CERTIFICATION TEST REPORT

Report Number. : 12980396A

Applicant	:	Vista Manufacturing Inc 53345 Columbia Dr Elkhart, IN, 46514 US
Model	:	BTNC1
FCC ID	:	MGOBTNC1
IC	:	24881-BTNC1
EUT Description	:	Vista BT in Aftermarket Channel
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C ISED RSS-210, Annex B ISSUE 9 ISED RSS-GEN ISSUE 5

Date Of Issue:
2019-09-30

Prepared by:
UL LLC
333 Pfingsten Road
Northbrook, IL 60062 U.S.A.
TEL: (847) 272-8800

NVLAP Lab code: 100414-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
--	--	Initial Issue	

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Vista Manufacturing Inc
53345 Columbia Dr
Elkhart, IN, 46514, USA

EUT DESCRIPTION: Vista BT in Aftermarket Channel

MODEL: BTNC1

SERIAL NUMBER: #63 – Used for Bandwidth Measurements
#71 – Used for all other measurements

DATE TESTED: 2019-09-05 – 2019-09-06

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Complies
ISED RSS-210, Annex B, Issue 9	Complies
ISED RSS-GEN Issue 5	Complies

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

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

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By: Jeff Moser

Operations Leader
Consumer Technology Division

Prepared By: Bart Mucha

Staff Engineer
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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, RSS-GEN Issue 5, and RSS-210 Issue 9.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, Illinois, USA.

333 Pfingsten Road
☒ Chamber 10m

UL NBK is accredited by NVLAP, Laboratory Code 100414-0
ISED Site 2180B

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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

RADIATED EMISSIONS
Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS
Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB

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

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a BT Transceiver attached to LED strip in aftermarket channel.

5.2. MAXIMUM FIELD STRENGTH

The transmitter has a maximum filed strength as follows:

Frequency Range (MHz)	Mode	Field Strength dBuV/m @ 3m	Detector
2402 - 2480	BLE	89.11	Pk
2402 - 2480	BLE	88.01	Av

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PCB trace antenna, with a maximum gain of 2.1 dBi.

5.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 8266 12M emi test internal cap.bin

The test utility software used during testing "EMI_TEST_V1.4".

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 30MHz were conducted in single axis.

Radiated Emissions above 30MHz, including Band Edge were conducted in two axis, on low middle and high channels. Product maybe mounted in flat horizontal configuration or in wall configuration.

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Powere Supply	Mean Well	PWM-40-12	HB55C85944	n/a

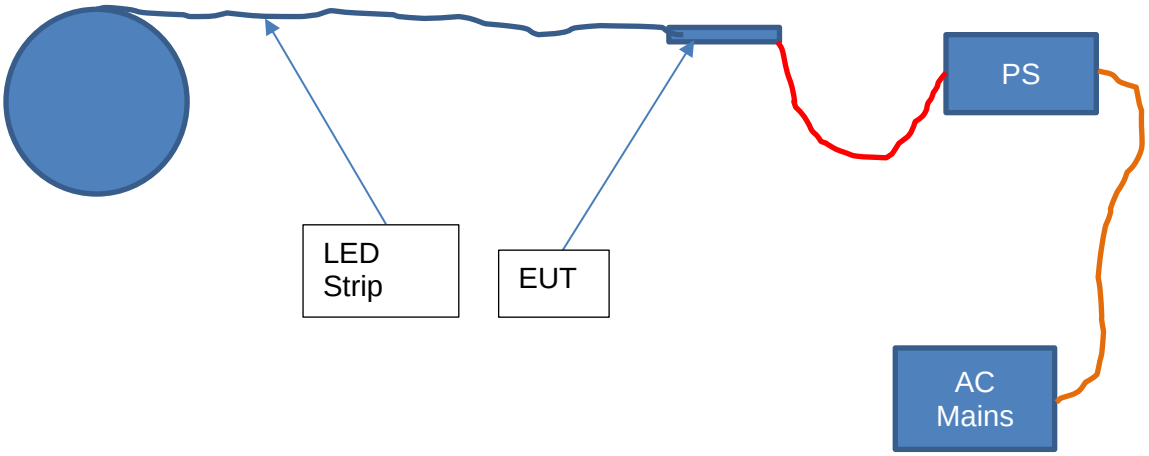
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Power	1	none	2-wire	2m	none
2	DC	1	none	2-wire	20cm	connection between electronics and LEDs

TEST SETUP

The test software set the EUT's transceiver's mode, transmit power, modulation, and frequency as needed for each test. For radiated tests the test laptop was connected to the EUT before each test and removed during the test measurements. For antenna port test the test laptop was left connected to the EUT during the tests.

SETUP DIAGRAMS



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6. MEASUREMENT METHOD

Occupied BW (99%) AND 20dB BW: ANSI C63.10-2013 Section 6.9.2 and 6.9.3

Radiated emissions: ANSI C63.10 Subclause 6.3, 6.4, 6.5, 6.6, and 6.10

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

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7. TEST AND MEASUREMENT EQUIPMENT

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

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated @ Conducted Software	UL	UL EMC	9.5

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	2018-12-26	2019-12-31
Bicon Antenna	Chase	VBA6106A	EMC4078	2019-04-05	2020-04-30
Log-P Antenna	Chase	UPA6109	EMC4313	2019-04-05	2020-04-30
Loop Antenna	EMCO	6502/1	EMC4026	2019-01-07	2020-01-31
Antenna Array	UL	BOMS	EMC4276	2019-07-02	2020-07-31
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	2018-12-13	2019-12-31
EMI Test Receiver	Rohde & Schwarz	ESR	EMC4377	2018-12-26	2019-12-31
Transient Limiter	Electro-Metrics	EM7600-2	EMC4224	N/A	N/A
High-Pass Filter	Solar Electronics	2803-150	EMC4327	N/A	N/A
Attenuator	HP	8494B	2831A00838	N/A	N/A
LISN - L1	Solar Electronics	8602-50-TS-50-N	EMC4066	2018-12-19	2019-12-31
LISN - L2	Solar Electronics	8602-50-TS-50-N	EMC4064	2018-12-19	2019-12-31

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8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

TESTED BY: mdk31193
TESTED ON: 2019-09-05

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
BLE	0.42	0.57	0.738	73.78%	1.3	2.385

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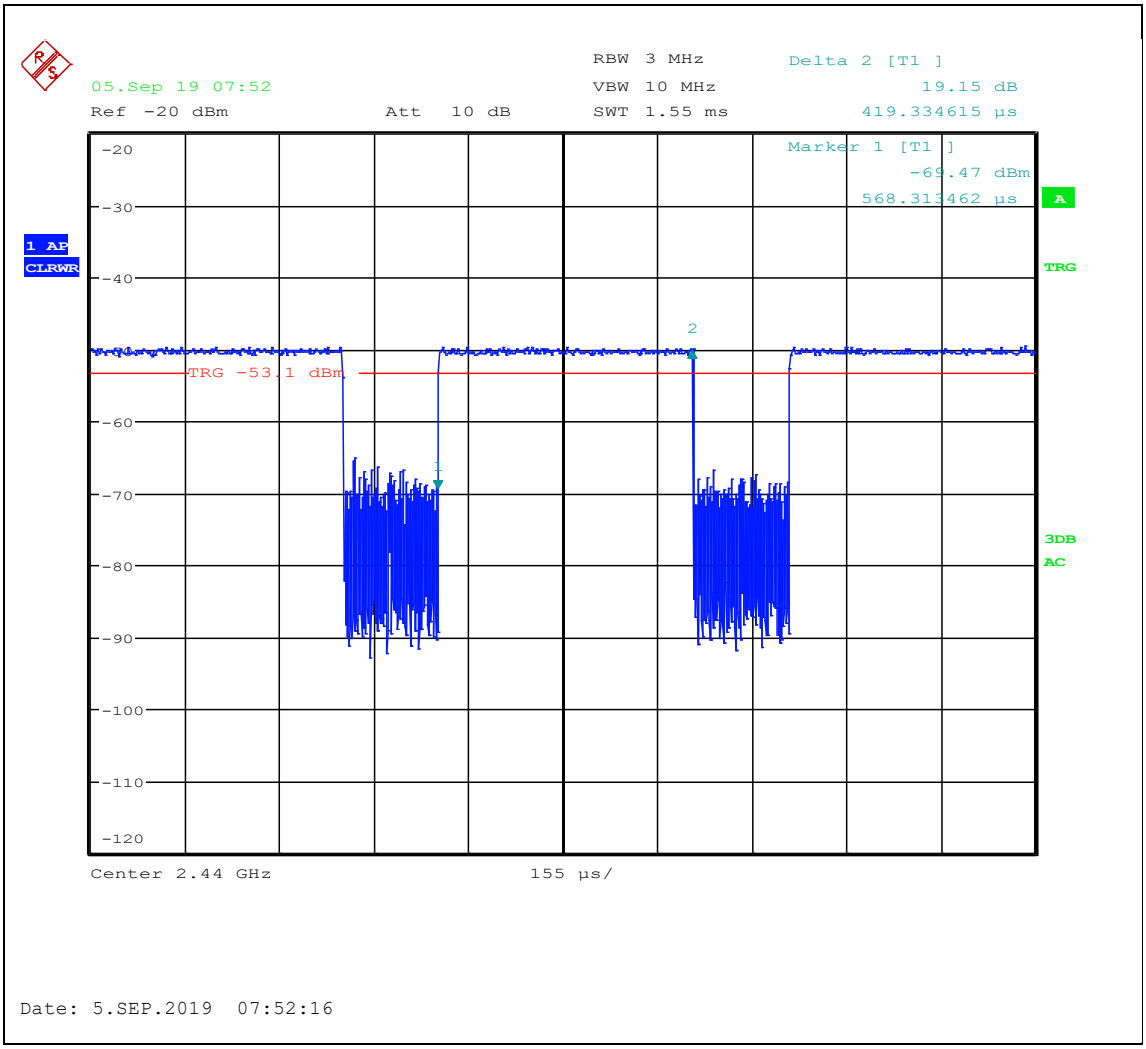
DUTY CYCLE PLOTS



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8.2. 99% AND 20 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

TESTED BY: bm06740
TESTED ON: 2019-09-06

RESULTS

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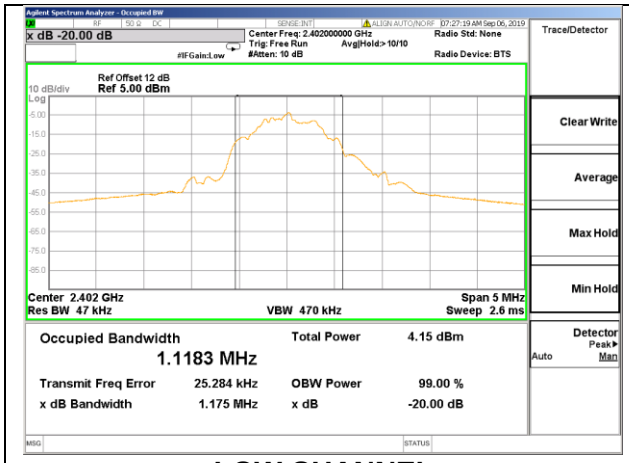
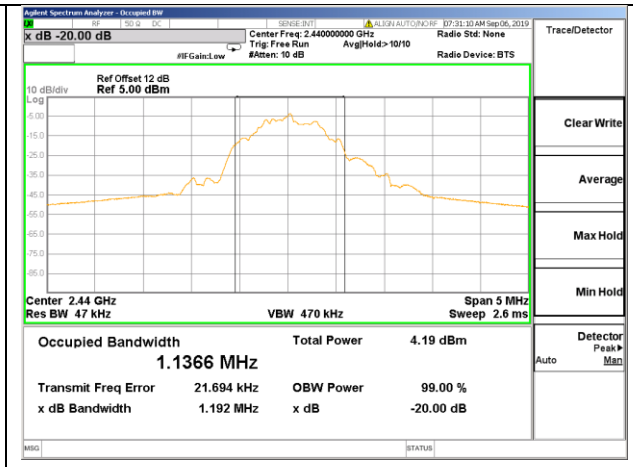
8.2.1. BLE (1Mbps)

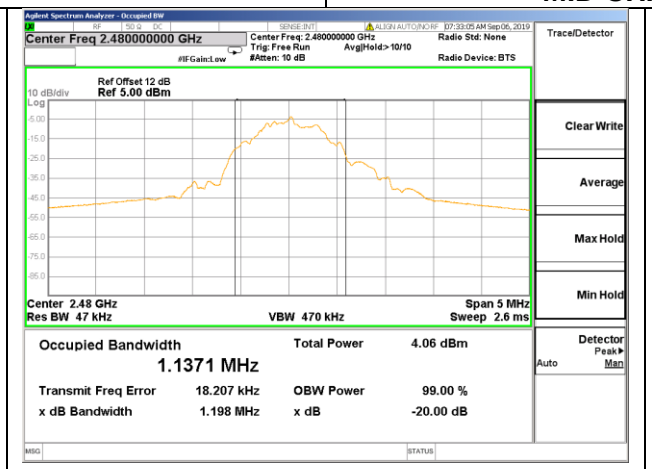
Channel	Frequency (MHz)	99% Bandwidth (MHz)	20dB andwidth (MHz)
Low	2402	1.1183	1.1750
Middle	2440	1.1366	1.1920
High	2480	1.1371	1.1980



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

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9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209 and §15.249

RSS-210, Annex B

RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
960 – 2400	500	54
2400 – 2483.5	50,000	94
2483.5 and above	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 for 9kHz-30MHz, 10 meters for 30MHz – 1GHz, and 3 meters for 1GHz-25GHz. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode with modulation.

For measurements below 1 GHz the resolution bandwidth is set to 120 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements for 30-1000 MHz, 200Hz from 9kHz to 150 kHz and 9kHz from 150 kHz to 30 MHz. 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 3MHz for peak measurements.

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

The spectrum from 30 MHz to 25 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 30MHz middle channel 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

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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.

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

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

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

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

TESTED BY: mdk31193/bm06740
TESTED ON: 2019-09-05

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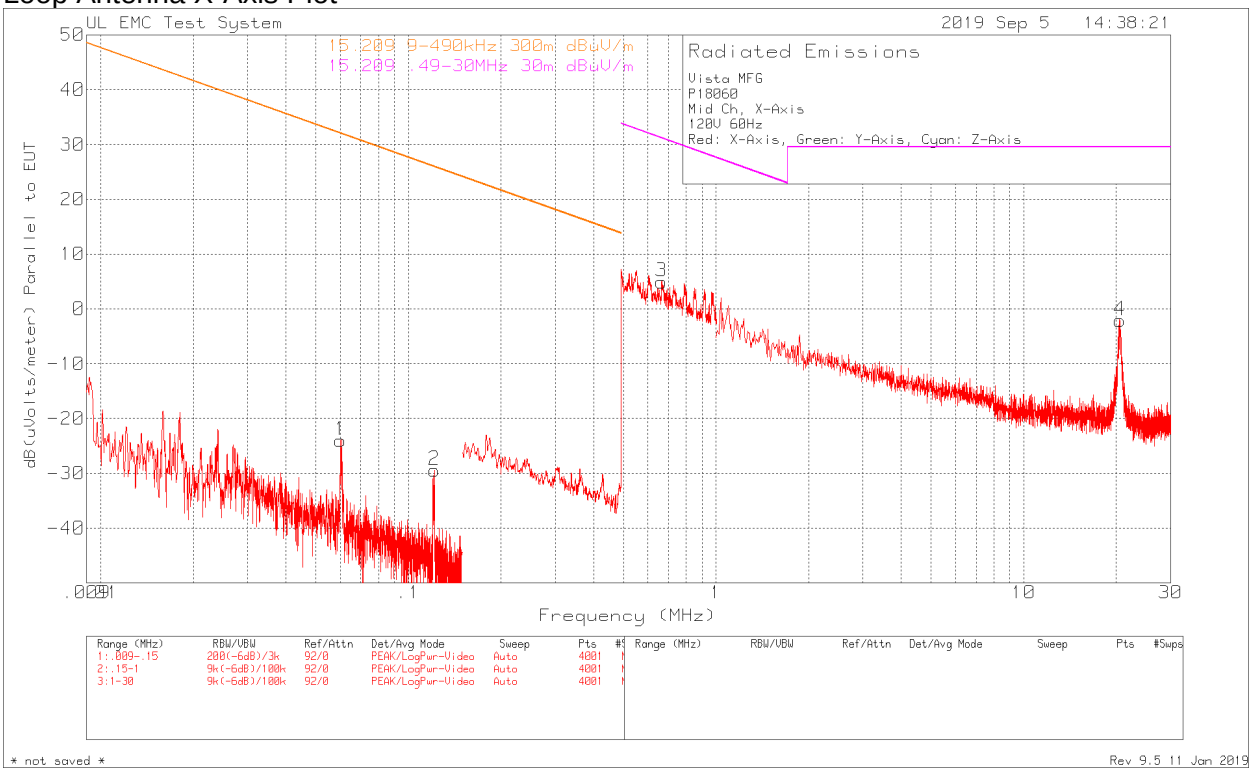
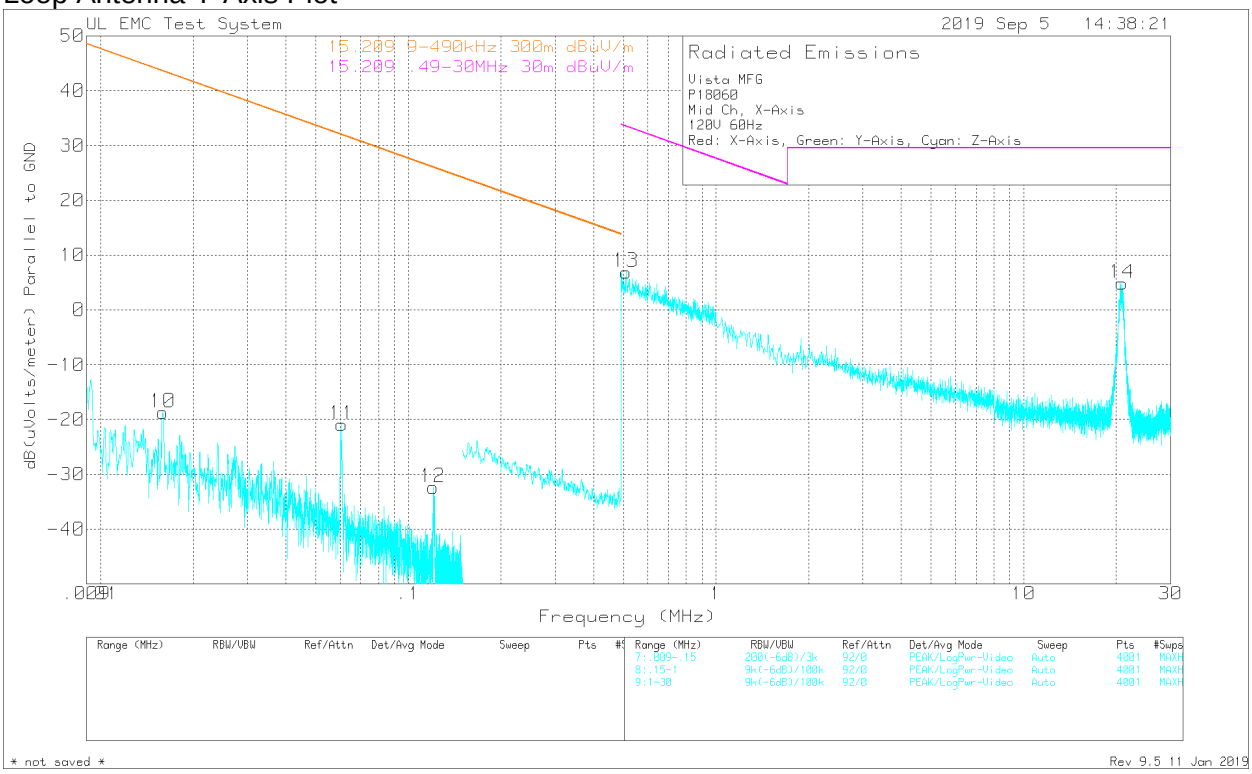
9.2. TRANSMITTER 9kHz to 30MHz, EUT X-Axis Orientation

Loop Antenna X-Axis Plot



Loop Antenna Y-Axis Plot



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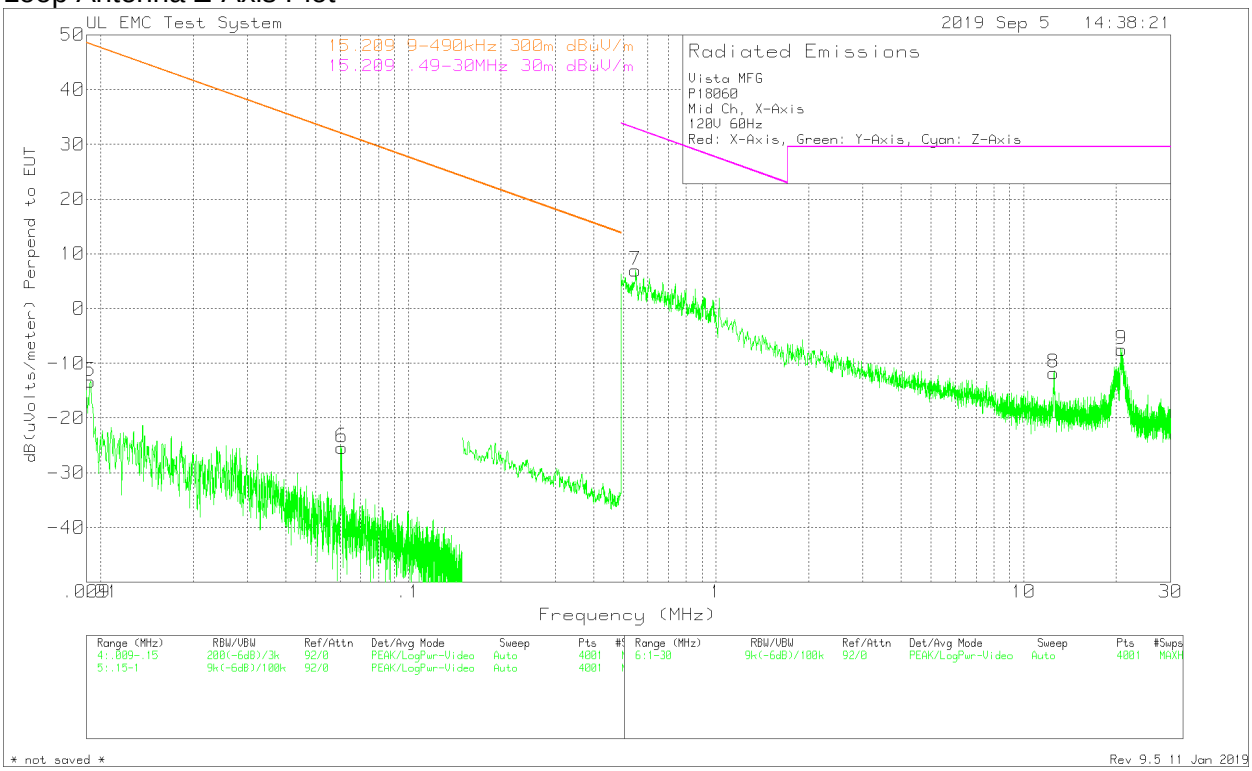
Loop Antenna Z-Axis Plot



