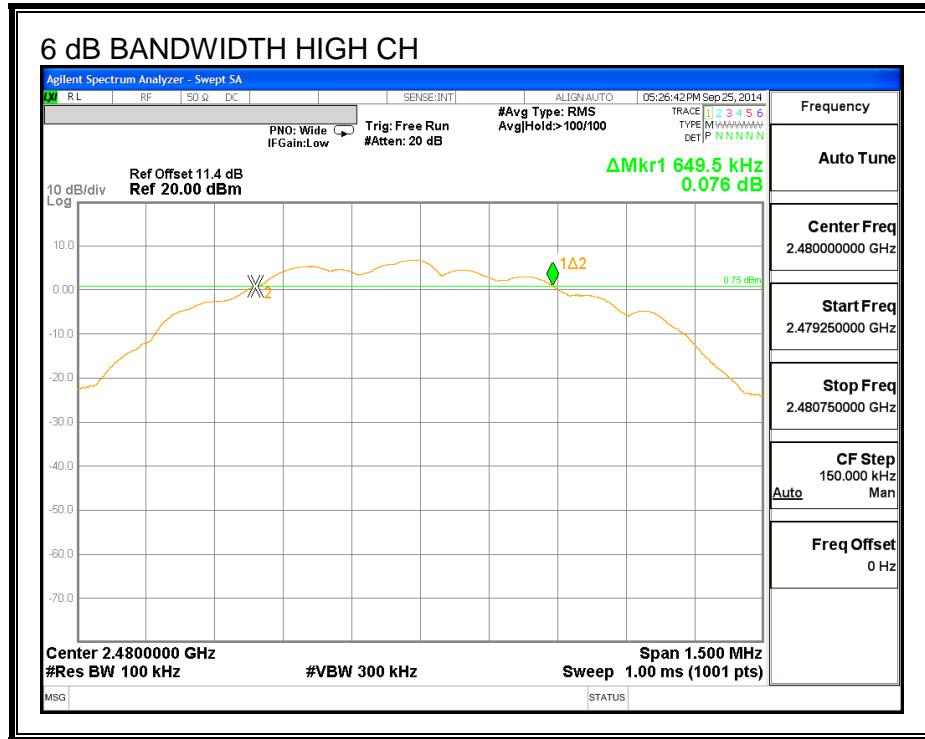
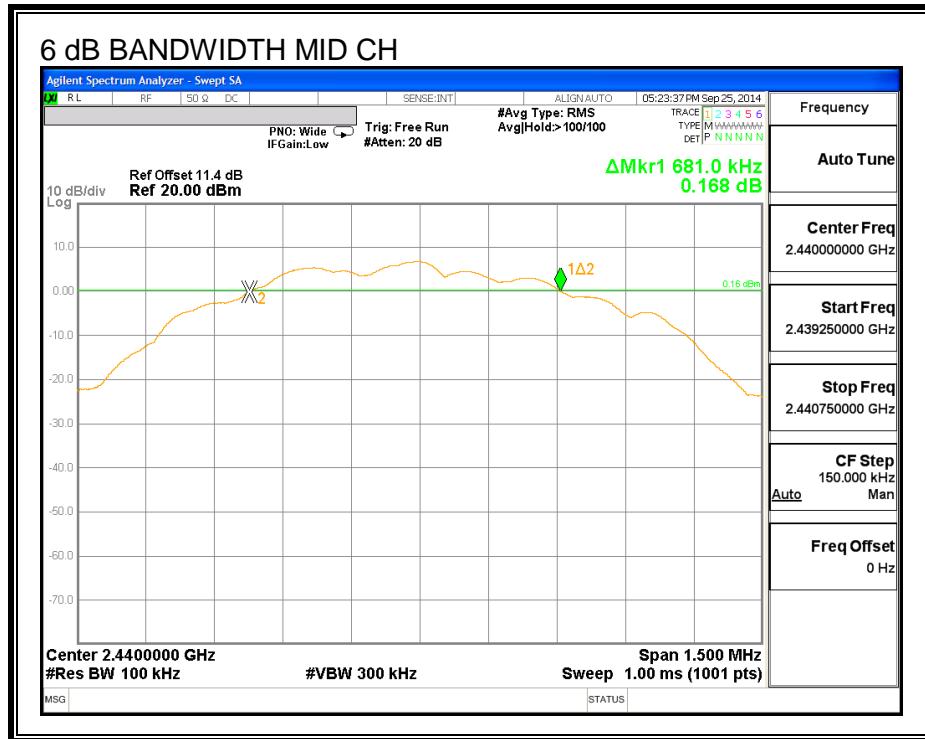
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6630	0.5
Middle	2440	0.6810	0.5
High	2480	0.6495	0.5

6 dB BANDWIDTH





9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

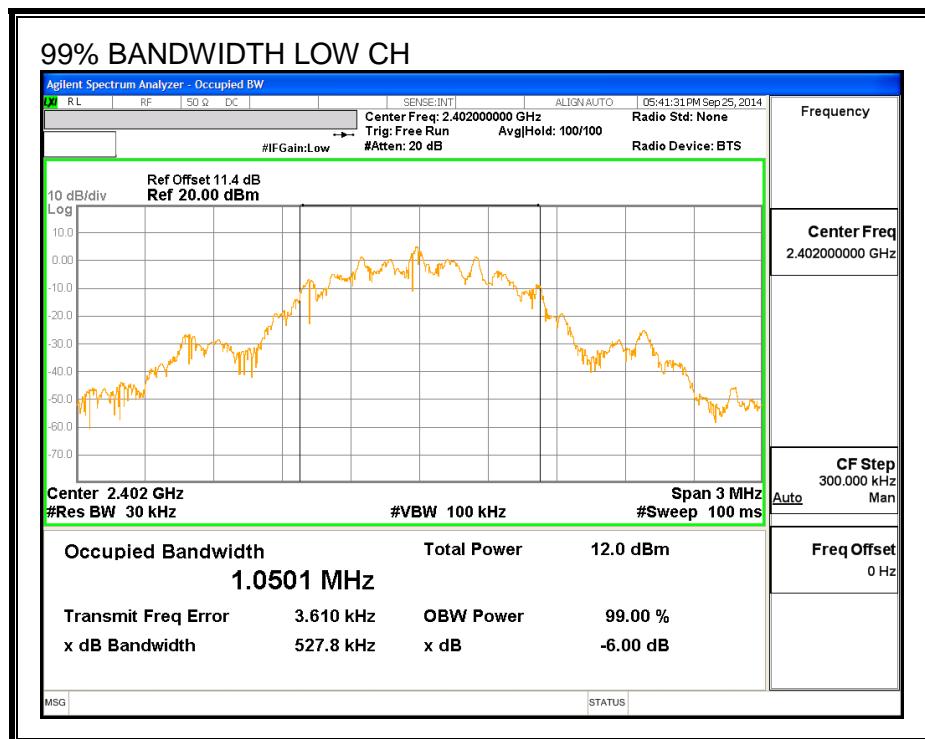
TEST PROCEDURE

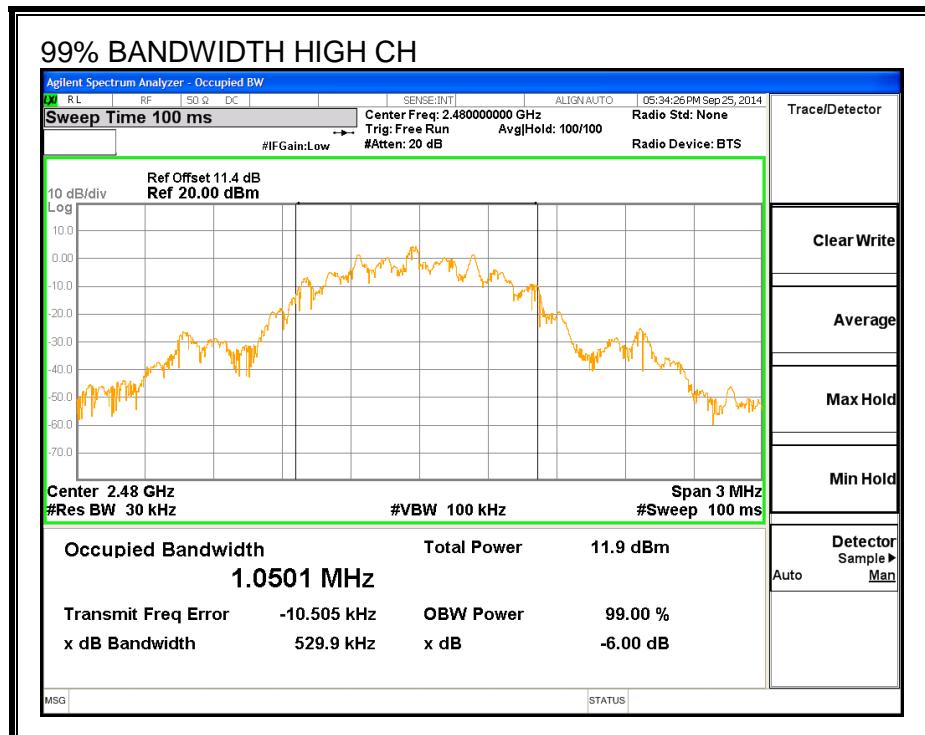
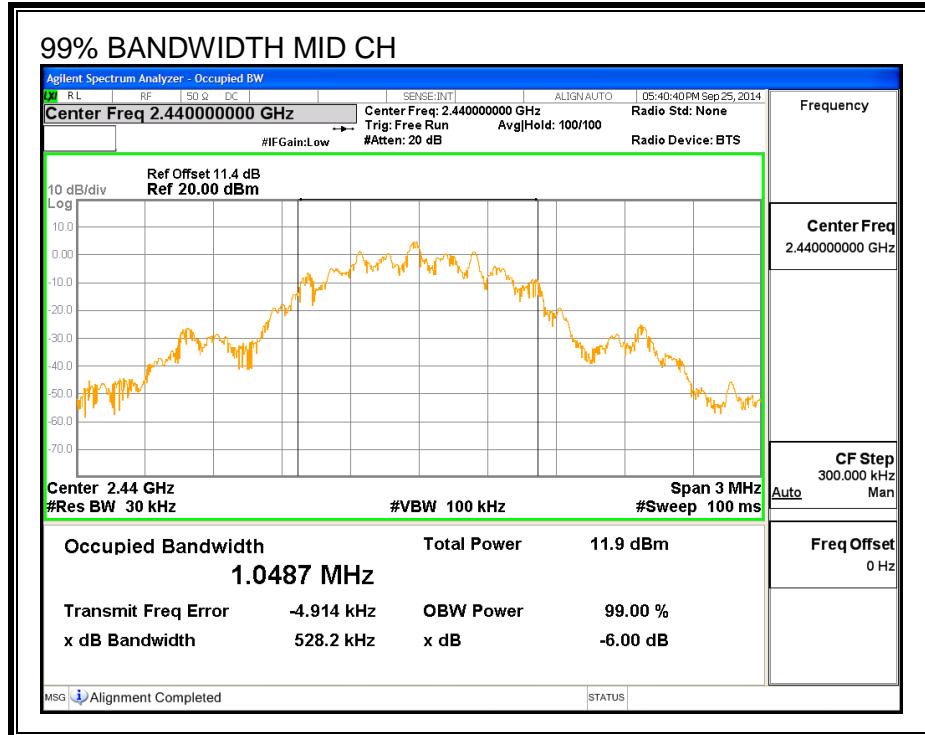
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0501
Middle	2440	1.0487
High	2480	1.0501

