



# **CERTIFICATION TEST REPORT**

**Report Number. :** 12672854A

**Applicant :** Vista Manufacturing Inc  
53345 Columbia Dr  
Elkhart, IN, 46514  
US

**Model :** BTFT1

**FCC ID :** MGOBTFT1

**IC :** 24881-BTFT1

**EUT Description :** Flexible light strip consisting of Red-Green-Blue LEDs with an integrated Bluetooth controller.

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

**Date Of Issue:**

2019-06-14

**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:** Flexible light strip consisting of Red-Green-Blue LEDs with an integrated Bluetooth controller.

**MODEL:** BTFT1

**SERIAL NUMBER:** Sample #20 for Radiated and Line Conducted Emissions  
Sample #22 for Antenna Port Measurements

**DATE TESTED:** 2019-05-29 & 2019-05-30

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

UL 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  
Consumer Technology Division

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, RSS-GEN Issue 5, and RSS-247 Issue 2.

## 3. FACILITIES AND ACCREDITATION

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

333 Pfingsten Road ISED Site Code: 2180A-1
<input checked="" type="checkbox"/> Chamber 10m

UL NBK is accredited by NVLAP, Laboratory Code 100414-0

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

#### **RADIATED EMISSIONS**

Where relevant, the following sample calculation is provided:

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

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

#### **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.

$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

### 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

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

## 5. EQUIPMENT UNDER TEST

### 5.1. EUT DESCRIPTION

Flexible light strip consisting of Red-Green-Blue LEDs with an integrated Bluetooth controller

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	-1.53	0.70

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

### 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 was "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.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Power Supply	Cosmos	LFZVC90NS12E	1510	

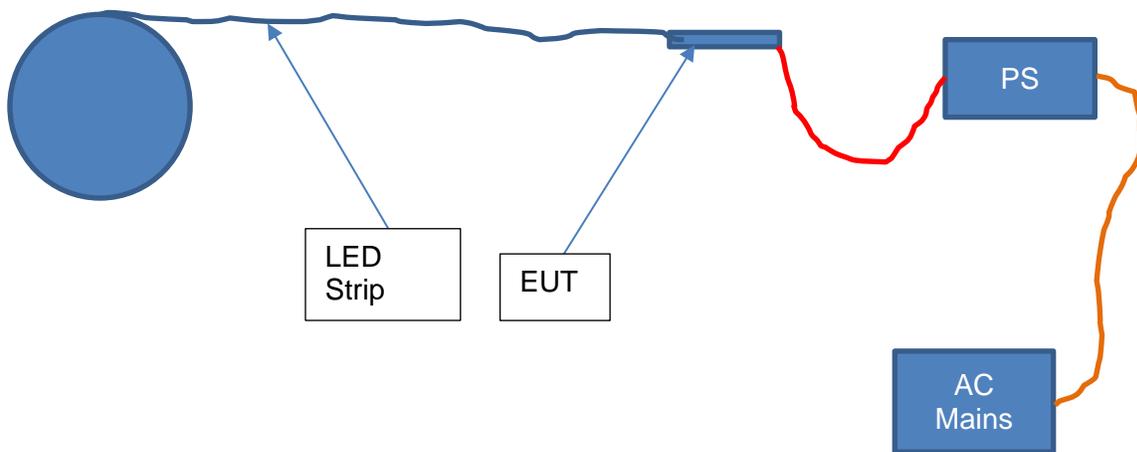
### I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Power	1	wire	2-wire	1m	DC Power
2	I/O	1	wire	3-wire	1m	Programming port, used for testing only

### 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



## 6. MEASUREMENT METHOD

6 dB BW: ANSI C63.10 Subclause -11.8.2 RBW  $\leq$  DTS BW

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

Output Power: ANSI C63.10 Subclause -11.9.1.1 RBW  $\geq$  DTS bandwidth

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

Radiated emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11 and 6.10.4

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1 and 6.10.5

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

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

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

## 7. TEST AND MEASUREMENT EQUIPMENT

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

Test 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	2018-06-19	2019-06-30
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

## 8. ANTENNA PORT TEST RESULTS

### 8.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

#### PROCEDURE

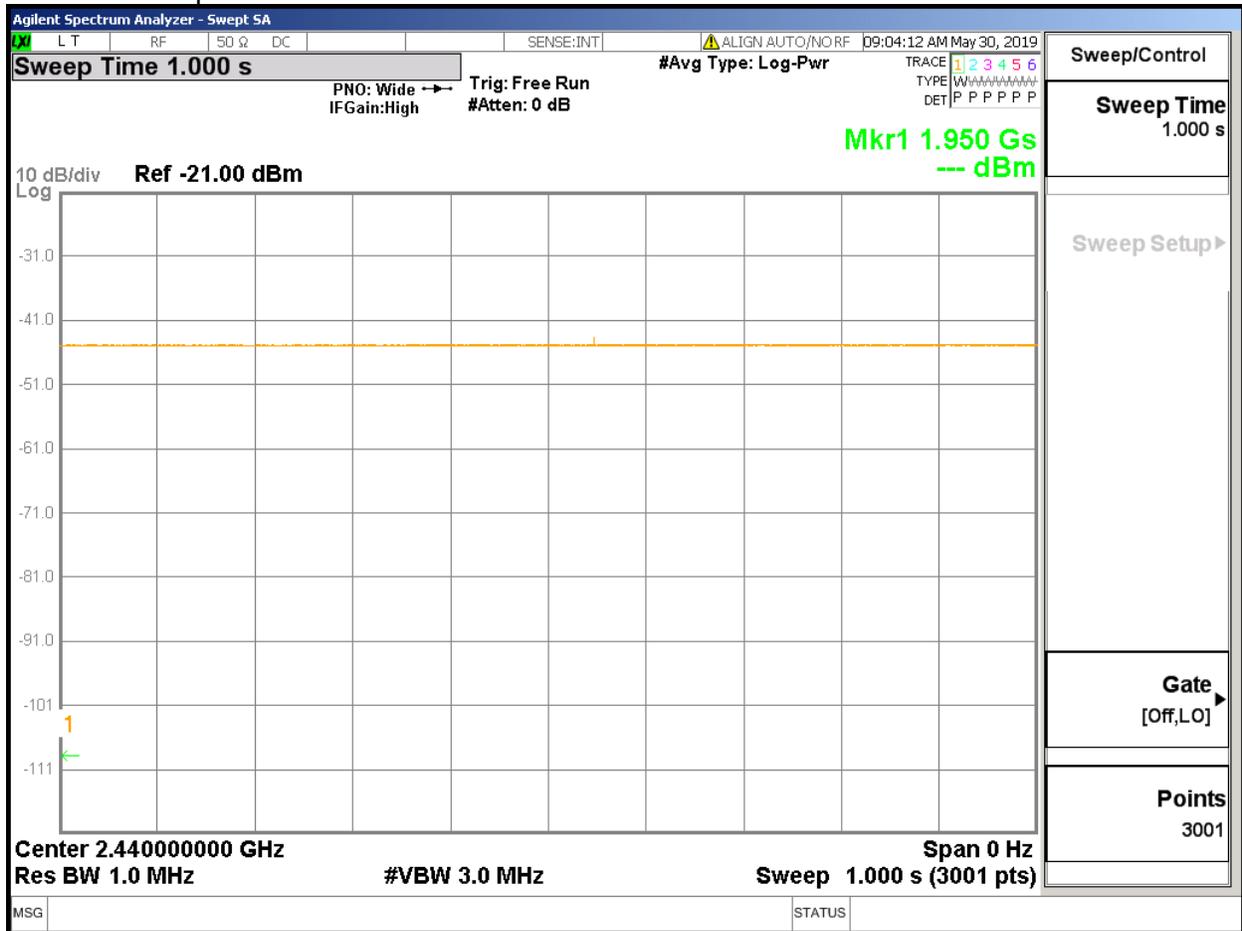
KDB 558074 Zero-Span Spectrum Analyzer Method.

#### ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
BLE	100.000	100.000	1.000	100.00%	0.00	0.010



### 1000mS Sweep



## **8.2. 99% BANDWIDTH**

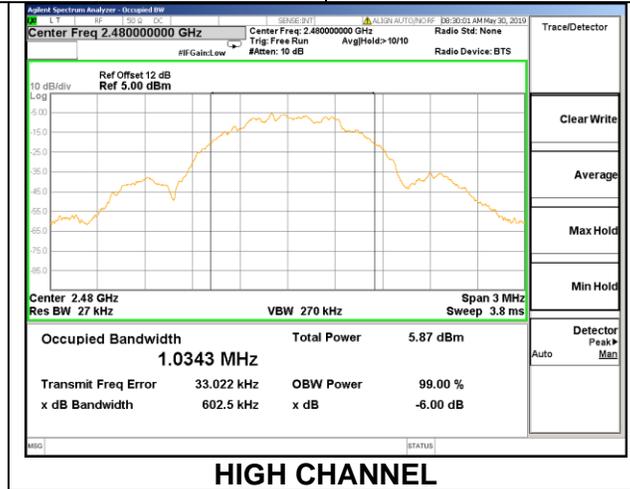
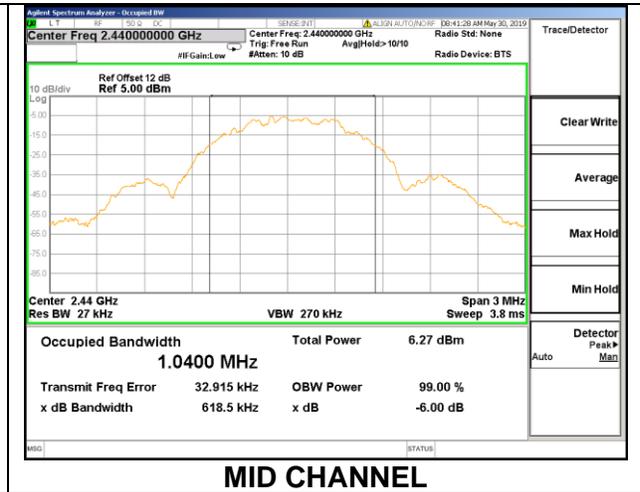
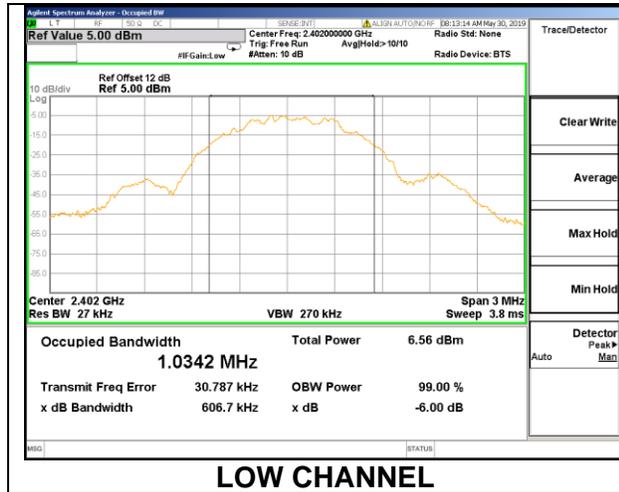
### **LIMITS**

None; for reporting purposes only.

### **RESULTS**

### 8.2.1. BLE (1Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0342
Middle	2440	1.0400
High	2480	1.0343



### 8.3. 6 dB BANDWIDTH

#### LIMITS

FCC §15.247 (a) (2)

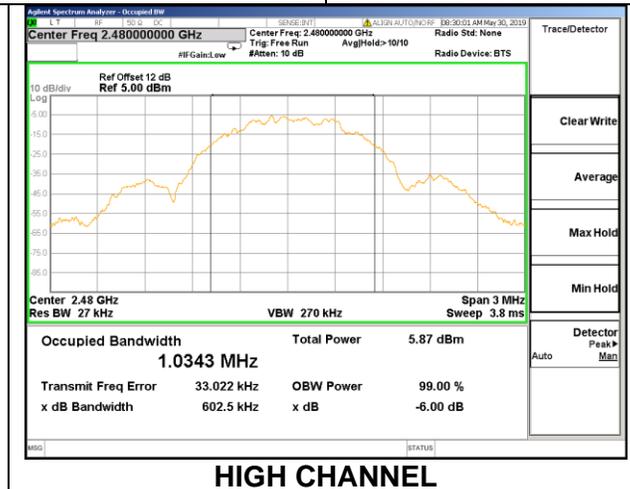
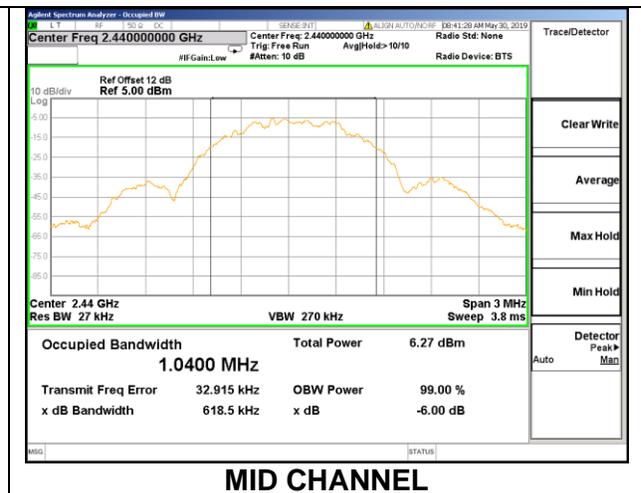
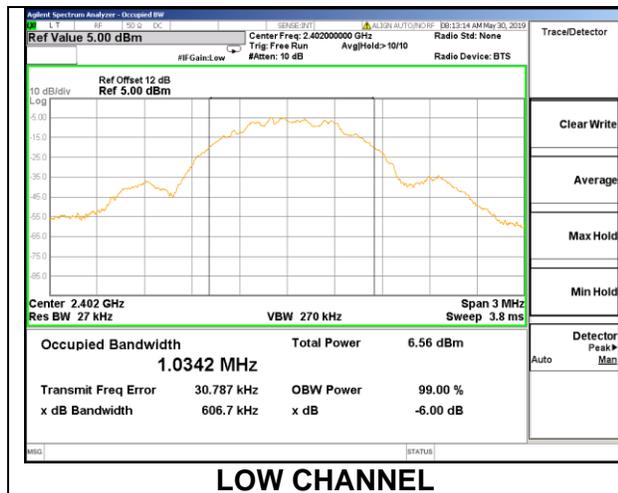
RSS-247 5.2 (a)

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

#### RESULTS

##### 8.3.1. BLE (1Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6067	0.5
Middle	2440	0.6185	0.5
High	2480	0.6025	0.5



## **8.4. OUTPUT POWER**

### **LIMITS**

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

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

### **TEST PROCEDURE**

The transmitter output is connected to a power meter.

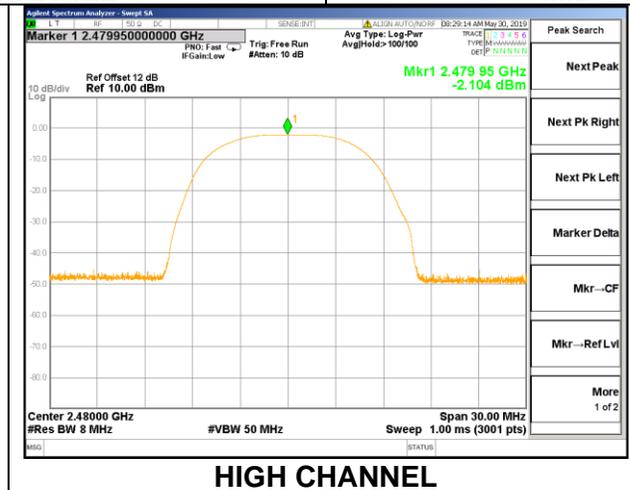
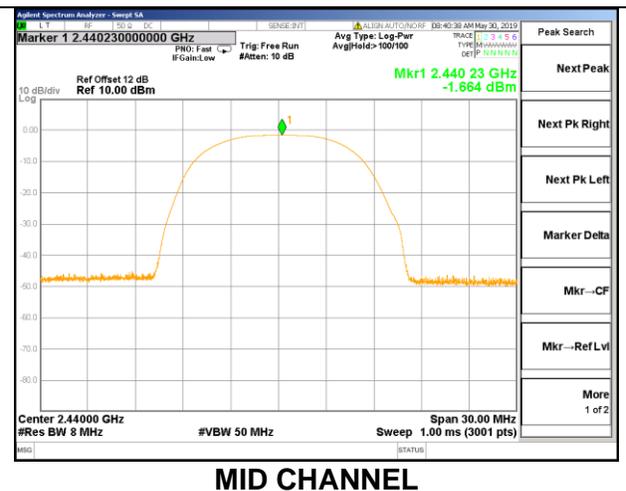
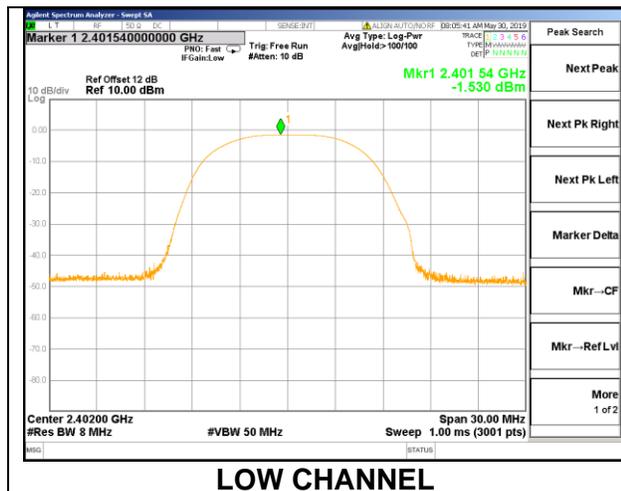
The cable assembly insertion loss of 12dB (including 10.5 dB pad with cable and 1.5dB for cable attached to EUT) was entered as an offset in the power meter to allow for a gated peak reading of power.

### **RESULTS**

### 8.4.1. BLE (1Mbps)

Tested By:	
Date:	

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-1.530	30	-31.530
Middle	2440	-1.664	30	-31.664
High	2480	-2.104	30	-32.104



## **8.5. POWER SPECTRAL DENSITY**

### **LIMITS**

FCC §15.247 (e)

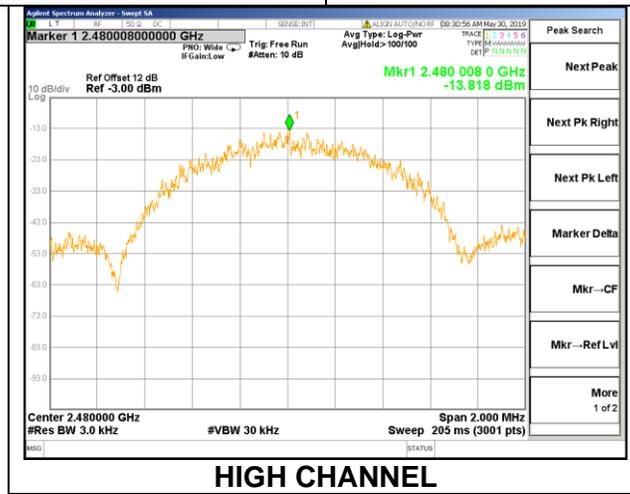
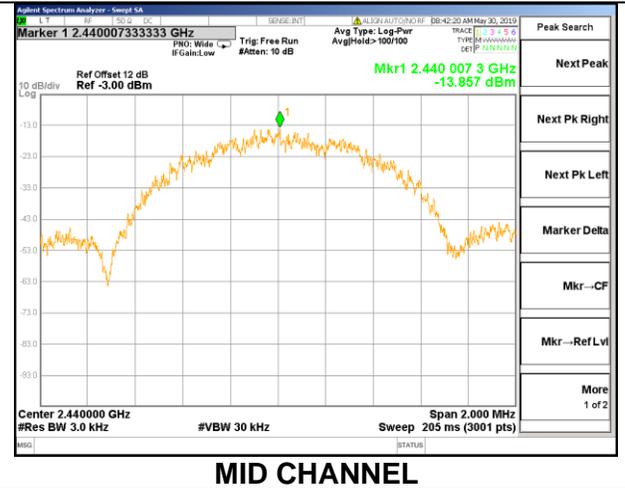
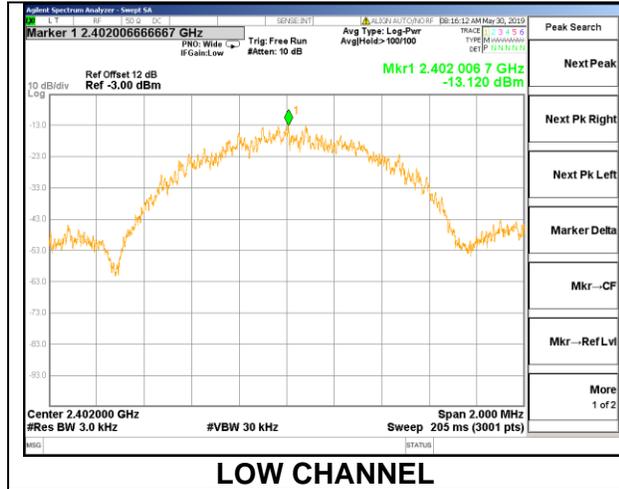
RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### **RESULTS**

### 8.5.1. BLE (1Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-13.120	8	-21.12
Middle	2440	-13.857	8	-21.86
High	2480	-13.818	8	-21.82



