



CERTIFICATION TEST REPORT

Report Number. : 16U23814-E1V2

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

Model : A1823

FCC ID : BCGA1823

IC : 579C-A1823

EUT Description : TABLET DEVICE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS - 247 ISSUE 1

Date Of Issue:
February 10, 2017

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	01/24/2017	Initial Issue	Tina Chu
V2	02/10/2017	Address TCB Questions	Francisco Guarnero

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: TABLET DEVICE

MODEL: A1823

SERIAL NUMBER: F9FSQ00QHNC9 (CONDUCTED),
F9FSQ00MHNC9 (RADIATED)

DATE TESTED: NOVEMBER 10 – JANUARY 20, 2017

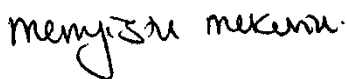
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 Issue 1	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

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:

Prepared By:



Mengistu Mekuria
Senior Engineer
UL VERIFICATION SERVICES INC.

Francisco Guarnero
Project Lead
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 v03r05, ANSI C63.10-2013, RSS-GEN Issue 4, and RSS-247 Issue 1.

3. FACILITIES AND ACCREDITATION

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

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

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.

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:

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

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 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/WCDMA /HSPA+/DC-HSDPA/LTE FDD & 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	17.43	55.39

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Band (GHz)	Antenna Gain (dBi)
2.4	1.91

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 14E232.

5.5. 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 Y- landscape orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in Y- landscape orientation.

Worst-case data rates as provided by the client were:

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

BLE: 1 Mbps.

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
Laptop	Apple	A1286	7313700NAGW	N/A
Laptop AC/DC adapter	Apple	A1343	C062172045DDJ94A6	N/A
Earphone	Apple	NA	NA	N/A
EUT AC/DC adapter	Apple	A1357	W010A051	N/A

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	AC	1	AC	Un-shielded	2	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 (RADIATED BELOW 1 GHZ AND AC LINE CONDUCTED: AC/DC ADAPTER CONFIGURATION)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Earphone Jack	1	3.5mm Audio	Shielded	0.9	N/A
2	USB	1	USB	shielded	1	N/A

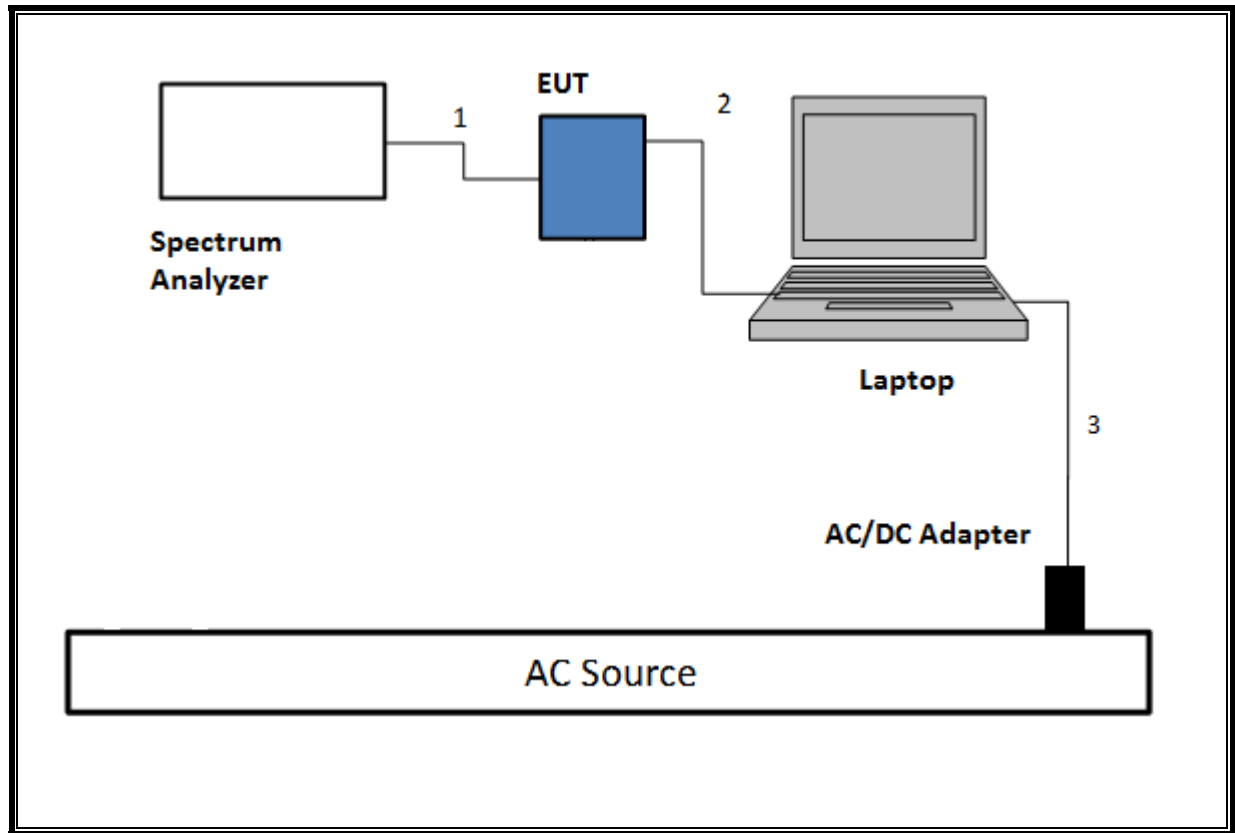
I/O CABLES (AC LINE CONDUCTED: LAPTOP CONFIGUARTION)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Earphone Jack	1	3.5mm Audio	Shielded	0.9	N/A
2	USB	1	USB	Shielded	1	N/A
3	AC	1	AC	Un-shielded	2	N/A

TEST SETUP - CONDUCTED TESTS

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

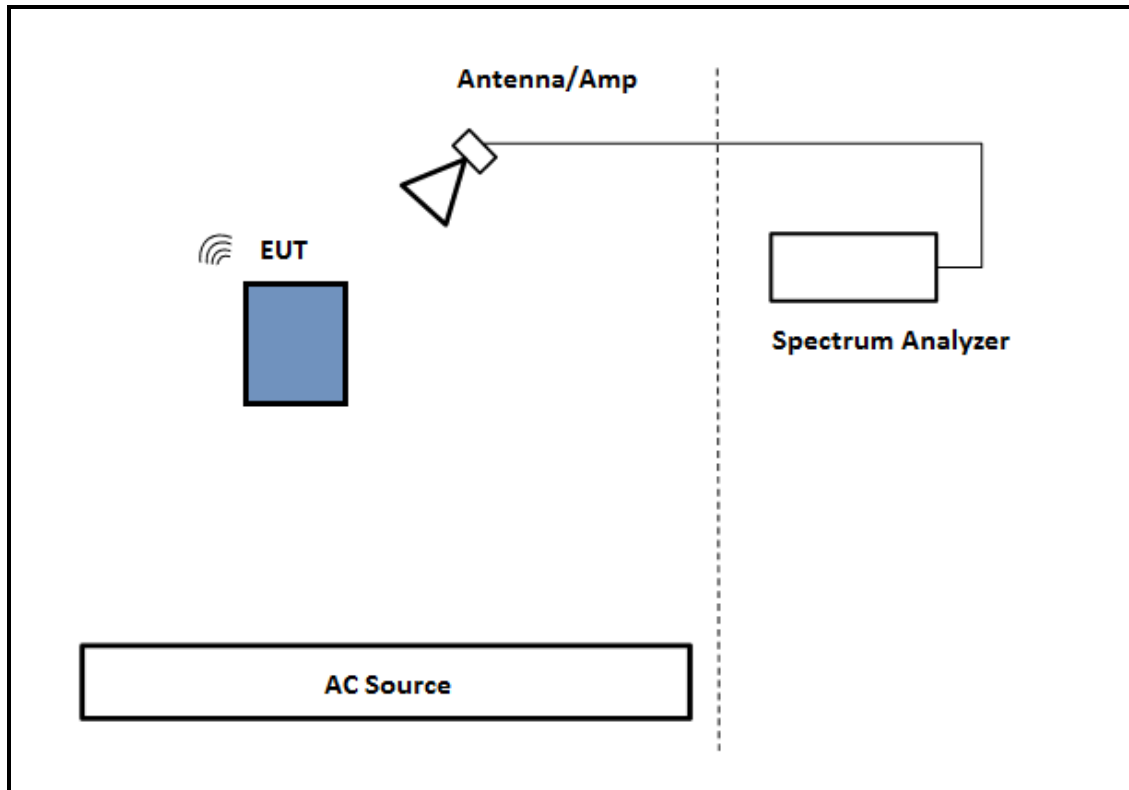
SETUP DIAGRAM



TEST SETUP- RADIATED-ABOVE 1 GHZ

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

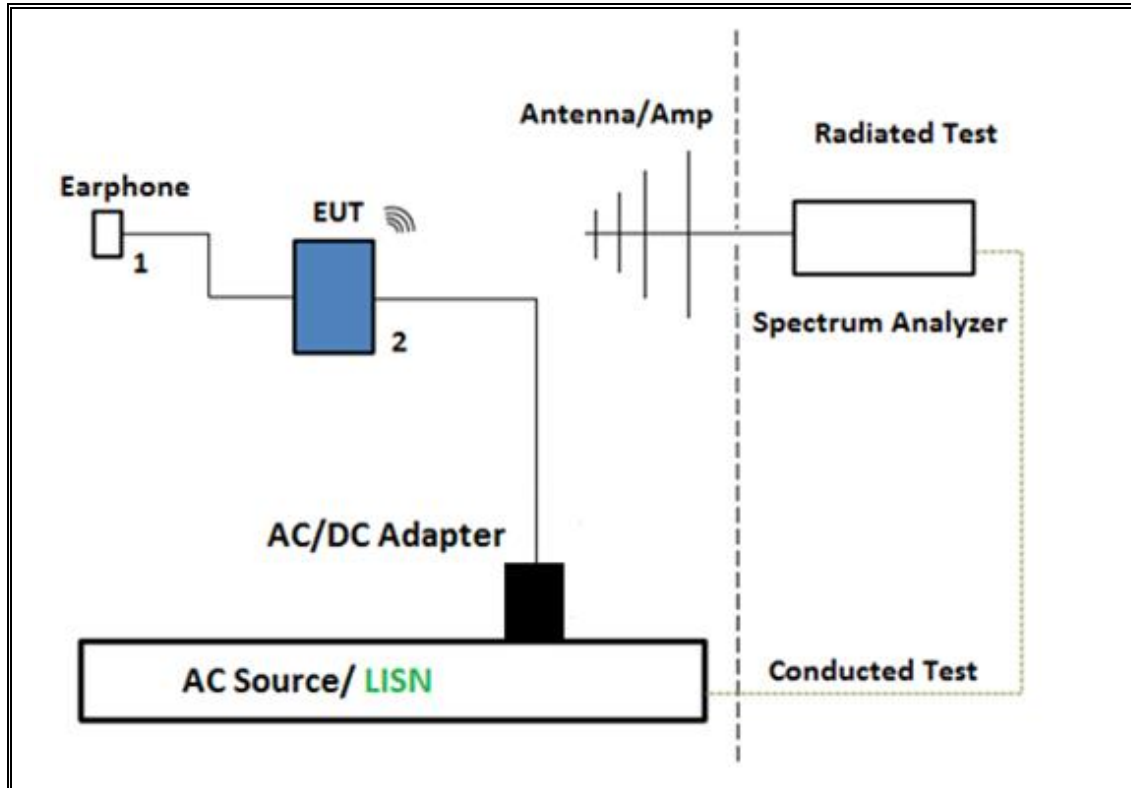
SETUP DIAGRAM



TEST SETUP- BELOW 1GHz

The EUT was powered by AC/DC adapter and connected with earphone. Test software exercised the EUT.

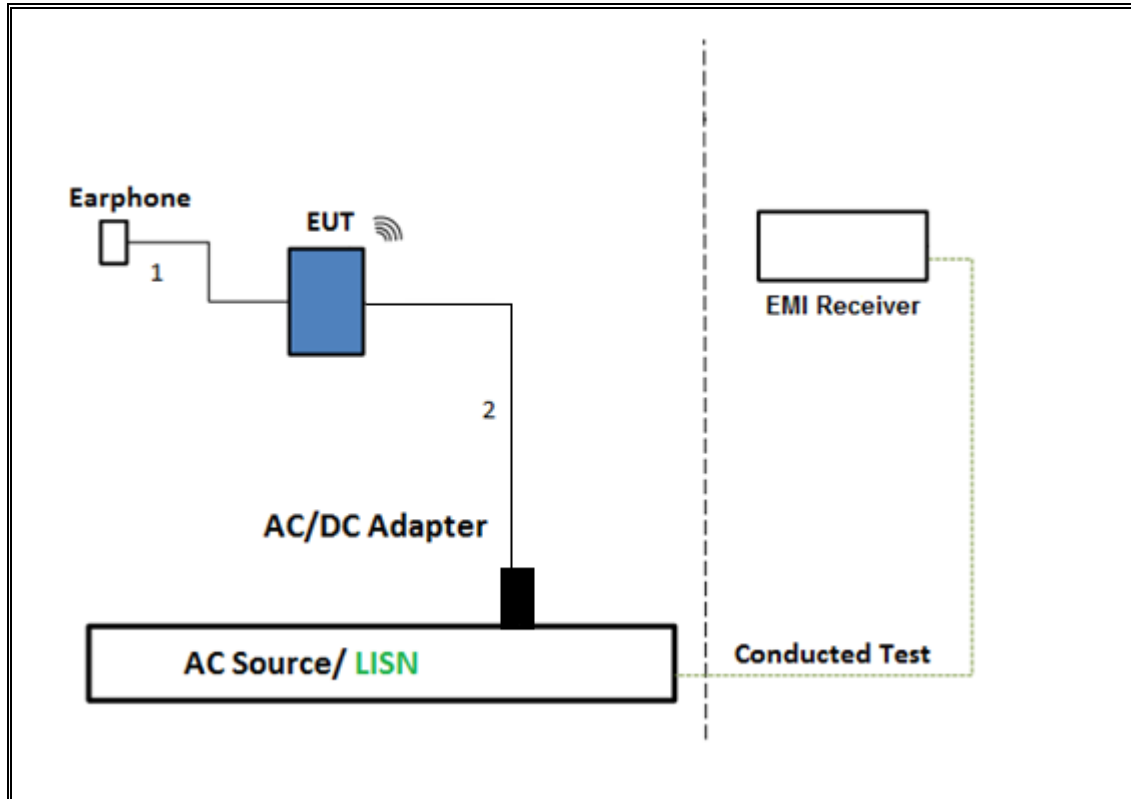
SETUP DIAGRAM



TEST SETUP- AC LINE CONDUCTED: AC/DC ADAPTER CONFIGURATION

The EUT was tested with earphone connected and powered by AC/DC adapter via USB cable. Test software exercised the EUT.

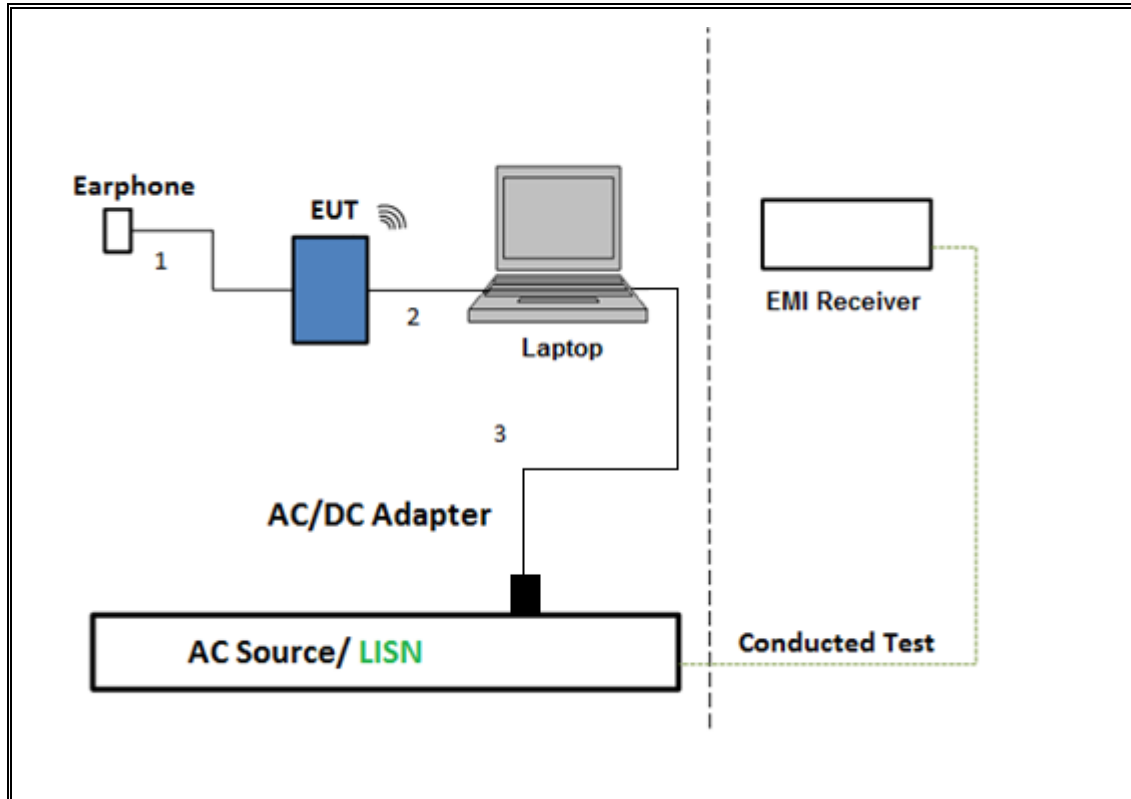
SETUP DIAGRAM



TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION

The EUT was tested with earphone connected and powered by host PC via USB cable. 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 1-18GHz	ETS Lindgren	3117	T344	02/22/2017
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	T407	04/04/2017
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	T286	05/04/2017
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	T740	11/29/2017
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T340	12/14/2017
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T120	4/5/2017
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	T742	11/29/2017
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T341	10/25/2017
Power Meter, P-series single channel	Keysight	N1912A	T1244	05/03/2017
Power Sensor	ETS LINDGREN	7002-006	T1126	02/10/2017
Power Sensor, Peak and average, 50 MHz to 18 GHz, 5 MHz BW	HEWLET PACKARD	8481A	T246	06/24/2017
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	T339	09/22/2017
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	T905	06/21/2017
Spectrum Analyzer	Keysight	8564E	T106	09/07/2017
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	T447	06/16/2017
Amplifier, 1 to 26.5GHz, 23.5dB Gain minimum	Keysight	8449B	T402	07/5/2017
AC Line Conducted				
*EMI Test Receiver 9KHz-7GHz	Rohde & Schwarz	ESCI7	T1436	12/19/2016
LISN for Conducted Emissions CISPR-16	Fischer	50/250-25-2-01	T1310	06/08/2017
Power Cable, Line Conducted Emissions	UL	PG1	T861	9/1/2017
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, April 26, 2016	
Conducted Software	UL	UL EMC	Ver 5.4, October 13, 2016	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015	

NOTE: *testing is completed before equipment calibration expiration date.

7. ANTENNA PORT TEST RESULTS

7.1. MEASUREMENT METHODS

6 dB BW: KDB 558074 D01 v03r05, Section 8.1.

Output Power: KDB 558074 D01 v03r05, Section 9.1.2.

Power Spectral Density: KDB 558074 D01 v03r05, Section 10.2.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v03r05, Section 11.0.

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r05, Section 12.1.

Band-edge: KDB 558074 D01 v03r05, Section 12.1.

7.2. ON TIME, DUTY CYCLE

LIMITS

None; for reporting purposes only.

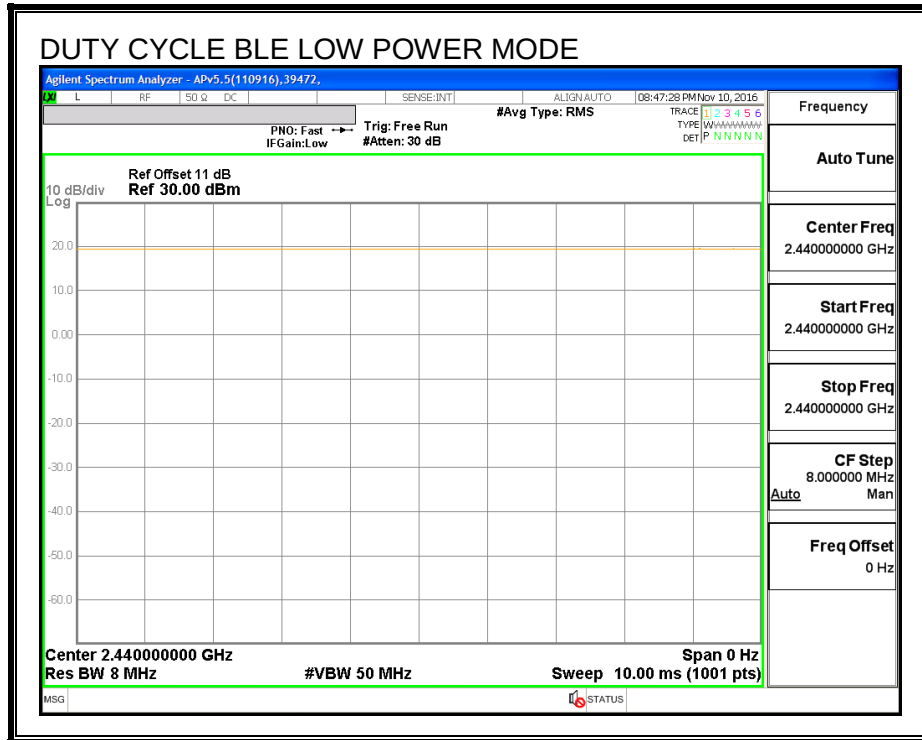
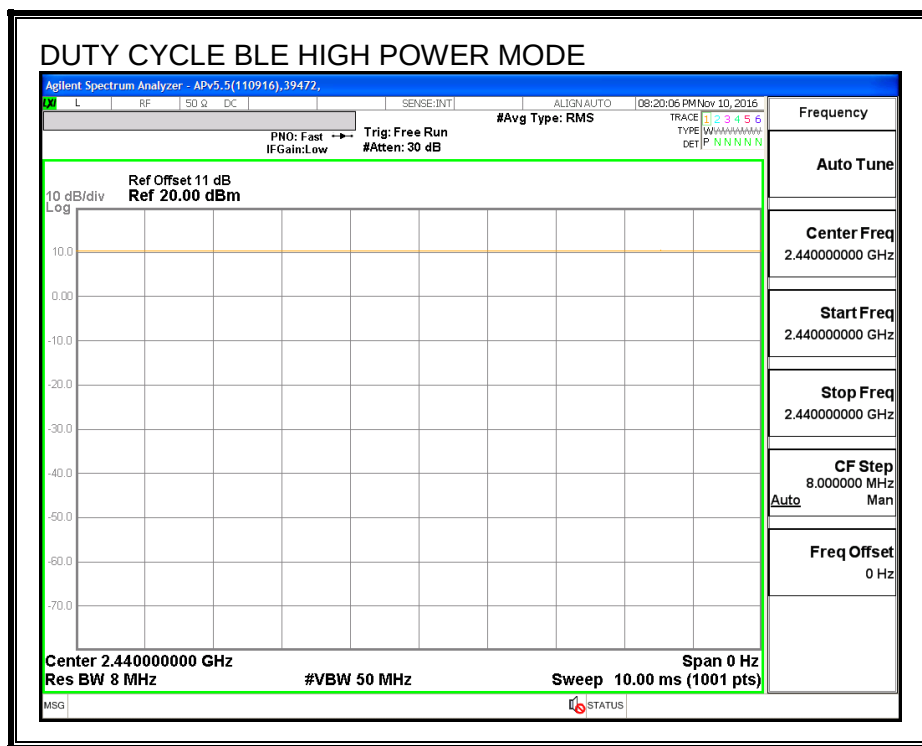
PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

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 HIGHPOWER	1.000	1.000	1.000	100.00%	0.00	0.010
BLE LOW POWER	1.000	1.000	1.000	100.00%	0.00	0.010

DUTY CYCLE PLOTS



7.3. HIGH POWER MODE

7.3.1. 6 dB BANDWIDTH

LIMITS

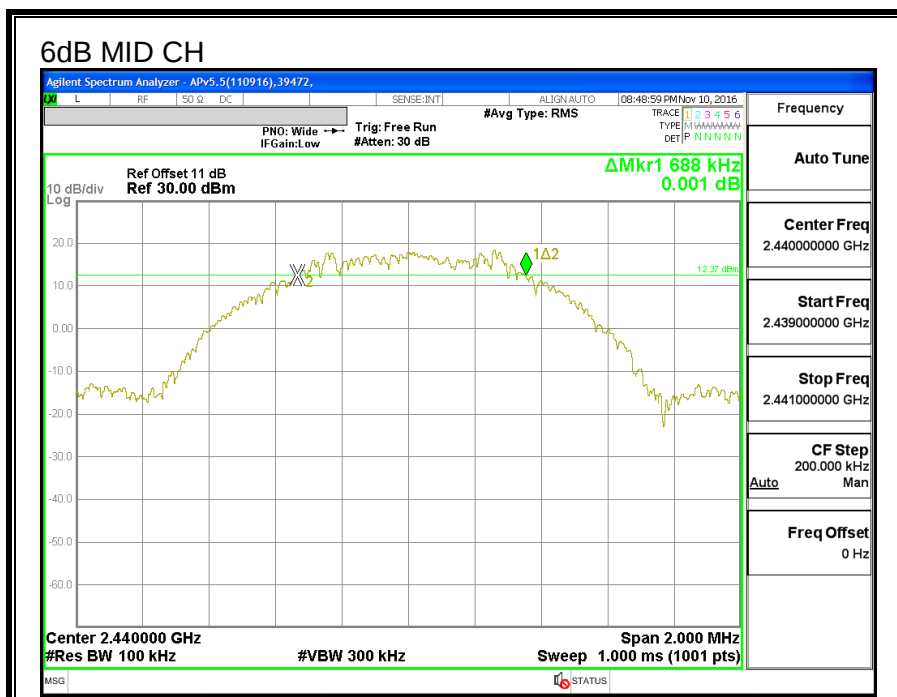
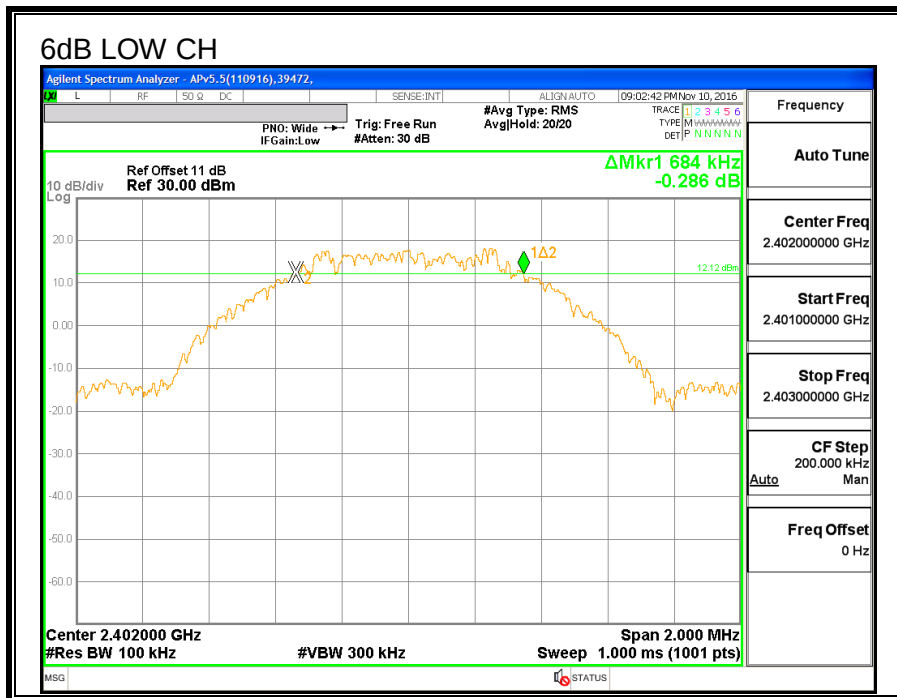
FCC §15.247 (a) (2)

