



CERTIFICATION TEST REPORT

Report Number. : 12750204-E2V2

Applicant : APPLE, INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A.

Model : A2015

FCC ID : BCGA2015

IC : 579C-A2015

EUT Description : WIRELESS HEADPHONE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-247 ISSUE 2
ISED RSS-GEN ISSUE 5

Date Of Issue:
December 10, 2019

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	11/25/2019	Initial Issue	Chin Pang
V2	12/10/2019	Address TCB question	Chin Pang

TABLE OF CONTENTS

REPORT REVISION HISTORY	2
TABLE OF CONTENTS	3
1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	7
4.1. MEASURING INSTRUMENT CALIBRATION	7
4.2. SAMPLE CALCULATION	7
4.3. MEASUREMENT UNCERTAINTY.....	7
5. EQUIPMENT UNDER TEST	8
5.1. EUT DESCRIPTION	8
5.2. MAXIMUM OUTPUT POWER.....	8
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.4. SOFTWARE AND FIRMWARE.....	8
5.5. WORST-CASE CONFIGURATION AND MODE.....	8
5.6. DESCRIPTION OF TEST SETUP.....	9
6. MEASUREMENT METHOD.....	14
7. TEST AND MEASUREMENT EQUIPMENT	15
8. ANTENNA PORT TEST RESULTS	16
8.1. ON TIME AND DUTY CYCLE.....	16
8.2. 99% BANDWIDTH.....	17
8.2.1. BLE (1Mbps).....	18
8.2.2. BLE (2Mbps).....	19
8.3. 6 dB BANDWIDTH.....	20
8.3.1. BLE (1Mbps).....	21
8.3.2. BLE (2Mbps).....	22
8.4. OUTPUT POWER.....	23
8.4.1. BLE (1Mbps).....	24
8.4.2. BLE (2Mbps).....	24
8.5. AVERAGE POWER	25
8.5.1. BLE (1Mbps).....	26
8.5.2. BLE (2Mbps).....	26
8.6. POWER SPECTRAL DENSITY	27
8.6.1. BLE (1Mbps).....	28

8.6.2.	BLE (2Mbps).....	29
8.7.	CONDUCTED SPURIOUS EMISSIONS.....	30
8.7.1.	BLE (1Mbps).....	31
8.7.2.	BLE (2Mbps).....	32
9.	RADIATED TEST RESULTS.....	33
9.1.	LIMITS AND PROCEDURE.....	33
9.2.	TRANSMITTER ABOVE 1 GHz.....	36
9.2.1.	BLE (1Mbps).....	36
9.2.2.	BLE (2Mbps).....	46
9.3.	WORST CASE BELOW 30MHZ.....	56
9.4.	WORST CASE BELOW 1 GHz.....	57
9.5.	WORST CASE 18-26 GHz.....	59
10.	AC POWER LINE CONDUCTED EMISSIONS	61
10.1.1.	AC Power Line Host.....	62
10.1.2.	AC Power Line Norm.....	64
11.	SETUP PHOTOS	66

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE, INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A

EUT DESCRIPTION: WIRELESS HEADPHONE

MODEL: A2015

SERIAL NUMBER: F9FZG0SDP4GN (CONDUCTED)
F9FZM00DP4GN (RADIATED)

DATE TESTED: NOVEMBER 07-19, 2019

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Complies
ISED RSS-247 Issue 2	Complies
ISED RSS-GEN Issue 5	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

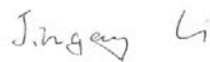
This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This 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 the U.S. government.

Approved & Released For
UL Verification Services Inc. By:



Chin Pang
Senior Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:



Jingang Li
Test Engineer
Consumer Technology Division
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, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, RSS-GEN Issue 5, 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, and 47658 Kato Road, 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	47658 Kato Rd.
☒ Chamber A (IC:2324B-1)	☒ Chamber D (IC:22541-1)	☐ Chamber I (IC: 2324A-5)
☐ Chamber B (IC:2324B-2)	☐ Chamber E (IC:22541-2)	☐ Chamber J (IC: 2324A-6)
☐ Chamber C (IC:2324B-3)	☒ Chamber F (IC:22541-3)	☐ Chamber K (IC: 2324A-1)
	☐ Chamber G (IC:22541-4)	☐ Chamber L (IC: 2324A-3)
	☐ Chamber H (IC:22541-5)	☐ Chamber M (IC: 2324A-2)

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code: 2324A.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

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

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.

36.5 dBuV + 0 dB + 10.1 dB + 0 dB = 46.6 dBuV

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	3.39 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.07 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB

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

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a wireless headphone with integrated battery, microphone and antenna. It can play music from Bluetooth audio source. It has lightning connector port for charging. It has Red/White LEDs, volume up, volume down buttons.

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, 1Mbps	2.84	1.92
2402 - 2480	BLE, 2Mbps	2.87	1.94

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PCB antenna, with a maximum gain of 1 dBi.

5.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 2B20121d

5.5. WORST-CASE CONFIGURATION AND MODE

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

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Y (landscape) orientation was the worst-case orientation without AC/DC adapter; For below 1GHz and 30MHz tests were performed with EUT connected to AC power adapter as the worst case; and for above 1GHz, the worst-case configuration was tested with EUT only.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Apple	A1398	C02PM012G3QD	QDS-BRCM1069
Laptop AC/DC adapter	Liteon Technology	PA-1450-BA1	B123	NA
EUT AC Adapter	Apple	A1385	D29325SM03XDHLHC9	NA

I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	SMA	Un-Shielded	0.3	To Spectrum Analyzer
2	USB	1	USB	Shielded	1	N/A
3	Antenna	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
NA						

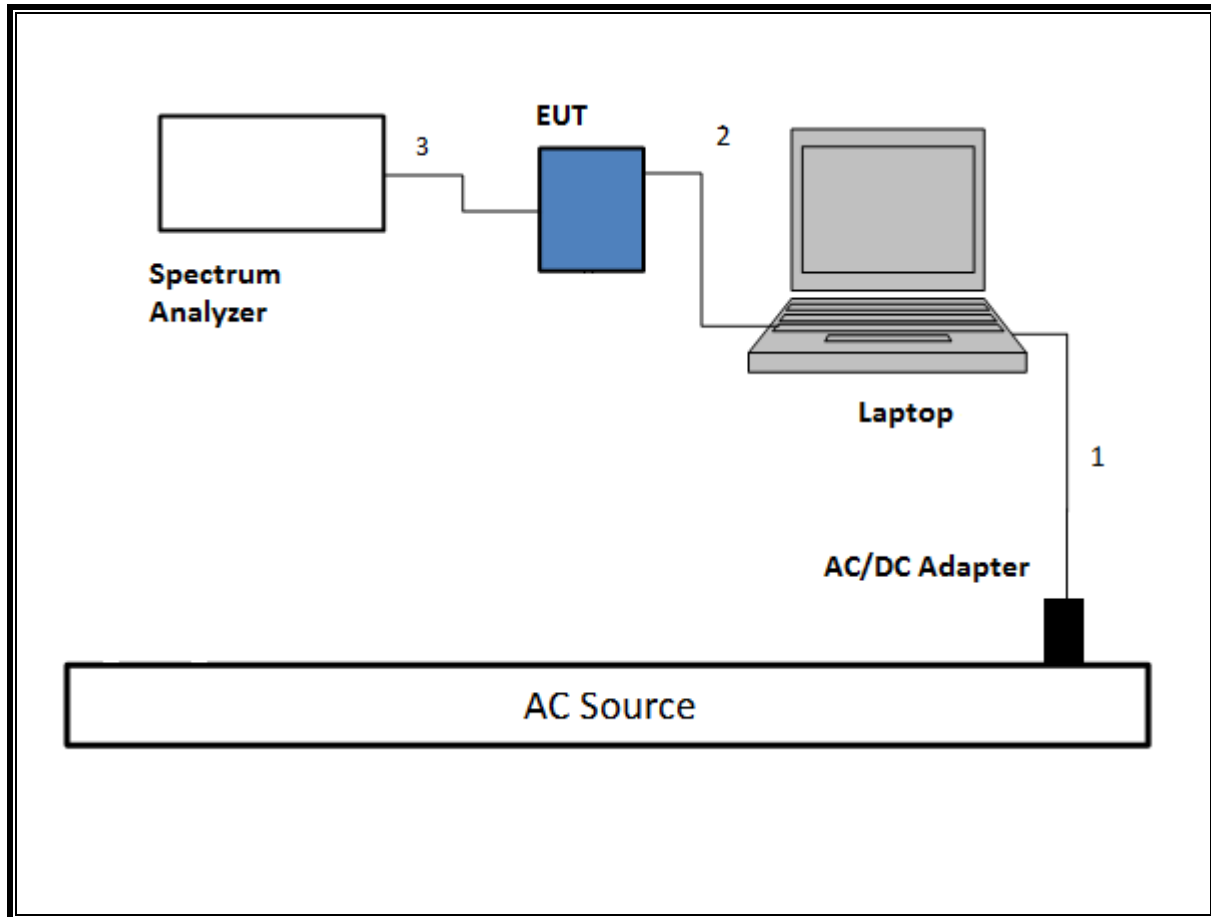
I/O CABLES (BELOW 1GHz AND AC POWER LINE TESTADAPTER AND LAPTOP)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	Lightning	Un-shielded	1	N/A

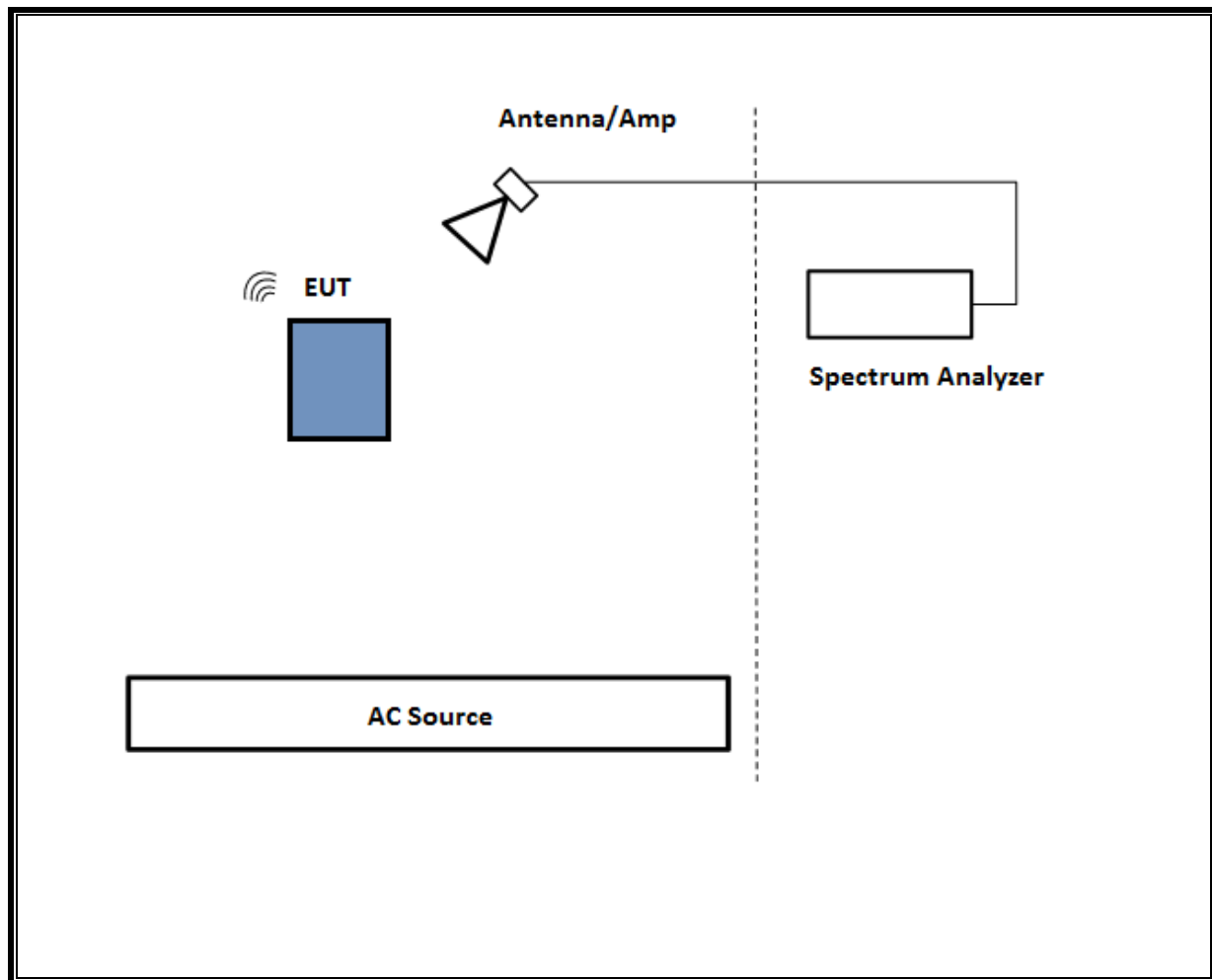
TEST SETUP

The EUT is connected to a test laptop during the tests. Test software exercised the radio card.

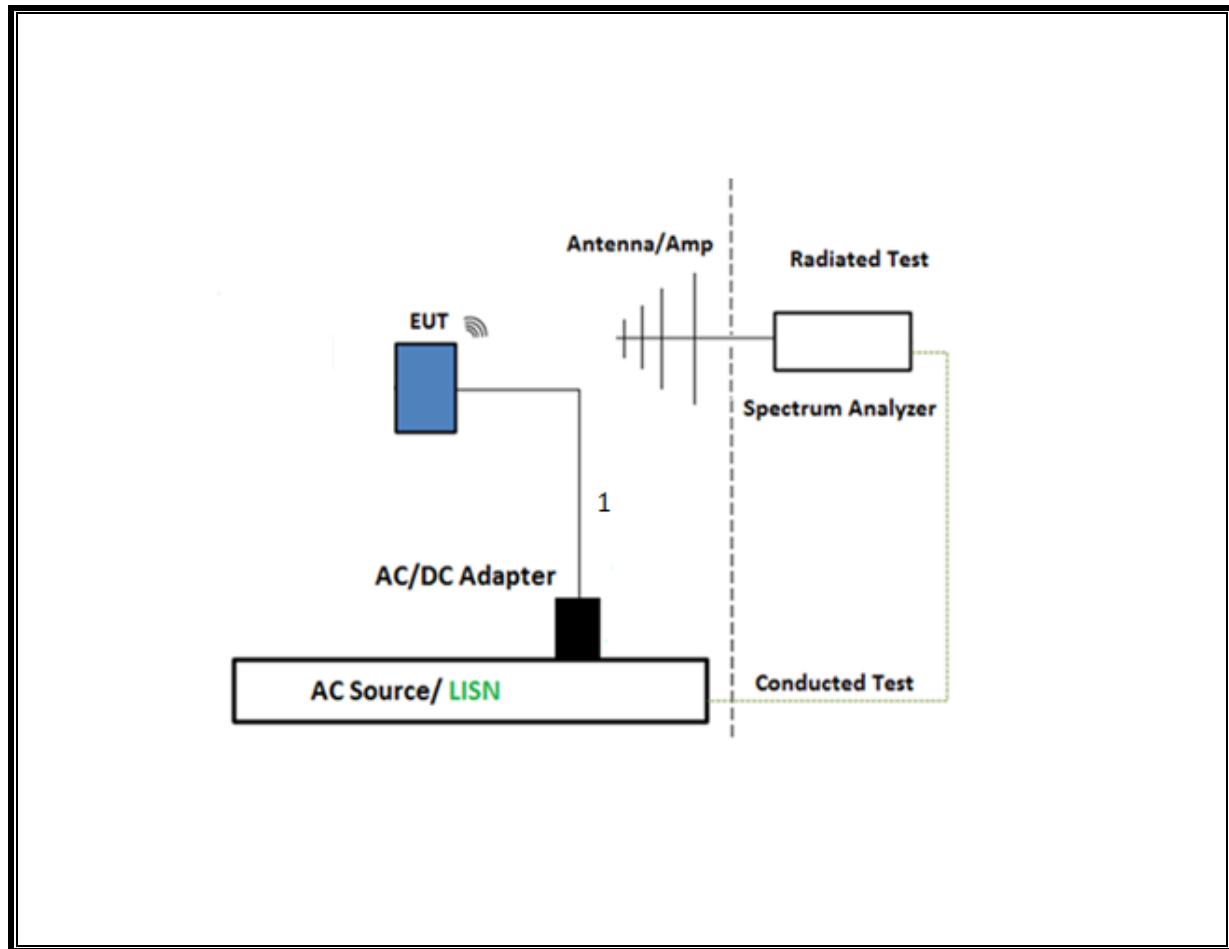
SETUP DIAGRAM FOR CONDUCTED TESTS



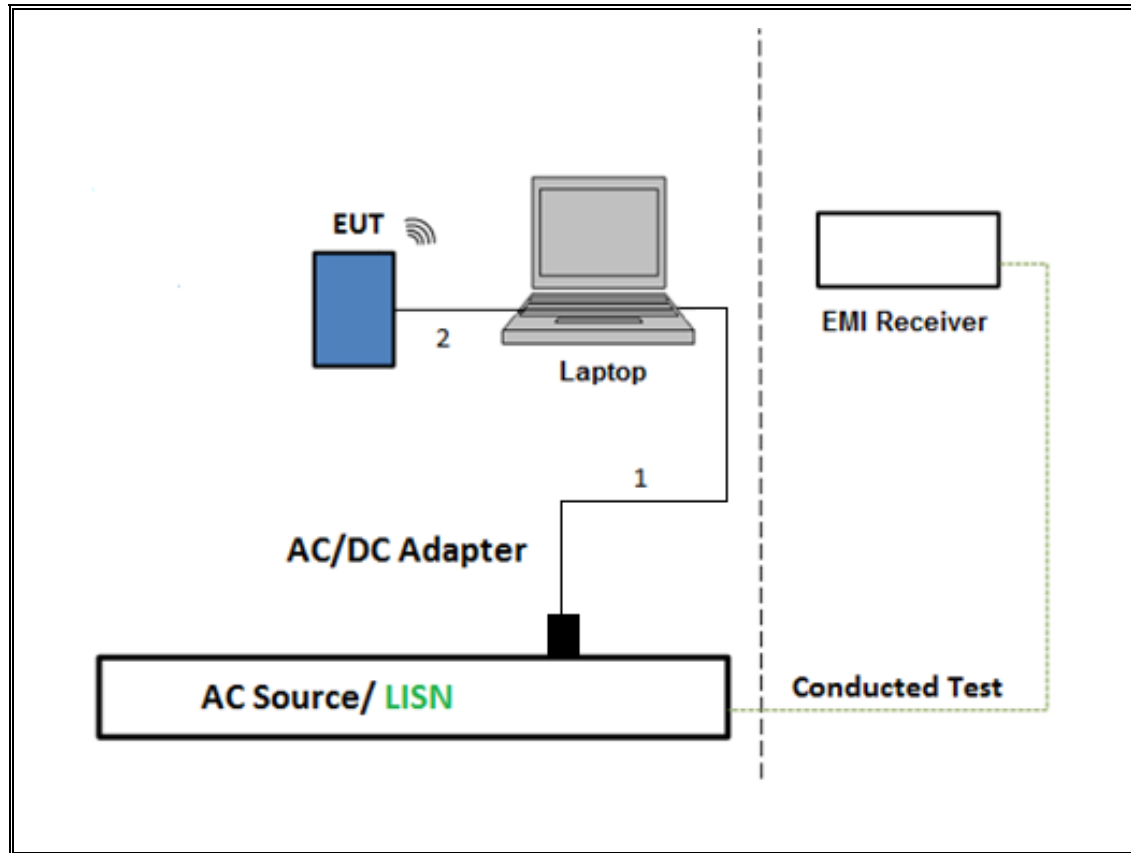
SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz



SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST



TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION



6. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 558074 D01 v05r02, Section 6.

