



CERTIFICATION TEST REPORT

Report Number. : 11697707-E2V4

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

Model : A1897

FCC ID : BCG-E3174A

IC : 579C-E3174A

EUT Description : SMARTPHONE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS - 247 ISSUE 2

Date Of Issue:
July 24, 2017

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	6/28/2017	Initial Issue	Chin Pang
V2	7/11/2017	Re-measuring and Changing Power to align with original target power.	Mengistu Mekuria
V3	7/21/2017	Address TCB's Questions	Chin Pang
V4	7/24/2017	Address TCB's Questions	Tri Pham

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	6
2. TEST METHODOLOGY	7
3. FACILITIES AND ACCREDITATION	7
4. CALIBRATION AND UNCERTAINTY	8
4.1. MEASURING INSTRUMENT CALIBRATION	8
4.2. SAMPLE CALCULATION	8
4.3. MEASUREMENT UNCERTAINTY.....	8
5. EQUIPMENT UNDER TEST	9
5.1. DESCRIPTION OF EUT	9
5.2. MAXIMUM OUTPUT POWER.....	9
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	9
5.4. SOFTWARE AND FIRMWARE.....	9
5.5. WORST-CASE CONFIGURATION AND MODE	10
5.6. DESCRIPTION OF TEST SETUP.....	11
6. TEST AND MEASUREMENT EQUIPMENT	15
7. ANTENNA PORT TEST RESULTS	16
7.1. MEASUREMENT METHODS	16
7.2. ON TIME, DUTY CYCLE	17
7.3. UAT1 BLE 1M Pmax.....	19
7.3.1. 6 dB BANDWIDTH.....	19
7.3.2. 99% BANDWIDTH.....	22
7.3.3. AVERAGE POWER	25
7.3.4. OUTPUT POWER	26
7.3.5. POWER SPECTRAL DENSITY	27
7.3.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS.....	30
7.4. UAT1 BLE 1M Plow	34
7.4.1. 6 dB BANDWIDTH.....	34
7.4.2. 99% BANDWIDTH.....	37
7.4.3. AVERAGE POWER	40
7.4.4. OUTPUT POWER	41
7.4.5. POWER SPECTRAL DENSITY	42
7.4.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS.....	45
7.5. UAT1 BLE 2M Pmax.....	49
7.5.1. AVERAGE POWER	49
7.5.2. OUTPUT POWER	50

7.6.	<i>UAT1 BLE 2M P_{low}</i>	51
7.6.1.	AVERAGE POWER	51
7.6.2.	OUTPUT POWER	52
7.7.	<i>LAT3 BLE 1M P_{max}</i>	53
7.7.1.	6 dB BANDWIDTH.....	53
7.7.2.	99% BANDWIDTH.....	56
7.7.3.	AVERAGE POWER	59
7.7.4.	OUTPUT POWER	60
7.7.5.	POWER SPECTRAL DENSITY	61
7.7.6.	CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS.....	64
7.8.	<i>LAT3 BLE 1M P_{low}</i>	68
7.8.1.	6 dB BANDWIDTH.....	68
7.8.2.	99% BANDWIDTH.....	71
7.8.3.	AVERAGE POWER	74
7.8.4.	OUTPUT POWER	75
7.8.5.	POWER SPECTRAL DENSITY	76
7.8.6.	CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS.....	79
7.9.	<i>LAT3 BLE 2M P_{max}</i>	83
7.9.1.	AVERAGE POWER	83
7.9.2.	OUTPUT POWER	84
7.10.	<i>LAT3 BLE 2M P_{low}</i>	85
7.10.1.	AVERAGE POWER	85
7.10.2.	OUTPUT POWER.....	86
8.	RADIATED TEST RESULTS.....	87
8.1.	<i>LIMITS AND PROCEDURE</i>	87
8.2.	<i>UAT1 P_{max}</i>	88
8.2.1.	RESTRICTED BANDEDGE (LOW CHANNEL).....	88
8.2.2.	AUTHORIZED BANDEDGE (HIGH CHANNEL).....	90
8.2.3.	HARMONICS AND SPURIOUS EMISSIONS	92
8.3.	<i>UAT1 P_{low}</i>	98
8.3.1.	RESTRICTED BANDEDGE (LOW CHANNEL).....	98
8.3.2.	AUTHORIZED BANDEDGE (HIGH CHANNEL).....	100
8.3.3.	HARMONICS AND SPURIOUS EMISSIONS	102
8.4.	<i>LAT3 P_{max}</i>	108
8.4.1.	RESTRICTED BANDEDGE (LOW CHANNEL).....	108
8.4.2.	AUTHORIZED BANDEDGE (HIGH CHANNEL).....	110
8.4.3.	HARMONICS AND SPURIOUS EMISSIONS	112
8.5.	<i>LAT3 P_{low}</i>	118
8.5.1.	RESTRICTED BANDEDGE (LOW CHANNEL).....	118
8.5.2.	AUTHORIZED BANDEDGE (HIGH CHANNEL).....	120
8.5.3.	HARMONICS AND SPURIOUS EMISSIONS	122
8.6.	<i>WORST-CASE BELOW 1 GHz</i>	128
8.7.	<i>WORST-CASE ABOVE 18 GHz</i>	130
8.8.	<i>AC POWER LINE CONDUCTED EMISSIONS</i>	132
8.8.1.	EUT POWERED BY AC/DC ADAPTER VIA USB CABLE	133
8.8.2.	EUT POWERED BY HOST PC VIA USB CABLE	135

9. SETUP PHOTOS.....137

1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: SMARTPHONE

MODEL: A1897

SERIAL NUMBER: C39TQ009J6L8

DATE TESTED: MARCH 08, 2017 – JUNE 22, 2017

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 Issue 2	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:



CHIN PANG
SENIOR ENGINEER
UL VERIFICATION SERVICES INC.



TRI PHAM
LAB ENGINEER
UL VERIFICATION SERVICES INC.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, KDB 558074 D01 v04, ANSI C63.10-2013, RSS-GEN Issue 4, and RSS-247 Issue 2

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:22541-1)
☐ Chamber B (IC:2324B-2)	☒ Chamber E (IC:22541-2)
☐ Chamber C (IC:2324B-3)	☒ Chamber F (IC:22541-3)
	☐ Chamber G (IC:22541-4)
	☒ Chamber H (IC:22541-5)

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
Occupied Channel Bandwidth	±0.39 %

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The equipment under Test is a mobile phone with GSM, GPRS, EGPRS, UMTS, LTE and TD-SCDMA technologies. It also supports IEEE 802.11a/b/g/n/ac, Bluetooth®, GPS and NFC. The device has a built-in inductive charging receiver which is not user accessible. The rechargeable battery is not user accessible.

5.2. MAXIMUM OUTPUT POWER

EUT includes different power levels for head use configuration and body use configuration and the below tables contain the highest of all configurations peak conducted output powers as follows:

Antenna	Configuration	Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
UAT 1	Pmax	2402 - 2480	BLE 1M	20.10	102.33
	Plow			10.15	10.35
	Pmax		BLE 2M	19.70	93.33
	Plow			9.65	9.23
LAT 3	Pmax	2402 - 2480	BLE 1M	20.02	100.46
	Plow			10.06	10.14
	Pmax		BLE 2M	19.50	89.13
	Plow			9.76	9.46

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Band (GHz)	UAT1 Gain (dBi)	LAT 3 Gain (dBi)
2.4	1.01	-2.24

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was version 15.1.40.176.

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated band edge, harmonic, and spurious emissions from 1GHz to 18GHz were performed with the EUT set to transmit at highest power on Low/Middle/High channels.

Radiated emissions below 30MHz, below 1GHz, above 18GHz and power line conducted emissions were performed with the EUT transmits at the channel with the highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations, X (Flatbed), Y (Landscape), and Z (Portrait), on both primary and diversity antennas. In addition, the EUT was also investigated with and without AC/DC charger, headphones & laptop. It was determined that Y (Landscape) orientation was the worst-case orientation on both antennas. Therefore, all final radiated testing was performed with the EUT in Y orientation.
For 1 - 18GHz and 18 – 26GHz.EUT was tested without AC/DC charger and for 30MHz – 1000MHz was tested with AC/DC charger

Worst-case data rate as provided by the client and baseline scan was:

BLE: 1 Mbps

BLE 1M mode has been verified to have the highest power.

There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The Wi-Fi/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.

For simultaneous transmission of multiple channels from the same antenna LAT 3 in the 2.4GHz BLE and 5GHz bands, tests were conducted for various configurations having the highest power. No noticeable new emission was found.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop AC/DC adapter	Liteon Technology	PA-1450-BA1	B123	NA
Laptop	Apple	MackBook Air 4	NA	NA
Dongle	N/A	N/A	HDG1409226823	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	AC	1	AC	Un-shielded	3	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						

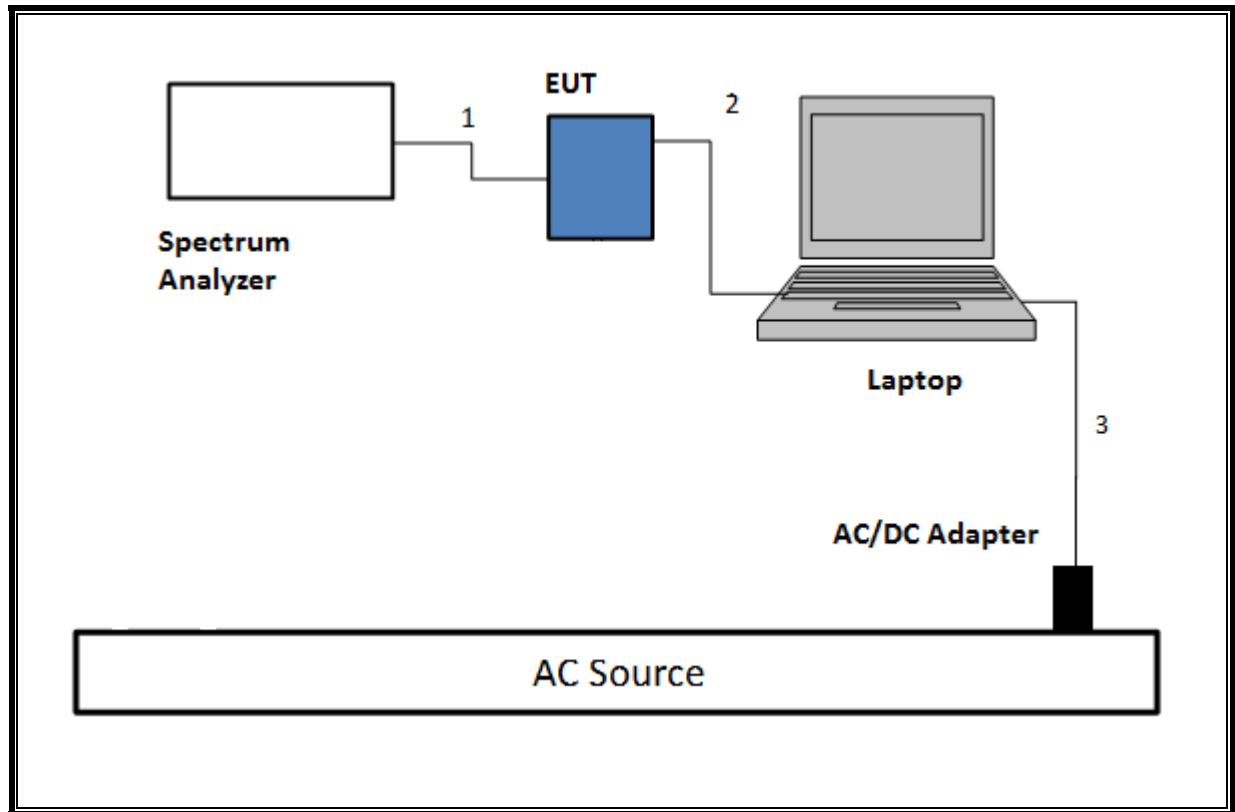
I/O CABLES (AC POWER CONDUCTED TEST AND BELOW 1 GHZ)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-shielded	3	N/A

TEST SETUP

The EUT was powered by AC cord. Test software exercised the radio card.

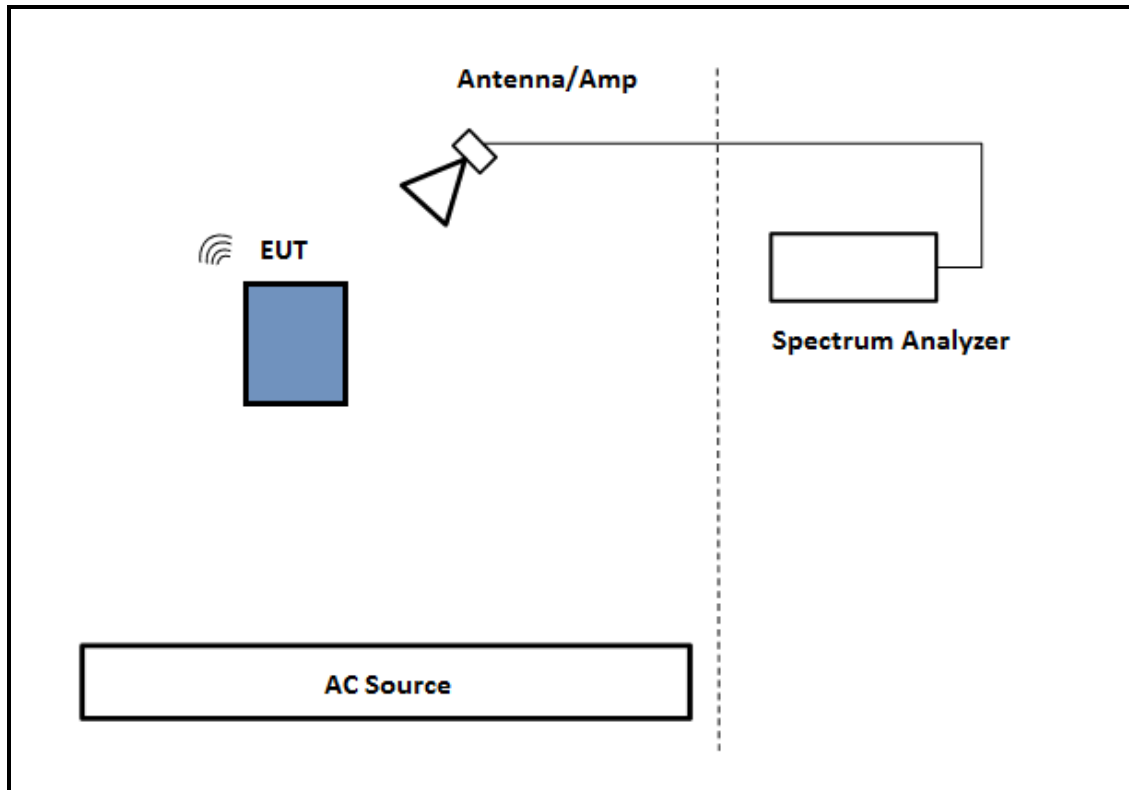
SETUP DIAGRAM



TEST SETUP- RADIATED-ABOVE 1 GHZ

The EUT was powered by AC cord. Test software exercised the EUT.

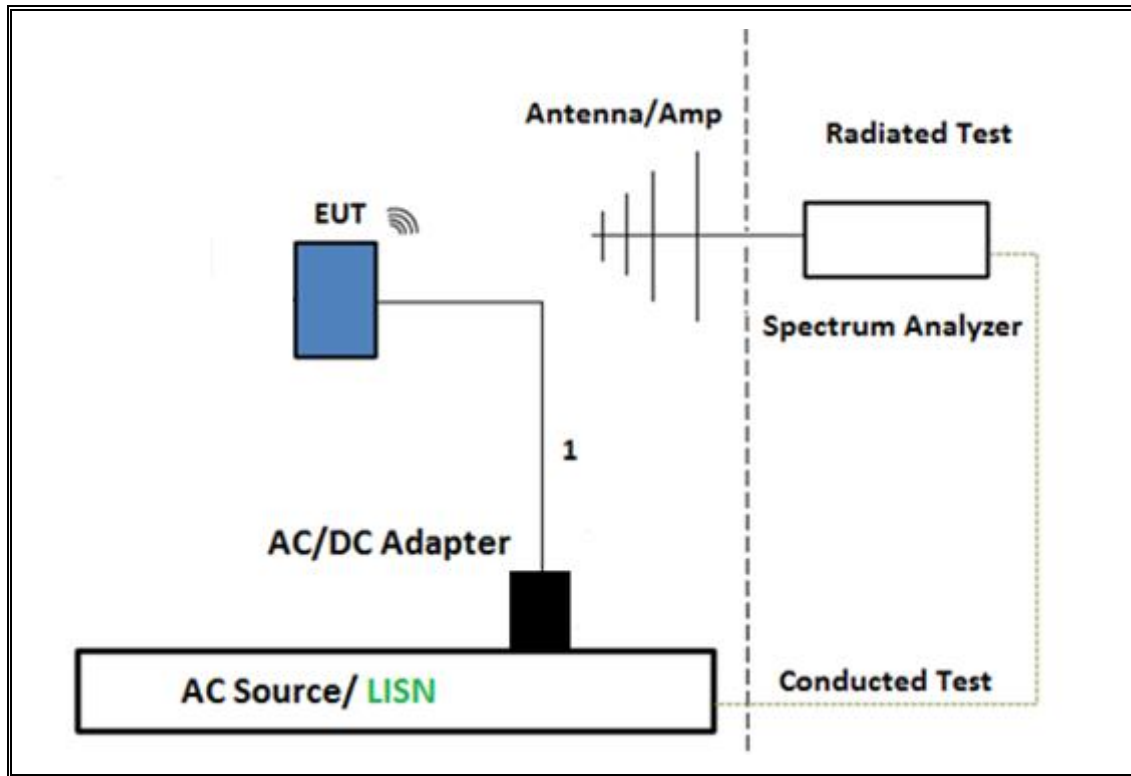
SETUP DIAGRAM



TEST SETUP- BELOW 1GHZ & AC LINE CONDUCTED TESTS

The EUT was powered by AC cord. 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	T863	4/26/2017
*Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	T286	5/4/2017
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	T740	11/29/17
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T340	12/14/2017
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T300	11/10/17
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	T243	10/11/2017
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	T285	6/20/2017
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1113	12/20/2017
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T300	11/10/17
*Antenna, Horn 1-18GHz	ETS Lindgren	3117	T120	4/5/2017
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	T122	1/31/2018
Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	T742	11/29/2017
*Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	T173	6/17/2017
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1113	12/20/2017
*Antenna, Horn 1-18GHz	ETS Lindgren	3117	T863	4/26/2017
*Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	T900	5/3/2017
Amplifier, 1 to 18GHz, 35dB	Ampical	AMP1G18-35	T1569	9/15/2017
*Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	T835	6/18/2017
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1613	12/2/2017
AC Line Conducted				
EMI Test Receiver 9KHz-7GHz	Rohde & Schwarz	ESCI7	T1436	1/06/2018
*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 v04, Section 8.1.

Output Power: KDB 558074 D01 v04, Section 9.1.3.

Power Spectral Density: KDB 558074 D01 v04, Section 10.2.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v04, Section 11.0.

Out-of-band emissions in restricted bands: KDB 558074 D01 v04, Section 12.1.

Band-edge: KDB 558074 D01 v04, Section 12.1.

Conducted line emissions: C63.10, Clause 6.2.

7.2. ON TIME, DUTY CYCLE

LIMITS

None; for reporting purposes only.

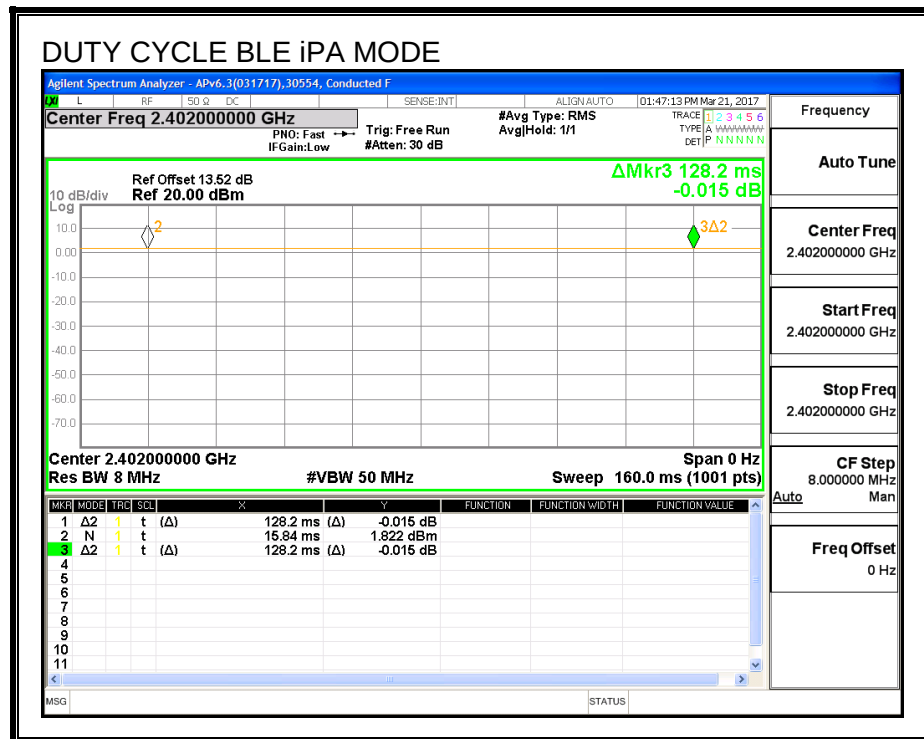
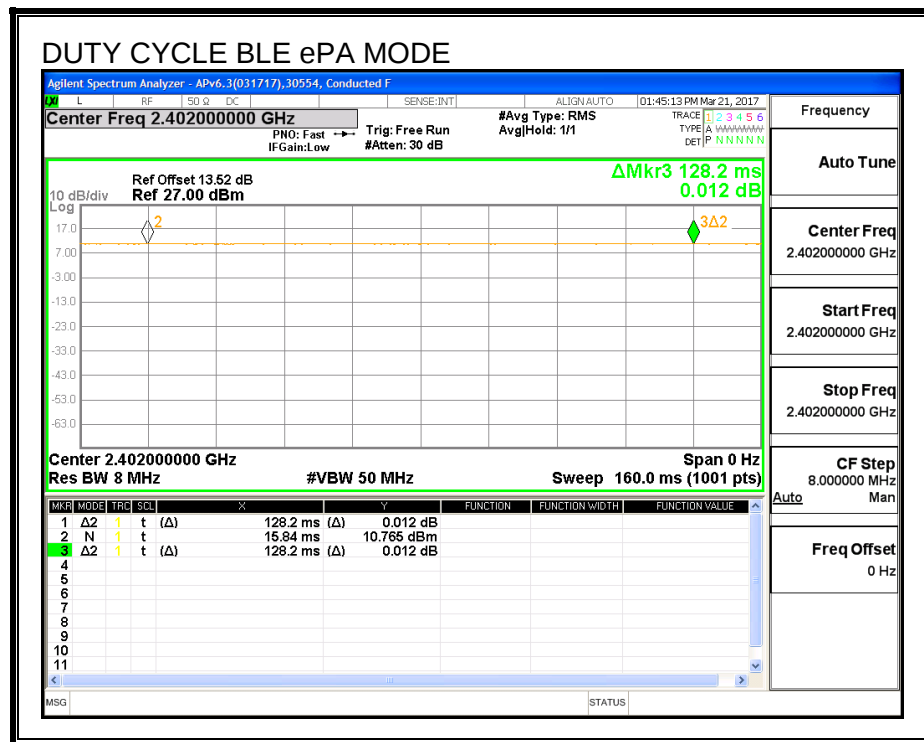
PROCEDURE

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 Pmax	128	128	1.0	100%	0.0	0.010
BLE Plow	128	128	1.0	100%	0.0	0.010

DUTY CYCLE PLOTS



7.3. UAT1 BLE 1M Pmax

7.3.1. 6 dB BANDWIDTH

LIMITS

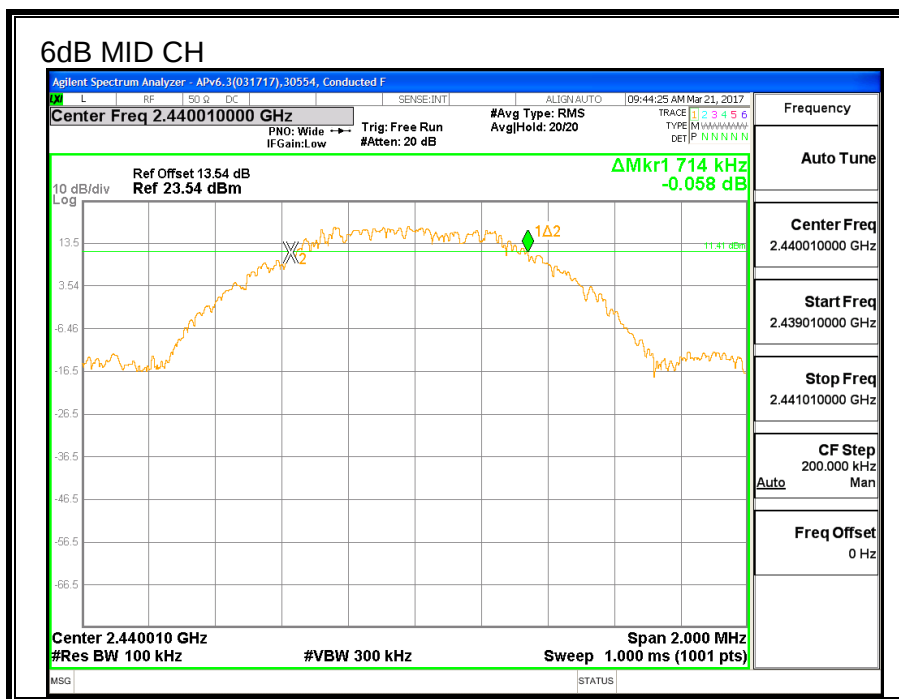
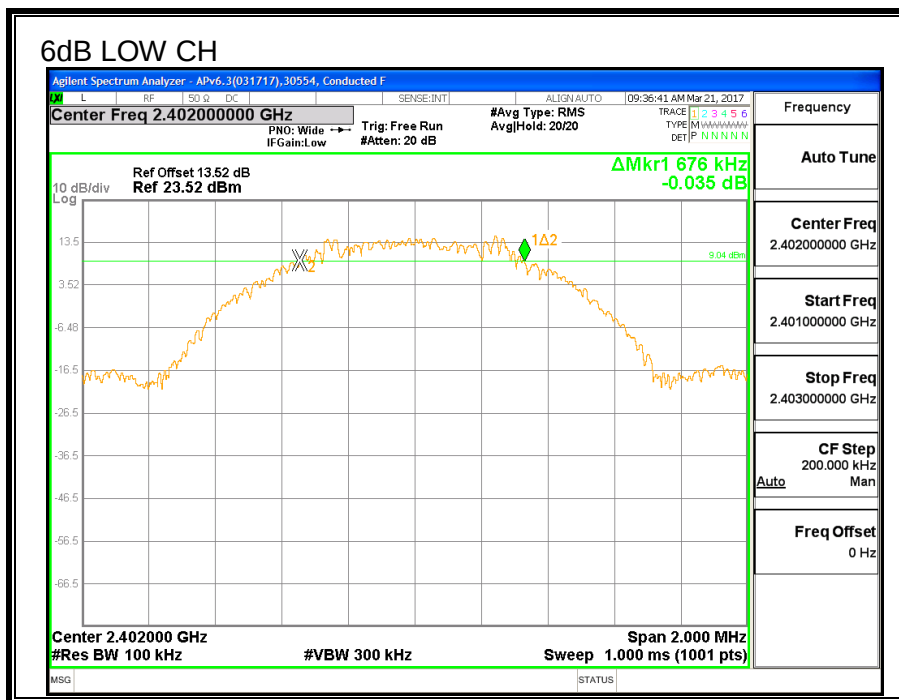
FCC §15.247 (a) (2)

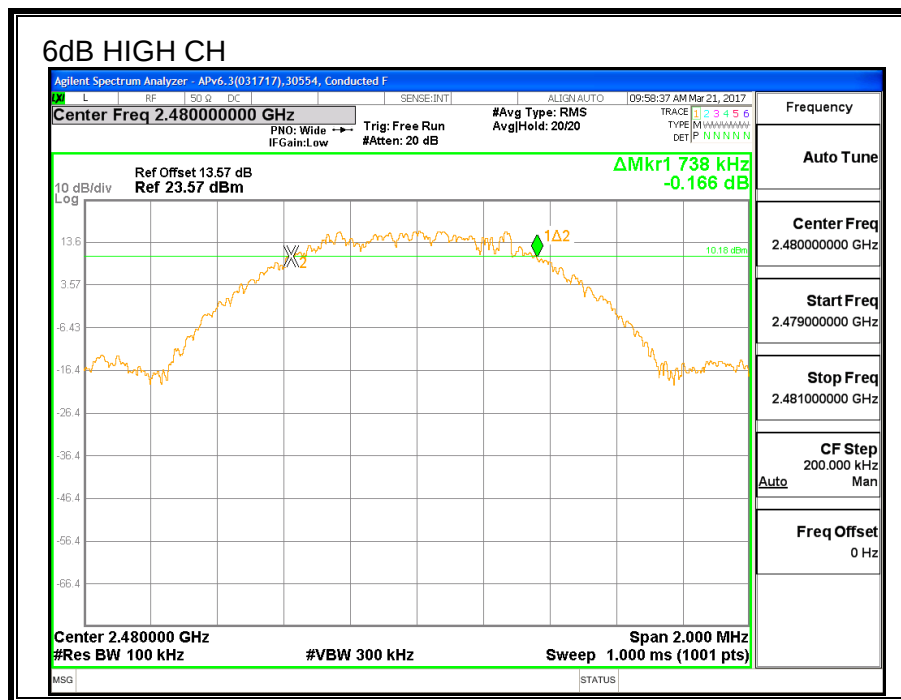
IC RSS-247 (5.2) (a)

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

RESULTS

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.676	0.5
Middle	2440	0.714	0.5
High	2480	0.738	0.5





7.3.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

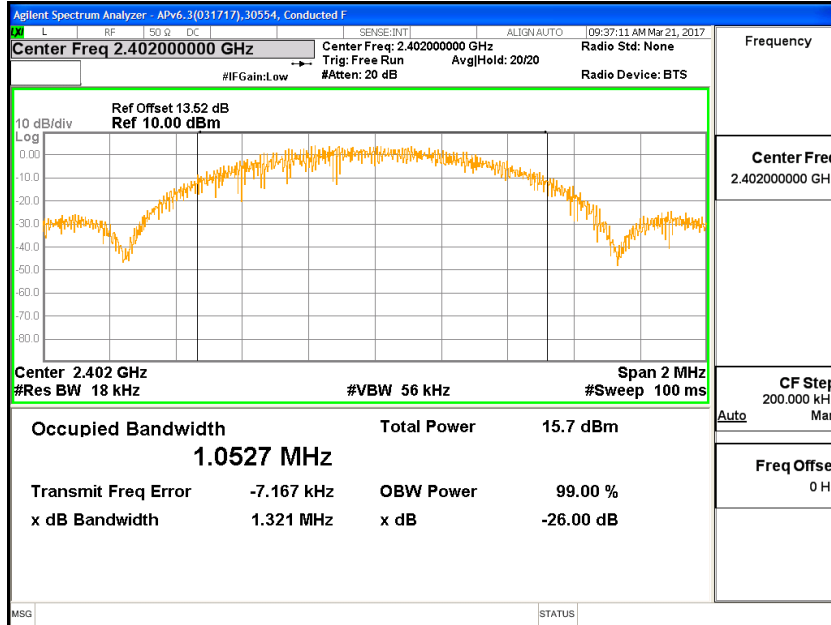
Test Procedure

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.

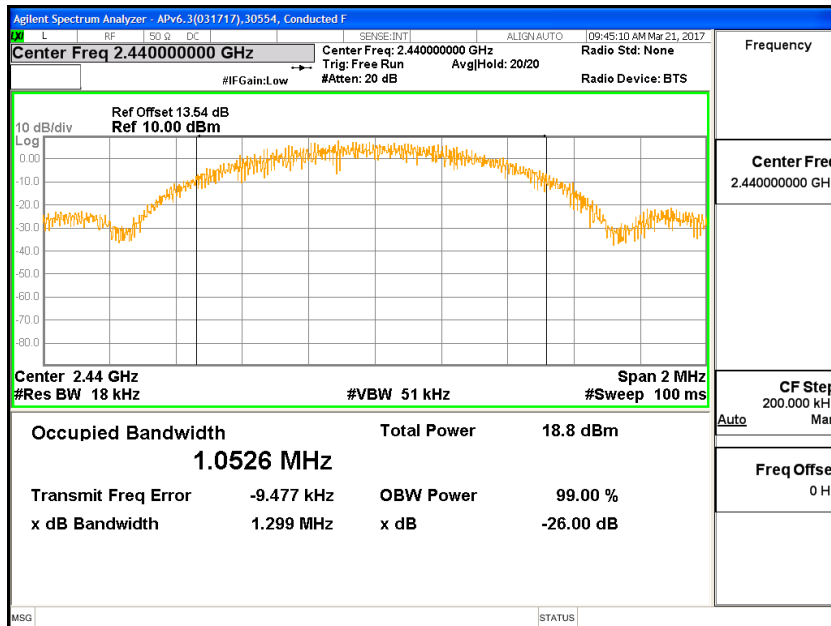
RESULTS

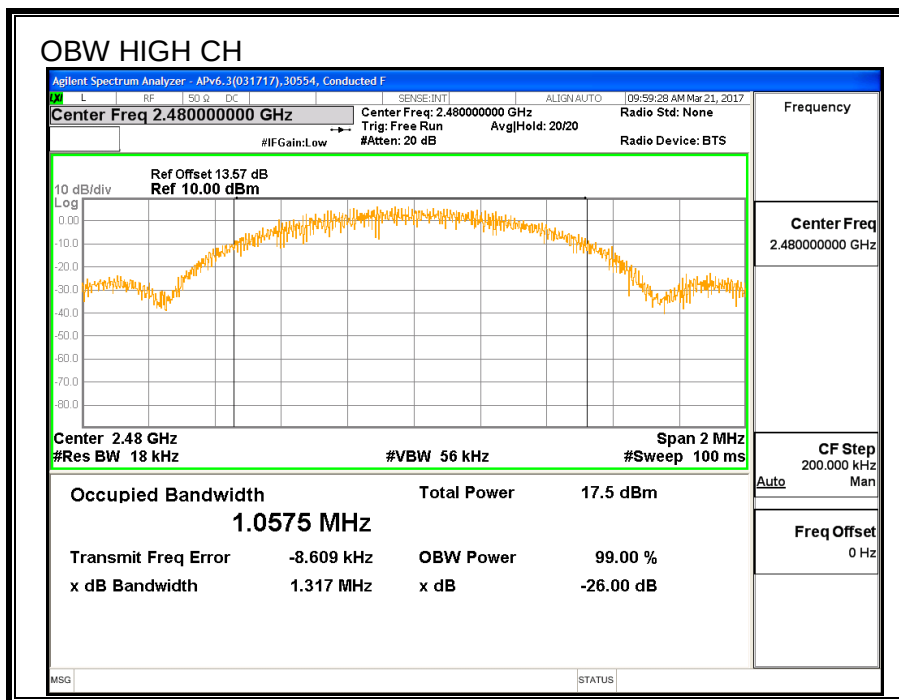
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0527
Middle	2440	1.0526
High	2480	1.0575

OBW LOW CH



OBW MID CH





7.3.3. AVERAGE POWER

ID:	30554	Date:	6/14/2017
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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 (dBm)
Low	2402	19.45
Middle	2440	19.92
High	2480	19.60

7.3.4. OUTPUT POWER

ID:	30554	Date:	6/14/2017
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LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

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

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.65	30	-10.45
Middle	2440	20.10	30	-9.90
High	2480	19.80	30	-10.20

7.3.5. POWER SPECTRAL DENSITY

LIMITS

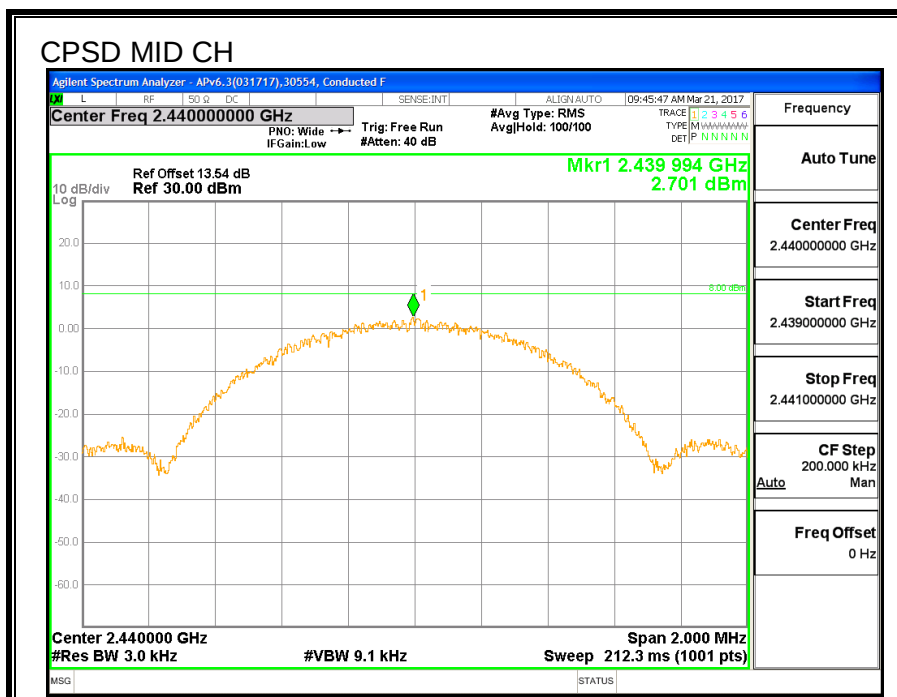
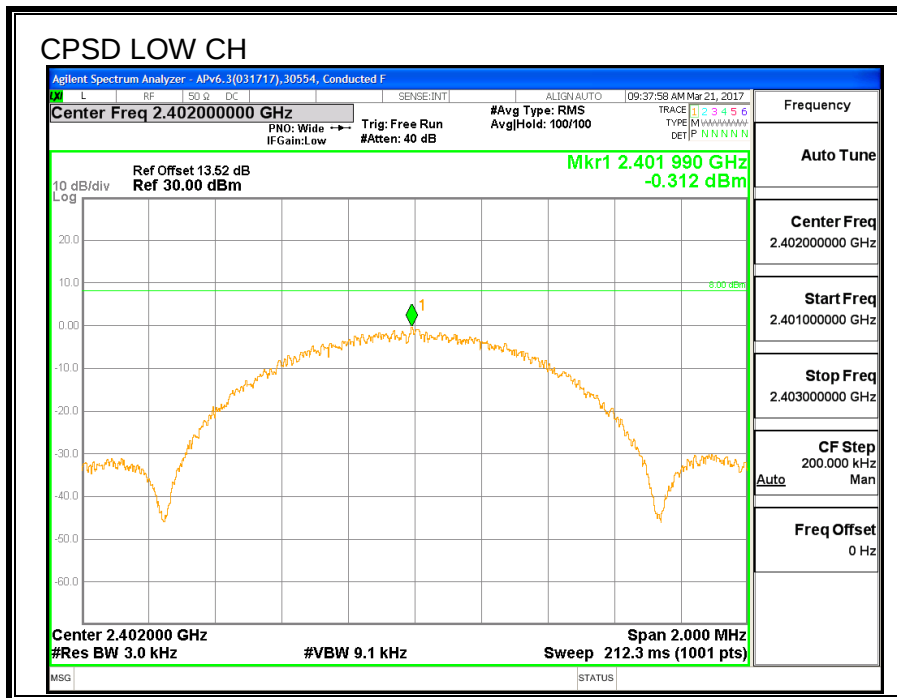
FCC §15.247 (e)

