



CERTIFICATION TEST REPORT

Report Number. : 11988903-E2V2

Applicant : Mayfield Robotics
400 Convention Way
Redwood City, CA 94063

Model : AHR-M8T

FCC ID : 2AN44-AHR-M8T

EUT Description : General Consumer Home Robot

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

Date Of Issue:

June 19, 2018

Prepared by:

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NVLAP LAB CODE 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	6/11/18	Initial Release	---
V2	6/19/18	Updated Section 5.6 setup diagram for radiated tests and setup diagram for line conducted	J.Qian

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Mayfield Robotics
400 Convention Way
Redwood City, CA 94063

EUT DESCRIPTION: General Consumer Home Robot

MODEL: AHR-M8T

SERIAL NUMBER: RADIATED: 17534007 (MF-001 Rev. A04)
CONDUCTED: 17450531 (MF-001 Rev. A04)

DATE TESTED: September 11th, 2017 – December 8th, 2017

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Complies

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 the U.S. government.

Approved & Released For
UL Verification Services Inc By:



Francisco De Anda
Operations Leader
UL Verification Services Inc.

Prepared By:



Eric Yu
Test 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, ANSI C63.10-2013.

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

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through C are covered under ISED company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under Industry Canada company address code 22541 with site numbers 22541 -1 through 22541-5, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at [NVLAP Lab Search](#).

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:

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.84 dB
Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Radiated Disturbance, 26000 to 40000 MHz	5.24 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a general consumer home robot

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum output power as follows:

Frequency Range (MHz)	Mode	Average		Peak	
		Output Power (dBm)	Output Power (mW)	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	-17.99	0.02	-10.45	0.09

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes antenna, with a maximum gain of 3.1 dBi

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Windows 10

The test utility software used during testing was BlueSuite v2.6.4.1046

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions 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 EUT cannot be used in different orientations. Therefore, all final radiated testing was performed with the EUT in typical standing orientation.

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

BLE: 1 Mbps.

The height of the robot is at 0.51 meters and the highest point of the antennas is at 0.31 meters. Given the measurement antenna height range, 1 meter to 4 meters, and for above 1GHz testing, the boring sight mechanism and beamwidth of the antenna, testing on the floor would prevent capturing full emissions strength. Testing on the floor the antenna would not capture worst case emissions, therefore EUT was tested as table top equipment.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Description	Manufacturer	Model	Serial Number
Laptop	Lenovo	X1 Carbon	R9-OJM36P
AC/DC Adapter	Lenovo	ADL170NDC2A	11S36200317ZZ40077C20J
DC Power Supply	BK Precision	1550	238D15253
USB ethernet adapter	Cable Matters Inc.	202013	TS3G9FQ7
EUT AC Adapter	DYS	DYS902-190473W	NSN
Monitor	ODROID-VU	GH620A	YXD090TN02-40NMO1

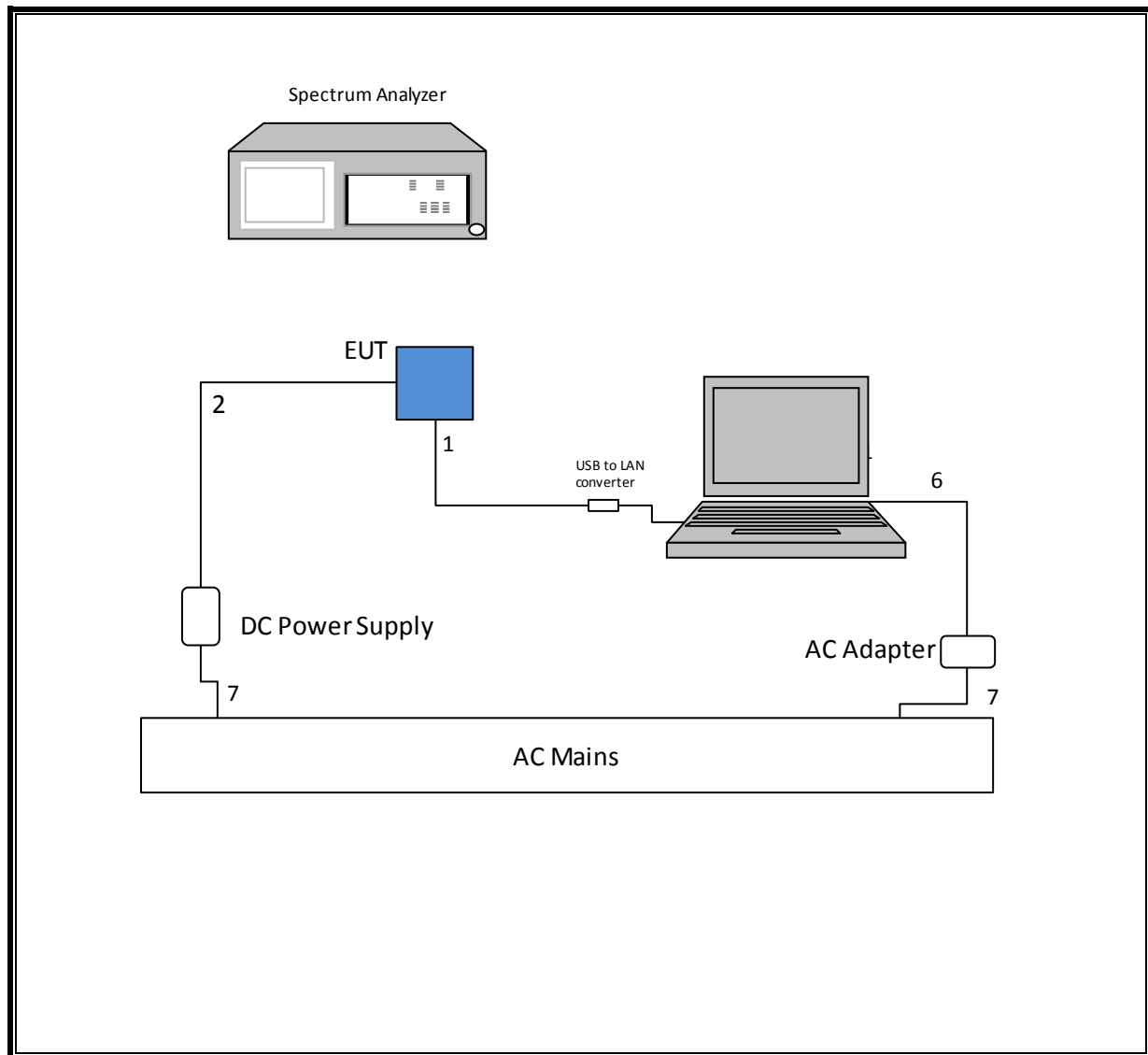
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Ethernet	1	RJ45	unshielded	2.1	
2	DC	1	Header	unshielded	1.85	To EUT from DC P/S
3	DC	1	barrel	unshielded	1.32	To EUT AC adapter
4	AC	1	2-prong	unshielded	1.22	
5	HDMI	1	HDMI	shielded	2.5	
6	DC	1	Barrel	shielded	1.5	To laptop
7	AC	2	3-prong	shielded	1	

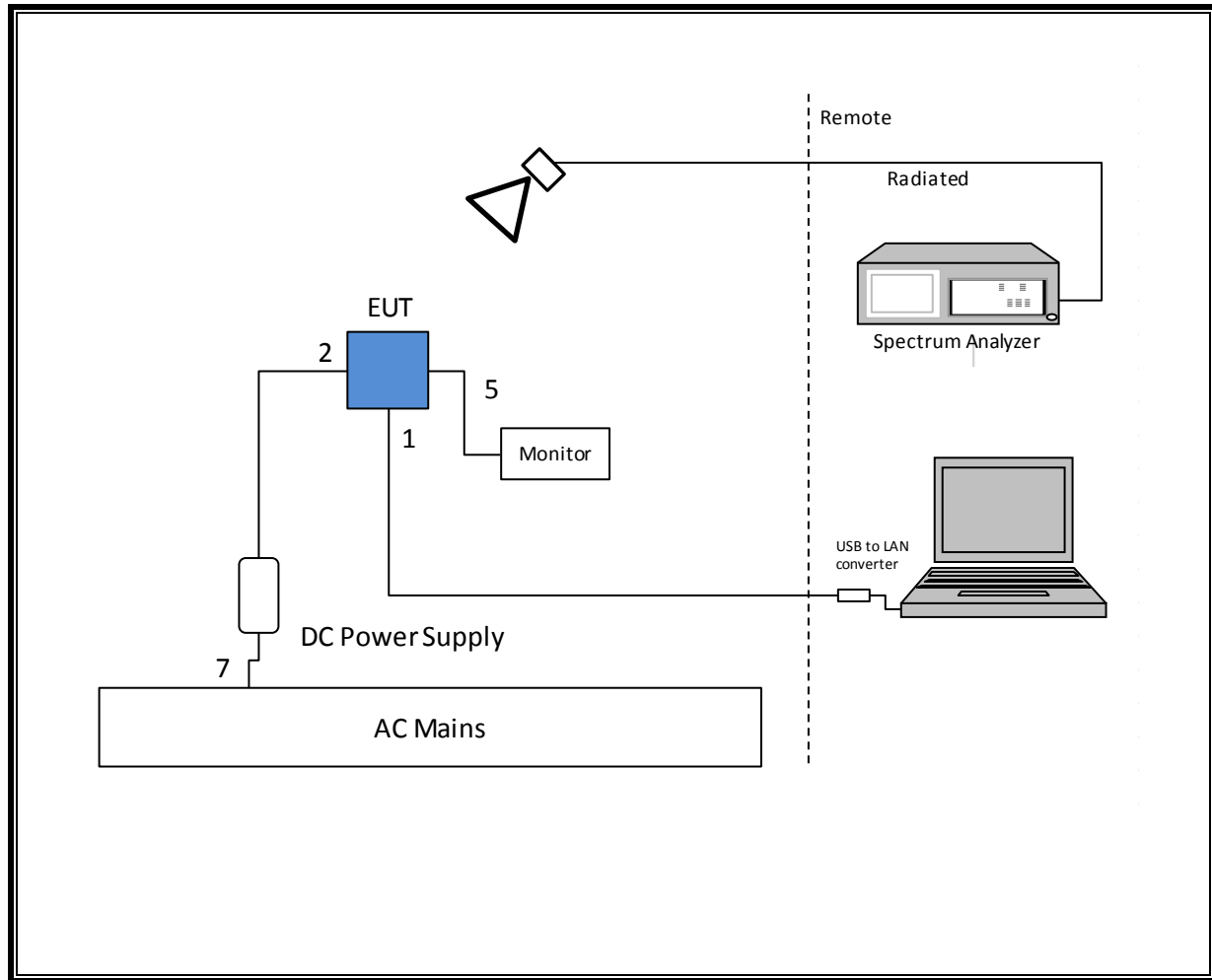
TEST SETUP

The EUT is connected to a test laptop. Test software exercises the radio.