## **8.6. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

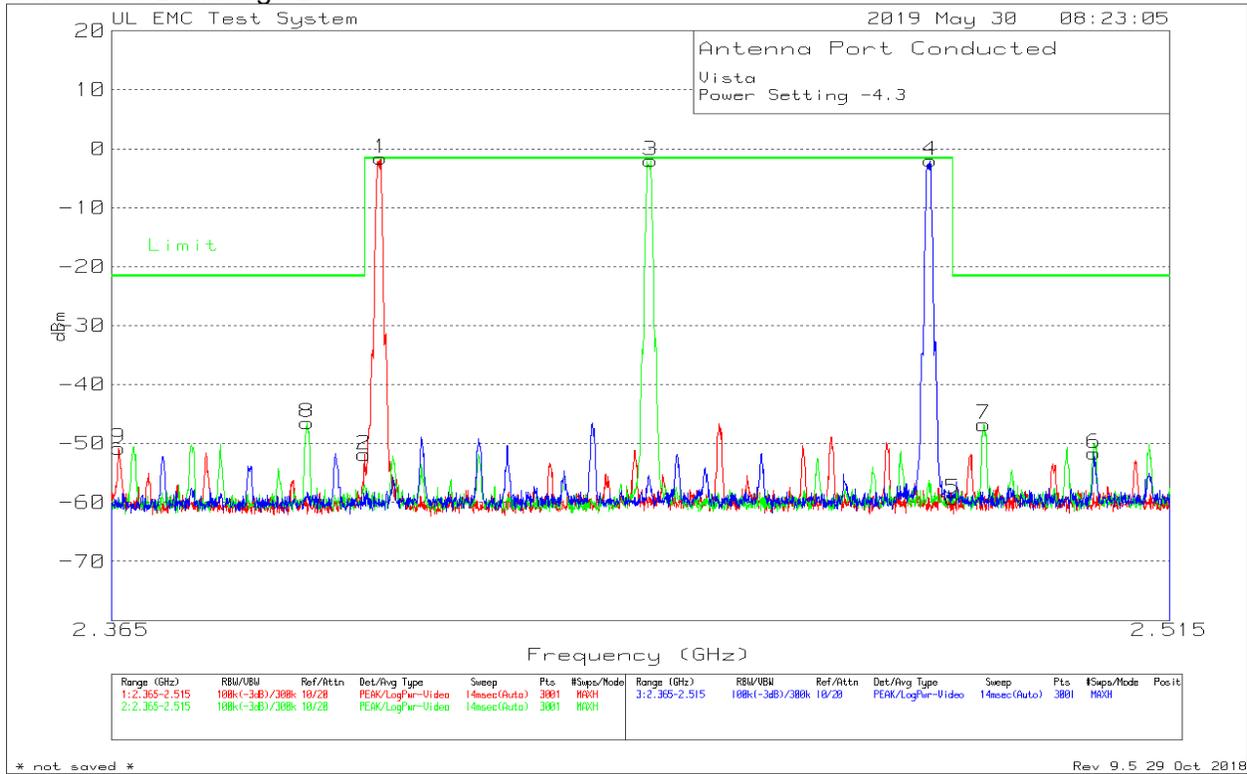
RSS-247 5.5

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

### **RESULTS**

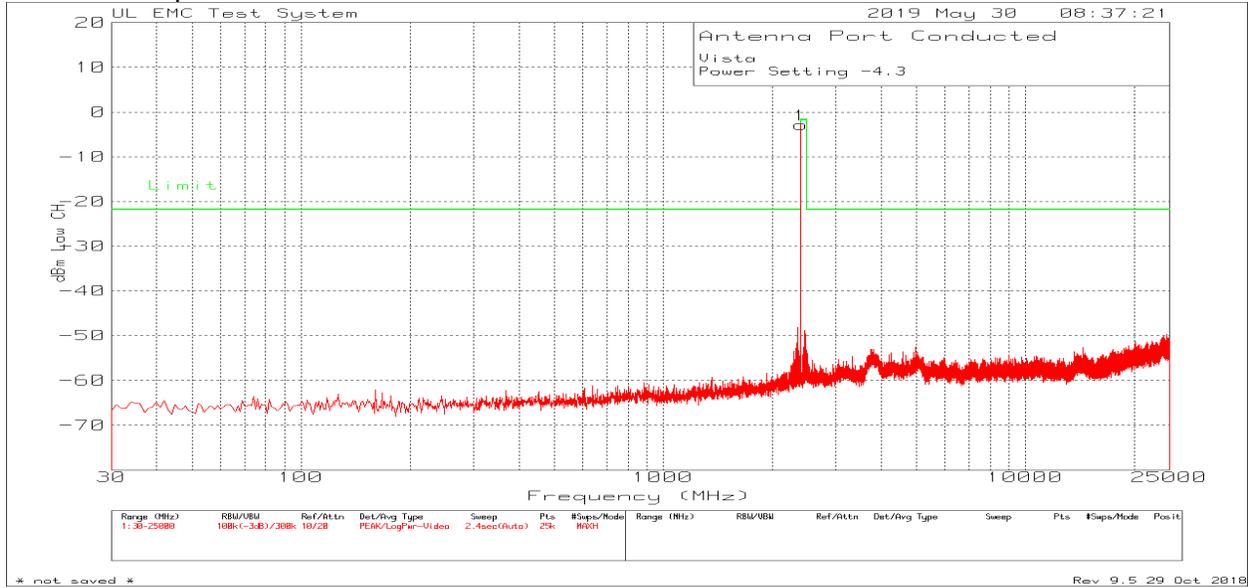
### 8.6.1. BLE (1Mbps)

#### Conducted Bandedge Data



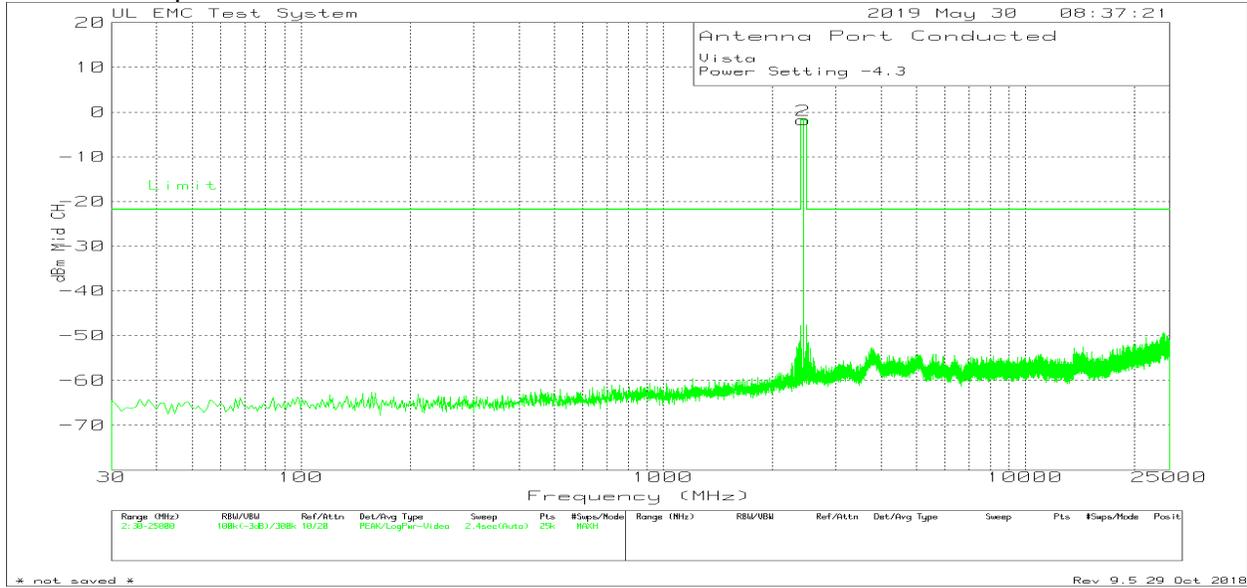
Vista								
Power Setting -4.3								
Trace Markers								
Marker No.	Test Frequency (GHz)	Meter Reading (dBm)	Detector	Path Factor dB	Patch Cable dB	Level dBm	Limit dBm	Margin (dB)
Low Channel								
1	2.4023	-13.61	Pk	10.5	1.5	-1.61	-1.61	0
2	2.4	-63.86	Pk	10.5	1.5	-51.86	-21.61	-30.25
9	2.366	-62.78	Pk	10.5	1.5	-50.78	-21.61	-29.17
Middle Channel								
3	2.4403	-14	Pk	10.5	1.5	-2	-1.61	-0.39
7	2.488	-58.87	Pk	10.6	1.5	-46.77	-21.61	-25.16
8	2.3921	-58.46	Pk	10.5	1.5	-46.46	-21.61	-24.85
High Channel								
4	2.4803	-14.1	Pk	10.6	1.5	-2	-1.61	-0.39
5	2.4835	-71.46	Pk	10.6	1.5	-59.36	-21.61	-37.75
6	2.504	-63.73	Pk	10.6	1.5	-51.63	-21.61	-30.02
Pk - Peak detector								

### Conducted Spurious Emissions Low Channel



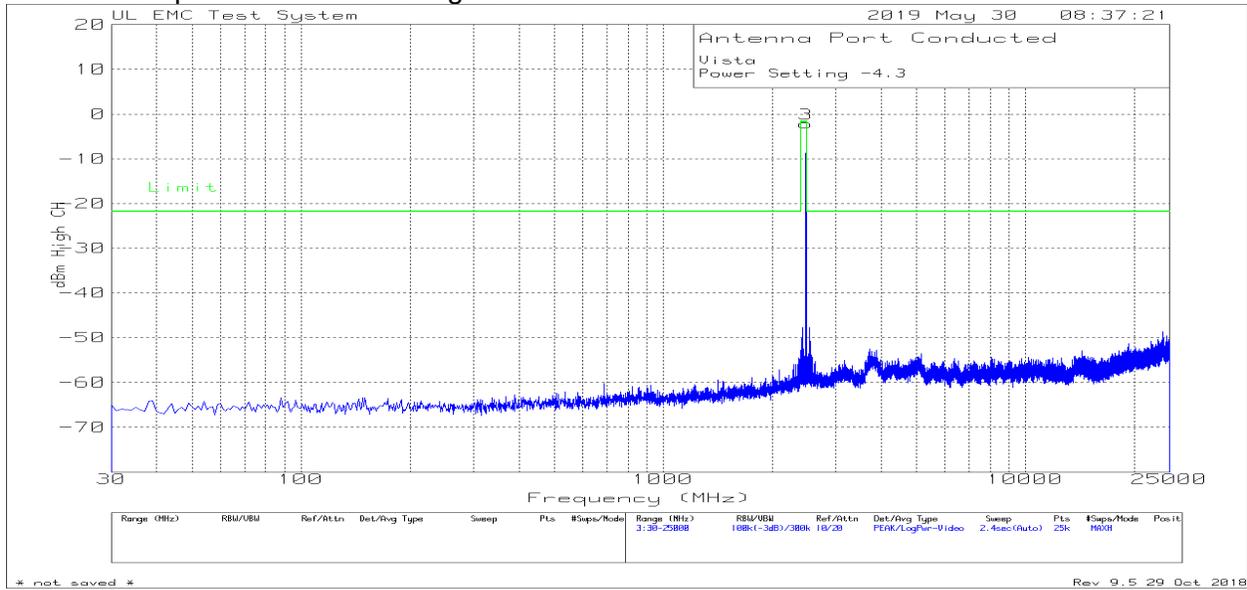
No spurious emissions detected

### Conducted Spurious Emissions Middle Channel



No Spurious Emissions Detected

### Conducted Spurious Emissions High Channel



No Spurious Emissions Detected

## 9. RADIATED TEST RESULTS

### 9.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. Below 30MHz and above 1GHz the antenna to EUT distance is 3 meters. Between 30MHz-1GHz the antenna to EUT distance is 10 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 120 kHz for peak detection measurements and 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 3 MHz 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 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 30 MHz the 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 from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

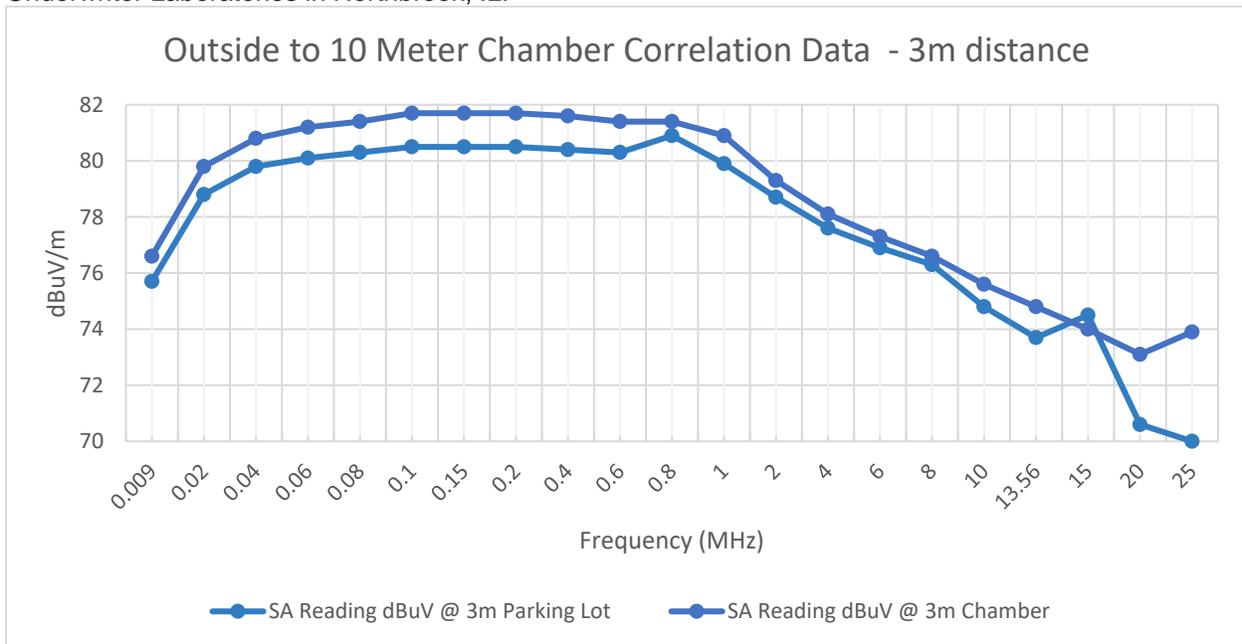
For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

## 9.2. Outdoor to 10m SAC Correlation Data

### 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.

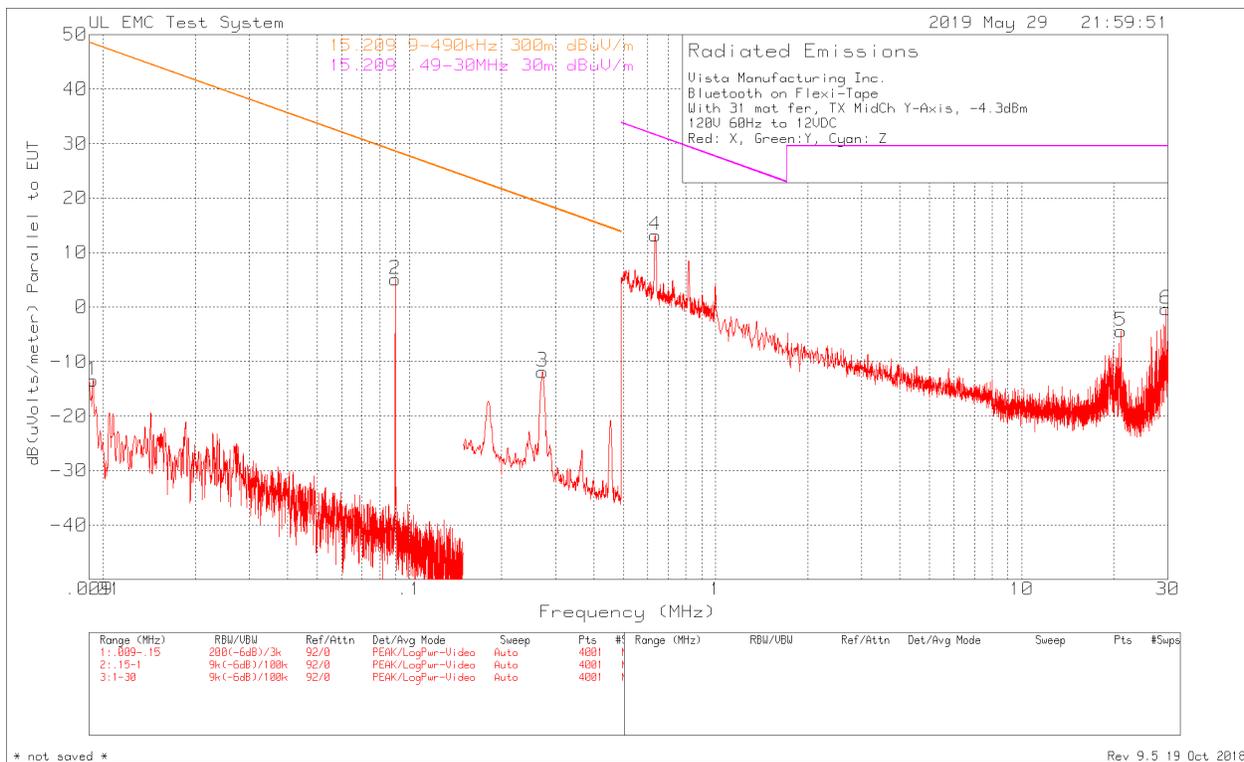
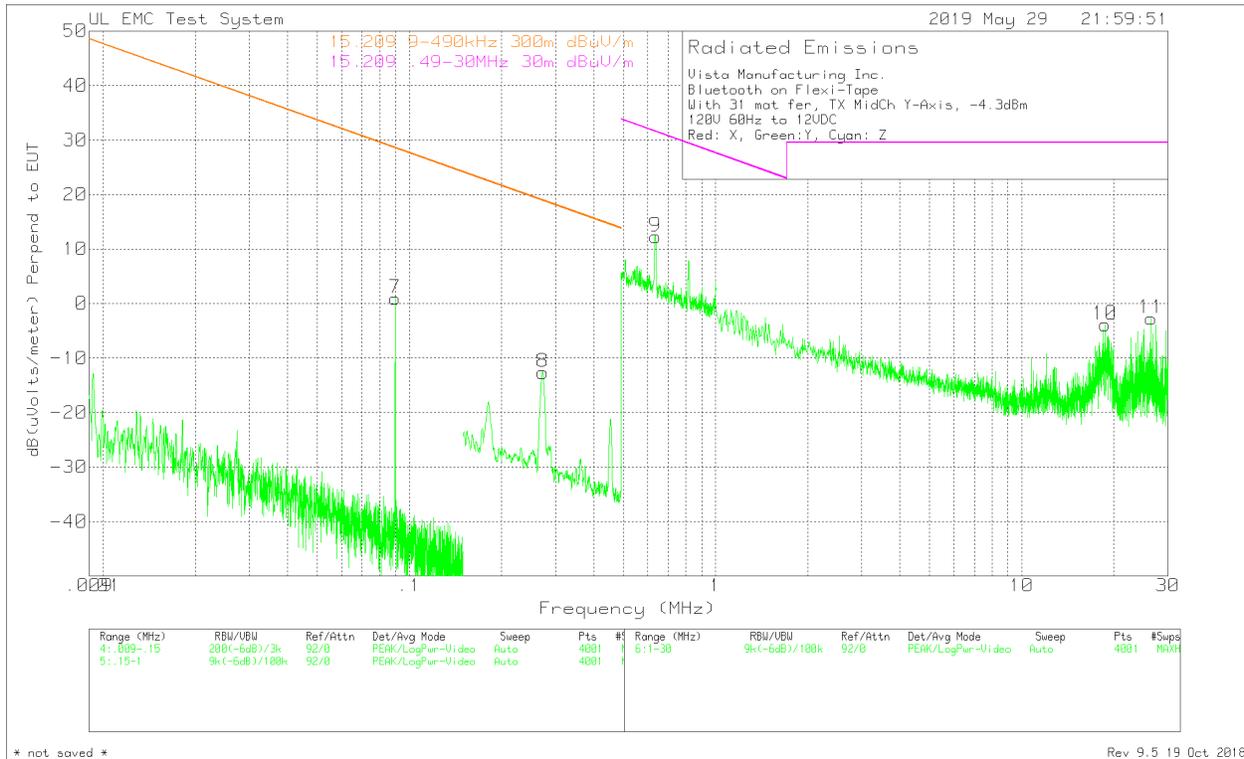
Correlation Data for measurements 9kHz-30MHz between Outside and 10m semi-anechoic chamber at Underwriter Laboratories in Northbrook, IL.

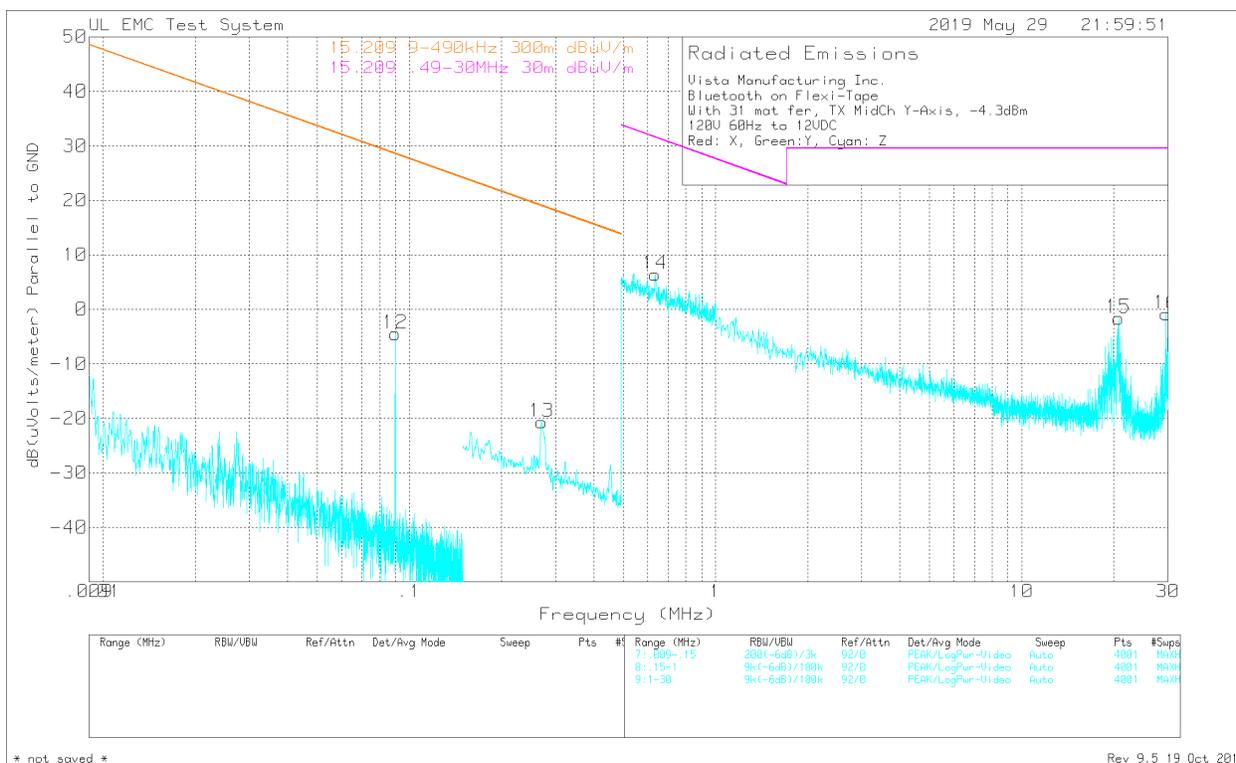


Correlation measurements were conducted using a signal source with an antenna outside in open area (parking lot). Immediately following the measurements the same setup was moved inside the 10 meter semi-anechoic chamber and the measurements were repeated. The above plot shows the difference in levels measured between outside and the 10 meter semi anechoic chamber. Measurements are required per KDB414788.

