CERTIFICATION TEST REPORT

Report Number. : 12540676A

Applicant	:	RF CONTROLS LLC Suite 200 1400 S 3rd St SAINT LOUIS, MO, 63104 US
Model	:	CS-445B
FCC ID	:	WFQCS-445B
IC	:	10717A-CS445B
EUT Description	:	RF ID Reader
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C ISED RSS-247 ISSUE 2 ISED RSS-GEN ISSUE 5

Date Of Issue:
2019-03-11

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
V1	--	Initial Issue	

UL LLC
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UL LLC
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: **RF Controls LLC**

EUT DESCRIPTION: RF ID Reader

MODEL: CS-445B

SERIAL NUMBER: non-serialized

DATE TESTED: 2018-10-17 to 2019-03-06

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 LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL LLC By: Jeff Moser

Project Engineer/Operations Leader
Consumer Technology Division

Prepared By: Bart Mucha

Test 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 v05, 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
☒ Chamber 10m (ISED:2180A-1)

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 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, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.43 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	3.31 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Power Measurement via SA	1.47 dB
Number of Hopping Frequencies	0
Carrier Frequency Separation	10.051Hz

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 RF ID reader built into antenna assembly.

The radio and antenna is manufactured by RF Controls.

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)
902 - 928	Circular Polarization	27.47	558.47
902 - 928	Linear Polarization	24.68	293.76

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio is mounted together with an antenna. The maximum measured antenna gain is 9.49dBi in linear polarization.

5.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was v005.18.339

The test utility software used during testing was VB RF-Test Laptop 1.0.0.173

5.5. WORST-CASE CONFIGURATION AND MODE

Device can be mounted either on the wall or ceiling and the major lobe is always from front of the antenna. Single orientation was tested (wall mount). Testing ceiling mount was considered not necessary since the side radiation spurious emissions were checked by rotating the antenna about horizontal axis. The antenna can be electronically set to either transmit in circular polarization, horizontal polarization and vertical polarization. Antenna is designed to read tags at large distances. Testing with tags present was not possible due to necessary distance to tag therefore all testing was conducted without tags present.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop Computer	HP	-	-	-
PoE Adapter	StarTech	POEINJ100	-	-

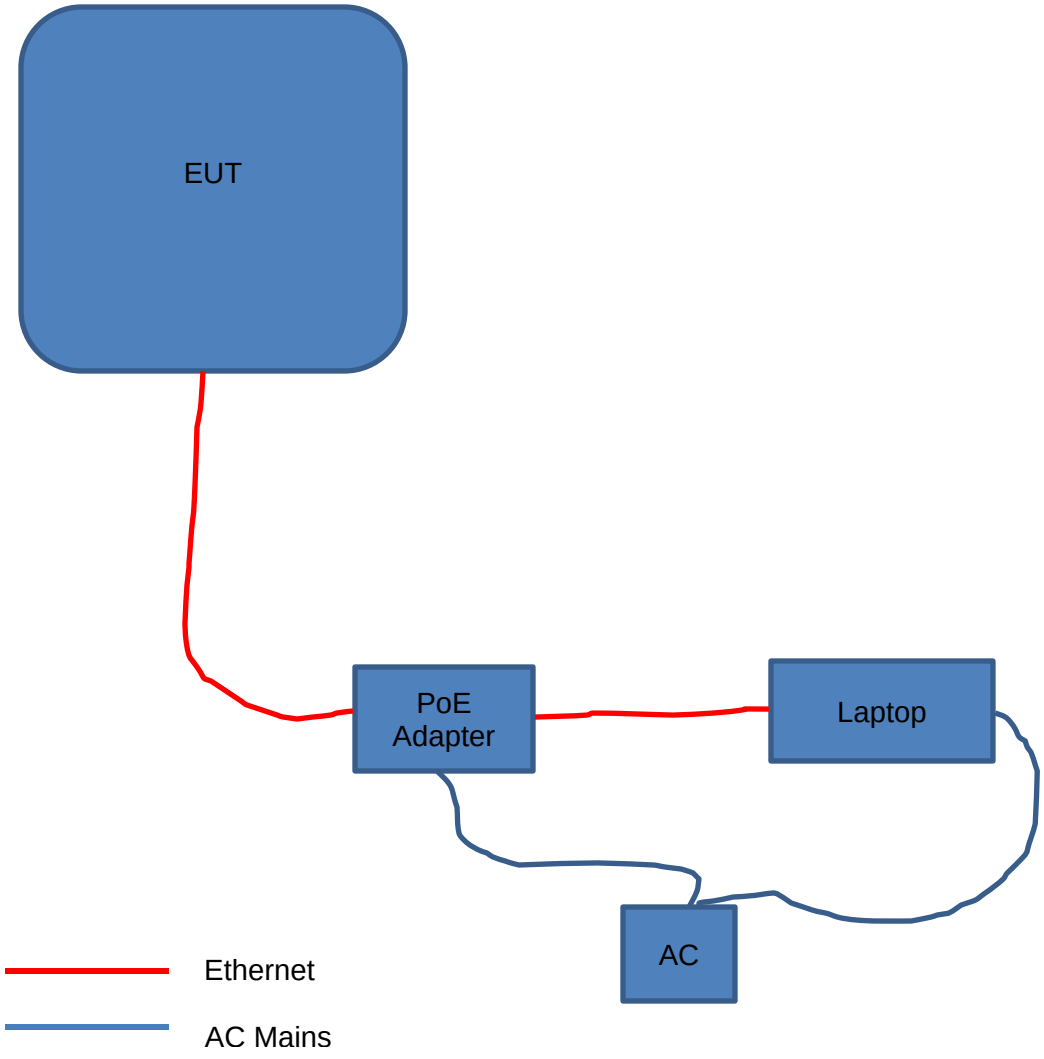
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Ethernet +PoE	1	RJ-45	Cat 5	50m	-

TEST SETUP

The device is stand alone combination of radio and antenna. Device is powered via 48VDC PoE and controller via Ethernet. PoE adapter is not sold with the device.

SETUP DIAGRAMS



6. TEST AND MEASUREMENT EQUIPMENT

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

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	2018-03-28	2019-03-31
Log-P Antenna	Chase	UPA6109	EMC4313	2018-04-09	2019-04-30
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
Signal Analyzer	Aglient	N9030A PXA	EMC4360	2018-12-11	2019-12-31

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7. MEASUREMENT METHODS

Occupied BW (20dB): ANSI C63.10-2013 Section 6.9.2

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

Carrier Frequency Separation: ANSI C63.10-2013 Section 7.8.2

Number of Hopping Frequencies: ANSI C63.10-2013 Section 7.8.3

Time of Occupancy (Dwell Time): ANSI C63.10-2013 Section 7.8.4

Peak Output Power: ANSI C63.10-2013 Section 7.8.5

Conducted Spurious Emissions: ANSI C63.10-2013 Section 7.8.8

Conducted Band-Edge: ANSI C63.10-2013 Section 6.10.4

Radiated Spurious Emissions 30-1000MHz: ANSI C63.10-2013 Section 6.3 and 6.5

Radiated Spurious Emissions above 1GHz: ANSI C63.10-2013 Section 6.3 and 6.6

Radiated Band-edge: ANSI C63.10-2013 Section 6.10.5

AC Power-line conducted emissions: ANSI C63.10-2013, Section 6.2.

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8. ANTENNA PORT TEST RESULTS

8.1. 20 dB AND 99% BANDWIDTH

LIMITS

FCC 15.247 (a)(1)(i)
RSS-247, section 5.1 (c)

The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

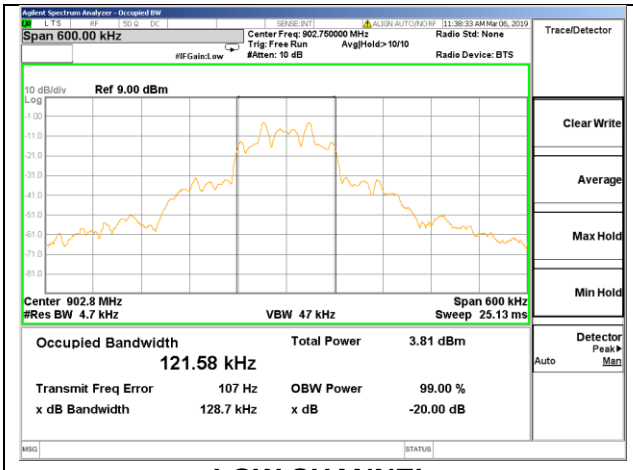
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1-5% of the 20 dB bandwidth and 99% Occupied Bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

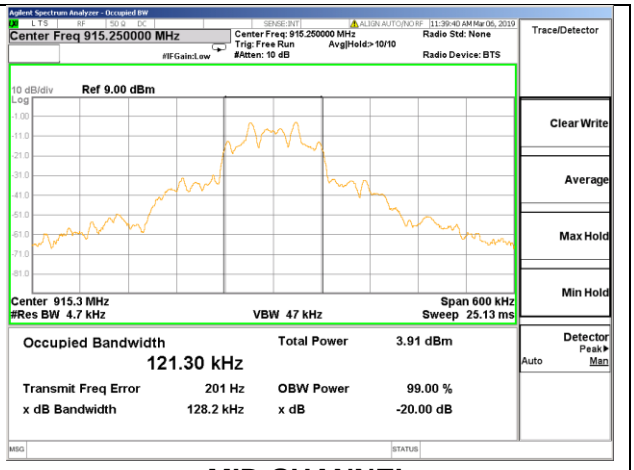
RESULTS

8.1.1. NORMAL MODULATION

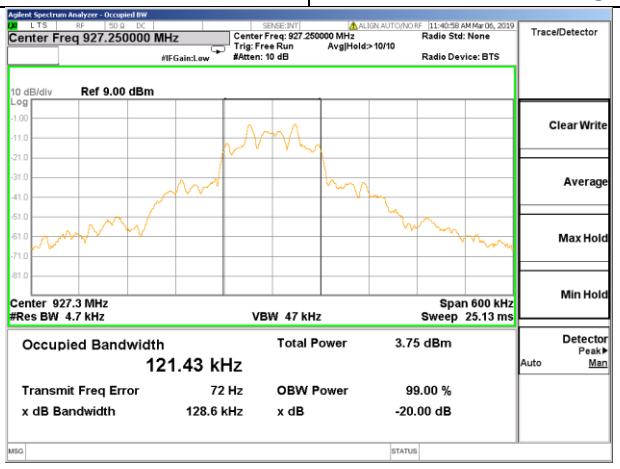
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	902.75	0.1287	0.12158
Mid	915.25	0.1282	0.1213
High	927.25	0.1286	0.12143



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

8.2. HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)

RSS-247 (5.1) (b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel. The VBW is set to ≥ RBW. The sweep time is coupled. Alternatively RBW and VBW can be adjusted to clearly show frequency separation.

RESULTS

8.2.1. NORMAL MODULATION

HOPPING FREQUENCY SEPARATION PLOT

Ch#	Freq MHz	Ch#	Freq MHz	Ch#	Freq MHz	Ch#	Freq MHz	Ch#	Freq MHz
1	902.7628	11	907.7778	21	912.7628	31	917.7778	41	922.7627
2	903.2733	12	908.2583	22	913.2733	32	918.2582	42	923.2733
3	903.7688	13	908.7688	23	913.7537	33	918.7688	43	923.7537
4	904.2643	14	909.2492	24	914.2643	34	919.2492	44	924.2642
5	904.7748	15	909.7598	25	914.7748	35	919.7597	45	924.7748
6	905.2553	16	910.2703	26	915.2552	36	920.2703	46	925.2552
7	905.7658	17	910.7658	27	915.7658	37	920.7658	47	925.7657
8	906.2763	18	911.2613	28	916.2763	38	921.2612	48	926.2763
9	906.7568	19	911.7718	29	916.7567	39	921.7718	49	926.7567
10	907.2673	20	912.2673	30	917.2673	40	922.2673	50	927.2672
Overall Min. Freq Separation MHz: 0.4804									

8.3. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (i)

RSS-247 (5.1) (c)

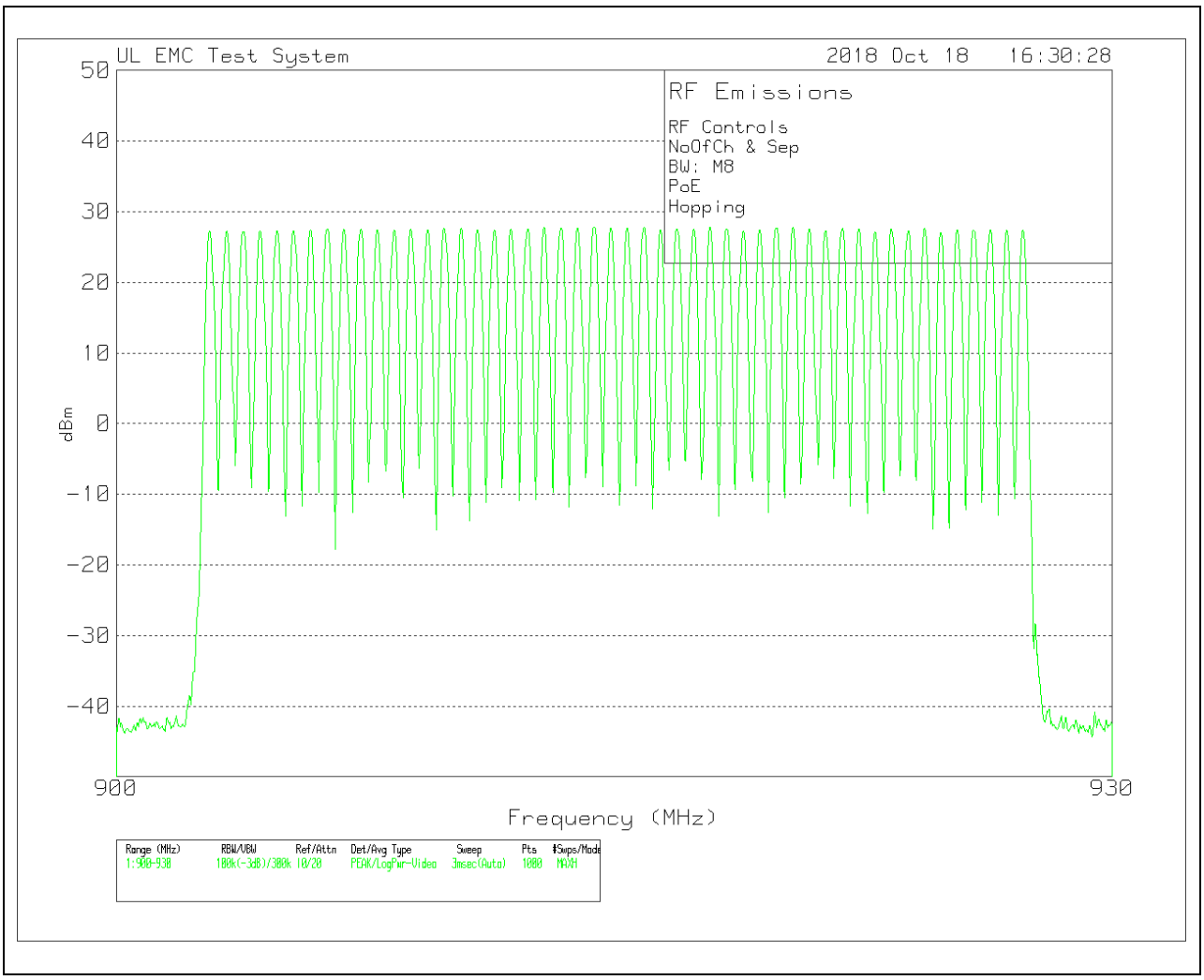
For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to less than 30% of the channel spacing or 20 dB BW, whichever is smaller to clearly identify the individual channels. The analyzer is set to Max Hold.

RESULTS

Normal Mode: 50 Channels Observed



Ch#	Freq MHz	Ch#	Freq MHz	Ch#	Freq MHz	Ch#	Freq MHz	Ch#	Freq MHz
1	902.7628	11	907.7778	21	912.7628	31	917.7778	41	922.7627
2	903.2733	12	908.2583	22	913.2733	32	918.2582	42	923.2733
3	903.7688	13	908.7688	23	913.7537	33	918.7688	43	923.7537
4	904.2643	14	909.2492	24	914.2643	34	919.2492	44	924.2642
5	904.7748	15	909.7598	25	914.7748	35	919.7597	45	924.7748
6	905.2553	16	910.2703	26	915.2552	36	920.2703	46	925.2552
7	905.7658	17	910.7658	27	915.7658	37	920.7658	47	925.7657
8	906.2763	18	911.2613	28	916.2763	38	921.2612	48	926.2763
9	906.7568	19	911.7718	29	916.7567	39	921.7718	49	926.7567
10	907.2673	20	912.2673	30	917.2673	40	922.2673	50	927.2672

8.4. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (i)

RSS-247 (5.1) (c)

For FHSs in the band 902-928 MHz: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 20-second period. If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 10-second period.

TEST PROCEDURE

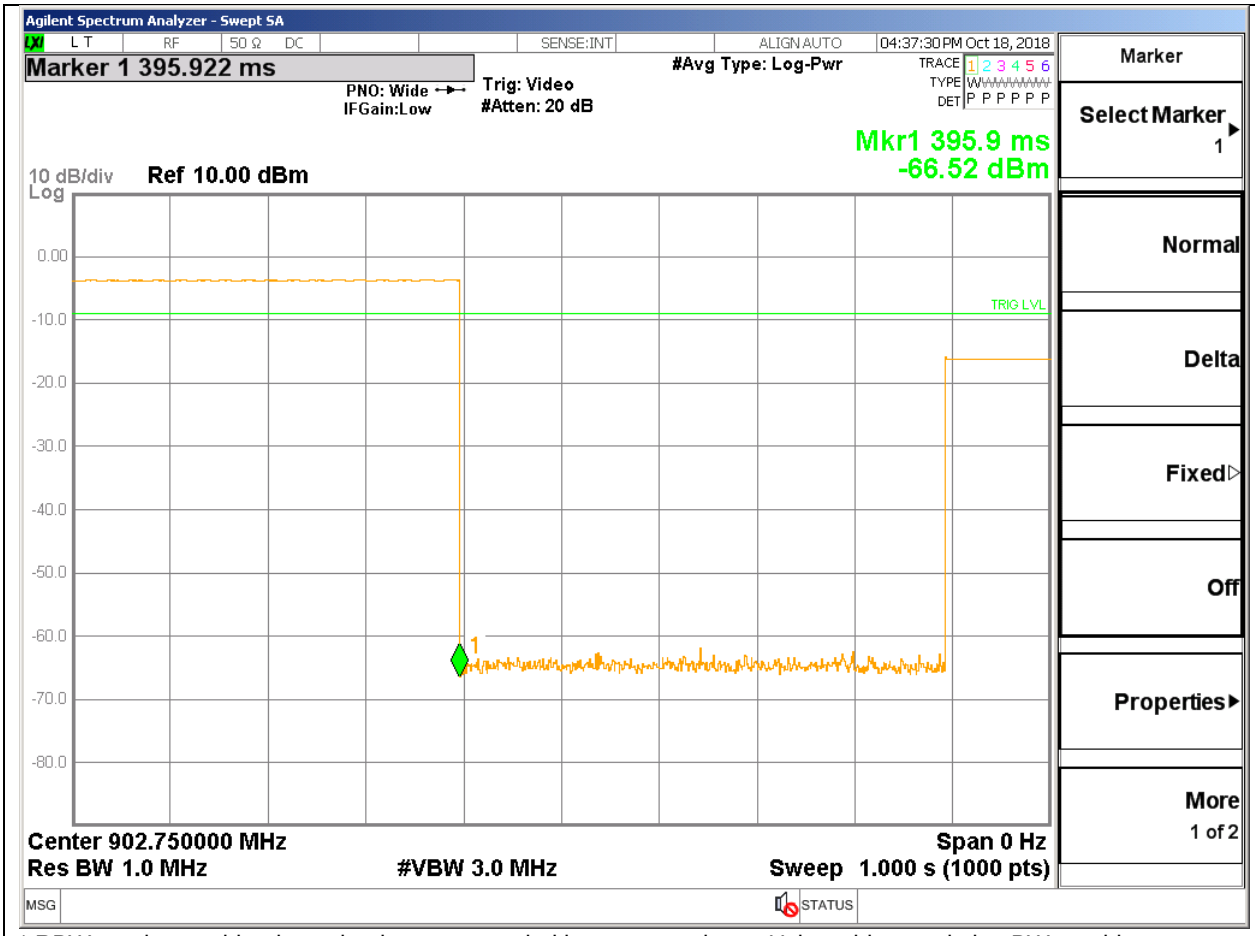
The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan.

Depending on the bandwidth, a 20s or 10s sweep is conducted and number of times the same channel is repeated is counted.

RESULTS

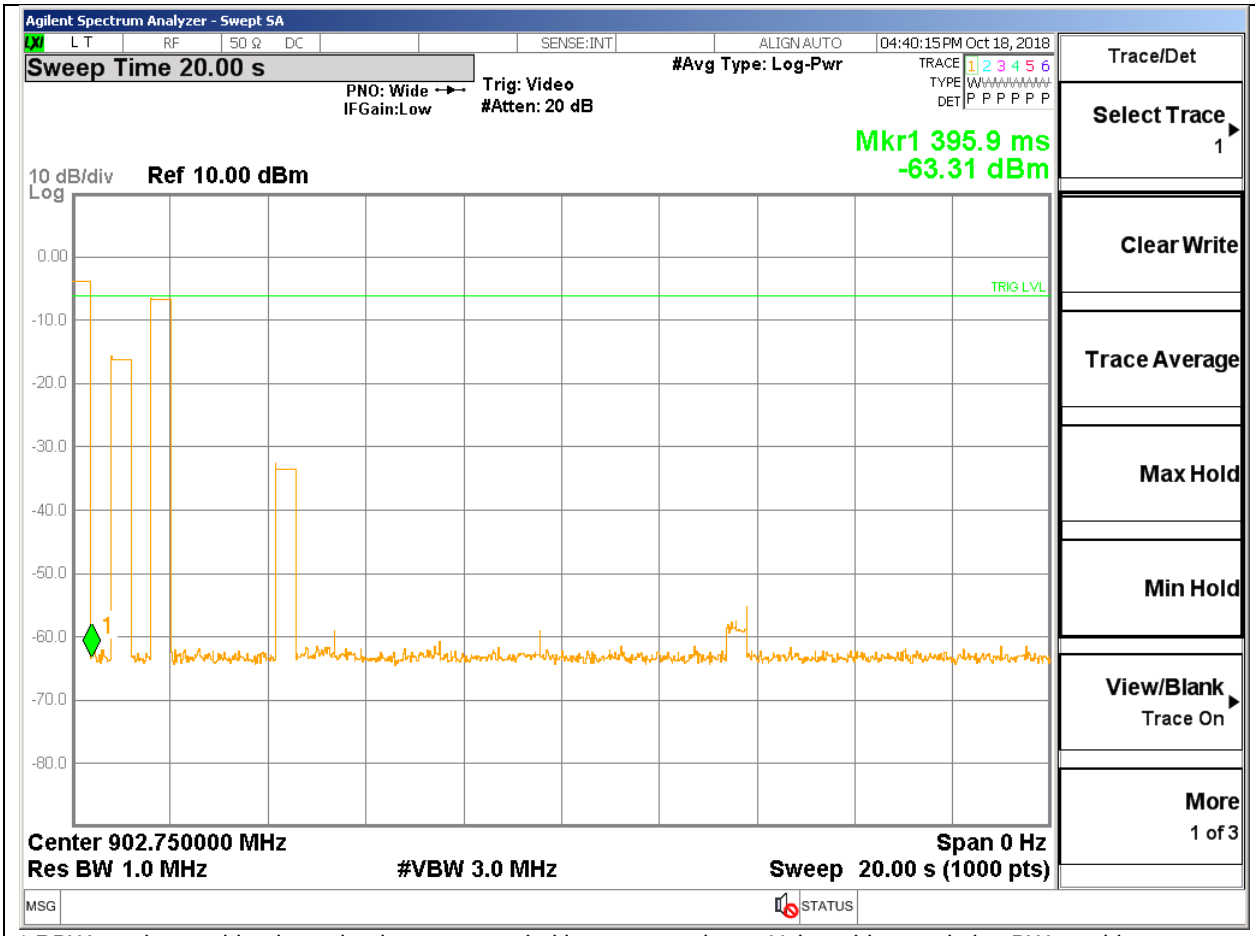
8.4.1. NORMAL MODULATION

Modulated	Pulse Width (sec)	Number of Pulses in 20 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
Normal Mode					
TX	0.3959	1	0.39590	0.4	-0.0041



* RBW used was wider then what is recommended in test procedures. Using wider resolution BW provides more accurate measurements.