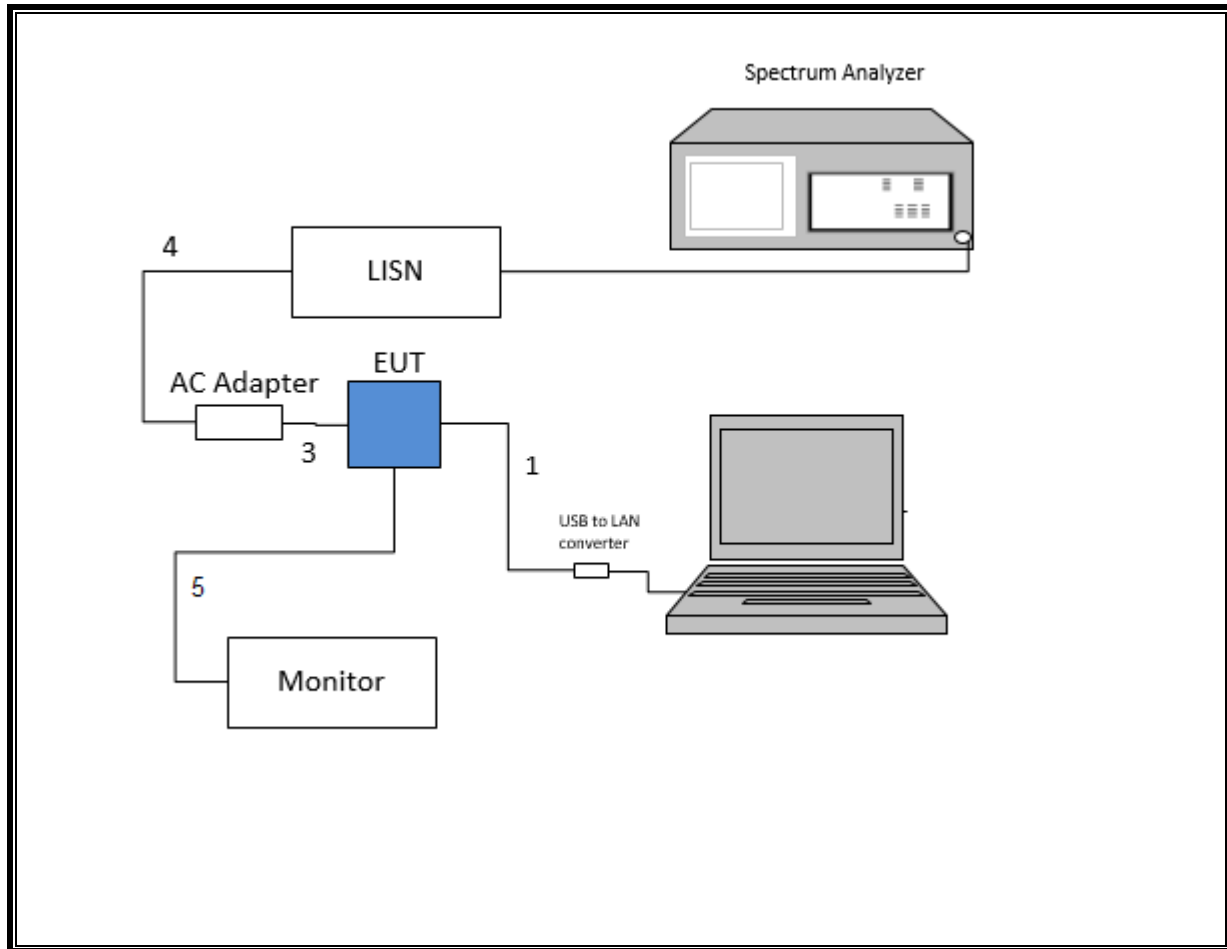
SETUP DIAGRAM FOR ANTENNA PORT CONDUCTED TESTS



SETUP DIAGRAM FOR RADIATED TESTS



SETUP DIAGRAM FOR LINE CONDUCTED TEST



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Spectrum Analyzer	Keysight	E4446A	T146	07/17/18	07/17/17
Spectrum Analyzer	Keysight	N9030A	T1466	04/11/18	04/11/17
Antenna, Biconolog, 30MHz – 1GHz	Sunol Sciences	JB1	T130	10/16/18	10/16/17
Antenna, Horn, 1-18GHz	ETS Lindgren	3117	T862	06/09/18	06/09/17
RF Preamplifier, 10kHz - 1GHz	Sonoma	310N	T300	11/10/17	11/10/16
RF Preamplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T1165	06/24/18	06/24/17
RF Preamplifier, 1 - 8GHz	Miteq	AMF-4D-01000800-30-29P	T1573	06/24/18	06/24/17
High Pass Filter 3GHz	Micro-Tronics	HPM17543	T486	06/24/18	06/24/17
Antenna, Horn, 1-18GHz	ETS Lindgren	3117	T863	06/09/18	06/09/17
RF Preamplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T493	02/15/18	02/15/17
RF Preamplifier, 1 - 8GHz	Miteq	AMF-4D-01000800-30-29P	T1156	02/15/18	02/15/17
Spectrum Analyzer	Keysight	N9030A	T907	01/23/18	01/23/17
High Pass Filter 3GHz	Micro-Tronics	HPM17543	T485	02/15/18	02/15/17
Antenna, Horn, 1-18GHz	ETS Lindgren	3117	T712	01/30/18	01/30/17
RF Preamplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T931	06/21/18	06/21/17
Spectrum Analyzer	Keysight	N9030A	T905	01/11/18	01/11/17
Antenna, Horn, 18-26-GHz	ARA	MWH-1826	T89	01/04/18	01/04/17
Antenna, Active Loop 9KHz to 30MHz	COM-POWER	AL-130R	T1866	10/10/2018	10/10/2017
RF Preamplifier, 1-26GHz	Agilent	8449B	T404	07/23/18	07/23/17
Spectrum Analyzer, 40GHz	Keysight	N9030A	T1454	12/15/17	12/15/16
Power Meter	Keysight	N1911A	T1271	07/17/18	07/17/17
Power Sensor	Keysight	N1921A	T413	06/22/18	06/22/17
EMI Receiver	Rohde & Schwarz	ESR	T1436	01/06/18	01/06/17
LISN	Fischer Custom Communications	FCC-LISN-50/250-25-2-01	T1310	06/15/18	06/15/17

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Ver 9.5, Dec 01, 2016
Conducted Emissions Software	UL	UL EMC	Ver 9.5, May 26, 2015

NOTES:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

7. MEASUREMENT METHODS

On Time and Duty Cycle: KDB 558074 D01 v04, Section 6.

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.

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

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME, DUTY CYCLE

LIMITS

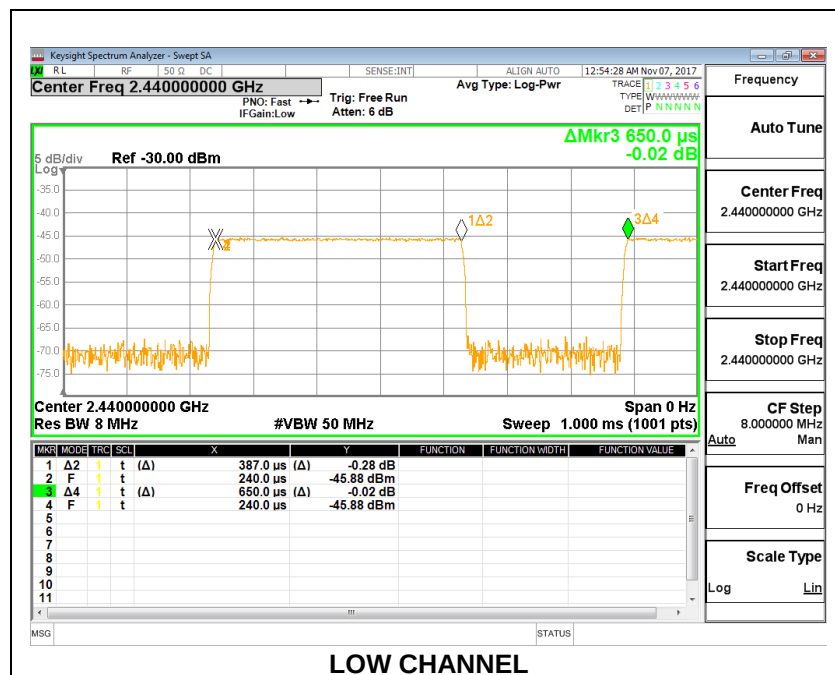
None; for reporting purposes only.

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/T Minimum VBW (kHz)
BLE	0.387	0.650	0.595	59.54%	2.25	2.584



8.2. 6 dB BANDWIDTH

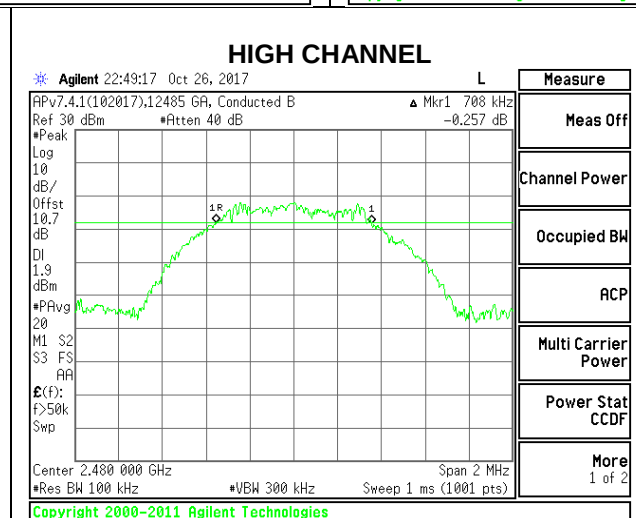
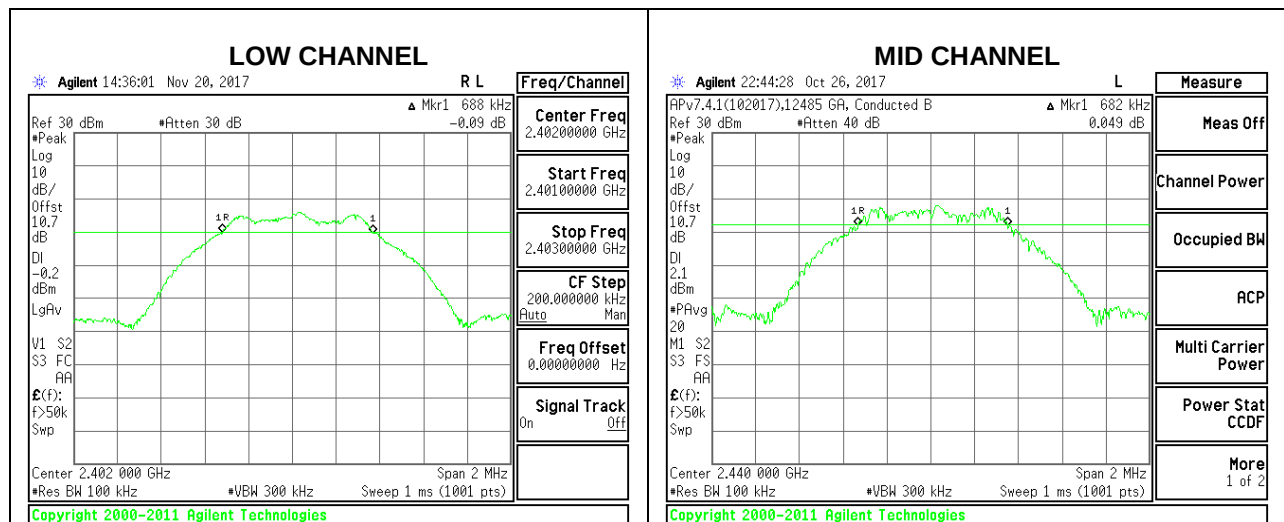
LIMITS

FCC §15.247 (a) (2)

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

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.688	0.5
Middle	2440	0.682	0.5
High	2480	0.708	0.5