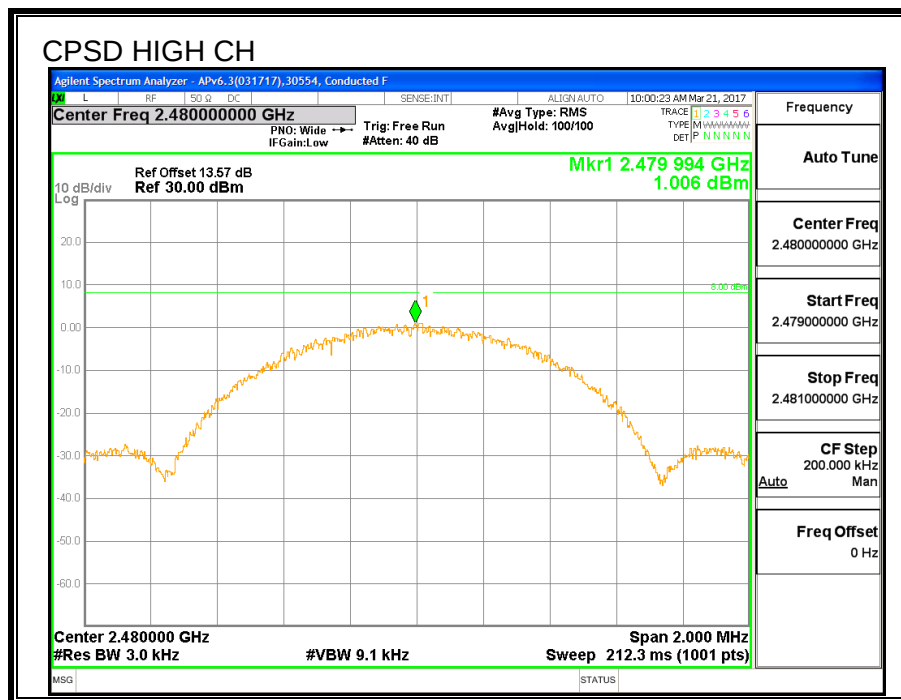
IC RSS-247 (5.2) (b)

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/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-0.312	8	-8.312
Middle	2440	2.701	8	-5.299
High	2480	1.006	8	-6.994





7.3.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

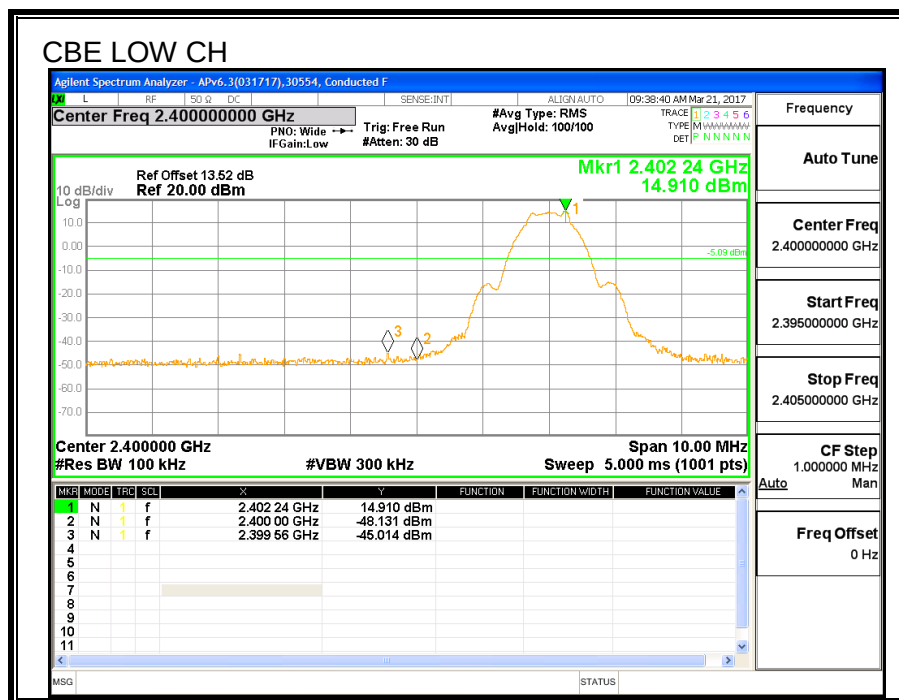
LIMITS

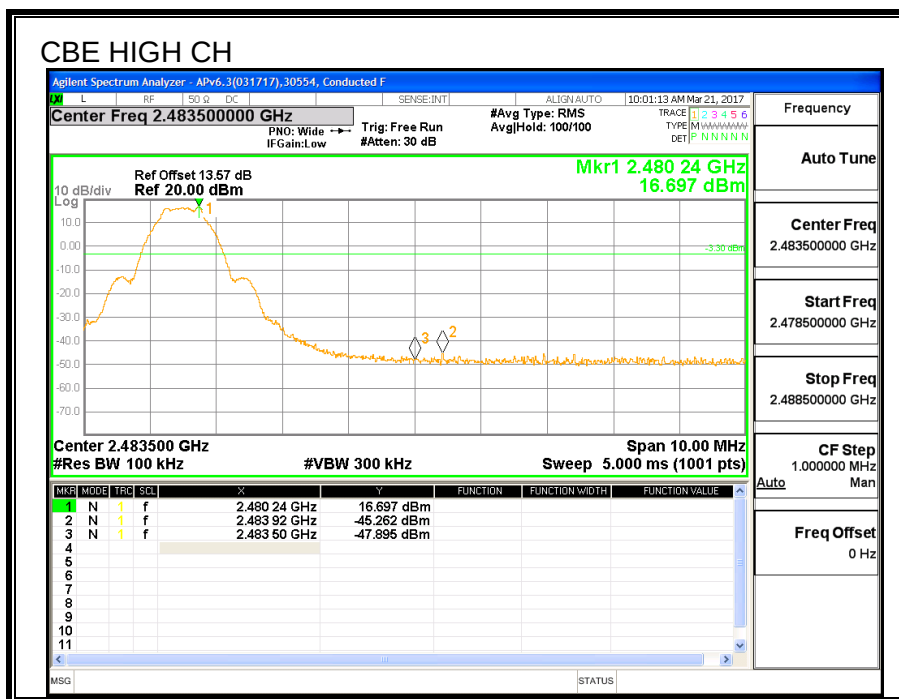
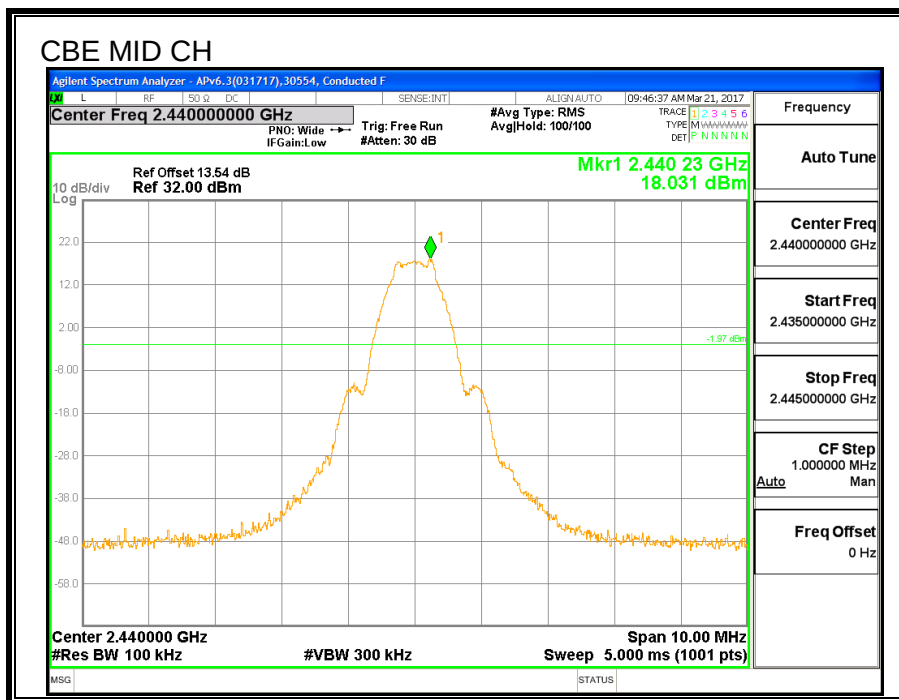
FCC §15.247 (d)

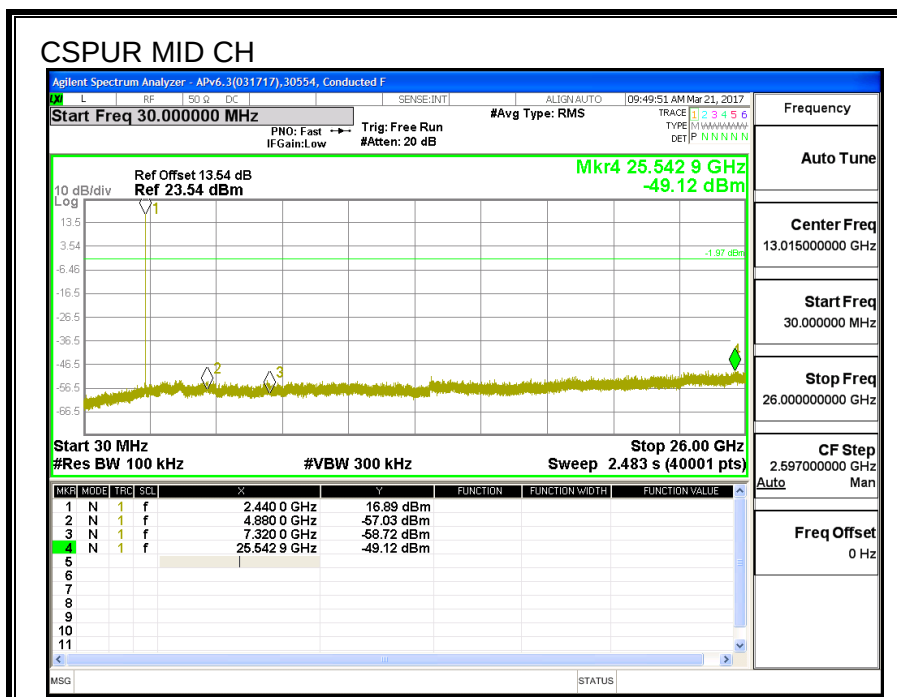
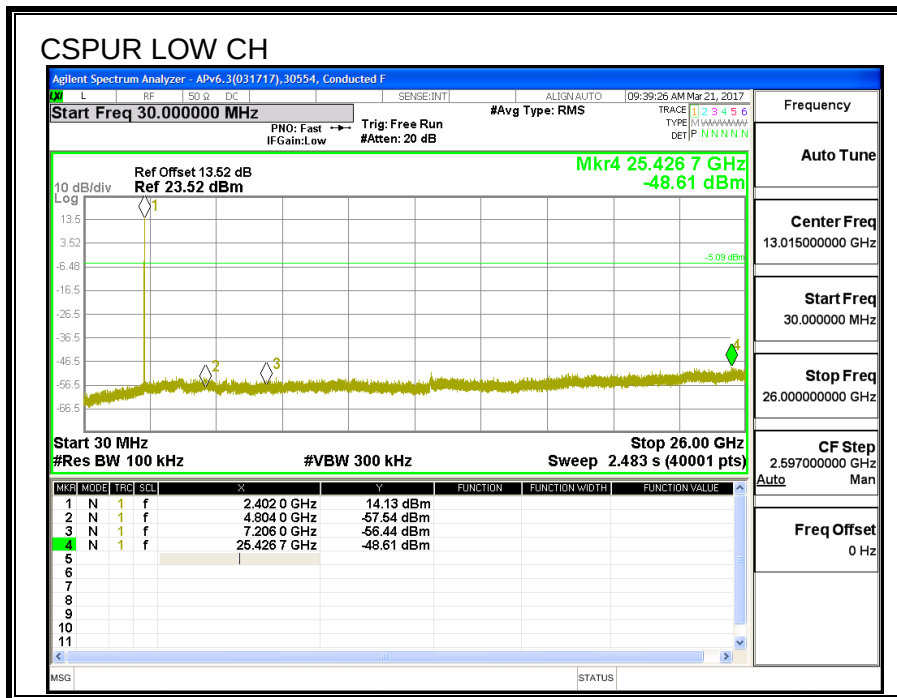
IC RSS-247 (5.5)

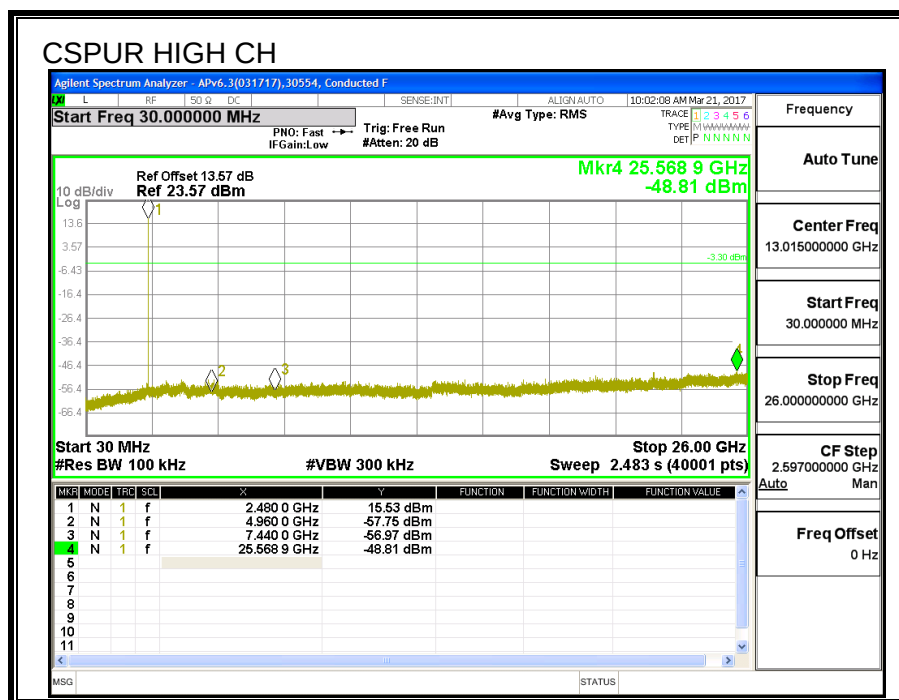
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS









7.4. UAT1 BLE 1M Plow

7.4.1. 6 dB BANDWIDTH

LIMITS

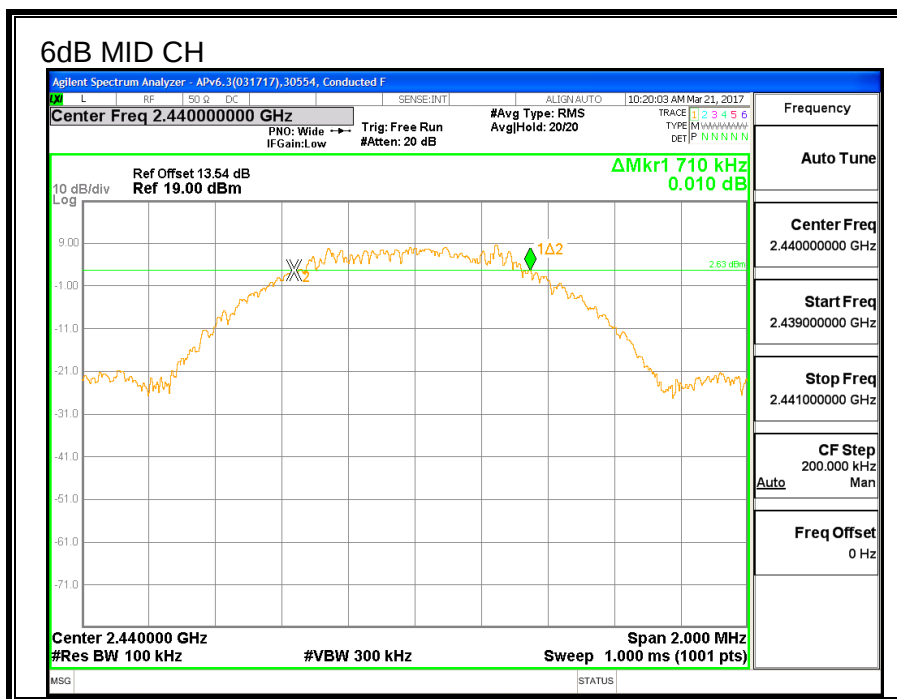
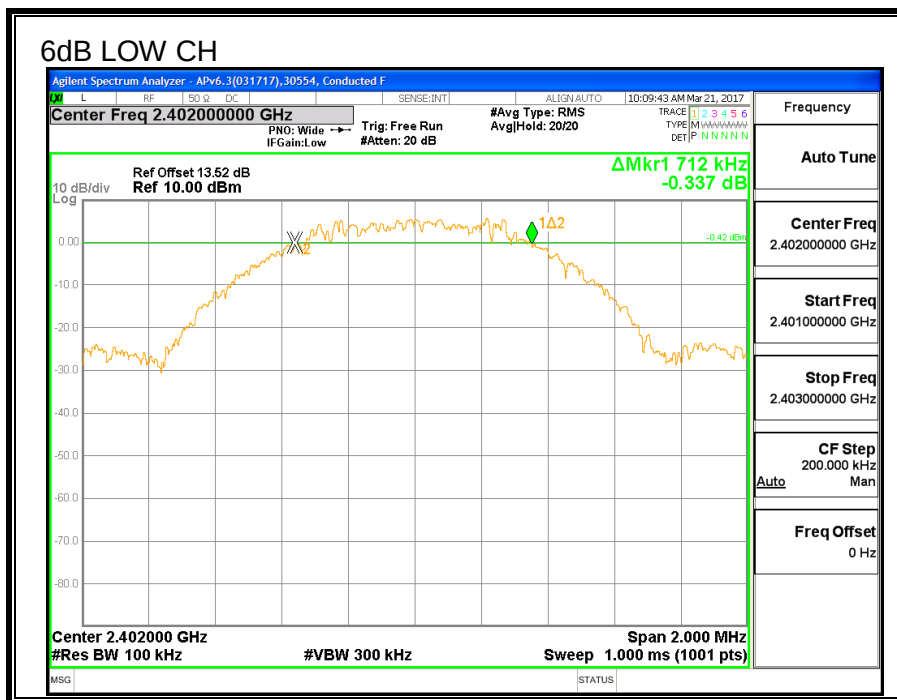
FCC §15.247 (a) (2)

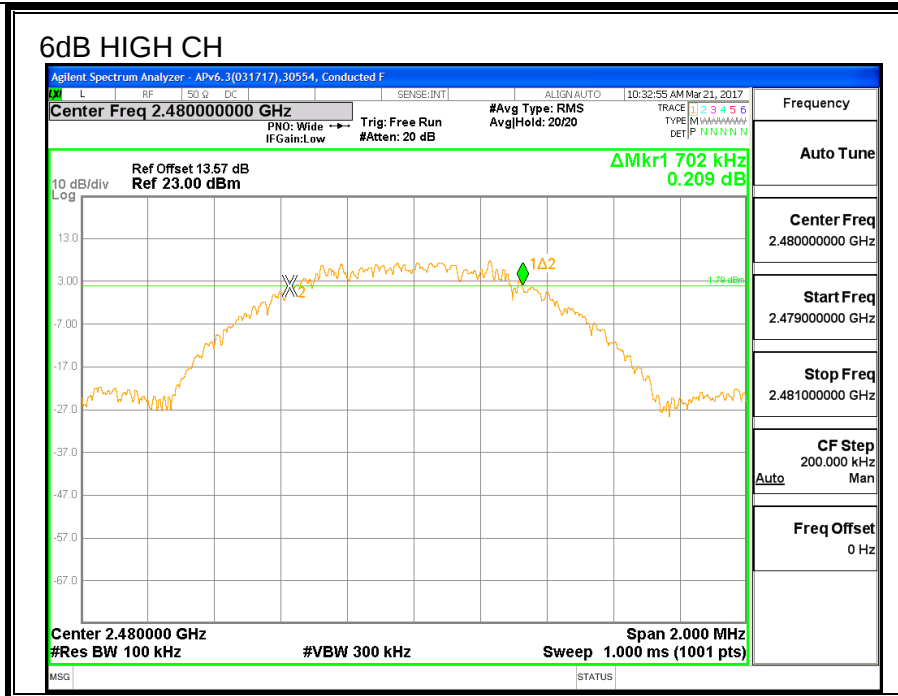
IC RSS-247 (5.2) (a)

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

RESULTS

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.712	0.5
Middle	2440	0.710	0.5
High	2480	0.702	0.5





7.4.2. 99% BANDWIDTH

LIMITS

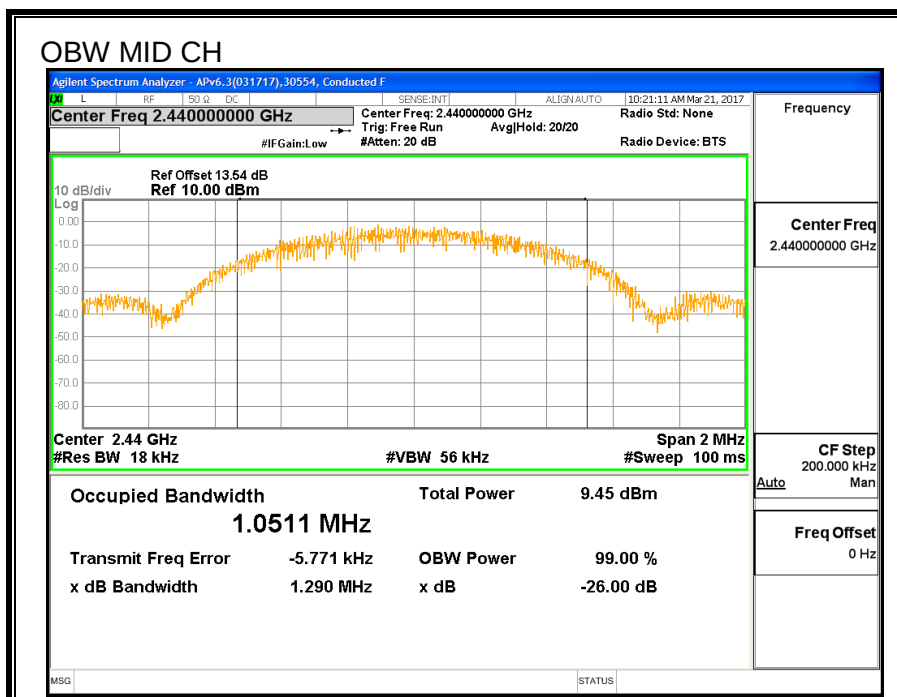
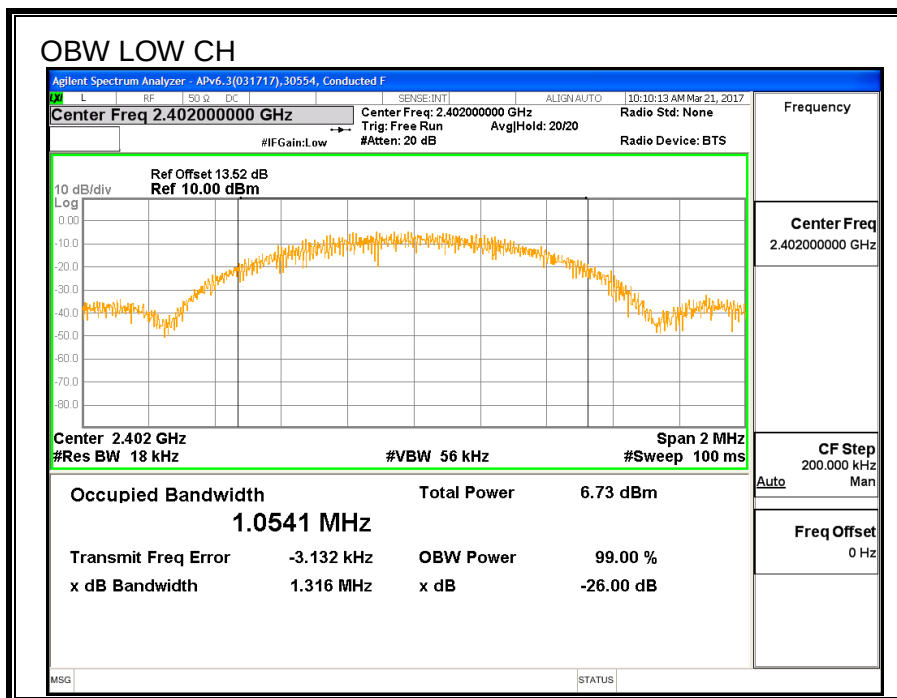
None; for reporting purposes only.

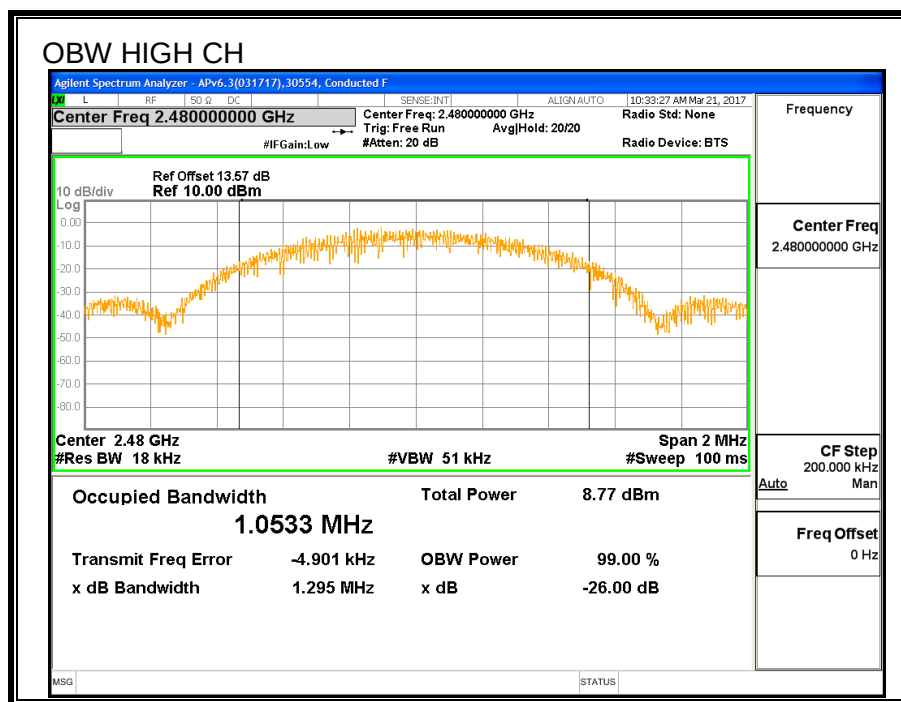
Test Procedure

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	1.0541
Middle	2440	1.0511
High	2480	1.0533





7.4.3. AVERAGE POWER

ID:	30554	Date:	6/14/2017
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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 (dBm)
Low	2402	9.65
Middle	2440	9.90
High	2480	9.45

7.4.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

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

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.80	30	-20.20
Middle	2440	10.15	30	-19.85
High	2480	9.65	30	-20.35

7.4.5. POWER SPECTRAL DENSITY

LIMITS

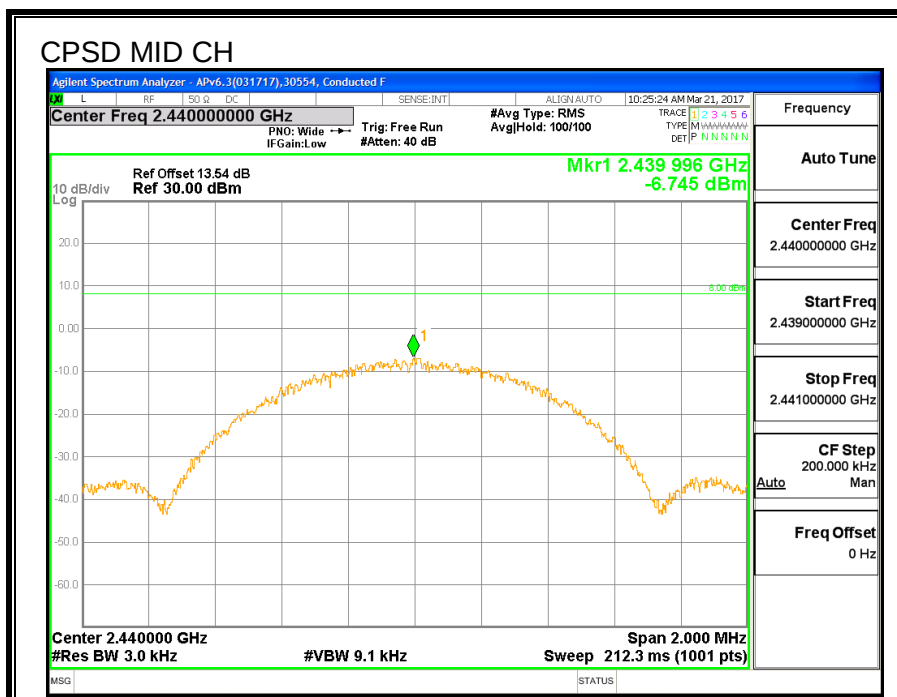
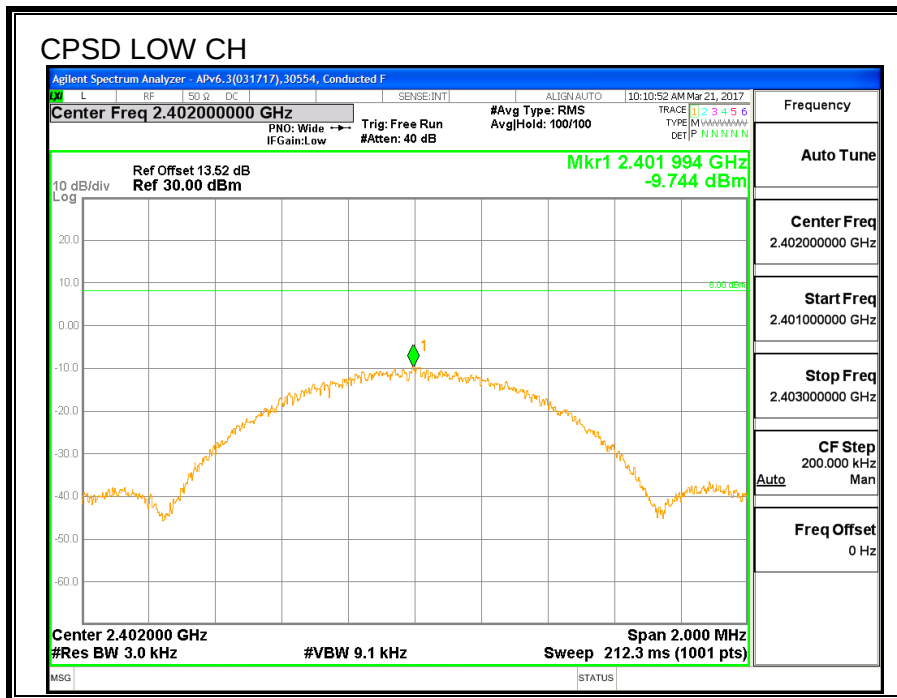
FCC §15.247 (e)

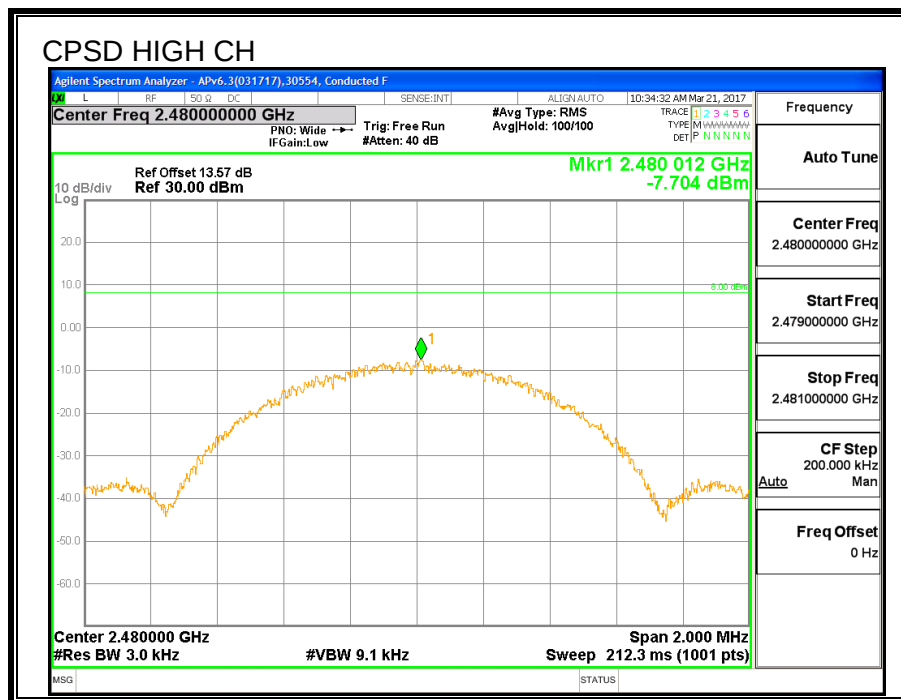
IC RSS-247 (5.2) (b)

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/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-9.744	8	-17.744
Middle	2440	-6.745	8	-14.745
High	2480	-7.704	8	-15.704





7.4.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

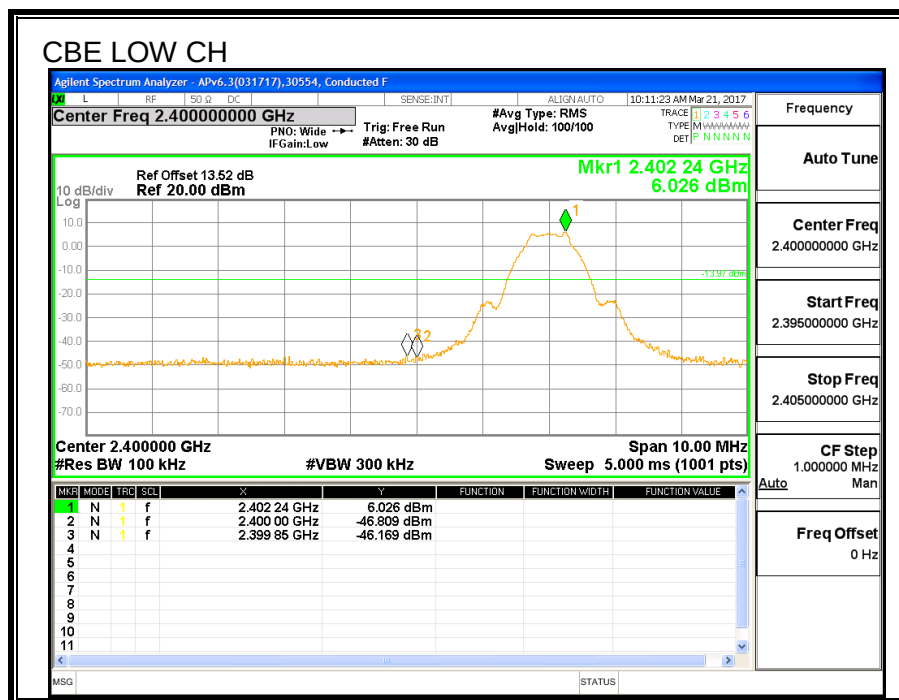
LIMITS

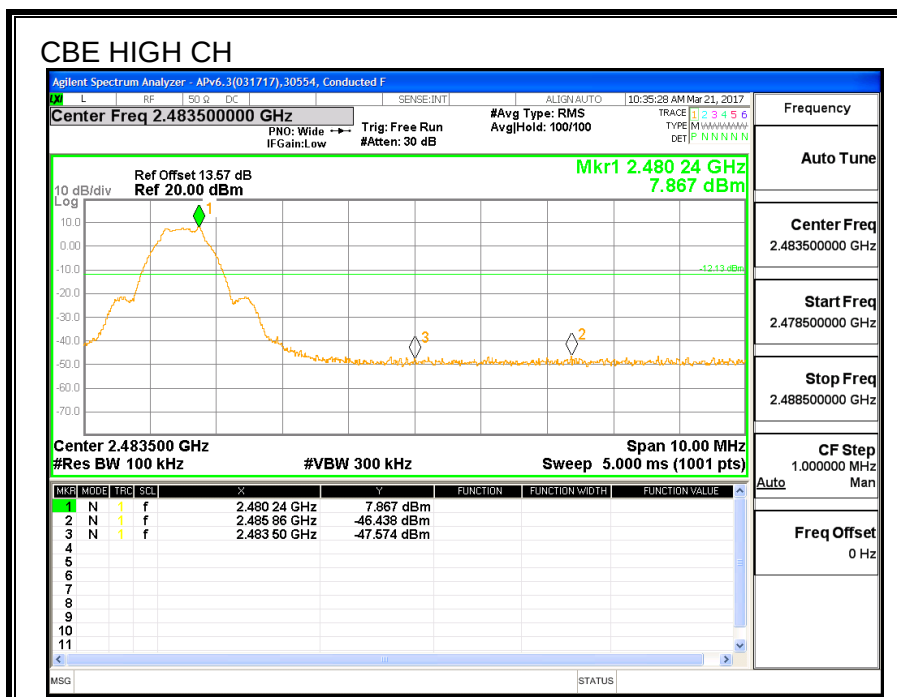
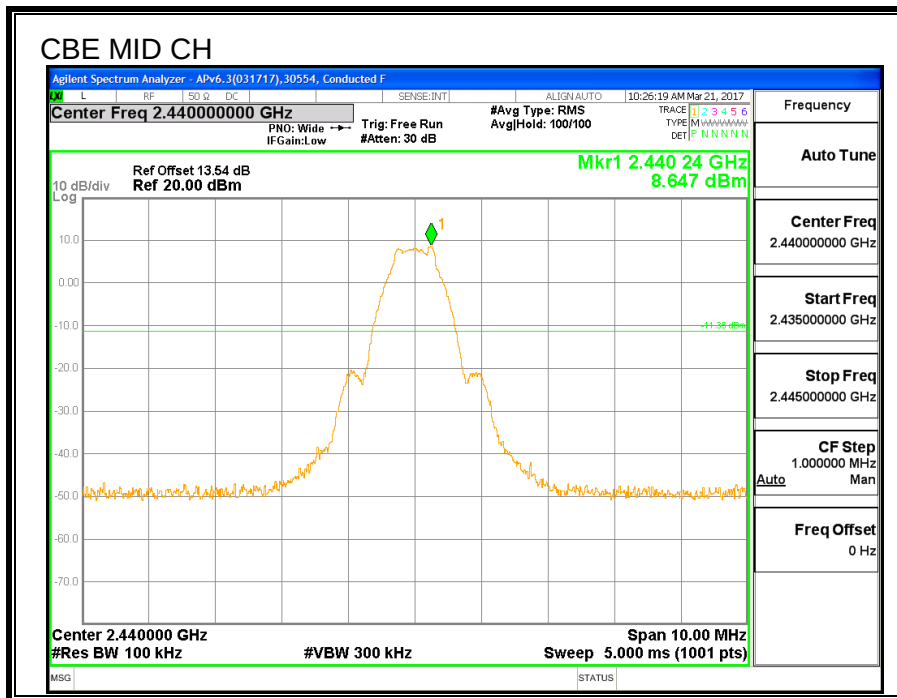
FCC §15.247 (d)