### 9.3. TRANSMITTER SPURIOUS 9kHz – 30MHz

#### 9.3.1. WORST CASE EMISSIONS BELOW 30MHz



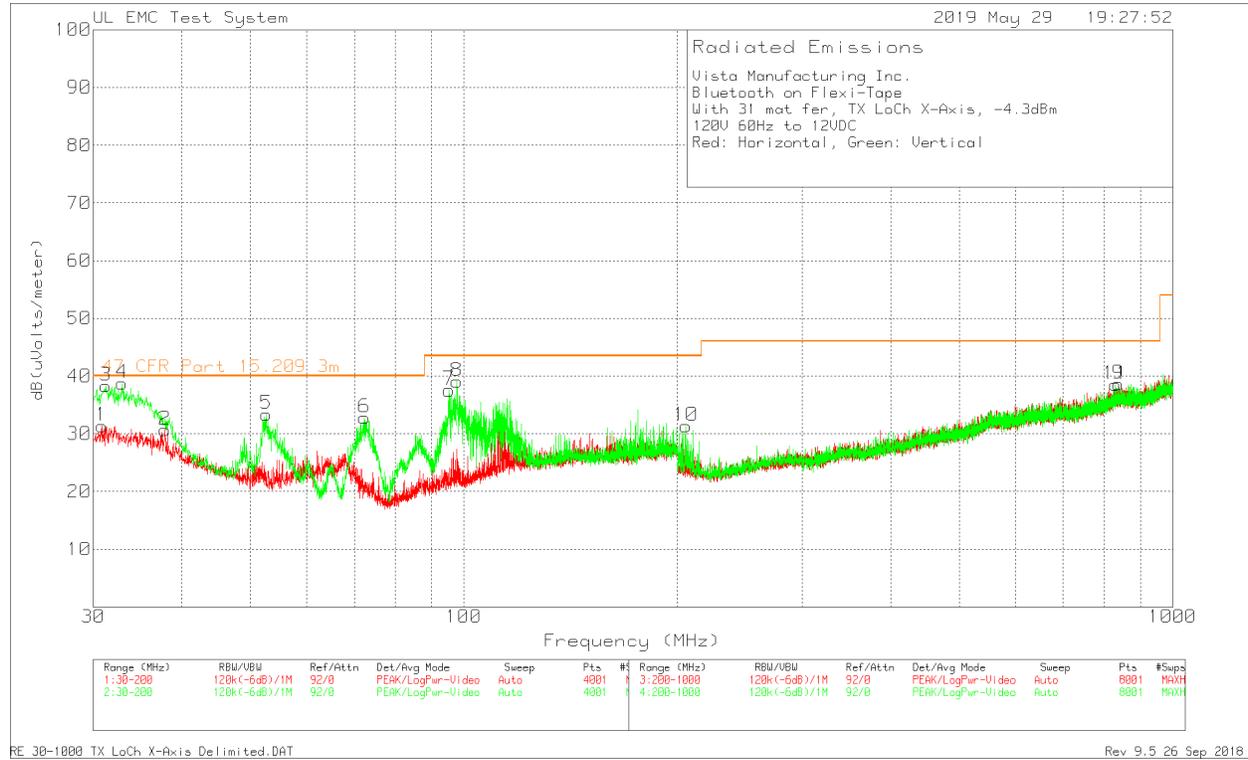


Trace Markers														
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Loop EField Antenna Factor dB/m	3mPath Red Cable dB	300mTo3m & 30mTo3m dB	Corrected Reading dB (uVolts/meter)	15.209 9-490kHz 300m dBuV/m	Margin (dB)	15.209 49-30MHz 30m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
Parallel to EUT														
1	0.009245	42.89	Pk	23.7	0	-80	-13.41	48.28	-61.69	-	-	0-360	101	H
2	0.08992	72.27	Pk	12.8	0	-80	5.07	28.52	-23.45	-	-	0-360	101	H
3	0.27184	56.25	Pk	11.8	0.1	-80	-11.85	18.92	-30.77	-	-	0-360	101	H
4	0.63543	41.08	Pk	12	0.1	-40	13.18	-	-	31.54	-18.36	0-360	101	H
5	21.06075	24.7	Pk	10.4	0.5	-40	-4.4	-	-	29.54	-33.94	0-360	101	H
6	29.63025	29.69	Pk	9.4	0.5	-40	-0.41	-	-	29.54	-29.95	0-360	101	H
Perpendicular to EUT														
7	0.08992	68.12	Pk	12.8	0	-80	0.92	28.52	-27.6	-	-	0-360	101	H
8	0.27269	55.46	Pk	11.8	0.1	-80	-12.64	18.89	-31.53	-	-	0-360	101	H
9	0.63628	40.18	Pk	12	0.1	-40	12.28	-	-	31.53	-19.25	0-360	101	H
10	18.69725	24.83	Pk	10.9	0.4	-40	-3.87	-	-	29.54	-33.41	0-360	101	H
11	26.46925	27.07	Pk	9.7	0.5	-40	-2.73	-	-	29.54	-32.27	0-360	101	H
Parallel to Ground														
12	0.08992	62.73	Pk	12.8	0	-80	-4.47	28.52	-32.99	-	-	0-360	101	H
13	0.27013	47.39	Pk	11.8	0.1	-80	-20.71	18.97	-39.68	-	-	0-360	101	H
14	0.63479	34.33	Pk	12	0.1	-40	6.43	-	-	31.55	-25.12	0-360	101	H
15	20.7055	27.37	Pk	10.5	0.5	-40	-1.63	-	-	29.54	-31.17	0-360	101	H
16	29.63025	29.27	Pk	9.4	0.5	-40	-0.83	-	-	29.54	-30.37	0-360	101	H
Pk - Peak detector														

## 9.4. TRANSMITTER SPURIOUS 30MHz – 1GHz

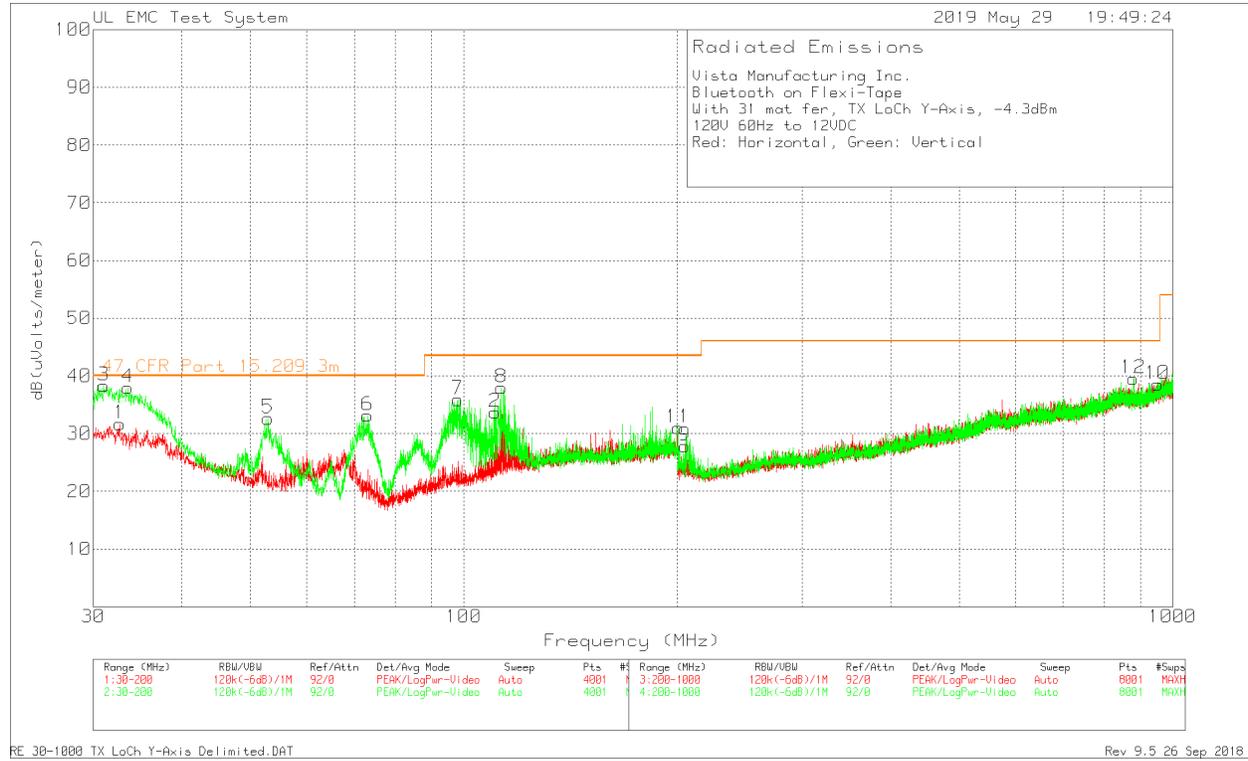
### 9.4.1. SPURIOUS EMISSIONS

#### LOW CHANNEL RESULTS X-Axis



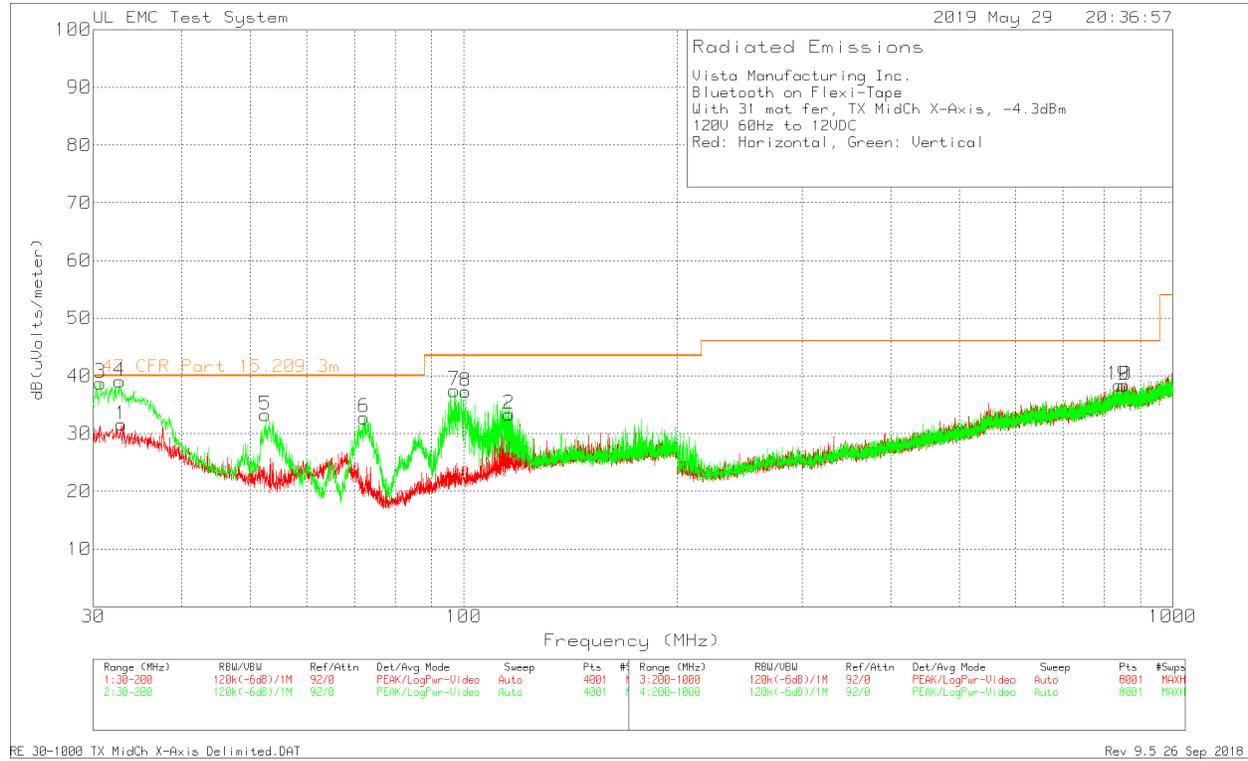
Vista Manufacturing Inc.												
Bluetooth on Flexi-Tape												
With 31 mat fer, TX LoCh X-Axis, -4.3dBm												
120V 60Hz to 12VDC												
Red: Horizontal, Green: Vertical												
Trace MArkers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	30.85	33.16	Pk	17.8	-30.1	10.5	31.36	40	-8.64	0-360	249	H
2	37.8625	35.18	Pk	15	-30	10.5	30.68	40	-9.32	0-360	399	H
3	31.2325	40.32	Pk	17.6	-30.1	10.5	38.32	40	-1.68	0-360	101	V
4	32.9325	41.45	Pk	16.9	-30.1	10.5	38.75	40	-1.25	0-360	101	V
5	52.61	43.69	Pk	9.2	-30	10.5	33.39	40	-6.61	0-360	101	V
6	72.3725	46.08	Pk	6.2	-30	10.5	32.78	40	-7.22	0-360	251	V
7	95.28	46.88	Pk	10	-29.8	10.5	37.58	43.52	-5.94	0-360	101	V
8	97.745	48.21	Pk	10.3	-29.9	10.5	39.11	43.52	-4.41	0-360	101	V
9	837.9	32.21	Pk	23.2	-27.3	10.5	38.61	46.02	-7.41	0-360	399	H
10	205.6	38.85	Pk	11.3	-29.3	10.5	31.35	43.52	-12.17	0-360	102	V
11	830.5	32.42	Pk	23.1	-27.5	10.5	38.52	46.02	-7.5	0-360	302	V
Radiated Emission Data												
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
31.2325	37.62	Qp	17.6	-30.1	10.5	35.62	40	-4.38	229	105	V	
32.9325	37.46	Qp	16.9	-30.1	10.5	34.76	40	-5.24	232	105	V	
97.745	38.49	Qp	10.3	-29.9	10.5	29.39	43.52	-14.13	0	101	V	
Pk - Peak detector												
Qp - Quasi-Peak detector												

**LOW CHANNEL RESULTS Y-Axis**



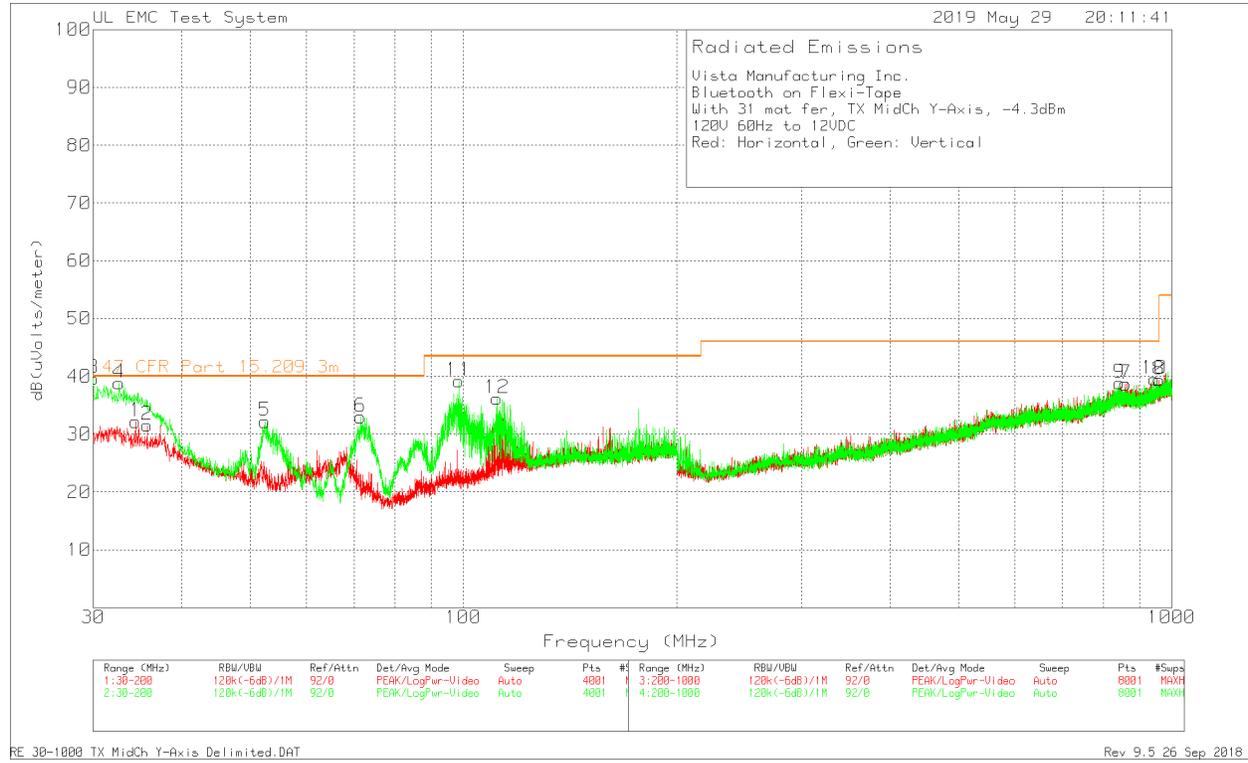
Vista Manufacturing Inc.												
Bluetooth on Flex-i-Tape												
With 31 mat fer, TX LoCh Y-Axis, -4.3dBm												
120V 60Hz to 12VDC												
Red: Horizontal, Green: Vertical												
Trace Markers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	32.6775	34.27	Pk	17	-30.1	10.5	31.67	40	-8.33	0-360	398	H
2	110.6225	40.67	Pk	12.3	-29.8	10.5	33.67	43.52	-9.85	0-360	398	H
3	31.02	40.22	Pk	17.7	-30.1	10.5	38.32	40	-1.68	0-360	101	V
4	33.57	40.86	Pk	16.7	-30.1	10.5	37.96	40	-2.04	0-360	101	V
5	52.9075	43.15	Pk	9	-30	10.5	32.65	40	-7.35	0-360	101	V
6	73.095	46.34	Pk	6.3	-30	10.5	33.14	40	-6.86	0-360	398	V
7	98	44.9	Pk	10.4	-29.9	10.5	35.9	43.52	-7.62	0-360	101	V
8	112.96	44.74	Pk	12.5	-29.8	10.5	37.94	43.52	-5.58	0-360	251	V
9	205	35.4	Pk	11.3	-29.3	10.5	27.9	43.52	-15.62	0-360	399	H
10	951.8	30.91	Pk	23.9	-26.8	10.5	38.51	46.02	-7.51	0-360	399	H
11	200.6	38.39	Pk	11.5	-29.4	10.5	30.99	43.52	-12.53	0-360	99	V
12	879.7	33.36	Pk	23	-27.3	10.5	39.56	46.02	-6.46	0-360	99	V
Radiated Emission Data												
	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	31.6825	37.79	Qp	17.4	-30.1	10.5	35.59	40	-4.41	271	101	V
	32.9325	37.46	Qp	16.9	-30.1	10.5	34.76	40	-5.24	232	105	V
	97.745	38.49	Qp	10.3	-29.9	10.5	29.39	43.52	-14.13	0	101	V
Pk - Peak detector												
Qp - Quasi-Peak detector												