8.3. 99% BANDWIDTH

LIMITS

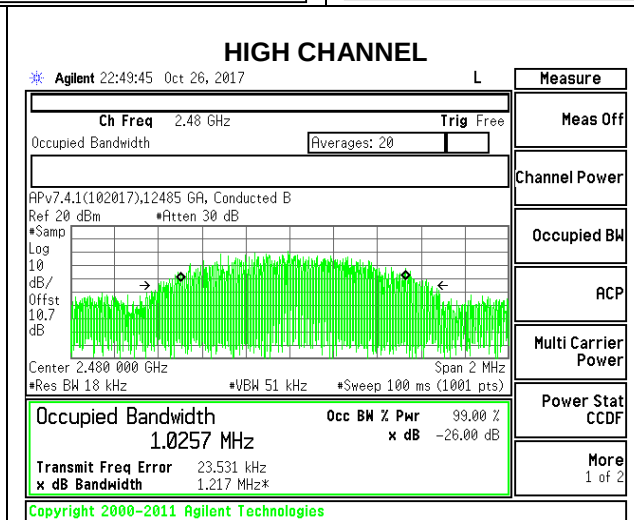
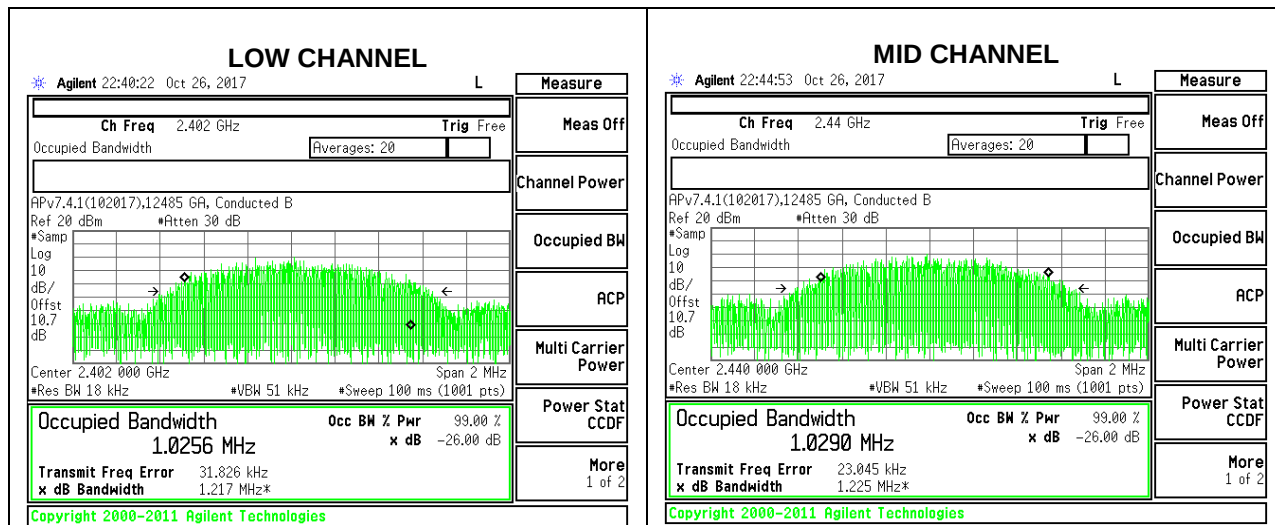
None; for reporting purposes only.

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	1.0256
Middle	2440	1.0290
High	2480	1.0257



8.4. 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 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated average reading of power.

RESULTS

TEST ENGINEER:	12485	Date:	12/04/17
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Channel	Frequency (MHz)	AV Power (dBm)
Low	2402	-22.36
Middle	2440	-19.48
High	2480	-17.99

8.5. OUTPUT POWER

LIMITS

FCC §15.247 (b)

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.7 dB (including 10 dB pad and 0.7 dB cable) was entered as an offset in the power meter to allow for a gated peak reading of power.

RESULTS

TEST ENGINEER:	12485	Date:	12/04/17
-----------------------	-------	--------------	----------

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-11.15	30	-41.150
Middle	2440	-10.88	30	-40.880
High	2480	-10.45	30	-40.450

8.6. POWER SPECTRAL DENSITY

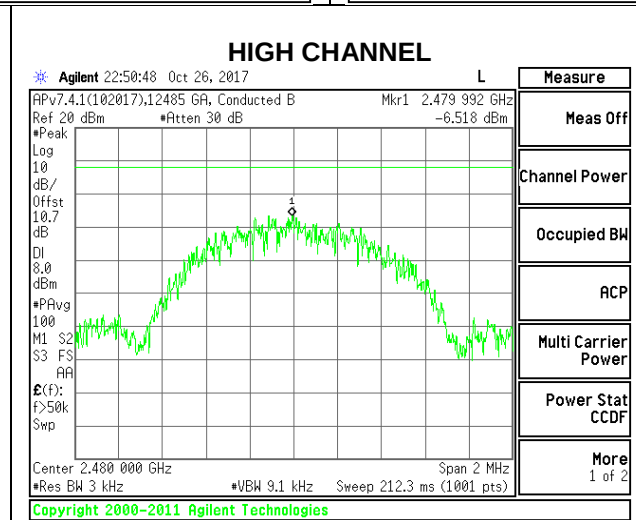
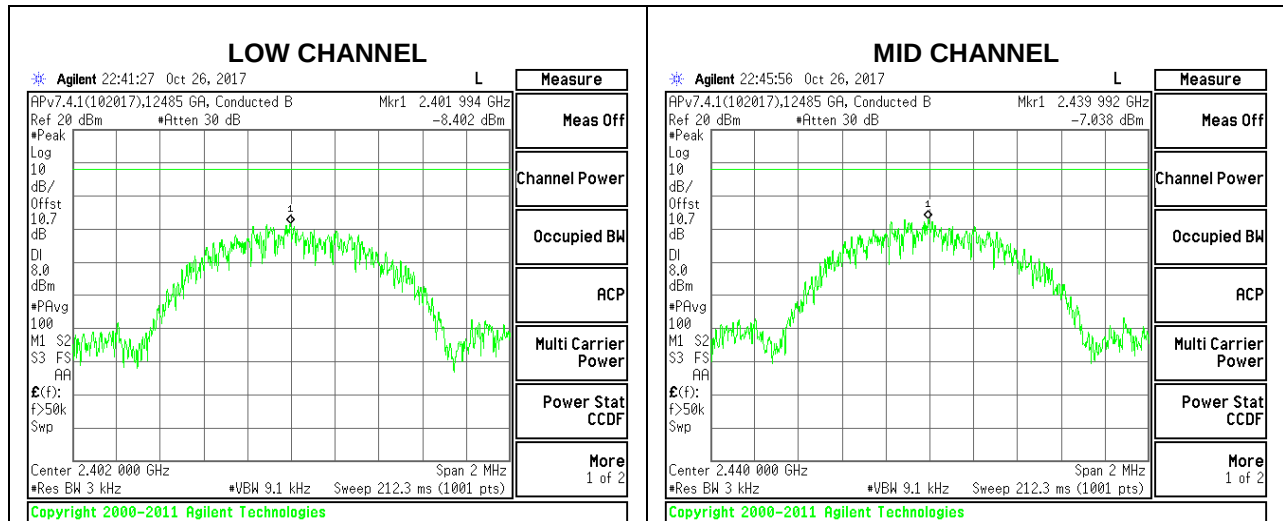
LIMITS

FCC §15.247 (e)

(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

RESULTS

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-8.40	8	-16.40
Middle	2440	-7.04	8	-15.04
High	2480	-6.52	8	-14.52



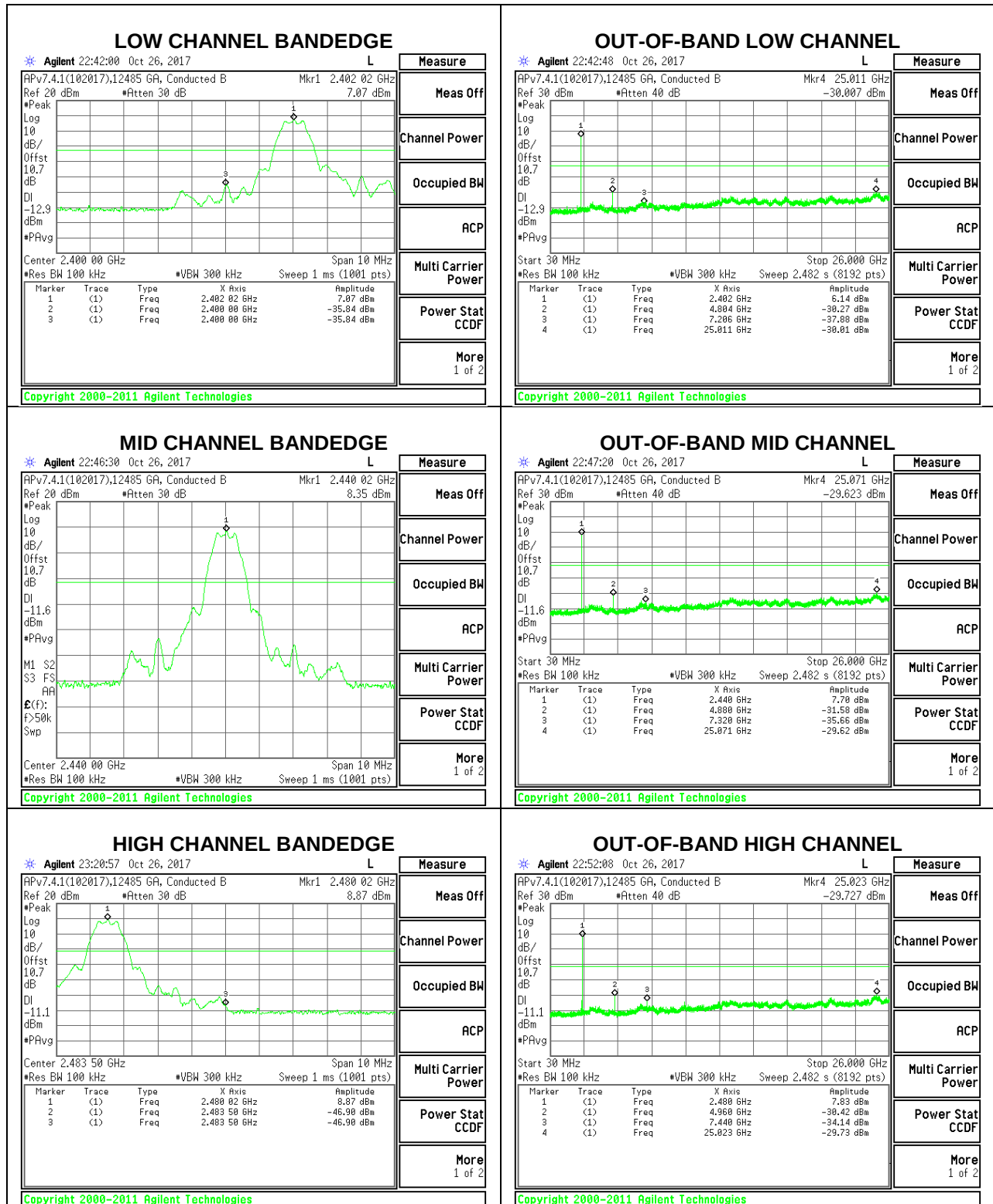
8.7. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

RESULTS



9. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

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.