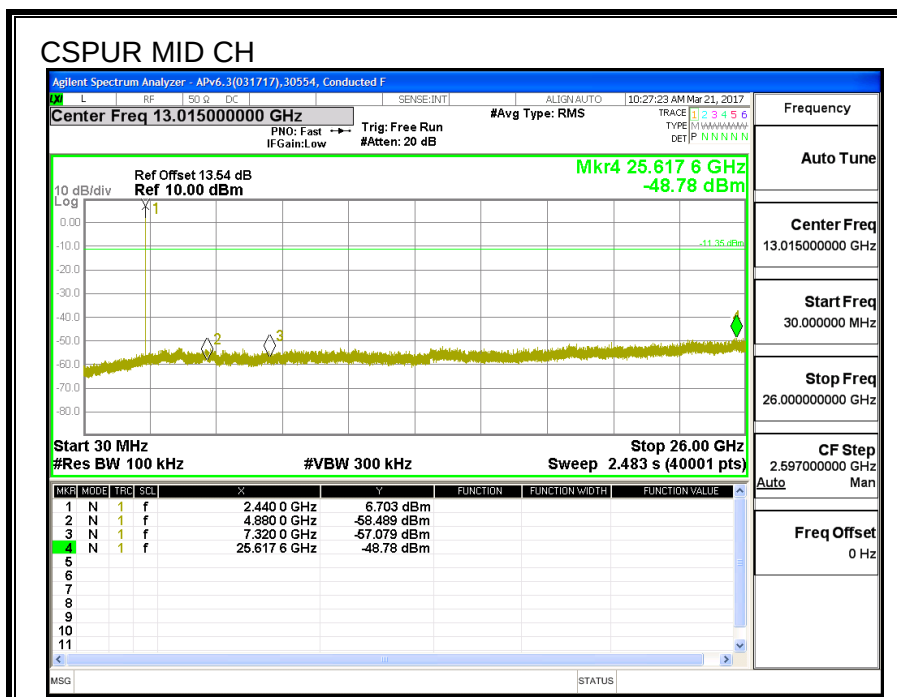
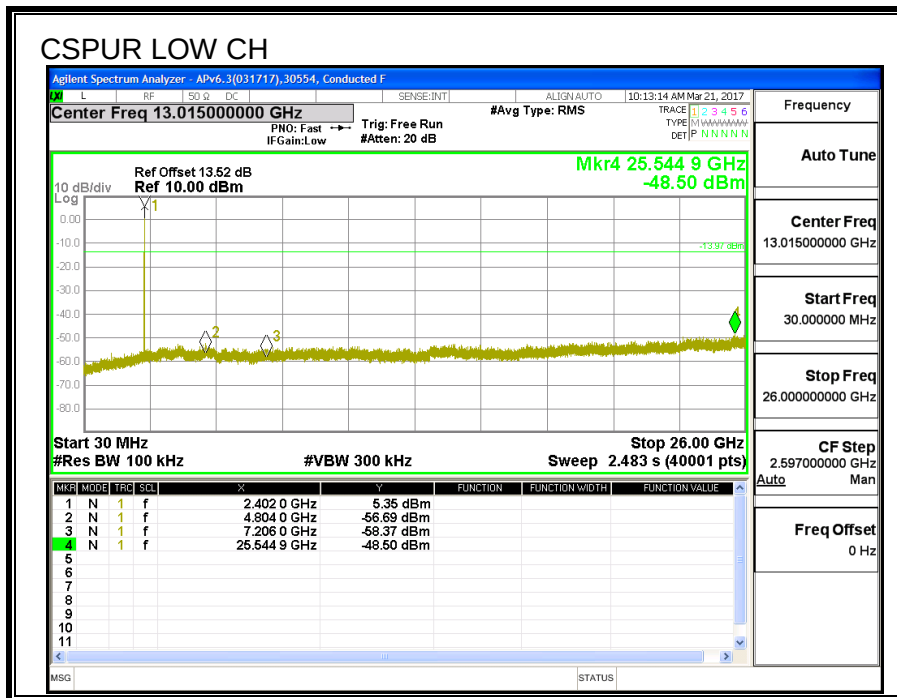
IC RSS-247 (5.5)

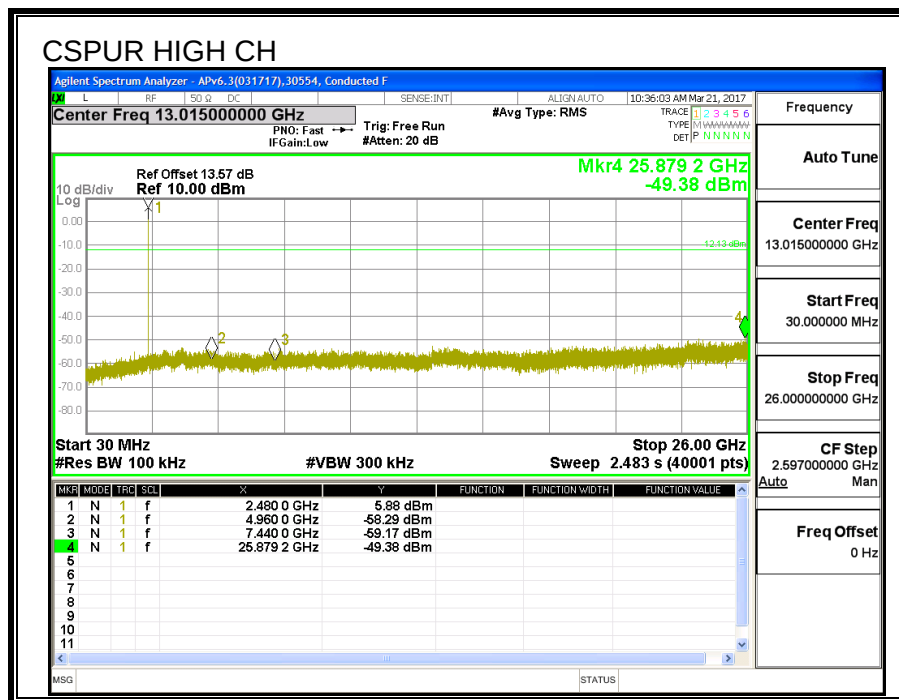
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS









7.5. UAT1 BLE 2M Pmax

7.5.1. AVERAGE POWER

ID:	39316	Date:	6/27/2017
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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 (dBm)
Low	2402	19.30
Middle	2440	19.52
High	2480	19.44

7.5.2. OUTPUT POWER

ID:	39316	Date:	6/27/2017
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LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

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

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.50	30	-10.5
Middle	2440	19.70	30	-10.3
High	2480	19.64	30	-10.36

7.6. UAT1 BLE 2M Plow

7.6.1. AVERAGE POWER

ID:	39316	Date:	6/27/2017
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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 (dBm)
Low	2402	9.10
Middle	2440	9.30
High	2480	9.45

7.6.2. OUTPUT POWER

ID:	39316	Date:	6/27/2017
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LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

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

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.30	30	-20.70
Middle	2440	9.48	30	-20.52
High	2480	9.65	30	-20.35

7.7. LAT3 BLE 1M Pmax

7.7.1. 6 dB BANDWIDTH

LIMITS

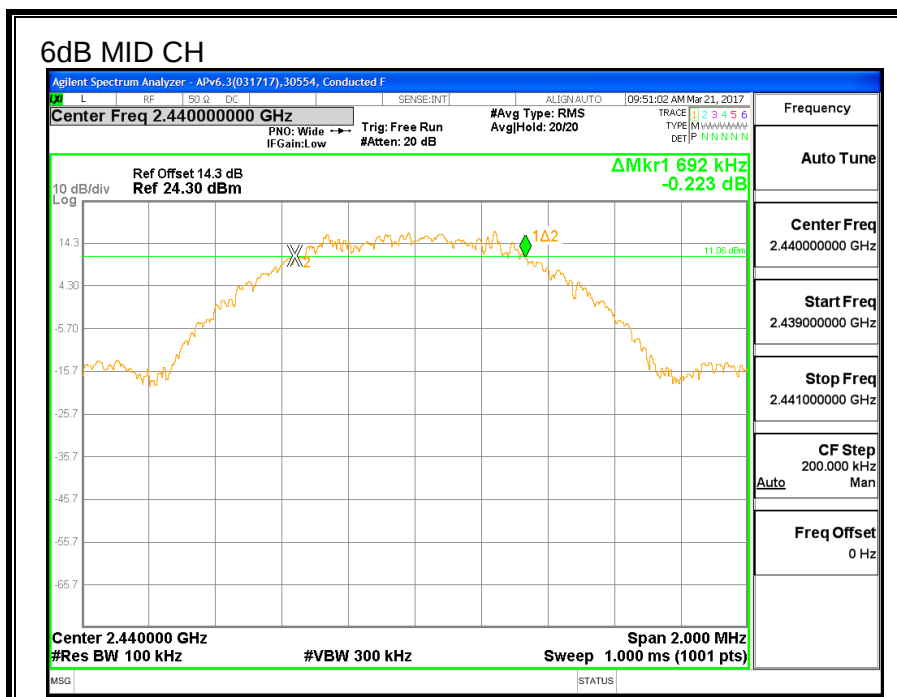
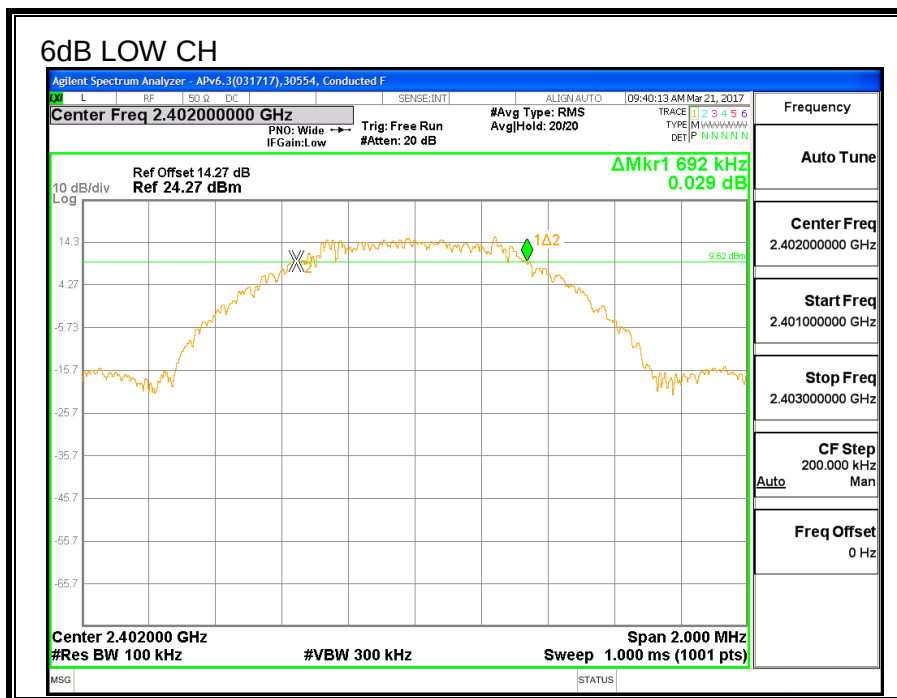
FCC §15.247 (a) (2)

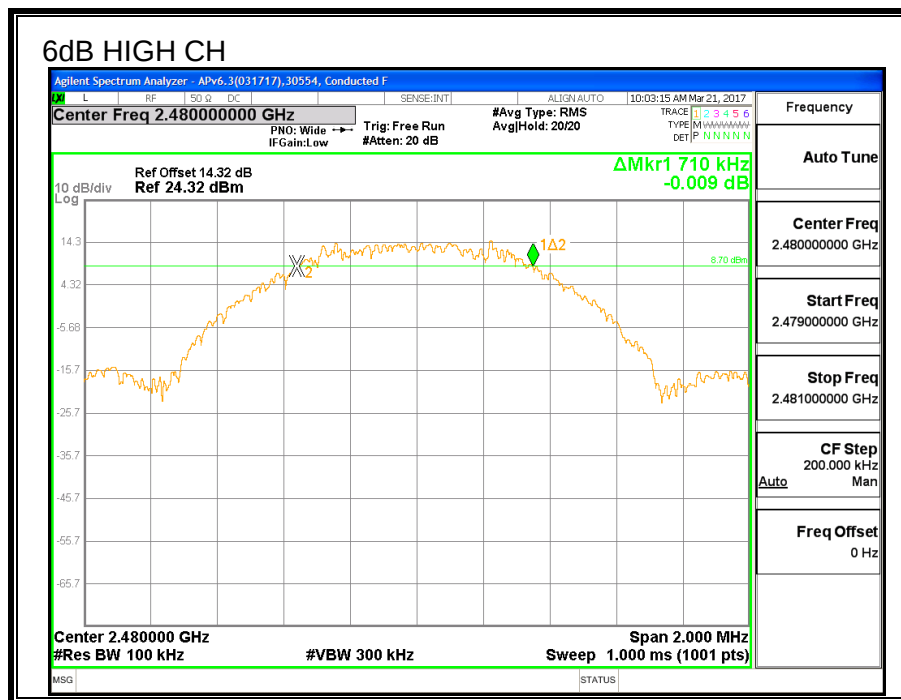
IC RSS-247 (5.2) (a)

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

RESULTS

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.692	0.5
Middle	2440	0.692	0.5
High	2480	0.710	0.5





7.7.2. 99% BANDWIDTH

LIMITS

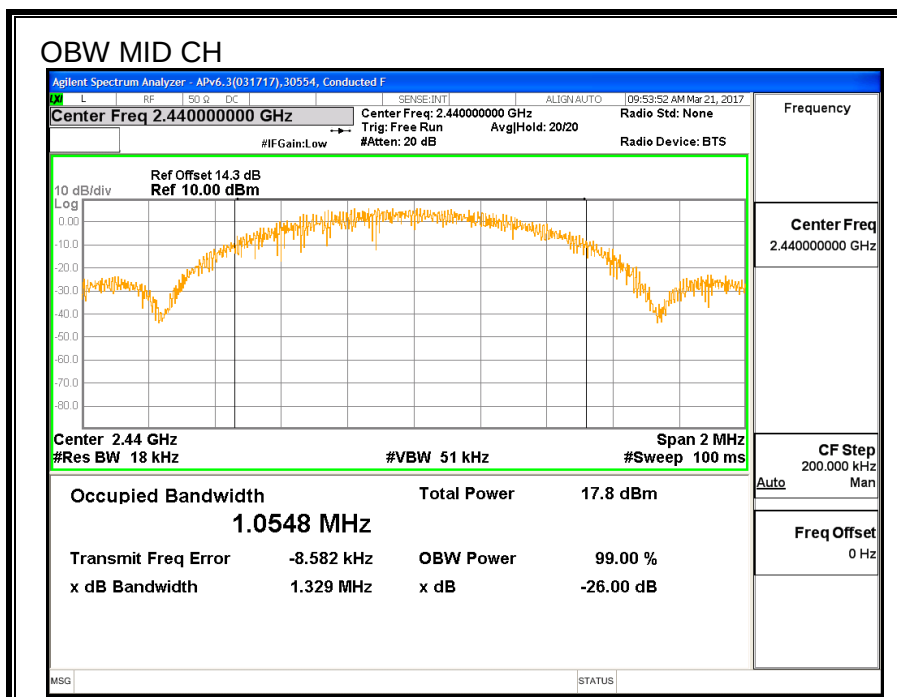
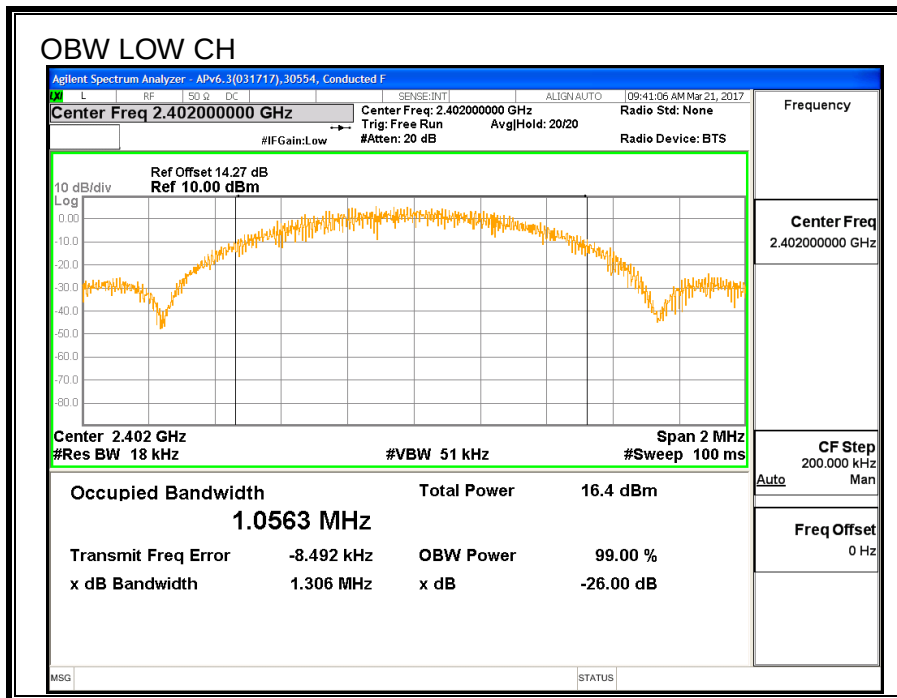
None; for reporting purposes only.

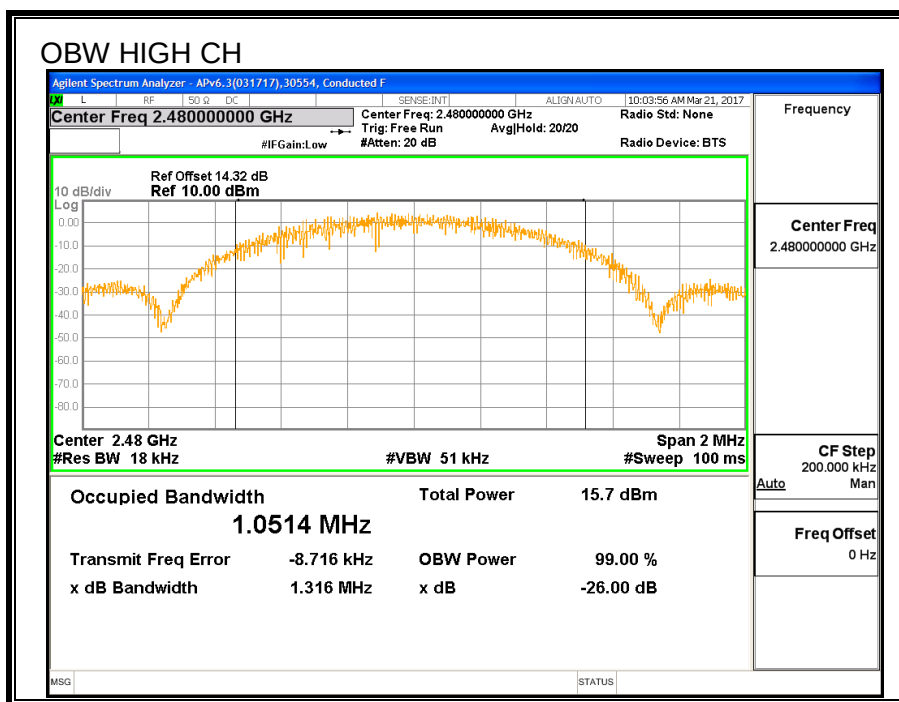
Test Procedure

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	1.0563
Middle	2440	1.0548
High	2480	1.0514





7.7.3. AVERAGE POWER

ID:	30554	Date:	6/14/2017
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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 (dBm)
Low	2402	19.65
Middle	2440	19.80
High	2480	19.66

7.7.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

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

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.87	30	-10.13
Middle	2440	20.02	30	-9.98
High	2480	19.88	30	-10.12

7.7.5. POWER SPECTRAL DENSITY

LIMITS

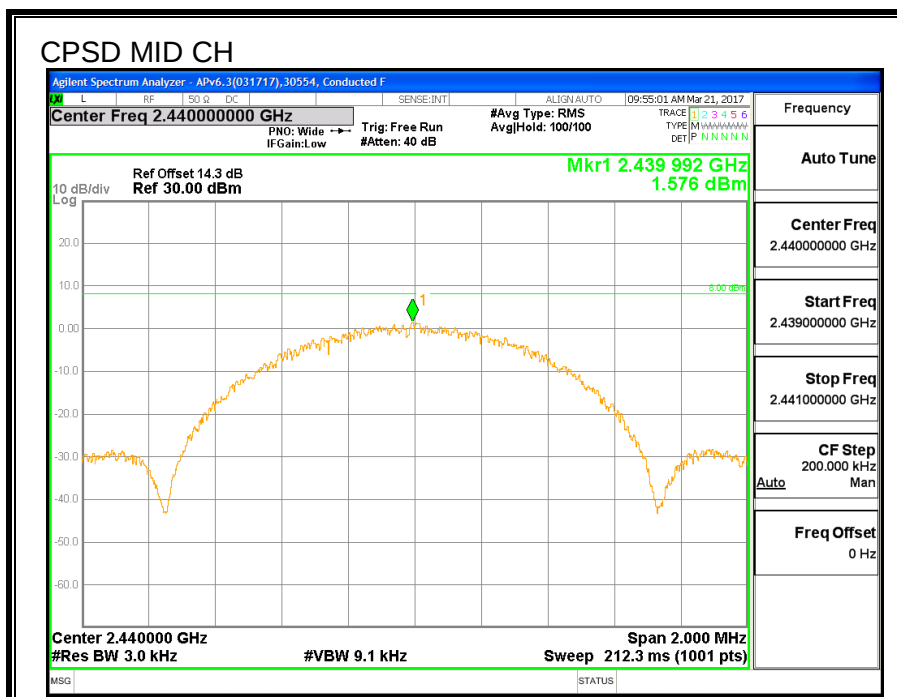
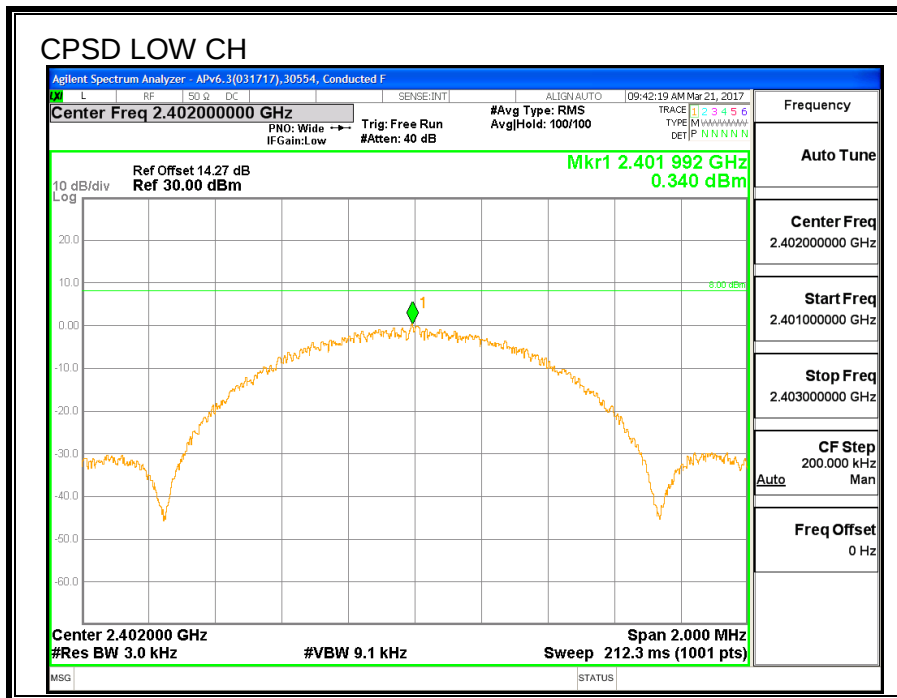
FCC §15.247 (e)

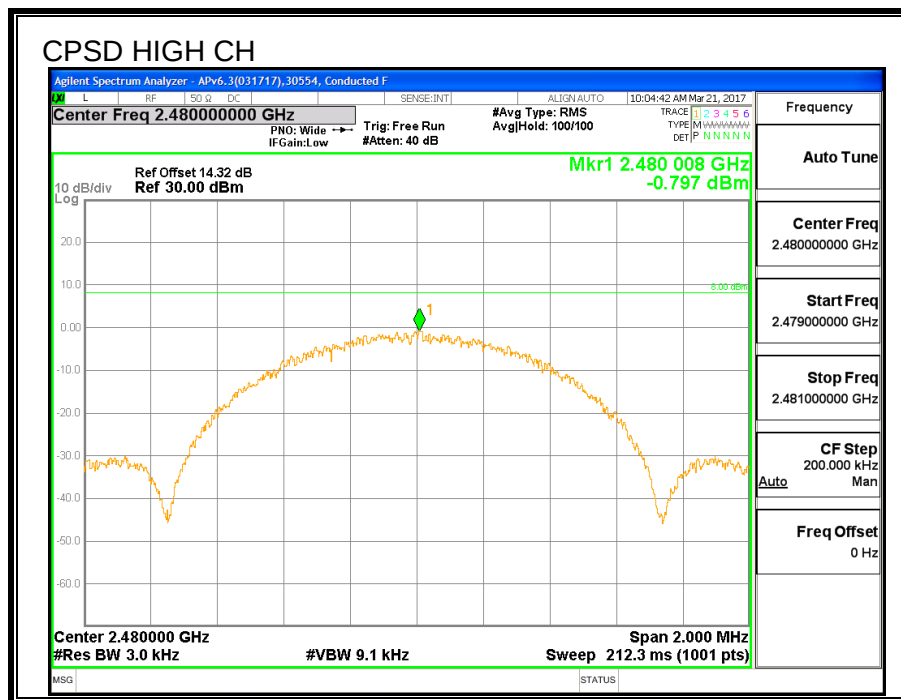
IC RSS-247 (5.2) (b)

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/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	0.340	8	-7.640
Middle	2440	1.576	8	-6.424
High	2480	-0.797	8	-8.797





7.7.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

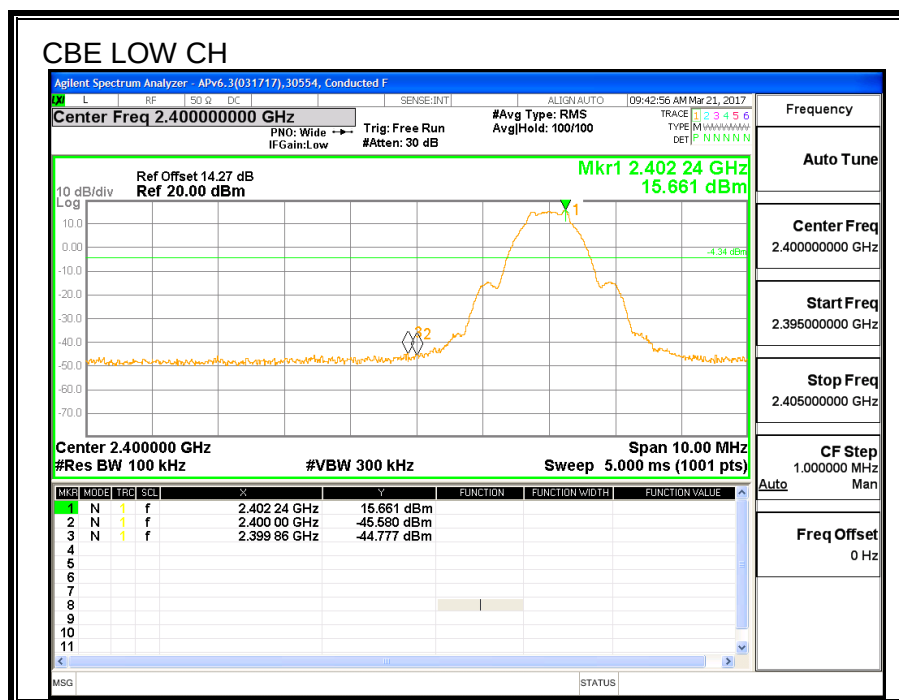
LIMITS

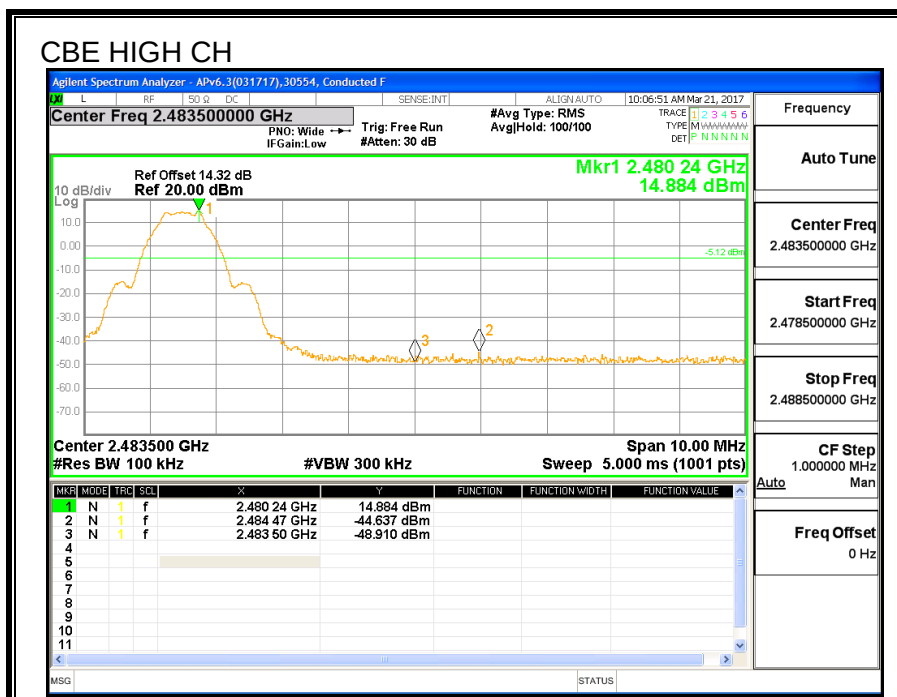
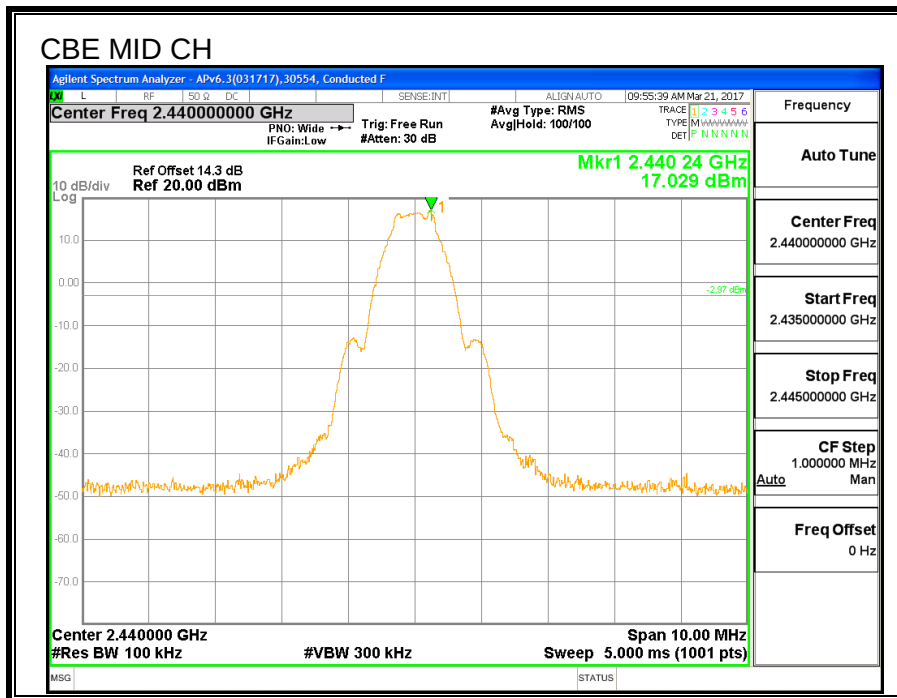
FCC §15.247 (d)

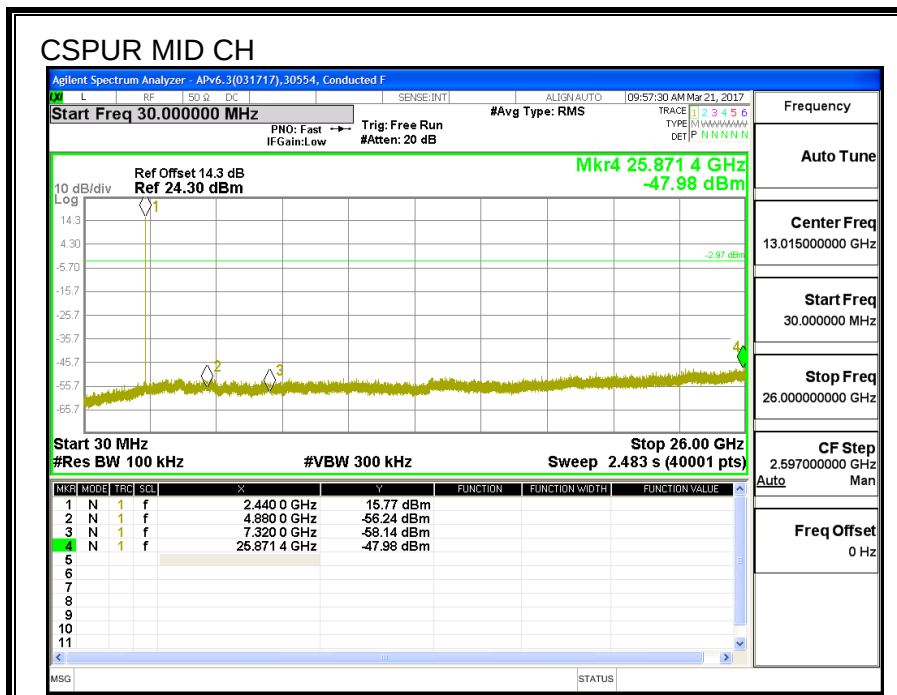
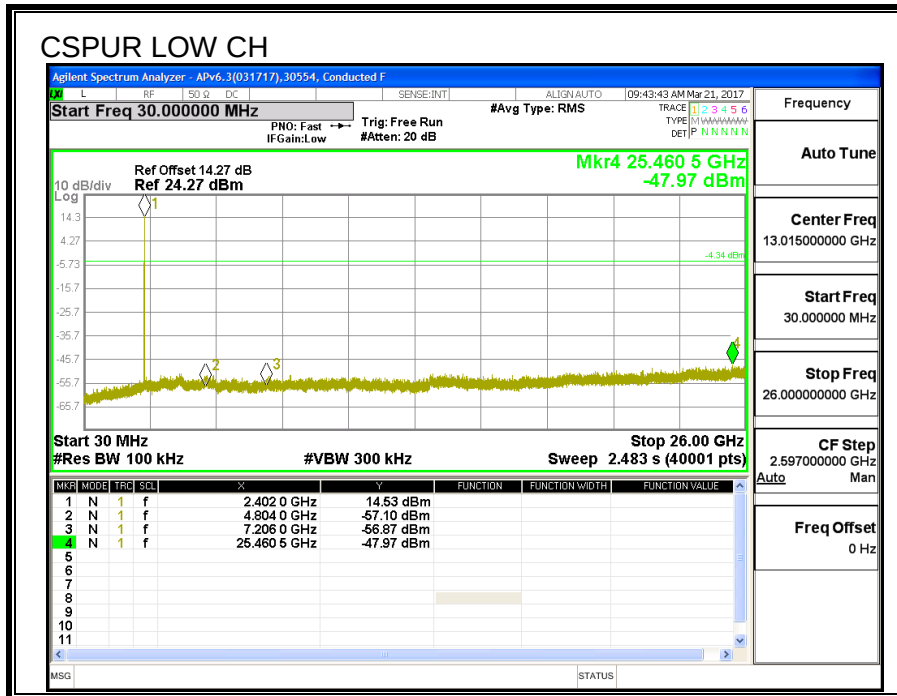
IC RSS-247 (5.5)

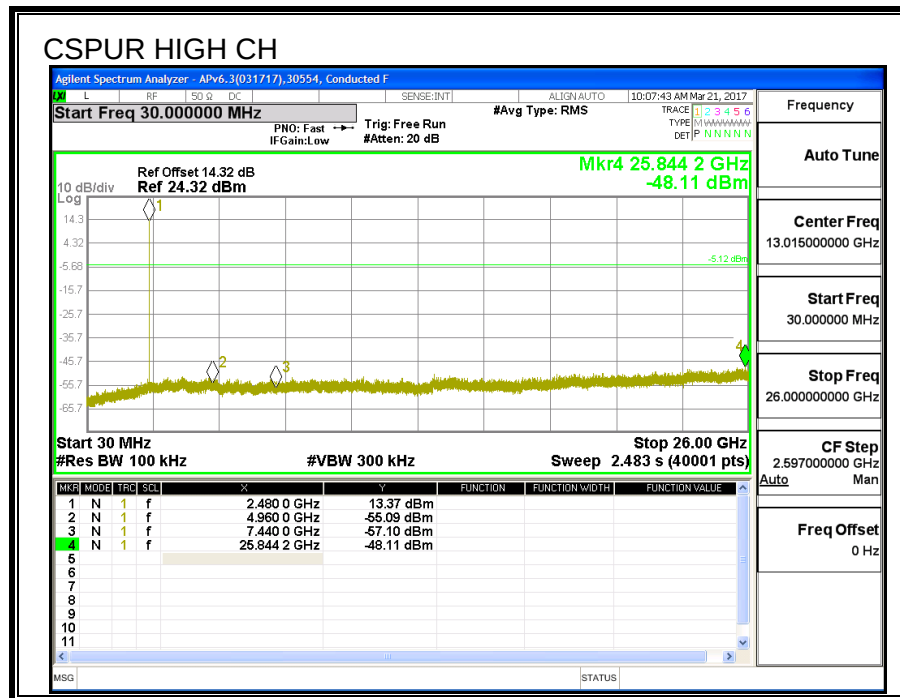
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS









7.8. LAT3 BLE 1M Plow

7.8.1. 6 dB BANDWIDTH

LIMITS

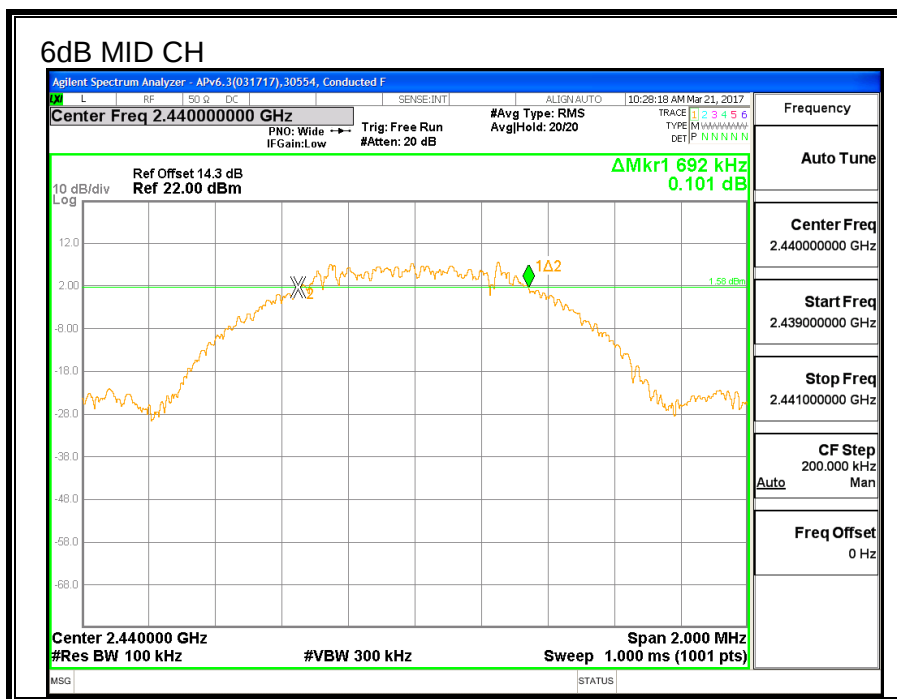
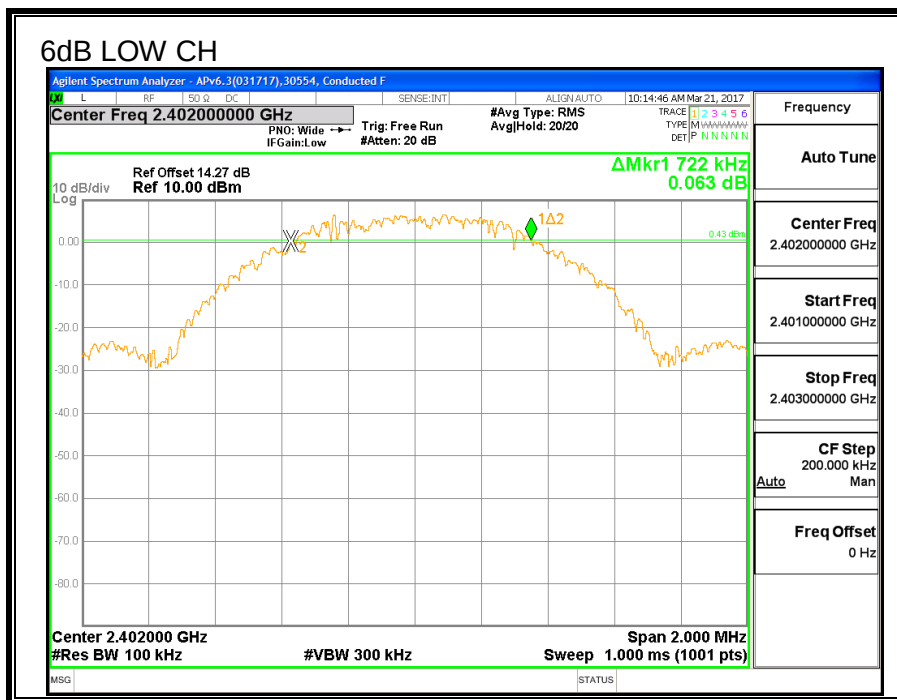
FCC §15.247 (a) (2)