PULSE WIDTH



* RBW used was wider then what is recommended in test procedures. Using wider resolution BW provides more accurate measurements.

NUMBER OF PULSES IN 20 SECONDS OBSERVATION PERIOD: 1

8.5. PEAK OUTPUT POWER

LIMITS

§15.247 (b) (2) & (4)

RSS-247 (5.4) (a)

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels.

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

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter or spectrum analyzer per ANSI C63.10 Section 7.8.5.

RESULTS

8.5.1. NORMAL MODULATION

Peak Output Power when Circular Polarization used

Tested By:	
Date:	

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)	Maximum Antenna Gain dBi	EiRP Limit dBm	EiRP Level dBm	Margin dB
Low	902.75	27.23	30	-2.77	6.22	36	33.45	-2.55
Middle	915.25	27.47	30	-2.53	6.22	36	33.69	-2.31
High	927.25	27.07	30	-2.93	6.22	36	33.29	-2.71

Note – Reduced power limit of 29.78 dBm yields same conducted power margin as the EIRP margin shown in the above table.

Channel	Frequency (MHz)	Output Power (dBm)	Directional Gain (dBi)	Limit (dBm)	Margin (dB)
Low	902.75	27.23	6.22	29.78	-2.55
Middle	915.25	27.47	6.22	29.78	-2.31
High	927.25	27.07	6.22	29.78	-2.71

Peak Output Power when Linear Polarization used

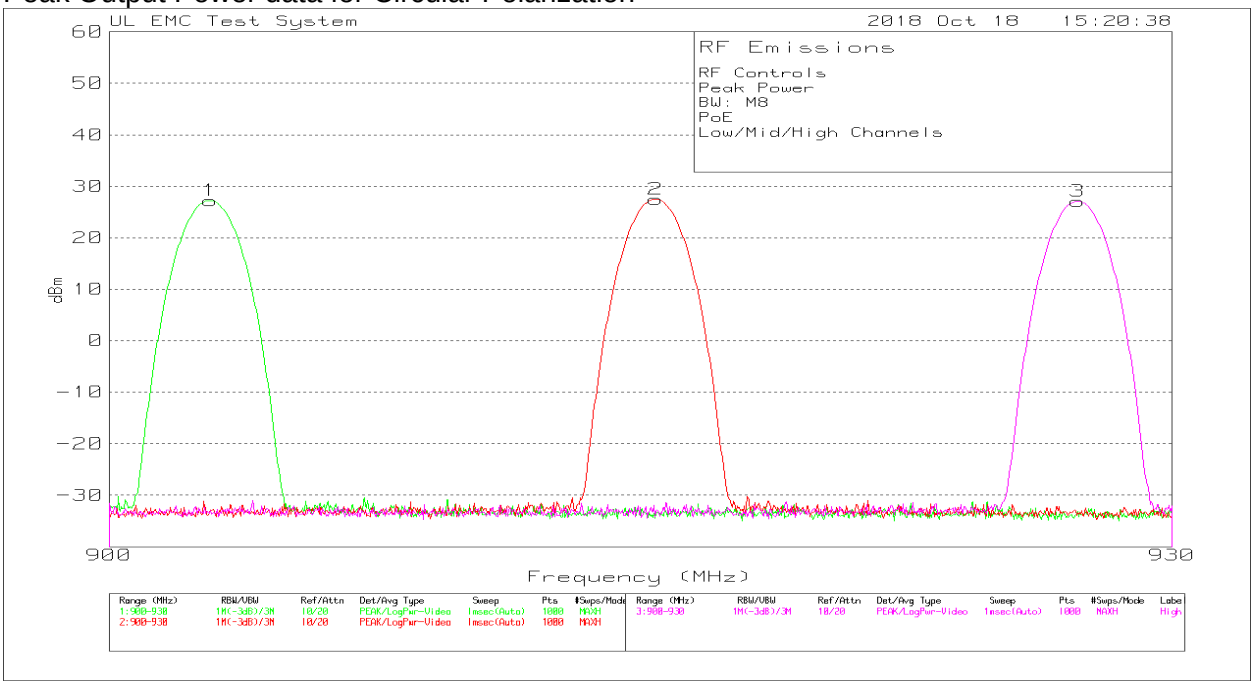
Tested By:	
Date:	

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)	Maximum Antenna Gain dBi	EiRP Limit dBm	EiRP Level dBm	Margin dB
Low	902.75	24.23	30	-5.77	9.49	36	33.72	-2.28
Middle	915.25	24.68	30	-5.32	9.49	36	34.17	-1.83
High	927.25	24.31	30	-5.69	9.49	36	33.8	-2.2

Note – Reduced power limit of 26.51 dBm yields same conducted power margin as the EIRP margin shown in the above table.

Channel	Frequency (MHz)	Output Power (dBm)	Directional Gain (dBi)	Limit (dBm)	Margin (dB)
Low	902.75	24.23	9.49	26.51	-2.28
Middle	915.25	24.68	9.49	26.51	-1.83
High	927.25	24.31	9.49	26.51	-2.20

Peak Output Power data for Circular Polarization



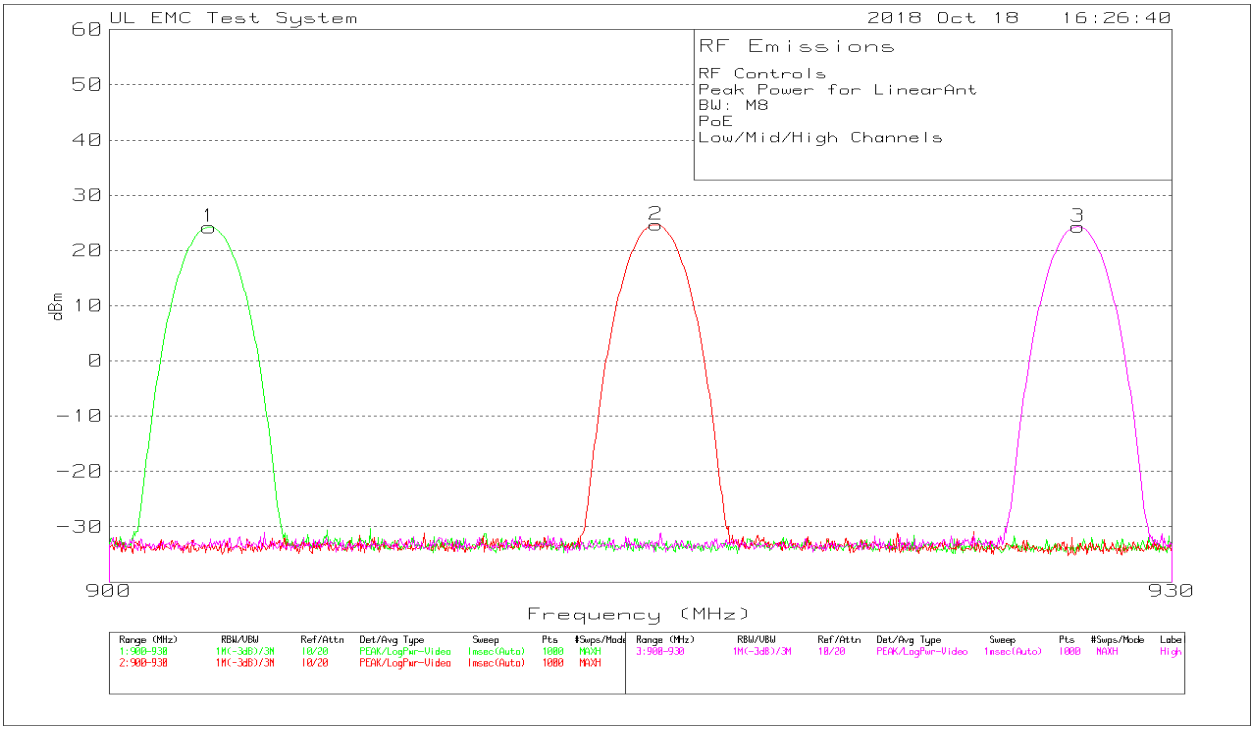
RF Controls
Peak Power
BW: M8
PoE
Low/Mid/High Channels

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBm
Range 1: Low Channel 900 - 930MHz					
1	902.8078	-3.77dBm Pk	31	0	27.23
					Margin (dB)
Range 2: Middle Channel 900 - 930MHz					
2	915.3003	-3.53dBm Pk	31	0	27.47
					Margin (dB)
Range 3: High Channel 900 - 930MHz					
3	927.2973	-3.83dBm Pk	30.9	0	27.07
					Margin (dB)

Pk - Peak detector

Peak Output Power data for Linear Polarization



RF Controls
Peak Power for LinearAnt
BW: M8
PoE
Low/Mid/High Channels

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBm
Range 1: Low Channel 900 - 930MHz					
1	902.7778	-6.77dBm Pk	31	0	24.23
					Margin (dB)
Range 2: Middle Channel 900 - 930MHz					
2	915.3153	-6.32dBm Pk	31	0	24.68
					Margin (dB)
Range 3: High Channel 900 - 930MHz					
3	927.3123	-6.69dBm Pk	31	0	24.31
					Margin (dB)

Pk - Peak detector

8.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

RSS-247 5.5

Limit = -20 dBc

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz.The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 10 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

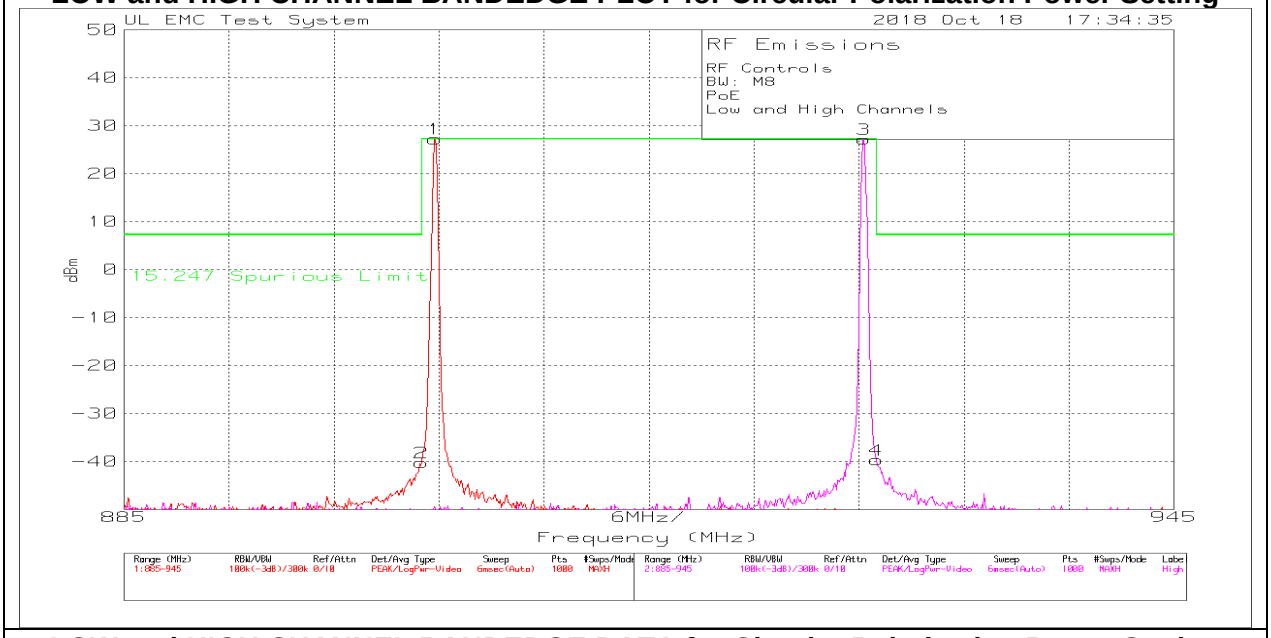
The authorized bandedges at 902MHz and 928MHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

8.6.1. NORMAL MODULATION

SPURIOUS EMISSIONS, INBAND

LOW and HIGH CHANNEL BANDEDGE PLOT for Circular Polarization Power Setting

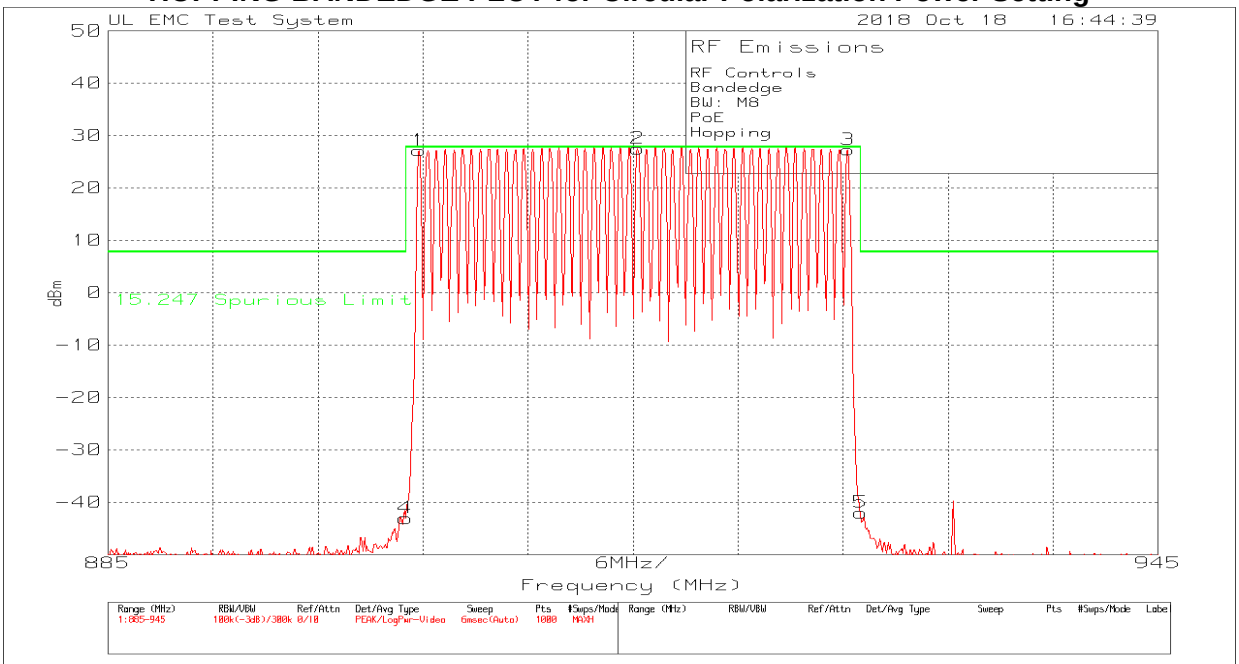


LOW and HIGH CHANNEL BANDEDGE DATA for Circular Polarization Power Setting

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBm	Limit:1
Range 1: Low Channel 885 - 945MHz						
1	902.7778	-3.74dBm Pk	31	0	27.26	27.26
					Margin (dB)	0
2	902.000	-71.2dBm Pk	31	0	-40.2	7.26
					Margin (dB)	-47.46
Range 2: High Channel 885 - 945MHz						
3	927.2822	-3.69dBm Pk	30.9	0	27.21	27.26
					Margin (dB)	-.05
4	928.000	-70.64dBm Pk	31	0	-39.64	7.26
					Margin (dB)	-46.9

LIMIT 1: 15.247 Spurious Limit
Pk - Peak detector

HOPPING BANDEDGE PLOT for Circular Polarization Power Setting



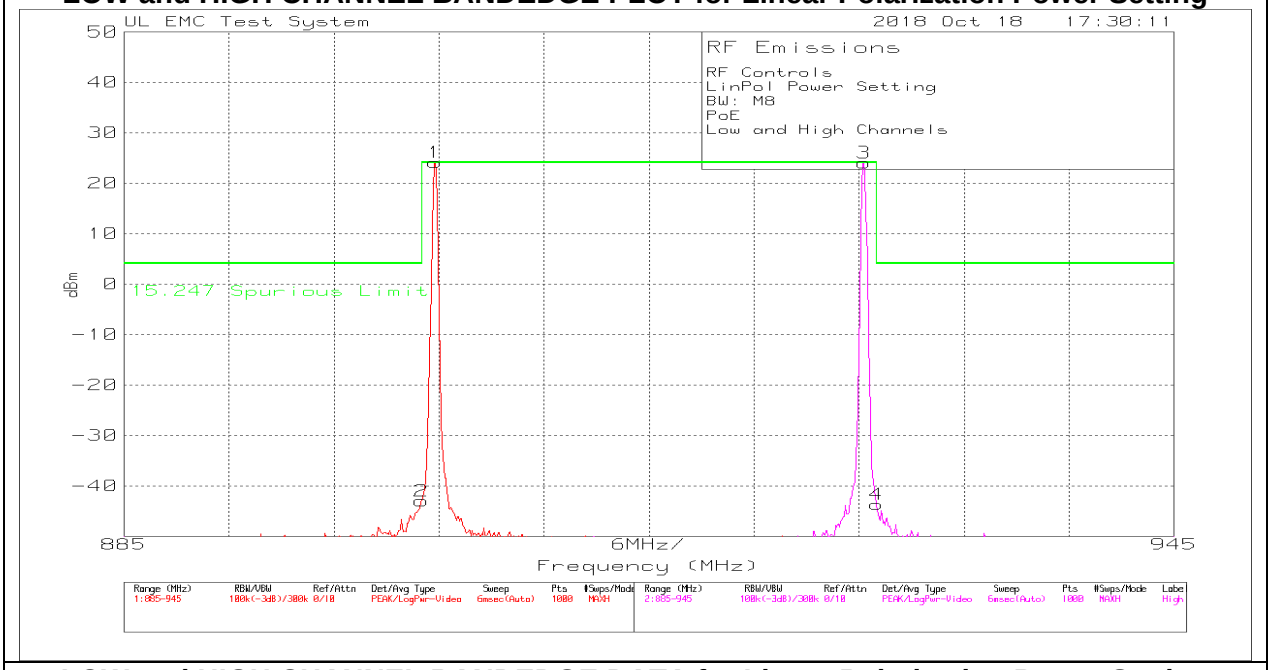
HOPPING BANDEDGE DATA for Circular Polarization Power Setting

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBm	Limit:1
1	902.7778	-3.83dBm Pk	31	0	27.17	27.84
					Margin (dB)	-.67
2	915.2702	-3.46dBm Pk	31	0	27.54	27.84
					Margin (dB)	-.3
3	927.2822	-3.58dBm Pk	30.9	0	27.32	27.84
					Margin (dB)	-.52
4	901.997	-74.02dBm Pk	31	0	-43.02	7.84
					Margin (dB)	-50.86
5	928.003	-72.98dBm Pk	31	0	-41.98	7.84
					Margin (dB)	-49.82

LIMIT 1: 15.247 Spurious Limit
Pk - Peak detector
* limit and margins are based on highest emission within the band and it might not be necessary the emission with the marker.