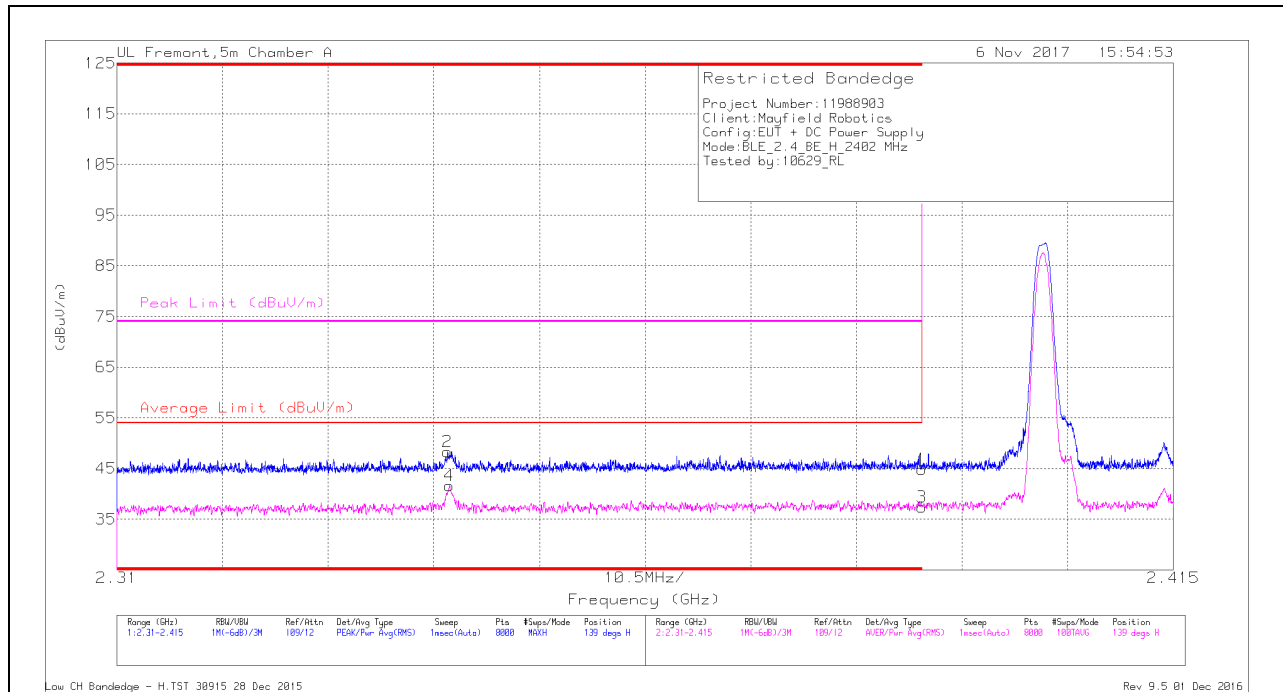
The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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.

9.1. TRANSMITTER ABOVE 1 GHz

9.1.1. BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Trace Markers

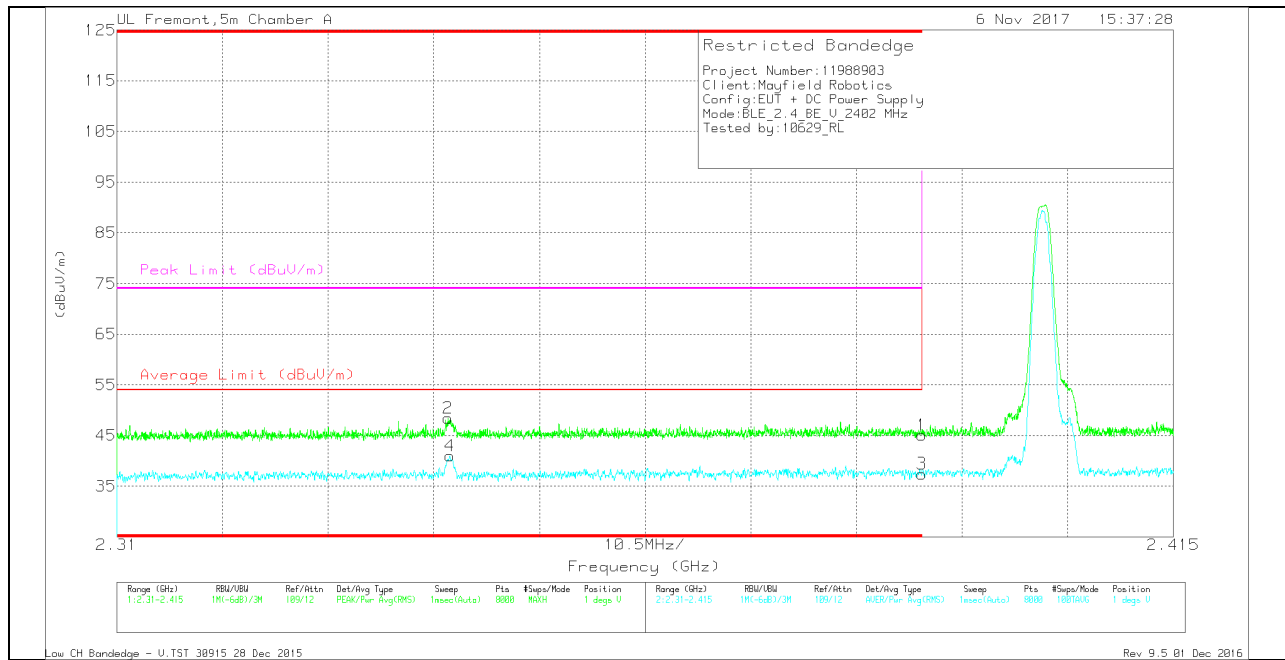
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFTS62 (dB/m)	Amp/Cb/Flt/Psd (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	36.27	Pk	31.8	-23.2	0	44.87	-	-	74	-29.13	139	245	H
2	* 2.343	39.92	Pk	31.6	-23.2	0	48.32	-	-	74	-25.68	139	245	H
3	* 2.39	26.55	RMS	31.8	-23.2	2.25	37.4	54	-16.6	-	-	139	245	H
4	* 2.343	30.96	RMS	31.6	-23.2	2.25	41.61	54	-12.39	-	-	139	245	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T662 (dB/m)	Amp/Ch/Filt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
1	* 2.39	36.52	Pk	31.8	-23.2	0	45.12	-	-	74	-28.88	1	236	V
2	* 2.343	40.06	Pk	31.6	-23.2	0	48.46	-	-	74	-25.54	1	236	V
3	* 2.39	26.59	RMS	31.8	-23.2	2.25	37.44	54	-16.56	-	-	1	236	V
4	* 2.343	30.34	RMS	31.6	-23.2	2.25	40.99	54	-13.01	-	-	1	236	V

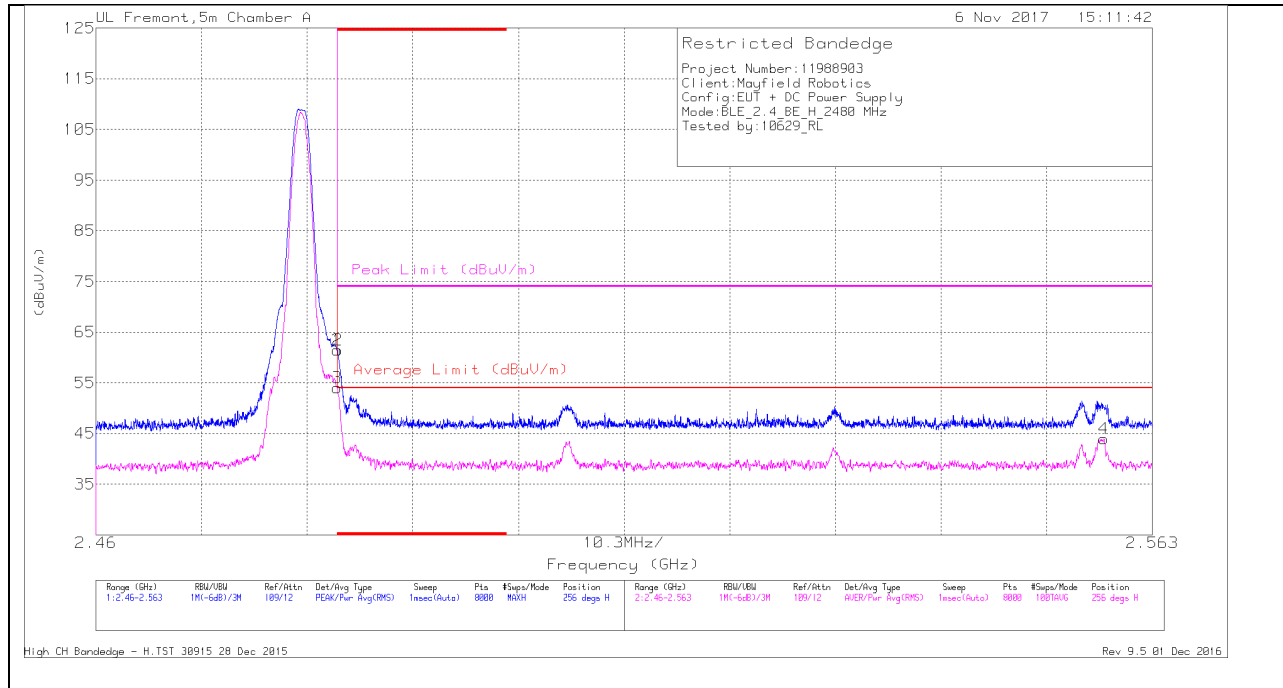
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

9.1.2. BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Trace Markers

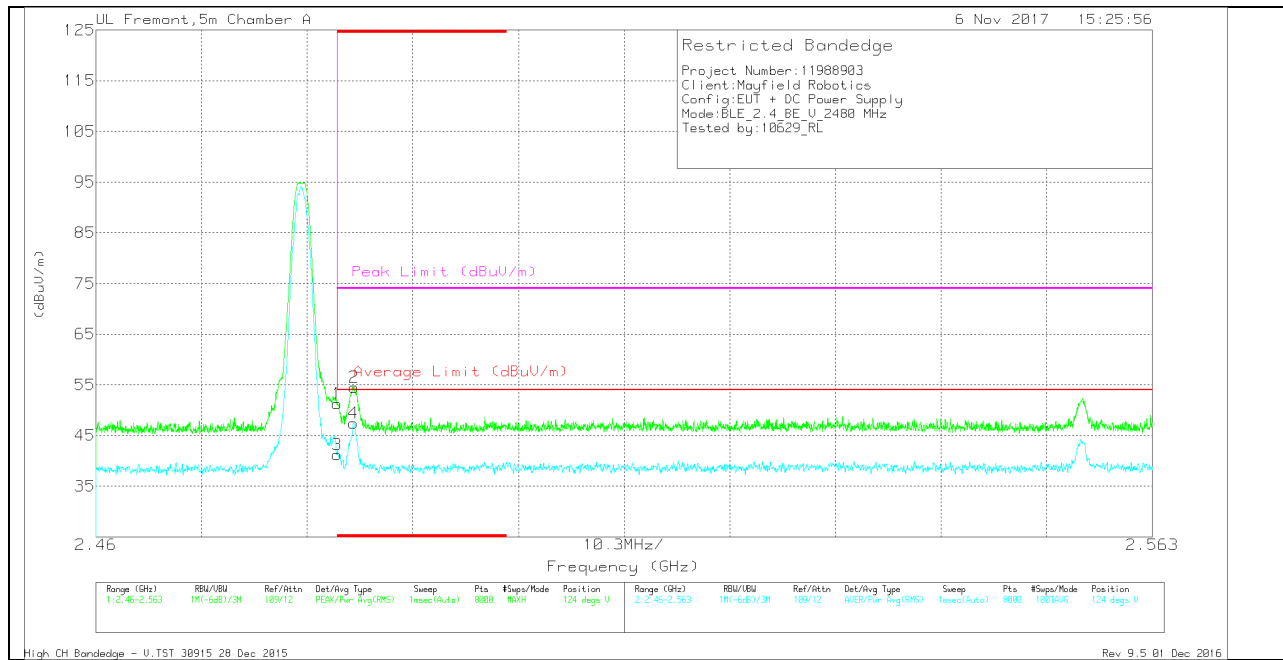
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Flt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
1	* 2.484	52.22	Pk	32.3	-23.1	0	61.42	-	-	74	-12.58	256	122	H
2	* 2.484	52.28	Pk	32.3	-23.1	0	61.48	-	-	74	-12.52	256	122	H
3	* 2.484	42.53	RMS	32.3	-23.1	2.25	53.98	54	-0.02	-	-	256	122	H
4	2.558	32.35	RMS	32.4	-23	2.25	44	54	-10	-	-	256	122	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Flt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
1	* 2.484	42.11	Pk	32.3	-23.1	0	51.31	-	-	74	-22.69	124	288	V
2	* 2.485	45.33	Pk	32.3	-23.1	0	54.53	-	-	74	-19.47	124	288	V
3	* 2.484	29.82	RMS	32.3	-23.1	2.25	41.27	54	-12.73	-	-	124	288	V
4	* 2.485	35.99	RMS	32.3	-23.1	2.25	47.44	54	-6.56	-	-	124	288	V