99% BANDWIDTH





9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

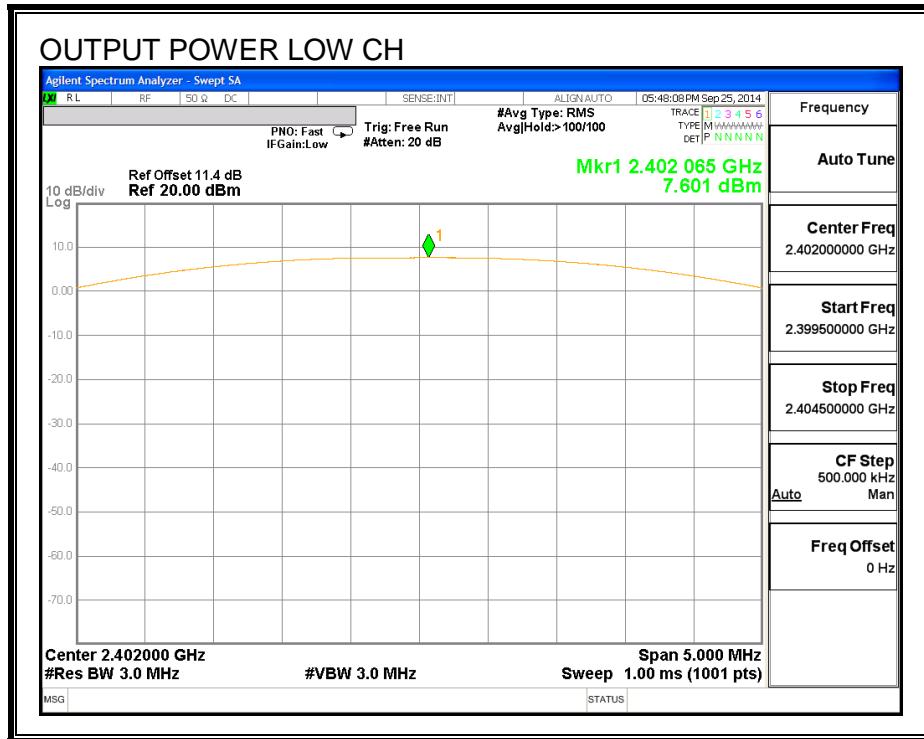
IC RSS-210 A8.4

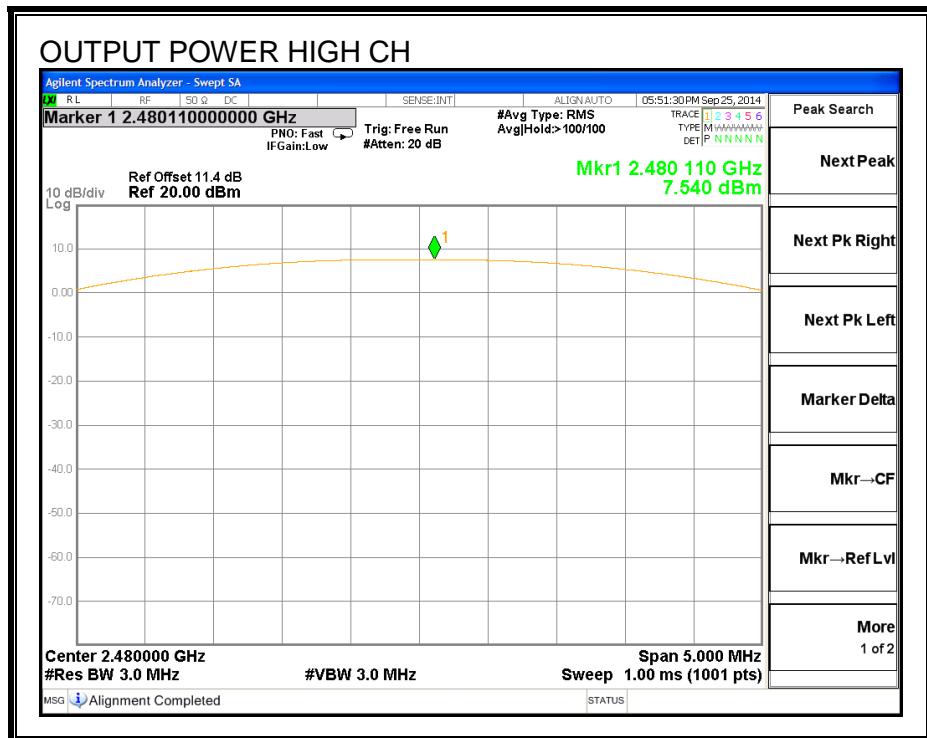
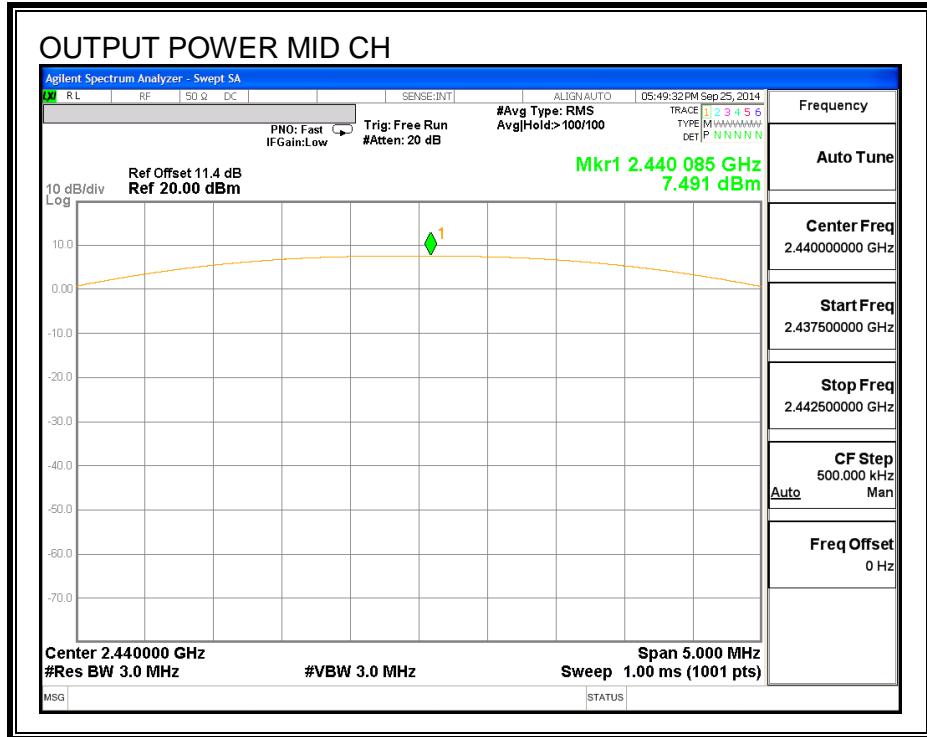
The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	7.601	30	-22.399
Middle	2440	7.491	30	-22.509
High	2480	7.540	30	-22.460

OUTPUT POWER





9.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

The cable assembly insertion loss of 11.4 dB (including 10 dB pad and 1.4 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	7.32
Middle	2440	7.27
High	2480	7.33

9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

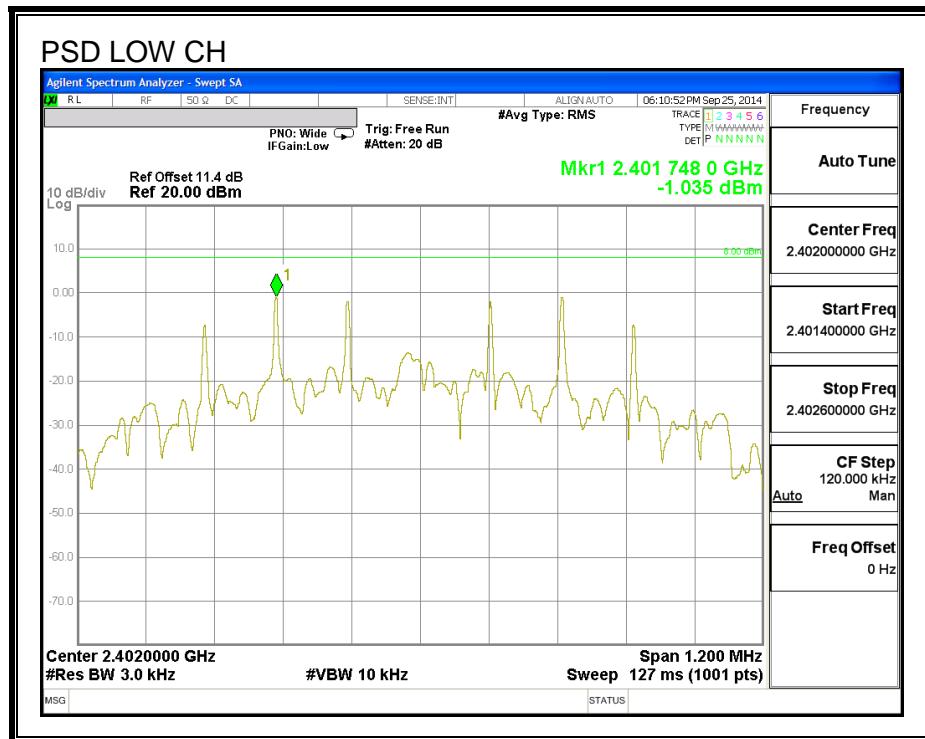
IC RSS-210 A8.2 (b)

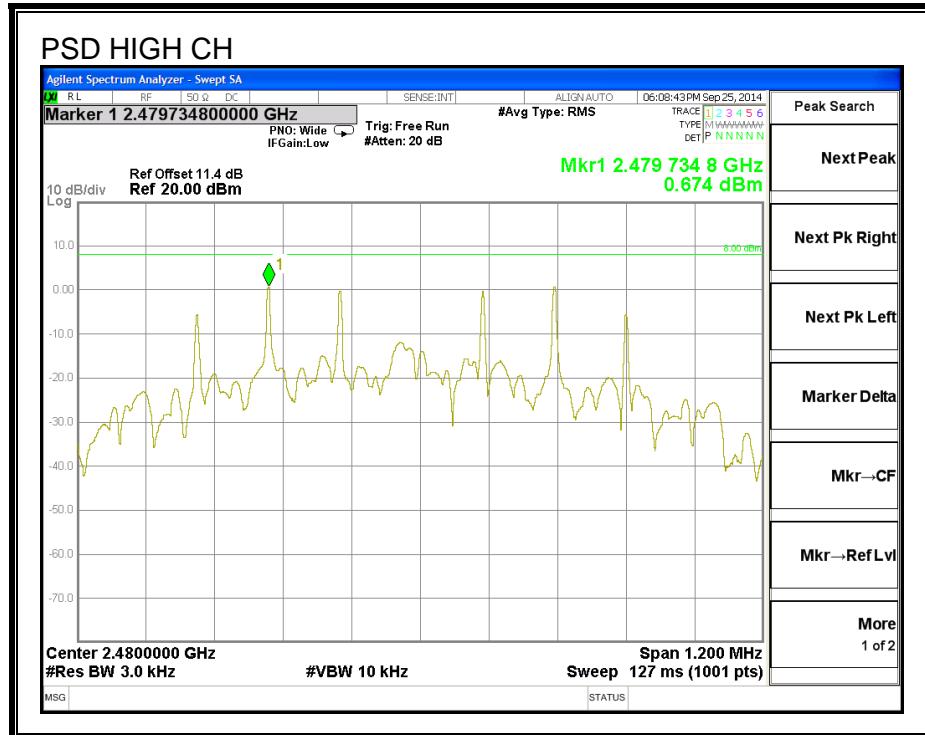
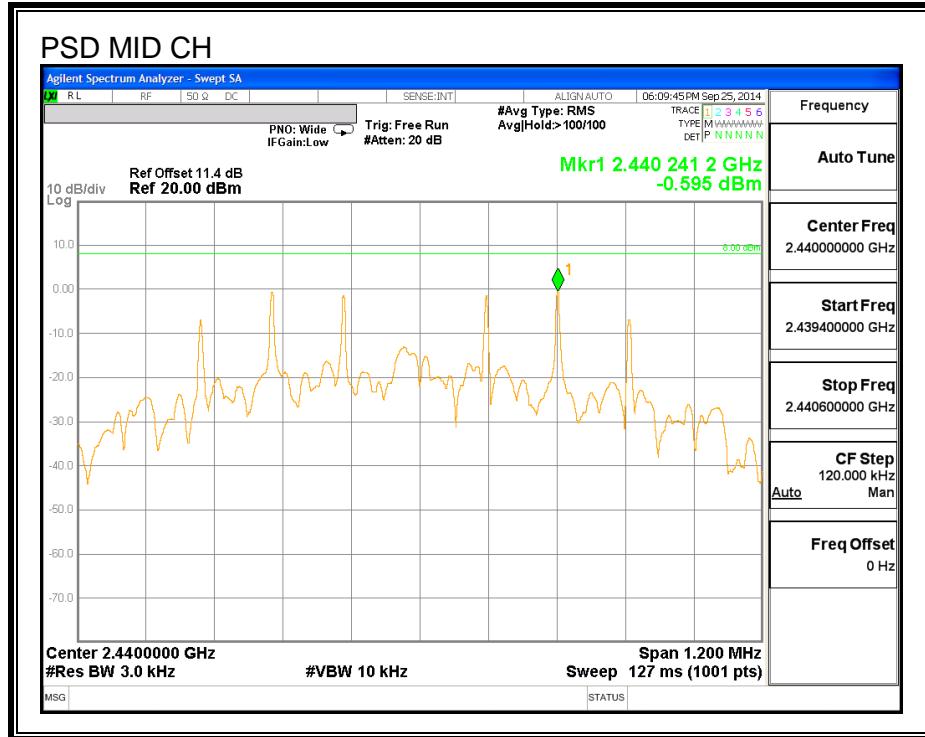
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-1.04	8	-9.04
Middle	2440	-0.60	8	-8.60
High	2480	0.67	8	-7.33