6 dB BW: ANSI C63.10 Subclause -11.8.1 RBW $\geq$ DTS BW

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Output Power: ANSI C63.10 Subclause -11.9.1.3 Peak power meter method

Output Power: ANSI C63.10 Subclause -11.9.2.3.1 Measurement using average power meter

PSD: ANSI C63.10 Subclause -11.10.2 Method PKPSD (peak PSD)

Radiated emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1

Conducted emissions in restricted frequency bands: ANSI C63.10 Subclause -11.12.2

Band-edge: ANSI C63.10 Subclause -11.13.3.2 Integration method -Peak detection

Band-edge: ANSI C63.10 Subclause -11.13.3.3 Integration method -Trace averaging with continuous transmission at full power

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

7. 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	ID Num	Cal Due	Last Cal
Amplifier, 1 - 18GHz	MITEQ	AFS42-00101800-25-S-42	T1165	10/06/2020	10/06/2019
Amplifier, 1 - 18GHz, 45dB Min	AMPLICAL	AMP0.1G18-47-20	172121	07/15/2020	07/15/2019
Amplifier, 10KHz to 1GHz, 32dB	Sonoma Instrument Co.	310N	T286	07/31/2020	07/31/2019
Amplifier, 1 to 26.5GHz, 23.5dB Gain mini	Agilent (Keysight) Technologies	8449B	T404	03/23/2020	03/23/2019
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T757	10/01/2020	10/01/2019
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB1	T185	06/06/2020	06/06/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T346	05/14/2020	05/14/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T345	04/20/2020	04/20/2019
Antenna Horn, 18 to 26GHz	ARA	MWH-1826	T447	08/13/2020	08/13/2019
Filter, HPF 3.0GHz	MICRO-TRONICS	HPM17543	T486	10/06/2020	10/06/2019
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1272	01/29/2020	01/29/2019
Power Sensor	Power Sensor	Keysight	T1226	02/06/2020	02/06/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T908	01/23/2020	01/23/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T342	01/23/2020	01/23/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T905	01/24/2020	01/24/2019
Thermo-Hygrometer	Contact East	445703	T909	02/26/2020	02/26/2020
AC Line Conducted					
EMI Test Receiver 9KHz-7GHz	Rohde & Schwarz	ESCI7	T1436	02/23/2020	02/23/2019
Power Cable, Line Conducted Emissions	UL	PG1	T861	10/19/2020	10/19/2019
**LISN for Conducted Emissions CISPR-16	Fischer	50/250-25-2-01	T1310	01/24/2020	01/24/2019
UL AUTOMATION SOFTWARE					
Radiated Software	UL	UL EMC	Ver 9.5, September 24, 2019		
Conducted Software	UL	UL EMC	Ver 10.4, October 10, 2019		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015		

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

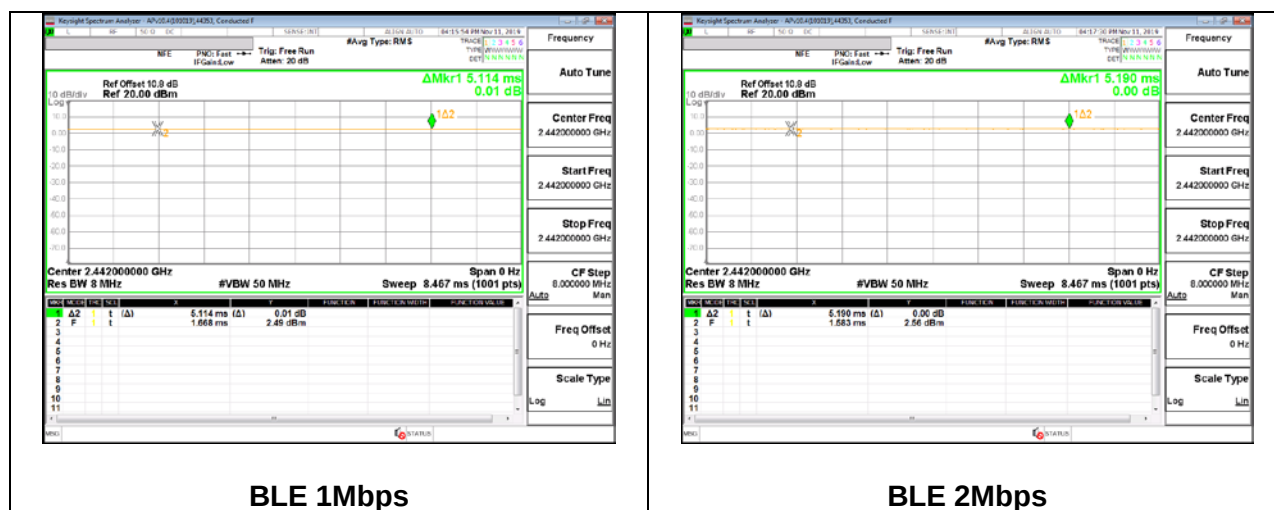
PROCEDURE

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)
2.4GHz Band						
BLE 1M	5.114	5.114	1.000	100.00%	0.00	0.010
BLE 2M	5.190	5.190	1.000	100.00%	0.00	0.010

DUTY CYCLE PLOTS



8.2. 99% BANDWIDTH

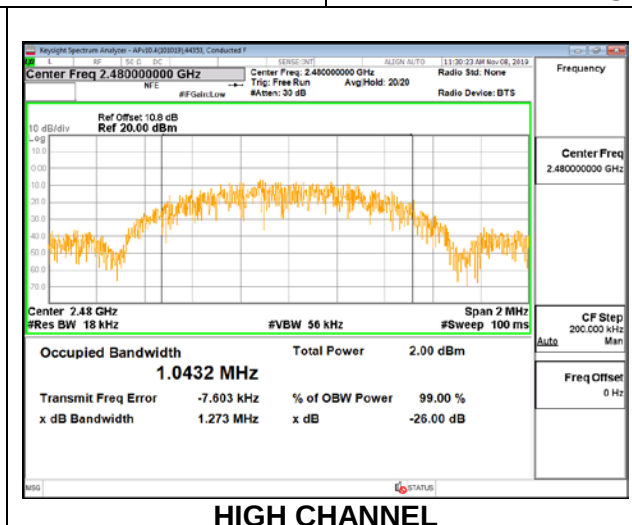
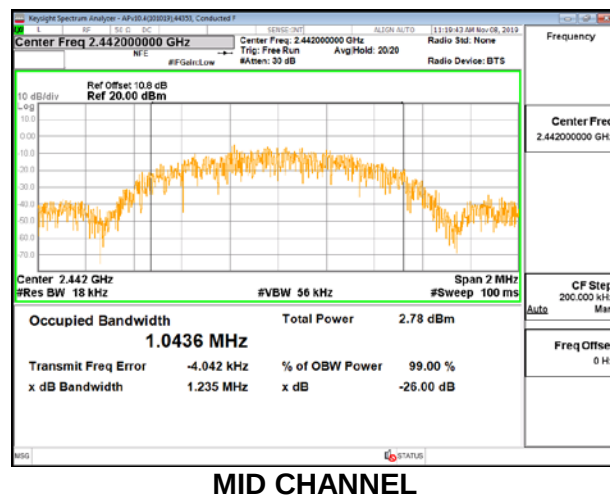
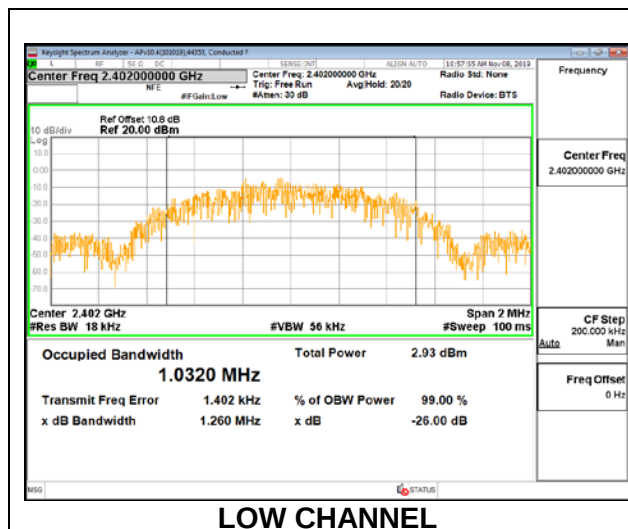
LIMITS

None; for reporting purposes only.

RESULTS

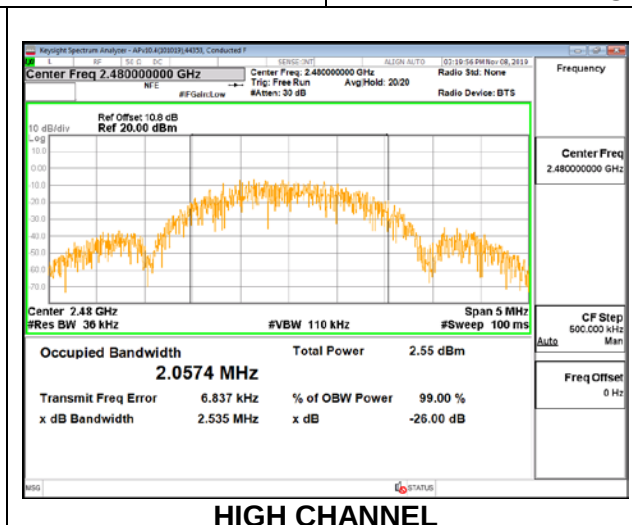
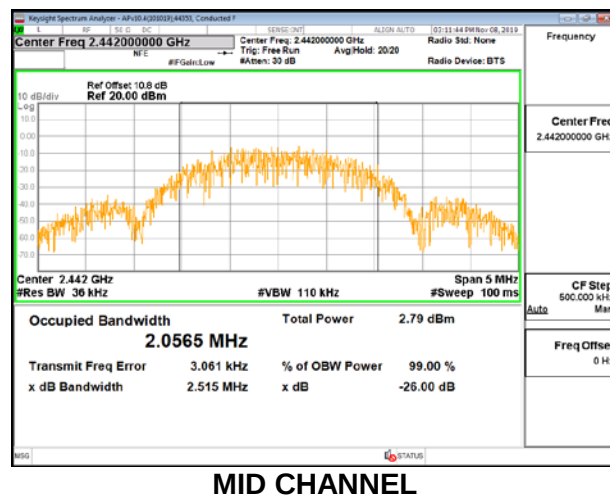
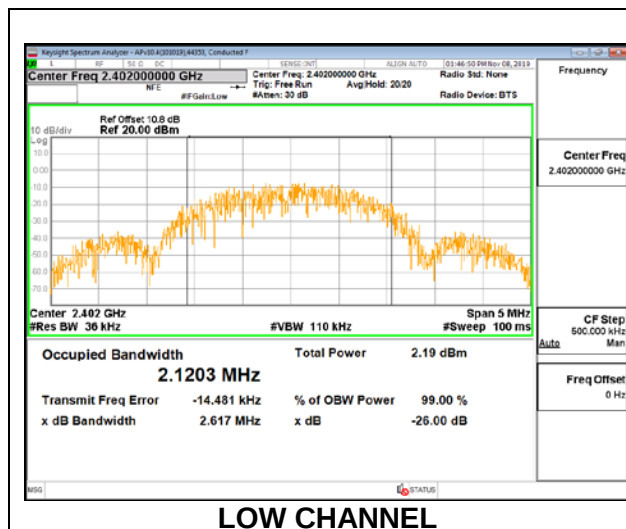
8.2.1. BLE (1Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0320
Middle	2442	1.0436
High	2480	1.0432



8.2.2. BLE (2Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	2.1203
Middle	2442	2.0565
High	2480	2.0574



8.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

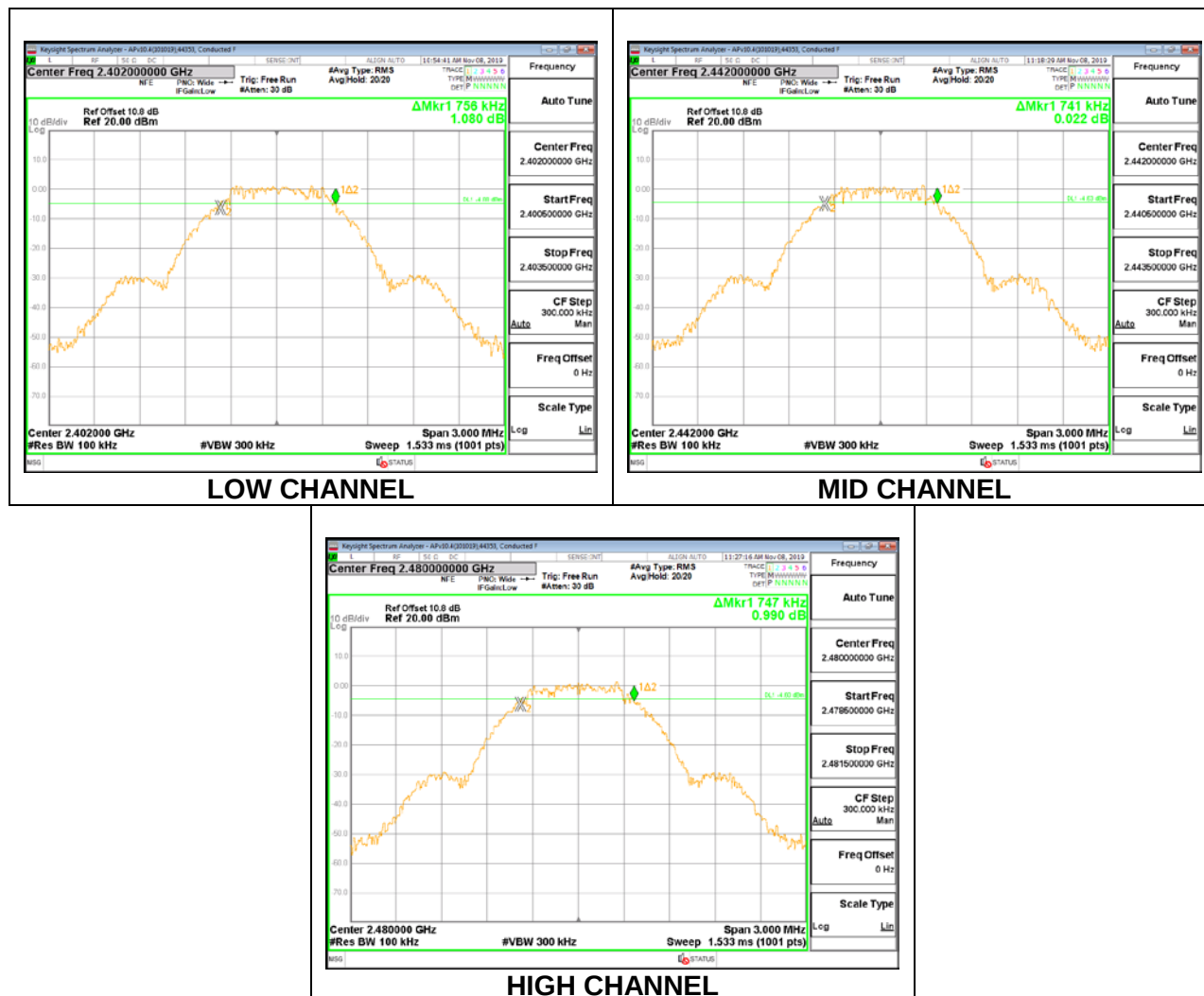
RSS-247 5.2 (a)

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

RESULTS

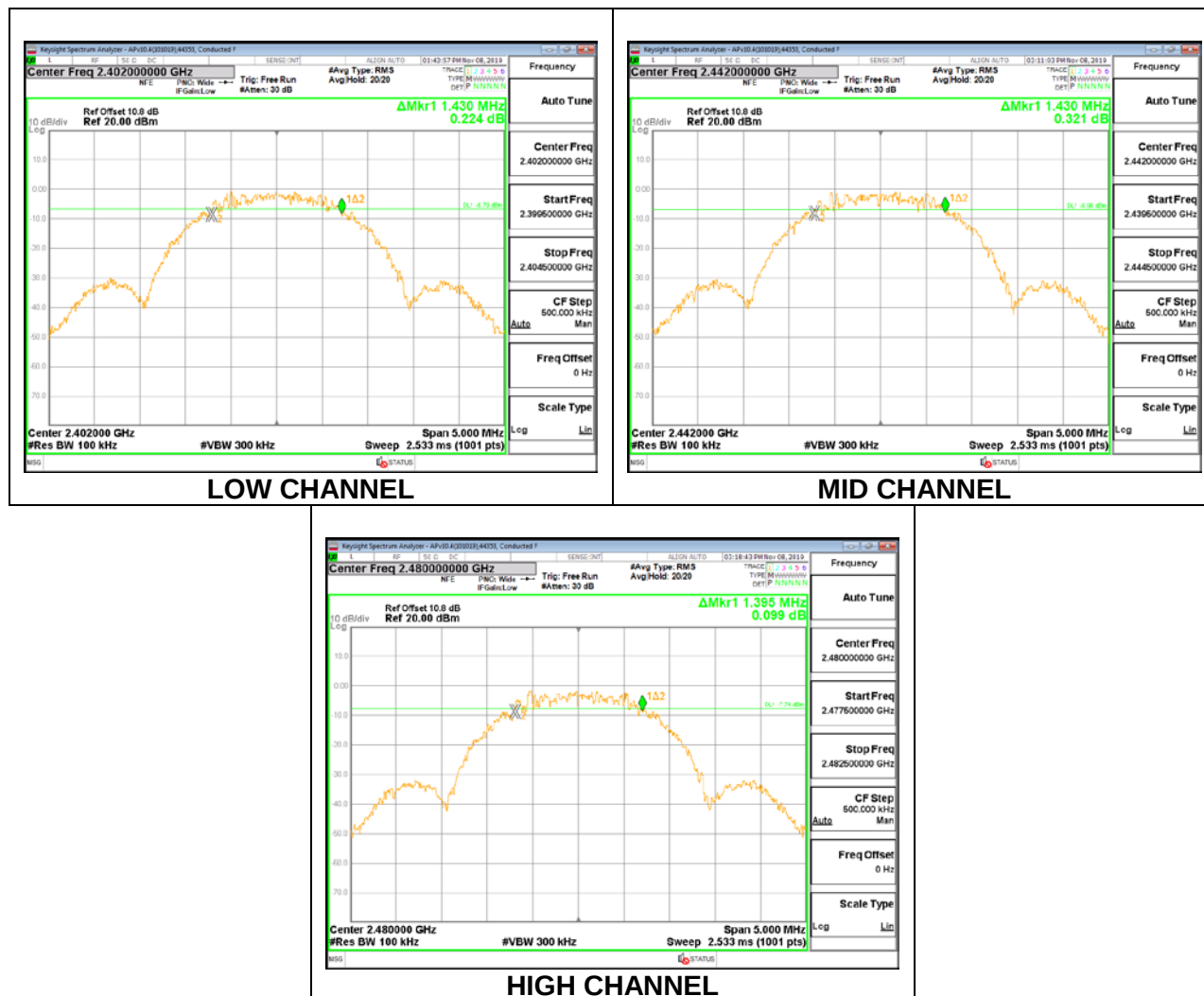
8.3.1. BLE (1Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.7560	0.5
Middle	2442	0.7410	0.5
High	2480	0.7470	0.5



8.3.2. BLE (2Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	1.4300	0.5
Middle	2442	1.4300	0.5
High	2480	1.3950	0.5



8.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

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 power meter.

The cable assembly insertion loss of 10.8 dB (including 10 dB pad and 0.8 dB cable) was entered as an offset in the power meter to allow for a gated peak reading of power.

RESULTS

8.4.1. BLE (1Mbps)

Tested By:	44366
Date:	11/19/2019

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	2.84	30	-27.160
Middle	2440	2.77	30	-27.230
High	2480	2.48	30	-27.520

8.4.2. BLE (2Mbps)

Tested By:	44366
Date:	11/19/2019

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	2.870	30	-27.130
Middle	2440	2.800	30	-27.200
High	2480	2.550	30	-27.450

8.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.8 dB (including 10 dB pad and 0.8 dB cable) was entered as an offset in the power meter to allow for a gated average reading of power.