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Loop Antenna X, Y, Z - Axis Data

Vista MFG
P18060
Mid Ch, X-Axis
120V 60Hz
Red: X-Axis, Green: Y-Axis, Cyan: Z-Axis

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 dB(uVolts/meter)	Limit:2 dB(uVolts/meter)
X-Axis Parallel to EUT							
1	.06014	42.59dBuV Pk	13.4	-80	-24.01	32.02	-
		Azimuth:0-360	Height:102		Margin (dB)	-56.03	-
2	.12142	38.29dBuV Pk	12.3	-80	-29.41	25.91	-
		Azimuth:0-360	Height:102		Margin (dB)	-55.32	-
3	.66503	32.83dBuV Pk	12	-39.9	4.93	-	31.14
		Azimuth:0-360	Height:102		Margin (dB)	-	-26.21
4	20.55325	26.91dBuV Pk	10.5	-39.5	-2.09	-	29.54
		Azimuth:0-360	Height:102		Margin (dB)	-	-31.63
Y-Axis Perpend to EUT							
5	.00925	42.98dBuV Pk	23.7	-80	-13.32	48.28	-
		Azimuth:0-360	Height:102		Margin (dB)	-61.6	-
6	.0608	41.22dBuV Pk	13.4	-80	-25.38	31.92	-
		Azimuth:0-360	Height:102		Margin (dB)	-57.3	-
7	.54703	34.87dBuV Pk	12	-39.9	6.97	-	32.84
		Azimuth:0-360	Height:102		Margin (dB)	-	-25.87
8	12.49125	16.14dBuV Pk	11.7	-39.6	-11.76	-	29.54
		Azimuth:0-360	Height:102		Margin (dB)	-	-41.3
9	20.81425	21.51dBuV Pk	10.5	-39.5	-7.49	-	29.54
		Azimuth:0-360	Height:102		Margin (dB)	-	-37.03
Z-Axis Parallel to GND							
10	.01593	40.8dBuV Pk	20.5	-80	-18.7	43.55	-
		Azimuth:0-360	Height:102		Margin (dB)	-62.25	-
11	.06077	45.7dBuV Pk	13.4	-80	-20.9	31.93	-
		Azimuth:0-360	Height:102		Margin (dB)	-52.83	-
12	.1203	35.33dBuV Pk	12.3	-80	-32.37	26	-
		Azimuth:0-360	Height:102		Margin (dB)	-58.37	-
13	.51018	34.81dBuV Pk	12	-39.9	6.91	-	33.45
		Azimuth:0-360	Height:102		Margin (dB)	-	-26.54
14	20.85775	33.95dBuV Pk	10.4	-39.5	4.85	-	29.54
		Azimuth:0-360	Height:102		Margin (dB)	-	-24.69

LIMIT 1: 15.209 9-490kHz 300m dBuV/m (Average)
LIMIT 2: 15.209 .49-30MHz 30m dBuV/m (QP)

Pk - Peak detector

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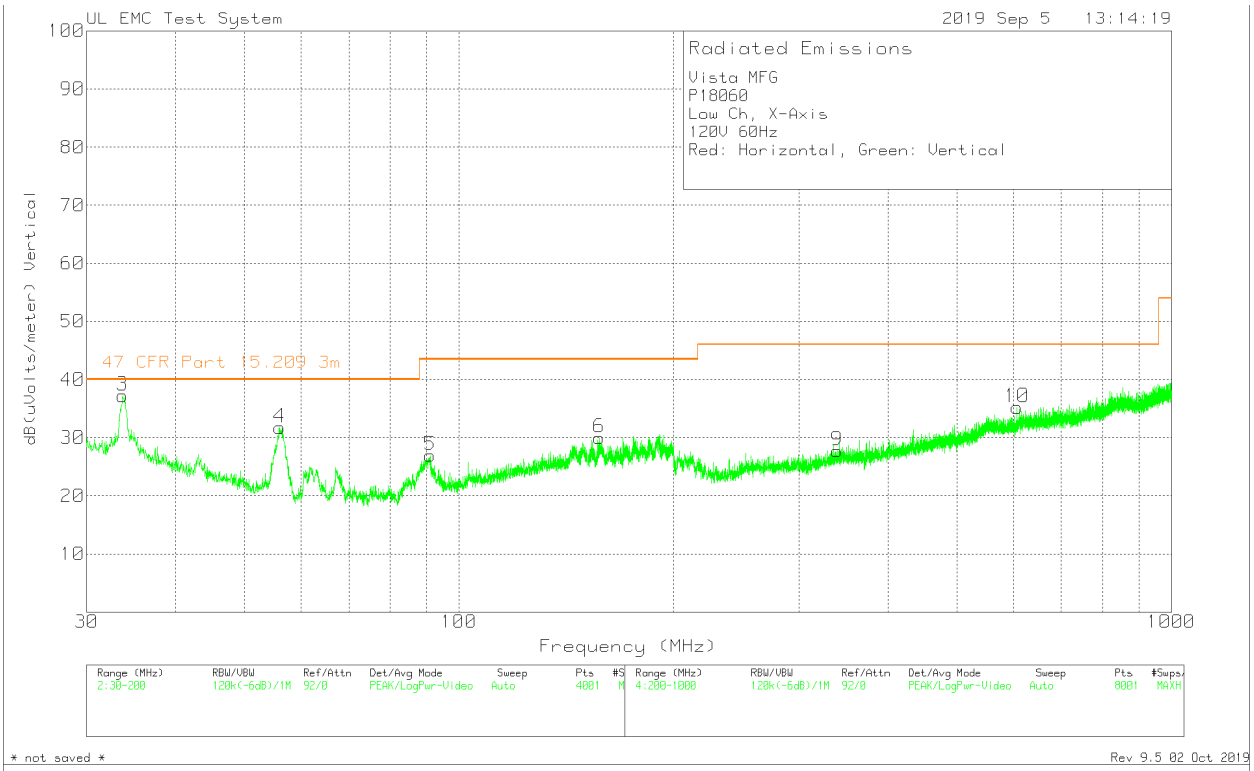
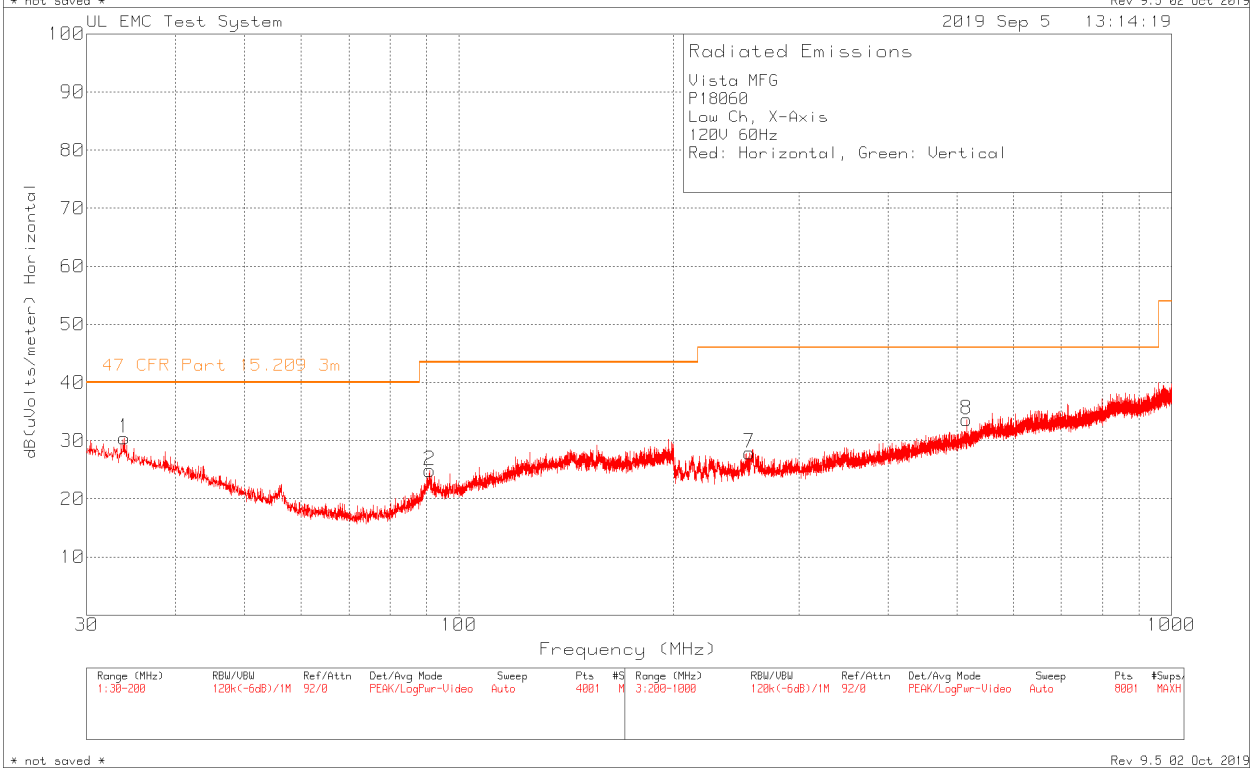
9.3. TRANSMITTER 30MHz to 1GHz – EUT X-Axis Orientation

Low Channel Plot





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Low Channel Data

```
Vista MFG
P18060
Low Ch, X-Axis
120V 60Hz
Red: Horizontal, Green: Vertical

Trace Markers

      Test        Meter       Transducer  Gain/Loss  Corrected  Limit:1
No. Frequency    Reading       Factor      Factor    Reading dB(uVolts/meter)
      (MHz)                     (dB)        (dB)
=========================================================================
1 33.8675       33.49dBuV Pk     16.6      -19.6       30.49      40
                 Azimuth:0-360  Height:248          Margin (dB)  -9.51
2 90.945        35.1dBuV Pk      9.2       -19.4       24.9       43.52
                 Azimuth:0-360  Height:248          Margin (dB)  -18.62
3 33.6975       40.23dBuV Pk     16.6      -19.6       37.23      40
                 Azimuth:0-360  Height:101          Margin (dB)  -2.77
4 56.01         43.34dBuV Pk     8         -19.6       31.74      40
                 Azimuth:0-360  Height:252          Margin (dB)  -8.26
5 91.03         37.17dBuV Pk     9.2       -19.4       26.97      43.52
                 Azimuth:0-360  Height:101          Margin (dB)  -16.55
6 157.33        33.97dBuV Pk     15        -19         29.97      43.52
                 Azimuth:0-360  Height:101          Margin (dB)  -13.55
7 255.7         34.22dBuV Pk     12.2      -18.5       27.92      46.02
                 Azimuth:0-360  Height:299          Margin (dB)  -18.1
8 515.7         32.66dBuV Pk     18.1      -17.1       33.66      46.02
                 Azimuth:0-360  Height:299          Margin (dB)  -12.36
9 339.4         31.19dBuV Pk     14.5      -17.9       27.79      46.02
                 Azimuth:0-360  Height:99           Margin (dB)  -18.23
10 607          31.82dBuV Pk     19.9      -16.5       35.22      46.02
                 Azimuth:0-360  Height:302          Margin (dB)  -10.8

Radiated Emission Data

      Test        Meter       Transducer  Gain/Loss  Corrected  Limit:1
    Frequency    Reading       Factor      Factor    Reading dB(uVolts/meter)
      (MHz)                     (dB)        (dB)
=========================================================================
33.76575       36.34dBuV Qp      16.6      -19.6       33.34      40
Azimuth: 354  Height:102 Vert                        Margin (dB): -6.66

LIMIT 1: 47 CFR Part 15.209 3m

Pk - Peak detector
Qp - Quasi-Peak detector
```


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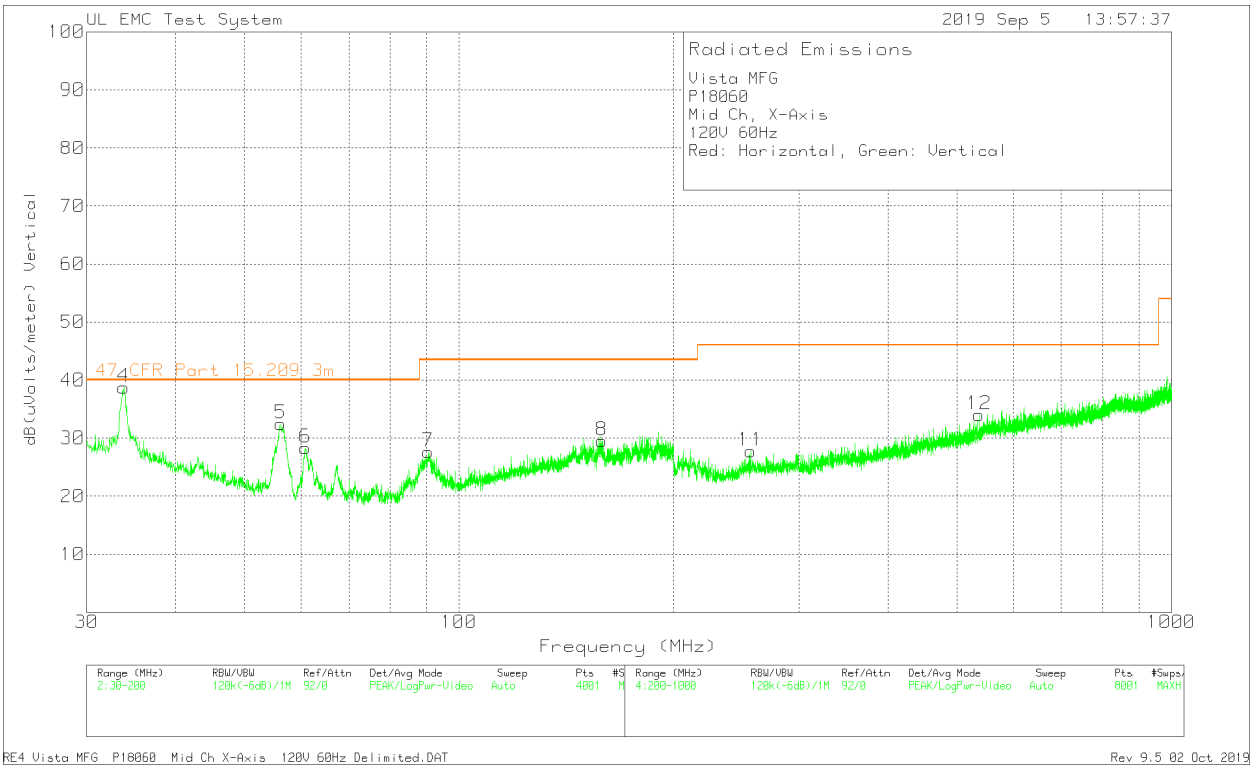
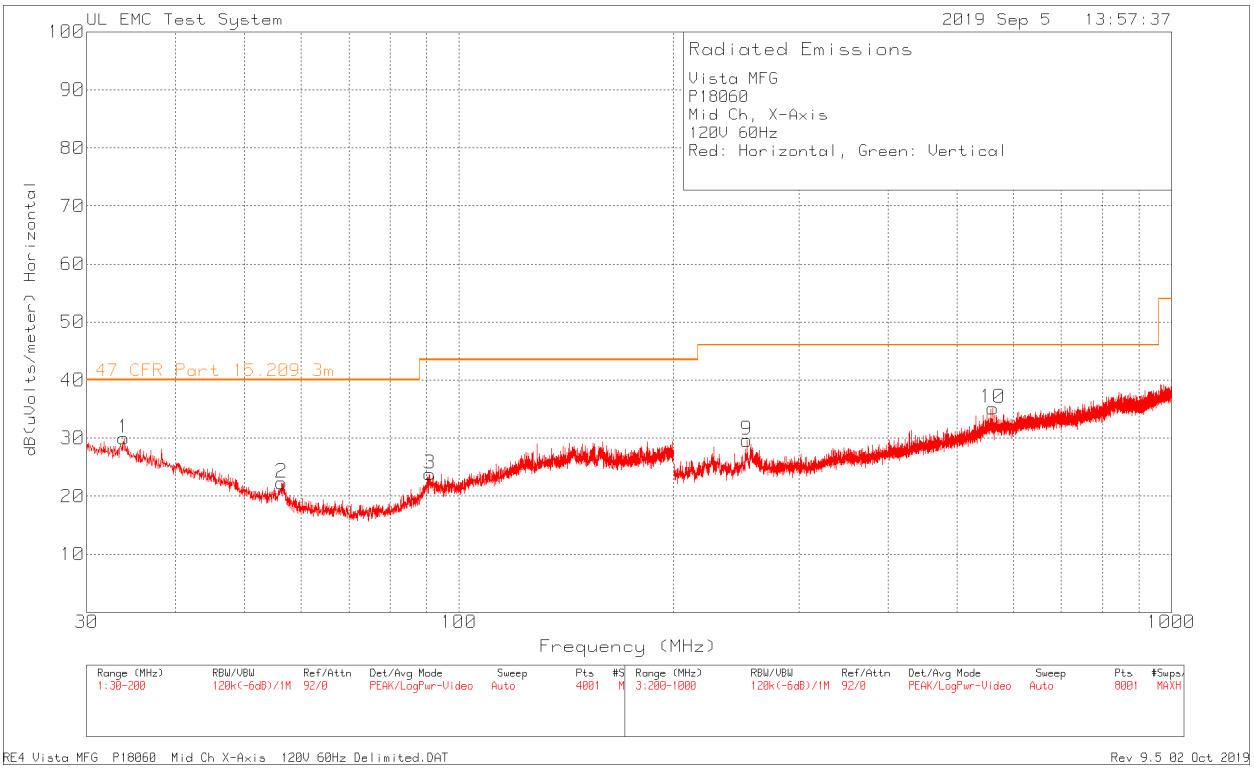
Middle Channel Plot





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Middle Channel Data

Vista MFG
P18060
Mid Ch, X-Axis
120V 60Hz
Red: Horizontal, Green: Vertical

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 dB(uVolts/meter)
1	33.825	32.97dBuV Pk	16.6	-19.6	29.97	40
		Azimuth:0-360	Height:398		Margin (dB)	-10.03
2	56.3075	34.03dBuV Pk	7.9	-19.6	22.33	40
		Azimuth:0-360	Height:398		Margin (dB)	-17.67
3	90.945	34.02dBuV Pk	9.2	-19.4	23.82	43.52
		Azimuth:0-360	Height:249		Margin (dB)	-19.7
4	33.825	41.77dBuV Pk	16.6	-19.6	38.77	40
		Azimuth:0-360	Height:101		Margin (dB)	-1.23
5	56.18	44.14dBuV Pk	7.9	-19.6	32.44	40
		Azimuth:0-360	Height:251		Margin (dB)	-7.56
6	60.8125	40.99dBuV Pk	6.8	-19.5	28.29	40
		Azimuth:0-360	Height:398		Margin (dB)	-11.71
7	90.52	37.92dBuV Pk	9.1	-19.4	27.62	43.52
		Azimuth:0-360	Height:101		Margin (dB)	-15.9
8	158.6475	33.46dBuV Pk	15.1	-19	29.56	43.52
		Azimuth:0-360	Height:251		Margin (dB)	-13.96
9	253.5	36.03dBuV Pk	12.2	-18.6	29.63	46.02
		Azimuth:0-360	Height:399		Margin (dB)	-16.39
10	561.4	32.29dBuV Pk	19.7	-16.8	35.19	46.02
		Azimuth:0-360	Height:199		Margin (dB)	-10.83
11	256.7	34.08dBuV Pk	12.2	-18.5	27.78	46.02
		Azimuth:0-360	Height:99		Margin (dB)	-18.24
12	536.9	32.11dBuV Pk	18.8	-16.9	34.01	46.02
		Azimuth:0-360	Height:202		Margin (dB)	-12.01

Radiated Emission Data

Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 dB(uVolts/meter)
33.7635	37.85dBuV Qp	16.6	-19.6	34.85	40
Azimuth: 307	Height:102 Vert			Margin (dB): -5.15	