**MIDDLE CHANNEL RESULTS X-Axis**



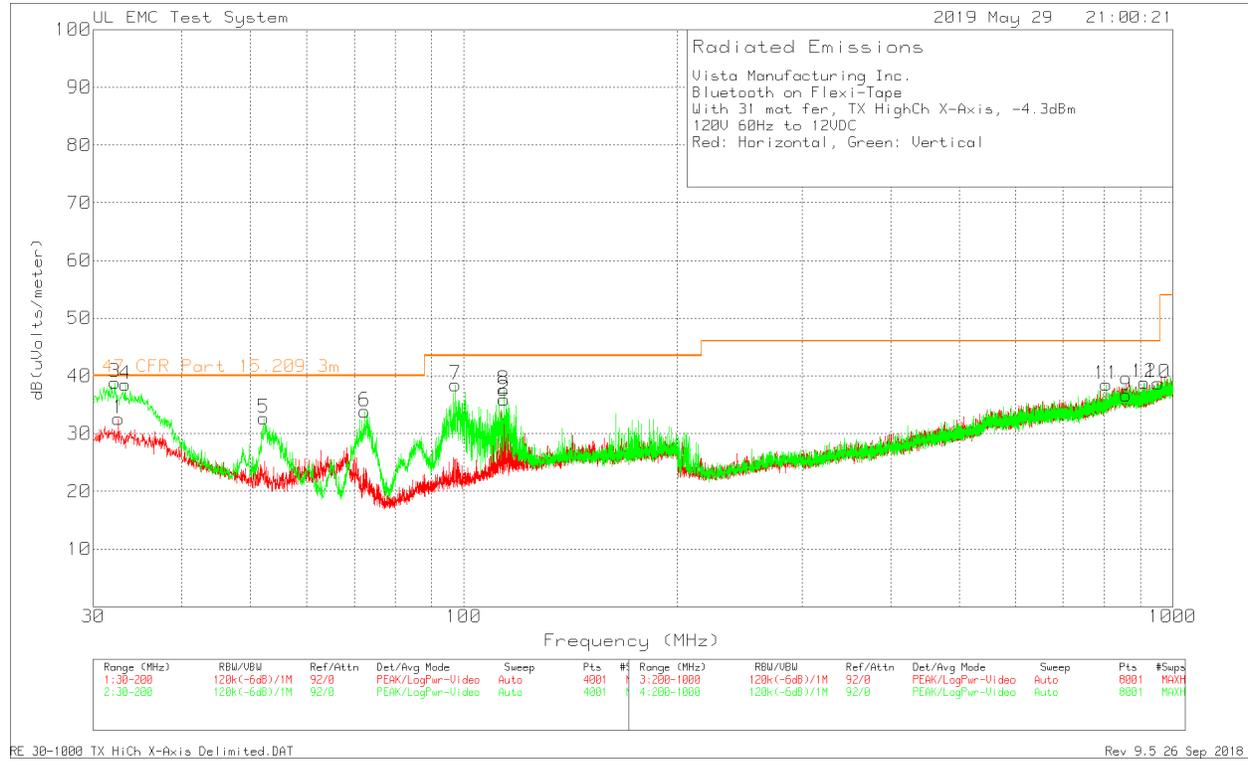
Vista Manufacturing Inc.												
Bluetooth on Flexi-Tape												
With 31 mat fer, TX MidCh X-Axis, -4.3dBm												
120V 60Hz to 12VDC												
Red: Horizontal, Green: Vertical												
Trace Markers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	32.8475	34.14	Pk	17	-30.1	10.5	31.54	40	-8.46	0-360	399	H
2	115.765	39.78	Pk	12.9	-29.8	10.5	33.38	43.52	-10.14	0-360	399	H
3	30.68	40.59	Pk	17.8	-30.1	10.5	38.79	40	-1.21	0-360	101	V
4	32.6775	41.71	Pk	17	-30.1	10.5	39.11	40	-0.89	0-360	101	V
5	52.4825	43.52	Pk	9.2	-30	10.5	33.22	40	-6.78	0-360	251	V
6	72.245	46.07	Pk	6.2	-30	10.5	32.77	40	-7.23	0-360	399	V
7	96.8525	46.66	Pk	10.2	-29.9	10.5	37.46	43.52	-6.06	0-360	101	V
8	100.55	45.9	Pk	10.8	-29.9	10.5	37.3	43.52	-6.22	0-360	101	V
9	852.7	31.91	Pk	23.2	-27.2	10.5	38.41	46.02	-7.61	0-360	199	H
10	840.1	32.14	Pk	23.2	-27.4	10.5	38.44	46.02	-7.58	0-360	202	V
Radiated Emission Data												
	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	32.6775	36.96	Qp	17	-30.1	10.5	34.36	40	-5.64	251	101	V
	30.68	36.67	Qp	17.8	-30.1	10.5	34.87	40	-5.13	245	101	V
	97.745	38.49	Qp	10.3	-29.9	10.5	29.39	43.52	-14.13	0	101	V
Pk - Peak detector												
Qp - Quasi-Peak detector												

**MIDDLE CHANNEL RESULTS Y-Axis**



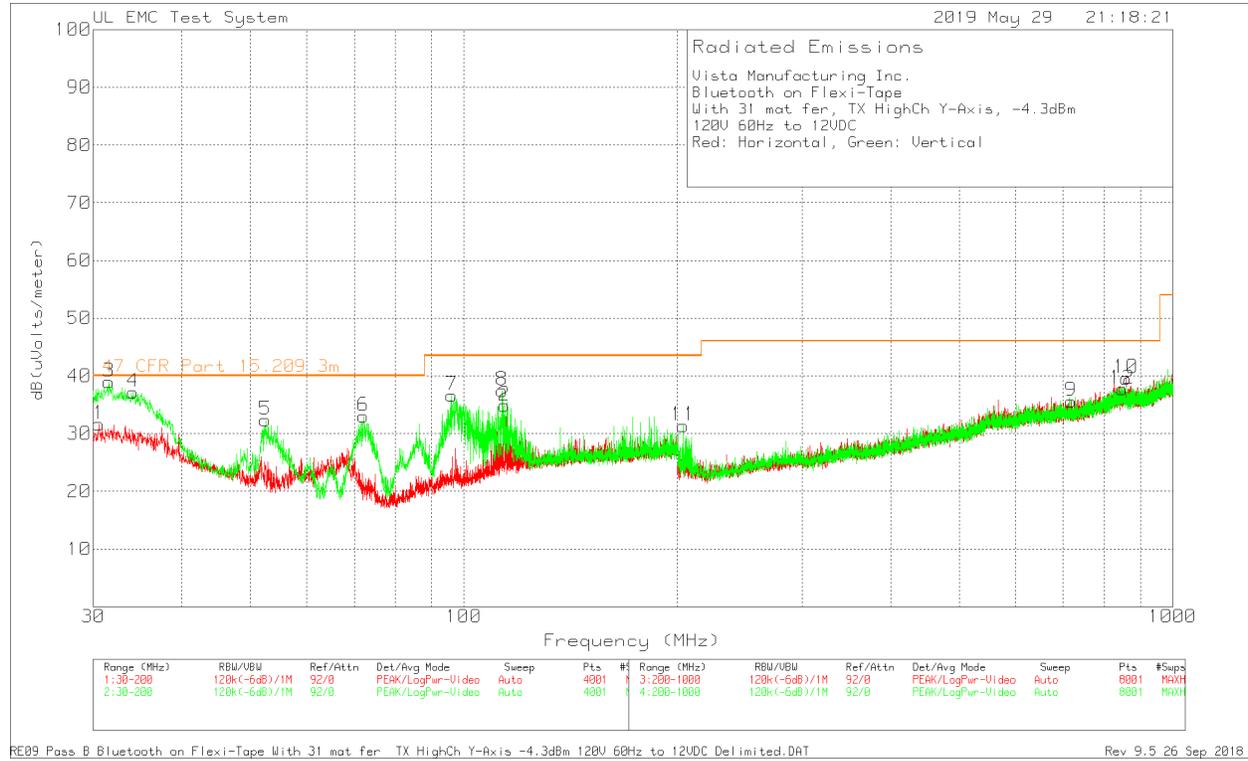
Vista Manufacturing Inc.												
Bluetooth on Flex-i-Tape												
With 31 mat fer, TX MidCh Y-Axis, -4.3dBm												
120V 60Hz to 12VDC												
Red: Horizontal, Green: Vertical												
Trace Markers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	34.42	35.3	Pk	16.4	-30	10.5	32.2	40	-7.8	0-360	398	H
2	35.7375	35.17	Pk	15.9	-30	10.5	31.57	40	-8.43	0-360	398	H
3	30	41.16	Pk	18.1	-30.1	10.5	39.66	40	-0.34	0-360	101	V
4	32.635	41.43	Pk	17	-30.1	10.5	38.83	40	-1.17	0-360	101	V
5	52.3975	42.51	Pk	9.2	-30	10.5	32.21	40	-7.79	0-360	251	V
6	71.5225	46.27	Pk	6.2	-30	10.5	32.97	40	-7.03	0-360	398	V
11	98.425	48.09	Pk	10.5	-29.9	10.5	39.19	43.52	-4.33	0-360	101	V
12	111.4725	43.2	Pk	12.3	-29.8	10.5	36.2	43.52	-7.32	0-360	251	V
7	860.3	32.6	Pk	23.1	-27.5	10.5	38.7	46.02	-7.32	0-360	399	H
8	959.6	31.8	Pk	24.1	-27	10.5	39.4	46.02	-6.62	0-360	199	H
9	843.7	32.54	Pk	23.3	-27.5	10.5	38.84	46.02	-7.18	0-360	102	V
10	944.9	32.43	Pk	23.8	-27.2	10.5	39.53	46.02	-6.49	0-360	299	V
Radiated Emission Data												
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
30.12	36.06	Qp	18.1	-30.1	10.5	34.56	40	-5.44	235	101	V	
32.635	36.69	Qp	17	-30.1	10.5	34.09	40	-5.91	230	101	V	
97.745	38.49	Qp	10.3	-29.9	10.5	29.39	43.52	-14.13	0	101	V	
Pk - Peak detector												
Qp - Quasi-Peak detector												

### HIGH CHANNEL RESULTS X-Axis



Vista Manufacturing Inc.												
Bluetooth on Flexi-Tape												
With 31 mat fer, TX HighCh X-Axis, -4.3dBm												
120V 60Hz to 12VDC												
Red: Horizontal, Green: Vertical												
Trace Markers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	32.55	35.07	Pk	17.1	-30.1	10.5	32.57	40	-7.43	0-360	398	H
2	113.8525	42.63	Pk	12.6	-29.8	10.5	35.93	43.52	-7.59	0-360	398	H
3	32.1675	41.26	Pk	17.2	-30.1	10.5	38.86	40	-1.14	0-360	102	V
4	33.2725	41.35	Pk	16.8	-30.1	10.5	38.55	40	-1.45	0-360	102	V
5	52.185	42.88	Pk	9.3	-30	10.5	32.68	40	-7.32	0-360	102	V
6	72.4575	47.17	Pk	6.2	-30	10.5	33.87	40	-6.13	0-360	398	V
7	97.2775	47.58	Pk	10.3	-29.9	10.5	38.48	43.52	-5.04	0-360	102	V
8	113.7675	44.31	Pk	12.6	-29.8	10.5	37.61	43.52	-5.91	0-360	102	V
9	859.6	30.67	Pk	23.1	-27.6	10.5	36.67	46.02	-9.35	0-360	399	H
10	954	31.06	Pk	24	-26.8	10.5	38.76	46.02	-7.26	0-360	99	H
11	805.9	33.01	Pk	22.2	-27.2	10.5	38.51	46.02	-7.51	0-360	299	V
12	911.1	32.34	Pk	23.1	-27.1	10.5	38.84	46.02	-7.18	0-360	202	V
Radiated Emission Data												
	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	32.6775	36.96	Qp	17	-30.1	10.5	34.36	40	-5.64	251	101	V
	30.68	36.67	Qp	17.8	-30.1	10.5	34.87	40	-5.13	245	101	V
	97.745	38.49	Qp	10.3	-29.9	10.5	29.39	43.52	-14.13	0	101	V
Pk - Peak detector												
Qp - Quasi-Peak detector												

### HIGH CHANNEL RESULTS Y-Axis

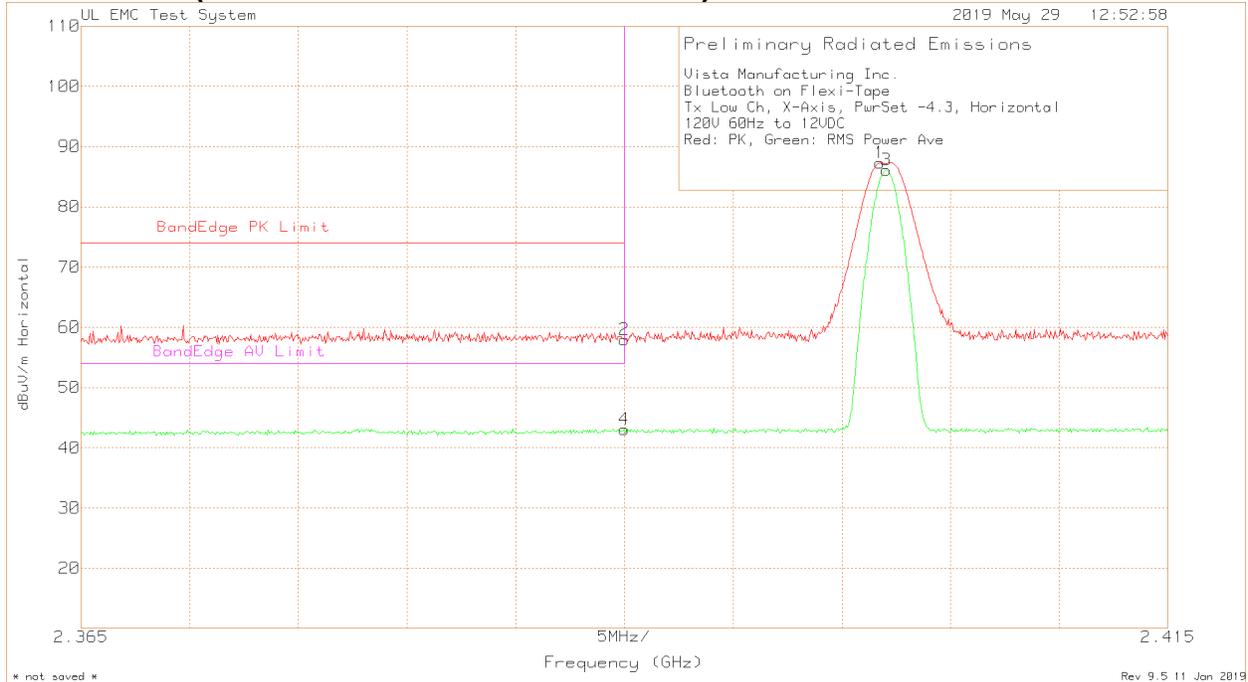


Vista Manufacturing Inc.												
Bluetooth on Flex-i-Tape												
With 31 mat fer, TX HighCh Y-Axis, -4.3dBm												
120V 60Hz to 12VDC												
Red: Horizontal, Green: Vertical												
Trace Markers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	30.5525	33.34	Pk	17.9	-30.1	10.5	31.64	40	-8.36	0-360	398	H
2	114.0225	41.59	Pk	12.6	-29.8	10.5	34.89	43.52	-8.63	0-360	398	H
3	31.53	41.08	Pk	17.5	-30.1	10.5	38.98	40	-1.02	0-360	101	V
4	34.1225	40.3	Pk	16.5	-30.1	10.5	37.2	40	-2.8	0-360	101	V
5	52.4825	42.65	Pk	9.2	-30	10.5	32.35	40	-7.65	0-360	101	V
6	72.1175	46.3	Pk	6.2	-30	10.5	33	40	-7	0-360	398	V
7	96.0875	45.84	Pk	10.1	-29.8	10.5	36.64	43.52	-6.88	0-360	101	V
8	113.215	44.27	Pk	12.5	-29.8	10.5	37.47	43.52	-6.05	0-360	101	V
9	718.9	31.24	Pk	20.9	-27	10.5	35.64	46.02	-10.38	0-360	399	H
10	859.1	33.49	Pk	23.2	-27.6	10.5	39.59	46.02	-6.43	0-360	299	H
11	203.9	38.79	Pk	11.4	-29.3	10.5	31.39	43.52	-12.13	0-360	102	V
12	848.5	31.37	Pk	23.2	-27.3	10.5	37.77	46.02	-8.25	0-360	399	V
Radiated Emission Data												
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading dB(uV/m)	47 CFR Part 15.209 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
32.6775	36.96	Qp	17	-30.1	10.5	34.36	40	-5.64	251	101	V	
30.68	36.67	Qp	17.8	-30.1	10.5	34.87	40	-5.13	245	101	V	
97.745	38.49	Qp	10.3	-29.9	10.5	29.39	43.52	-14.13	0	101	V	
Pk - Peak detector												
Qp - Quasi-Peak detector												

## 9.5. TRANSMITTER ABOVE 1 GHz

### 9.5.1. BANDEDGE

#### BANDEDGE (LOW CHANNEL X Axis Horizontal)



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 Tx Low Ch, X-Axis, PwrSet -4.3, Horizontal  
 120V 60Hz to 12VDC  
 Red: PK, Green: RMS Power Ave

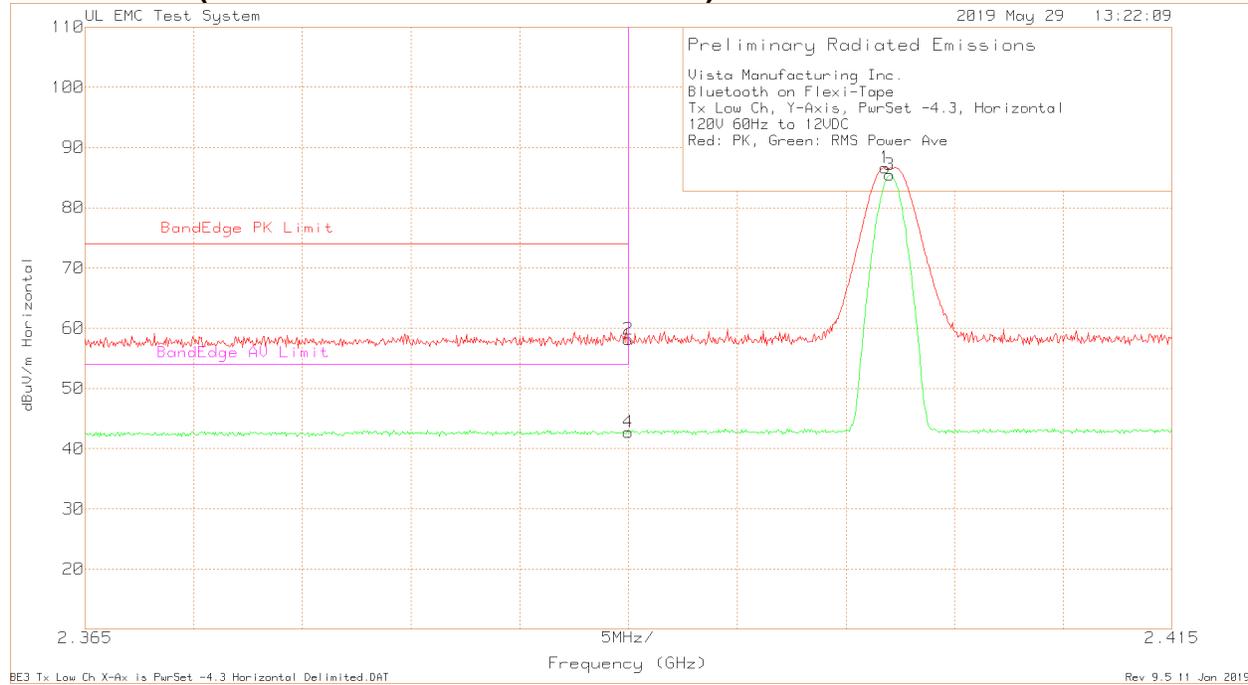
Trace Markers

Test No.	Frequency (GHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBuV/m	Limit:1	2
1	2.40175	60.76dBuV Pk Azimuth:102	21.8 Height:140	4.75 Horz	87.31 Margin (dB)	-	-
2	2.39	31.37dBuV Pk Azimuth:102	21.8 Height:140	4.76 Horz	57.93 Margin (dB)	74	-
3	2.40205	59.57dBuV Av Azimuth:102	21.8 Height:140	4.75 Horz	86.12 Margin (dB)	-16.07	-
4	2.39	16.5dBuV Av Azimuth:102	21.8 Height:140	4.76 Horz	43.06 Margin (dB)	74	54
						-30.94	-10.94

LIMIT 1: BandEdge PK Limit  
 LIMIT 2: BandEdge AV Limit

Pk - Peak detector  
 Av - PWR RMS Av

**BANDEDGE (LOW CHANNEL Y Axis Horizontal)**



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 Tx Low Ch, Y-Axis, PwrSet -4.3, Horizontal  
 120V 60Hz to 12VDC  
 Red: PK, Green: RMS Power Ave

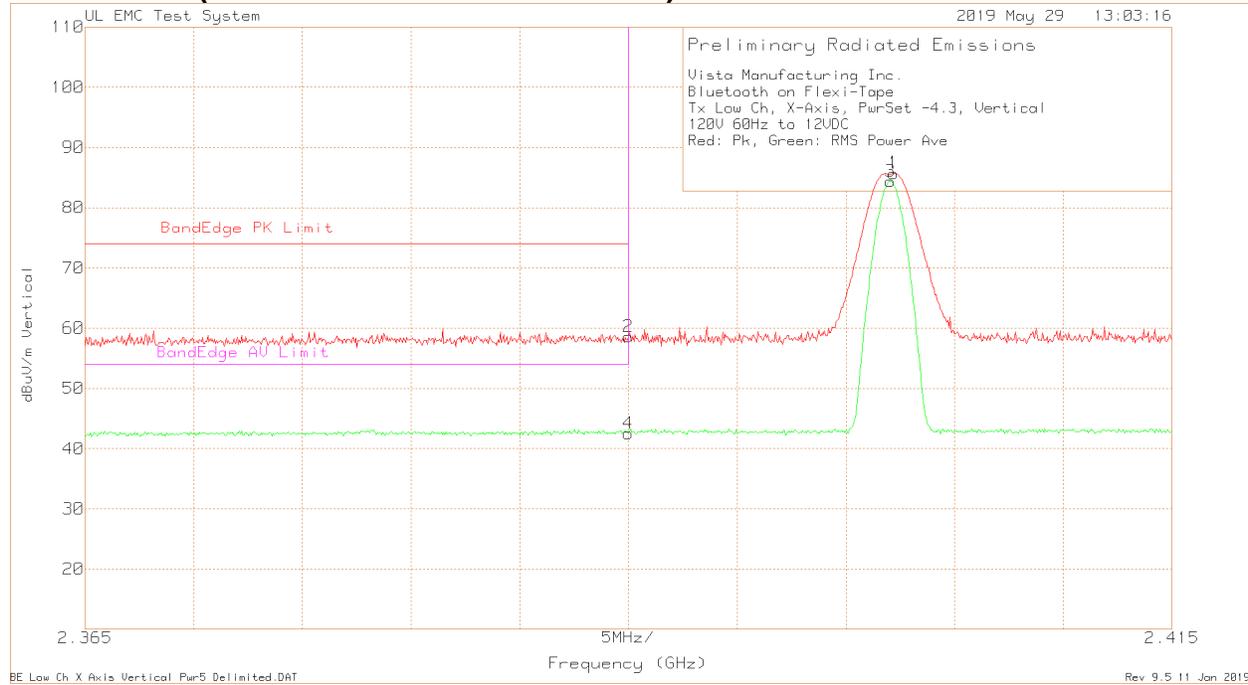
Trace Markers

Test No.	Frequency (GHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 (dB)	Limit:2 (dB)
1	2.4018	60.1dBuV Pk	21.8	4.75	86.65	-	-
		Azimuth:108	Height:139	Horz	Margin (dB)	-	-
2	2.39	31.59dBuV Pk	21.8	4.76	58.15	74	-
		Azimuth:108	Height:139	Horz	Margin (dB)	-15.85	-
3	2.402025	58.88dBuV Av	21.8	4.75	85.43	-	-
		Azimuth:108	Height:139	Horz	Margin (dB)	-	-
4	2.39	16.18dBuV Av	21.8	4.76	42.74	74	54
		Azimuth:108	Height:139	Horz	Margin (dB)	-31.26	-11.26

