CERTIFICATION TEST REPORT

Report Number. : 11988903-E1V2

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 27, 2018

Prepared by:
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NVLAP LAB CODE 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	6/11/2018	Initial Issue	---
V2	6/27/2018	Updated Section 1 Attestation Of Test Result, Date Tested; Updated Section 5.6 Description Of Test Setup; Updated Section 6 Test And Measurement Equipment; Updated Section 7 Measurement Method; Updated Section 8.6 Power Spectral Density Limits. Added Section 8.7.4 for worst-case co-location.	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: October 27th, 2017 – June 19, 2018

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, KDB 5588074 D01 v04, KDB 662911, 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.

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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:

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.84 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%.

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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 conducted output power as follows:

		Peak		Average	
Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)	Output Power (dBm)	Output Power (mW)
2Tx					
2412 - 2462	802.11b	14.83	30.41	12.28	16.90
2412 - 2462	802.11g	23.96	248.89	15.34	34.20
2412 - 2462	802.11n HT20	24.61	289.07	14.08	25.59
2422 - 2452	802.11n HT40	25.07	321.37	15.94	39.26

List of test reduction and modes covering other modes:

Frequency Range (MHz)	Mode	Covered by
2412 - 2462	802.11b 1Tx	802.11b CDD 2Tx
2412 - 2462	802.11g 1Tx	802.11n HT20 CDD 2Tx
2412 - 2462	802.11n HT20 1Tx	802.11n HT20 CDD 2Tx
2412 - 2452	802.11n HT40 1Tx	802.11n HT40 CDD 2Tx

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Band (GHz)	Antenna Gain (dBi)	
	Chain 0	Chain 1
2.4	3.10	3.10

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Windows 10

The test utility software used during testing was RT5x7xQA v1.0.8.0

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:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0

For MIMO modes, the 2Tx emission testing was considered as a worst case scenario and was performed at power levels, per transmit chain, greater than or equal to the maximum power in any 1Tx mode.

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.

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Description	Manufacturer	Model	Serial Number
Laptop	Lenovo	X1 Carbon	R9-0JM36P
AC/DC Adapter	Lenovo	ADL170NDC2A	11S36200317ZZ40077C20J
DC Power Supply	BK Precesion	1550	238D15253
USB ethernet adapter	Cable Matters Inc.	202013	TS3G9FQ7
EUT AC Adapter	DYS	DYS902-190473W	NSN
Monitor	ODROID-VU	GH620A	YXD090TN02-40NMO1

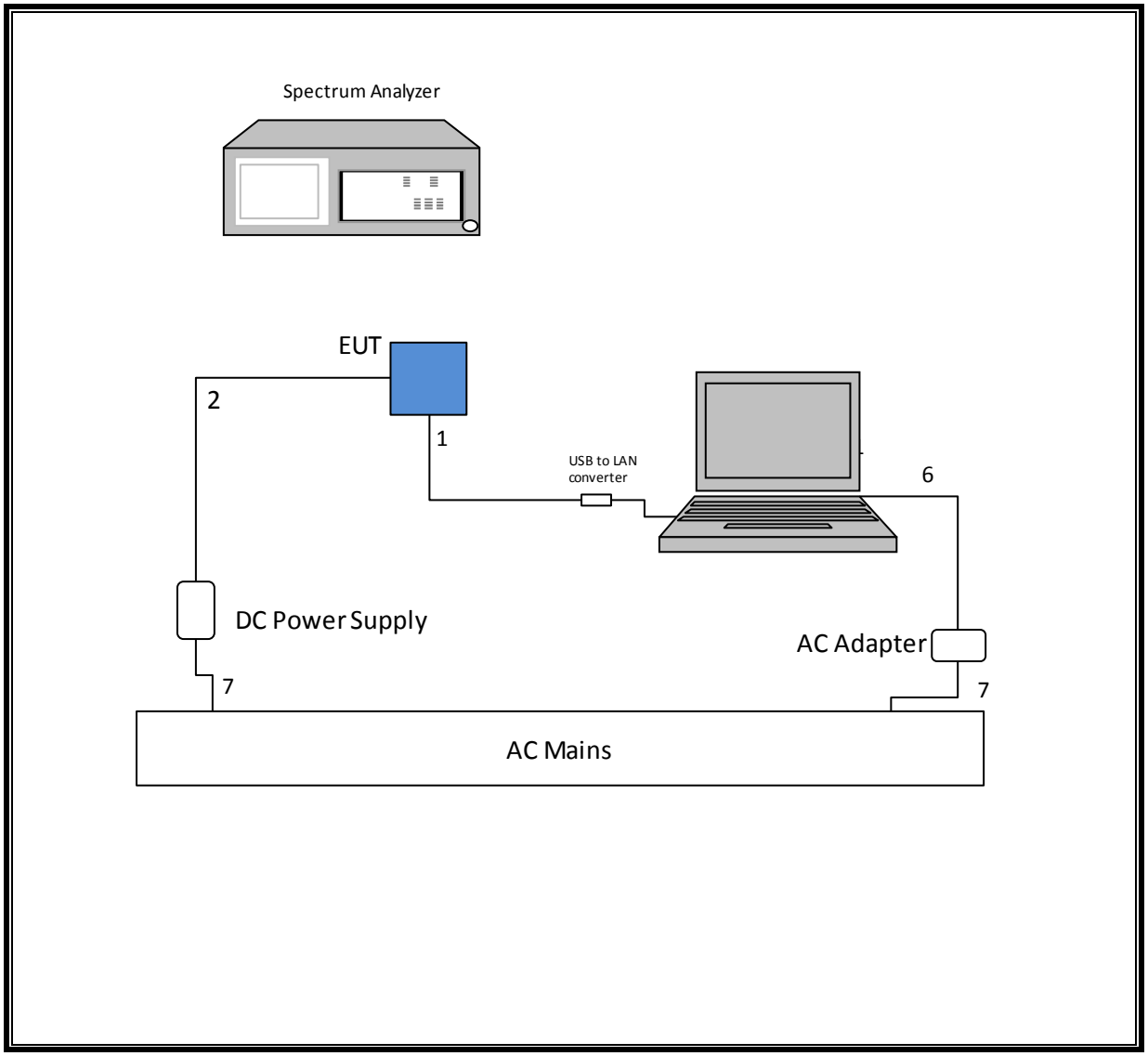
I/O CABLES

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	Barrle	shielded	1.5	To laptop
7	AC	2	3-prong	shielded	1	

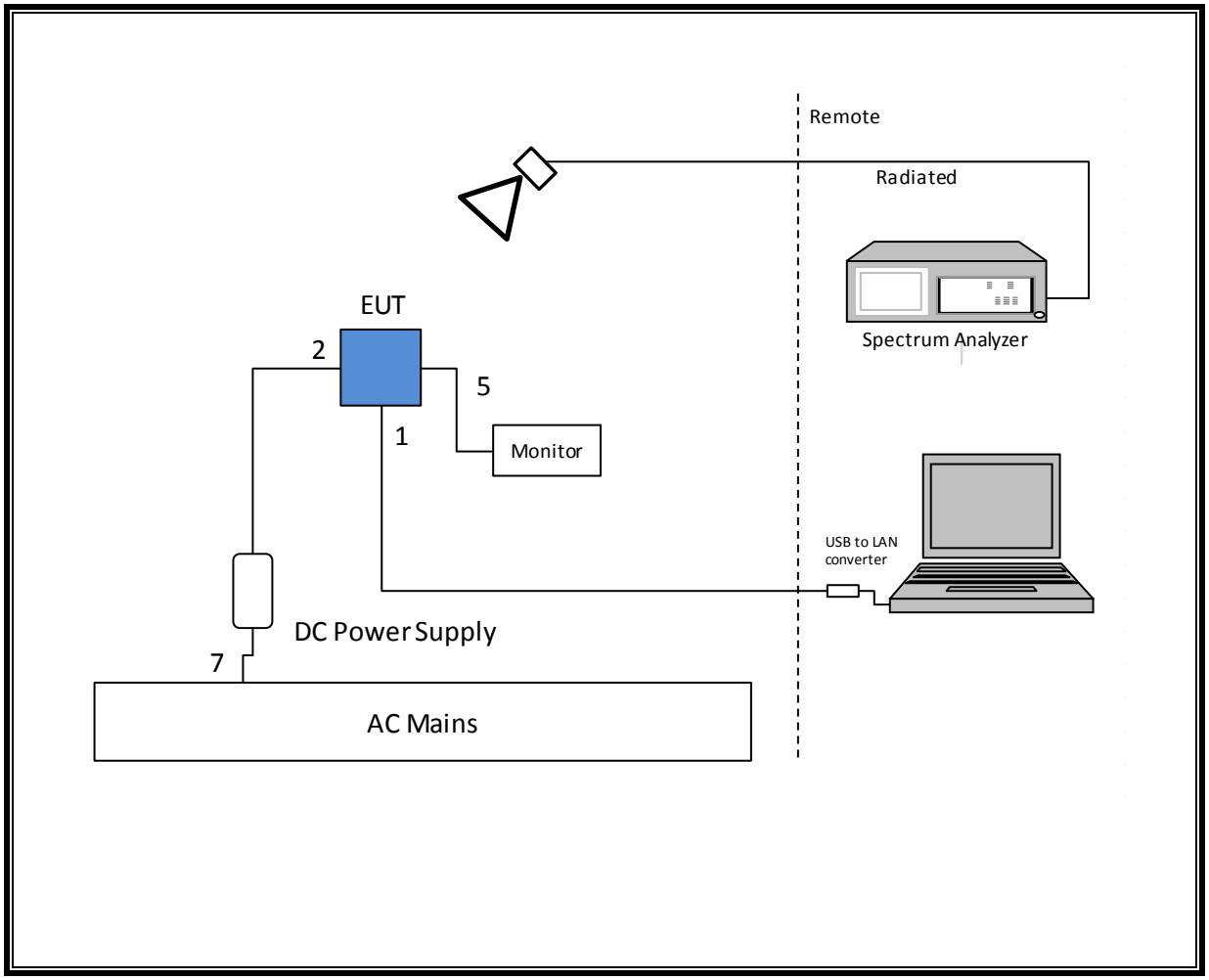
TEST SETUP

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

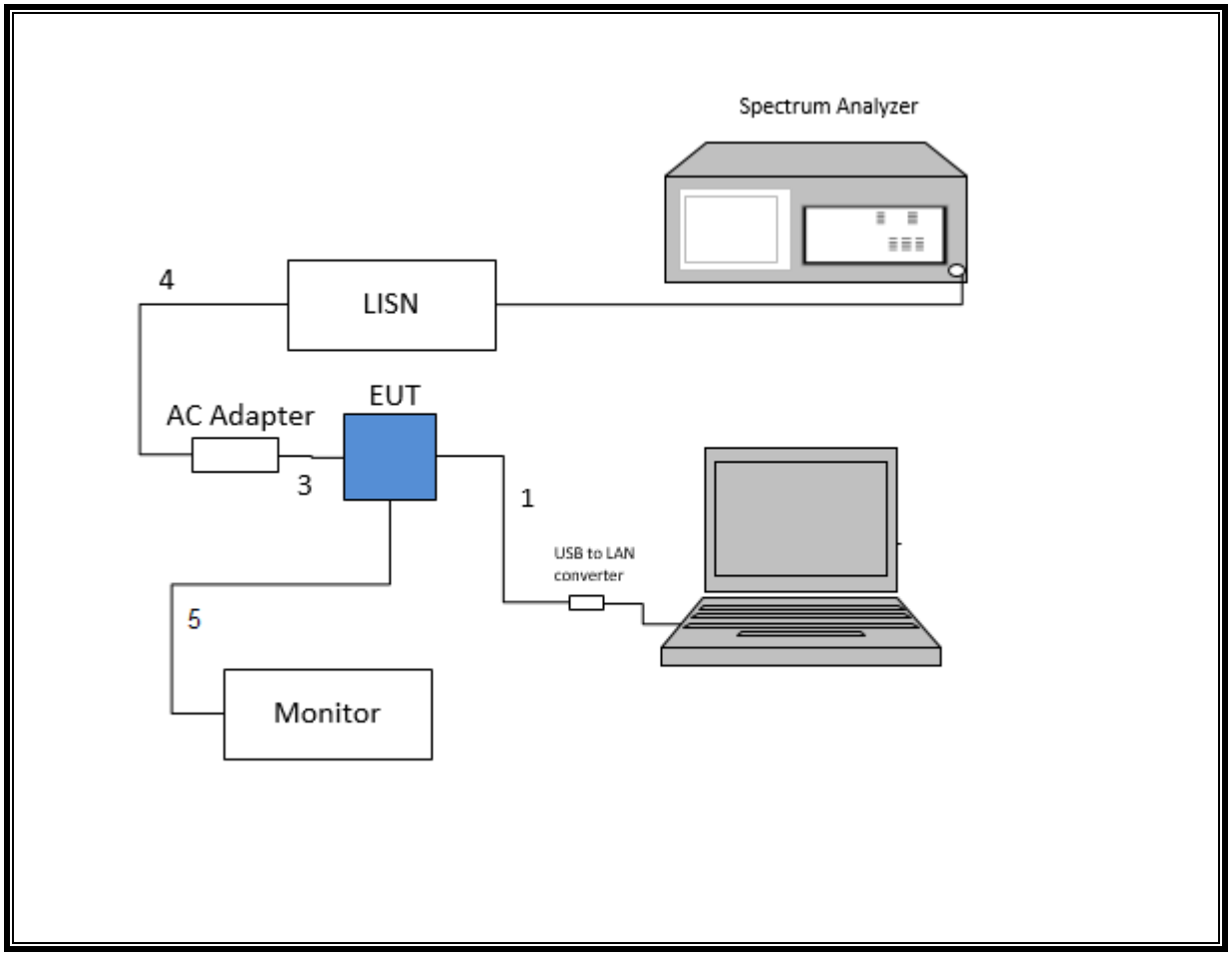
SETUP DIAGRAM FOR CONDUCTED TESTS



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	10/10/18	10/10/17
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
Spectrum Analyzer, 40GHz	Keysight	N9030A	T1450	02/05/19	02/05/18
Power Splitter	Weinschel	1594	T719	N/A	N/A
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	v9.5 Dec 01, 2016
Antenna Port Software	UL	UL RF	v7.4.1 Oct 20, 2017

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 METHOD

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

6 dB BW: KDB 558074 D01 v04, Section 8.1.

99% BW: ANSI C63.10-2013, Section 6.9.3.

Output Power: KDB 558074 D01 v04, Section 9.1.3.

Average Power: KDB 558074 D01 v04, Section 9.2.3.2.

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

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v04, Section 11.1 (b).

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.

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8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 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)
802.11b 2Tx CDD	90.800	90.800	1.000	100.00%	0.00	0.010
802.11n HT20 2Tx CDD	128.000	128.000	1.000	100.00%	0.00	0.010
802.11n HT40 2Tx CDD	128.000	128.000	1.000	100.00%	0.00	0.010

DUTY CYCLE PLOTS

802.11b 2Tx CDD MODE

802.11n HT20 2Tx CDD MODE

802.11n HT40 2Tx CDD MODE

8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

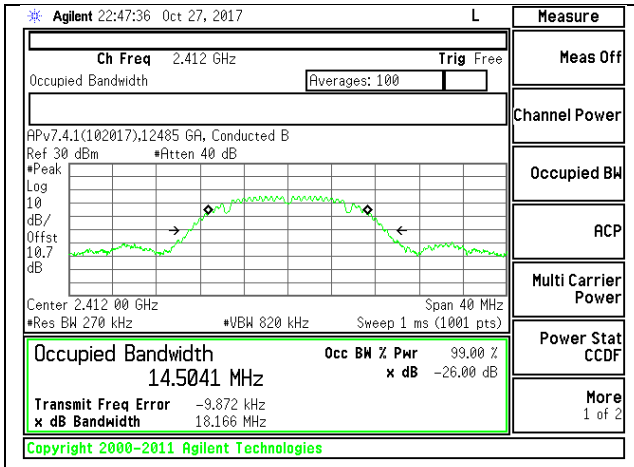
RESULTS

8.2.1. 802.11b MODE

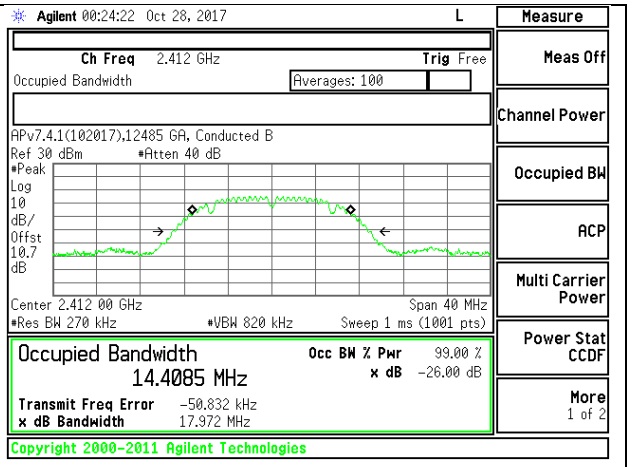
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	14.5041	14.4085
Mid 6	2437	14.4189	14.4396
High 11	2462	14.3394	14.2994

LOW CHANNEL 1

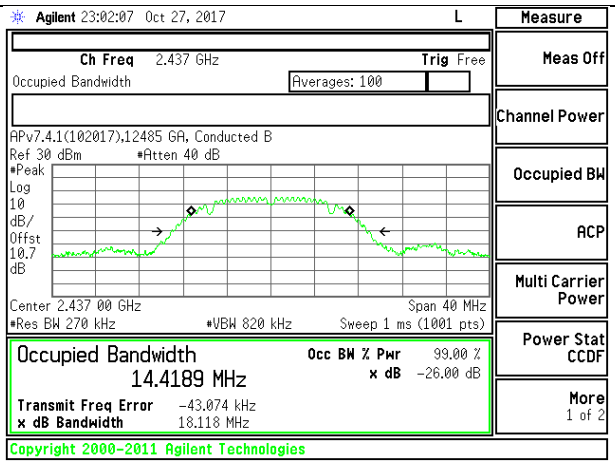


LOW CHANNEL 1 CHAIN 0

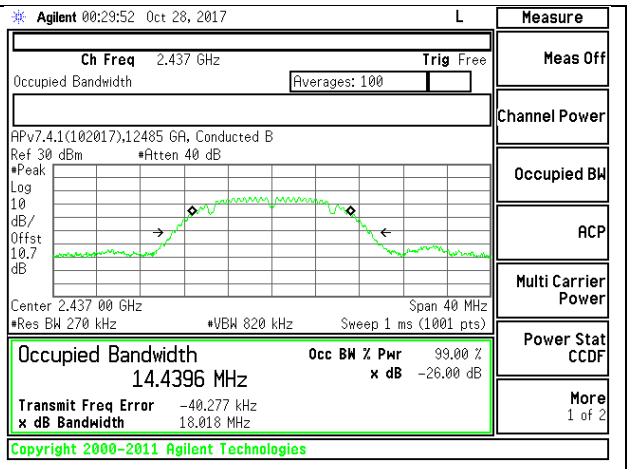


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

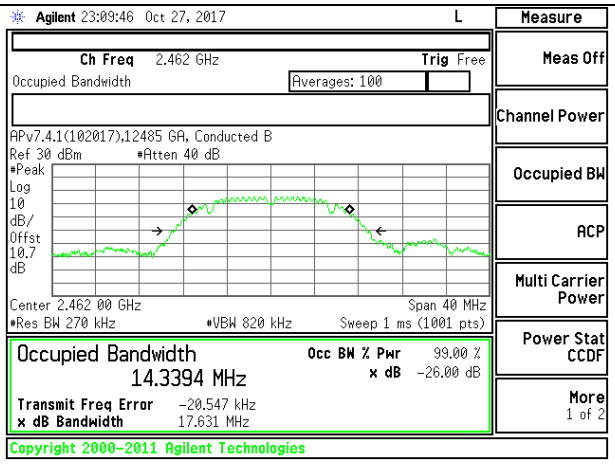


MID CHANNEL 6 CHAIN 0

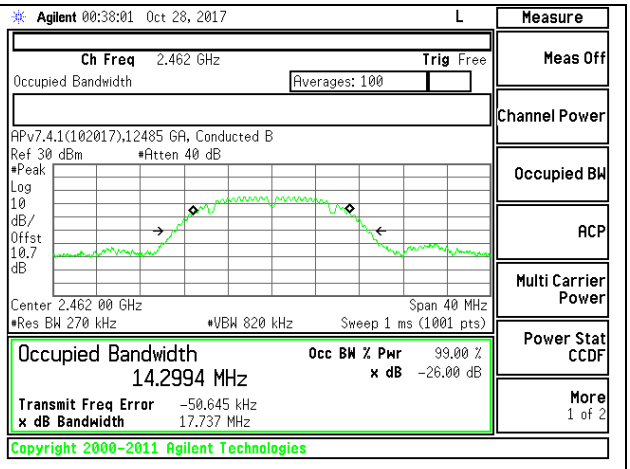


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



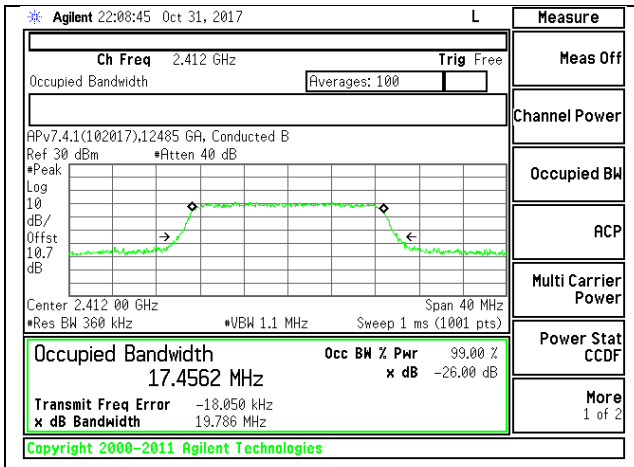
HIGH CHANNEL 11 CHAIN 1

8.2.2. 802.11n HT20 MODE

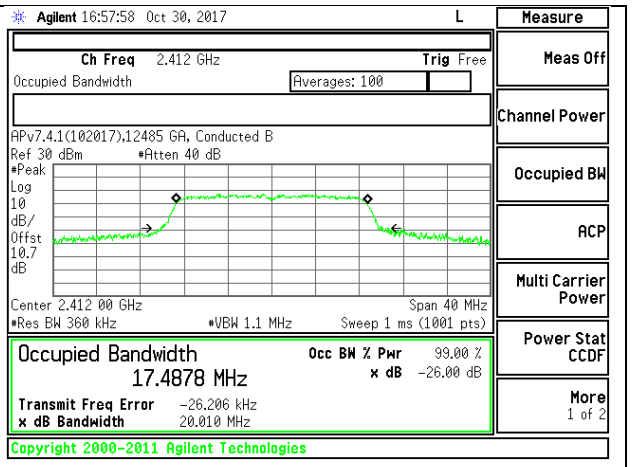
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	17.4562	17.4878
Mid 6	2437	17.4571	17.4660
High 11	2462	17.4907	17.4910

LOW CHANNEL 1

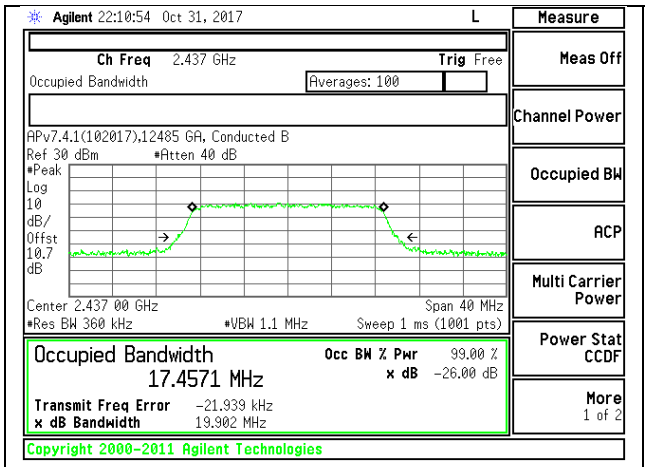


LOW CHANNEL 1 CHAIN 0

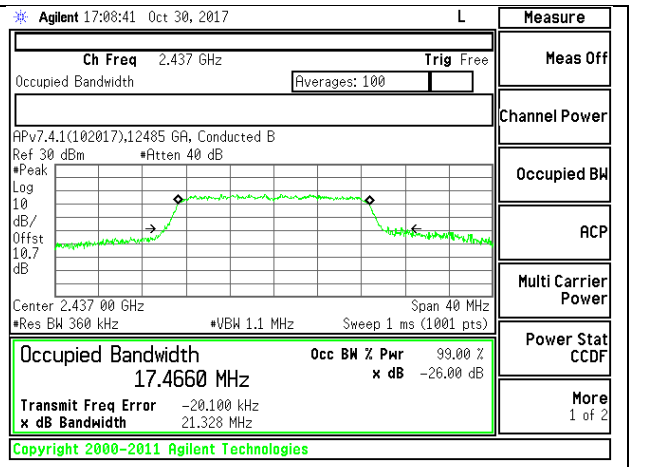


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

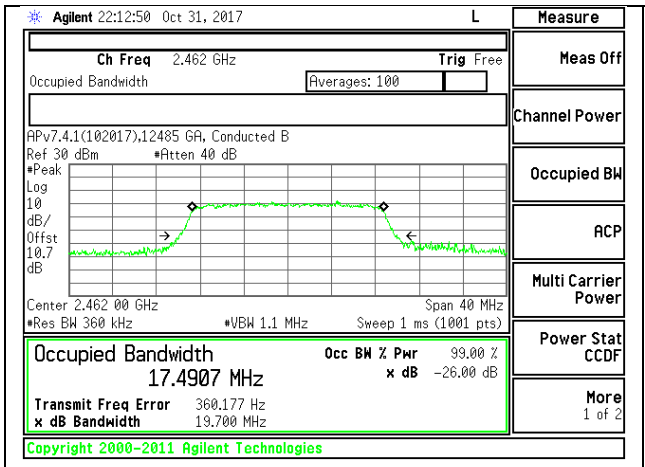


MID CHANNEL 6 CHAIN 0

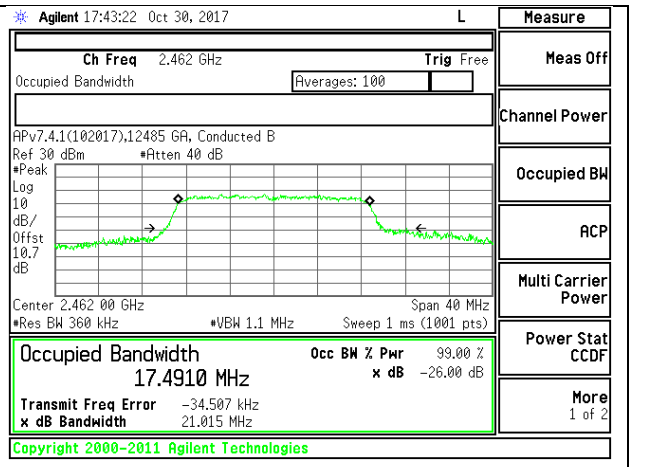


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



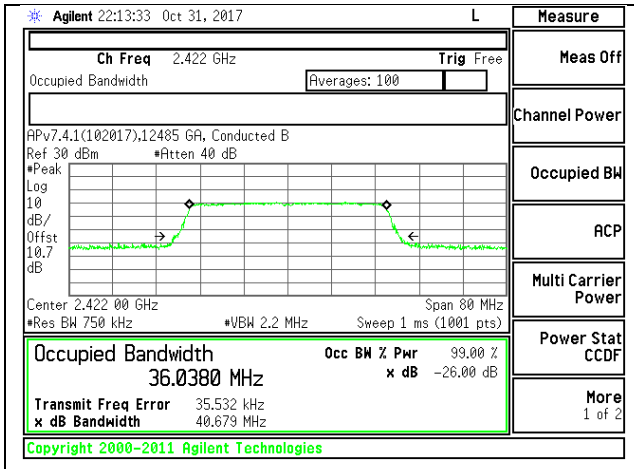
HIGH CHANNEL 11 CHAIN 1

8.2.3. 802.11n HT40 MODE

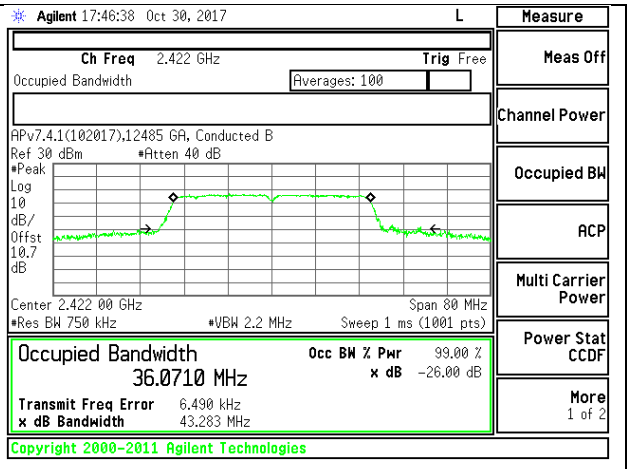
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 3	2422	36.0380	36.0710
Low 4	2427	36.3120	36.0200
Low 5	2432	36.0230	36.0210
Mid 6	2437	35.9904	36.0394
High 7	2442	36.0620	36.0550
High 8	2447	36.0780	35.8170
High 9	2452	35.9965	36.1025

LOW CHANNEL 3

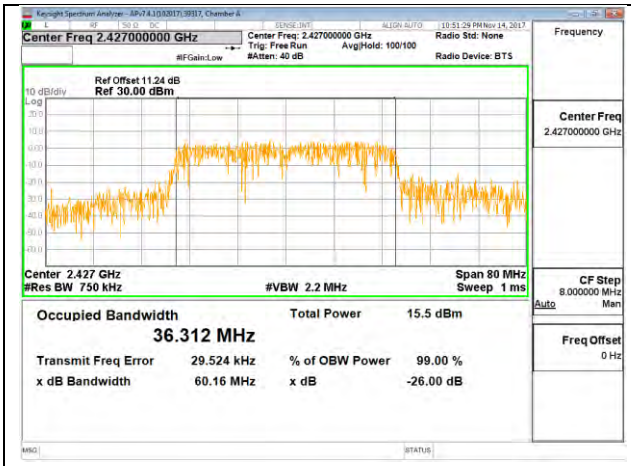


LOW CHANNEL 3 CHAIN 0



LOW CHANNEL 3 CHAIN 1

LOW CHANNEL 4

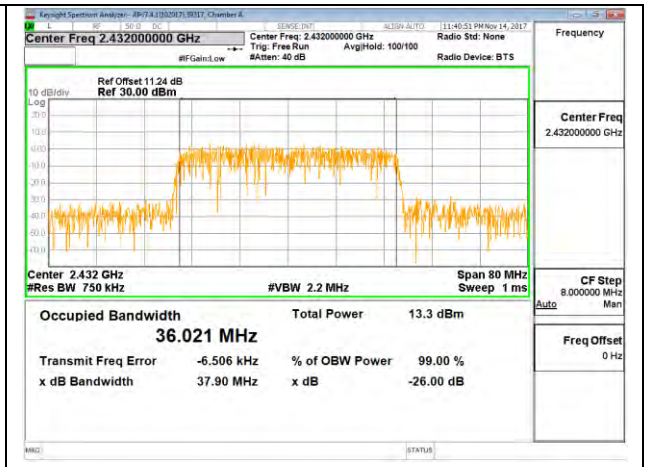


LOW CHANNEL 4 CHAIN 0

LOW CHANNEL 4 CHAIN 1

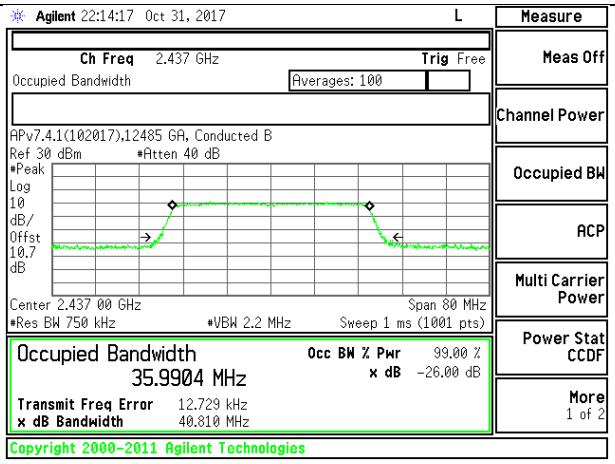
LOW CHANNEL 5

LOW CHANNEL 5 CHAIN 0

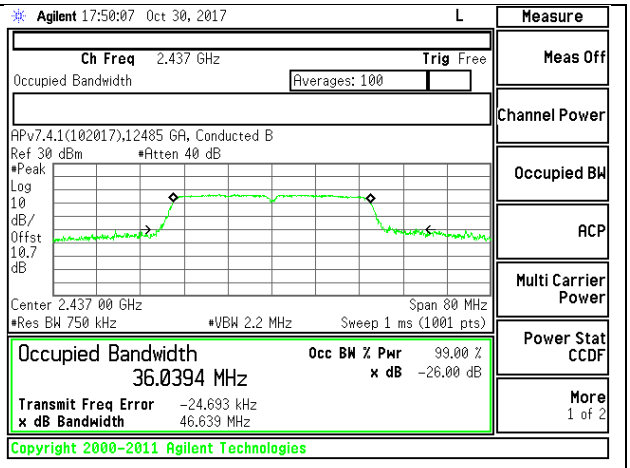


LOW CHANNEL 5 CHAIN 1

MID CHANNEL 6

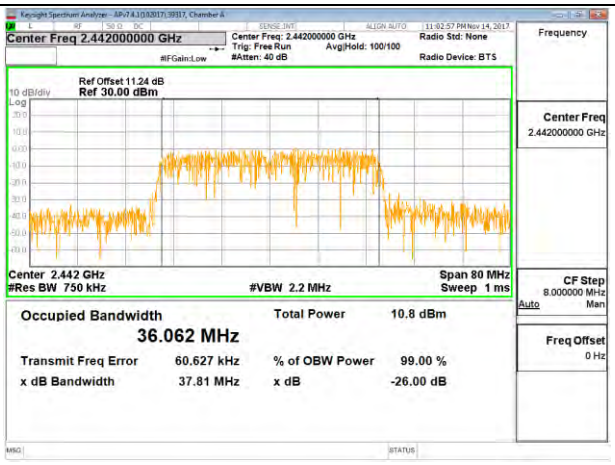


MID CHANNEL 6 CHAIN 0

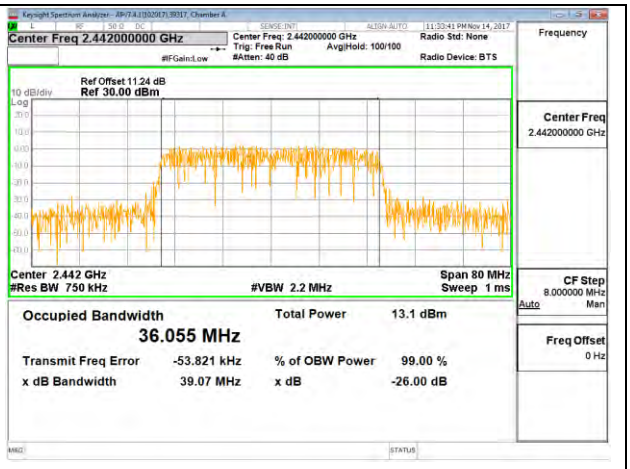


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 7

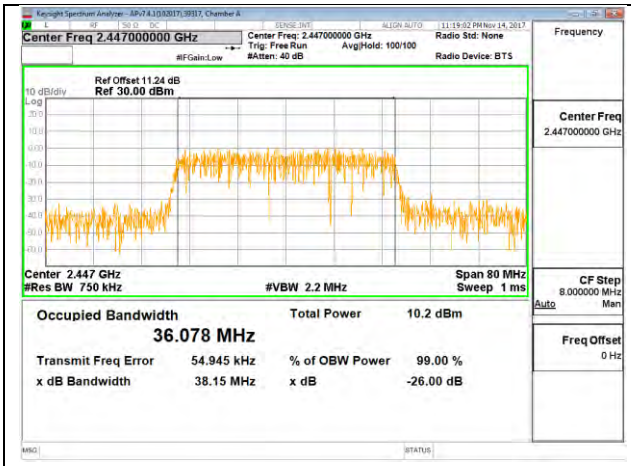


HIGH CHANNEL 7 CHAIN 0



HIGH CHANNEL 7 CHAIN 1

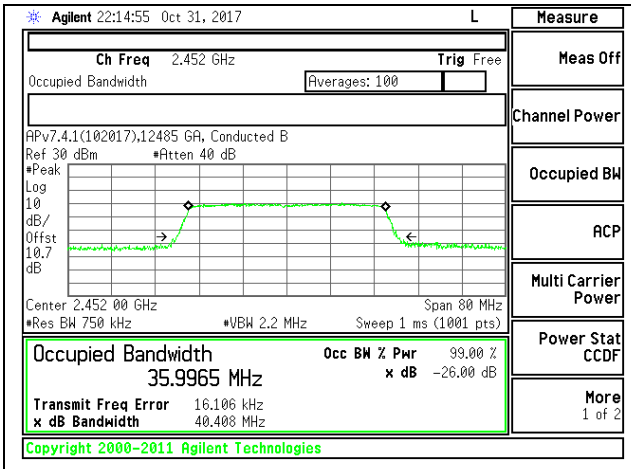
HIGH CHANNEL 8



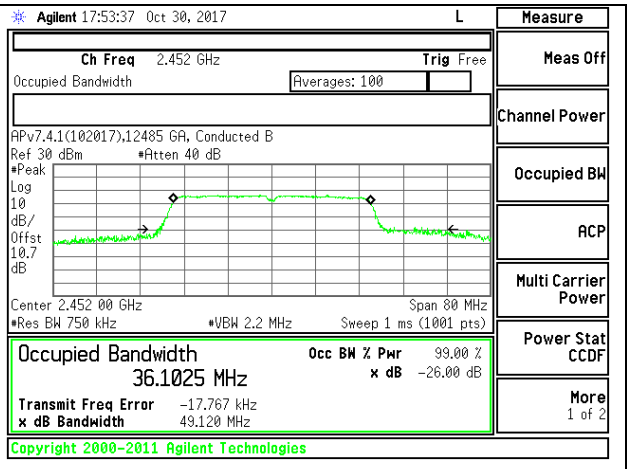
HIGH CHANNEL 8 CHAIN 0

HIGH CHANNEL 8 CHAIN 1

HIGH CHANNEL 9



HIGH CHANNEL 9 CHAIN 0



HIGH CHANNEL 9 CHAIN 1

8.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

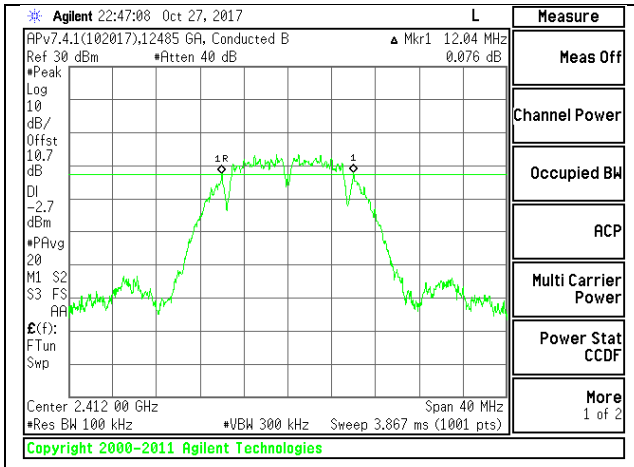
RESULTS

8.3.1. 802.11b MODE

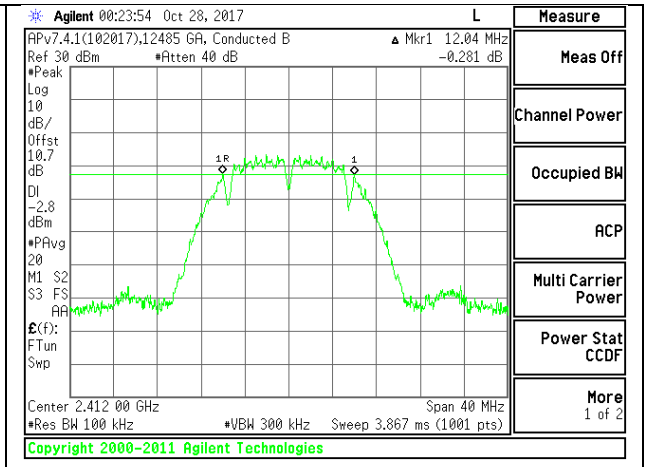
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	12.04	12.04	0.5
Mid 6	2437	11.08	11.12	0.5
High 11	2462	12.08	11.12	0.5