LIMIT 1: 47 CFR Part 15.209 3m

Pk - Peak detector
Qp - Quasi-Peak detector

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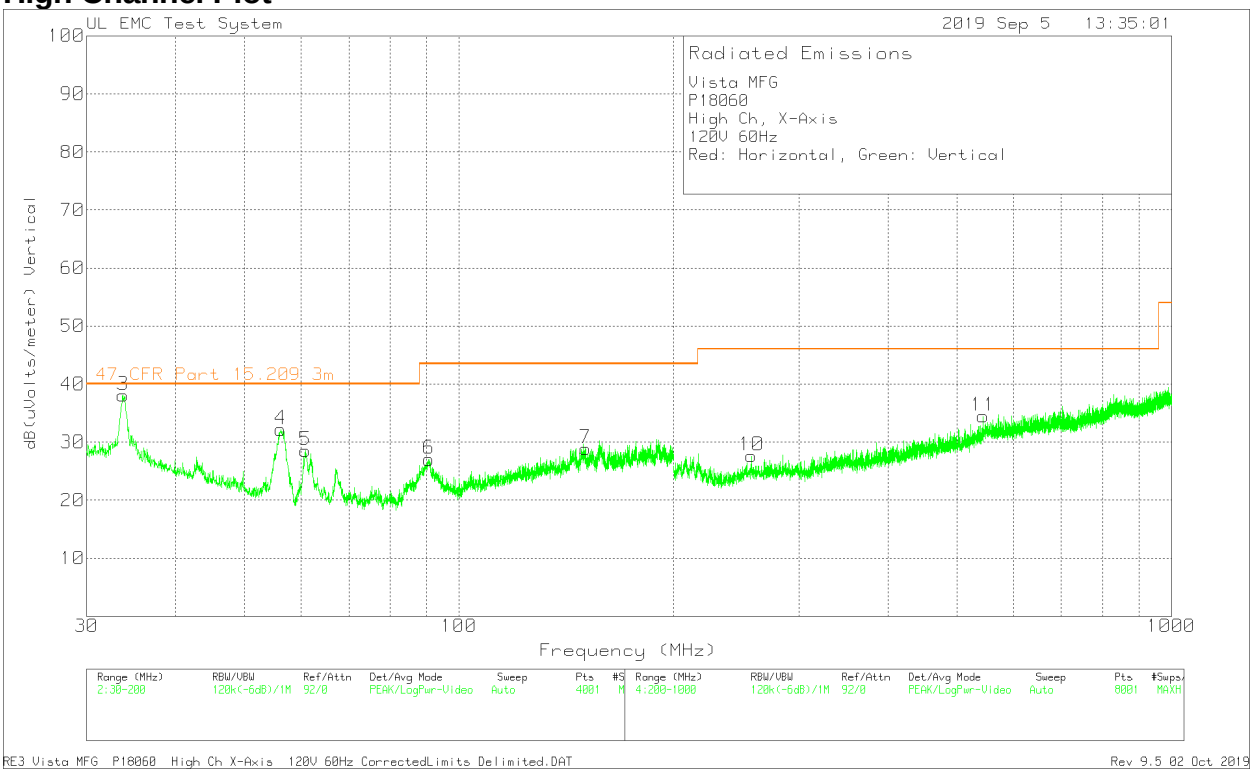
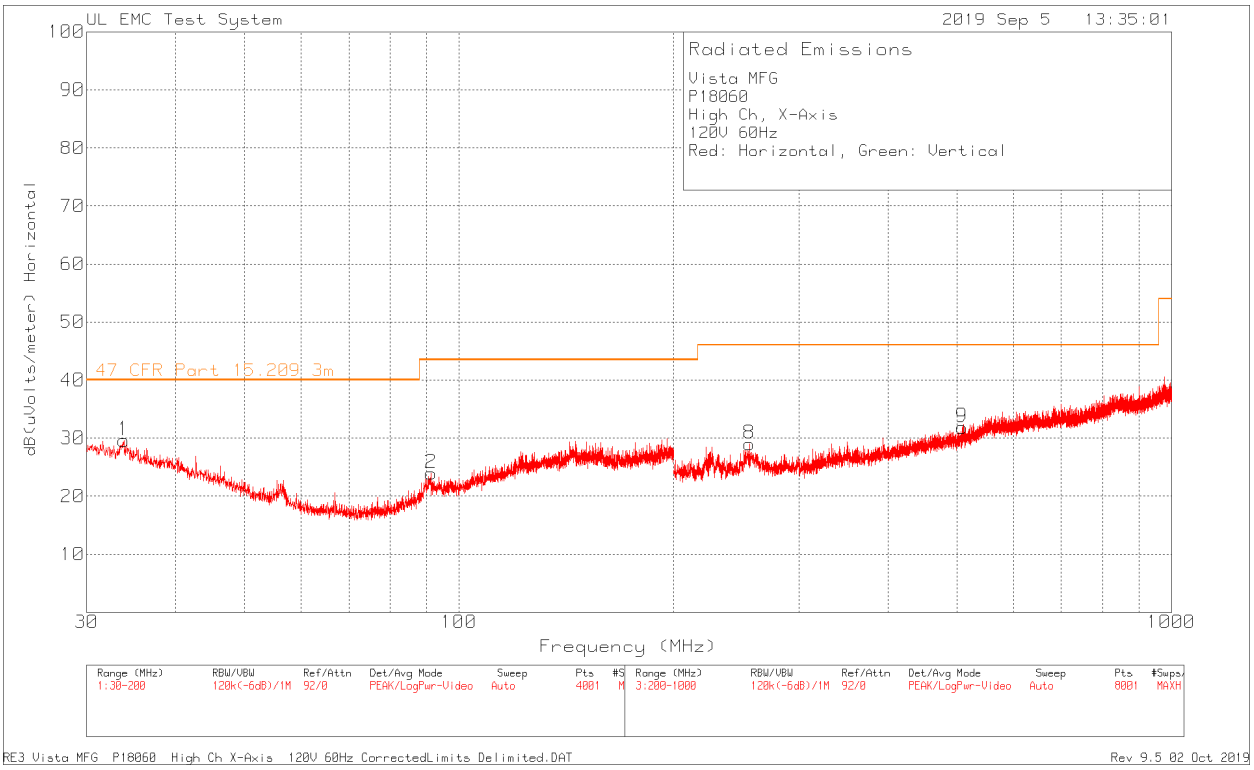
High Channel Plot





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High Channel Data

Vista MFG
P18060
High Ch, X-Axis
120V 60Hz
Red: Horizontal, Green: Vertical

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 dB(uVolts/meter)
1	33.825	32.61dBuV Pk	16.6	-19.6	29.61	40
		Azimuth:0-360	Height:248		Margin (dB)	-10.39
2	91.3275	34.07dBuV Pk	9.3	-19.4	23.97	43.52
		Azimuth:0-360	Height:248		Margin (dB)	-19.55
3	33.74	41.1dBuV Pk	16.6	-19.6	38.1	40
		Azimuth:0-360	Height:101		Margin (dB)	-1.9
4	56.18	43.89dBuV Pk	7.9	-19.6	32.19	40
		Azimuth:0-360	Height:252		Margin (dB)	-7.81
5	60.855	41.25dBuV Pk	6.8	-19.5	28.55	40
		Azimuth:0-360	Height:252		Margin (dB)	-11.45
6	90.6475	37.35dBuV Pk	9.1	-19.4	27.05	43.52
		Azimuth:0-360	Height:101		Margin (dB)	-16.47
7	150.4875	33.05dBuV Pk	14.9	-19.1	28.85	43.52
		Azimuth:0-360	Height:252		Margin (dB)	-14.67
8	255.5	35.3dBuV Pk	12.2	-18.5	29	46.02
		Azimuth:0-360	Height:399		Margin (dB)	-17.02
9	508.2	30.95dBuV Pk	17.9	-17	31.85	46.02
		Azimuth:0-360	Height:199		Margin (dB)	-14.17
10	257.3	33.94dBuV Pk	12.2	-18.5	27.64	46.02
		Azimuth:0-360	Height:99		Margin (dB)	-18.38
11	544.1	32.06dBuV Pk	19.3	-16.9	34.46	46.02
		Azimuth:0-360	Height:302		Margin (dB)	-11.56

Radiated Emission Data

Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 dB(uVolts/meter)
33.7885	37.53dBuV Qp	16.6	-19.6	34.53	40
Azimuth: 314	Height:103 Vert			Margin (dB): -5.47	

LIMIT 1: 47 CFR Part 15.209 3m

Pk - Peak detector
Qp - Quasi-Peak detector

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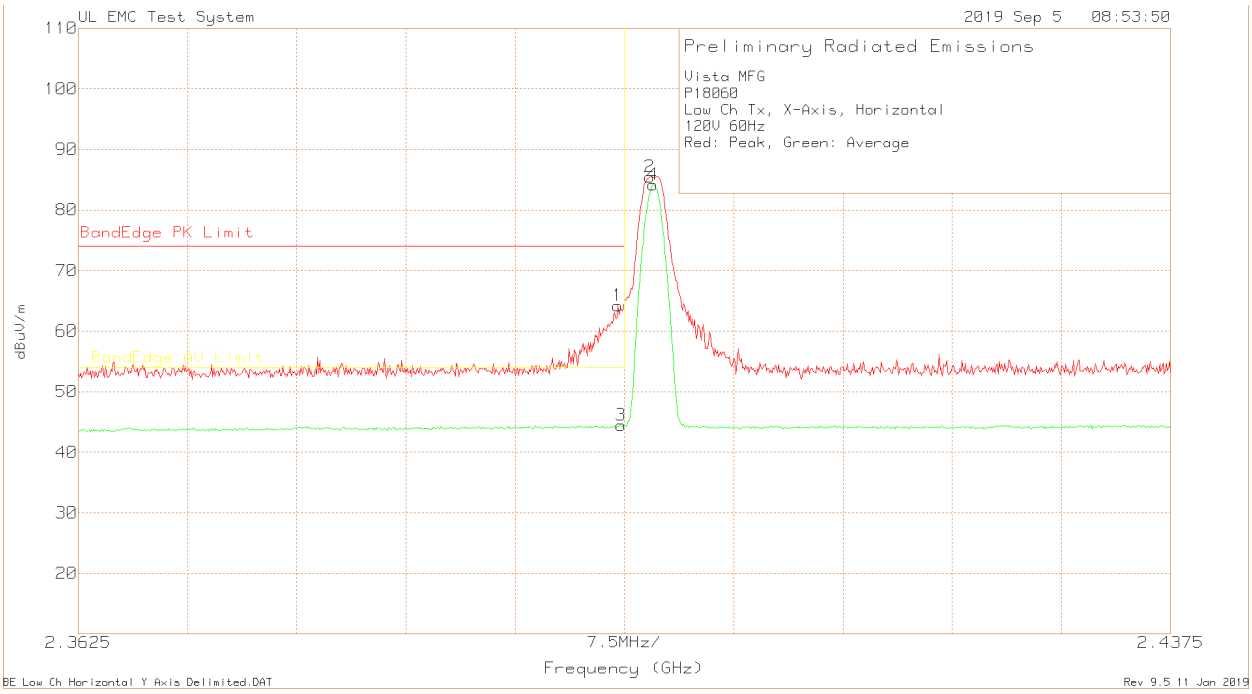
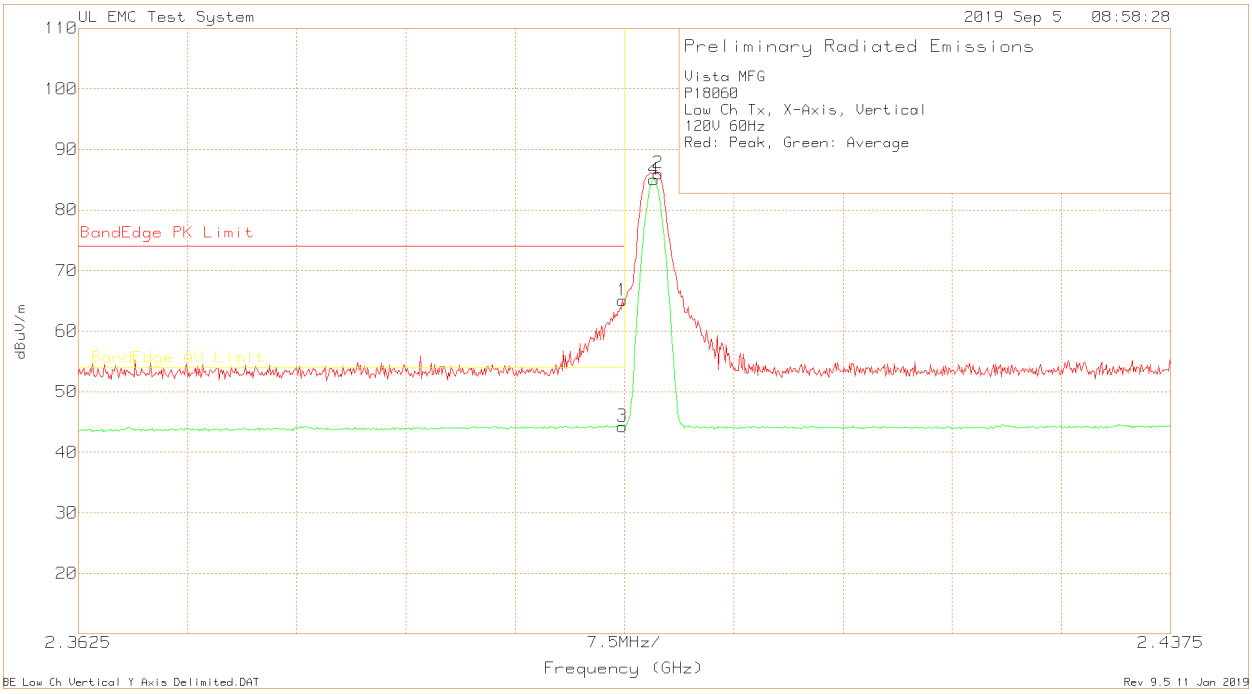
9.4. TRANSMITTER 1GHz – 25GHz

9.4.1. Fundamental and Band Edge Data

Low Channel Plot – EUT X-Axis





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Low Channel Data – EUT X-Axis

Vista MFG
P18060
Low Ch Tx, X-Axis, Horizontal
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4	37.63	Pk	21.8	-	4.79	64.22	74	-9.78	-	-	142	140	H
2	2.4017	58.9	Pk	21.8	-	4.75	85.45	114	-28.55	-	-	142	140	H
3	2.4	16.54	Av	21.8	1.3	4.79	44.43	-	-	54	-9.57	142	140	H
4	2.402	56.34	Av	21.8	1.3	4.74	84.18	-	-	94	-9.82	142	140	H

Pk - Peak detector
Av - Power RMS Average

Vista MFG
P18060
Low Ch Tx, X-Axis, Vertical
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4	38.49	Pk	21.8	-	4.79	65.08	74	-8.92	-	-	255	100	V
2	2.4023	59.51	Pk	21.8	-	4.74	86.05	114	-27.95	-	-	255	100	V
3	2.4	16.39	Av	21.8	1.3	4.79	44.28	-	-	54	-9.72	255	100	V
4	2.402	57.2	Av	21.8	1.3	4.74	85.04	-	-	94	-8.96	255	100	V

Pk - Peak detector
Av - Power RMS Average

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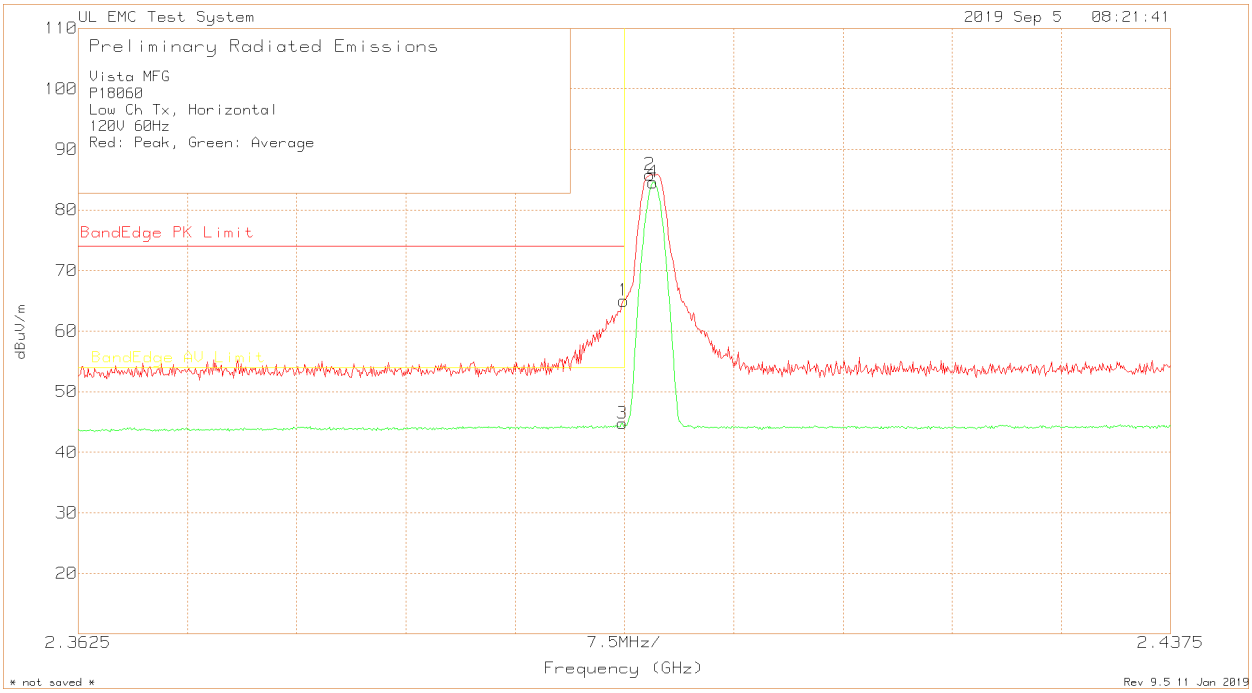
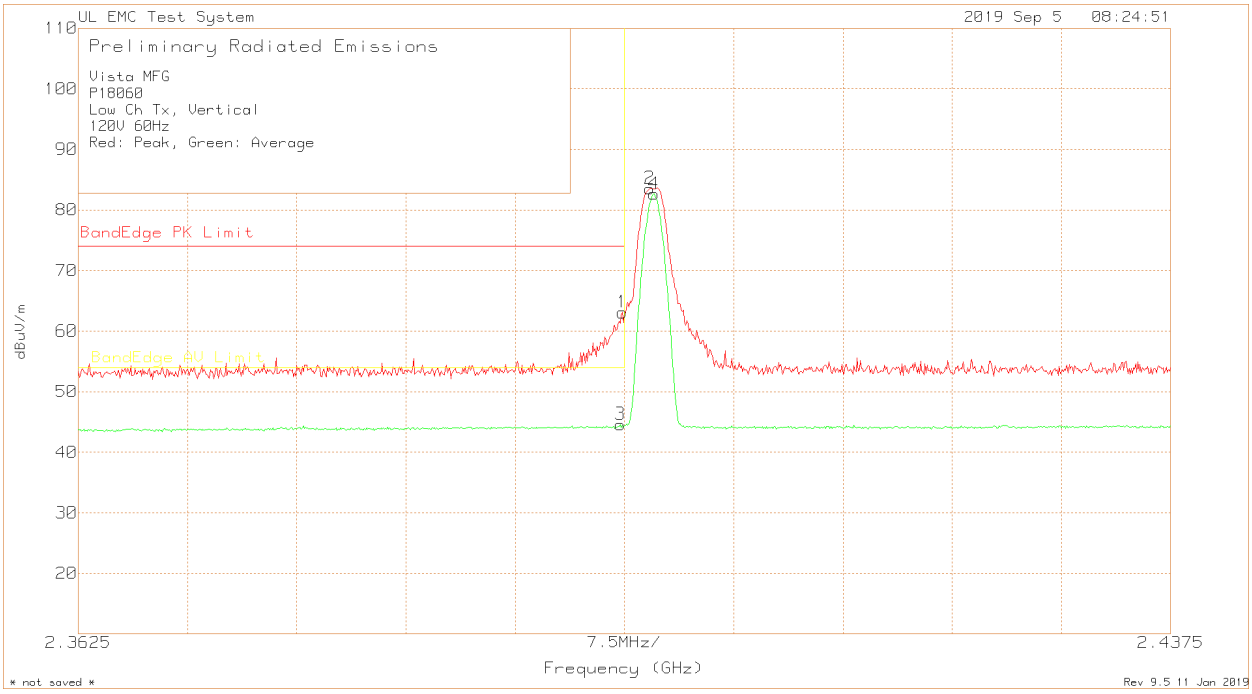
Low Channel Plot – EUT Y-Axis





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Low Channel Data – EUT Y-Axis

Vista MFG
P18060
Low Ch Tx, Horizontal
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4	38.43	Pk	21.8	-	4.79	65.02	74	-8.98	-	-	143	140	H
2	2.4017	59.26	Pk	21.8	-	4.75	85.81	114	-28.19	-	-	143	140	H
3	2.4	16.9	Av	21.8	1.3	4.79	44.79	-	-	54	-9.21	143	140	H
4	2.402	56.71	Av	21.8	1.3	4.74	84.55	-	-	94	-9.45	143	140	H

Pk - Peak detector
Av - Power RMS Average

Vista MFG
P18060
Low Ch Tx, Vertical
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2400	36.49	Pk	21.8	-	4.79	63.08	74	-10.92	-	-	267	100	V
2	2.4017	57.01	Pk	21.8	-	4.75	83.56	114	-30.44	-	-	267	100	V
3	2400	16.71	Av	21.8	1.3	4.79	44.6	-	-	54	-9.4	267	100	V
4	2.402	54.8	Av	21.8	1.3	4.74	82.64	-	-	94	-11.36	267	100	V

Pk - Peak detector
Av - Power RMS Average

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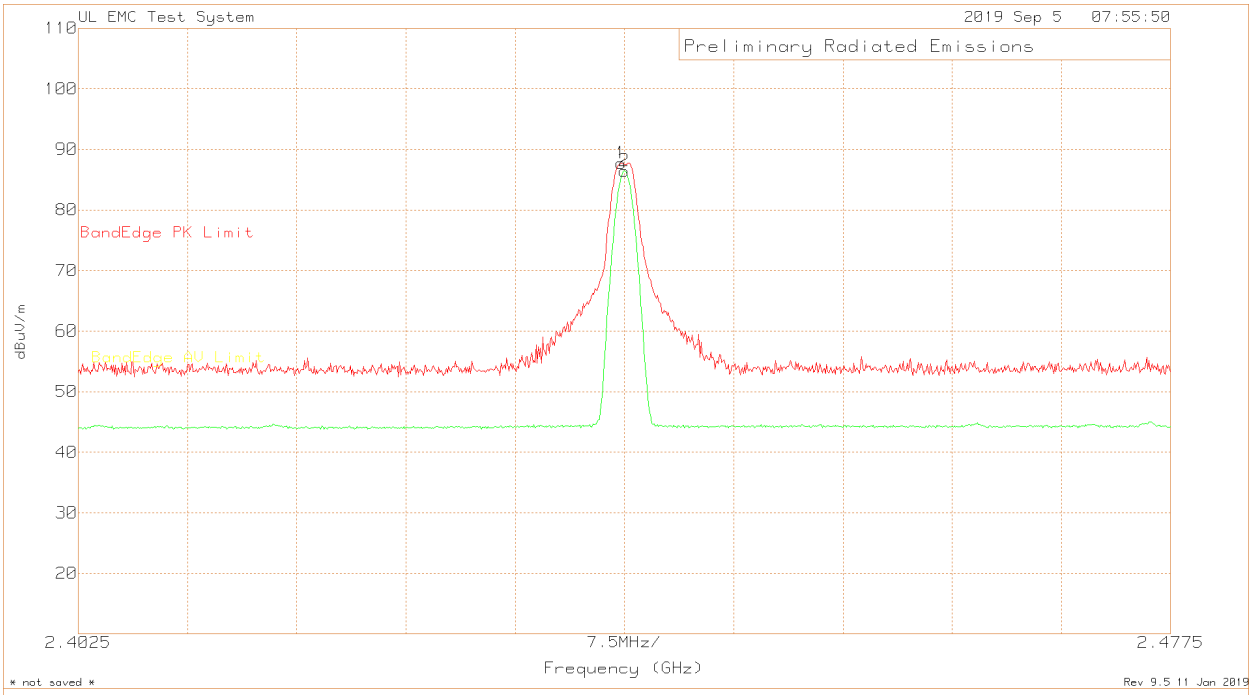
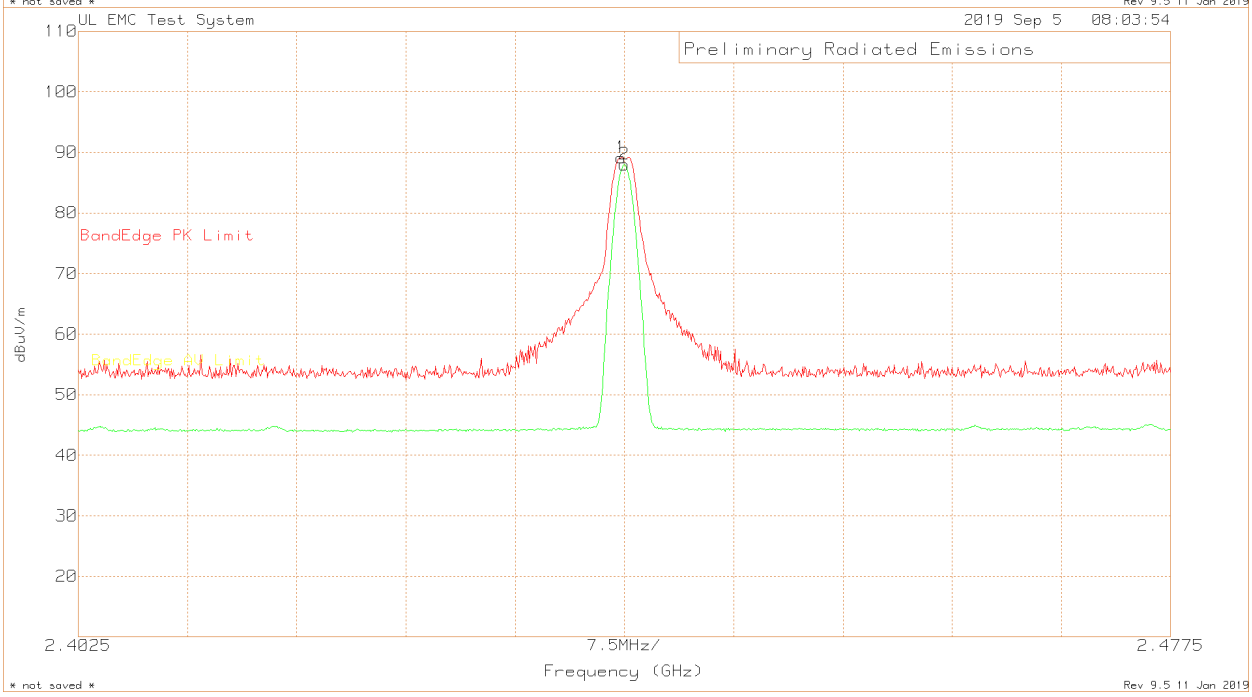
Middle Channel Plot - EUT X-Axis