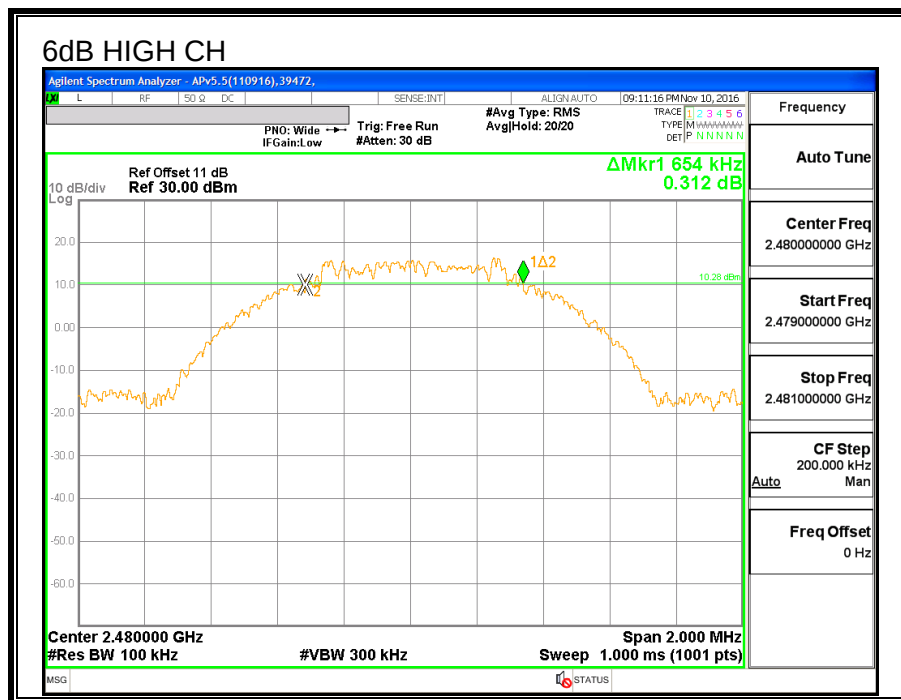
IC RSS-247 (5.2) (1)

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

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.684	0.5
Middle	2440	0.688	0.5
High	2480	0.654	0.5





7.3.2. 99% BANDWIDTH

LIMITS

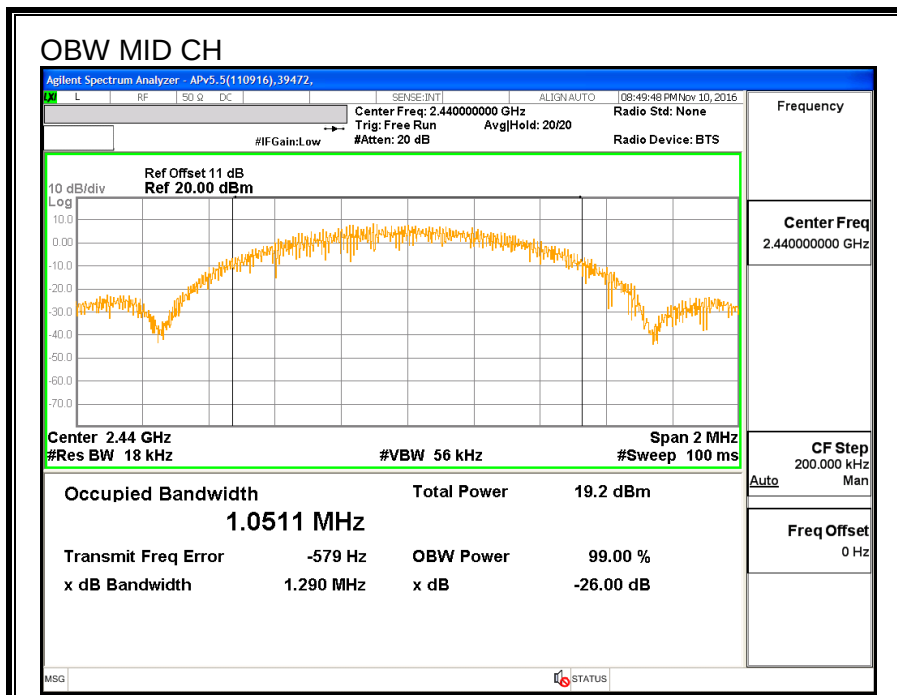
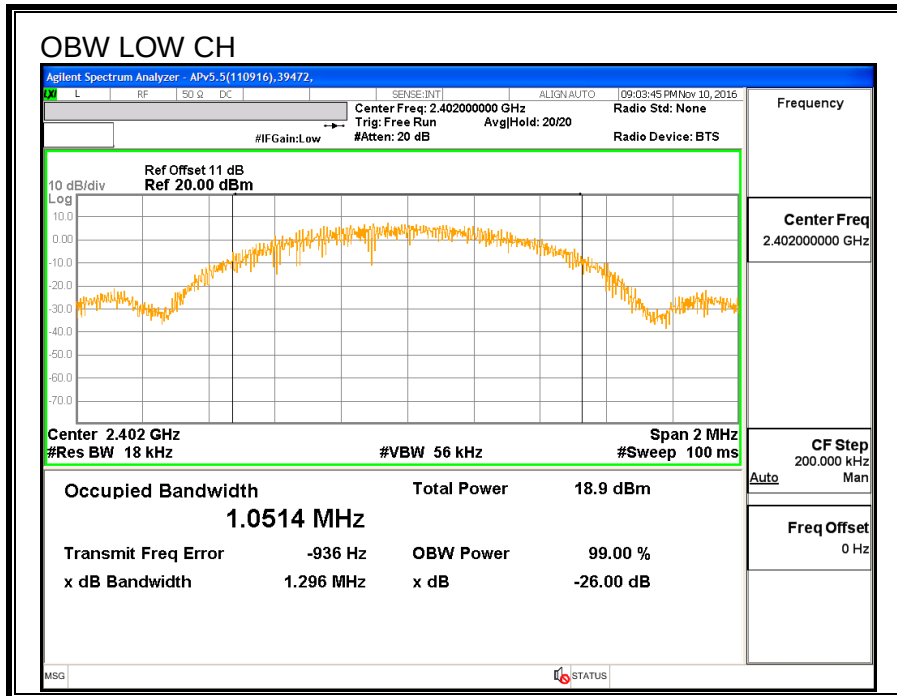
None; for reporting purposes only.

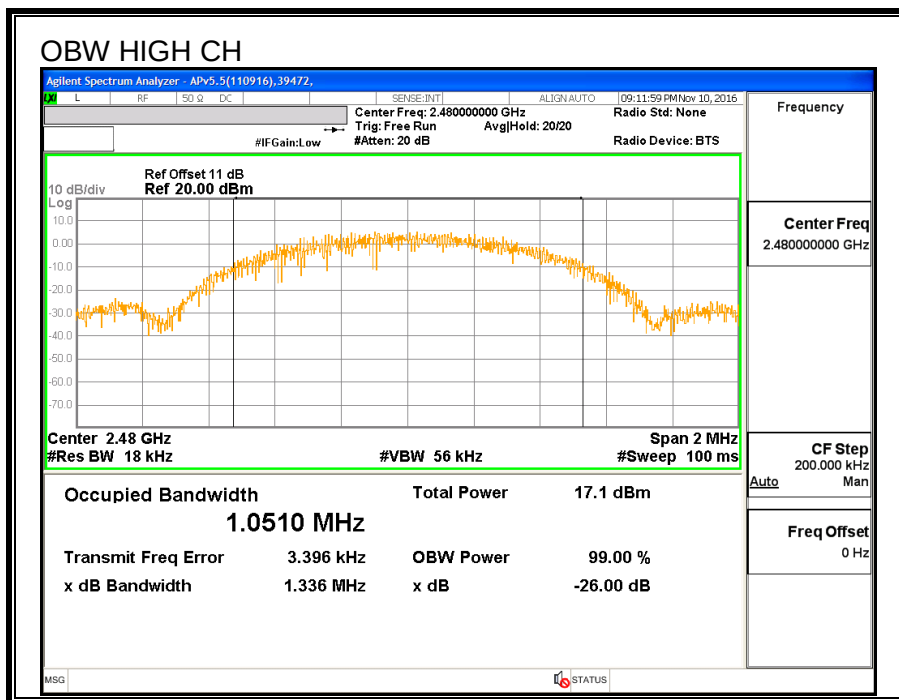
Test Procedure

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	1.051
Middle	2440	1.051
High	2480	1.051





7.3.3. AVERAGE POWER

ID:	30606	Date:	1/18/17
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LIMITS

None; for reporting purposes only.

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

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	16.99
Middle	2440	16.86
High	2480	16.96

7.3.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

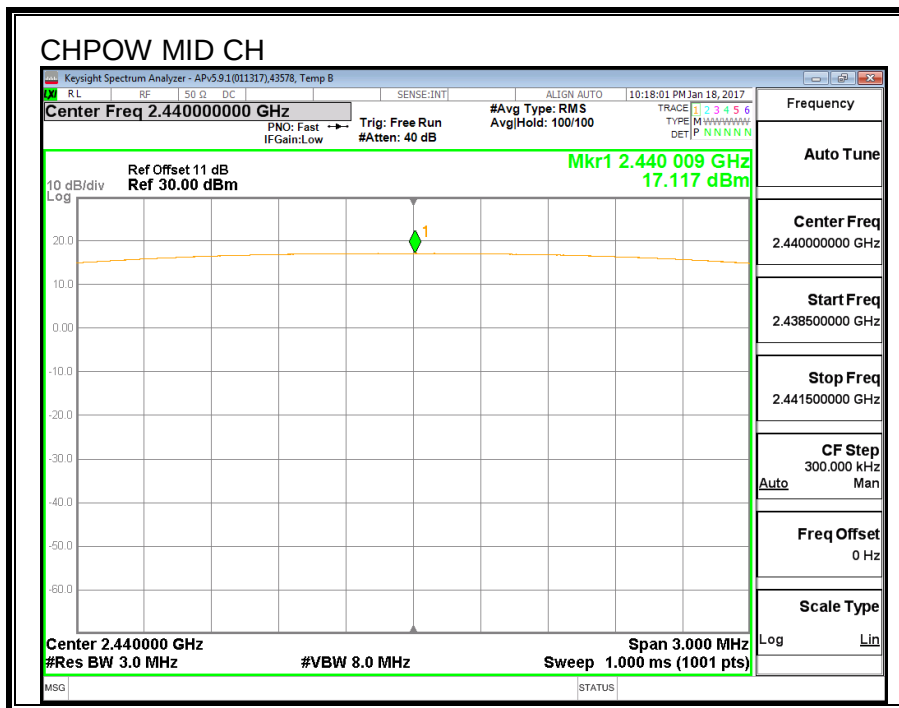
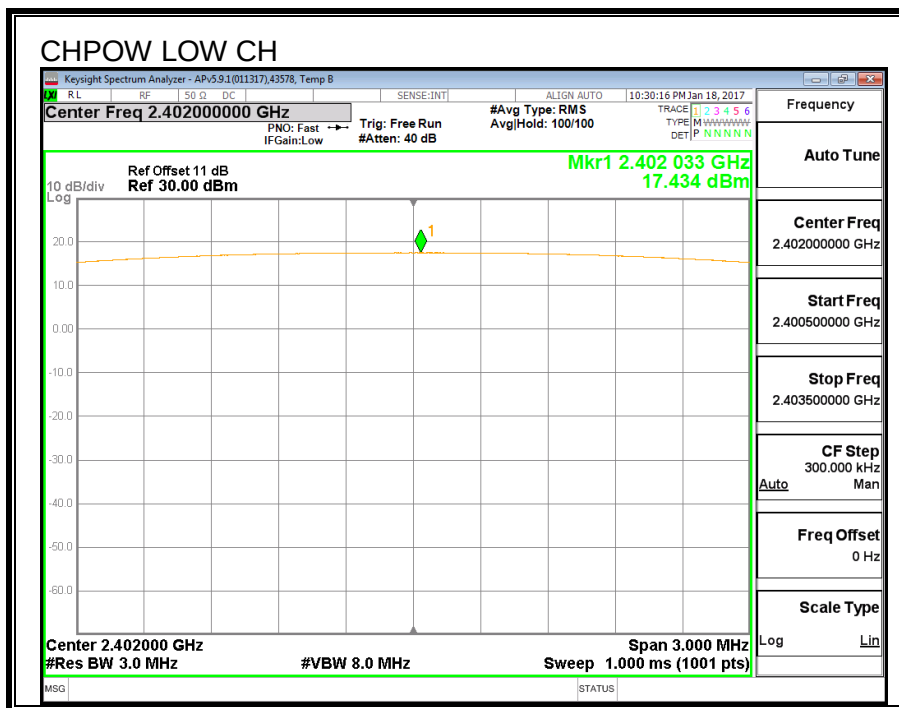
IC RSS-247 (5.4) (4)

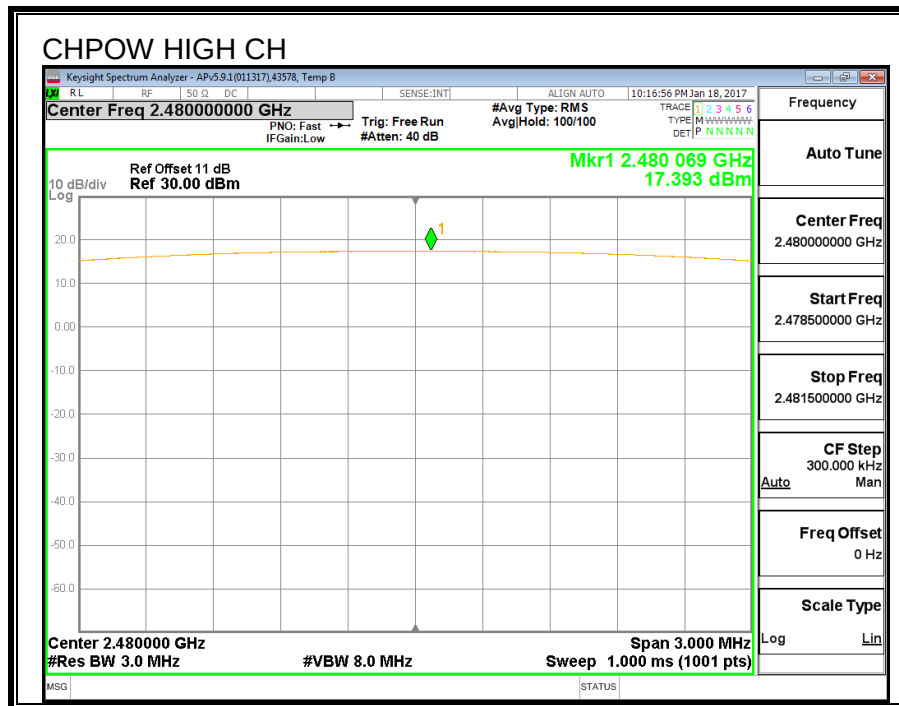
The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

RESULTS

ID:	30606	Date:	1/18/17
------------	-------	--------------	---------

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	17.434	30	-12.566
Middle	2440	17.117	30	-12.883
High	2480	17.393	30	-12.607





7.3.5. POWER SPECTRAL DENSITY

LIMITS

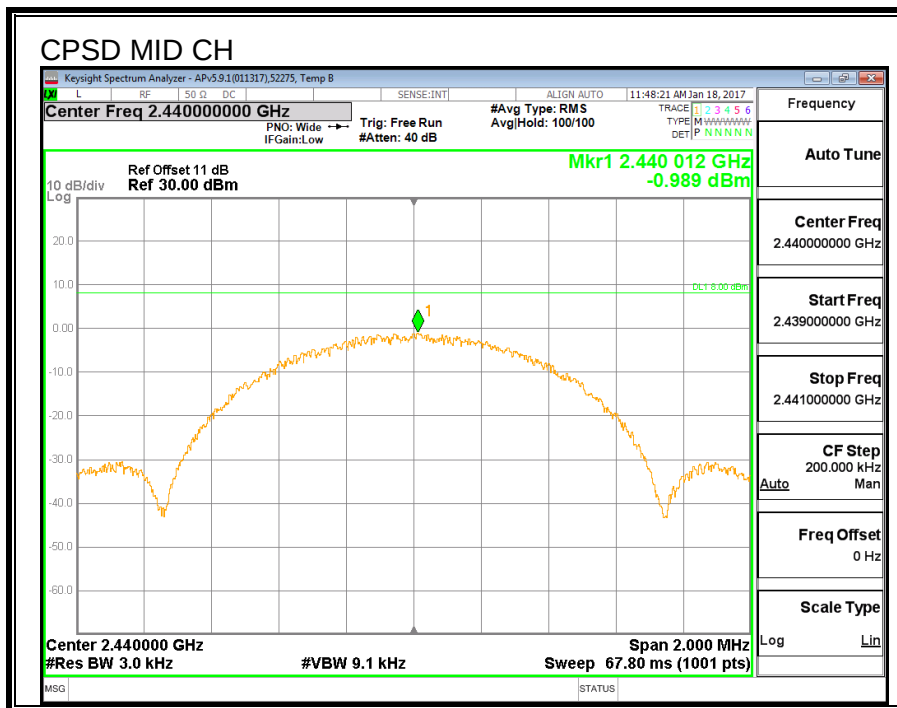
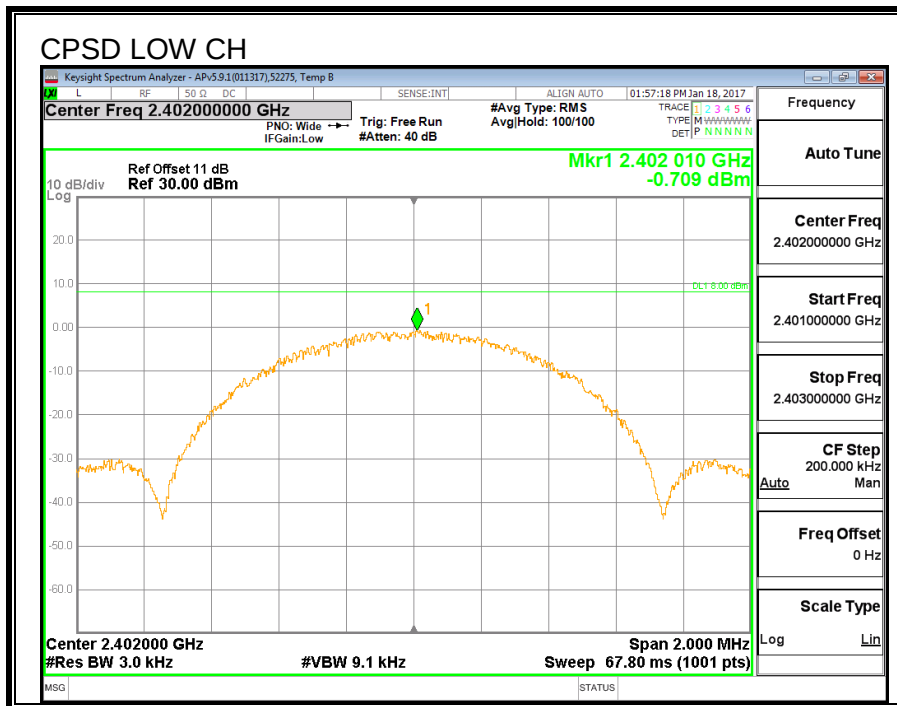
FCC §15.247 (e)

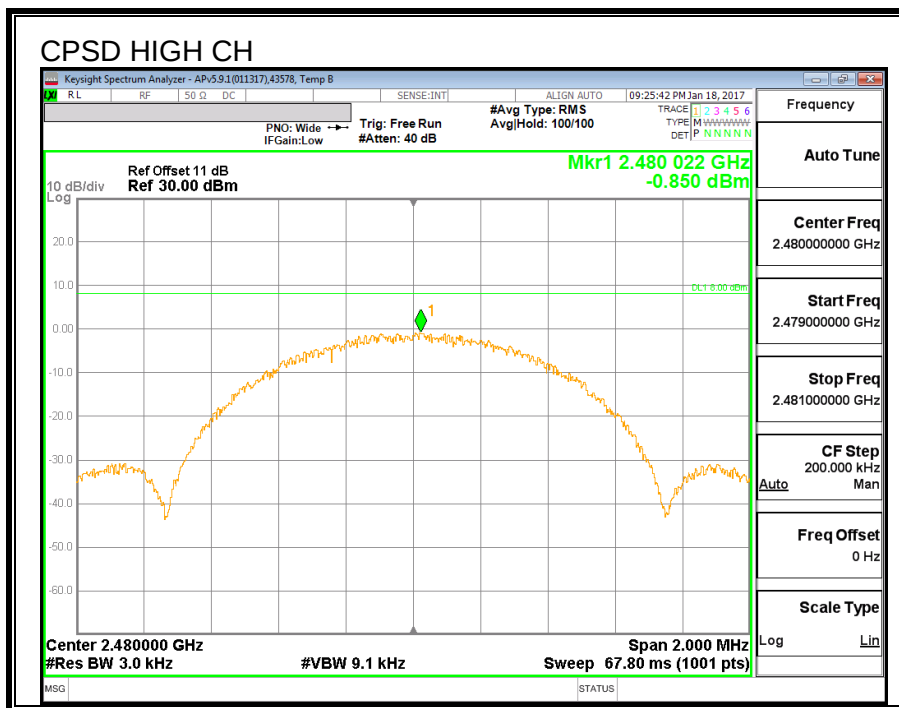
IC RSS-247 (5.2) (2)

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

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-0.709	8	-8.709
Middle	2440	-0.989	8	-8.989
High	2480	-0.850	8	-8.850





7.3.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 (5.5)

Limit = -20 dBc

TEST PROCEDURE

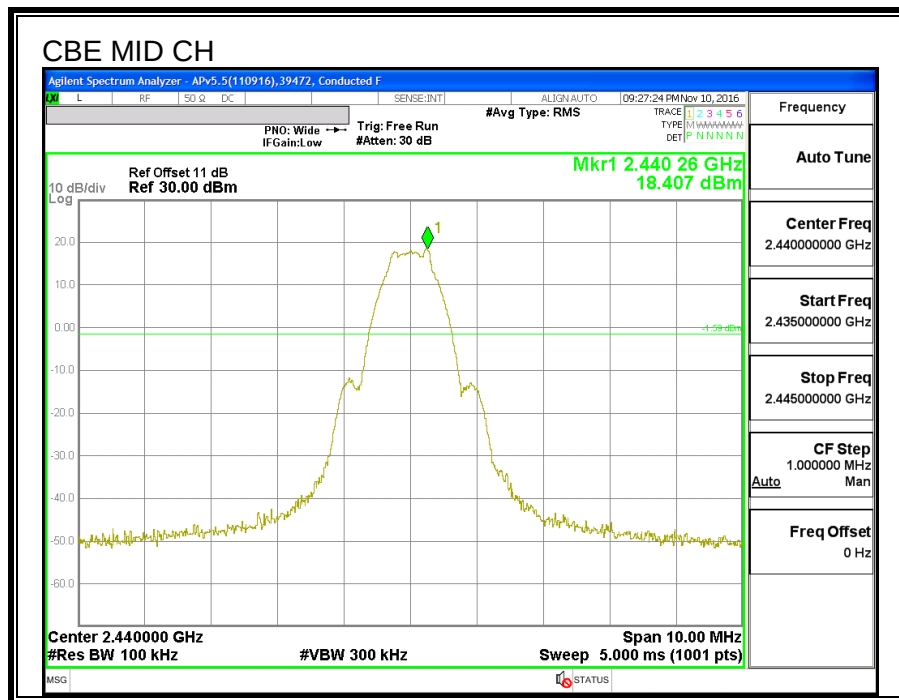
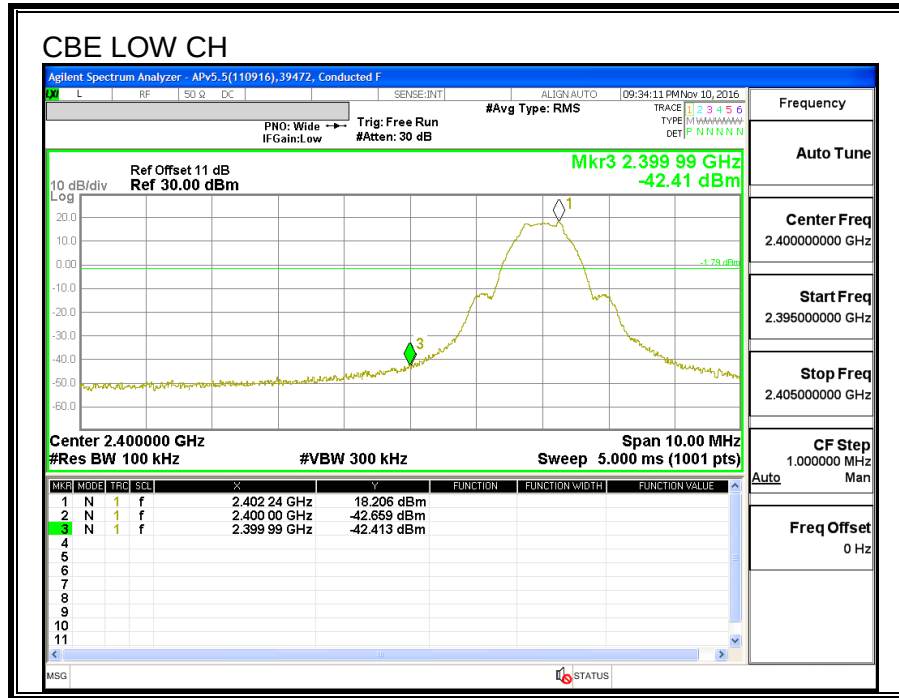
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