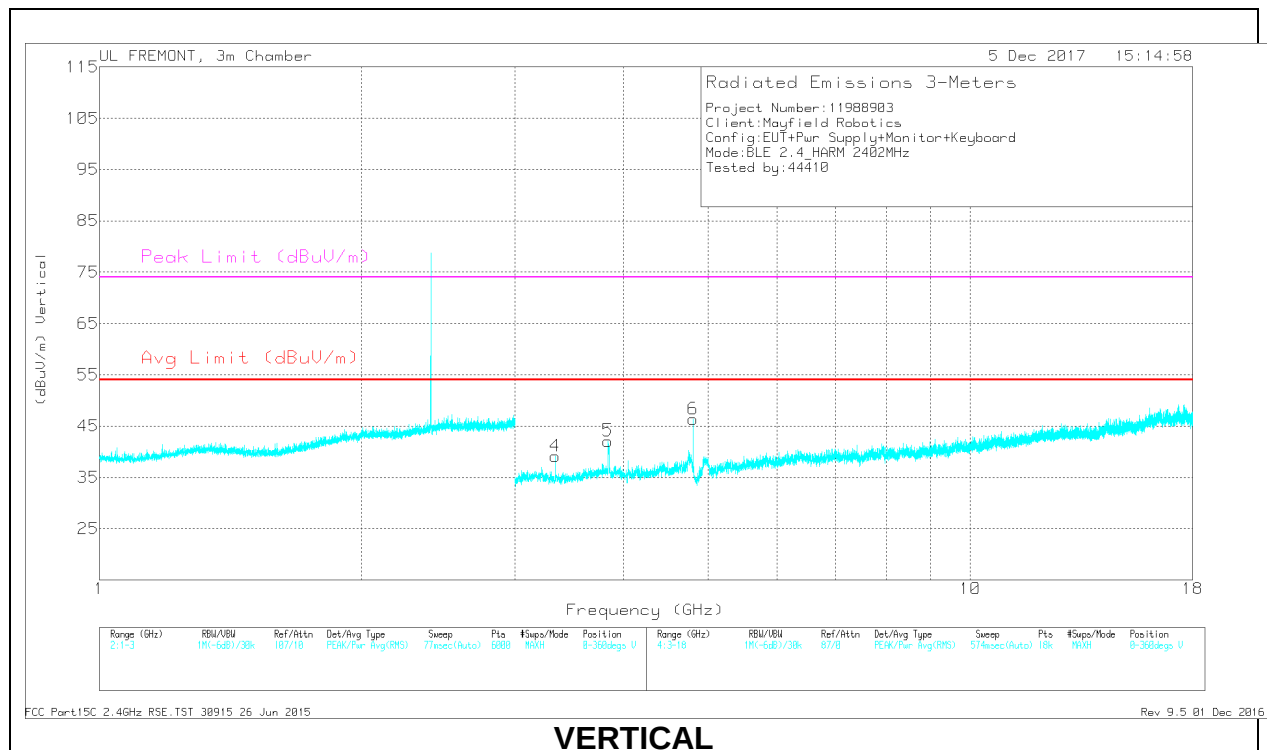
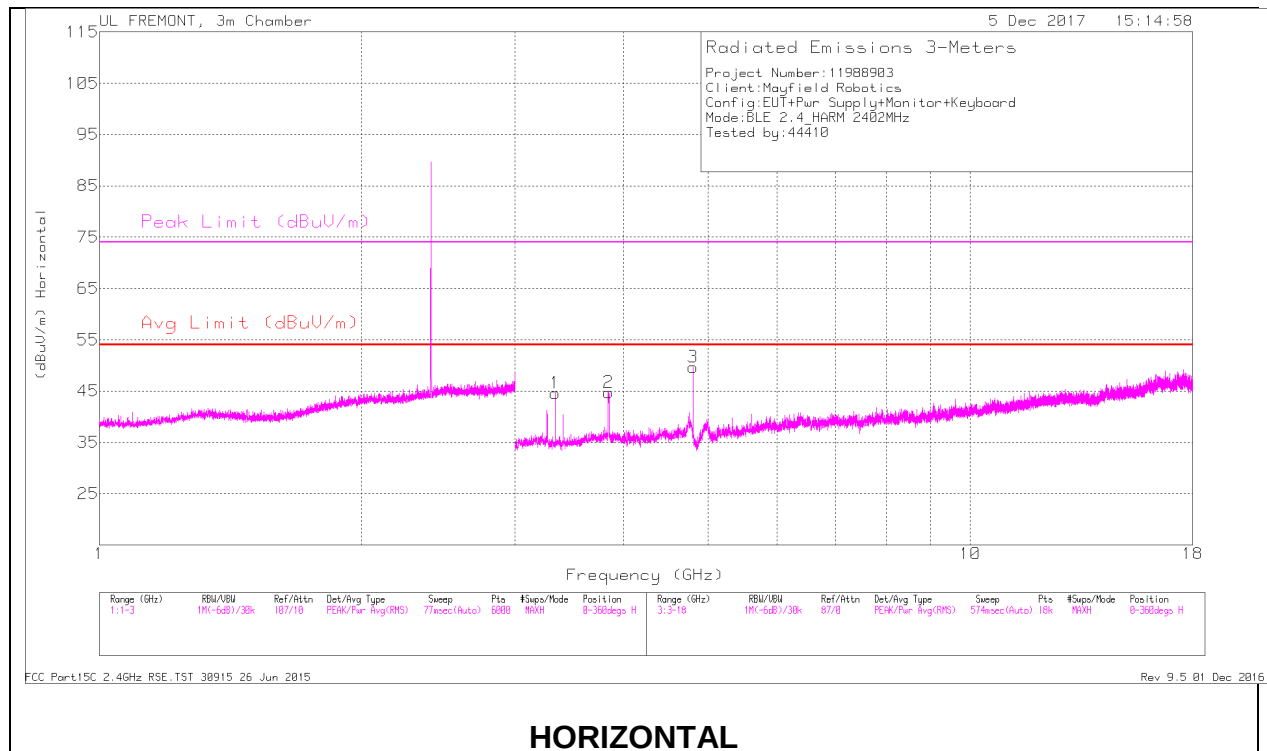
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

9.1.3. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



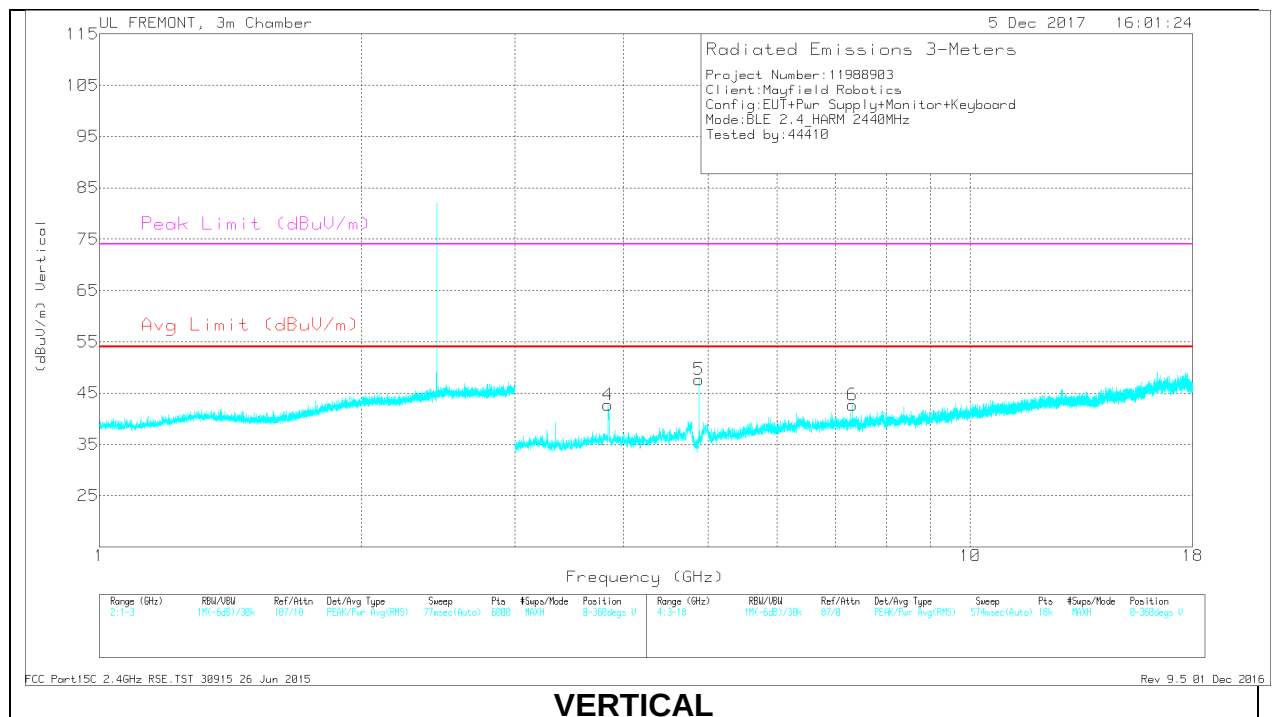
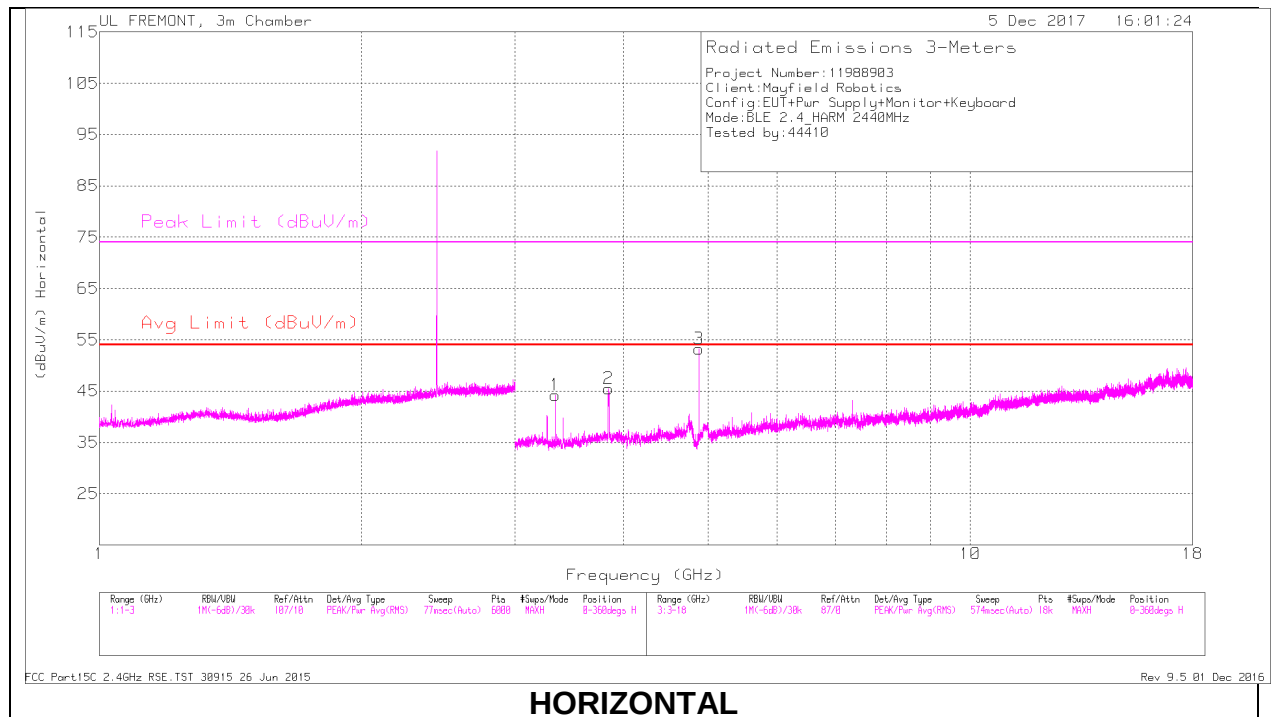
Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/P ad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.337	46.11	PK2	32.8	-29.5	0	49.41	-	-	74	-24.59	280	220	H
	3.337	39.69	MAv1	32.8	-29.5	2.25	45.24	54	-8.76	-	-	280	220	H
4	3.337	43.21	PK2	32.8	-29.5	0	46.51	-	-	74	-27.49	289	102	V
	3.337	34.25	MAv1	32.8	-29.5	2.25	39.8	54	-14.2	-	-	289	102	V
5	3.837	45.68	PK2	33.4	-29.1	0	49.98	-	-	74	-24.02	330	394	V
	3.838	34.21	MAv1	33.4	-29.1	2.25	40.76	54	-13.24	-	-	330	394	V
2	3.844	35.1	MAv1	33.4	-29	2.25	41.75	54	-12.25	-	-	26	271	H
	3.845	48.31	PK2	33.4	-29	0	52.71	-	-	74	-21.29	26	271	H
3	4.804	49.35	PK2	34	-28.3	0	55.05	-	-	74	-18.95	321	399	H
	4.804	42.23	MAv1	34	-28.3	2.25	50.18	54	-3.82	-	-	321	399	H
6	4.804	45.72	PK2	34	-28.3	0	51.42	-	-	74	-22.58	24	389	V
	4.804	37.61	MAv1	34	-28.2	2.25	45.66	54	-8.34	-	-	24	389	V