LIMIT 1: BandEdge PK Limit  
 LIMIT 2: BandEdge AV Limit

Pk - Peak detector  
 Av - PWR RMS Average

**BANDEDGE (LOW CHANNEL X Axis Vertical)**



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 Tx Low Ch, X-Axis, PwrSet -4.3, Vertical  
 120V 60Hz to 12VDC  
 Red: Pk, Green: RMS Power Ave

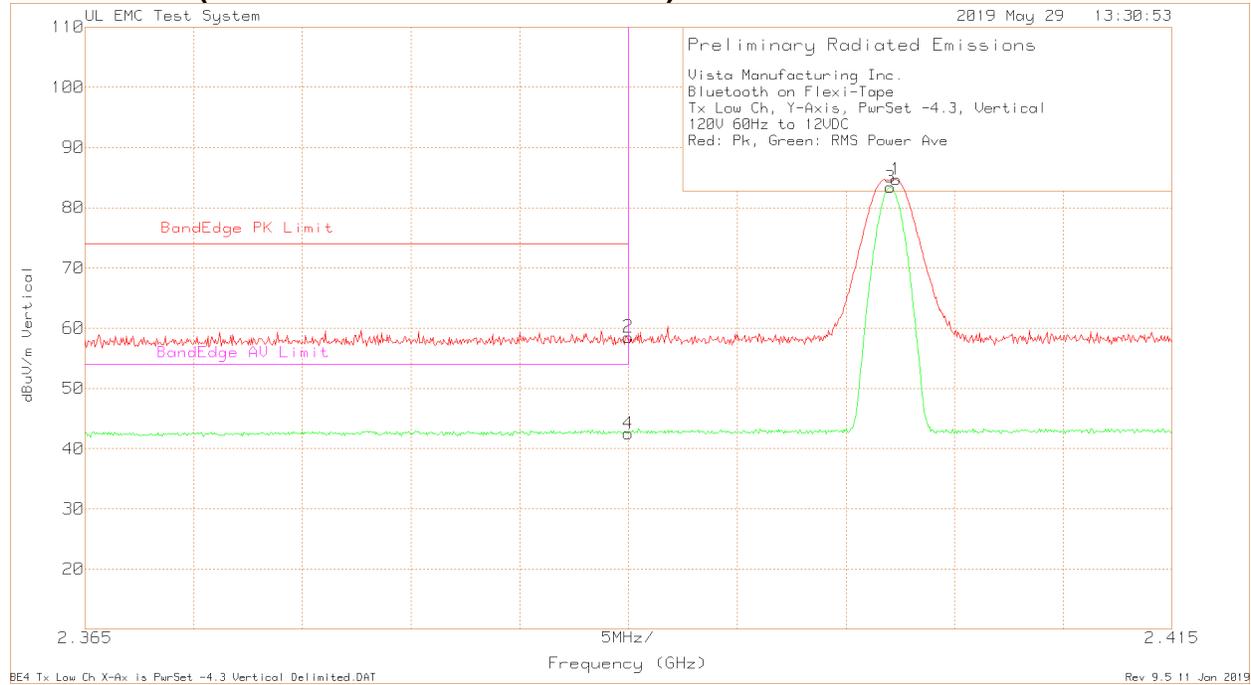
Trace Markers

Test No.	Frequency (GHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBuV/m	Limit:1	2
1	2.4022	59.18dBuV Pk Azimuth:211	21.8 Height:139	4.75 Vert	85.73 Margin (dB)	-	-
2	2.39	32dBuV Pk Azimuth:211	21.8 Height:139	4.76 Vert	58.56 Margin (dB)	74	-
3	2.40205	57.85dBuV Av Azimuth:211	21.8 Height:139	4.75 Vert	84.4 Margin (dB)	-	-
4	2.39	15.95dBuV Av Azimuth:211	21.8 Height:139	4.76 Vert	42.51 Margin (dB)	74	54

LIMIT 1: BandEdge PK Limit  
 LIMIT 2: BandEdge AV Limit

Pk - Peak detector  
 AV - PWR RMS Average

**BANDEDGE (LOW CHANNEL Y Axis Vertical)**



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 Tx Low Ch, Y-Axis, PwrSet -4.3, Vertical  
 120V 60Hz to 12VDC  
 Red: Pk, Green: RMS Power Ave

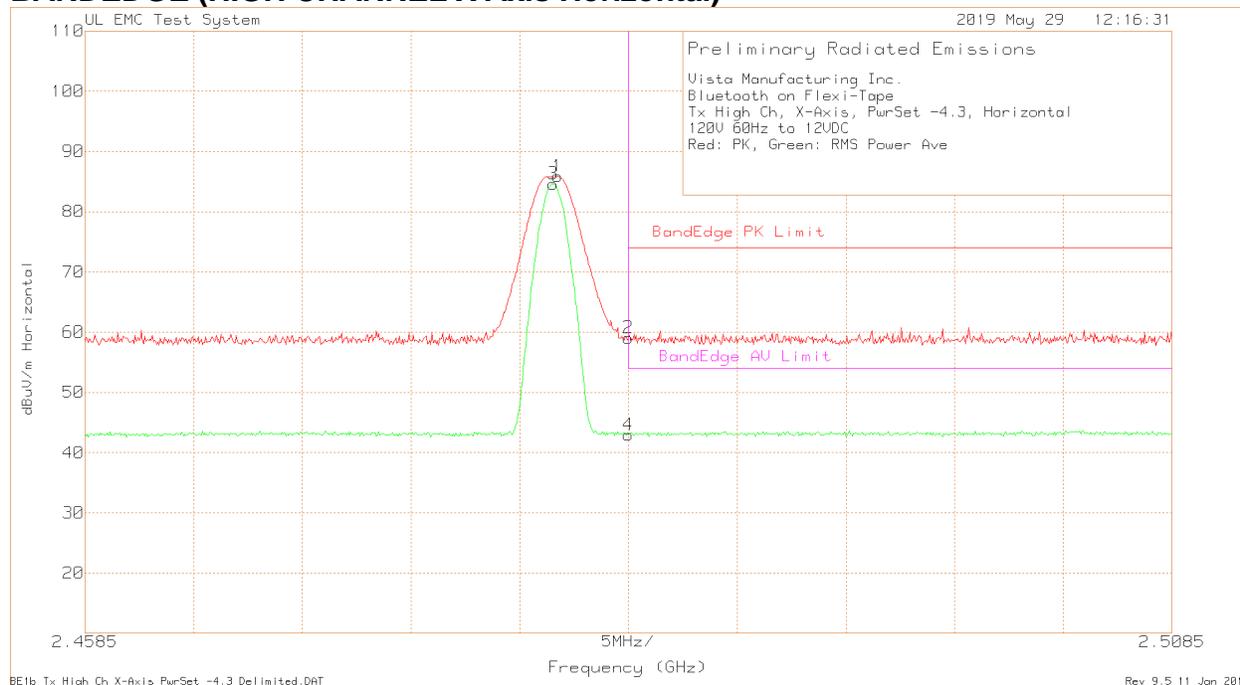
Trace Markers

Test No.	Frequency (GHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBuV/m	Limit:1	2
1	2.4023	58.16dBuV Pk Azimuth:205	21.8	4.75	84.71	-	-
2	2.39	31.96dBuV Pk Azimuth:205	21.8	4.76	58.52	74	-
3	2.40205	56.86dBuV Av Azimuth:205	21.8	4.75	83.41	-	-
4	2.39	15.97dBuV Av Azimuth:205	21.8	4.76	42.53	74	54
						Margin (dB)	Margin (dB)
						-15.48	-
						-31.47	-11.47

LIMIT 1: BandEdge PK Limit  
 LIMIT 2: BandEdge AV Limit

Pk - Peak detector  
 Av - PWR RMS Average

### BANDEDGE (HIGH CHANNEL X Axis Horizontal)



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 Tx High Ch, X-Axis, PwrSet -4.3, Horizontal  
 120V 60Hz to 12VDC  
 Red: PK, Green: RMS Power Ave

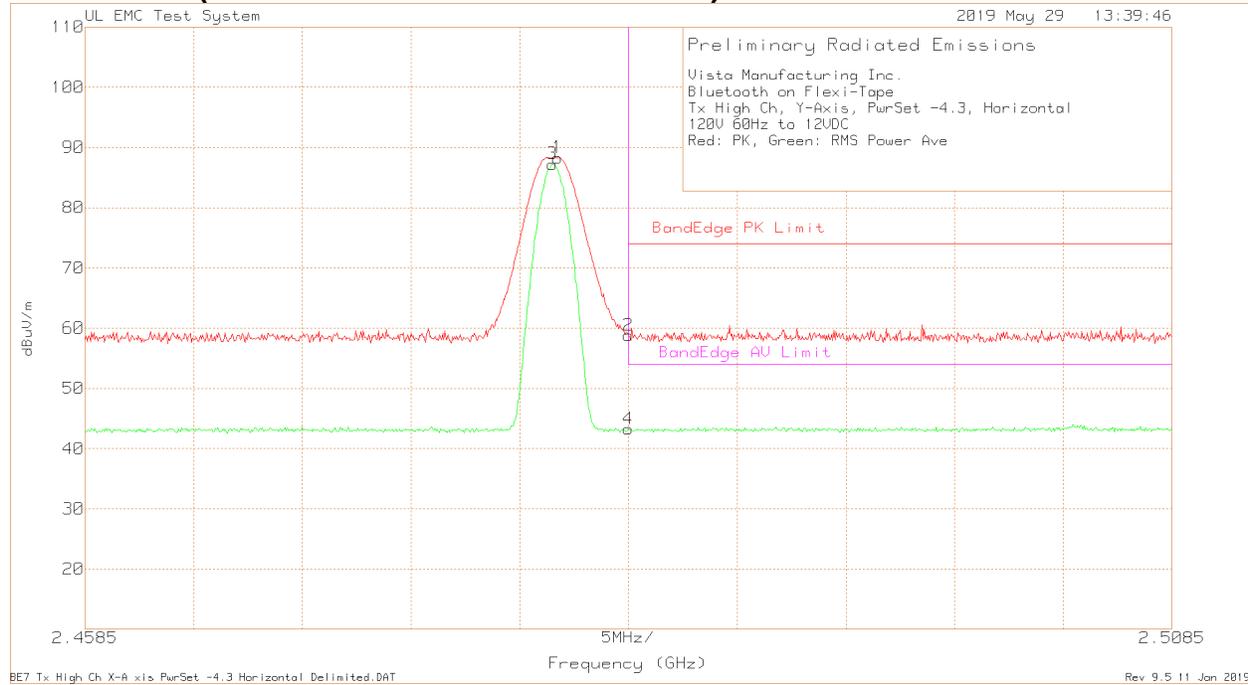
Trace Markers

Test No.	Frequency (GHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBuV/m	Limit:1	2
1	2.48025	59.34dBuV Pk Azimuth:164	22 Height:217	4.52 Horz	85.86	-	-
2	2.4835	32.42dBuV Pk Azimuth:164	22.1 Height:217	4.53 Horz	59.05	74	-
3	2.48025	58.11dBuV Av Azimuth:164	22 Height:217	4.52 Horz	84.63	-	-
4	2.4835	16.29dBuV Av Azimuth:164	22.1 Height:217	4.53 Horz	42.92	74	54
						Margin (dB)	Margin (dB)
						-14.95	-31.08
						-11.08	

LIMIT 1: BandEdge PK Limit  
 LIMIT 2: BandEdge AV Limit

Pk - Peak detector  
 Av - PWR RMS Average

**BANDEDGE (HIGH CHANNEL Y Axis Horizontal)**



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 Tx High Ch, Y-Axis, PwrSet -4.3, Horizontal  
 120V 60Hz to 12VDC  
 Red: PK, Green: RMS Power Ave

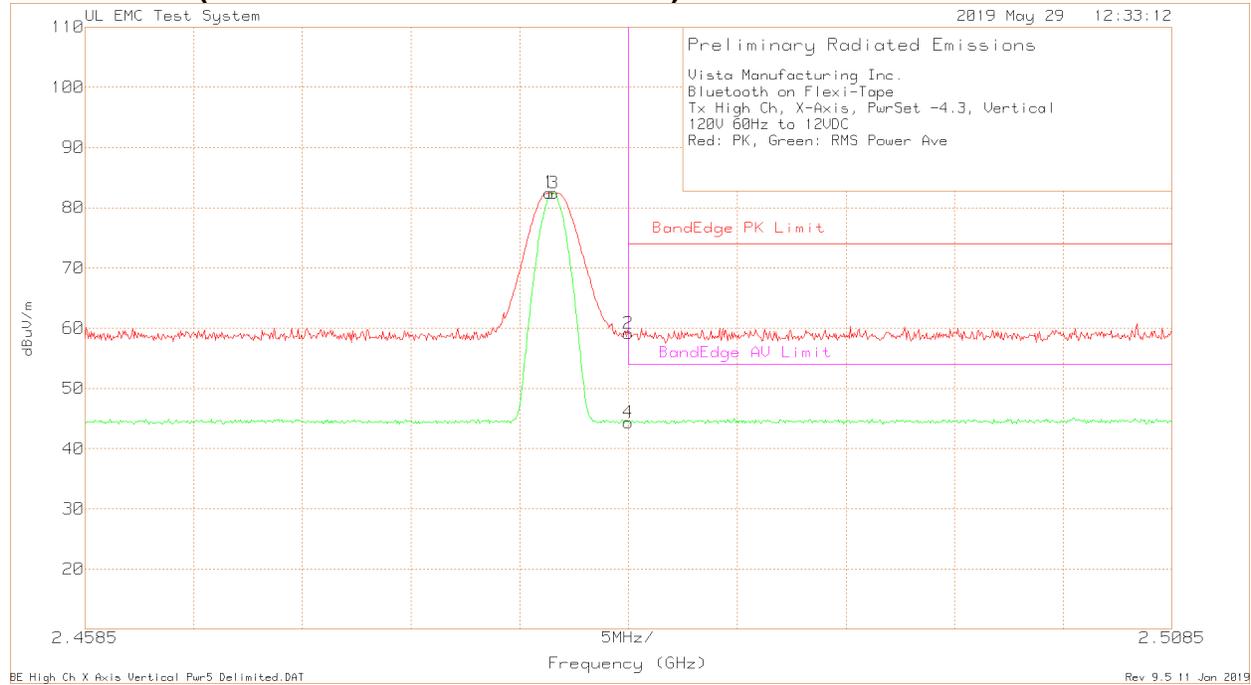
Trace Markers

Test No.	Frequency (GHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBuV/m	Limit:1	2
1	2.48025	61.79dBuV Pk Azimuth:120	22 Height:140	4.52 Horz	88.31	-	-
2	2.4835	32.17dBuV Pk Azimuth:120	22.1 Height:140	4.53 Horz	58.8	74	-
3	2.48	60.72dBuV Av Azimuth:120	22 Height:140	4.52 Horz	87.24	-	-
4	2.4835	16.61dBuV Av Azimuth:120	22.1 Height:140	4.53 Horz	43.24	74	54
						Margin (dB)	Margin (dB)
						-30.76	-10.76

LIMIT 1: BandEdge PK Limit  
 LIMIT 2: BandEdge AV Limit

Pk - Peak detector  
 Av - PWR RMS Average

**BANDEDGE (HIGH CHANNEL X Axis Vertical)**



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 Tx High Ch, X-Axis, PwrSet -4.3, Vertical  
 120V 60Hz to 12VDC  
 Red: PK, Green: RMS Power Ave

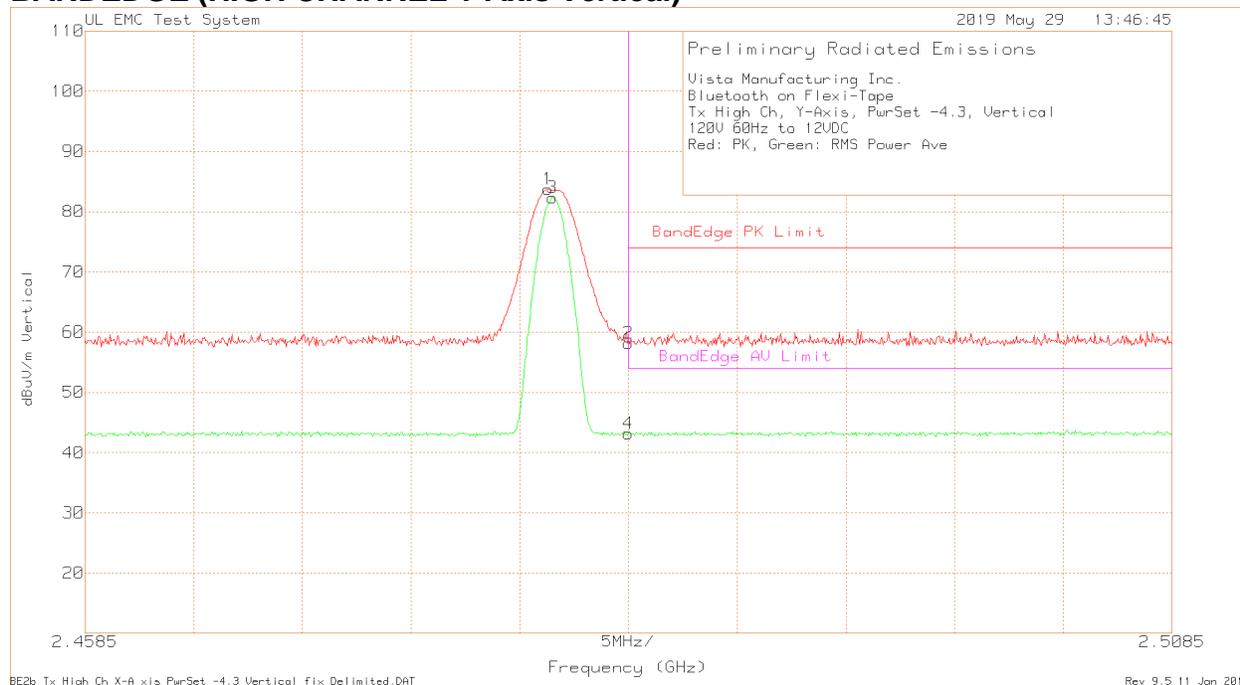
Trace Markers

Test No.	Frequency (GHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBuV/m	Limit:1	2
1	2.47985	55.95dBuV Pk Azimuth:307	22 Height:251 Vert	4.52	82.47	-	-
2	2.4835	32.47dBuV Pk Azimuth:307	22.1 Height:251 Vert	4.53	59.1	74	-
3	2.48005	54.53dBuV Av Azimuth:307	22 Height:251 Vert	5.92	82.45	-	-
4	2.4835	16.28dBuV Av Azimuth:307	22.1 Height:251 Vert	5.93	44.31	74	54
						-29.69	-9.69

LIMIT 1: BandEdge PK Limit  
 LIMIT 2: BandEdge AV Limit

Pk - Peak detector  
 Av - PWR RMS Average

**BANDEDGE (HIGH CHANNEL Y Axis Vertical)**



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 Tx High Ch, Y-Axis, PwrSet -4.3, Vertical  
 120V 60Hz to 12VDC  
 Red: PK, Green: RMS Power Ave