RESULTS

8.5.1. BLE (1Mbps)

Tested By:	44366
Date:	11/19/2019

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	2.59
Middle	2440	2.49
High	2480	2.27

8.5.2. BLE (2Mbps)

Tested By:	44366
Date:	11/19/2019

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	2.62
Middle	2440	2.52
High	2480	2.30

8.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

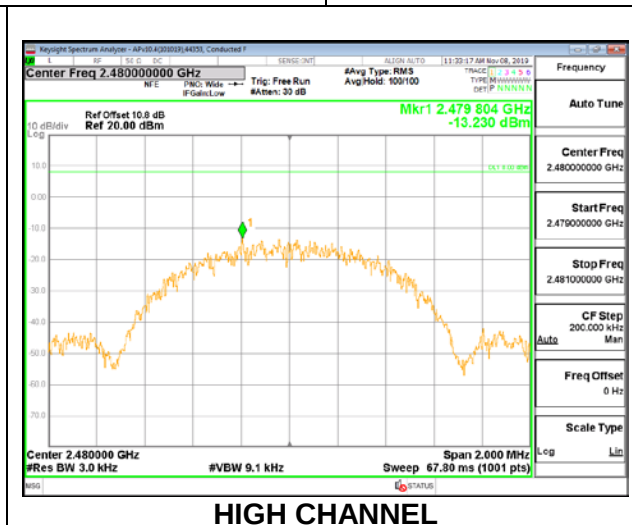
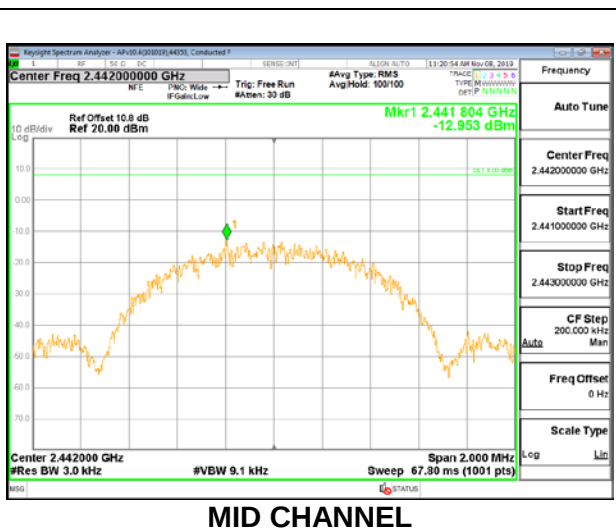
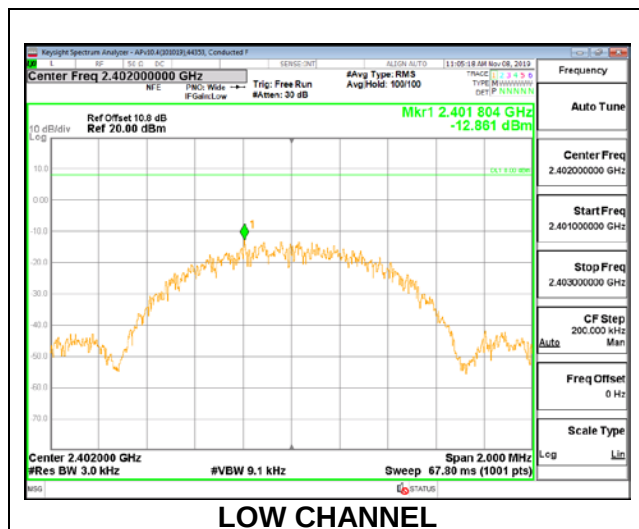
RSS-247 (5.2) (b)

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

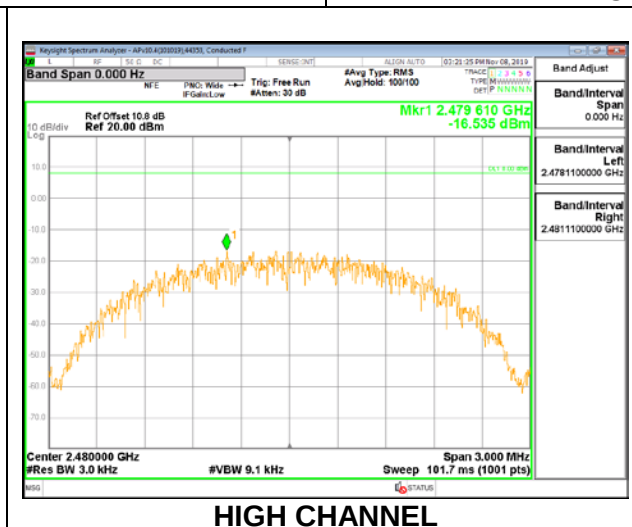
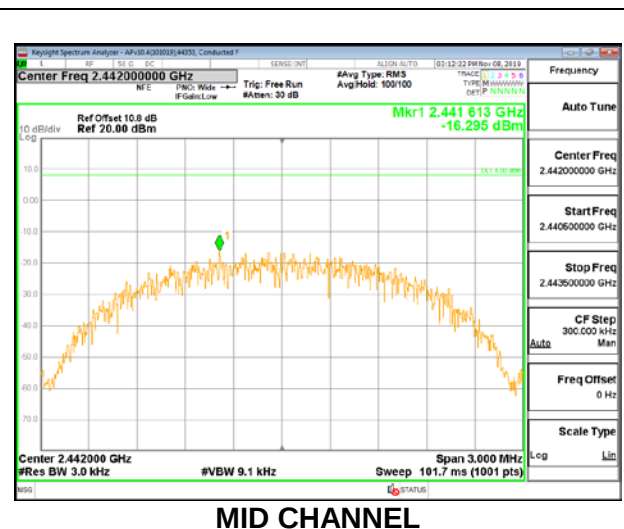
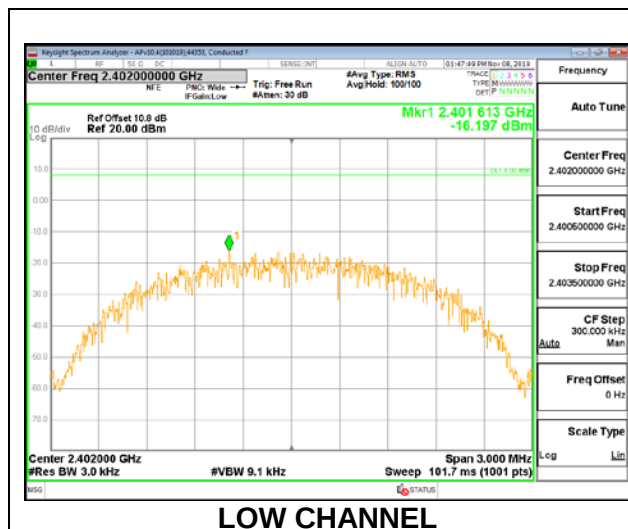
8.6.1. BLE (1Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-12.861	8	-20.86
Middle	2442	-12.953	8	-20.95
High	2480	-13.230	8	-21.23



8.6.2. BLE (2Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-16.197	8	-24.20
Middle	2442	-16.295	8	-24.30
High	2480	-16.535	8	-24.54



8.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

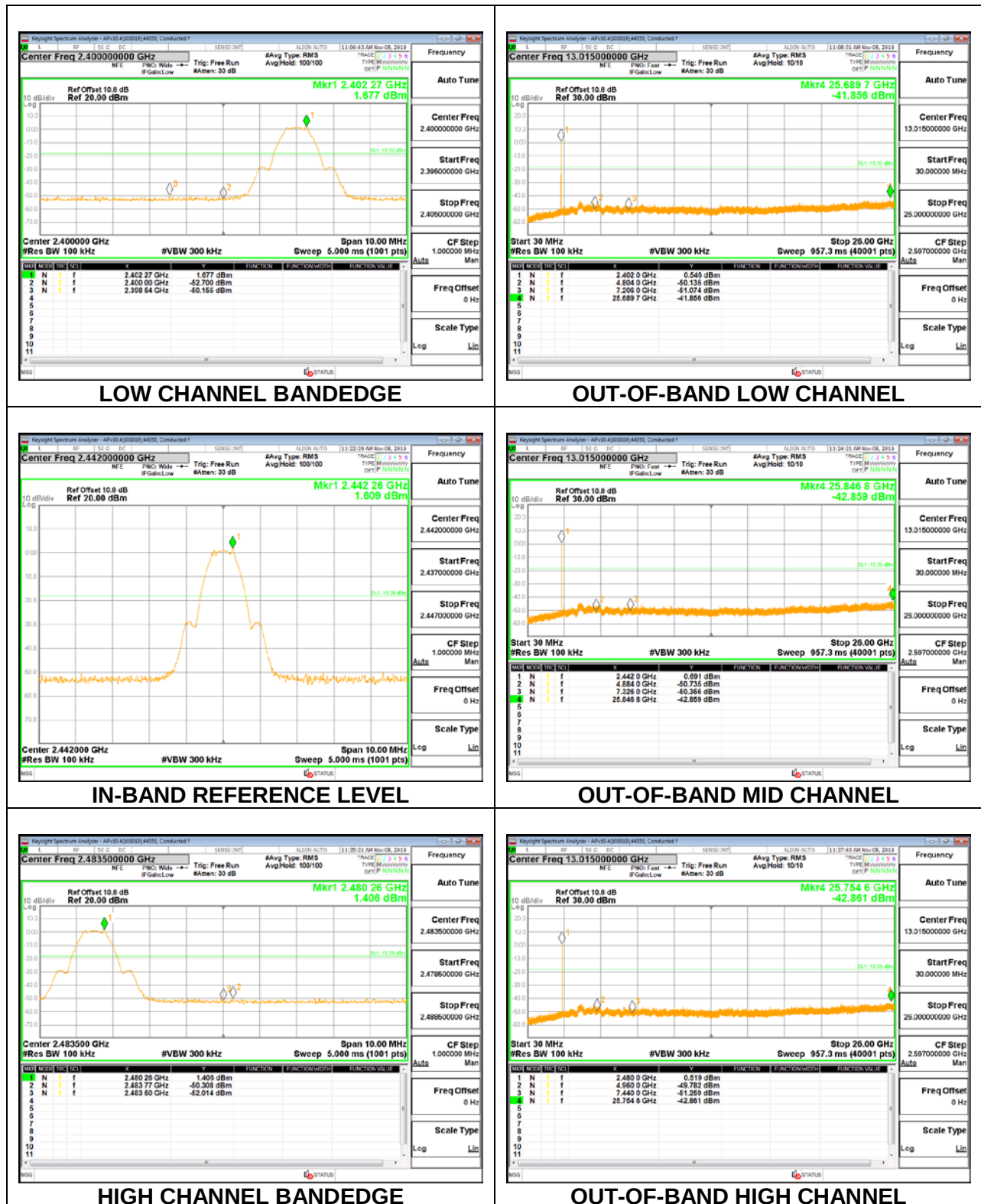
FCC §15.247 (d)

RSS-247 5.5

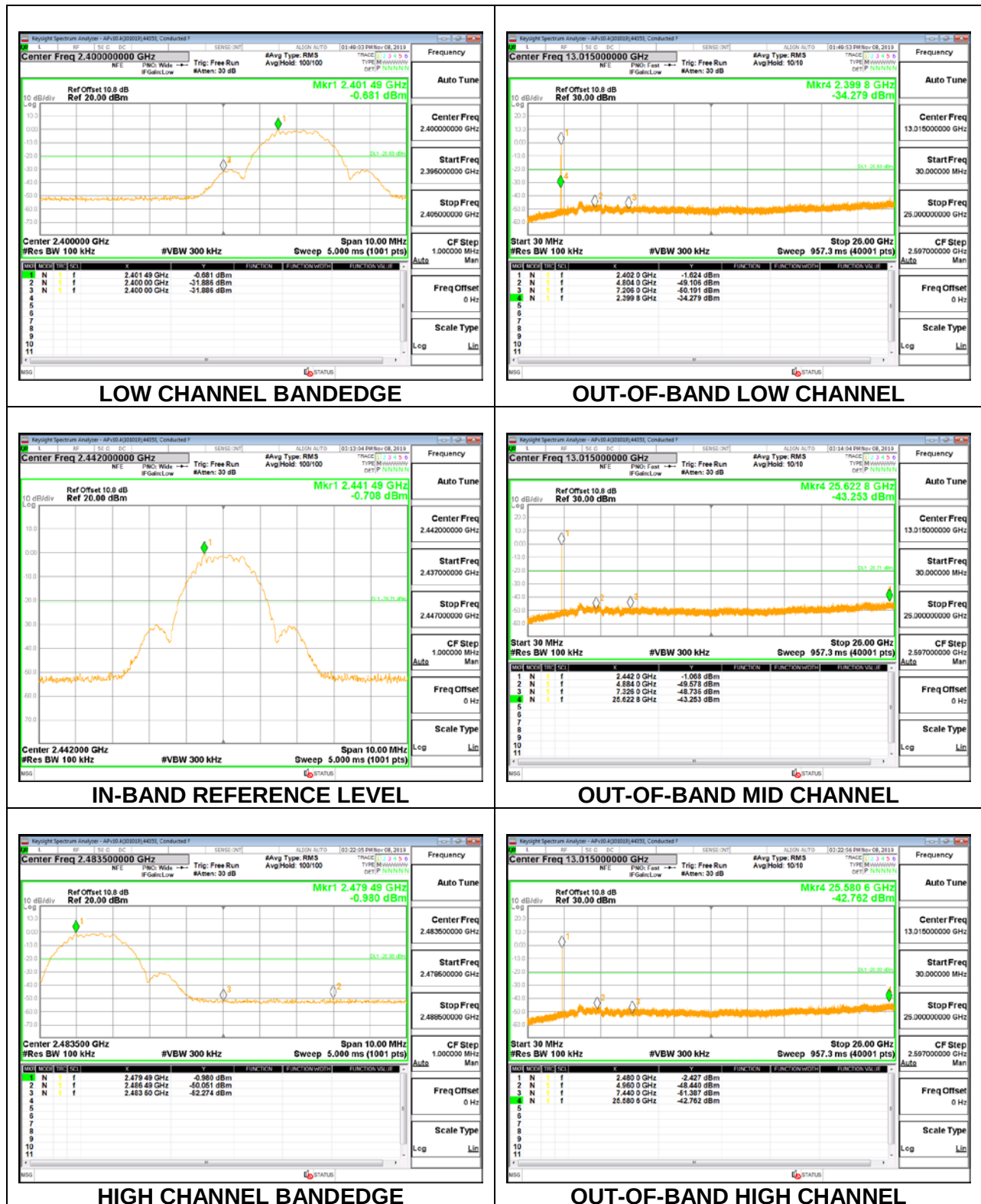
Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS

8.7.1. BLE (1Mbps)



8.7.2. BLE (2Mbps)



9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
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 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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.

For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

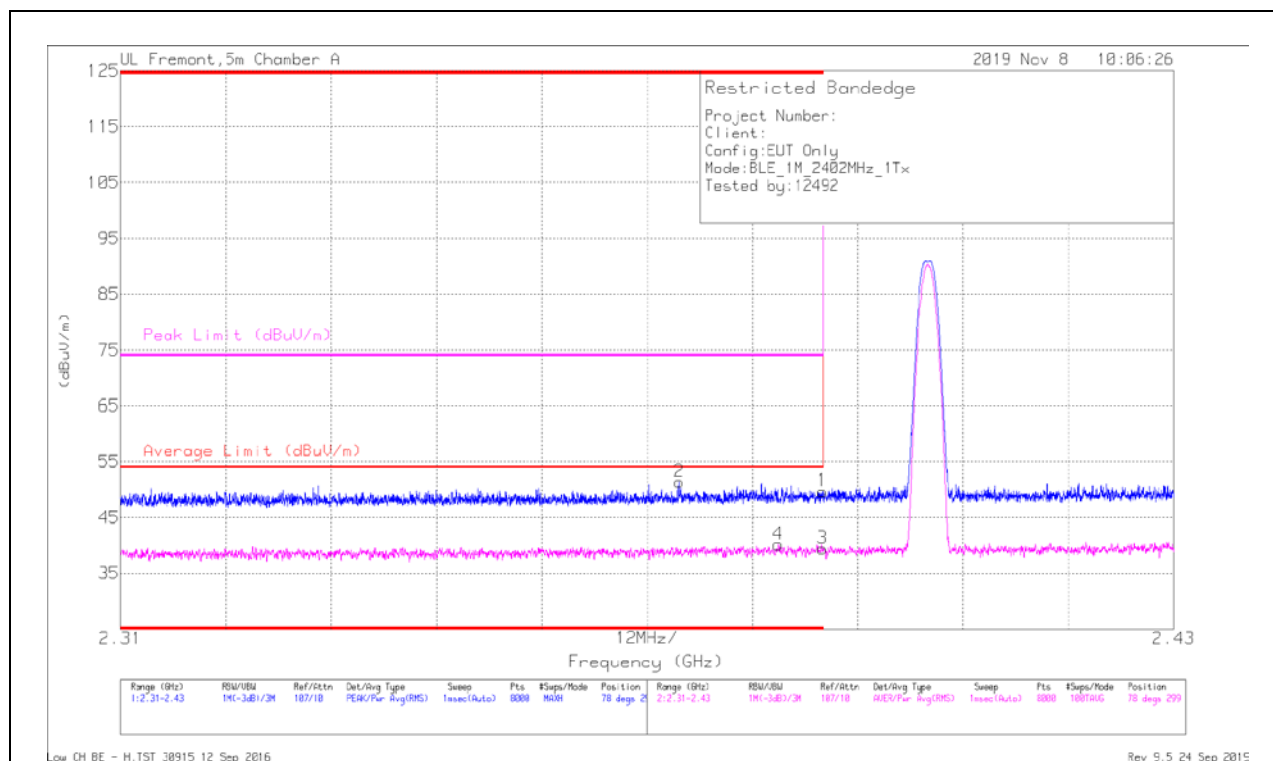
OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

9.2. TRANSMITTER ABOVE 1 GHz

9.2.1. BLE (1Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



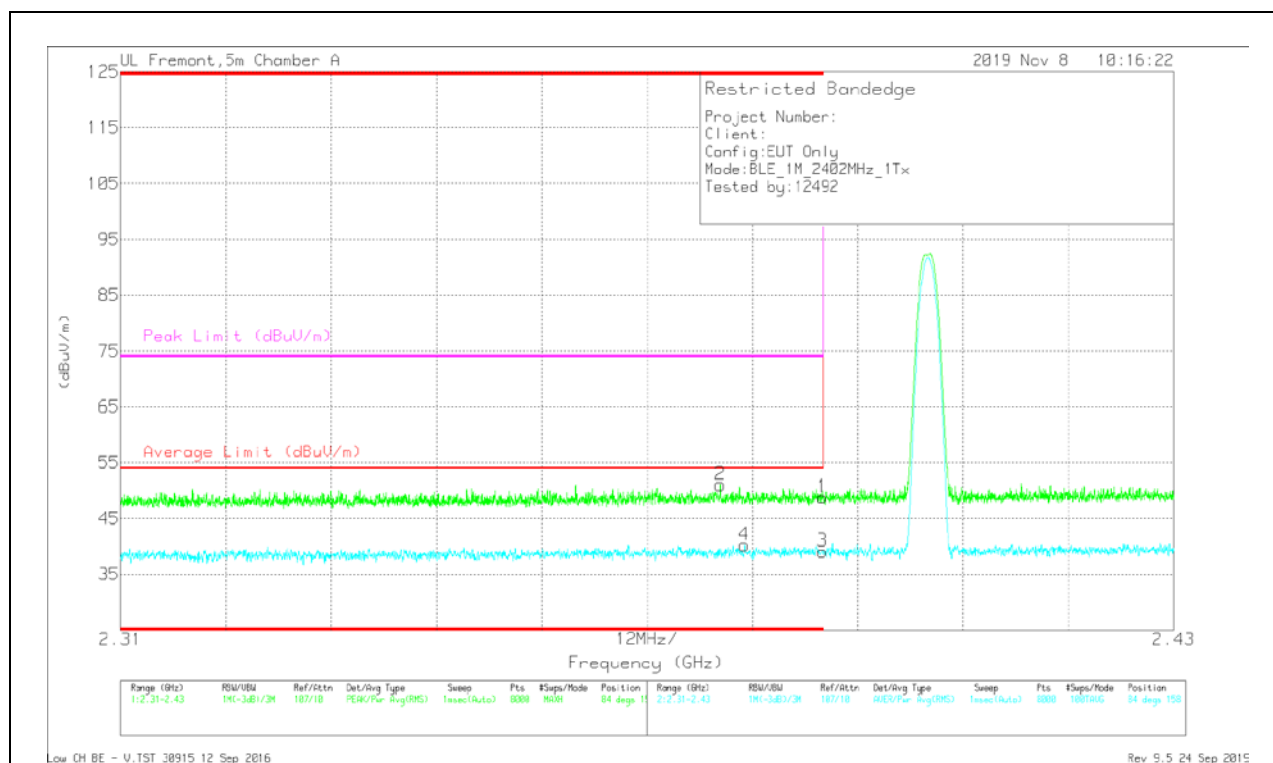
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	41.1	Pk	32.2	-23.6	49.7	-	-	74	-24.3	78	299	H
2	* 2.37365	42.75	Pk	32.2	-23.6	51.35	-	-	74	-22.65	78	299	H
3	* 2.38999	30.84	RMS	32.2	-23.6	39.44	54	-14.56	-	-	78	299	H
4	* 2.38498	31.57	RMS	32.2	-23.6	40.17	54	-13.83	-	-	78	299	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cb I/Filtr/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	* 2.38999	40.22	Pk	32.2	-23.6	48.82	-	-	74	-25.18	84	158	V
2	* 2.37835	42.48	Pk	32.2	-23.6	51.08	-	-	74	-22.92	84	158	V
3	* 2.38999	30.52	RMS	32.2	-23.6	39.12	54	-14.88	-	-	84	158	V
4	* 2.38112	31.65	RMS	32.2	-23.6	40.25	54	-13.75	-	-	84	158	V