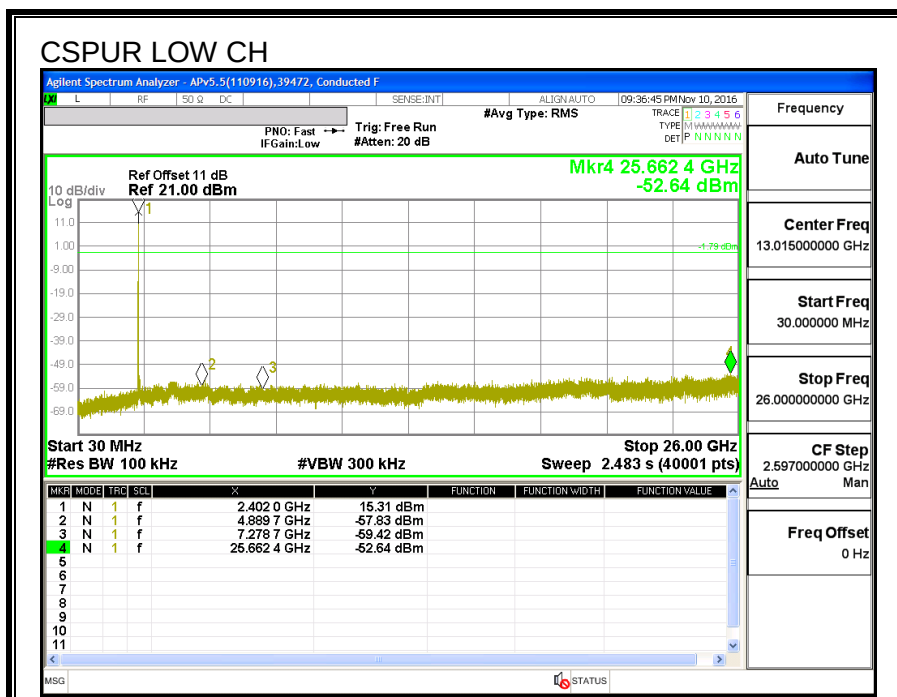
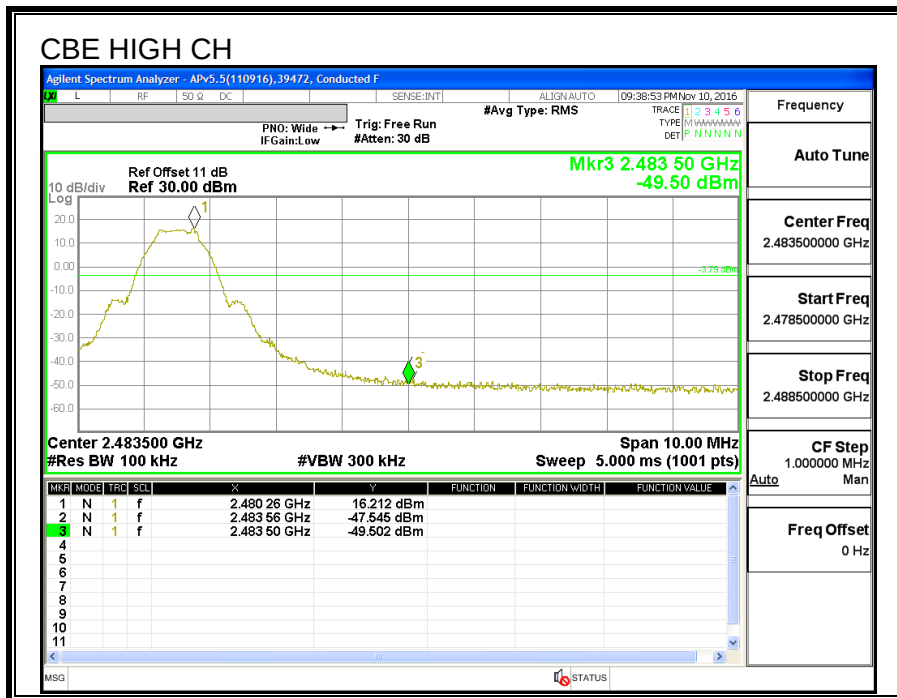
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

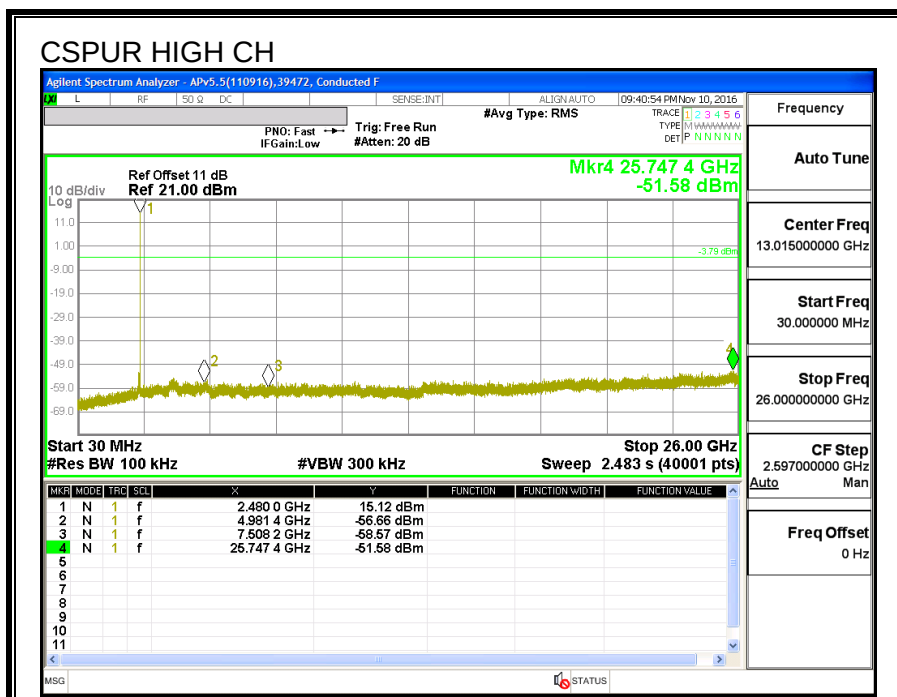
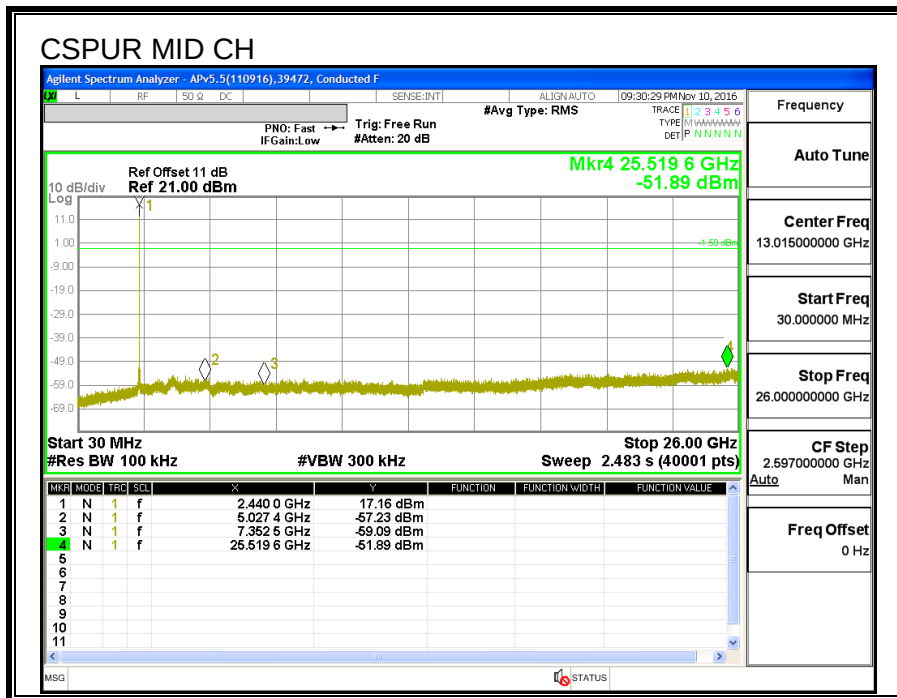
The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS







7.4. LOW POWER MODE

7.4.1. 6 dB BANDWIDTH

LIMITS

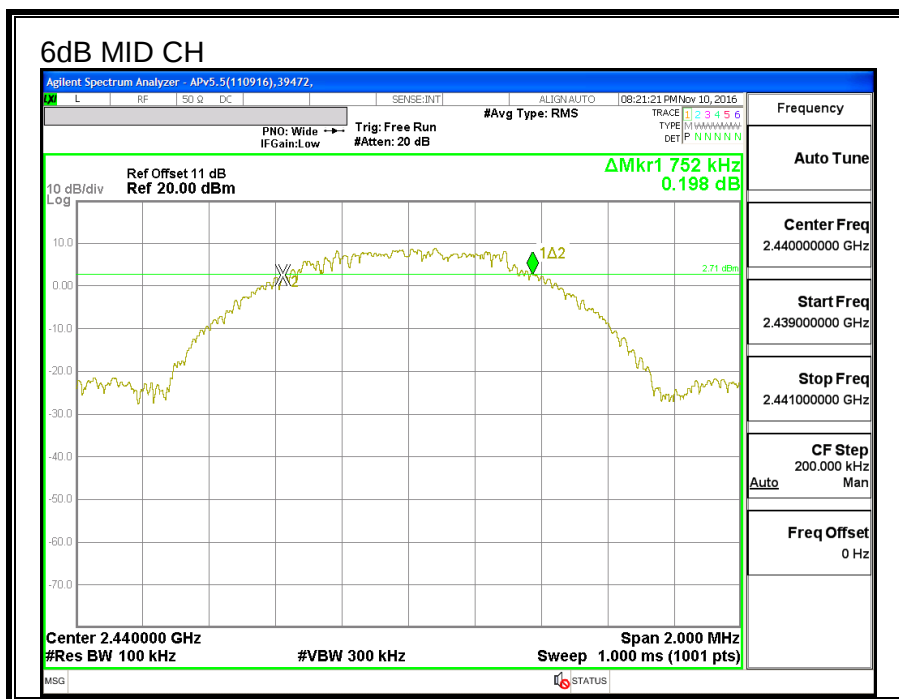
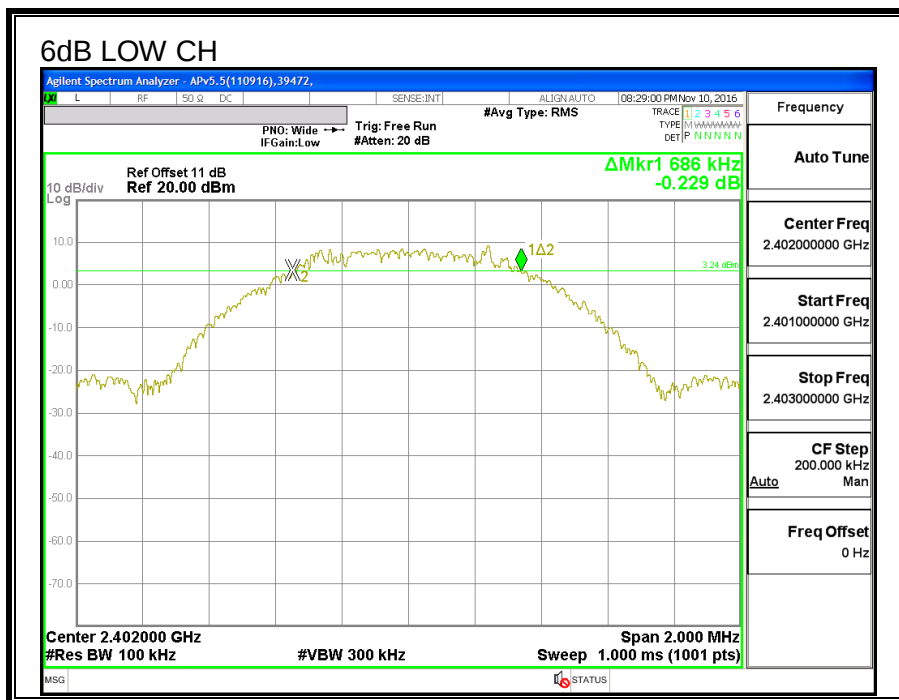
FCC §15.247 (a) (2)

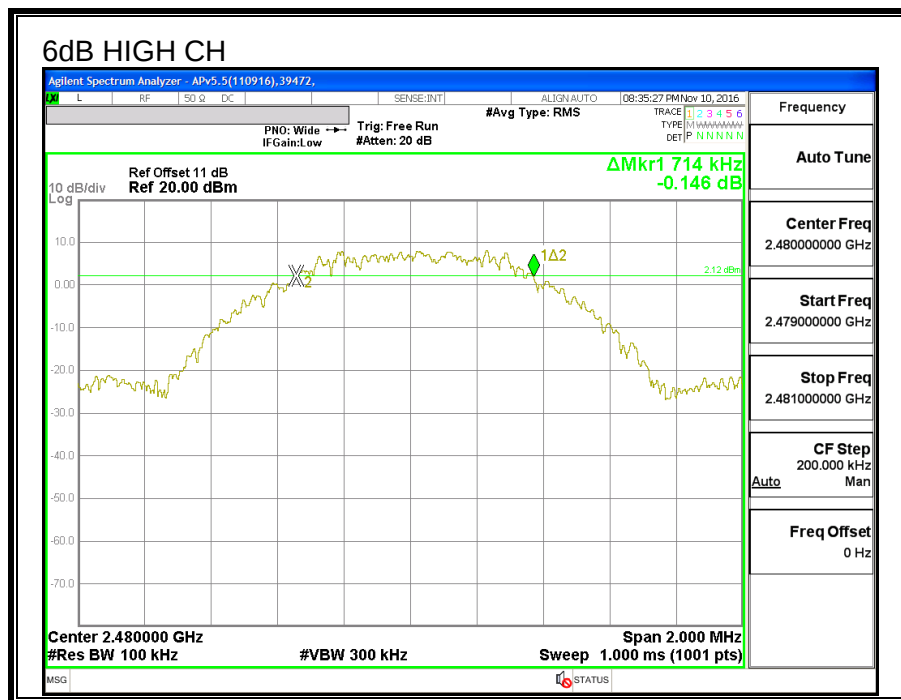
IC RSS-247 (5.2) (1)

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

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.686	0.5
Middle	2440	0.752	0.5
High	2480	0.714	0.5





7.4.2. 99% BANDWIDTH

LIMITS

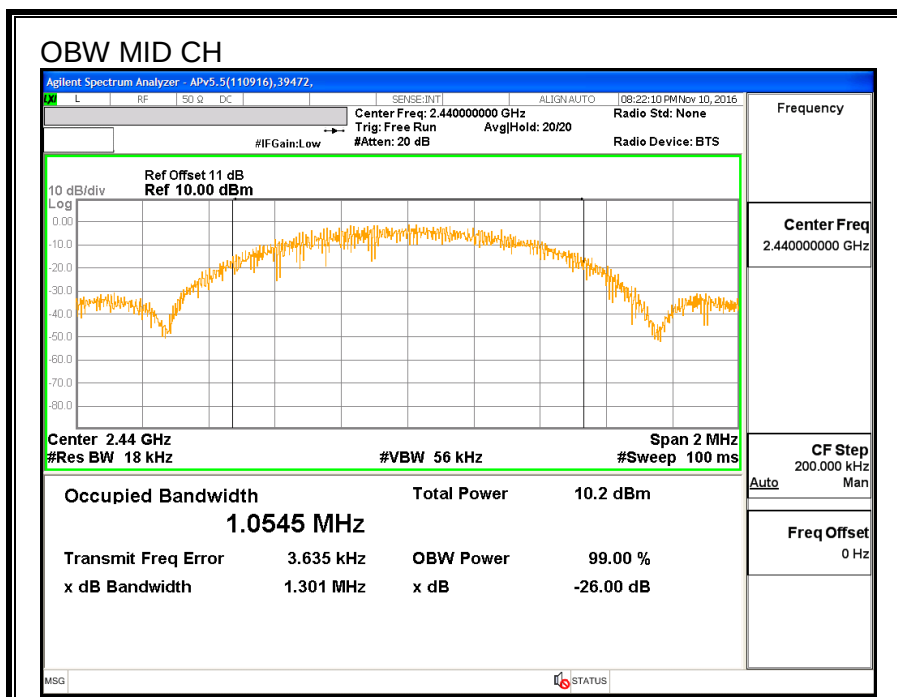
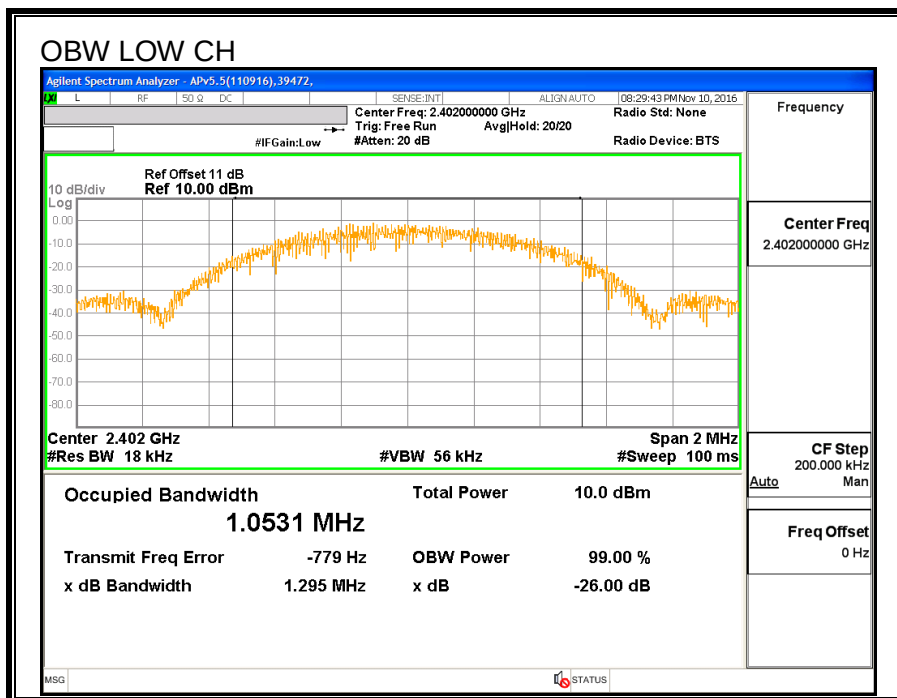
None; for reporting purposes only.

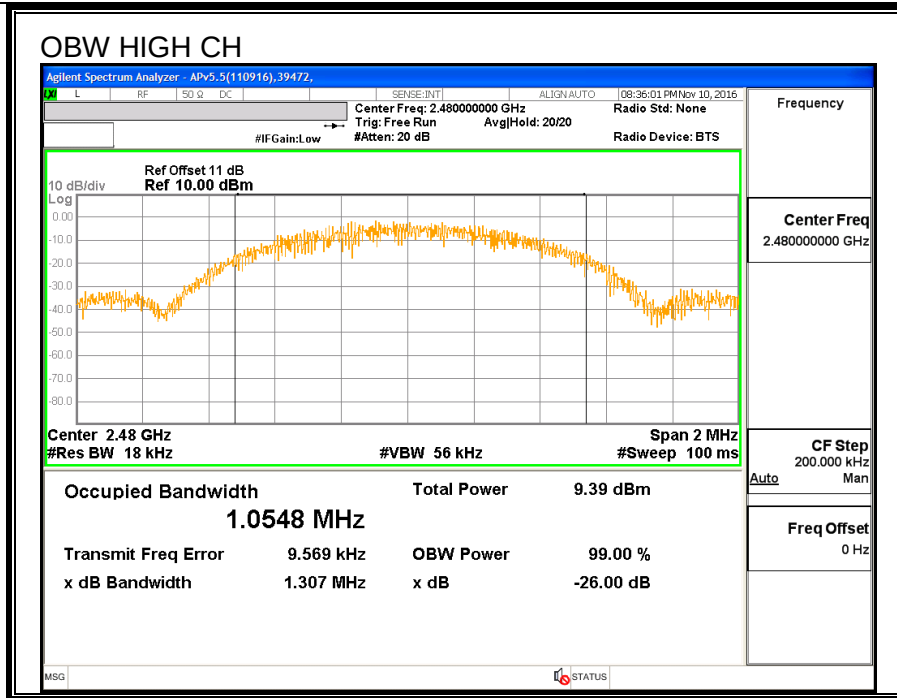
Test Procedure

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	1.053
Middle	2440	1.055
High	2480	1.055





7.4.3. AVERAGE POWER

ID:	30606	Date:	1/18/17
------------	-------	--------------	---------

LIMITS

None; for reporting purposes only.

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

RESULTS

Channel	Frequency (MHz)	AV Power (MHz)
Low	2402	6.85
Middle	2440	6.64
High	2480	6.94

7.4.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

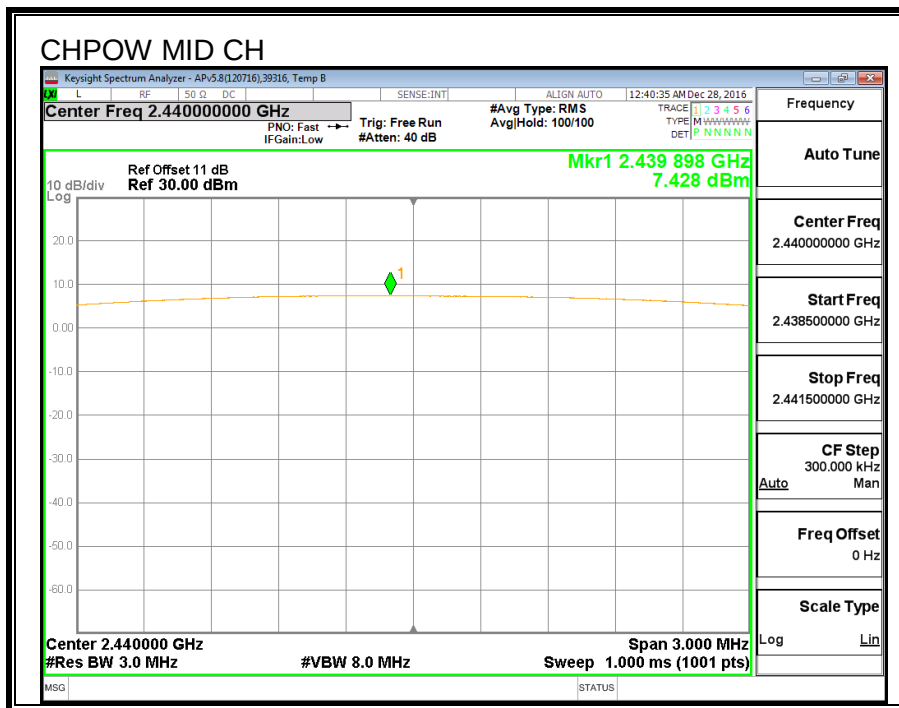
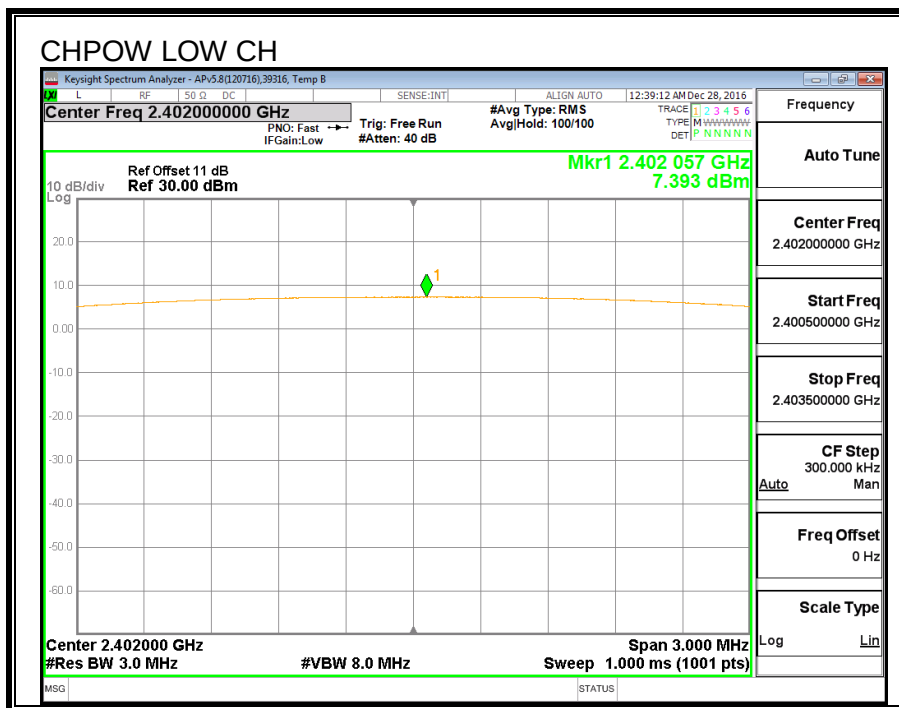
IC RSS-247 (5.4) (4)