Trace Markers

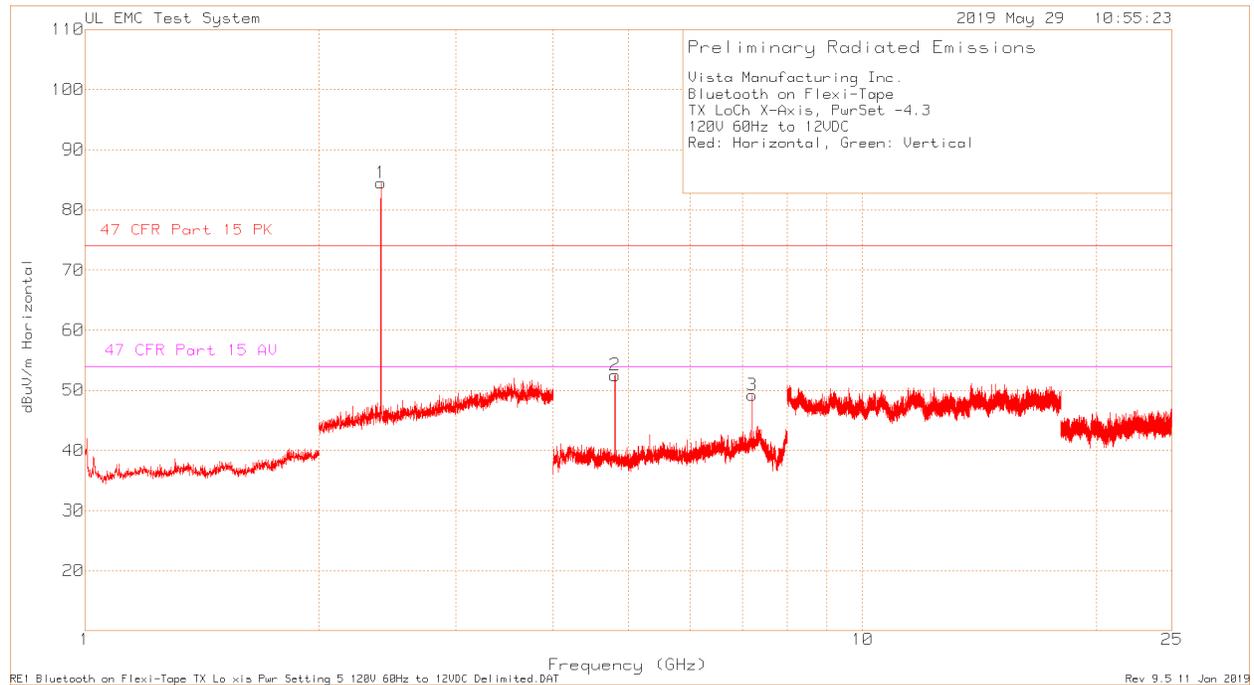
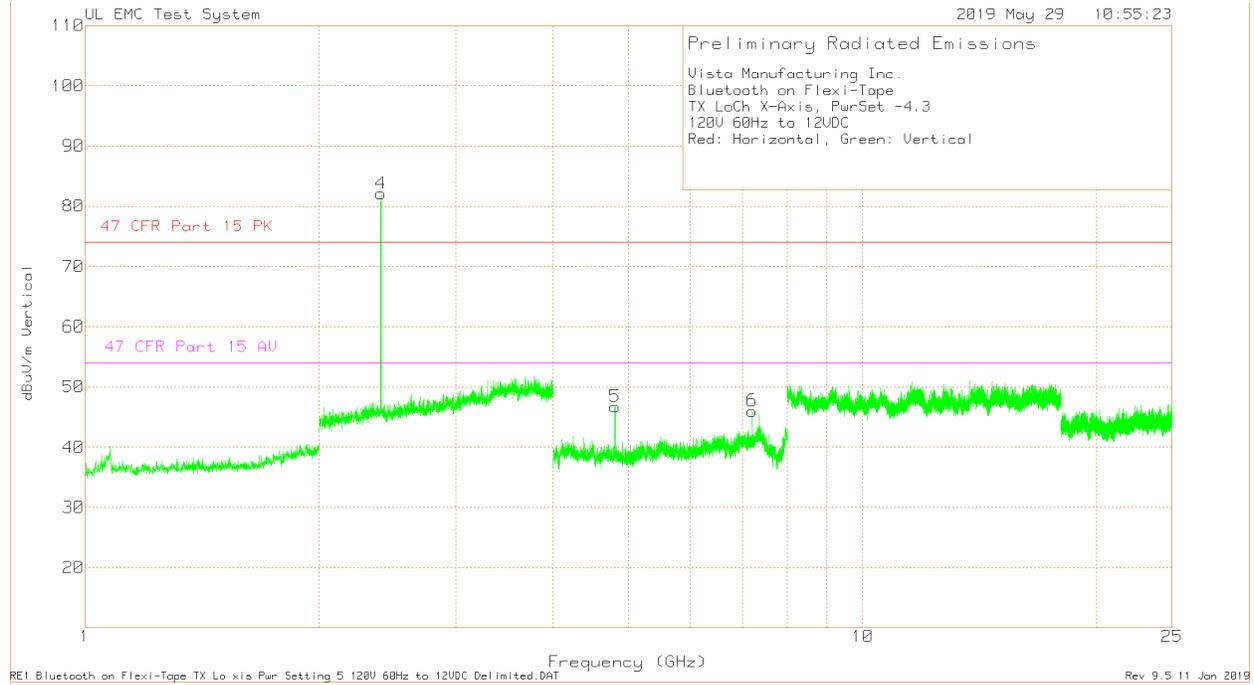
Test No.	Frequency (GHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBuV/m	Limit:1	Limit:2
1	2.4798	57.18dBuV Pk Azimuth:220	22 Height:107 Vert	4.52	83.7	-	-
2	2.4835	31.5dBuV Pk Azimuth:220	22.1 Height:107 Vert	4.53	58.13	74	-
3	2.48	55.82dBuV Av Azimuth:220	22 Height:107 Vert	4.52	82.34	-	-
4	2.4835	16.54dBuV Av Azimuth:220	22.1 Height:107 Vert	4.53	43.17	74	54
						Margin (dB)	Margin (dB)
						-15.87	-
						-30.83	-10.83

LIMIT 1: BandEdge PK Limit  
 LIMIT 2: BandEdge AV Limit

Pk - Peak detector  
 Av - PWR RMS Average

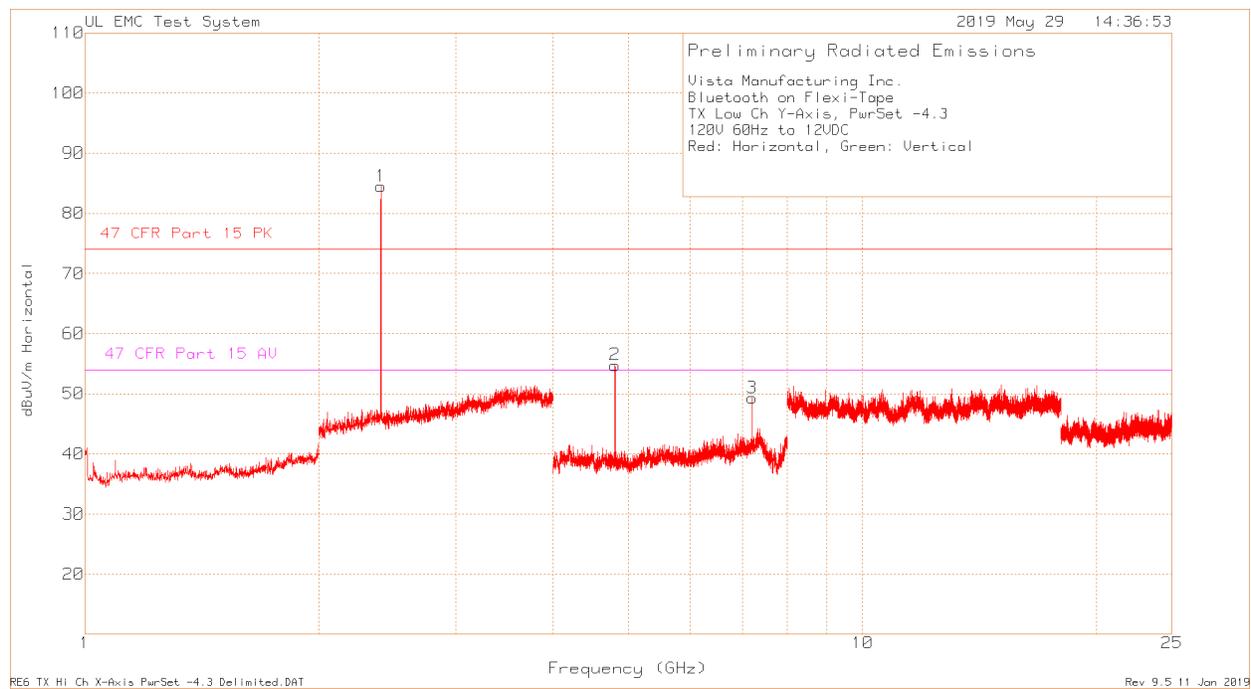
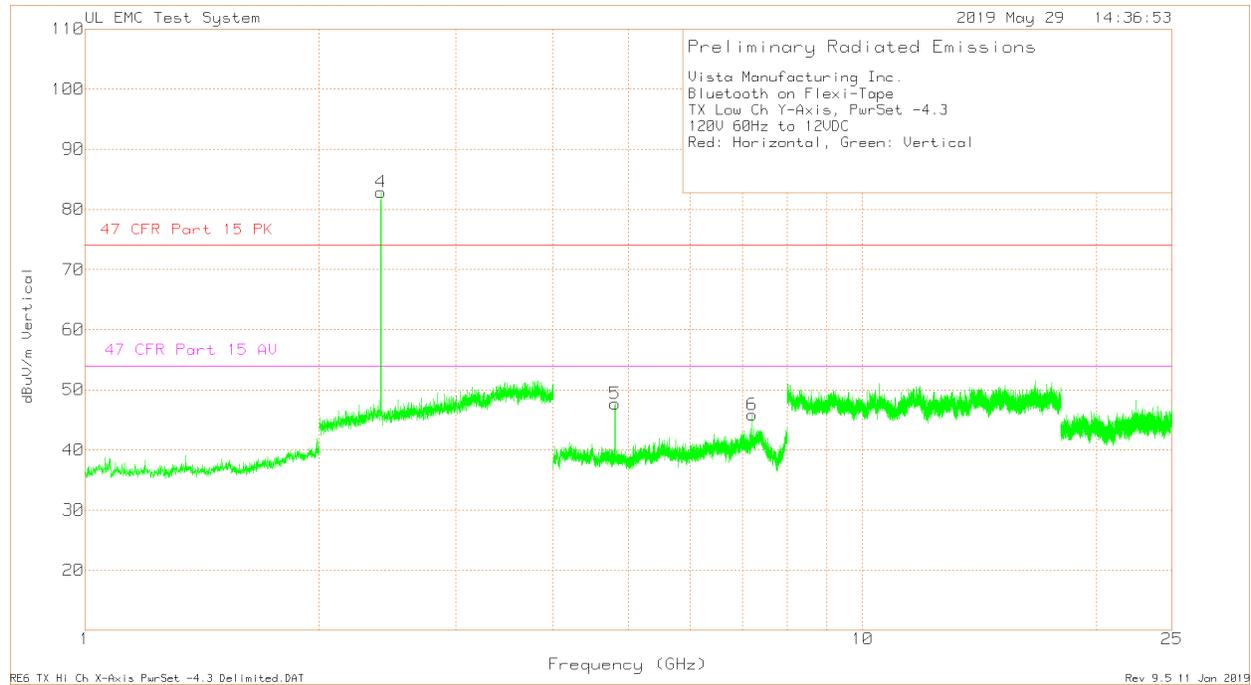
### 9.5.2. SPURIOUS EMISSIONS

#### LOW CHANNEL RESULTS X-Axis



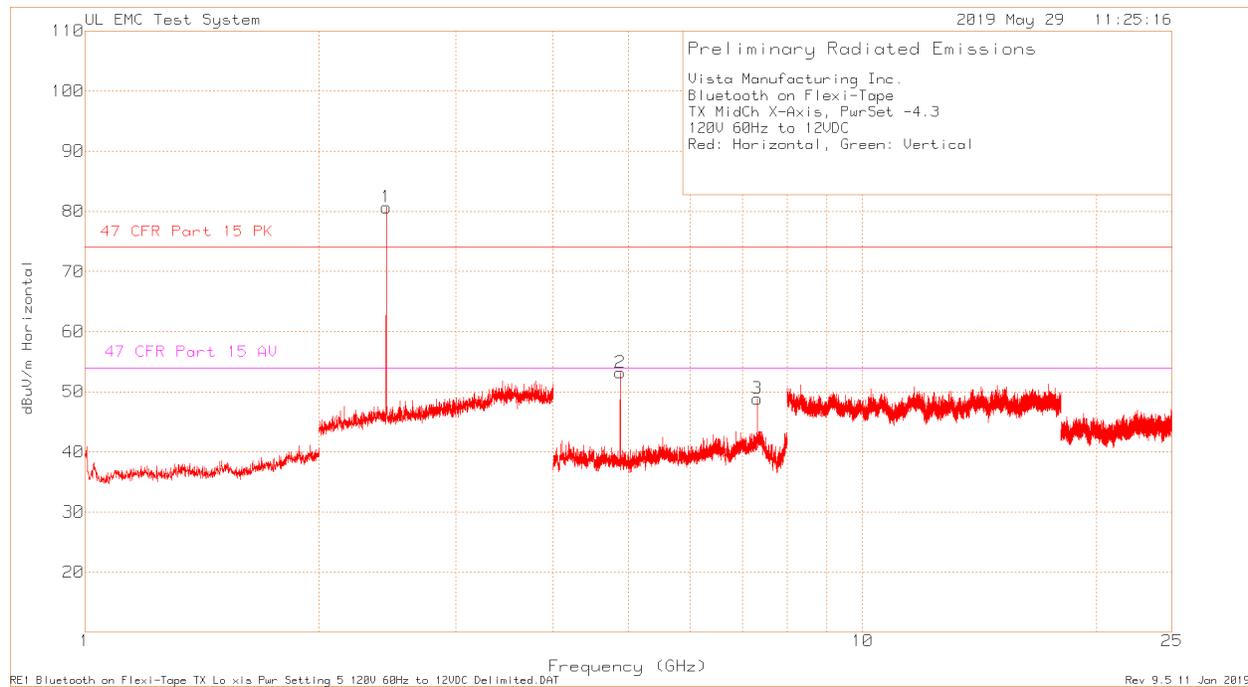
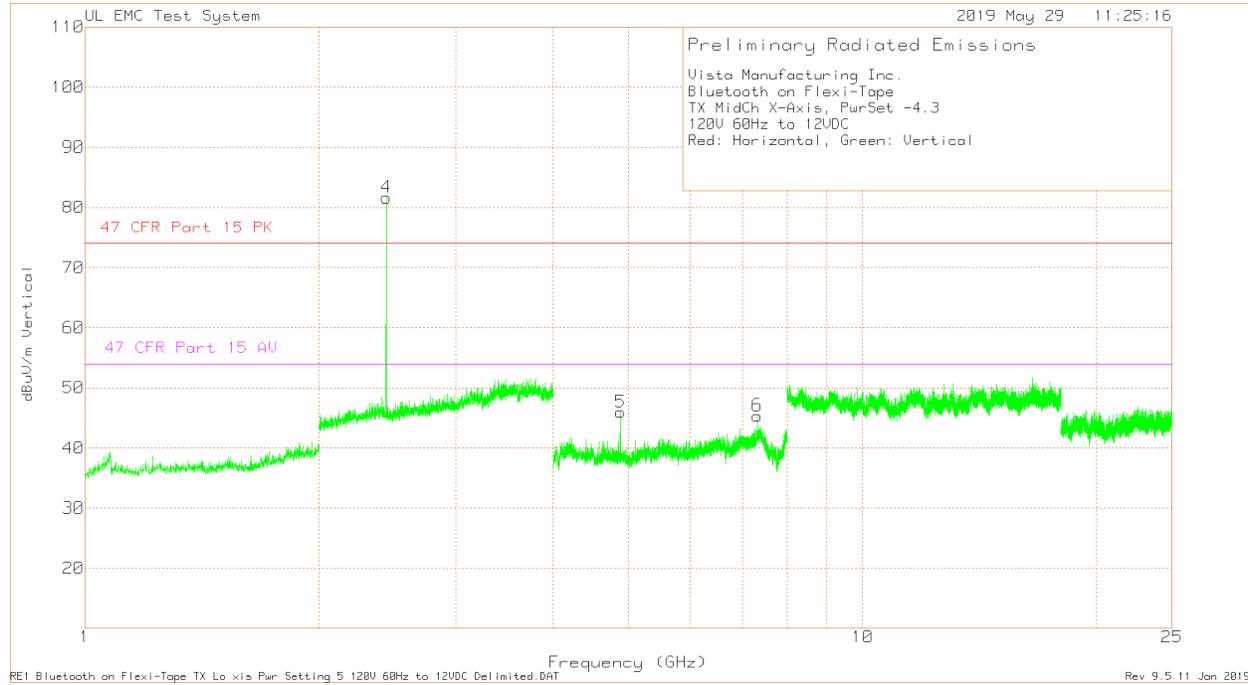
Vista Manufacturing Inc.													
Bluetooth on Flex-i-Tape													
TX LoCh X-Axis, PwrSet -4.3													
120V 60Hz to 12VDC													
Red: Horizontal, Green: Vertical													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.402	57.95	Pk	21.8	4.75	-	-	-	-	30.5	0-360	150	H
2	4.805	75.62	Pk	27.7	-50.82	52.5	74	-21.5	54	-1.5	0-360	150	H
3	7.206	64.76	Pk	29.7	-45.28	49.18	74	-24.82	54	-4.82	0-360	150	H
4	2.402	55.57	Pk	21.8	4.75	-	-	-	-	28.12	0-360	150	V
5	4.805	69.84	Pk	27.7	-50.82	46.72	74	-27.28	54	-7.28	0-360	150	V
6	7.206	61.58	Pk	29.7	-45.28	46	74	-28	54	-8	0-360	150	V
Pk - Peak detector													
Radiated Emission Data													
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
4.8037	73.46	Av	27.7	-51.06	50.1	74	-23.9	54	-3.9	68	119	H	
Pk - Peak detector													
Av - PWR RMS Average													

### LOW CHANNEL RESULTS Y-Axis



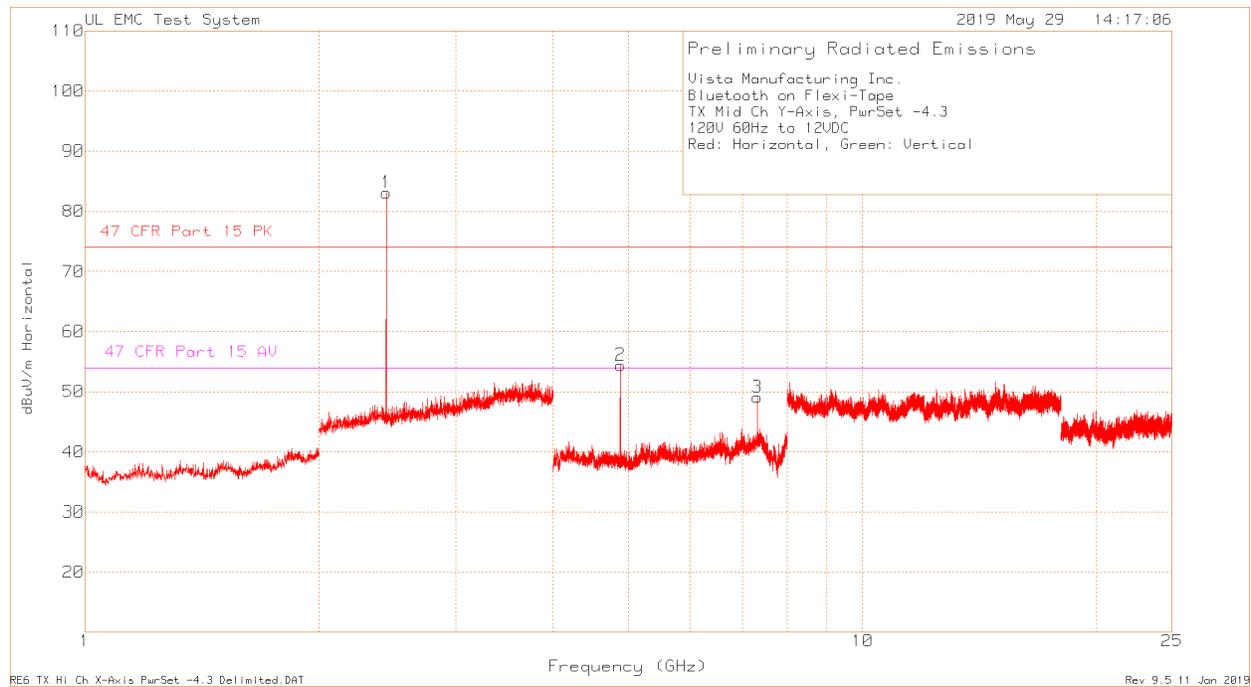
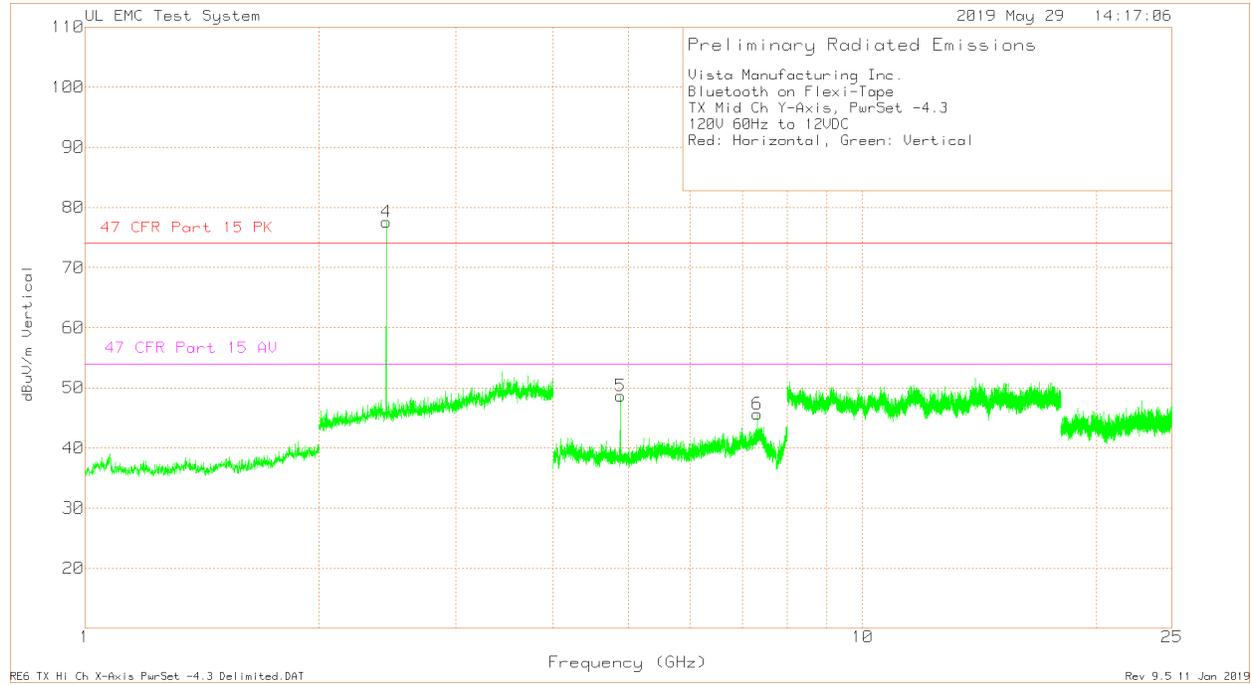
Vista Manufacturing Inc.													
Bluetooth on Flexi-Tape													
TX Low Ch Y-Axis, PwrSet -4.3													
120V 60Hz to 12VDC													
Red: Horizontal, Green: Vertical													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.402	57.95	Pk	21.8	4.75	84.5	-	-	-	-	0-360	150	H
2	4.804	78.14	Pk	27.7	-51.09	54.75	74	-19.25	54	0.75	0-360	150	H
3	7.207	64.97	Pk	29.8	-45.46	49.31	74	-24.69	54	-4.69	0-360	150	H
4	2.402	56.3	Pk	21.8	4.75	82.85	-	-	-	-	0-360	150	V
5	4.805	70.77	Pk	27.7	-50.82	47.65	74	-26.35	54	-6.35	0-360	150	V
6	7.207	61.49	Pk	29.8	-45.46	45.83	74	-28.17	54	-8.17	0-360	150	V
Radiated Emission Data													
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
4.8039	75.52	Av	27.7	-51.07	52.15	74	-21.85	54	-1.85	139	101	H	
Pk - Peak detector													
Av - PWR RMS Average													