LOW CHANNEL 1

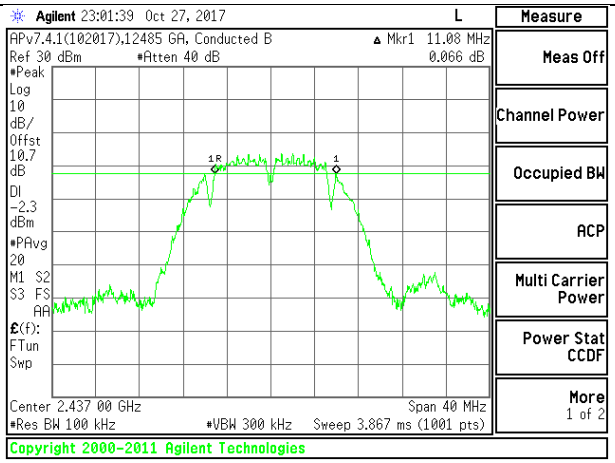


LOW CHANNEL 1 CHAIN 0

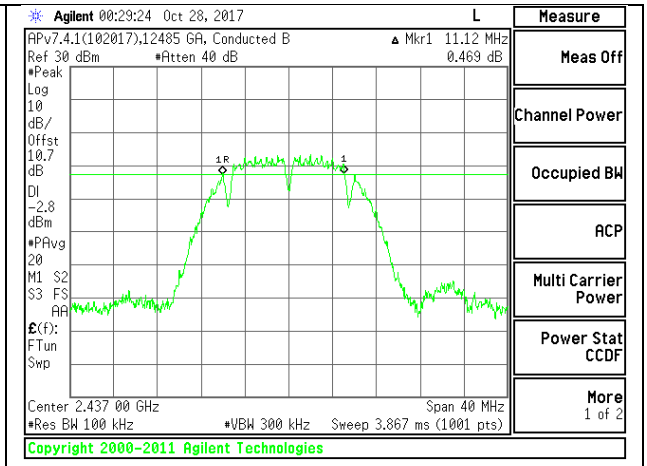


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

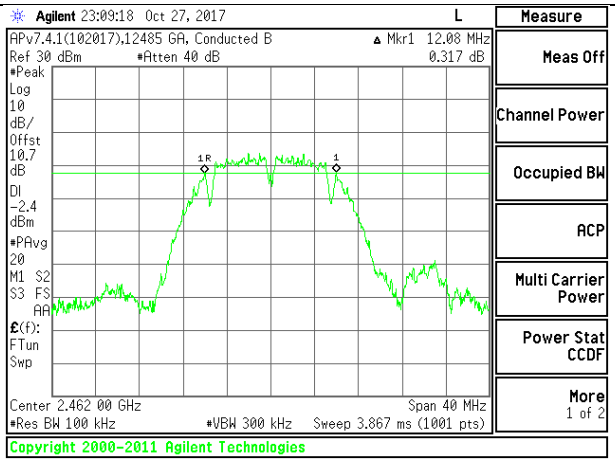


MID CHANNEL 6 CHAIN 0

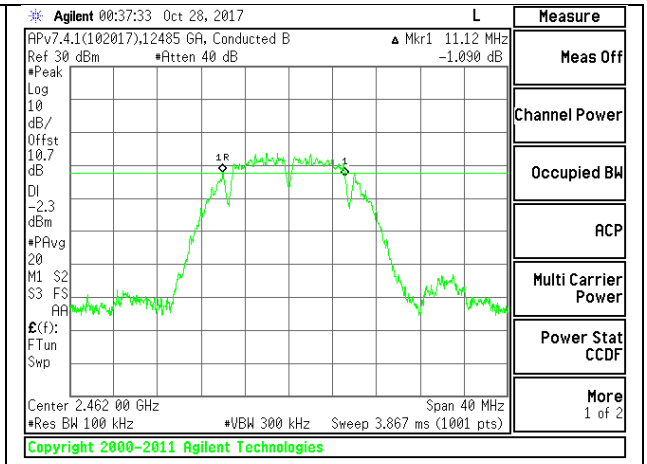


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



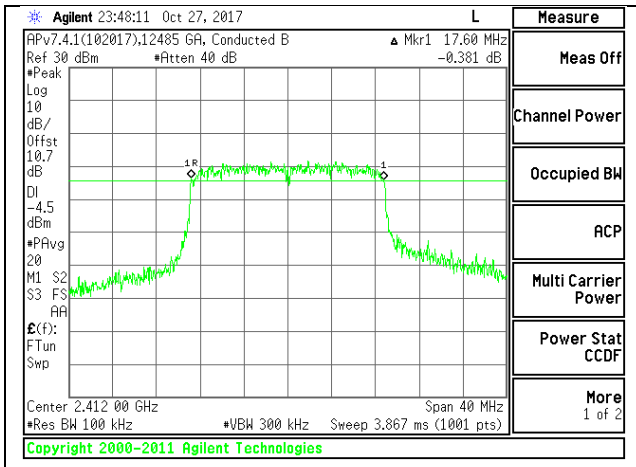
HIGH CHANNEL 11 CHAIN 1

8.3.2. 802.11n HT20 MODE

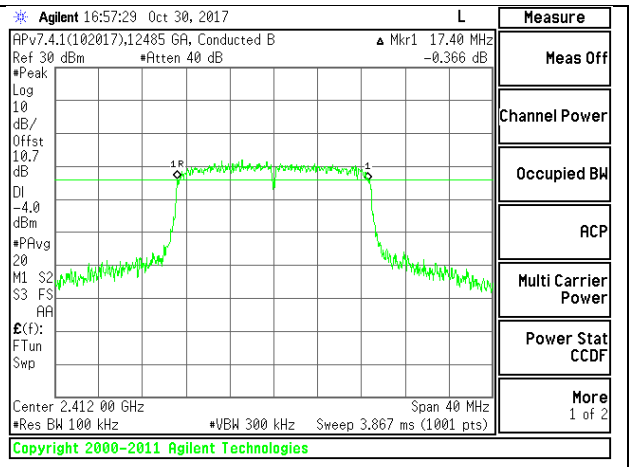
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	17.60	17.40	0.5
Mid 6	2437	17.40	17.28	0.5
High 11	2462	17.56	17.56	0.5

LOW CHANNEL 1

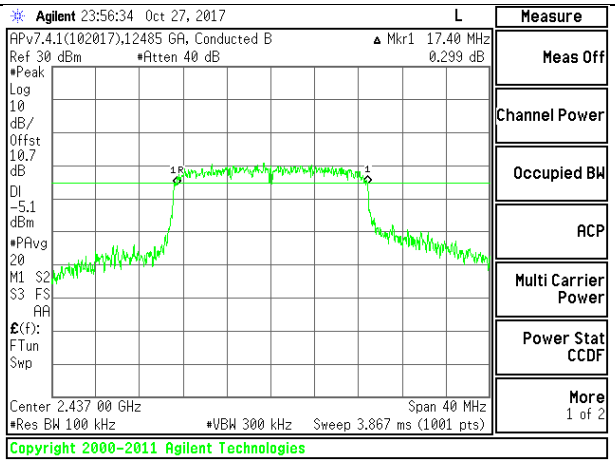


LOW CHANNEL 1 CHAIN 0

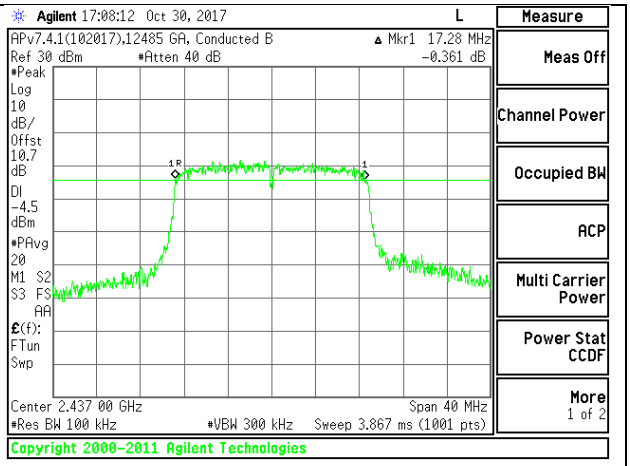


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

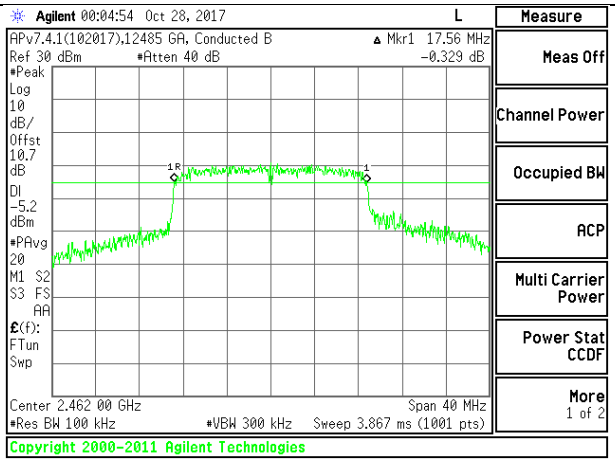


MID CHANNEL 6 CHAIN 0

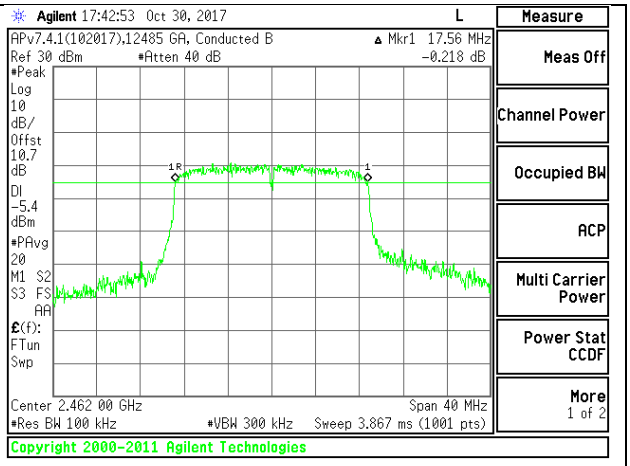


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



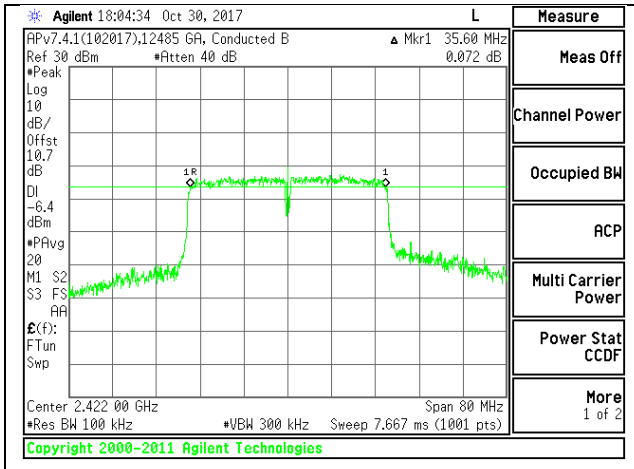
HIGH CHANNEL 11 CHAIN 1

8.3.3. 802.11n HT40 MODE

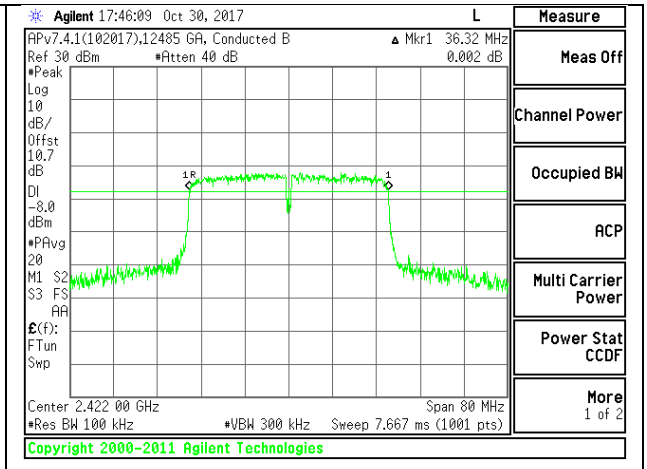
2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 3	2422	35.60	36.32	0.5
Low 4	2427	36.40	36.40	0.5
Low 5	2432	36.40	36.40	0.5
Mid 6	2437	35.76	36.40	0.5
High 7	2442	36.40	36.40	0.5
High 8	2447	36.40	36.32	0.5
High 9	2452	36.00	36.32	0.5

LOW CHANNEL 3

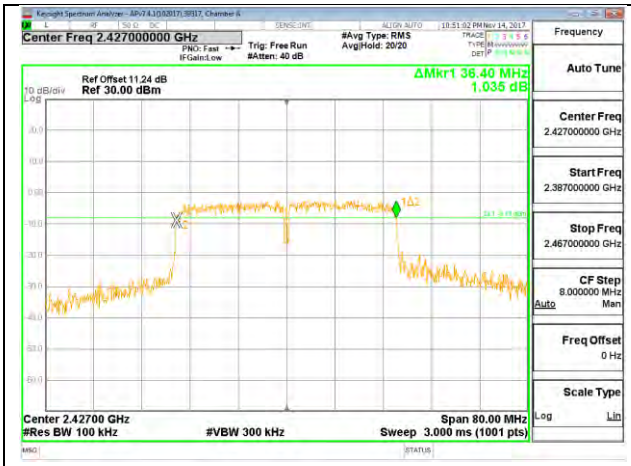


LOW CHANNEL 3 CHAIN 0

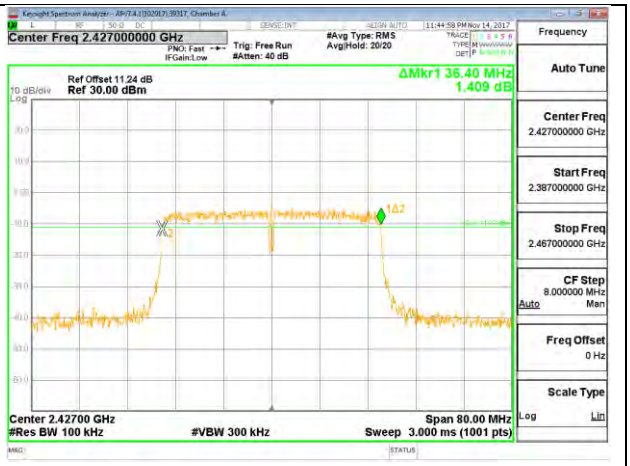


LOW CHANNEL 3 CHAIN 1

LOW CHANNEL 4

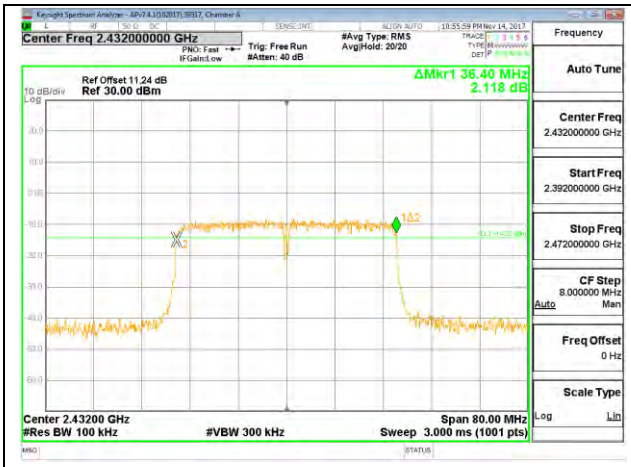


LOW CHANNEL 4 CHAIN 0

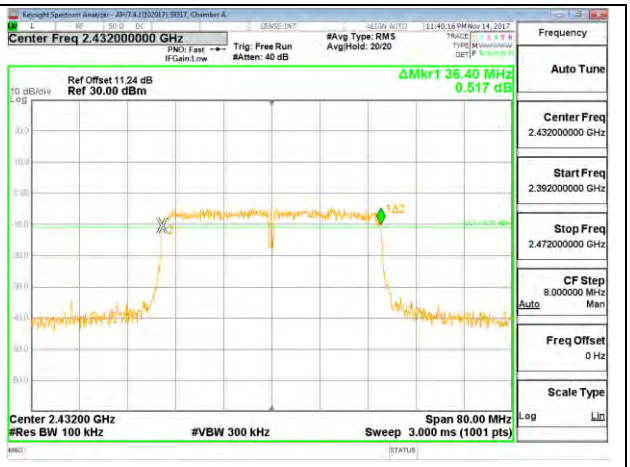


LOW CHANNEL 4 CHAIN 1

LOW CHANNEL 5

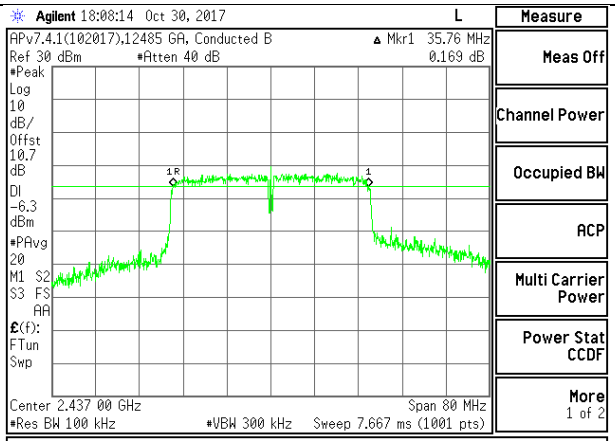


LOW CHANNEL 5 CHAIN 0

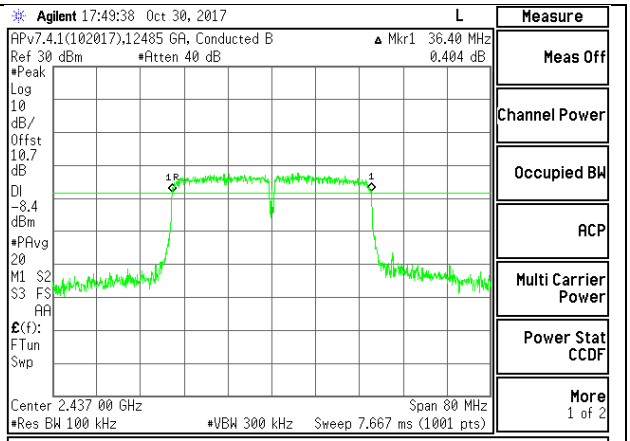


LOW CHANNEL 5 CHAIN 1

MID CHANNEL 6

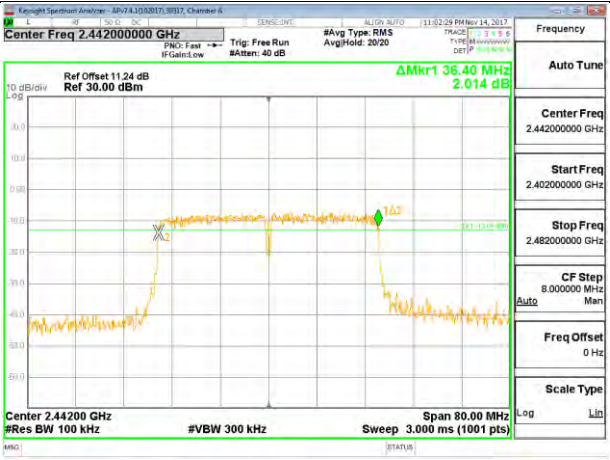


MID CHANNEL 6 CHAIN 0

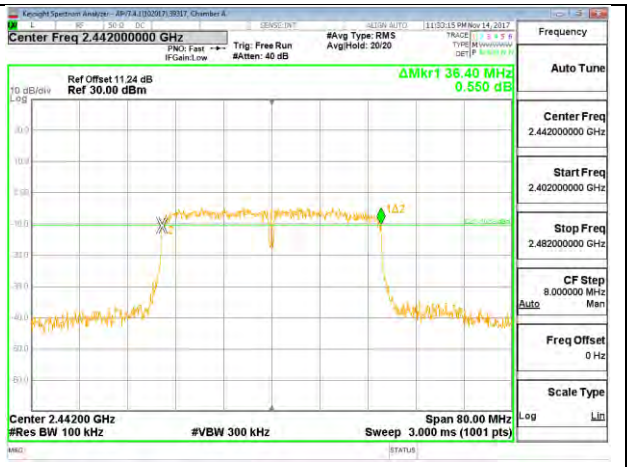


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 7



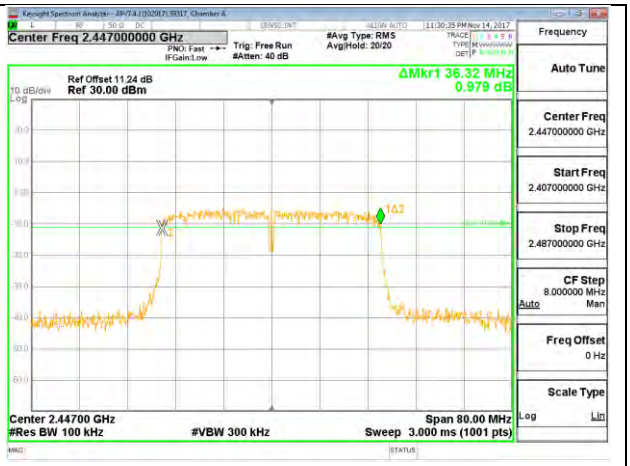
HIGH CHANNEL 7 CHAIN 0



HIGH CHANNEL 7 CHAIN 1

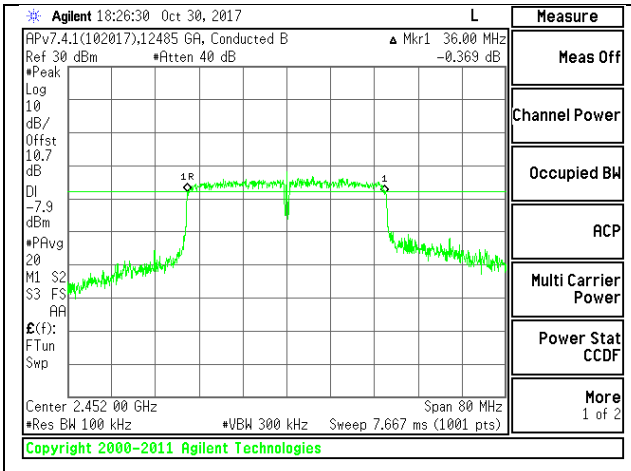
HIGH CHANNEL 8

HIGH CHANNEL 8 CHAIN 0

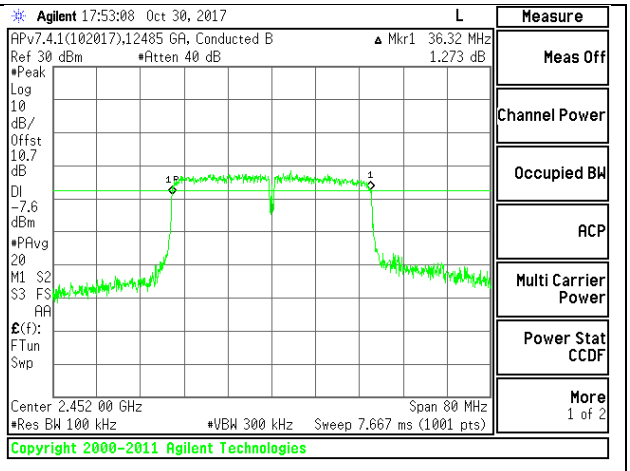


HIGH CHANNEL 8 CHAIN 1

HIGH CHANNEL 9



HIGH CHANNEL 9 CHAIN 0



HIGH CHANNEL 9 CHAIN 1

8.4. 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.

DIRECTIONAL ANTENNA GAIN

For 2 TX:
Tx chains are uncorrelated for power and correlated for PSD due to the device supporting CDD in all MIMO modes. The directional gains are as follows:

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	3.10	3.10	3.10	6.11

RESULTS

8.4.1. 802.11b MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.10	30.00	36	30.00
Mid 6	2437	3.10	30.00	36	30.00
High 11	2462	3.10	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	12.65	10.79	14.83	30.00	-15.17
Mid 6	2437	11.01	9.97	13.53	30.00	-16.47
High 11	2462	10.21	7.98	12.25	30.00	-17.75

8.4.2. 802.11g MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.10	30.00	36	30.00
Mid 6	2437	3.10	30.00	36	30.00
High 11	2462	3.10	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.97	20.92	23.96	30.00	-6.04
Mid 6	2437	20.13	18.22	22.29	30.00	-7.71
High 11	2462	17.36	21.40	22.84	30.00	-7.16

8.4.3. 802.11n HT20 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.10	30.00	36	30.00
Mid 6	2437	3.10	30.00	36	30.00
High 11	2462	3.10	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	21.28	21.89	24.61	30.00	-5.39
Mid 6	2437	21.21	20.39	23.83	30.00	-6.17
High 11	2462	19.46	21.34	23.51	30.00	-6.49

8.4.4. 802.11n HT40 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	3.10	30.00	36	30.00
Low 4	2427	3.10	30.00	36	30.00
Low 5	2432	3.10	30.00	36	30.00
Mid 6	2437	3.10	30.00	36	30.00
High 7	2442	3.10	30.00	36	30.00
High 8	2447	3.10	30.00	36	30.00
High 9	2452	3.10	30.00	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 3	2422	20.03	18.96	22.54	30.00	-7.46
Low 4	2427	21.61	20.48	24.09	30.00	-5.91
Low 5	2432	21.22	21.14	24.19	30.00	-5.81
Mid 6	2437	21.78	22.33	25.07	30.00	-4.93
High 7	2442	20.12	20.96	23.57	30.00	-6.43
High 8	2447	20.42	19.59	23.04	30.00	-6.96
High 9	2452	20.14	18.03	22.22	30.00	-7.78

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

RESULTS

8.5.1. 802.11b MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low 1	2412	10.05	8.33	12.28
Mid 6	2437	8.53	7.47	11.04
High 11	2462	7.65	4.80	9.47

8.5.2. 802.11g MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low 1	2412	12.41	12.24	15.34
Mid 6	2437	11.24	9.45	13.45
High 11	2462	8.36	11.74	13.38

8.5.3. 802.11n HT20 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low 1	2412	12.69	8.47	14.08
Mid 6	2437	11.25	9.96	13.66
High 11	2462	8.87	9.67	12.30

8.5.4. 802.11n HT40 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low 3	2422	10.97	9.42	13.27
Low 4	2427	11.85	10.75	14.35
Low 5	2432	11.96	11.66	14.82
Mid 6	2437	13.15	12.69	15.94
High 7	2442	9.95	11.00	13.52
High 8	2447	10.50	9.65	13.11
High 9	2452	10.37	8.35	12.49

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

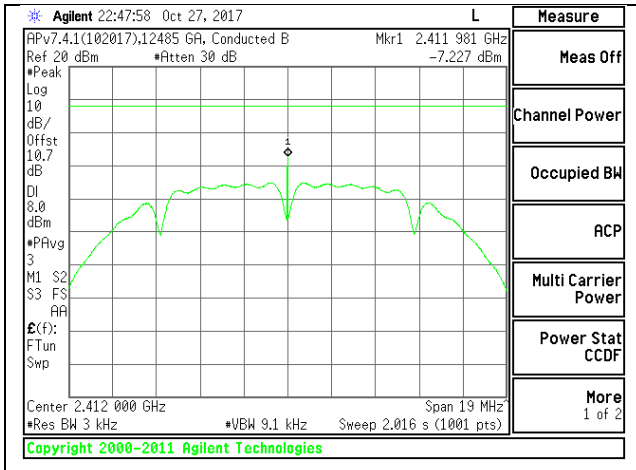
8.6.1. 802.11b MODE

2TX Antenna 1 + Antenna 2 CDD MODE

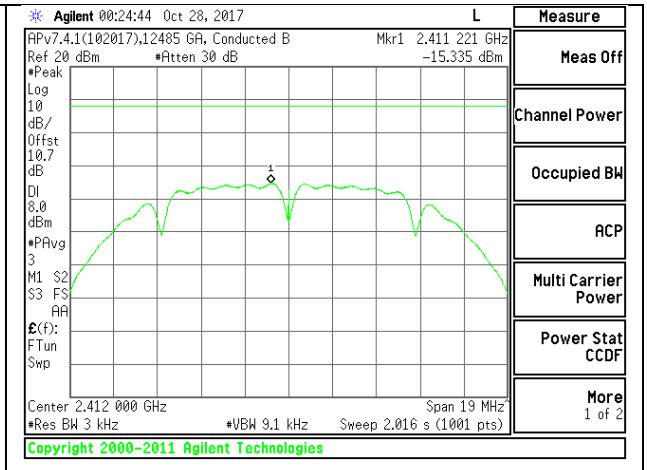
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Chain 1 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-7.23	-15.34	-6.60	7.89	-14.49
Mid 6	2437	-7.46	-15.24	-6.79	7.89	-14.68
High 11	2462	-7.54	-15.34	-6.80	7.89	-14.69

LOW CHANNEL 1

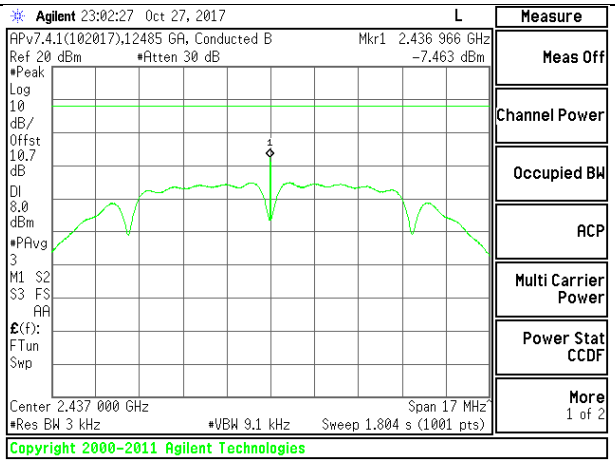


LOW CHANNEL 1 CHAIN 0

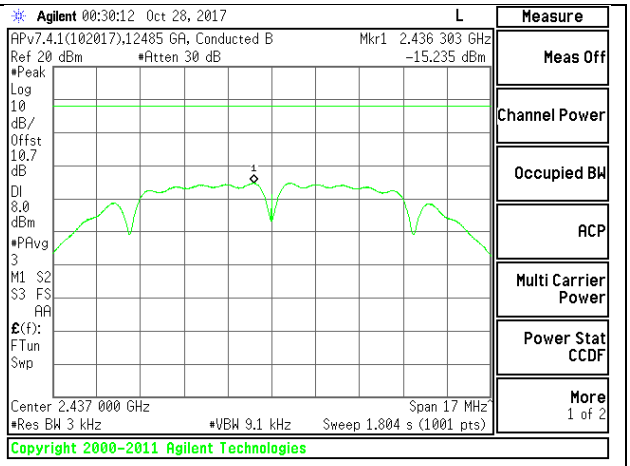


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

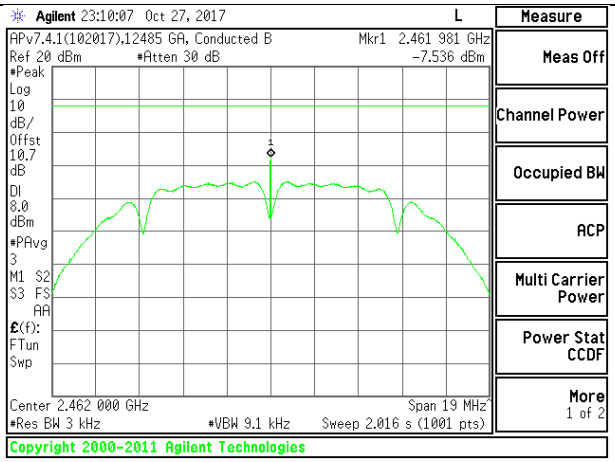


MID CHANNEL 6 CHAIN 0

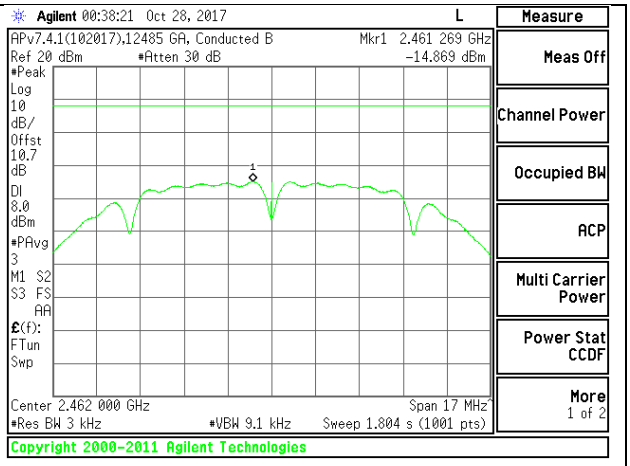


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

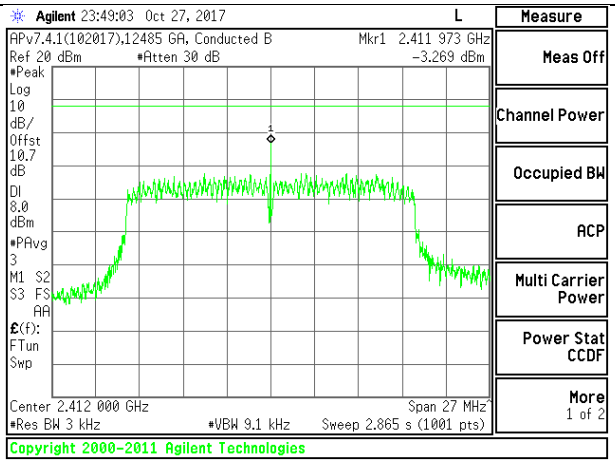
8.6.2. 802.11n HT20 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

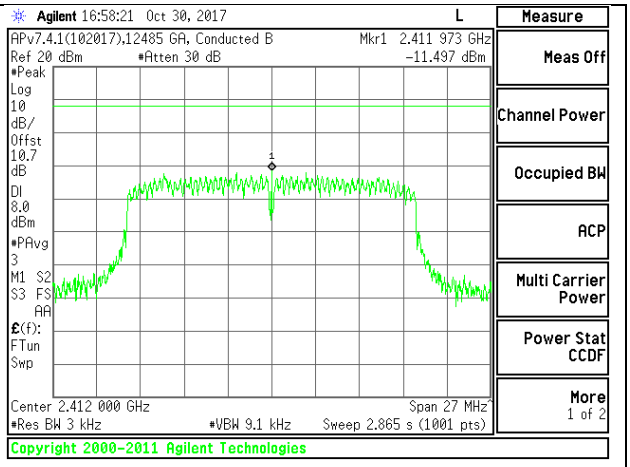
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Chain 1 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 1	2412	-3.27	-11.50	-2.66	7.89	-10.55
Mid 6	2437	-2.47	-11.93	-2.00	7.89	-9.89
High 11	2462	-2.71	-11.31	-2.15	7.89	-10.04