LOW and HIGH CHANNEL BANDEDGE PLOT for Linear Polarization Power Setting

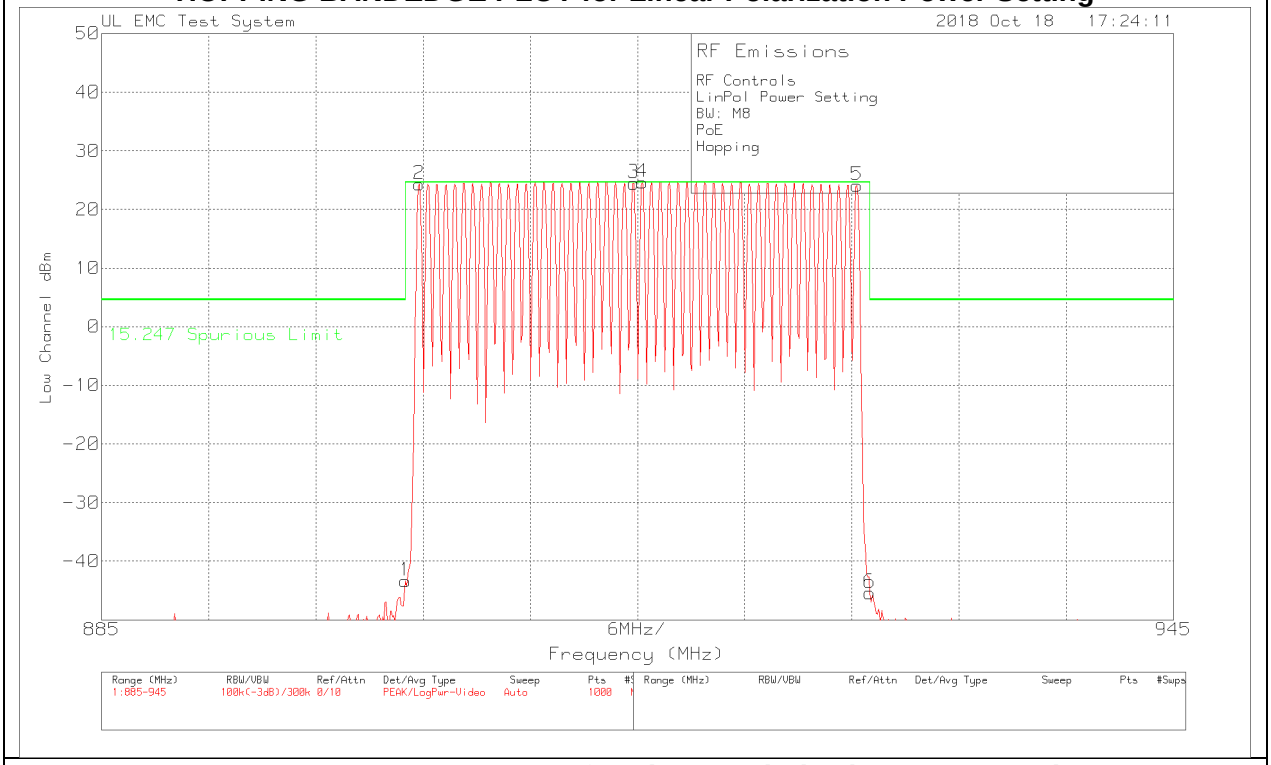


LOW and HIGH CHANNEL BANDEDGE DATA for Linear Polarization Power Setting

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBm	Limit:1
Range 1: Low Channel 885 - 945MHz ----------						
1	902.7778	-6.84dBm Pk	31	0	24.16	24.16
					Margin (dB)	0
2	902.000	-73.94dBm Pk	31	0	-42.94	4.16
					Margin (dB)	-47.1
Range 2: High Channel 885 - 945MHz ----------						
3	927.2822	-6.81dBm Pk	30.9	0	24.09	24.16
					Margin (dB)	-.07
4	928.000	-74.65dBm Pk	31	0	-43.65	4.16
					Margin (dB)	-47.81

LIMIT 1: 15.247 Spurious Limit
Pk - Peak detector

HOPPING BANDEDGE PLOT for Linear Polarization Power Setting



HOPPING BANDEDGE DATA for Linear Polarization Power Setting

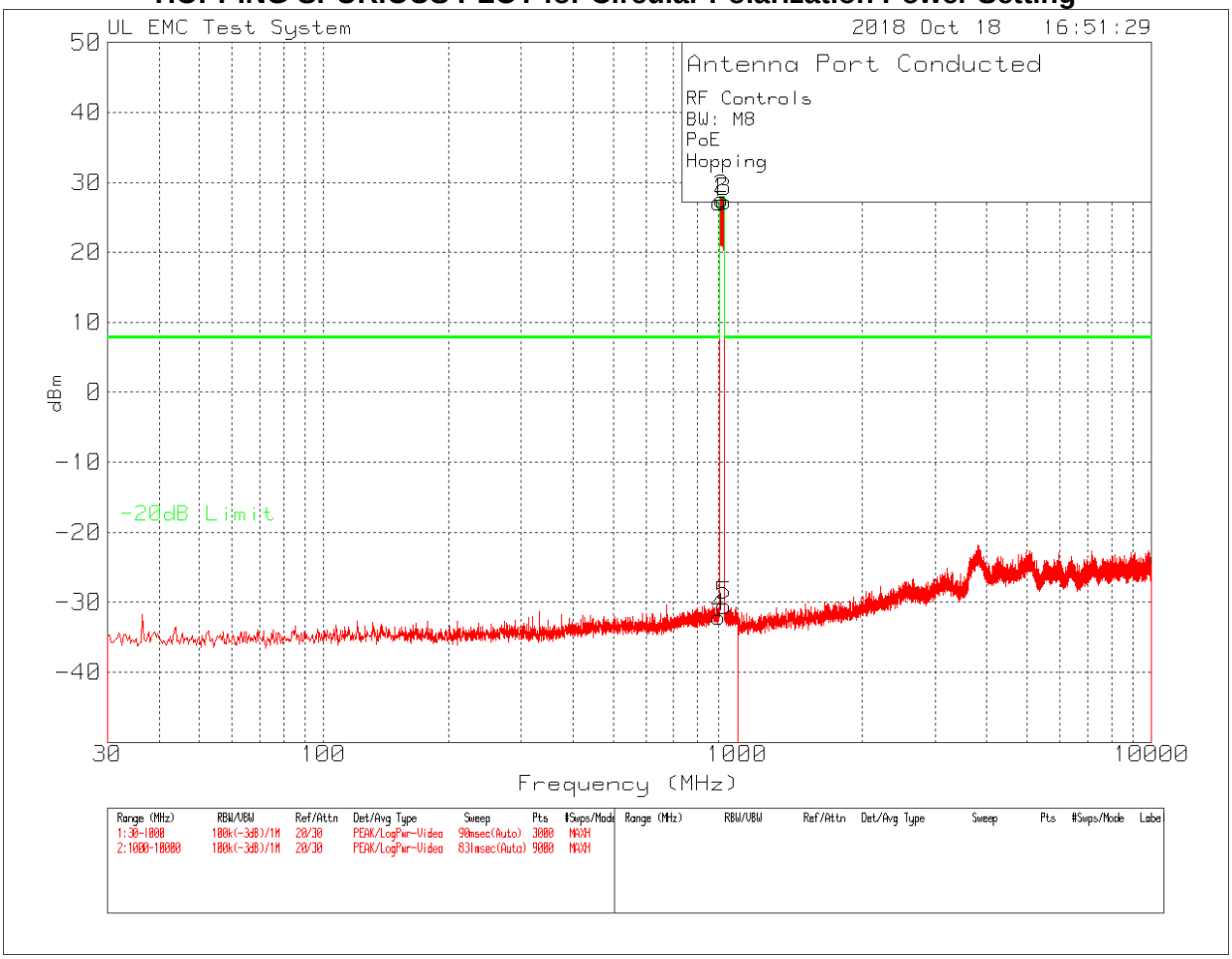
Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBm	Limit:1
1	901.997	-74.37dBm Pk	31	0	-43.37	4.61
					Margin (dB)	-47.98
2	902.7778	-6.67dBm Pk	31	0	24.33	24.61
					Margin (dB)	-.28
3	914.7898	-6.54dBm Pk	31	0	24.46	24.61
					Margin (dB)	-.15
4	915.2702	-6.4dBm Pk	31	0	24.6	24.61
					Margin (dB)	-.01
5	927.2822	-6.79dBm Pk	30.9	0	24.11	24.61
					Margin (dB)	-.5
6	928.003	-76.4dBm Pk	31	0	-45.4	4.61
					Margin (dB)	-50.01

LIMIT 1: 15.247 Spurious Limit
Pk - Peak detector
* limit and margins are based on highest emission within the band and it might not be necessary the emission with the marker.

SPURIOUS EMISSIONS, 30MHz – 10GHz

HOPPING SPURIOUS PLOT for Circular Polarization Power Setting



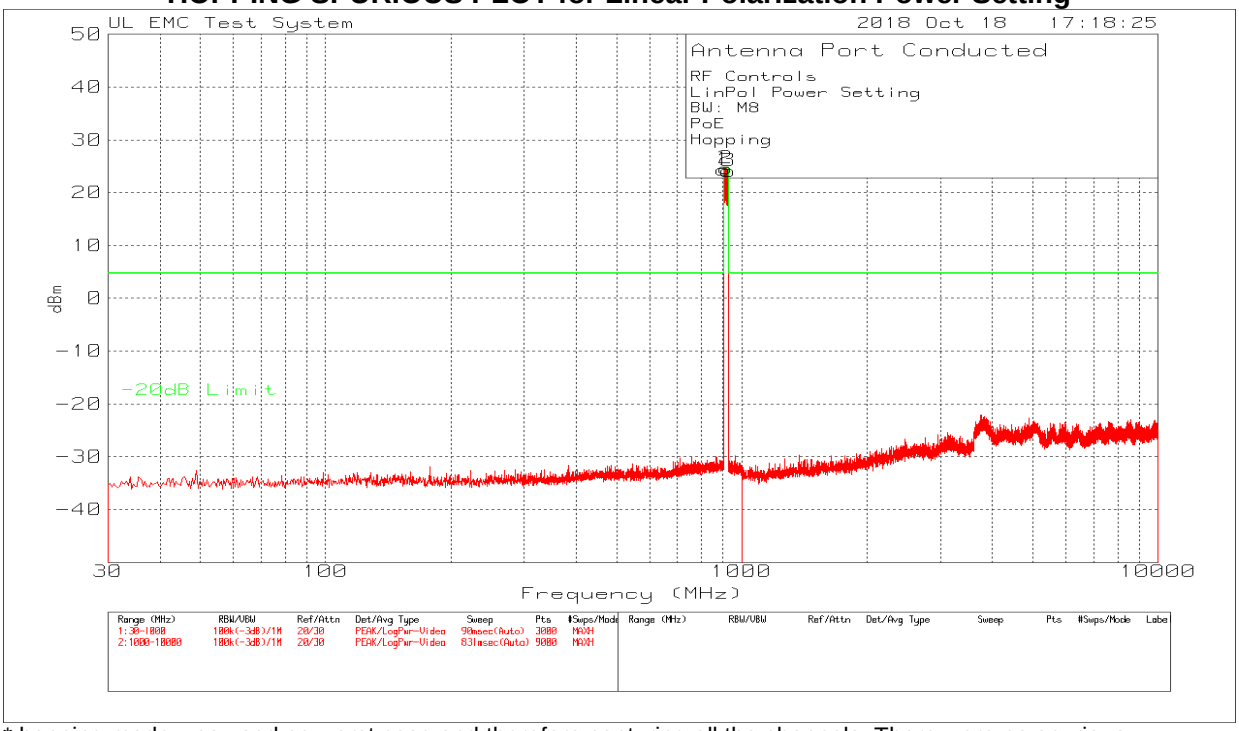
* hopping mode was used as worst case and therefore capturing all the channels. There were no spurious emissions detected.

HOPPING SPURIOUS DATA for Circular Polarization Power Setting

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBm	Limit:1
1	902.6438	-3.83dBm Pk	31	0	27.17	27.84
					Margin (dB)	-.67
2	914.9346	-3.4dBm Pk	31	0	27.6	27.84
					Margin (dB)	-.24
3	927.2253	-3.63dBm Pk	30.9	0	27.27	27.84
					Margin (dB)	-.57
4	901.9969	-63.12dBm Pk	31	0	-32.12	7.84
					Margin (dB)	-39.96
5	927.8722	-61.5dBm Pk	31	0	-30.5	27.84
					Margin (dB)	-58.34

LIMIT 1: -20dB Limit
Pk - Peak detector

HOPPING SPURIOUS PLOT for Linear Polarization Power Setting



* hopping mode was used as worst case and therefore capturing all the channels. There were no spurious emissions detected.

HOPPING SPURIOUS DATA for Linear Polarization Power Setting

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dBm	Limit:1
1	902.6438	-6.65dBm Pk	31	0	24.35	24.68
					Margin (dB)	-.33
2	915.258	-6.39dBm Pk	31	0	24.61	24.68
					Margin (dB)	-.07
3	927.2253	-6.77dBm Pk	30.9	0	24.13	24.68
					Margin (dB)	-.55

LIMIT 1: -20dB Limit
Pk - Peak detector

9. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10.

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements for the 30-1000 MHz range, 9 kHz for peak detection measurements or 9 kHz for quasi-peak detection measurements for the 0.15-30 MHz range and 200 Hz for peak detection measurements or 200 Hz for quasi-peak detection measurements for the 9 to 150 kHz range. Peak detection is used unless otherwise noted as quasi-peak.

For pre-scans above 1GHz – 4GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3MHz, 4GHz-10GHz the resolution bandwidth is set to 500kHz, the video bandwidth is set to 1MHz.

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

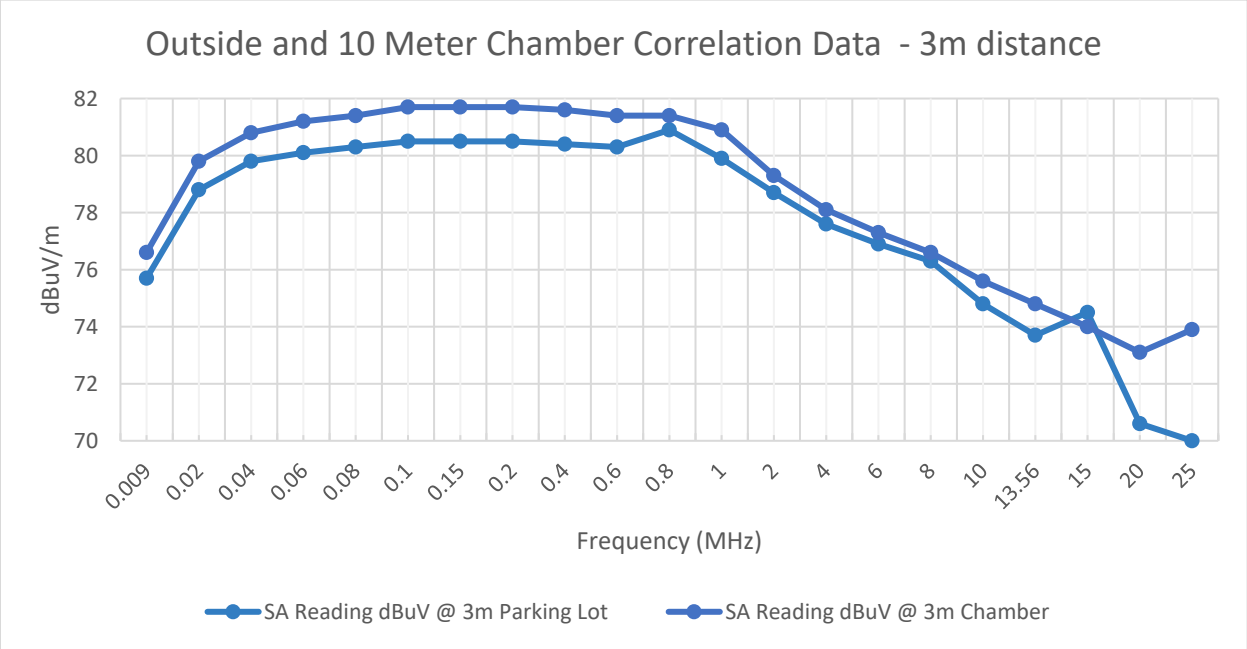
The spectrum from 1 GHz to 10GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

9.1. RADIATED SPURIOUS EMISSIONS 9kHz-30MHz

9.1.1. Site correlation Data between 10m SAC and Outside

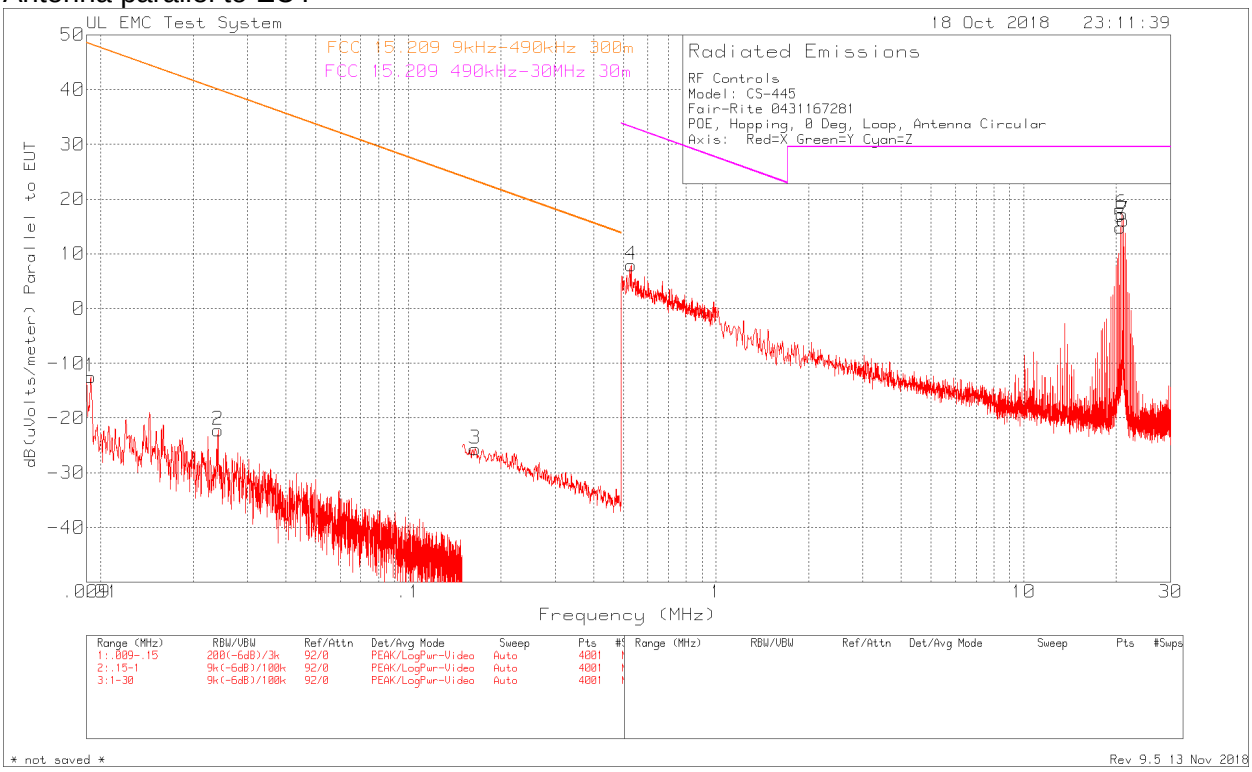
Correlation Data for measurements 9kHz-30MHz between Outside and 10m semi-anechoic chamber at Underwriter Laboratories in Northbrook, IL.



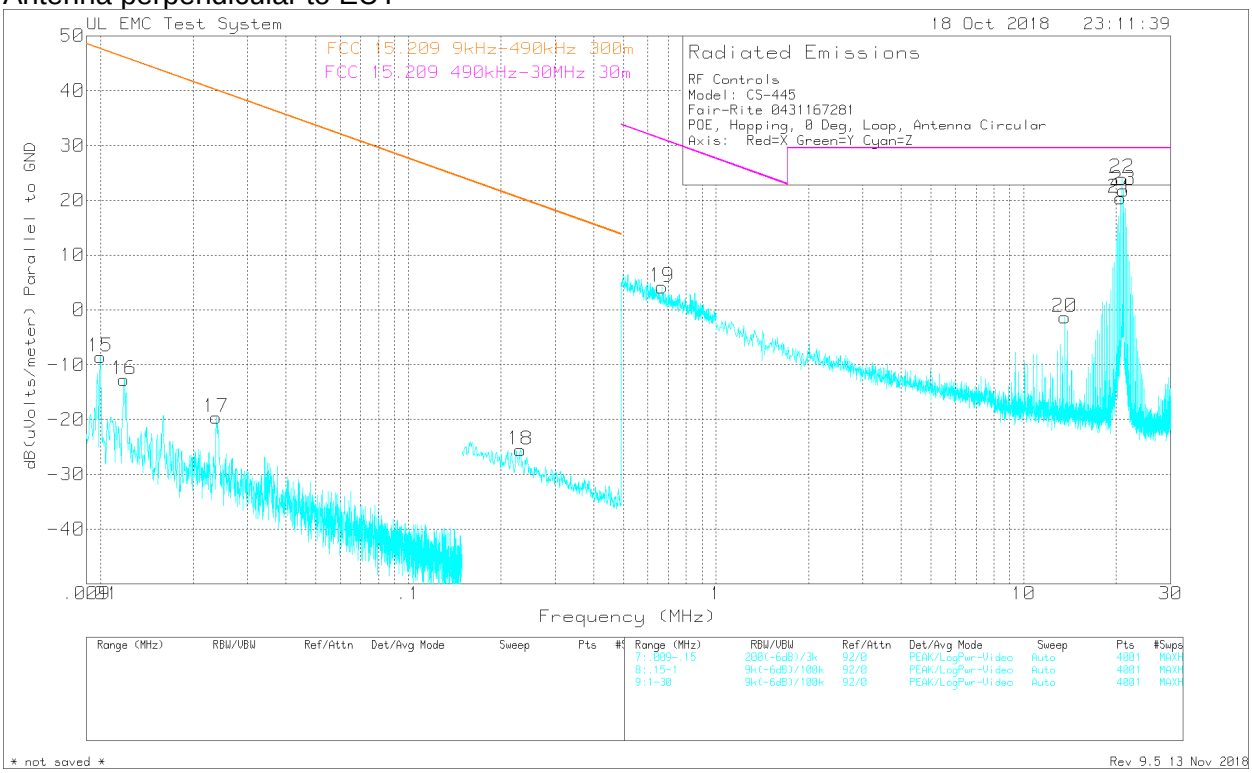
Correlation measurements were conducted using a signal source with an antenna outside in open area (parking lot). Immediately following the measurements the same setup was moved inside the 10 meter semi-anechoic chamber and the measurements were repeated. The above plot shows the difference in levels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