### MIDDLE CHANNEL RESULTS X-Axis



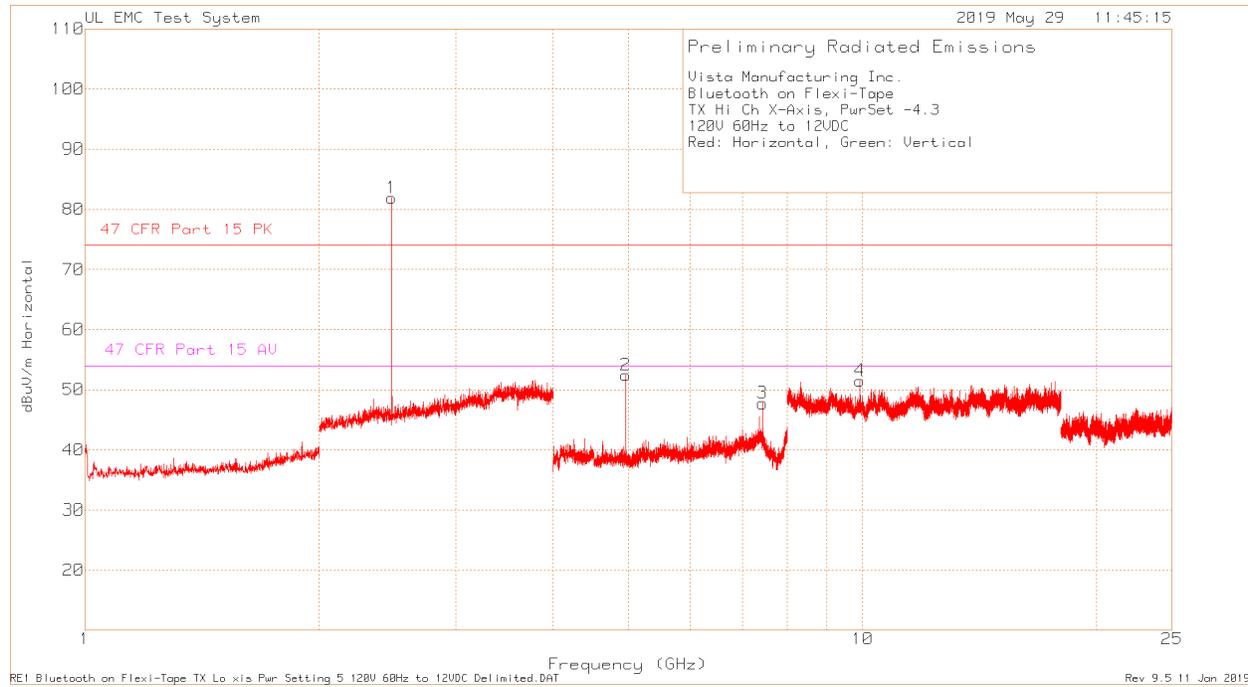
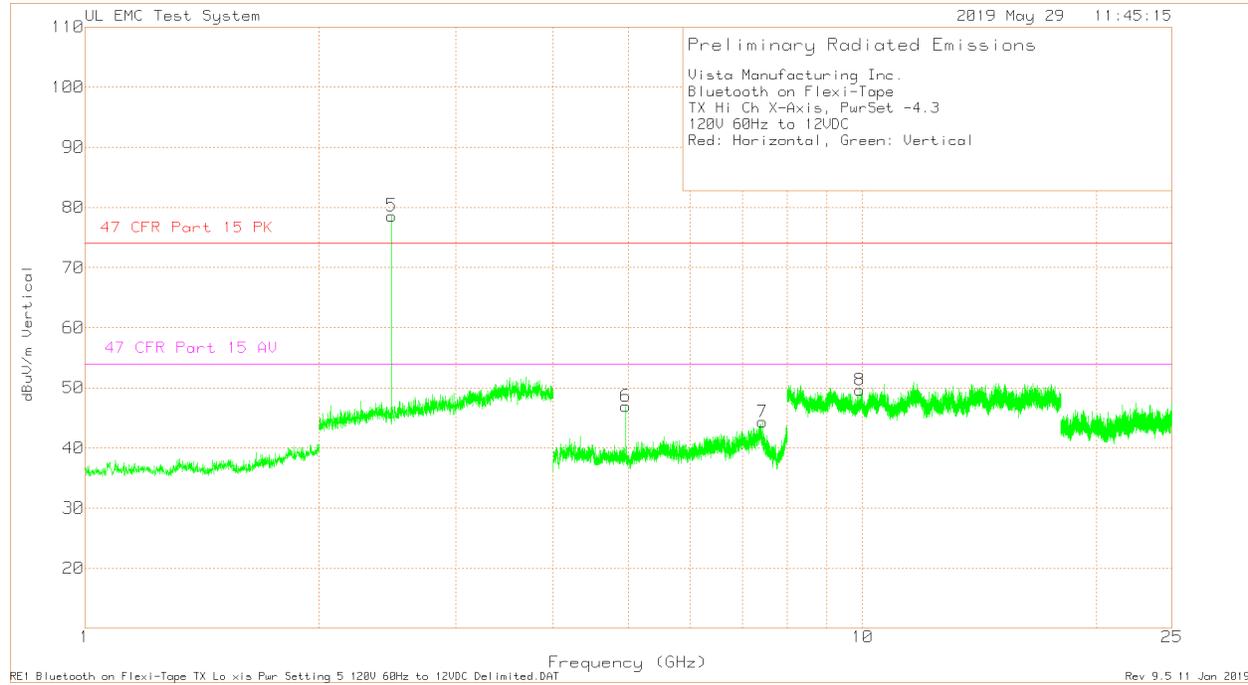
Vista Manufacturing Inc.													
Bluetooth on Flex i-Tape													
TX MidCh X-Axis, PwrSet -4.3													
120V 60Hz to 12VDC													
Red: Horizontal, Green: Vertical													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.44	54.16	Pk	21.9	4.61	80.67	-	-	-	-	0-360	150	H
2	4.879	75.65	Pk	27.7	-50.17	53.18	74	-20.82	54	-0.82	0-360	150	H
3	7.32	63.29	Pk	30.6	-45.06	48.83	74	-25.17	54	-5.17	0-360	150	H
4	2.44	55.13	Pk	21.9	4.61	81.64	-	-	-	-	0-360	150	V
5	4.88	68.47	Pk	27.7	-50.22	45.95	74	-28.05	54	-8.05	0-360	150	V
6	7.32	59.81	Pk	30.6	-45.06	45.35	74	-28.65	54	-8.65	0-360	150	V
Radiated Emission Data													
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
4.8799	73.24	Av	27.7	-50.21	50.73	74	-23.27	54	-3.27	104	113	H	
Pk - Peak detector													
Av - PWR RMS Average													

### MIDDLE CHANNEL RESULTS Y-Axis



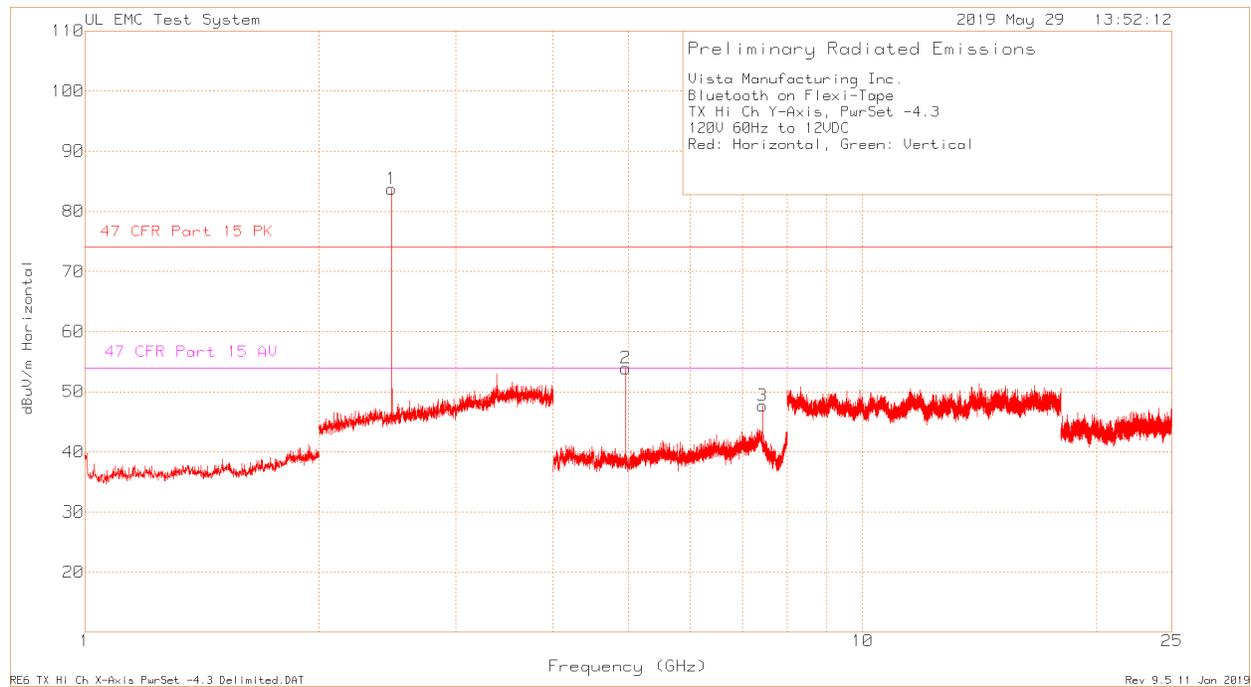
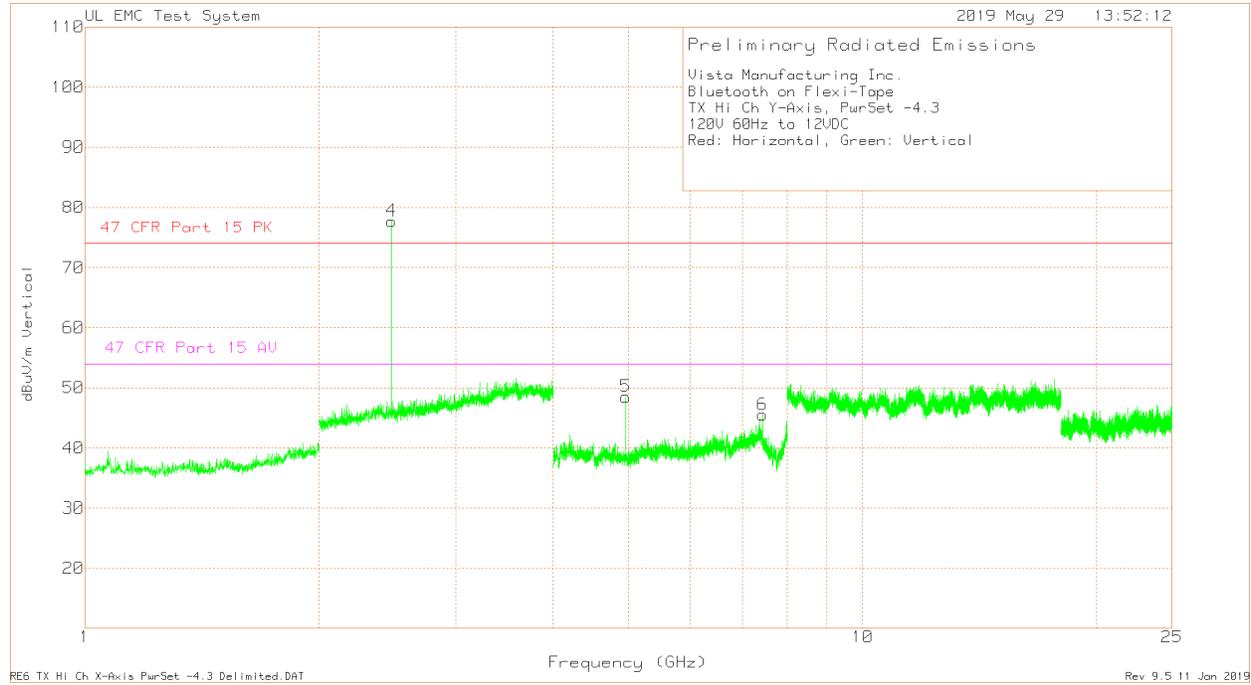
Vista Manufacturing Inc.													
Bluetooth on Flex-i-Tape													
TX Mid Ch Y-Axis, PwrSet -4.3													
120V 60Hz to 12VDC													
Red: Horizontal, Green: Vertical													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.44	56.6	Pk	21.9	4.61	83.11	-	-	-	-	0-360	150	H
2	4.88	76.94	Pk	27.7	-50.22	54.42	74	-19.58	54	0.42	0-360	150	H
3	7.322	63.53	Pk	30.6	-45.03	49.1	74	-24.9	54	-4.9	0-360	150	H
4	2.44	51.07	Pk	21.9	4.61	77.58	-	-	-	-	0-360	150	V
5	4.88	71.16	Pk	27.7	-50.22	48.64	74	-25.36	54	-5.36	0-360	150	V
6	7.32	60.09	Pk	30.6	-45.06	45.63	74	-28.37	54	-8.37	0-360	150	V
Radiated Emission Data													
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
4.8798	75.33	Av	27.7	-50.21	52.82	74	-21.18	54	-1.18	138	118	H	
Pk - Peak detector													
Av - PWR RMS Average													

### HIGH CHANNEL RESULTS X-Axis



Vista Manufacturing Inc.													
Bluetooth on Flex i-Tape													
TX Hi Ch X-Axis, PwrSet -4.3													
120V 60Hz to 12VDC													
Red: Horizontal, Green: Vertical													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 7 CFR Part 15.209 PK	Margin (dB)	Limit 7 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.48	55.36	Pk	22	4.52	81.88	-	-	-	-	0-360	150	H
2	4.959	73.99	Pk	27.8	-49.39	52.4	74	-21.6	54	-1.6	0-360	150	H
3	7.442	63.72	Pk	30.5	-46.47	47.75	74	-26.25	54	-6.25	0-360	150	H
4	9.92	63.3	Pk	36.4	-48.21	51.49	74	-22.51	54	-2.51	0-360	150	H
5	2.48	52.07	Pk	22	4.52	78.59	-	-	-	-	0-360	150	V
6	4.96	68.7	Pk	27.8	-49.57	46.93	74	-27.07	54	-7.07	0-360	150	V
7	7.441	60.43	Pk	30.5	-46.59	44.34	74	-29.66	54	-9.66	0-360	150	V
8	9.92	61.46	Pk	36.4	-48.21	49.65	74	-24.35	54	-4.35	0-360	150	V
Radiated Emission Data													
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 7 CFR Part 15.209 PK	Margin (dB)	Limit 7 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
4.9598	71.79	Av	27.8	-49.54	50.05	74	-23.95	54	-3.95	105	100	H	
Pk - Peak detector													
Av - PWR RMS Average													

### HIGH CHANNEL RESULTS Y-Axis



Vista Manufacturing Inc.													
Bluetooth on Flex-i-Tape													
TX Hi Ch Y-Axis, PwrSet -4.3													
120V 60Hz to 12VDC													
Red: Horizontal, Green: Vertical													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	2.48	57.18	Pk	22	4.52	83.7	-	-	-	-	0-360	150	H
2	4.961	75.44	Pk	27.8	-49.34	53.9	74	-20.1	54	-0.1	0-360	150	H
3	7.441	63.75	Pk	30.5	-46.59	47.66	74	-26.34	54	-6.34	0-360	150	H
4	2.48	51.21	Pk	22	4.52	77.73	-	-	-	-	0-360	150	V
5	4.961	70.04	Pk	27.8	-49.34	48.5	74	-25.5	54	-5.5	0-360	150	V
6	7.44	61.49	Pk	30.6	-46.58	45.51	74	-28.49	54	-8.49	0-360	150	V
Radiated Emission Data													
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 PK	Margin (dB)	Limit 47 CFR Part 15.209 AV	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
4.9597	74.05	Av	27.8	-49.52	52.33	74	-21.67	54	-1.67	141	114	H	
Pk - Peak detector													
Av - PWR RMS Average													

## 10. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

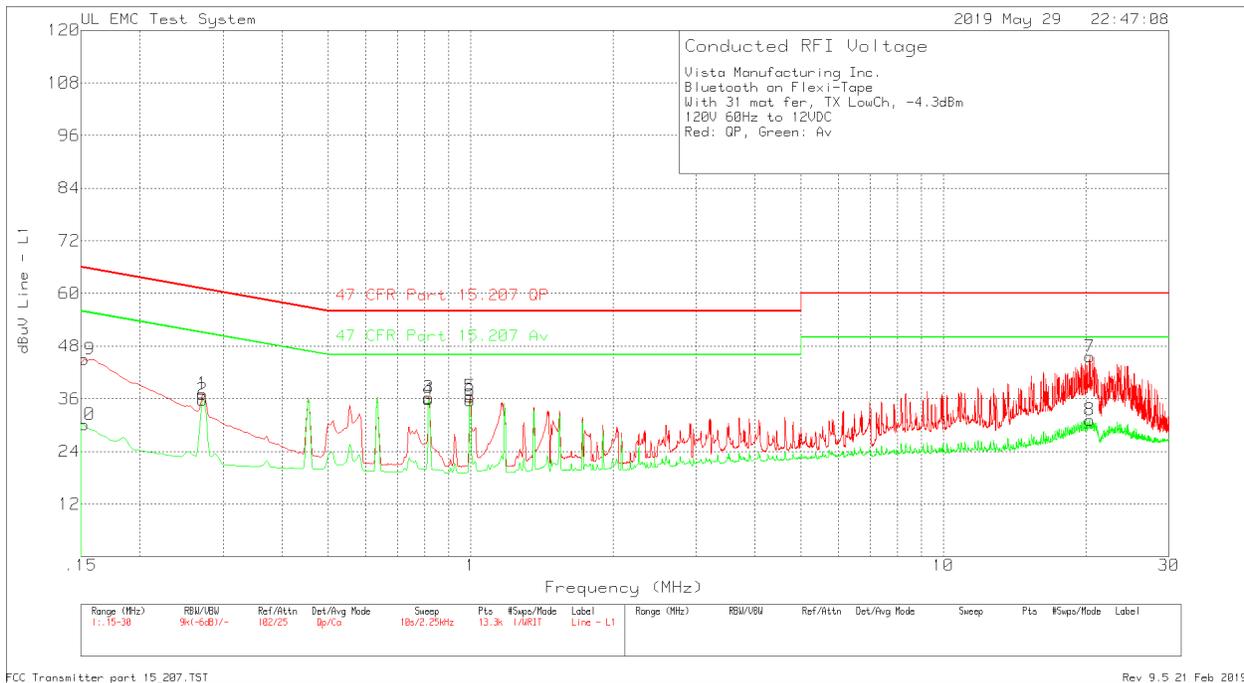
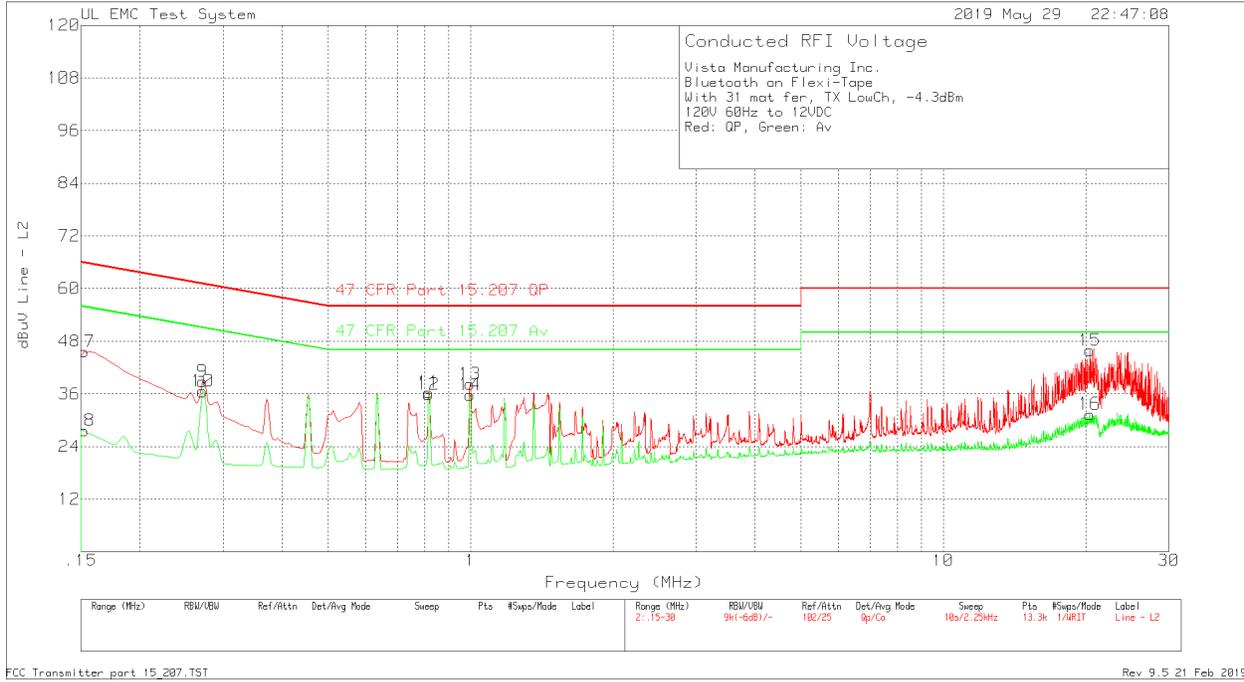
Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