LOW CHANNEL 1

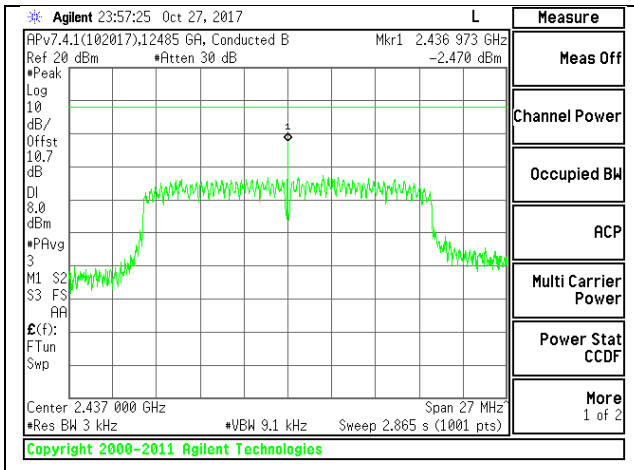


LOW CHANNEL 1 CHAIN 0

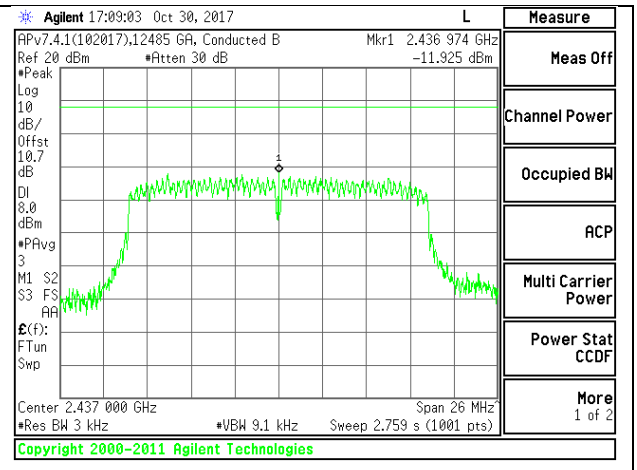


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

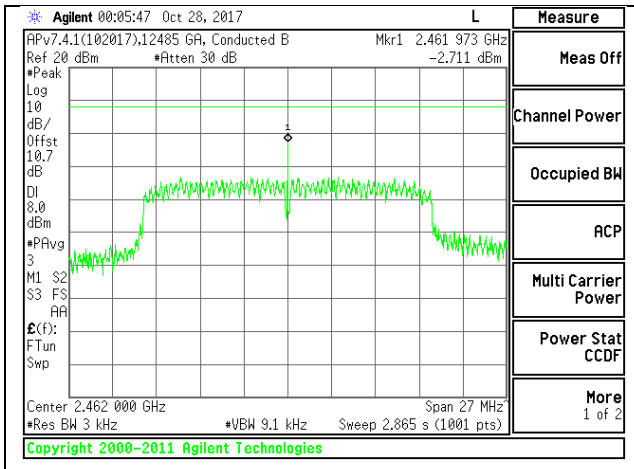


MID CHANNEL 6 CHAIN 0

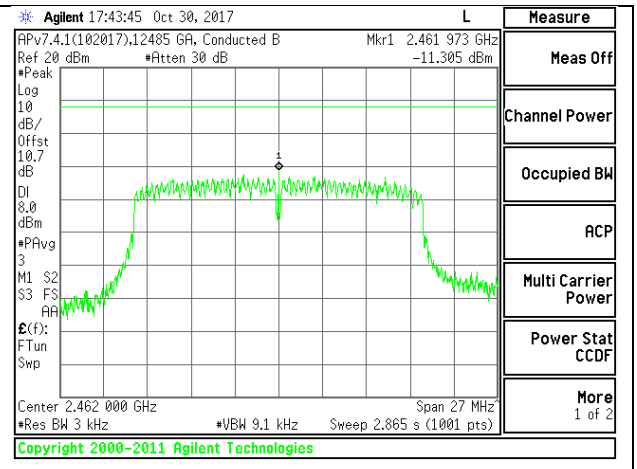


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

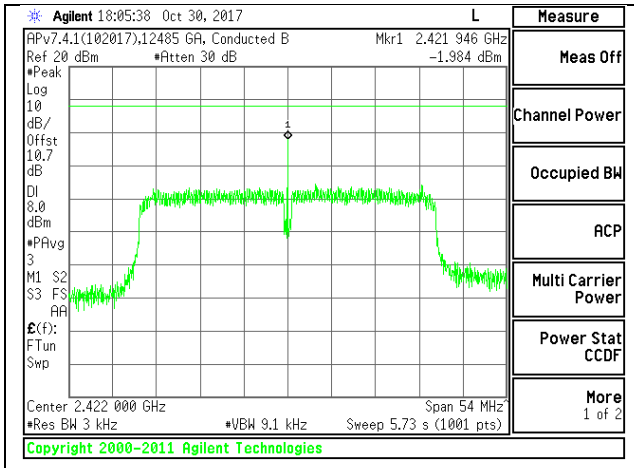
8.6.3. 802.11n HT40 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

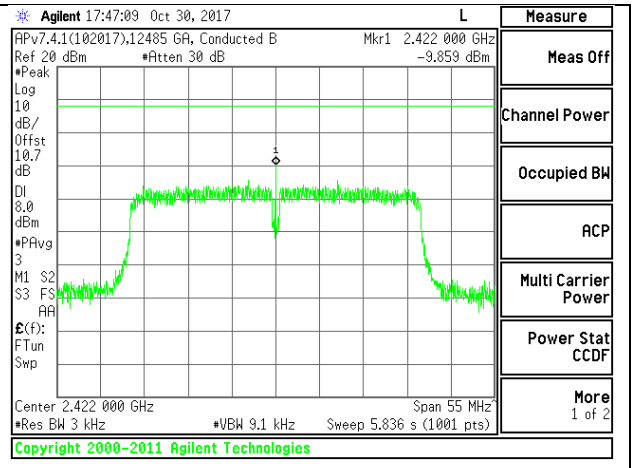
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/3kHz)	Chain 1 Meas (dBm/3kHz)	Total Corr'd PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 3	2422	-1.98	-9.86	-1.33	7.89	-9.22
Low 4	2427	-6.15	-6.42	-3.27	7.89	-11.16
Low 5	2432	-11.42	-6.42	-5.23	7.89	-13.12
Mid 6	2437	-1.68	-10.52	-1.15	7.89	-9.04
High 7	2442	-11.37	-6.75	-5.46	7.89	-13.35
High 8	2447	-11.15	-7.08	-5.64	7.89	-13.53
High 9	2452	-3.26	-8.55	-2.14	7.89	-10.03

LOW CHANNEL 3

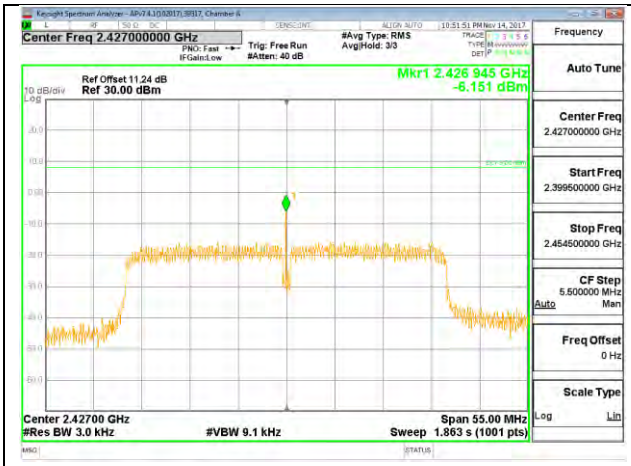


LOW CHANNEL 3 CHAIN 0

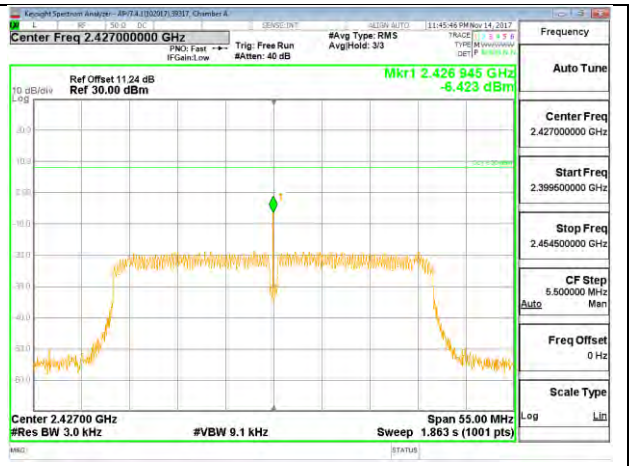


LOW CHANNEL 3 CHAIN 1

LOW CHANNEL 4

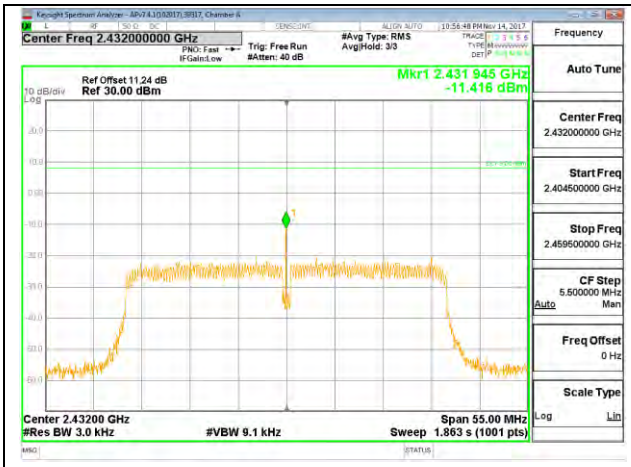


LOW CHANNEL 4 CHAIN 0

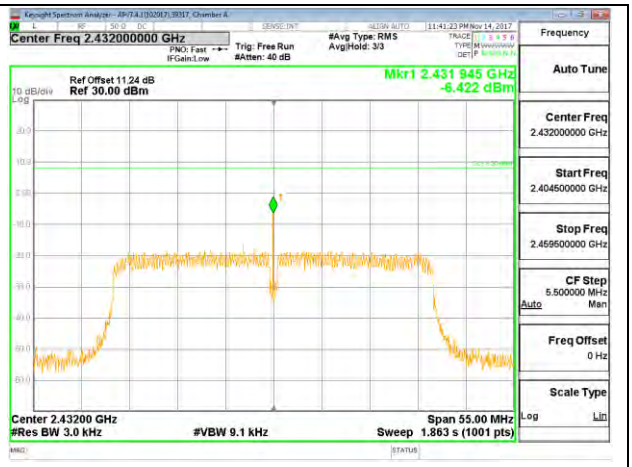


LOW CHANNEL 4 CHAIN 1

LOW CHANNEL 5

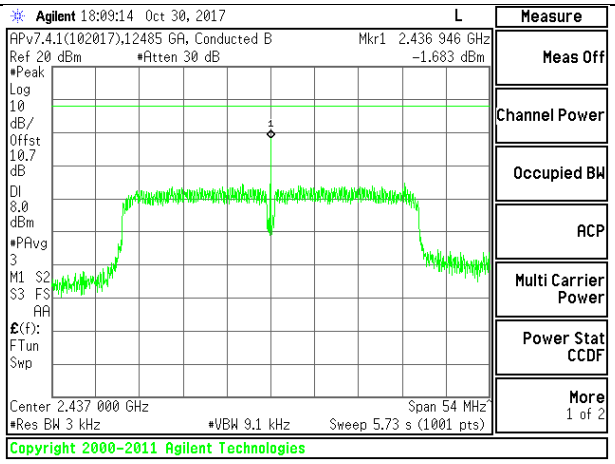


LOW CHANNEL 5 CHAIN 0

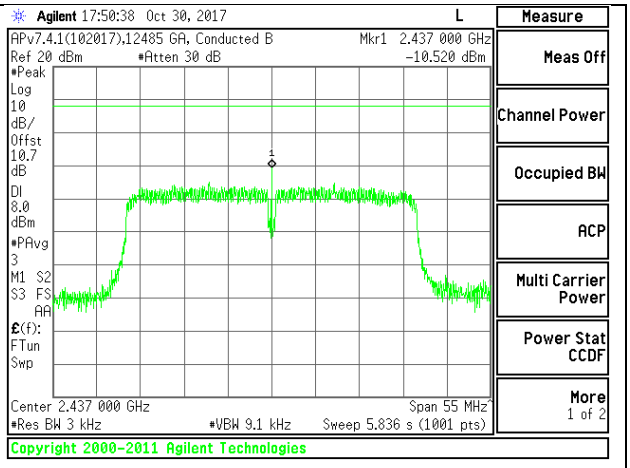


LOW CHANNEL 5 CHAIN 1

MID CHANNEL 6

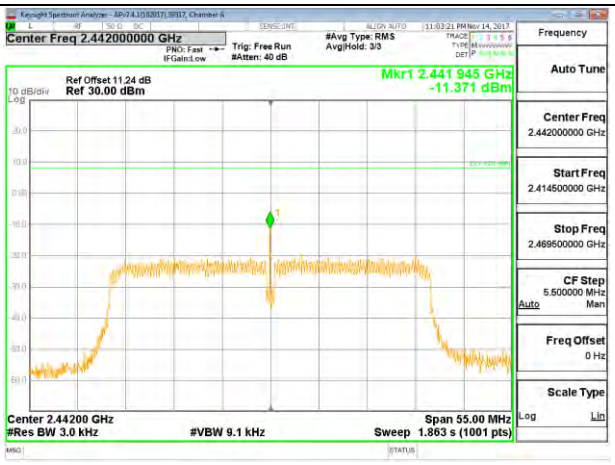


MID CHANNEL 6 CHAIN 0

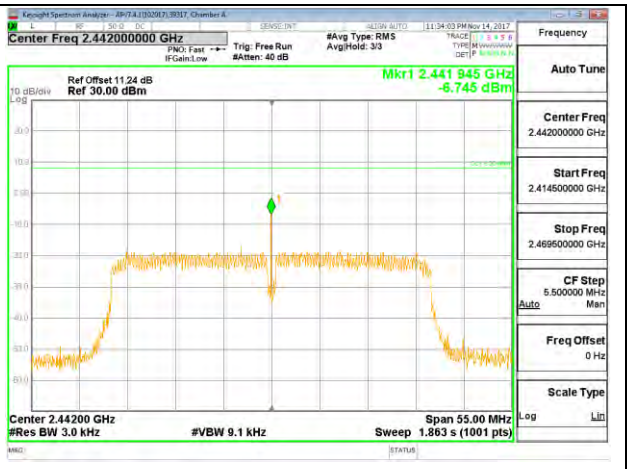


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 7

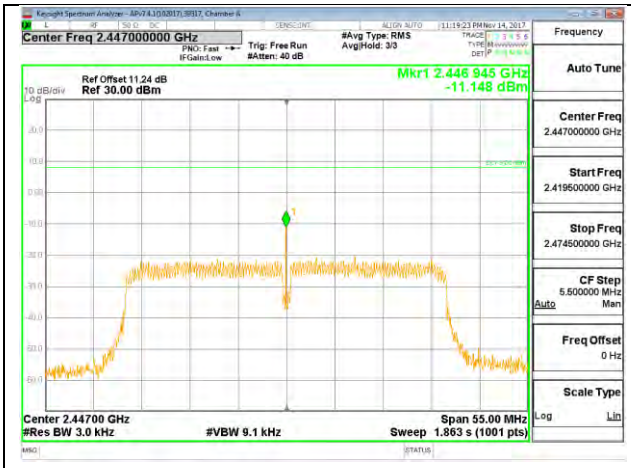


HIGH CHANNEL 7 CHAIN 0

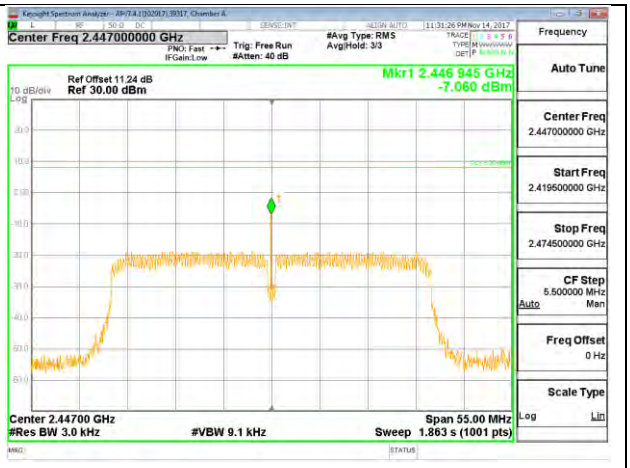


HIGH CHANNEL 7 CHAIN 1

HIGH CHANNEL 8

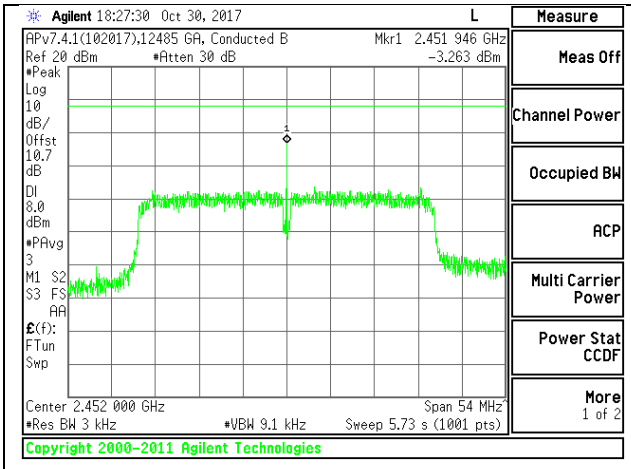


HIGH CHANNEL 8 CHAIN 0

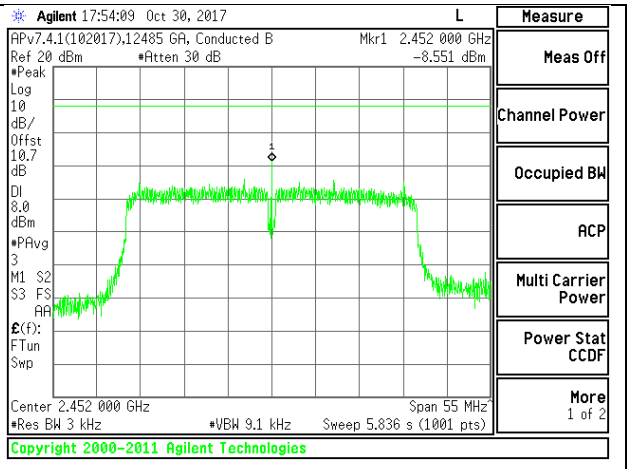


HIGH CHANNEL 8 CHAIN 1

HIGH CHANNEL 9



HIGH CHANNEL 9 CHAIN 0



HIGH CHANNEL 9 CHAIN 1

8.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

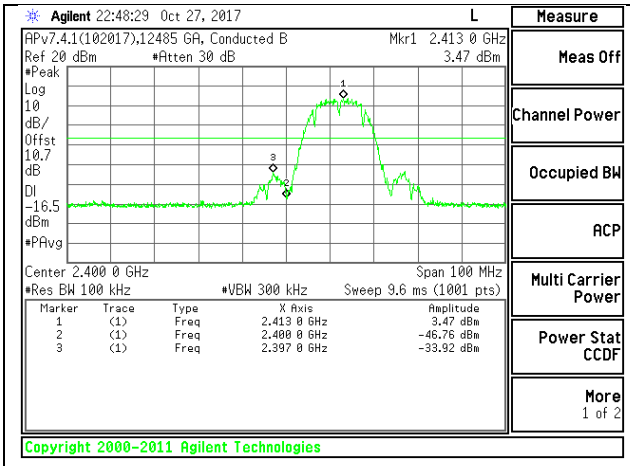
Limit = -20 dBc

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)).

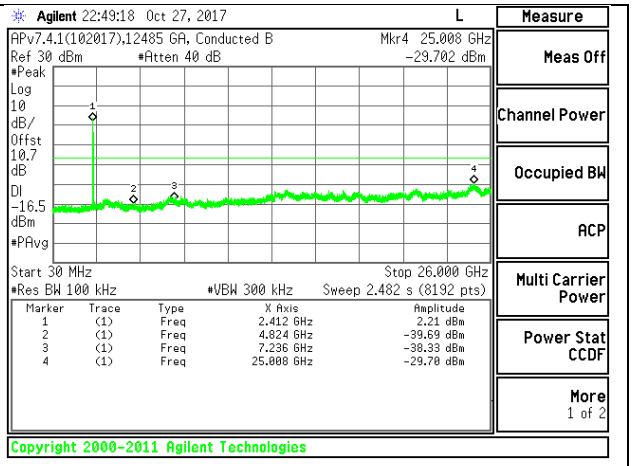
RESULTS

8.7.1. 802.11b MODE

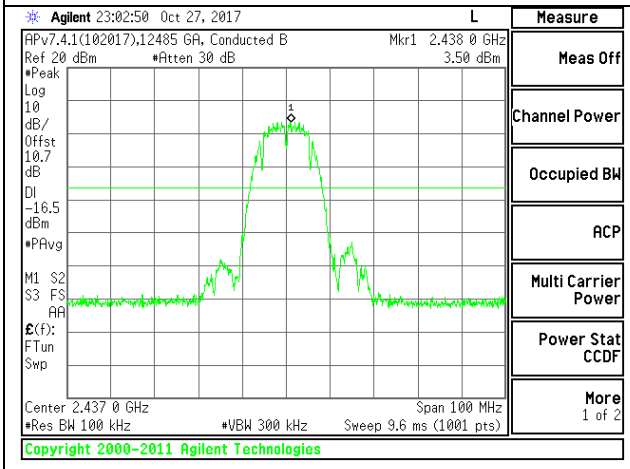
2TX Antenna 1 + Antenna 2 CDD MODE



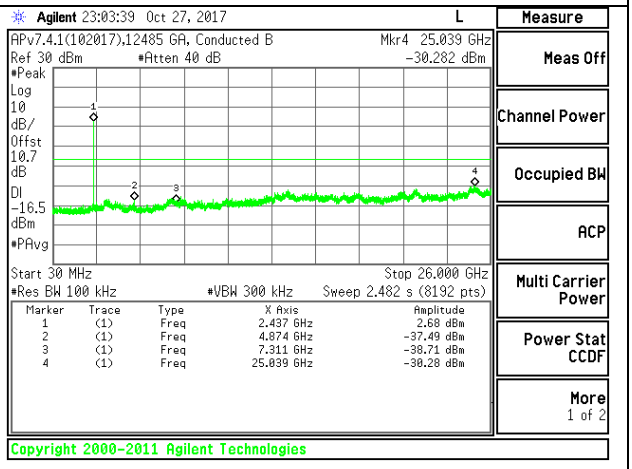
LOW CHANNEL 1 BANDEDGE CHAIN 0



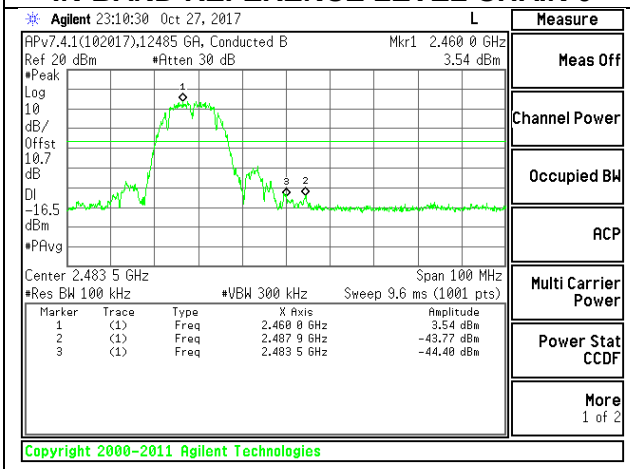
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



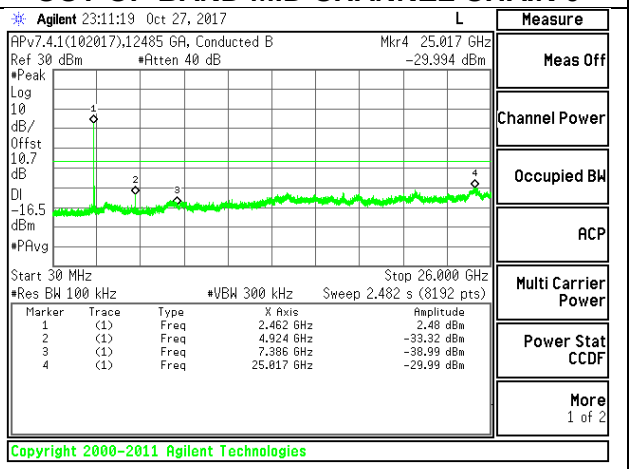
IN-BAND REFERENCE LEVEL CHAIN 0



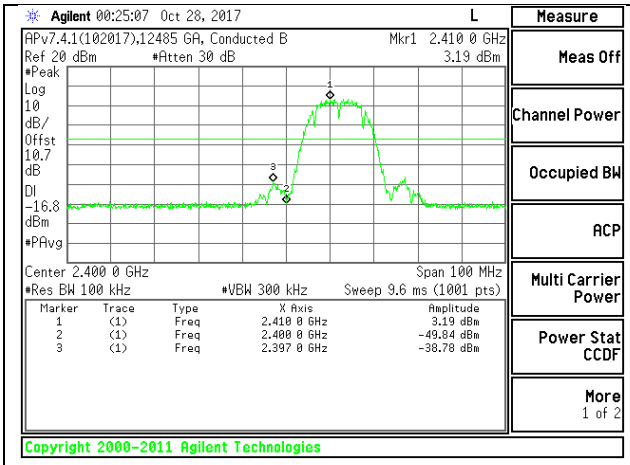
OUT-OF-BAND MID CHANNEL CHAIN 0



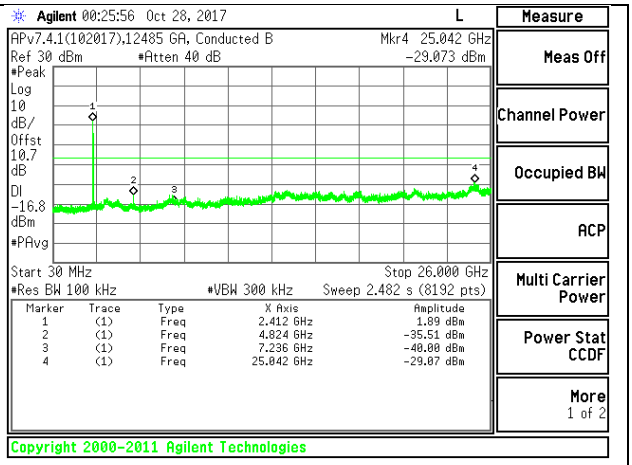
HIGH CHANNEL 11 BANDEDGE CHAIN 0



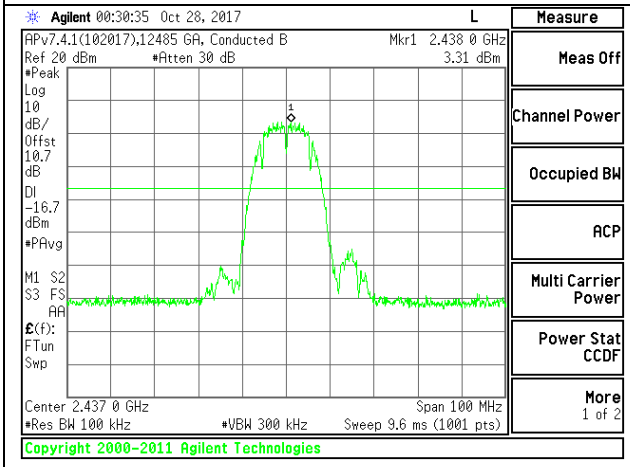
OUT-OF-BAND HIGH CHANNEL 11 CHAIN 0



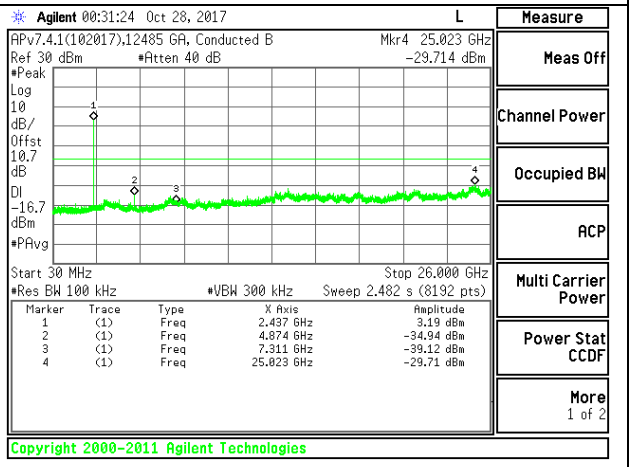
LOW CHANNEL 1 BANDEDGE CHAIN 1



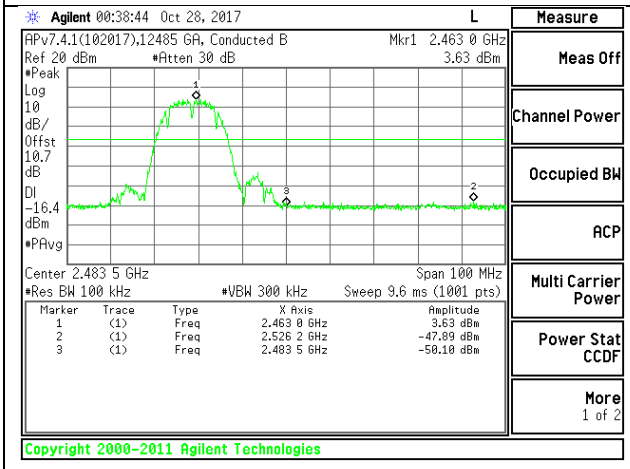
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



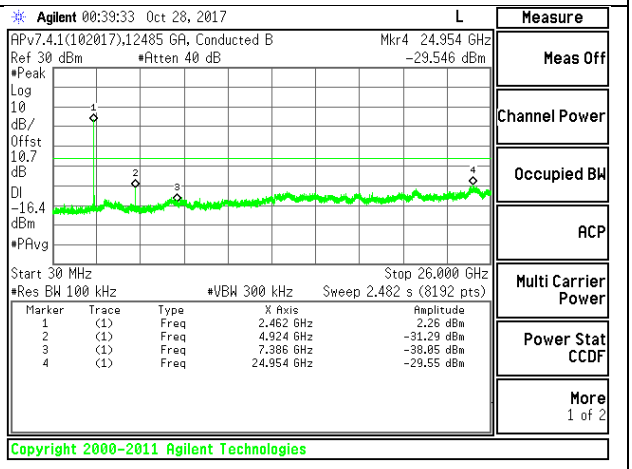
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



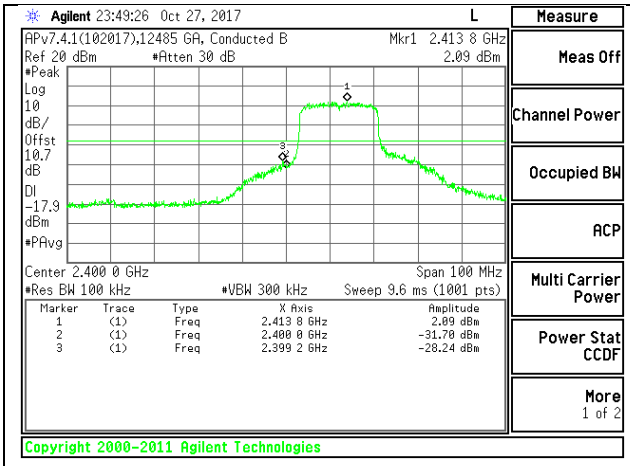
HIGH CHANNEL 11 BANDEDGE CHAIN 1



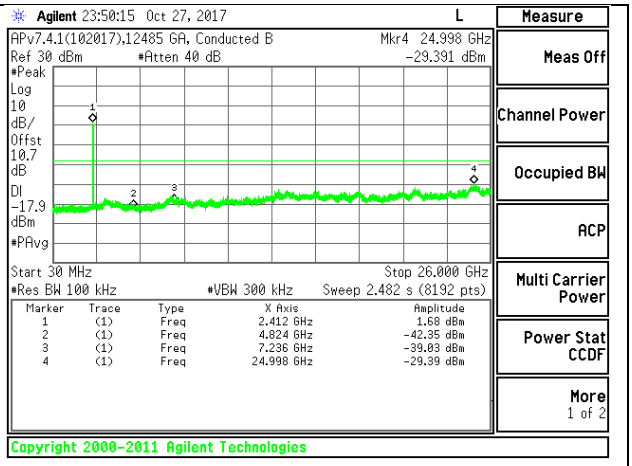
OUT-OF-BAND HIGH CHANNEL 11 CHAIN 1

8.7.2. 802.11n HT20 MODE

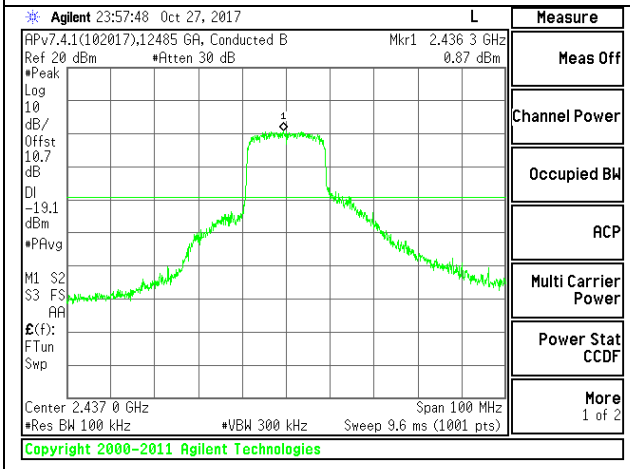
2TX Antenna 1 + Antenna 2 CDD MODE



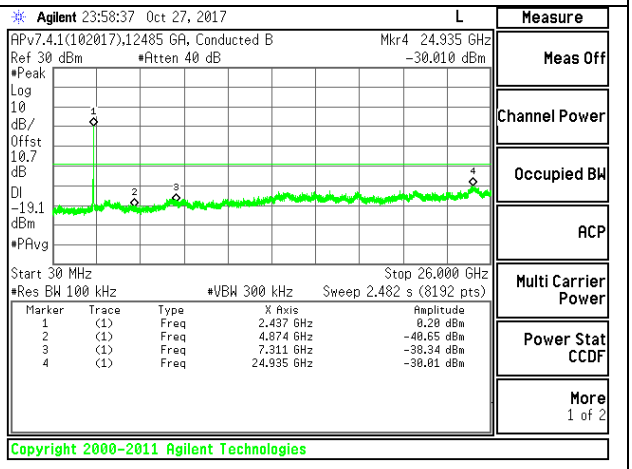
LOW CHANNEL 1 BANDEDGE CHAIN 0



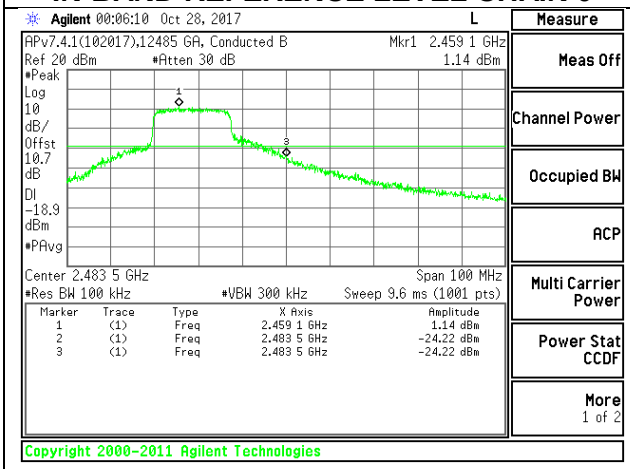
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