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Middle Channel Data - EUT X-Axis

Vista MFG
P18060
Mid Ch Tx, Horizontal
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4398	61.22	Pk	21.9	-	4.62	87.74	114	-26.26	-	-	241	100	H
2	2.44	58.64	Av	21.9	1.3	4.62	86.46	-	-	94	-7.54	241	100	H

Pk - Peak detector
Av - Power RMS Average

Vista MFG
P18060
Mid Ch Tx, Vertical
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4398	62.59	Pk	21.9		4.62	89.11	114	-24.89	-	-	253	100	V
2	2.44	60.19	Av	21.9	1.3	4.62	88.01	-	-	94	-5.99	253	100	V

Pk - Peak detector
Av - Power RMS Average

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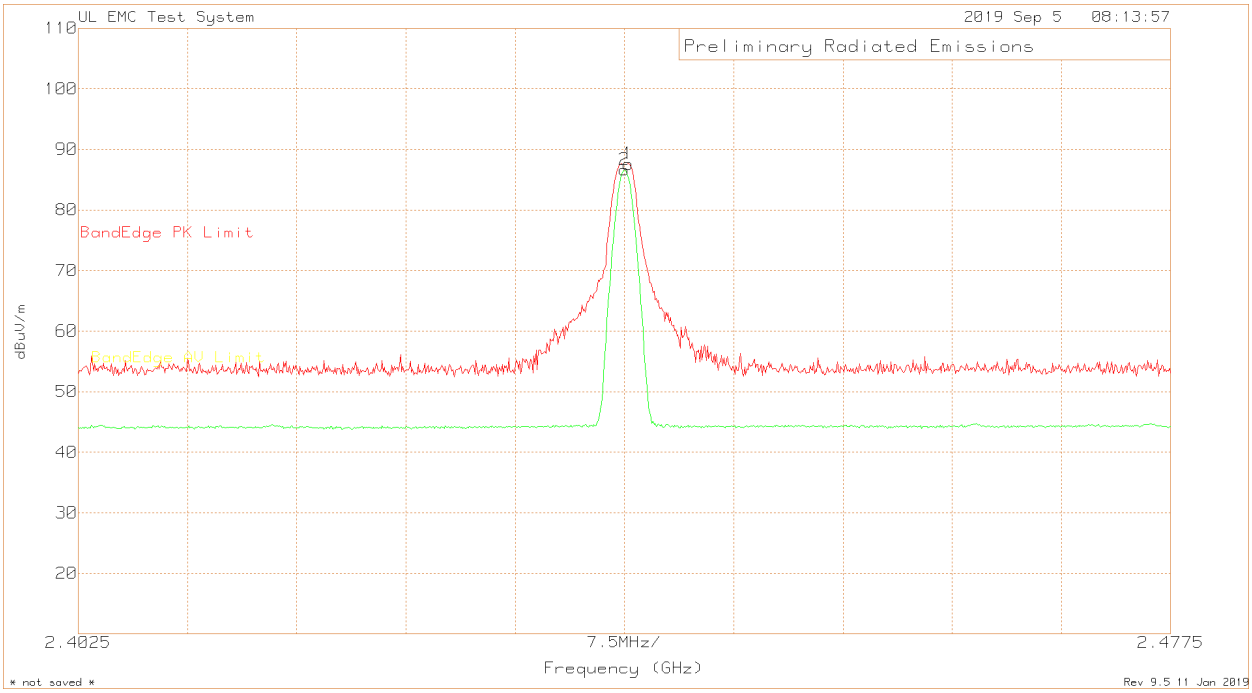
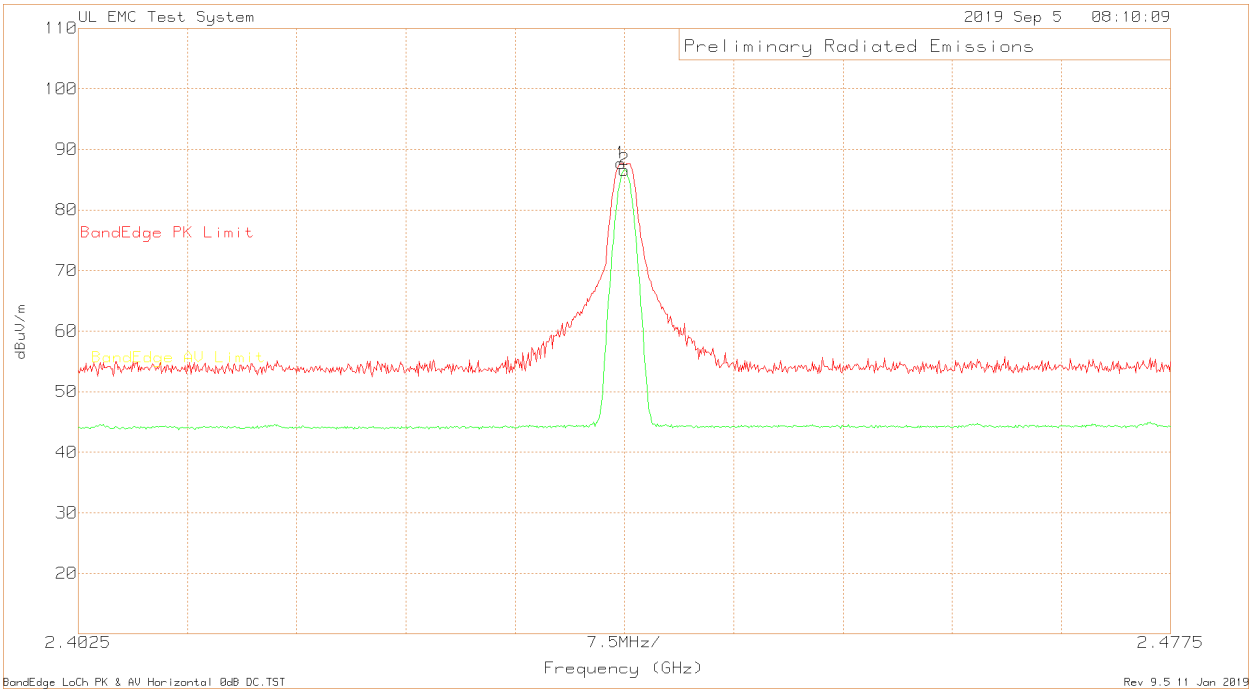
Middle Channel Plot - EUT Y-Axis





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Middle Channel Data - EUT Y-Axis

Vista MFG
P18060
Mid Ch Tx, Horizontal
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4403	61.05	Pk	21.9		4.62	87.57	114	-26.43	-	-	129	221	H
2	2.44	58.79	Av	21.9	1.3	4.62	86.61	-	-	94	-7.39	129	221	H

Pk - Peak detector
Av - Power RMS Average

Vista MFG
P18060
Mid Ch Tx, Vertical
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4398	61.19	Pk	21.9		4.62	87.71	114	-26.29	-	-	252	100	V
2	2.44	58.78	Av	21.9	1.3	4.62	86.6	-	-	94	-7.4	252	100	V

Pk - Peak detector
Av - Power RMS Average

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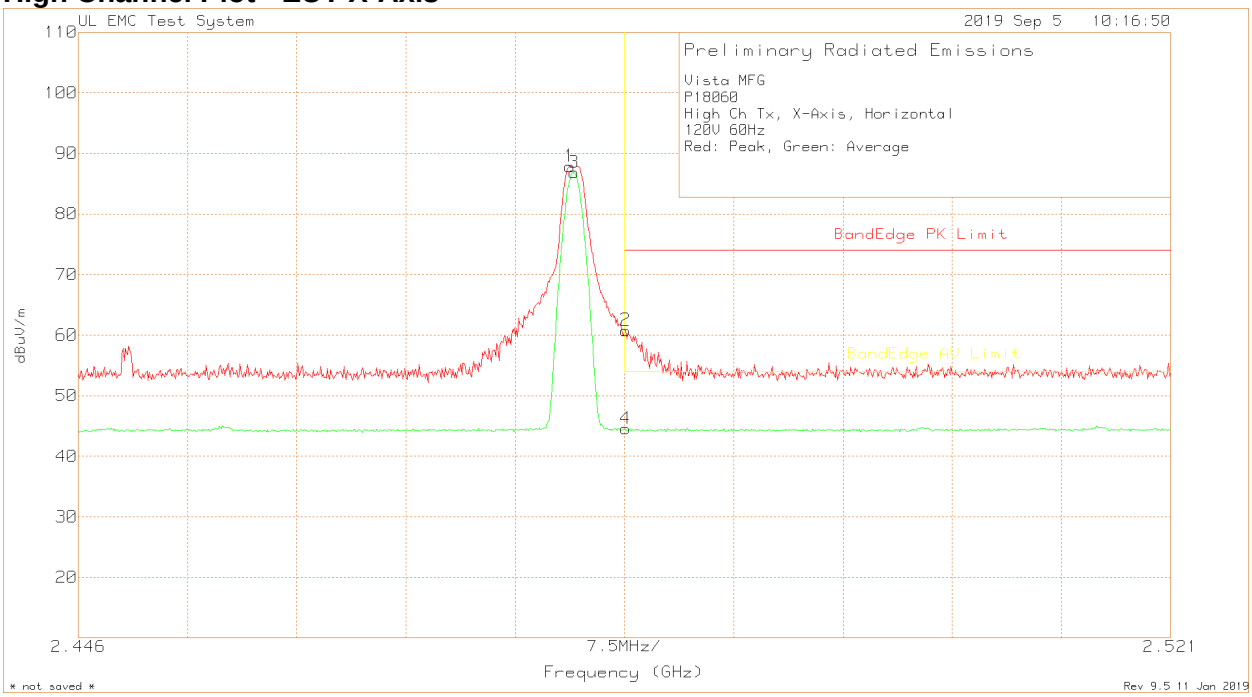
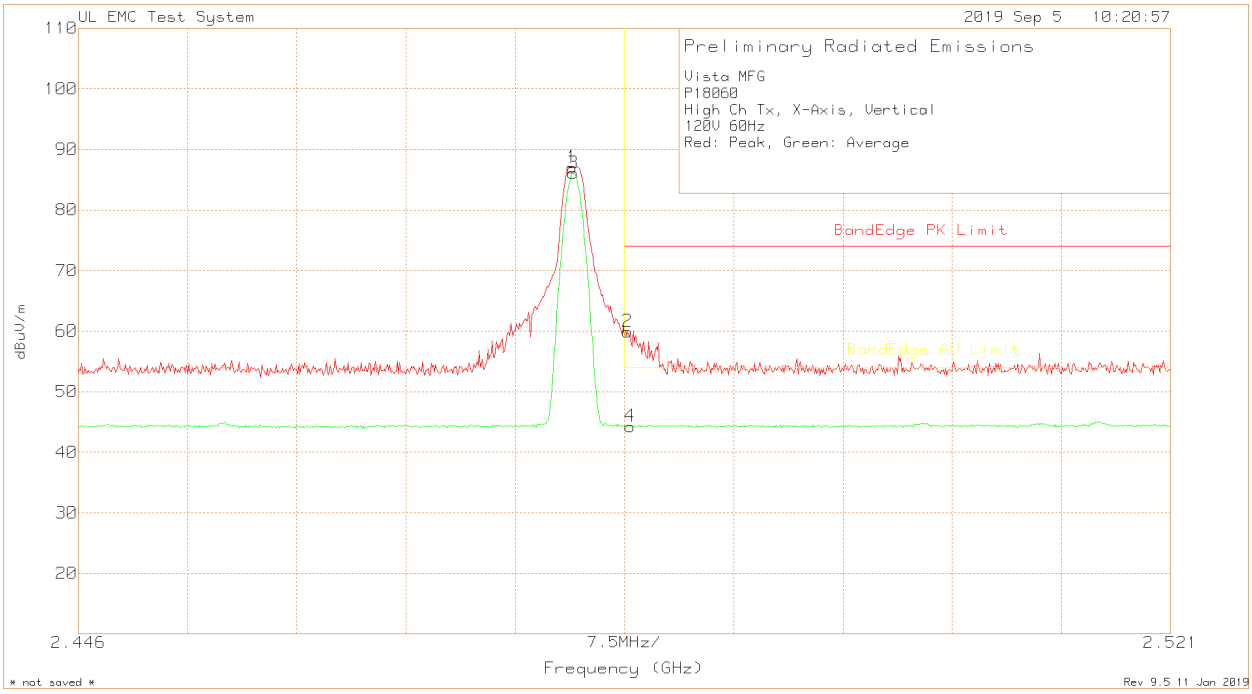
High Channel Plot - EUT X-Axis





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High Channel Data - EUT X-Axis

Vista MFG
P18060
High Ch Tx, X-Axis, Horizontal
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4798	61.38	Pk	22	-	4.48	87.86	114	-26.14	-	-	129	194	H
2	2.4835	34.22	Pk	22.1	-	4.47	60.79	74	-13.21	-	-	129	194	H
3	2.4801	59.1	Av	22	1.3	4.47	86.87	-	-	94	-7.13	129	194	H
4	2.4835	16.71	Av	22.1	1.3	4.47	44.58	-	-	54	-9.42	129	194	H

Pk - Peak detector
Av - Power RMS Average

Vista MFG
P18060
High Ch Tx, X-Axis, Vertical
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4799	60.53	Pk	22	-	4.47	87	114	-27	-	-	246	100	V
2	2.4835	33.35	Pk	22.1	-	4.47	59.92	74	-14.08	-	-	246	100	V
3	2.48	58.31	Av	22	1.3	4.47	86.08	-	-	94	-7.92	246	100	V
4	2.4835	16.41	Av	22.1	1.3	4.47	44.28	-	-	54	-9.72	246	100	V

Pk - Peak detector
Av - Power RMS Average

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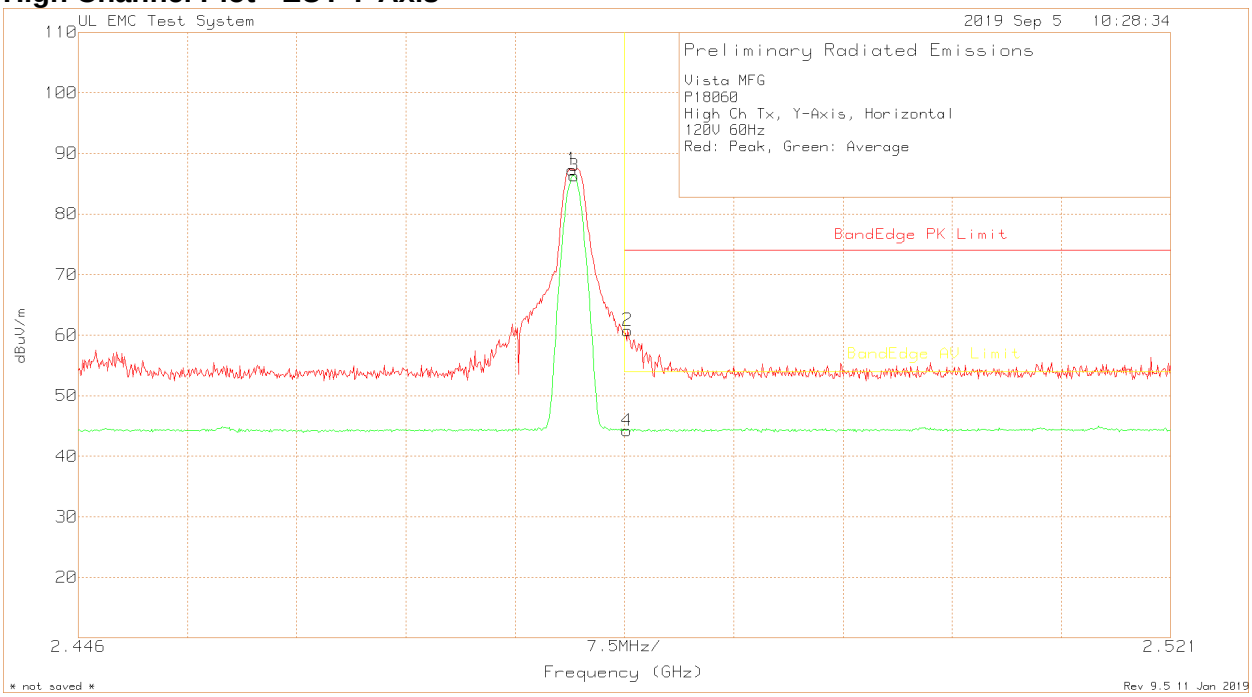
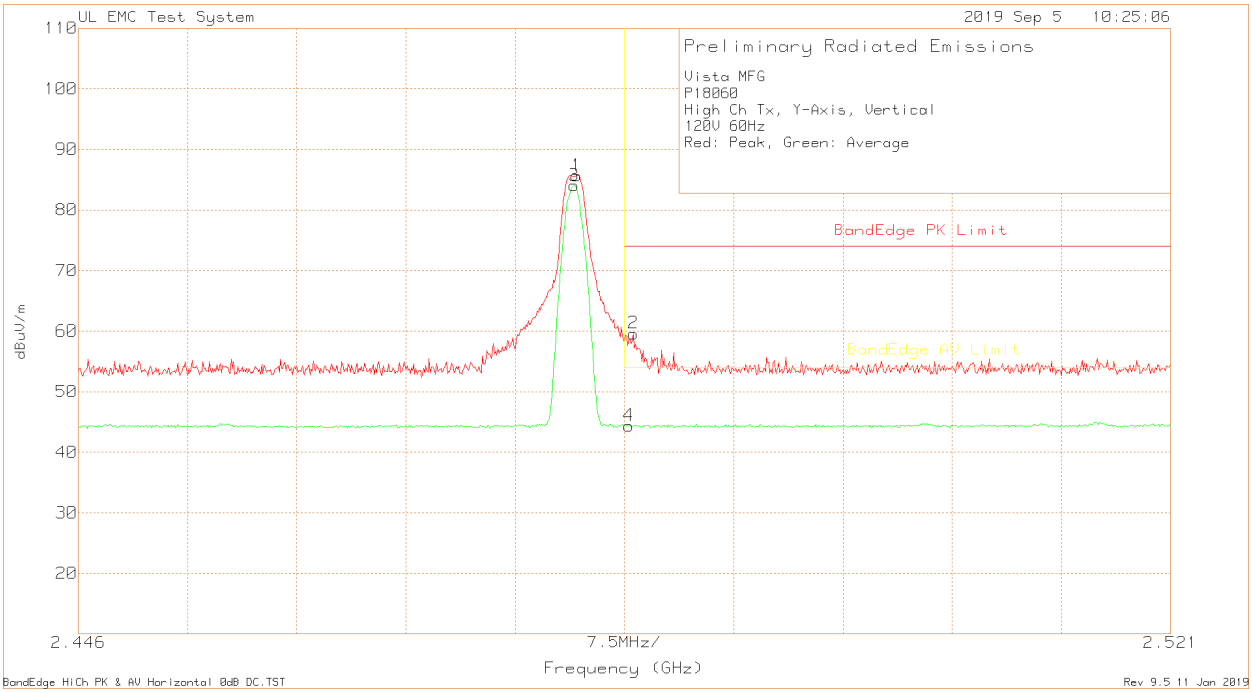
High Channel Plot - EUT Y-Axis





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High Channel Data - EUT Y-Axis

Vista MFG
P18060
High Ch Tx, Y-Axis, Horizontal
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4799	60.87	Pk	22	-	4.47	87.34	114	-26.66	-	-	71	129	H
2	2.4835	34.21	Pk	22.1	-	4.47	60.78	74	-13.22	-	-	71	129	H
3	2.4801	58.55	Av	22	1.3	4.47	86.32	-	-	94	-7.68	71	129	H
4	2.4835	16.36	Av	22.1	1.3	4.47	44.23	-	-	54	-9.77	71	129	H

Pk - Peak detector
Av - Power RMS Average

Vista MFG
P18060
High Ch Tx, Y-Axis, Vertical
120V 60Hz
Red: Peak, Green: Average
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	DC Correction dB	Path Factor dB	Level dBuV/m	FCC 15.209 limit @ 3m Pk dBuV/m	Margin (dB)	FCC 15.209 Limit @ 3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.4802	59.22	Pk	22	-	4.47	85.69	114	-28.31	-	-	240	100	V
2	2.4835	33.04	Pk	22.1	-	4.47	59.61	74	-14.39	-	-	240	100	V
3	2.4801	56.3	Av	22	1.3	4.47	84.07	-	-	94	-9.93	240	100	V
4	2.4835	16.5	Av	22.1	1.3	4.47	44.37	-	-	54	-9.63	240	100	V