POWER SPECTRAL DENSITY





9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

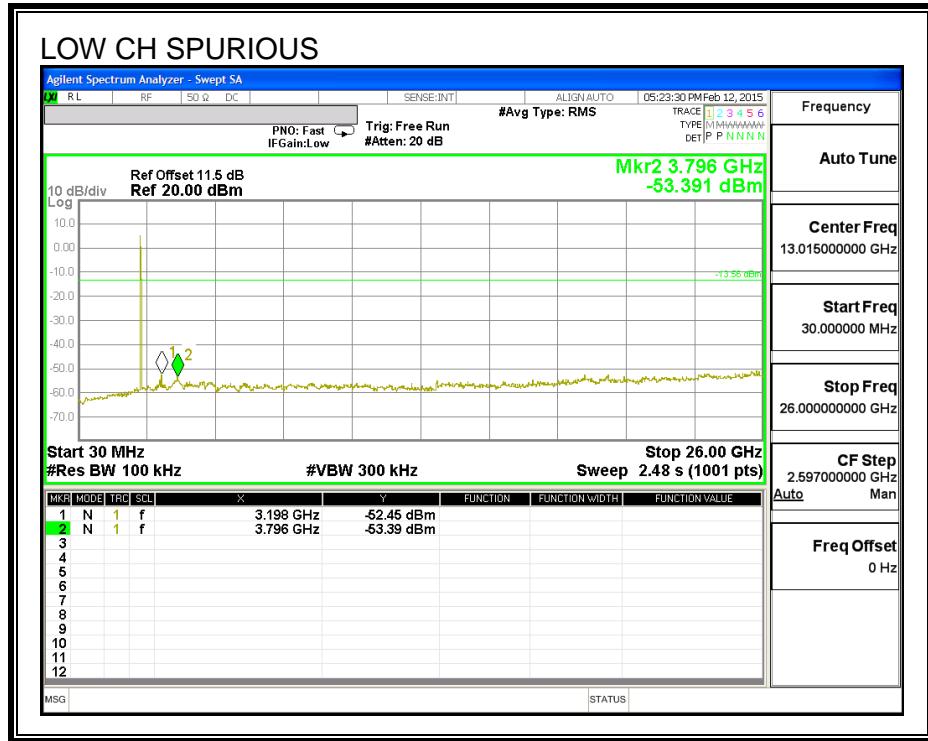
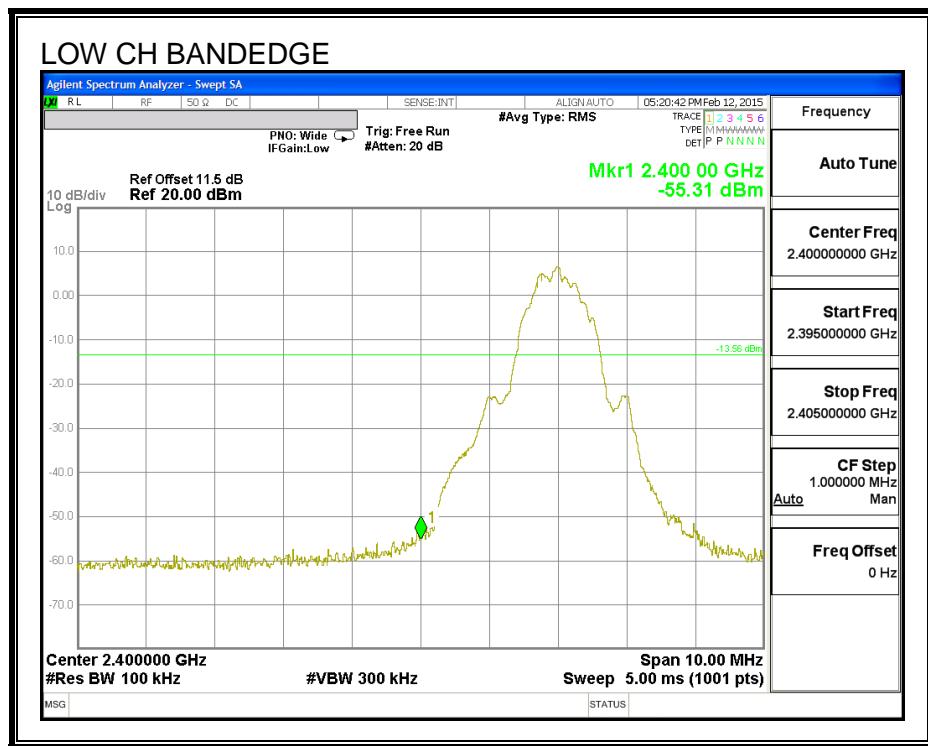
FCC §15.247 (d)

IC RSS-210 A8.5

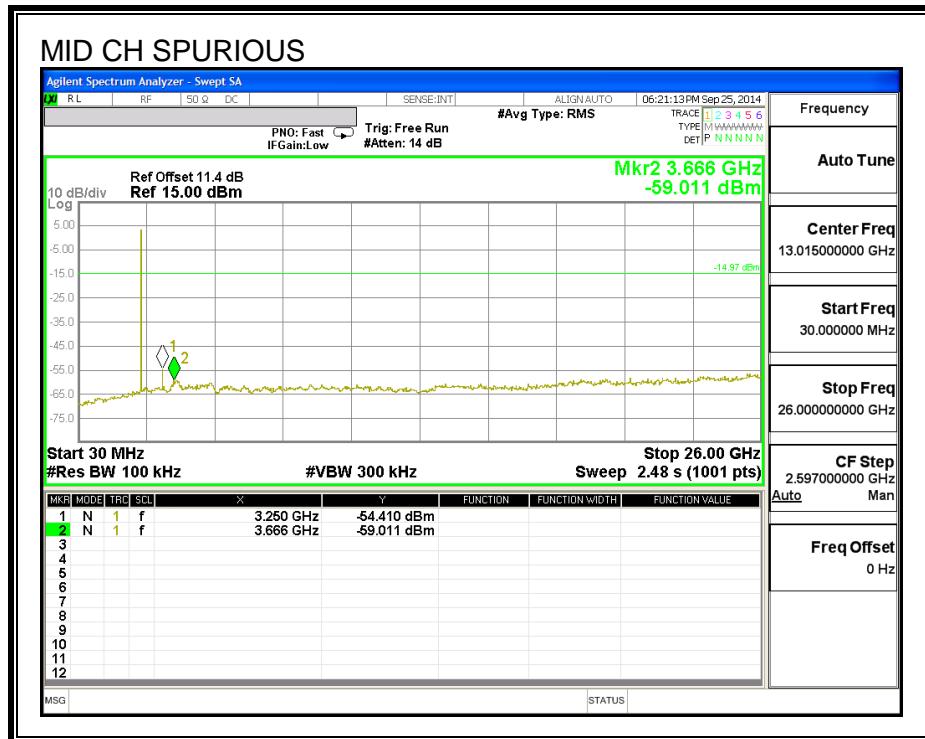
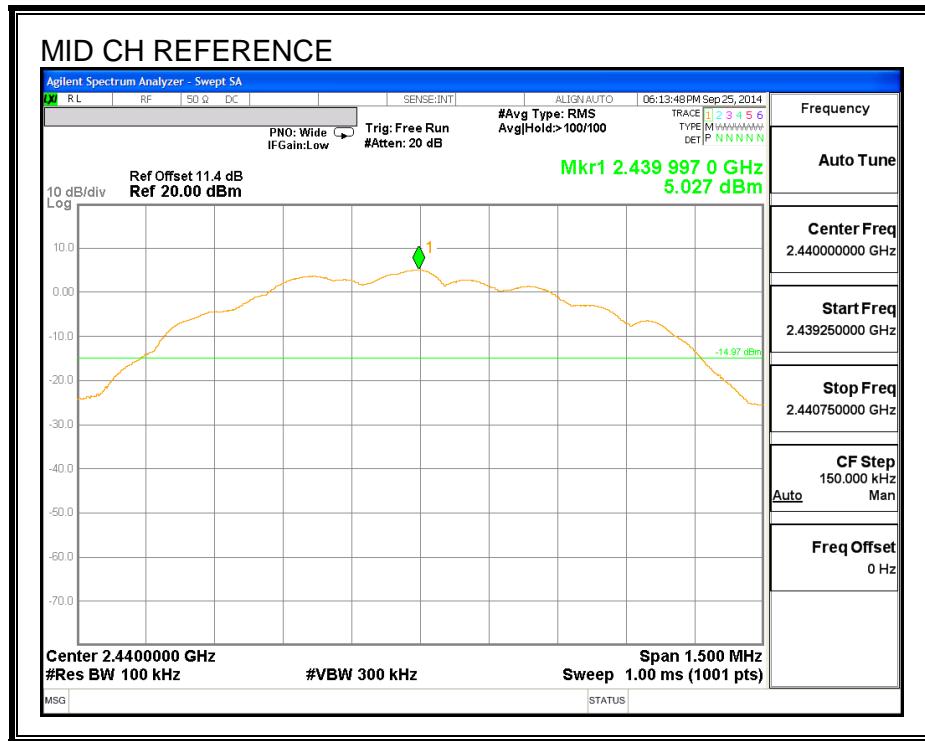
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS