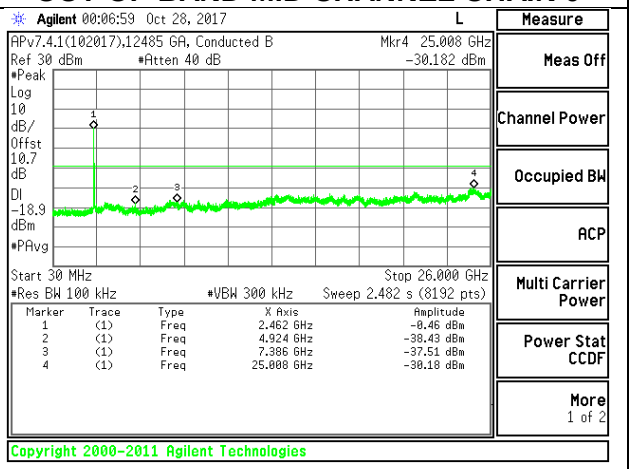
IN-BAND REFERENCE LEVEL CHAIN 0



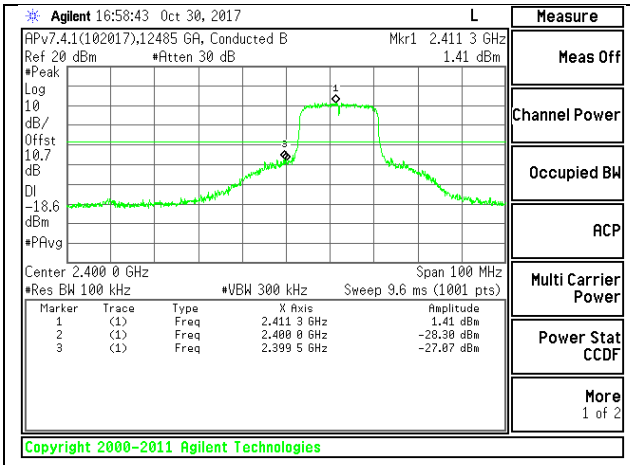
OUT-OF-BAND MID CHANNEL CHAIN 0



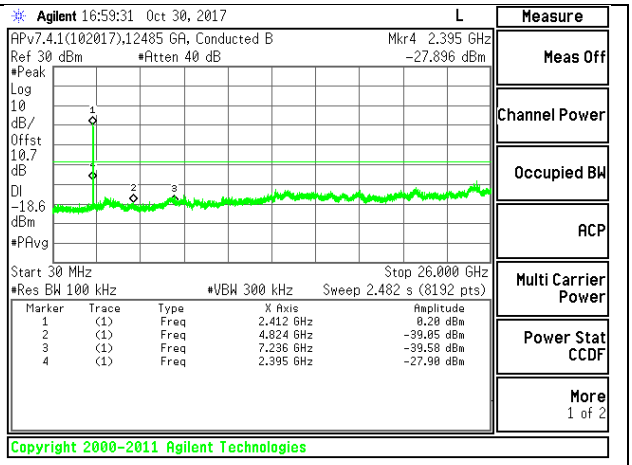
HIGH CHANNEL 11 BANDEDGE CHAIN 0



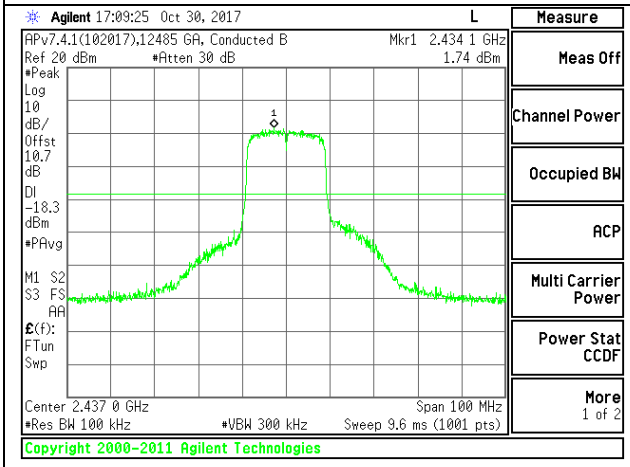
OUT-OF-BAND HIGH CHANNEL 11 CHAIN 0



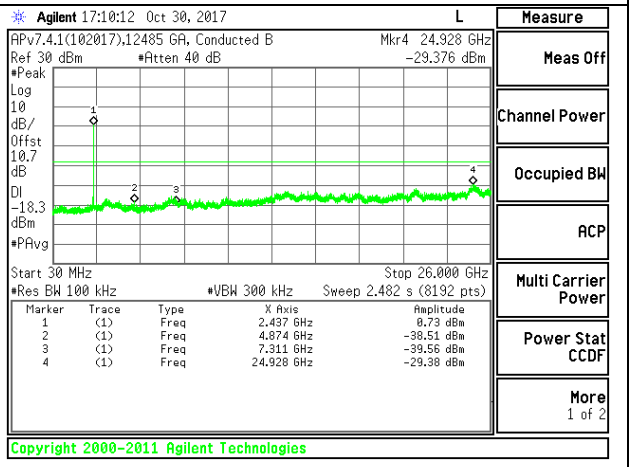
LOW CHANNEL 1 BANDEDGE CHAIN 1



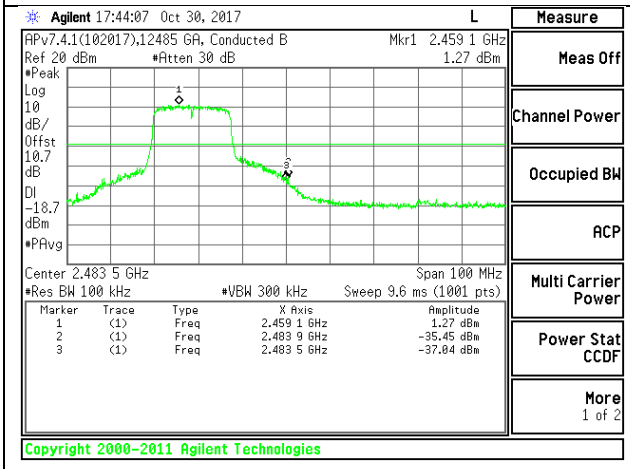
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



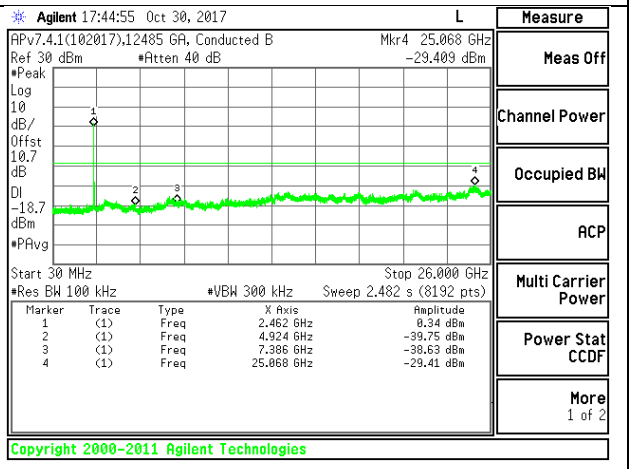
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



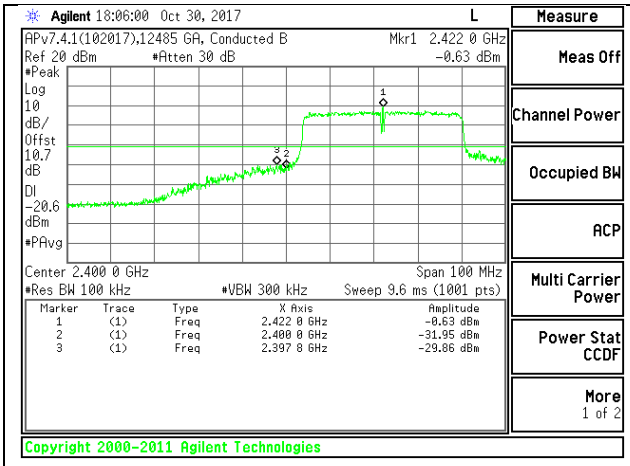
HIGH CHANNEL 11 BANDEDGE CHAIN 1



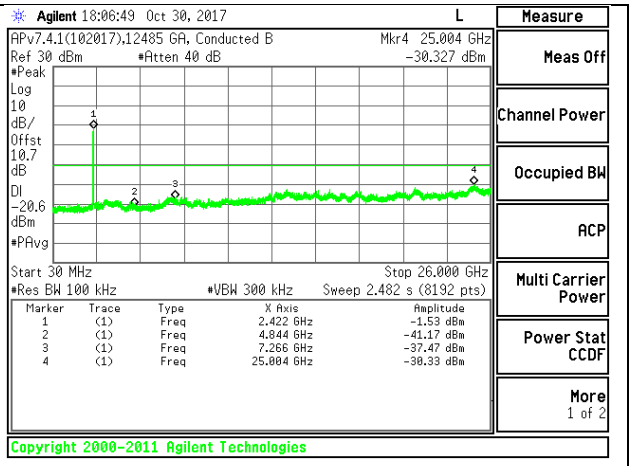
OUT-OF-BAND HIGH CHANNEL 11 CHAIN 1

8.7.3. 802.11n HT40 MODE

2TX Antenna 1 + Antenna 2 CDD MODE



LOW CHANNEL 3 BANDEDGE CHAIN 0

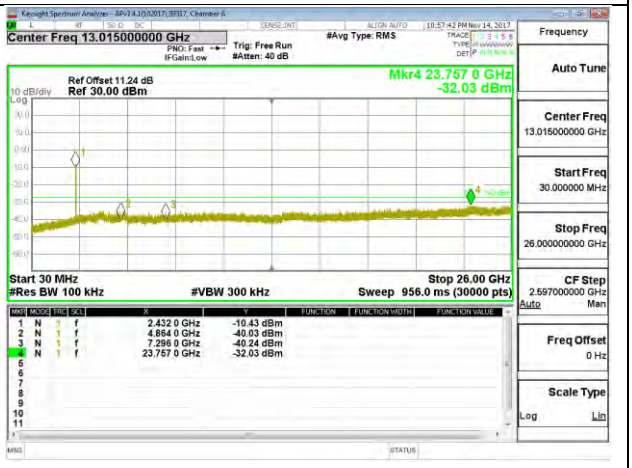


OUT-OF-BAND LOW CHANNEL 3 CHAIN 0

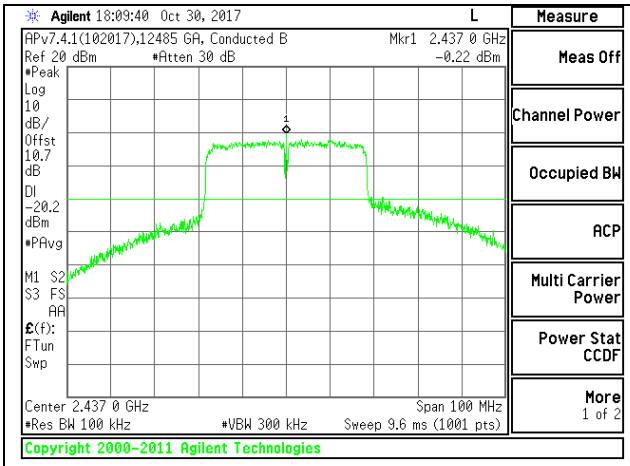
LOW CHANNEL 4 BANDEDGE CHAIN 0

OUT-OF-BAND LOW CHANNEL 4 CHAIN 0

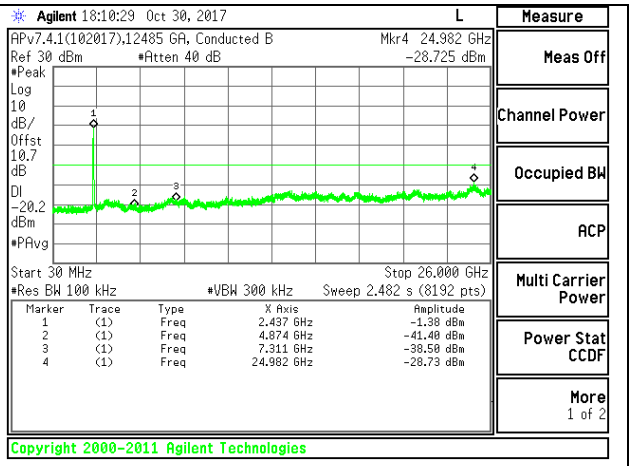
LOW CHANNEL 5 BANDEDGE CHAIN 0



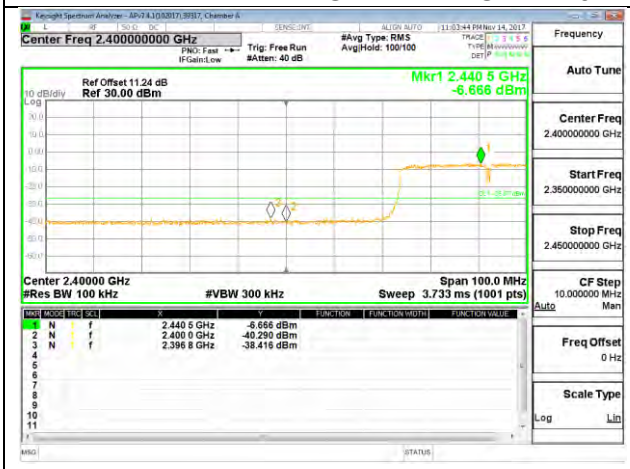
OUT-OF-BAND LOW CHANNEL 5 CHAIN 0



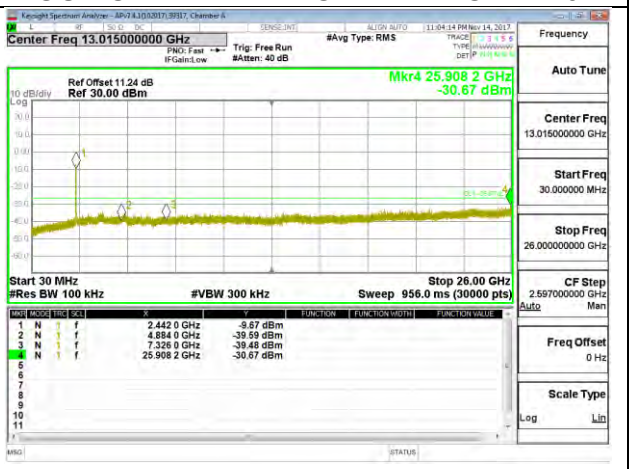
IN-BAND REFERENCE LEVEL CHAIN 0



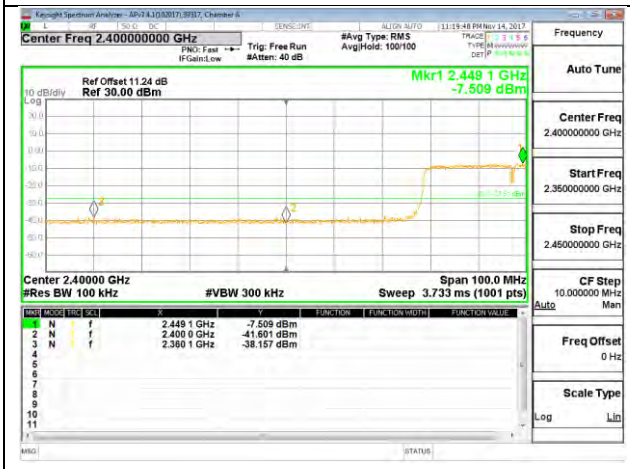
OUT-OF-BAND MID CHANNEL CHAIN 0



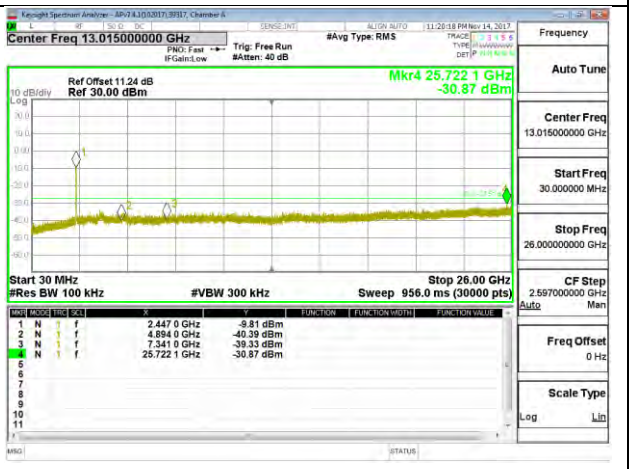
HIGH CHANNEL 7 BANDEDGE CHAIN 0



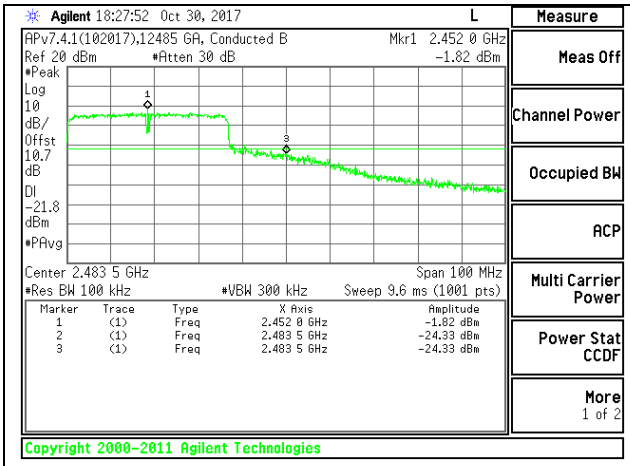
OUT-OF-BAND HIGH CHANNEL 7 CHAIN 0



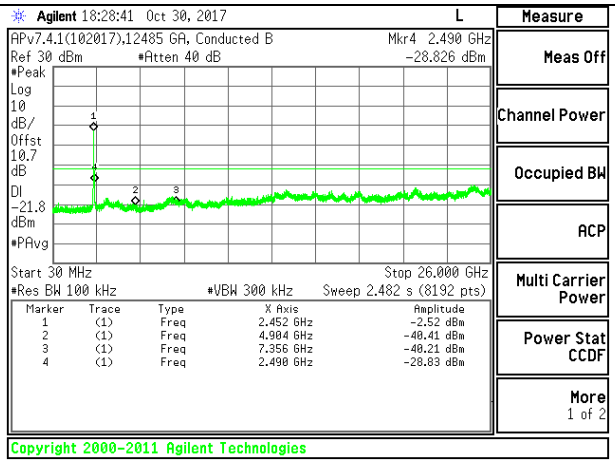
HIGH CHANNEL 8 BANDEDGE CHAIN 0



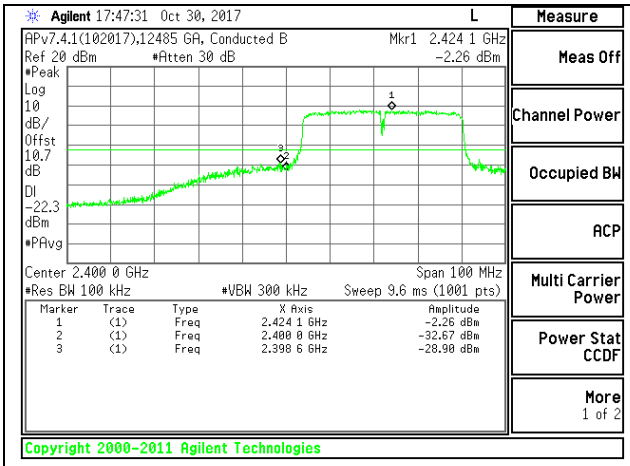
OUT-OF-BAND HIGH CHANNEL 8 CHAIN 0



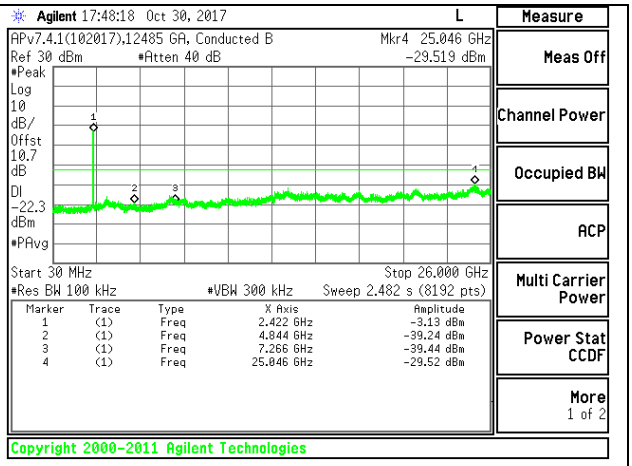
HIGH CHANNEL 9 BANDEDGE CHAIN 0



OUT-OF-BAND HIGH CHANNEL 9 CHAIN 0



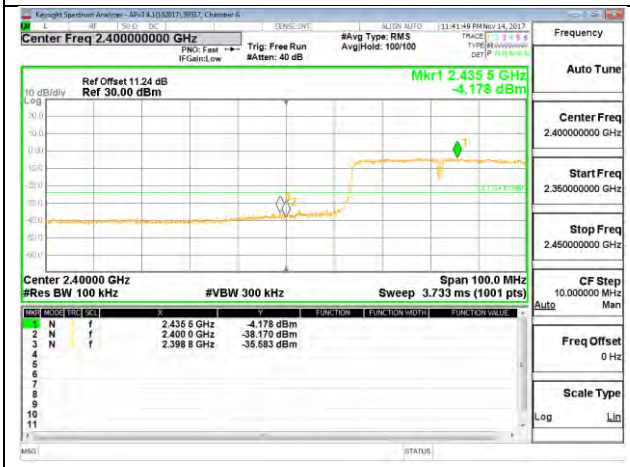
LOW CHANNEL 3 BANDEDGE CHAIN 1



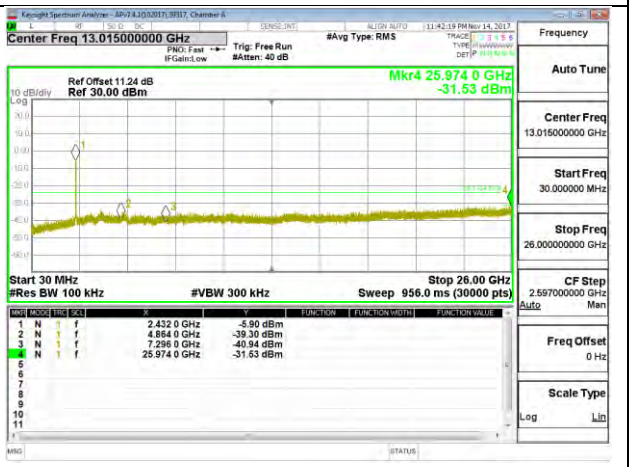
OUT-OF-BAND LOW CHANNEL 3 CHAIN 1

LOW CHANNEL 4 BANDEDGE CHAIN 1

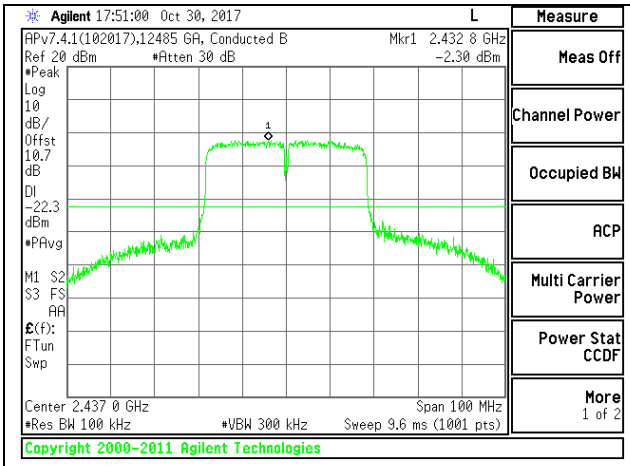
OUT-OF-BAND LOW CHANNEL 4 CHAIN 1



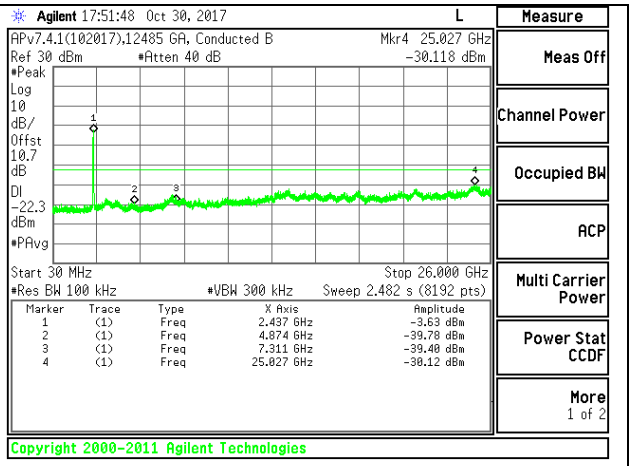
LOW CHANNEL 5 BANDEDGE CHAIN 1



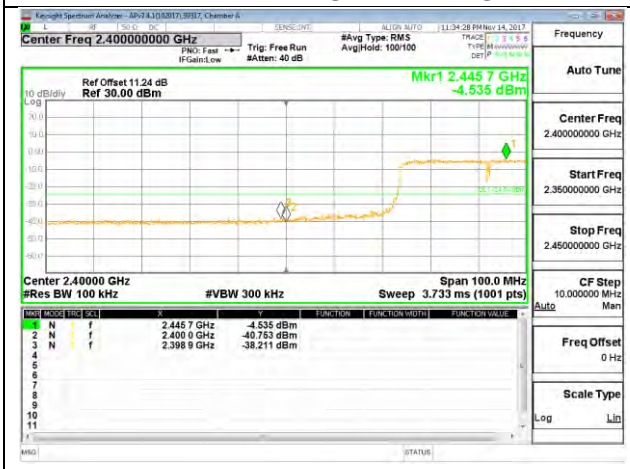
OUT-OF-BAND LOW CHANNEL 5 CHAIN 1



IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1

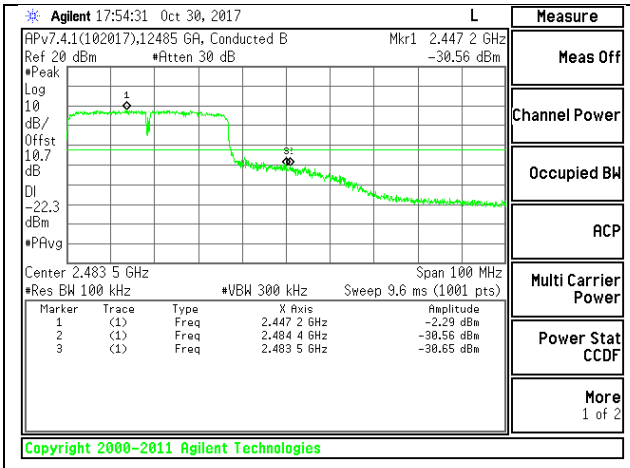


HIGH CHANNEL 7 BANDEDGE CHAIN 1

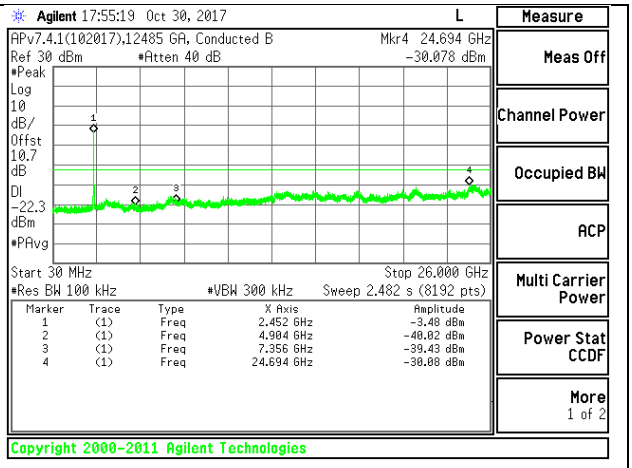
OUT-OF-BAND HIGH CHANNEL 7 CHAIN 1

HIGH CHANNEL 8 BANDEDGE CHAIN 1

OUT-OF-BAND HIGH CHANNEL 8 CHAIN 1



HIGH CHANNEL 9 BANDEDGE CHAIN 1

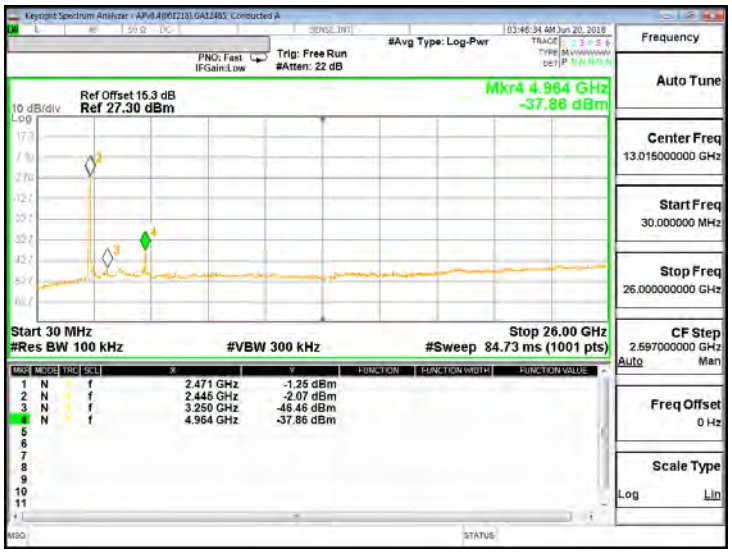


OUT-OF-BAND HIGH CHANNEL 9 CHAIN 1

8.7.4. WORST-CASE CO-LOCATION

SPURIOUS EMISSION FOR CO-LOCATION (BT & WLAN)

BT & DTS



Note: Markers 1, 2 are the bluetooth and DTS fundamental signals.

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 30 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

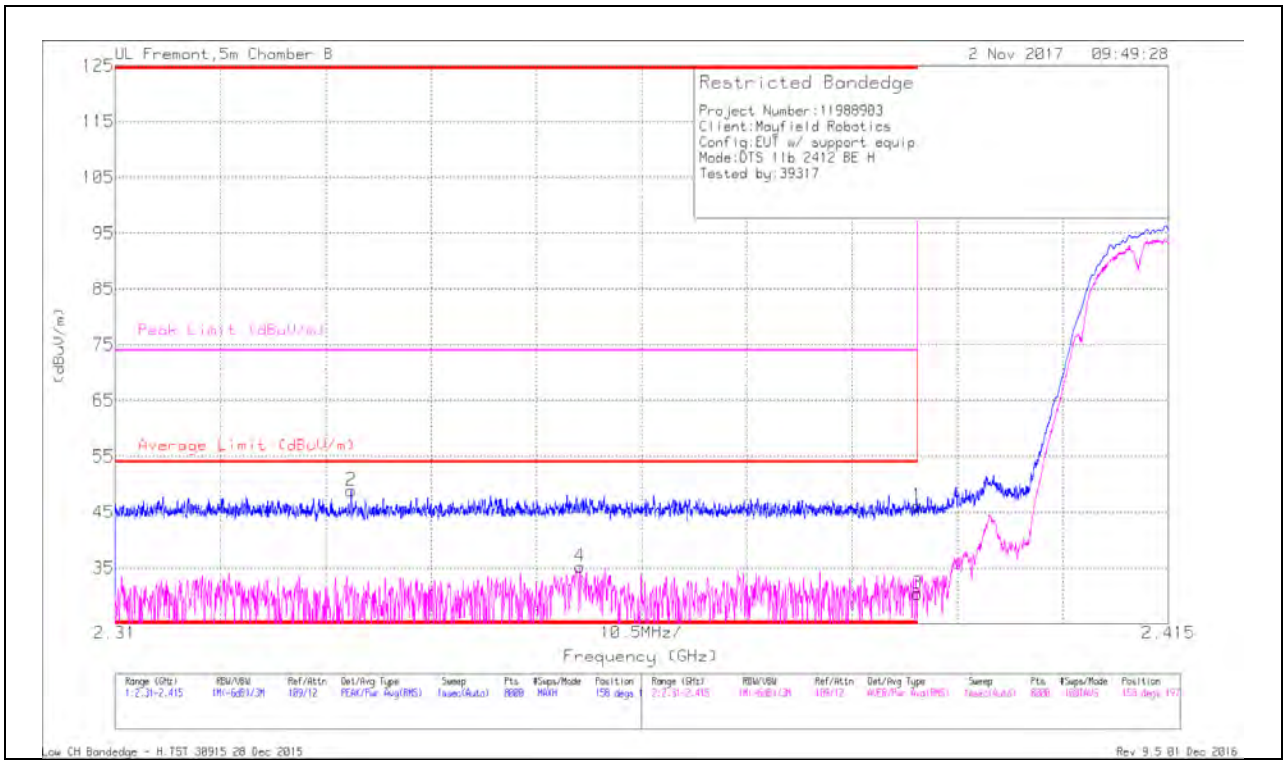
9.1. TRANSMITTER ABOVE 1 GHz

9.1.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

BANDEDGE (LOW CHANNEL, CH 1)

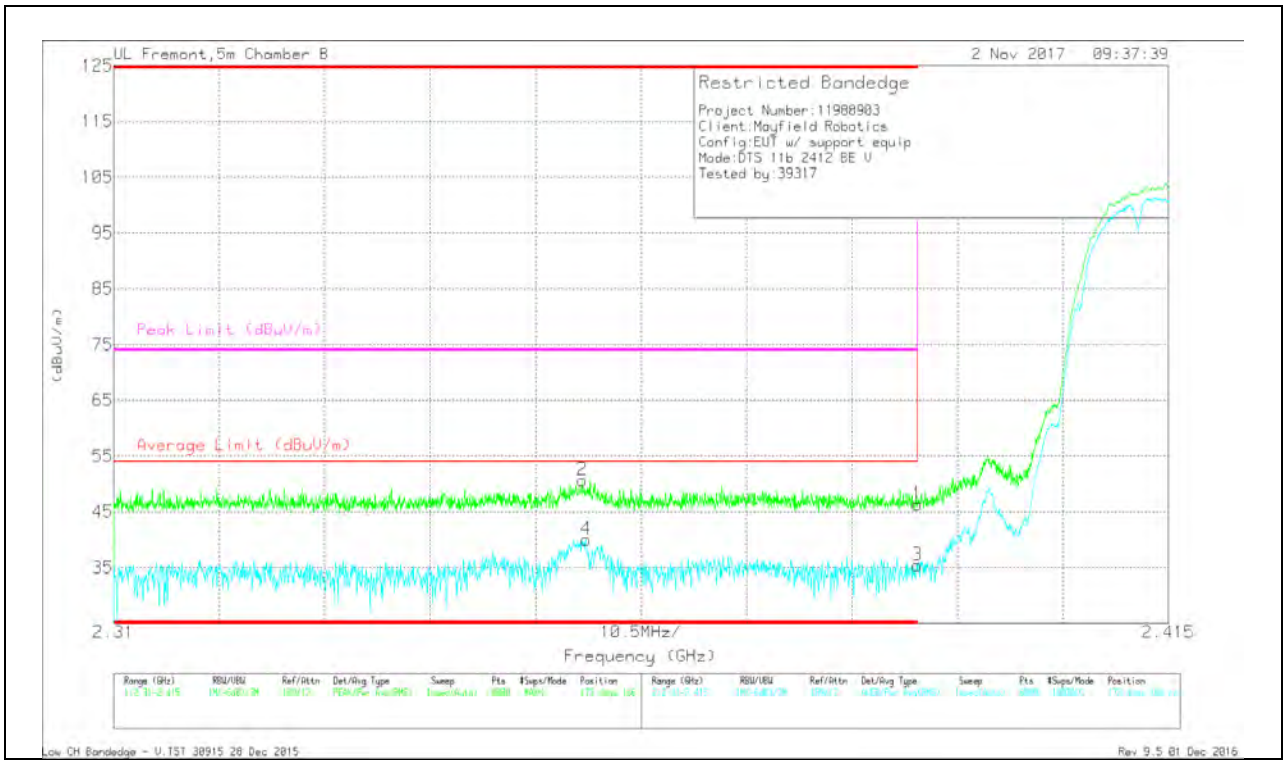
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.334	38.08	Pk	31.9	-21.1	48.88	-	-	74	-25.12	158	197	H
4	* 2.356	24.31	RMS	31.9	-21	35.21	54	-18.79	-	-	158	197	H
1	* 2.39	35.36	Pk	32	-21.2	46.16	-	-	74	-27.84	158	197	H
3	* 2.39	19.57	RMS	32	-21.2	30.37	54	-23.63	-	-	158	197	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

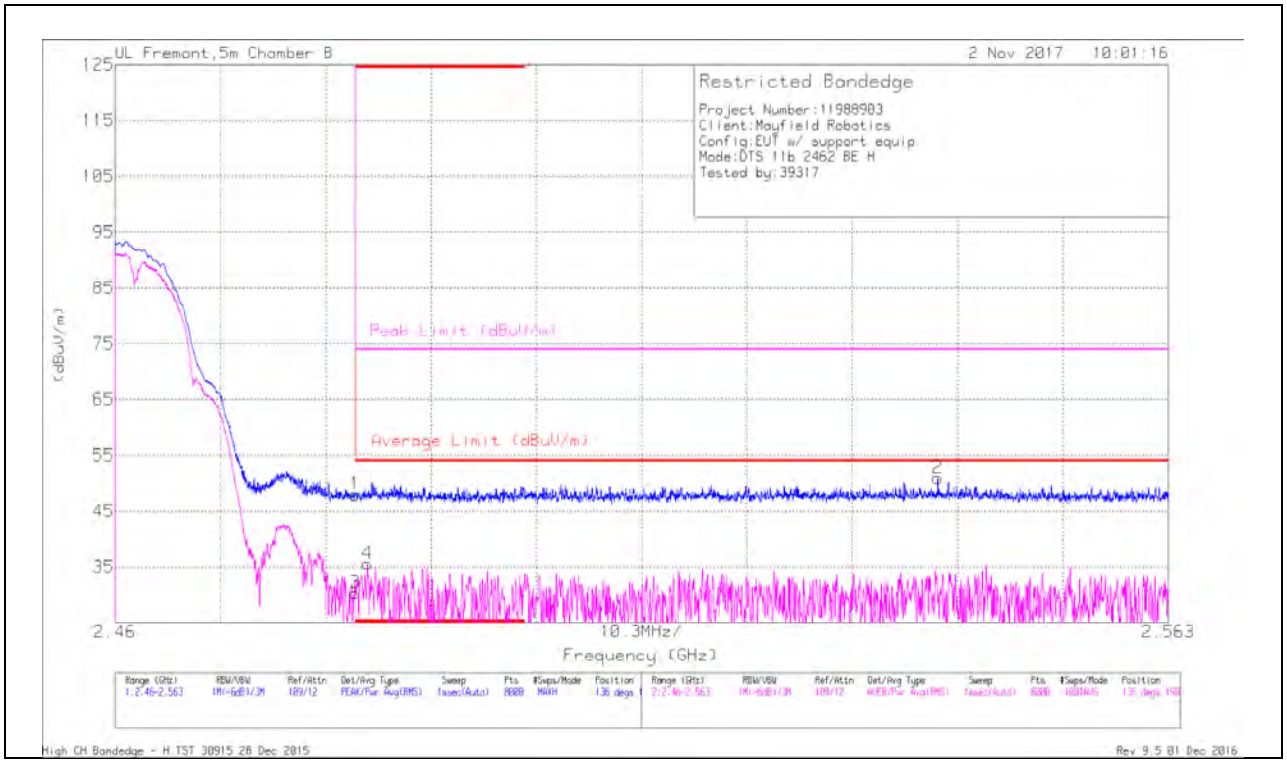


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	35.54	Pk	32	-21.2	46.34	-	-	74	-27.66	172	166	V
2	* 2.357	39.78	Pk	31.9	-21	50.68	-	-	74	-23.32	172	166	V
3	* 2.39	24.61	RMS	32	-21.2	35.41	54	-18.59	-	-	172	166	V
4	* 2.357	29.1	RMS	31.9	-21	40	54	-14	-	-	172	166	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (HIGH CHANNEL, CH 11)