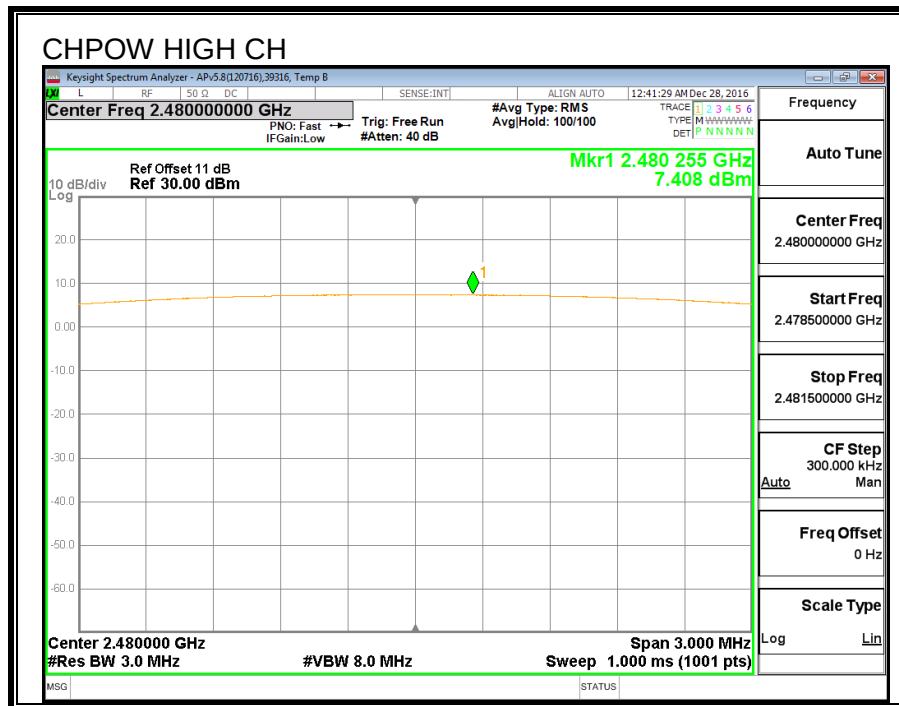
The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

RESULTS

ID:	30606	Date:	1/18/17
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Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	7.393	30	-22.607
Middle	2440	7.428	30	-22.572
High	2480	7.408	30	-22.592





7.4.5. POWER SPECTRAL DENSITY

LIMITS

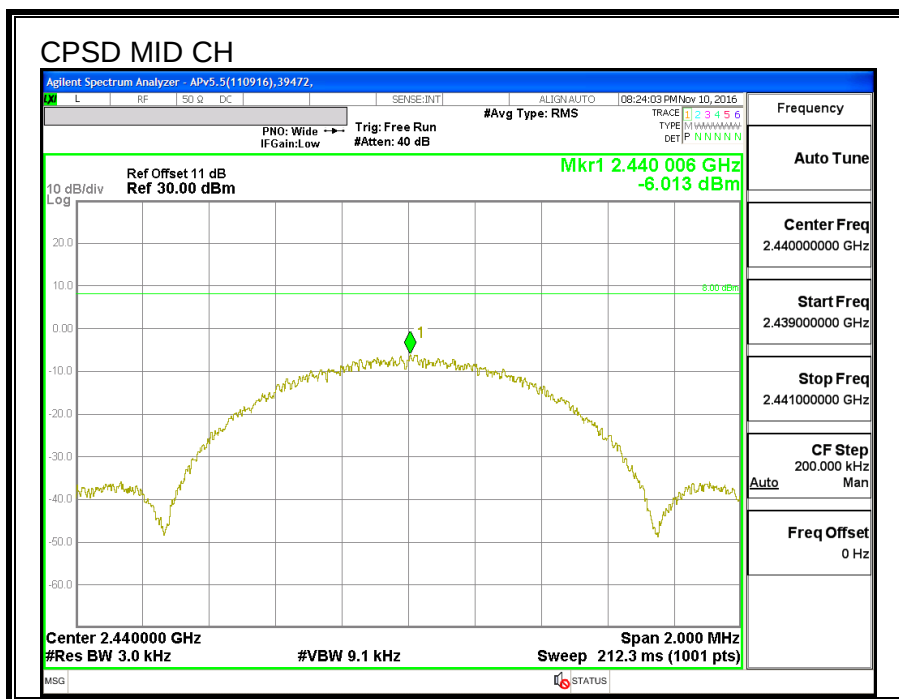
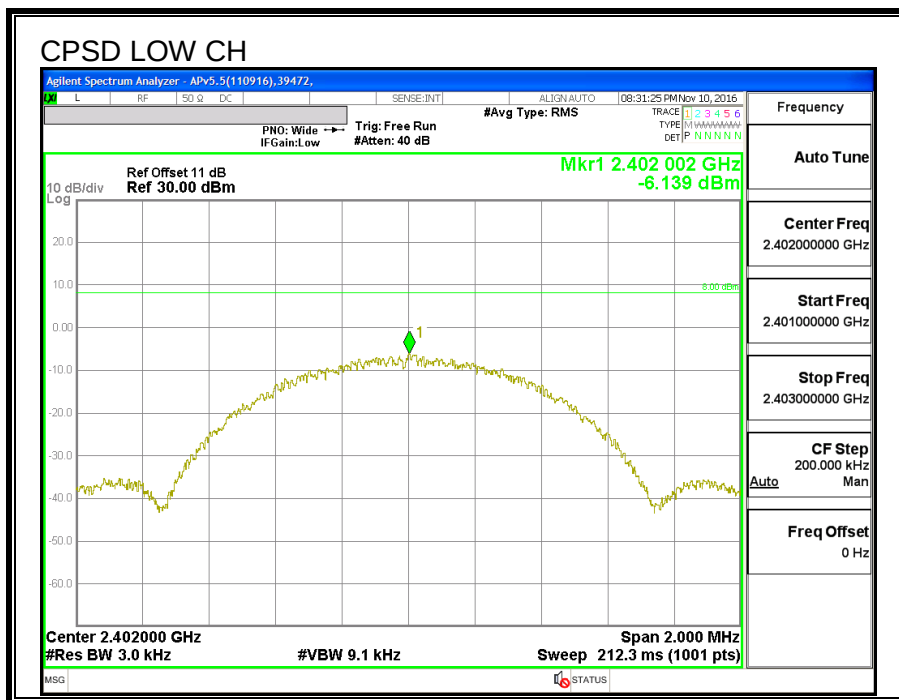
FCC §15.247 (e)

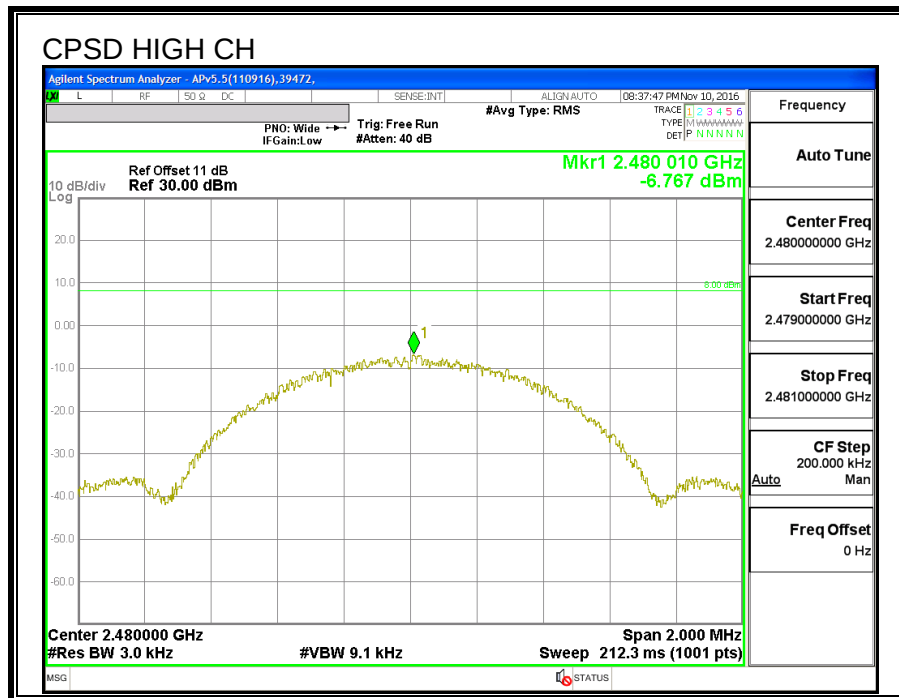
IC RSS-247 (5.2) (2)

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

RESULTS

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-6.14	8	-14.14
Middle	2440	-6.01	8	-14.01
High	2480	-6.77	8	-14.77





7.4.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 (5.5)

Limit = -20 dBc

TEST PROCEDURE

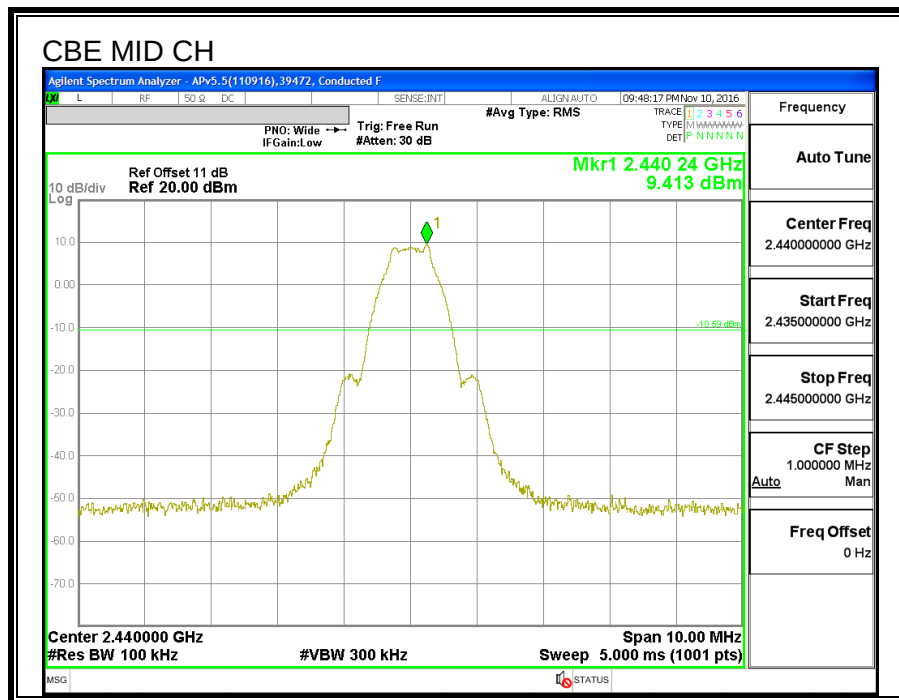
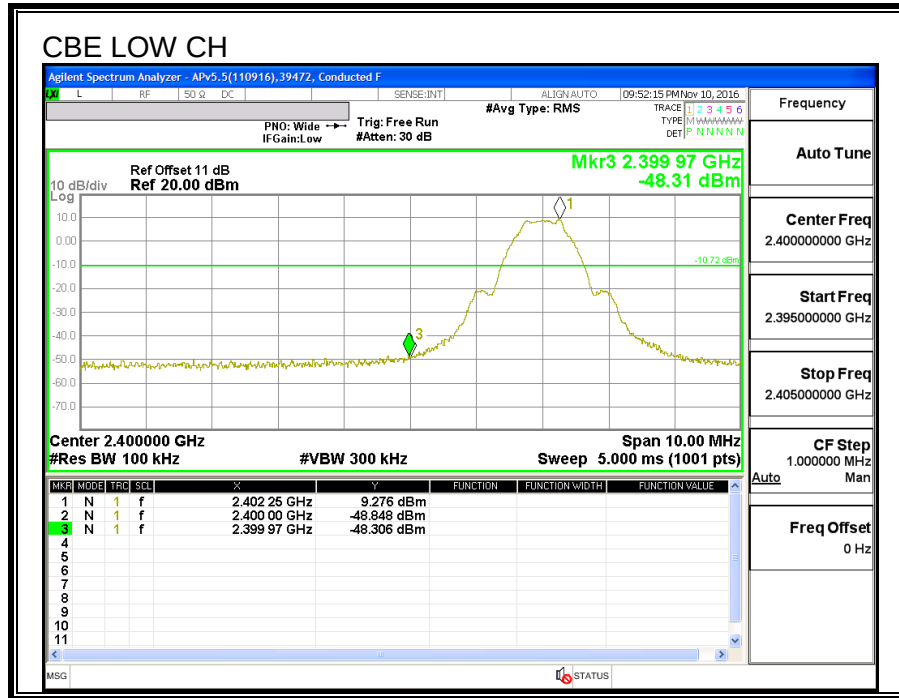
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

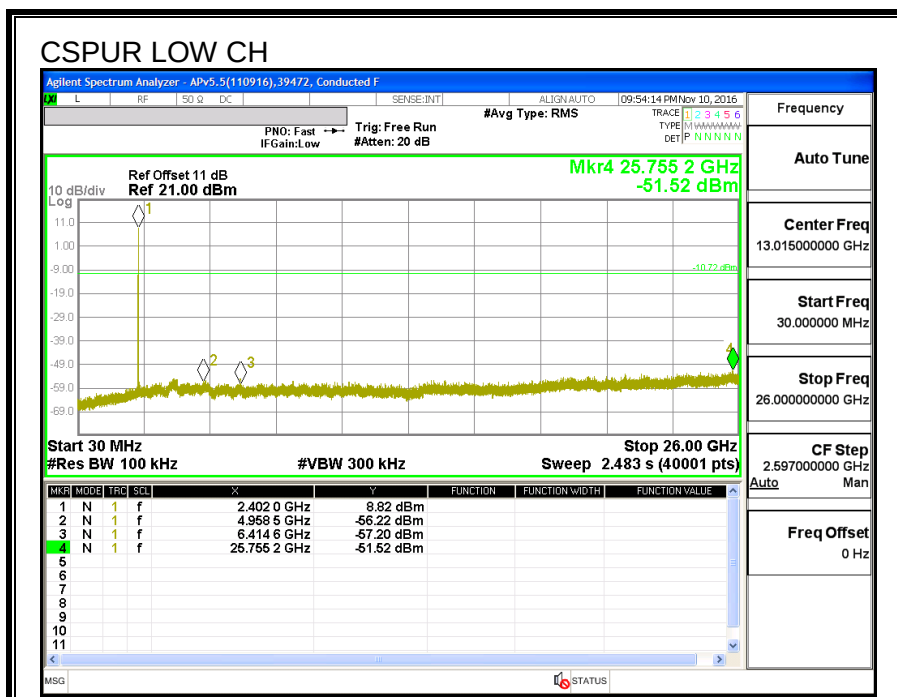
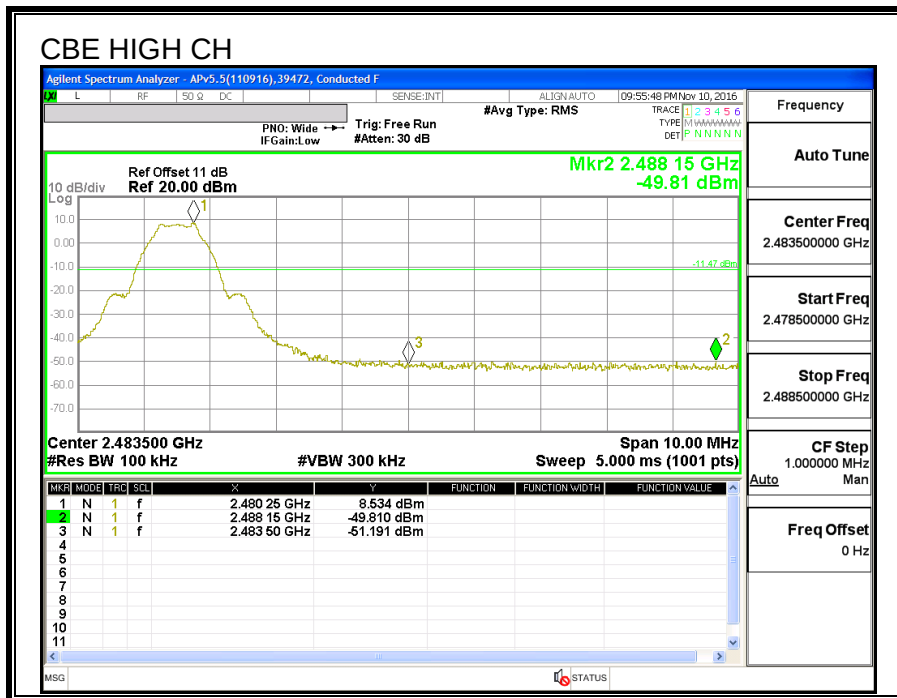
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

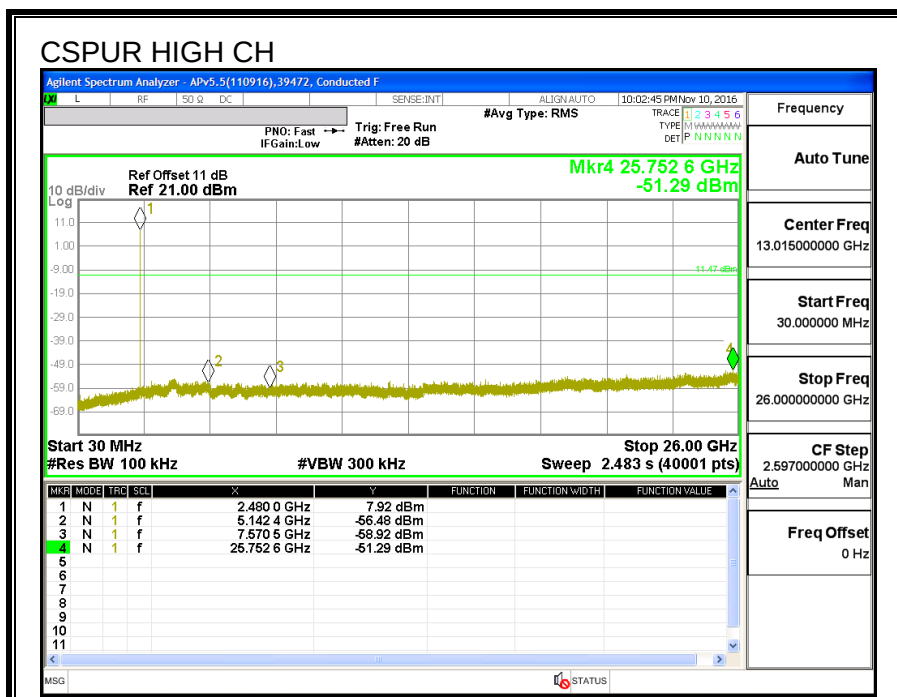
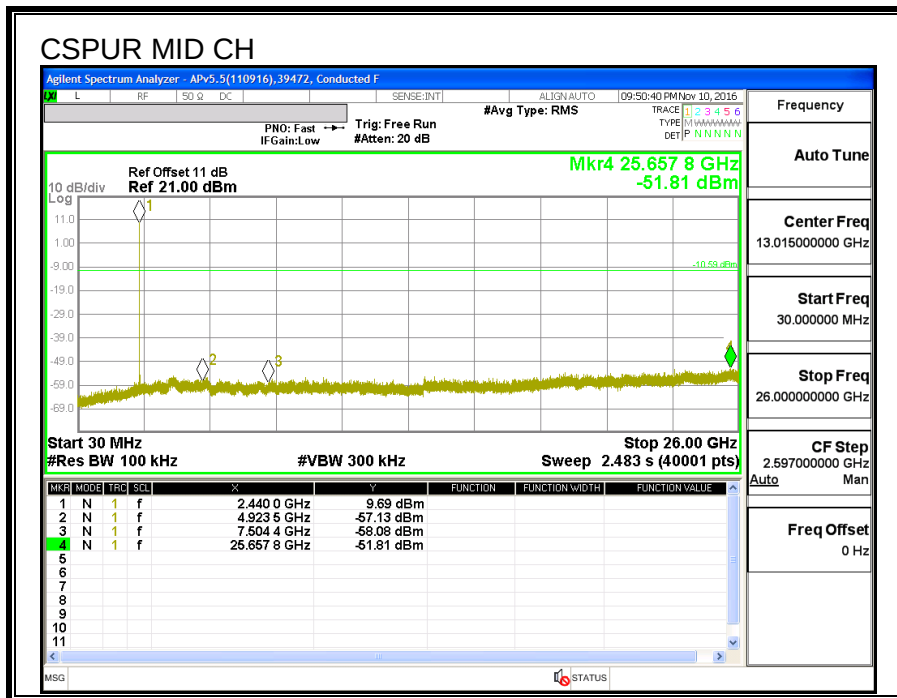
The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS







8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN, Section 8.9 and 8.10.

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 measurement below 1GHz; 1.5 m above the ground plane for measurement 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 pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

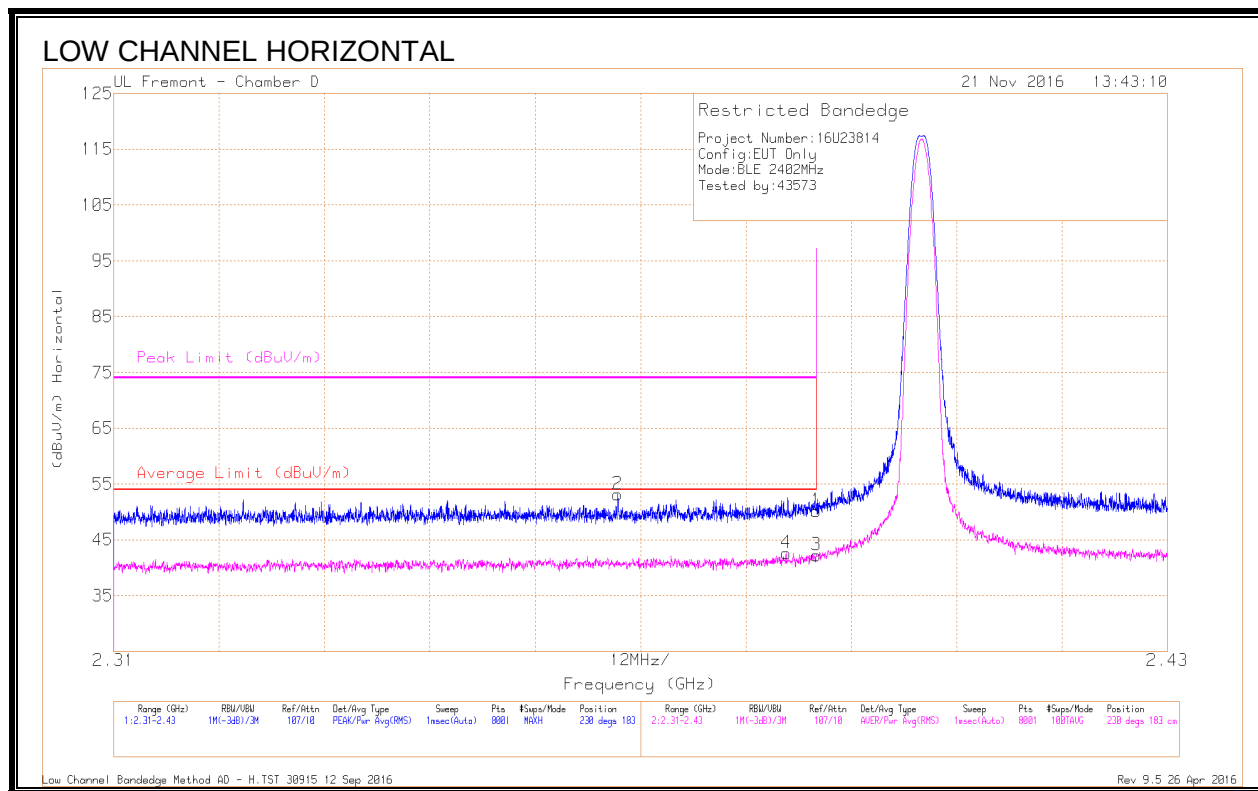
For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

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.