Pk - Peak detector
Av - Power RMS Average

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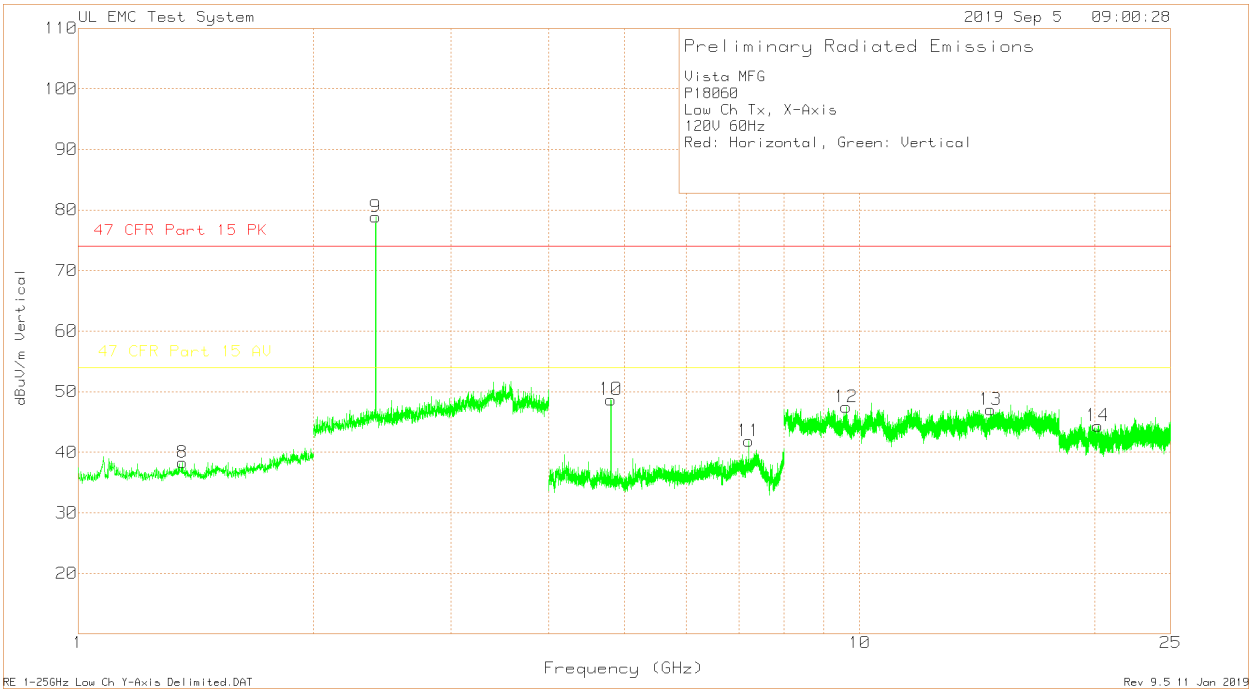
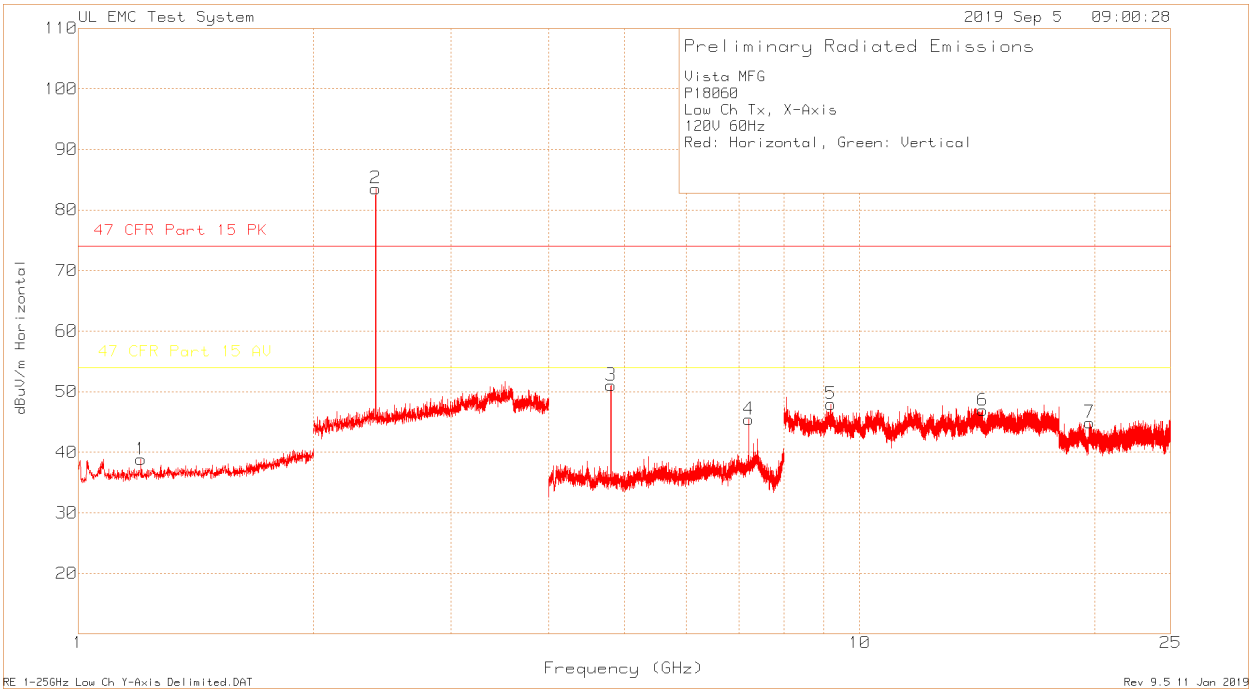
9.4.1. Radiated Spurious Emissions

Low Channel X-Axis - Plot





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Low Channel X-Axis – Data

Vista MFG														
P18060														
Low Ch Tx, X-Axis														
120V 60Hz														
Red: Horizontal, Green: Vertical														
Trace MArkers														
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Path Factor dB	Level dBuV/m	Limit 15.209 @3m PK dBuV/m	Margin (dB)	Limit 15.209 @3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.203	69.79	Pk	25	-	-55.96	38.83	74	-35.17	54	-15.17	0-360	150	H
2	2.402	57.03	Pk	21.8	-	4.74	83.57	-	-	-	-	0-360	150	H
3	4.805	74.63	Pk	27.7	-	-51.27	51.06	74	-22.94	54	-2.94	0-360	150	H
4	7.206	61.59	Pk	29.7	-	-45.84	45.45	74	-28.55	54	-8.55	0-360	150	H
5	9.18	59.88	Pk	36.3	-	-48.22	47.96	74	-26.04	54	-6.04	0-360	150	H
6	14.366	48.81	Pk	39.8	-	-41.71	46.9	74	-27.1	54	-7.1	0-360	150	H
7	19.7	54.48	Pk	40.3	-	-49.87	44.91	74	-29.09	54	-9.09	0-360	150	H
8	1.36	68.42	Pk	25.1	-	-55.26	38.26	74	-35.74	54	-15.74	0-360	150	V
9	2.402	52.34	Pk	21.8	-	4.74	78.88	-	-	-	-	0-360	150	V
10	4.804	72.38	Pk	27.7	-	-51.39	48.69	74	-25.31	54	-5.31	0-360	150	V
11	7.207	58.04	Pk	29.8	-	-45.99	41.85	74	-32.15	54	-12.15	0-360	150	V
12	9.61	60.27	Pk	36.4	-	-49.23	47.44	74	-26.56	54	-6.56	0-360	150	V
13	14.698	47.42	Pk	39.8	-	-40.2	47.02	74	-26.98	54	-6.98	0-360	150	V
14	20.169	52.71	Pk	40.2	-	-48.54	44.37	74	-29.63	54	-9.63	0-360	150	V
Radiated Emission Data														
	4.8036	76	Pk	27.7	-	-51.37	52.33	74	-21.67	-	-	103	100	H
	4.8038	72.22	Av	27.7	1.3	-51.38	49.84	-	-	54	-4.16	103	100	H
	4.8036	74.27	Pk	27.7	-	-51.37	50.6	74	-23.4	-	-	31	219	V
	4.8038	70.64	Av	27.7	1.3	-51.38	48.26	-	-	54	-5.74	31	219	V
Pk - Peak detector														
Av - Power RMS Average														

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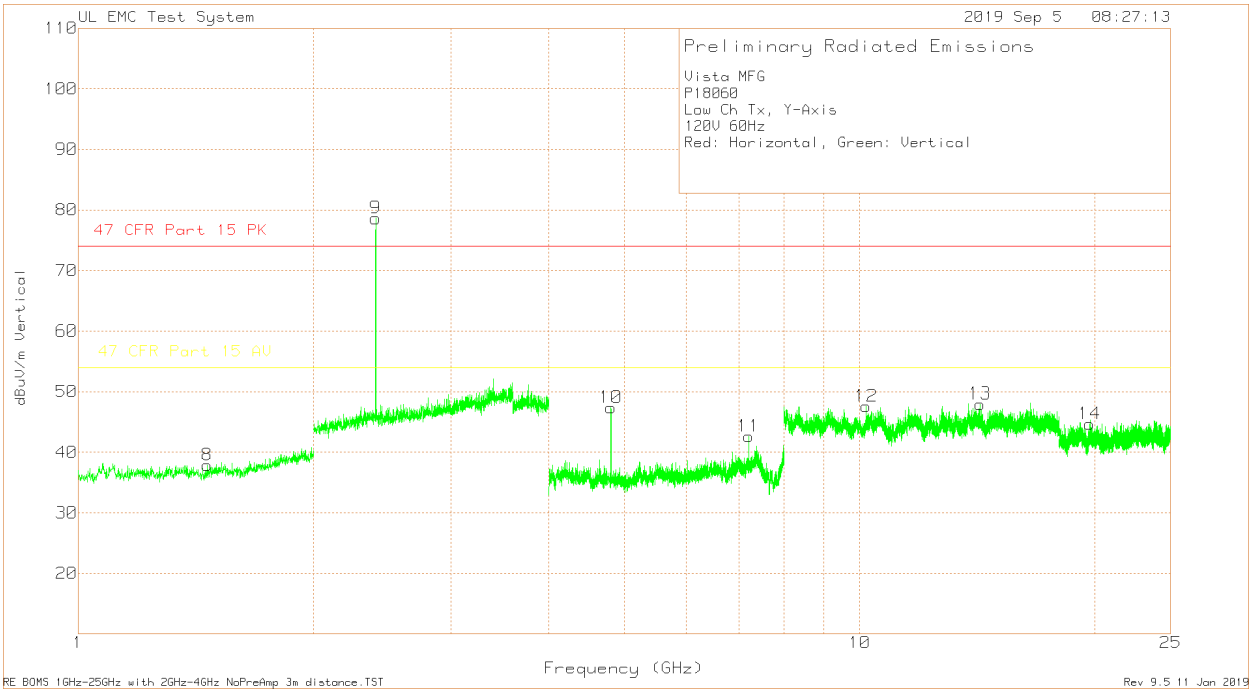
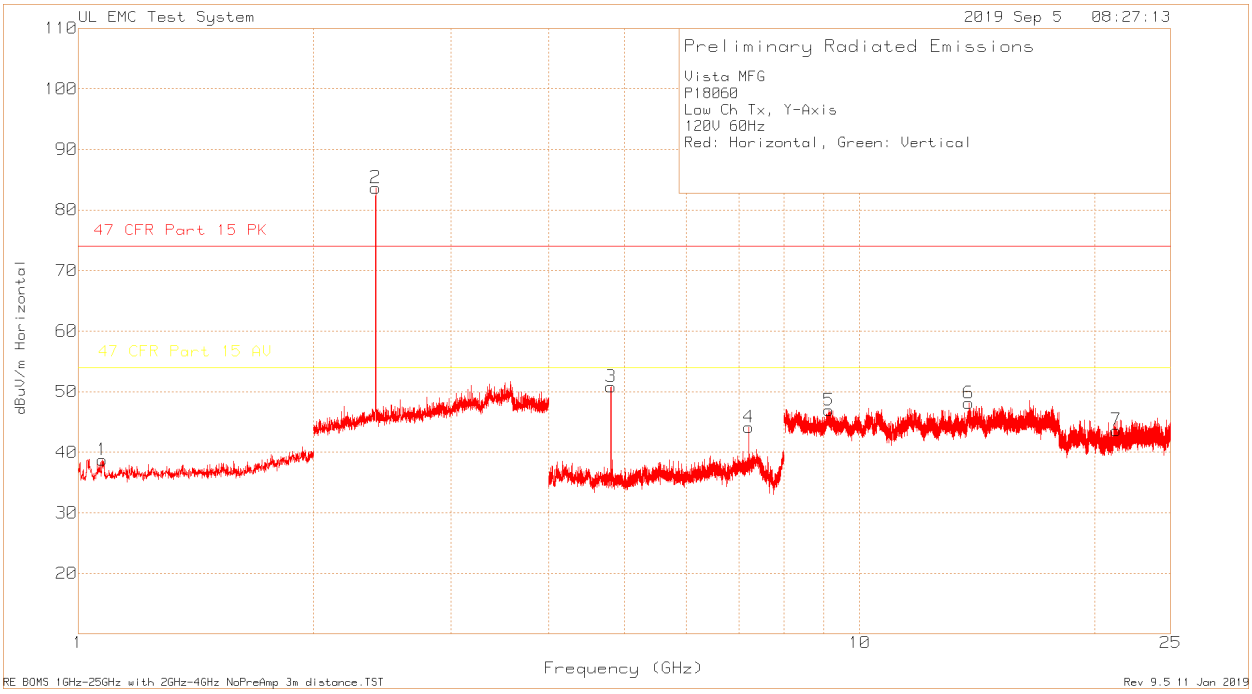
Low Channel Y-Axis - Plot





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Low Channel Y-Axis – Data

Vista MFG														
P18060														
Low Ch Tx, Y-Axis														
120V 60Hz														
Red: Horizontal, Green: Vertical														
Trace MArkers														
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Path Factor dB	Level dBuV/m	Limit 15.209 @3m PK dBuV/m	Margin (dB)	Limit 15.209 @3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.074	70.44	Pk	24.6	-	-56.32	38.72	74	-35.28	54	-15.28	0-360	150	H
2	2.402	57.13	Pk	21.8	-	4.74	83.67	-	-	-	-	0-360	150	H
3	4.805	74.39	Pk	27.7	-	-51.27	50.82	74	-23.18	54	-3.18	0-360	150	H
4	7.206	60.23	Pk	29.7	-	-45.84	44.09	74	-29.91	54	-9.91	0-360	150	H
5	9.129	58.94	Pk	36.3	-	-48.32	46.92	74	-27.08	54	-7.08	0-360	150	H
6	13.788	50.82	Pk	39.9	-	-42.58	48.14	74	-25.86	54	-5.86	0-360	150	H
7	21.312	49.9	Pk	40.2	-	-46.48	43.62	74	-30.38	54	-10.38	0-360	150	H
8	1.462	67.63	Pk	25.1	-	-54.85	37.88	74	-36.12	54	-16.12	0-360	150	V
9	2.402	52.08	Pk	21.8	-	4.74	78.62	-	-	-	-	0-360	150	V
10	4.804	71.05	Pk	27.7	-	-51.39	47.36	74	-26.64	54	-6.64	0-360	150	V
11	7.208	58.79	Pk	29.8	-	-45.97	42.62	74	-31.38	54	-11.38	0-360	150	V
12	10.196	59.23	Pk	36.2	-	-47.88	47.55	74	-26.45	54	-6.45	0-360	150	V
13	14.266	50.05	Pk	39.8	-	-41.9	47.95	74	-26.05	54	-6.05	0-360	150	V
14	19.701	54.61	Pk	40.3	-	-50.27	44.64	74	-29.36	54	-9.36	0-360	150	V
Radiated Emission Data														
	4.8045	76.07	Pk	27.7	-	-51.33	52.44	74	-21.56	-	-	84	100	H
	4.8039	72.64	Av	27.7	1.3	-51.38	50.26	-	-	54	-3.74	84	100	H
	4.8046	72.09	Pk	27.7	-	-51.32	48.47	74	-25.53	-	-	359	100	V
	4.8037	67.56	Av	27.7	1.3	-51.37	45.19	-	-	54	-8.81	359	100	V
Pk - Peak detector														
Av - Power RMS Average														

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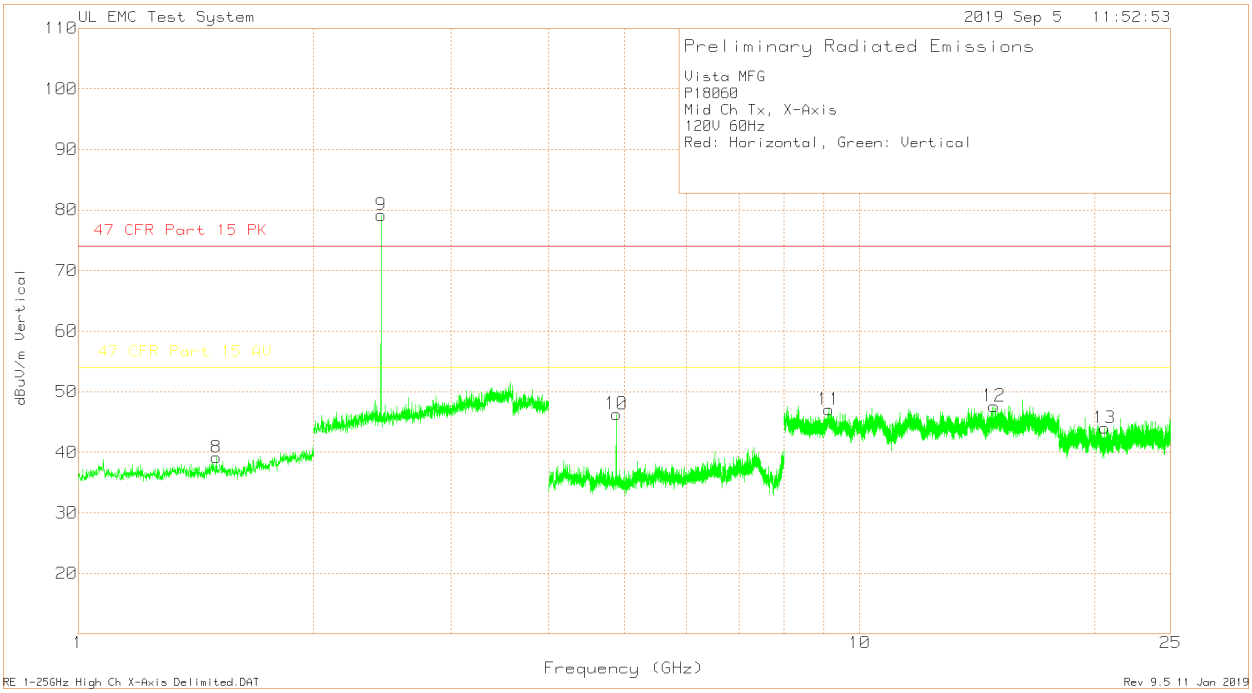
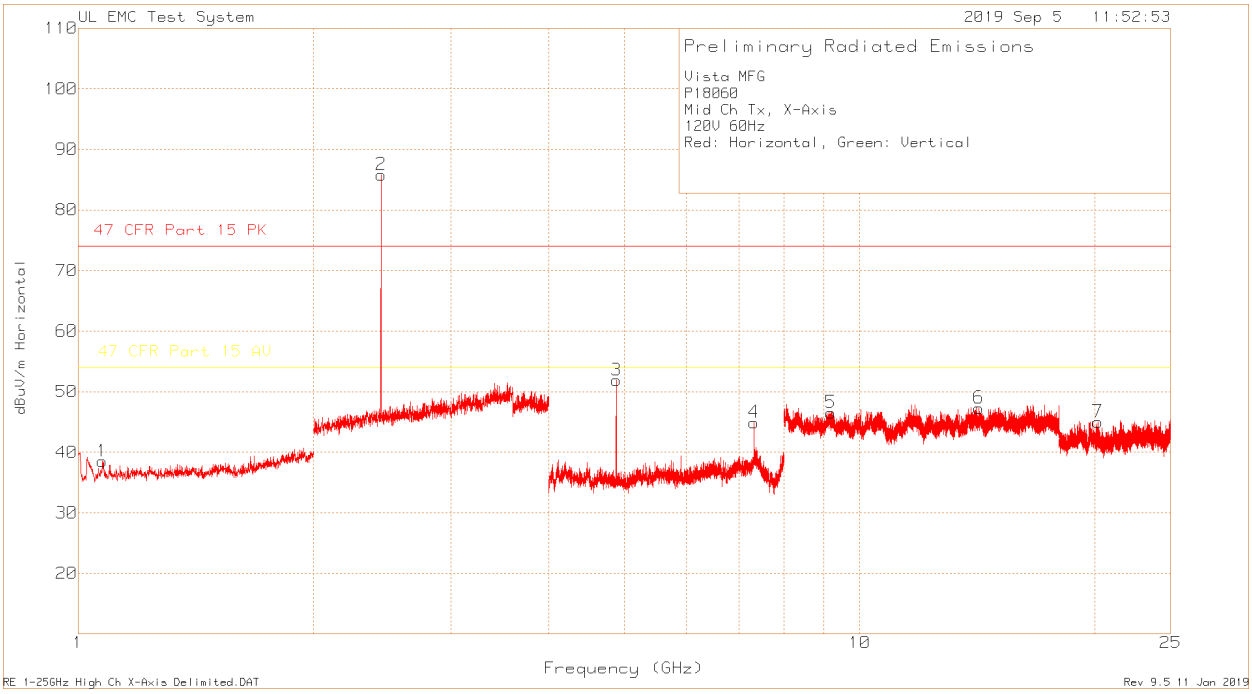
Middle Channel Plot X-Axis - Plot





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Middle Channel Data X-Axis – Data

Vista MFG														
P18060														
Mid Ch Tx, X-Axis														
120V 60Hz														
Red: Horizontal, Green: Vertical														
Trace MArkers														
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Path Factor dB	Level dBuV/m	Limit 15.209 @3m PK dBuV/m	Margin (dB)	Limit 15.209 @3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.074	70.21	Pk	24.6	-	-56.32	38.49	74	-35.51	54	-15.51	0-360	150	H
2	2.44	59.3	Pk	21.9	-	4.62	85.82	-	-	-	-	0-360	150	H
3	4.881	74.58	Pk	27.7	-	-50.39	51.89	74	-22.11	54	-2.11	0-360	150	H
4	7.32	60.09	Pk	30.6	-	-45.78	44.91	74	-29.09	54	-9.09	0-360	150	H
5	9.19	58.32	Pk	36.3	-	-48.09	46.53	74	-27.47	54	-7.47	0-360	150	H
6	14.2	49.34	Pk	39.9	-	-41.94	47.3	74	-26.7	54	-6.7	0-360	150	H
7	20.169	53.36	Pk	40.2	-	-48.54	45.02	74	-28.98	54	-8.98	0-360	150	H
8	1.503	68.33	Pk	25	-	-54.15	39.18	74	-34.82	54	-14.82	0-360	150	V
9	2.44	52.63	Pk	21.9	-	4.62	79.15	-	-	-	-	0-360	150	V
10	4.88	69.27	Pk	27.7	-	-50.66	46.31	74	-27.69	54	-7.69	0-360	150	V
11	9.129	59.05	Pk	36.3	-	-48.32	47.03	74	-26.97	54	-6.97	0-360	150	V
12	14.859	48.61	Pk	39.8	-	-40.79	47.62	74	-26.38	54	-6.38	0-360	150	V
13	20.567	51.68	Pk	40.3	-	-47.98	44	74	-30	54	-10	0-360	150	V
Radiated Emission Data														
	4.8796	74.75	Pk	27.7	-	-50.67	51.78	74	-22.22	-	-	136	100	H
	4.8797	70.55	Av	27.7	1.3	-50.67	48.88	-	-	54	-5.12	136	100	H
	4.8795	72.17	Pk	27.7	-	-50.67	49.2	74	-24.8	-	-	73	224	V
	4.8799	67.88	Av	27.7	1.3	-50.66	46.22	-	-	54	-7.78	73	224	V
Pk - Peak detector														
Av - Power RMS Average														