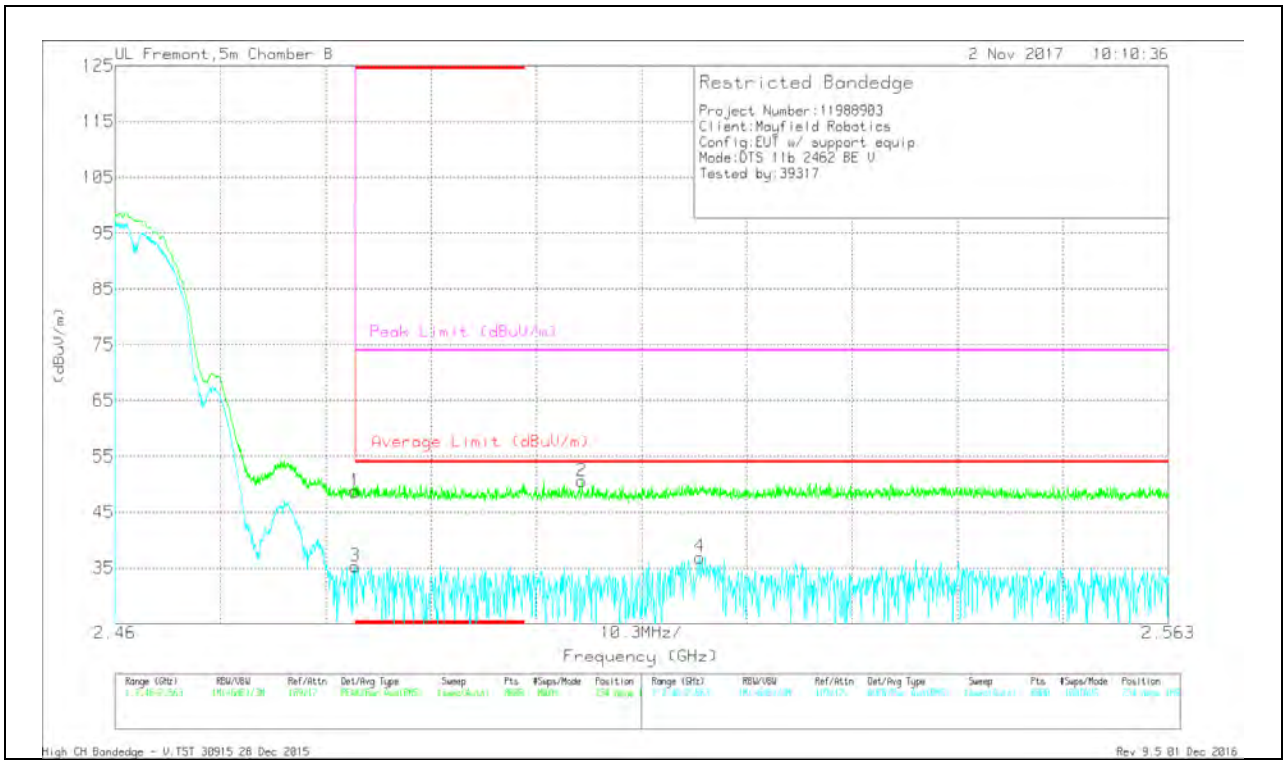
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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	36.36	Pk	32.5	-20.9	47.96	-	-	74	-26.04	136	190	H
3	* 2.484	18.67	RMS	32.5	-20.9	30.27	54	-23.73	-	-	136	190	H
4	* 2.485	23.85	RMS	32.5	-20.8	35.55	54	-18.45	-	-	136	190	H
2	2.54	39.01	Pk	32.5	-20.6	50.91	-	-	74	-23.09	136	190	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

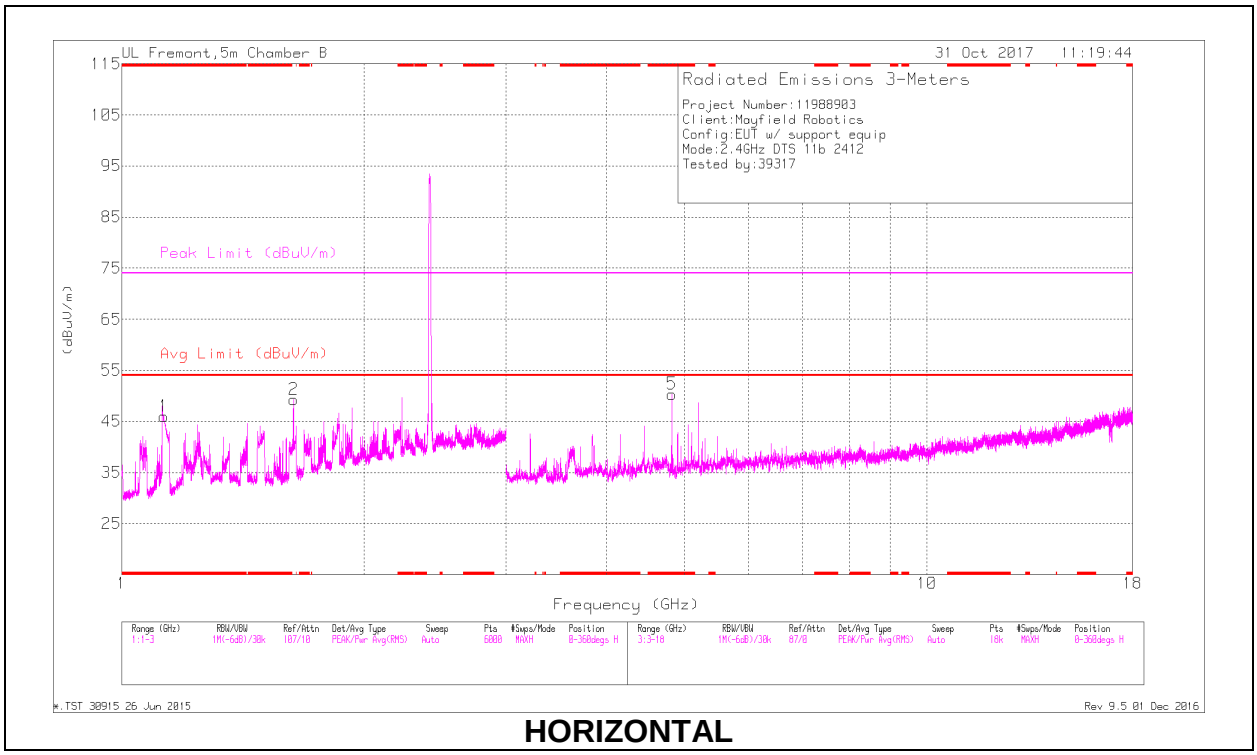


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	37.09	Pk	32.5	-20.9	48.69	-	-	74	-25.31	234	189	V
3	* 2.484	23.69	RMS	32.5	-20.9	35.29	54	-18.71	-	-	234	189	V
2	2.506	39.04	Pk	32.6	-21.1	50.54	-	-	74	-23.46	234	189	V
4	2.517	25.34	RMS	32.6	-21	36.94	54	-17.06	-	-	234	189	V

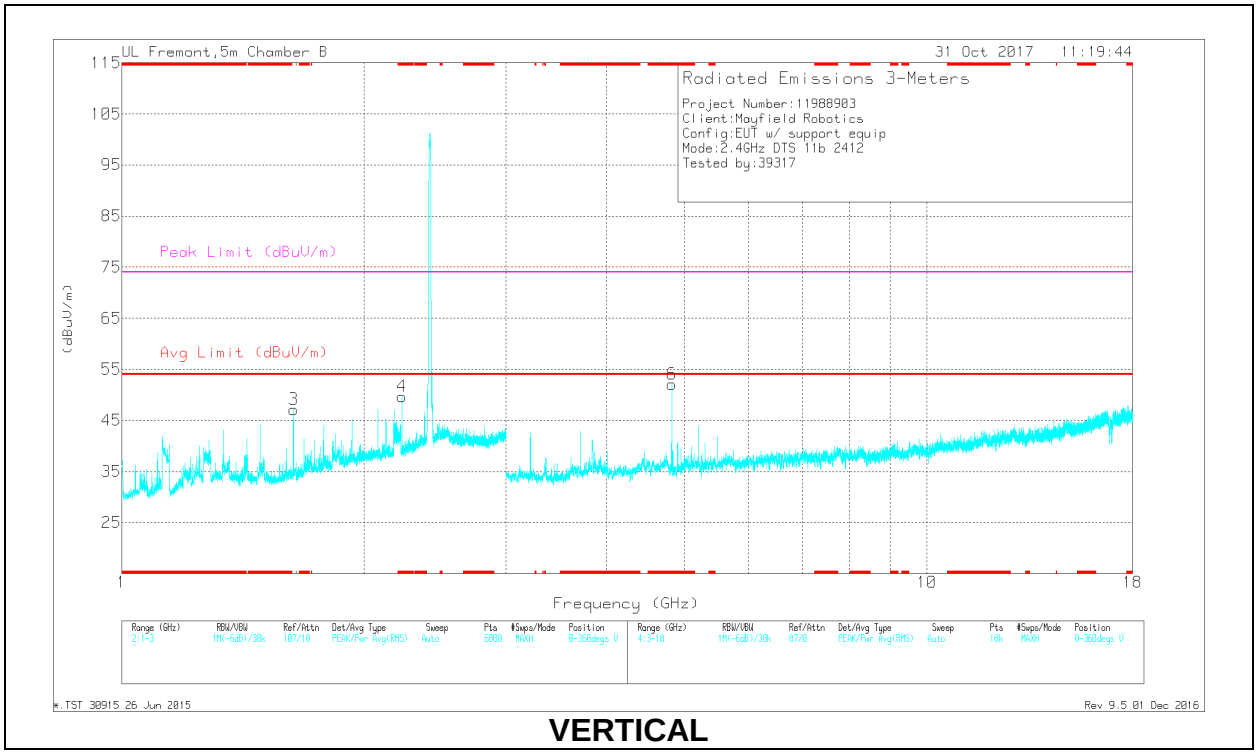
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, CH 1 RESULTS



HORIZONTAL



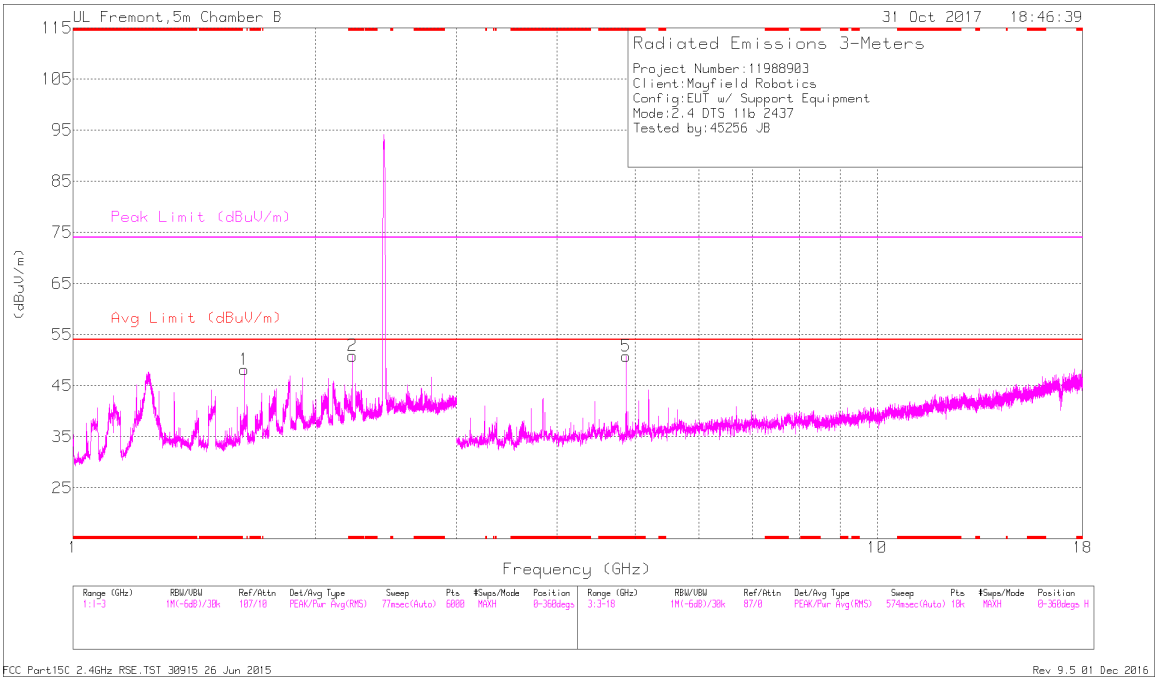
VERTICAL

RADIATED EMISSIONS

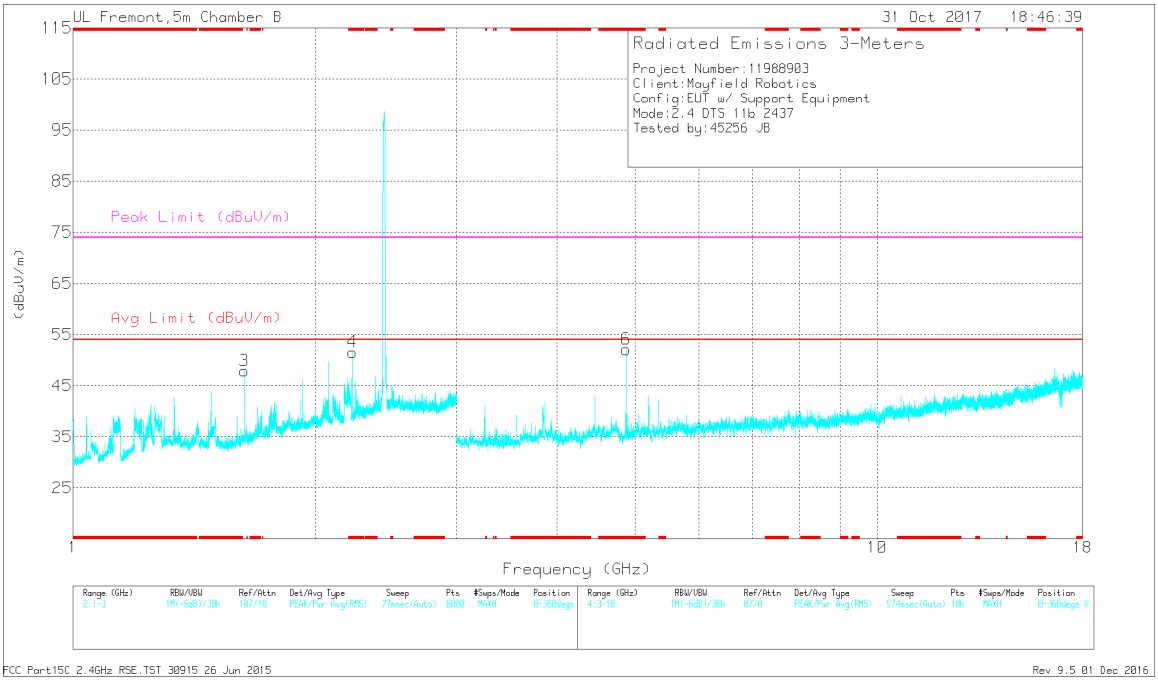
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.126	48.8	PK2	27.6	-22.7	53.7	-	-	74	-20.3	347	150	H
	* 1.126	33.95	MAv1	27.6	-22.7	38.85	54	-15.15	-	-	347	150	H
4	* 2.228	40.88	PK2	31.8	-21.1	51.58	-	-	74	-22.42	360	214	V
	* 2.228	31.32	MAv1	31.8	-21.1	42.02	54	-11.98	-	-	360	214	V
5	* 4.824	47.27	PK2	34.4	-29.4	52.27	-	-	74	-21.73	125	198	H
	* 4.824	44.97	MAv1	34.4	-29.4	49.97	54	-4.03	-	-	125	198	H
6	* 4.824	47.12	PK2	34.4	-29.4	52.12	-	-	74	-21.88	313	102	V
	* 4.824	44.56	MAv1	34.4	-29.4	49.56	54	-4.44	-	-	313	102	V
2	1.634	40.3	PK2	28.5	-21.4	47.4	-	-	-	-	347	104	H
3	1.634	44.6	PK2	28.5	-21.4	51.7	-	-	-	-	161	180	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, CH 6 RESULTS



HORIZONTAL



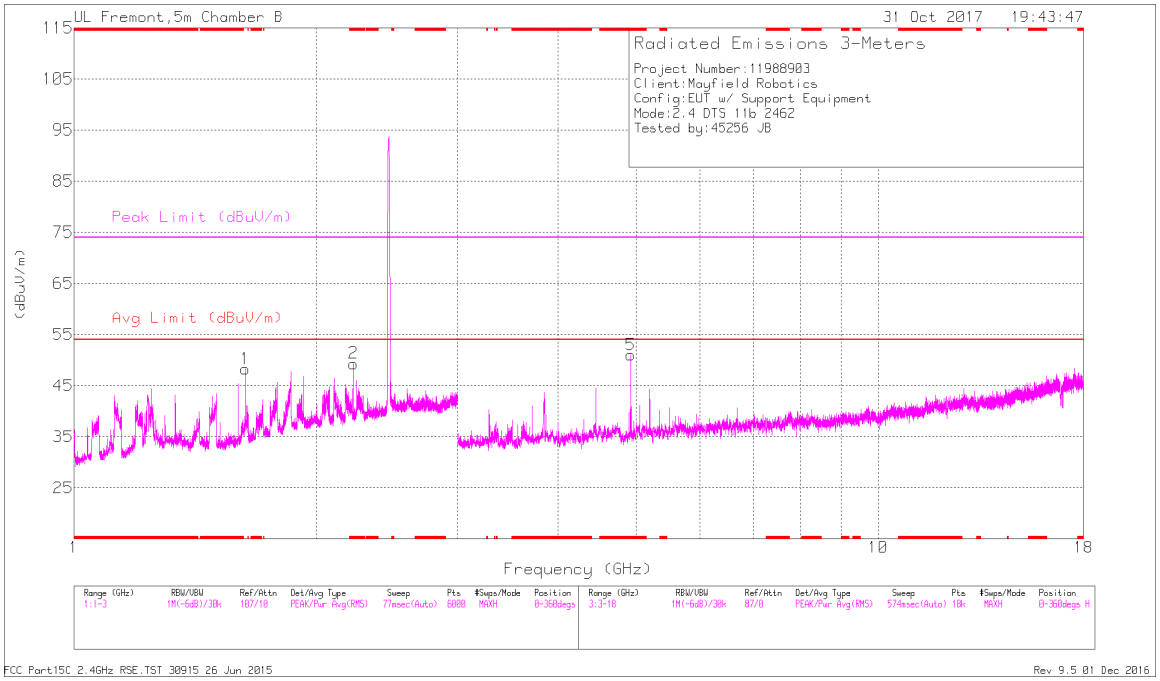
VERTICAL

RADIATED EMISSIONS

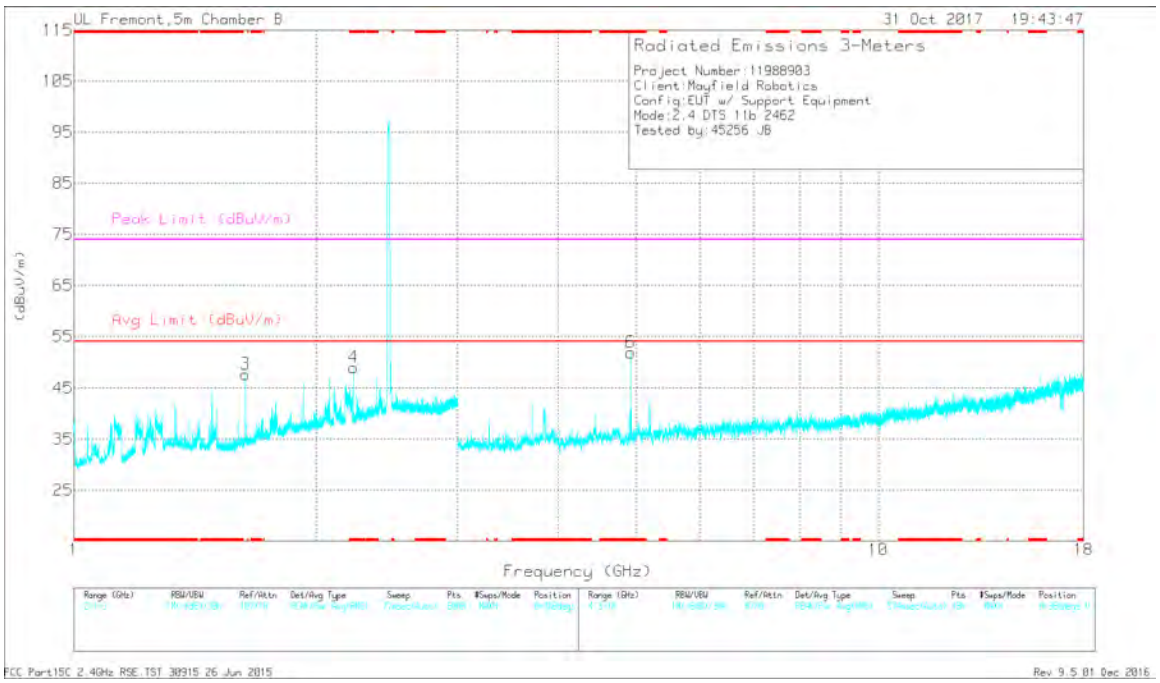
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.228	42.39	PK2	31.8	-21.1	0	53.09	-	-	74	-20.91	133	118	H
	* 2.228	31.47	MAv1	31.8	-21.1	0	42.17	54	-11.83	-	-	133	118	H
4	* 2.227	42.39	PK2	31.8	-21.1	0	53.09	-	-	74	-20.91	120	168	V
	* 2.228	30.1	MAv1	31.8	-21.1	0	40.8	54	-13.2	-	-	120	168	V
5	* 4.874	48.02	PK2	34.4	-30.1	0	52.32	-	-	74	-21.68	357	198	H
	* 4.874	45.72	MAv1	34.4	-30.1	0	50.02	54	-3.98	-	-	357	198	H
6	* 4.874	48.12	PK2	34.4	-30.1	0	52.42	-	-	74	-21.58	328	102	V
	* 4.874	46.01	MAv1	34.4	-30.1	0	50.31	54	-3.69	-	-	328	102	V
1	1.633	44.74	PK2	28.5	-21.4	0	51.84	-	-	-	-	159	107	H
3	1.633	43.57	PK2	28.5	-21.4	0	50.67	-	-	-	-	144	197	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, CH 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.228	43.16	PK2	31.8	-21.1	0	53.86	-	-	74	-20.14	129	117	H
	* 2.227	32.87	MAv1	31.8	-21.1	0	43.57	54	-10.43	-	-	129	117	H
4	* 2.228	42.57	PK2	31.8	-21.1	0	53.27	-	-	74	-20.73	112	126	V
	* 2.228	31	MAv1	31.8	-21.1	0	41.7	54	-12.3	-	-	112	126	V
5	* 4.924	49.05	PK2	34.4	-30.2	0	53.25	-	-	74	-20.75	104	113	H
	* 4.924	46.82	MAv1	34.4	-30.2	0	51.02	54	-2.98	-	-	104	113	H
6	* 4.924	49.64	PK2	34.4	-30.2	0	53.84	-	-	74	-20.16	156	193	V
	* 4.924	47.47	MAv1	34.4	-30.2	0	51.67	54	-2.33	-	-	156	193	V
1	1.634	45.12	PK2	28.5	-21.4	0	52.22	-	-	-	-	156	109	H
3	1.634	44.28	PK2	28.5	-21.4	0	51.38	-	-	-	-	139	224	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

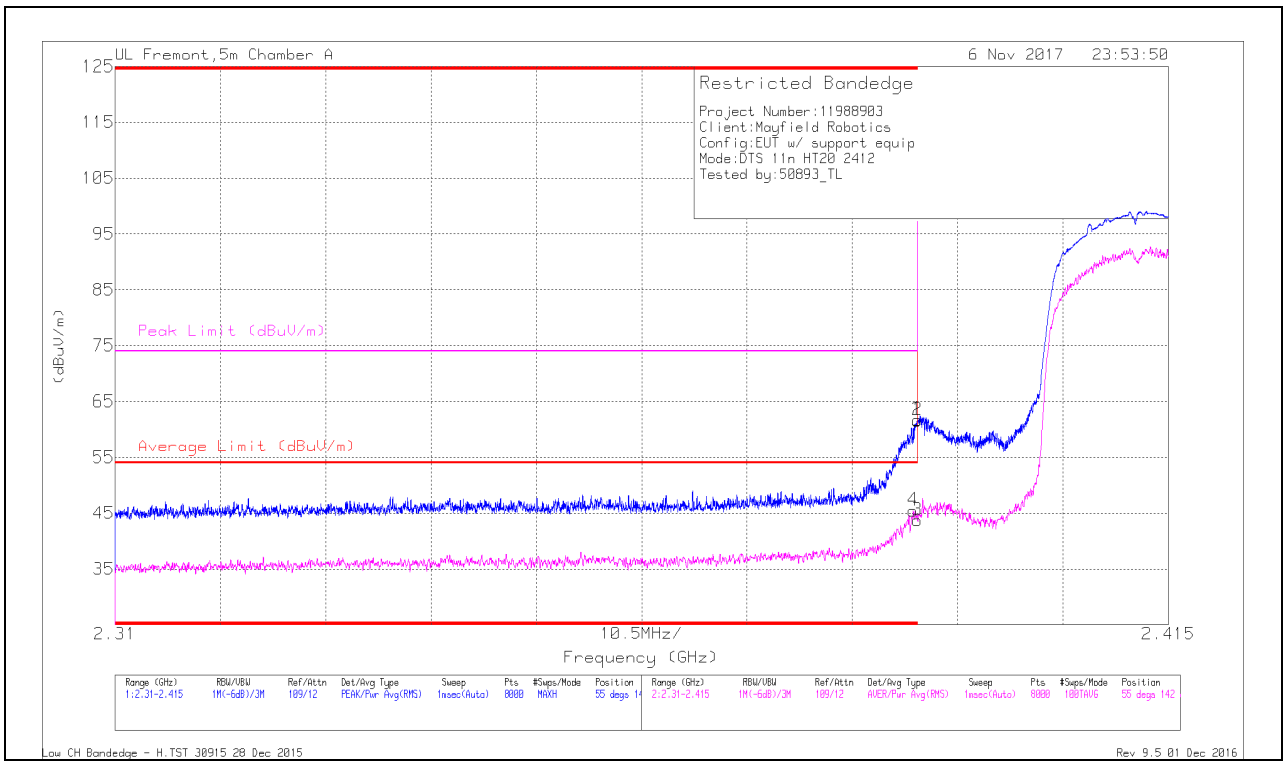
UL VERIFICATION SERVICES INC.
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

9.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

BANDEDGE (LOW CHANNEL, CH 1)

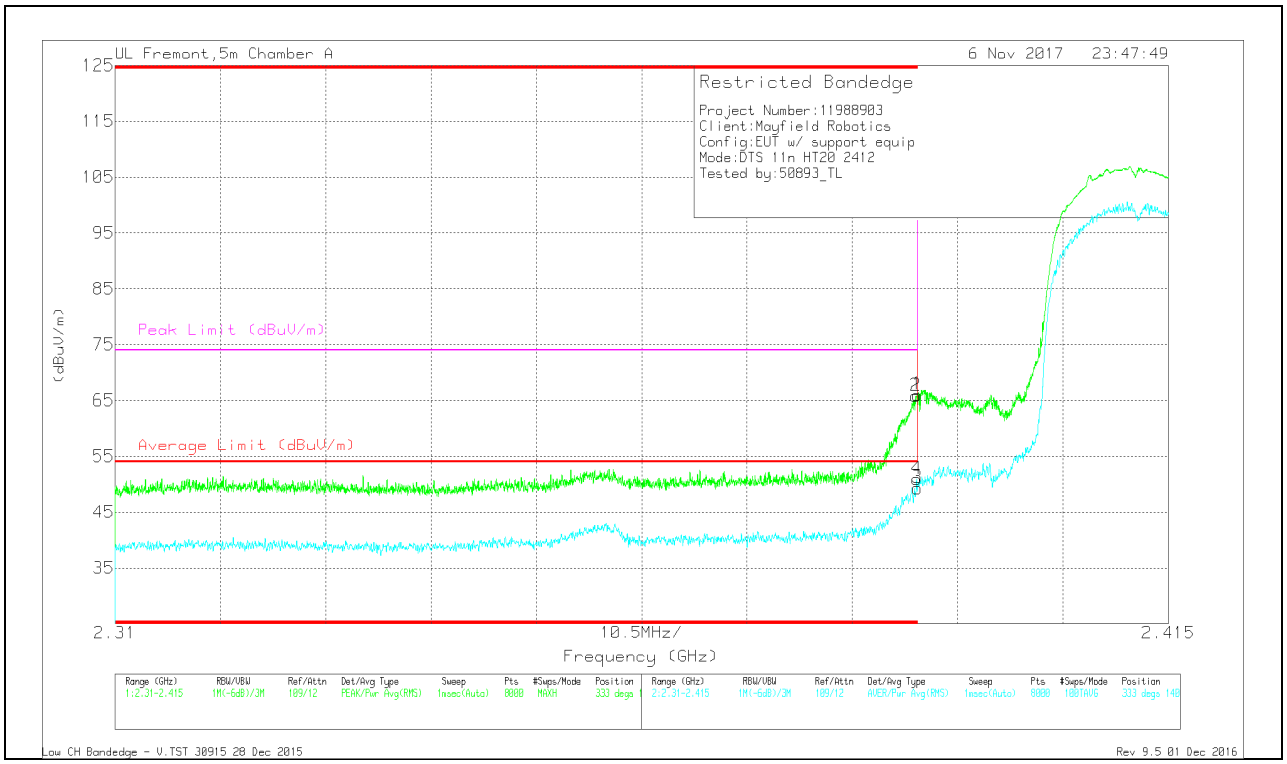
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	53.14	Pk	31.8	-23.2	61.74	-	-	74	-12.26	55	142	H
2	* 2.39	53.04	Pk	31.8	-23.2	61.64	-	-	74	-12.36	55	142	H
3	* 2.39	35.14	RMS	31.8	-23.2	43.74	54	-10.26	-	-	55	142	H
4	* 2.39	36.86	RMS	31.8	-23.2	45.46	54	-8.54	-	-	55	142	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

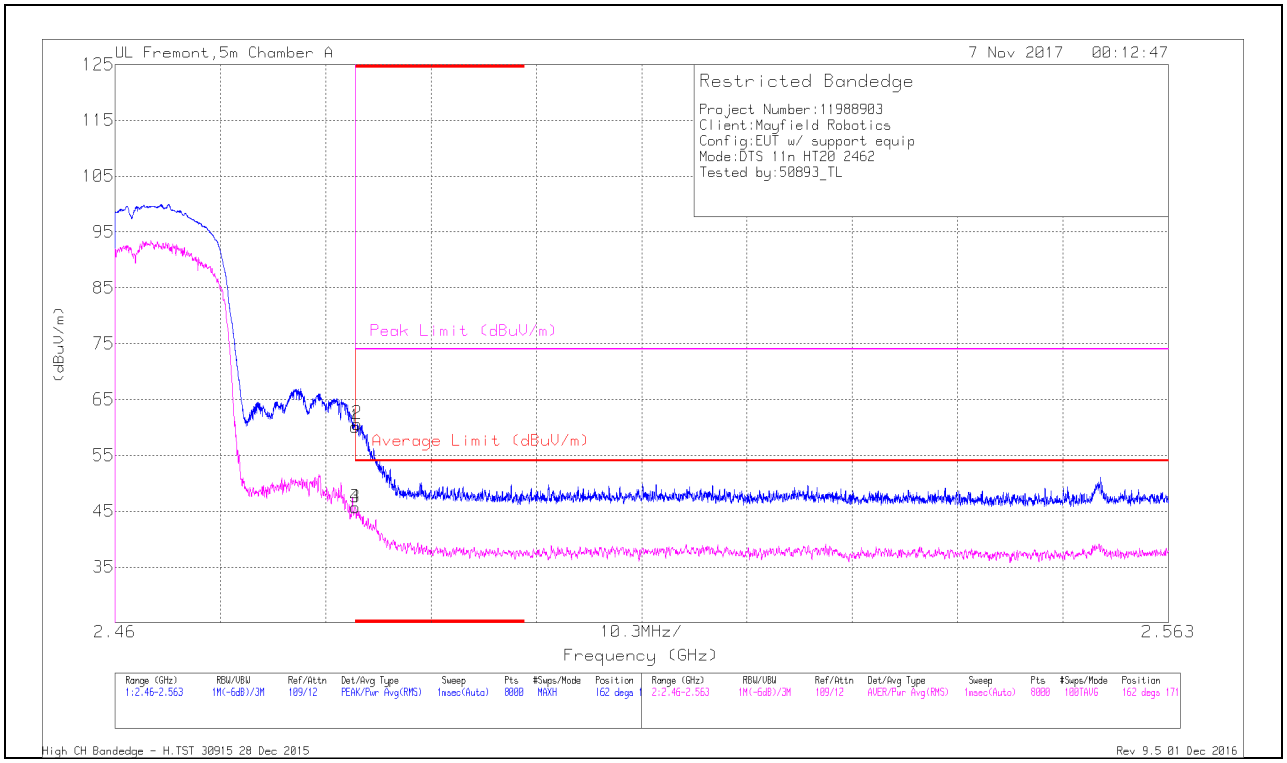


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	57.42	Pk	31.8	-23.2	66.02	-	-	74	-7.98	333	140	V
2	* 2.39	57.21	Pk	31.8	-23.2	65.81	-	-	74	-8.19	333	140	V
3	* 2.39	40.7	RMS	31.8	-23.2	49.3	54	-4.7	-	-	333	140	V
4	* 2.39	42.34	RMS	31.8	-23.2	50.94	54	-3.06	-	-	333	140	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (HIGH CHANNEL, CH 11)

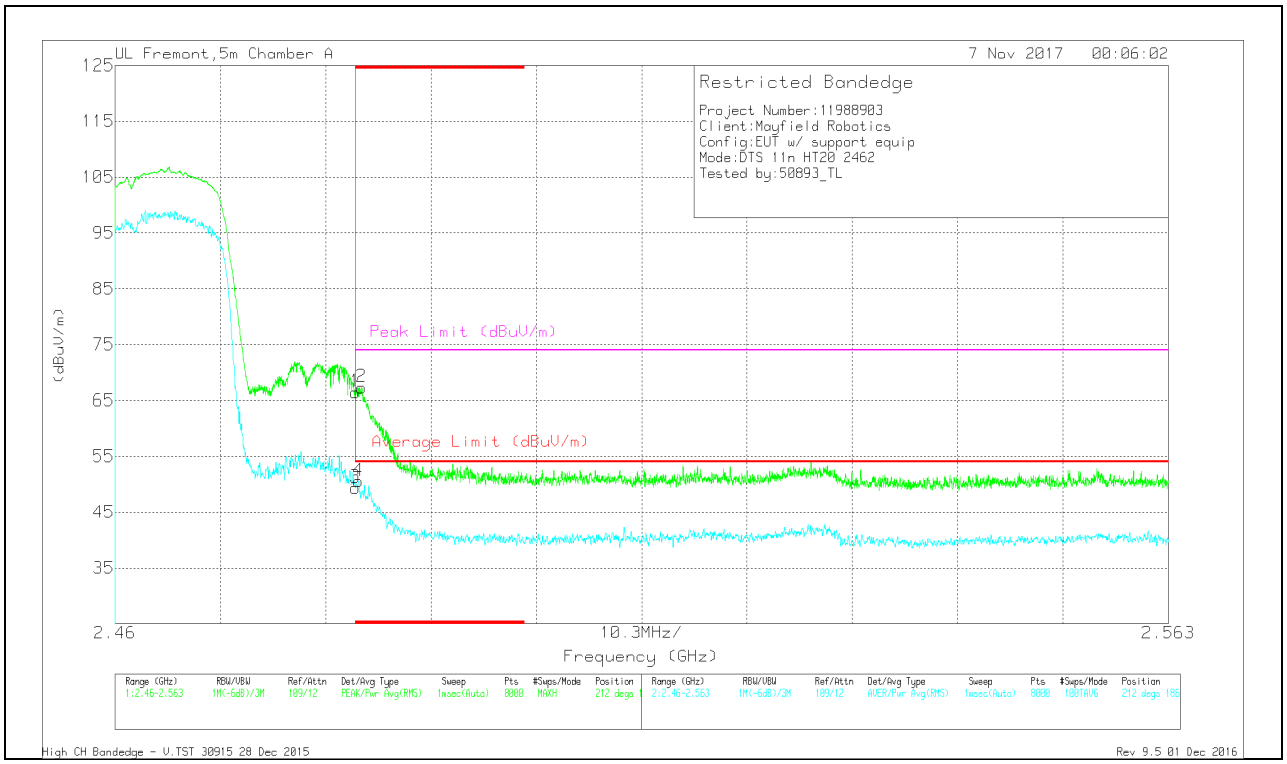
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	50.9	Pk	32.3	-23.1	60.1	-	-	74	-13.9	162	171	H
2	* 2.484	51.41	Pk	32.3	-23.1	60.61	-	-	74	-13.39	162	171	H
3	* 2.484	36.45	RMS	32.3	-23.1	45.65	54	-8.35	-	-	162	171	H
4	* 2.484	36.45	RMS	32.3	-23.1	45.65	54	-8.35	-	-	162	171	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