8.2. HIGH POWER MODE

8.2.1. RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cb/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.65	Pk	32.1	-20.6	50.15	-	-	74	-23.85	230	183	H
2	* 2.367	41.93	Pk	31.9	-20.7	53.13	-	-	74	-20.87	230	183	H
3	* 2.39	30.75	RMS	32.1	-20.6	42.25	54	-11.75	-	-	230	183	H
4	* 2.387	31.1	RMS	32.1	-20.6	42.6	54	-11.4	-	-	230	183	H

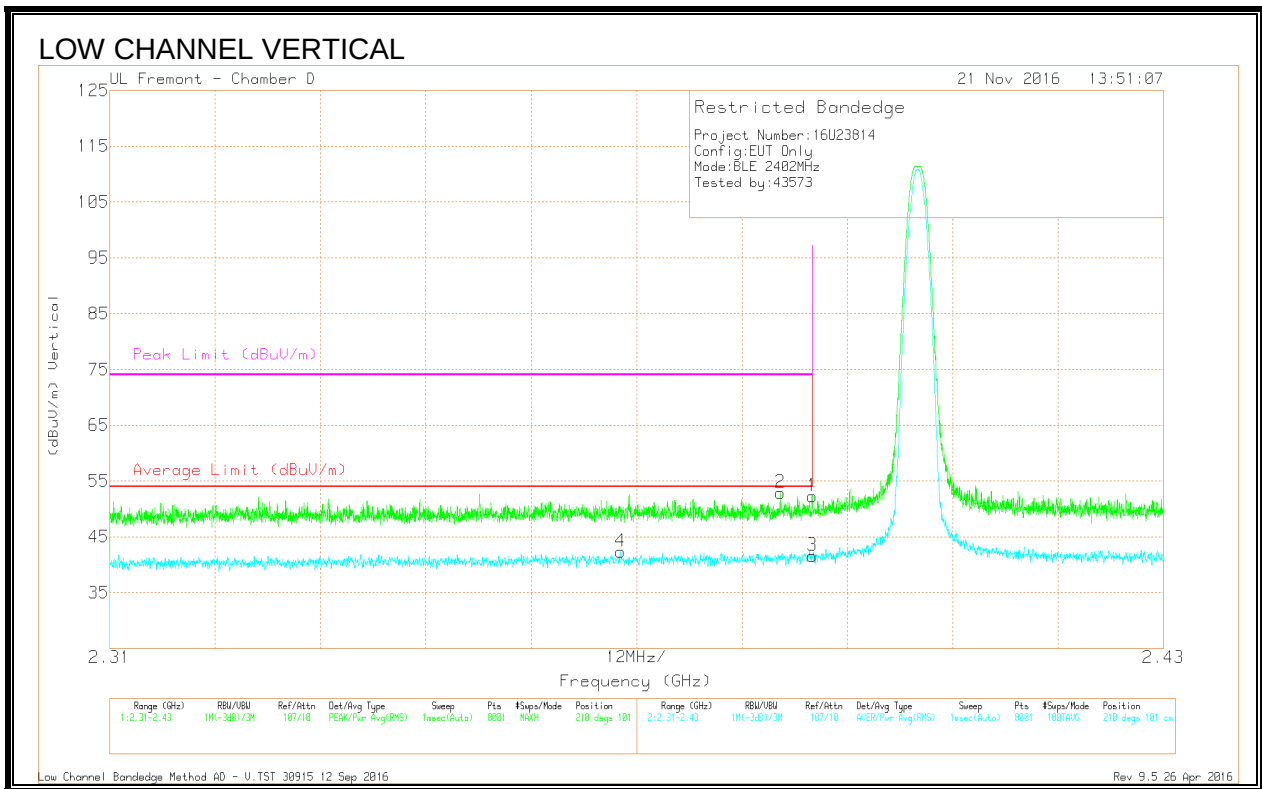
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cb/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.8	Pk	32.1	-20.6	52.3	-	-	74	-21.7	210	101	V
2	* 2.386	41.37	Pk	32.1	-20.6	52.87	-	-	74	-21.13	210	101	V
3	* 2.39	30.12	RMS	32.1	-20.6	41.62	54	-12.38	-	-	210	101	V
4	* 2.368	31.18	RMS	31.9	-20.7	42.38	54	-11.62	-	-	210	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

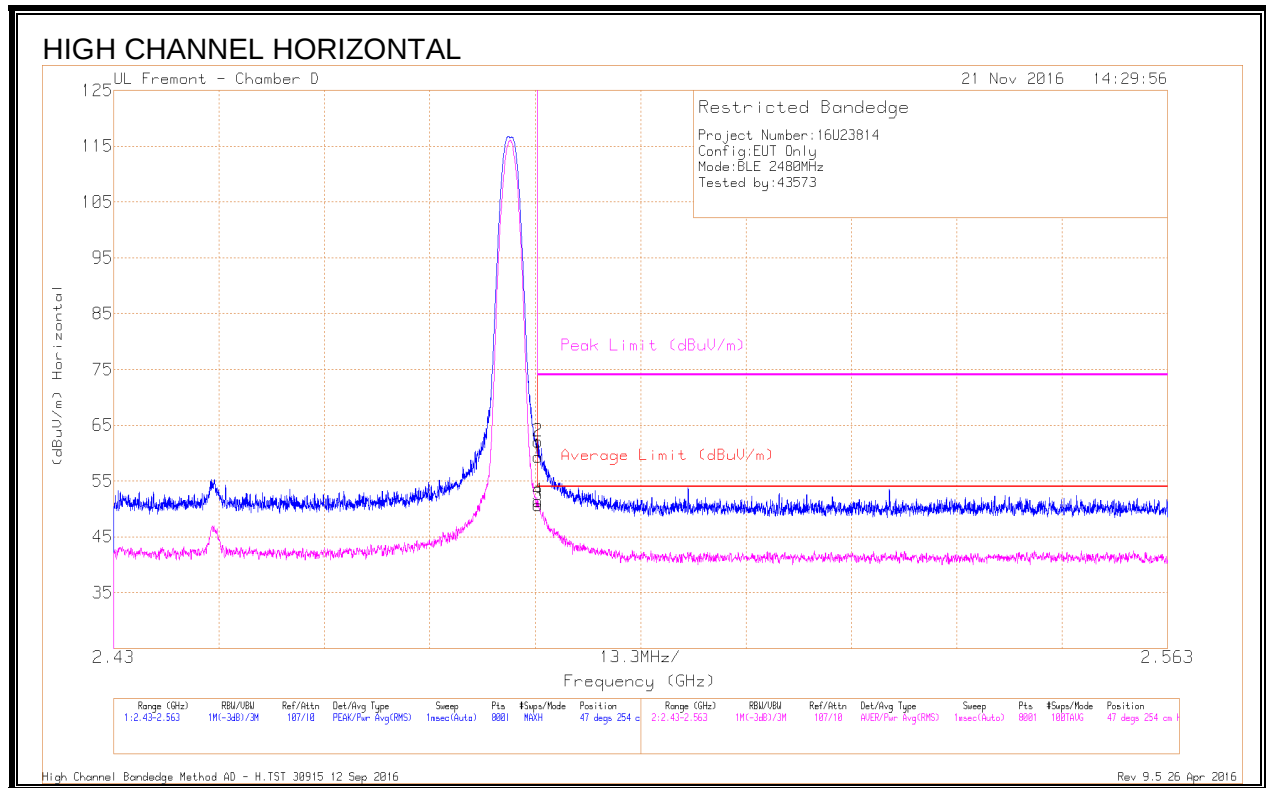
Pk - Peak detector

RMS - RMS detection

Low Channel Bandedge Method AD - V.TST 30915 12 Sep 2016

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8.2.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.58	Pk	32.3	-20.5	59.38	-	-	74	-14.62	47	254	H
2	* 2.484	50.26	Pk	32.3	-20.5	62.06	-	-	74	-11.94	47	254	H
3	* 2.484	38.9	RMS	32.3	-20.5	50.7	54	-3.3	-	-	47	254	H
4	* 2.484	39.61	RMS	32.3	-20.5	51.41	54	-2.59	-	-	47	254	H

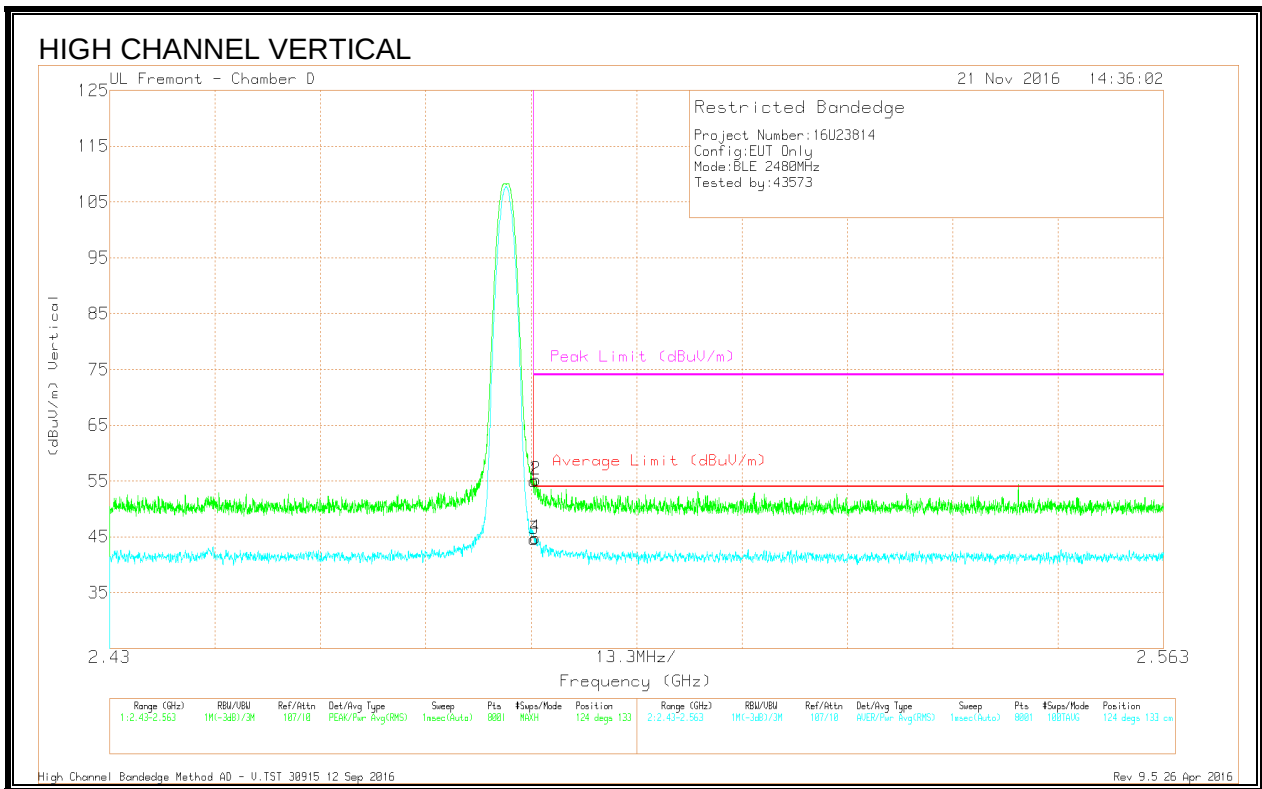
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	43.22	Pk	32.3	-20.5	55.02	-	-	74	-18.98	124	133	V
2	* 2.484	43.42	Pk	32.3	-20.5	55.22	-	-	74	-18.78	124	133	V
3	* 2.484	32.73	RMS	32.3	-20.5	44.53	54	-9.47	-	-	124	133	V
4	* 2.484	32.99	RMS	32.3	-20.5	44.79	54	-9.21	-	-	124	133	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

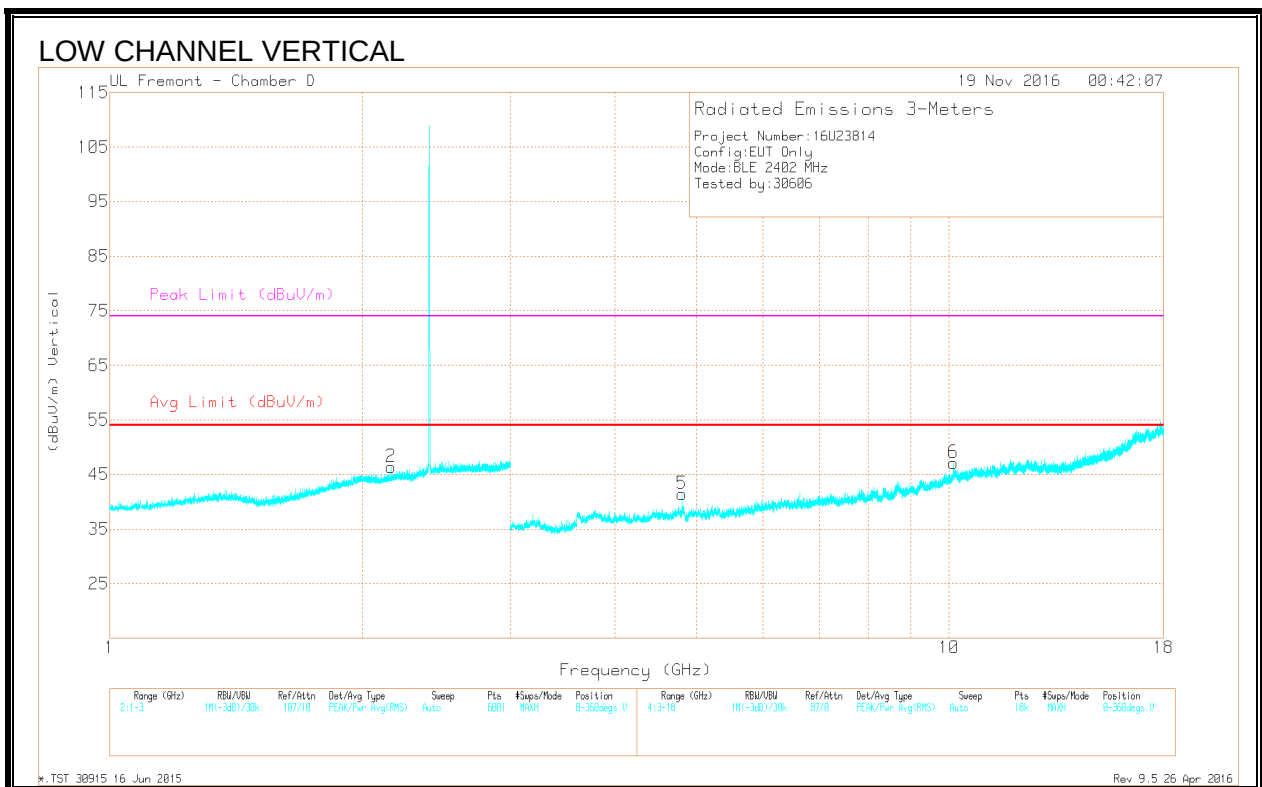
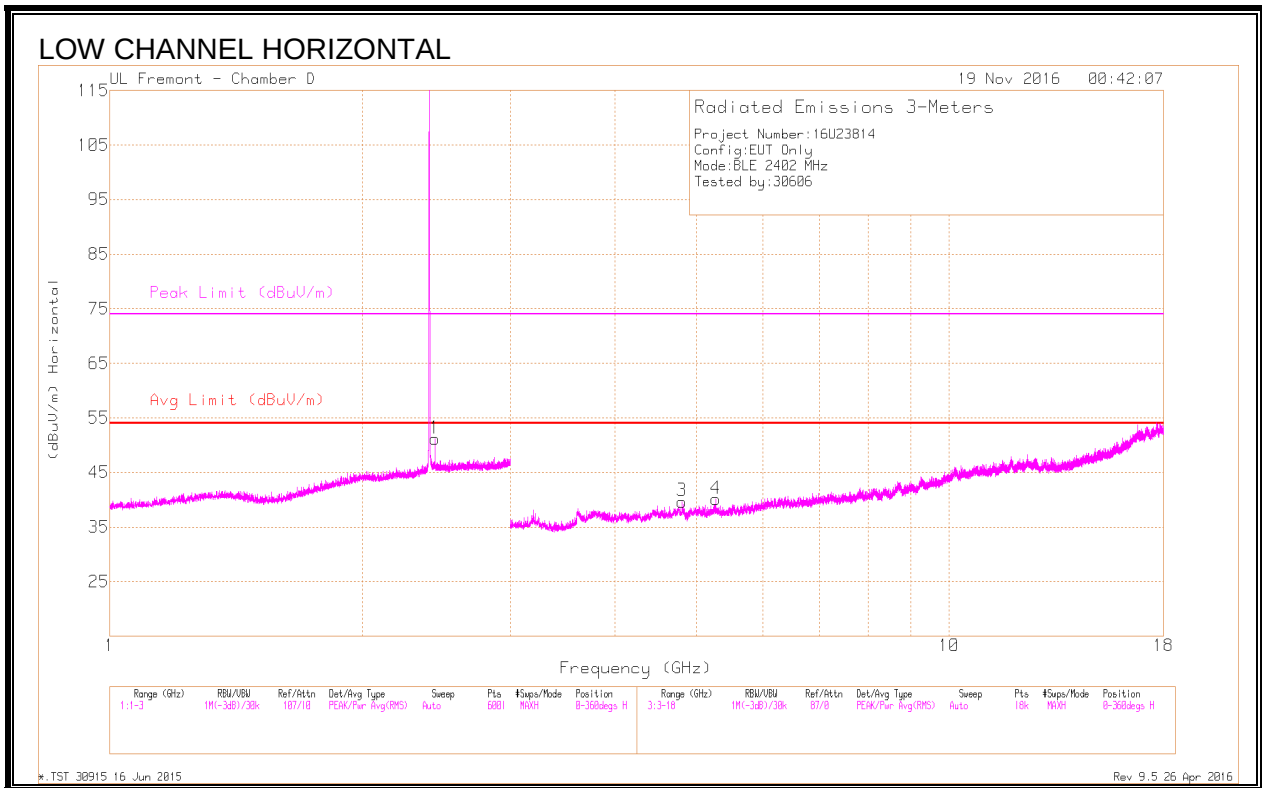
Pk - Peak detector

RMS - RMS detection

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8.2.3. HARMONICS AND SPURIOUS EMISSIONS



Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 4.805	38.48	PK2	34.1	-26.7	45.88	-	-	74	-28.12	327	102	H
	* 4.804	28.73	MAv1	34.1	-26.7	36.13	54	-17.87	-	-	327	102	H
5	* 4.803	37.85	PK2	34.1	-26.7	45.25	-	-	74	-28.75	257	103	V
	* 4.804	28.07	MAv1	34.1	-26.7	35.47	54	-18.53	-	-	257	103	V
2	2.161	41	PK2	31.4	-20.8	51.6	-	-	-	-	324	200	V
	2.164	30.17	MAv1	31.4	-20.8	40.77	-	-	-	-	324	200	V
1	2.439	45.11	PK2	32.2	-20.6	56.71	-	-	-	-	222	200	H
	2.439	36.66	MAv1	32.2	-20.6	48.26	-	-	-	-	222	200	H
4	5.268	27.75	MAv1	34.3	-26.9	35.15	-	-	-	-	341	201	H
	5.269	38.16	PK2	34.3	-26.9	45.56	-	-	-	-	341	201	H
6	10.125	34.73	PK2	37.4	-20.3	51.83	-	-	-	-	335	103	V
	10.125	24.41	MAv1	37.4	-20.3	41.51	-	-	-	-	335	103	V

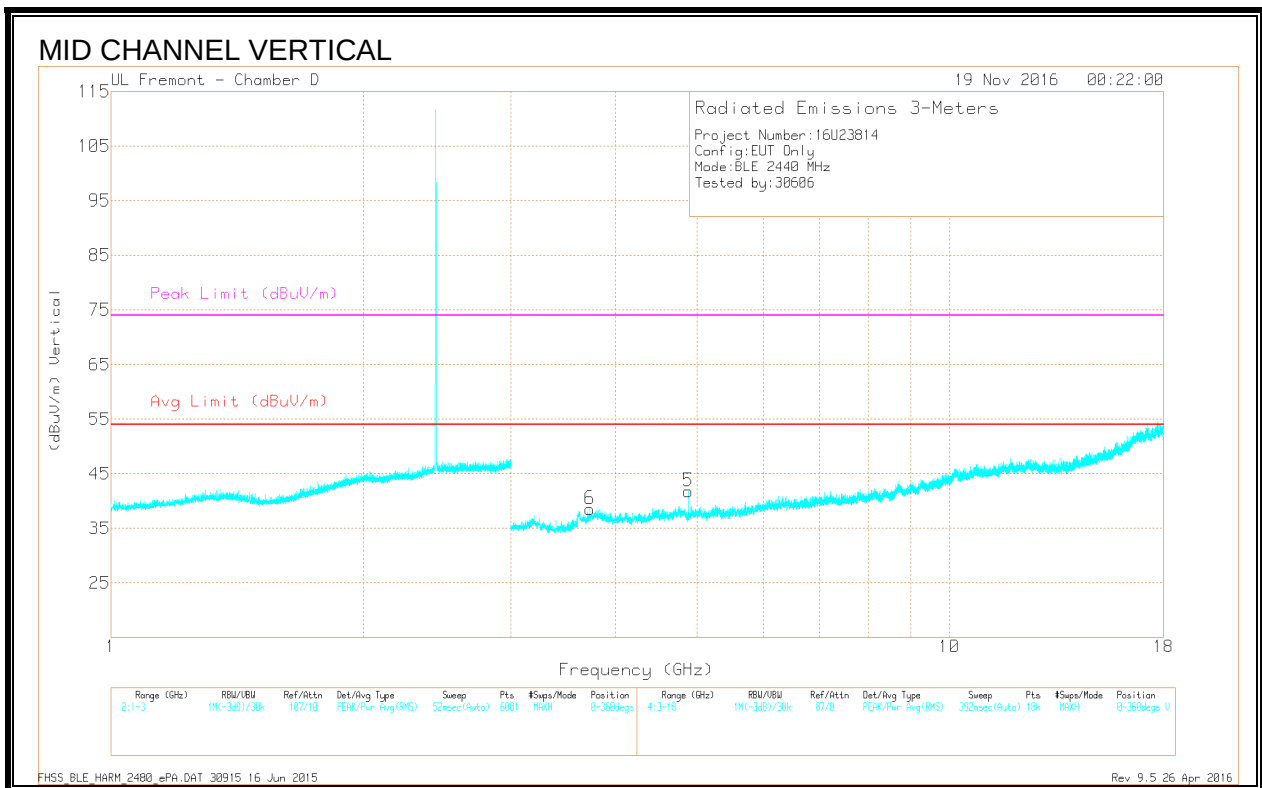
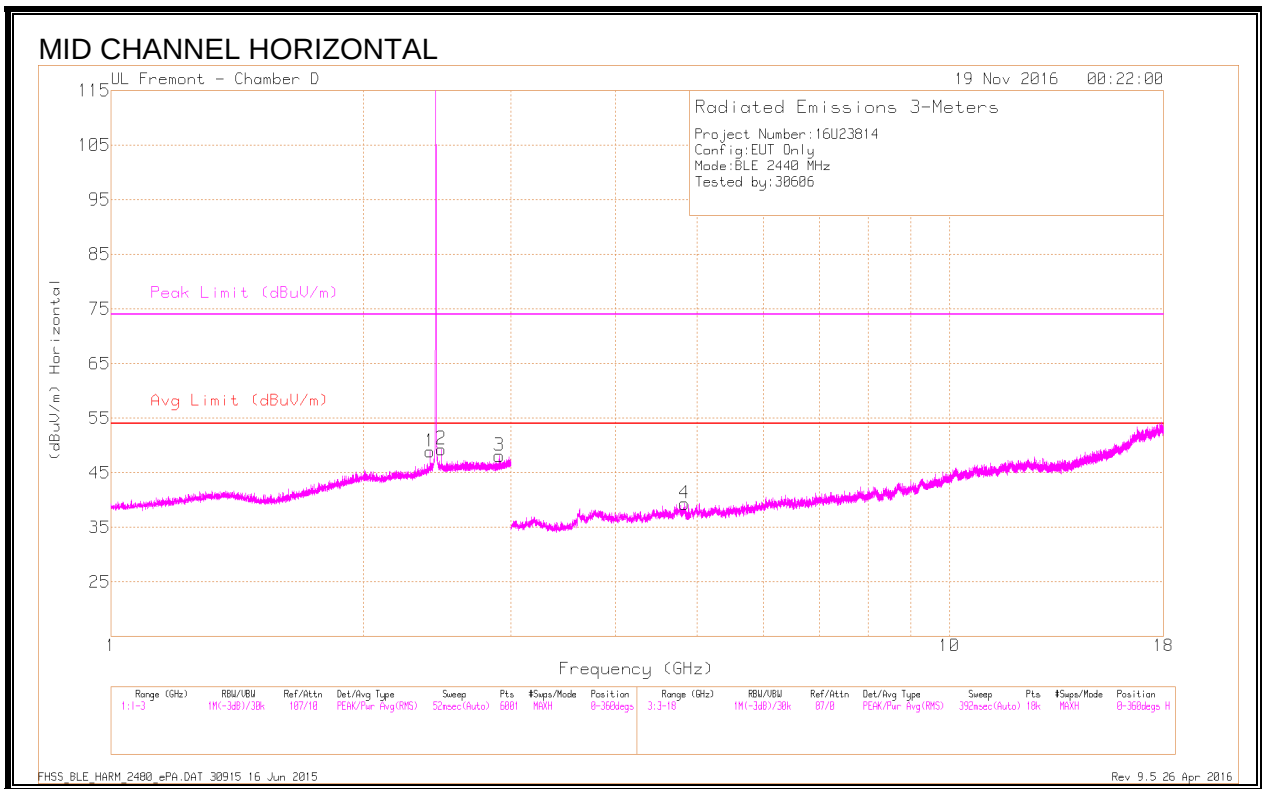
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 4.829	38.49	PK2	34.1	-27.2	45.39	-	-	74	-28.61	339	102	H
	* 4.831	27.85	MAv1	34.1	-27.2	34.75	54	-19.25	-	-	339	102	H
5	* 4.88	41.68	PK2	34.1	-27.9	47.88	-	-	74	-26.12	316	102	V
	* 4.88	33.88	MAv1	34.1	-27.9	40.08	54	-13.92	-	-	316	102	V
6	* 3.725	39.94	PK2	33.5	-28.6	44.84	-	-	74	-29.16	329	102	V
	* 3.727	28.66	MAv1	33.5	-28.5	33.66	54	-20.34	-	-	329	102	V
1	2.403	42.98	PK2	32.2	-20.6	54.58	-	-	-	-	309	200	H
	2.403	32.76	MAv1	32.2	-20.6	44.36	-	-	-	-	309	200	H
2	2.477	32.56	MAv1	32.3	-20.6	44.26	-	-	-	-	348	102	H
	2.478	43.41	PK2	32.3	-20.6	55.11	-	-	-	-	348	102	H
3	2.905	41.29	PK2	32.4	-20.1	53.59	-	-	-	-	333	200	H
	2.907	30.11	MAv1	32.4	-20	42.51	-	-	-	-	333	200	H