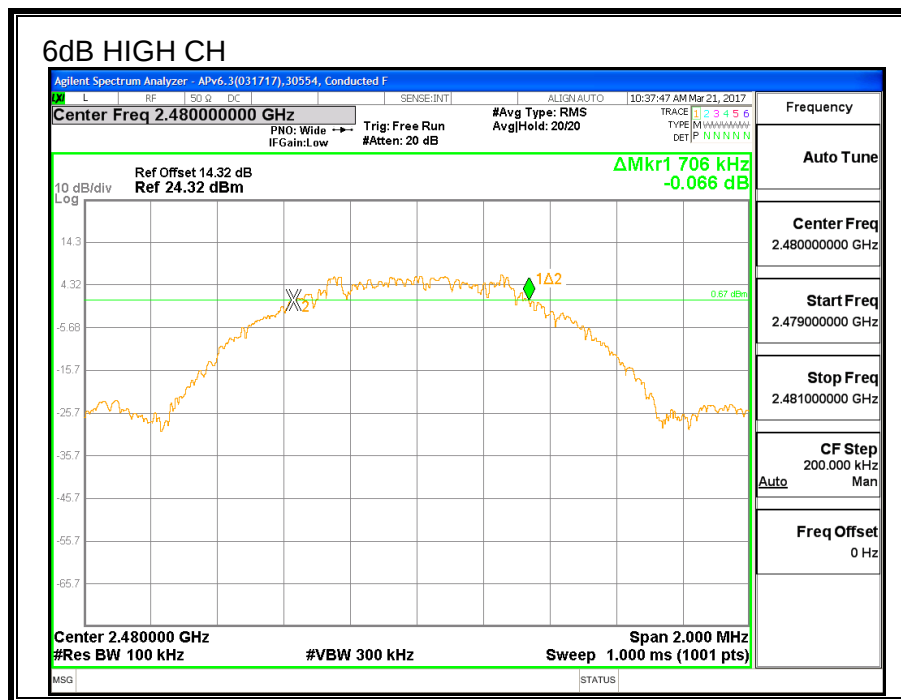
IC RSS-247 (5.2) (a)

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

RESULTS

Channel	Frequency	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.722	0.5
Middle	2440	0.692	0.5
High	2480	0.706	0.5





7.8.2. 99% BANDWIDTH

LIMITS

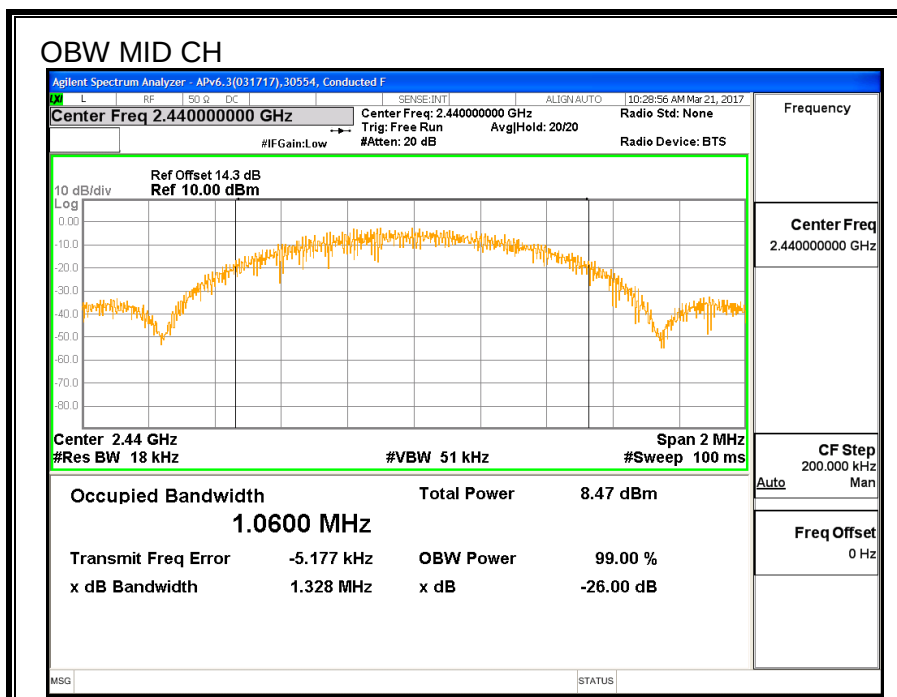
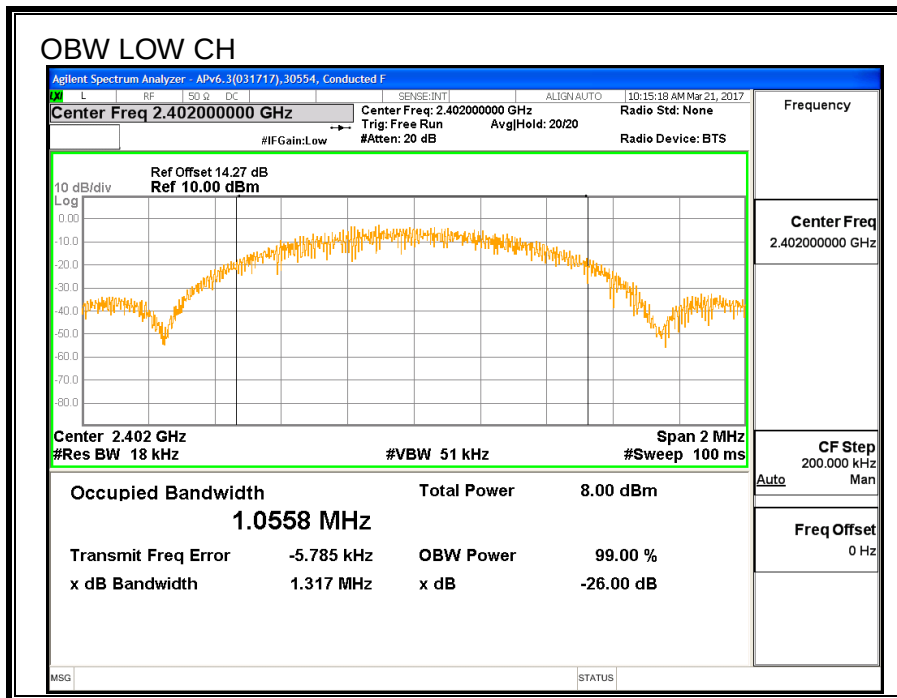
None; for reporting purposes only.

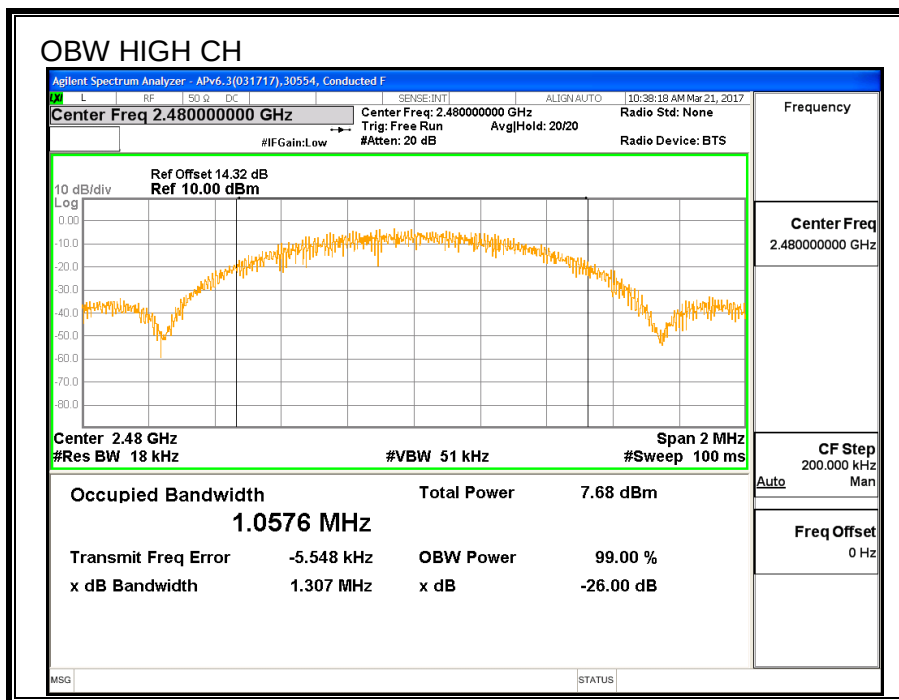
Test Procedure

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	1.0558
Middle	2440	1.0600
High	2480	1.0576





7.8.3. AVERAGE POWER

ID:	30554	Date:	6/14/2017
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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 (dBm)
Low	2402	9.55
Middle	2440	9.80
High	2480	9.25

7.8.4. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

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

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.70	30	-20.30
Middle	2440	10.06	30	-19.94
High	2480	9.40	30	-20.60

7.8.5. POWER SPECTRAL DENSITY

LIMITS

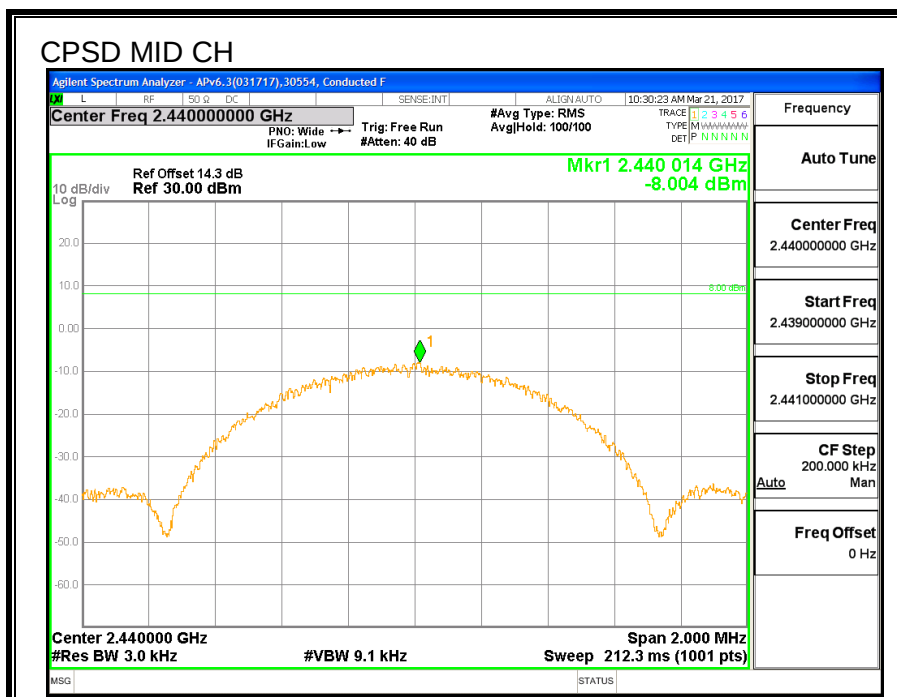
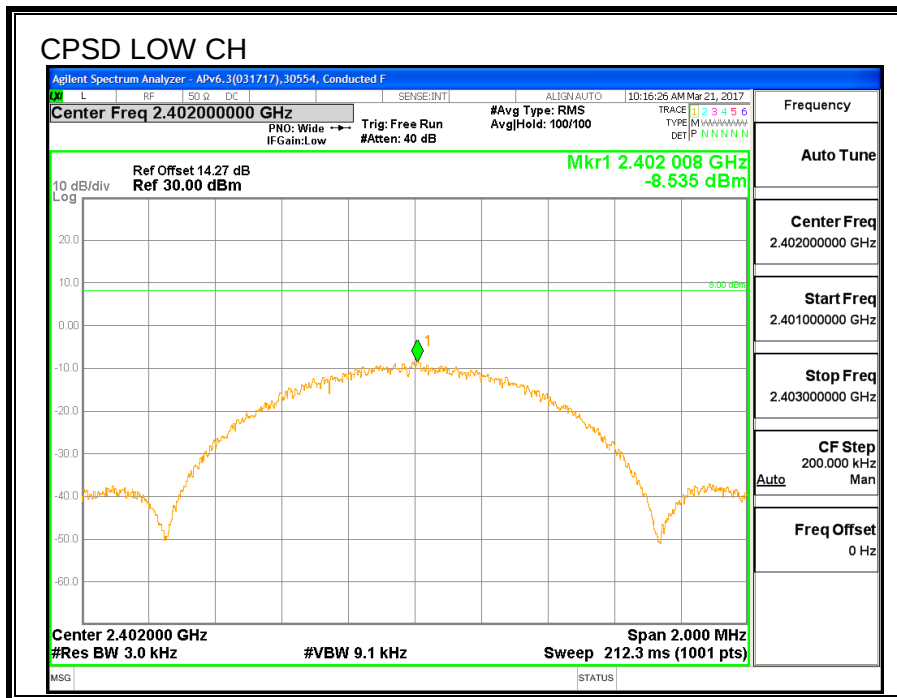
FCC §15.247 (e)

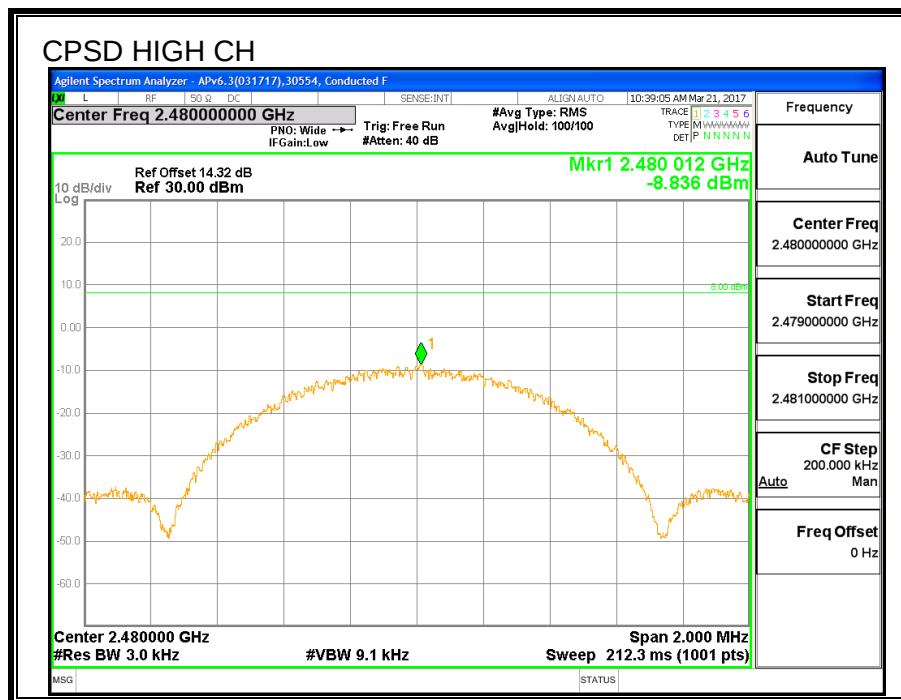
IC RSS-247 (5.2) (b)

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/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-8.535	8	-16.535
Middle	2440	-8.004	8	-16.004
High	2480	-8.836	8	-16.836





7.8.6. CONDUCTED BANEDGE AND SPURIOUS EMISSIONS

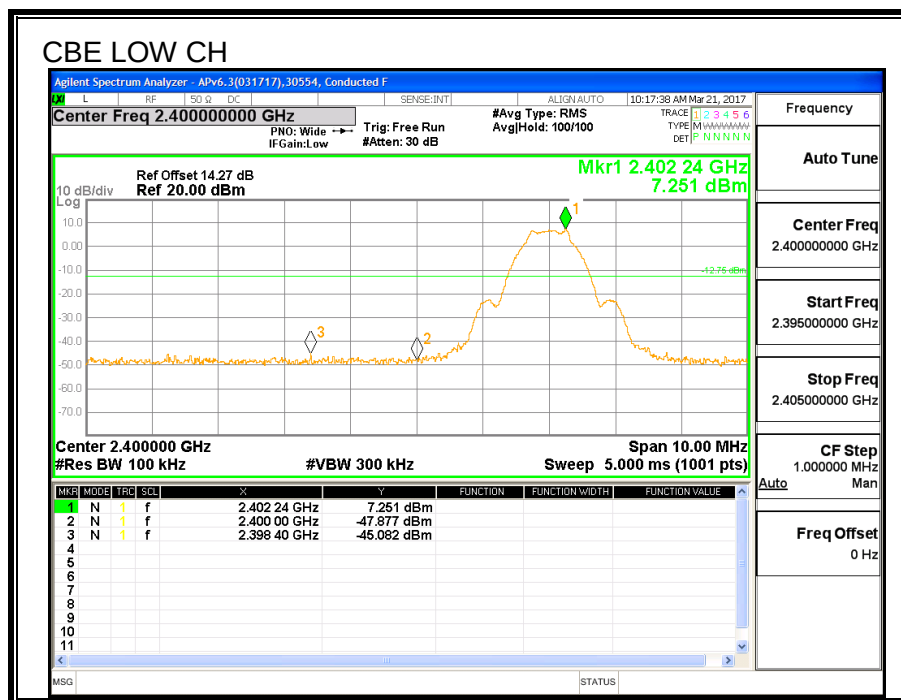
LIMITS

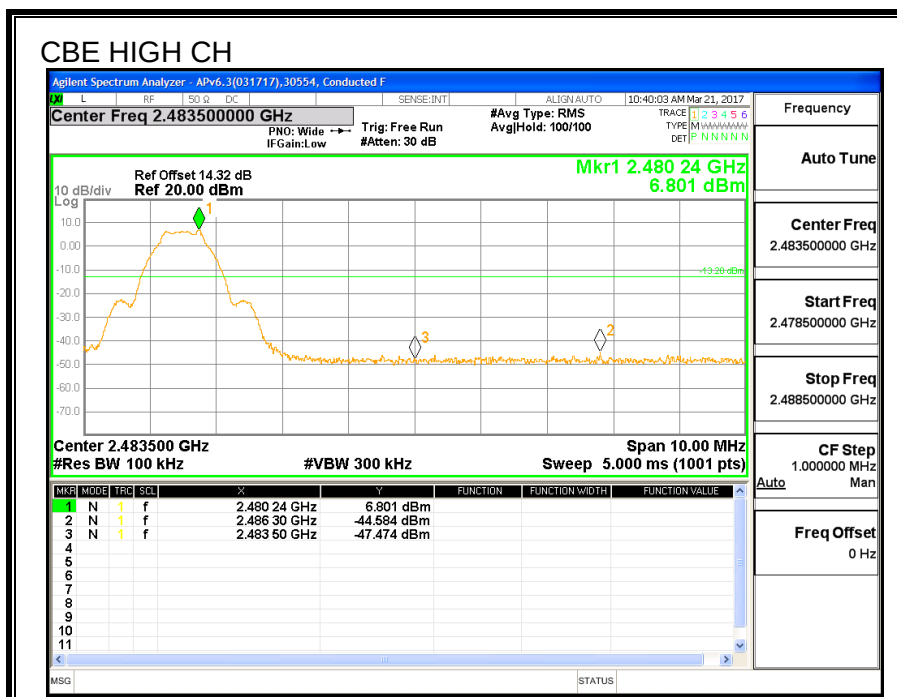
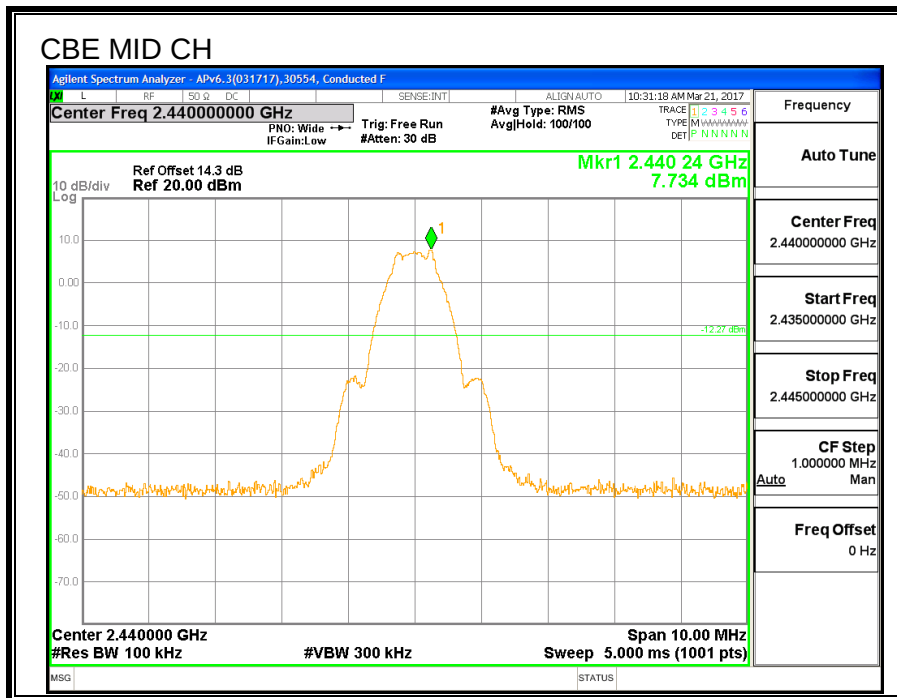
FCC §15.247 (d)

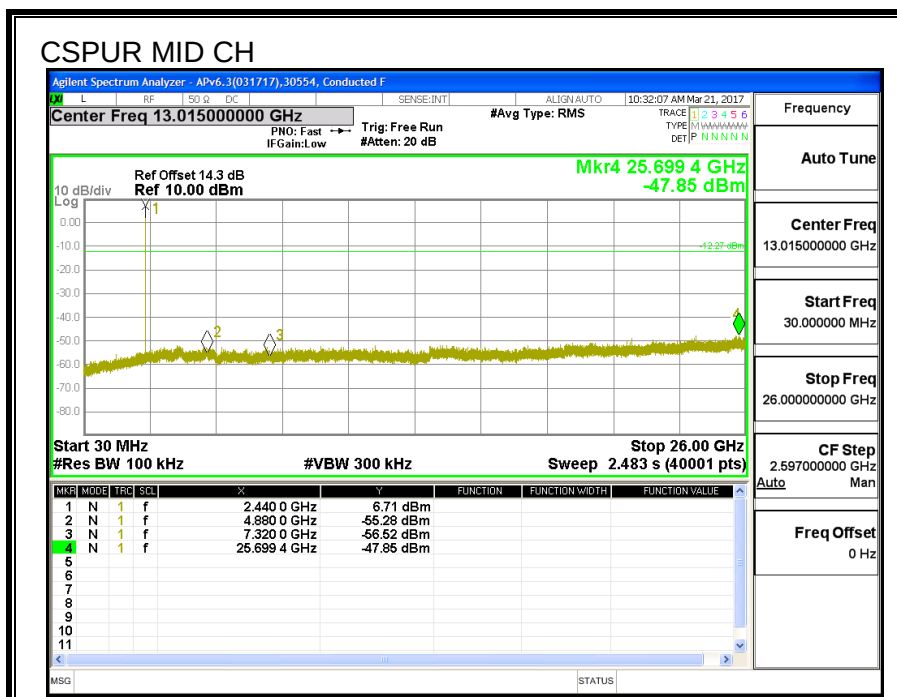
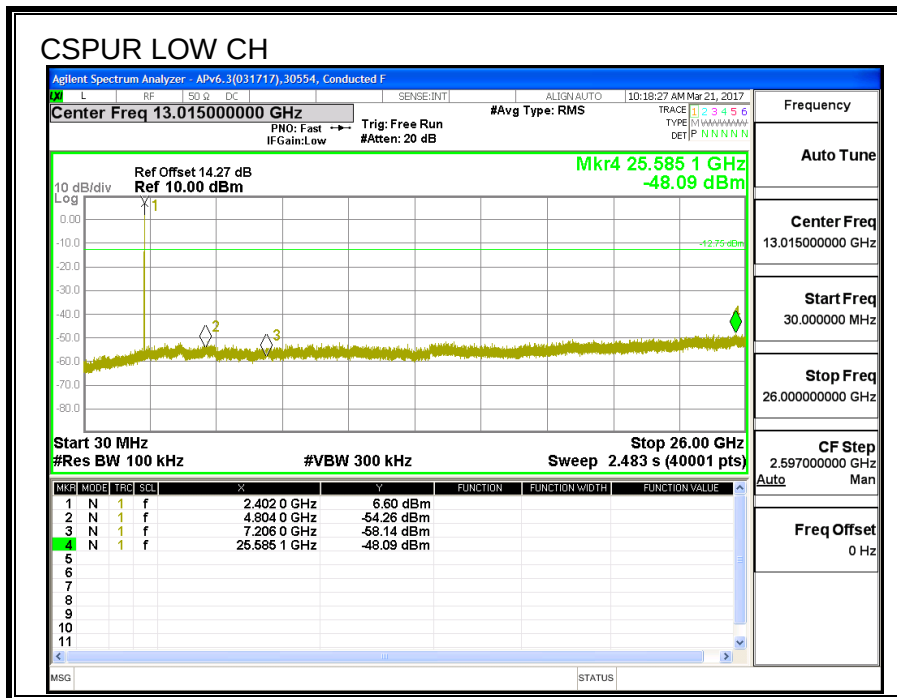
IC RSS-247 (5.5)

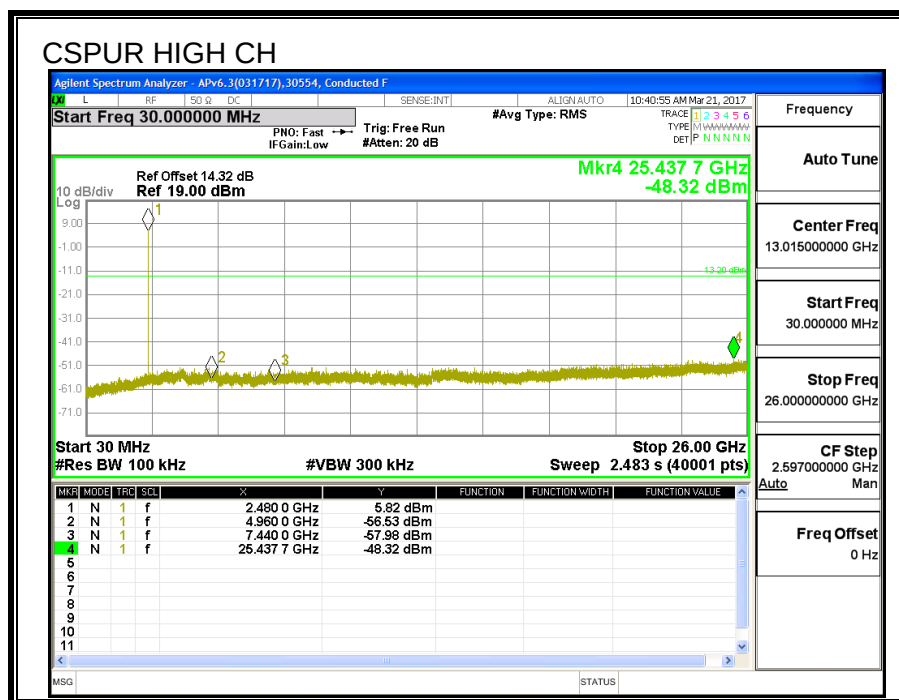
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS









7.9. LAT3 BLE 2M Pmax

7.9.1. AVERAGE POWER

ID:	39316	Date:	6/27/2017
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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 (dBm)
Low	2402	19.45
Middle	2440	19.50
High	2480	19.46

7.9.2. OUTPUT POWER

ID:	39316	Date:	6/27/2017
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LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

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

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.10	30	-10.90
Middle	2440	19.50	30	-10.50
High	2480	19.34	30	-10.66

7.10. LAT3 BLE 2M Plow

7.10.1. AVERAGE POWER

ID:	39316	Date:	6/27/2017
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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 (dBm)
Low	2402	8.97
Middle	2440	9.34
High	2480	9.12

7.10.2. OUTPUT POWER

ID:	39316	Date:	6/27/2017
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LIMITS

FCC §15.247 (b)

IC RSS-247 (5.4) (d)

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

TEST PROCEDURE

The transmitter output is connected to a broadband Peak/average RF power meter

RESULTS

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	9.30	30	-20.70
Middle	2440	9.76	30	-20.24
High	2480	9.42	30	-20.58

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.

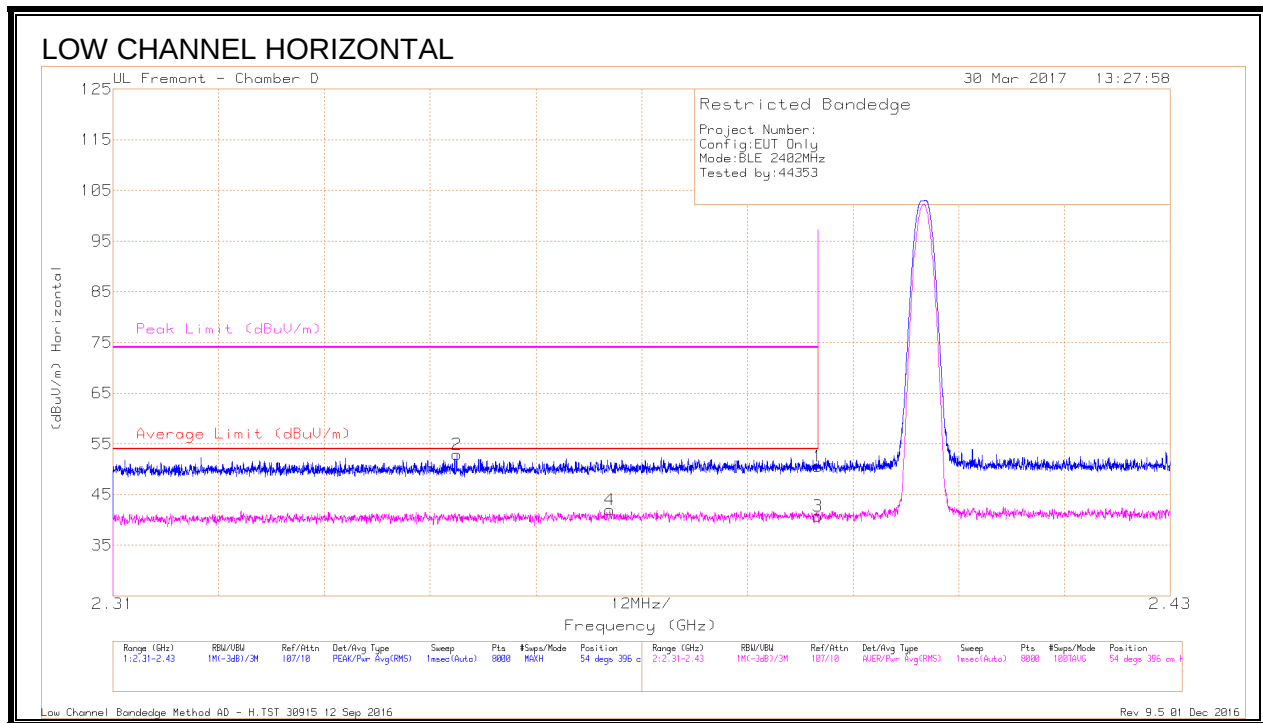
For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

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 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. UAT1 Pmax

8.2.1. RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/CB/FI tr/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	39.27	Pk	32	-20.7	50.57	-	-	74	-23.43	54	396	H
2	* 2.349	42.02	Pk	31.7	-20.8	52.92	-	-	74	-21.08	54	396	H
3	* 2.39	29.48	RMS	32	-20.7	40.78	54	-13.22	-	-	54	396	H
4	* 2.366	30.94	RMS	31.8	-20.8	41.94	54	-12.06	-	-	54	396	H

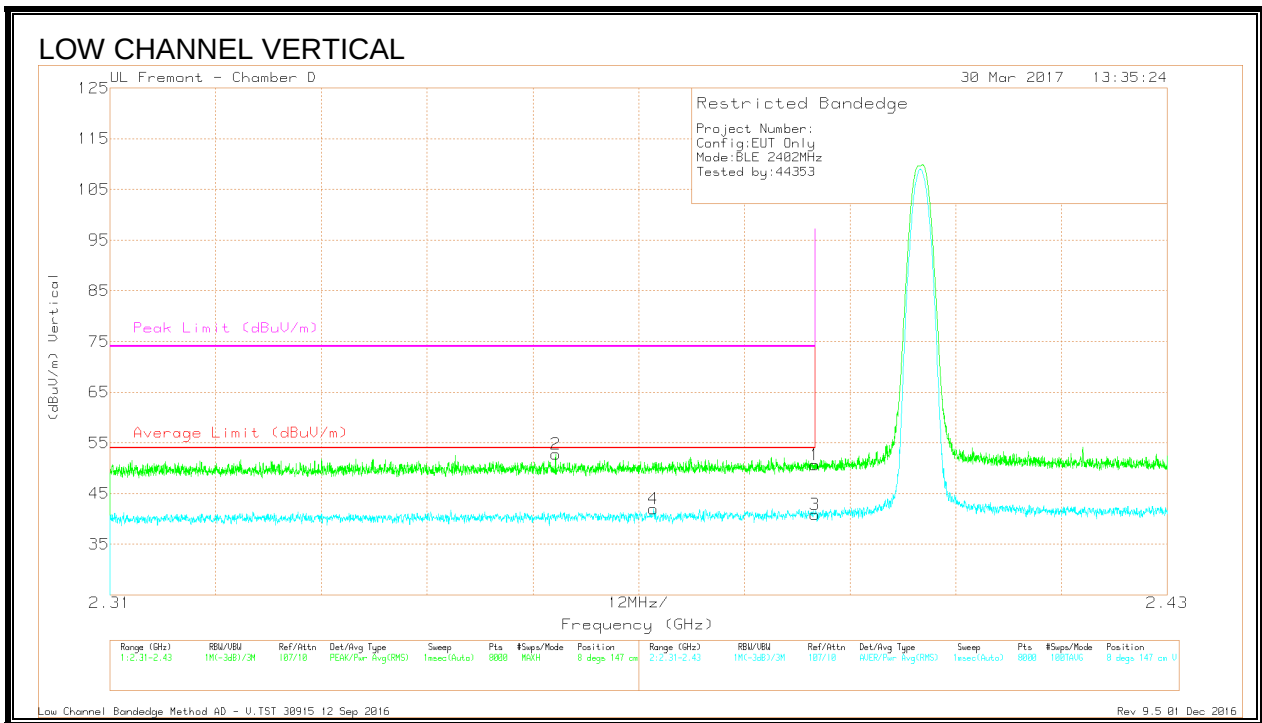
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/FI tr/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	39.31	Pk	32	-20.7	50.61	-	-	74	-23.39	8	147	V
2	* 2.361	41.73	Pk	31.8	-20.8	52.73	-	-	74	-21.27	8	147	V
3	* 2.39	29.55	RMS	32	-20.7	40.85	54	-13.15	-	-	8	147	V
4	* 2.372	30.86	RMS	31.9	-20.8	41.96	54	-12.04	-	-	8	147	V

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

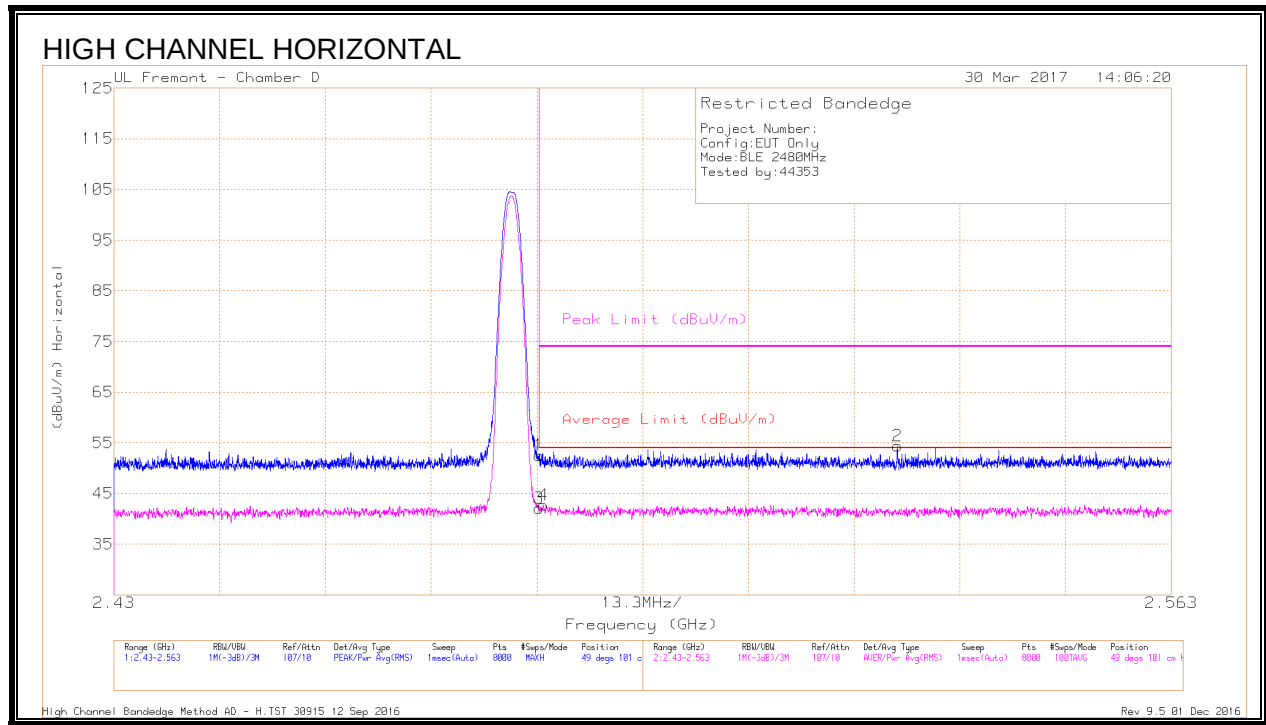
Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016

8.2.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (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	40.89	Pk	32.5	-20.8	52.59	-	-	74	-21.41	49	101	H
3	* 2.484	30.37	RMS	32.5	-20.8	42.07	54	-11.93	-	-	49	101	H
4	* 2.484	31.03	RMS	32.5	-20.8	42.73	54	-11.27	-	-	49	101	H
2	2.529	42.5	Pk	32.6	-20.7	54.4	-	-	74	-19.6	49	101	H