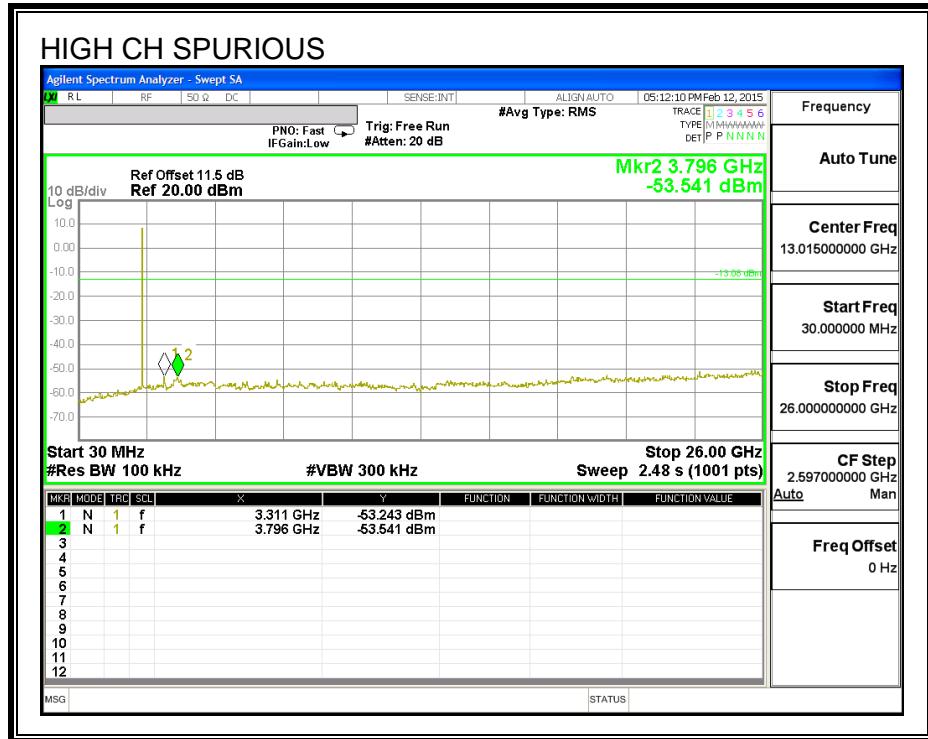
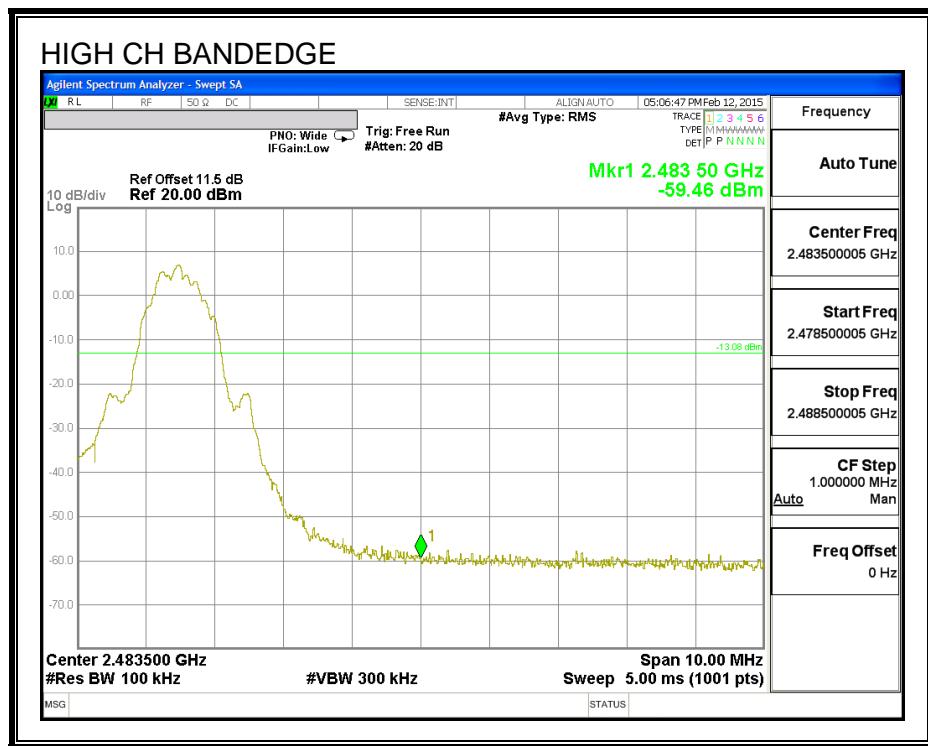
SPURIOUS EMISSIONS, LOW CHANNEL



SPURIOUS EMISSIONS, MID CHANNEL



SPURIOUS EMISSIONS, HIGH CHANNEL



10. RADIATED TEST RESULTS

10.1. LIMITS

LIMITS

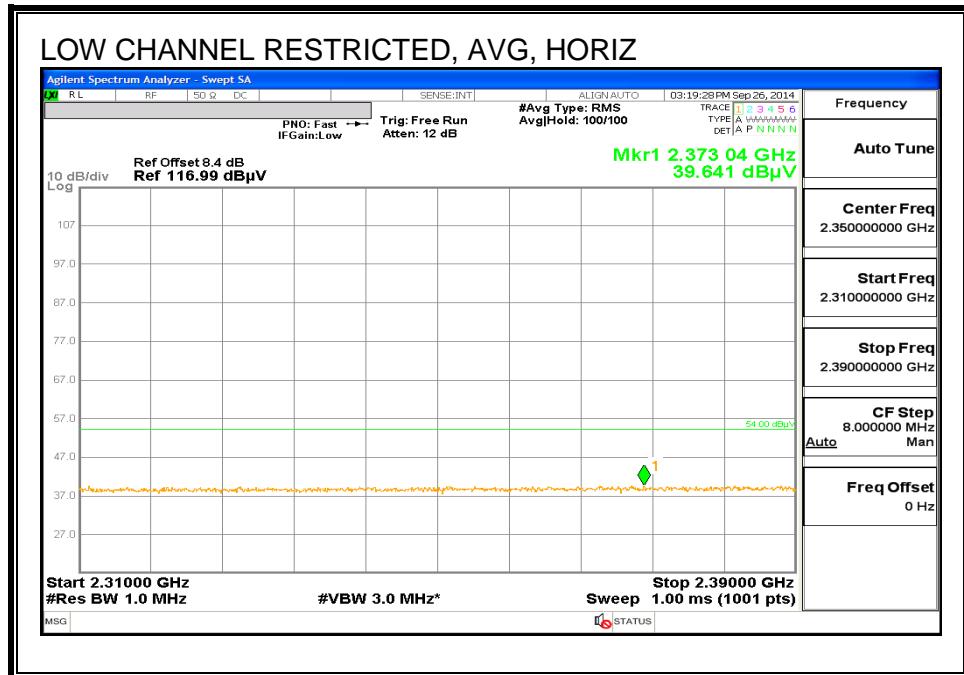
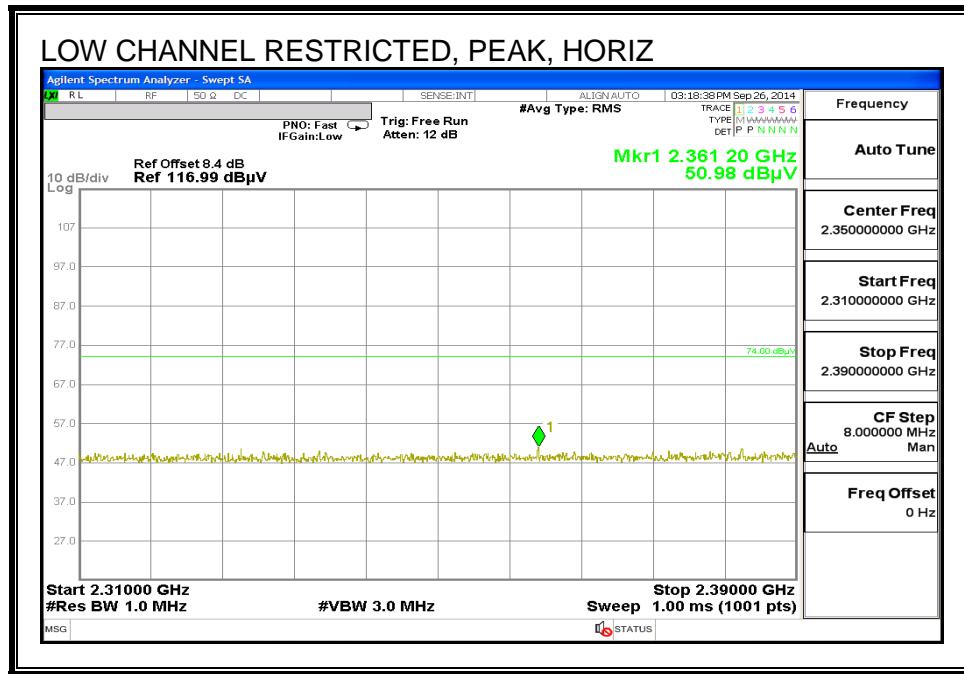
FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

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

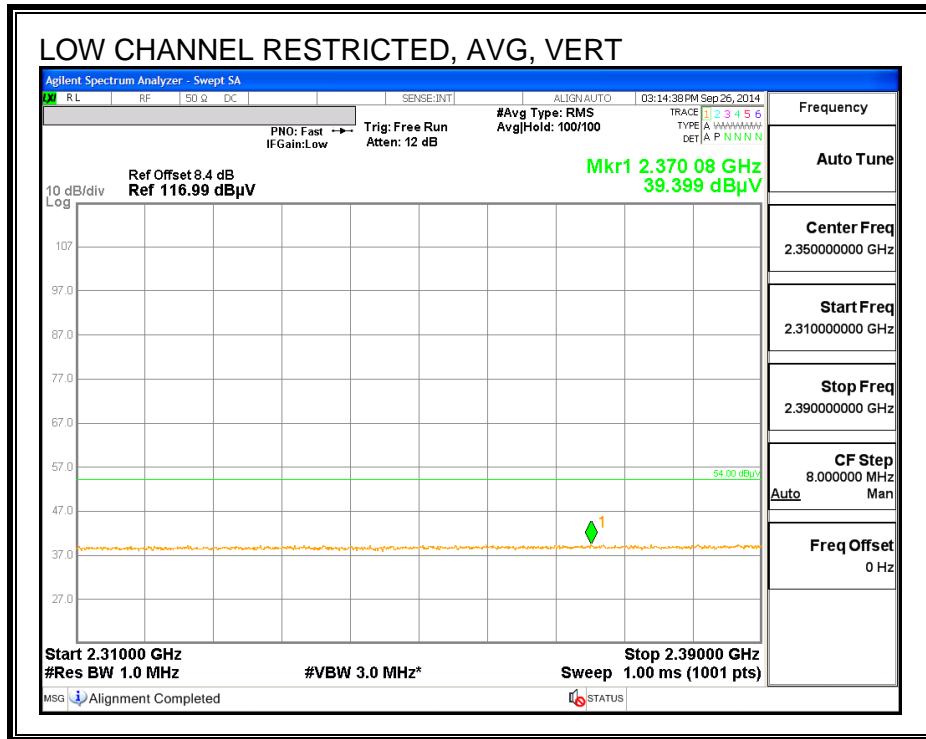
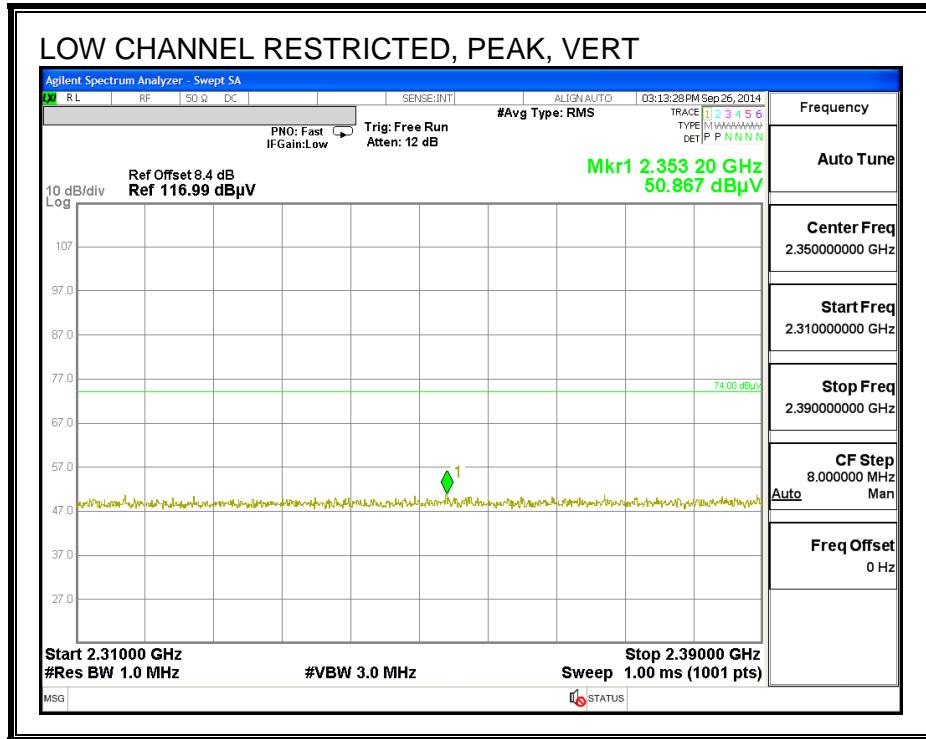
10.2. TRANSMITTER ABOVE 1 GHz