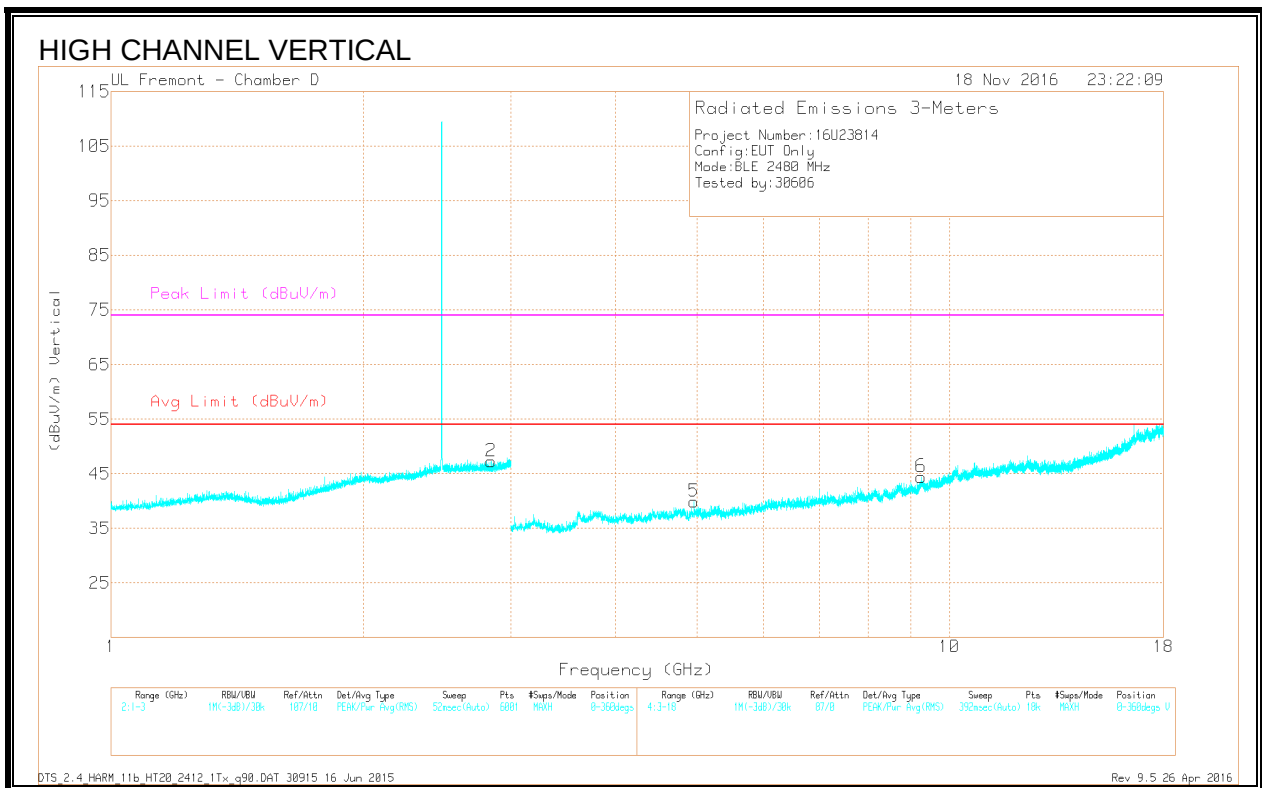
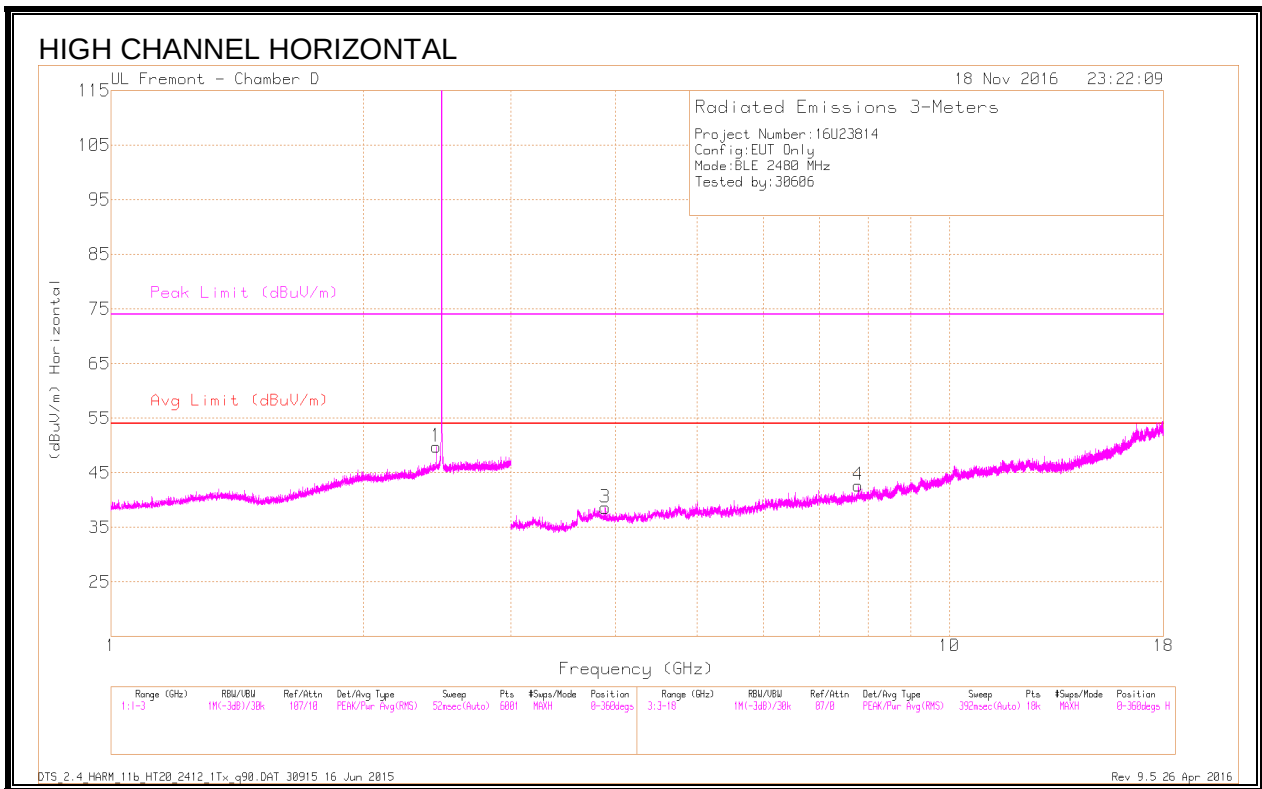
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FHSS_BLE_HARM_2480_ePA.DAT 30915 16 Jun 2015

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Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.842	41.4	PK2	32.3	-20.1	53.6	-	-	74	-20.4	75	200	V
* 2.841	30.2	MAv1	32.3	-20.1	42.4	54	-11.6	-	-	75	200	V
* 3.884	39.04	PK2	33.5	-28.2	44.34	-	-	74	-29.66	312	102	H
* 3.887	28.47	MAv1	33.5	-28.1	33.87	54	-20.13	-	-	312	102	H
* 4.961	40.13	PK2	34.1	-27.5	46.73	-	-	74	-27.27	304	102	V
* 4.96	31.86	MAv1	34.1	-27.5	38.46	54	-15.54	-	-	304	102	V
2.443	44.75	PK2	32.2	-20.6	56.35	-	-	-	-	232	156	H
2.443	33.68	MAv1	32.2	-20.6	45.28	-	-	-	-	302	200	H
7.783	25.48	MAv1	35.9	-23.6	37.78	-	-	-	-	308	200	H
7.784	36.66	PK2	35.9	-23.6	48.96	-	-	-	-	308	200	H
9.254	34.34	PK2	36.3	-20.4	50.24	-	-	-	-	269	102	V
9.254	23.94	MAv1	36.3	-20.3	39.94	-	-	-	-	269	102	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

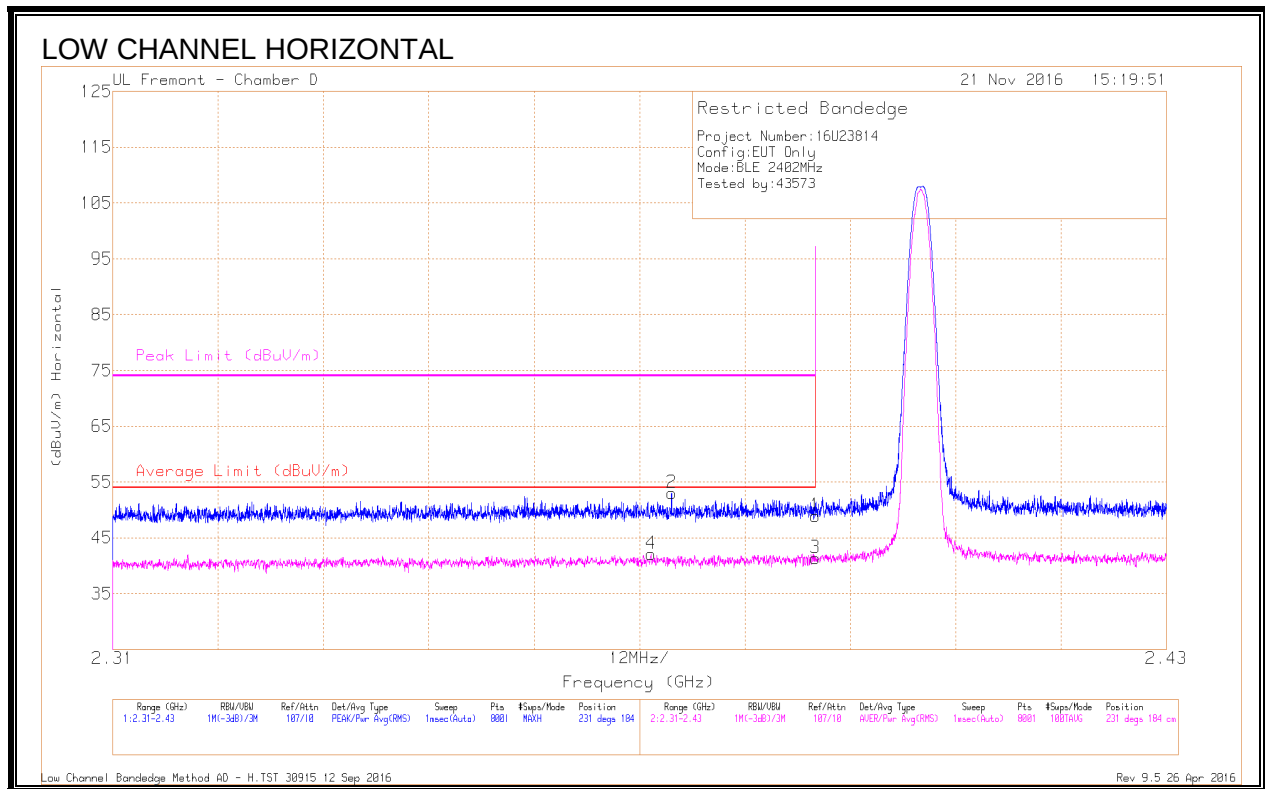
MAv1 - KDB558074 Option 1 Maximum RMS Average

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8.3. LOW POWER MODE

8.3.1. RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Correcte d Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.42	Pk	32.1	-20.6	48.92	-	-	74	-25.08	231	184	H
2	* 2.374	41.67	Pk	32	-20.6	53.07	-	-	74	-20.93	231	184	H
3	* 2.39	29.88	RMS	32.1	-20.6	41.38	54	-12.62	-	-	231	184	H
4	* 2.371	30.83	RMS	32	-20.7	42.13	54	-11.87	-	-	231	184	H

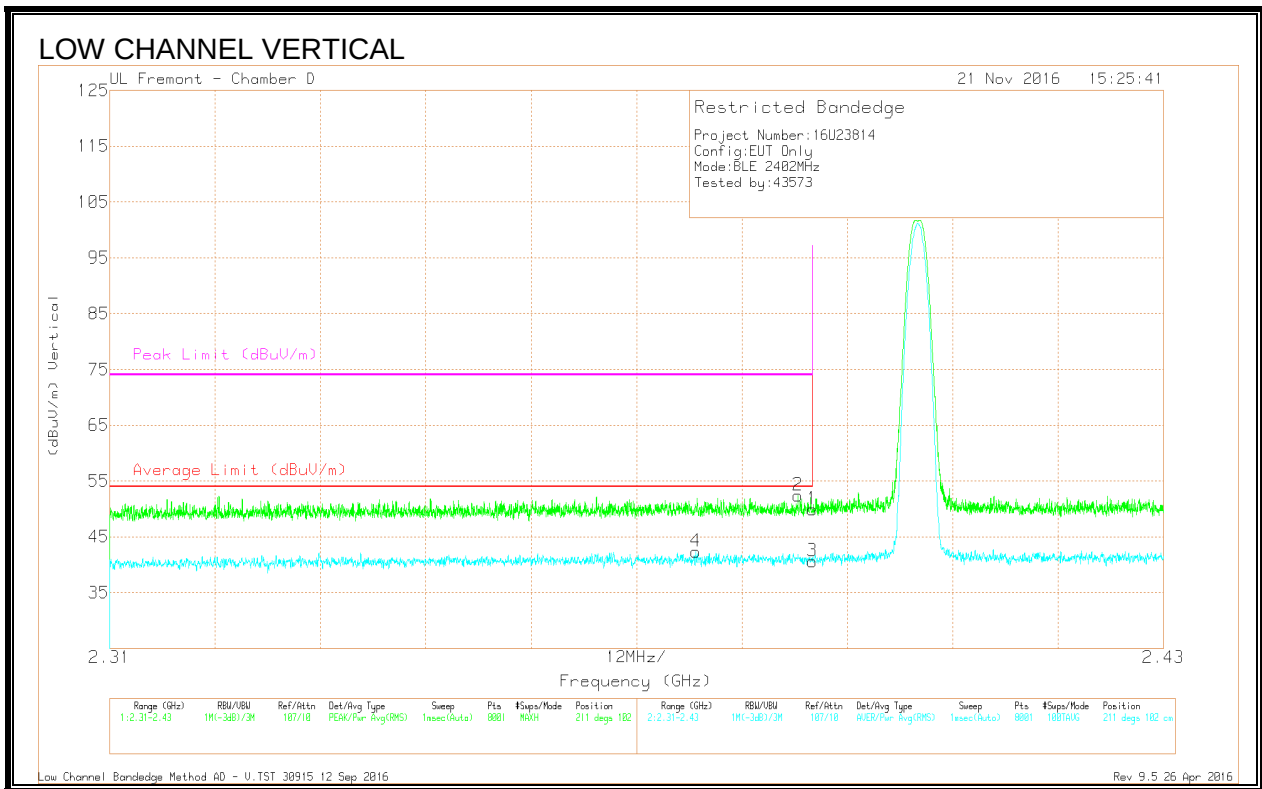
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl /Filt/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.43	Pk	32.1	-20.6	49.93	-	-	74	-24.07	211	102	V
2	* 2.388	40.88	Pk	32.1	-20.6	52.38	-	-	74	-21.62	211	102	V
3	* 2.39	29.16	RMS	32.1	-20.6	40.66	54	-13.34	-	-	211	102	V
4	* 2.377	30.95	RMS	32	-20.6	42.35	54	-11.65	-	-	211	102	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

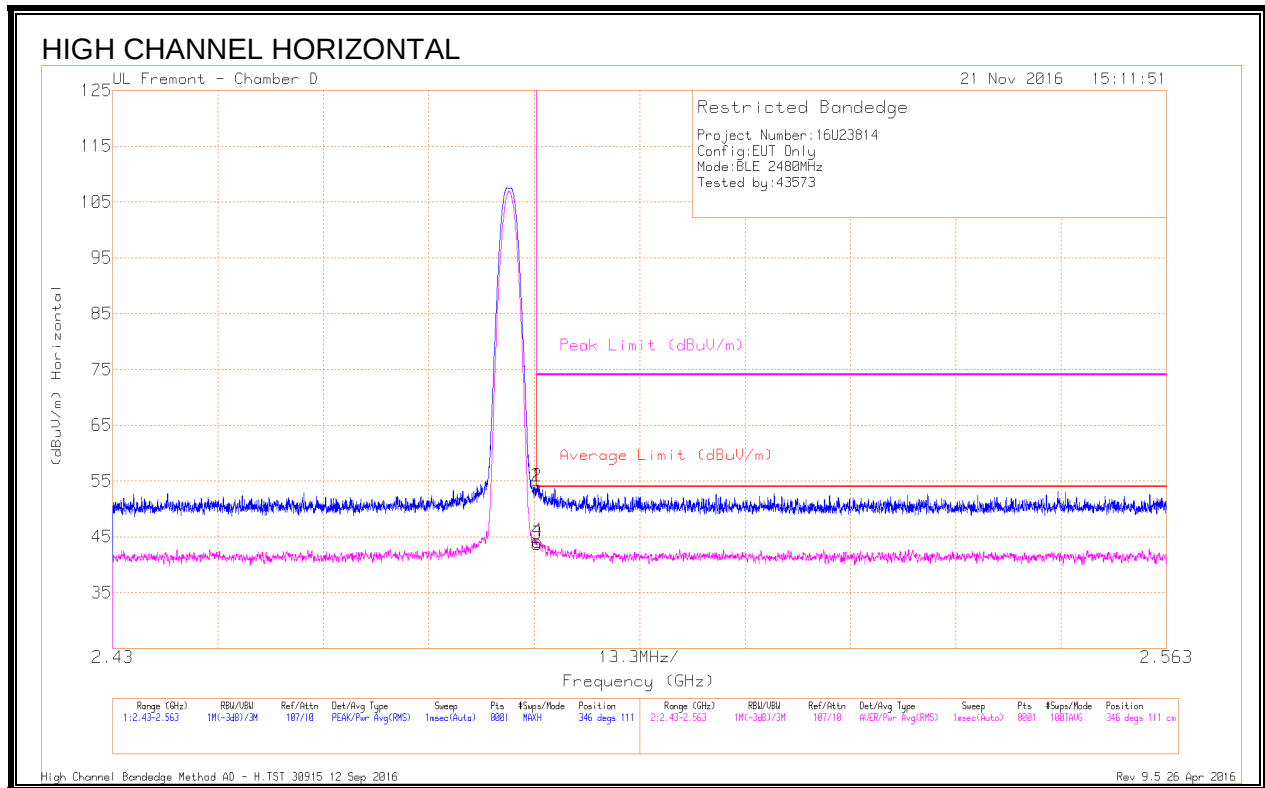
Pk - Peak detector

RMS - RMS detection

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8.3.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl /Filt/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	42.2	Pk	32.3	-20.5	54	-	-	74	-20	346	111	H
2	* 2.484	42.22	Pk	32.3	-20.5	54.02	-	-	74	-19.98	346	111	H
3	* 2.484	31.88	RMS	32.3	-20.5	43.68	54	-10.32	-	-	346	111	H
4	* 2.484	32.35	RMS	32.3	-20.5	44.15	54	-9.85	-	-	346	111	H

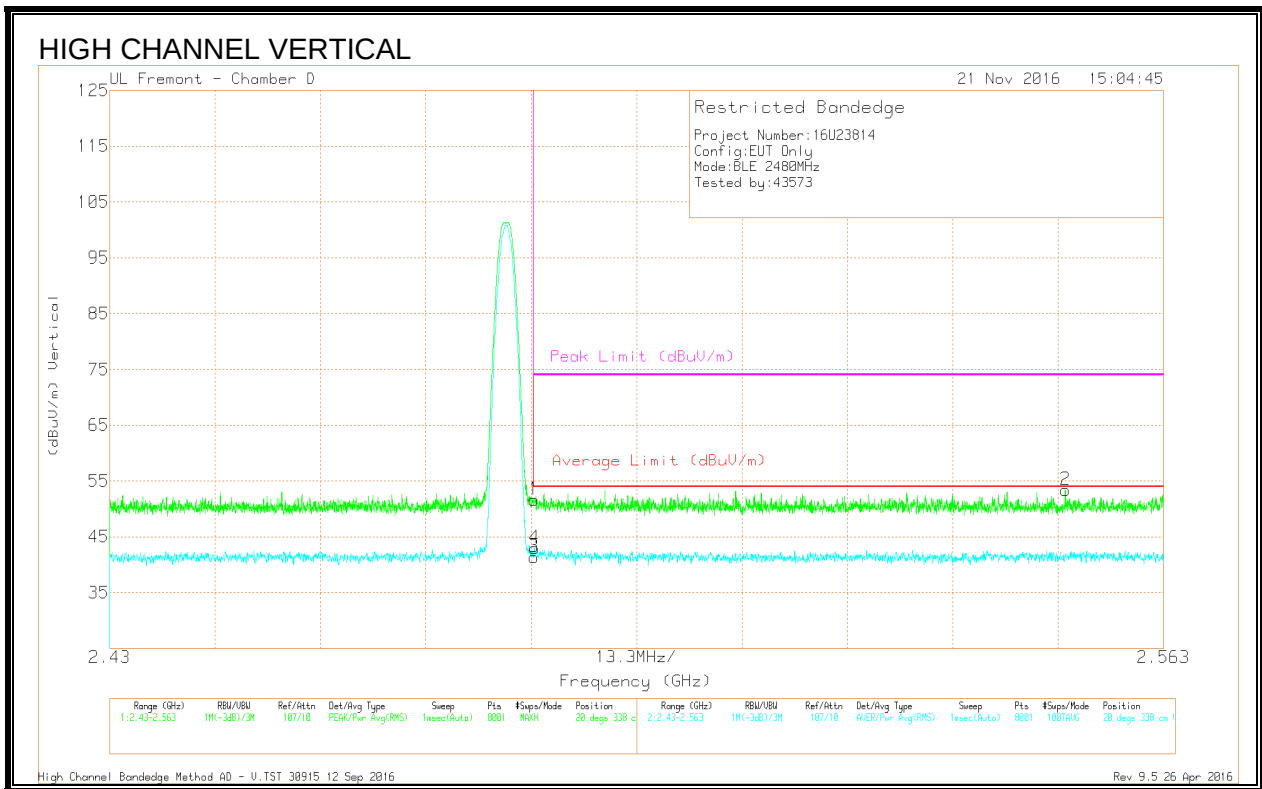
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

High Channel Bandedge Method AD - H.TST 30915 12 Sep 2016

Rev 9.5 26 Apr 2016



Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Correcte d Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.91	Pk	32.3	-20.5	51.71	-	-	74	-22.29	20	338	V
3	* 2.484	29.6	RMS	32.3	-20.5	41.4	54	-12.6	-	-	20	338	V
4	* 2.484	31.12	RMS	32.3	-20.5	42.92	54	-11.08	-	-	20	338	V
2	2.551	41.62	Pk	32.2	-20.4	53.42	-	-	74	-20.58	20	338	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

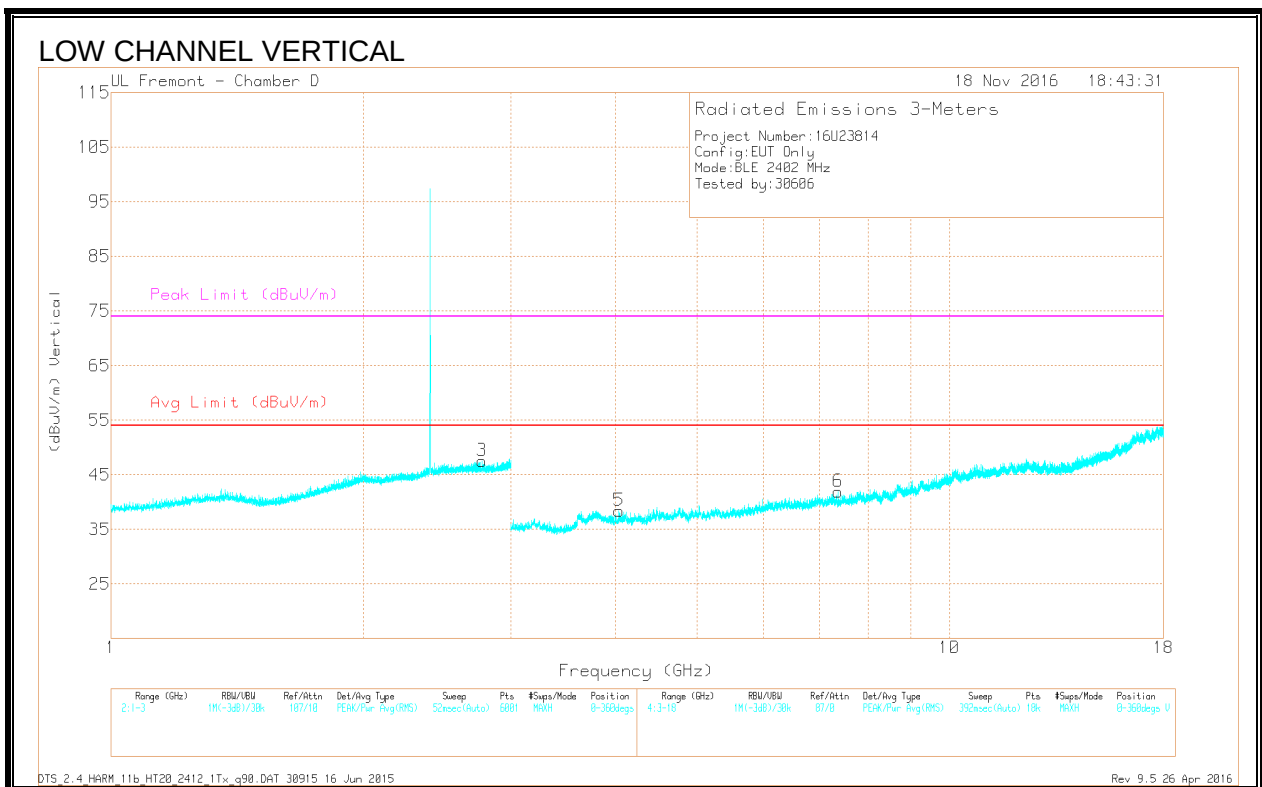
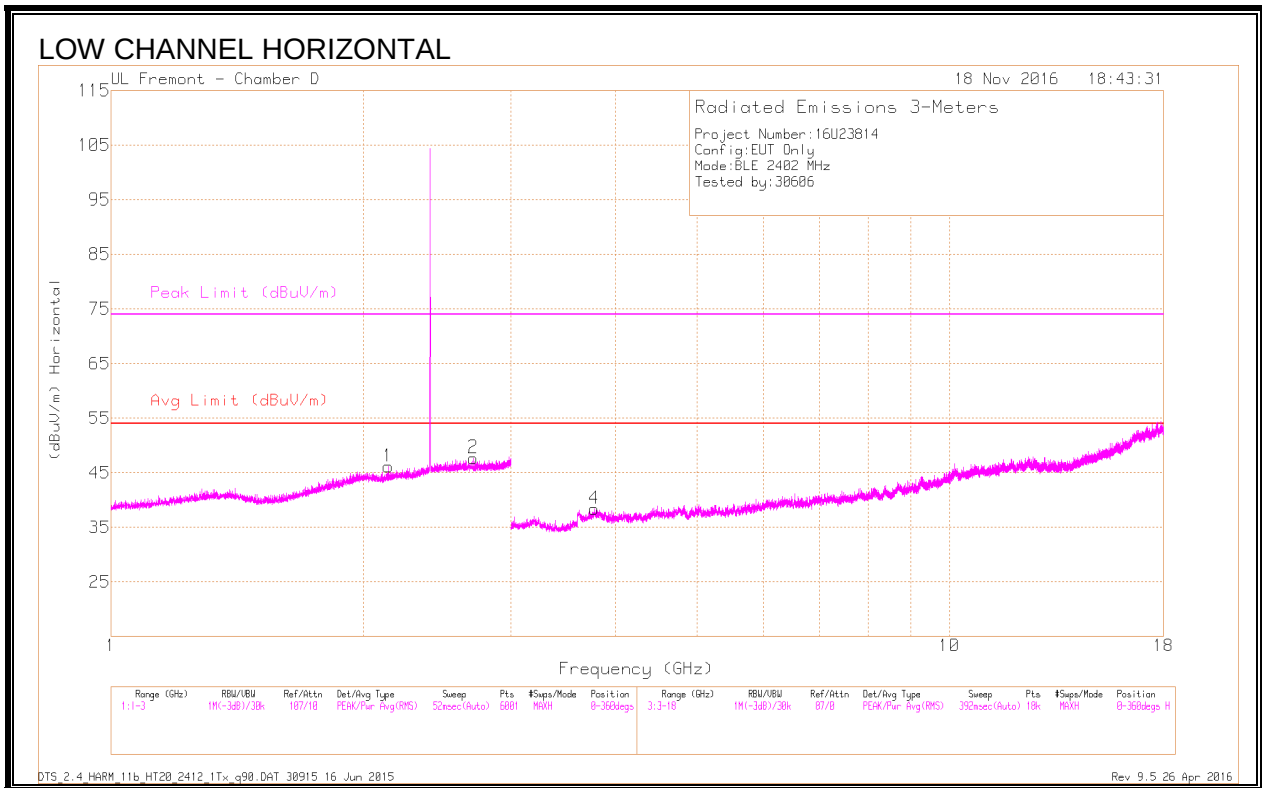
Pk - Peak detector