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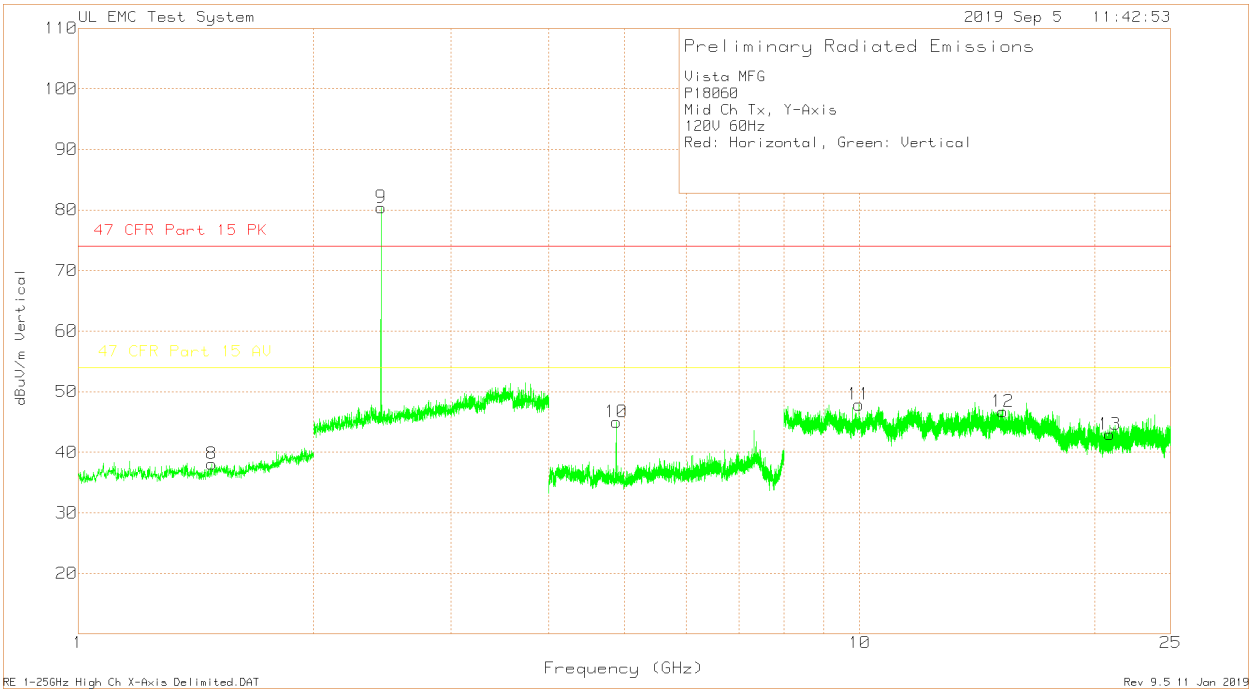
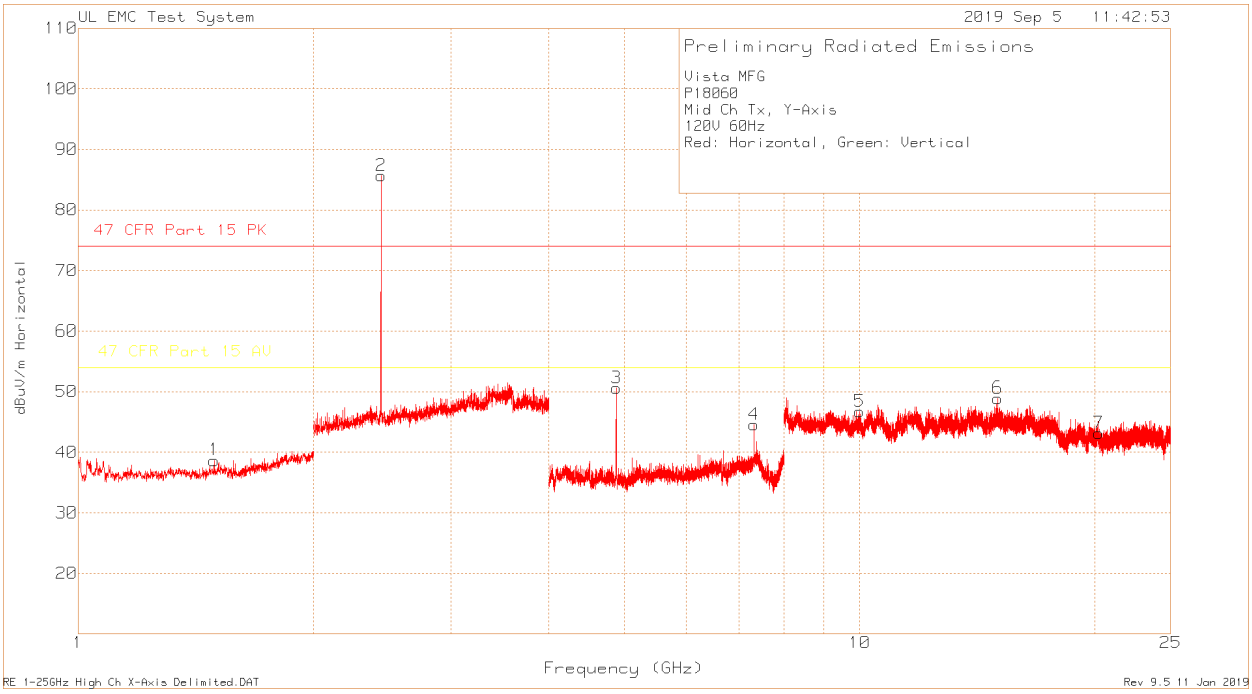
Middle Channel Plot Y-Axis - Plot





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Middle Channel Data Y-Axis – Data

Vista MFG														
P18060														
Mid Ch Tx, Y-Axis														
120V 60Hz														
Red: Horizontal, Green: Vertical														
Trace MArkers														
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Path Factor dB	Level dBuV/m	Limit 15.209 @3m PK dBuV/m	Margin (dB)	Limit 15.209 @3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.492	68.24	Pk	25	-	-54.57	38.67	74	-35.33	54	-15.33	0-360	150	H
2	2.44	59.12	Pk	21.9	-	4.62	85.64	-	-	-	-	0-360	150	H
3	4.88	73.54	Pk	27.7	-	-50.66	50.58	74	-23.42	54	-3.42	0-360	150	H
4	7.322	59.8	Pk	30.6	-	-45.88	44.52	74	-29.48	54	-9.48	0-360	150	H
5	9.991	58.22	Pk	36.4	-	-47.93	46.69	74	-27.31	54	-7.31	0-360	150	H
6	15.015	49.58	Pk	39.8	-	-40.48	48.9	74	-25.1	54	-5.1	0-360	150	H
7	20.215	52.01	Pk	40.2	-	-49.07	43.14	74	-30.86	54	-10.86	0-360	150	H
8	1.482	67.68	Pk	25	-	-54.58	38.1	74	-35.9	54	-15.9	0-360	150	V
9	2.44	53.9	Pk	21.9	-	4.62	80.42	-	-	-	-	0-360	150	V
10	4.88	67.94	Pk	27.7	-	-50.66	44.98	74	-29.02	54	-9.02	0-360	150	V
11	9.97	59.6	Pk	36.4	-	-48.14	47.86	74	-26.14	54	-6.14	0-360	150	V
12	15.24	47.36	Pk	39.9	-	-40.55	46.71	74	-27.29	54	-7.29	0-360	150	V
13	20.896	49.97	Pk	40.1	-	-47.11	42.96	74	-31.04	54	-11.04	0-360	150	V
Radiated Emission Data														
	4.8805	74.07	Pk	27.7	-	-50.52	51.25	74	-22.75	-	-	109	131	H
	4.8803	69.93	Av	27.7	1.3	-50.57	48.36	-	-	54	-5.64	109	131	H
	4.8805	69.72	Pk	27.7	-	-50.53	46.89	74	-27.11	-	-	285	130	V
	4.8795	62.02	Av	27.7	1.3	-50.67	40.35	-	-	54	-13.65	285	130	V
Pk - Peak detector														
Av - Power RMS Average														

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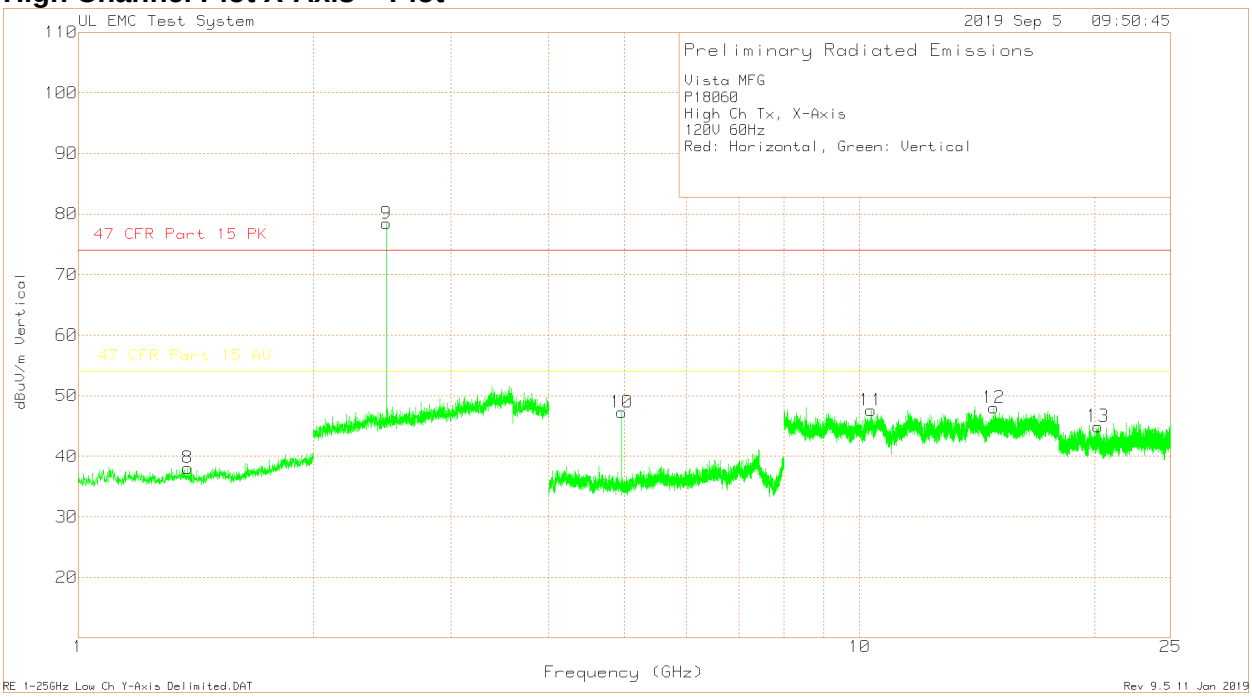
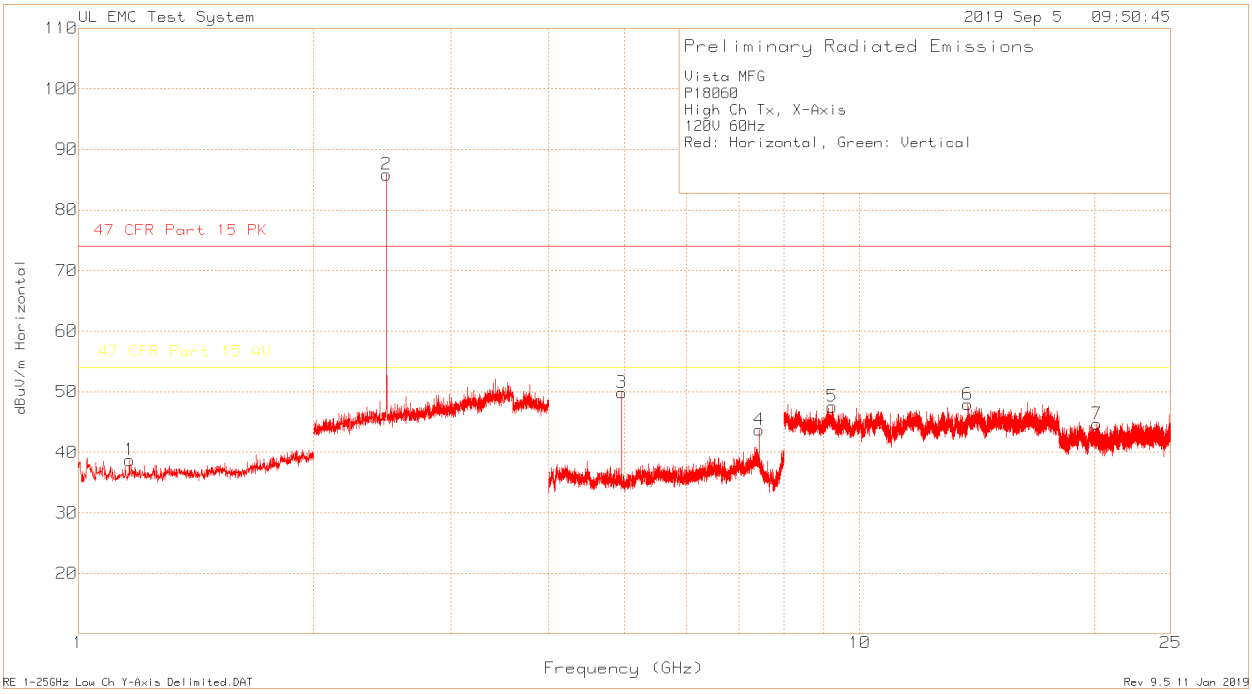
High Channel Plot X-Axis - Plot





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High Channel X-Axis – Data

Vista MFG
P18060
High Ch Tx, X-Axis
120V 60Hz
Red: Horizontal, Green: Vertical
Trace Markers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Path Factor dB	Level dBuV/m	Limit 15.209 @3m PK dBuV/m	Margin (dB)	Limit 15.209 @3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.163	69.95	Pk	24.8	-	-56.07	38.68	74	-35.32	54	-15.32	0-360	150	H
2	2.48	59.38	Pk	22	-	4.47	85.85	-	-	-	-	0-360	150	H
3	4.96	71.87	Pk	27.8	-	-49.84	49.83	74	-24.17	54	-4.17	0-360	150	H
4	7.44	60.13	Pk	30.6	-	-47.02	43.71	74	-30.29	54	-10.29	0-360	150	H
5	9.218	59.09	Pk	36.4	-	-47.96	47.53	74	-26.47	54	-6.47	0-360	150	H
6	13.755	50.9	Pk	39.9	-	-42.92	47.88	74	-26.12	54	-6.12	0-360	150	H
7	20.115	53.7	Pk	40.2	-	-49.24	44.66	74	-29.34	54	-9.34	0-360	150	H
8	1.381	68.13	Pk	25.2	-	-55.29	38.04	74	-35.96	54	-15.96	0-360	150	V
9	2.48	51.97	Pk	22	-	4.47	78.44	-	-	-	-	0-360	150	V
10	4.959	69.18	Pk	27.8	-	-49.76	47.22	74	-26.78	54	-6.78	0-360	150	V
11	10.338	58.58	Pk	36.2	-	-47.22	47.56	74	-26.44	54	-6.44	0-360	150	V
12	14.851	48.83	Pk	39.8	-	-40.65	47.98	74	-26.02	54	-6.02	0-360	150	V
13	20.185	53.45	Pk	40.2	-	-48.74	44.91	74	-29.09	54	-9.09	0-360	150	V
Radiated Emission Data														
	4.9605	73.62	Pk	27.8	-	-49.95	51.47	74	-22.53	-	-	109	100	H
	4.9597	69.89	Av	27.8	1.3	-49.82	49.17	-	-	54	-4.83	109	100	H
	4.9604	71.5	Pk	27.8	-	-49.95	49.35	74	-24.65	-	-	78	219	V
	4.9597	67.3	Av	27.8	1.3	-49.82	46.58	-	-	54	-7.42	78	219	V

Pk - Peak detector
Av - Power RMS Average

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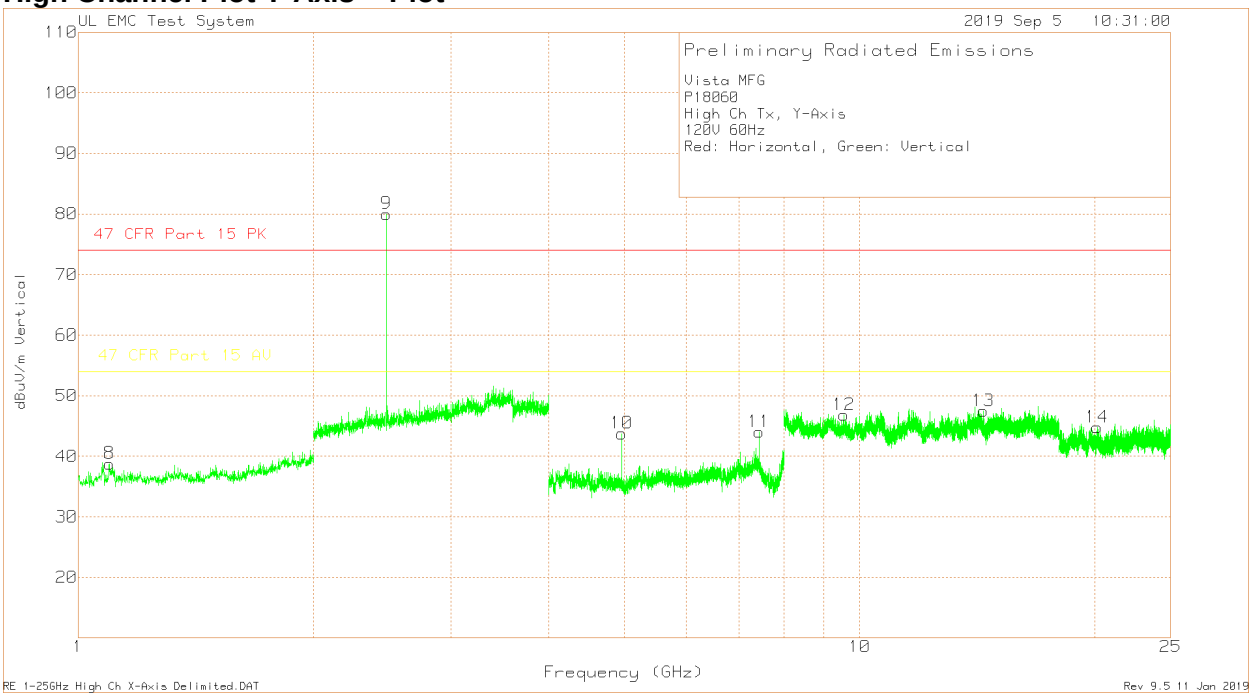
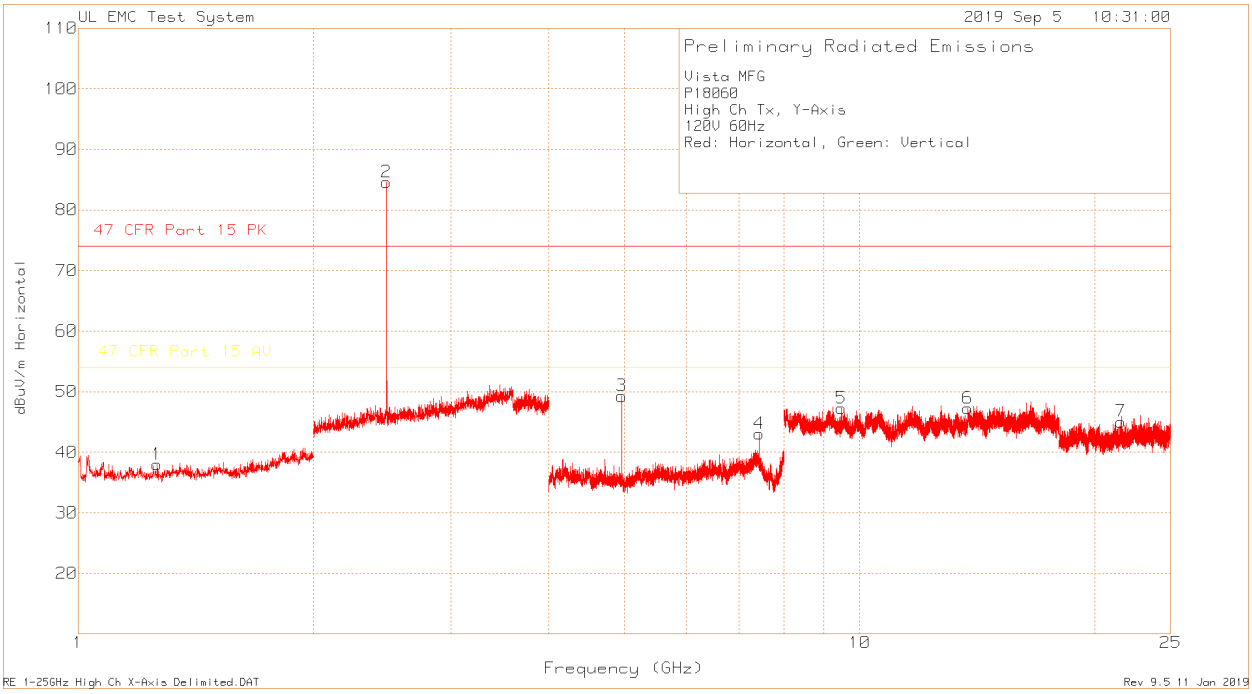
High Channel Plot Y-Axis - Plot





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High Channel Y-Axis – Data

Vista MFG
P18060
High Ch Tx, Y-Axis
120V 60Hz
Red: Horizontal, Green: Vertical
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Duty Cycle Factor dB	Path Factor dB	Level dBuV/m	Limit 15.209 @3m PK dBuV/m	Margin (dB)	Limit 15.209 @3m Av dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.262	68.64	Pk	25.1		-55.79	37.95	74	-36.05	54	-16.05	0-360	149	H
2	2.48	58.09	Pk	22		4.47	84.56	-	-	-	-	0-360	150	H
3	4.961	71.53	Pk	27.8		-50.07	49.26	74	-24.74	54	-4.74	0-360	150	H
4	7.441	59.69	Pk	30.5		-47.13	43.06	74	-30.94	54	-10.94	0-360	150	H
5	9.474	60.03	Pk	36.4		-49.19	47.24	74	-26.76	54	-6.76	0-360	150	H
6	13.741	50.5	Pk	39.8		-43.07	47.23	74	-26.77	54	-6.77	0-360	150	H
7	21.605	50.72	Pk	40.3		-45.98	45.04	74	-28.96	54	-8.96	0-360	150	H
8	1.096	69.94	Pk	24.9		-56.07	38.77	74	-35.23	54	-15.23	0-360	150	V
9	2.48	53.54	Pk	22		4.47	80.01	-	-	-	-	0-360	150	V
10	4.959	65.71	Pk	27.8		-49.76	43.75	74	-30.25	54	-10.25	0-360	150	V
11	7.44	60.44	Pk	30.6		-47.02	44.02	74	-29.98	54	-9.98	0-360	150	V
12	9.541	58.89	Pk	36.4		-48.47	46.82	74	-27.18	54	-7.18	0-360	150	V
13	14.395	49.23	Pk	39.8		-41.54	47.49	74	-26.51	54	-6.51	0-360	150	V
14	20.129	53.88	Pk	40.2		-49.31	44.77	74	-29.23	54	-9.23	0-360	150	V
Pk - Peak detector														
Radiated Emission Data														
	4.9606	73	Pk	27.8		-49.97	50.83	74	-23.17	-	-	109	100	H
	4.9597	68.75	Av	27.8	1.3	-49.82	48.03	-	-	54	-5.97	109	100	H
	4.9597	67.49	Pk	27.8		-49.82	45.47	74	-28.53	-	-	360	100	V
	4.9597	62.69	Av	27.8	1.3	-49.82	41.97	-	-	54	-12.03	360	100	V
Pk - Peak detector														
Av - Power RMS Average														

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10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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.