9.1.2. Radiated Spurious emissions 9kHz-30MHz

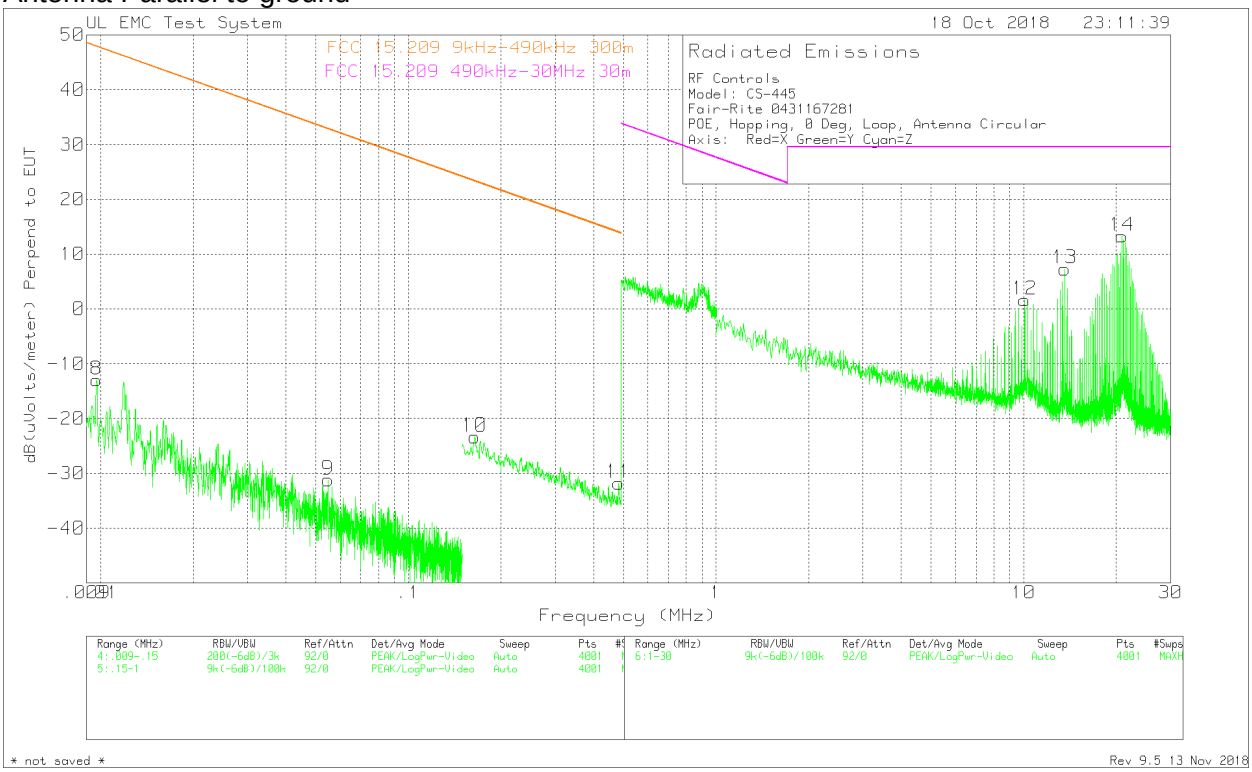
Antenna parallel to EUT



Antenna perpendicular to EUT



Antenna Parallel to ground



* all peak emissions well below the limits

RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Hopping, 0 Deg, Loop, Antenna Circular
Axis: Red=X Green=Y Cyan=Z
Trace MArkers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Distance Correction Factor dB	Level dBuV/m	FCC 15.209 9kHz-490kHz @ 300m dBuV/m	Margin (dB)	FCC 15.209 490kHz-30MHz @ 30m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	0.00928	44.45	Pk	23.1	0	-80	-12.45	48.24	-60.69	-	-	0-360	101	H
2	0.024085	40.52	Pk	17.3	0	-80	-22.18	39.96	-62.14	-	-	0-360	101	H
3	0.1647	42.47	Pk	11.9	0	-80	-25.63	23.27	-48.9	-	-	0-360	101	H
4	0.52999	35.95	Pk	11.9	0.1	-40	7.95	-	-	33.12	-25.17	0-360	101	H
5	20.62575	43.81	Pk	10.5	0.5	-40	14.81	-	-	29.54	-14.73	0-360	101	H
6	20.85775	46.44	Pk	10.4	0.5	-40	17.34	-	-	29.54	-12.2	0-360	101	H
7	21.097	45.22	Pk	10.4	0.5	-40	16.12	-	-	29.54	-13.42	0-360	101	H
8	0.0097	43.94	Pk	23.1	0	-80	-12.96	47.86	-60.82	-	-	0-360	101	H
9	0.054815	35.42	Pk	13.4	0	-80	-31.18	32.82	-64	-	-	0-360	101	H
10	0.16416	44.75	Pk	11.9	0	-80	-23.35	23.3	-46.65	-	-	0-360	101	H
11	0.48228	36.23	Pk	11.9	0.1	-80	-31.77	13.94	-45.71	-	-	0-360	101	H
12	10.077	29.58	Pk	11.8	0.3	-40	1.68	-	-	29.54	-27.86	0-360	101	H
13	13.59325	35.5	Pk	11.4	0.4	-40	7.3	-	-	29.54	-22.24	0-360	101	H
14	20.865	42.41	Pk	10.4	0.5	-40	13.31	-	-	29.54	-16.23	0-360	101	H
15	0.00998	48.3	Pk	23.1	0	-80	-8.6	47.61	-56.21	-	-	0-360	101	H
16	0.011905	45.16	Pk	22.1	0	-80	-12.74	46.08	-58.82	-	-	0-360	101	H
17	0.023735	43.07	Pk	17.3	0	-80	-19.63	40.09	-59.72	-	-	0-360	101	H
18	0.23126	42.54	Pk	11.8	0.1	-80	-25.56	20.32	-45.88	-	-	0-360	101	H
19	0.66706	32.2	Pk	11.9	0.1	-40	4.2	-	-	31.12	-26.92	0-360	101	H
20	13.59325	26.91	Pk	11.4	0.4	-40	-1.29	-	-	29.54	-30.83	0-360	101	H
21	20.62575	49.38	Pk	10.5	0.5	-40	20.38	-	-	29.54	-9.16	0-360	101	H
22	20.865	53.11	Pk	10.4	0.5	-40	24.01	-	-	29.54	-5.53	0-360	101	H
23	21.097	50.97	Pk	10.4	0.5	-40	21.87	-	-	29.54	-7.67	0-360	101	H

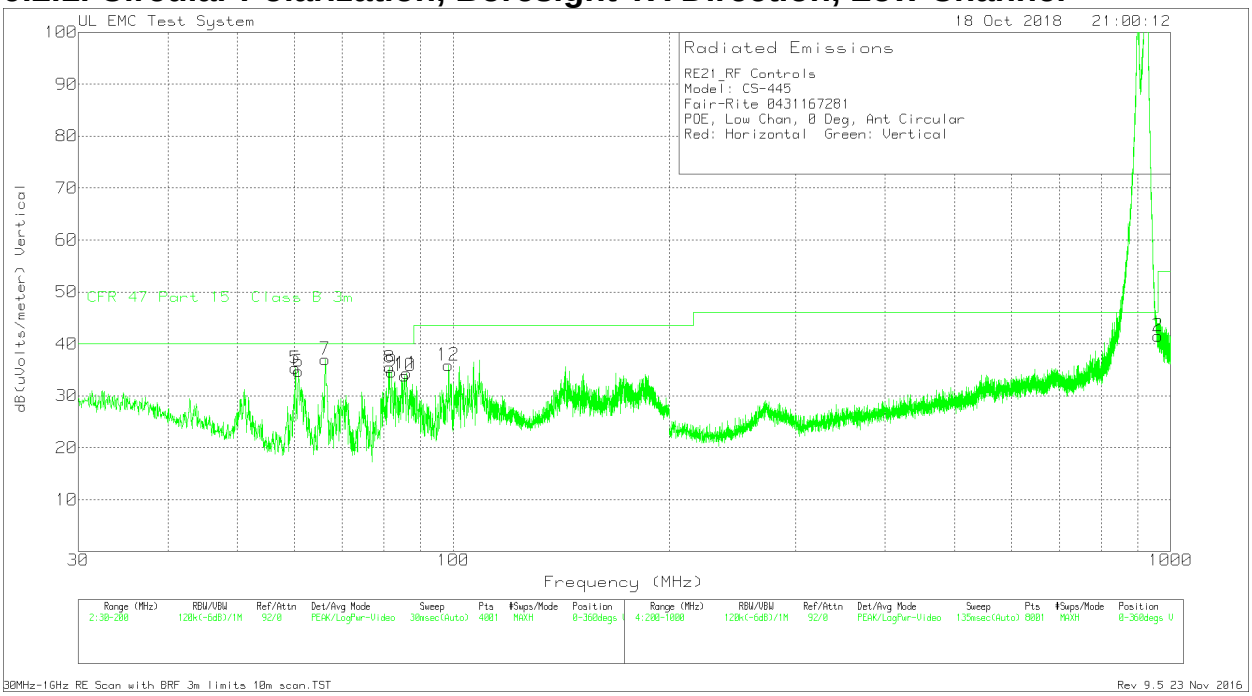
Radiated Emission Data

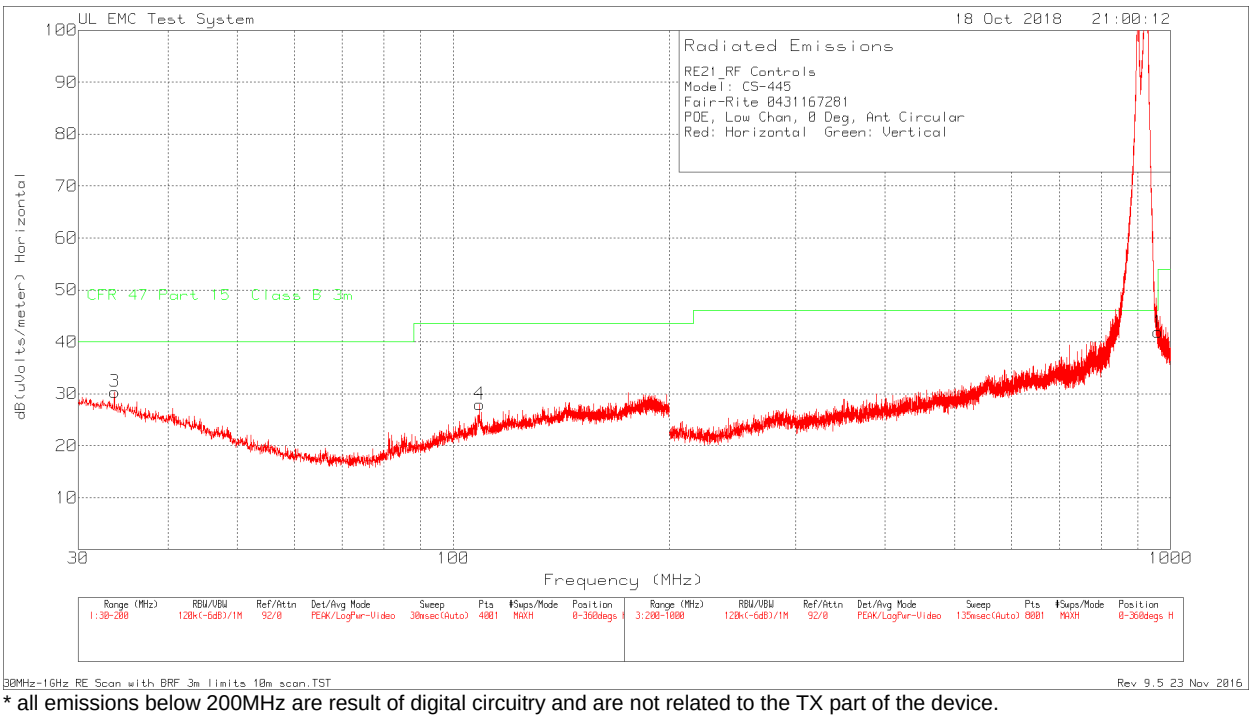
	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Distance Correction Factor dB	Level dBuV/m	FCC 15.209 9kHz-490kHz @ 300m dBuV/m	Margin (dB)	FCC 15.209 490kHz-30MHz @ 30m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	20.8588	53.23	Qp	10.4	0.5	-40	24.13	-	-	29.54	-5.41	174	101	H
	20.8588	52.51	Av	10.4	0.5	-40	23.41	-	-	29.54	-6.13	174	101	H

Pk - Peak detector
Qp - Quasi-Peak detector
Av - Average detection

9.2. Radiated Spurious Emissions 30MHz-1GHz

9.2.1. Circular Polarization, Boresight TX Direction, Low Channel





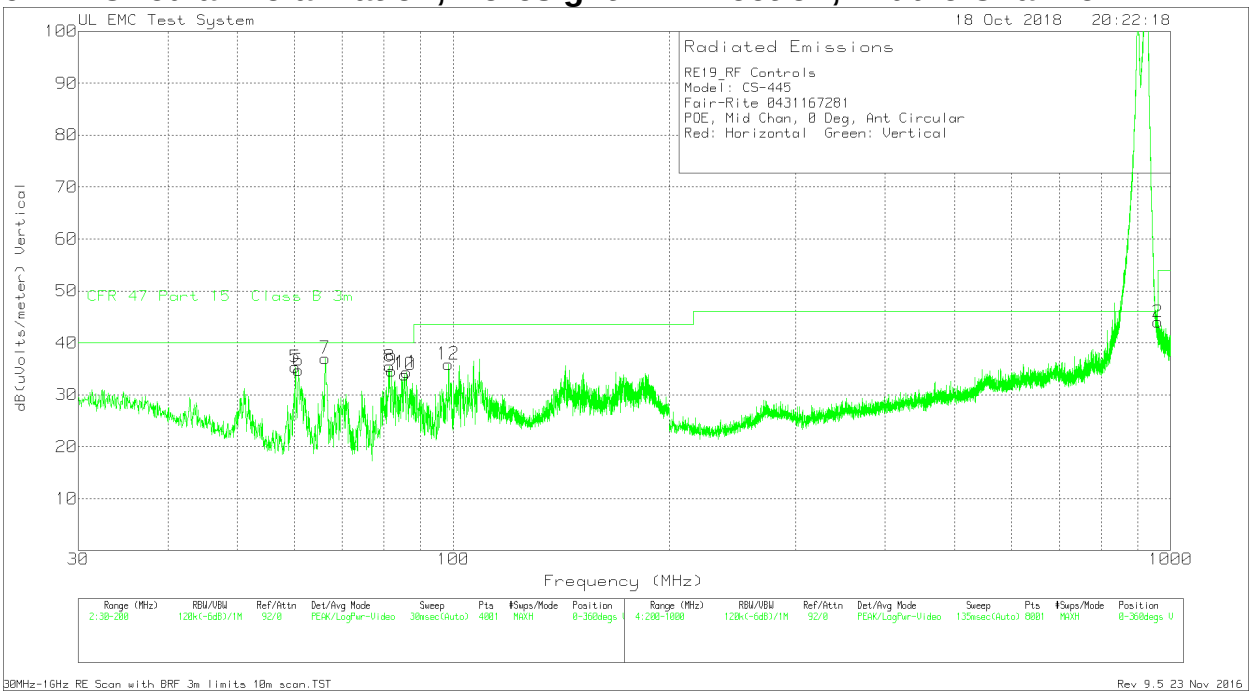
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

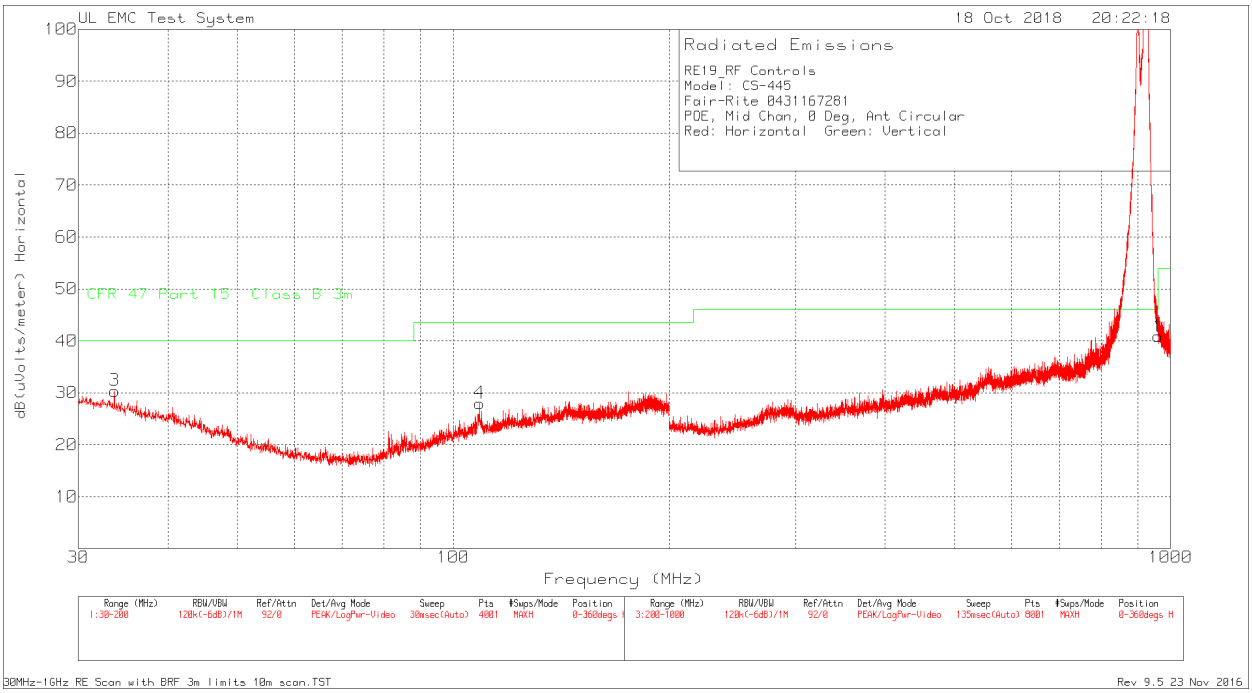
RE21_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Low Chan, 0 Deg, Ant Circular
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	33.6975	33.3	Pk	16.8	-30.2	10.5	N/A	30.4	40	-9.6	0-360	101	H
4	108.795	35.4	Pk	12	-29.9	10.5	N/A	28	43.52	-15.52	0-360	398	H
5	60.2175	48.32	Pk	6.8	-30.3	10.5	N/A	35.32	40	-4.68	0-360	101	V
6	60.8125	47.71	Pk	6.7	-30.2	10.5	N/A	34.71	40	-5.29	0-360	248	V
7	66.295	50.34	Pk	6.2	-30	10.5	N/A	37.04	40	-2.96	0-360	248	V
8	81.51	47.76	Pk	7.3	-30.1	10.5	N/A	35.46	40	-4.54	0-360	248	V
9	82.0625	46.87	Pk	7.4	-30.1	10.5	N/A	34.67	40	-5.33	0-360	248	V
10	85.5475	45.19	Pk	8.2	-30	10.5	N/A	33.89	40	-6.11	0-360	248	V
11	86.0575	45.42	Pk	8.2	-29.8	10.5	N/A	34.32	40	-5.68	0-360	248	V
12	98.425	45.01	Pk	10.4	-30	10.5	N/A	35.91	43.52	-7.61	0-360	101	V
1	960	31.28	Pk	23.9	-27.4	10.5	3.6	41.88	46.02	-4.14	0-360	99	H
2	960	30.96	Pk	23.9	-27.4	10.5	3.6	41.56	46.02	-4.46	0-360	99	V

Pk - Peak detector

9.2.2. Circular Polarization, Boresight TX Direction, Middle Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE19_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Mid Chan, 0 Deg, Ant Circular
Red: Horizontal Green: Vertical
Trace Markers

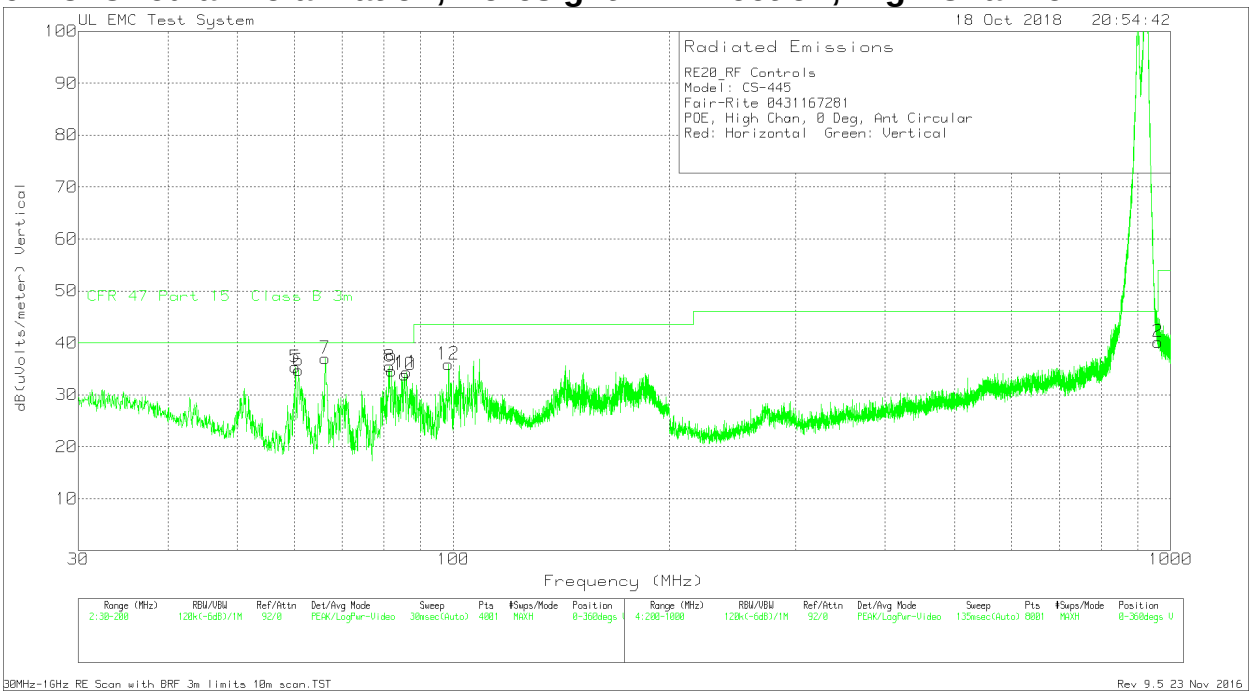
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	33.6975	33.3	Pk	16.8	-30.2	10.5	N/A	30.4	40	-9.6	0-360	101	H
4	108.795	35.4	Pk	12	-29.9	10.5	N/A	28	43.52	-15.52	0-360	398	H
5	60.2175	48.32	Pk	6.8	-30.3	10.5	N/A	35.32	40	-4.68	0-360	101	V
6	60.8125	47.71	Pk	6.7	-30.2	10.5	N/A	34.71	40	-5.29	0-360	248	V
7	66.295	50.34	Pk	6.2	-30	10.5	N/A	37.04	40	-2.96	0-360	248	V
8	81.51	47.76	Pk	7.3	-30.1	10.5	N/A	35.46	40	-4.54	0-360	248	V
9	82.0625	46.87	Pk	7.4	-30.1	10.5	N/A	34.67	40	-5.33	0-360	248	V
10	85.5475	45.19	Pk	8.2	-30	10.5	N/A	33.89	40	-6.11	0-360	248	V
11	86.0575	45.42	Pk	8.2	-29.8	10.5	N/A	34.32	40	-5.68	0-360	248	V
12	98.425	45.01	Pk	10.4	-30	10.5	N/A	35.91	43.52	-7.61	0-360	101	V
1	960	30.29	Pk	23.9	-27.4	10.5	3.6	40.89	46.02	-5.13	0-360	99	H
2	960	33.39	Pk	23.9	-27.4	10.5	3.6	43.99	46.02	-2.03	0-360	99	V