RMS - RMS detection

High Channel Bandedge Method AD - V.TST 30915 12 Sep 2016

Rev 9.5 26 Apr 2016

8.3.3. HARMONICS AND SPURIOUS EMISSIONS



Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.705	41.5	PK2	32.4	-20.4	53.5	-	-	74	-20.5	128	240	H
	* 2.706	30.29	MAv1	32.4	-20.4	42.29	54	-11.71	-	-	128	240	H
3	* 2.771	41.24	PK2	32.4	-20.2	53.44	-	-	74	-20.56	252	323	V
	* 2.773	30.22	MAv1	32.4	-20.2	42.42	54	-11.58	-	-	252	323	V
4	* 3.771	39.75	PK2	33.5	-28	45.25	-	-	74	-28.75	182	237	H
	* 3.772	28.77	MAv1	33.5	-28	34.27	54	-19.73	-	-	182	237	H
5	* 4.038	39.67	PK2	33.4	-28.4	44.67	-	-	74	-29.33	257	237	V
	* 4.038	28.49	MAv1	33.4	-28.4	33.49	54	-20.51	-	-	257	237	V
6	* 7.369	36.44	PK2	35.6	-25	47.04	-	-	74	-26.96	347	173	V
	* 7.372	25.75	MAv1	35.6	-25	36.35	54	-17.65	-	-	347	173	V
1	2.142	41.09	PK2	31.3	-20.8	51.59	-	-	-	-	87	160	H

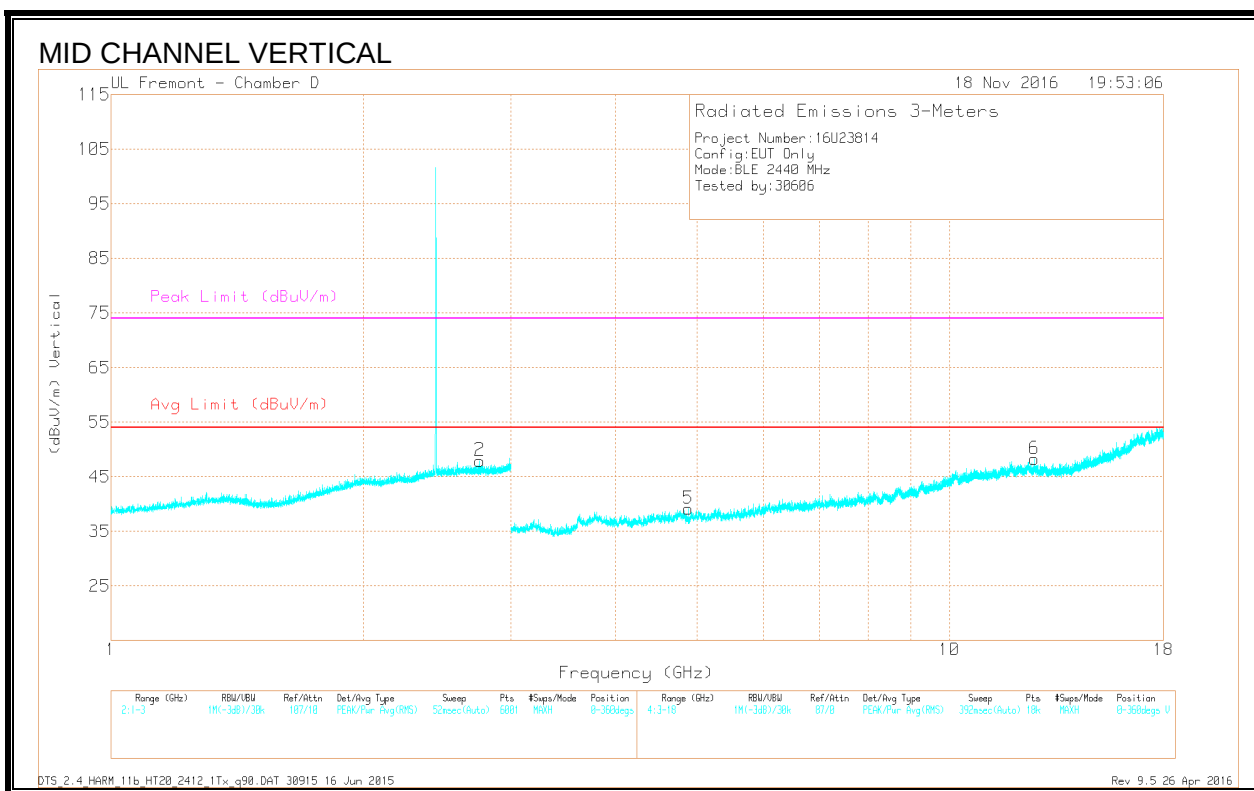
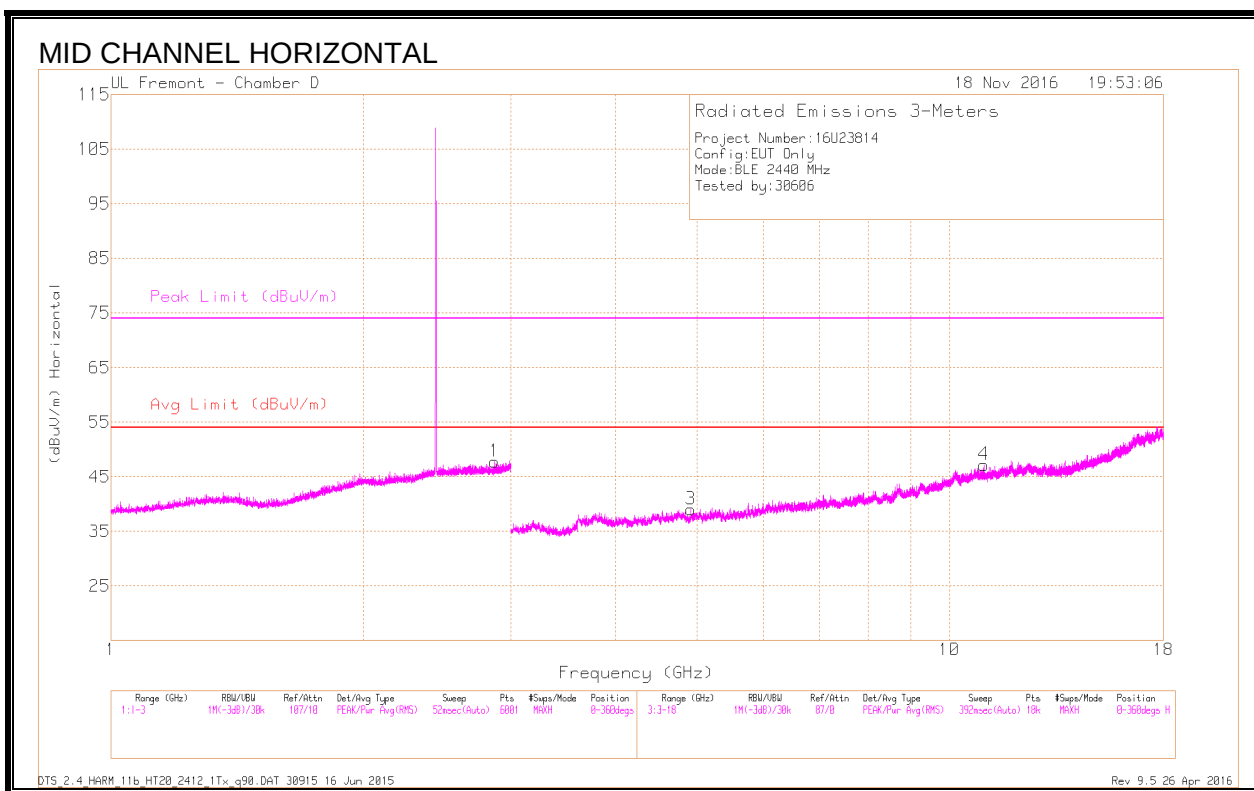
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

DTS_2.4_HARM_11b_HT20_2412_1Tx_q90.DAT 30915 16 Jun 2015

Rev 9.5 26 Apr 2016



Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.868	41.5	PK2	32.3	-20	53.8	-	-	74	-20.2	4	210	H
	* 2.867	29.97	MAv1	32.3	-20	42.27	54	-11.73	-	-	4	210	H
2	* 2.756	41.52	PK2	32.4	-20.2	53.72	-	-	74	-20.28	107	196	V
	* 2.755	30.25	MAv1	32.4	-20.2	42.45	54	-11.55	-	-	107	196	V
3	* 4.916	38.47	PK2	34.1	-27.9	44.67	-	-	74	-29.33	166	341	H
	* 4.915	28.1	MAv1	34.1	-27.9	34.3	54	-19.7	-	-	166	341	H
4	* 10.99	34.86	PK2	38	-20.7	52.16	-	-	74	-21.84	202	184	H
	* 10.989	24.43	MAv1	38	-20.7	41.73	54	-12.27	-	-	202	184	H
5	* 4.88	40.62	PK2	34.1	-27.9	46.82	-	-	74	-27.18	301	147	V
	* 4.88	32.37	MAv1	34.1	-27.9	38.57	54	-15.43	-	-	301	147	V
6	* 12.625	35.66	PK2	39.1	-20.9	53.86	-	-	74	-20.14	0	198	V
	* 12.626	24.89	MAv1	39.1	-20.9	43.09	54	-10.91	-	-	0	198	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

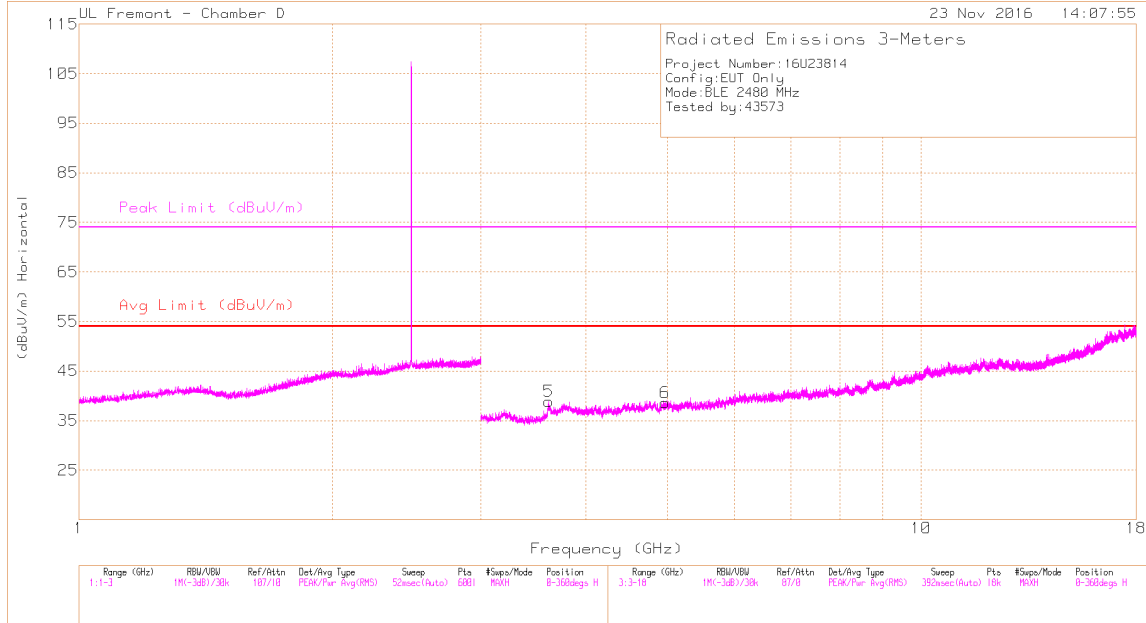
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

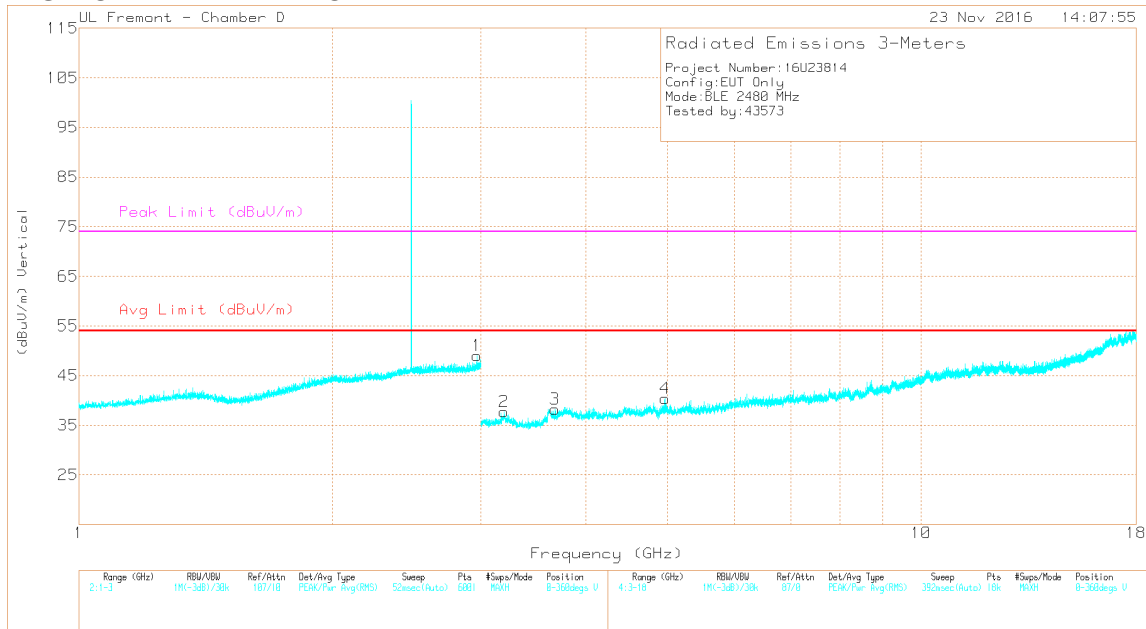
DTS_2.4_HARM_11b_HT20_2412_1Tx_q90.DAT 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 3.608	39	PK2	33.3	-28.1	44.2	-	-	74	-29.8	66	158	H
	* 3.61	28.36	MAv1	33.3	-28.2	33.46	54	-20.54	-	-	66	158	H
6	* 4.959	38.95	PK2	34.1	-27.5	45.55	-	-	74	-28.45	220	325	H
	* 4.96	30.15	MAv1	34.1	-27.5	36.75	54	-17.25	-	-	220	325	H
3	* 3.672	38.86	PK2	33.5	-29	43.36	-	-	74	-30.64	200	229	V
	* 3.672	28.75	MAv1	33.5	-29	33.25	54	-20.75	-	-	200	229	V
4	* 4.96	41.21	PK2	34.1	-27.5	47.81	-	-	74	-26.19	311	219	V
	* 4.96	32.5	MAv1	34.1	-27.5	39.1	54	-14.9	-	-	311	219	V
1	2.967	41.06	PK2	32.6	-20	53.66	-	-	-	-	146	141	V
	2.969	30.28	MAv1	32.6	-20	42.88	-	-	-	-	146	141	V
2	3.194	38.83	PK2	34	-28.9	43.93	-	-	-	-	53	358	V
	3.195	27.73	MAv1	34	-28.9	32.83	-	-	-	-	53	358	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

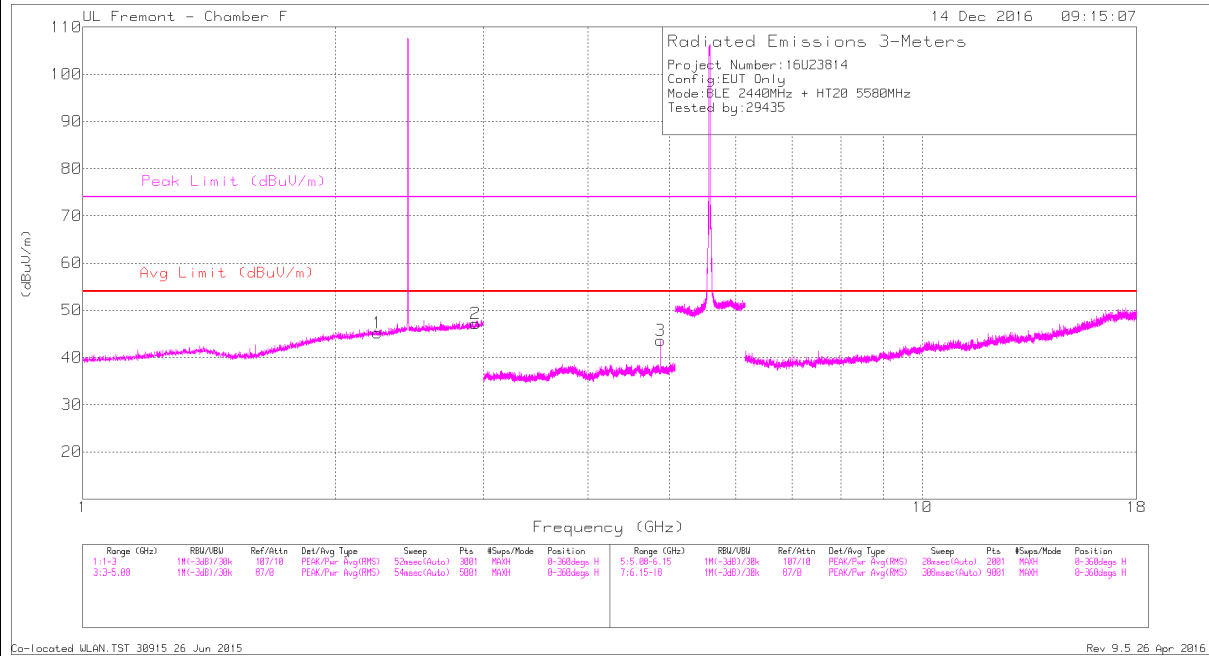
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

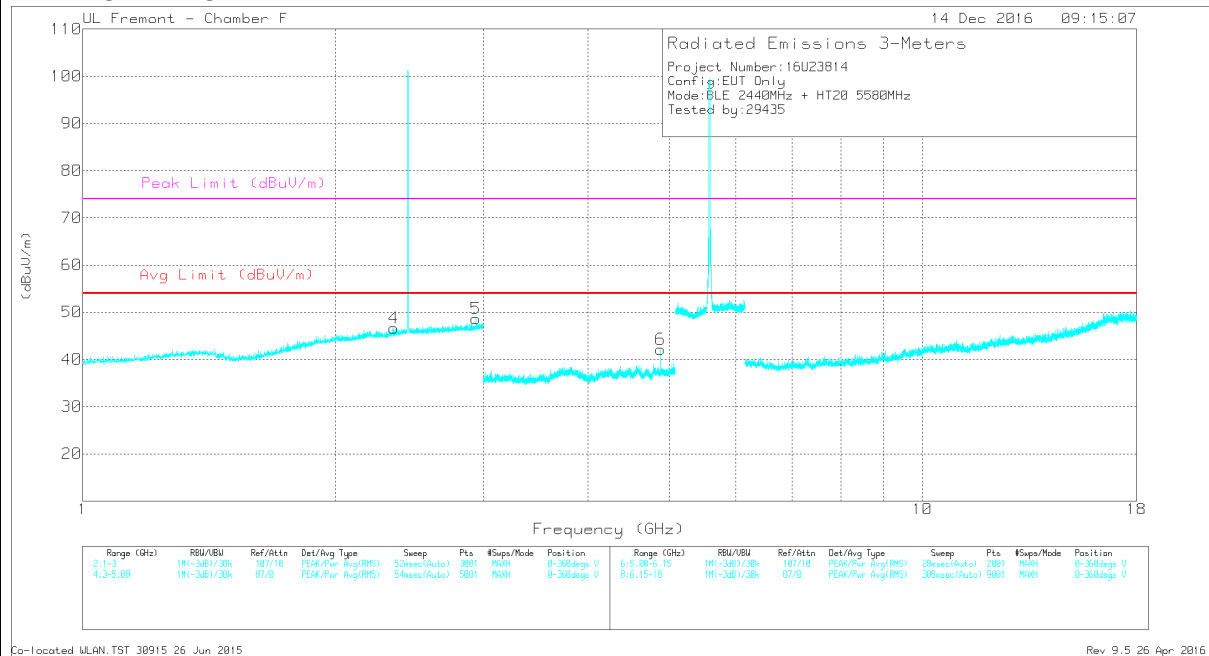
8.4. WORST CASE CO-LOCATION

BLUETOOTH LOW ENERGY AND 802.11 HT20 2Tx CDD MODE IN THE 5.6GHz BAND

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.244	41.39	PK-U	31.8	-21	52.19			74	-21.81	216	194	H
	* 2.243	30.43	ADR	31.8	-21	41.23	53.97-	-12.74	-	-	216	194	H
2	2.938	41.65	PK-U	32.7	-20.4	53.95			74	-20.05	14	377	H
	2.937	30.25	ADR	32.7	-20.4	42.55	53.97	-11.42	-	-	14	377	H
4	* 2.345	42.23	PK-U	31.9	-21	53.13			74	-20.87	261	243	V
	* 2.347	30.38	ADR	31.9	-21	41.28	53.97	-13.71	-	-	261	243	V
5	2.942	41.23	PK-U	32.7	-20.4	53.53			74	-20.47	94	132	V
	2.94	30.28	ADR	32.7	-20.4	42.58	53.97-	-11.41	-	-	94	132	V
3	* 4.88	41.86	PK-U	34.1	-27.8	48.16			74	-25.84	308	251	H
	* 4.88	34.04	ADR	34.1	-27.8	40.34	53.97-	-13.63	-	-	308	251	H
6	* 4.88	41.57	PK-U	34.1	-27.8	47.87			74	-26.13	248	125	V
	* 4.88	33.88	ADR	34.1	-27.8	40.18	53.97	-13.79	-	-	248	125	V

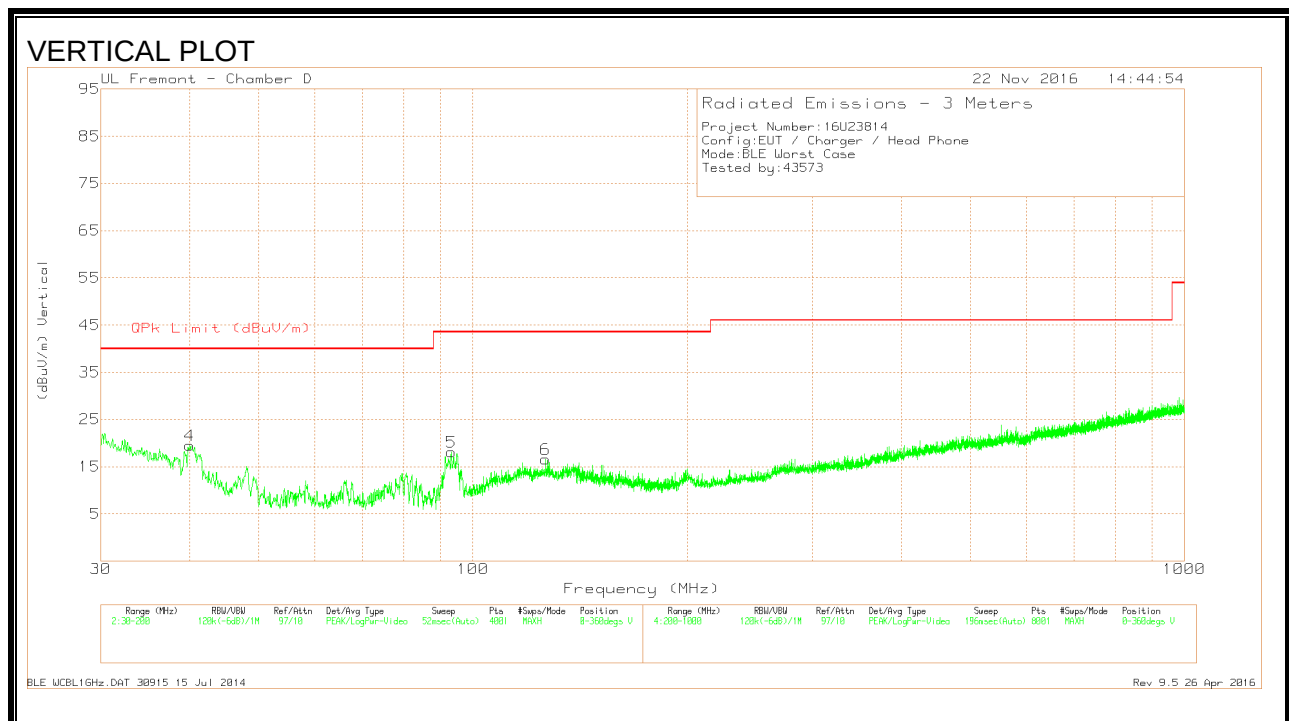
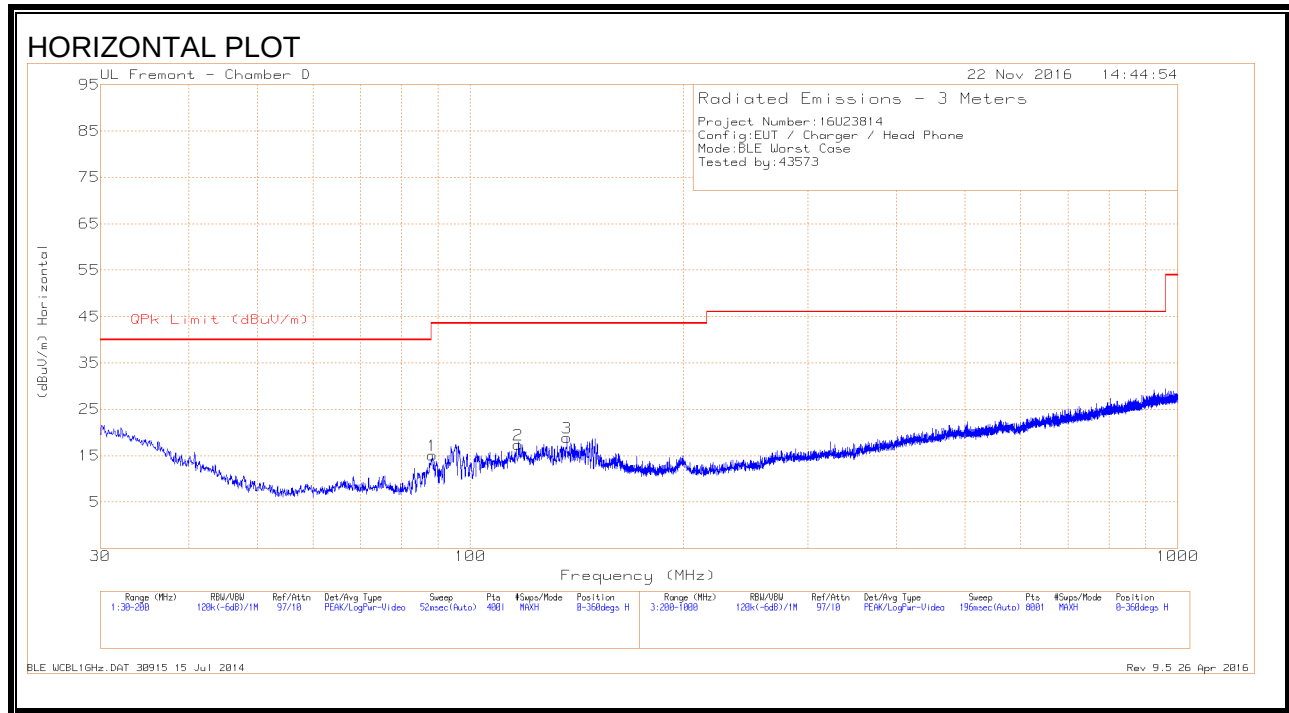
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