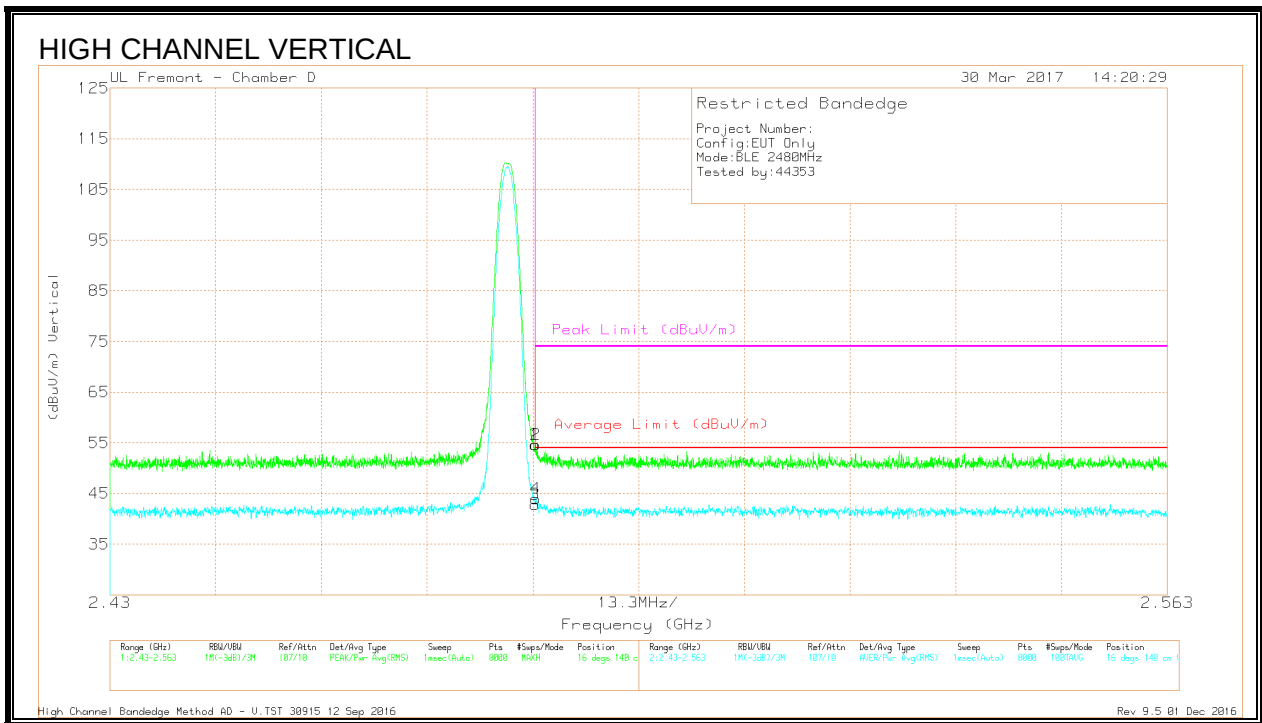
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/FI tr/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	42.96	Pk	32.5	-20.8	54.66	-	-	74	-19.34	16	140	V
2	* 2.484	42.97	Pk	32.5	-20.8	54.67	-	-	74	-19.33	16	140	V
3	* 2.484	31.14	RMS	32.5	-20.8	42.84	54	-11.16	-	-	16	140	V
4	* 2.484	32.23	RMS	32.5	-20.8	43.93	54	-10.07	-	-	16	140	V

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

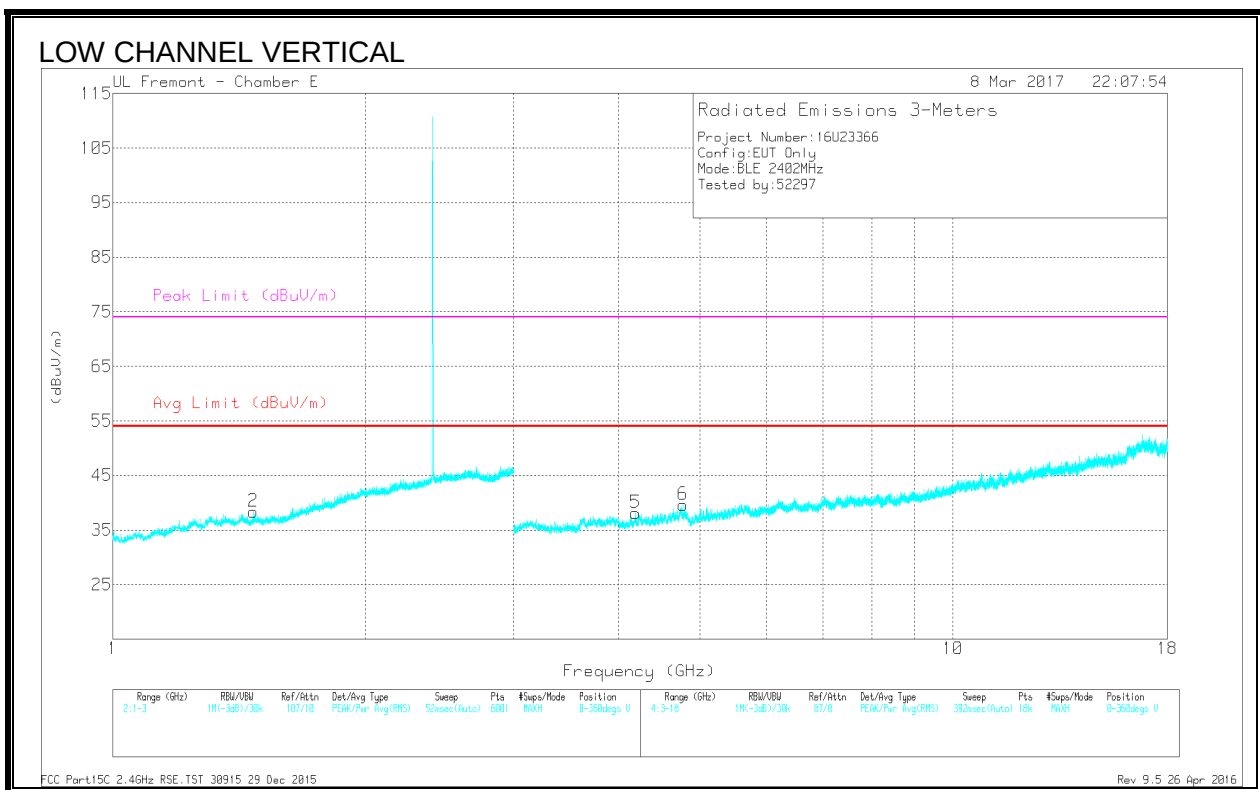
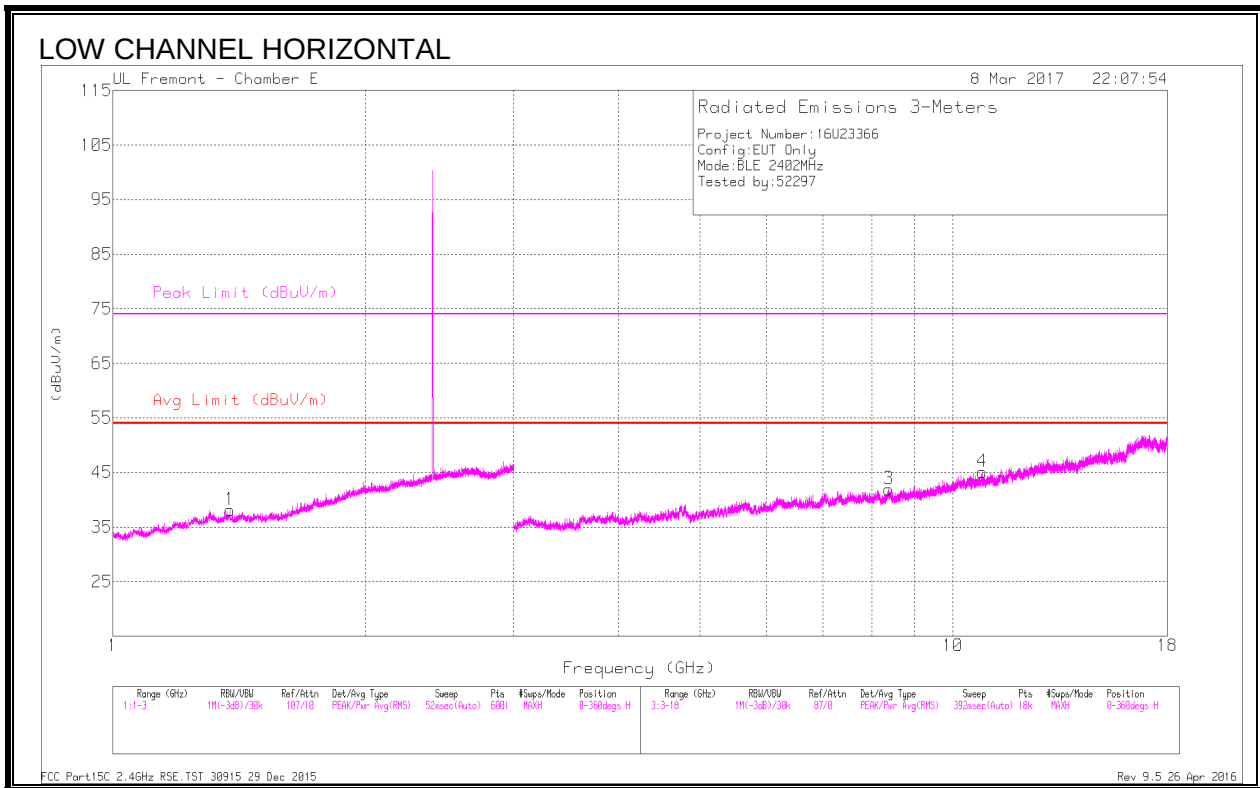
Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016

8.2.3. HARMONICS AND SPURIOUS EMISSIONS



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (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	* 1.379	36.88	PK2	28.7	-21.6	43.98	-	-	74	-30.02	41	144	H
	* 1.378	25.91	MAv1	28.7	-21.4	33.21	54	-20.79	-	-	41	144	H
2	* 1.47	37.04	PK2	28.2	-21.2	44.04	-	-	74	-29.96	110	166	V
	* 1.47	26.4	MAv1	28.2	-21.1	33.5	54	-20.5	-	-	110	166	V
3	* 8.384	37.84	PK2	36	-25.7	48.14	-	-	74	-25.86	165	239	H
	* 8.387	27.61	MAv1	36	-25.6	38.01	54	-15.99	-	-	165	239	H
4	* 10.834	35.8	PK2	37.6	-22.5	50.9	-	-	74	-23.1	356	199	H
	* 10.833	25.93	MAv1	37.6	-22.4	41.13	54	-12.87	-	-	356	199	H
5	* 4.19	40.28	PK2	33.5	-29.6	44.18	-	-	74	-29.82	249	313	V
	* 4.191	29.97	MAv1	33.5	-29.6	33.87	54	-20.13	-	-	249	313	V
6	* 4.772	41.18	PK2	34.3	-29.2	46.28	-	-	74	-27.72	277	264	V
	* 4.774	30.28	MAv1	34.3	-29.3	35.28	54	-18.72	-	-	277	264	V

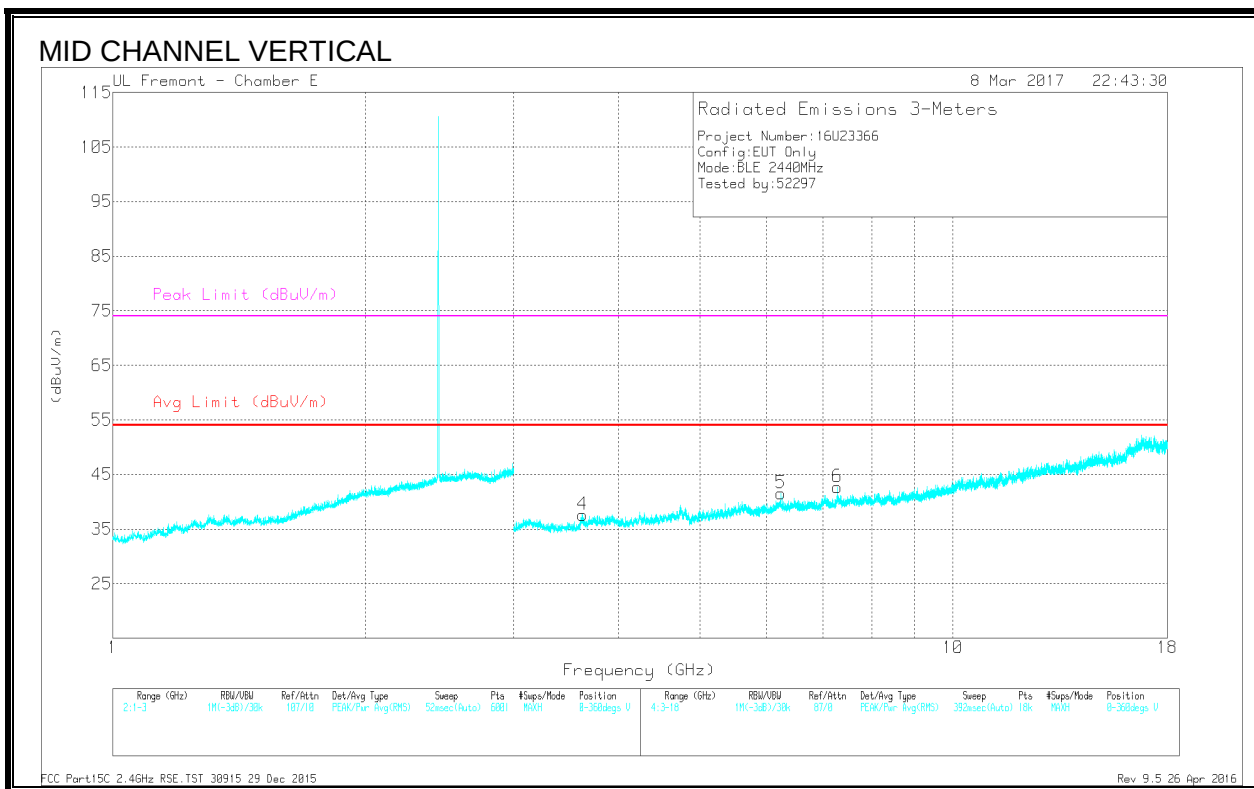
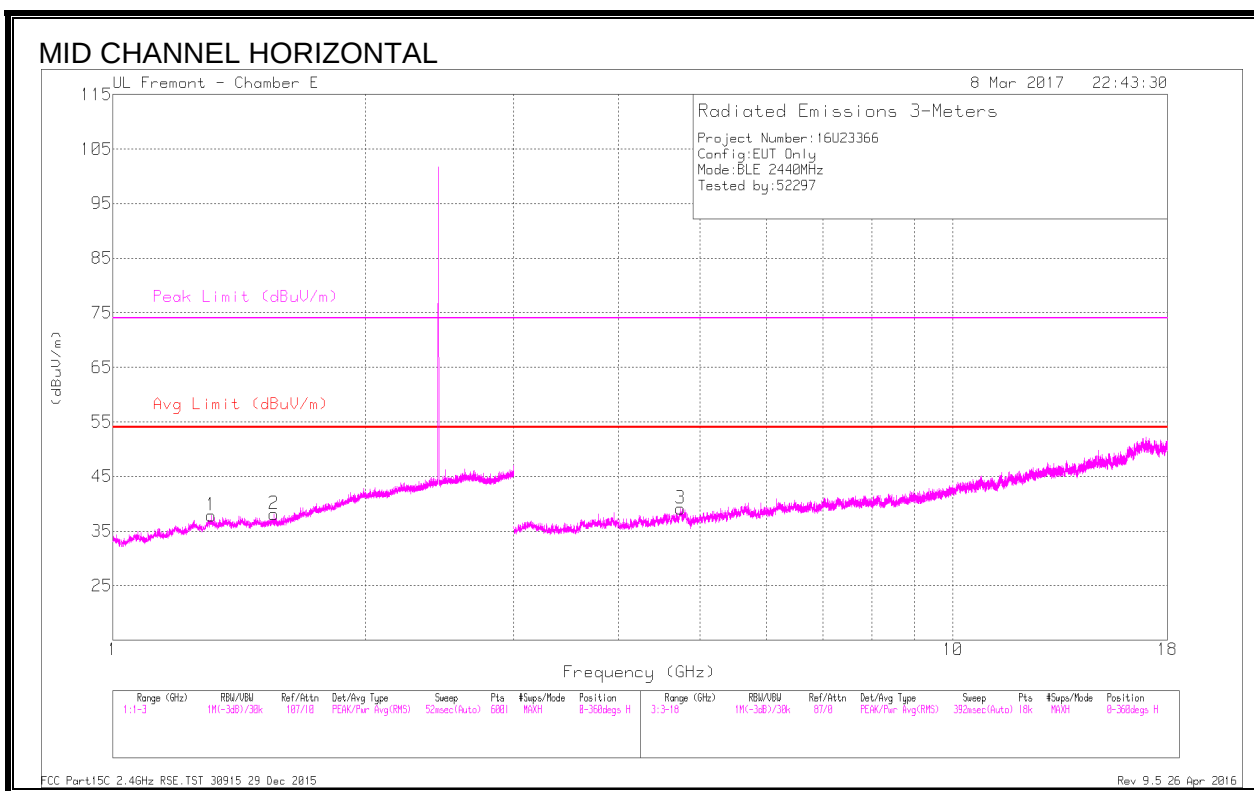
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/F ltr/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	* 1.309	37	PK2	28.8	-21.7	44.1	-	-	74	-29.9	318	172	H
	* 1.309	26.43	MAv1	28.8	-21.7	33.53	54	-20.47	-	-	318	172	H
2	* 1.556	36.59	PK2	28.1	-20.9	43.79	-	-	74	-30.21	292	156	H
	* 1.555	26.05	MAv1	28.1	-20.9	33.25	54	-20.75	-	-	292	156	H
3	* 4.743	40.7	PK2	34.3	-29	46	-	-	74	-28	201	197	H
	* 4.743	30.68	MAv1	34.3	-29	35.98	54	-18.02	-	-	201	197	H
4	* 3.625	40.37	PK2	33	-30.2	43.17	-	-	74	-30.83	234	249	V
	* 3.627	30.49	MAv1	33	-30.2	33.29	54	-20.71	-	-	234	249	V
5	6.238	38.63	PK2	35.7	-27.7	46.63	-	-	-	-	112	220	V
6	* 7.286	37.68	PK2	35.9	-26.2	47.38	-	-	74	-26.62	187	377	V
	* 7.285	28.06	MAv1	35.9	-26.2	37.76	54	-16.24	-	-	187	377	V

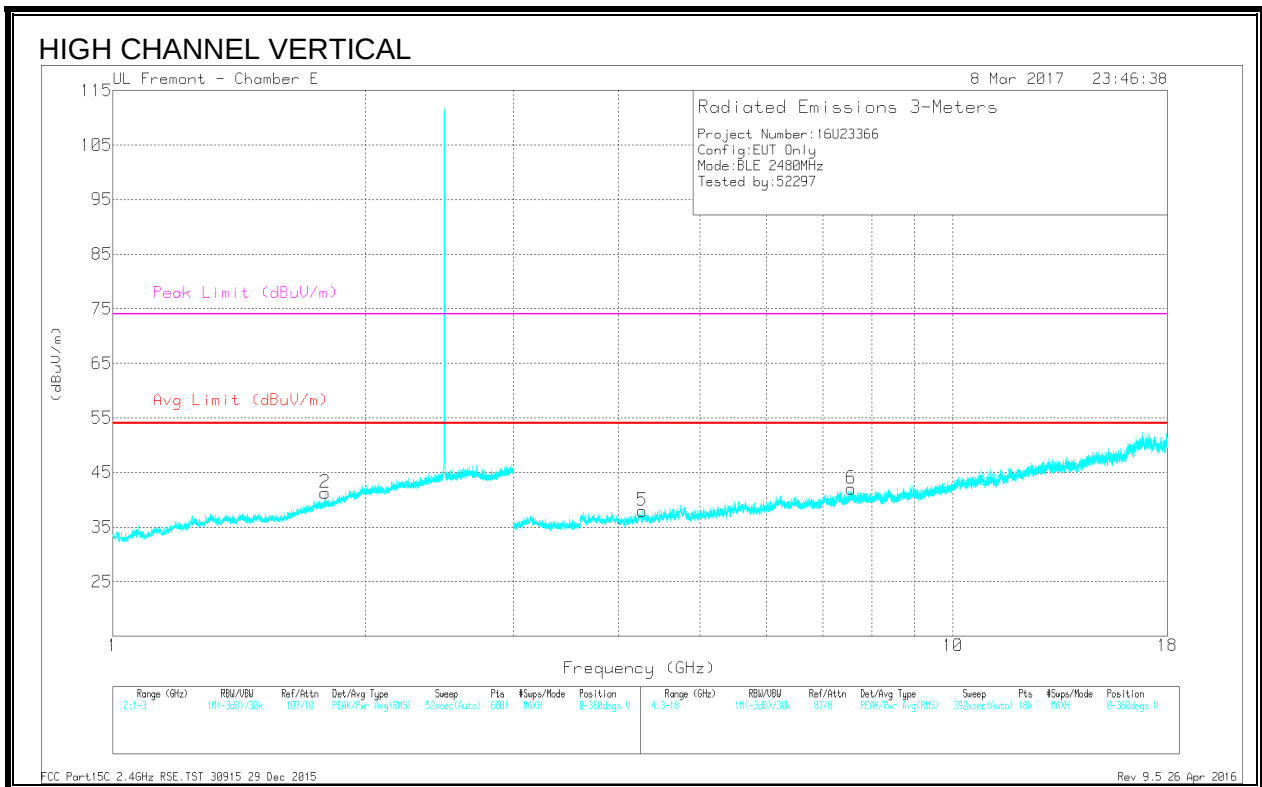
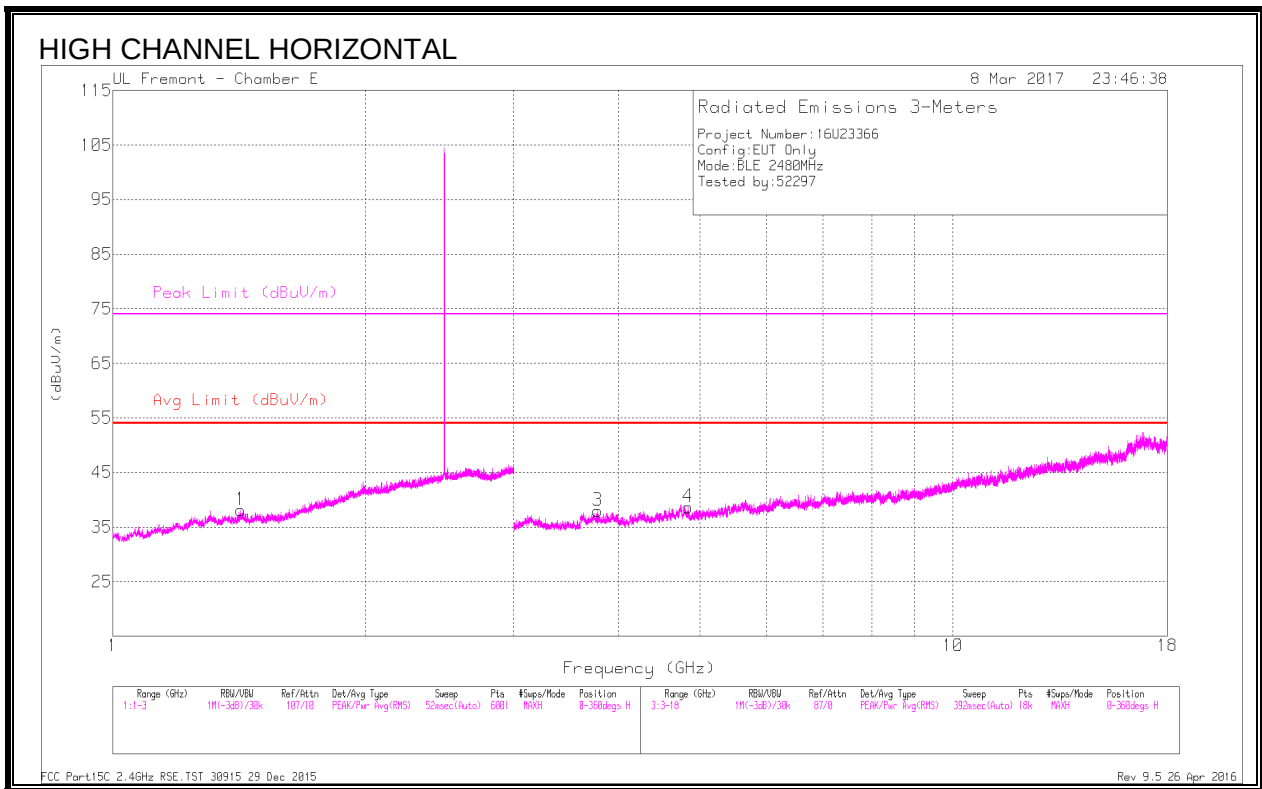
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/F ltr/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	* 1.419	36.98	PK2	28.5	-21.3	44.18	-	-	74	-29.82	338	144	H
	* 1.421	26.26	MAv1	28.5	-21.3	33.46	54	-20.54	-	-	338	144	H
2	1.787	36.78	PK2	30.1	-20.4	46.48	-	-	-	-	246	177	V
3	* 3.774	40.75	PK2	33.4	-30.3	43.85	-	-	74	-30.15	45	243	H
	* 3.775	30.75	MAv1	33.4	-30.3	33.85	54	-20.15	-	-	45	243	H
4	* 4.834	40.6	PK2	34.2	-30	44.8	-	-	74	-29.2	99	202	H
	* 4.834	30.1	MAv1	34.2	-30	34.3	54	-19.7	-	-	99	202	H
5	* 4.268	39.44	PK2	33.5	-29.2	43.74	-	-	74	-30.26	169	335	V
	* 4.268	29.33	MAv1	33.5	-29.2	33.63	54	-20.37	-	-	169	335	V
6	* 7.56	37.47	PK2	36.1	-26	47.57	-	-	74	-26.43	136	294	V
	* 7.559	27.51	MAv1	36.1	-26	37.61	54	-16.39	-	-	136	294	V

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

PK2 - KDB558074 Method: Maximum Peak

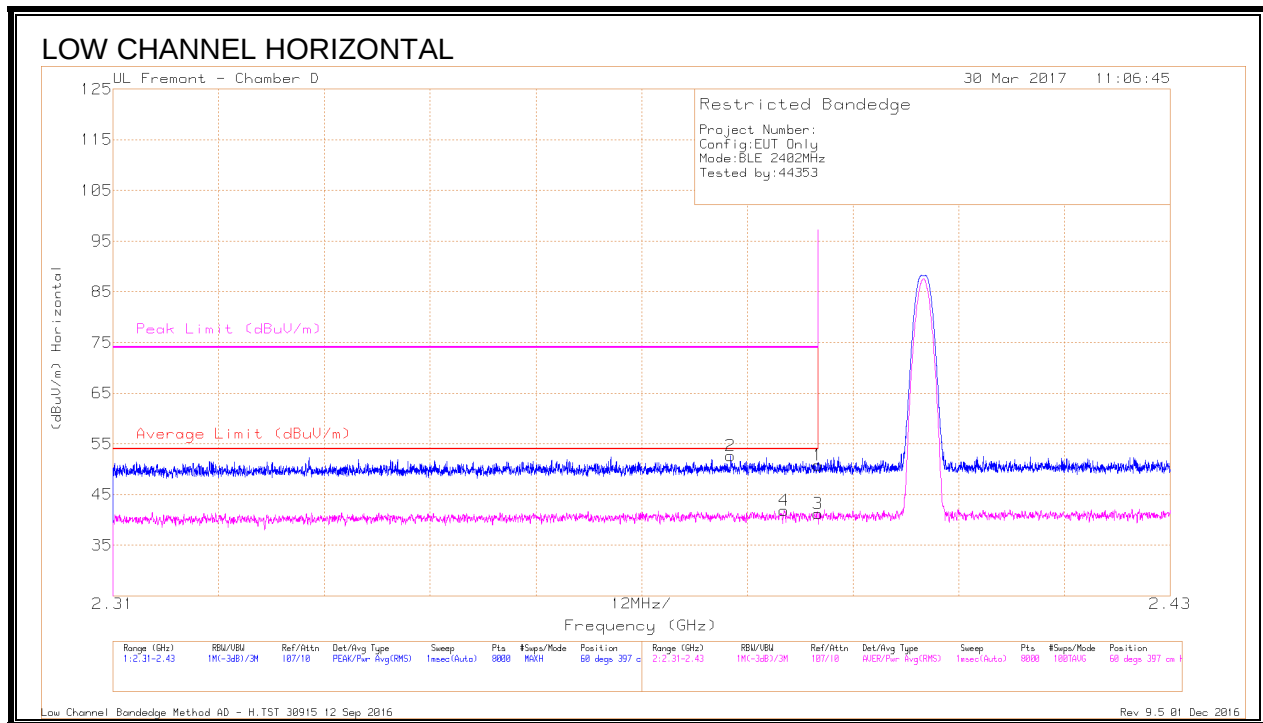
MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016

8.3. UAT1 Plow

8.3.1. RESTRICTED BANDEGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/CB/FI tr/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	39.53	Pk	32	-20.7	50.83	-	-	74	-23.17	60	397	H
2	* 2.38	41.57	Pk	31.9	-20.8	52.67	-	-	74	-21.33	60	397	H
3	* 2.39	29.91	RMS	32	-20.7	41.21	54	-12.79	-	-	60	397	H
4	* 2.386	30.64	RMS	32	-20.8	41.84	54	-12.16	-	-	60	397	H

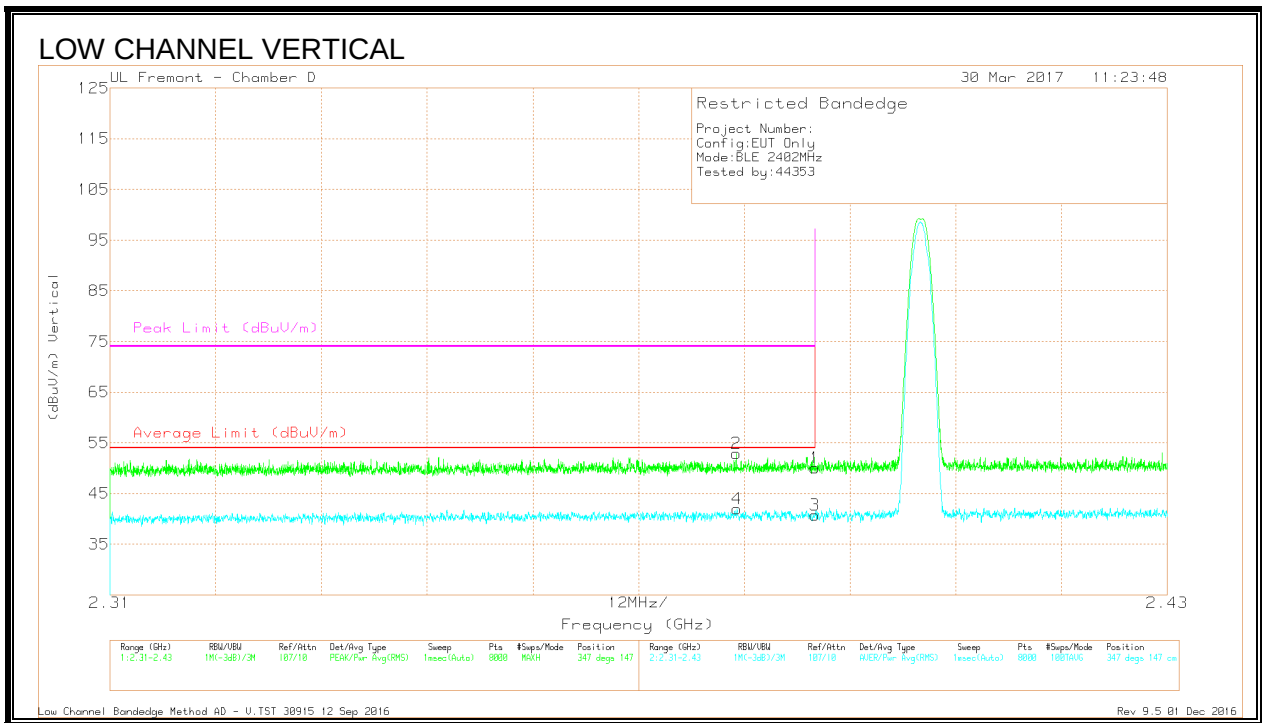
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/FI tr/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	38.7	Pk	32	-20.7	50	-	-	74	-24	347	147	V
2	* 2.381	41.79	Pk	31.9	-20.8	52.89	-	-	74	-21.11	347	147	V
3	* 2.39	29.44	RMS	32	-20.7	40.74	54	-13.26	-	-	347	147	V
4	* 2.381	30.89	RMS	31.9	-20.8	41.99	54	-12.01	-	-	347	147	V

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

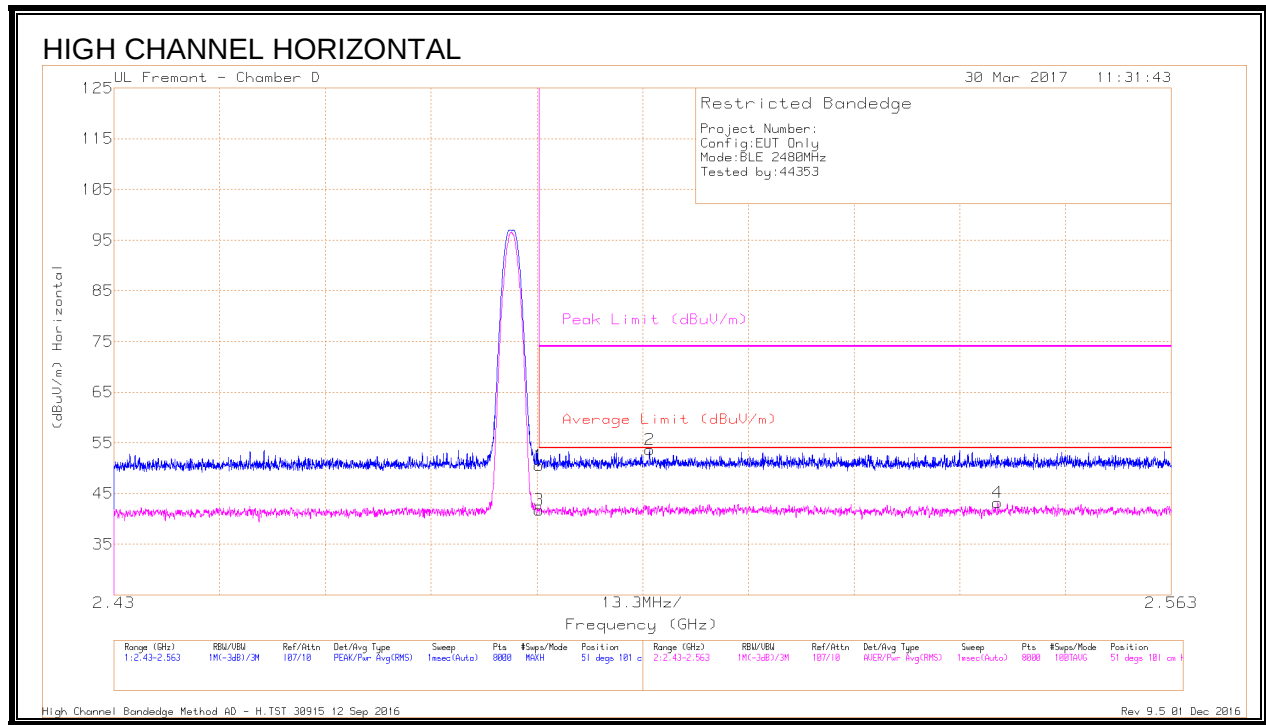
Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016

8.3.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/FI tr/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	38.8	Pk	32.5	-20.8	50.5	-	-	74	-23.5	51	101	H
2	* 2.497	41.74	Pk	32.6	-20.7	53.64	-	-	74	-20.36	51	101	H
3	* 2.484	29.99	RMS	32.5	-20.8	41.69	54	-12.31	-	-	51	101	H
4	2.541	31.26	RMS	32.5	-20.6	43.16	54	-10.84	-	-	51	101	H

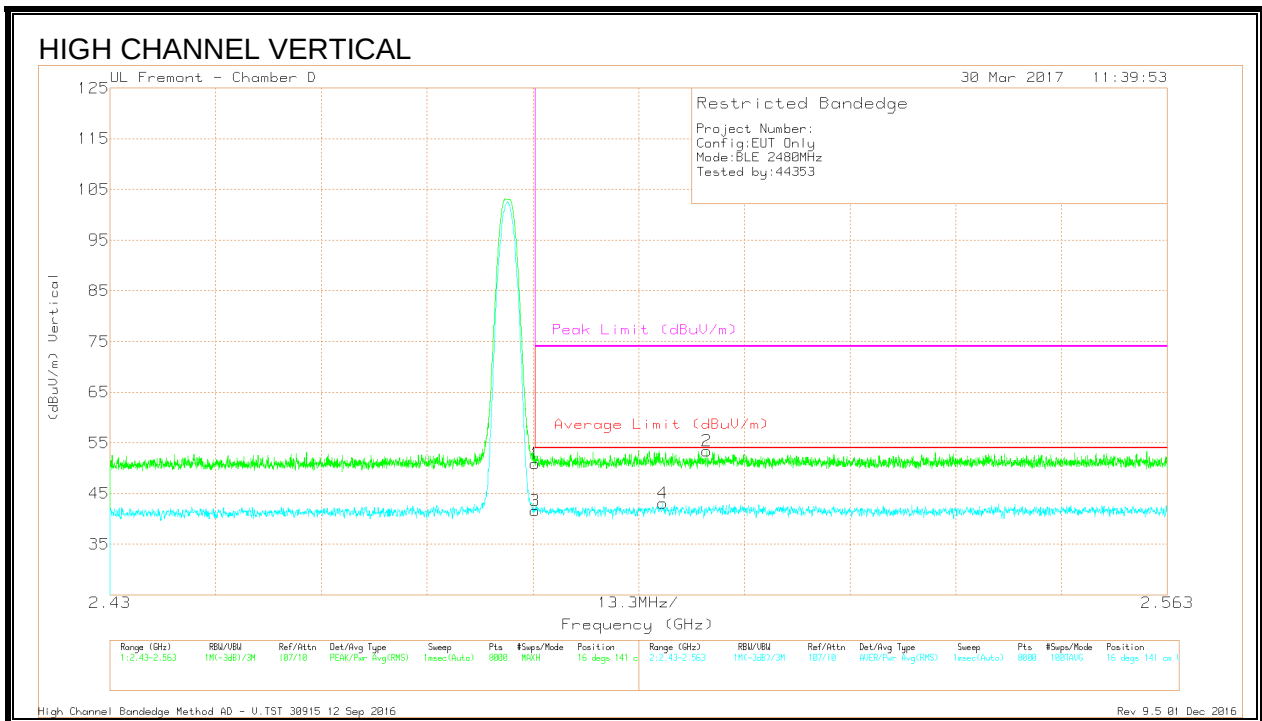
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/FI tr/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	39.24	Pk	32.5	-20.8	50.94	-	-	74	-23.06	16	141	V
3	* 2.484	29.94	RMS	32.5	-20.8	41.64	54	-12.36	-	-	16	141	V
4	* 2.5	31.24	RMS	32.6	-20.7	43.14	54	-10.86	-	-	16	141	V
2	2.505	41.53	Pk	32.6	-20.7	53.43	-	-	74	-20.57	16	141	V