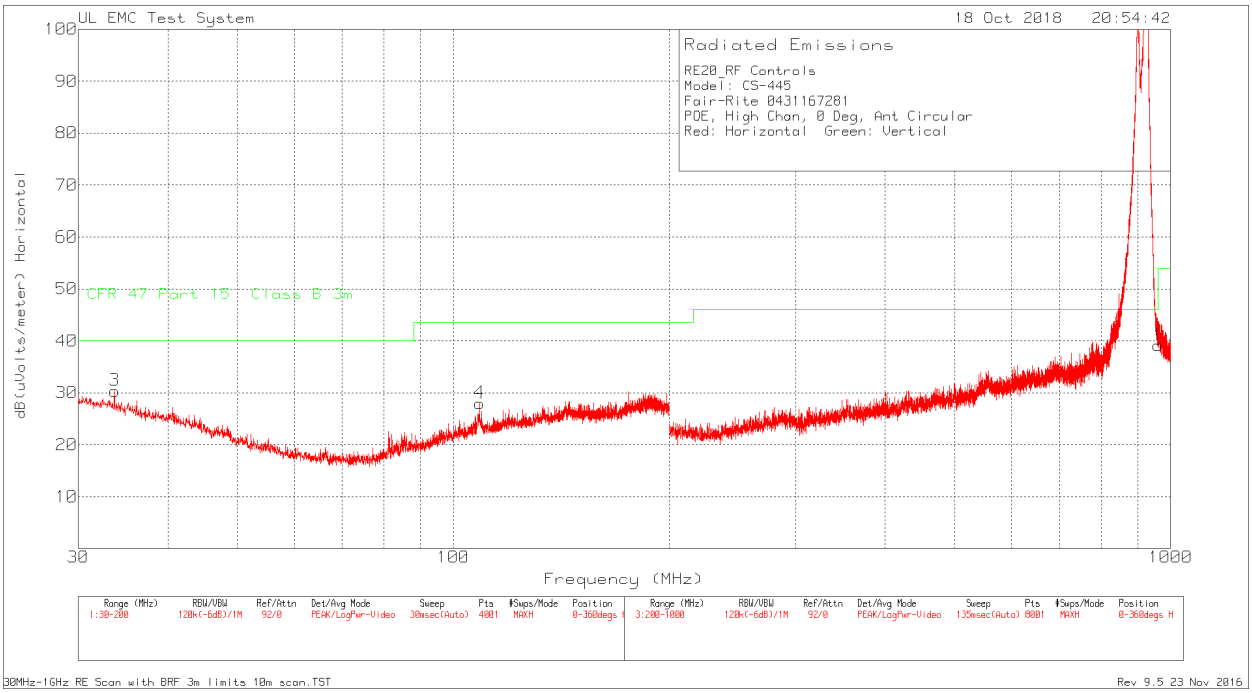
Radiated Emission Data

	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	960	32.09	Qp	23.9	-27.4	10.5	3.6	42.69	46.02	-3.33	196	127	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.2.3. Circular Polarization, Boresight TX Direction, High Channel





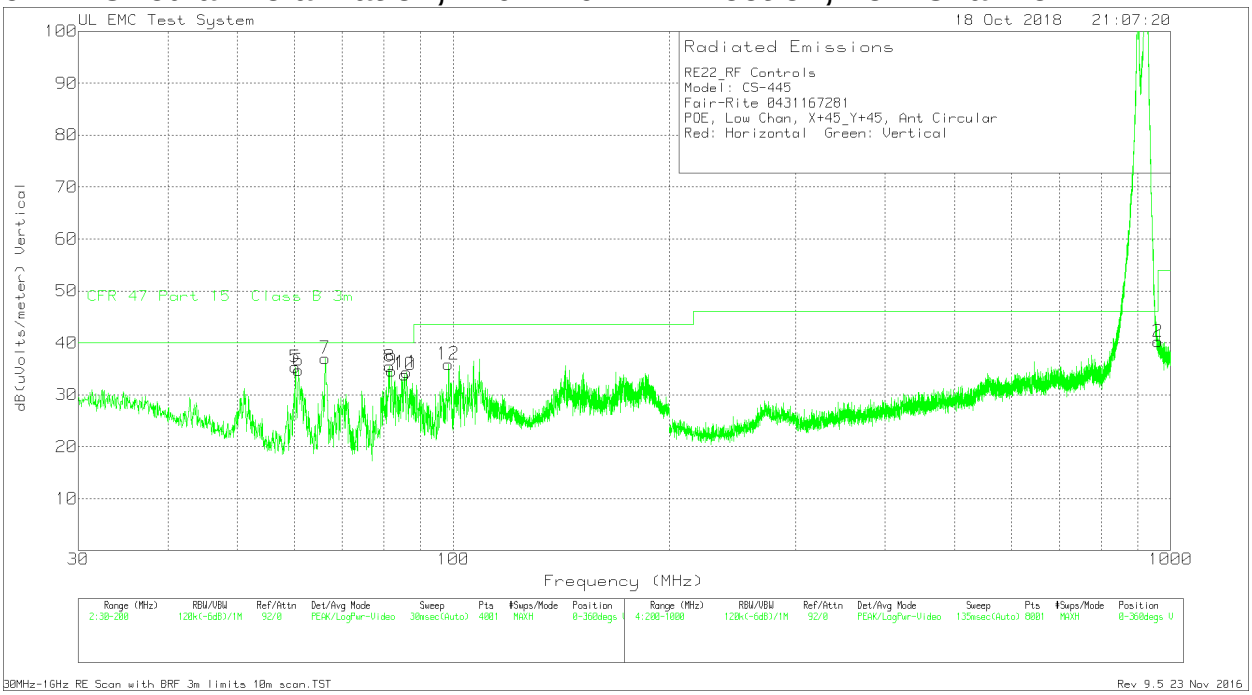
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

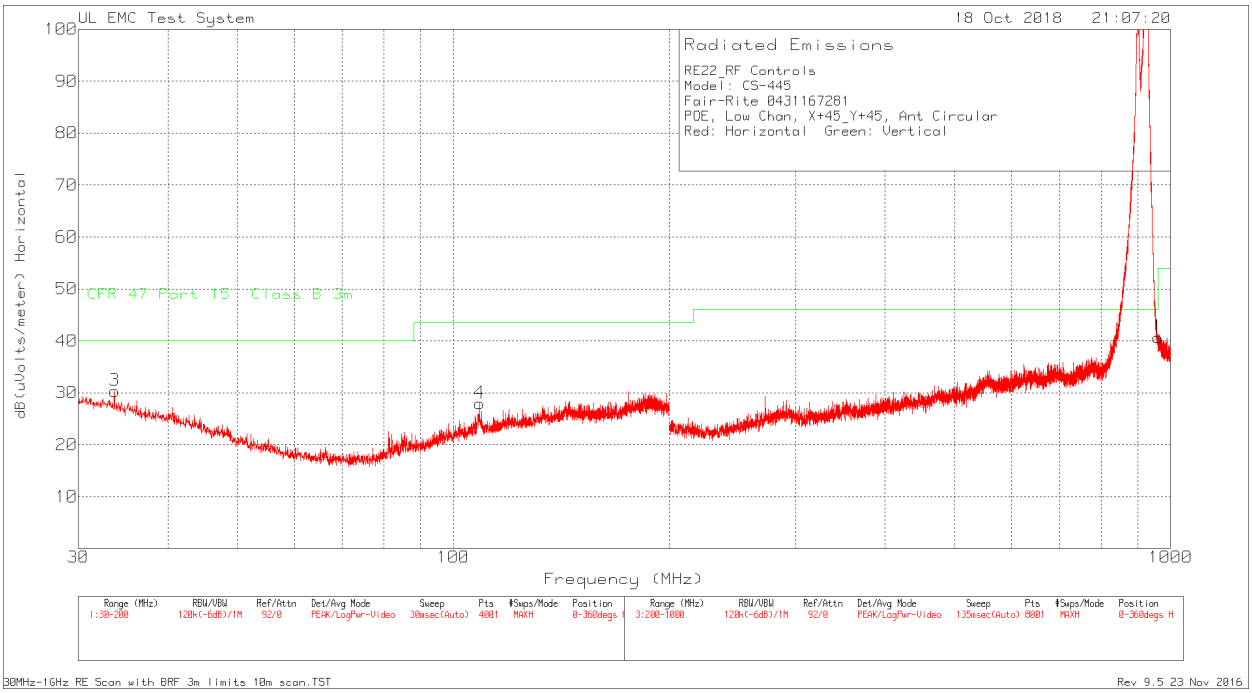
RE20_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, High Chan, 0 Deg, Ant Circular
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	33.6975	33.3	Pk	16.8	-30.2	10.5	N/A	30.4	40	-9.6	0-360	101	H
4	108.795	35.4	Pk	12	-29.9	10.5	N/A	28	43.52	-15.52	0-360	398	H
5	60.2175	48.32	Pk	6.8	-30.3	10.5	N/A	35.32	40	-4.68	0-360	101	V
6	60.8125	47.71	Pk	6.7	-30.2	10.5	N/A	34.71	40	-5.29	0-360	248	V
7	66.295	50.34	Pk	6.2	-30	10.5	N/A	37.04	40	-2.96	0-360	248	V
8	81.51	47.76	Pk	7.3	-30.1	10.5	N/A	35.46	40	-4.54	0-360	248	V
9	82.0625	46.87	Pk	7.4	-30.1	10.5	N/A	34.67	40	-5.33	0-360	248	V
10	85.5475	45.19	Pk	8.2	-30	10.5	N/A	33.89	40	-6.11	0-360	248	V
11	86.0575	45.42	Pk	8.2	-29.8	10.5	N/A	34.32	40	-5.68	0-360	248	V
12	98.425	45.01	Pk	10.4	-30	10.5	N/A	35.91	43.52	-7.61	0-360	101	V
1	960	28.52	Pk	23.9	-27.4	10.5	3.6	39.12	46.02	-6.9	0-360	99	H
2	960	29.6	Pk	23.9	-27.4	10.5	3.6	40.2	46.02	-5.82	0-360	99	V

Pk - Peak detector

9.2.4. Circular Polarization, +40° +40° TX Direction, Low Channel





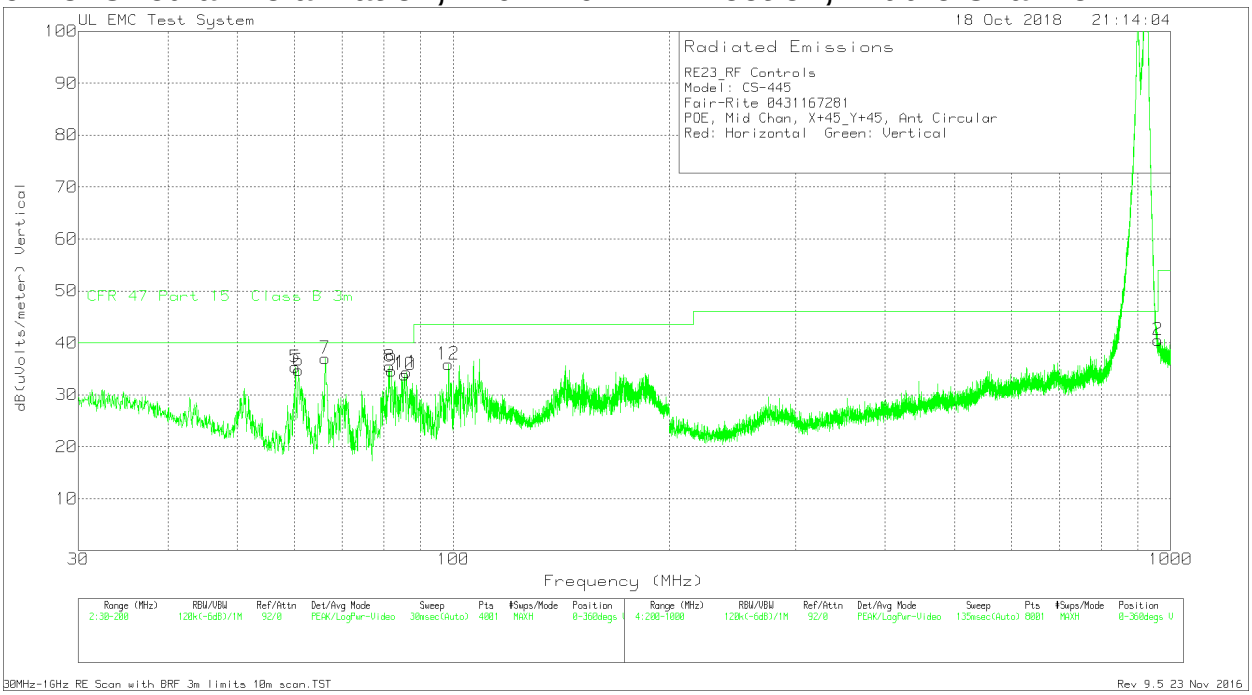
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

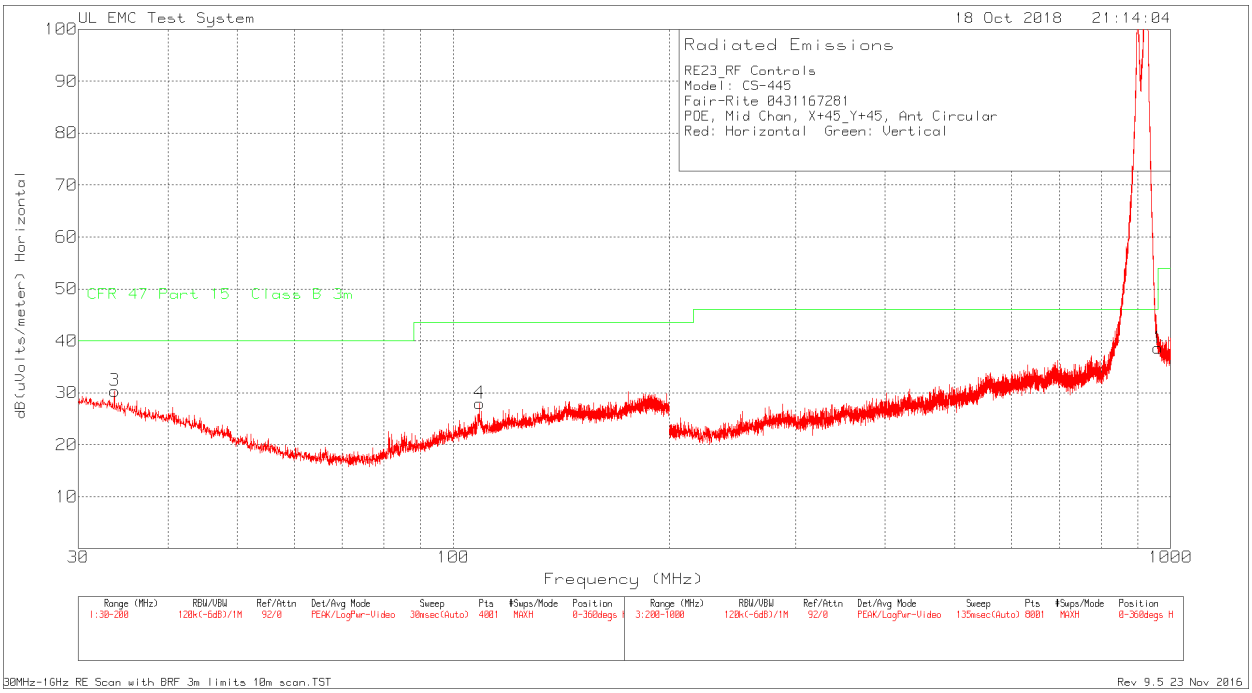
RE22_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Low Chan, X+45_Y+45, Ant Circular
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	33.6975	33.3	Pk	16.8	-30.2	10.5	N/A	30.4	40	-9.6	0-360	101	H
4	108.795	35.4	Pk	12	-29.9	10.5	N/A	28	43.52	-15.52	0-360	398	H
5	60.2175	48.32	Pk	6.8	-30.3	10.5	N/A	35.32	40	-4.68	0-360	101	V
6	60.8125	47.71	Pk	6.7	-30.2	10.5	N/A	34.71	40	-5.29	0-360	248	V
7	66.295	50.34	Pk	6.2	-30	10.5	N/A	37.04	40	-2.96	0-360	248	V
8	81.51	47.76	Pk	7.3	-30.1	10.5	N/A	35.46	40	-4.54	0-360	248	V
9	82.0625	46.87	Pk	7.4	-30.1	10.5	N/A	34.67	40	-5.33	0-360	248	V
10	85.5475	45.19	Pk	8.2	-30	10.5	N/A	33.89	40	-6.11	0-360	248	V
11	86.0575	45.42	Pk	8.2	-29.8	10.5	N/A	34.32	40	-5.68	0-360	248	V
12	98.425	45.01	Pk	10.4	-30	10.5	N/A	35.91	43.52	-7.61	0-360	101	V
1	960	30.09	Pk	23.9	-27.4	10.5	3.6	40.69	46.02	-5.33	0-360	99	H
2	960	29.65	Pk	23.9	-27.4	10.5	3.6	40.25	46.02	-5.77	0-360	102	V

Pk - Peak detector

9.2.5. Circular Polarization, +40° +40° TX Direction, Middle Channel





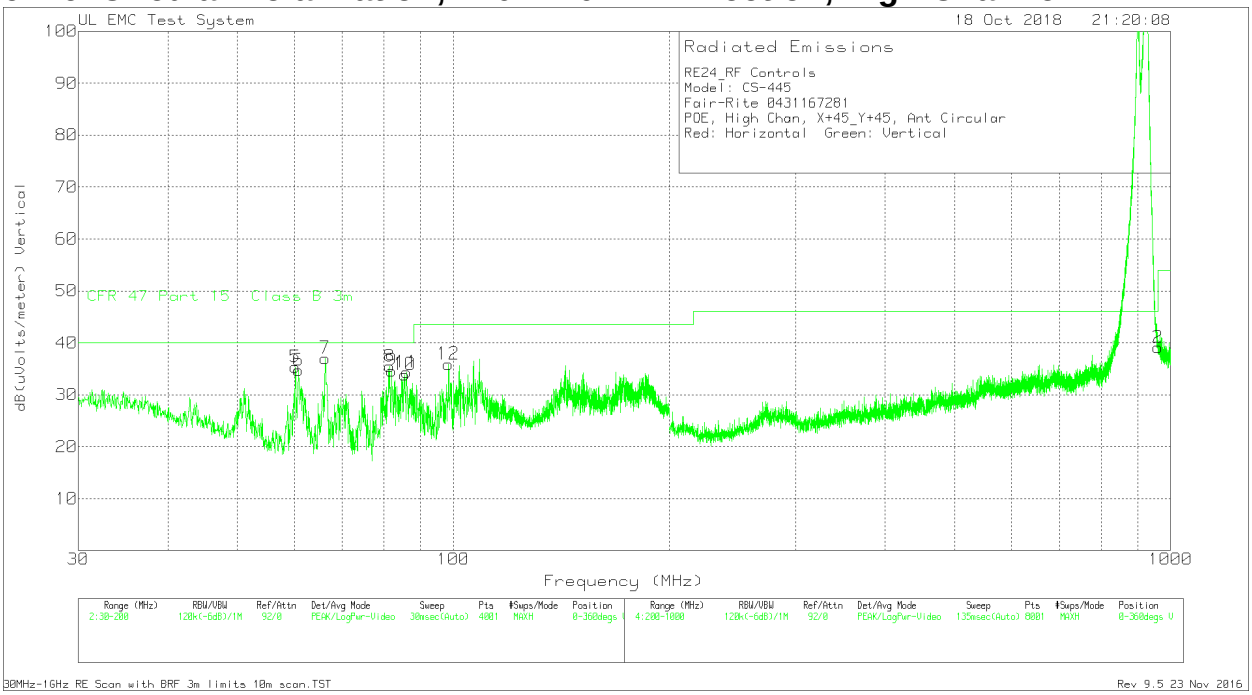
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

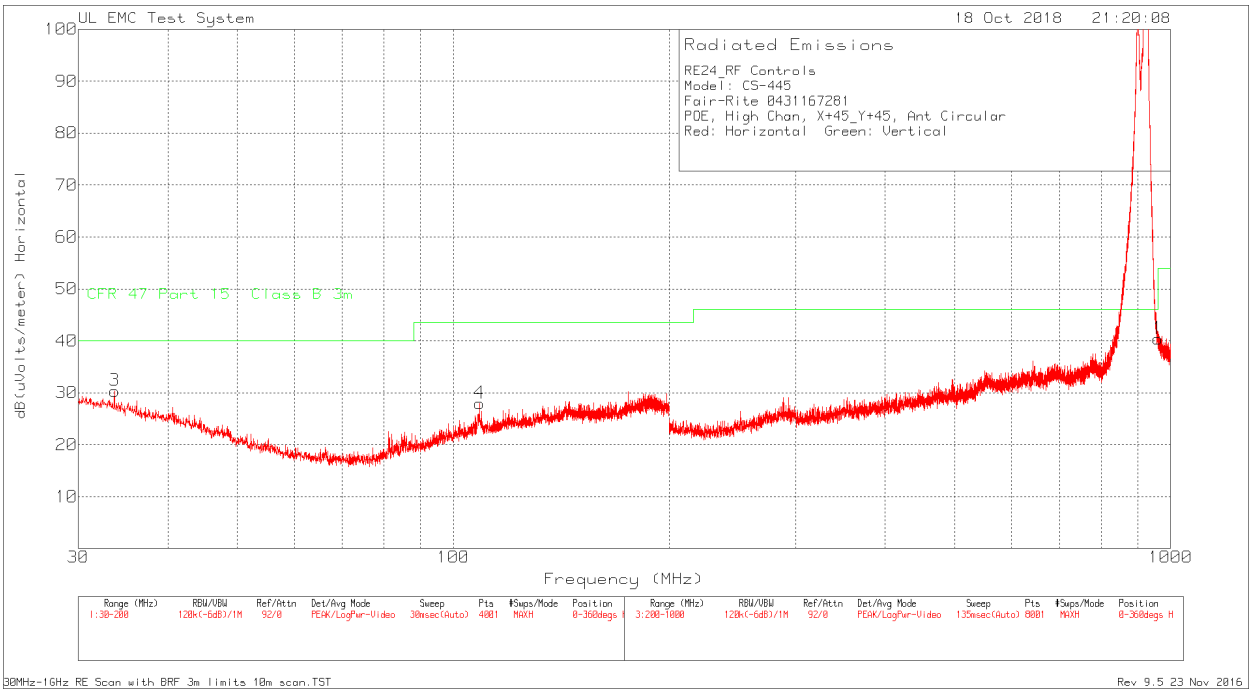
RE23_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Mid Chan, X+45_Y+45, Ant Circular
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	33.6975	33.3	Pk	16.8	-30.2	10.5	N/A	30.4	40	-9.6	0-360	101	H
4	108.795	35.4	Pk	12	-29.9	10.5	N/A	28	43.52	-15.52	0-360	398	H
5	60.2175	48.32	Pk	6.8	-30.3	10.5	N/A	35.32	40	-4.68	0-360	101	V
6	60.8125	47.71	Pk	6.7	-30.2	10.5	N/A	34.71	40	-5.29	0-360	248	V
7	66.295	50.34	Pk	6.2	-30	10.5	N/A	37.04	40	-2.96	0-360	248	V
8	81.51	47.76	Pk	7.3	-30.1	10.5	N/A	35.46	40	-4.54	0-360	248	V
9	82.0625	46.87	Pk	7.4	-30.1	10.5	N/A	34.67	40	-5.33	0-360	248	V
10	85.5475	45.19	Pk	8.2	-30	10.5	N/A	33.89	40	-6.11	0-360	248	V
11	86.0575	45.42	Pk	8.2	-29.8	10.5	N/A	34.32	40	-5.68	0-360	248	V
12	98.425	45.01	Pk	10.4	-30	10.5	N/A	35.91	43.52	-7.61	0-360	101	V
1	960	28	Pk	23.9	-27.4	10.5	3.6	38.6	46.02	-7.42	0-360	102	H
2	960	29.97	Pk	23.9	-27.4	10.5	3.6	40.57	46.02	-5.45	0-360	102	V