TESTED BY: bm06740
TESTED ON: 2019-09-05

RESULTS

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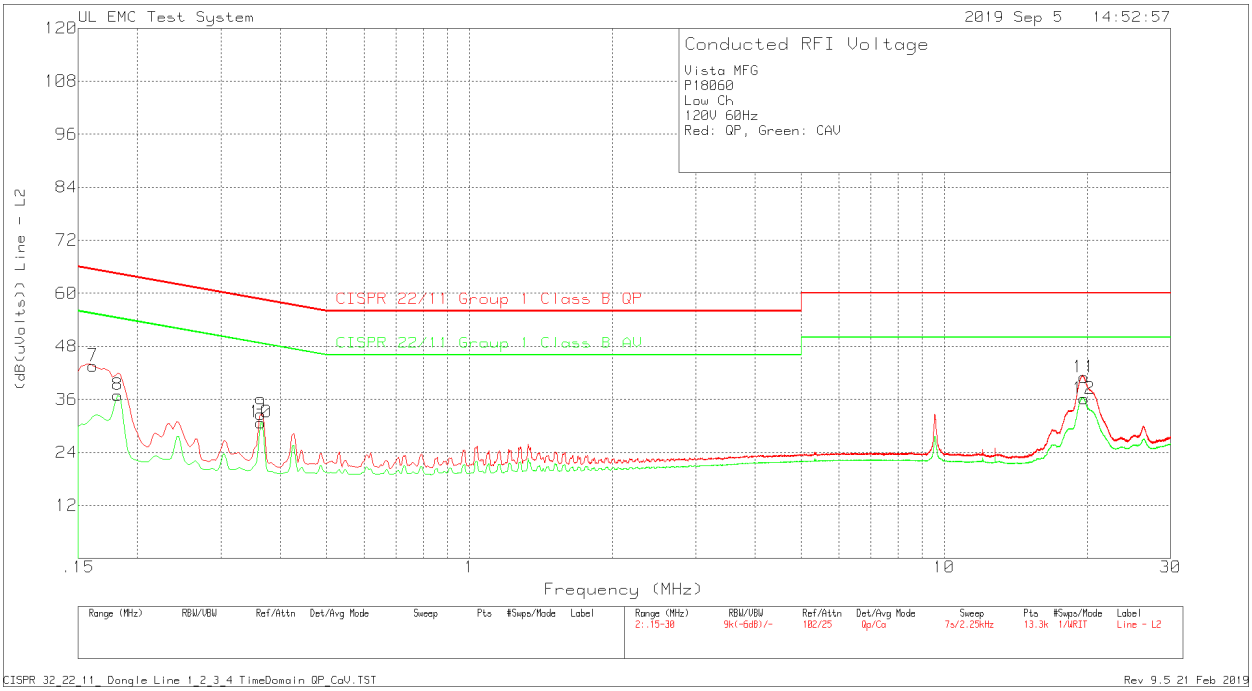
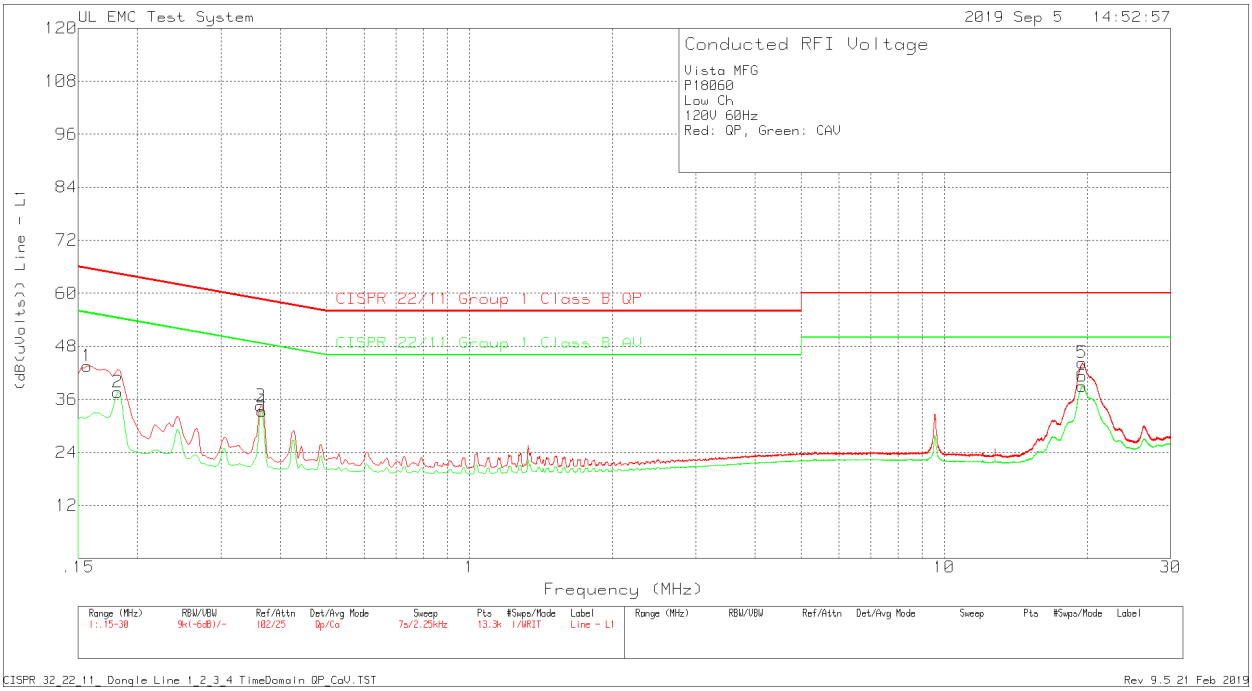
Low Channel Plot





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Low Channel Data

Vista MFG
P18060
Low Ch
120V 60Hz
Red: QP, Green: CAV

Trace Markers

Test No.	Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit: 1	2
Line 1							
1	.15675	29.17dBuV Qp	.1	14.3	43.57	65.63	-
					Margin (dB)	-22.06	-
2	.1815	25.55dBuV Ca	0	12.1	37.65	-	54.42
					Margin (dB)	-	-16.77
3	.36375	23.81dBuV Qp	0	10.7	34.51	58.64	-
					Margin (dB)	-24.13	-
4	.366	22.69dBuV Ca	0	10.7	33.39	-	48.59
					Margin (dB)	-	-15.2
5	19.50675	32.03dBuV Qp	.1	12.1	44.23	60	-
					Margin (dB)	-15.77	-
6	19.5225	26.77dBuV Ca	.1	12.1	38.97	-	50
					Margin (dB)	-	-11.03
Line 2							
7	.16125	29.59dBuV Qp	.1	13.9	43.59	65.4	-
					Margin (dB)	-21.81	-
8	.1815	24.77dBuV Ca	.1	12.1	36.97	-	54.42
					Margin (dB)	-	-17.45
9	.36375	21.96dBuV Qp	0	10.7	32.66	58.64	-
					Margin (dB)	-25.98	-
10	.36375	20.08dBuV Ca	0	10.7	30.78	-	48.64
					Margin (dB)	-	-17.86
11	19.70025	28.94dBuV Qp	0	12.1	41.04	60	-
					Margin (dB)	-18.96	-
12	19.69125	24.06dBuV Ca	0	12.1	36.16	-	50
					Margin (dB)	-	-13.84

LIMIT 1: CISPR 22/11 Group 1 Class B QP
LIMIT 2: CISPR 22/11 Group 1 Class B AV

Qp - Quasi-Peak detector
Ca - CISPR Average detection

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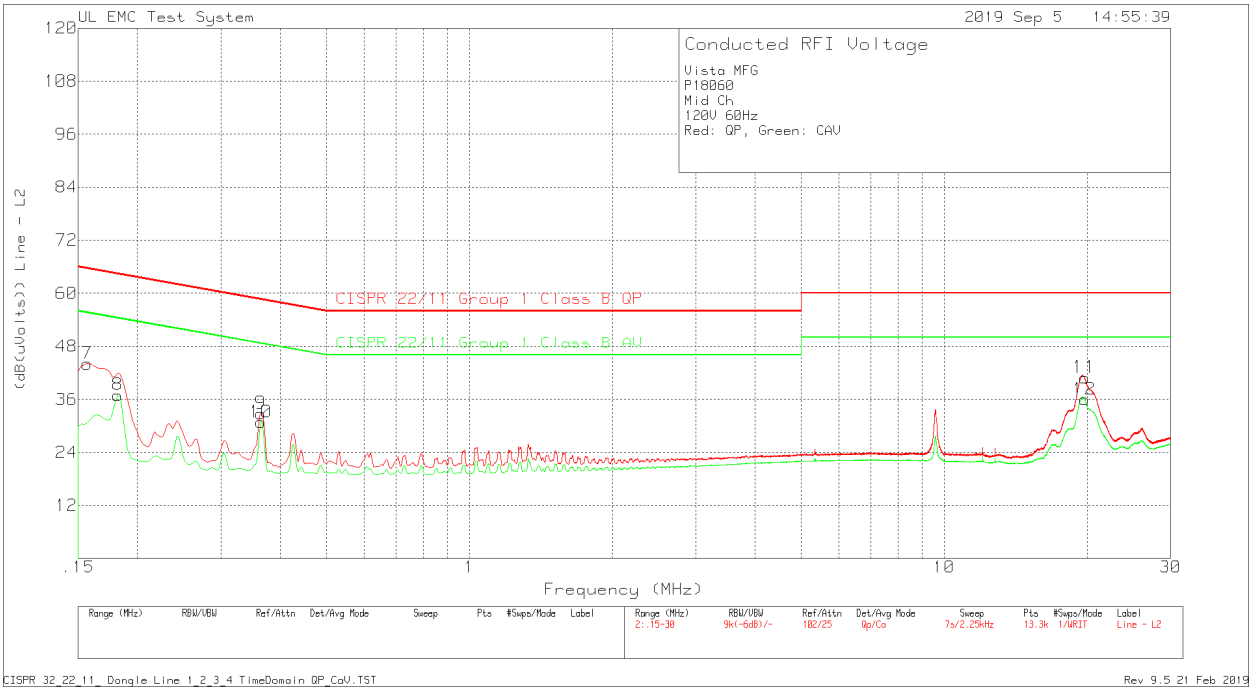
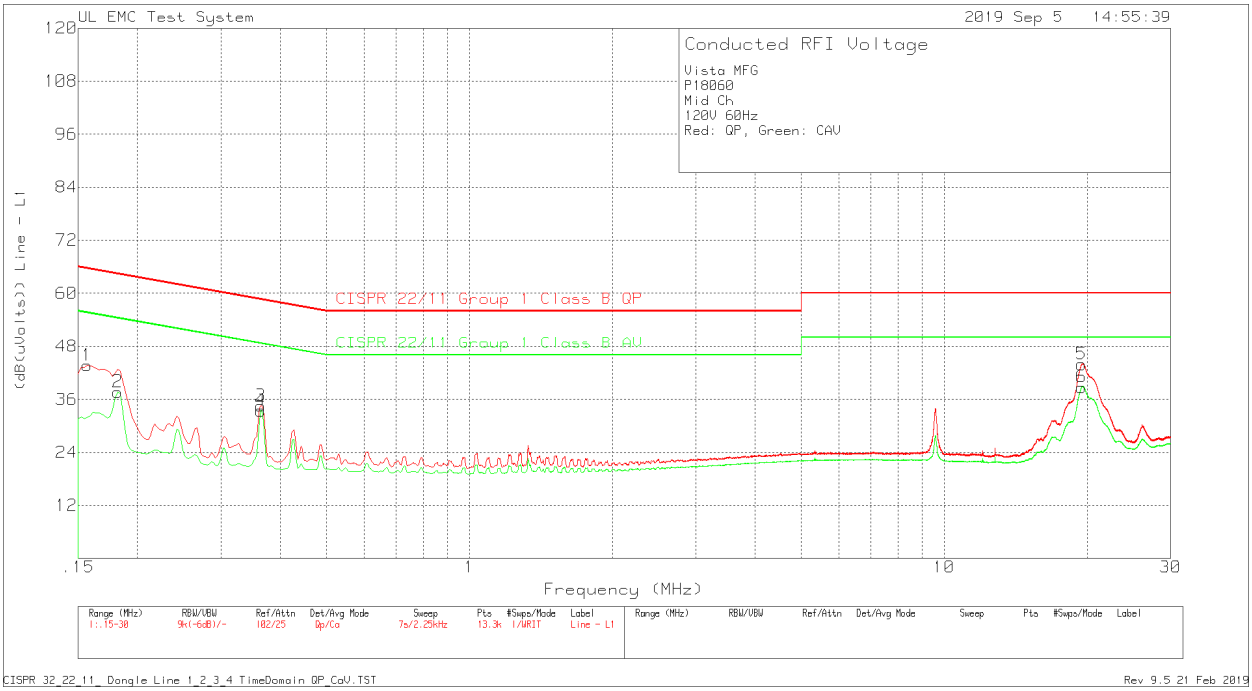
Middle Channel Plot





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Middle Channel Data

Vista MFG
P18060
Mid Ch
120V 60Hz
Red: QP, Green: CAV

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading (dB(uVolts))	Limit: 1	2
Line 1							
1	.15675	29.24dBuV Qp	.1	14.3	43.64	65.63	-
					Margin (dB)	-21.99	-
2	.1815	25.58dBuV Ca	0	12.1	37.68	-	54.42
					Margin (dB)	-	-16.74
3	.36375	23.8dBuV Qp	0	10.7	34.5	58.64	-
					Margin (dB)	-24.14	-
4	.36375	22.75dBuV Ca	0	10.7	33.45	-	48.64
					Margin (dB)	-	-15.19
5	19.48875	31.82dBuV Qp	0	12.1	43.92	60	-
					Margin (dB)	-16.08	-
6	19.48875	26.64dBuV Ca	0	12.1	38.74	-	50
					Margin (dB)	-	-11.26
Line 2							
7	.15675	29.67dBuV Qp	.1	14.3	44.07	65.63	-
					Margin (dB)	-21.56	-
8	.1815	24.77dBuV Ca	.1	12.1	36.97	-	54.42
					Margin (dB)	-	-17.45
9	.36375	22.14dBuV Qp	0	10.7	32.84	58.64	-
					Margin (dB)	-25.8	-
10	.36375	20.19dBuV Ca	0	10.7	30.89	-	48.64
					Margin (dB)	-	-17.75
11	19.752	28.85dBuV Qp	0	12.1	40.95	60	-
					Margin (dB)	-19.05	-
12	19.752	23.89dBuV Ca	0	12.1	35.99	-	50
					Margin (dB)	-	-14.01

LIMIT 1: CISPR 22/11 Group 1 Class B QP
LIMIT 2: CISPR 22/11 Group 1 Class B AV

Qp - Quasi-Peak detector
Ca - CISPR Average detection

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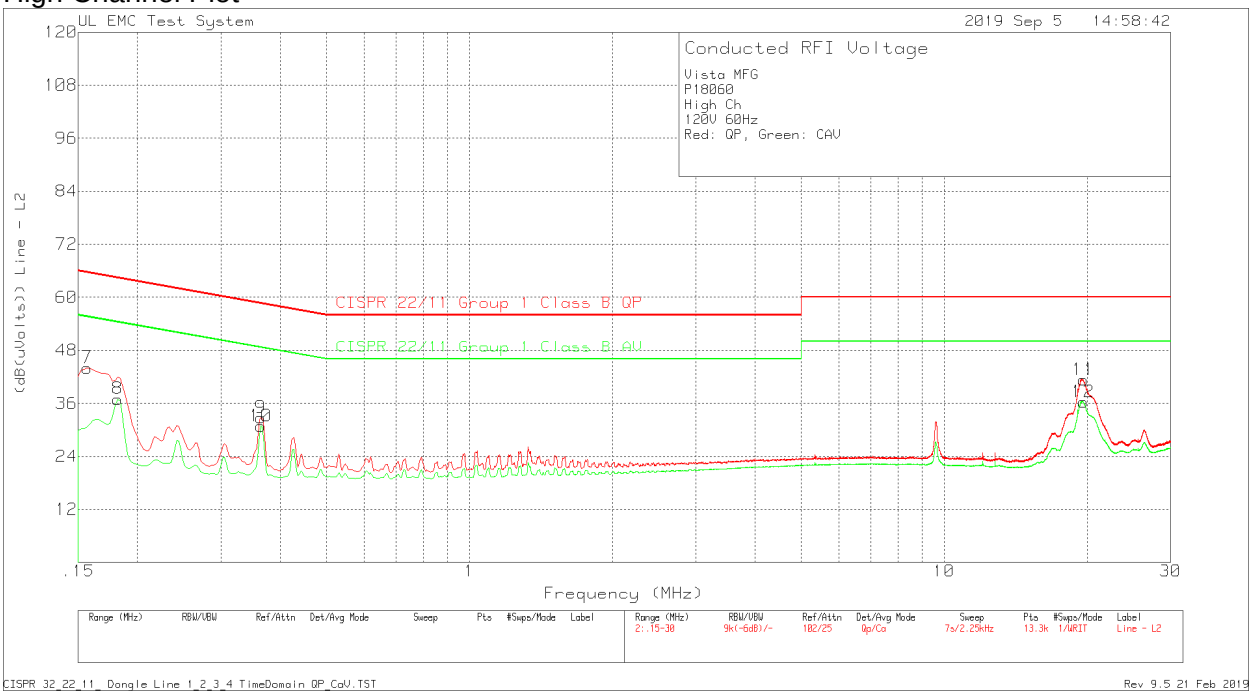
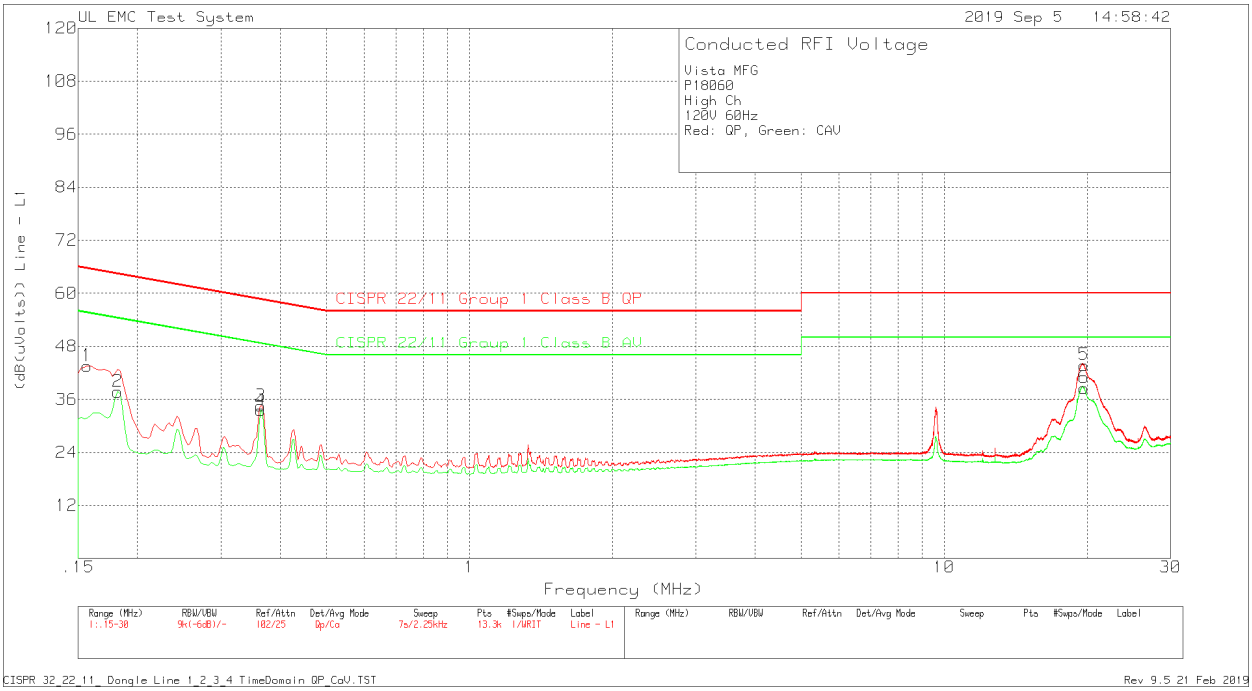
High Channel Plot





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High Channel Data

```
Vista MFG
P18060
High Ch
120V 60Hz
Red: QP, Green: CAV

Trace Markers

      Test        Meter       Transducer  Gain/Loss  Corrected  Limit:  1      2
No. Frequency    Reading       Factor      Factor    Reading (dB(uVolts))
      (MHz)                     (dB)        (dB)
================================================================================
Line 1
1 .15675        29.19dBuV Qp     .1        14.3        43.59          65.63       -
                                                    Margin (dB)      -22.04       -
2 .1815         25.63dBuV Ca     0         12.1        37.73          -       54.42
                                                    Margin (dB)       -      -16.69
3 .36375        23.85dBuV Qp     0         10.7        34.55          58.64       -
                                                    Margin (dB)      -24.09       -
4 .36375        22.79dBuV Ca     0         10.7        33.49          -       48.64
                                                    Margin (dB)       -      -15.15
5 19.698        31.56dBuV Qp     .1        12.1        43.76          60          -
                                                    Margin (dB)      -16.24       -
6 19.69125      26.4dBuV Ca      .1        12.1        38.6           -       50
                                                    Margin (dB)       -      -11.4

Line 2
7 .15675        29.62dBuV Qp     .1        14.3        44.02          65.63       -
                                                    Margin (dB)      -21.61       -
8 .1815         24.78dBuV Ca     .1        12.1        36.98          -       54.42
                                                    Margin (dB)       -      -17.44
9 .36375        22.05dBuV Qp     0         10.7        32.75          58.64       -
                                                    Margin (dB)      -25.89       -
10 .36375       20.12dBuV Ca     0         10.7        30.82          -       48.64
                                                    Margin (dB)       -      -17.82
11 19.6305      29.34dBuV Qp     0         12          41.34          60          -
                                                    Margin (dB)      -18.66       -
12 19.62713     24.33dBuV Ca     0         12          36.33          -       50
                                                    Margin (dB)       -      -13.67

LIMIT 1: CISPR 22/11 Group 1 Class B QP
LIMIT 2: CISPR 22/11 Group 1 Class B AV

Qp - Quasi-Peak detector
Ca - CISPR Average detection
```