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

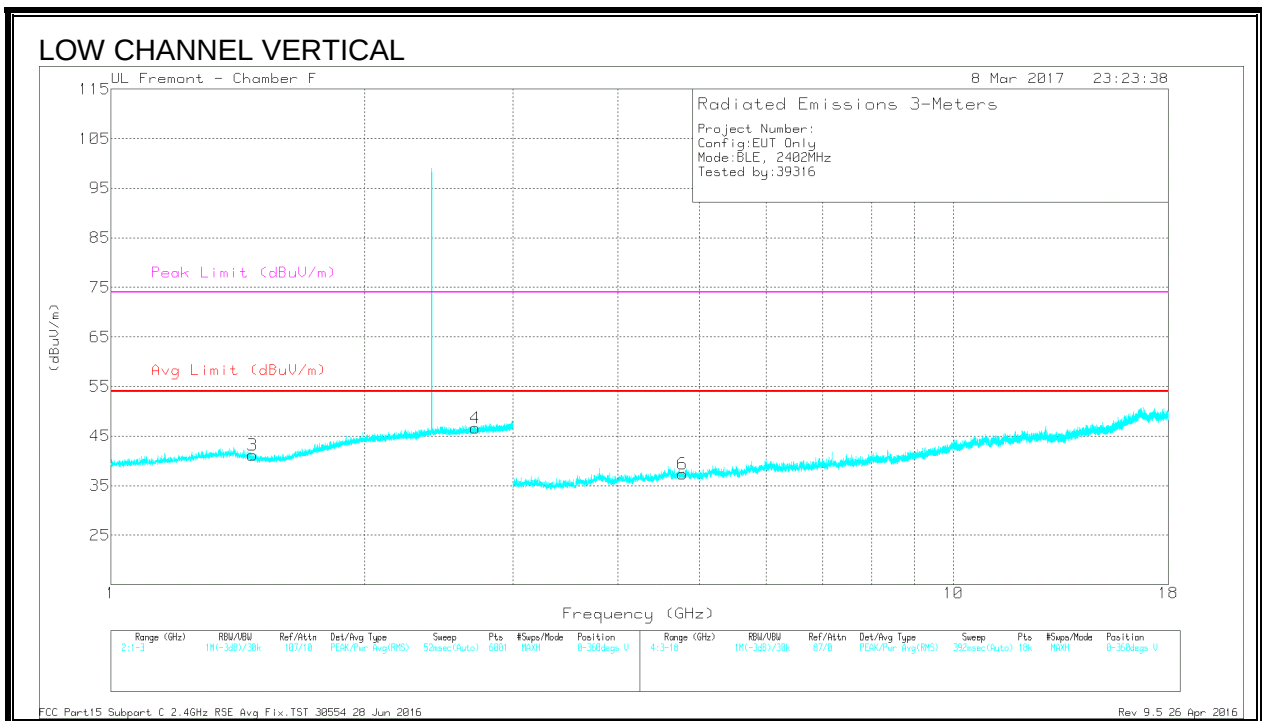
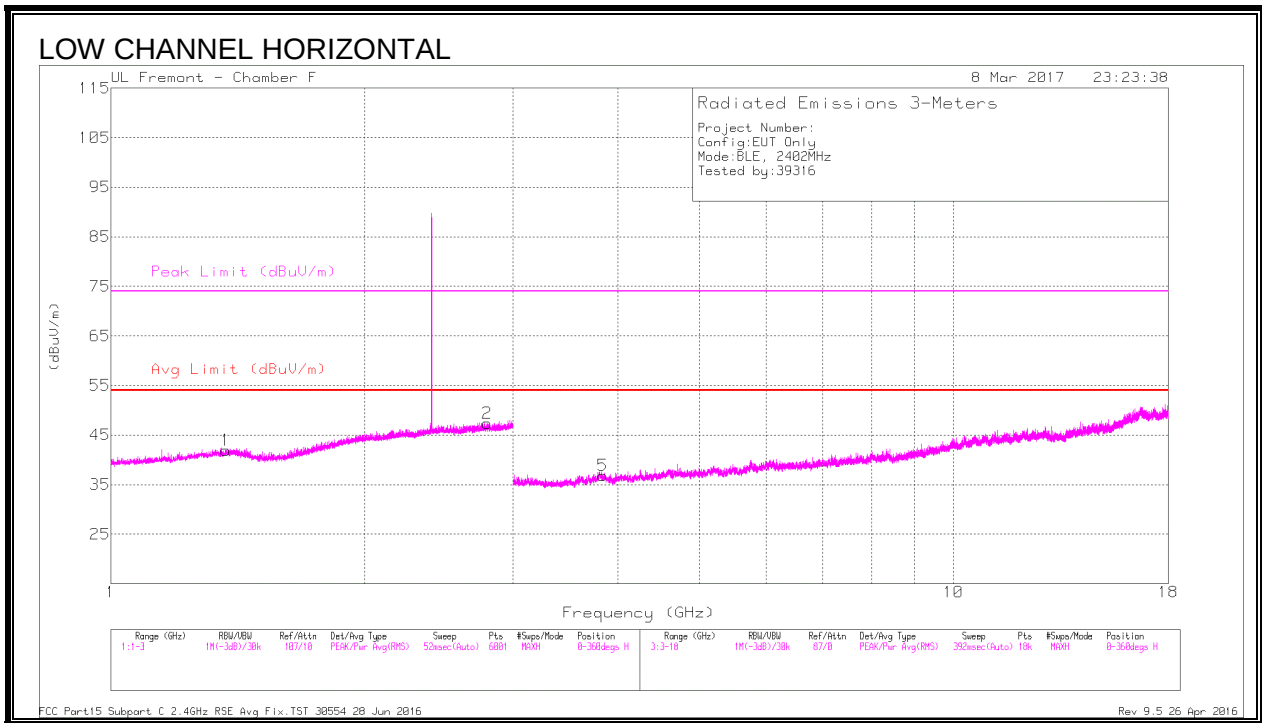
Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016

8.3.3. HARMONICS AND SPURIOUS EMISSIONS



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/F ltr/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	* 1.368	41.54	PK2	29.2	-22.1	48.64	-	-	74	-25.36	115	175	H
	* 1.367	31.32	MAv1	29.2	-22	38.52	54	-15.48	-	-	115	175	H
2	* 2.798	41.79	PK2	32.5	-20.5	53.79	-	-	74	-20.21	134	217	H
	* 2.799	31.01	MAv1	32.5	-20.5	43.01	54	-10.99	-	-	134	217	H
3	* 1.472	41.75	PK2	28.4	-22	48.15	-	-	74	-25.85	318	289	V
	* 1.473	31.29	MAv1	28.3	-22	37.59	54	-16.41	-	-	318	289	V
4	* 2.708	41.45	PK2	32.4	-20.7	53.15	-	-	74	-20.85	283	318	V
	* 2.707	31.3	MAv1	32.4	-20.7	43	54	-11	-	-	283	318	V
5	* 3.836	38.26	PK2	33.4	-28.3	43.36	-	-	74	-30.64	276	251	H
	* 3.833	28.61	MAv1	33.4	-28.3	33.71	54	-20.29	-	-	276	251	H
6	* 4.769	38.93	PK2	34.1	-27.7	45.33	-	-	74	-28.67	192	226	V
	* 4.769	28.11	MAv1	34.1	-27.7	34.51	54	-19.49	-	-	192	226	V

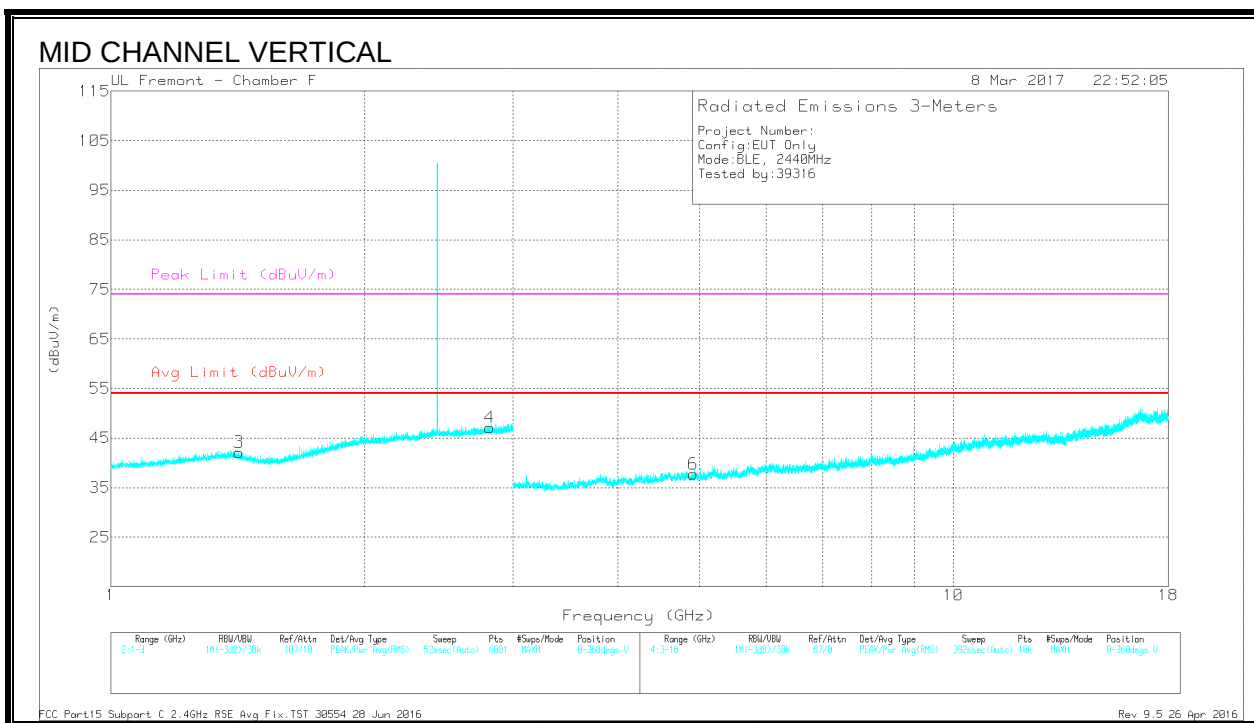
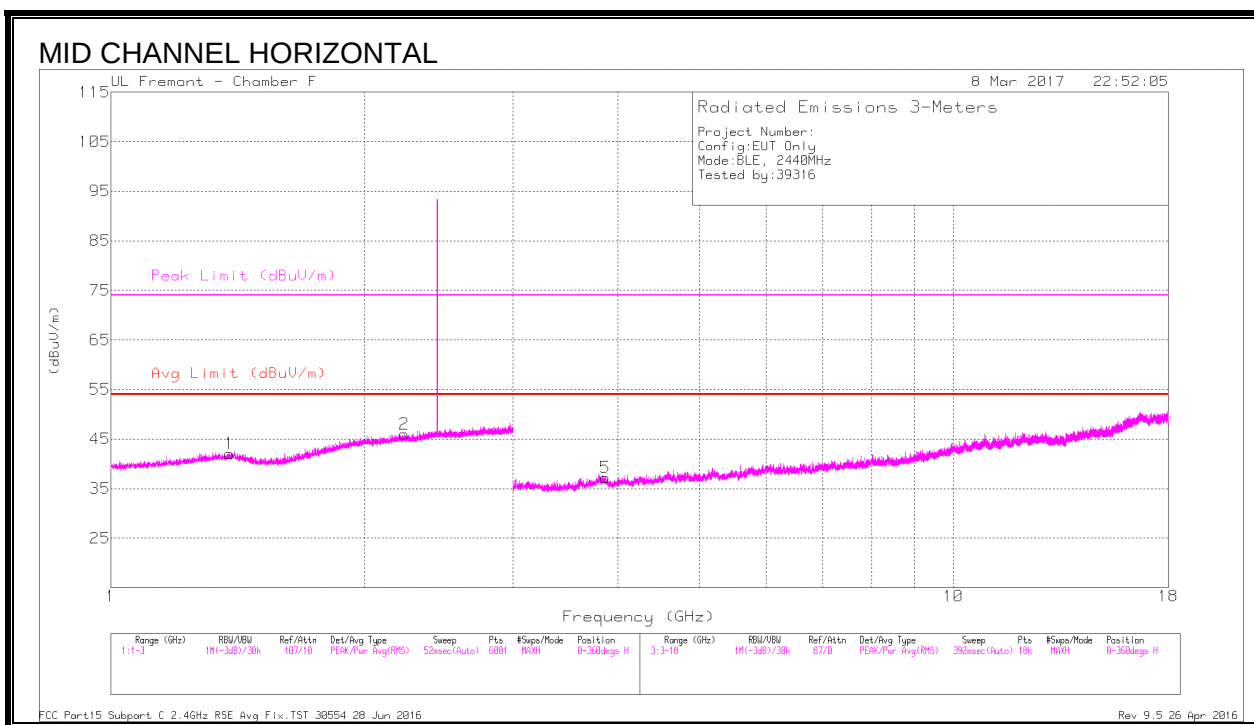
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2.4GHz RSE Avg Fix.TST 30554 28 Jun 2016

Rev 9.5 26 Apr 2016



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/FI tr/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	* 1.383	42.05	PK2	29.2	-22.1	49.15	-	-	74	-24.85	14	264	H
	* 1.382	30.74	MAv1	29.2	-22.1	37.84	54	-16.16	-	-	14	264	H
2	* 2.229	42	PK2	31.8	-21.1	52.7	-	-	74	-21.3	201	183	H
	* 2.231	30.47	MAv1	31.8	-21	41.27	54	-12.73	-	-	201	183	H
3	* 1.422	41.64	PK2	29	-22.1	48.54	-	-	74	-25.46	229	215	V
	* 1.42	31.13	MAv1	29	-22.1	38.03	54	-15.97	-	-	229	215	V
4	* 2.816	41.54	PK2	32.5	-20.5	53.54	-	-	74	-20.46	78	328	V
	* 2.818	31.5	MAv1	32.5	-20.5	43.5	54	-10.5	-	-	78	328	V
5	* 3.861	39.78	PK2	33.4	-28.3	44.88	-	-	74	-29.12	125	174	H
	* 3.86	28.71	MAv1	33.4	-28.3	33.81	54	-20.19	-	-	125	174	H
6	* 4.917	38.39	PK2	34.1	-28.2	44.29	-	-	74	-29.71	177	212	V
	* 4.917	28.49	MAv1	34.1	-28.2	34.39	54	-19.61	-	-	177	212	V

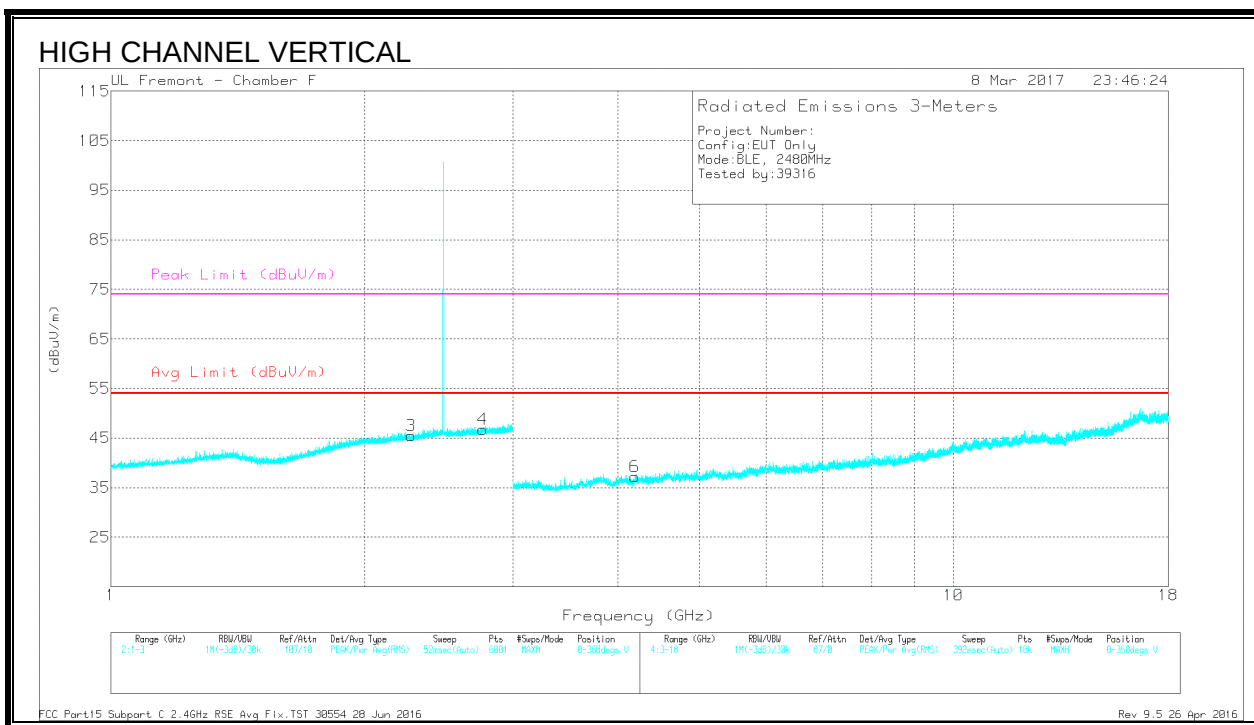
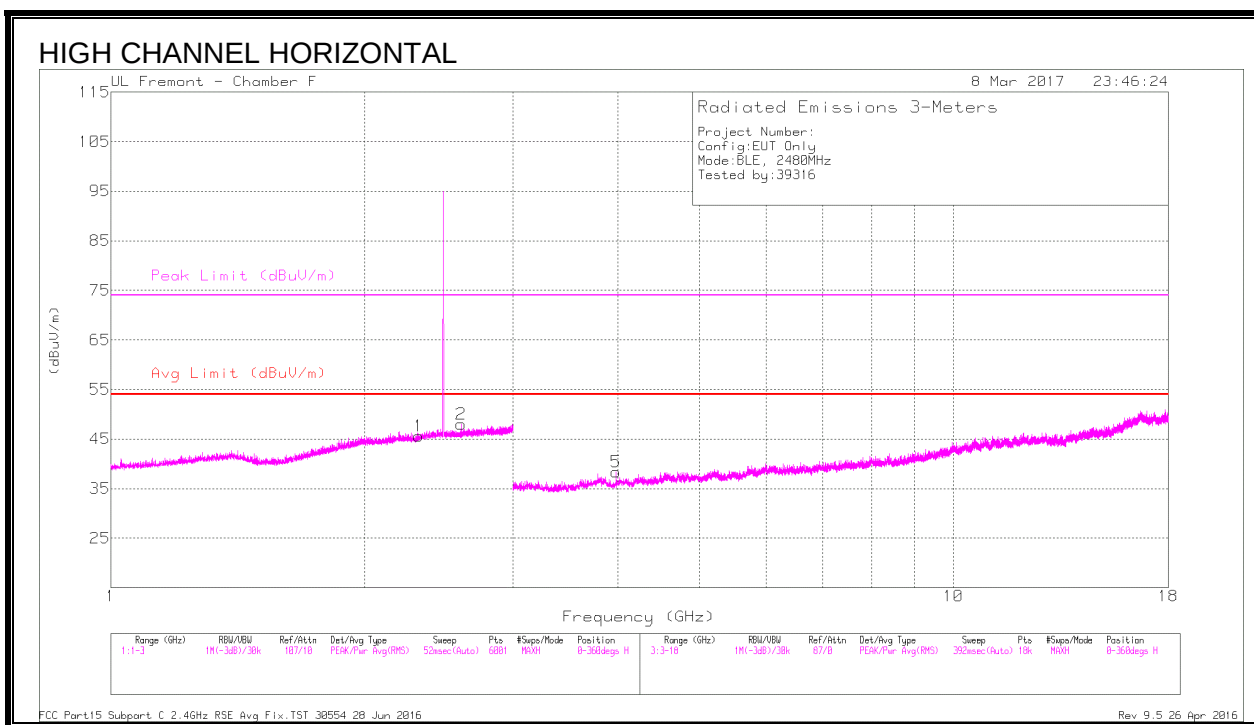
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2.4GHz RSE Avg Fix.TST 30554 28 Jun 2016

Rev 9.5 26 Apr 2016



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/FI tr/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	* 2.319	41.82	PK2	31.8	-21	52.62	-	-	74	-21.38	314	184	H
	* 2.319	31.06	MAv1	31.8	-21	41.86	54	-12.14	-	-	314	184	H
2	2.603	41.85	PK2	32.2	-20.9	53.15	-	-	-	-	289	174	H
	2.604	31.28	MAv1	32.2	-20.9	42.58	-	-	-	-	289	174	H
3	* 2.273	41.5	PK2	31.7	-21	52.2	-	-	74	-21.8	169	232	V
	* 2.272	31.02	MAv1	31.7	-21	41.72	54	-12.28	-	-	169	232	V
4	* 2.762	40.93	PK2	32.5	-20.6	52.83	-	-	74	-21.17	116	214	V
	* 2.761	30.99	MAv1	32.5	-20.6	42.89	54	-11.11	-	-	116	214	V
5	* 3.979	39.31	PK2	33.3	-29	43.61	-	-	74	-30.39	139	335	H
	* 3.98	28.82	MAv1	33.3	-28.9	33.22	54	-20.78	-	-	139	335	H
6	* 4.186	38.44	PK2	33.7	-28.2	43.94	-	-	74	-30.06	37	317	V
	* 4.186	28.31	MAv1	33.7	-28.2	33.81	54	-20.19	-	-	37	317	V

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

PK2 - KDB558074 Method: Maximum Peak

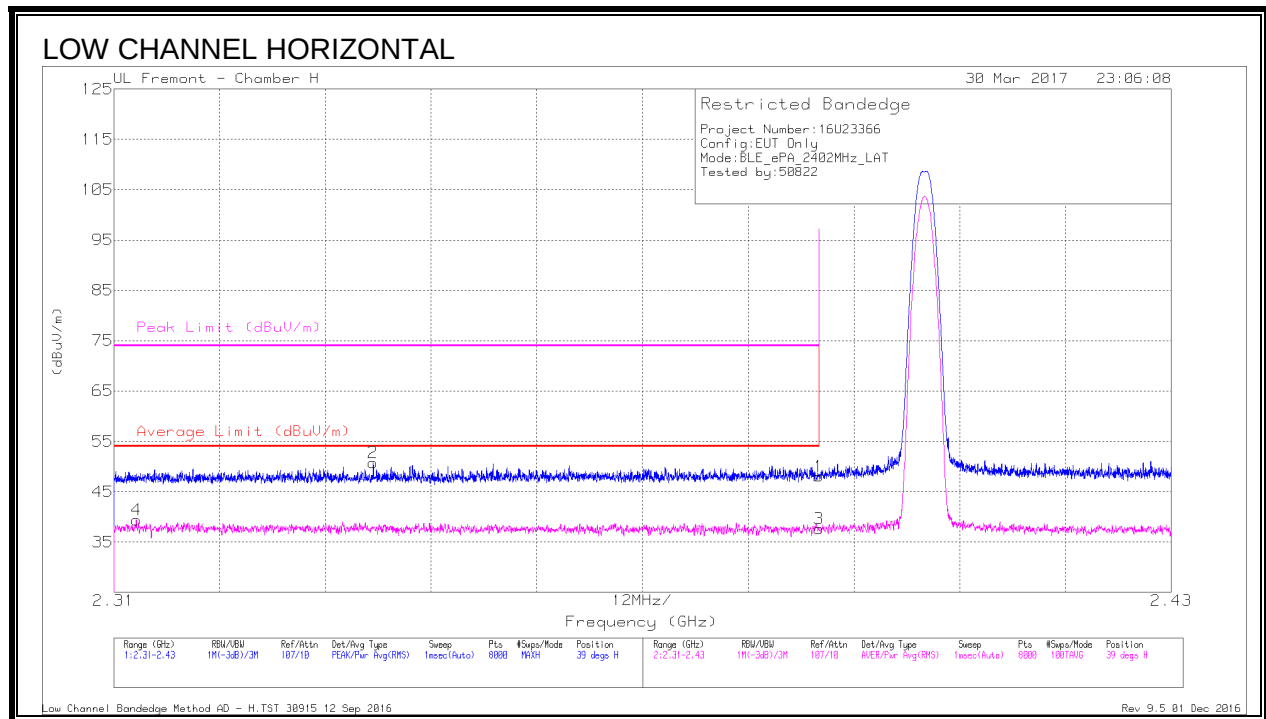
MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2.4GHz RSE Avg Fix.TST 30554 28 Jun 2016

Rev 9.5 26 Apr 2016

8.4. LAT3 Pmax

8.4.1. RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cb/FI tr/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	44.58	Pk	31.9	-28.4	48.08	-	-	74	-25.92	39	201	H
2	* 2.339	47.44	Pk	31.7	-28.4	50.74	-	-	74	-23.26	39	201	H
3	* 2.39	34.21	RMS	31.9	-28.4	37.71	54	-16.29	-	-	39	201	H
4	* 2.313	36.23	RMS	31.6	-28.4	39.43	54	-14.57	-	-	39	201	H

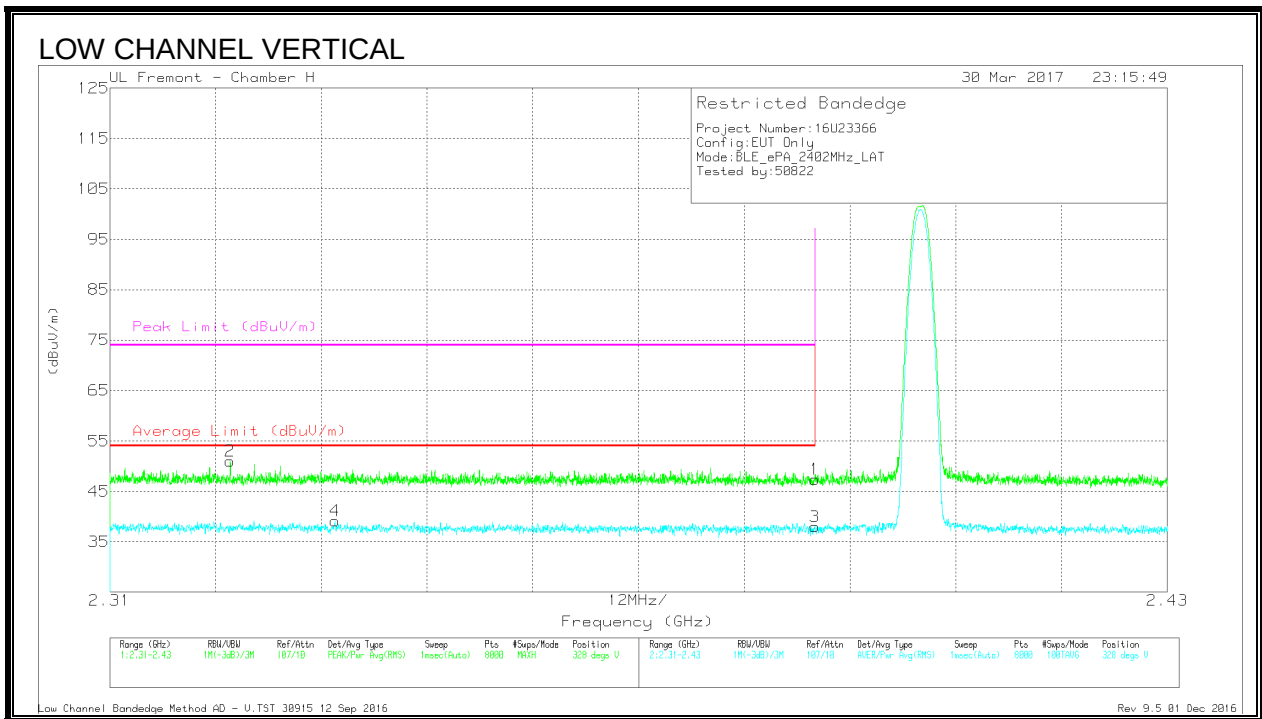
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cb/Fl tr/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	43.88	Pk	31.9	-28.4	47.38	-	-	74	-26.62	328	381	V
2	* 2.324	47.86	Pk	31.6	-28.4	51.06	-	-	74	-22.94	328	381	V
3	* 2.39	34.48	RMS	31.9	-28.4	37.98	54	-16.02	-	-	328	381	V
4	* 2.336	35.85	RMS	31.7	-28.4	39.15	54	-14.85	-	-	328	381	V

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

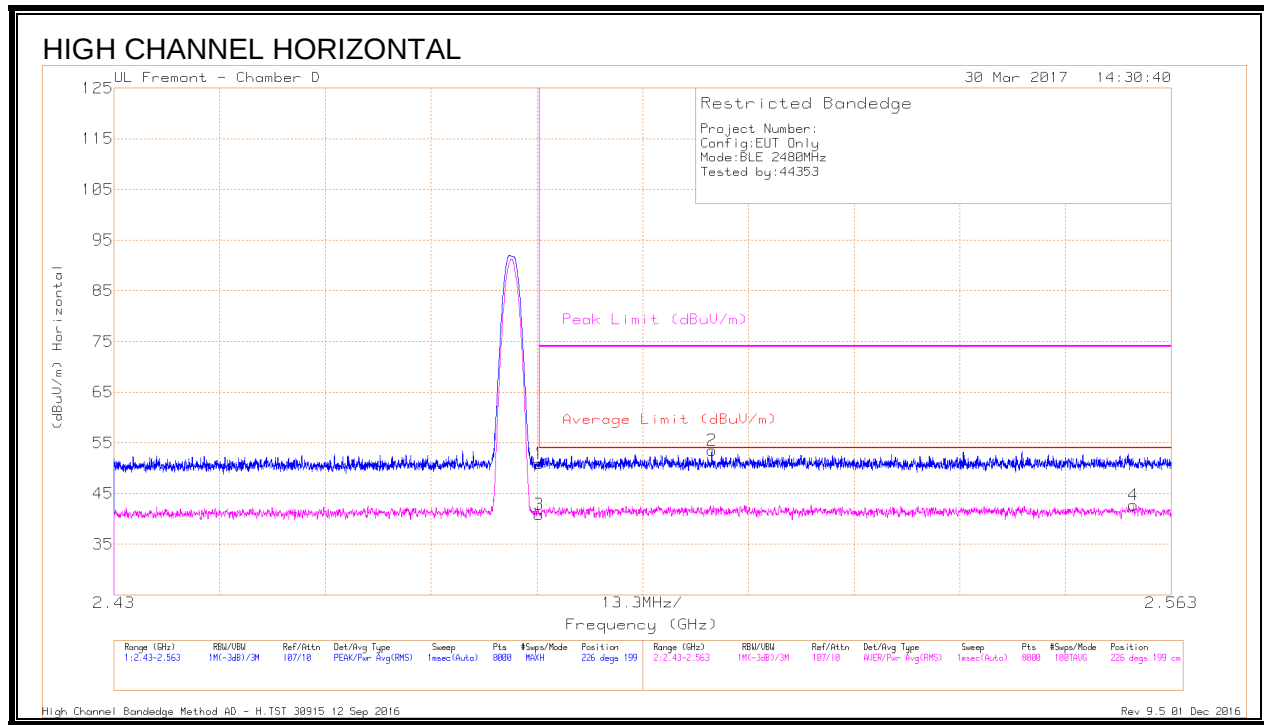
Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016

8.4.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/FI tr/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	39.17	Pk	32.5	-20.8	50.87	-	-	74	-23.13	226	199	H
3	* 2.484	29.12	RMS	32.5	-20.8	40.82	54	-13.18	-	-	226	199	H
2	2.505	41.58	Pk	32.6	-20.7	53.48	-	-	74	-20.52	226	199	H
4	2.558	30.83	RMS	32.5	-20.6	42.73	54	-11.27	-	-	226	199	H

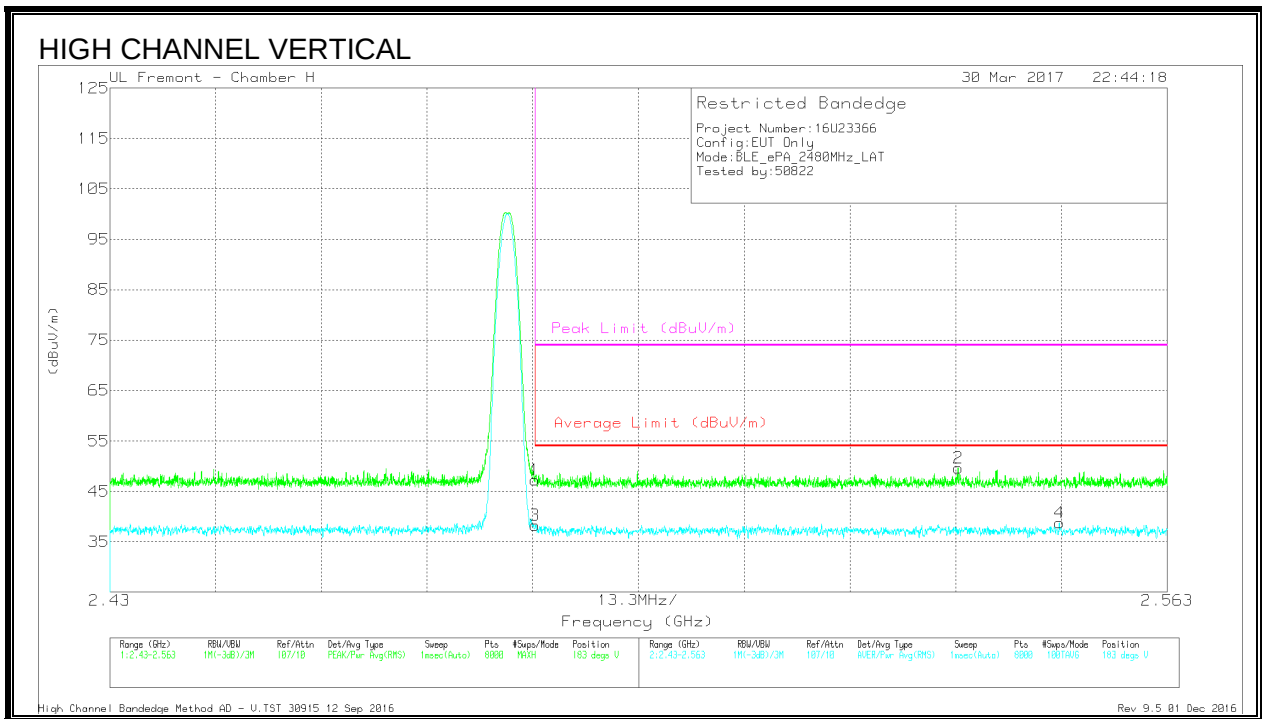
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cb/Fl tr/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	43.57	Pk	32.2	-28.5	47.27	-	-	74	-26.73	183	203	V
3	* 2.484	34.57	RMS	32.2	-28.5	38.27	54	-15.73	-	-	183	203	V
2	2.537	45.95	Pk	32.2	-28.5	49.65	-	-	74	-24.35	183	203	V
4	2.549	35.12	RMS	32.2	-28.5	38.82	54	-15.18	-	-	183	203	V

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

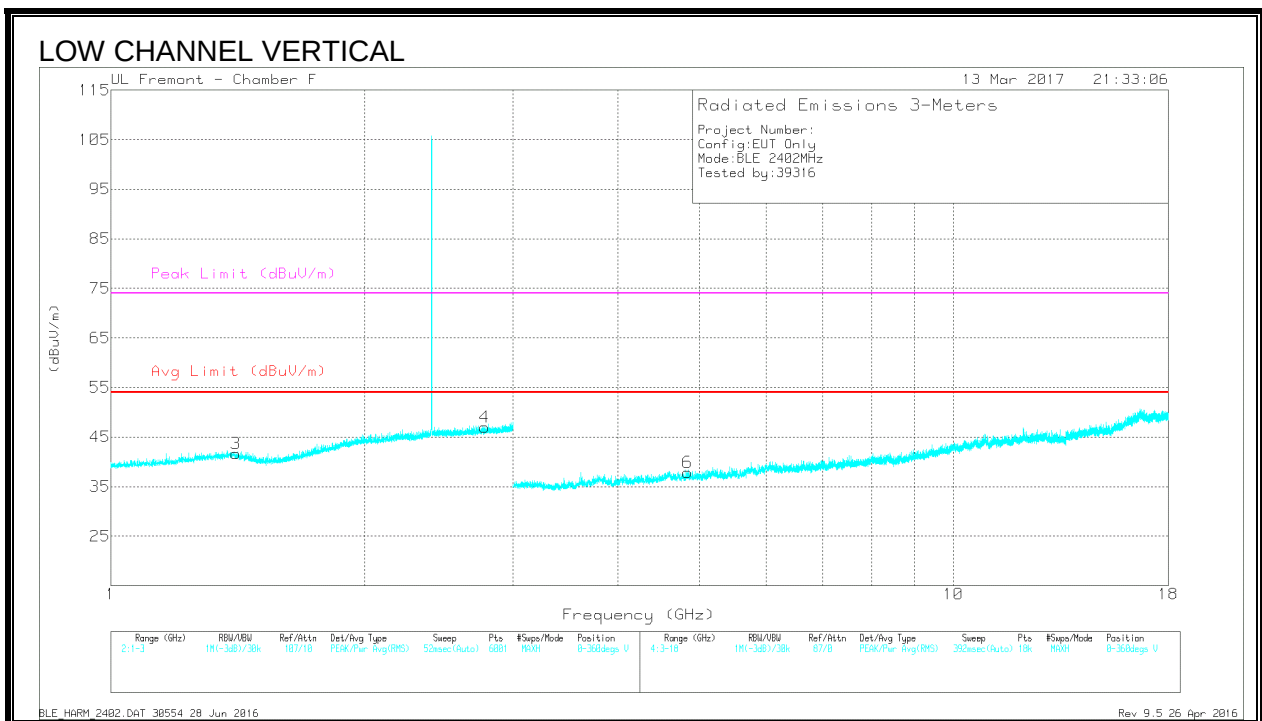
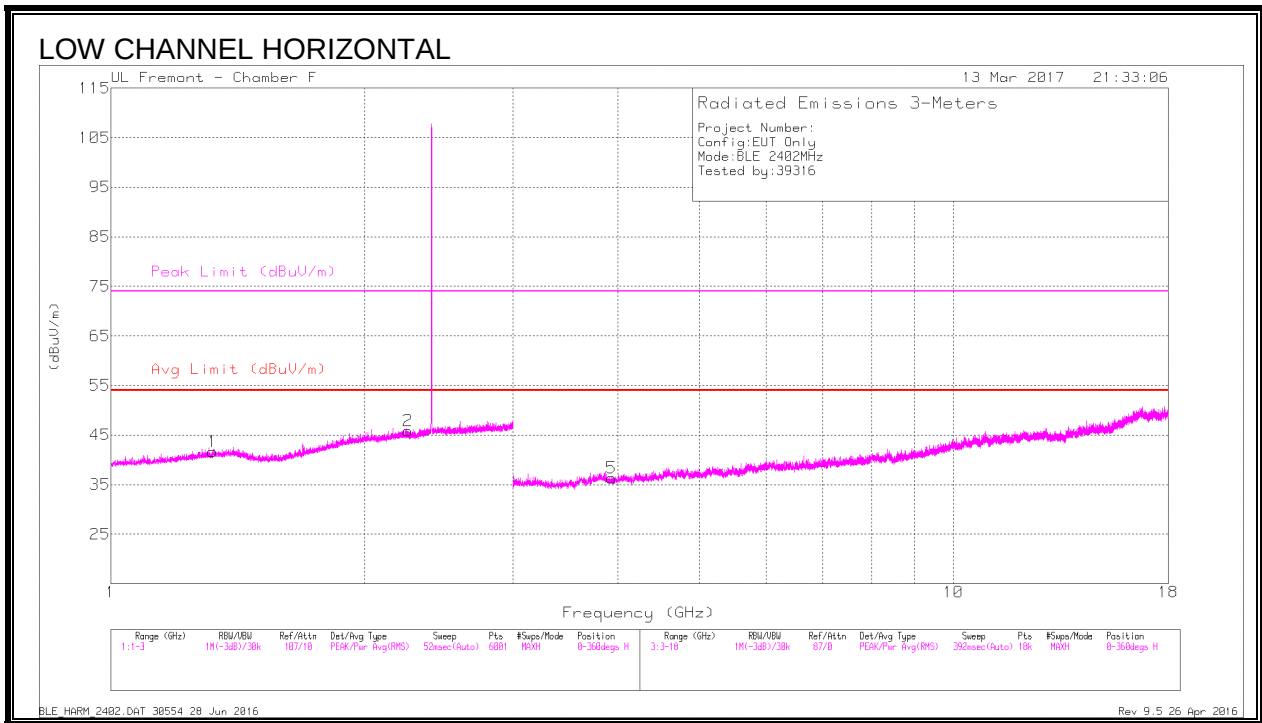
Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016

8.4.3. HARMONICS AND SPURIOUS EMISSIONS



DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
* 1.322	41.96	PK2	29	-22.1	48.86	-	-	74	-25.14	79	204	H
* 1.322	30.51	MAv1	29	-22.1	37.41	54	-16.59	-	-	79	204	H
* 2.254	41.48	PK2	31.8	-21	52.28	-	-	74	-21.72	354	389	H
* 2.252	30.35	MAv1	31.8	-21	41.15	54	-12.85	-	-	354	389	H
* 1.405	41.94	PK2	29.2	-22.1	49.04	-	-	74	-24.96	129	275	V
* 1.404	30.45	MAv1	29.2	-22.1	37.55	54	-16.45	-	-	129	275	V
* 2.779	42.44	PK2	32.5	-20.6	54.34	-	-	74	-19.66	334	300	V
* 2.779	30.55	MAv1	32.5	-20.6	42.45	54	-11.55	-	-	334	300	V
* 3.926	38.48	PK2	33.4	-29.1	42.78	-	-	74	-31.22	311	258	H
* 3.926	28.59	MAv1	33.4	-29.1	32.89	54	-21.11	-	-	311	258	H
* 4.84	37.91	PK2	34	-27.3	44.61	-	-	74	-29.39	233	218	V
* 4.841	27.92	MAv1	34	-27.3	34.62	54	-19.38	-	-	233	218	V