8.5. WORST-CASE BELOW 1 GHz

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



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 116.8275	30.9	Pk	17.7	-31.2	17.4	43.52	-26.12	0-360	299	H
3	* 136.8875	32.68	Pk	17.3	-31.1	18.88	43.52	-24.64	0-360	199	H
6	* 126.475	29.64	Pk	18.1	-31.2	16.54	43.52	-26.98	0-360	100	V
4	40.03	33.55	Pk	17.8	-31.8	19.55	40	-20.45	0-360	100	V
1	88.395	35.02	Pk	11.4	-31.4	15.02	43.52	-28.5	0-360	299	H
5	93.24	37.18	Pk	12.3	-31.4	18.08	43.52	-25.44	0-360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

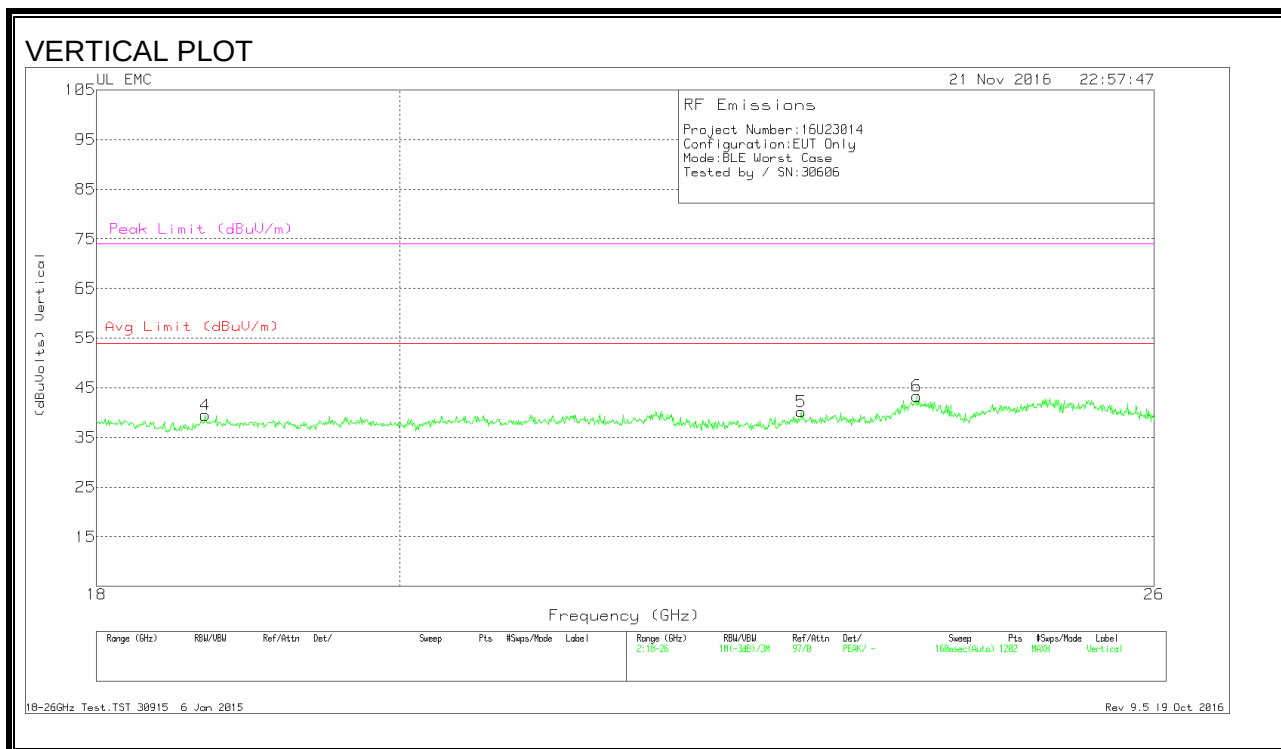
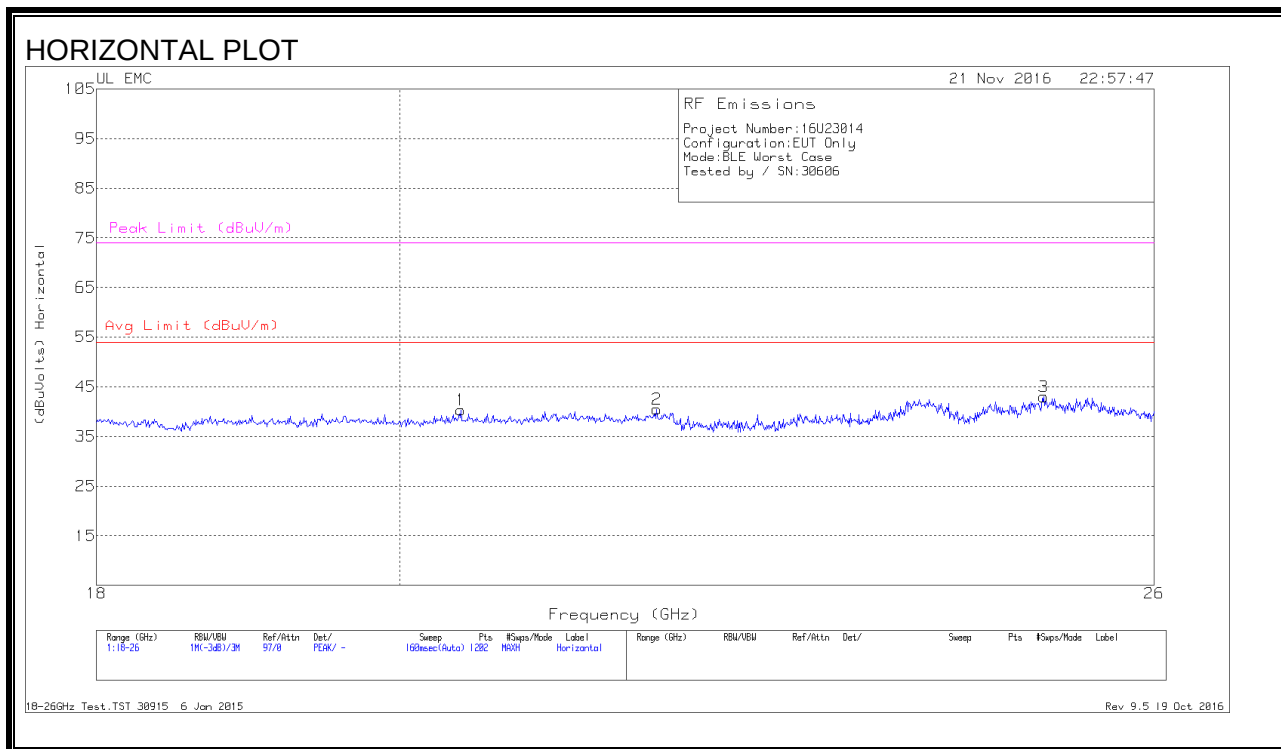
Pk - Peak detector

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

Rev 9.5 26 Apr 2016

8.6. WORST-CASE ABOVE 18 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION)



Data

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T449 (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	20.431	42.13	Pk	32.9	-25.2	-9.5	40.33	54	-13.67	74	-33.67
2	21.87	41.4	Pk	33.3	-24.7	-9.5	40.5	54	-13.5	74	-33.5
3	25.021	42.7	Pk	34.2	-24.4	-9.5	43	54	-11	74	-31
4	18.693	40.8	Pk	32.4	-24.2	-9.5	39.5	54	-14.5	74	-34.5
5	22.996	41.27	Pk	33.4	-25	-9.5	40.17	54	-13.83	74	-33.833
6	23.942	43.03	Pk	34	-24.2	-9.5	43.33	54	-10.67	74	-30.67

Pk - Peak detector

18-26GHz Test.TST 30915 6 Jan 2015

Rev 9.5 19 Oct 2016

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	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.

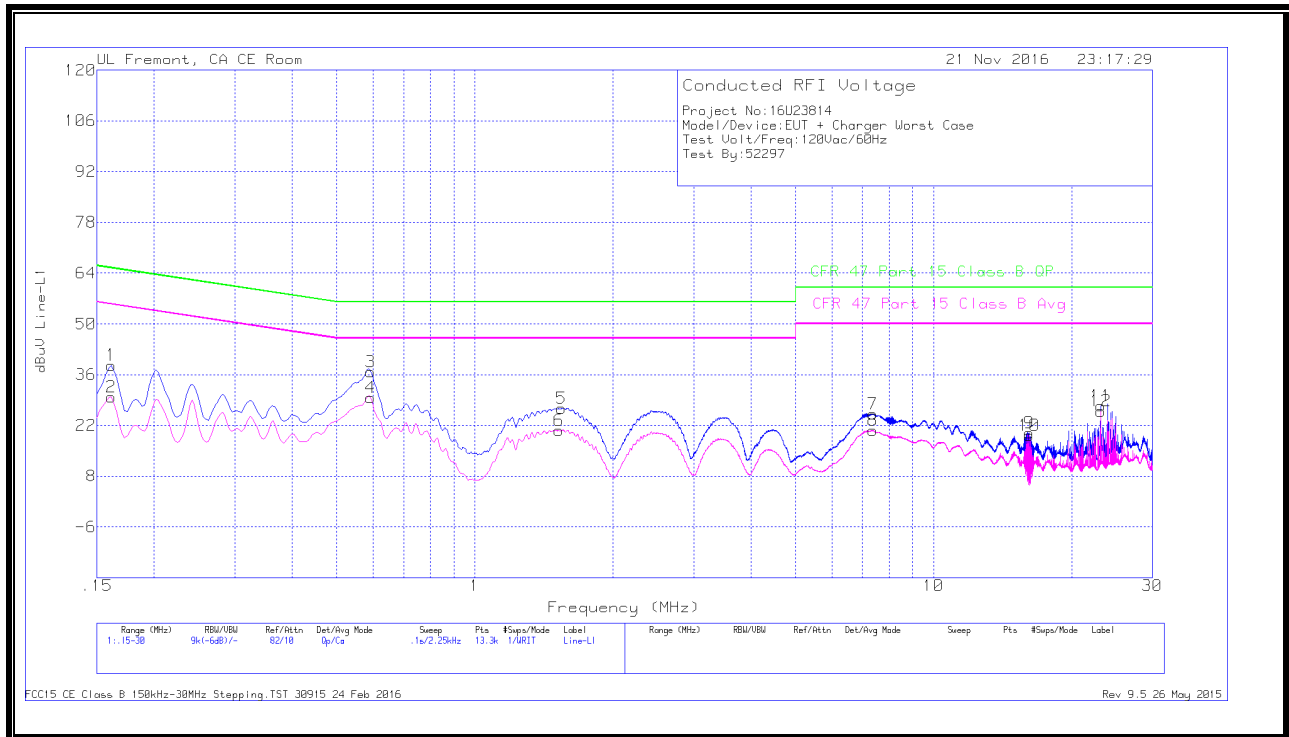
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

9.1. EUT POWERED BY AC/DC ADAPTER VIA USB CABLE

LINE 1 RESULTS



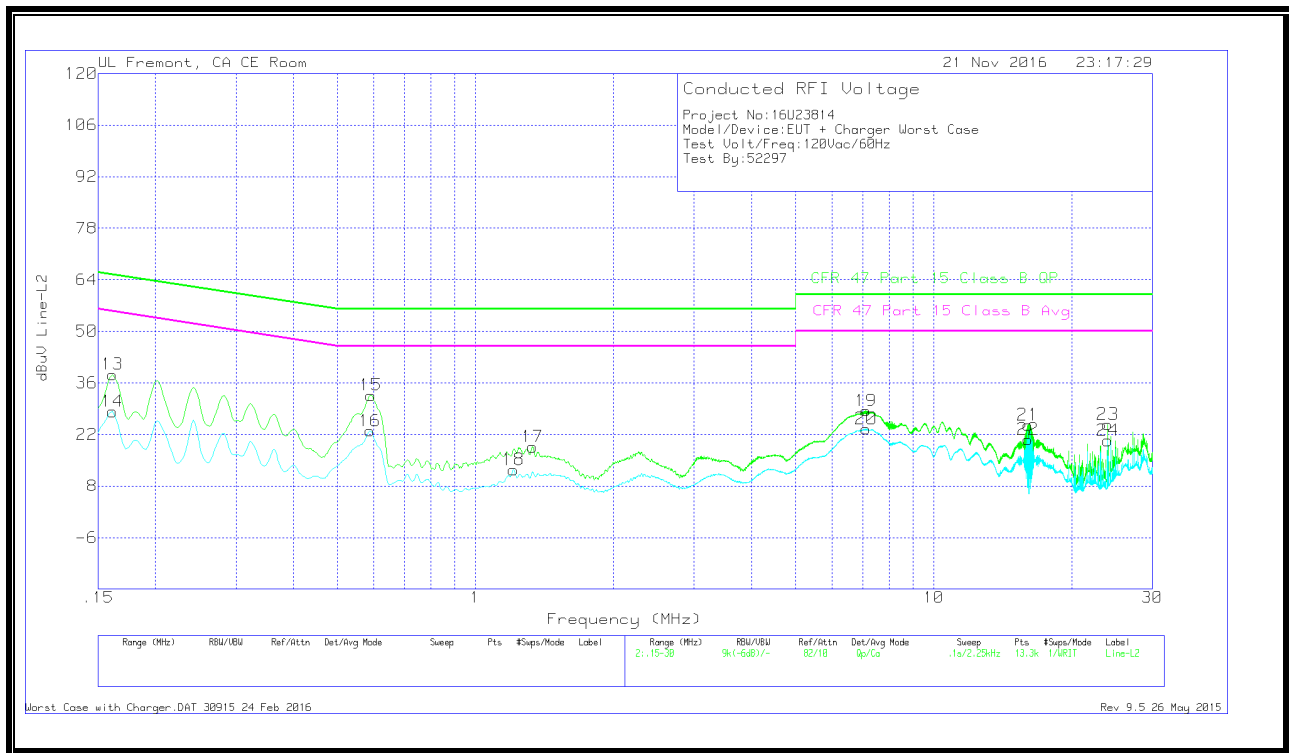
WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables 1&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
1	.16125	28.51	Qp	0	0	10.1	38.61	65.4	-26.79	-	-
2	.16125	19.73	Ca	0	0	10.1	29.83	-	-	55.4	-25.57
3	.59325	26.7	Qp	0	0	10.1	36.8	56	-19.2	-	-
4	.59325	19.55	Ca	0	0	10.1	29.65	-	-	46	-16.35
5	1.54613	16.51	Qp	0	.1	10.1	26.71	56	-29.29	-	-
6	1.52475	10.4	Ca	0	.1	10.1	20.6	-	-	46	-25.4
7	7.37925	14.92	Qp	0	.1	10.2	25.22	60	-34.78	-	-
8	7.37588	10.35	Ca	0	.1	10.2	20.65	-	-	50	-29.35
9	16.143	9.46	Qp	0	.2	10.3	19.96	60	-40.04	-	-
10	16.143	8.72	Ca	0	.2	10.3	19.22	-	-	50	-30.78
11	23.1315	16.74	Qp	.1	.2	10.4	27.44	60	-32.56	-	-
12	23.1315	15.23	Ca	.1	.2	10.4	25.93	-	-	50	-24.07

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables 2&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
13	.16125	28.18	Qp	0	0	10.1	38.28	65.4	-27.12	-	-
14	.16125	18.13	Ca	0	0	10.1	28.23	-	-	55.4	-27.17
15	.591	22.54	Qp	0	0	10.1	32.64	56	-23.36	-	-
16	.58875	12.85	Ca	0	0	10.1	22.95	-	-	46	-23.05
17	1.33125	8.45	Qp	0	.1	10.1	18.65	56	-37.35	-	-
18	1.20975	2.33	Ca	0	0	10.1	12.43	-	-	46	-33.57
19	7.11825	18.13	Qp	0	.1	10.2	28.43	60	-31.57	-	-
20	7.12275	13.24	Ca	0	.1	10.2	23.54	-	-	50	-26.46
21	16.06425	14.07	Qp	0	.2	10.3	24.57	60	-35.43	-	-
22	16.062	10.16	Ca	0	.2	10.3	20.66	-	-	50	-29.34
23	24	13.93	Qp	.1	.2	10.5	24.73	60	-35.27	-	-
24	24	9.55	Ca	.1	.2	10.5	20.35	-	-	50	-29.65

Qp - Quasi-Peak detector

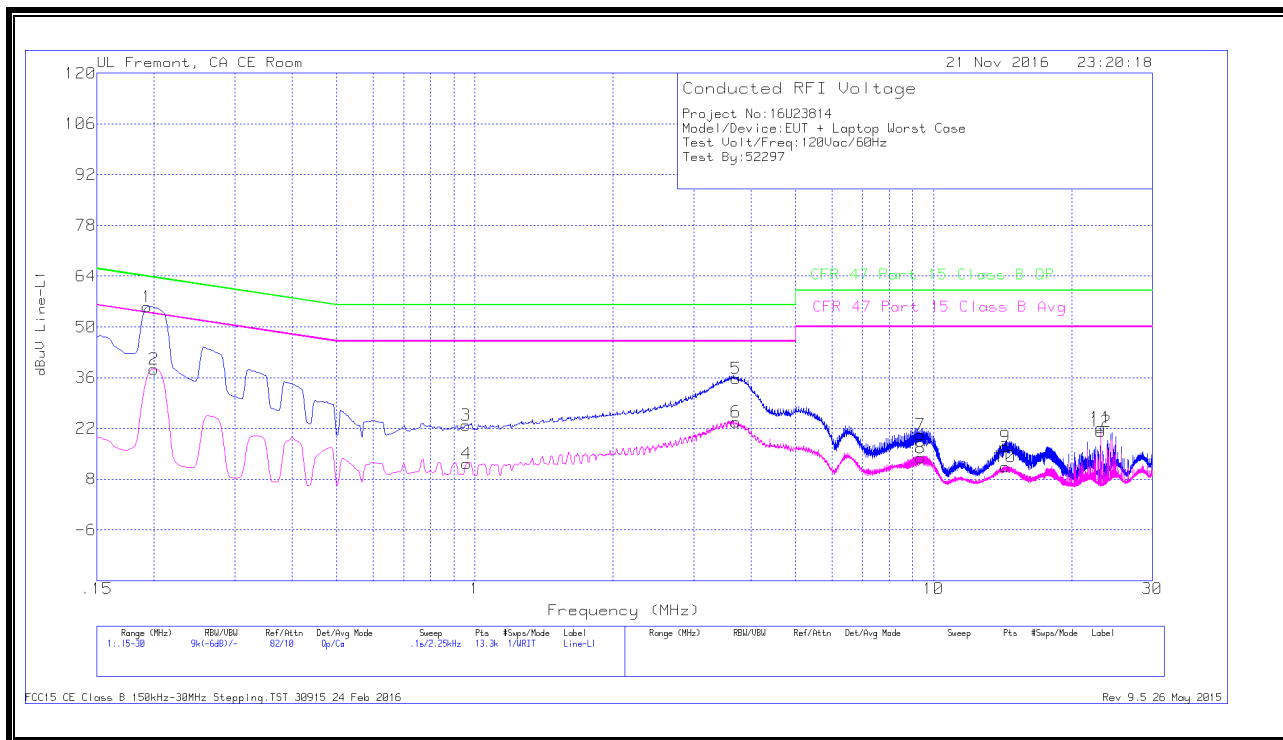
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST 30915 24 Feb 2016

Rev 9.5 26 May 2015

9.2. EUT POWERED BY HOST PC VIA USB CABLE

LINE 1 RESULTS



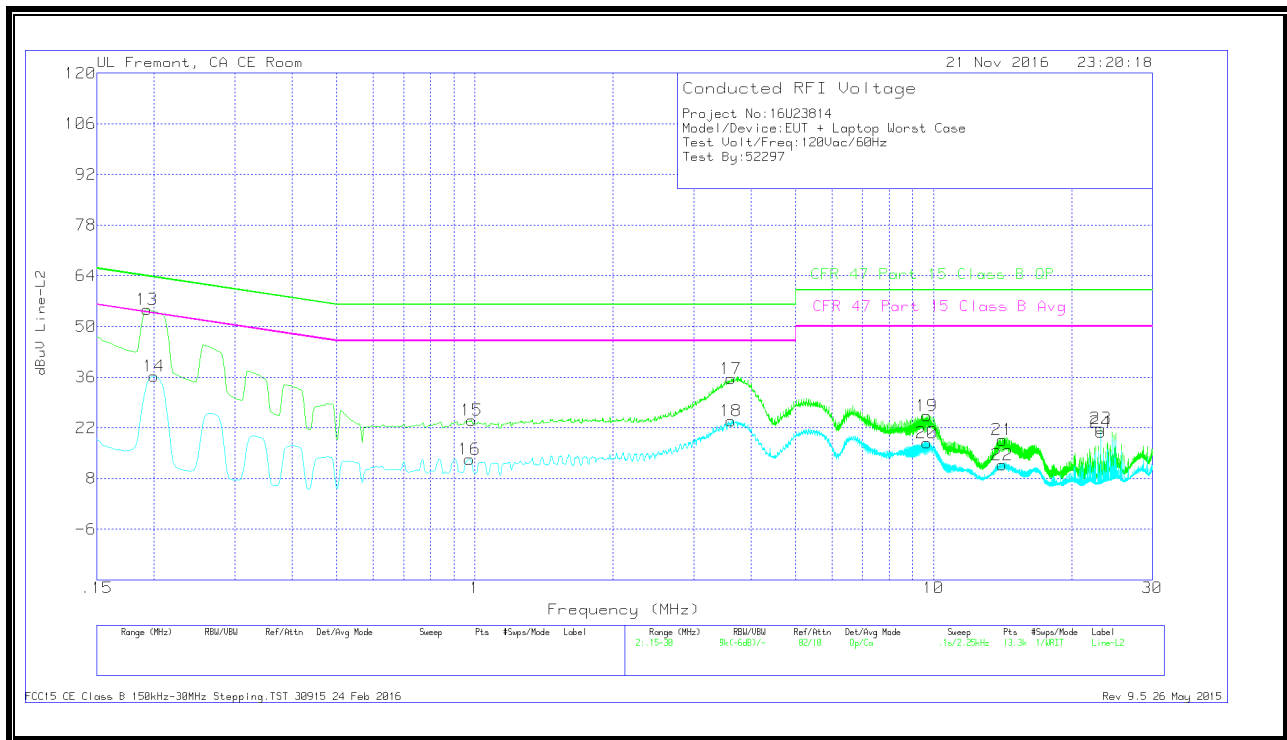
WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables 1&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
1	.19275	45.49	Qp	0	0	10.1	55.59	63.92	-8.33	-	-
2	.1995	28.32	Ca	0	0	10.1	38.42	-	-	53.63	-15.21
3	.9555	12.75	Qp	0	.1	10.1	22.95	56	-33.05	-	-
4	.96	2.12	Ca	0	0	10.1	12.22	-	-	46	-33.78
5	3.71288	25.61	Qp	0	.1	10.1	35.81	56	-20.19	-	-
6	3.71175	13.49	Ca	0	.1	10.1	23.69	-	-	46	-22.31
7	9.3615	9.94	Qp	0	.2	10.2	20.34	60	-39.66	-	-
8	9.384	3.61	Ca	0	.1	10.2	13.91	-	-	50	-36.09
9	14.352	6.52	Qp	0	.2	10.2	16.92	60	-43.08	-	-
10	14.352	1	Ca	0	.2	10.2	11.4	-	-	50	-38.6
11	23.1315	11.49	Qp	.1	.2	10.4	22.19	60	-37.81	-	-
12	23.1315	10.46	Ca	.1	.2	10.4	21.16	-	-	50	-28.84

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables 2&3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR)Margin (dB)
13	.19275	44.65	Qp	0	0	10.1	54.75	63.92	-9.17	-	-
14	.1995	26.09	Ca	0	0	10.1	36.19	-	-	53.63	-17.44
15	.98475	13.88	Qp	0	.1	10.1	24.08	56	-31.92	-	-
16	.9735	3.11	Ca	0	.1	10.1	13.31	-	-	46	-32.69
17	3.62175	25.3	Qp	0	.1	10.1	35.5	56	-20.5	-	-
18	3.6195	13.66	Ca	0	.1	10.1	23.86	-	-	46	-22.14
19	9.66075	14.96	Qp	0	.1	10.2	25.26	60	-34.74	-	-
20	9.6765	7.58	Ca	0	.1	10.2	17.88	-	-	50	-32.12
21	14.109	8.13	Qp	.1	.2	10.2	18.63	60	-41.37	-	-
22	14.1225	1.26	Ca	.1	.2	10.2	11.76	-	-	50	-38.24
23	23.1315	11.16	Qp	.1	.2	10.4	21.86	60	-38.14	-	-
24	23.1315	10.06	Ca	.1	.2	10.4	20.76	-	-	50	-29.24

Qp - Quasi-Peak detector
Ca - CISPR average detection