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



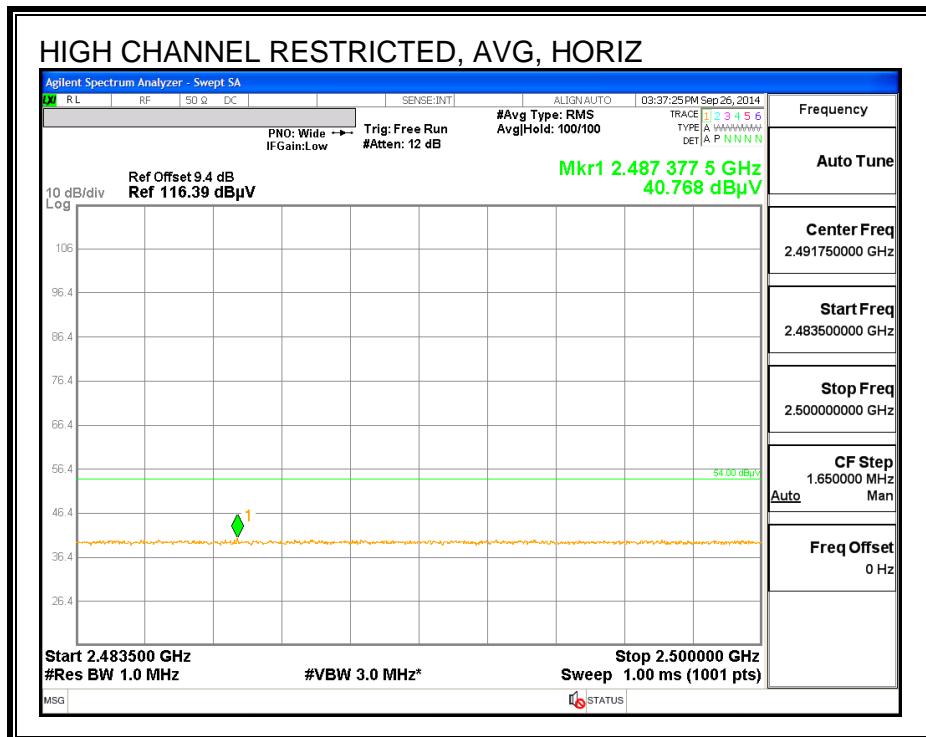
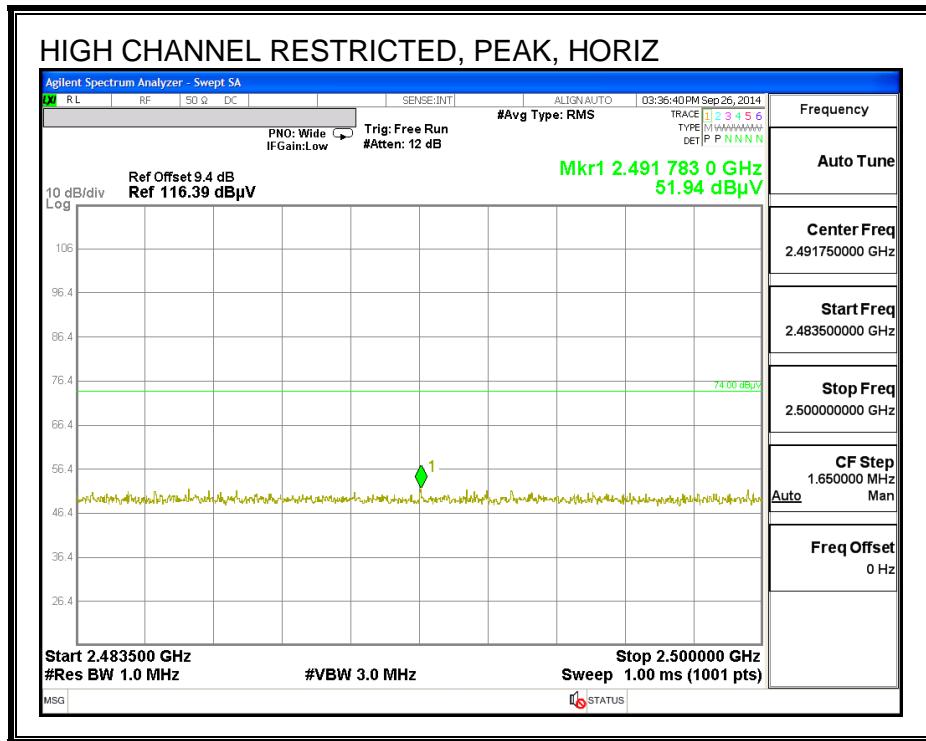
Corrected Value = Marker reading + Duty Cycle Factor
Final Corrected Average Value: $39.641 \text{ dB}\mu\text{V} + 3.72 = 43.361 \text{ dB}\mu\text{V}$

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



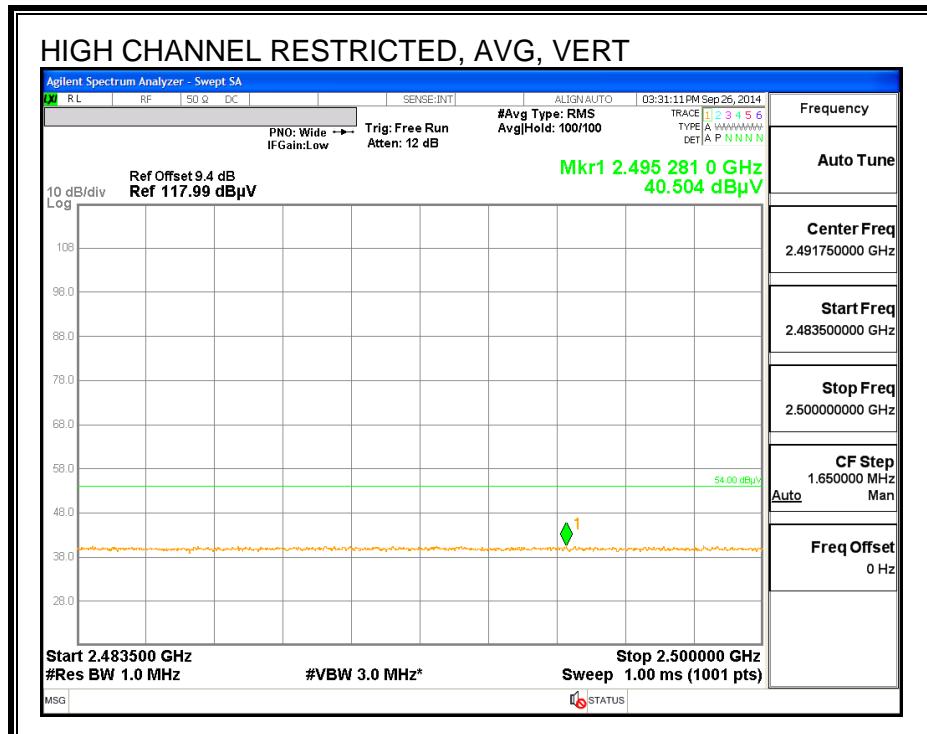
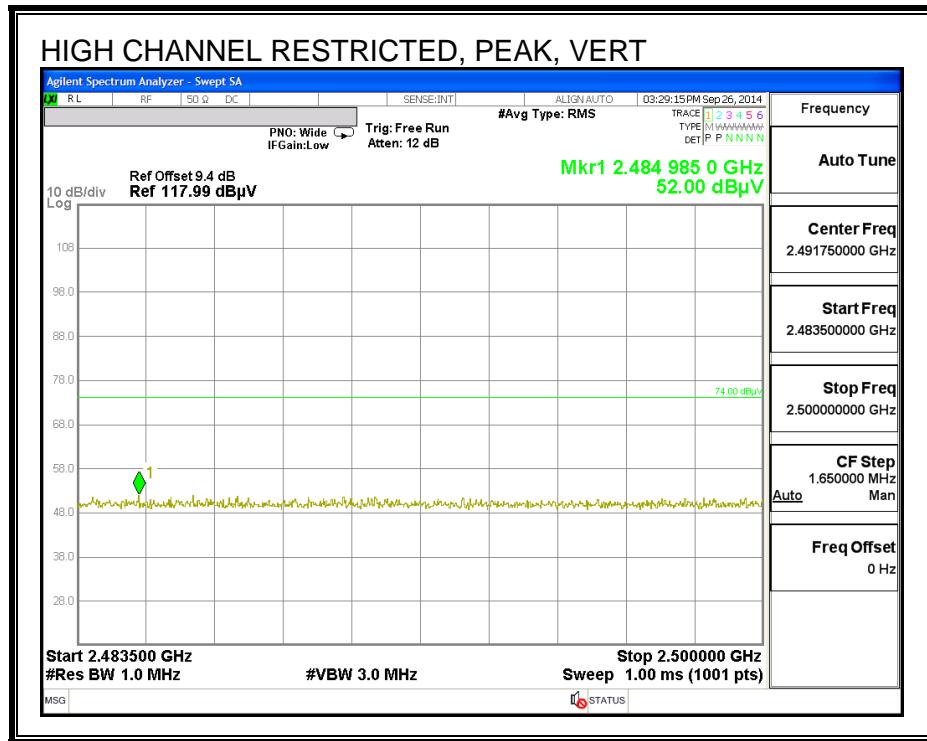
Corrected Value = Marker reading + Duty Cycle Factor
Final Corrected Average Value: 39.399dB μ V + 3.72 = 43.119dB μ V