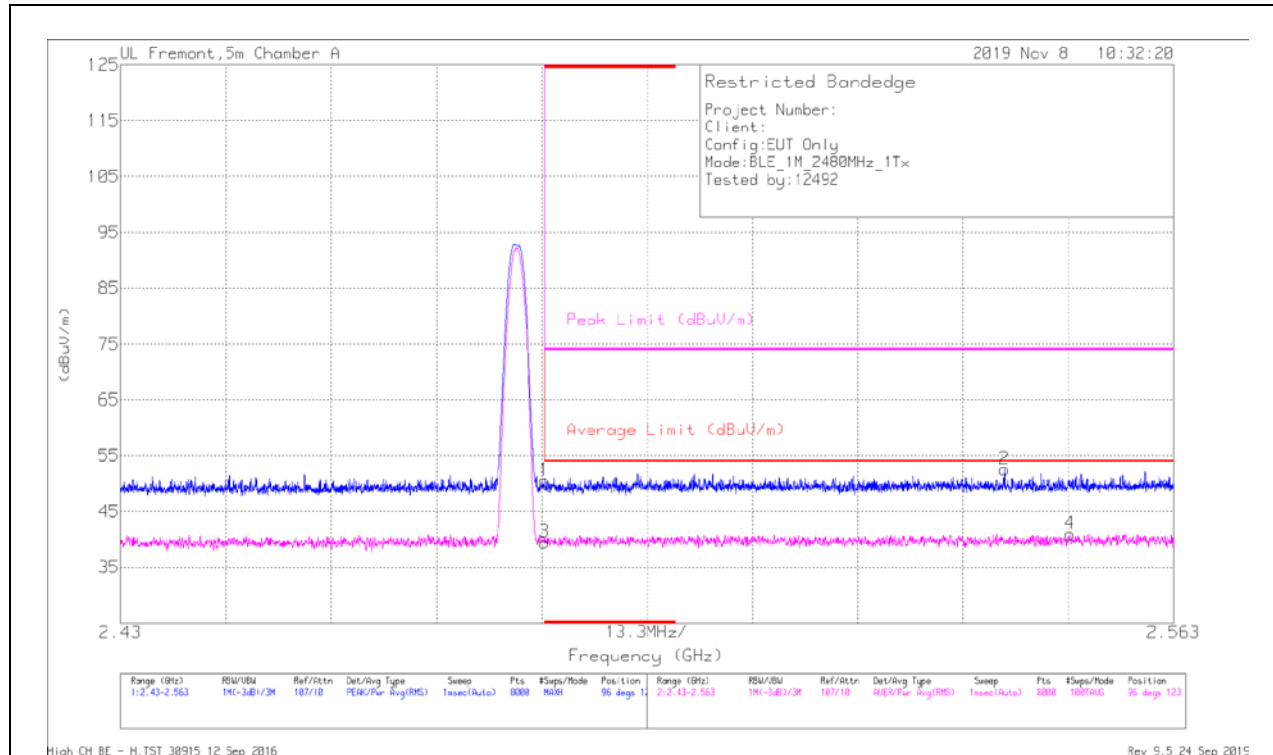
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



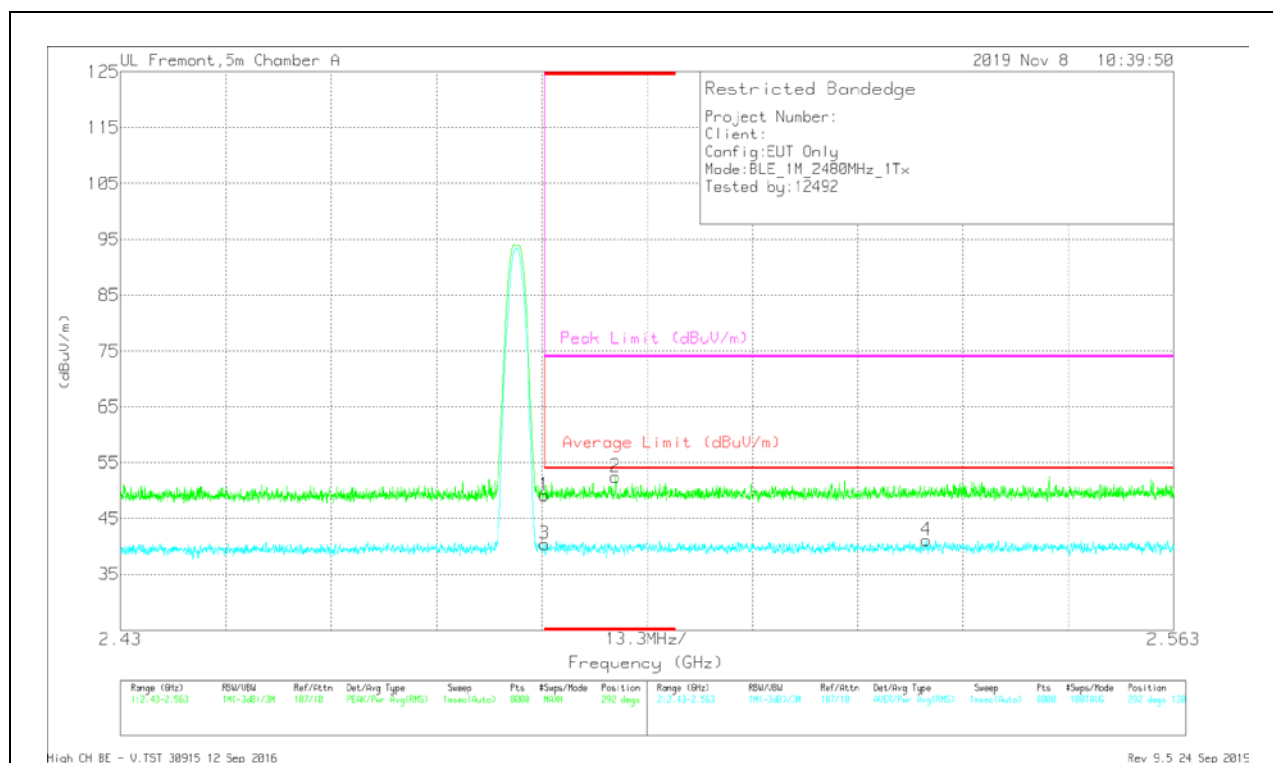
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cb I/Filtr/Pa d (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	41.13	Pk	32.6	-23.2	50.53	-	-	74	-23.47	96	123	H
3	* 2.48351	30.09	RMS	32.6	-23.2	39.49	54	-14.51	-	-	96	123	H
2	2.54162	42.88	Pk	32.6	-22.9	52.58	-	-	74	-21.42	96	123	H
4	2.54991	31.38	RMS	32.5	-22.9	40.98	54	-13.02	-	-	96	123	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dBm)	Amp/Cbl/Fit rPad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	39.76	Pk	32.6	-23.2	49.16	-	-	74	-24.84	292	130	V
3	* 2.48351	31.07	RMS	32.6	-23.2	40.47	54	-13.53	-	-	292	130	V
2	* 2.4925	43.08	Pk	32.6	-23.2	52.48	-	-	74	-21.52	292	130	V
4	2.53176	31.42	RMS	32.6	-22.9	41.12	54	-12.88	-	-	292	130	V

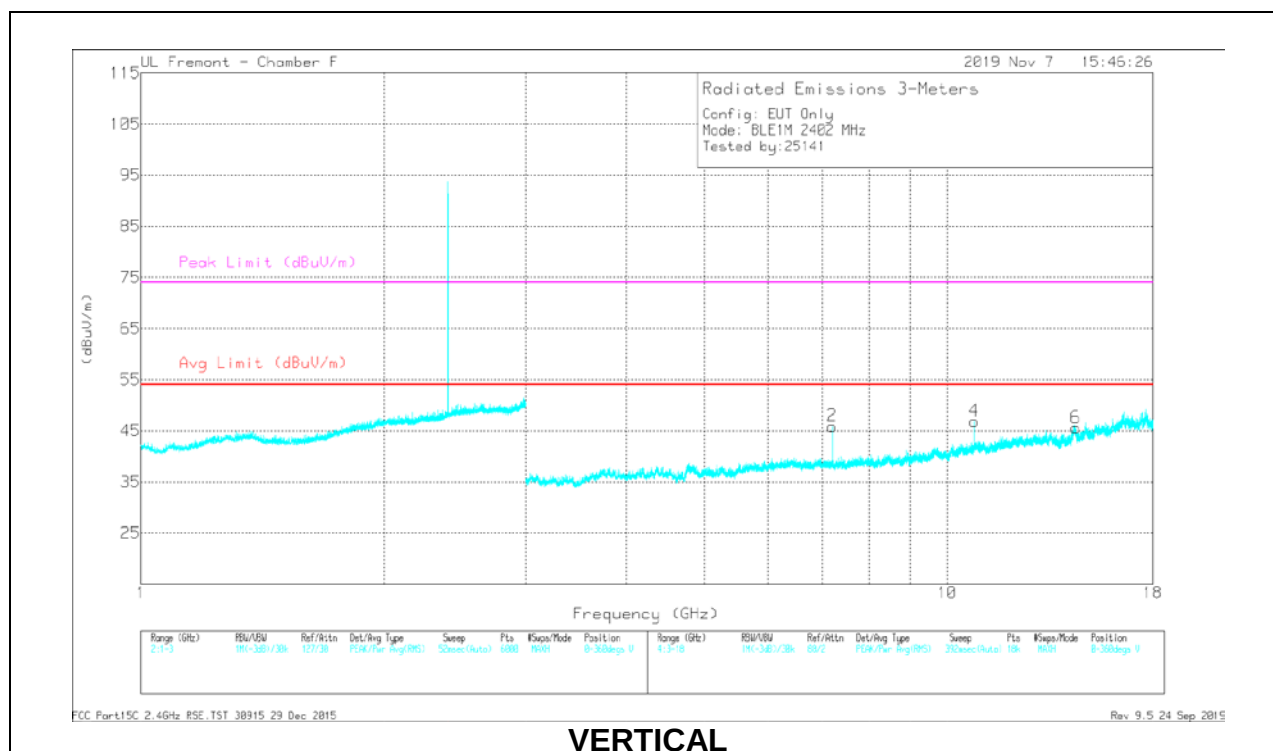
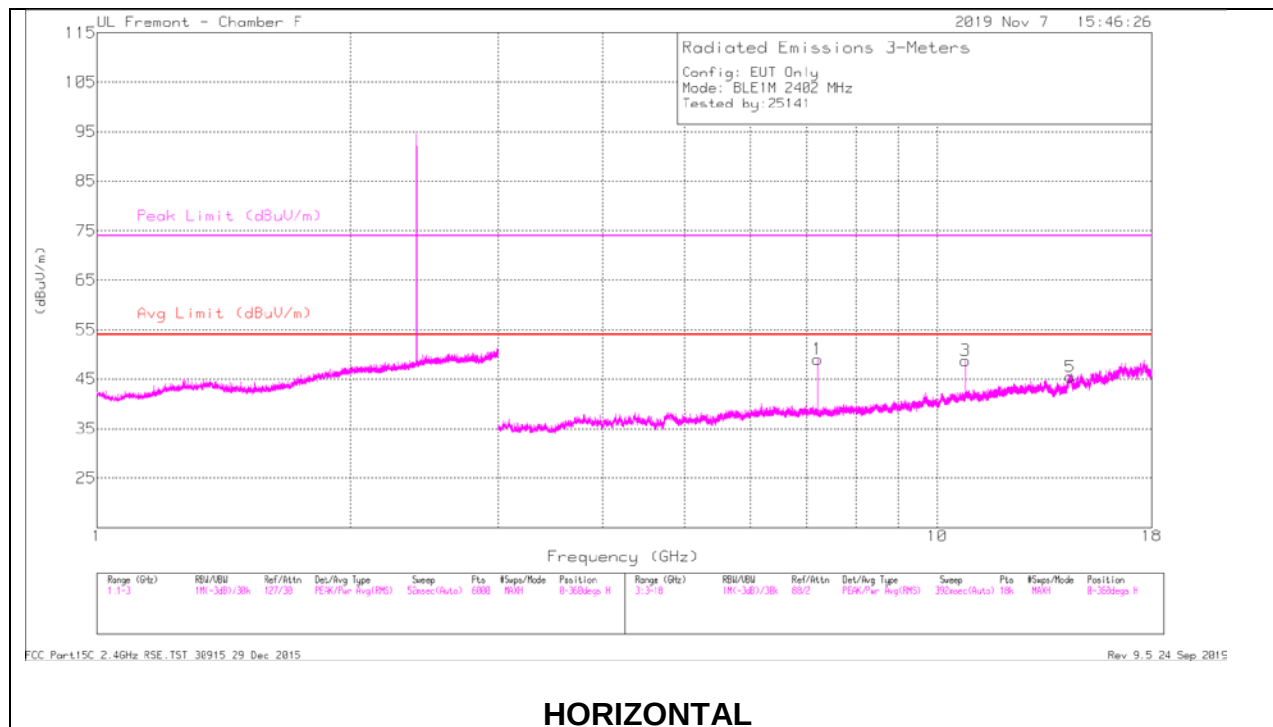
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

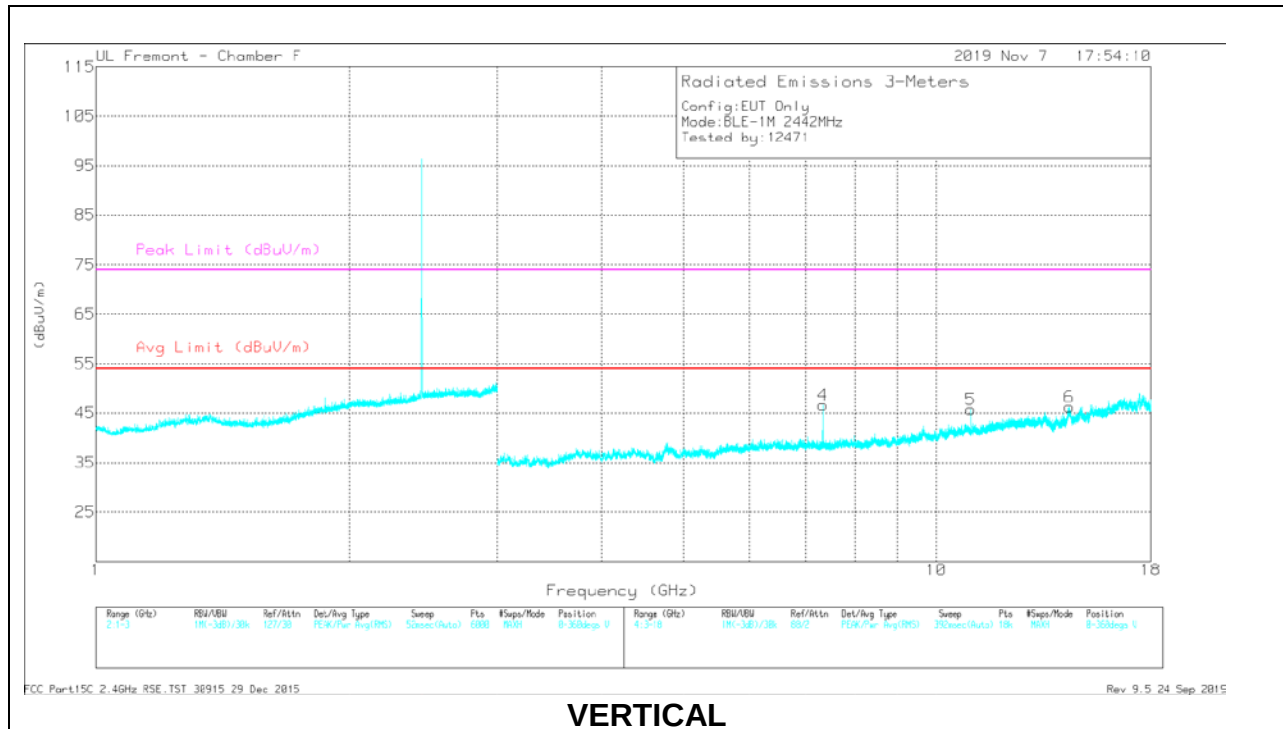
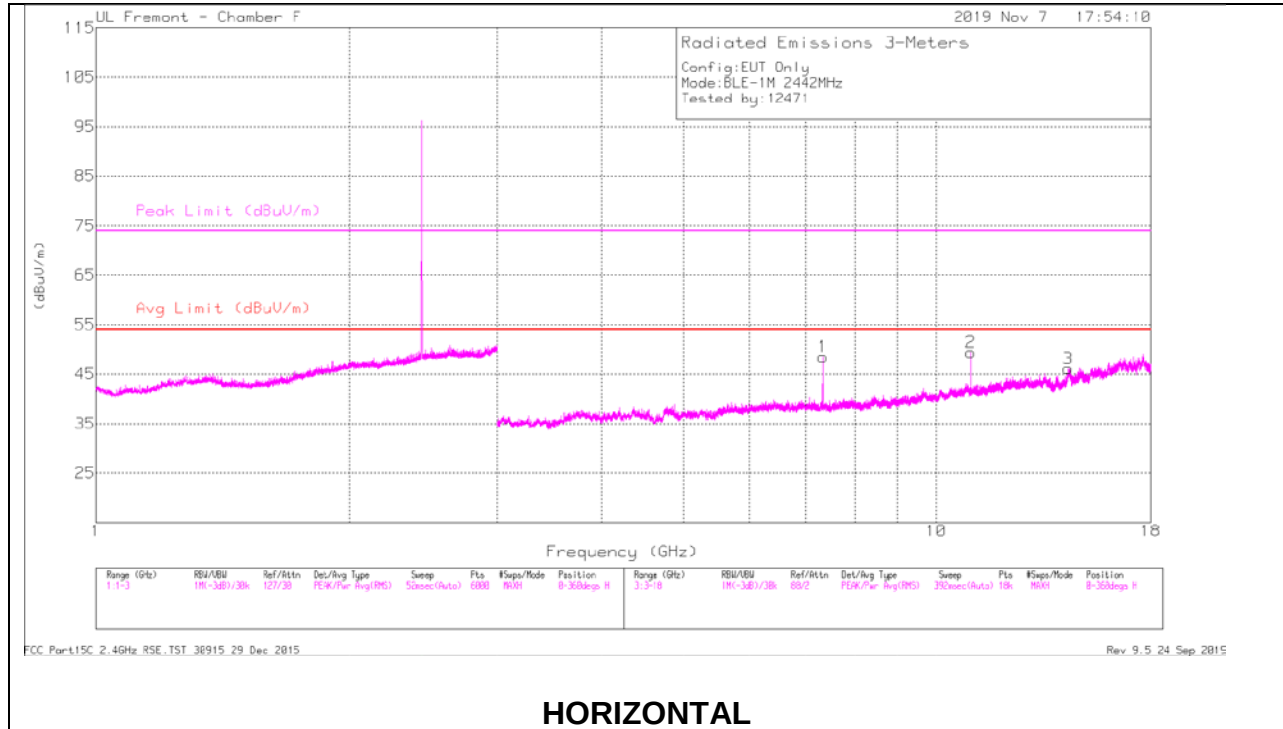
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	7.20681	58.17	PK2	35.5	-41	52.67	-	-	-	-	351	100	H
2	7.20672	56.53	PK2	35.5	-41	51.03	-	-	-	-	142	237	V
3	* 10.81027	54.81	PK2	38	-39	53.81	-	-	74	-20.19	56	244	H
	* 10.80797	46.43	MAV1	38	-39	45.43	54	-8.57	-	-	56	244	H
4	* 10.80802	53.97	PK2	38	-39	52.97	-	-	74	-21.03	248	221	V
	* 10.81006	44.5	MAV1	38	-39	43.5	54	-10.5	-	-	248	221	V
5	14.39339	49.71	PK2	39.3	-36.9	52.11	-	-	-	-	239	234	H
6	14.43965	49.3	PK2	39.4	-36.7	52	-	-	-	-	311	104	V