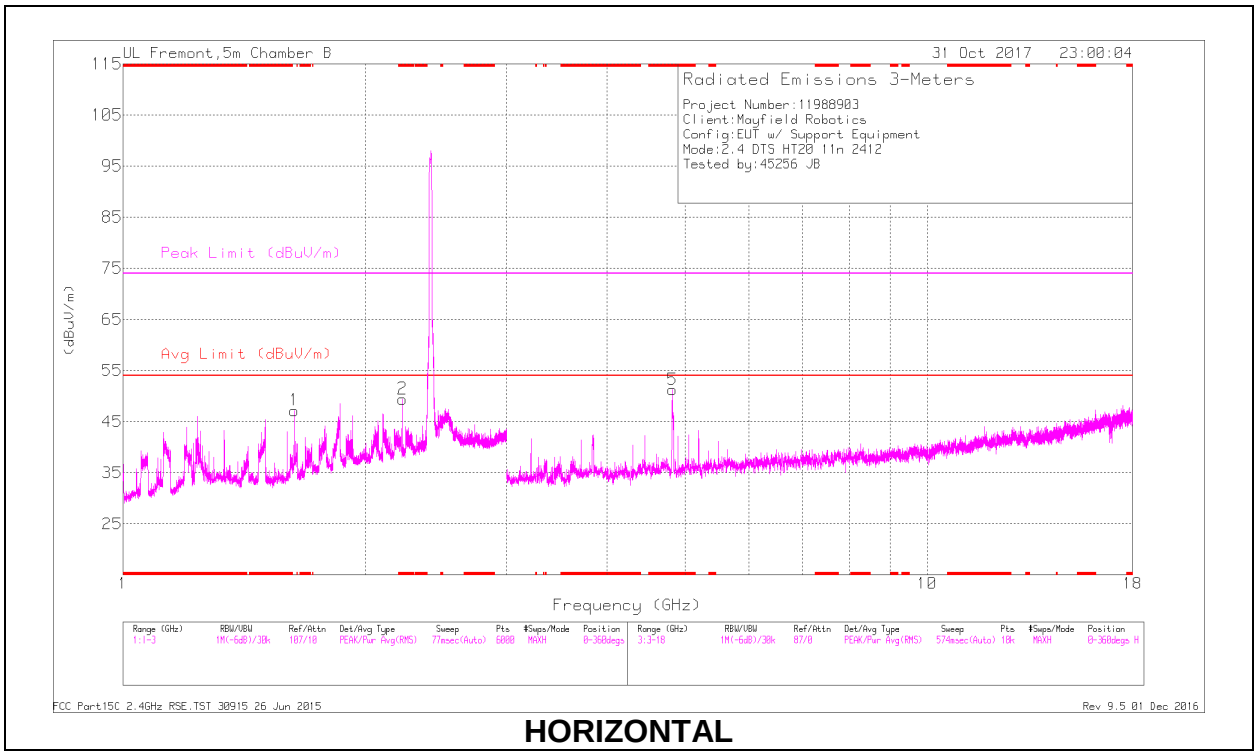


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	57.31	Pk	32.3	-23.1	66.51	-	-	74	-7.49	212	186	V
2	* 2.484	58.17	Pk	32.3	-23.1	67.37	-	-	74	-6.63	212	186	V
3	* 2.484	40.2	RMS	32.3	-23.1	49.4	54	-4.6	-	-	212	186	V
4	* 2.484	41.38	RMS	32.3	-23.1	50.58	54	-3.42	-	-	212	186	V

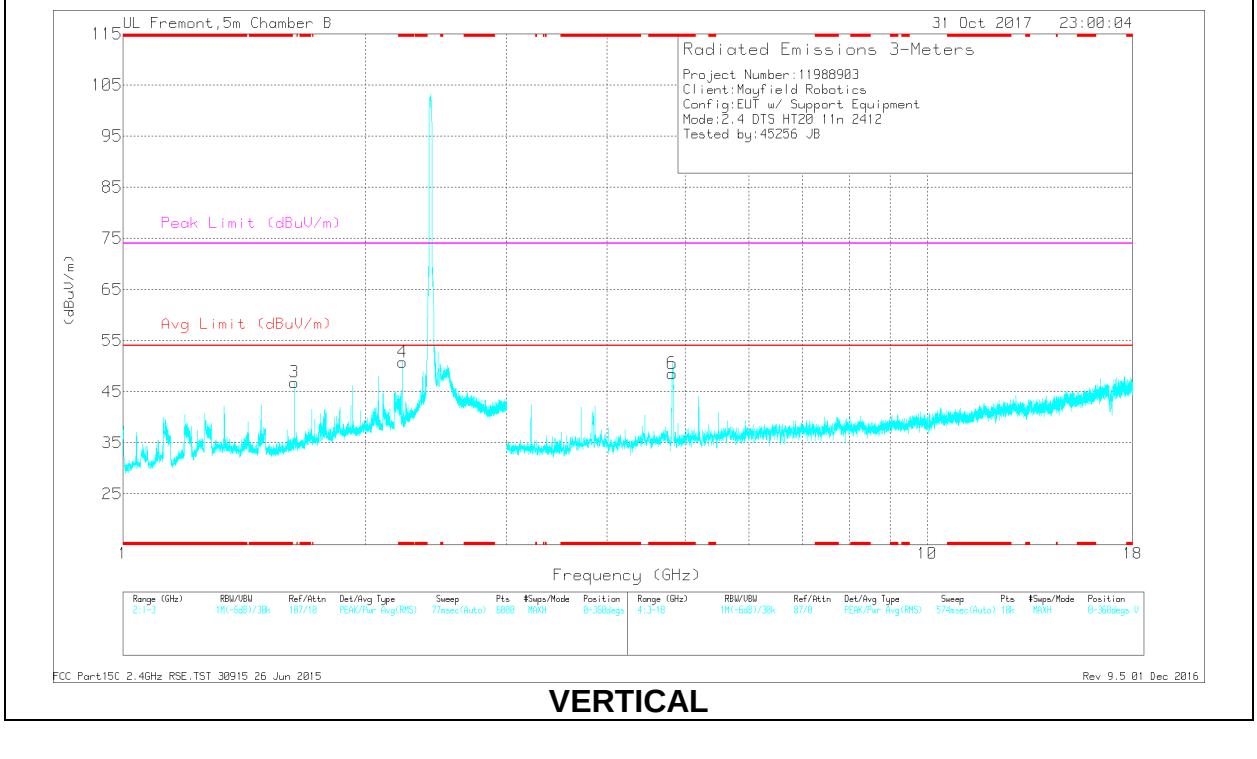
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, CH 1 RESULTS



HORIZONTAL



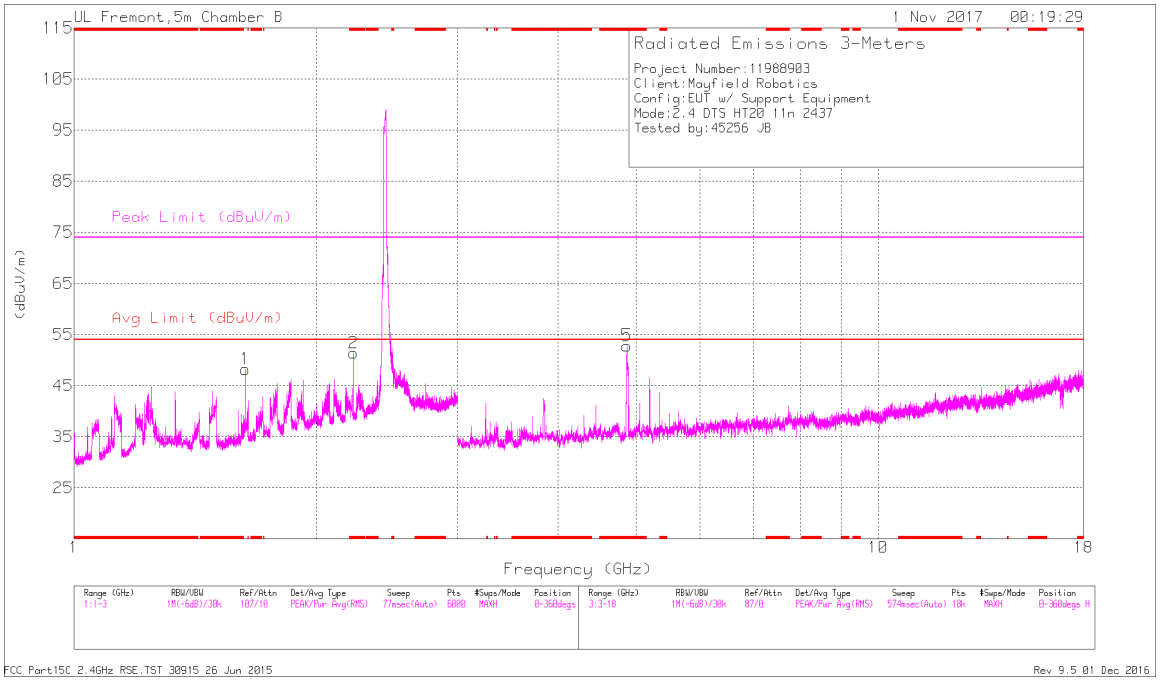
VERTICAL

RADIATED EMISSIONS

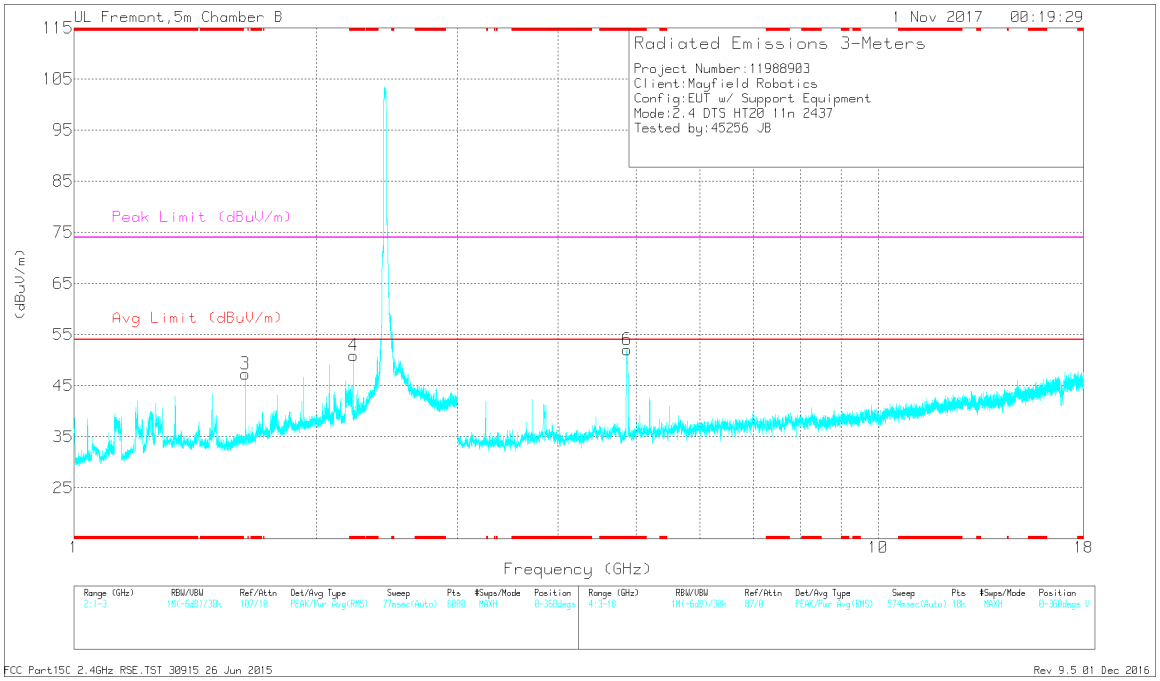
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.228	42.85	PK2	31.8	-21.1	0	53.55	-	-	74	-20.45	159	113	H
	* 2.228	32.04	MAv1	31.8	-21.1	0	42.74	54	-11.26	-	-	159	113	H
4	* 2.228	44.08	PK2	31.8	-21.1	0	54.78	-	-	74	-19.22	108	105	V
	* 2.228	33.38	MAv1	31.8	-21.1	0	44.08	54	-9.92	-	-	108	105	V
5	* 4.819	55.19	PK2	34.4	-29	0	60.59	-	-	74	-13.41	133	196	H
	* 4.819	40.86	MAv1	34.4	-29	0	46.26	54	-7.74	-	-	133	196	H
6	* 4.818	54.53	PK2	34.4	-29	0	59.93	-	-	74	-14.07	5	202	V
	* 4.817	40.96	MAv1	34.4	-29	0	46.36	54	-7.64	-	-	5	202	V
3	1.633	43.8	PK2	28.5	-21.4	0	50.9	-	-	-	-	140	222	V
1	1.634	45.02	PK2	28.5	-21.4	0	52.12	-	-	-	-	158	110	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL, CH 6 RESULTS



HORIZONTAL



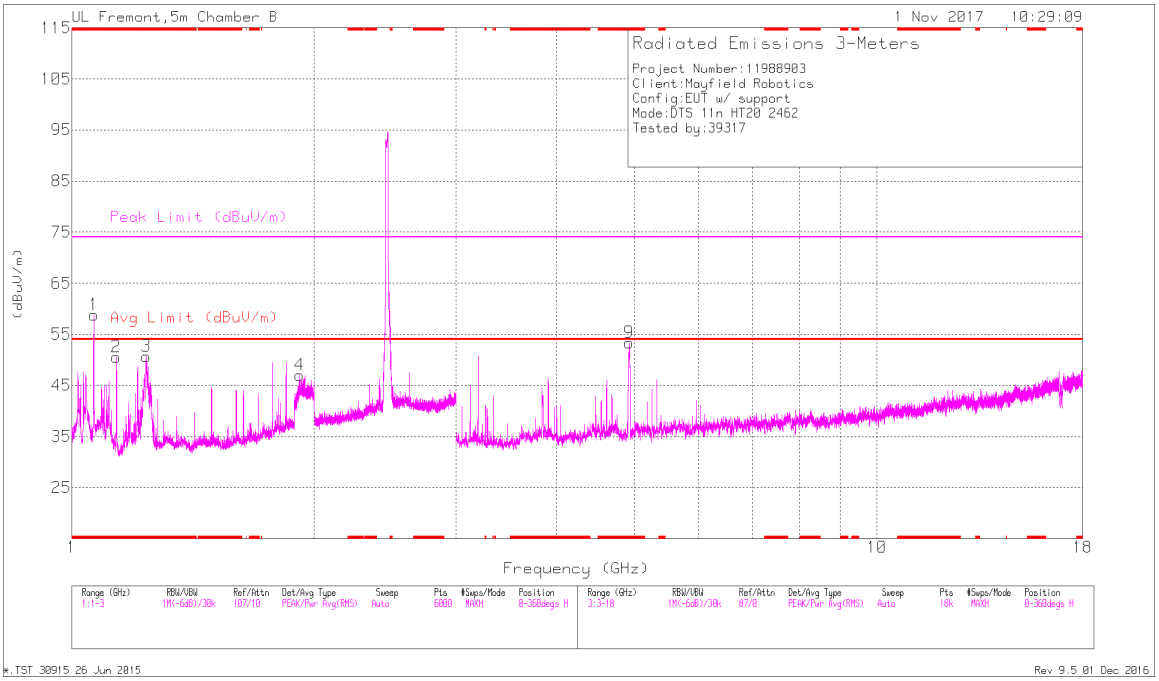
VERTICAL

RADIATED EMISSIONS

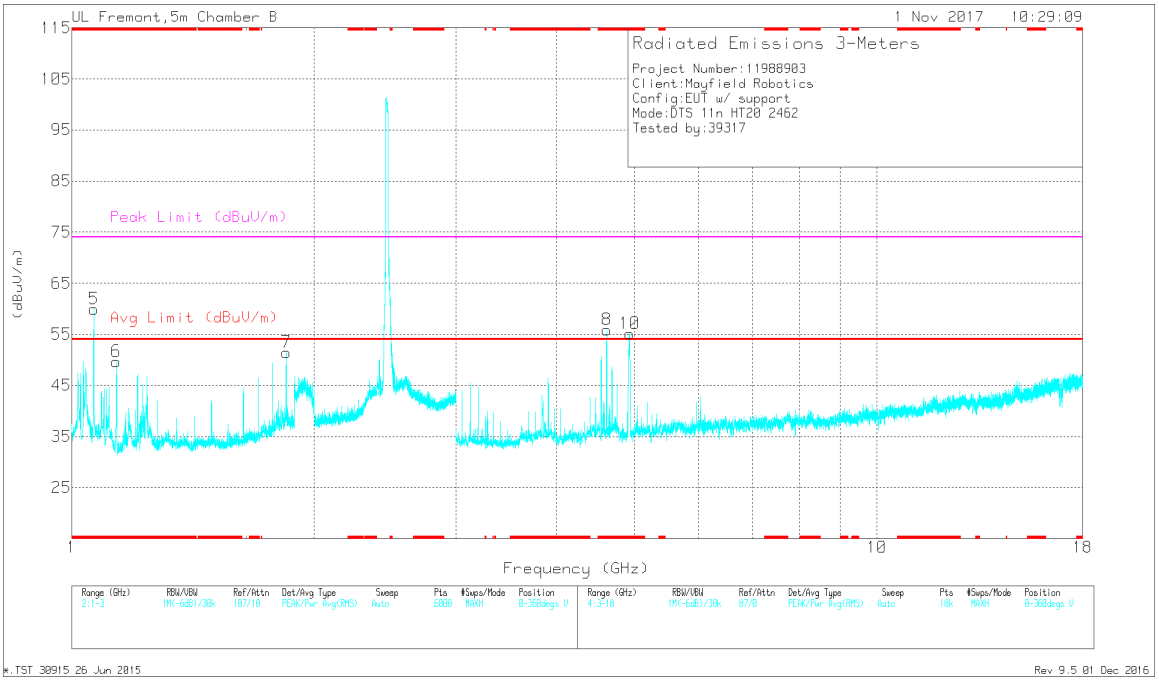
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.228	43.71	PK2	31.8	-21.1	0	54.41	-	-	74	-19.59	156	130	H
	* 2.228	32.04	MAv1	31.8	-21.1	0	42.74	54	-11.26	-	-	156	130	H
4	* 2.227	43.29	PK2	31.8	-21.1	0	53.99	-	-	74	-20.01	138	163	V
	* 2.228	29.76	MAv1	31.8	-21.1	0	40.46	54	-13.54	-	-	138	163	V
5	* 4.871	52.74	PK2	34.4	-30.1	0	57.04	-	-	74	-16.96	357	215	H
	* 4.871	39.4	MAv1	34.4	-30.1	0	43.7	54	-10.3	-	-	357	215	H
6	* 4.874	57.65	PK2	34.4	-30.2	0	61.85	-	-	74	-12.15	328	102	V
	* 4.874	44.55	MAv1	34.4	-30.1	0	48.85	54	-5.15	-	-	328	102	V
1	1.633	45.18	PK2	28.5	-21.4	0	52.28	-	-	-	-	157	109	H
3	1.634	43.79	PK2	28.5	-21.4	0	50.89	-	-	-	-	146	268	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, CH 11 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ 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	* 1.065	54.46	PK2	27.2	-22.9	58.76	-	-	74	-15.24	345	125	H
	* 1.065	45.49	MAv1	27.2	-22.9	49.79	54	-4.21	-	-	345	125	H
2	* 1.136	50.3	PK2	27.5	-22.8	55	-	-	74	-19	209	165	H
	* 1.136	40.59	MAv1	27.5	-22.8	45.29	54	-8.71	-	-	209	165	H
3	* 1.238	54.27	PK2	28.6	-22.1	60.77	-	-	74	-13.23	178	185	H
	* 1.238	29.04	MAv1	28.6	-22.1	35.54	54	-18.46	-	-	178	185	H
5	* 1.065	56.18	PK2	27.2	-22.9	60.48	-	-	74	-13.52	242	211	V
	* 1.065	46.87	MAv1	27.2	-22.9	51.17	54	-2.83	-	-	242	211	V
6	* 1.136	45.94	PK2	27.5	-22.8	50.64	-	-	74	-23.36	338	126	V
	* 1.136	35.65	MAv1	27.5	-22.8	40.35	54	-13.65	-	-	338	126	V
9	* 4.919	56.21	PK2	34.4	-30.4	60.21	-	-	74	-13.79	156	106	H
	* 4.919	42.5	MAv1	34.4	-30.4	46.5	54	-7.5	-	-	156	106	H
8	* 4.615	51.67	PK2	34.3	-30.5	55.47	-	-	74	-18.53	148	108	V
	* 4.615	42.15	MAv1	34.3	-30.5	45.95	54	-8.05	-	-	148	108	V
10	* 4.93	58.88	PK2	34.4	-30	63.28	-	-	74	-10.72	322	207	V
	* 4.928	46.19	MAv1	34.4	-30	50.59	54	-3.41	-	-	322	207	V
7	1.846	44.88	PK2	30.8	-21.1	54.58	-	-	-	-	89	130	V
4	1.917	47.07	PK2	31	-21	57.07	-	-	-	-	217	239	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

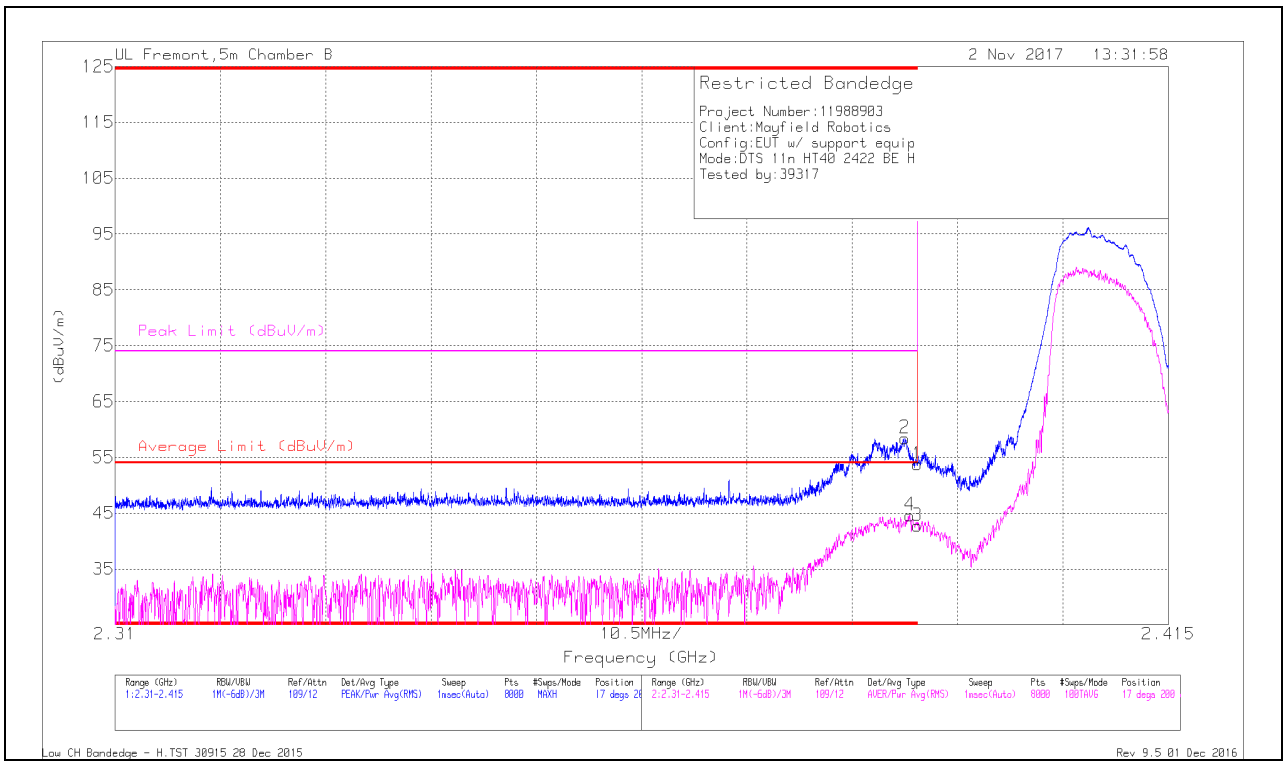
UL VERIFICATION SERVICES INC.
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

9.1.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 2.4 GHz BAND

2TX Antenna 1 + Antenna 2 CDD MODE

BANDEDGE (LOW CHANNEL, CH 3)

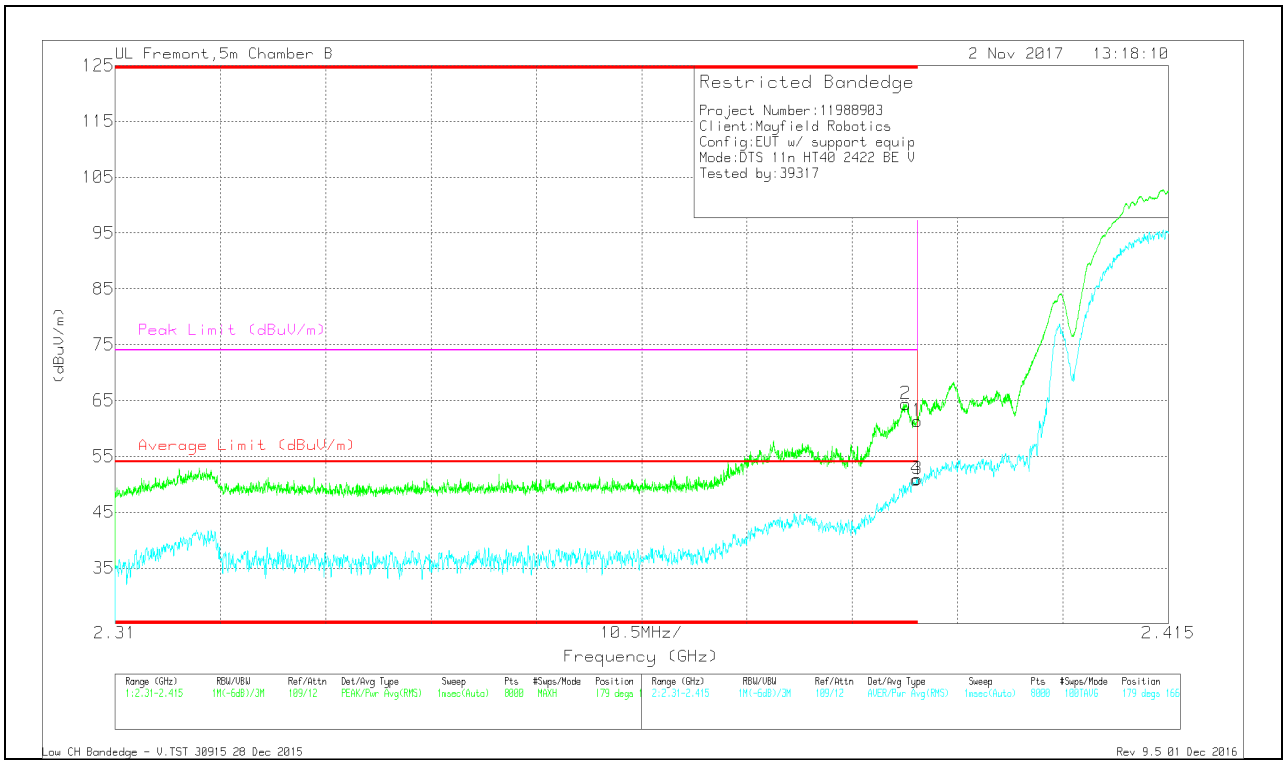
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	47.62	Pk	32	-21.2	58.42	-	-	74	-15.58	17	200	H
4	* 2.389	33.81	RMS	32	-21.2	44.61	54	-9.39	-	-	17	200	H
1	* 2.39	42.94	Pk	32	-21.2	53.74	-	-	74	-20.26	17	200	H
3	* 2.39	31.95	RMS	32	-21.2	42.75	54	-11.25	-	-	17	200	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

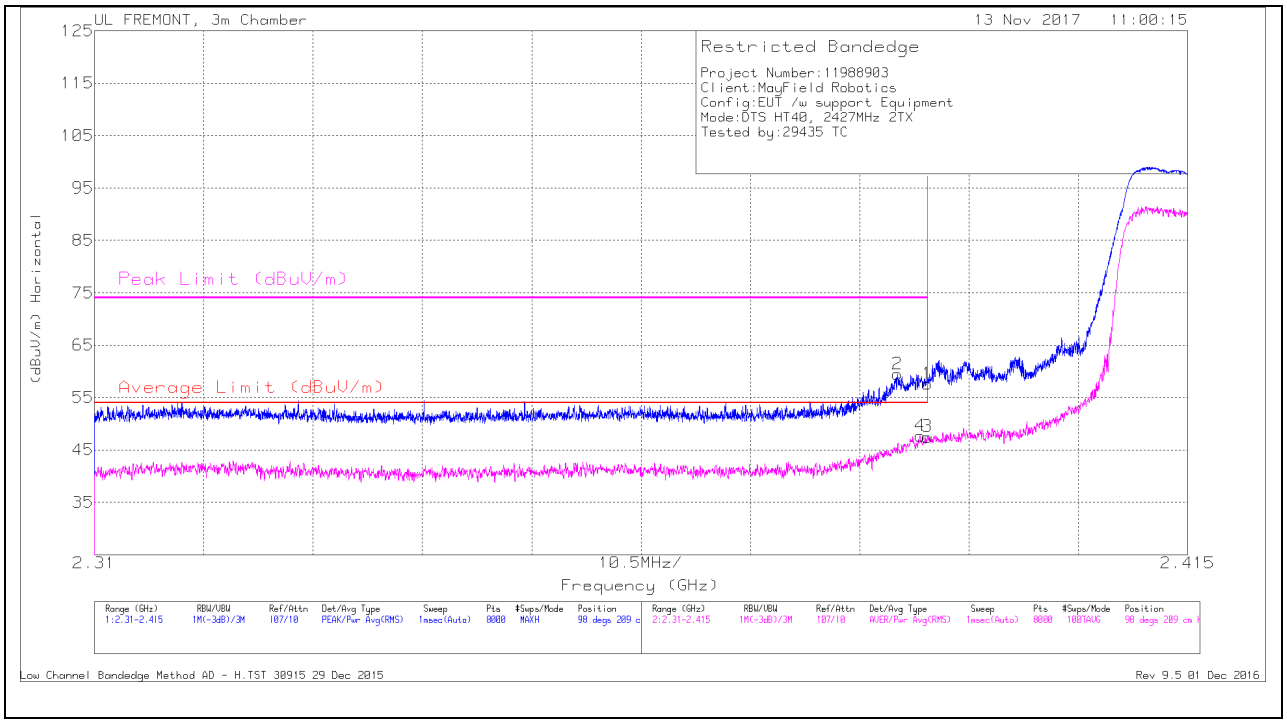


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	53.58	Pk	32	-21.2	64.38	-	-	74	-9.62	179	166	V
1	* 2.39	50.5	Pk	32	-21.2	61.3	-	-	74	-12.7	179	166	V
3	* 2.39	40.12	RMS	32	-21.2	50.92	54	-3.08	-	-	179	166	V
4	* 2.39	40.06	RMS	32	-21.2	50.86	54	-3.14	-	-	179	166	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (LOW CHANNEL, CH 4)

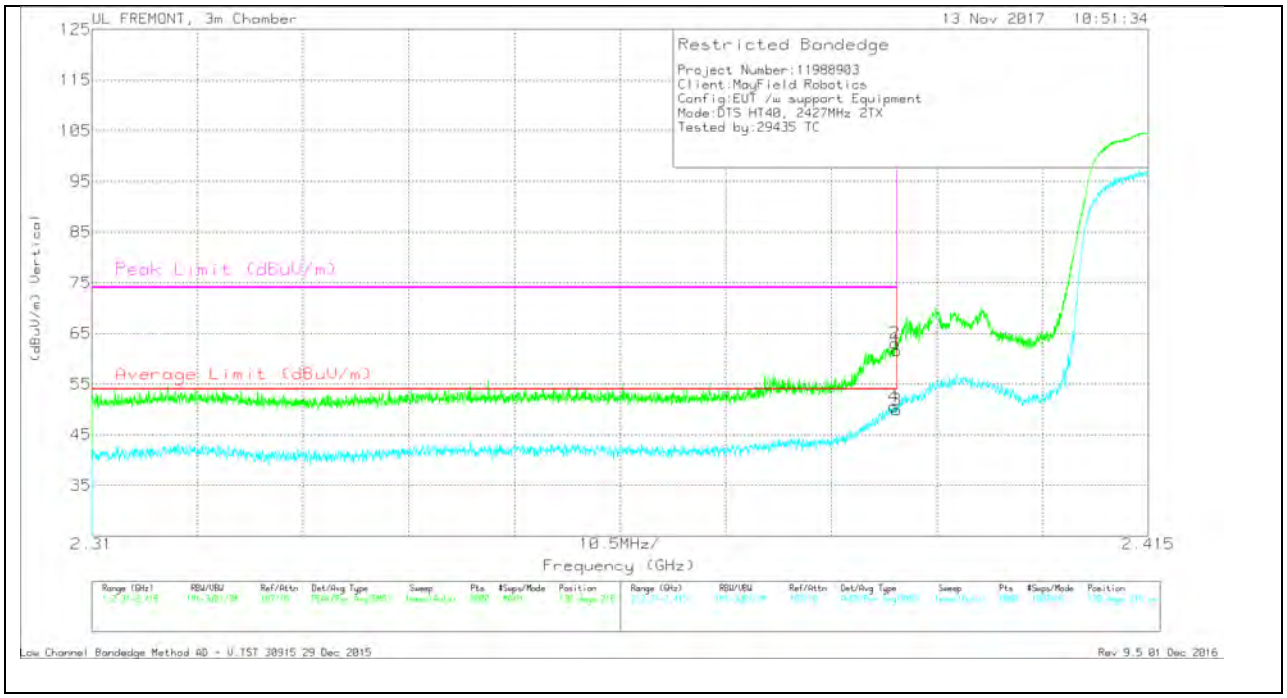
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.387	48.79	Pk	31.9	-21.2	59.49	-	-	74	-14.51	98	209	H
4	2.389	37.04	RMS	31.9	-21.2	47.74	54	-6.26	-	-	98	209	H
1	2.39	46.97	Pk	31.9	-21.2	57.67	-	-	74	-16.33	98	209	H
3	2.39	36.8	RMS	31.9	-21.2	47.5	54	-6.5	-	-	98	209	H

Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

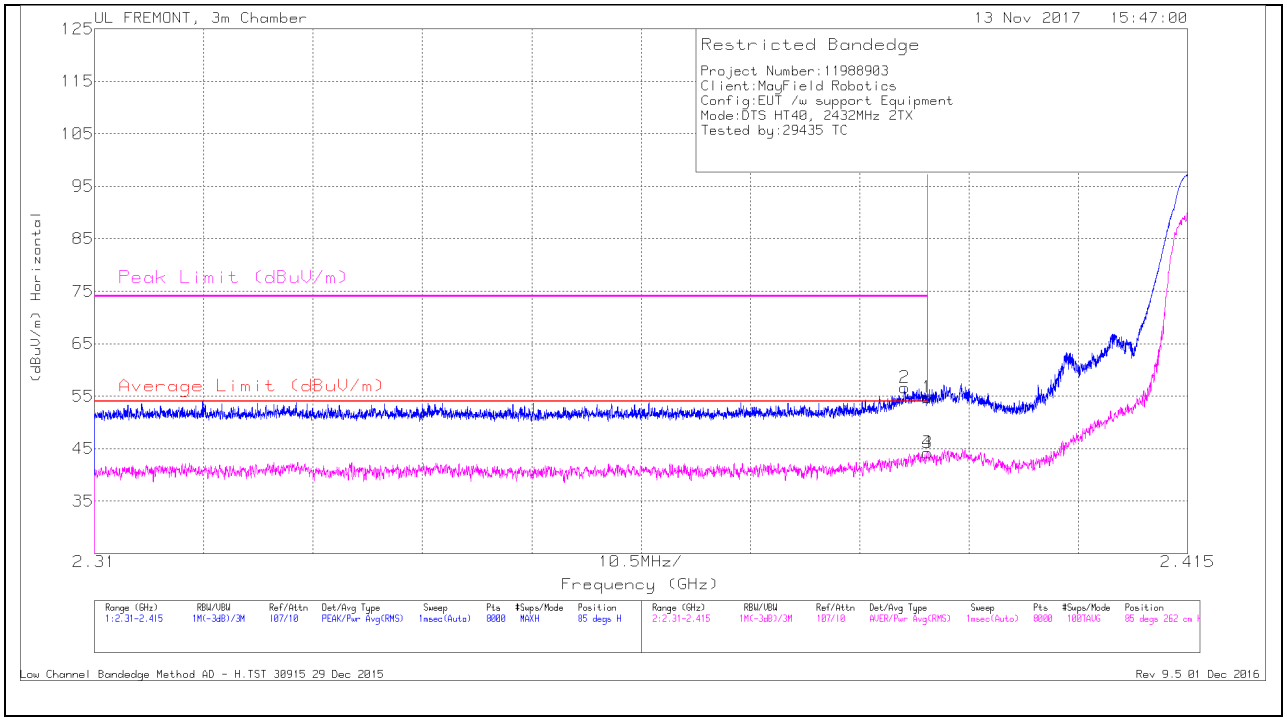


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.39	50.87	Pk	31.9	-21.2	61.57	-	-	74	-12.43	130	218	V
2	2.39	52.35	Pk	31.9	-21.2	63.05	-	-	74	-10.95	130	218	V
3	2.39	39.25	RMS	31.9	-21.2	49.95	54	-4.05	-	-	130	218	V
4	2.39	39.86	RMS	31.9	-21.2	50.56	54	-3.44	-	-	130	218	V

Pk - Peak detector
RMS - RMS detection

BANDEDGE (LOW CHANNEL, CH 5)

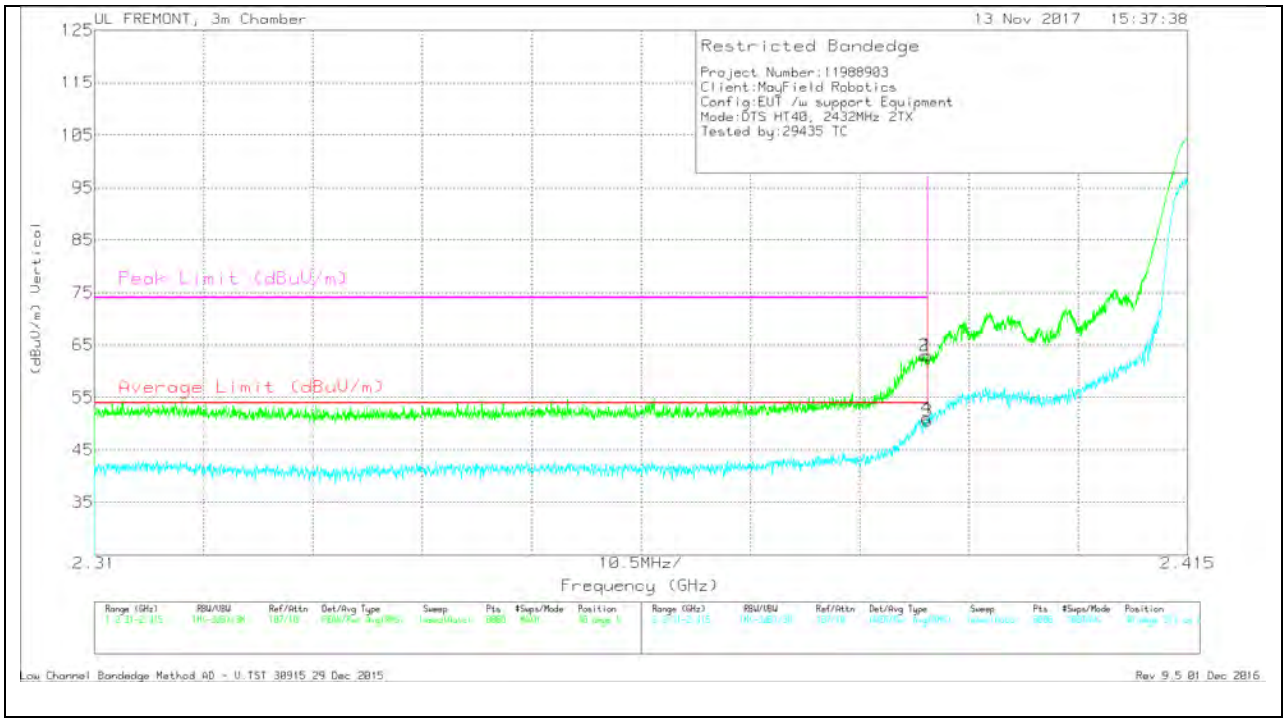
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.388	45.88	Pk	31.9	-21.2	56.58	-	-	74	-17.42	85	262	H
1	2.39	44.1	Pk	31.9	-21.2	54.8	-	-	74	-19.2	85	262	H
3	2.39	33.52	RMS	31.9	-21.2	44.22	54	-9.78	-	-	85	262	H
4	2.39	33.56	RMS	31.9	-21.2	44.26	54	-9.74	-	-	85	262	H

Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

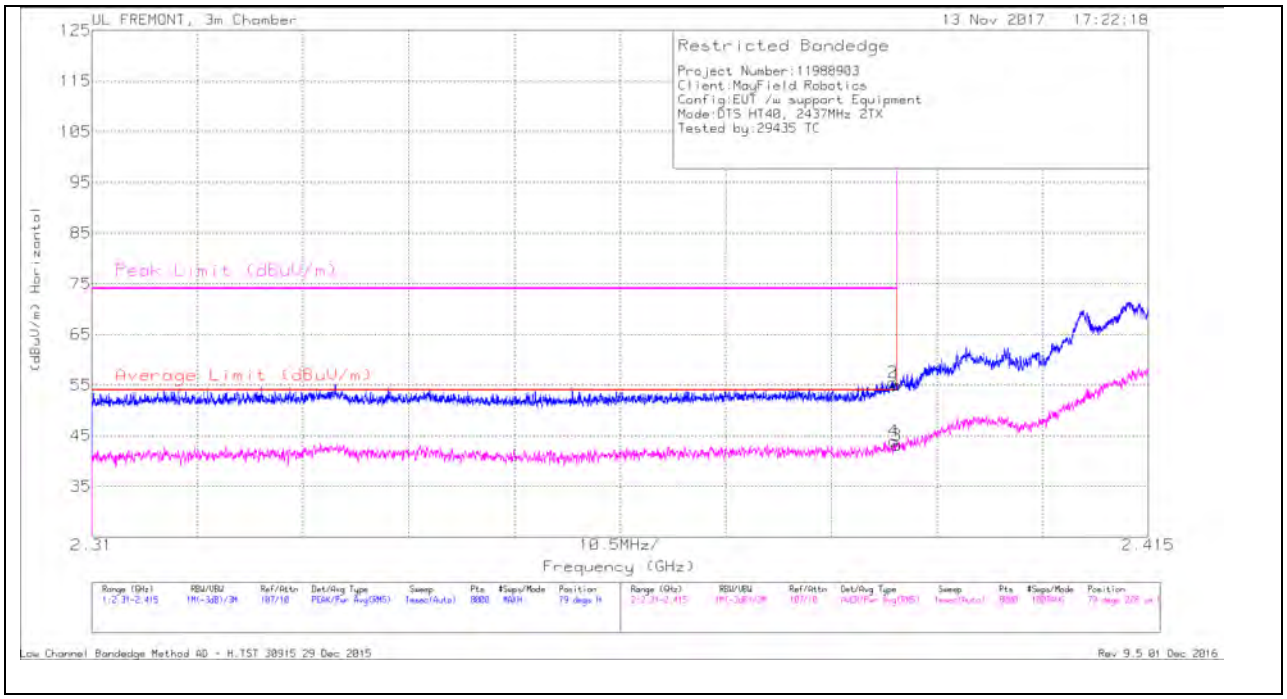


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.39	52.23	Pk	31.9	-21.2	62.93	-	-	74	-11.07	48	371	V
2	2.39	52.22	Pk	31.9	-21.2	62.92	-	-	74	-11.08	48	371	V
3	2.39	39.82	RMS	31.9	-21.2	50.52	54	-3.48	-	-	48	371	V
4	2.39	40.3	RMS	31.9	-21.2	51	54	-3	-	-	48	371	V

Pk - Peak detector
RMS - RMS detection

BANDEDGE LOW EDGE(MID CHANNEL, CH 6)

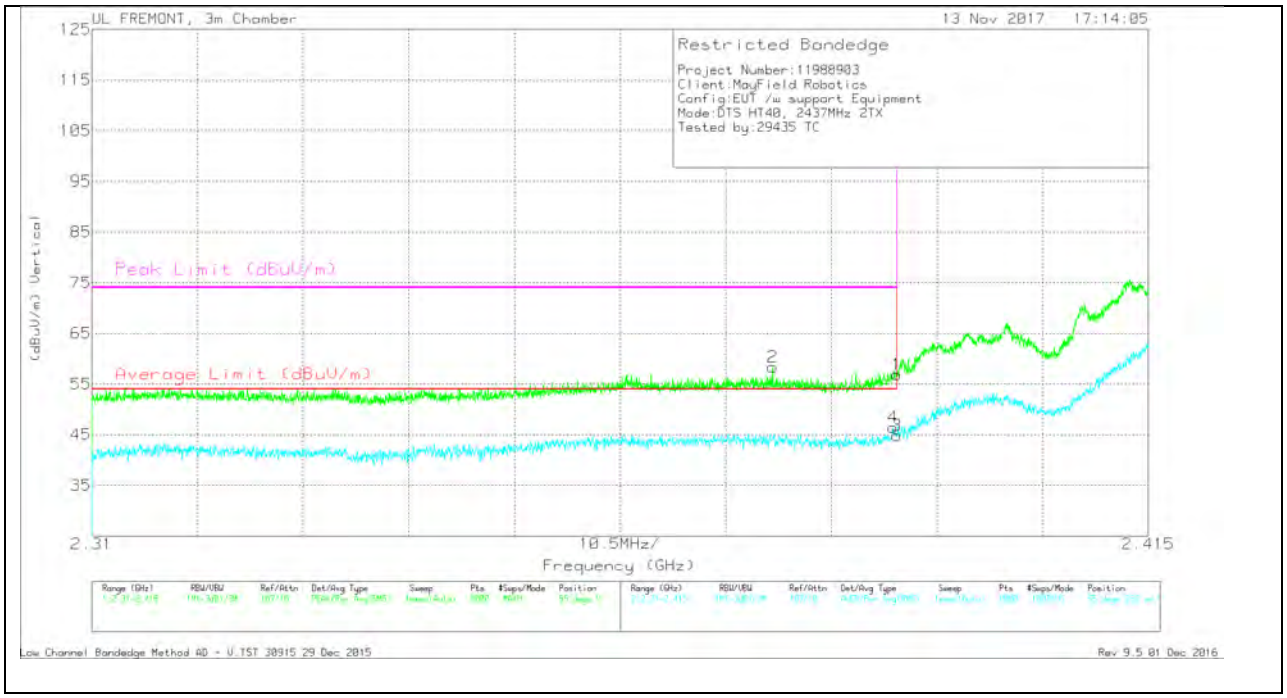
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/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	44.32	Pk	31.9	-21.2	55.02	-	-	74	-18.98	79	228	H
2	2.39	44.86	Pk	31.9	-21.2	55.56	-	-	74	-18.44	79	228	H
3	2.39	32.39	RMS	31.9	-21.2	43.09	54	-10.91	-	-	79	228	H
4	2.39	33.26	RMS	31.9	-21.2	43.96	54	-10.04	-	-	79	228	H

Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

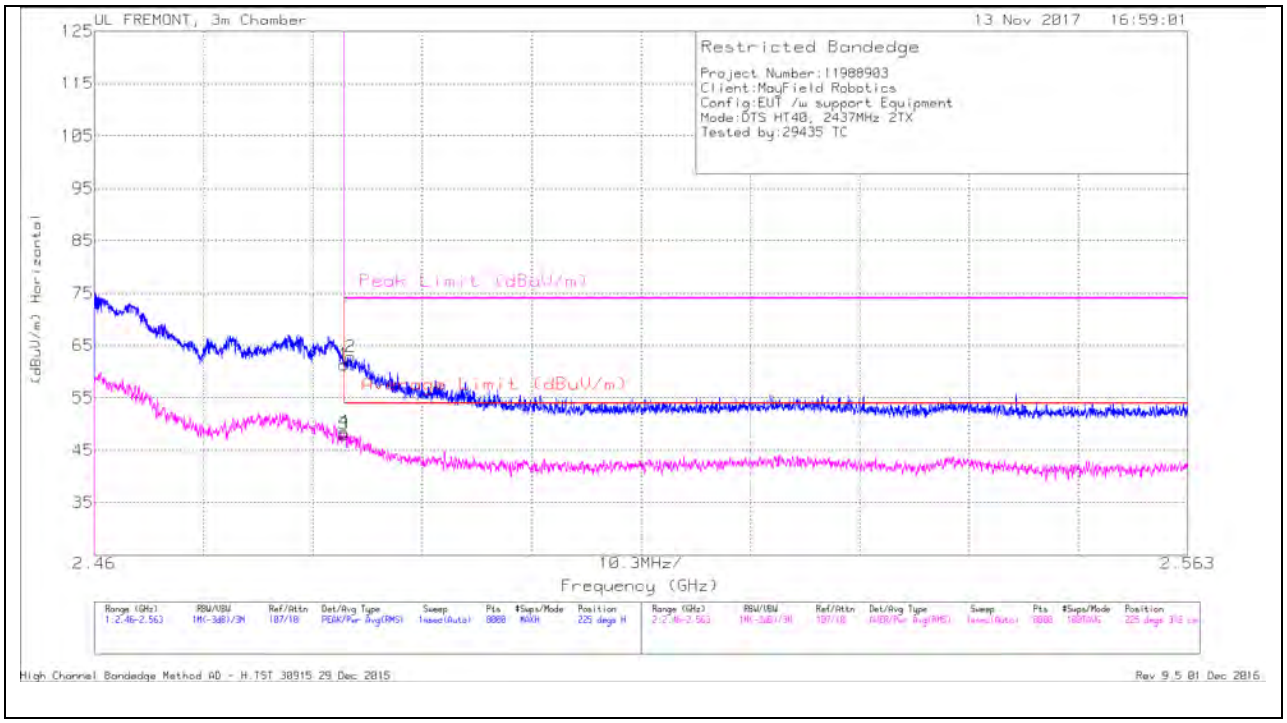


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.378	47.96	Pk	31.9	-21.5	58.36	-	-	74	-15.64	55	256	V
1	2.39	46.2	Pk	31.9	-21.2	56.9	-	-	74	-17.1	55	256	V
3	2.39	34.13	RMS	31.9	-21.2	44.83	54	-9.17	-	-	55	256	V
4	2.39	35.73	RMS	31.9	-21.2	46.43	54	-7.57	-	-	55	256	V

Pk - Peak detector
RMS - RMS detection

BANDEDGE HIGH EDGE(MID CHANNEL, CH 6)

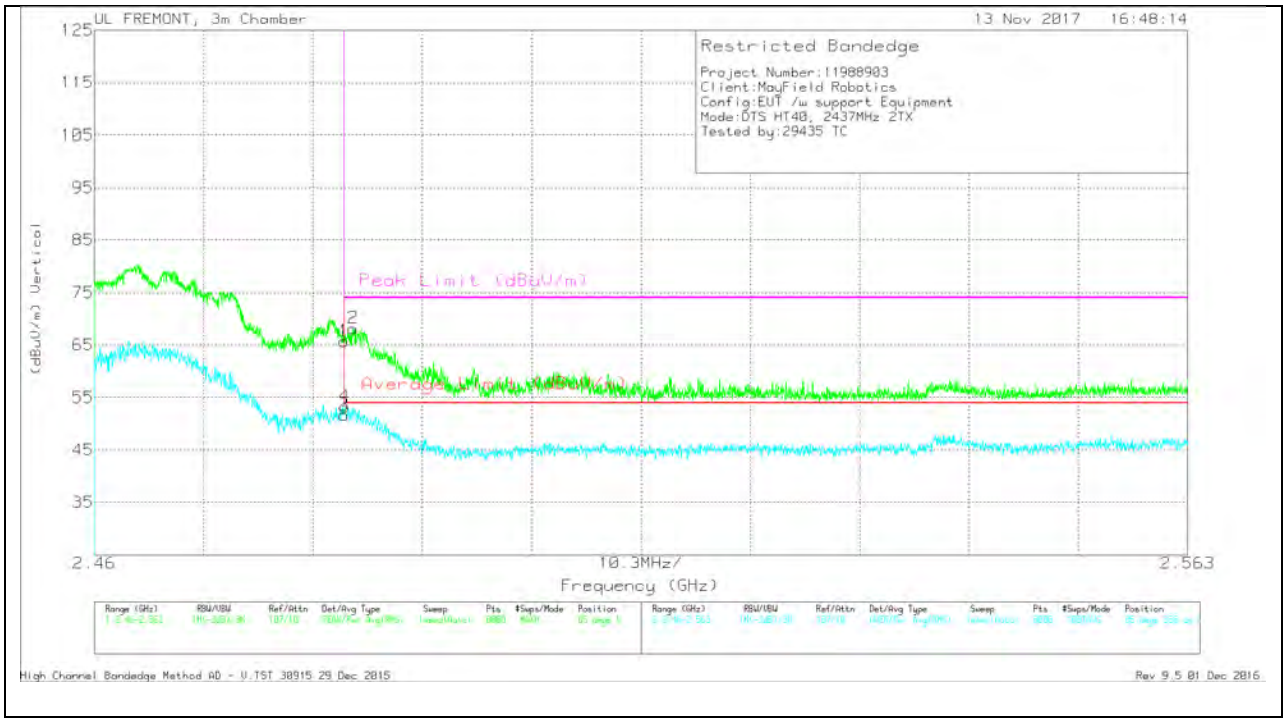
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/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	50.36	Pk	32.4	-21.4	61.36	-	-	74	-12.64	225	312	H
2	2.484	51.82	Pk	32.4	-21.4	62.82	-	-	74	-11.18	225	312	H
3	2.484	37	RMS	32.4	-21.4	48	54	-6	-	-	225	312	H
4	2.484	37.49	RMS	32.4	-21.4	48.49	54	-5.51	-	-	225	312	H

Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

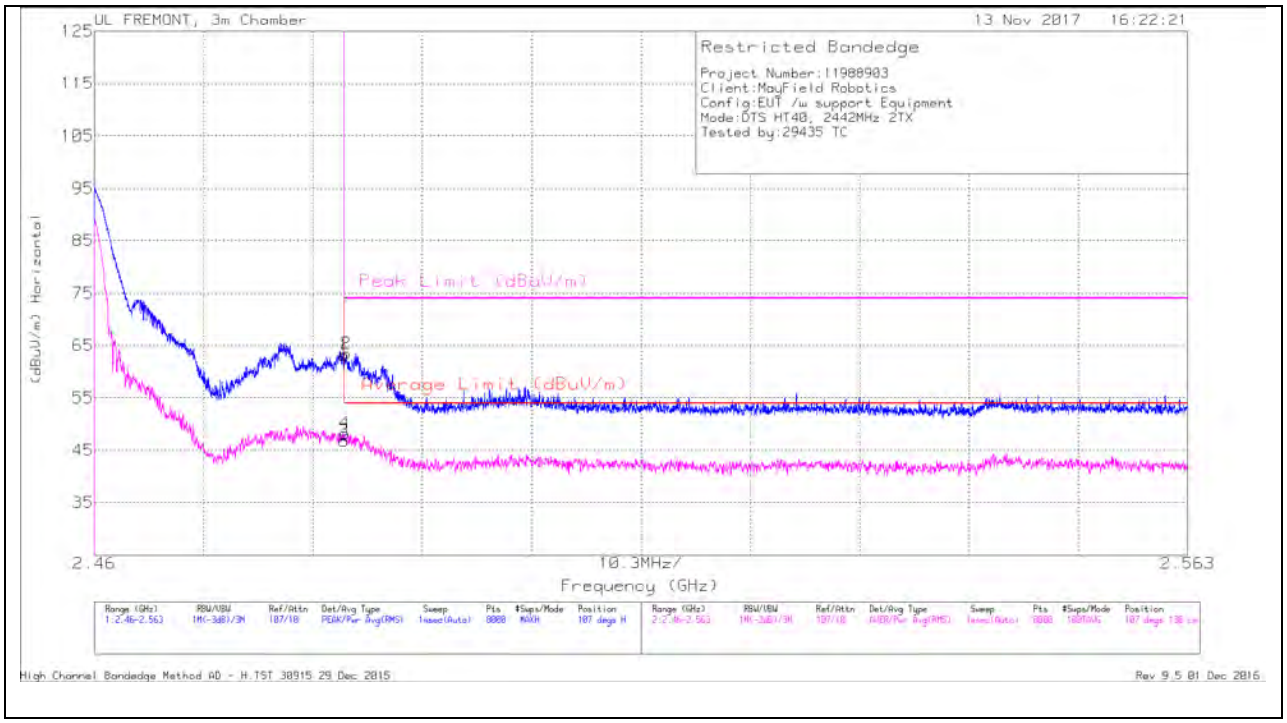


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	54.63	Pk	32.4	-21.4	65.63	-	-	74	-8.37	85	358	V
2	2.484	57.17	Pk	32.4	-21.4	68.17	-	-	74	-5.83	85	358	V
3	2.484	40.61	RMS	32.4	-21.4	51.61	54	-2.39	-	-	85	358	V
4	2.484	42.23	RMS	32.4	-21.4	53.23	54	-.77	-	-	85	358	V

Pk - Peak detector
RMS - RMS detection

BANDEDGE (HIGH CHANNEL, CH 7)

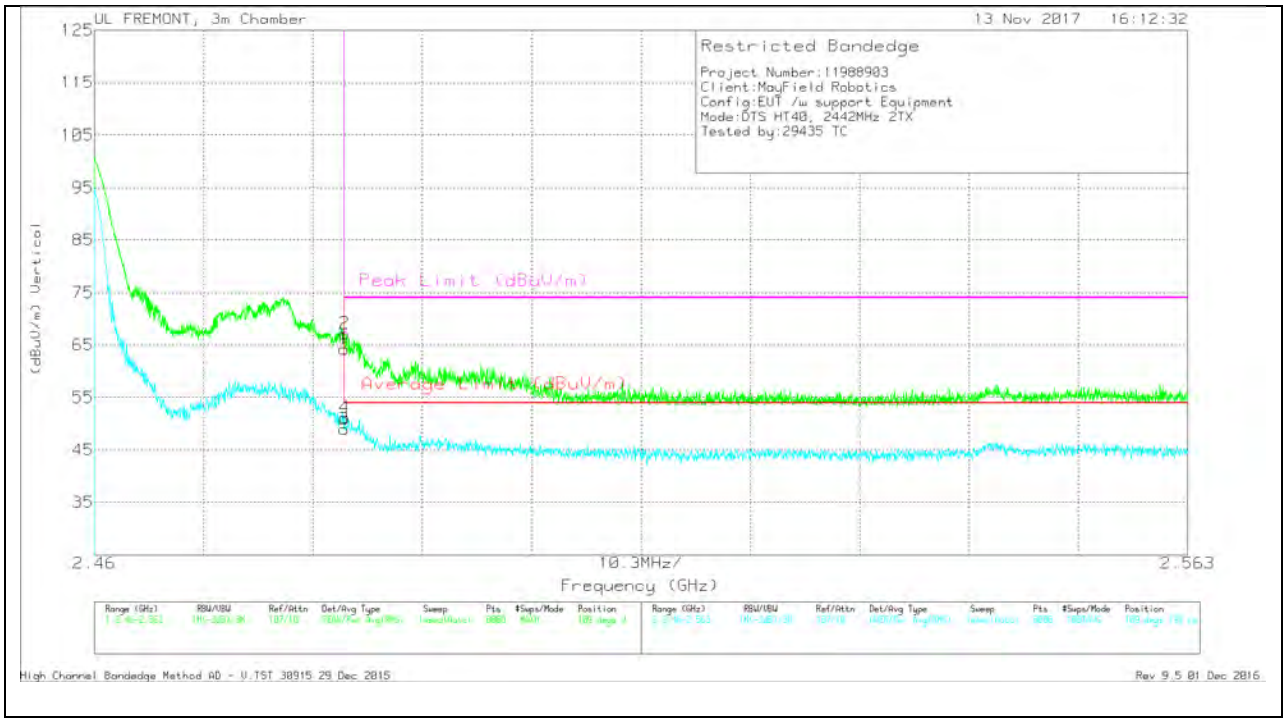
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/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	52.09	Pk	32.4	-21.4	63.09	-	-	74	-10.91	107	130	H
2	2.484	52.45	Pk	32.4	-21.4	63.45	-	-	74	-10.55	107	130	H
3	2.484	35.76	RMS	32.4	-21.4	46.76	54	-7.24	-	-	107	130	H
4	2.484	37.2	RMS	32.4	-21.4	48.2	54	-5.8	-	-	107	130	H

Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

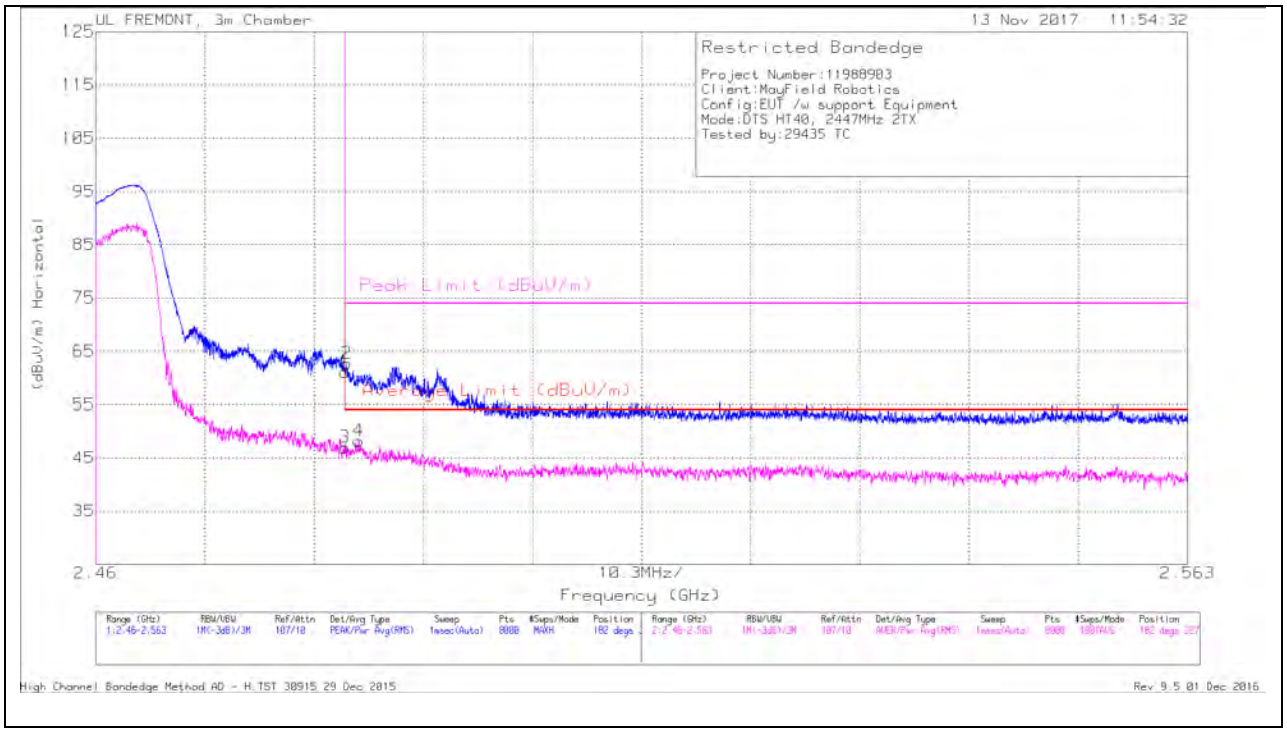


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	53.15	Pk	32.4	-21.4	64.15	-	-	74	-9.85	109	199	V
2	2.484	56.18	Pk	32.4	-21.4	67.18	-	-	74	-6.82	109	199	V
3	2.484	37.94	RMS	32.4	-21.4	48.94	54	-5.06	-	-	109	199	V
4	2.484	40.15	RMS	32.4	-21.4	51.15	54	-2.85	-	-	109	199	V

Pk - Peak detector
RMS - RMS detection

BANDEDGE (HIGH CHANNEL, CH 8)

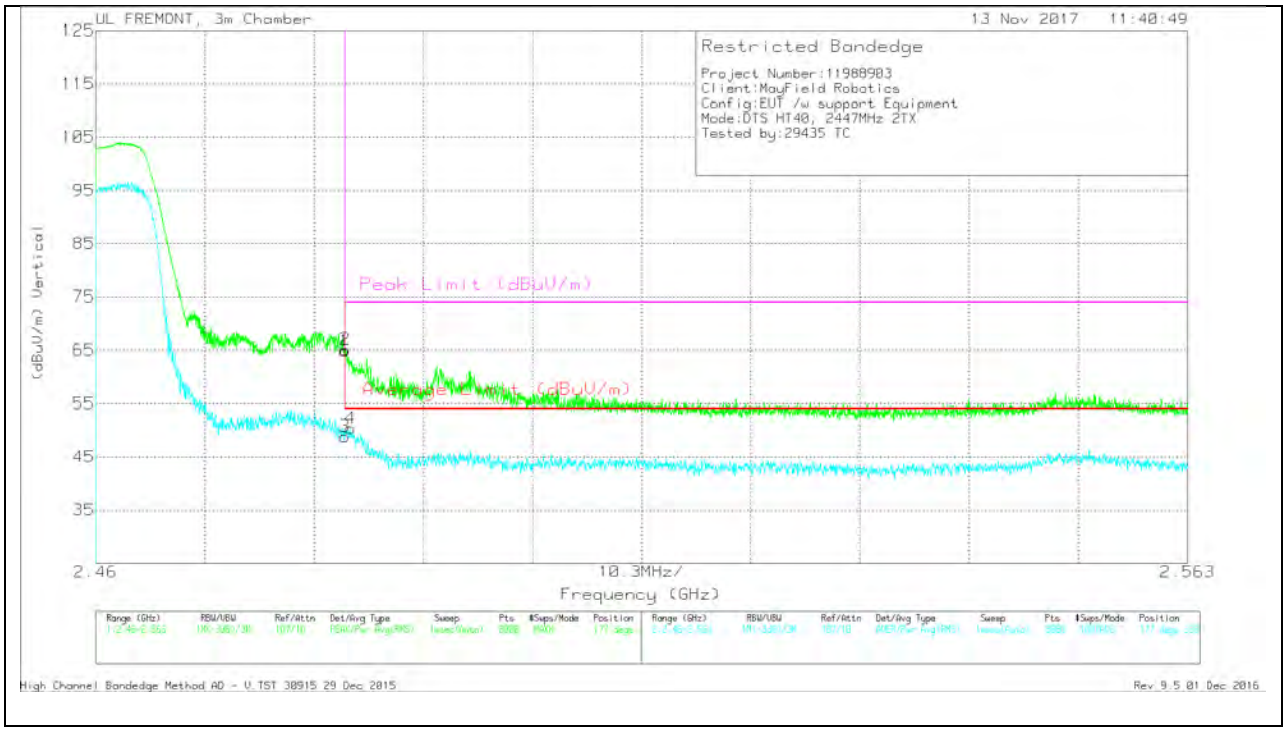
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/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	50.09	Pk	32.4	-21.4	61.09	-	-	74	-12.91	182	327	H
2	2.484	51.69	Pk	32.4	-21.4	62.69	-	-	74	-11.31	182	327	H
3	2.484	35.92	RMS	32.4	-21.4	46.92	54	-7.08	-	-	182	327	H
4	2.485	37.15	RMS	32.4	-21.4	48.15	54	-5.85	-	-	182	327	H

Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

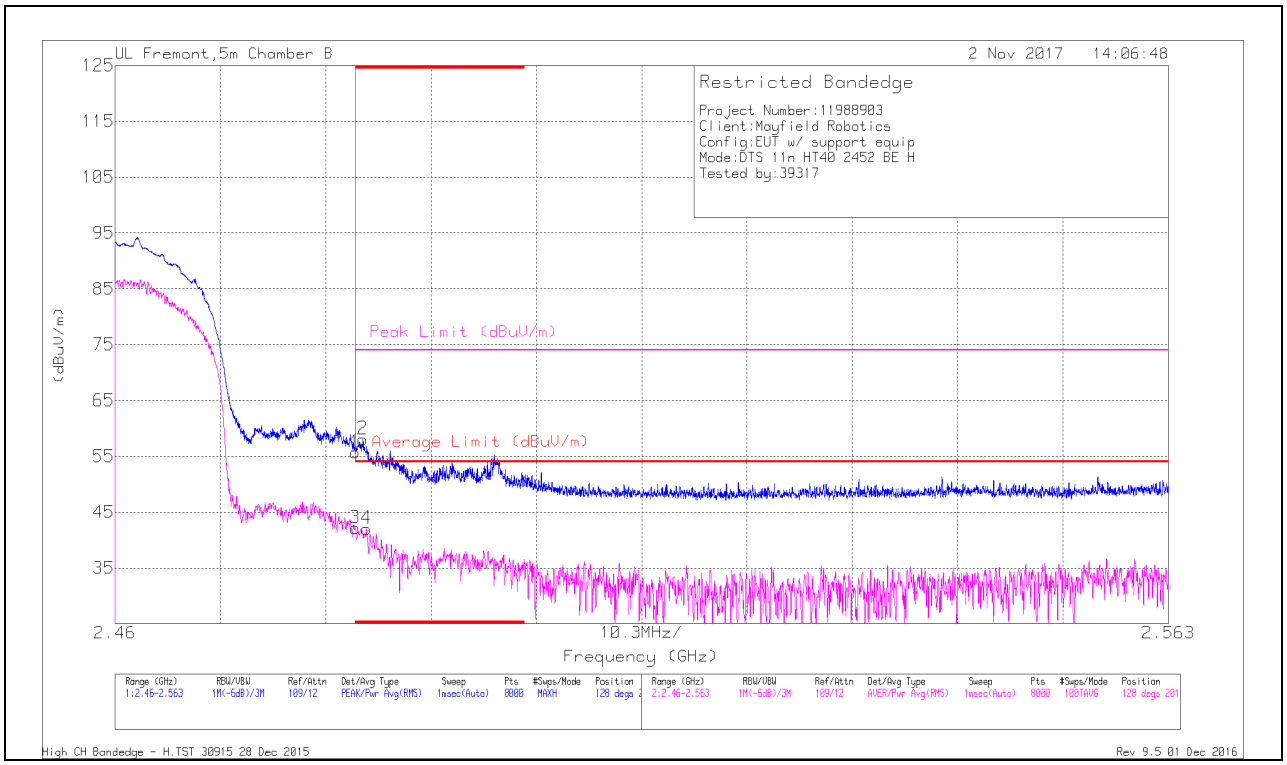


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	53.86	Pk	32.4	-21.4	64.86	-	-	74	-9.14	177	328	V
2	2.484	54.14	Pk	32.4	-21.4	65.14	-	-	74	-8.86	177	328	V
3	2.484	37.76	RMS	32.4	-21.4	48.76	54	-5.24	-	-	177	328	V
4	2.484	39.3	RMS	32.4	-21.4	50.3	54	-3.7	-	-	177	328	V

Pk - Peak detector
RMS - RMS detection

BANDEDGE (HIGH CHANNEL, CH 9)

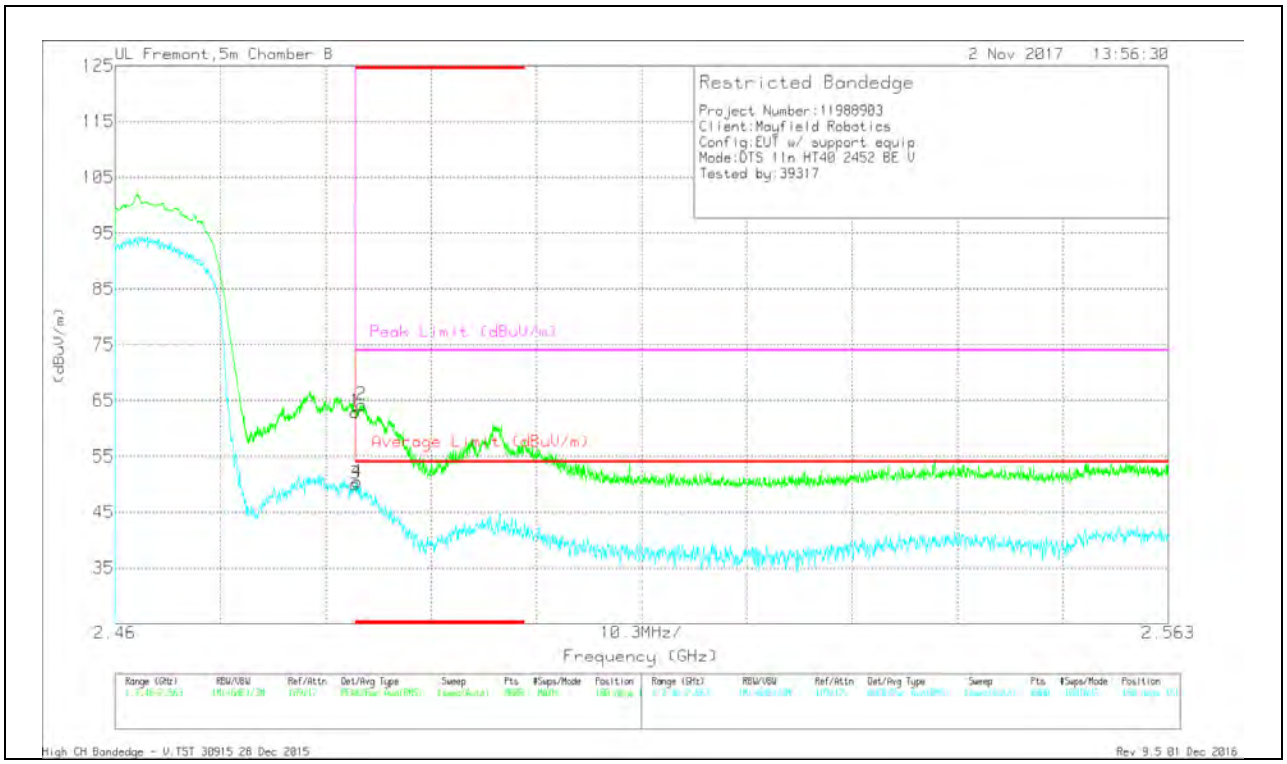
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/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	44.11	Pk	32.5	-20.9	55.71	-	-	74	-18.29	128	201	H
2	* 2.484	46.46	Pk	32.5	-20.9	58.06	-	-	74	-15.94	128	201	H
3	* 2.484	30.52	RMS	32.5	-20.9	42.12	54	-11.88	-	-	128	201	H
4	* 2.485	30.44	RMS	32.5	-20.9	42.04	54	-11.96	-	-	128	201	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

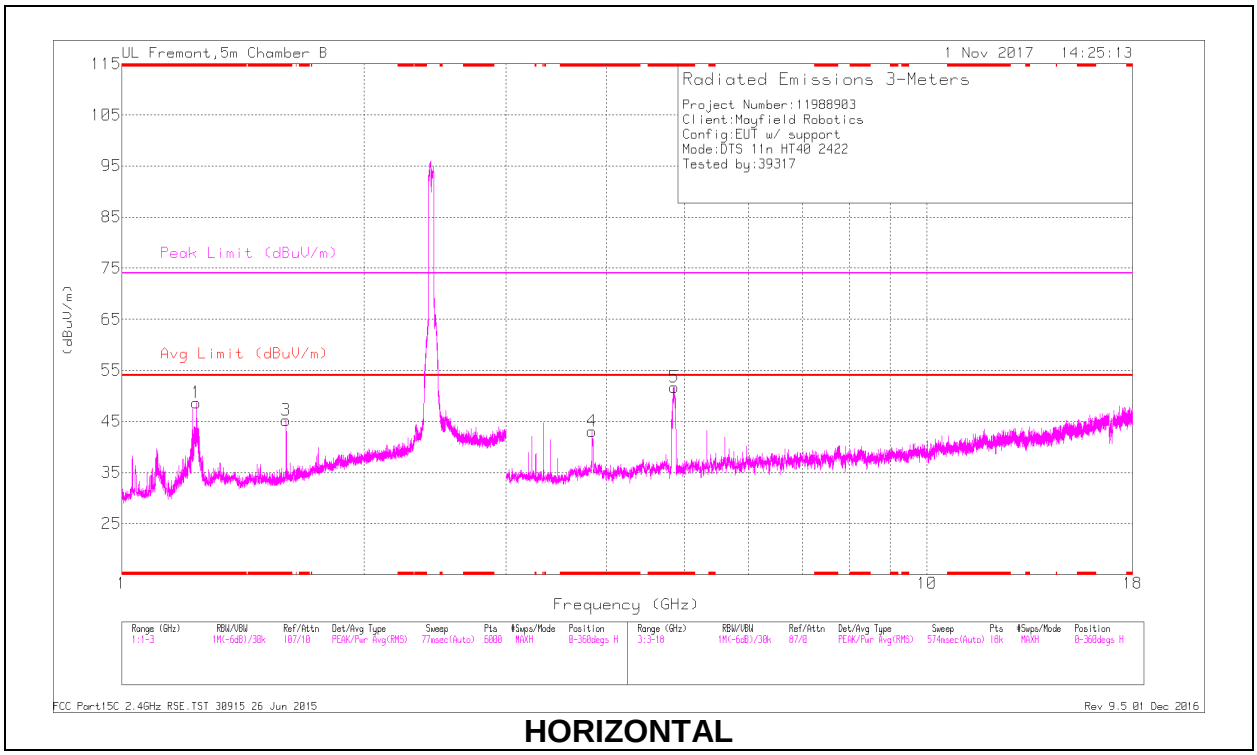


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	51.35	Pk	32.5	-20.9	62.95	-	-	74	-11.05	180	151	V
2	* 2.484	52.65	Pk	32.5	-20.9	64.25	-	-	74	-9.75	180	151	V
3	* 2.484	38.44	RMS	32.5	-20.9	50.04	54	-3.96	-	-	180	151	V
4	* 2.484	38.84	RMS	32.5	-20.9	50.44	54	-3.56	-	-	180	151	V