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



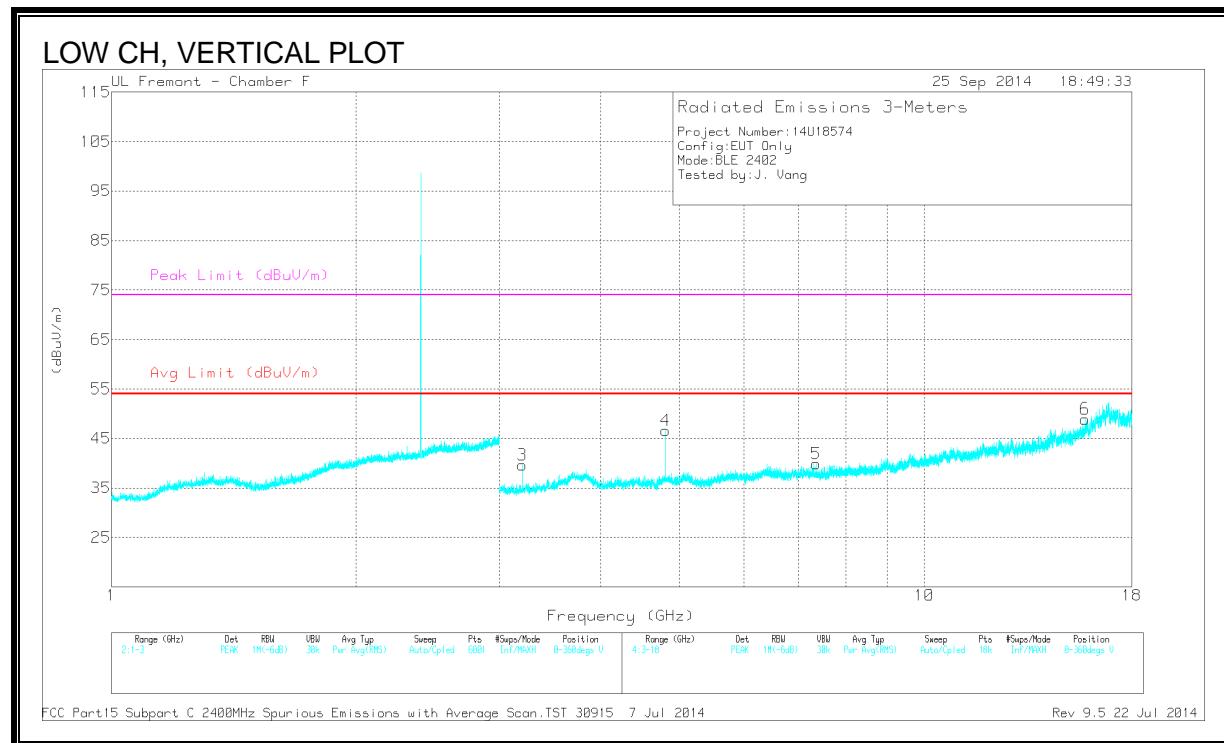
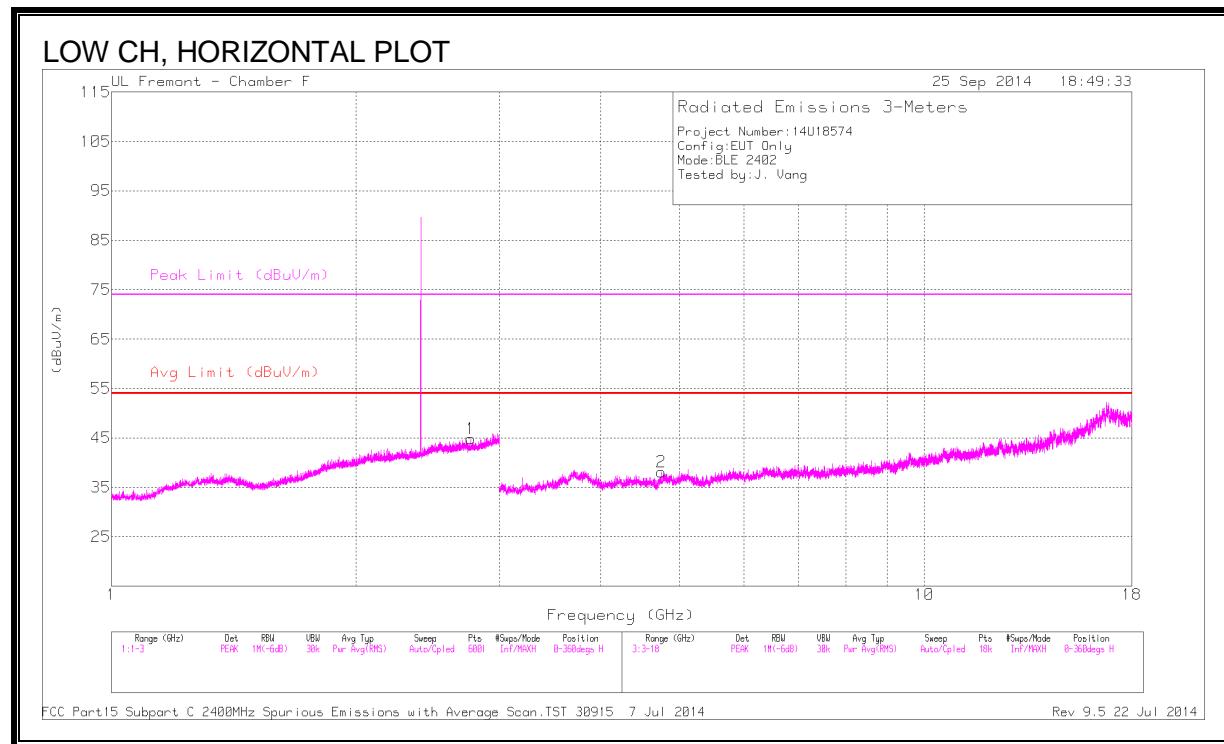
Corrected Value = Marker reading + Duty Cycle Factor
Final Corrected Average Value: $40.768 \text{ dB}\mu\text{V} + 3.72 = 44.488 \text{ dB}\mu\text{V}$

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



Corrected Value = Marker reading + Duty Cycle Factor
Final Corrected Average Value: $40.504 \text{ dB}\mu\text{V} + 3.72 = 44.224 \text{ dB}\mu\text{V}$

LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS



DATA

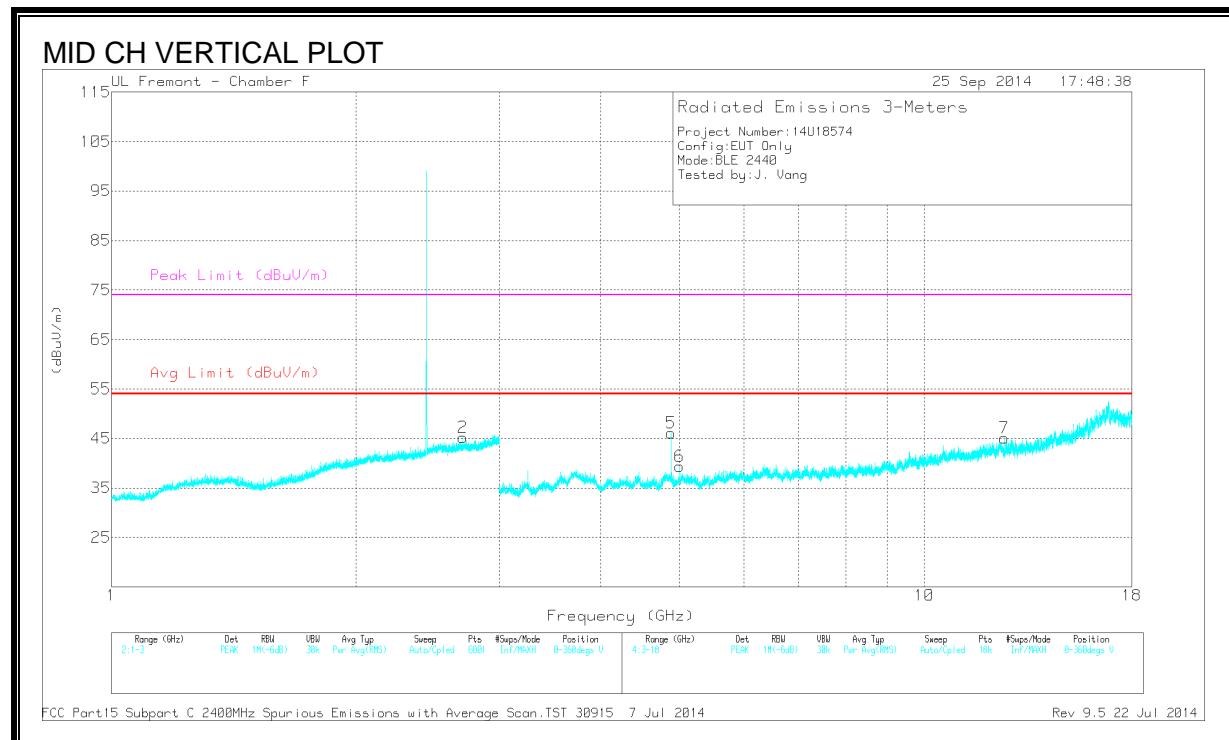
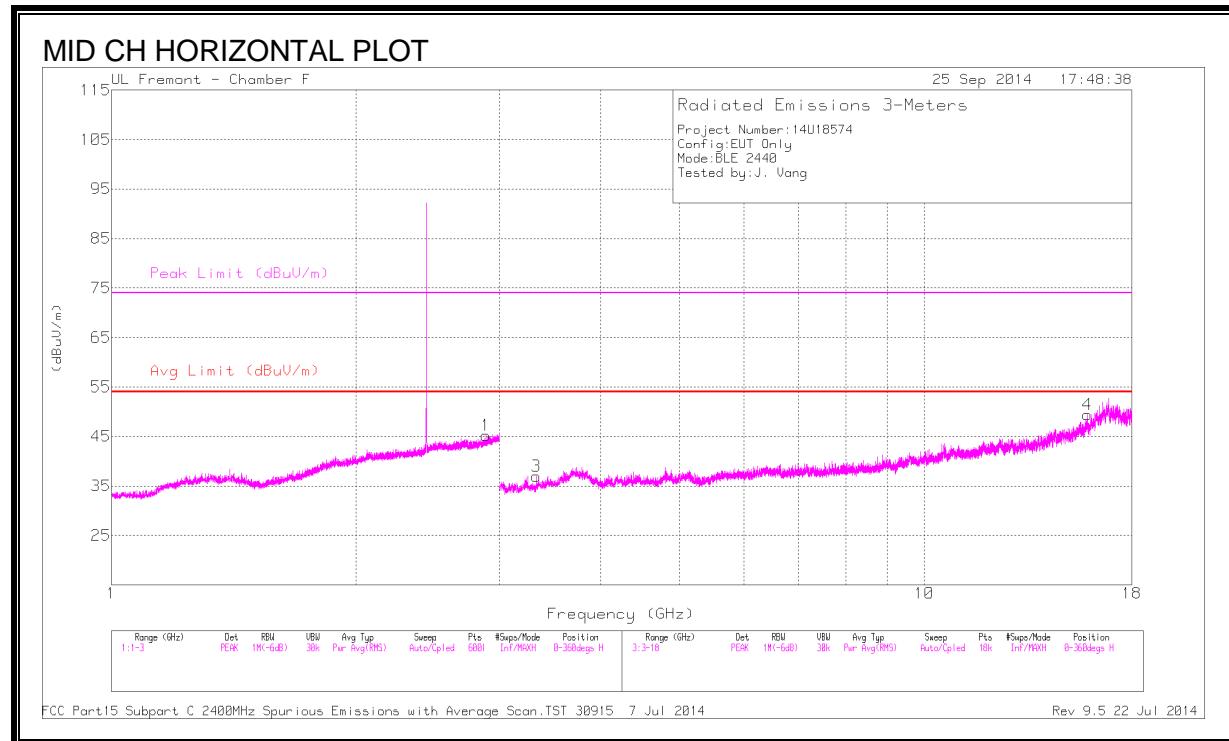
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.765	41.81	PK2	32.8	-22.7	0	51.91	-	-	74	-22.09	241	205	H
	* 2.767	29.68	MAv1	32.8	-22.7	3.72	43.5	54	-10.5	-	-	241	205	H
2	* 4.747	37.28	PK2	34.1	-28.4	0	42.98	-	-	74	-31.02	240	362	H
	* 4.746	26.1	MAv1	34.1	-28.4	3.72	35.52	54	-18.48	-	-	240	362	H
3	3.203	42.06	PK2	33.3	-29.4	0	45.96	-	-	-	-	170	207	V
4	* 4.805	42.15	PK2	34.1	-27.4	0	48.85	-	-	74	-25.15	230	162	V
	* 4.804	32.92	MAv1	34.1	-27.4	3.72	43.34	54	-10.66	-	-	230	162	V
5	* 7.355	37.35	PK2	35.6	-26.4	0	46.55	-	-	74	-27.45	330	114	V
	* 7.355	26.1	MAv1	35.6	-26.4	3.72	39.02	54	-14.98	-	-	330	114	V
6	* 15.773	35.99	PK2	40.4	-20.3	0	56.09	-	-	74	-17.91	288	175	V
	* 15.773	24.21	MAv1	40.4	-20.3	3.72	48.03	54	-5.97	-	-	288	175	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HARMONICS AND SPURIOUS EMISSIONS