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

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



RADIATED EMISSIONS

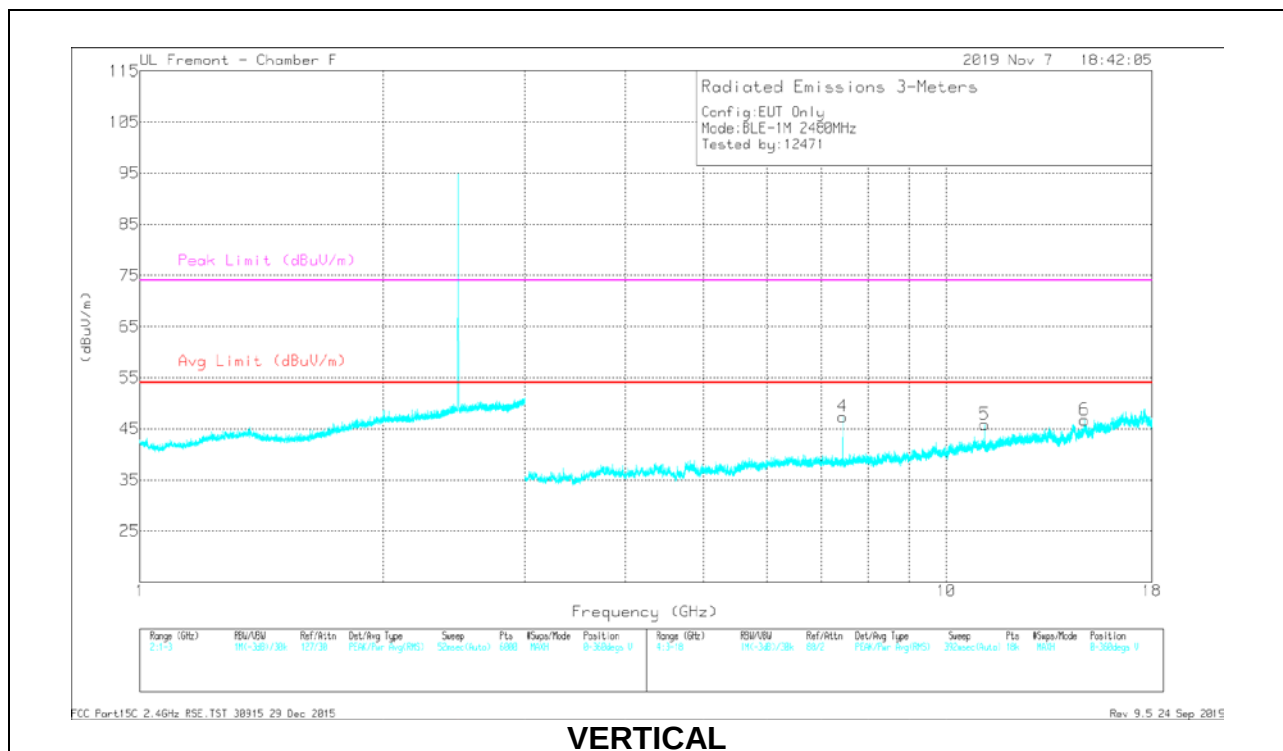
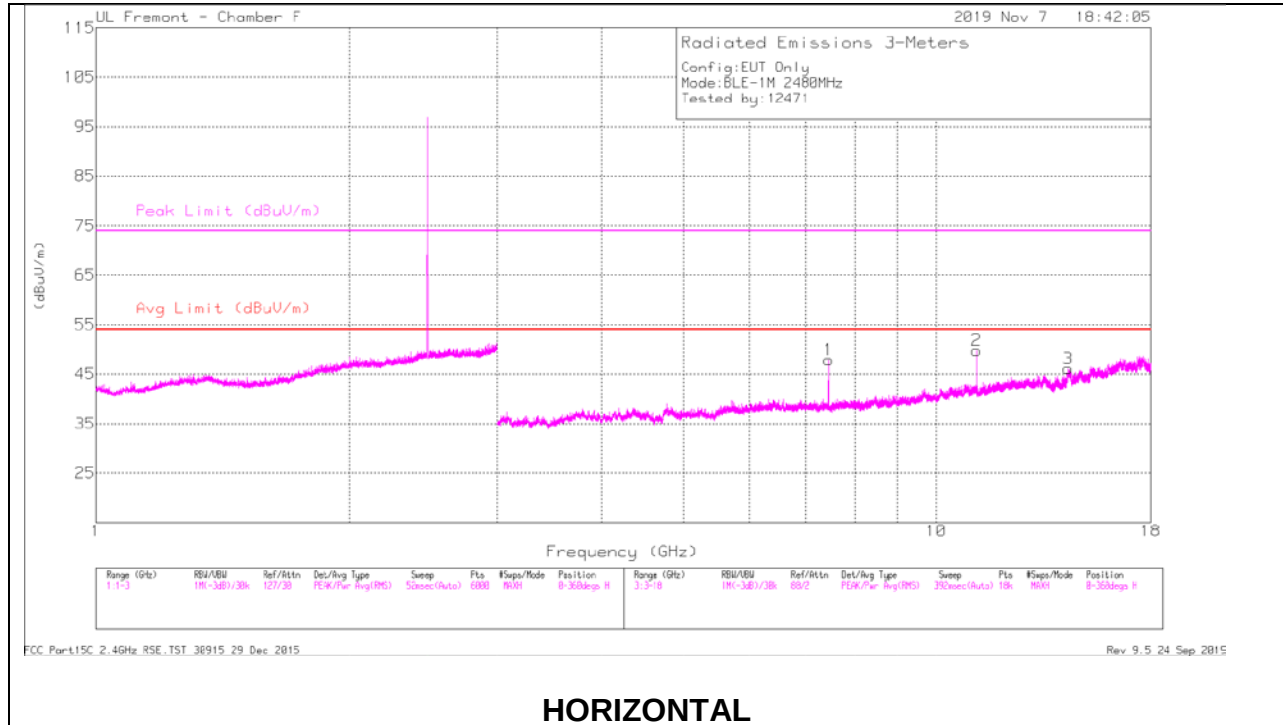
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb I/Filtr/Pa d (dB)	Correct ed Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 7.32518	57.72	PK2	35.7	-40.3	53.12	-	-	74	-20.88	155	107	H
	* 7.3266	51.2	MAv1	35.7	-40.3	46.6	54	-7.4	-	-	155	107	H
2	* 10.98806	55.28	PK2	37.9	-38.9	54.28	-	-	74	-19.72	213	112	H
	* 10.988	47.35	MAv1	37.9	-38.9	46.35	54	-7.65	-	-	213	112	H
3	14.35734	50.07	PK2	39.2	-36.7	52.57	-	-	-	-	229	348	H
4	* 7.32543	55.68	PK2	35.7	-40.3	51.08	-	-	74	-22.92	350	100	V
	* 7.32657	48.18	MAv1	35.7	-40.3	43.58	54	-10.42	-	-	350	100	V
5	* 10.98804	52.96	PK2	37.9	-38.9	51.96	-	-	74	-22.04	103	162	V
	* 10.98787	43.36	MAv1	37.9	-38.9	42.36	54	-11.64	-	-	103	162	V
6	14.39737	50.16	PK2	39.3	-37	52.46	-	-	-	-	313	193	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb I/Filtr/Pa d (dB)	Correct ed Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 7.43928	56.72	PK2	35.7	-40.7	51.72	-	-	74	-22.28	46	111	H
	* 7.43945	48.27	MAv1	35.7	-40.7	43.27	54	-10.73	-	-	46	111	H
2	* 11.15881	55.5	PK2	38	-38.6	54.9	-	-	74	-19.1	257	103	H
	* 11.15901	47.81	MAv1	38	-38.6	47.21	54	-6.79	-	-	257	103	H
3	14.35288	50.56	PK2	39.1	-36.9	52.76	-	-	-	-	345	118	H
4	* 7.4408	56.71	PK2	35.6	-40.7	51.61	-	-	74	-22.39	352	102	V
	* 7.44046	49.04	MAv1	35.6	-40.7	43.94	54	-10.06	-	-	352	102	V
5	* 11.1589	52.98	PK2	38	-38.6	52.38	-	-	74	-21.62	106	103	V
	* 11.15895	43.36	MAv1	38	-38.6	42.76	54	-11.24	-	-	106	103	V
6	14.84116	50.79	PK2	39.7	-37.3	53.19	-	-	-	-	299	270	V

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

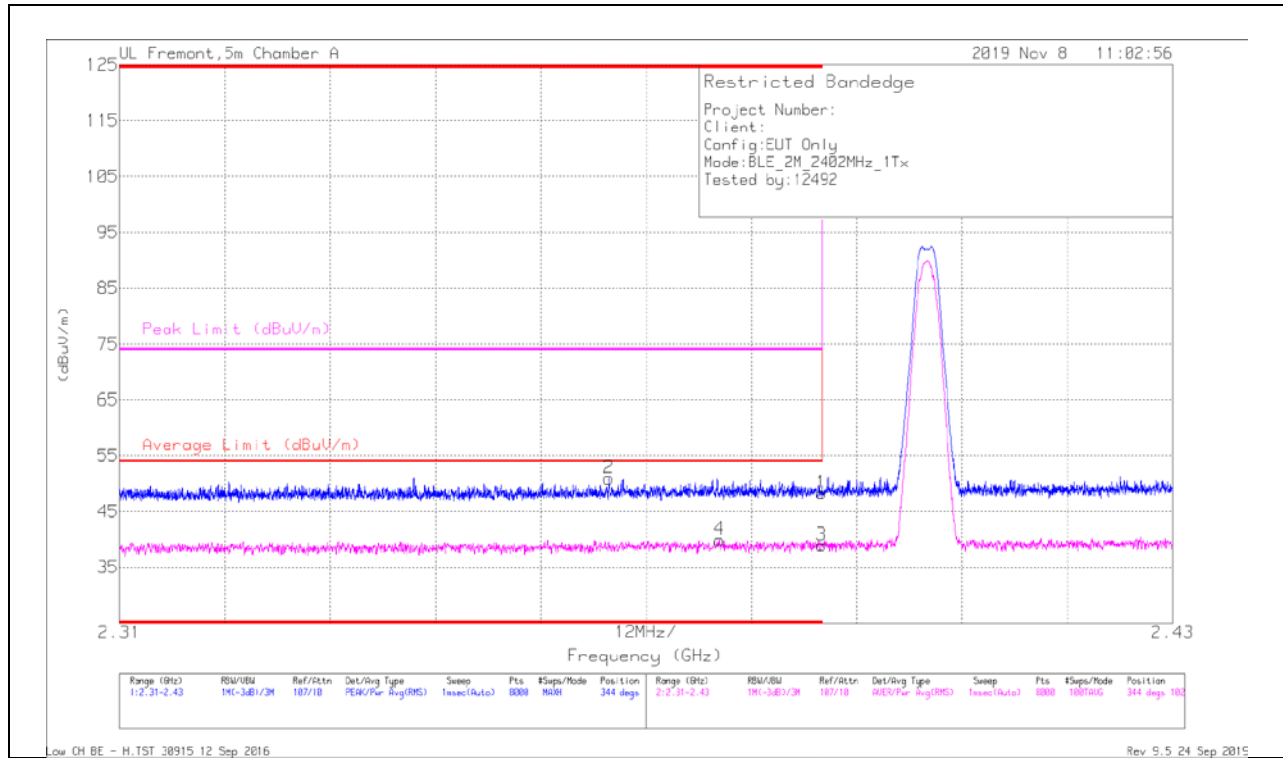
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.2.2. BLE (2Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



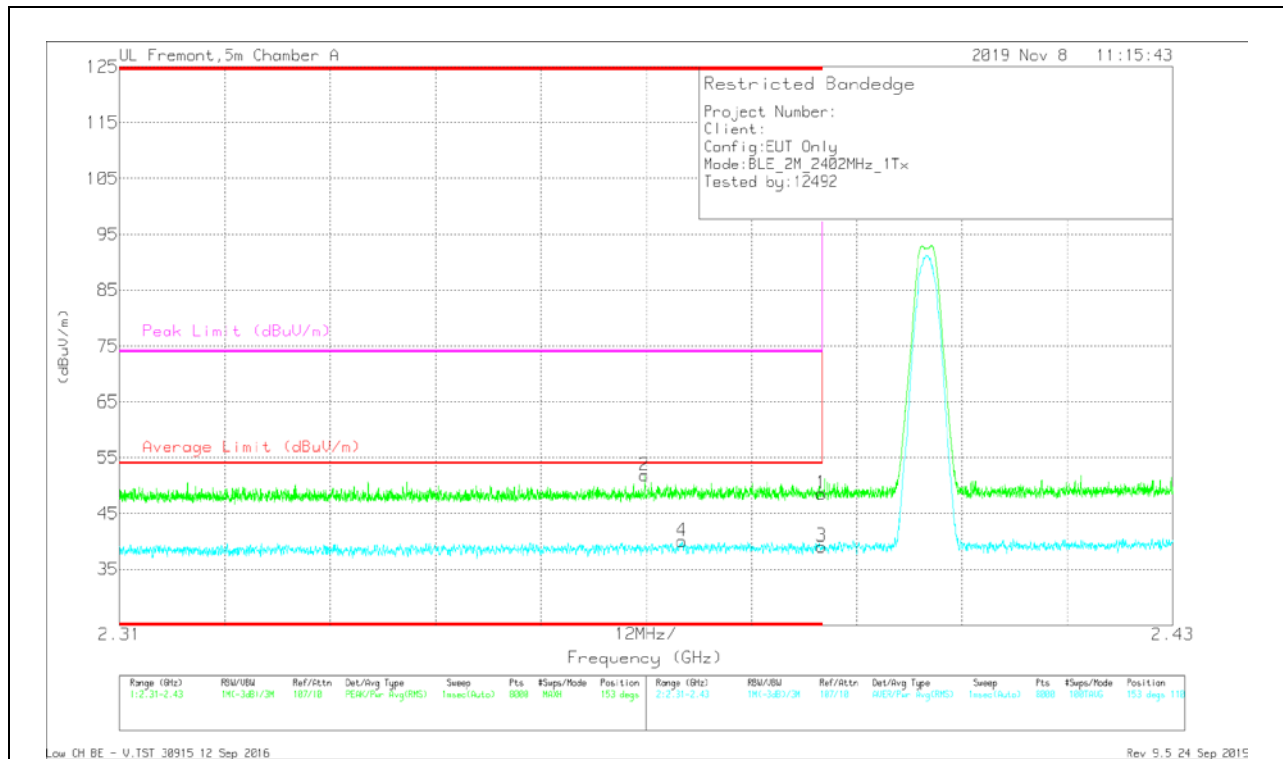
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	39.72	Pk	32.2	-23.6	48.32	-	-	74	-25.68	344	102	H
2	* 2.36573	42.57	Pk	32.1	-23.7	50.97	-	-	74	-23.03	344	102	H
3	* 2.38999	30.36	RMS	32.2	-23.6	38.96	54	-15.04	-	-	344	102	H
4	* 2.37836	31.37	RMS	32.2	-23.6	39.97	54	-14.03	-	-	344	102	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Filtr/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	* 2.38999	40	Pk	32.2	-23.6	48.6	-	-	74	-25.4	153	110	V
2	* 2.36981	43.44	Pk	32.1	-23.7	51.84	-	-	74	-22.16	153	110	V
3	* 2.38999	30.52	RMS	32.2	-23.6	39.12	54	-14.88	-	-	153	110	V
4	* 2.3741	31.48	RMS	32.2	-23.6	40.08	54	-13.92	-	-	153	110	V

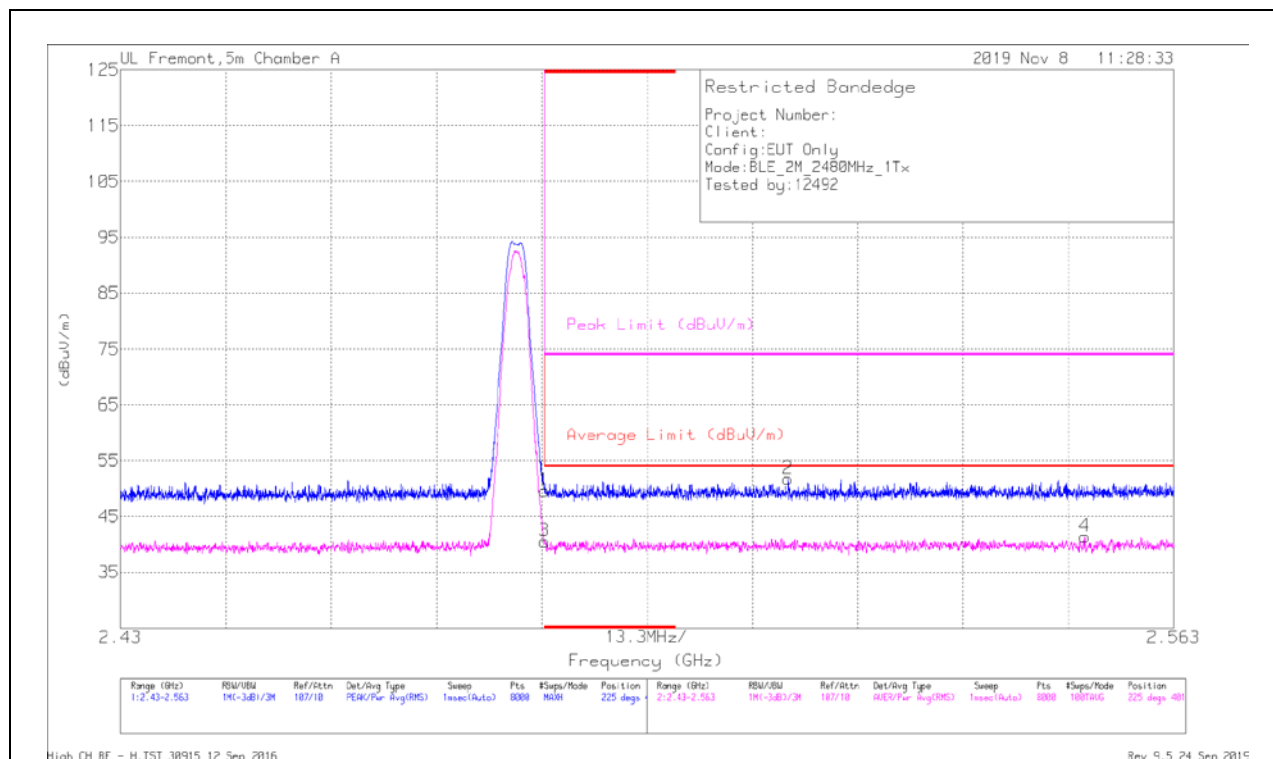
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