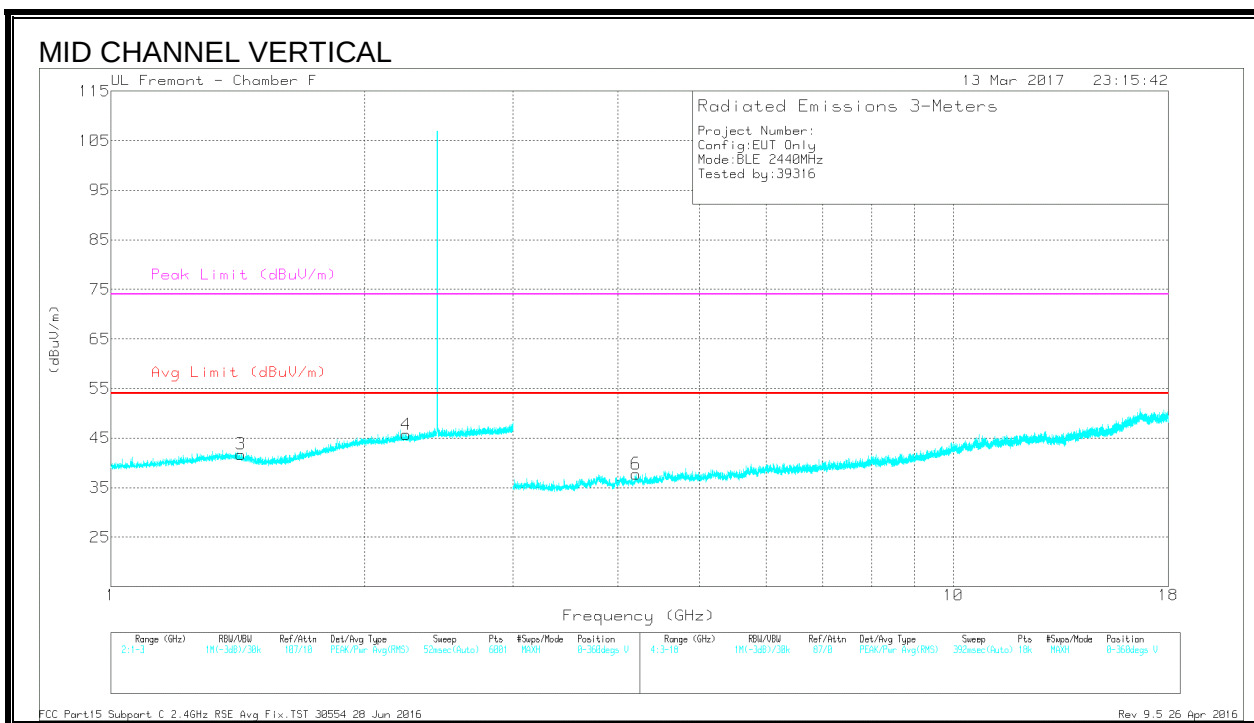
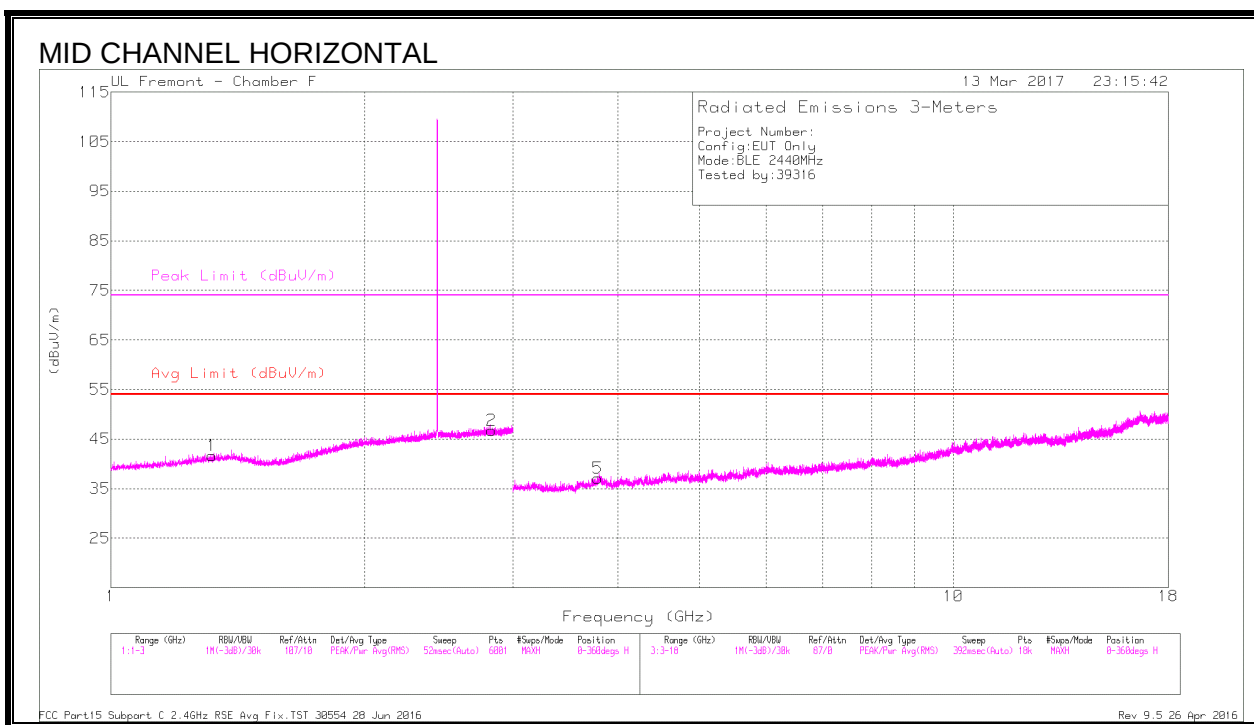
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

BLE_HARM_2402.DAT 30554 28 Jun 2016

Rev 9.5 26 Apr 2016



DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.319	42.35	PK2	29	-22.2	49.15	-	-	74	-24.85	141	137	H
* 1.318	30.57	MAv1	29	-22.2	37.37	54	-16.63	-	-	141	137	H
* 2.831	41.58	PK2	32.5	-20.5	53.58	-	-	74	-20.42	310	383	H
* 2.831	30.33	MAv1	32.5	-20.5	42.33	54	-11.67	-	-	310	383	H
* 1.427	41.88	PK2	28.9	-22	48.78	-	-	74	-25.22	344	177	V
* 1.426	30.68	MAv1	29	-22.1	37.58	54	-16.42	-	-	344	177	V
* 2.243	41.9	PK2	31.8	-20.9	52.8	-	-	74	-21.2	291	382	V
* 2.242	30.37	MAv1	31.8	-20.9	41.27	54	-12.73	-	-	291	382	V
* 3.781	38.94	PK2	33.4	-28.9	43.44	-	-	74	-30.56	246	324	H
* 3.784	28.74	MAv1	33.4	-28.9	33.24	54	-20.76	-	-	246	324	H
* 4.205	38.4	PK2	33.7	-27.9	44.2	-	-	74	-29.8	139	247	V
* 4.207	27.82	MAv1	33.7	-28	33.52	54	-20.48	-	-	139	247	V

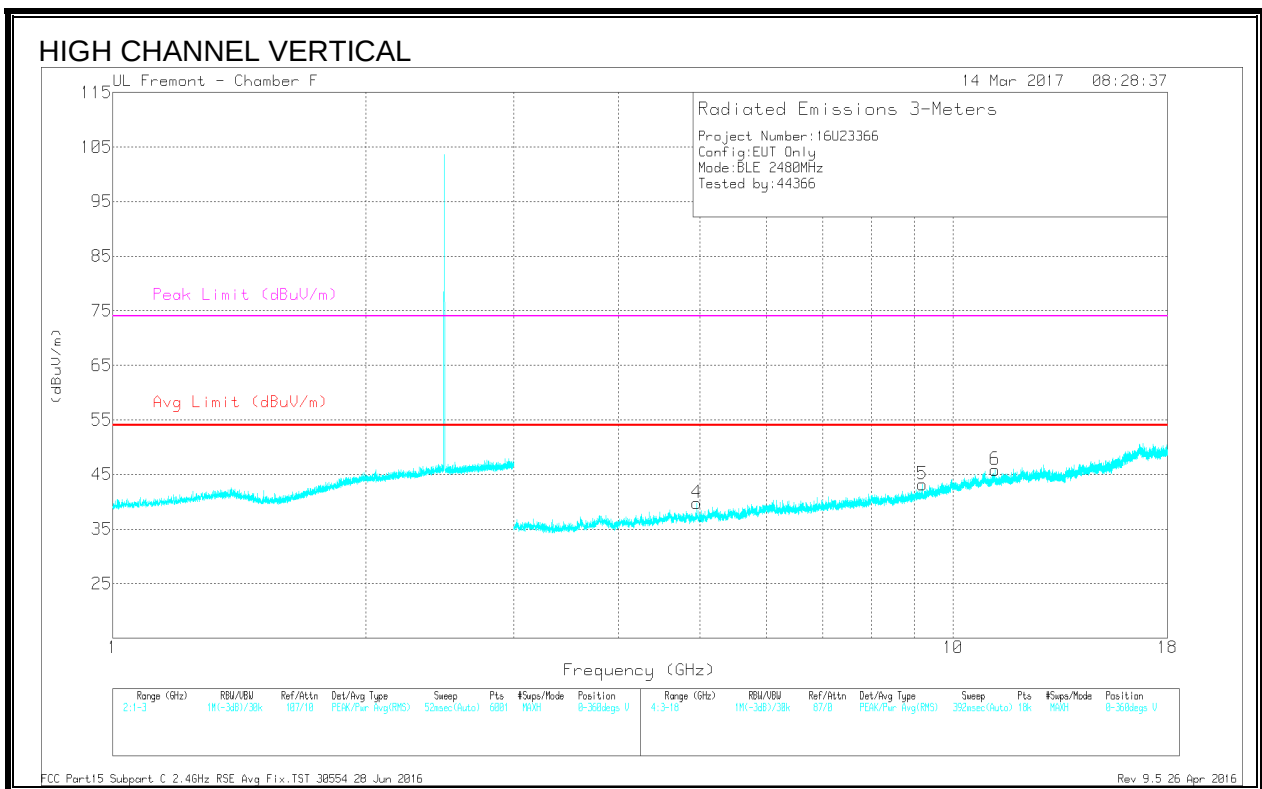
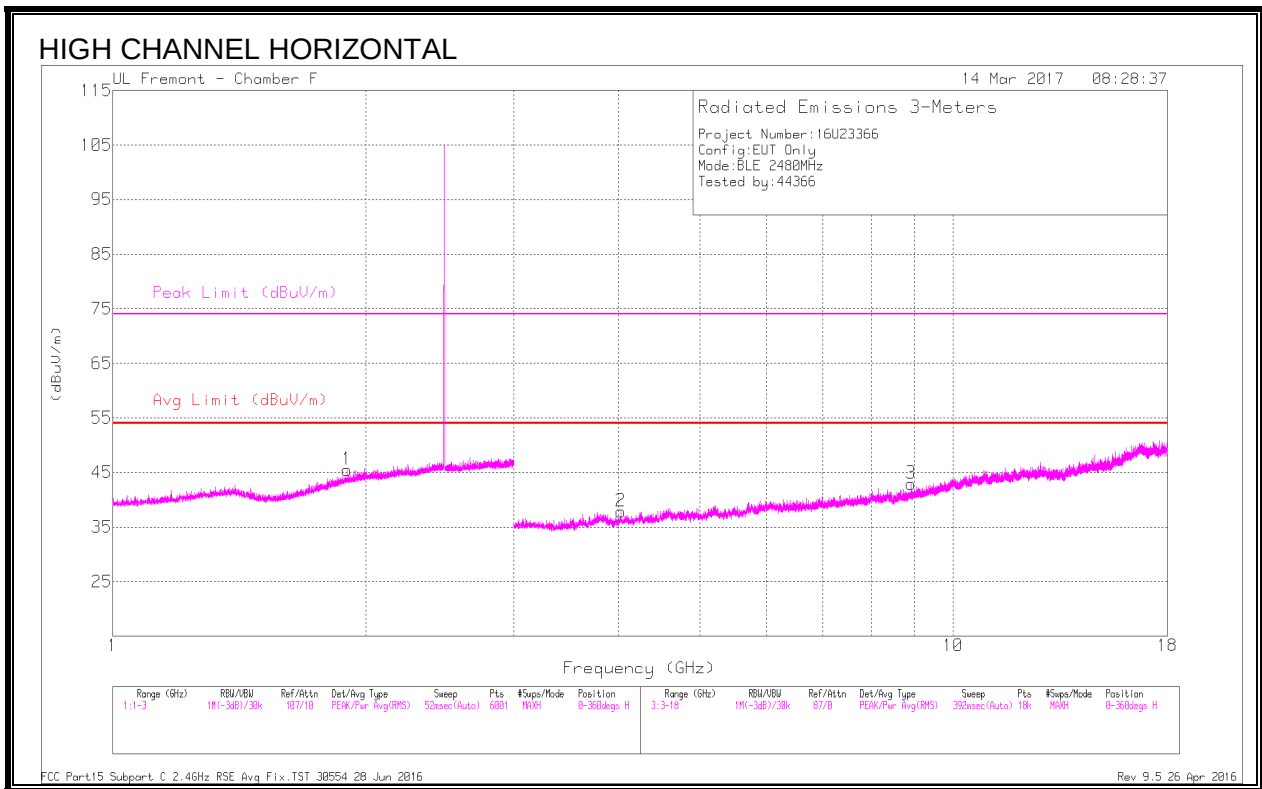
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2.4GHz RSE Avg Fix.TST 30554 28 Jun 2016

Rev 9.5 26 Apr 2016



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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
1	1.9	40.46	PK2	30.9	-21.4	49.96	-	-	-	-	31	375	H
2	* 4.027	38.41	PK2	33.4	-28.8	43.01	-	-	74	-30.99	74	270	H
		27.08	MAV1	33.4	-28.9	31.58	54	-22.42	-	-	74	270	H
3	8.911	34.85	PK2	35.9	-23.3	47.45	-	-	-	-	310	256	H
4	* 4.954	38.35	PK2	34.1	-28.4	44.05	-	-	74	-29.95	23	188	V
	* 4.957	26.87	MAV1	34.1	-28.5	32.47	54	-21.53	-	-	23	188	V
5	* 9.19	34.75	PK2	36.2	-23.1	47.85	-	-	74	-26.15	242	302	V
	* 9.191	23.36	MAV1	36.2	-23.1	36.46	54	-17.54	-	-	242	302	V
6	* 11.226	34.42	PK2	37.9	-21.2	51.12	-	-	74	-22.88	117	289	V
	* 11.224	22.83	MAV1	37.9	-21.2	39.53	54	-14.47	-	-	117	289	V

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

PK2 - KDB558074 Method: Maximum Peak

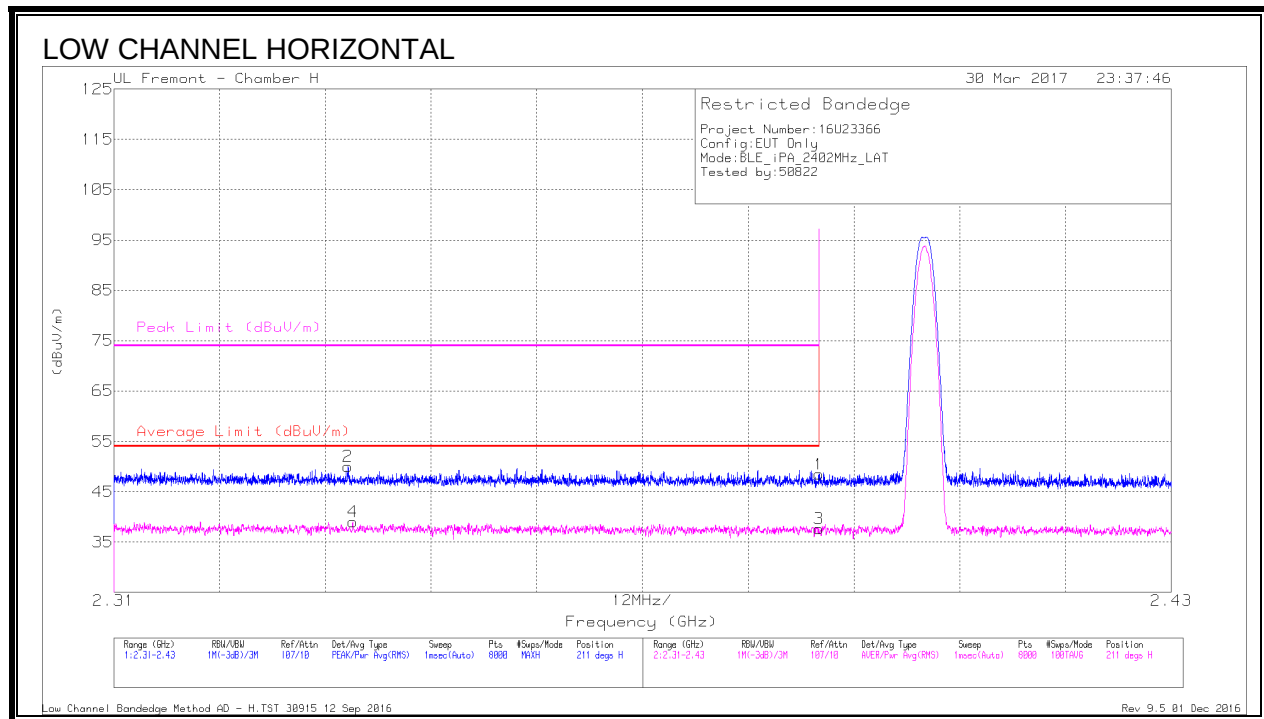
MAV1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2.4GHz RSE Avg Fix.TST 30554 28 Jun 2016

Rev 9.5 26 Apr 2016

8.5. LAT3 Plow

8.5.1. RESTRICTED BANDEDGE (LOW CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cb/FI tr/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	44.96	Pk	31.9	-28.4	48.46	-	-	74	-25.54	211	224	H
2	* 2.337	46.7	Pk	31.7	-28.4	50	-	-	74	-24	211	224	H
3	* 2.39	34.22	RMS	31.9	-28.4	37.72	54	-16.28	-	-	211	224	H
4	* 2.337	35.77	RMS	31.7	-28.4	39.07	54	-14.93	-	-	211	224	H

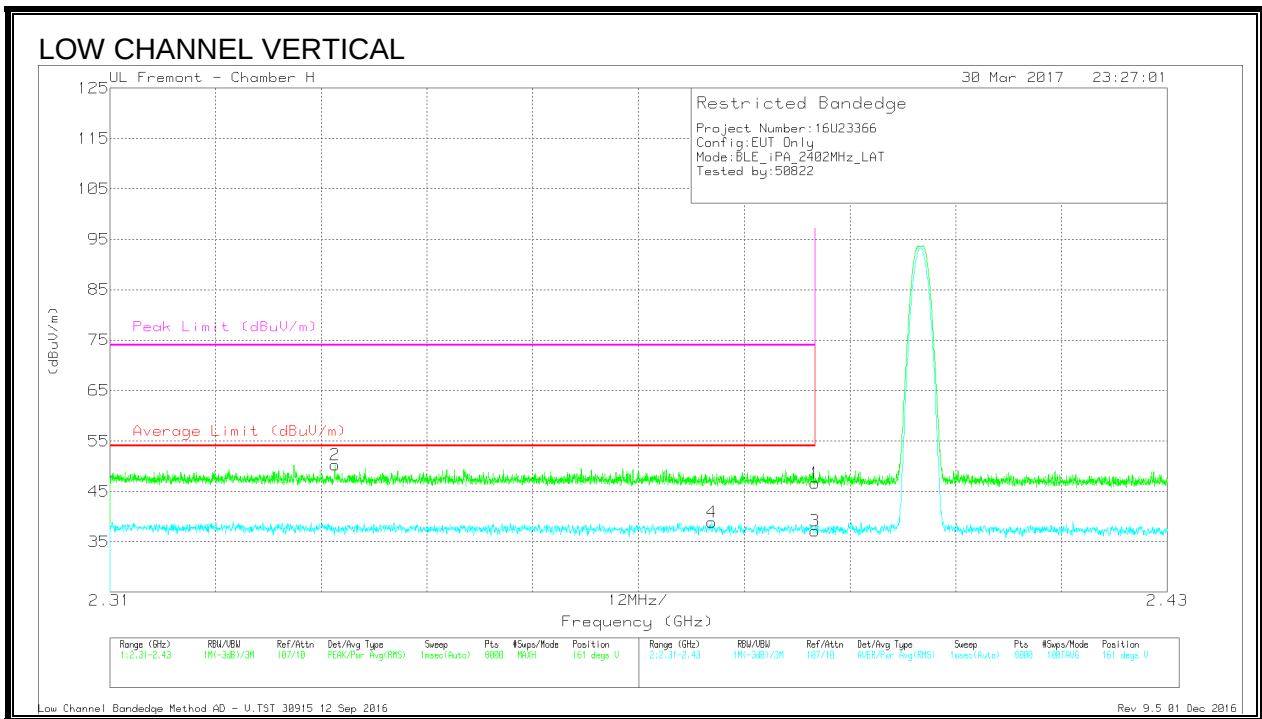
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cb/Fl tr/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	43.2	Pk	31.9	-28.4	46.7	-	-	74	-27.3	161	382	V
2	* 2.336	46.97	Pk	31.7	-28.4	50.27	-	-	74	-23.73	161	382	V
3	* 2.39	33.67	RMS	31.9	-28.4	37.17	54	-16.83	-	-	161	382	V
4	* 2.378	35.41	RMS	31.9	-28.4	38.91	54	-15.09	-	-	161	382	V

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

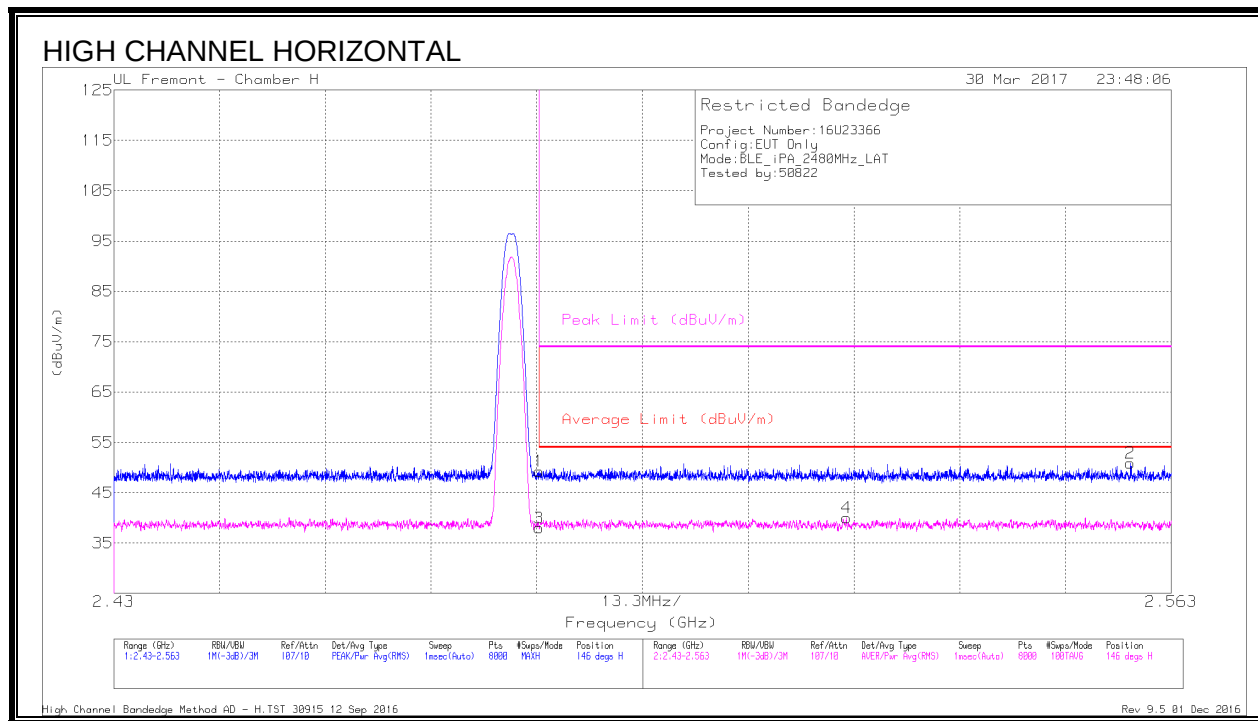
Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016

8.5.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cb/FI tr/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	45.55	Pk	32.2	-28.5	49.25	-	-	74	-24.75	146	107	H
3	* 2.484	34.28	RMS	32.2	-28.5	37.98	54	-16.02	-	-	146	107	H
4	2.522	36.34	RMS	32.2	-28.5	40.04	54	-13.96	-	-	146	107	H
2	2.558	47.17	Pk	32.2	-28.5	50.87	-	-	74	-23.13	146	107	H

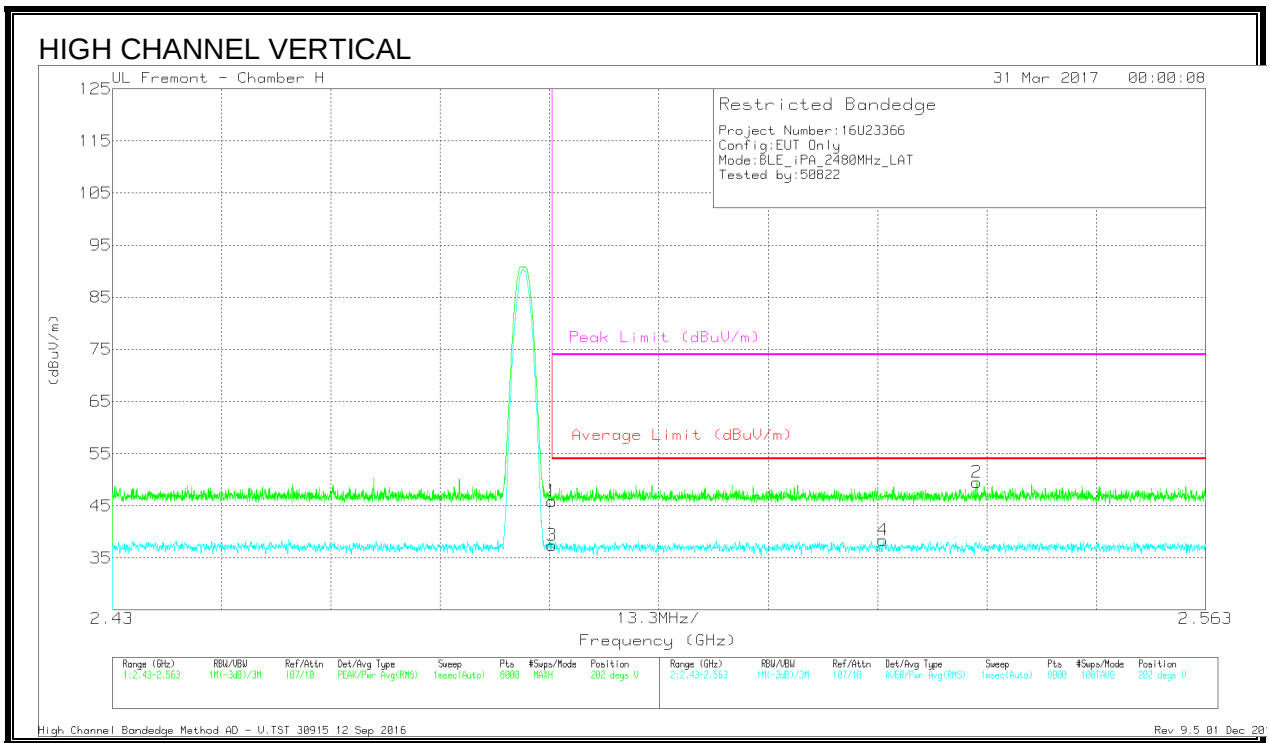
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (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	42.25	Pk	32.2	-28.5	45.95	-	-	74	-28.05	202	158	V
3	* 2.484	33.74	RMS	32.2	-28.5	37.44	54	-16.56	-	-	202	158	V
4	2.524	34.66	RMS	32.2	-28.5	38.36	54	-15.64	-	-	202	158	V
2	2.535	45.73	Pk	32.2	-28.4	49.53	-	-	74	-24.47	202	158	V

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

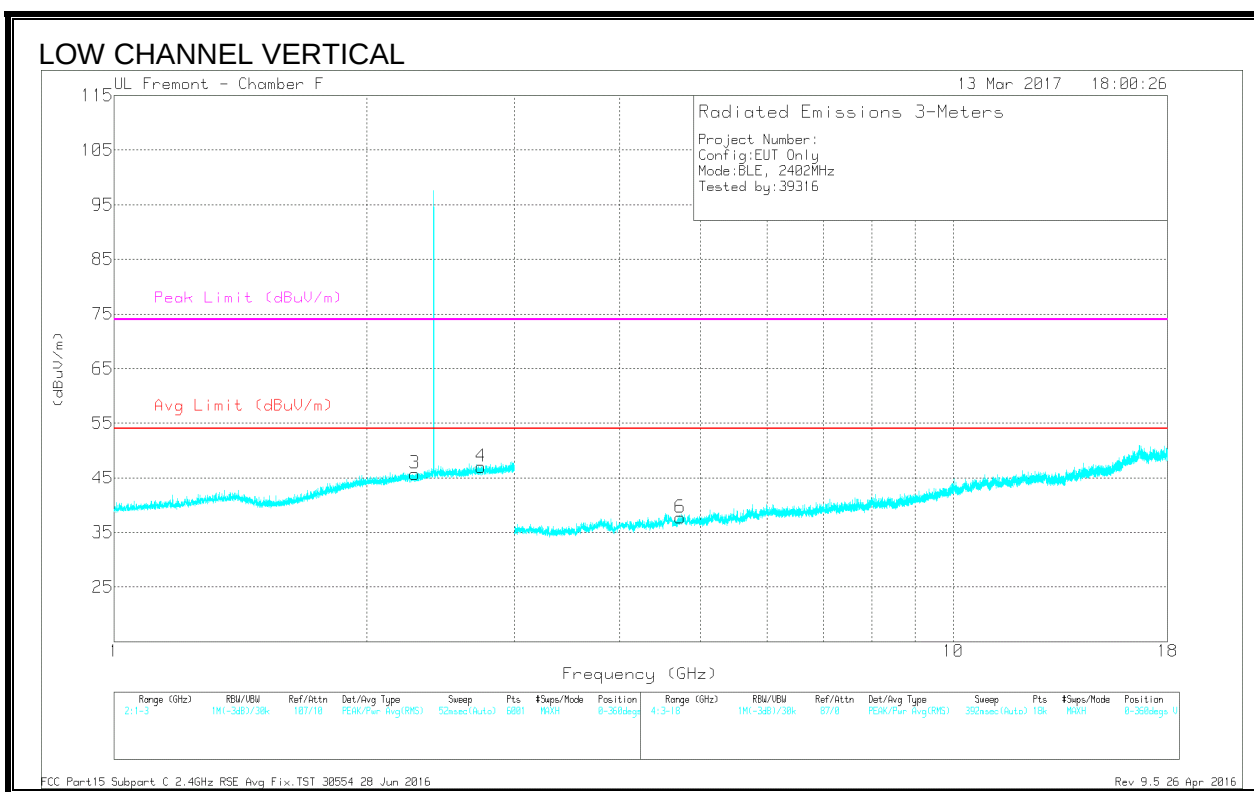
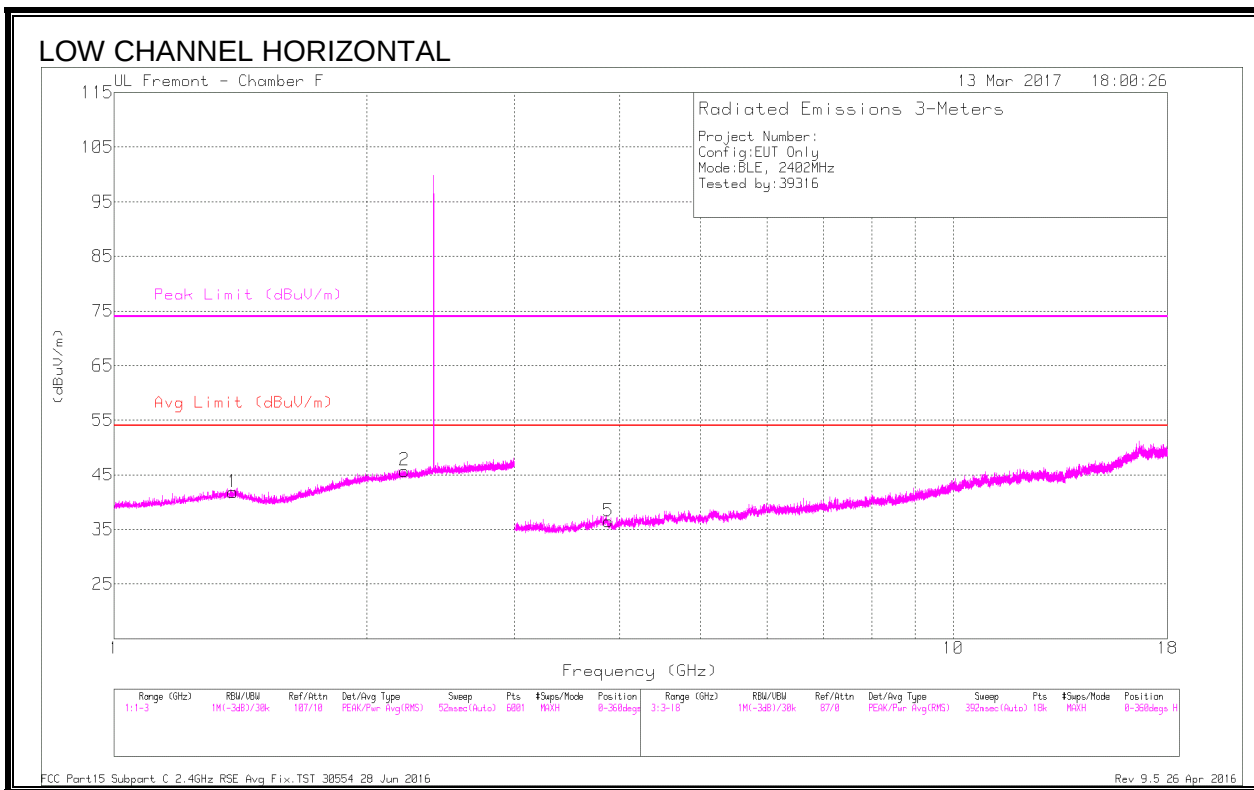
Pk - Peak detector

RMS - RMS detection

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

Rev 9.5 01 Dec 2016

8.5.3. HARMONICS AND SPURIOUS EMISSIONS



DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cb/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.384	42.07	PK2	29.2	-22.1	49.17	-	-	74	-24.83	33	129	H
* 1.385	30.56	MAv1	29.2	-22.1	37.66	54	-16.34	-	-	33	129	H
* 2.217	41.37	PK2	31.9	-21.1	52.17	-	-	74	-21.83	283	102	H
* 2.22	30.41	MAv1	31.9	-21.1	41.21	54	-12.79	-	-	283	102	H
* 2.284	41.48	PK2	31.7	-21	52.18	-	-	74	-21.82	241	385	V
* 2.282	30.5	MAv1	31.7	-21	41.2	54	-12.8	-	-	241	385	V
* 2.737	41.9	PK2	32.4	-20.6	53.7	-	-	74	-20.3	128	229	V
* 2.738	30.6	MAv1	32.4	-20.6	42.4	54	-11.6	-	-	128	229	V
* 3.877	38.36	PK2	33.4	-28.6	43.16	-	-	74	-30.84	139	248	H
* 3.881	28.22	MAv1	33.4	-28.7	32.92	54	-21.08	-	-	139	248	H
* 4.727	38.72	PK2	34.1	-28.4	44.42	-	-	74	-29.58	81	278	V
* 4.728	28.63	MAv1	34.1	-28.3	34.43	54	-19.57	-	-	81	278	V

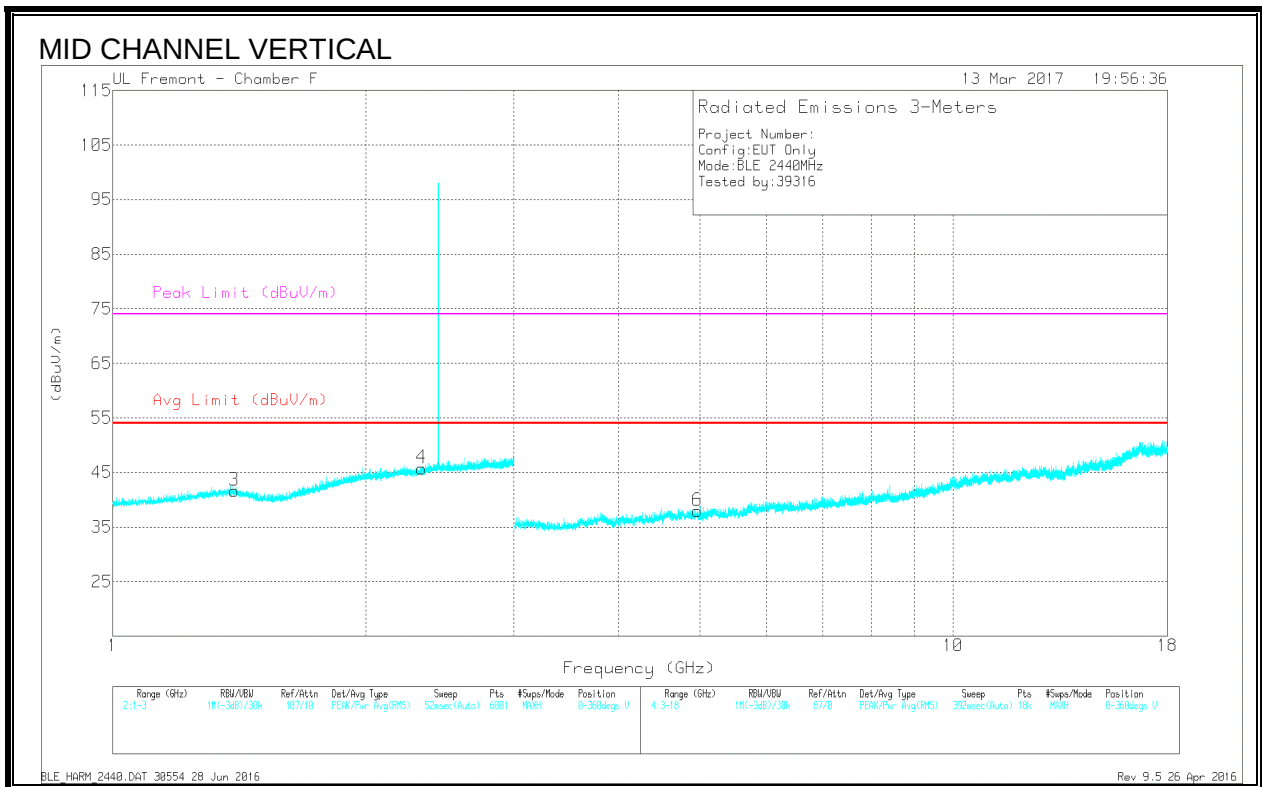
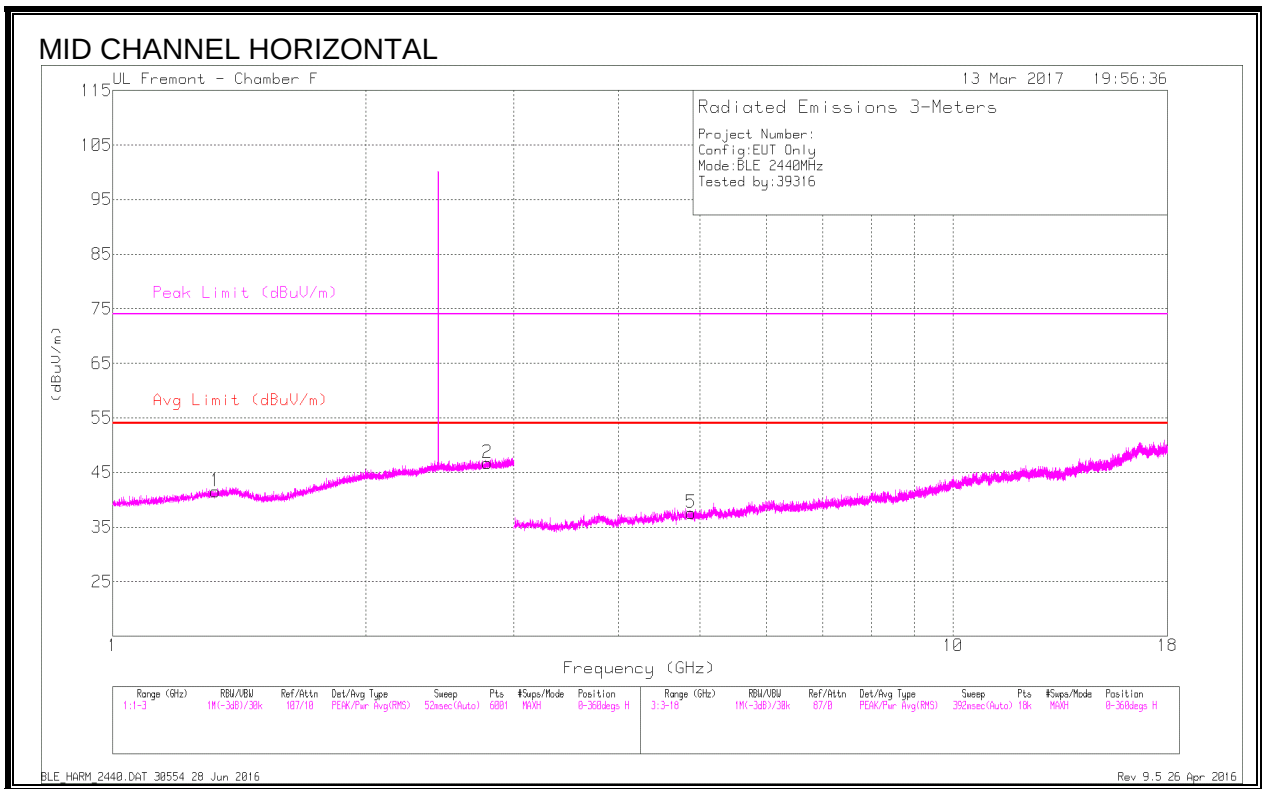
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