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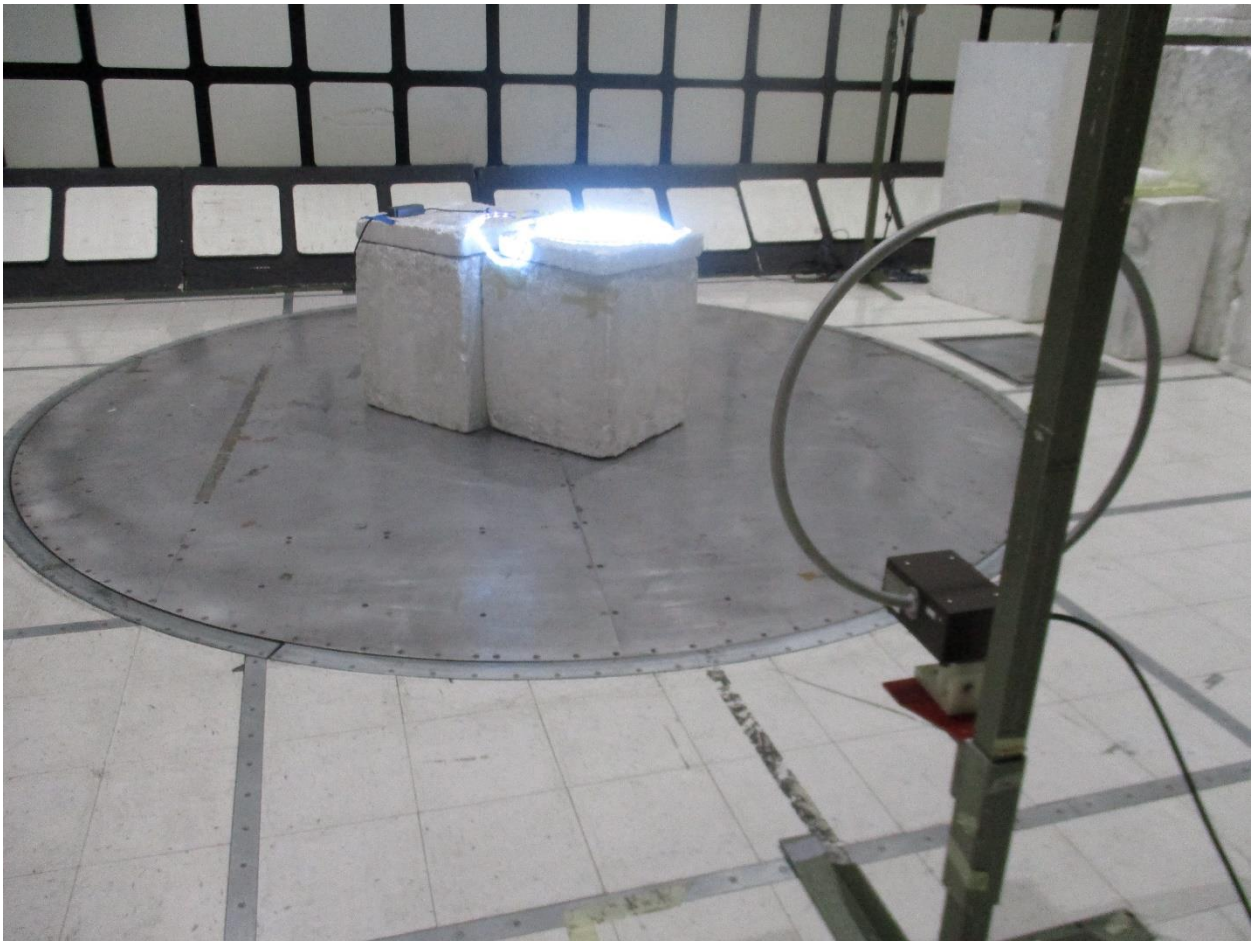
11. SETUP PHOTOS

Radiated Emissions 9kHz-30MHz



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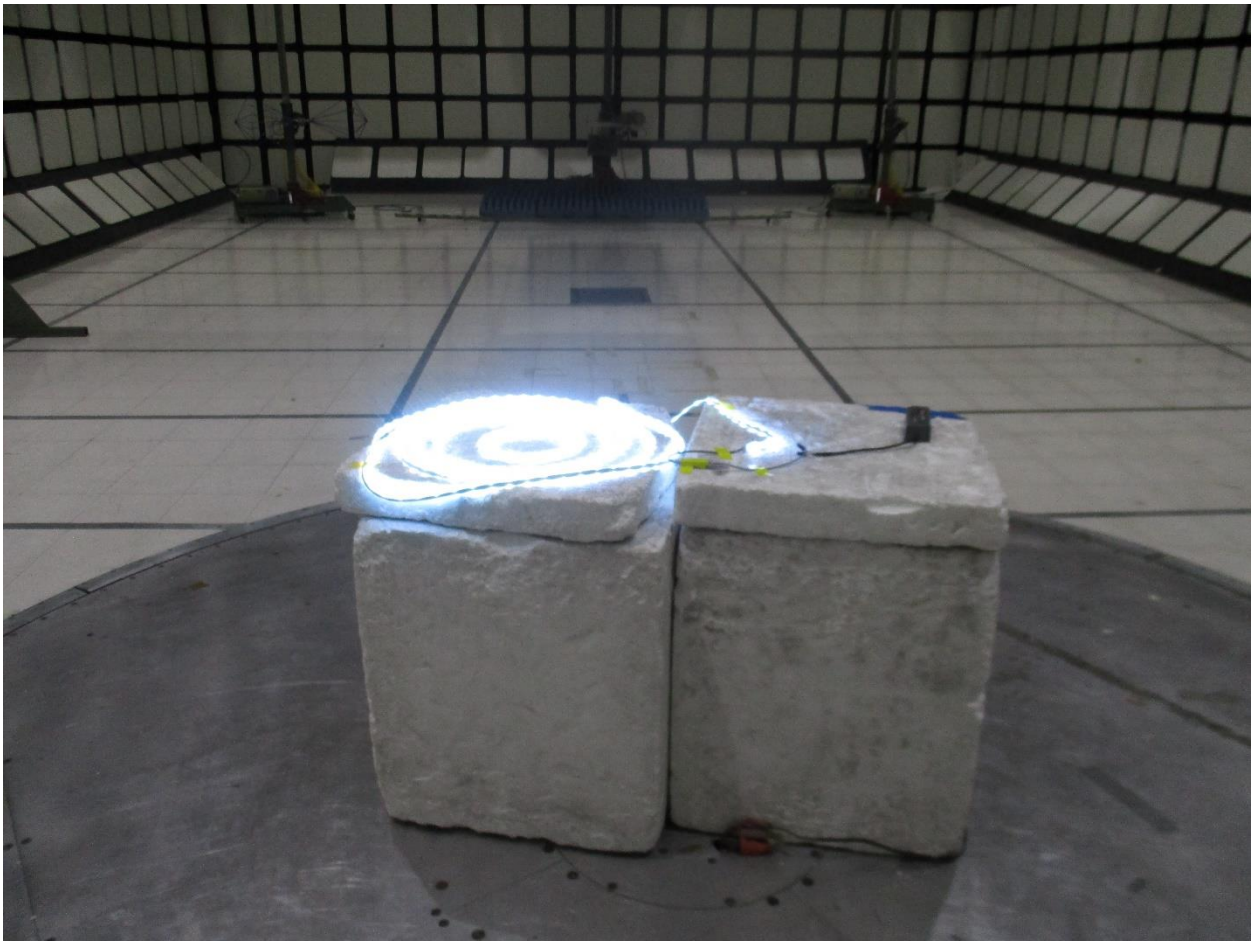
Radiated Emissions 30MHz-1GHz



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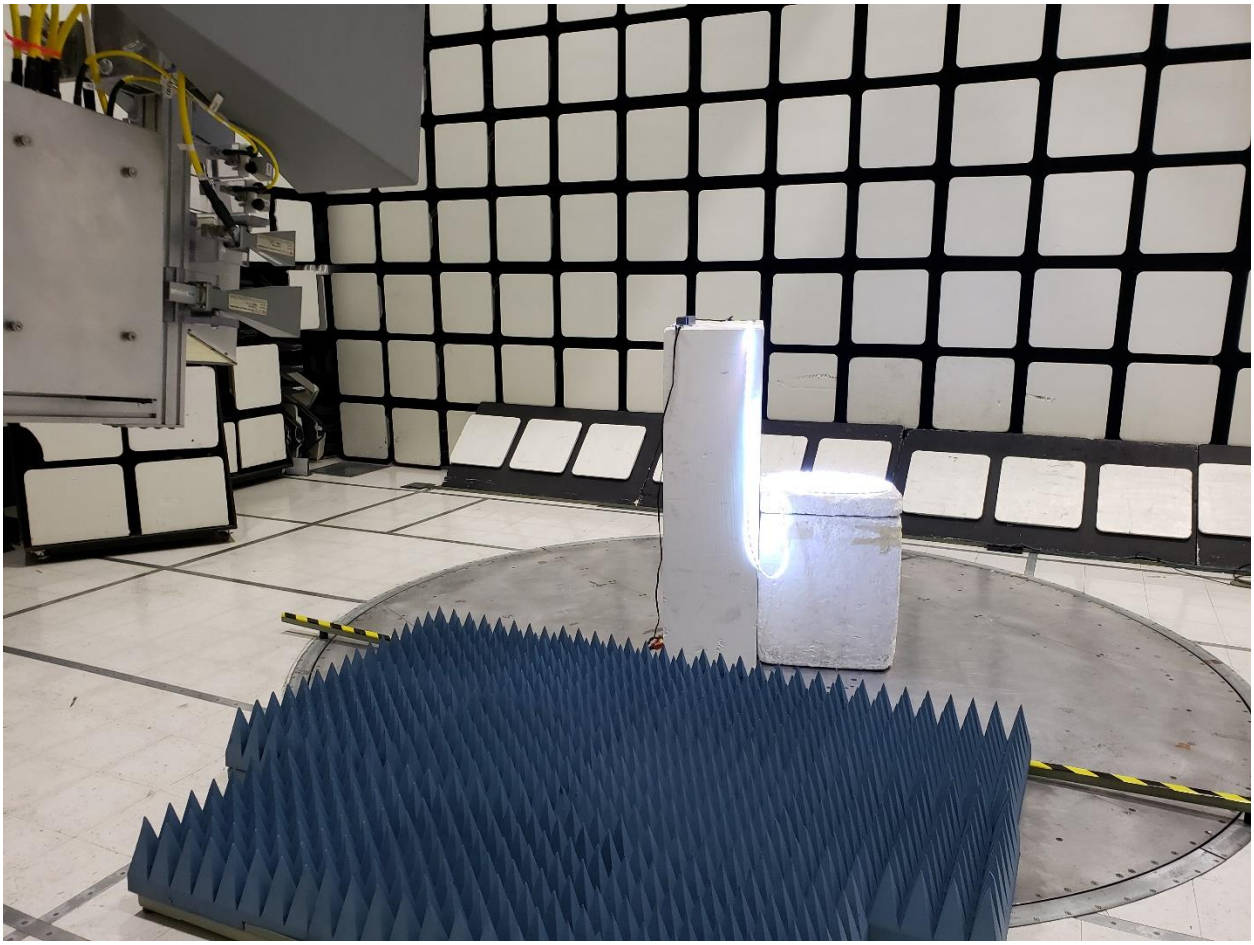
Radiated Emissions 1GHz-25GHz



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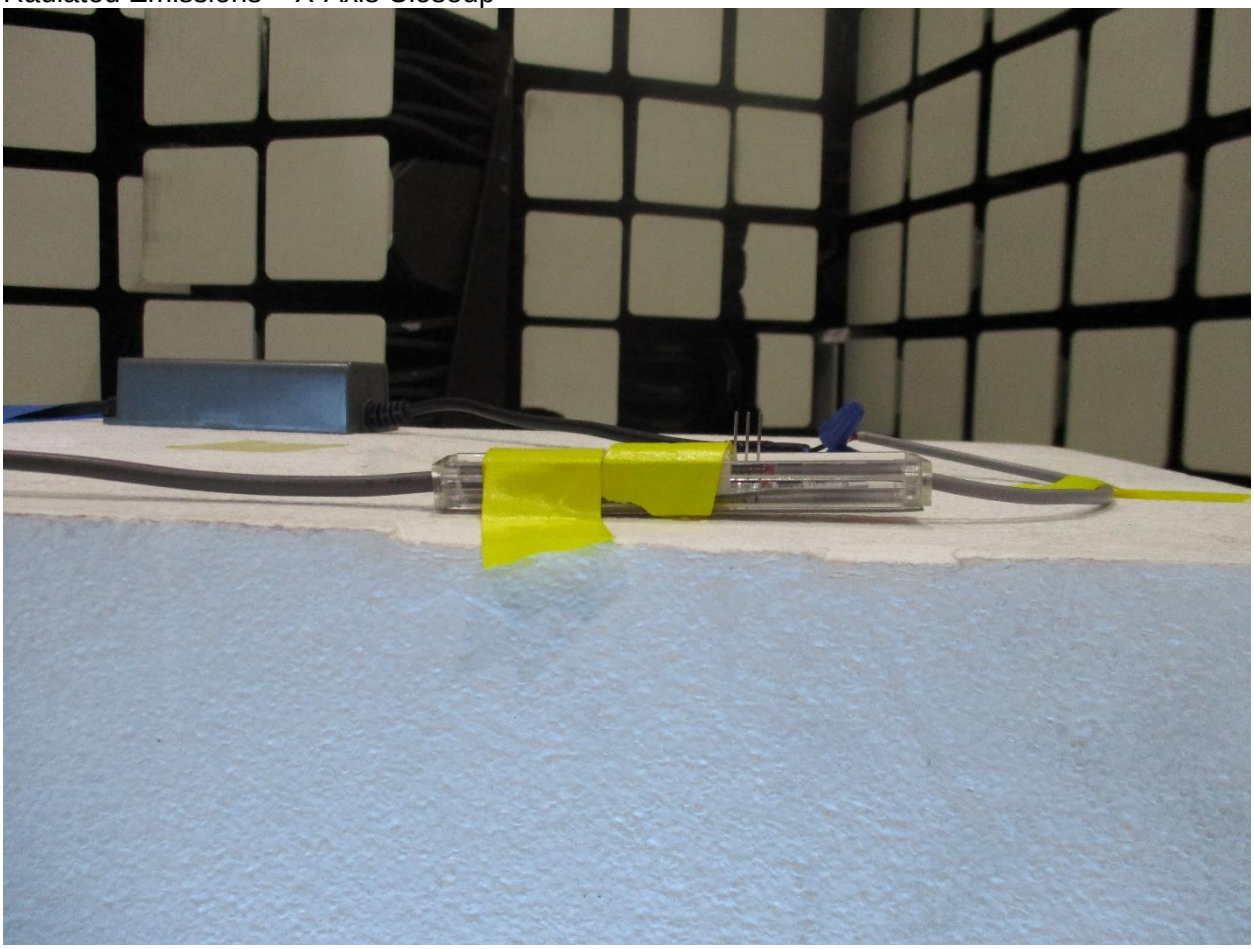
Radiated Emissions – X-Axis Closeup



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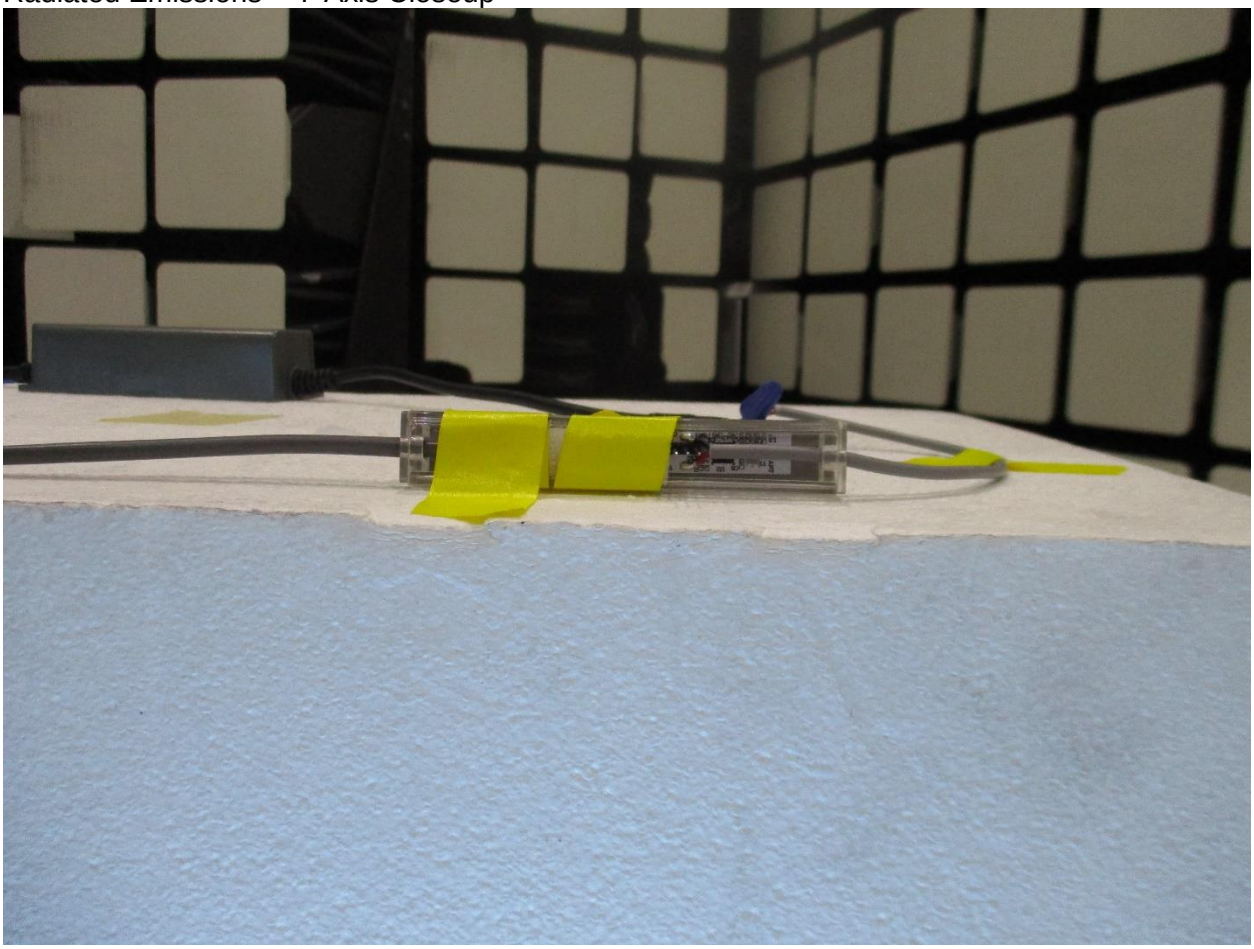
Radiated Emissions – Y-Axis Closeup



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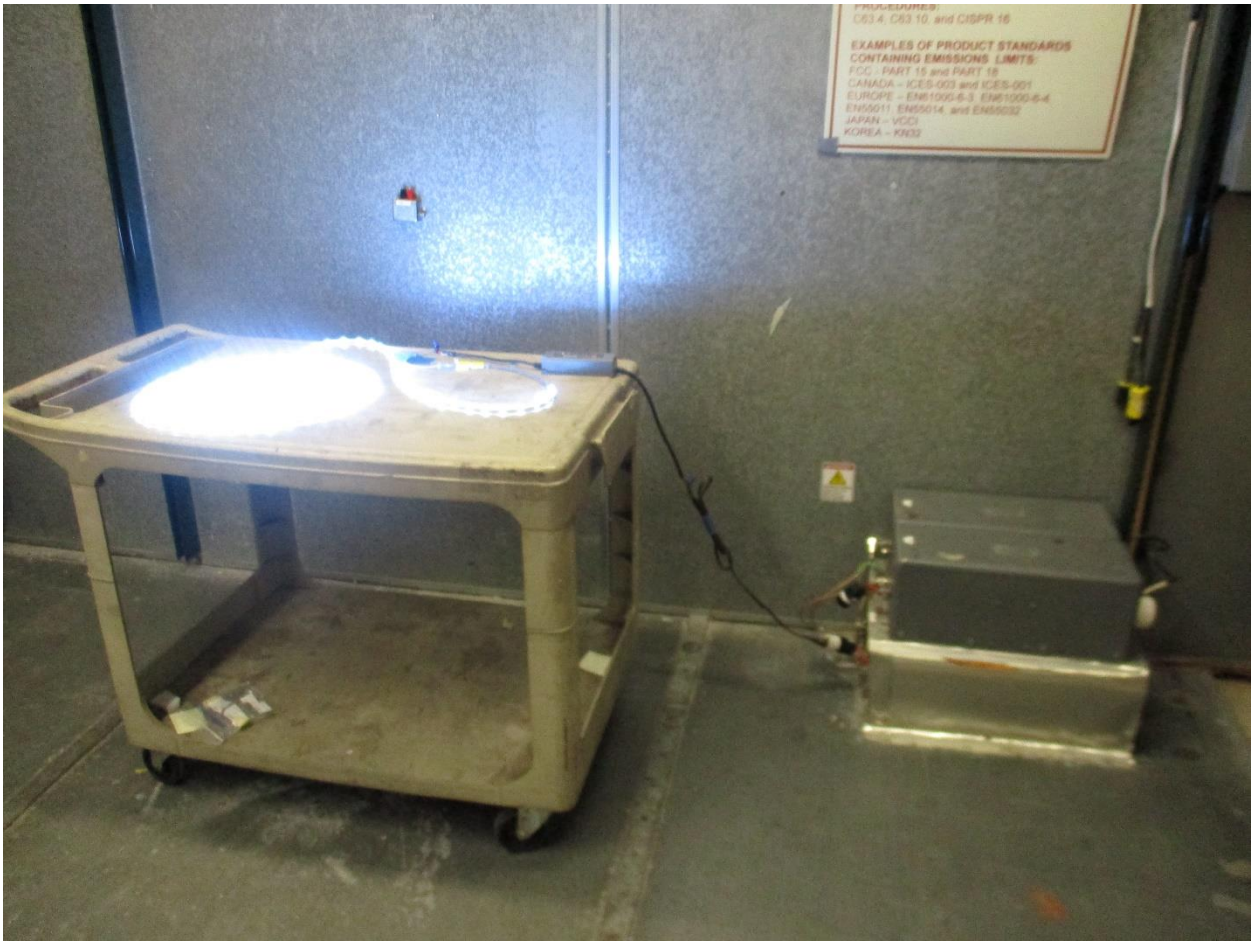
AC Line conducted Emissions



END OF TEST REPORT

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