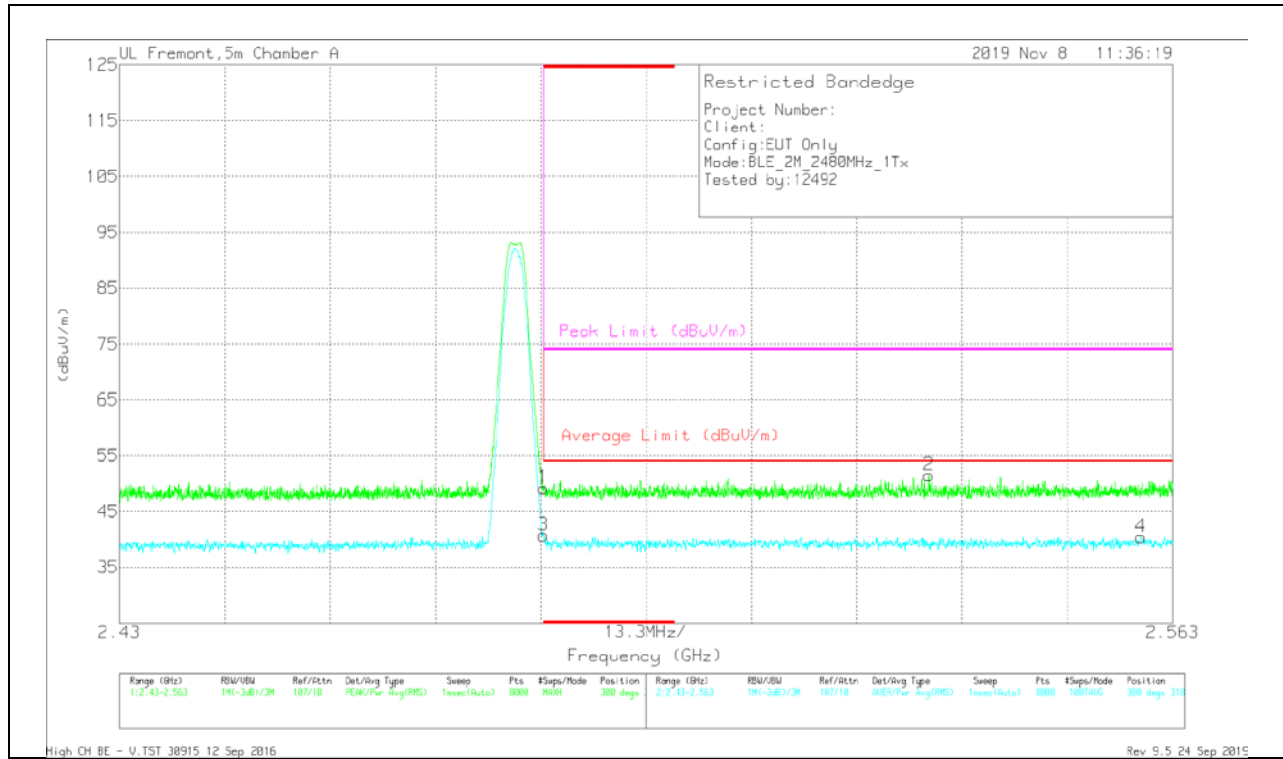
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	40.23	Pk	32.6	-23.2	49.63	-	-	74	-24.37	225	401	H
3	* 2.48351	31.19	RMS	32.6	-23.2	40.59	54	-13.41	-	-	225	401	H
2	2.51428	42.24	Pk	32.6	-23.1	51.74	-	-	74	-22.26	225	401	H
4	2.55178	31.8	RMS	32.5	-22.9	41.4	54	-12.6	-	-	225	401	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Filtr/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	* 2.48351	39.8	Pk	32.6	-23.2	49.2	-	-	74	-24.8	300	318	V
3	* 2.48351	31.34	RMS	32.6	-23.2	40.74	54	-13.26	-	-	300	318	V
2	2.53222	41.8	Pk	32.6	-22.9	51.5	-	-	74	-22.5	300	318	V
4	2.55899	30.63	RMS	32.6	-22.8	40.43	54	-13.57	-	-	300	318	V

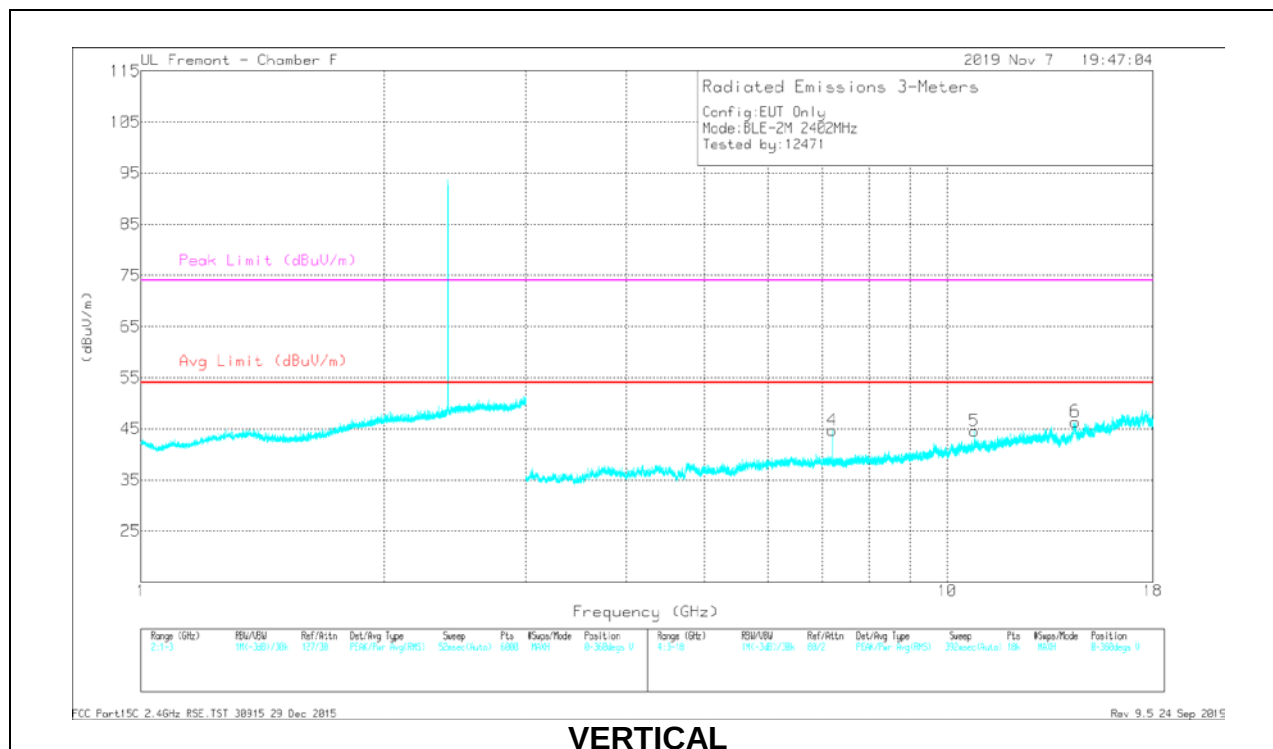
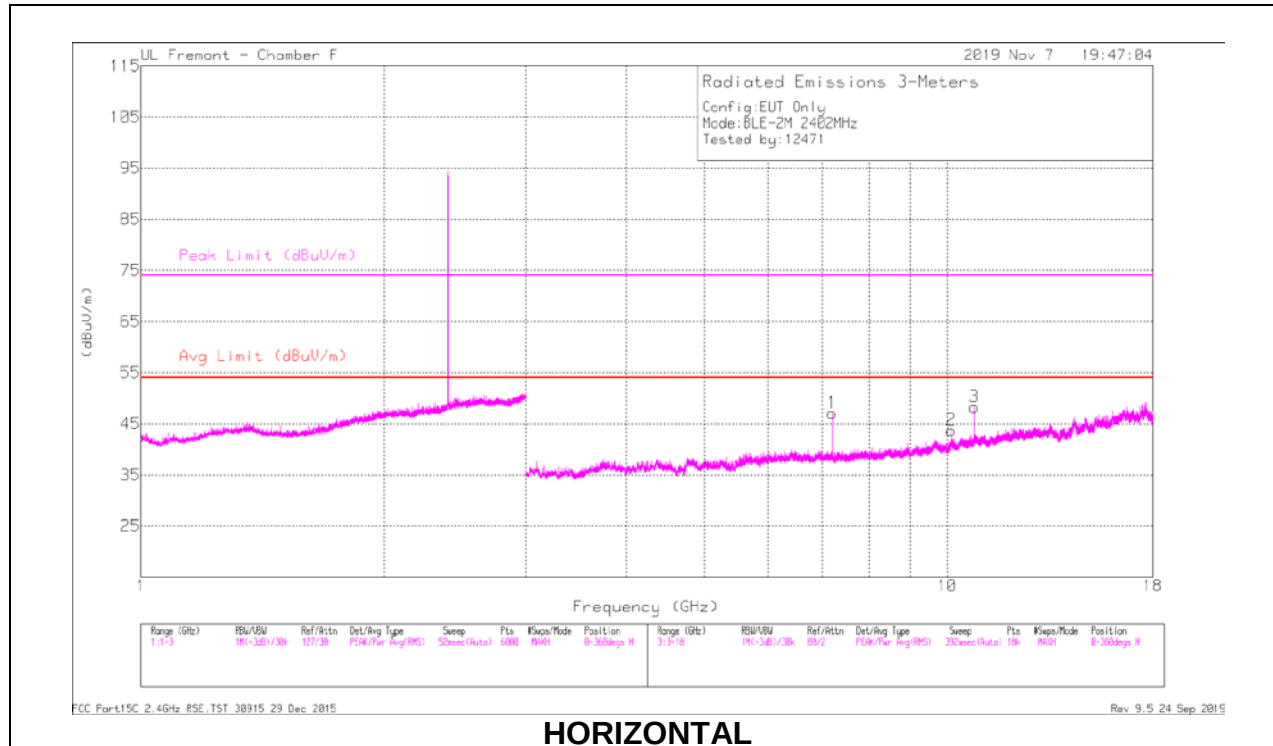
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS

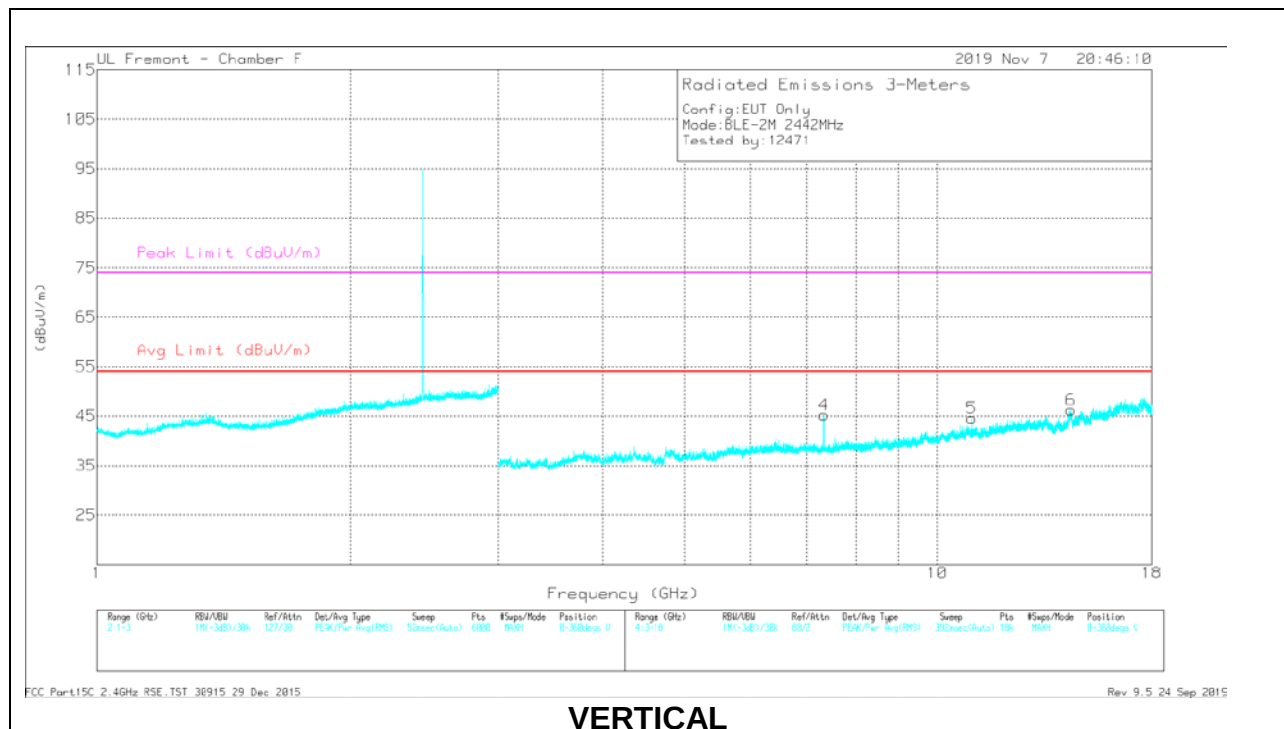
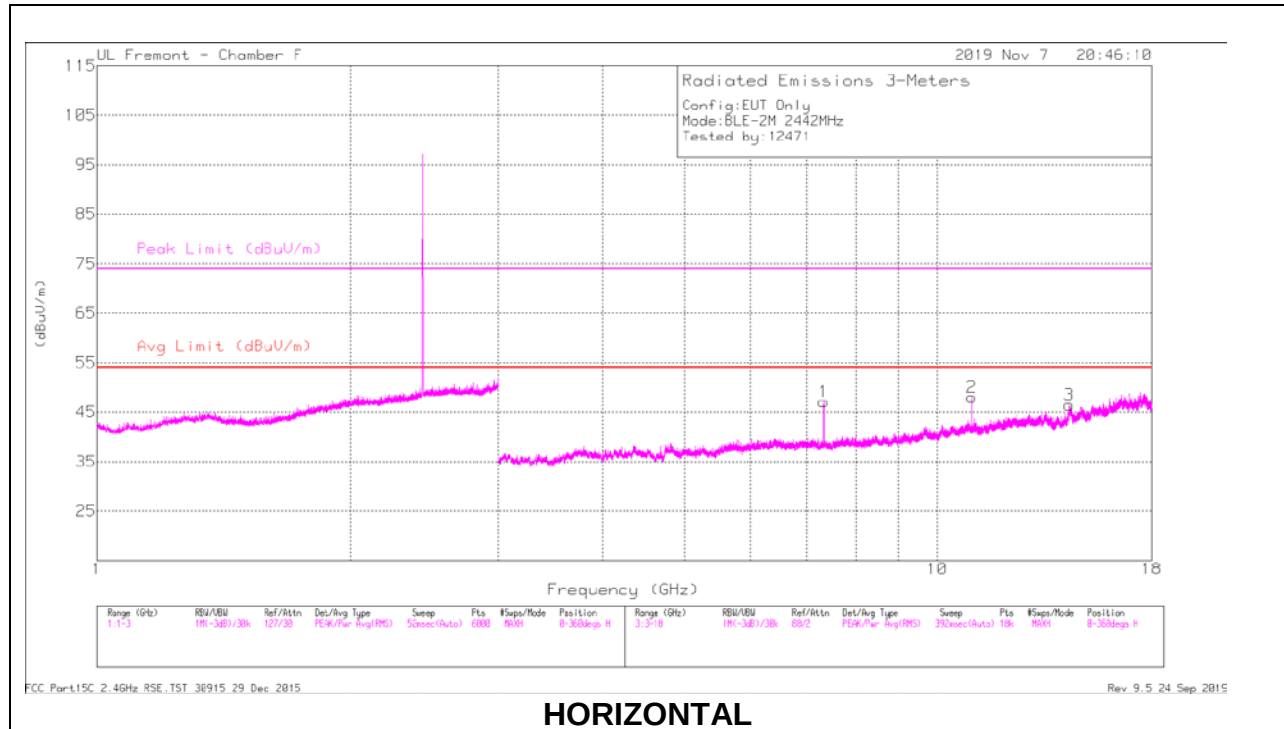


RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb I/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	7.20758	58.67	PK2	35.6	-41	53.27	-	-	-	-	145	103	H
2	10.12613	50.43	PK2	37.1	-38.9	48.63	-	-	-	-	344	162	H
3	* 10.81125	55.04	PK2	38	-38.9	54.14	-	-	74	-19.86	199	135	H
	* 10.81115	46.15	MAV1	38	-39	45.15	54	-8.85	-	-	199	135	H
4	7.20443	56.52	PK2	35.5	-41	51.02	-	-	-	-	310	251	V
5	* 10.80635	53.01	PK2	38	-39	52.01	-	-	74	-21.99	43	393	V
	* 10.8068	42.39	MAV1	38	-39	41.39	54	-12.61	-	-	43	393	V
6	14.4181	49.79	PK2	39.3	-36.9	52.19	-	-	-	-	106	225	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAV1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



RADIATED EMISSIONS

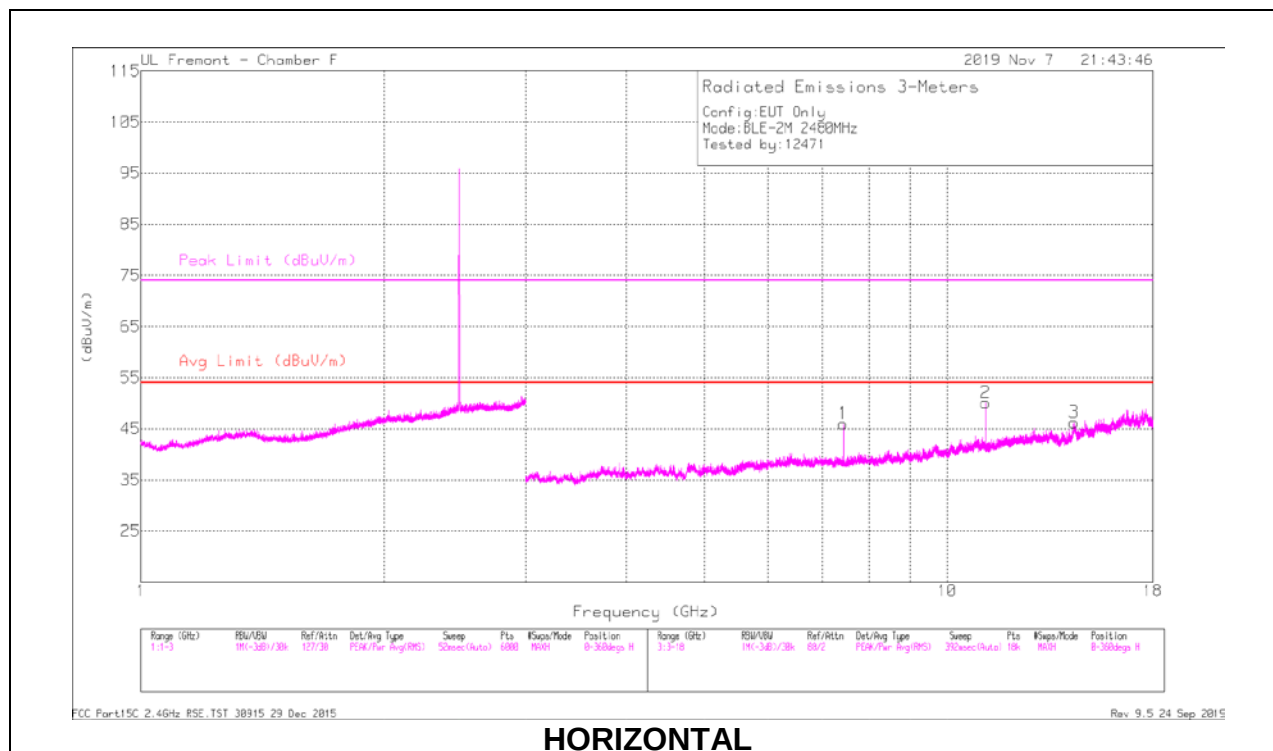
Mark er	Frequenc y (GHz)	Meter Readin g (dBuV)	Det	AF T345 (dB/m)	Amp/Cb l/Filtr/Pa d (dB)	Correct ed Readin g (dBuV/ m)	Avg Limit (dBuV/ m)	Margin (dB)	Peak Limit (dBuV/ m)	PK Margin (dB)	Azimu t (Degs)	Height (cm)	Polarity
1	* 7.32431	56.99	PK2	35.6	-40.4	52.19	-	-	74	-21.81	49	100	H
	* 7.32456	48.89	MAv1	35.7	-40.4	44.19	54	-9.81	-	-	49	100	H
2	* 10.98653	55.14	PK2	37.9	-38.9	54.14	-	-	74	-19.86	209	100	H
	* 10.98672	46.26	MAv1	37.9	-38.9	45.26	54	-8.74	-	-	209	100	H
3	14.35576	50.23	PK2	39.1	-36.8	52.53	-	-	-	-	119	269	H
4	* 7.32767	55.73	PK2	35.7	-40.3	51.13	-	-	74	-22.87	354	128	V
	* 7.32728	46.75	MAv1	35.7	-40.3	42.15	54	-11.85	-	-	354	128	V
5	* 10.98671	52.97	PK2	37.9	-38.9	51.97	-	-	74	-22.03	106	100	V
	* 10.99127	43.11	MAv1	38	-38.9	42.21	54	-11.79	-	-	106	100	V
6	14.43324	49.34	PK2	39.3	-36.7	51.94	-	-	-	-	319	362	V