FCC Part15 Subpart C 2.4GHz RSE Avg Fix.TST 30554 28 Jun 2016

Rev 9.5 26 Apr 2016



DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cb/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.325	41.65	PK2	29	-22.1	48.55	-	-	74	-25.45	186	250	H
* 1.324	31.23	MAv1	29	-22.1	38.13	54	-15.87	-	-	186	250	H
* 2.792	42.02	PK2	32.5	-20.5	54.02	-	-	74	-19.98	239	325	H
* 2.792	31.14	MAv1	32.5	-20.5	43.14	54	-10.86	-	-	239	325	H
* 1.394	41.83	PK2	29.3	-22.1	49.03	-	-	74	-24.97	317	189	V
* 1.394	31.24	MAv1	29.3	-22.1	38.44	54	-15.56	-	-	317	189	V
* 2.332	41.5	PK2	31.8	-21	52.3	-	-	74	-21.7	154	236	V
* 2.33	31.43	MAv1	31.8	-21	42.23	54	-11.77	-	-	154	236	V
* 4.882	38.39	PK2	34.1	-27.8	44.69	-	-	74	-29.31	76	168	H
* 4.881	28.05	MAv1	34.1	-27.8	34.35	54	-19.65	-	-	76	168	H
* 4.959	39.76	PK2	34.2	-28.5	45.46	-	-	74	-28.54	117	264	V
* 4.96	28.6	MAv1	34.2	-28.5	34.3	54	-19.7	-	-	117	264	V

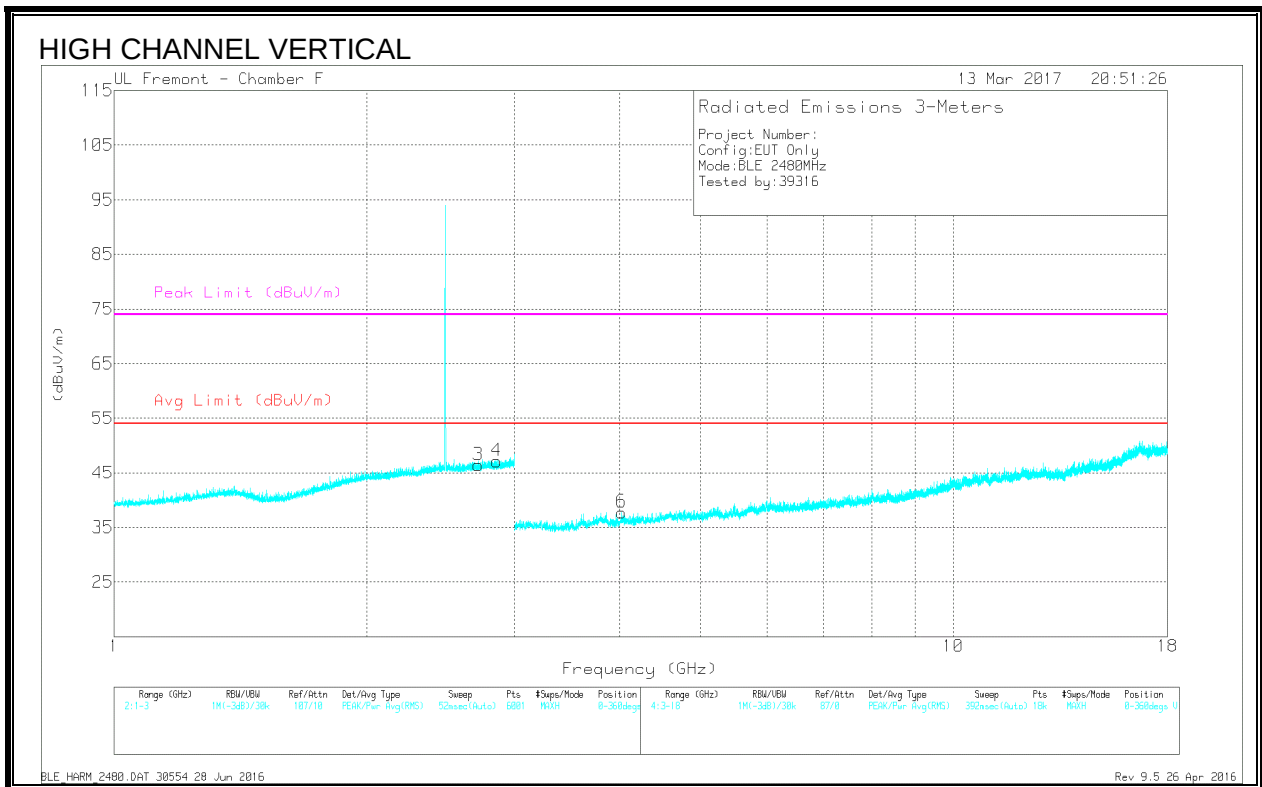
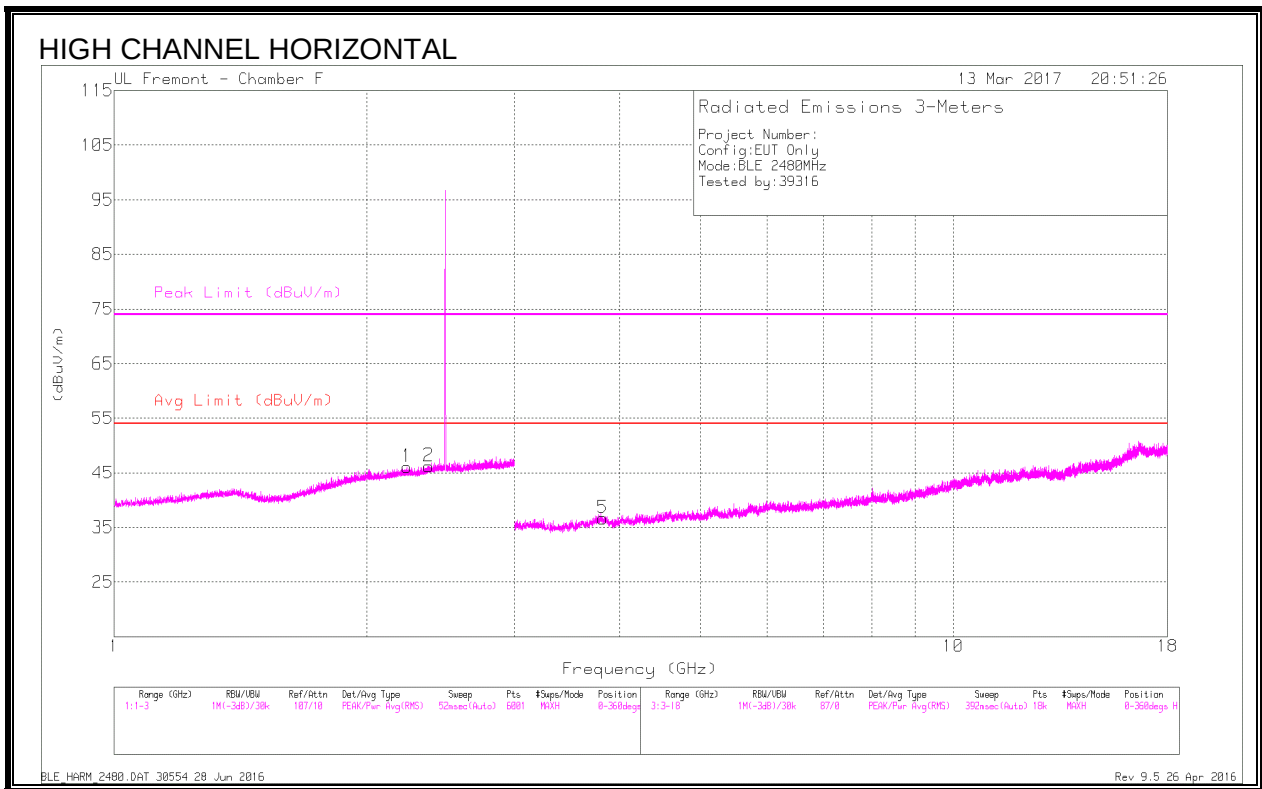
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

BLE_HARM_2440.DAT 30554 28 Jun 2016

Rev 9.5 26 Apr 2016



DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/FI tr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.234	41.8	PK2	31.8	-21	52.6	-	-	74	-21.4	175	213	H
* 2.235	31	MAv1	31.8	-21	41.8	54	-12.2	-	-	175	213	H
* 2.369	41.68	PK2	32	-20.9	52.78	-	-	74	-21.22	74	266	H
* 2.369	30.61	MAv1	32	-20.9	41.71	54	-12.29	-	-	74	266	H
* 2.715	41.46	PK2	32.4	-20.7	53.16	-	-	74	-20.84	163	232	V
* 2.715	31.26	MAv1	32.4	-20.7	42.96	54	-11.04	-	-	163	232	V
* 2.858	42.27	PK2	32.6	-20.4	54.47	-	-	74	-19.53	211	314	V
* 2.859	31.01	MAv1	32.6	-20.4	43.21	54	-10.79	-	-	211	314	V
* 3.823	38.75	PK2	33.4	-28.3	43.85	-	-	74	-30.15	127	305	H
* 3.823	27.96	MAv1	33.4	-28.3	33.06	54	-20.94	-	-	127	305	H
* 4.024	40.65	PK2	33.4	-28.9	45.15	-	-	74	-28.85	172	328	V
* 4.024	28.92	MAv1	33.4	-28.9	33.42	54	-20.58	-	-	172	328	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

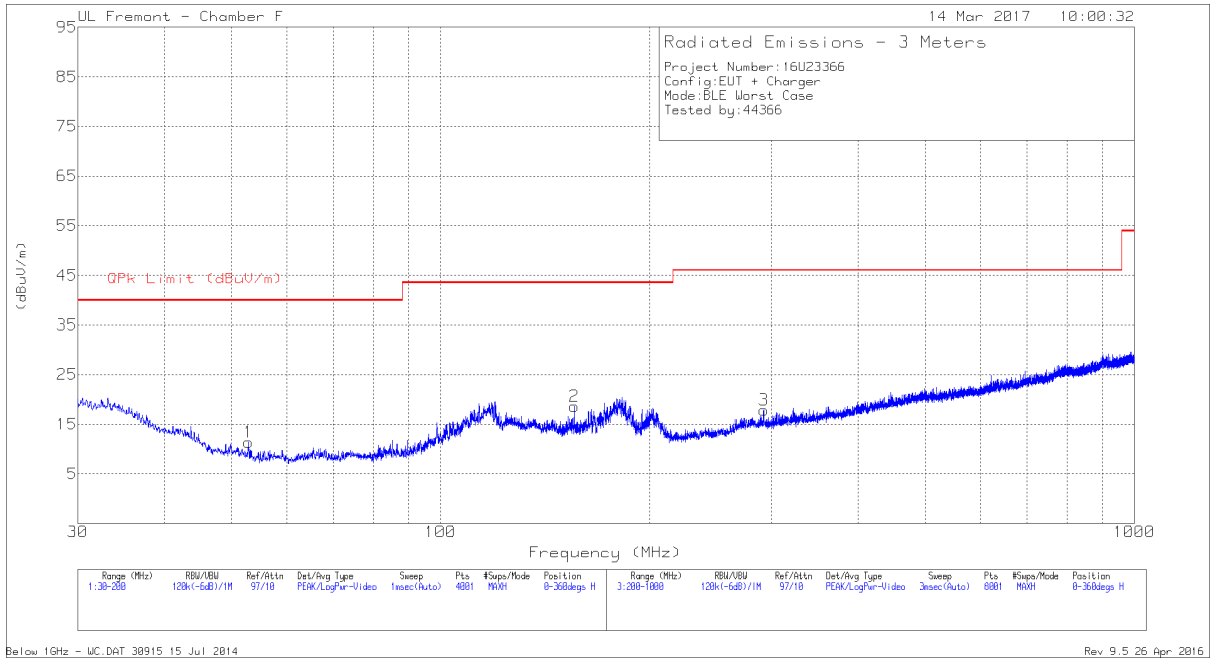
BLE_HARM_2480.DAT 30554 28 Jun 2016

Rev 9.5 26 Apr 2016

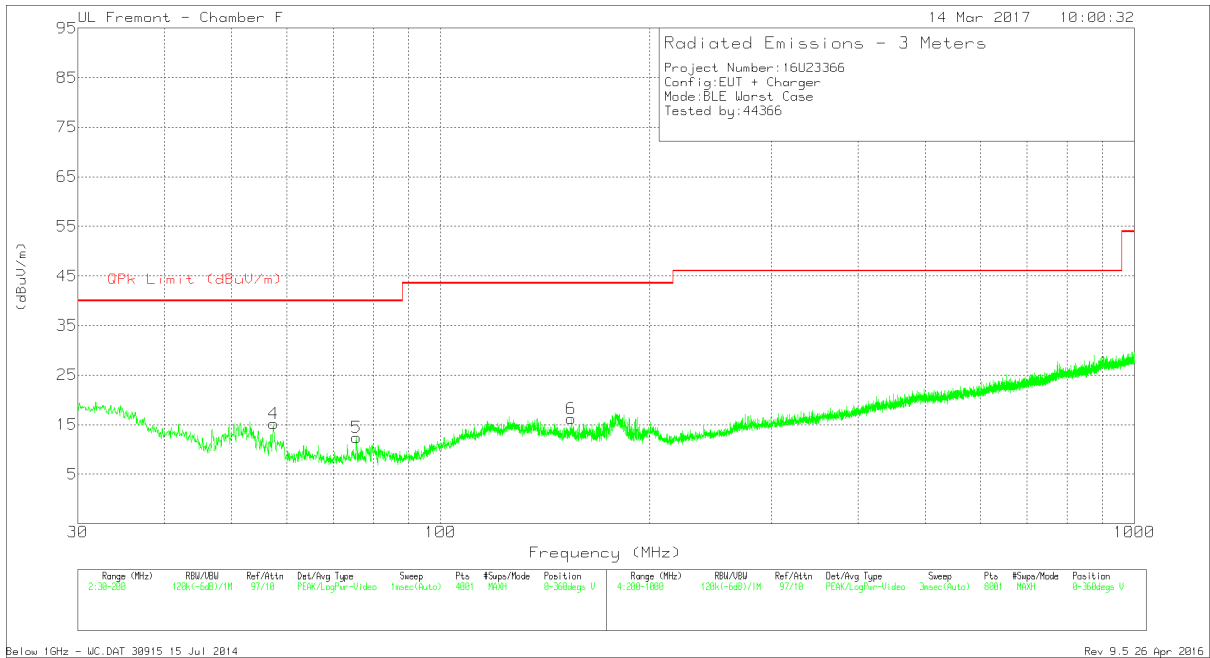
8.6. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



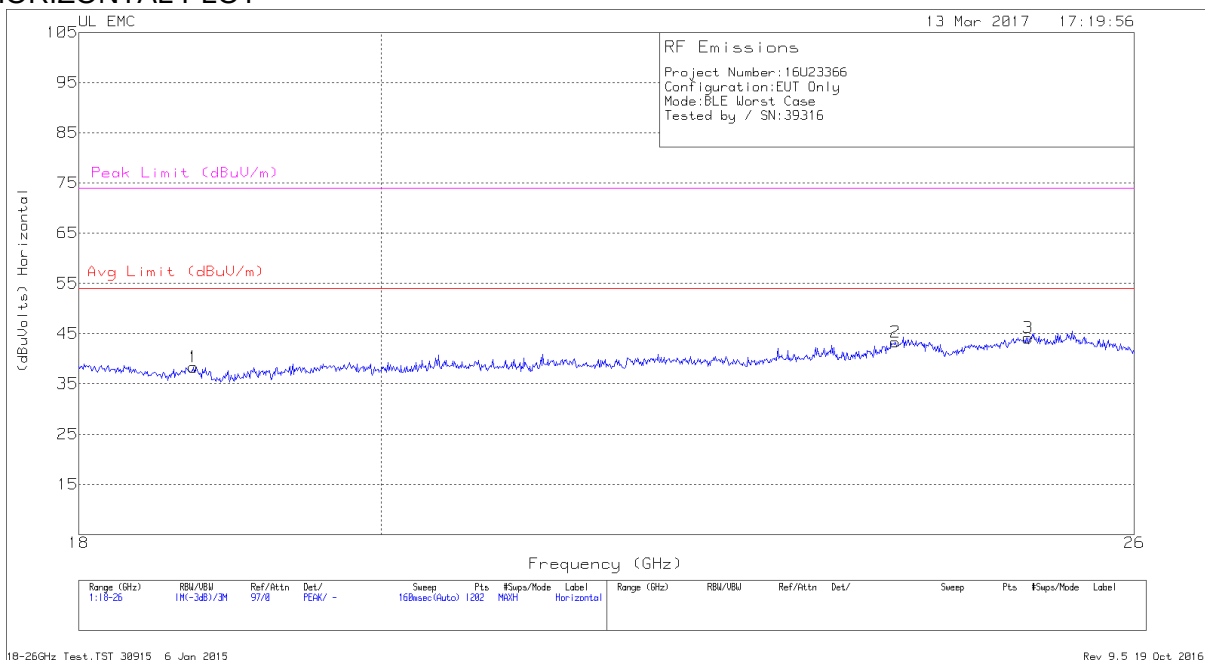
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T122 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	52.865	30.85	Pk	12.1	-31.6	11.35	40	-28.65	0-360	299	H
2	155.8425	33	Pk	16.4	-30.8	18.6	43.52	-24.92	0-360	199	H
4	57.455	34.99	Pk	11.8	-31.6	15.19	40	-24.81	0-360	100	V
5	75.6025	32.01	Pk	11.8	-31.4	12.41	40	-27.59	0-360	100	V
6	154.3125	30.52	Pk	16.4	-30.7	16.22	43.52	-27.3	0-360	100	V
3	292.2	30.3	Pk	17.4	-29.9	17.8	46.02	-28.22	0-360	100	H

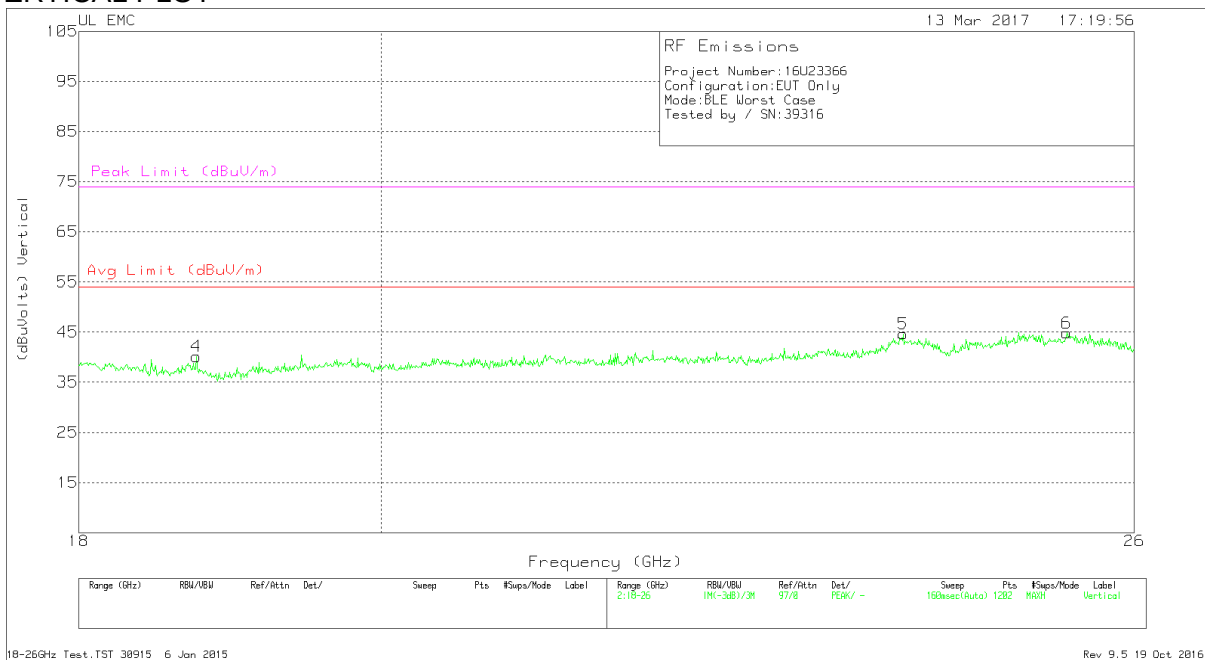
8.7. WORST-CASE ABOVE 18 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



Data

Marker	Frequency (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	18.733	40.13	Pk	32.4	-24.7	-9.5	38.33	54	-15.67	74	-35.67
2	23.922	42.73	Pk	34	-23.9	-9.5	43.33	54	-10.67	74	-30.67
3	25.054	44.37	Pk	34.3	-25	-9.5	44.17	54	-9.83	74	-29.83
4	18.753	41.87	Pk	32.4	-24.6	-9.5	40.17	54	-13.83	74	-33.833
5	23.988	44.47	Pk	34	-24.3	-9.5	44.67	54	-9.33	74	-29.33
6	25.394	44.33	Pk	34.3	-24.3	-9.5	44.83	54	-9.17	74	-29.17

8.8. 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.

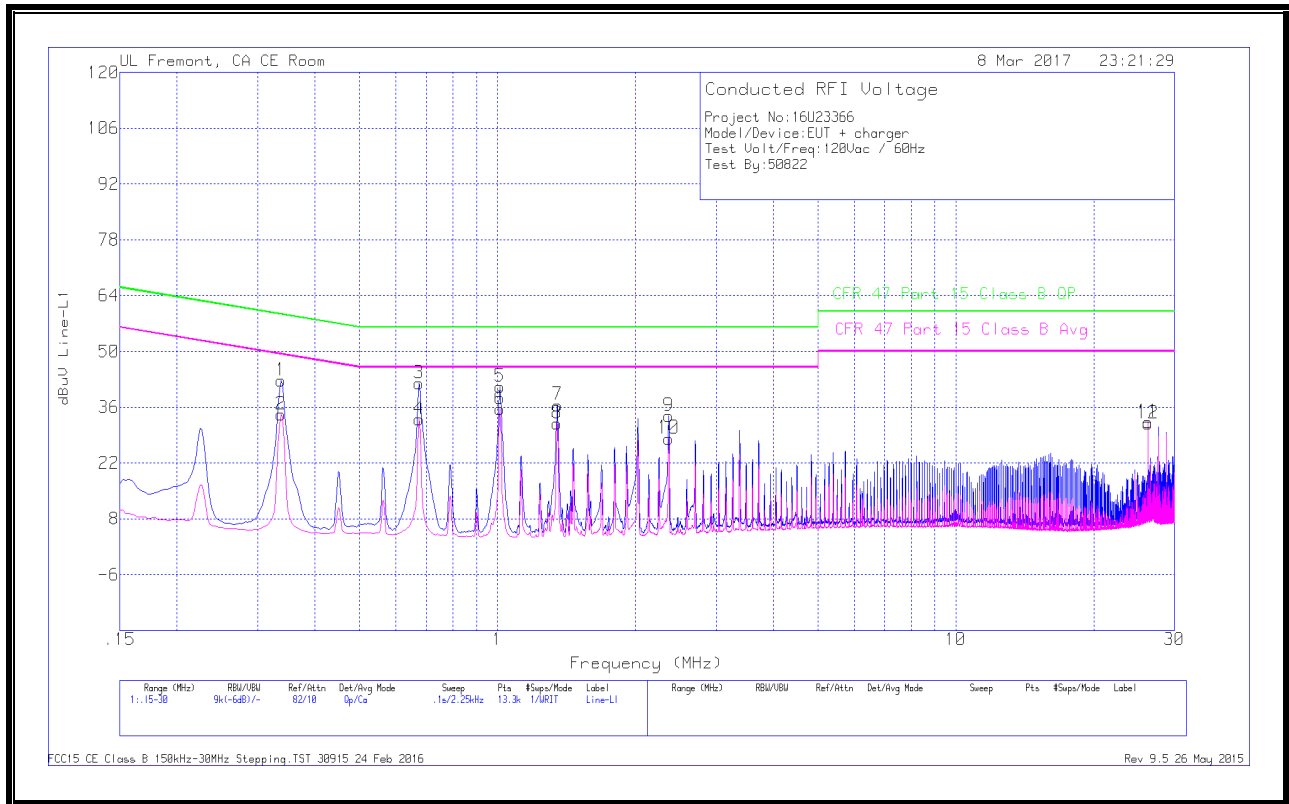
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

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

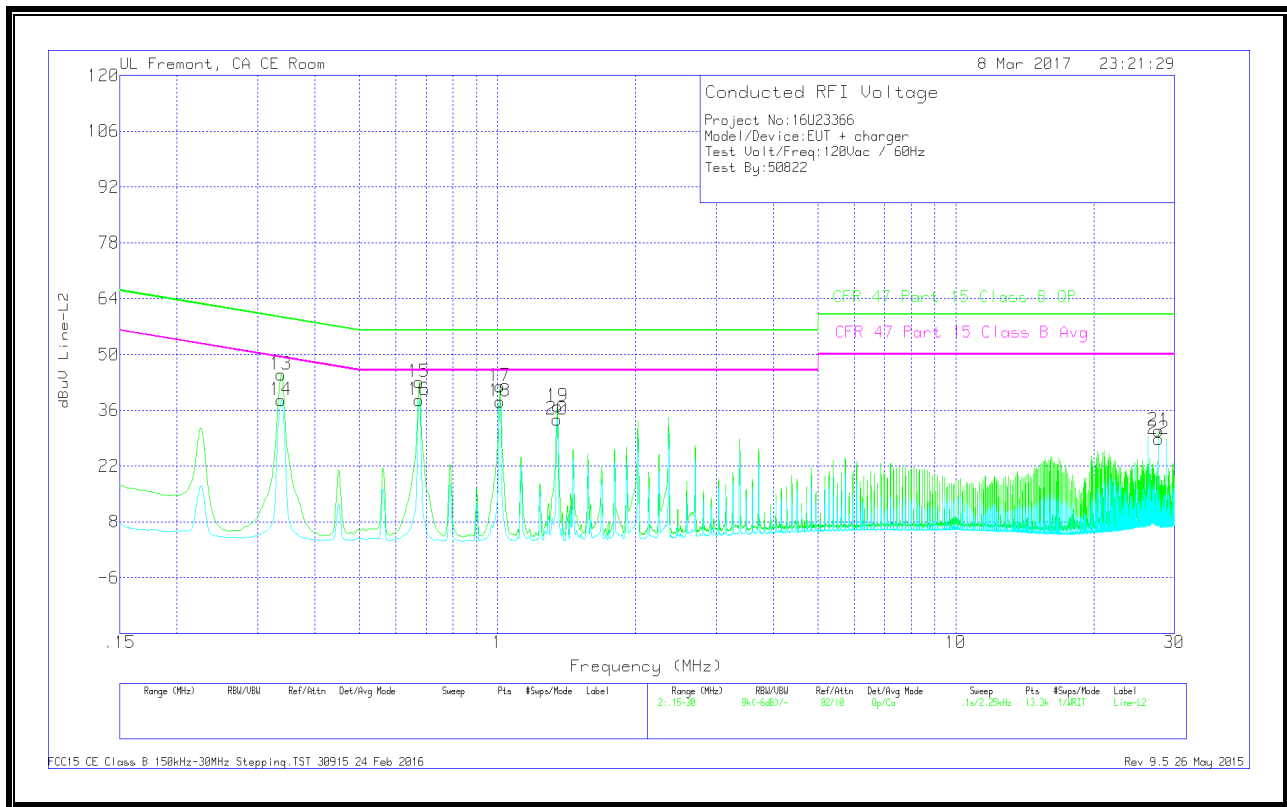
LINE 1 RESULTS



WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	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	.33675	32.43	Qp	0	.1	10.1	42.63	59.28	-16.65	-	-
2	.33675	23.93	Ca	0	.1	10.1	34.13	-	-	49.28	-15.15
3	.67425	31.79	Qp	0	.1	10.1	41.99	56	-14.01	-	-
4	.67425	22.73	Ca	0	.1	10.1	32.93	-	-	46	-13.07
5	1.014	30.9	Qp	0	.1	10.1	41.1	56	-14.9	-	-
6	1.01175	25.3	Ca	0	.1	10.1	35.5	-	-	46	-10.5
7	1.3515	26.33	Qp	0	.1	10.1	36.53	56	-19.47	-	-
8	1.34925	21.67	Ca	0	.1	10.1	31.87	-	-	46	-14.13
9	2.364	23.68	Qp	0	.1	10.1	33.88	56	-22.12	-	-
10	2.364	17.98	Ca	0	.1	10.1	28.18	-	-	46	-17.82
11	26.25	21.31	Qp	.1	.3	10.5	32.21	60	-27.79	-	-
12	26.25	21.05	Ca	.1	.3	10.5	31.95	-	-	50	-18.05

LINE 2 RESULTS

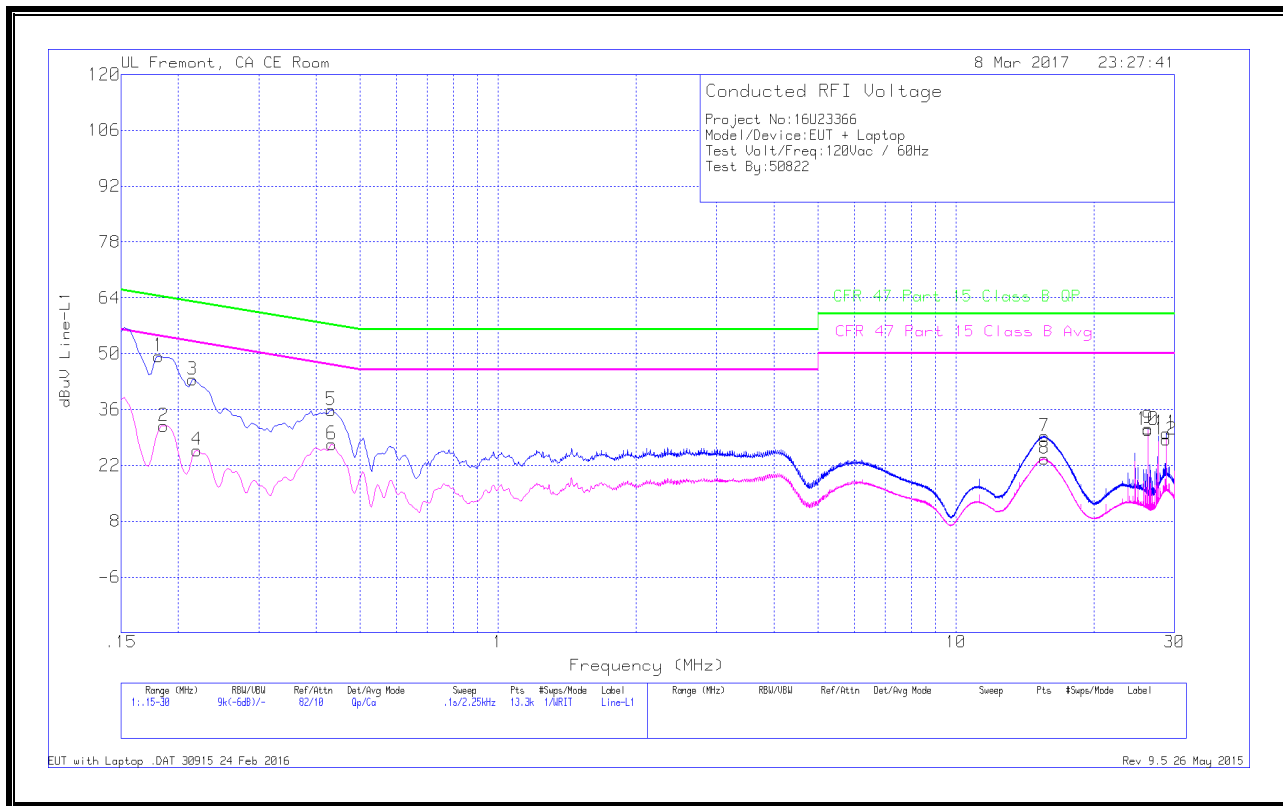


WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables C2&C3	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	.33675	34.74	Qp	0	.1	10.1	44.94	59.28	-14.34	-	-
14	.33675	28.31	Ca	0	.1	10.1	38.51	-	-	49.28	-10.77
15	.67425	32.9	Qp	0	.1	10.1	43.1	56	-12.9	-	-
16	.67425	28.32	Ca	0	.1	10.1	38.52	-	-	46	-7.48
17	1.01175	31.74	Qp	0	.1	10.1	41.94	56	-14.06	-	-
18	1.01175	27.96	Ca	0	.1	10.1	38.16	-	-	46	-7.84
19	1.3515	26.72	Qp	0	.1	10.1	36.92	56	-19.08	-	-
20	1.34925	23.51	Ca	0	.1	10.1	33.71	-	-	46	-12.29
21	27.6923	20.01	Qp	.1	.3	10.5	30.91	60	-29.09	-	-
22	27.6923	17.91	Ca	.1	.3	10.5	28.81	-	-	50	-21.19

8.8.2. EUT POWERED BY HOST PC VIA USB CABLE

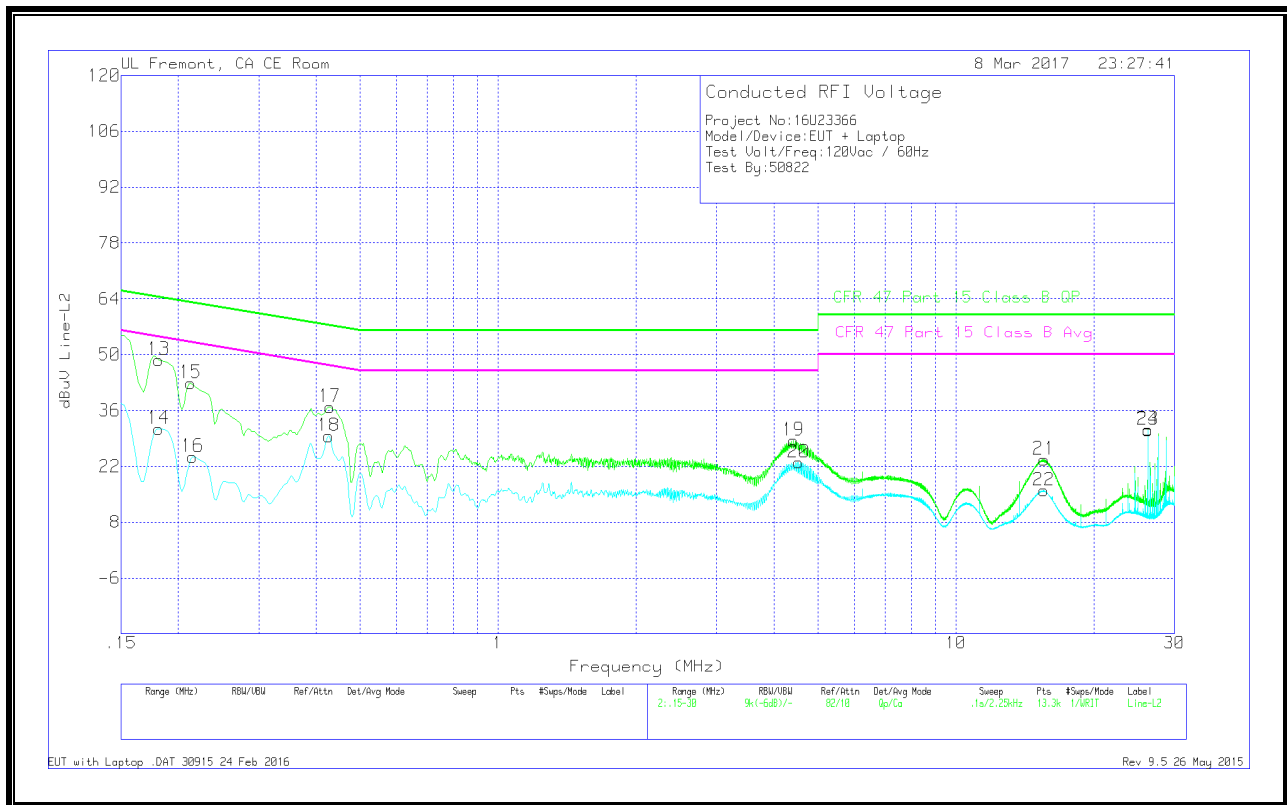
LINE 1 RESULTS



WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	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	.1815	39.19	Qp	0	.1	10.1	49.39	64.42	-15.03	-	-
2	.186	21.68	Ca	0	.1	10.1	31.88	-	-	54.21	-22.33
3	.21525	33.32	Qp	0	.1	10.1	43.52	63	-19.48	-	-
4	.21975	15.61	Ca	0	.1	10.1	25.81	-	-	52.83	-27.02
5	.43237	25.63	Qp	0	.1	10.1	35.83	57.21	-21.38	-	-
6	.4335	17.09	Ca	0	.1	10.1	27.29	-	-	47.19	-19.9
7	15.5918	18.89	Qp	0	.2	10.2	29.29	60	-30.71	-	-
8	15.6075	13.23	Ca	0	.2	10.2	23.63	-	-	50	-26.37
9	26.25	20.37	Qp	.1	.3	10.5	31.27	60	-28.73	-	-
10	26.25	20.02	Ca	.1	.3	10.5	30.92	-	-	50	-19.08
11	28.7498	19.13	Qp	.1	.3	10.5	30.03	60	-29.97	-	-
12	28.7498	17.53	Ca	.1	.3	10.5	28.43	-	-	50	-21.57

LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables C2&C3	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	.1815	38.51	Qp	0	.1	10.1	48.71	64.42	-15.71	-	-
14	.1815	21.22	Ca	0	.1	10.1	31.42	-	-	54.42	-23
15	.213	32.77	Qp	0	0	10.1	42.87	63.09	-20.22	-	-
16	.21525	14.22	Ca	0	.1	10.1	24.42	-	-	53	-28.58
17	.429	26.67	Qp	0	.1	10.1	36.87	57.27	-20.4	-	-
18	.42675	19.39	Ca	0	.1	10.1	29.59	-	-	47.32	-17.73
19	4.41825	18.28	Qp	0	.1	10.1	28.48	56	-27.52	-	-
20	4.53525	12.8	Ca	0	.1	10.1	23	-	-	46	-23
21	15.5783	13.34	Qp	0	.2	10.2	23.74	60	-36.26	-	-
22	15.558	5.57	Ca	0	.2	10.2	15.97	-	-	50	-34.03
23	26.25	20.33	Qp	.1	.3	10.5	31.23	60	-28.77	-	-
24	26.25	20.2	Ca	.1	.3	10.5	31.1	-	-	50	-18.9