Pk - Peak detector

9.2.6. Circular Polarization, +40° +40° TX Direction, High Channel





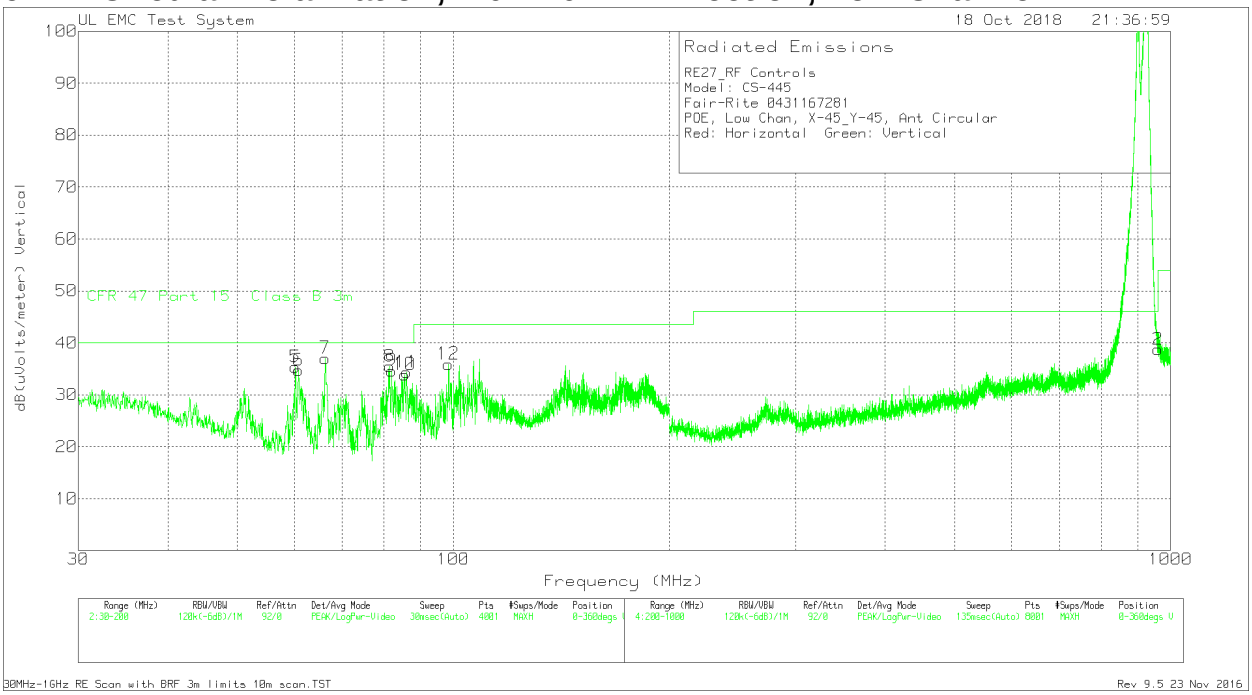
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

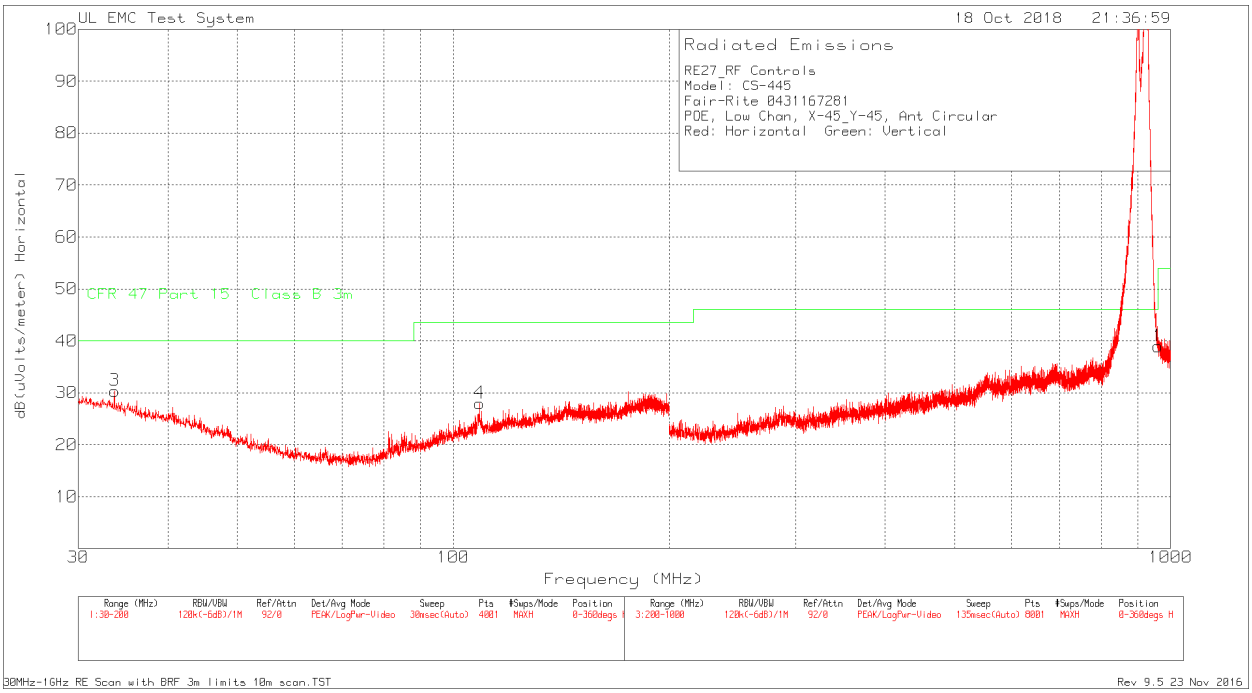
RE24_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, High Chan, X+45_Y+45, Ant Circular
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	33.6975	33.3	Pk	16.8	-30.2	10.5	N/A	30.4	40	-9.6	0-360	101	H
4	108.795	35.4	Pk	12	-29.9	10.5	N/A	28	43.52	-15.52	0-360	398	H
5	60.2175	48.32	Pk	6.8	-30.3	10.5	N/A	35.32	40	-4.68	0-360	101	V
6	60.8125	47.71	Pk	6.7	-30.2	10.5	N/A	34.71	40	-5.29	0-360	248	V
7	66.295	50.34	Pk	6.2	-30	10.5	N/A	37.04	40	-2.96	0-360	248	V
8	81.51	47.76	Pk	7.3	-30.1	10.5	N/A	35.46	40	-4.54	0-360	248	V
9	82.0625	46.87	Pk	7.4	-30.1	10.5	N/A	34.67	40	-5.33	0-360	248	V
10	85.5475	45.19	Pk	8.2	-30	10.5	N/A	33.89	40	-6.11	0-360	248	V
11	86.0575	45.42	Pk	8.2	-29.8	10.5	N/A	34.32	40	-5.68	0-360	248	V
12	98.425	45.01	Pk	10.4	-30	10.5	N/A	35.91	43.52	-7.61	0-360	101	V
1	960	29.83	Pk	23.9	-27.4	10.5	3.6	40.43	46.02	-5.59	0-360	199	H
2	960	28.52	Pk	23.9	-27.4	10.5	3.6	39.12	46.02	-6.9	0-360	102	V

Pk - Peak detector

9.2.7. Circular Polarization, -40° -40° TX Direction, Low Channel





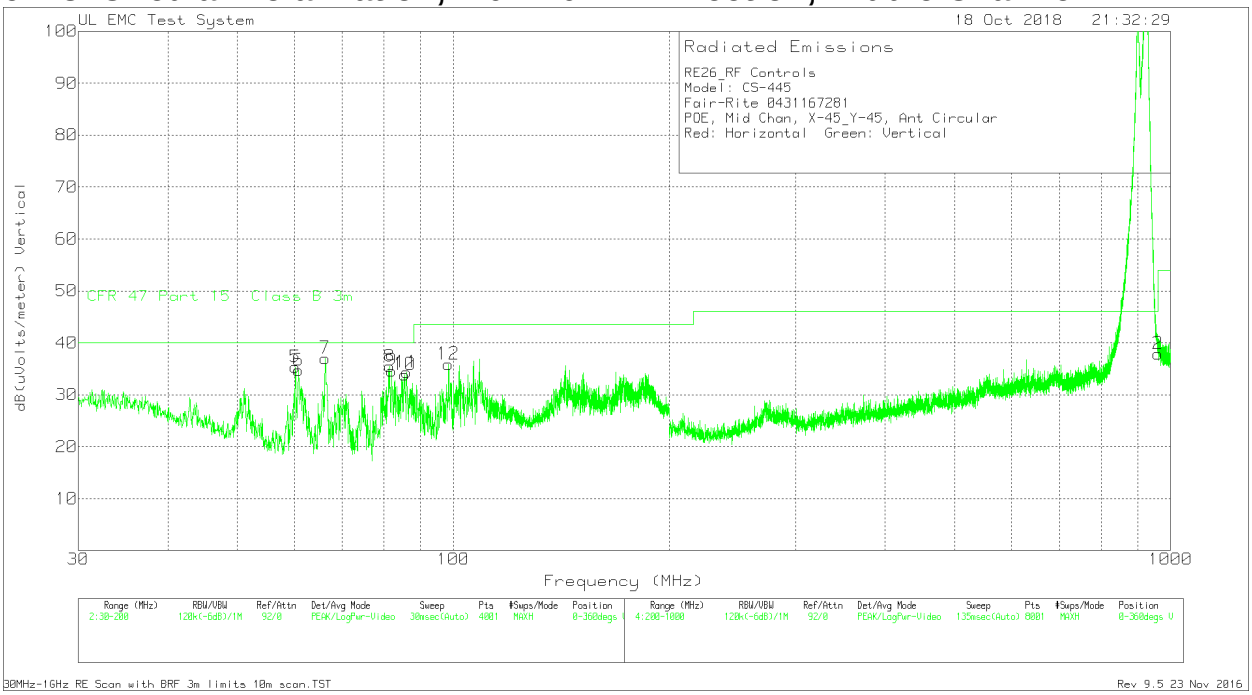
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

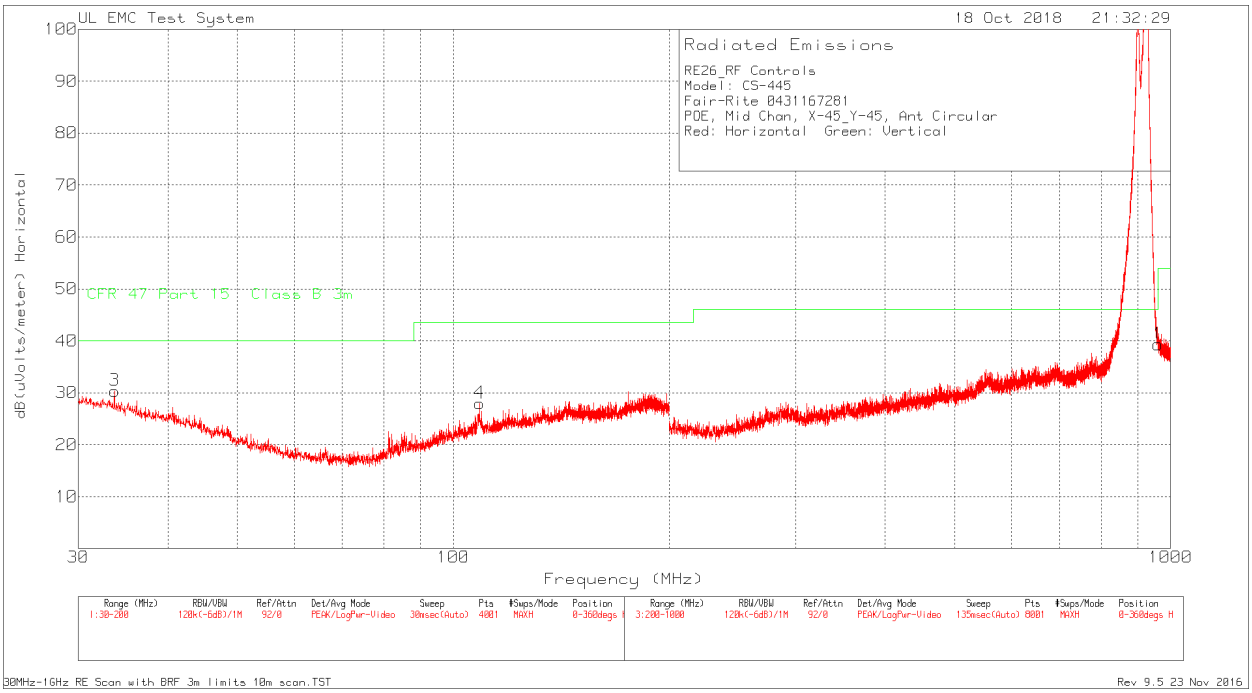
RE27_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Low Chan, X-45_Y-45, Ant Circular
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	33.6975	33.3	Pk	16.8	-30.2	10.5	N/A	30.4	40	-9.6	0-360	101	H
4	108.795	35.4	Pk	12	-29.9	10.5	N/A	28	43.52	-15.52	0-360	398	H
5	60.2175	48.32	Pk	6.8	-30.3	10.5	N/A	35.32	40	-4.68	0-360	101	V
6	60.8125	47.71	Pk	6.7	-30.2	10.5	N/A	34.71	40	-5.29	0-360	248	V
7	66.295	50.34	Pk	6.2	-30	10.5	N/A	37.04	40	-2.96	0-360	248	V
8	81.51	47.76	Pk	7.3	-30.1	10.5	N/A	35.46	40	-4.54	0-360	248	V
9	82.0625	46.87	Pk	7.4	-30.1	10.5	N/A	34.67	40	-5.33	0-360	248	V
10	85.5475	45.19	Pk	8.2	-30	10.5	N/A	33.89	40	-6.11	0-360	248	V
11	86.0575	45.42	Pk	8.2	-29.8	10.5	N/A	34.32	40	-5.68	0-360	248	V
12	98.425	45.01	Pk	10.4	-30	10.5	N/A	35.91	43.52	-7.61	0-360	101	V
1	960	28.36	Pk	23.9	-27.4	10.5	3.6	38.96	46.02	-7.06	0-360	98	H
2	960	28.11	Pk	23.9	-27.4	10.5	3.6	38.71	46.02	-7.31	0-360	98	V

Pk - Peak detector

9.2.8. Circular Polarization, -40° -40° TX Direction, Middle Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

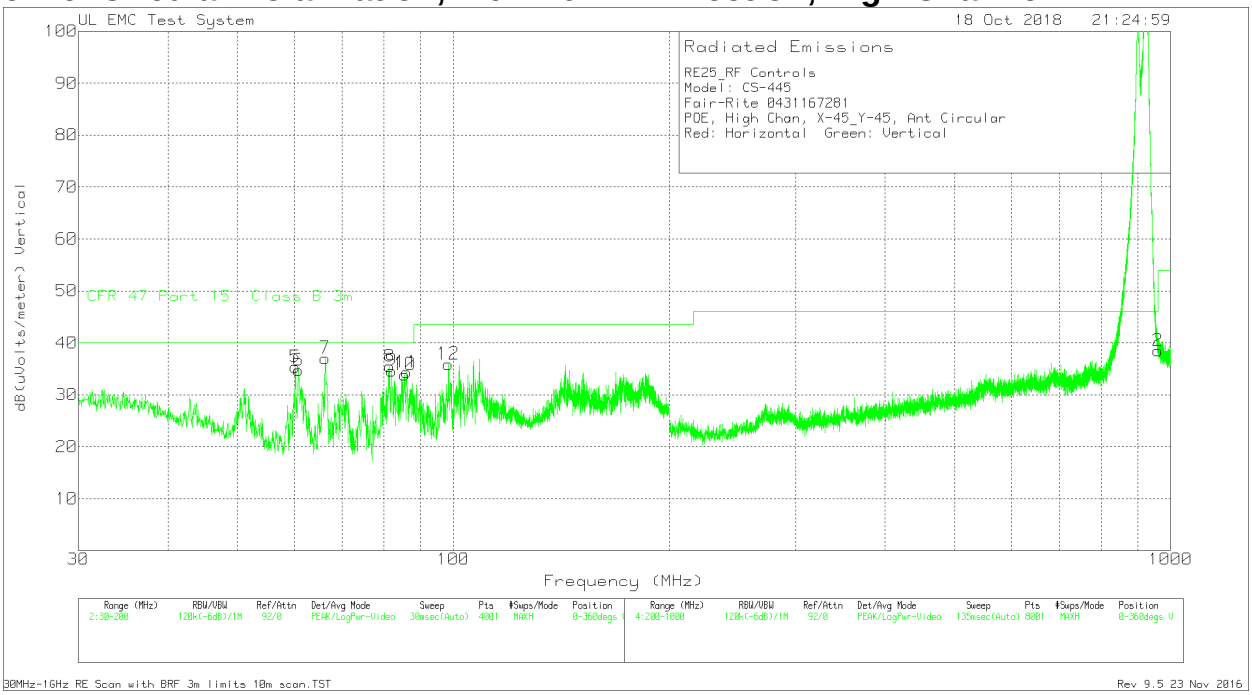
RE26_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Mid Chan, X-45_Y-45, Ant Circular
Red: Horizontal Green: Vertical

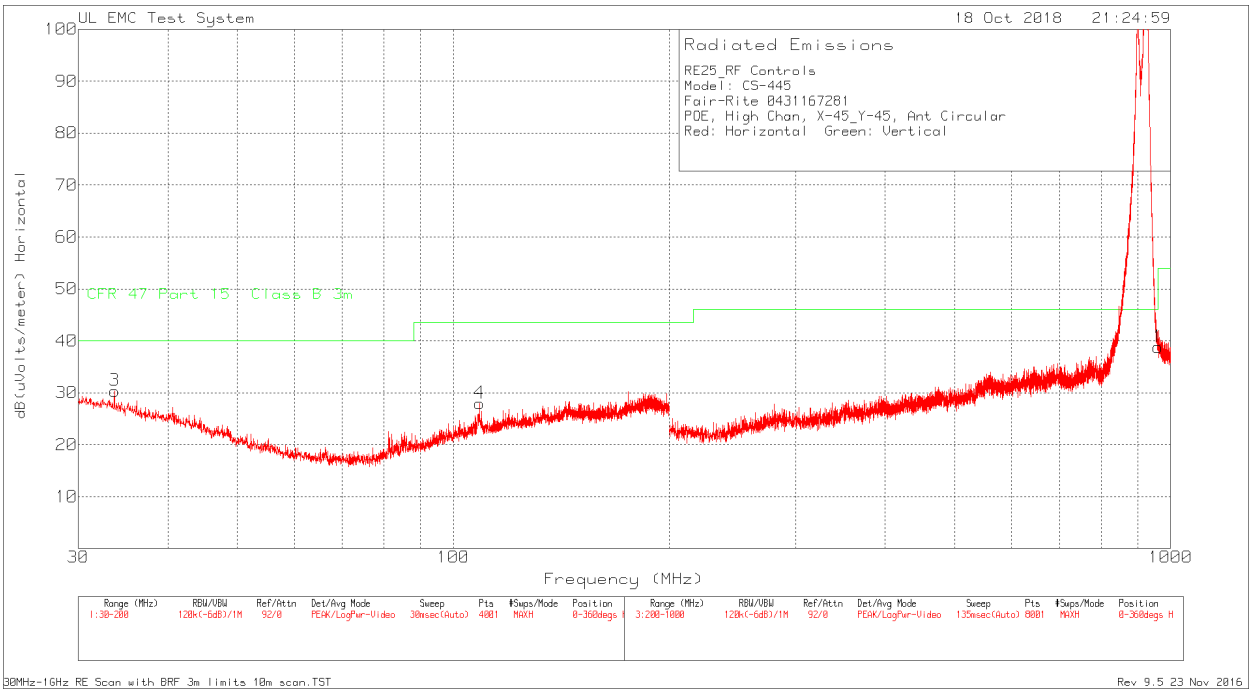
Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading	Limit:1 dB(uVolts/meter)	
3	33.6975	33.3dBuV Pk	16.8	-19.7	30.4	40	
		Azimuth:0-360	Height:101	Horz	Margin (dB)	-9.6	
4	108.795	35.4dBuV Pk	12	-19.4	28	43.52	
		Azimuth:0-360	Height:398	Horz	Margin (dB)	-15.52	
5	60.2175	48.32dBuV Pk	6.8	-19.8	35.32	40	
		Azimuth:0-360	Height:101	Vert	Margin (dB)	-4.68	
6	60.8125	47.71dBuV Pk	6.7	-19.7	34.71	40	
		Azimuth:0-360	Height:248	Vert	Margin (dB)	-5.29	
7	66.295	50.34dBuV Pk	6.2	-19.5	37.04	40	
		Azimuth:0-360	Height:248	Vert	Margin (dB)	-2.96	
8	81.51	47.76dBuV Pk	7.3	-19.6	35.46	40	
		Azimuth:0-360	Height:248	Vert	Margin (dB)	-4.54	
9	82.0625	46.87dBuV Pk	7.4	-19.6	34.67	40	
		Azimuth:0-360	Height:248	Vert	Margin (dB)	-5.33	
10	85.5475	45.19dBuV Pk	8.2	-19.5	33.89	40	
		Azimuth:0-360	Height:248	Vert	Margin (dB)	-6.11	
11	86.0575	45.42dBuV Pk	8.2	-19.3	34.32	40	
		Azimuth:0-360	Height:248	Vert	Margin (dB)	-5.68	
12	98.425	45.01dBuV Pk	10.4	-19.5	35.91	43.52	
		Azimuth:0-360	Height:101	Vert	Margin (dB)	-7.61	
1	960	28.73dBuV Pk	23.9	-13.3	39.33	46.02	
		Azimuth:0-360	Height:199	Horz	Margin (dB)	-6.69	
2	960	27.31dBuV Pk	23.9	-13.3	37.91	46.02	
		Azimuth:0-360	Height:99	Vert	Margin (dB)	-8.11	