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

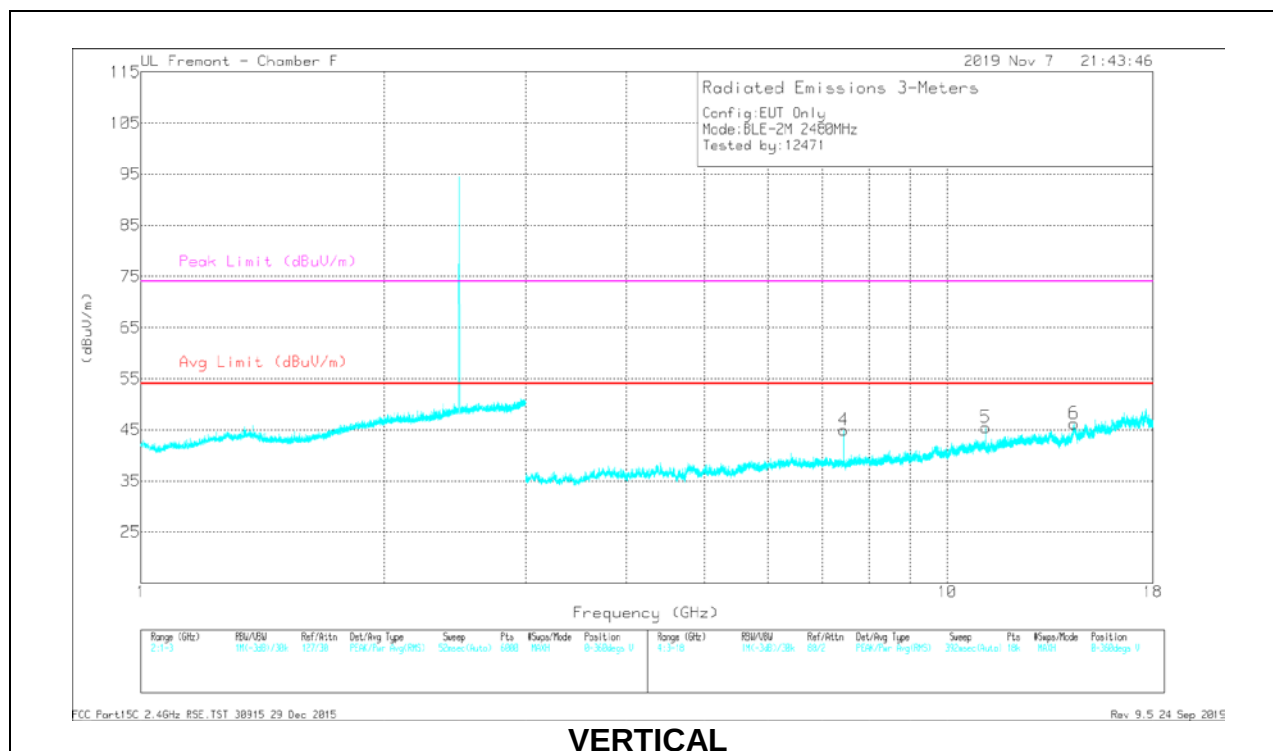
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

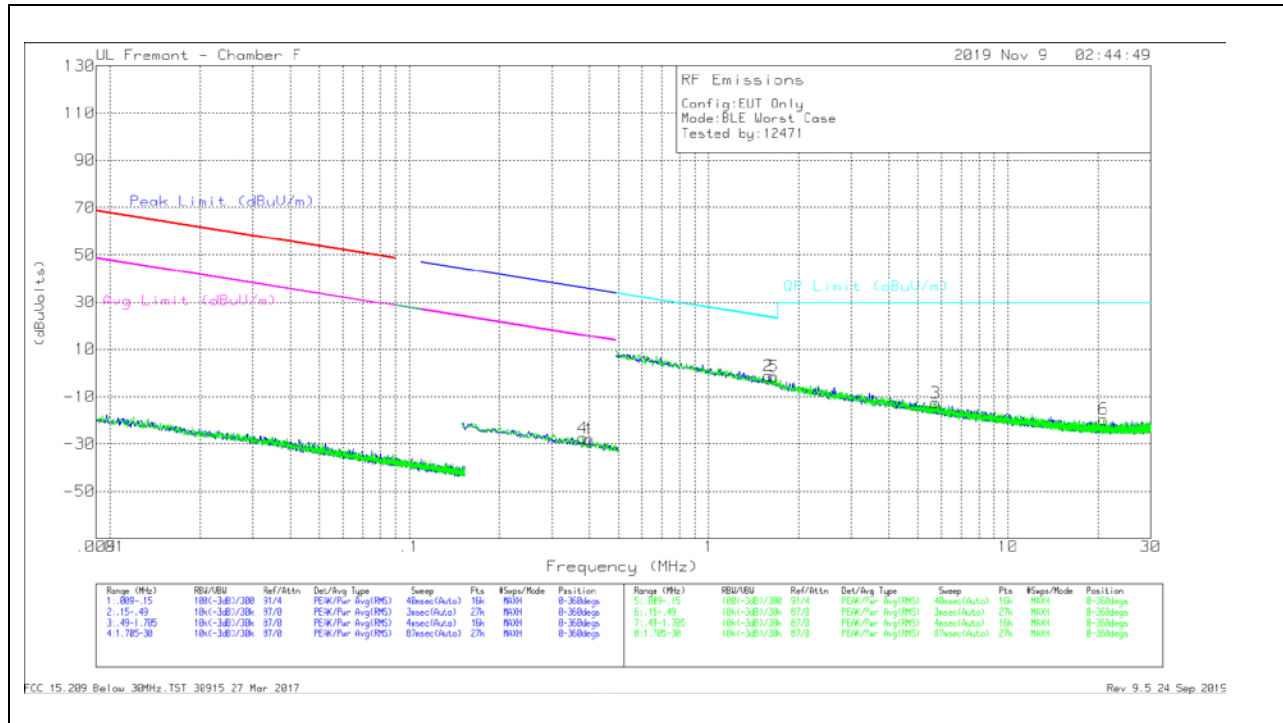
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cb I/Filtr/Pa d (dB)	Correct ed Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 7.43863	55.42	PK2	35.7	-40.7	50.42	-	-	74	-23.58	30	100	H
	* 7.43868	46.31	MAv1	35.7	-40.7	41.31	54	-12.69	-	-	30	100	H
2	* 11.15773	53.94	PK2	38	-38.5	53.44	-	-	74	-20.56	267	110	H
	* 11.15777	44.56	MAv1	38	-38.5	44.06	54	-9.94	-	-	267	110	H
3	14.3674	49.92	PK2	39.1	-36.4	52.62	-	-	-	-	289	246	H
4	* 7.44151	55.47	PK2	35.6	-40.7	50.37	-	-	74	-23.63	350	102	V
	* 7.43858	47.07	MAv1	35.7	-40.7	42.07	54	-11.93	-	-	350	102	V
5	* 11.15764	53.55	PK2	38	-38.5	53.05	-	-	74	-20.95	272	218	V
	* 11.15772	44.09	MAv1	38	-38.5	43.59	54	-10.41	-	-	272	218	V
6	14.37319	49.65	PK2	39.2	-36.5	52.35	-	-	-	-	9	273	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.3. WORST CASE BELOW 30MHZ



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.4001	40.76	Pk	11	.1	-80	-28.14	35.56	-63.7	15.56	-43.7	0-360
4	.38013	41.34	Pk	11	.1	-80	-27.56	36.01	-63.57	16.01	-43.57	0-360

Pk - Peak detector

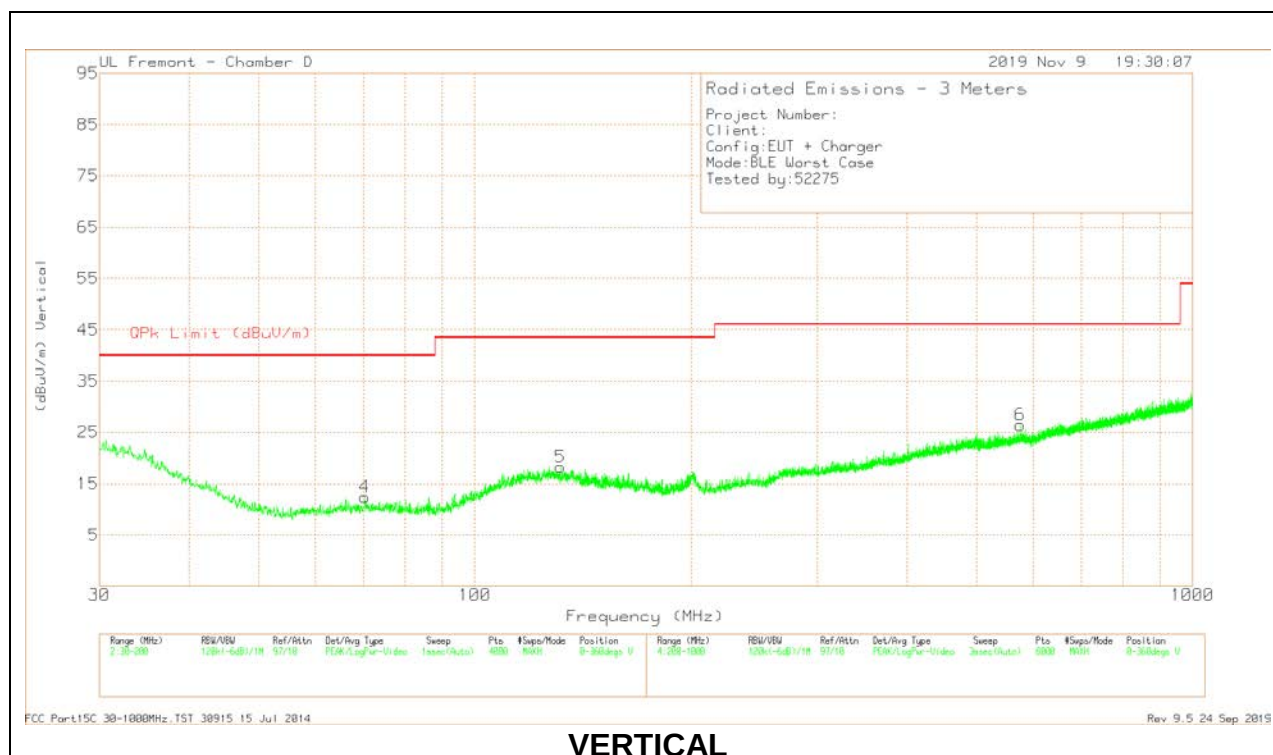
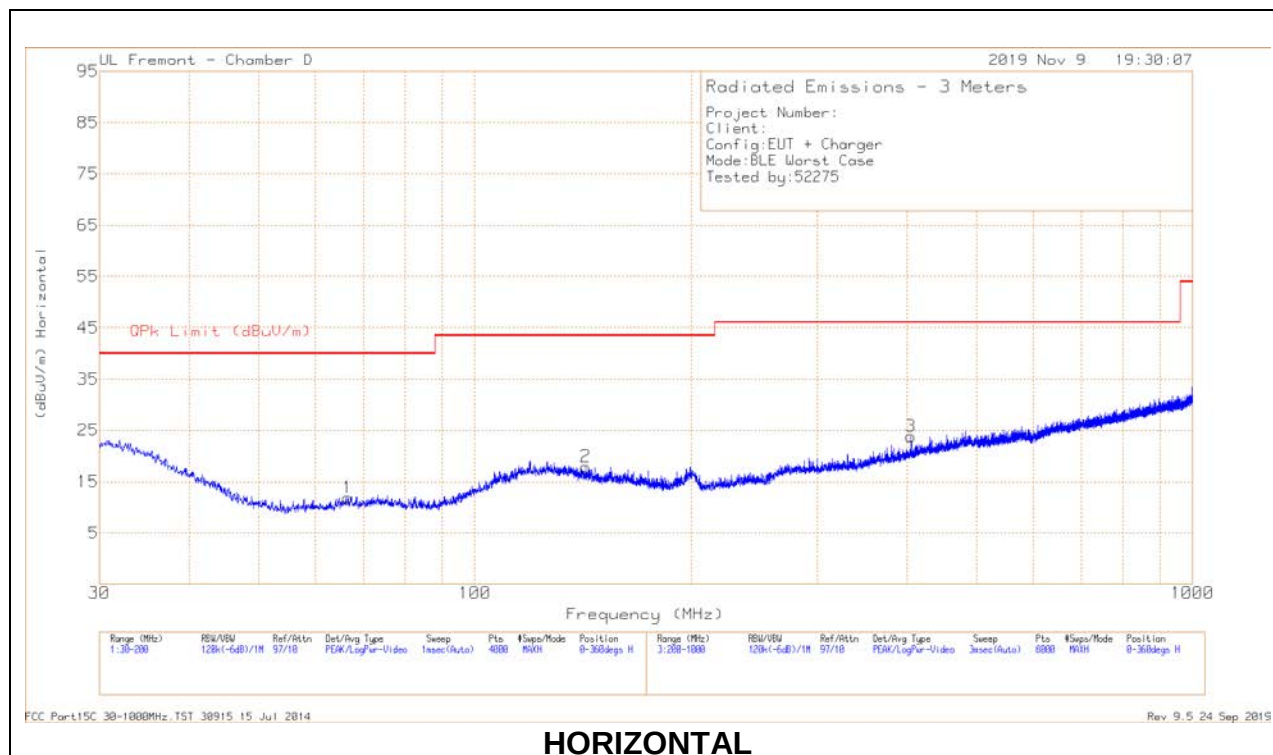
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
2	1.58778	27.96	Pk	10.8	.1	-40	-1.14	23.62	-24.76	0-360
3	5.74032	16.14	Pk	10.8	.3	-40	-12.76	29.5	-42.26	0-360
5	1.65915	27.68	Pk	10.8	.1	-40	-1.42	23.24	-24.66	0-360
6	20.85772	10.61	Pk	9.4	.5	-40	-19.49	29.5	-48.99	0-360

Pk - Peak detector

FCC 15.209 Below 30MHz.TST 30915 27 Mar 2017
Rev 9.5 24 Sep 2019

9.4. WORST CASE BELOW 1 GHz

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



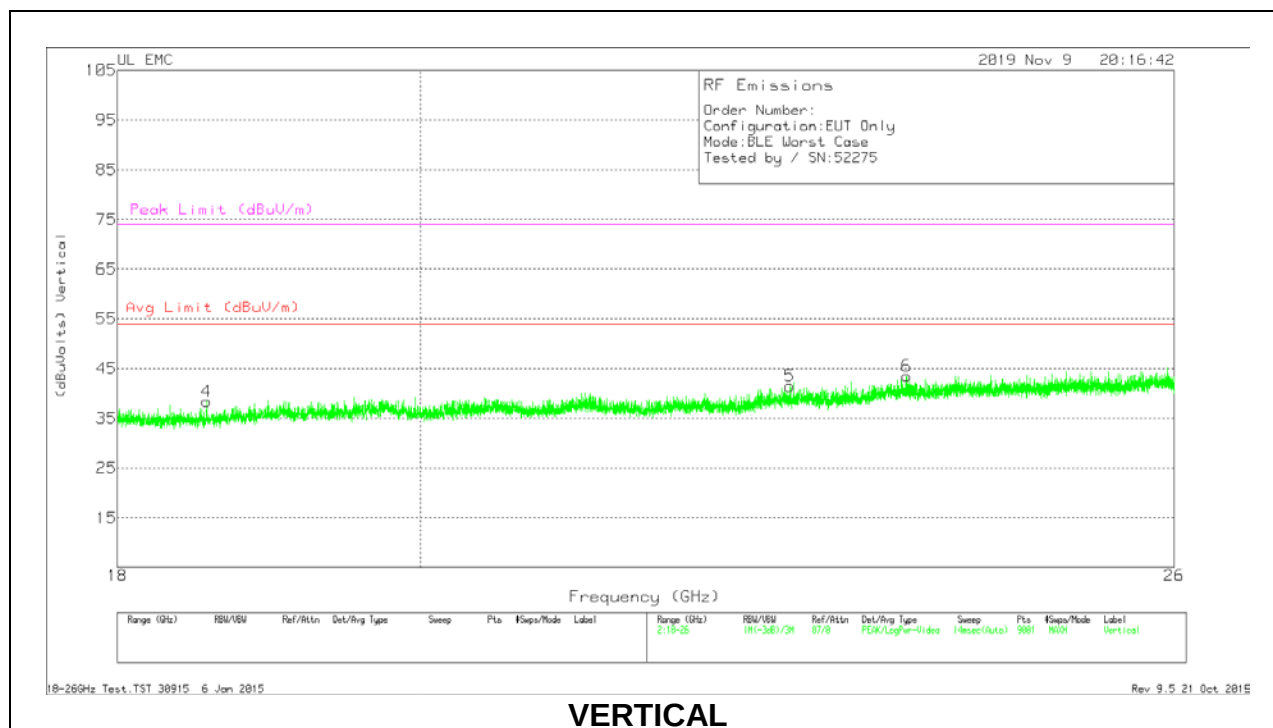
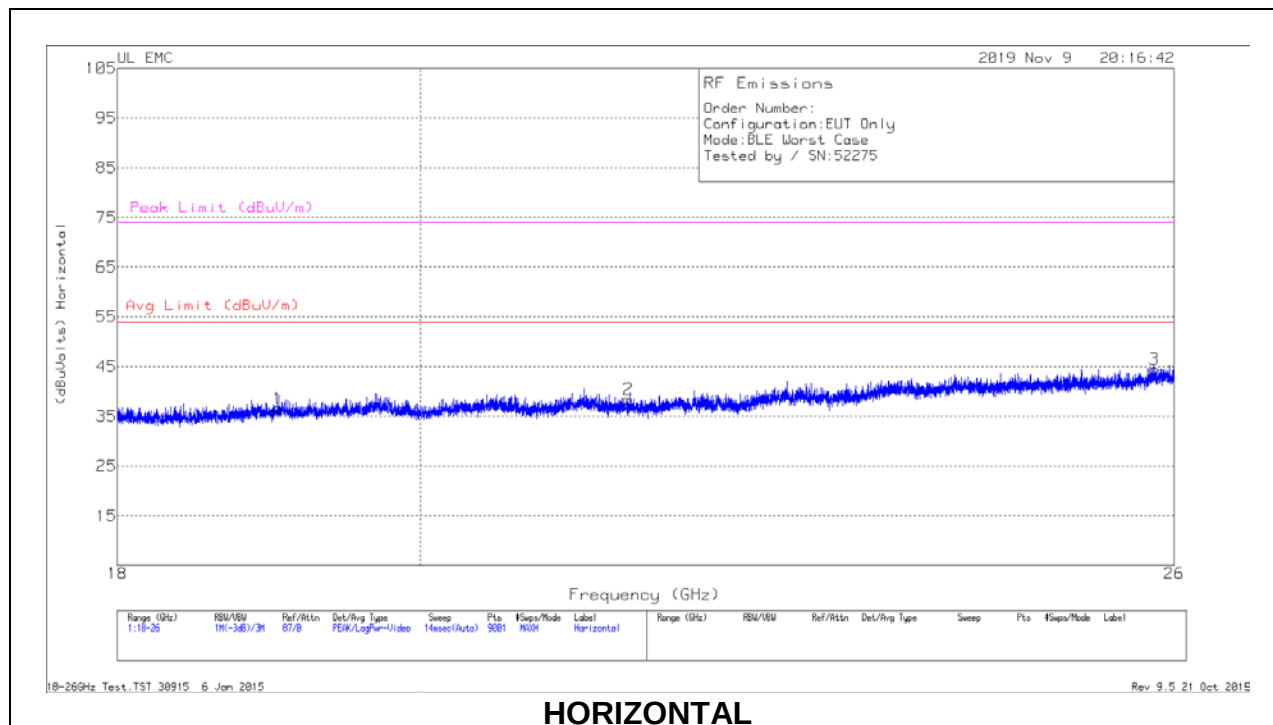
Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	66.5739	21.86	Qp	13.8	-31.3	4.36	40	-35.64	120	331	H
2	142.9257	21.19	Qp	18.8	-30.7	9.29	43.52	-34.23	3	267	H
3	* 405.5141	26.91	Qp	21.7	-29.1	19.51	46.02	-26.51	36	228	H
4	70.1919	21.34	Qp	14	-31.3	4.04	40	-35.96	13	354	V
5	* 131.6731	20.91	Qp	19.7	-30.7	9.91	43.52	-33.61	173	383	V
6	575.2338	20.07	Qp	24.6	-28.4	16.27	46.02	-29.75	248	131	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

9.5. WORST CASE 18-26 GHz

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



18-26GHz Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T447 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	19.03111	35.22	Pk	32.6	-21.7	-9.5	36.62	54	-17.38	74	-37.38
2	21.49956	36.03	Pk	33.1	-21.2	-9.5	38.43	54	-15.57	74	-35.57
3	25.81778	39.68	Pk	34.4	-20.1	-9.5	44.48	54	-9.52	74	-29.52
4	18.56711	37.33	Pk	32.4	-21.8	-9.5	38.43	54	-15.57	74	-35.57
5	22.744	38.01	Pk	33.5	-20.5	-9.5	41.51	54	-12.49	74	-32.49
6	23.688	38.6	Pk	34.1	-19.7	-9.5	43.5	54	-10.5	74	-30.5

Pk - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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.