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL, RESULTS



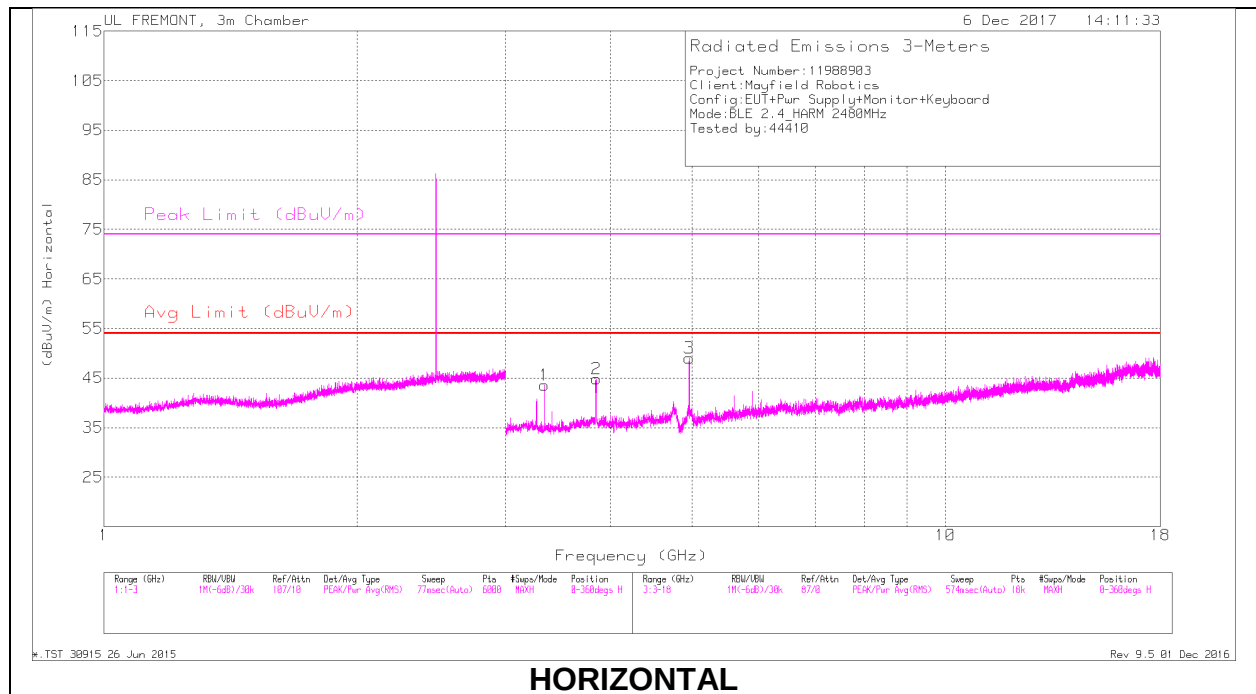
Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarization
1	3.337	46.47	PK2	32.8	-29.5	0	49.77	-	-	74	-24.23	280	118	H
	3.337	40.35	MAv1	32.8	-29.5	2.25	45.9	54	-8.1	-	-	280	118	H
4	3.838	46.66	PK2	33.4	-29.1	0	50.96	-	-	74	-23.04	322	396	V
	3.838	35.84	MAv1	33.4	-29.1	2.25	42.39	54	-11.61	-	-	322	396	V
2	3.845	48.85	PK2	33.4	-29	0	53.25	-	-	74	-20.75	25	285	H
	3.845	35.46	MAv1	33.4	-29	2.25	42.11	54	-11.89	-	-	25	285	H
5	4.88	49.3	PK2	34	-28	0	55.3	-	-	74	-18.7	314	209	H
	4.88	42.71	MAv1	34	-28	2.25	50.96	54	-3.04	-	-	314	209	H
3	4.88	47.25	PK2	34	-28	0	53.25	-	-	74	-20.75	261	374	V
	4.88	40.03	MAv1	34	-28	2.25	48.28	54	-5.72	-	-	261	374	V
6	7.319	40.19	PK2	35.5	-27	0	48.69	-	-	74	-25.31	293	226	V
	7.319	29.13	MAv1	35.5	-27	2.25	39.88	54	-14.12	-	-	293	226	V

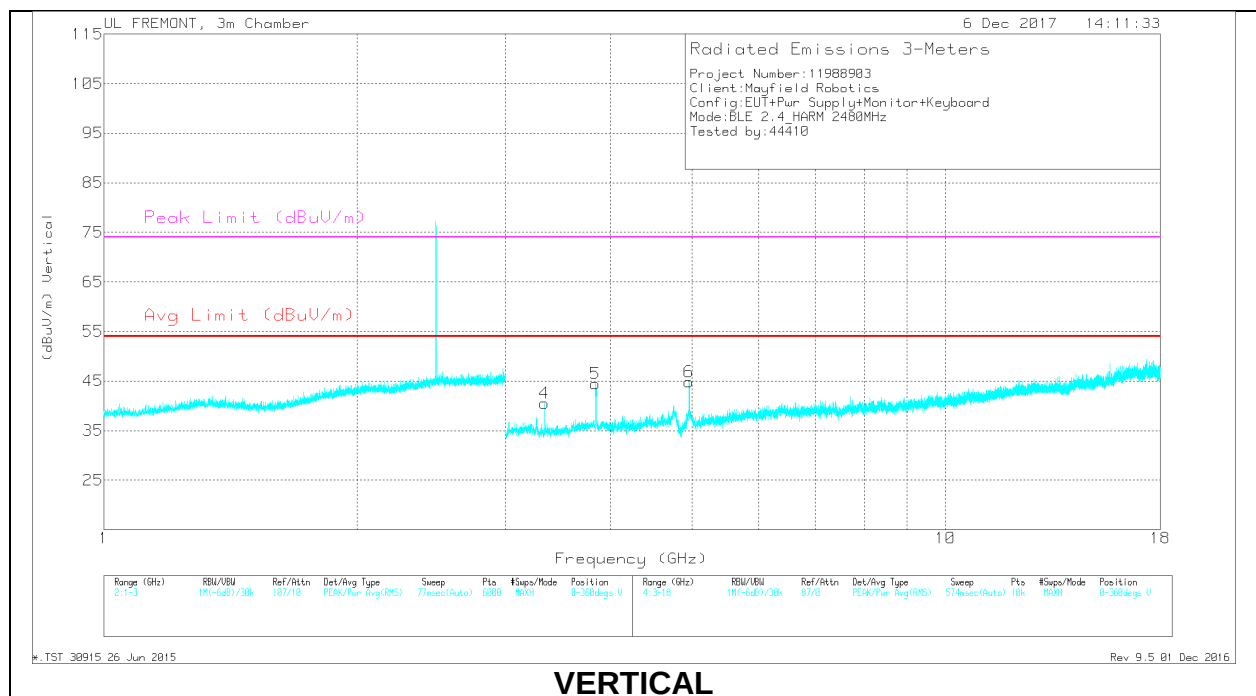
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL, RESULTS



HORIZONTAL



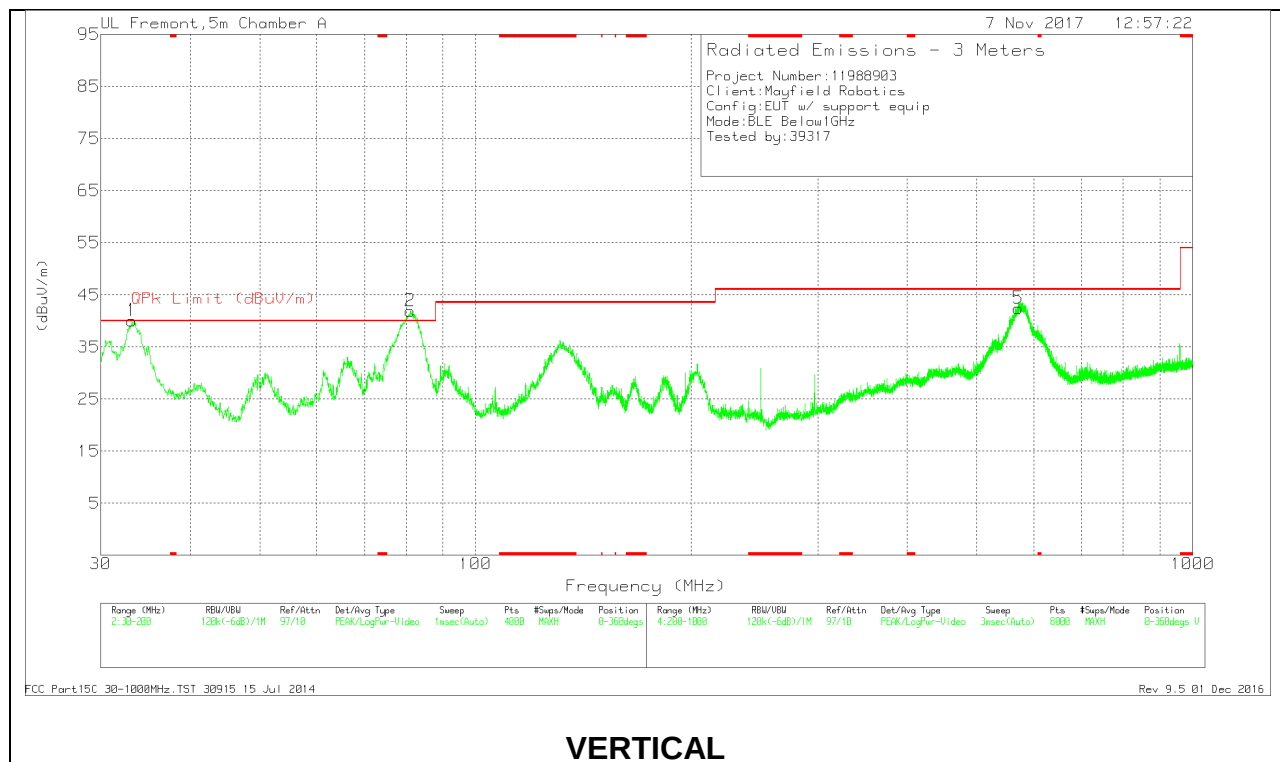
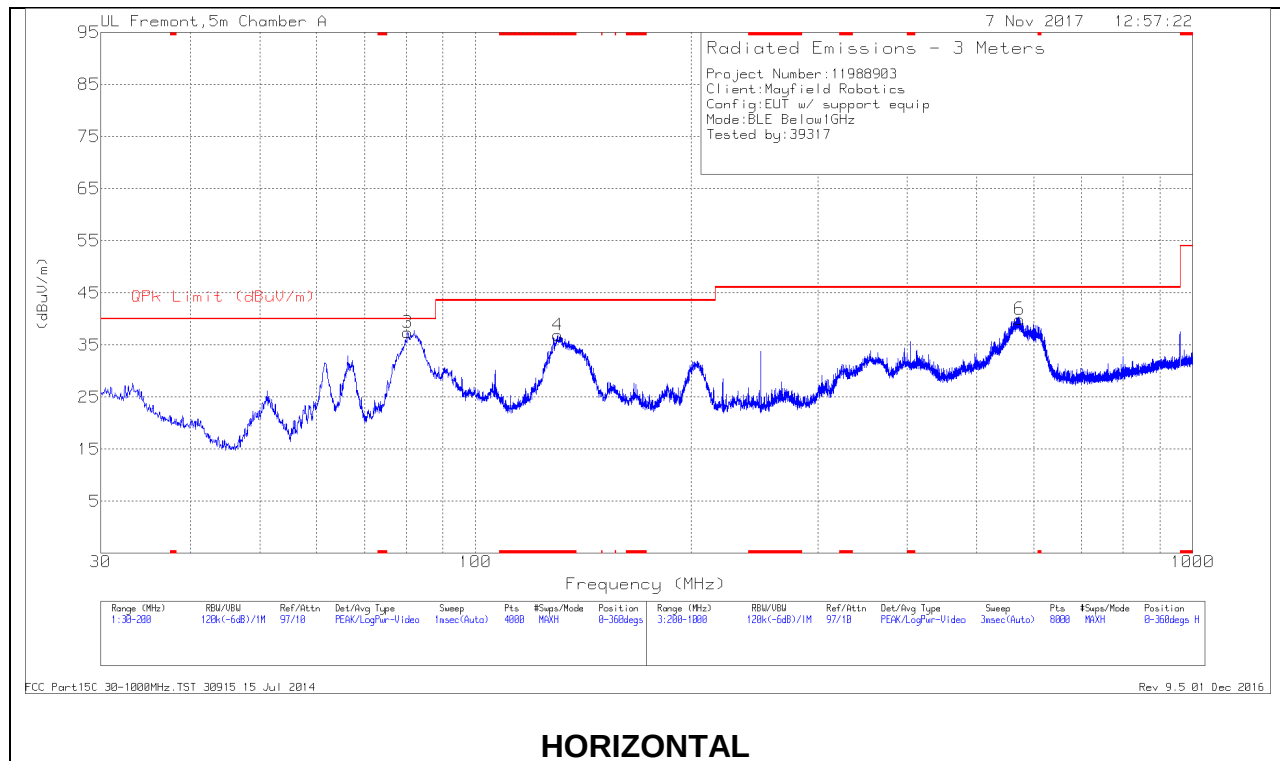
VERTICAL

Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Filtr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.337	45.63	PK2	32.8	-29.5	0	48.93	-	-	74	-25.07	285	297	H
	3.337	38.22	MAv1	32.8	-29.5	2.25	43.77	54	-10.23	-	-	285	297	H
4	3.337	43.81	PK2	32.8	-29.5	0	47.11	-	-	74	-26.89	234	100	V
	3.337	34.78	MAv1	32.8	-29.5	2.25	40.33	54	-13.67	-	-	234	100	V
5	3.836	47.84	PK2	33.4	-29.2	0	52.04	-	-	74	-21.96	323	388	V
	3.838	37.12	MAv1	33.4	-29.1	2.25	43.67	54	-10.33	-	-	323	388	V
2	3.844	36.05	MAv1	33.4	-29	2.25	42.7	54	-11.3	-	-	14	395	H
	3.846	49.39	PK2	33.4	-28.9	0	53.89	-	-	74	-20.11	14	395	H
6	4.959	49.91	PK2	34.1	-29.2	0	54.81	-	-	74	-19.19	304	355	H
	4.96	43.39	MAv1	34.1	-29.2	2.25	50.54	54	-3.46	-	-	304	355	H
3	4.96	46.74	PK2	34.1	-29.2	0	51.64	-	-	74	-22.36	235	367	V
	4.96	38.78	MAv1	34.1	-29.2	2.25	45.93	54	-8.07	-	-	235	367	V

PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

9.2. WORST-CASE BELOW 1 GHz



Below 1GHz DATA

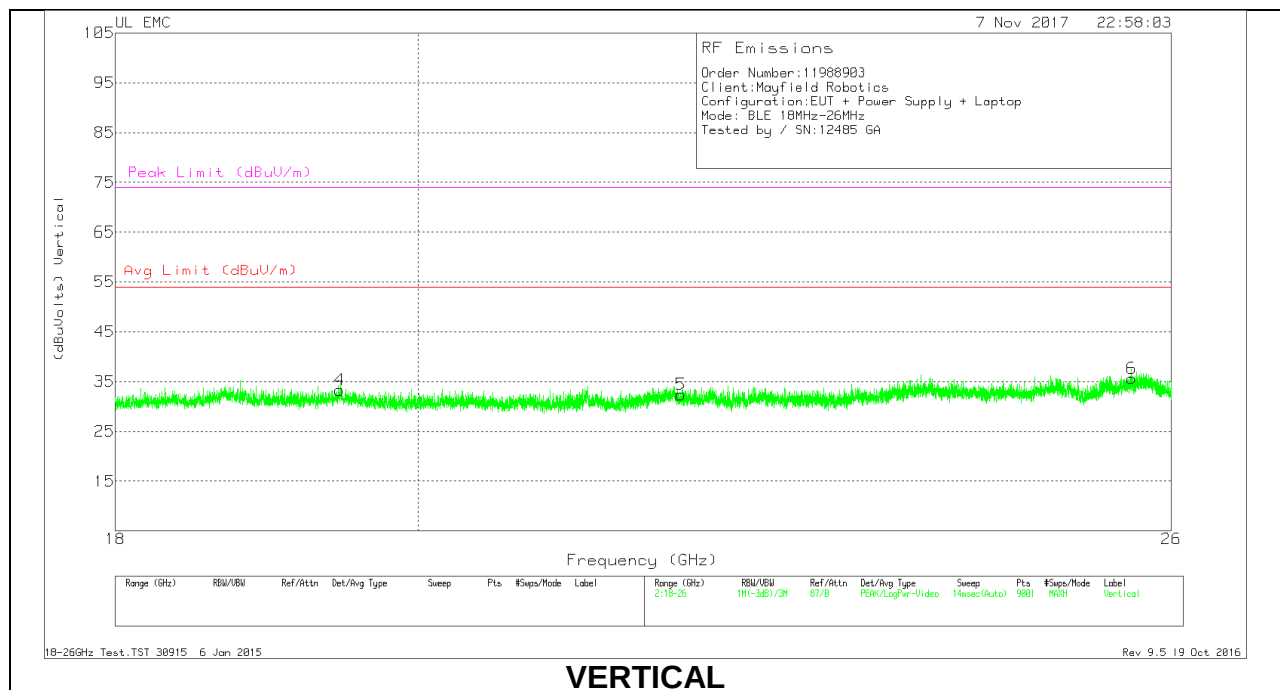
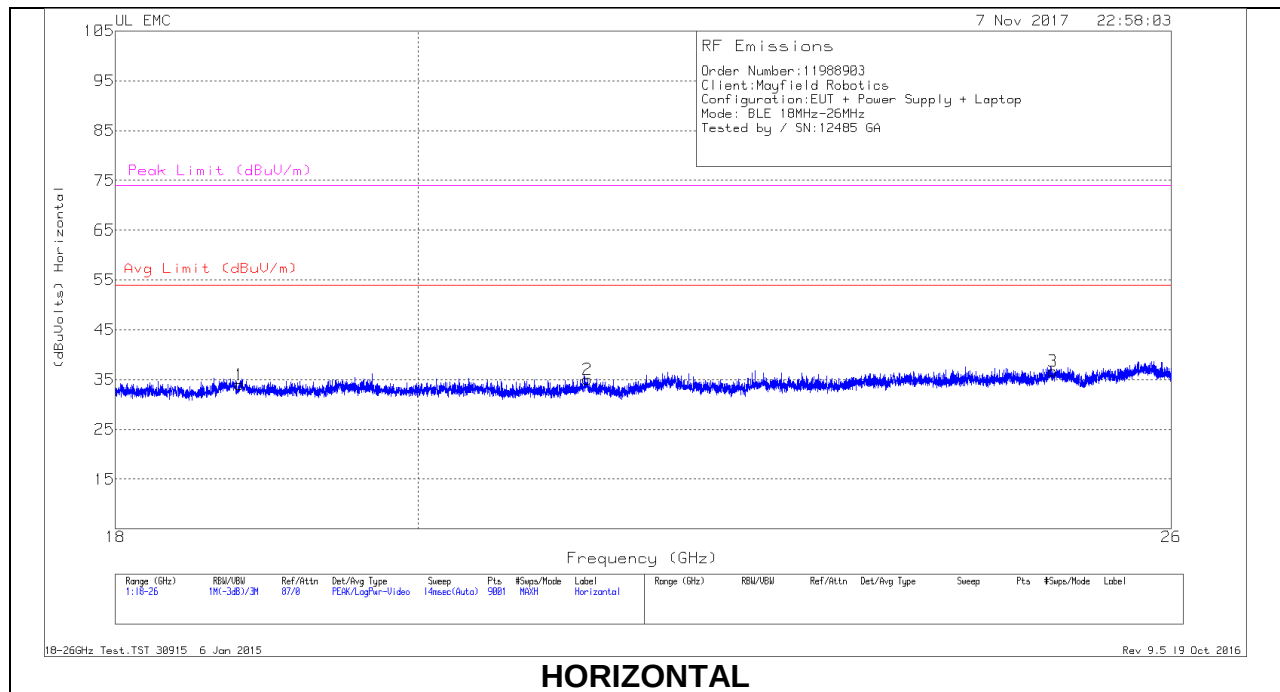
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 130.1559	40.03	Qp	18	-26	32.03	43.52	-11.49	100	201	H
1	33.1883	38.56	Qp	22.9	-27.2	34.26	40	-5.74	217	129	V
3	80.418	48.38	Qp	11.5	-26.6	33.28	40	-6.72	34	241	H
2	81.0982	52.85	Qp	11.4	-26.6	37.65	40	-2.35	332	107	V
5	570.9482	39.18	Qp	22.7	-25.2	36.68	46.02	-9.34	161	209	V
6	573.3485	42.42	Pk	22.7	-25.2	39.92	46.02	-6.1	0-360	200	H