DATA

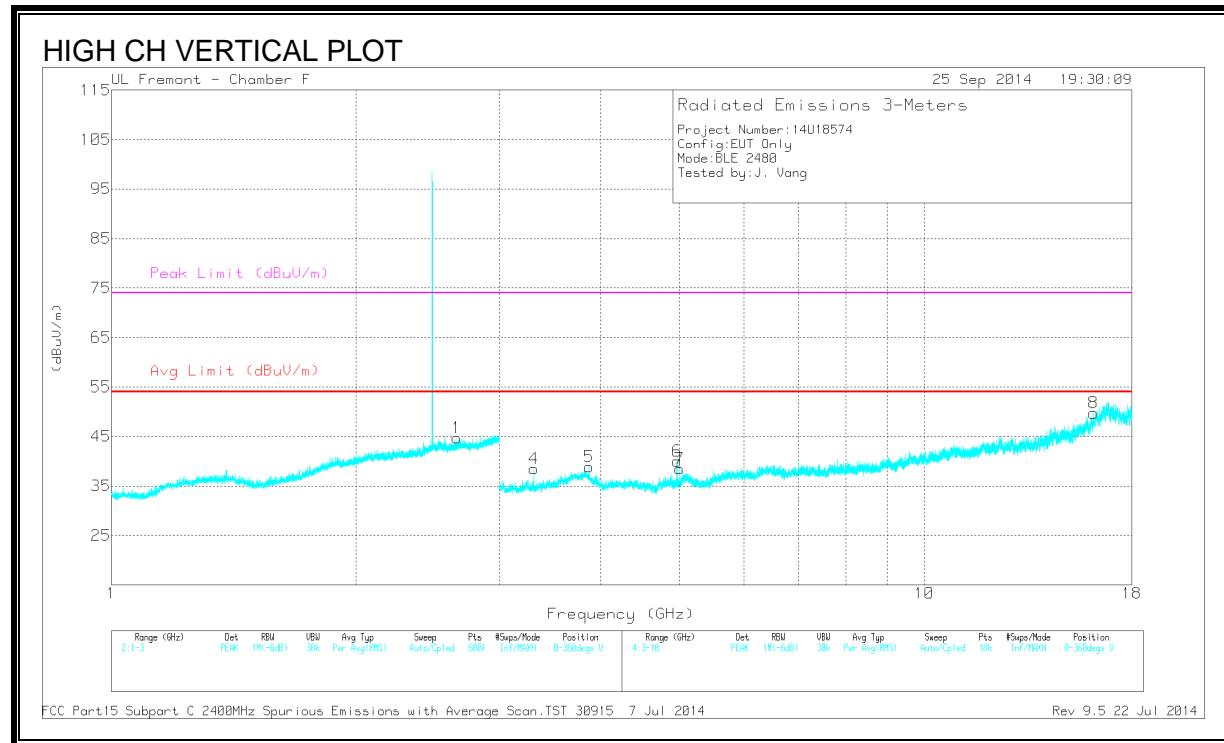
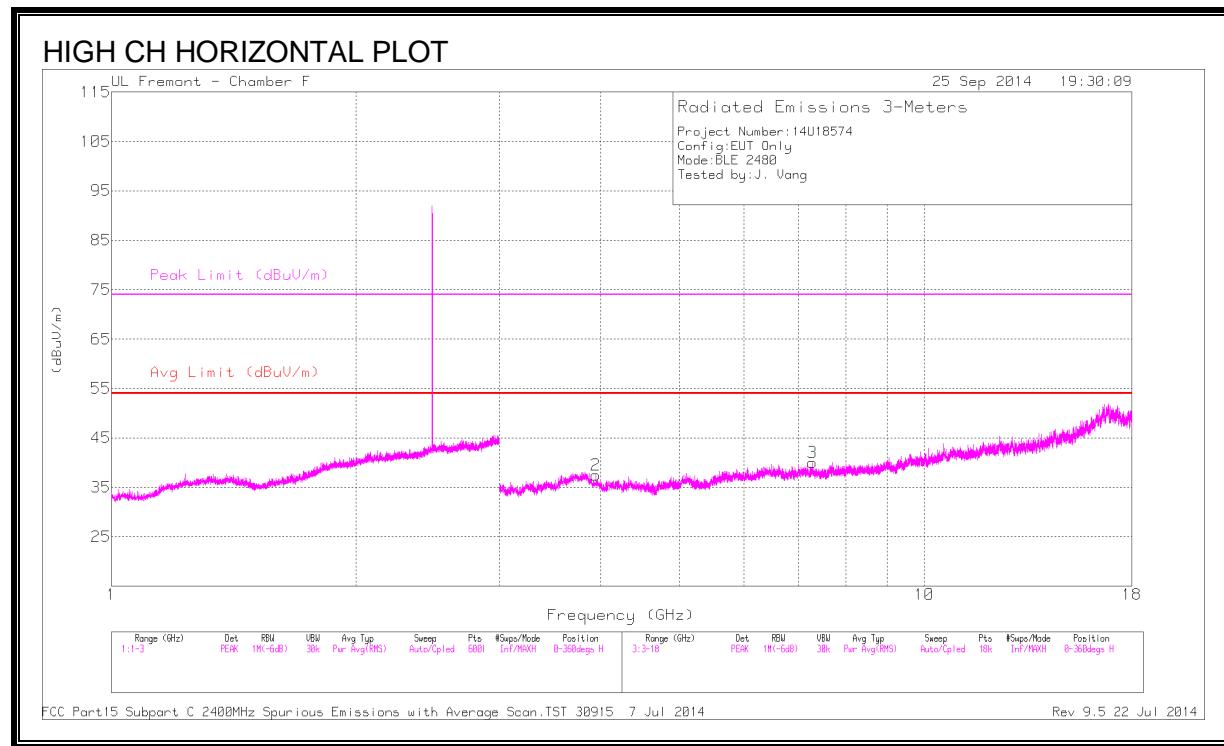
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.885	41.46	PK2	33.2	-22.4	0	52.26	-	-	74	-21.74	129	197	H
	* 2.889	29.75	MAv1	33.2	-22.4	3.72	44.27	54	-9.73	-	-	129	197	H
2	* 2.705	41.55	PK2	32.7	-22.5	0	51.75	-	-	74	-22.25	187	317	V
	* 2.705	29.78	MAv1	32.7	-22.5	3.72	43.7	54	-10.3	-	-	187	317	V
3	* 3.333	39.74	PK2	33.8	-29.7	0	43.84	-	-	74	-30.16	7	323	H
	* 3.333	27.91	MAv1	33.8	-29.7	3.72	35.73	54	-18.27	-	-	7	323	H
4	* 15.861	35.49	PK2	40.4	-19.5	0	56.39	-	-	74	-17.61	159	211	H
	* 15.864	24.18	MAv1	40.4	-19.5	3.72	48.8	54	-5.2	-	-	159	211	H
5	* 4.88	43.08	PK2	34.2	-27.8	0	49.48	-	-	74	-24.52	225	221	V
	* 4.88	33.86	MAv1	34.2	-27.8	3.72	43.98	54	-10.02	-	-	225	221	V
6	* 5	47.98	PK2	34.2	-29.1	0	53.08	-	-	74	-20.92	217	162	V
	* 5	27.41	MAv1	34.2	-29.1	3.72	36.23	54	-17.77	-	-	217	162	V
7	* 12.54	35.41	PK2	39	-22.9	0	51.51	-	-	74	-22.49	313	119	V
	* 12.536	23.78	MAv1	39	-22.9	3.72	43.6	54	-10.4	-	-	313	119	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HARMONICS AND SPURIOUS EMISSIONS



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (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	* 2.660	41.95	PK2	32.7	-23.1	0	51.55	-	-	74	-22.45	138	105	V
	* 2.661	30.04	MAv1	32.7	-23.1	3.72	43.36	54	-10.64	-	-	138	105	V
2	* 3.942	38.42	PK2	33.9	-29	0	43.32	-	-	74	-30.68	166	361	H
	* 3.944	27.05	MAv1	33.9	-29	3.72	35.67	54	-18.33	-	-	166	361	H
3	* 7.287	37.64	PK2	35.5	-26.3	0	46.84	-	-	74	-27.16	273	220	H
	* 7.287	25.75	MAv1	35.5	-26.3	3.72	38.67	54	-15.33	-	-	273	220	H
4	3.307	41.85	PK2	33.7	-29.4	0	46.15	-	-	-	-	161	184	V
5	* 3.869	39.48	PK2	34.1	-29.2	0	44.38	-	-	74	-29.62	283	257	V
	* 3.869	27.25	MAv1	34.1	-29.2	3.72	35.87	54	-18.13	-	-	283	257	V
6	* 4.961	40.6	PK2	34.2	-29.2	0	45.6	-	-	74	-28.4	218	167	V
	* 4.960	30.31	MAv1	34.2	-29.2	3.72	39.03	54	-14.97	-	-	218	167	V
7	* 5.000	47.24	PK2	34.2	-29.1	0	52.34	-	-	74	-21.66	227	210	V
	* 5.000	26.53	MAv1	34.2	-29.1	3.72	35.35	54	-18.65	-	-	227	210	V
8	* 16.162	34.53	PK2	40.5	-19.5	0	55.53	-	-	74	-18.47	38	342	V
	* 16.162	23.33	MAv1	40.5	-19.4	3.72	48.15	54	-5.85	-	-	38	342	V

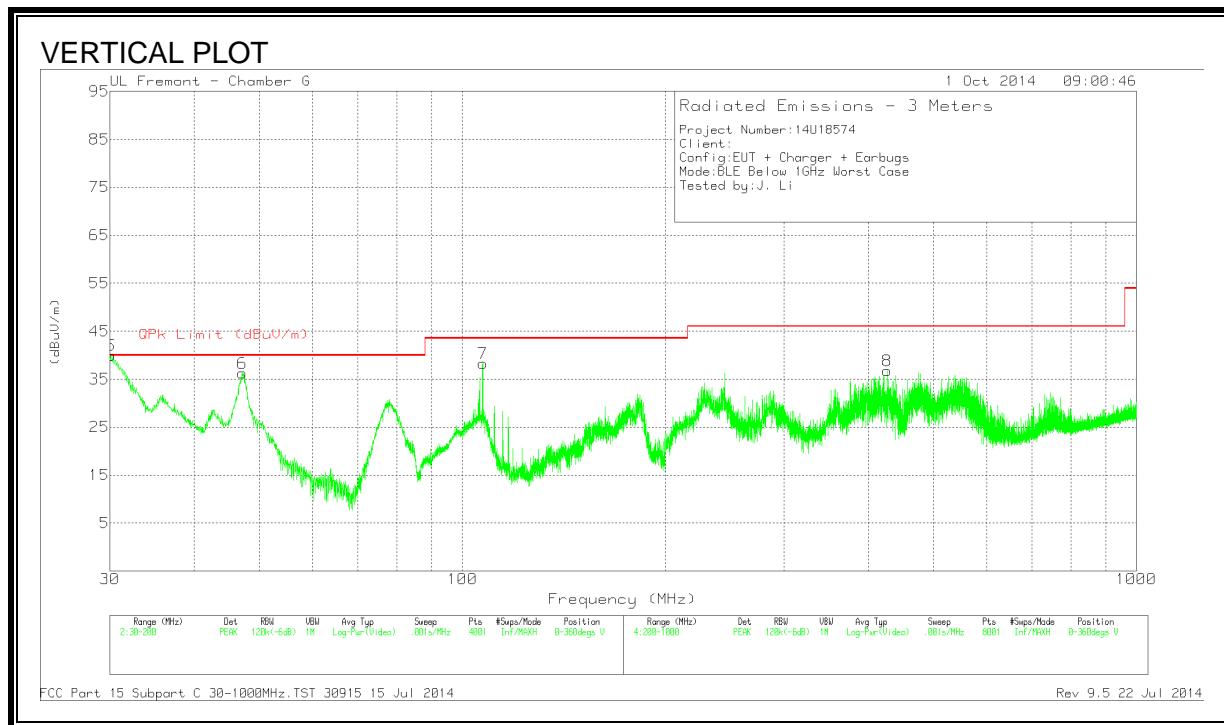
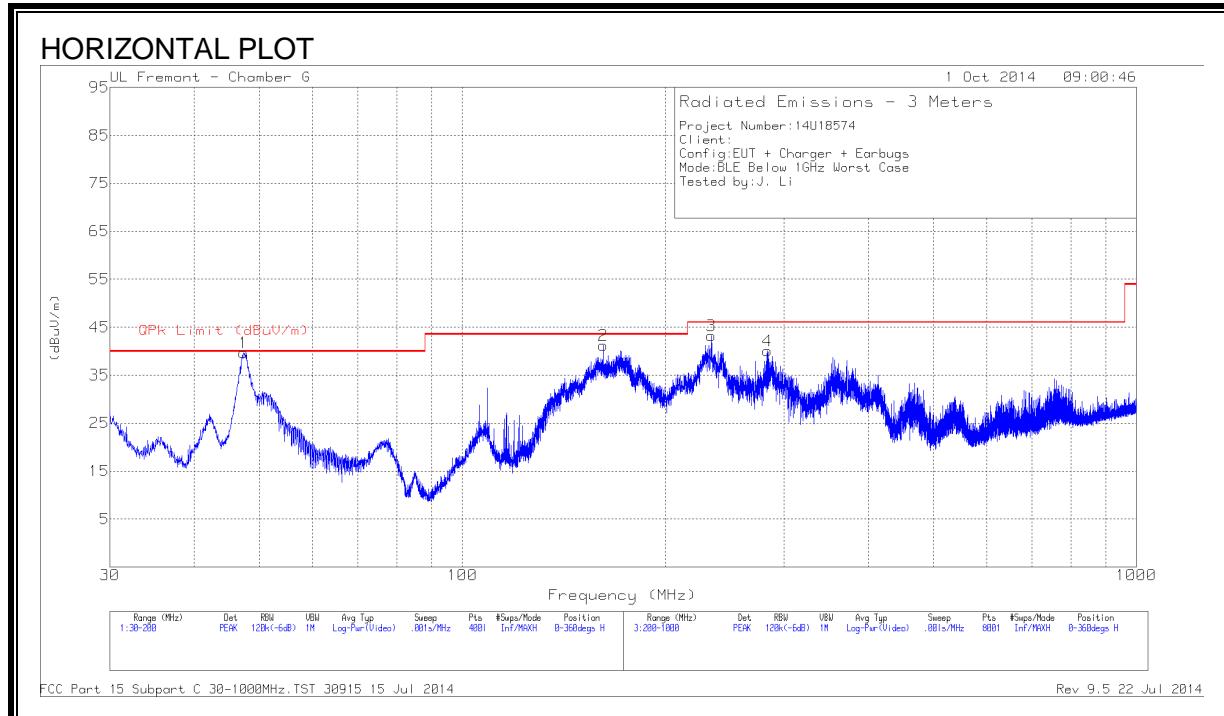
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