LIMIT 1: CFR 47 Part 15 Class B 3m
Pk - Peak detector

9.2.9. Circular Polarization, -40° -40° TX Direction, High Channel





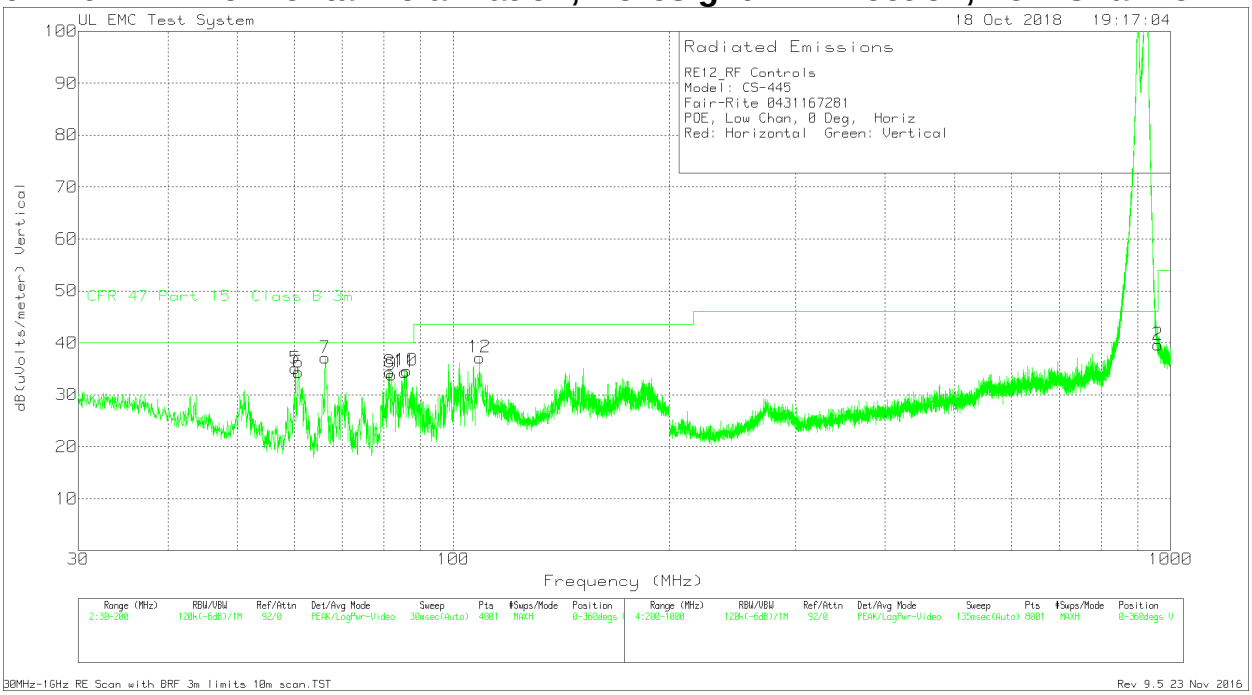
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

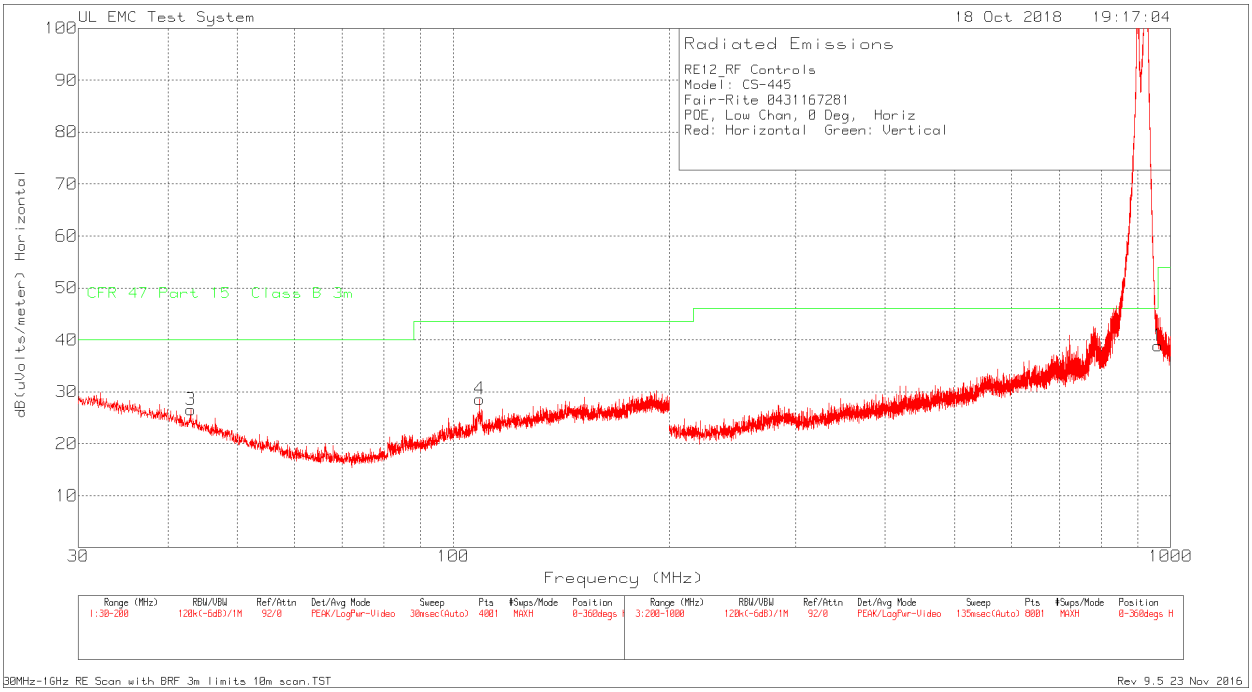
RE25_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, High Chan, X-45_Y-45, Ant Circular
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	33.6975	33.3	Pk	16.8	-30.2	10.5	N/A	30.4	40	-9.6	0-360	101	H
4	108.795	35.4	Pk	12	-29.9	10.5	N/A	28	43.52	-15.52	0-360	398	H
5	60.2175	48.32	Pk	6.8	-30.3	10.5	N/A	35.32	40	-4.68	0-360	101	V
6	60.8125	47.71	Pk	6.7	-30.2	10.5	N/A	34.71	40	-5.29	0-360	248	V
7	66.295	50.34	Pk	6.2	-30	10.5	N/A	37.04	40	-2.96	0-360	248	V
8	81.51	47.76	Pk	7.3	-30.1	10.5	N/A	35.46	40	-4.54	0-360	248	V
9	82.0625	46.87	Pk	7.4	-30.1	10.5	N/A	34.67	40	-5.33	0-360	248	V
10	85.5475	45.19	Pk	8.2	-30	10.5	N/A	33.89	40	-6.11	0-360	248	V
11	86.0575	45.42	Pk	8.2	-29.8	10.5	N/A	34.32	40	-5.68	0-360	248	V
12	98.425	45.01	Pk	10.4	-30	10.5	N/A	35.91	43.52	-7.61	0-360	101	V
1	960	28.22	Pk	23.9	-27.4	10.5	3.6	38.82	46.02	-7.2	0-360	102	H
2	960	27.91	Pk	23.9	-27.4	10.5	3.6	38.51	46.02	-7.51	0-360	102	V

Pk - Peak detector

9.2.10. Horizontal Polarization, Boresight TX Direction, Low Channel



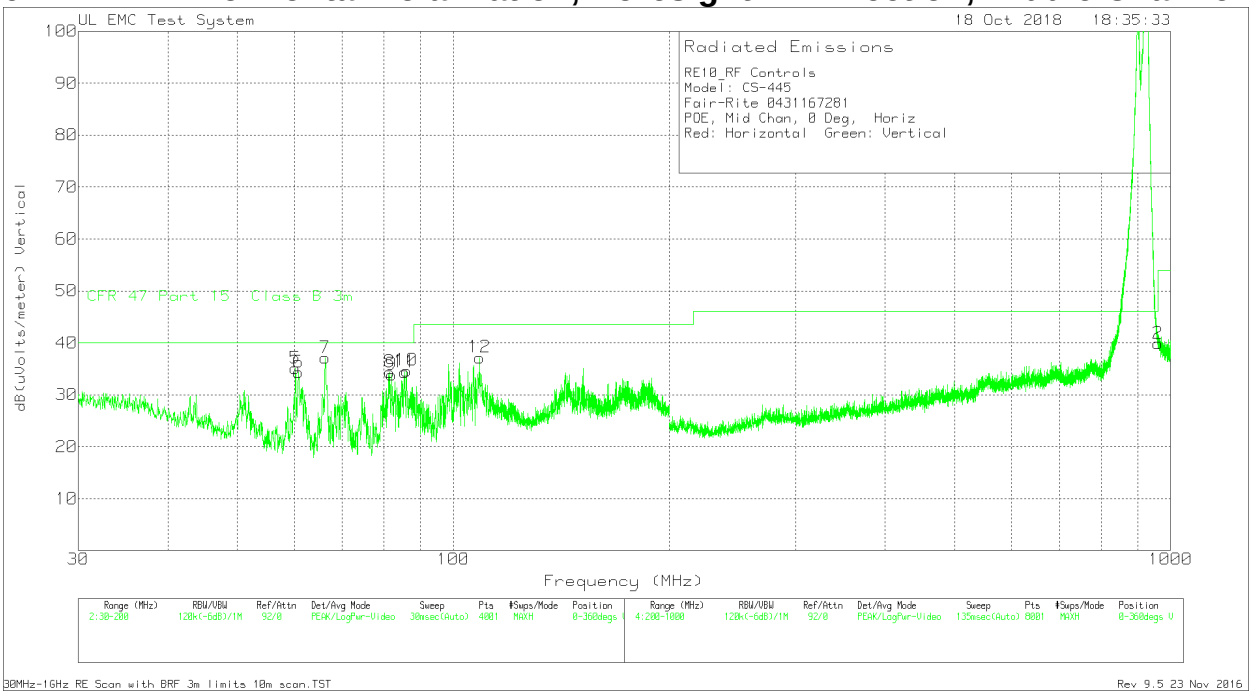


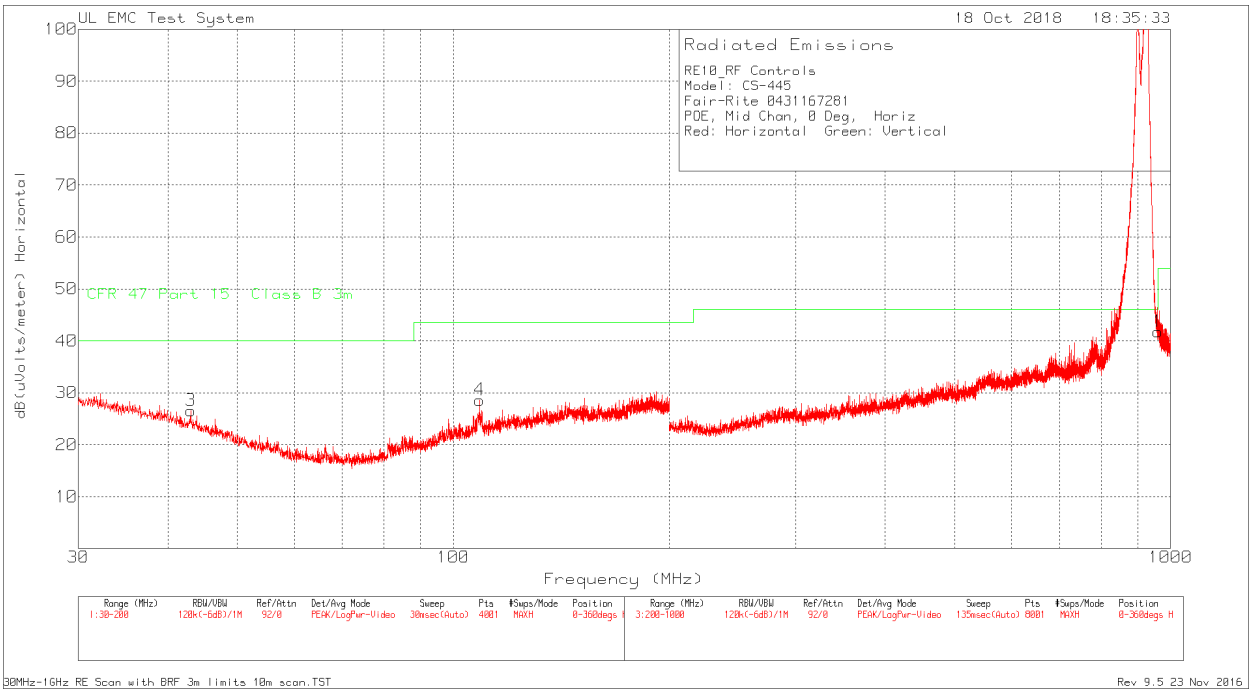
RE12_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Low Chan, 0 Deg, Horiz
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	43.0475	33.15	Pk	13	-30.1	10.5	N/A	26.55	40	-13.45	0-360	101	H
4	108.795	36.01	Pk	12	-29.9	10.5	N/A	28.61	43.52	-14.91	0-360	398	H
5	60.2175	48.11	Pk	6.8	-30.3	10.5	N/A	35.11	40	-4.89	0-360	252	V
6	60.8125	47.37	Pk	6.7	-30.2	10.5	N/A	34.37	40	-5.63	0-360	102	V
7	66.295	50.42	Pk	6.2	-30	10.5	N/A	37.12	40	-2.88	0-360	252	V
8	81.51	46.7	Pk	7.3	-30.1	10.5	N/A	34.4	40	-5.6	0-360	252	V
9	82.0625	46.11	Pk	7.4	-30.1	10.5	N/A	33.91	40	-6.09	0-360	398	V
10	86.015	45.77	Pk	8.2	-29.8	10.5	N/A	34.67	40	-5.33	0-360	252	V
11	85.505	45.71	Pk	8.2	-30	10.5	N/A	34.41	40	-5.59	0-360	252	V
12	108.795	44.58	Pk	12	-29.9	10.5	N/A	37.18	43.52	-6.34	0-360	102	V
1	960	28.25	Pk	23.9	-27.4	10.5	3.6	38.85	46.02	-7.17	0-360	98	H
2	960	29.07	Pk	23.9	-27.4	10.5	3.6	39.67	46.02	-6.35	0-360	98	V

Pk - Peak detector

9.2.11. Horizontal Polarization, Boresight TX Direction, Middle Channel





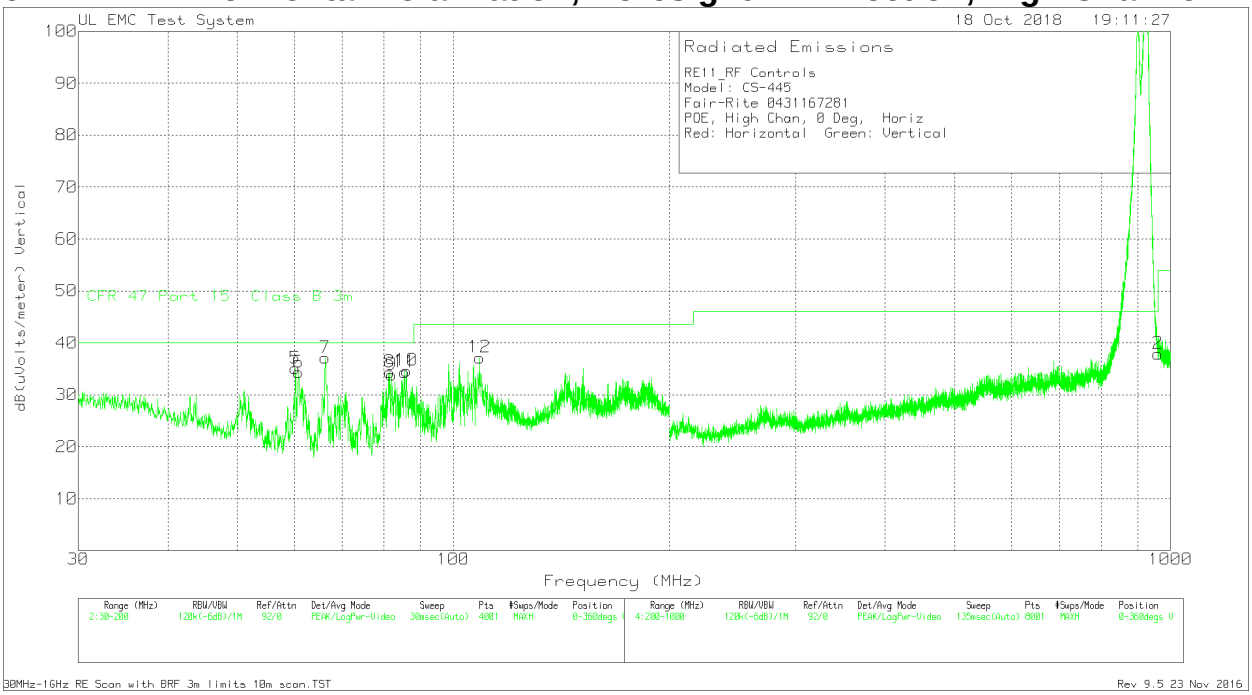
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

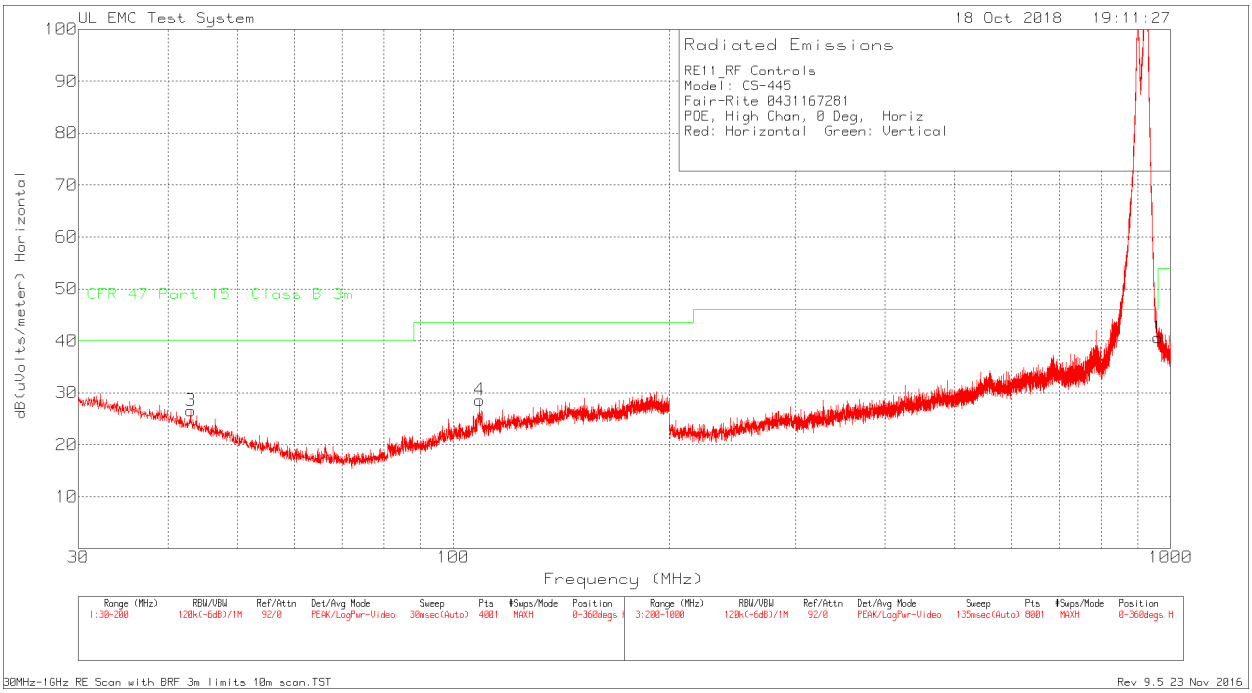
RE10_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Mid Chan, 0 Deg, Horiz
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	43.0475	33.15	Pk	13	-30.1	10.5	N/A	26.55	40	-13.45	0-360	101	H
4	108.795	36.01	Pk	12	-29.9	10.5	N/A	28.61	43.52	-14.91	0-360	398	H
5	60.2175	48.11	Pk	6.8	-30.3	10.5	N/A	35.11	40	-4.89	0-360	252	V
6	60.8125	47.37	Pk	6.7	-30.2	10.5	N/A	34.37	40	-5.63	0-360	102	V
7	66.295	50.42	Pk	6.2	-30	10.5	N/A	37.12	40	-2.88	0-360	252	V
8	81.51	46.7	Pk	7.3	-30.1	10.5	N/A	34.4	40	-5.6	0-360	252	V
9	82.0625	46.11	Pk	7.4	-30.1	10.5	N/A	33.91	40	-6.09	0-360	398	V
10	86.015	45.77	Pk	8.2	-29.8	10.5	N/A	34.67	40	-5.33	0-360	252	V
11	85.505	45.71	Pk	8.2	-30	10.5	N/A	34.41	40	-5.59	0-360	252	V
12	108.795	44.58	Pk	12	-29.9	10.5	N/A	37.18	43.52	-6.34	0-360	102	V
1	960	31.14	Pk	23.9	-27.4	10.5	3.6	41.74	46.02	-4.28	0-360	199	H
2	960	29.3	Pk	23.9	-27.4	10.5	3.6	39.9	46.02	-6.12	0-360	199	V

Pk - Peak detector

9.2.12. Horizontal Polarization, Boresight TX Direction, High Channel





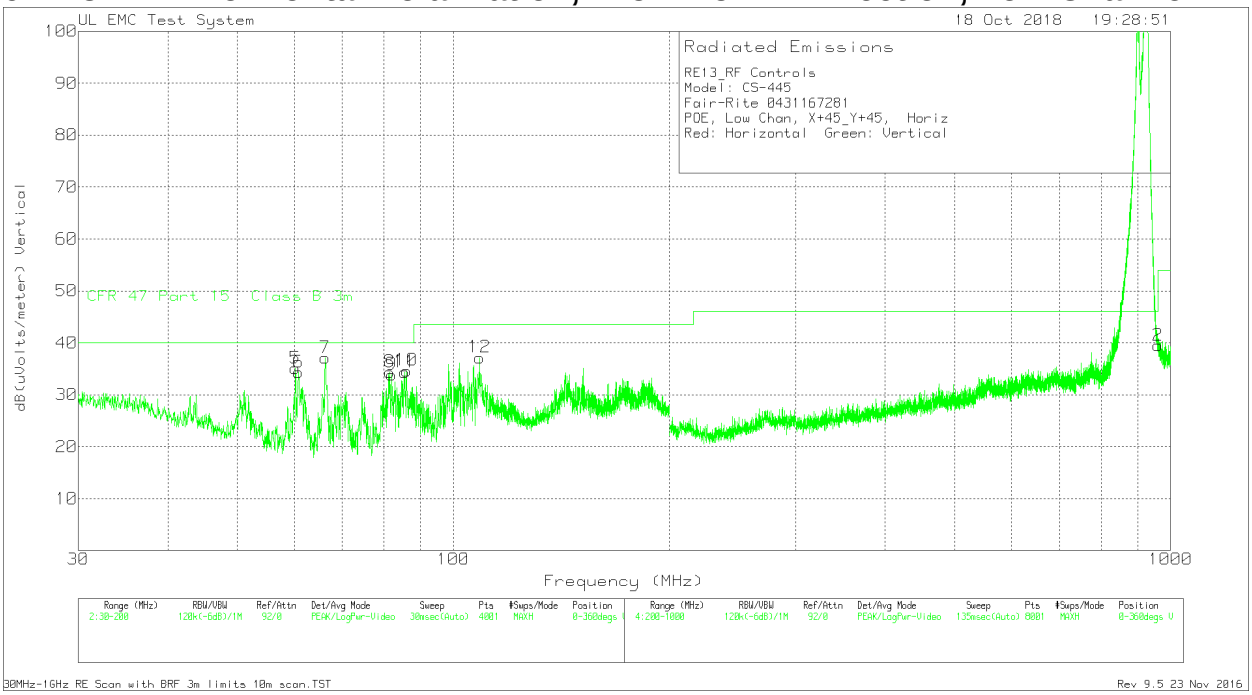
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