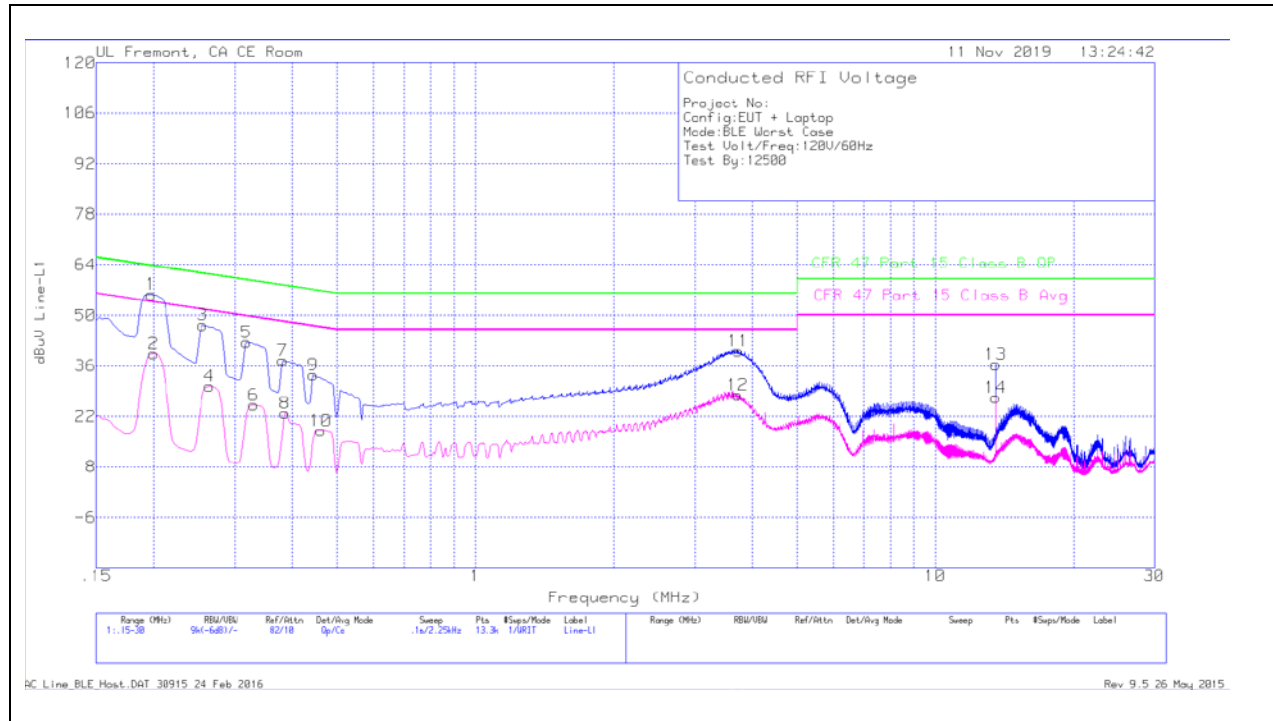
Frequency of Emission(MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency

RESULTS

10.1.1. AC Power Line Host

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz

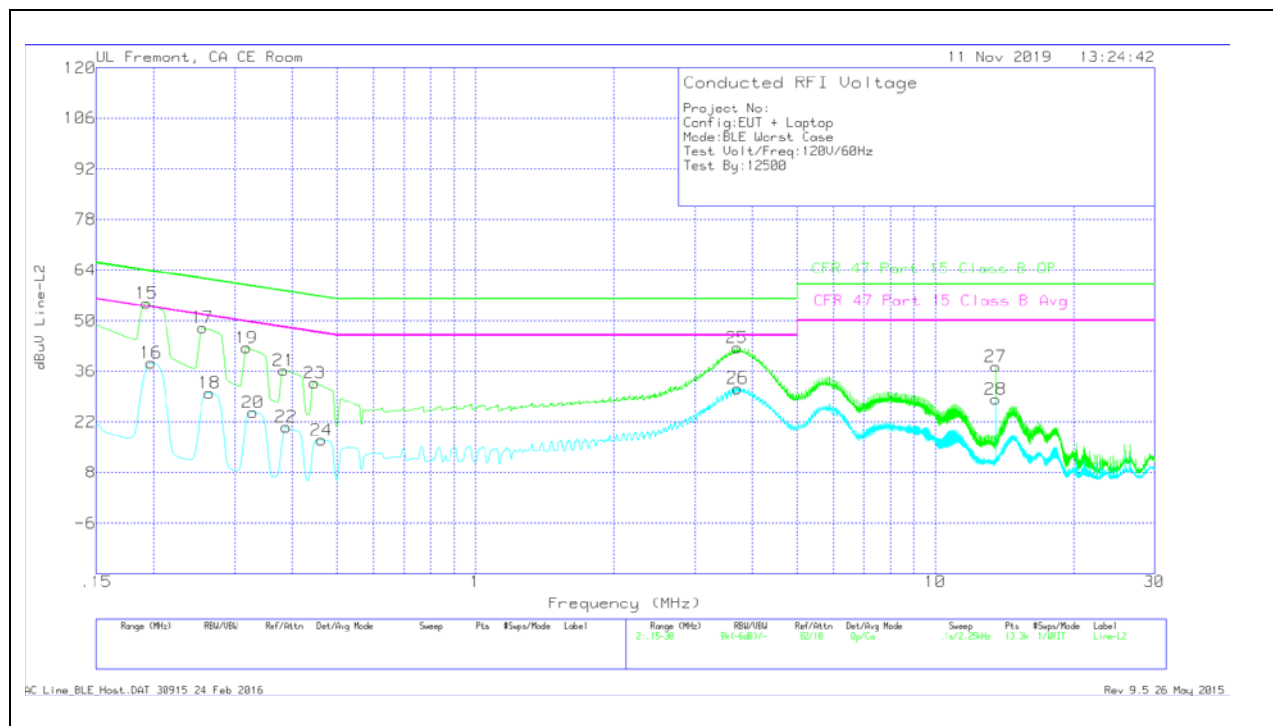
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.19725	45.72	Qp	0	0	10.1	55.82	63.73	-7.91	-	-
2	.1995	29.31	Ca	0	0	10.1	39.41	-	-	53.63	-14.22
3	.25575	37.21	Qp	0	0	10.1	47.31	61.57	-14.26	-	-
4	.26475	20.21	Ca	0	0	10.1	30.31	-	-	51.28	-20.97
5	.31875	32.44	Qp	0	0	10.1	42.54	59.74	-17.2	-	-
6	.33	15.02	Ca	0	0	10.1	25.12	-	-	49.45	-24.33
7	.38175	27.34	Qp	0	0	10.1	37.44	58.24	-20.8	-	-
8	.38625	12.74	Ca	0	0	10.1	22.84	-	-	48.14	-25.3
9	.44475	23.36	Qp	0	0	10.1	33.46	56.97	-23.51	-	-
10	.46162	7.98	Ca	0	0	10.1	18.08	-	-	46.66	-28.58
11	3.73875	29.89	Qp	0	.1	10.1	40.09	56	-15.91	-	-
12	3.723	17.7	Ca	0	.1	10.1	27.9	-	-	46	-18.1
*13	13.56	25.86	Qp	.1	.2	10.2	36.36	60	-23.64	-	-
*14	13.56	16.7	Ca	.1	.2	10.2	27.2	-	-	50	-22.8

Qp - Quasi-Peak detector

Ca - CISPR average detection

*Indicates UL RFID Signal. Not from device.

LINE 2 RESULTS



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)
15	.19275	44.78	Qp	0	0	10.1	54.88	63.92	-9.04	-	-
16	.19725	28.3	Ca	0	0	10.1	38.4	-	-	53.73	-15.33
17	.25575	37.91	Qp	0	0	10.1	48.01	61.57	-13.56	-	-
18	.26475	19.97	Ca	0	0	10.1	30.07	-	-	51.28	-21.21
19	.31875	32.43	Qp	0	0	10.1	42.53	59.74	-17.21	-	-
20	.32887	14.49	Ca	0	0	10.1	24.59	-	-	49.48	-24.89
21	.384	26.18	Qp	0	0	10.1	36.28	58.19	-21.91	-	-
22	.3885	10.45	Ca	0	0	10.1	20.55	-	-	48.1	-27.55
23	.44812	22.7	Qp	0	0	10.1	32.8	56.91	-24.11	-	-
24	.46275	6.85	Ca	0	0	10.1	16.95	-	-	46.64	-29.69
25	3.714	32.29	Qp	0	.1	10.1	42.49	56	-13.51	-	-
26	3.7185	21.11	Ca	0	.1	10.1	31.31	-	-	46	-14.69
*27	13.56	26.88	Qp	.1	.2	10.2	37.38	60	-22.62	-	-
*28	13.56	17.82	Ca	.1	.2	10.2	28.32	-	-	50	-21.68

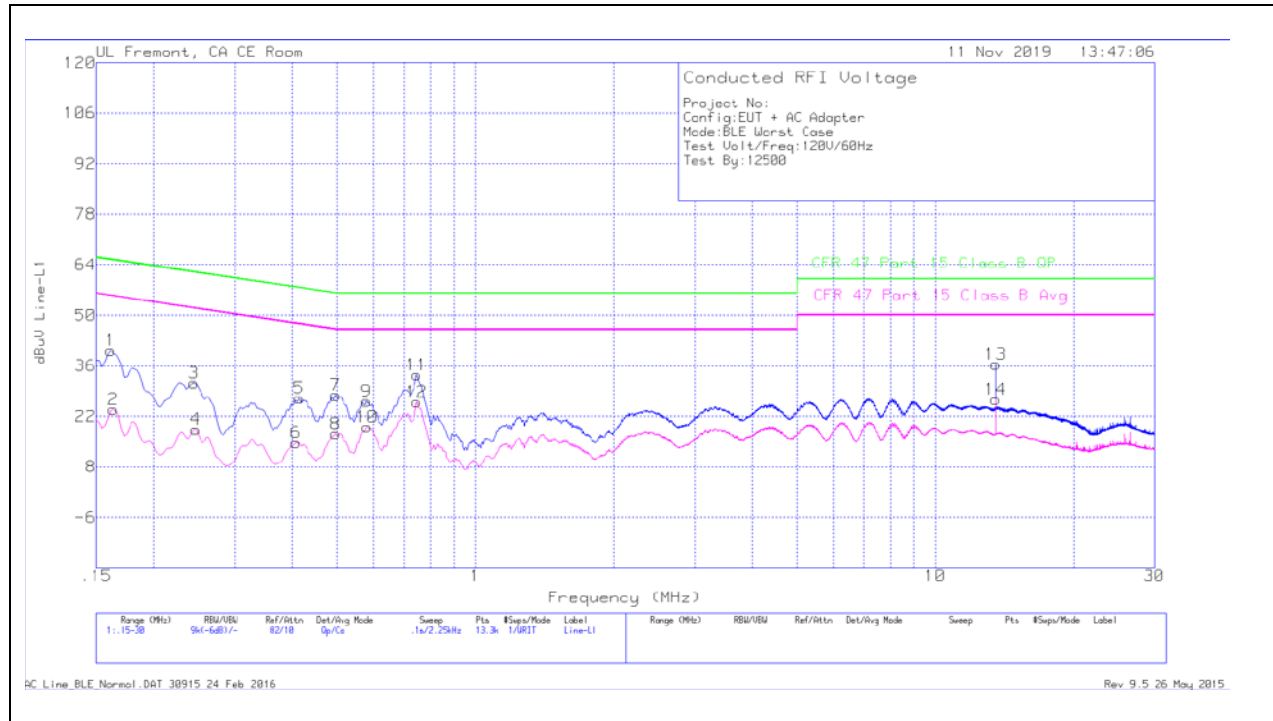
Qp - Quasi-Peak detector

Ca - CISPR average detection

*Indicates UL RFID Signal. Not from device.

10.1.2. AC Power Line Norm

LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz

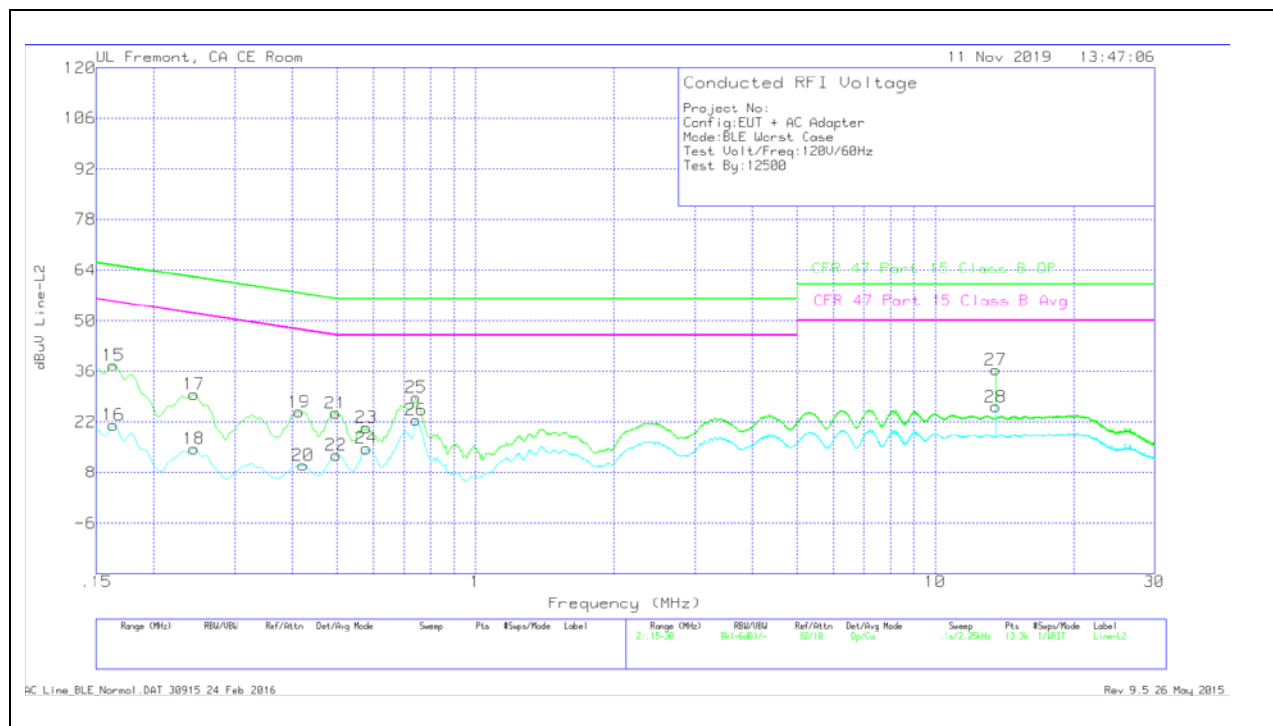
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.16125	30.03	Qp	.1	0	10.1	40.23	65.4	-25.17	-	-
2	.1635	13.79	Ca	.1	0	10.1	23.99	-	-	55.28	-31.29
3	.2445	21.08	Qp	0	0	10.1	31.18	61.94	-30.76	-	-
4	.24675	8.35	Ca	0	0	10.1	18.45	-	-	51.87	-33.42
5	.41325	16.89	Qp	0	0	10.1	26.99	57.58	-30.59	-	-
6	.40762	4.66	Ca	0	0	10.1	14.76	-	-	47.7	-32.94
7	.4965	17.74	Qp	0	0	10.1	27.84	56.06	-28.22	-	-
8	.4965	7	Ca	0	0	10.1	17.1	-	-	46.06	-28.96
9	.57975	16.03	Qp	0	0	10.1	26.13	56	-29.87	-	-
10	.582	8.88	Ca	0	0	10.1	18.98	-	-	46	-27.02
11	.74625	23.36	Qp	0	0	10.1	33.46	56	-22.54	-	-
12	.74625	15.88	Ca	0	0	10.1	25.98	-	-	46	-20.02
*13	13.56	25.91	Qp	.1	.2	10.2	36.41	60	-23.59	-	-
*14	13.56	16.13	Ca	.1	.2	10.2	26.63	-	-	50	-23.37

Qp - Quasi-Peak detector

Ca - CISPR average detection

*Indicates UL RFID Signal. Not from device.

LINE 2 RESULTS



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)
15	.1635	27.42	Qp	.1	0	10.1	37.62	65.28	-27.66	-	-
16	.1635	10.89	Ca	.1	0	10.1	21.09	-	-	55.28	-34.19
17	.2445	19.5	Qp	0	0	10.1	29.6	61.94	-32.34	-	-
18	.2445	4.52	Ca	0	0	10.1	14.62	-	-	51.94	-37.32
19	.41325	14.64	Qp	0	0	10.1	24.74	57.58	-32.84	-	-
20	.42225	-.1	Ca	0	0	10.1	10	-	-	47.4	-37.4
21	.4965	14.32	Qp	0	0	10.1	24.42	56.06	-31.64	-	-
22	.49875	2.64	Ca	0	0	10.1	12.74	-	-	46.02	-33.28
23	.57975	10.33	Qp	0	0	10.1	20.43	56	-35.57	-	-
24	.57975	4.53	Ca	0	0	10.1	14.63	-	-	46	-31.37
25	.744	18.62	Qp	0	0	10.1	28.72	56	-27.28	-	-
26	.744	12.5	Ca	0	0	10.1	22.6	-	-	46	-23.4
*27	13.56	25.91	Qp	.1	.2	10.2	36.41	60	-23.59	-	-
*28	13.56	15.65	Ca	.1	.2	10.2	26.15	-	-	50	-23.85

Qp - Quasi-Peak detector

Ca - CISPR average detection

*Indicates UL RFID Signal. Not from device.

11. SETUP PHOTOS

Please refer to 12750204-EP1V1 FCC IC for setup photos.

END OF TEST REPORT