10.3. WORST-CASE BELOW 1 GHz

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



HORIZONTAL AND VERTICAL DATA

Trace Markers

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	* 283.3	52.39	PK	16.3	-28.6	40.09	46.02	-5.93	0-360	100	H
5	30.1061	43.12	QP	24	-30.9	36.22	40	-3.78	322	142	V
6	47.155	52.08	QP	12.2	-30.7	33.58	40	-6.42	224	100	V
1	47.755	55.02	QP	11.9	-30.6	36.32	40	-3.68	124	360	H
7	107.18	53.54	PK	14.9	-30.1	38.34	43.52	-5.18	0-360	100	V
2	162.71	47.44	QP	15.1	-29.5	33.04	43.52	-10.48	137	155	H
3	230.68	51.43	QP	14	-29	36.43	46.02	-9.59	115	155	H
8	426.6	45.17	PK	19.4	-27.8	36.77	46.02	-9.25	0-360	100	V

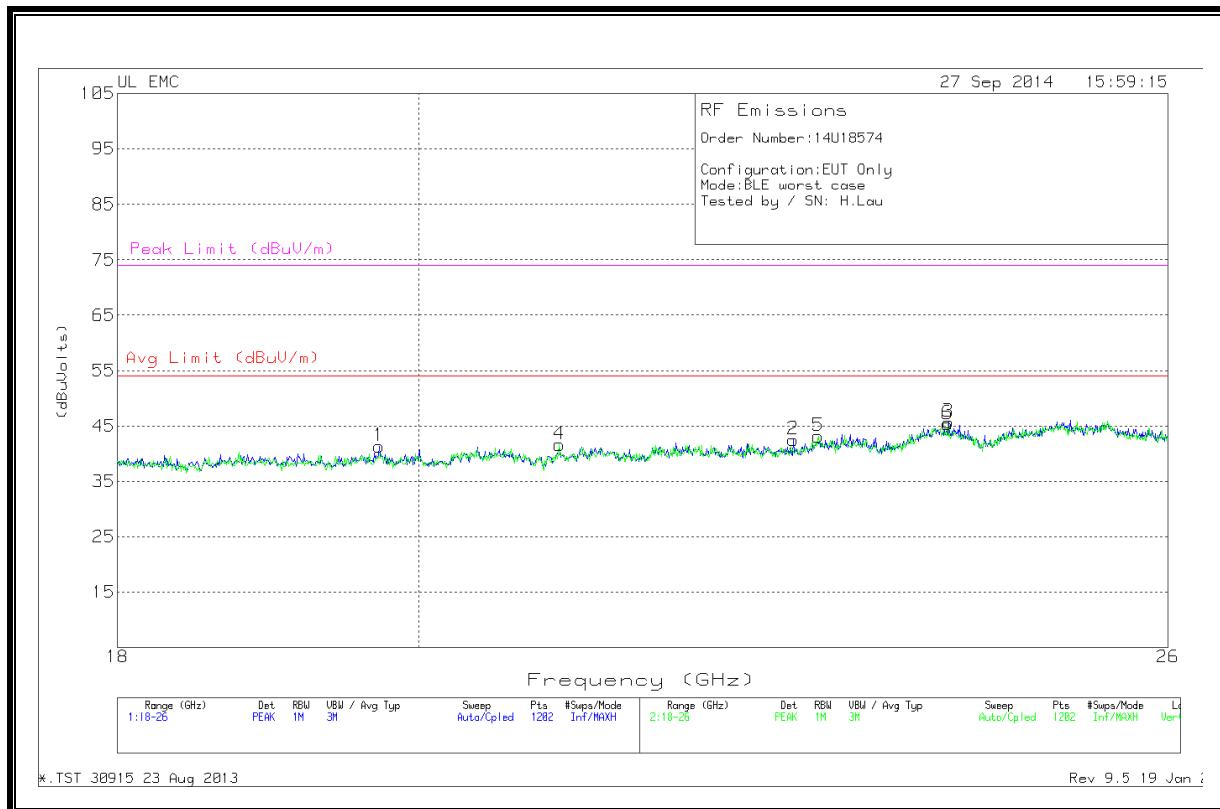
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK - Peak detector

QP - Quasi-Peak detector

10.4. 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	19.725	42.03	PK	32.7	-23.9	-9.5	41.33	54	-12.67	74	-32.67
2	22.803	42.3	PK	33.4	-23.7	-9.5	42.5	54	-11.5	74	-31.5
3	24.075	44.27	PK	33.6	-22.7	-9.5	45.67	54	-8.33	74	-28.33
4	21.011	41.97	PK	32.9	-23.7	-9.5	41.67	54	-12.33	74	-32.33
5	23.002	42.27	PK	33.6	-23.2	-9.5	43.17	54	-10.83	74	-30.83
6	24.068	43.83	PK	33.6	-22.6	-9.5	45.33	54	-8.67	74	-28.67

PK - Peak detector

*.TST 30915 23 Aug 2013 Rev 9.5 19 Jan 2014

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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

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

TEST PROCEDURE

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

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.

RESULTS

WORST EMISSIONS DATA

Line-L1 .15 - 30MHz

Trace Markers										
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	55.27	PK	1.3	0	56.57	65.8	-9.23	-	-
2	.1545	32.36	Av	1.3	0	33.66	-	-	55.8	-22.14
3	.6045	31.93	PK	.3	0	32.23	56	-23.77	-	-
4	.6045	12.21	Av	.3	0	12.51	-	-	46	-33.49
5	2.049	23.96	PK	.2	.1	24.26	56	-31.74	-	-
6	2.049	5.79	Av	.2	.1	6.09	-	-	46	-39.91
7	9.0375	29.2	PK	.2	.1	29.5	60	-30.5	-	-
8	9.0375	5.26	Av	.2	.1	5.56	-	-	50	-44.44
9	22.4295	24.51	PK	.3	.2	25.01	60	-34.99	-	-
10	22.4295	9.51	Av	.3	.2	10.01	-	-	50	-39.99

PK - Peak detector

Av - average detection

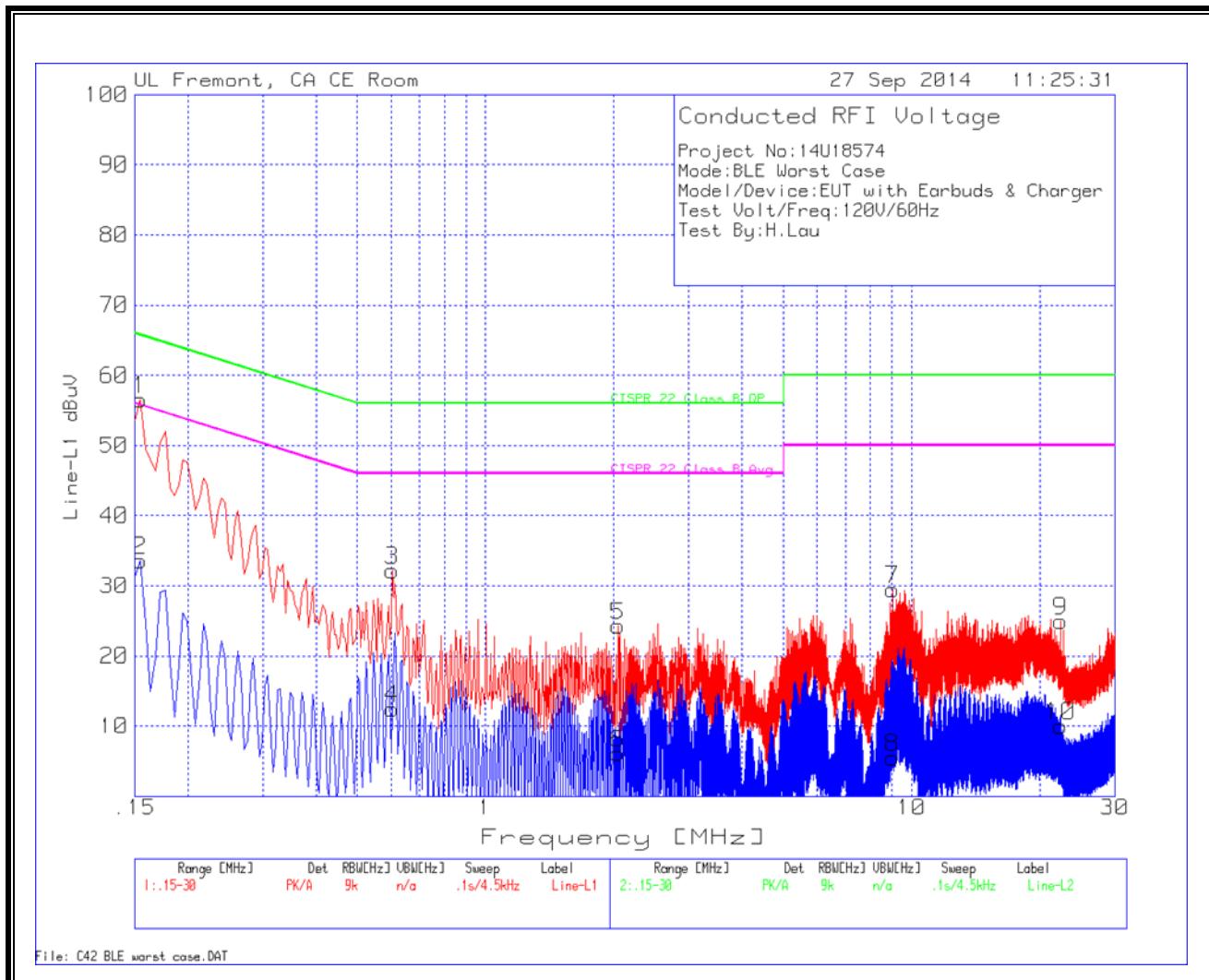
Line-L2 .15 - 30MHz

Trace Markers										
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)
11	.1545	55.18	PK	1.4	0	56.58	65.8	-9.22	-	-
12	.1545	32.91	Av	1.4	0	34.31	-	-	55.8	-21.49
13	.6045	32.15	PK	.3	0	32.45	56	-23.55	-	-
14	.6045	14.38	Av	.3	0	14.68	-	-	46	-31.32
15	2.877	25.75	PK	.2	.1	26.05	56	-29.95	-	-
16	2.877	1.46	Av	.2	.1	1.76	-	-	46	-44.24
17	6.18	25.3	PK	.2	.1	25.6	60	-34.4	-	-
18	6.18	7.57	Av	.2	.1	7.87	-	-	50	-42.13
19	19.248	26.15	PK	.3	.2	26.65	60	-33.35	-	-
20	19.248	2.9	Av	.3	.2	3.4	-	-	50	-46.6

PK - Peak detector

Av - average detection

LINE 1 PLOT



LINE 2 PLOT