### RESULTS

### 10.1.1. AC Power Line Host

#### RESULTS LOW CHANNEL



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 With 31 mat fer, TX LowCh, -4.3dBm  
 120V 60Hz to 12VDC  
 Red: QP, Green: Av

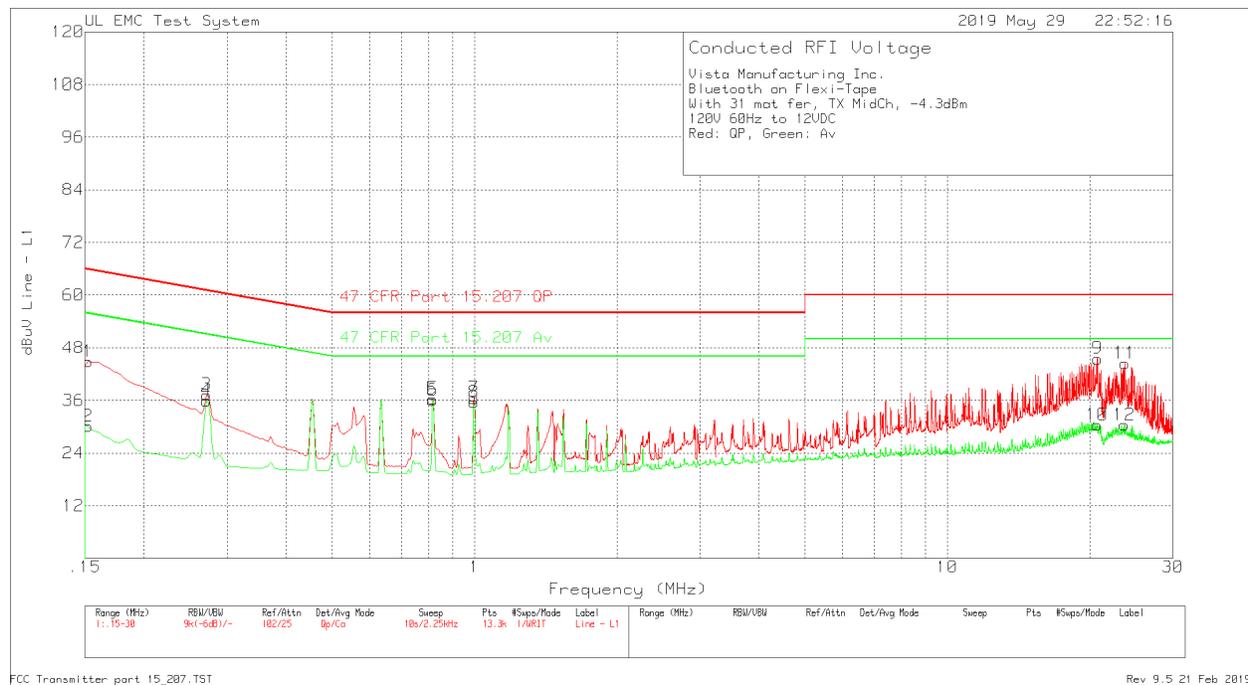
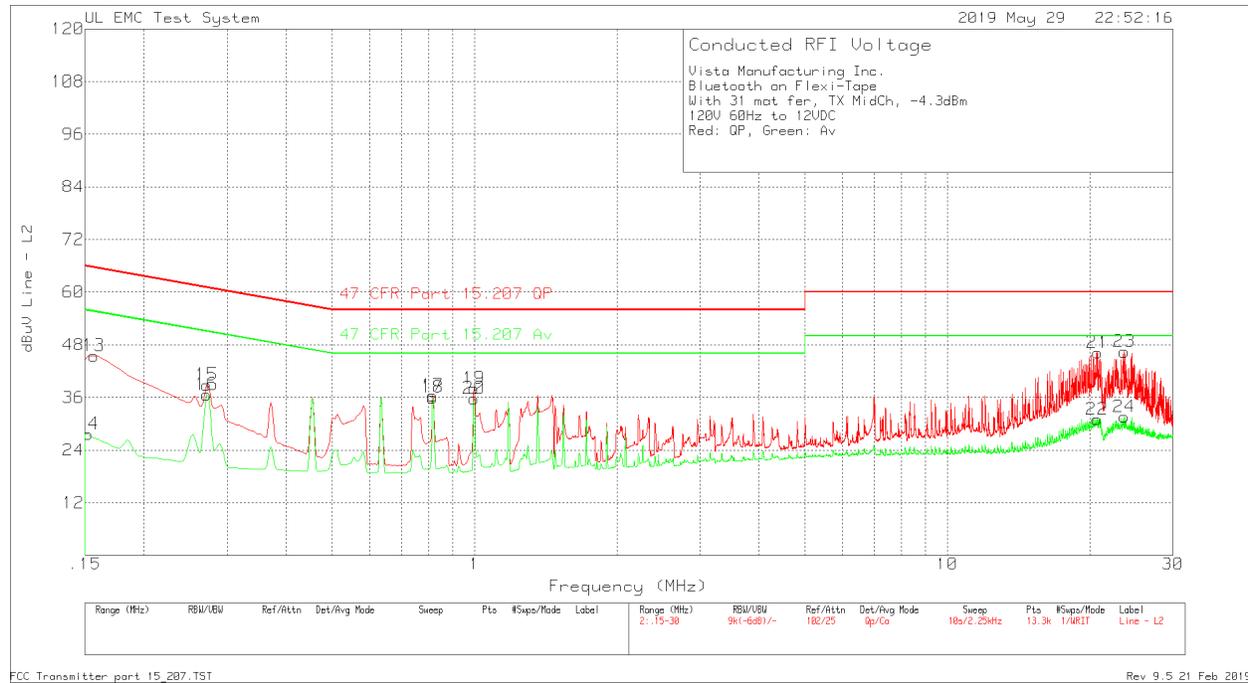
Trace Markers

Test No.	Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 dBuV	2
=====							
Line							
1	.2715	26.1dBuV Qp	0	11	37.1	61.07	51.07
					Margin (dB)	-23.97	-13.97
2	.2715	24.81dBuV Ca	0	11	35.81	61.07	51.07
					Margin (dB)	-25.26	-15.26
3	.816	25.76dBuV Qp	0	10.5	36.26	56	46
					Margin (dB)	-19.74	-9.74
4	.816	25.36dBuV Ca	0	10.5	35.86	56	46
					Margin (dB)	-20.14	-10.14
5	.99825	26.04dBuV Qp	0	10.5	36.54	56	46
					Margin (dB)	-19.46	-9.46
6	.99825	25.03dBuV Ca	0	10.5	35.53	56	46
					Margin (dB)	-20.47	-10.47
7	20.38875	33.31dBuV Qp	.1	12.2	45.61	60	50
					Margin (dB)	-14.39	-4.39
8	20.3865	18.9dBuV Ca	.1	12.2	31.2	60	50
					Margin (dB)	-28.8	-18.8
19	.15225	30.19dBuV Qp	.1	14.7	44.99	65.88	55.88
					Margin (dB)	-20.89	-10.89
20	.15225	15.33dBuV Ca	.1	14.7	30.13	65.88	55.88
					Margin (dB)	-35.75	-25.75
Neutral							
9	.2715	27.77dBuV Qp	0	11	38.77	61.07	51.07
					Margin (dB)	-22.3	-12.3
10	.2715	25.55dBuV Ca	0	11	36.55	61.07	51.07
					Margin (dB)	-24.52	-14.52
11	.816	25.83dBuV Qp	0	10.5	36.33	56	46
					Margin (dB)	-19.67	-9.67
12	.816	25.33dBuV Ca	0	10.5	35.83	56	46
					Margin (dB)	-20.17	-10.17
13	.99825	27.68dBuV Qp	0	10.5	38.18	56	46
					Margin (dB)	-17.82	-7.82
14	.99825	25.27dBuV Ca	0	10.5	35.77	56	46
					Margin (dB)	-20.23	-10.23
15	20.3955	33.77dBuV Qp	0	12.1	45.87	60	50
					Margin (dB)	-14.13	-4.13
16	20.39325	19.26dBuV Ca	0	12.1	31.36	60	50
					Margin (dB)	-28.64	-18.64
17	.15225	30.79dBuV Qp	.1	14.7	45.59	65.88	55.88
					Margin (dB)	-20.29	-10.29
18	.15225	12.84dBuV Ca	.1	14.7	27.64	65.88	55.88
					Margin (dB)	-38.24	-28.24

LIMIT 1: 47 CFR Part 15.207 QP  
 LIMIT 2: 47 CFR Part 15.207 Av

Qp - Quasi-Peak detector  
 Ca - CISPR Average detection

**RESULTS MIDDLE CHANNEL**



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 With 31 mat fer, TX MidCh, -4.3dBm  
 120V 60Hz to 12VDC  
 Red: QP, Green: Av

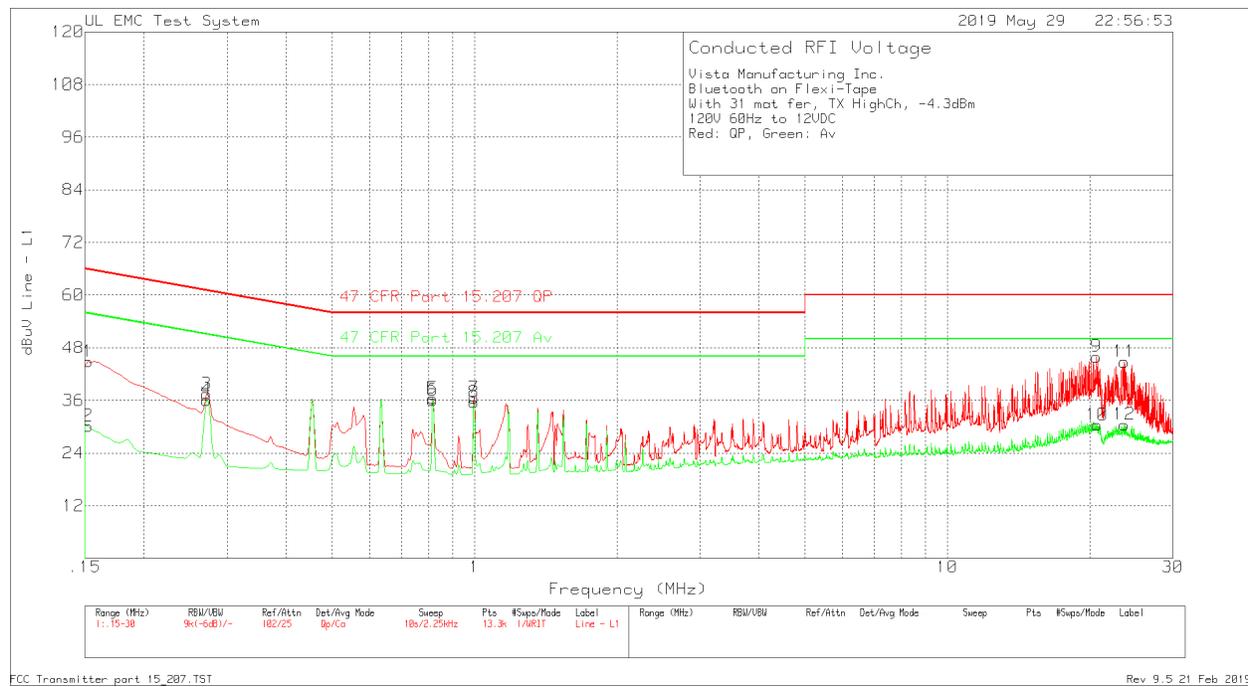
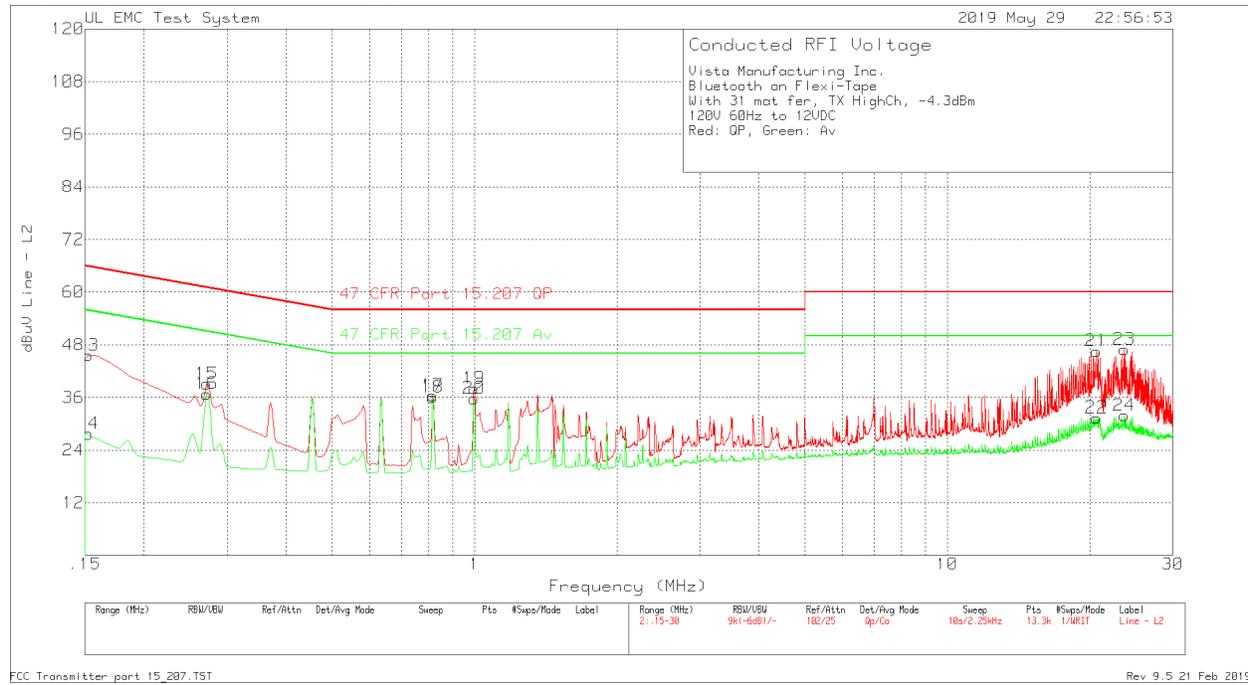
Trace Markers

Test No.	Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 dBuV	2
=====							
Line							
1	.15225	30.1dBuV Qp	.1	14.7	44.9	65.88	55.88
					Margin (dB)	-20.98	-10.98
2	.15225	15.35dBuV Ca	.1	14.7	30.15	65.88	55.88
					Margin (dB)	-35.73	-25.73
3	.2715	26.27dBuV Qp	0	11	37.27	61.07	51.07
					Margin (dB)	-23.8	-13.8
4	.2715	24.95dBuV Ca	0	11	35.95	61.07	51.07
					Margin (dB)	-25.12	-15.12
5	.816	25.85dBuV Qp	0	10.5	36.35	56	46
					Margin (dB)	-19.65	-9.65
6	.816	25.49dBuV Ca	0	10.5	35.99	56	46
					Margin (dB)	-20.01	-10.01
7	.99825	26.05dBuV Qp	0	10.5	36.55	56	46
					Margin (dB)	-19.45	-9.45
8	.99825	25.06dBuV Ca	0	10.5	35.56	56	46
					Margin (dB)	-20.44	-10.44
9	20.8095	33.23dBuV Qp	.1	12.2	45.53	60	50
					Margin (dB)	-14.47	-4.47
10	20.7285	18.08dBuV Ca	.1	12.2	30.38	60	50
					Margin (dB)	-29.62	-19.62
11	23.739	31.76dBuV Qp	.1	12.6	44.46	60	50
					Margin (dB)	-15.54	-5.54
12	23.685	17.71dBuV Ca	.1	12.6	30.41	60	50
					Margin (dB)	-29.59	-19.59
Neutral							
13	.15675	31.11dBuV Qp	.1	14.3	45.51	65.63	55.63
					Margin (dB)	-20.12	-10.12
14	.15225	12.86dBuV Ca	.1	14.7	27.66	65.88	55.88
					Margin (dB)	-38.22	-28.22
15	.2715	27.86dBuV Qp	0	11	38.86	61.07	51.07
					Margin (dB)	-22.21	-12.21
16	.2715	25.67dBuV Ca	0	11	36.67	61.07	51.07
					Margin (dB)	-24.4	-14.4
17	.816	25.9dBuV Qp	0	10.5	36.4	56	46
					Margin (dB)	-19.6	-9.6
18	.816	25.45dBuV Ca	0	10.5	35.95	56	46
					Margin (dB)	-20.05	-10.05
19	.99825	27.57dBuV Qp	0	10.5	38.07	56	46
					Margin (dB)	-17.93	-7.93
20	.99825	25.27dBuV Ca	0	10.5	35.77	56	46
					Margin (dB)	-20.23	-10.23
21	20.8005	34.03dBuV Qp	0	12.2	46.23	60	50
					Margin (dB)	-13.77	-3.77
22	20.7195	18.81dBuV Ca	0	12.2	31.01	60	50
					Margin (dB)	-28.99	-18.99
23	23.68275	33.93dBuV Qp	0	12.5	46.43	60	50
					Margin (dB)	-13.57	-3.57
24	23.676	19.06dBuV Ca	0	12.5	31.56	60	50
					Margin (dB)	-28.44	-18.44

LIMIT 1: 47 CFR Part 15.207 QP  
 LIMIT 2: 47 CFR Part 15.207 Av

Qp - Quasi-Peak detector  
 Ca - CISPR Average detection

**RESULTS HIGH CHANNEL**



Vista Manufacturing Inc.  
 Bluetooth on Flexi-Tape  
 With 31 mat fer, TX HighCh, -4.3dBm  
 120V 60Hz to 12VDC  
 Red: QP, Green: Av

Trace Markers

Test No.	Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 dBuV	2
=====							
Line							
1	.15225	30.07dBuV	Qp	.1	14.7	44.87	65.88 55.88
						Margin (dB)	-21.01 -11.01
2	.15225	15.38dBuV	Ca	.1	14.7	30.18	65.88 55.88
						Margin (dB)	-35.7 -25.7
3	.2715	26.43dBuV	Qp	0	11	37.43	61.07 51.07
						Margin (dB)	-23.64 -13.64
4	.2715	25.11dBuV	Ca	0	11	36.11	61.07 51.07
						Margin (dB)	-24.96 -14.96
5	.816	25.94dBuV	Qp	0	10.5	36.44	56 46
						Margin (dB)	-19.56 -9.56
6	.816	25.55dBuV	Ca	0	10.5	36.05	56 46
						Margin (dB)	-19.95 -9.95
7	.99825	26.09dBuV	Qp	0	10.5	36.59	56 46
						Margin (dB)	-19.41 -9.41
8	.99825	25.07dBuV	Ca	0	10.5	35.57	56 46
						Margin (dB)	-20.43 -10.43
9	20.69475	33.67dBuV	Qp	.1	12.2	45.97	60 50
						Margin (dB)	-14.03 -4.03
10	20.71275	18.13dBuV	Ca	.1	12.2	30.43	60 50
						Margin (dB)	-29.57 -19.57
11	23.6715	32.1dBuV	Qp	.1	12.6	44.8	60 50
						Margin (dB)	-15.2 -5.2
12	23.6715	17.79dBuV	Ca	.1	12.6	30.49	60 50
						Margin (dB)	-29.51 -19.51
Neutral							
13	.15225	30.78dBuV	Qp	.1	14.7	45.58	65.88 55.88
						Margin (dB)	-20.3 -10.3
14	.15225	12.89dBuV	Ca	.1	14.7	27.69	65.88 55.88
						Margin (dB)	-38.19 -28.19
15	.2715	28.09dBuV	Qp	0	11	39.09	61.07 51.07
						Margin (dB)	-21.98 -11.98
16	.2715	25.83dBuV	Ca	0	11	36.83	61.07 51.07
						Margin (dB)	-24.24 -14.24
17	.816	25.97dBuV	Qp	0	10.5	36.47	56 46
						Margin (dB)	-19.53 -9.53
18	.816	25.51dBuV	Ca	0	10.5	36.01	56 46
						Margin (dB)	-19.99 -9.99
19	.99825	27.58dBuV	Qp	0	10.5	38.08	56 46
						Margin (dB)	-17.92 -7.92
20	.99825	25.28dBuV	Ca	0	10.5	35.78	56 46
						Margin (dB)	-20.22 -10.22
21	20.68125	34.36dBuV	Qp	0	12.2	46.56	60 50
						Margin (dB)	-13.44 -3.44
22	20.6925	19.15dBuV	Ca	0	12.2	31.35	60 50
						Margin (dB)	-28.65 -18.65
23	23.65575	34.41dBuV	Qp	0	12.5	46.91	60 50
						Margin (dB)	-13.09 -3.09
24	23.6535	19.38dBuV	Ca	0	12.5	31.88	60 50
						Margin (dB)	-28.12 -18.12

LIMIT 1: 47 CFR Part 15.207 QP  
 LIMIT 2: 47 CFR Part 15.207 Av

Qp - Quasi-Peak detector  
 Ca - CISPR Average detection