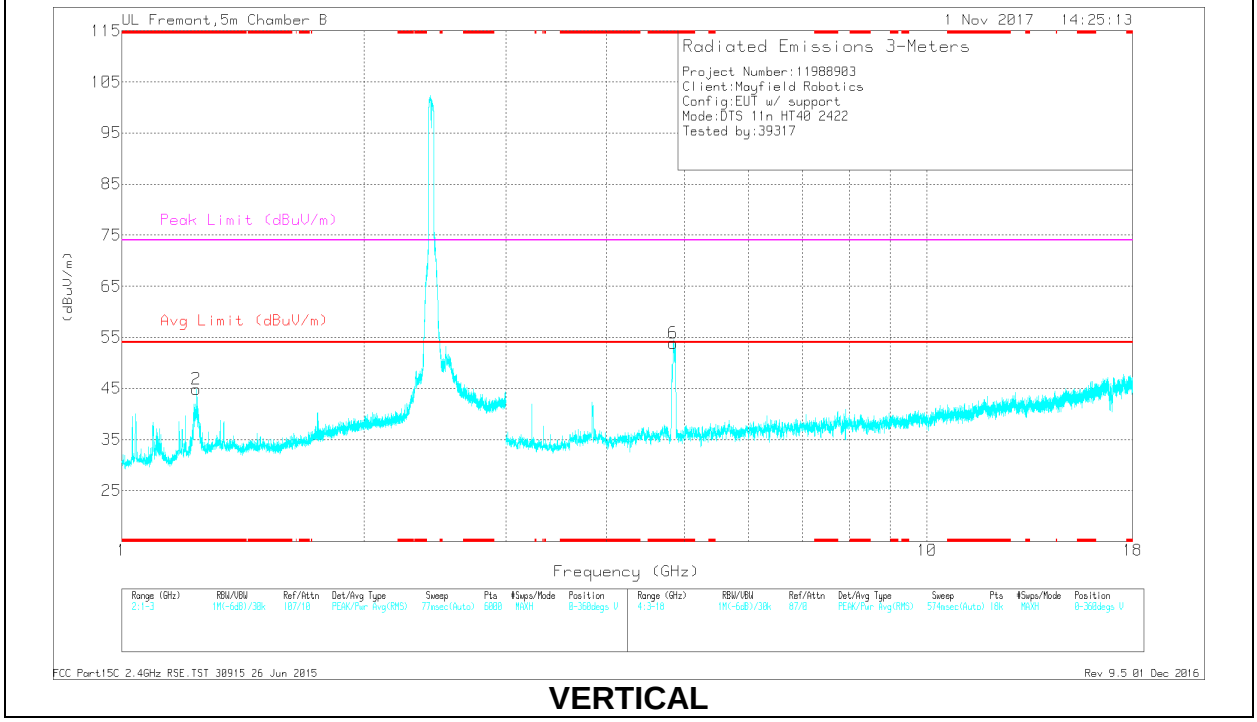
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL, CH 3 RESULTS



HORIZONTAL



VERTICAL

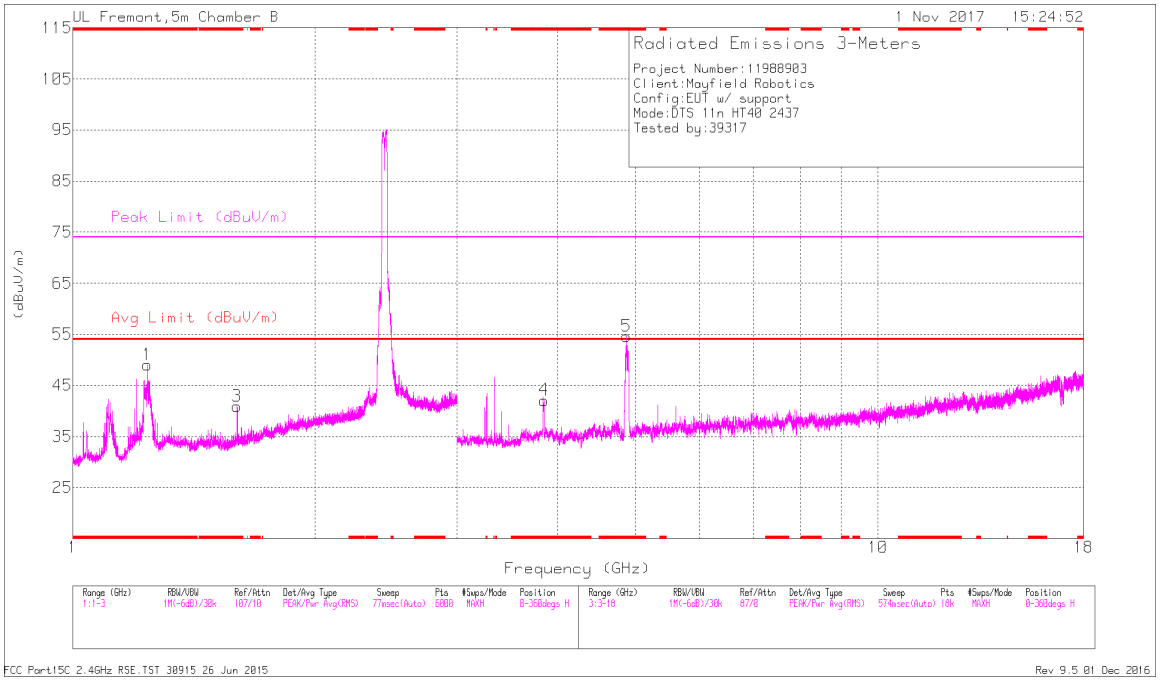
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 1.6	42.56	PK2	28.3	-21.2	49.66	-	-	74	-24.34	210	213	H
	* 1.6	19.98	MAv1	28.3	-21.2	27.08	54	-26.92	-	-	210	213	H
1	* 1.238	53.05	PK2	28.6	-22.2	59.45	-	-	74	-14.55	303	263	H
	* 1.238	27.28	MAv1	28.6	-22.1	33.78	54	-20.22	-	-	303	263	H
2	* 1.238	47.53	PK2	28.6	-22.1	54.03	-	-	74	-19.97	208	369	V
	* 1.24	22.89	MAv1	28.6	-22.2	29.29	54	-24.71	-	-	208	369	V
5	* 4.856	53.96	PK2	34.4	-29.6	58.76	-	-	74	-15.24	157	104	H
	* 4.856	42.95	MAv1	34.4	-29.6	47.75	54	-6.25	-	-	157	104	H
4	* 3.836	47.02	PK2	33.5	-30	50.52	-	-	74	-23.48	198	186	H
	* 3.836	33.67	MAv1	33.5	-30	37.17	54	-16.83	-	-	198	186	H
6	* 4.838	55.55	PK2	34.4	-29.6	60.35	-	-	74	-13.65	110	209	V
	* 4.84	45.23	MAv1	34.4	-29.7	49.93	54	-4.07	-	-	110	209	V

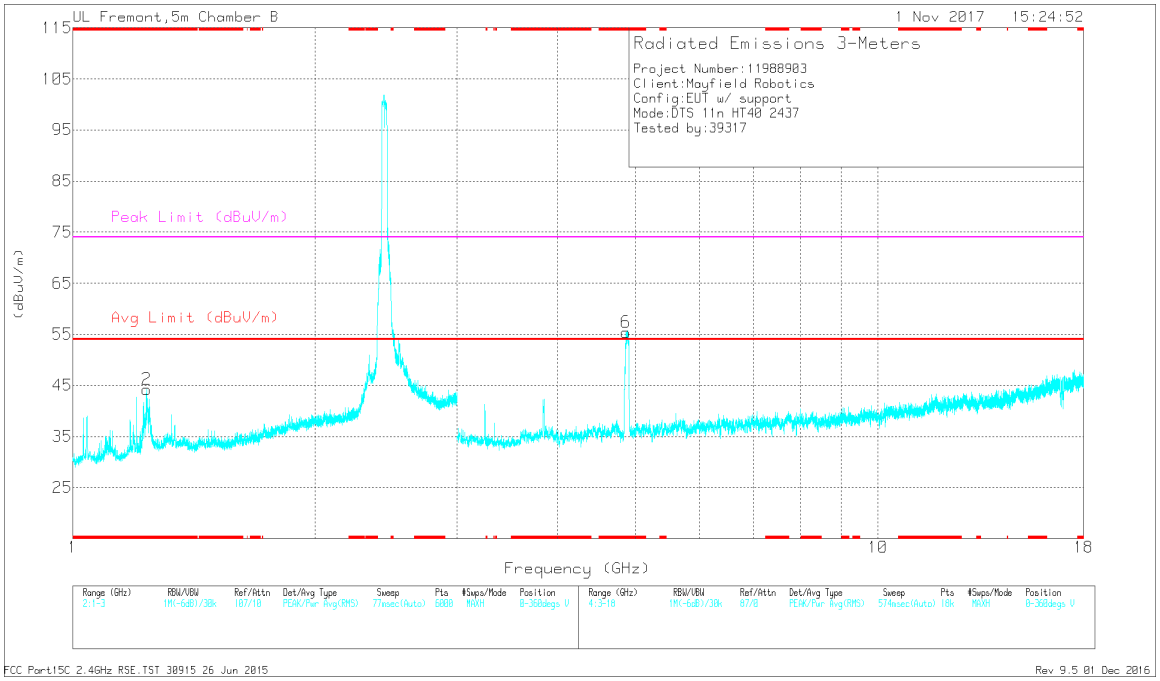
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

UL VERIFICATION SERVICES INC.
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

MID CHANNEL, CH 6 RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 1.6	43.54	PK2	28.3	-21.2	50.64	-	-	74	-23.36	172	161	H
	* 1.6	22.53	MAv1	28.3	-21.2	29.63	54	-24.37	-	-	172	161	H
1	* 1.238	52.76	PK2	28.6	-22.1	59.26	-	-	74	-14.74	180	197	H
	* 1.237	27.38	MAv1	28.6	-22.2	33.78	54	-20.22	-	-	180	197	H
2	* 1.232	48.21	PK2	28.5	-22.3	54.41	-	-	74	-19.59	113	112	V
	* 1.236	22.48	MAv1	28.6	-22.3	28.78	54	-25.22	-	-	113	112	V
5	* 4.874	57.16	PK2	34.4	-30.1	61.46	-	-	74	-12.54	159	120	H
	* 4.874	46.67	MAv1	34.4	-30.1	50.97	54	-3.03	-	-	159	120	H
4	* 3.846	45.62	PK2	33.5	-30	49.12	-	-	74	-24.88	174	224	H
	* 3.846	31.79	MAv1	33.5	-30	35.29	54	-18.71	-	-	174	224	H
6	* 4.868	57.02	PK2	34.4	-30	61.42	-	-	74	-12.58	135	205	V
	* 4.868	46.1	MAv1	34.4	-30	50.5	54	-3.5	-	-	135	205	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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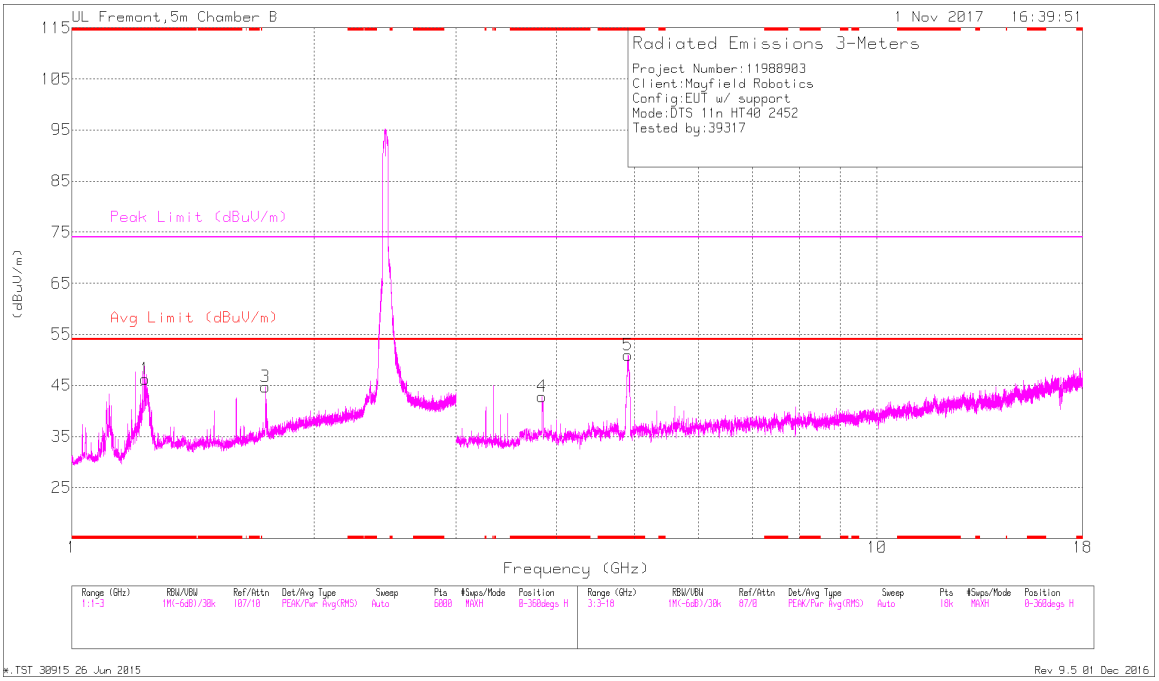
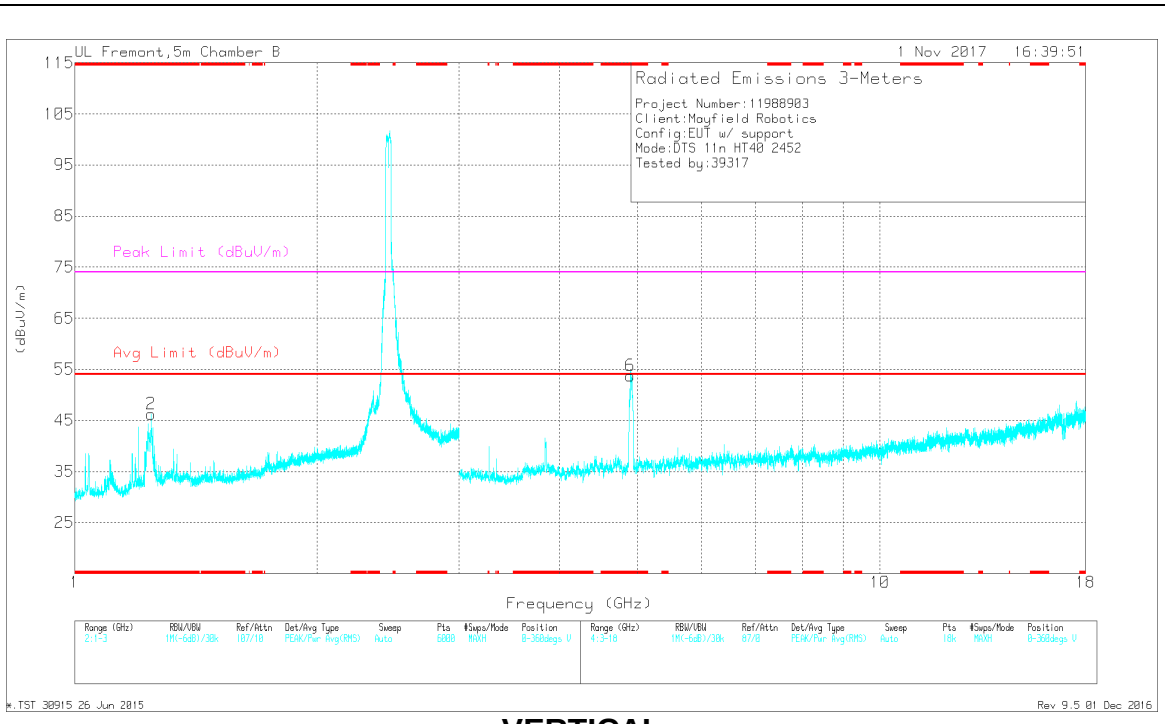
HIGH CHANNEL, CH 9 RESULTS



HORIZONTAL



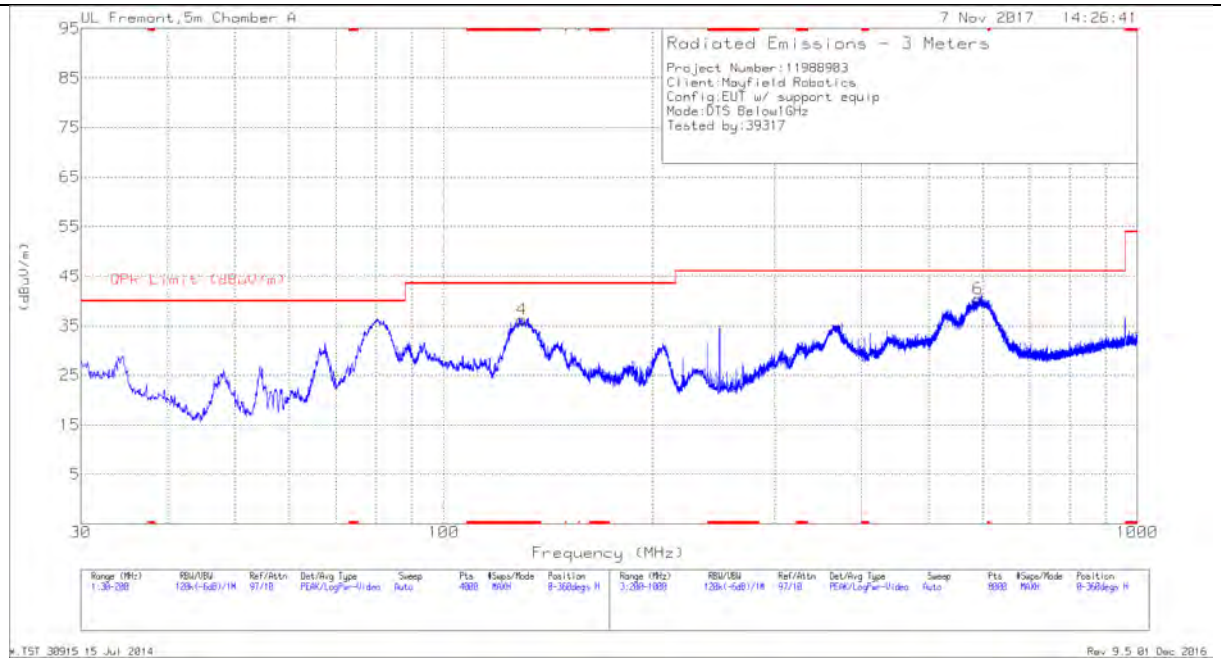
VERTICAL

RADIATED EMISSIONS

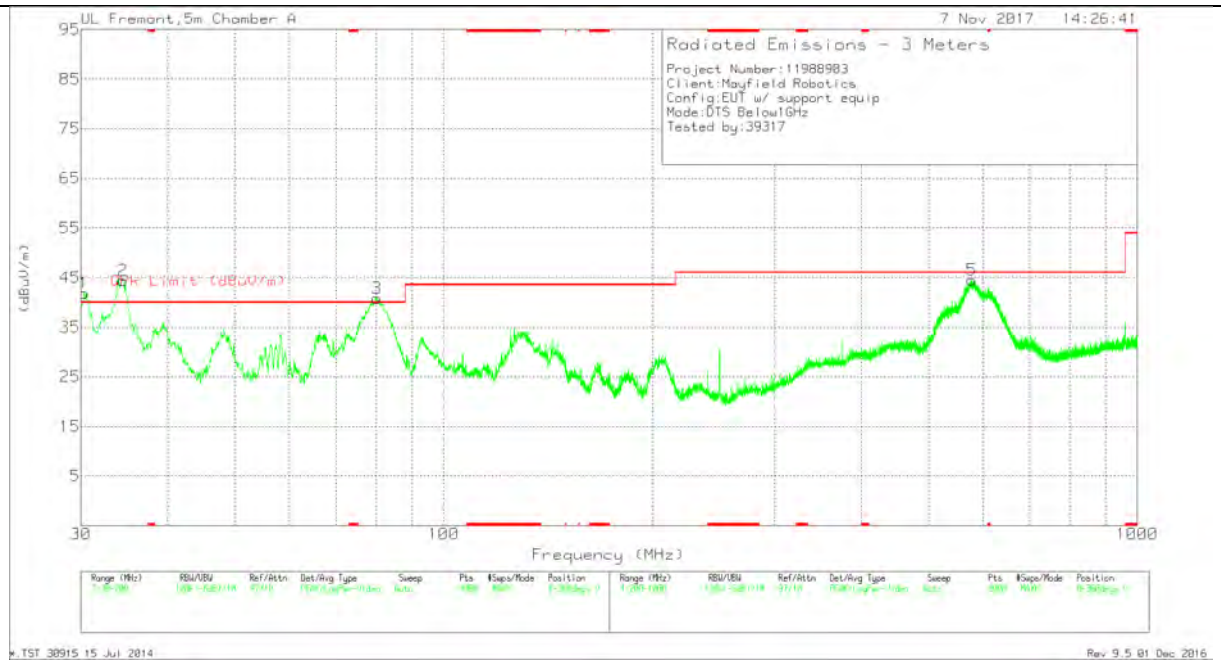
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.232	52.73	PK2	28.5	-22.3	58.93	-	-	74	-15.07	313	258	H
	* 1.234	28.09	MAv1	28.5	-22.2	34.39	54	-19.61	-	-	313	258	H
2	* 1.243	45.94	PK2	28.7	-22.1	52.54	-	-	74	-21.46	73	112	V
	* 1.244	22.73	MAv1	28.7	-22.1	29.33	54	-24.67	-	-	73	112	V
4	* 3.834	46.2	PK2	33.5	-29.9	49.8	-	-	74	-24.2	187	200	H
	* 3.836	33.09	MAv1	33.5	-29.9	36.69	54	-17.31	-	-	187	200	H
5	* 4.904	53.28	PK2	34.4	-30.3	57.38	-	-	74	-16.62	197	200	H
	* 4.904	41.66	MAv1	34.4	-30.3	45.76	54	-8.24	-	-	197	200	H
6	* 4.898	56.7	PK2	34.4	-30.2	60.9	-	-	74	-13.1	125	201	V
	* 4.9	45.76	MAv1	34.4	-30.2	49.96	54	-4.04	-	-	125	201	V
3	1.74	34.46	PK2	29.6	-20.9	43.16	-	-	-	-	197	200	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

9.2. WORST-CASE BELOW 1 GHz



HORIZONTAL



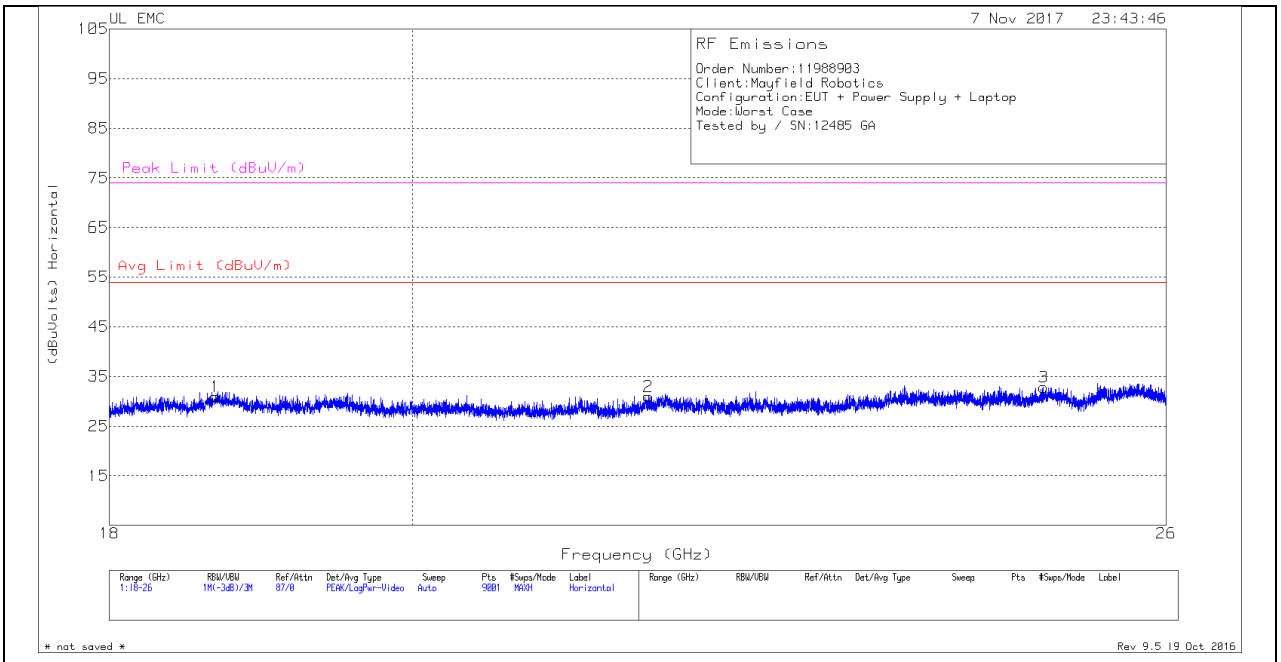
VERTICAL

Below 1GHz DATA

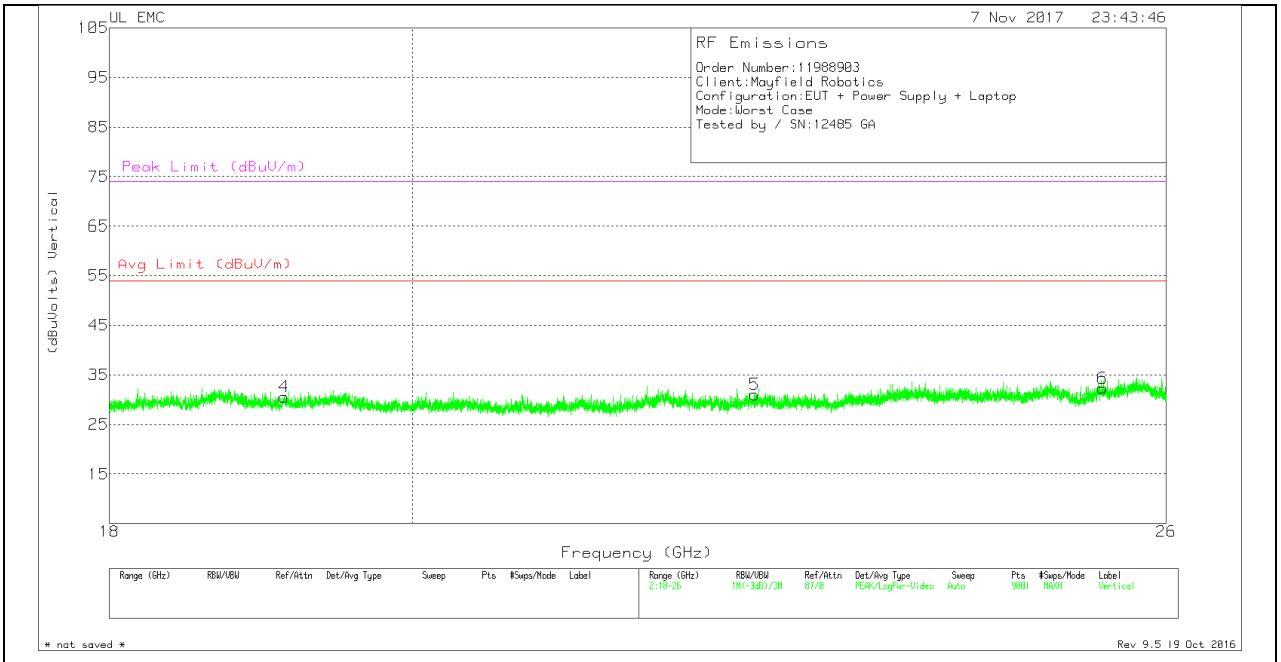
Markers	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 129.8158	38.6	Qp	18	-26.1	30.5	43.52	-13.02	97	227	H
1	30.2976	37.9	Qp	25	-27.3	35.6	40	-4.4	315	107	V
2	34.4637	42.23	Qp	22	-27.2	37.03	40	-2.97	242	137	V
3	80.078	52.42	Qp	11.5	-26.6	37.32	40	-2.68	37	100	V
5	577.6491	34.55	Qp	22.7	-25.1	32.15	46.02	-13.87	62	205	V
6	589.3506	44.17	Qp	22.4	-25.1	41.47	46.02	-4.55	71	147	H

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

9.3. WORST-CASE 18-26GHz



HORIZONTAL



VERTICAL

18-26GHz DATA

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	18.676	32.58	Pk	32.5	-24.6	-9.5	30.98	54	-23.02	74	-43.02
2	21.711	31.84	Pk	33.3	-24.7	-9.5	30.94	54	-23.06	74	-43.06
3	24.912	32.42	Pk	34.1	-24.2	-9.5	32.82	54	-21.18	74	-41.18
4	19.129	32.36	Pk	32.2	-24.5	-9.5	30.56	54	-23.44	74	-43.44
5	22.532	32.31	Pk	33.4	-25.2	-9.5	31.01	54	-22.99	74	-42.99
6	25.431	32.35	Pk	33.8	-24.3	-9.5	32.35	54	-21.65	74	-41.65

Pk - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

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

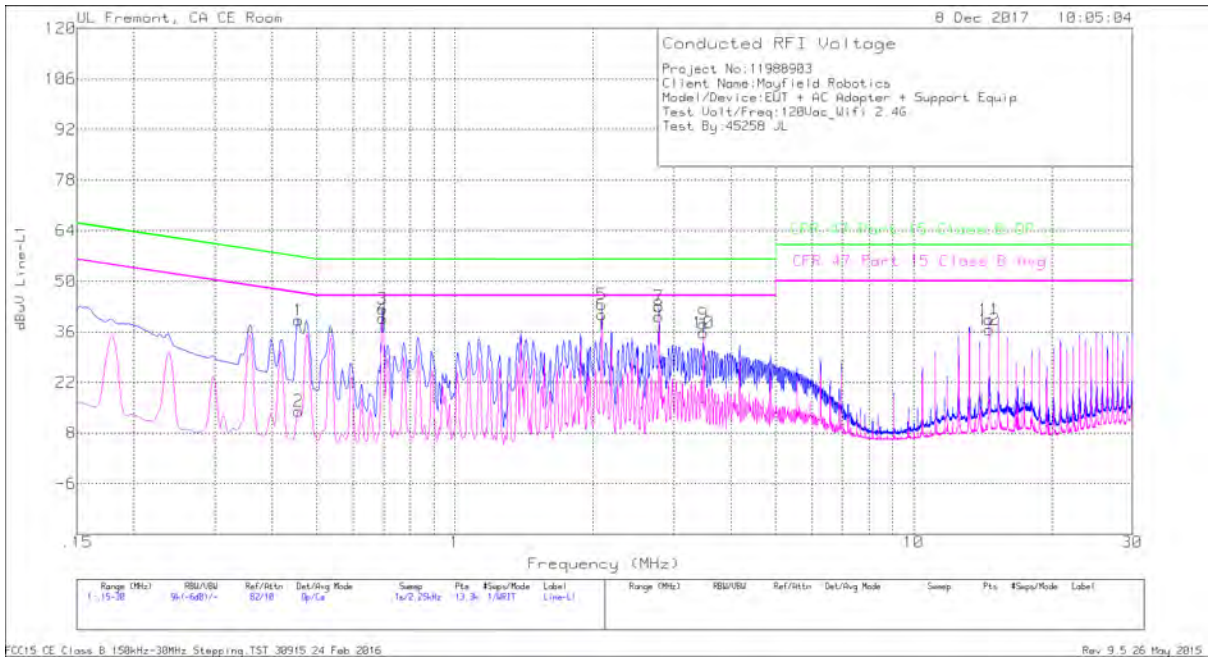
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

UL VERIFICATION SERVICES INC.
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

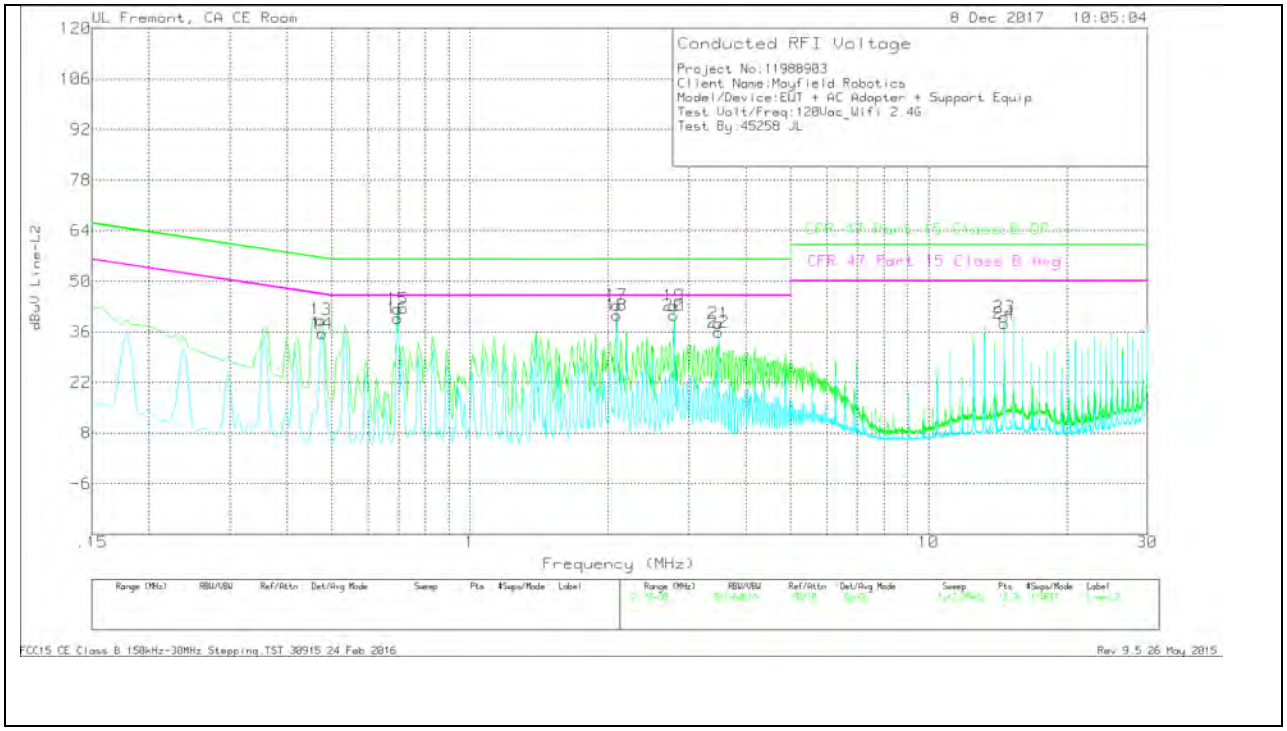
LINE 1 RESULTS



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	.456	29.2	Qp	0	0	10.1	39.3	56.77	-17.47	-	-
2	.456	4	Ca	0	0	10.1	14.1	-	-	46.77	-32.67
3	.69675	32.21	Qp	0	0	10.1	42.31	56	-13.69	-	-
4	.69675	29.64	Ca	0	0	10.1	39.74	-	-	46	-6.26
5	2.0895	33.3	Qp	0	.1	10.1	43.5	56	-12.5	-	-
6	2.0895	30.54	Ca	0	.1	10.1	40.74	-	-	46	-5.26
7	2.787	32.83	Qp	0	.1	10.1	43.03	56	-12.97	-	-
8	2.787	30.15	Ca	0	.1	10.1	40.35	-	-	46	-5.65
9	3.48225	27.9	Qp	0	.1	10.2	38.2	56	-17.8	-	-
10	3.48225	25.48	Ca	0	.1	10.2	35.78	-	-	46	-10.22
11	14.6265	28.62	Qp	.1	.3	10.3	39.32	60	-20.68	-	-
12	14.6265	25.99	Ca	.1	.3	10.3	36.69	-	-	50	-13.31

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	.474	29.21	Qp	0	0	10.1	39.31	56.44	-17.13	-	-
14	.47625	25.51	Ca	0	0	10.1	35.61	-	-	46.4	-10.79
15	.69675	32.19	Qp	0	0	10.1	42.29	56	-13.71	-	-
16	.69675	29.61	Ca	0	0	10.1	39.71	-	-	46	-6.29
17	2.0895	33.22	Qp	0	.1	10.1	43.42	56	-12.58	-	-
18	2.0895	30.38	Ca	0	.1	10.1	40.58	-	-	46	-5.42
19	2.787	33	Qp	0	.1	10.1	43.2	56	-12.8	-	-
20	2.787	30.37	Ca	0	.1	10.1	40.57	-	-	46	-5.43
21	3.4845	27.99	Qp	0	.1	10.2	38.29	56	-17.71	-	-
22	3.4845	25.55	Ca	0	.1	10.2	35.85	-	-	46	-10.15
23	14.631	29.35	Qp	.1	.3	10.3	40.05	60	-19.95	-	-
24	14.631	27.59	Ca	.1	.3	10.3	38.29	-	-	50	-11.71

Qp - Quasi-Peak detector
Ca - CISPR average detection