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

Qp - Quasi-Peak detector

Pk - Peak detector

9.3. WORST-CASE 18-26GHz



18-26GHz DATA

Trace Markers

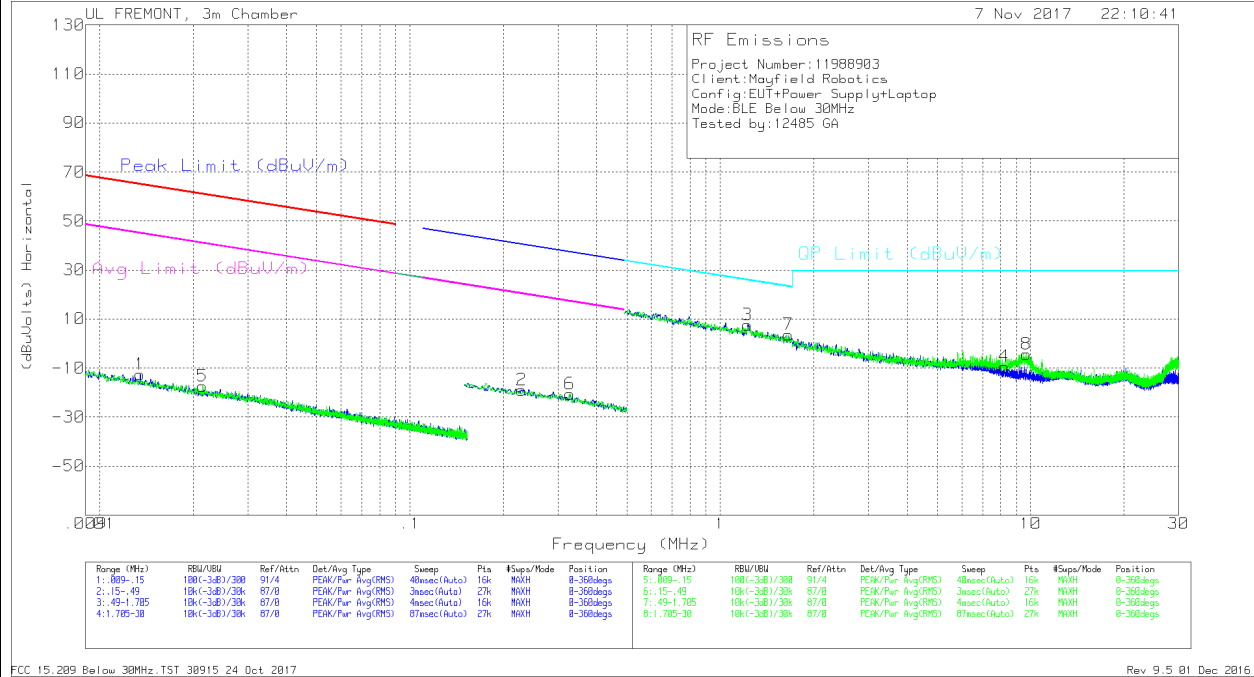
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	18.795	35.89	Pk	32.5	-24.9	-9.5	33.99	54	-20.01	74	-40.01
2	21.216	36.15	Pk	33.1	-24.7	-9.5	35.05	54	-18.95	74	-38.95
3	24.949	36.56	Pk	34.1	-24.5	-9.5	36.66	54	-17.34	74	-37.34
4	19.462	34.9	Pk	32.5	-24.6	-9.5	33.3	54	-20.7	74	-40.7
5	21.916	33.79	Pk	33.3	-25.2	-9.5	32.39	54	-21.61	74	-41.61
6	25.644	36.24	Pk	34	-25.1	-9.5	35.64	54	-18.36	74	-38.36

Pk - Peak detector

9.4. WORST-CASE BELOW 30 MHz

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL AND VERTICAL PLOTS



NOTE: KDB 414788 OATS and Chamber Correlation Justification

- Based 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.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.01352	50.67	Pk	15.3	1.4	-80	-12.63	64.97	-77.6	44.97	-57.6	-	-	-	-	0-360
5	.02148	46.34	Pk	14.8	1.4	-80	-17.46	60.94	-78.4	40.94	-58.4	-	-	-	-	0-360
2	.22918	45.51	Pk	13.9	1.5	-80	-19.09	-	-	-	-	40.41	-59.5	20.41	-39.5	0-360
6	.32763	44.12	Pk	13.8	1.5	-80	-20.58	-	-	-	-	37.3	-57.88	17.3	-37.88	0-360

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	1.22329	31.81	Pk	14.3	1.5	-40	7.61	25.88	-18.27	0-360
7	1.65698	27.62	Pk	14.4	1.5	-40	3.52	23.25	-19.73	0-360
4	8.22251	14.67	Pk	14.4	1.5	-40	-9.43	29.5	-38.93	0-360
8	9.69705	19.44	Pk	14.6	1.5	-40	-4.46	29.5	-33.96	0-360

Pk - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

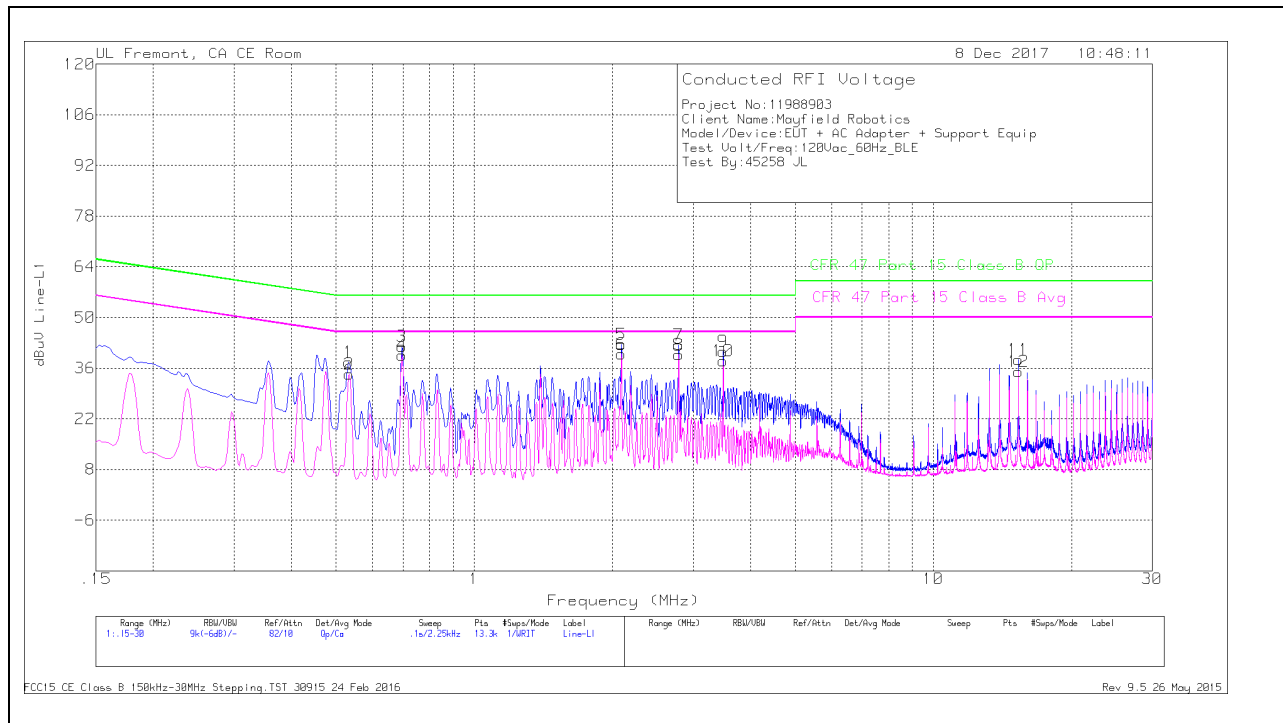
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

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

LINE 1 RESULTS

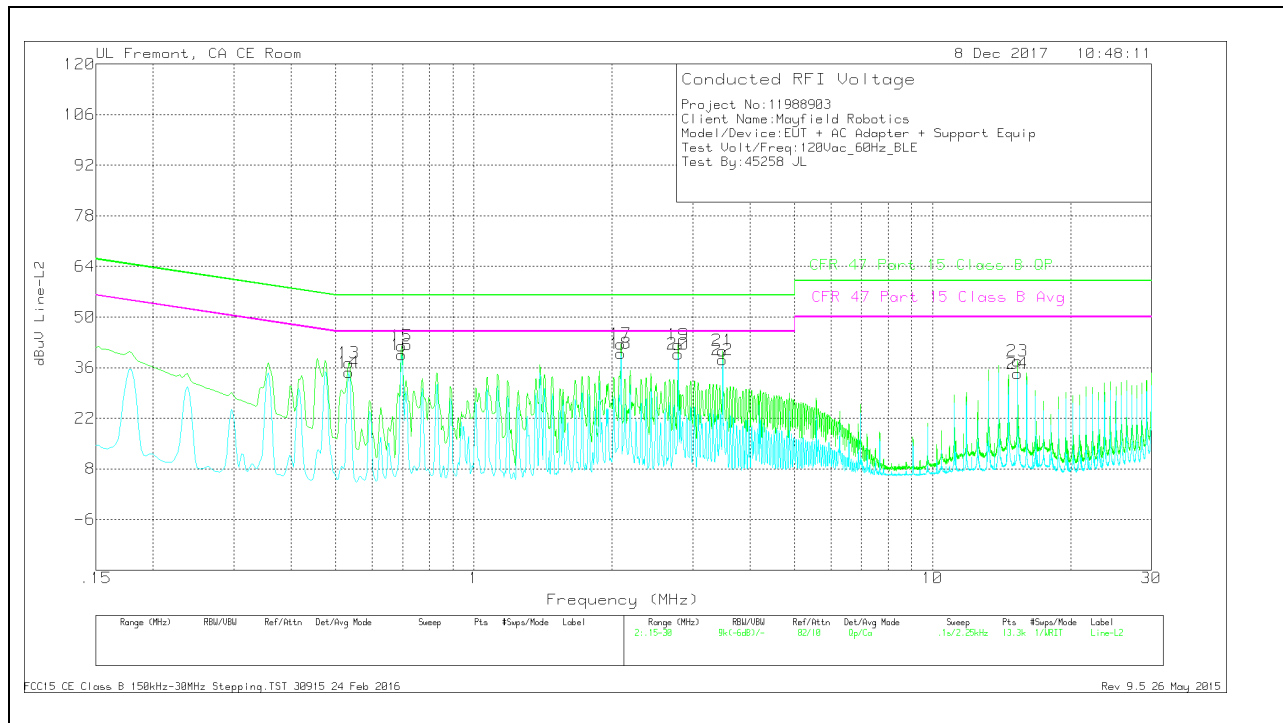


Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.5325	27.49	Qp	0	0	10.1	37.59	56	-18.41	-	-
2	.53475	24.18	Ca	0	0	10.1	34.28	-	-	46	-11.72
3	.69675	31.93	Qp	0	0	10.1	42.03	56	-13.97	-	-
4	.69675	29.44	Ca	0	0	10.1	39.54	-	-	46	-6.46
5	2.09175	32.39	Qp	0	.1	10.1	42.59	56	-13.41	-	-
6	2.09175	29.66	Ca	0	.1	10.1	39.86	-	-	46	-6.14
7	2.78925	32.14	Qp	0	.1	10.1	42.34	56	-13.66	-	-
8	2.78925	29.51	Ca	0	.1	10.1	39.71	-	-	46	-6.29
9	3.48675	30.24	Qp	0	.1	10.2	40.54	56	-15.46	-	-
10	3.48675	27.68	Ca	0	.1	10.2	37.98	-	-	46	-8.02
11	15.33525	27.71	Qp	0	.3	10.3	38.31	60	-21.69	-	-
12	15.3375	24.5	Ca	0	.3	10.3	35.1	-	-	50	-14.9

Qp - Quasi-Peak detector

Ca - CISPR average detection

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)
13	.53475	27.19	Qp	0	0	10.1	37.29	56	-18.71	-	-
14	.53475	24.54	Ca	0	0	10.1	34.64	-	-	46	-11.36
15	.69675	31.96	Qp	0	0	10.1	42.06	56	-13.94	-	-
16	.69675	29.44	Ca	0	0	10.1	39.54	-	-	46	-6.46
17	2.09175	32.4	Qp	0	.1	10.1	42.6	56	-13.4	-	-
18	2.09175	29.68	Ca	0	.1	10.1	39.88	-	-	46	-6.12
19	2.78925	32.19	Qp	0	.1	10.1	42.39	56	-13.61	-	-
20	2.78925	29.59	Ca	0	.1	10.1	39.79	-	-	46	-6.21
21	3.48675	30.4	Qp	0	.1	10.2	40.7	56	-15.3	-	-
22	3.48675	27.83	Ca	0	.1	10.2	38.13	-	-	46	-7.87
23	15.3375	27.22	Qp	0	.3	10.3	37.82	60	-22.18	-	-
24	15.33975	23.78	Ca	0	.3	10.3	34.38	-	-	50	-15.62

Qp - Quasi-Peak detector

Ca - CISPR average detection