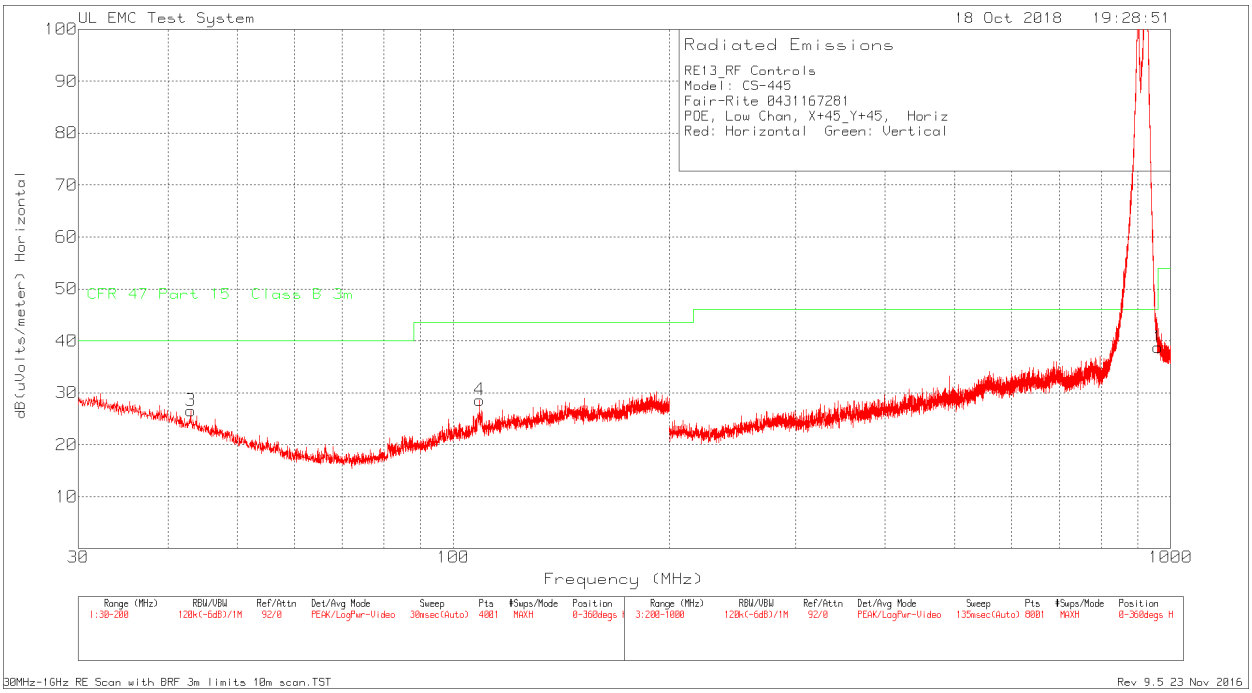
RE11_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, High Chan, 0 Deg, Horiz
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	43.0475	33.15	Pk	13	-30.1	10.5	N/A	26.55	40	-13.45	0-360	101	H
4	108.795	36.01	Pk	12	-29.9	10.5	N/A	28.61	43.52	-14.91	0-360	398	H
5	60.2175	48.11	Pk	6.8	-30.3	10.5	N/A	35.11	40	-4.89	0-360	252	V
6	60.8125	47.37	Pk	6.7	-30.2	10.5	N/A	34.37	40	-5.63	0-360	102	V
7	66.295	50.42	Pk	6.2	-30	10.5	N/A	37.12	40	-2.88	0-360	252	V
8	81.51	46.7	Pk	7.3	-30.1	10.5	N/A	34.4	40	-5.6	0-360	252	V
9	82.0625	46.11	Pk	7.4	-30.1	10.5	N/A	33.91	40	-6.09	0-360	398	V
10	86.015	45.77	Pk	8.2	-29.8	10.5	N/A	34.67	40	-5.33	0-360	252	V
11	85.505	45.71	Pk	8.2	-30	10.5	N/A	34.41	40	-5.59	0-360	252	V
12	108.795	44.58	Pk	12	-29.9	10.5	N/A	37.18	43.52	-6.34	0-360	102	V
1	960	30.05	Pk	23.9	-27.4	10.5	3.6	40.65	46.02	-5.37	0-360	98	H
2	960	27.32	Pk	23.9	-27.4	10.5	3.6	37.92	46.02	-8.1	0-360	98	V

Pk - Peak detector

9.2.13. Horizontal Polarization, +45° +45° TX Direction, Low Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

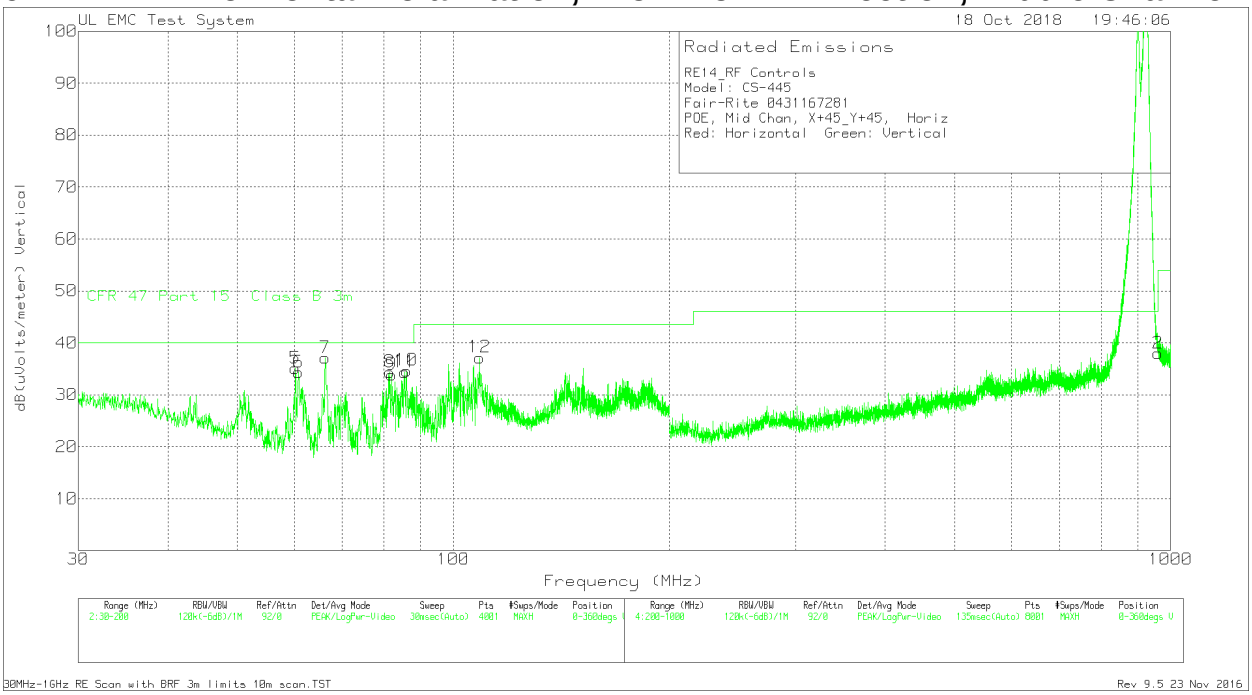
RE13_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Low Chan, X+45_Y+45, Horiz
Red: Horizontal Green: Vertical
Trace Markers

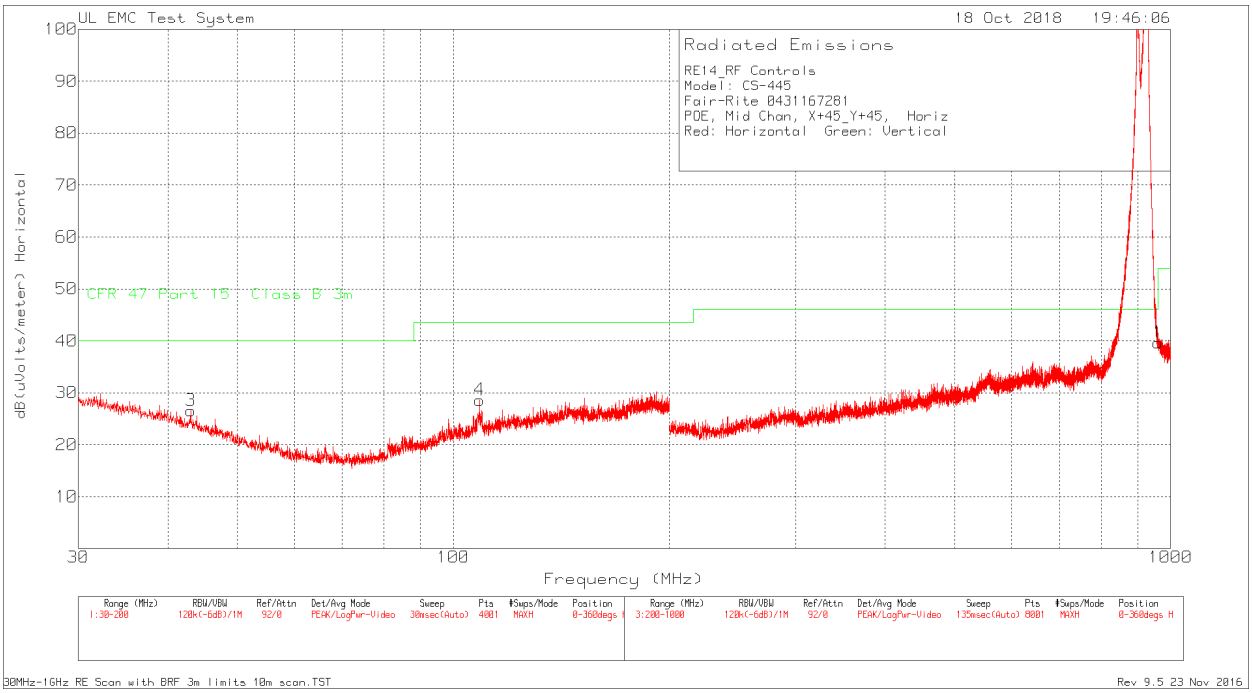
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	43.0475	33.15	Pk	13	-30.1	10.5	N/A	26.55	40	-13.45	0-360	101	H
4	108.795	36.01	Pk	12	-29.9	10.5	N/A	28.61	43.52	-14.91	0-360	398	H
5	60.2175	48.11	Pk	6.8	-30.3	10.5	N/A	35.11	40	-4.89	0-360	252	V
6	60.8125	47.37	Pk	6.7	-30.2	10.5	N/A	34.37	40	-5.63	0-360	102	V
7	66.295	50.42	Pk	6.2	-30	10.5	N/A	37.12	40	-2.88	0-360	252	V
8	81.51	46.7	Pk	7.3	-30.1	10.5	N/A	34.4	40	-5.6	0-360	252	V
9	82.0625	46.11	Pk	7.4	-30.1	10.5	N/A	33.91	40	-6.09	0-360	398	V
10	86.015	45.77	Pk	8.2	-29.8	10.5	N/A	34.67	40	-5.33	0-360	252	V
11	85.505	45.71	Pk	8.2	-30	10.5	N/A	34.41	40	-5.59	0-360	252	V
12	108.795	44.58	Pk	12	-29.9	10.5	N/A	37.18	43.52	-6.34	0-360	102	V
1	960	28.11	Pk	23.9	-27.4	10.5	3.6	38.71	46.02	-7.31	0-360	98	H
2	960	28.89	Pk	23.9	-27.4	10.5	3.6	39.49	46.02	-6.53	0-360	98	V

Pk - Peak detector

UL LLC
333 Pfingsten Road, Northbrook, IL 60062; USA TEL:(847) 272-8800

9.2.14. Horizontal Polarization, +45° +45° TX Direction, Middle Channel





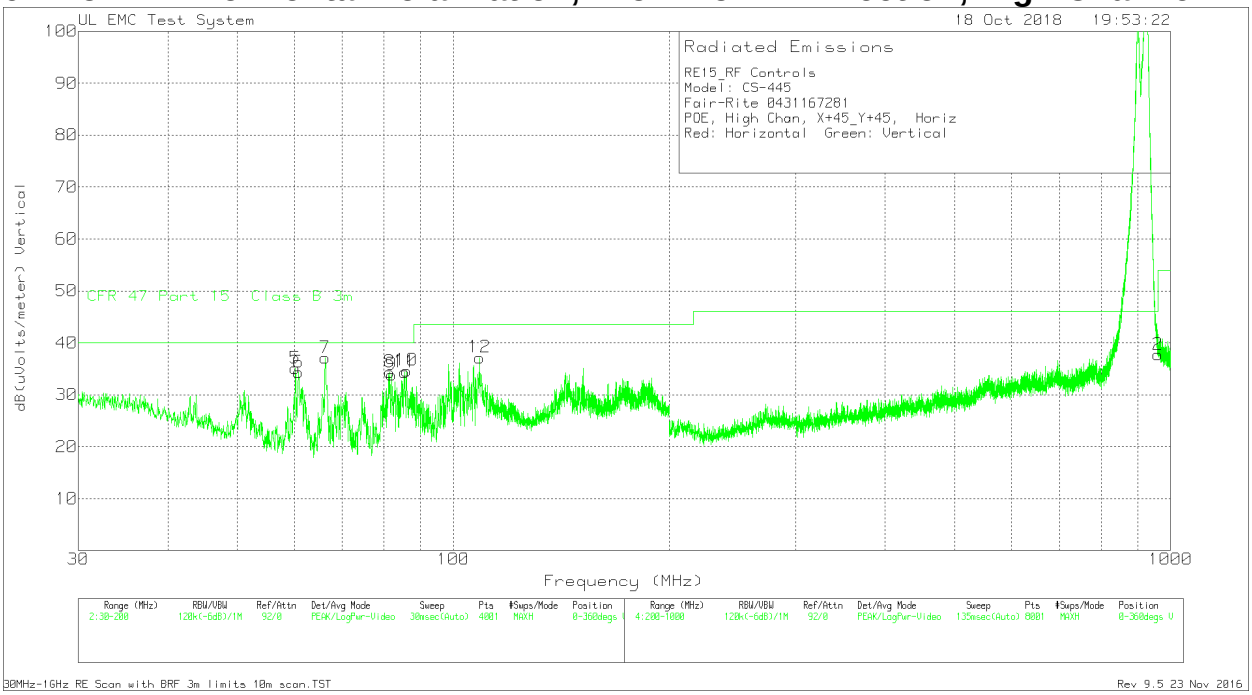
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

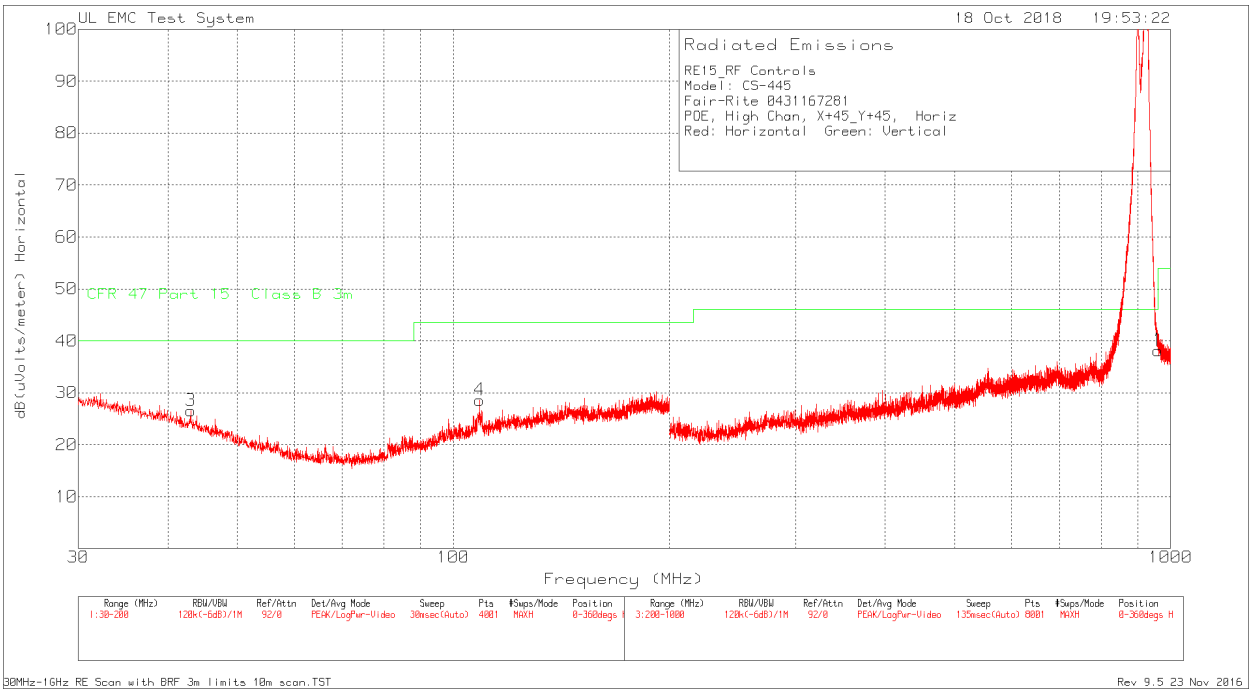
RE14_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Mid Chan, X+45_Y+45, Horiz
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	43.0475	33.15	Pk	13	-30.1	10.5	N/A	26.55	40	-13.45	0-360	101	H
4	108.795	36.01	Pk	12	-29.9	10.5	N/A	28.61	43.52	-14.91	0-360	398	H
5	60.2175	48.11	Pk	6.8	-30.3	10.5	N/A	35.11	40	-4.89	0-360	252	V
6	60.8125	47.37	Pk	6.7	-30.2	10.5	N/A	34.37	40	-5.63	0-360	102	V
7	66.295	50.42	Pk	6.2	-30	10.5	N/A	37.12	40	-2.88	0-360	252	V
8	81.51	46.7	Pk	7.3	-30.1	10.5	N/A	34.4	40	-5.6	0-360	252	V
9	82.0625	46.11	Pk	7.4	-30.1	10.5	N/A	33.91	40	-6.09	0-360	398	V
10	86.015	45.77	Pk	8.2	-29.8	10.5	N/A	34.67	40	-5.33	0-360	252	V
11	85.505	45.71	Pk	8.2	-30	10.5	N/A	34.41	40	-5.59	0-360	252	V
12	108.795	44.58	Pk	12	-29.9	10.5	N/A	37.18	43.52	-6.34	0-360	102	V
1	960	29.05	Pk	23.9	-27.4	10.5	3.6	39.65	46.02	-6.37	0-360	98	H
2	960	27.37	Pk	23.9	-27.4	10.5	3.6	37.97	46.02	-8.05	0-360	102	V

Pk - Peak detector

9.2.15. Horizontal Polarization, +45° +45° TX Direction, High Channel





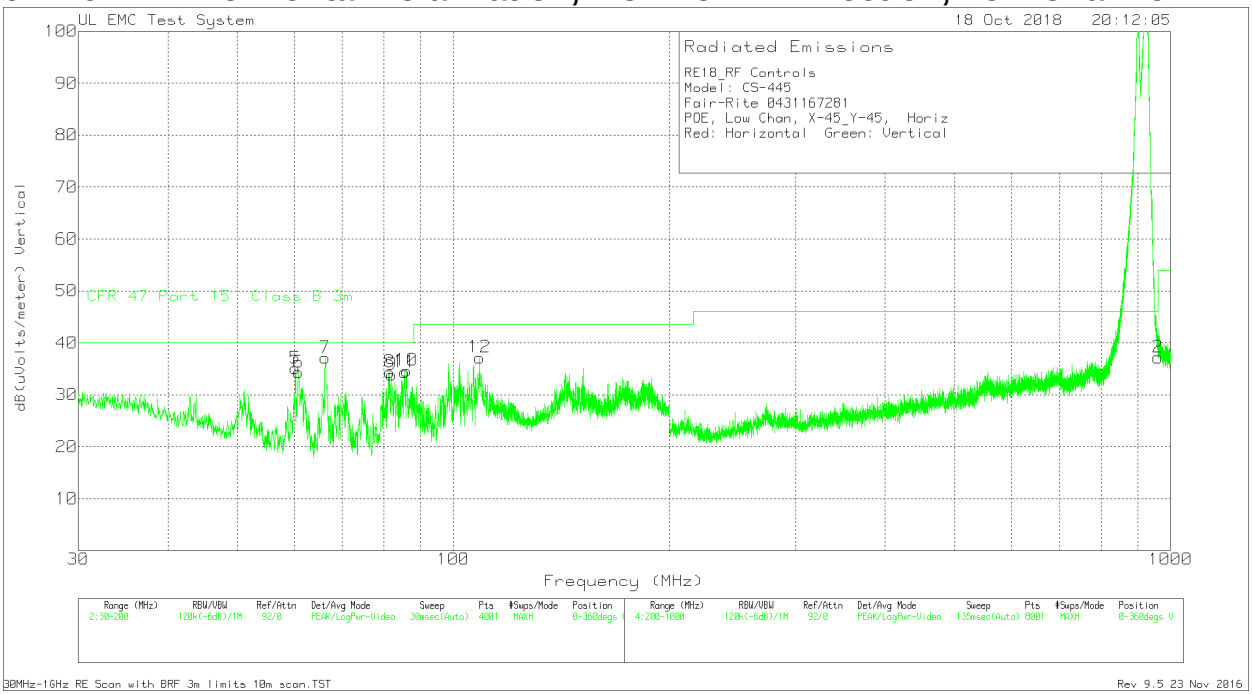
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

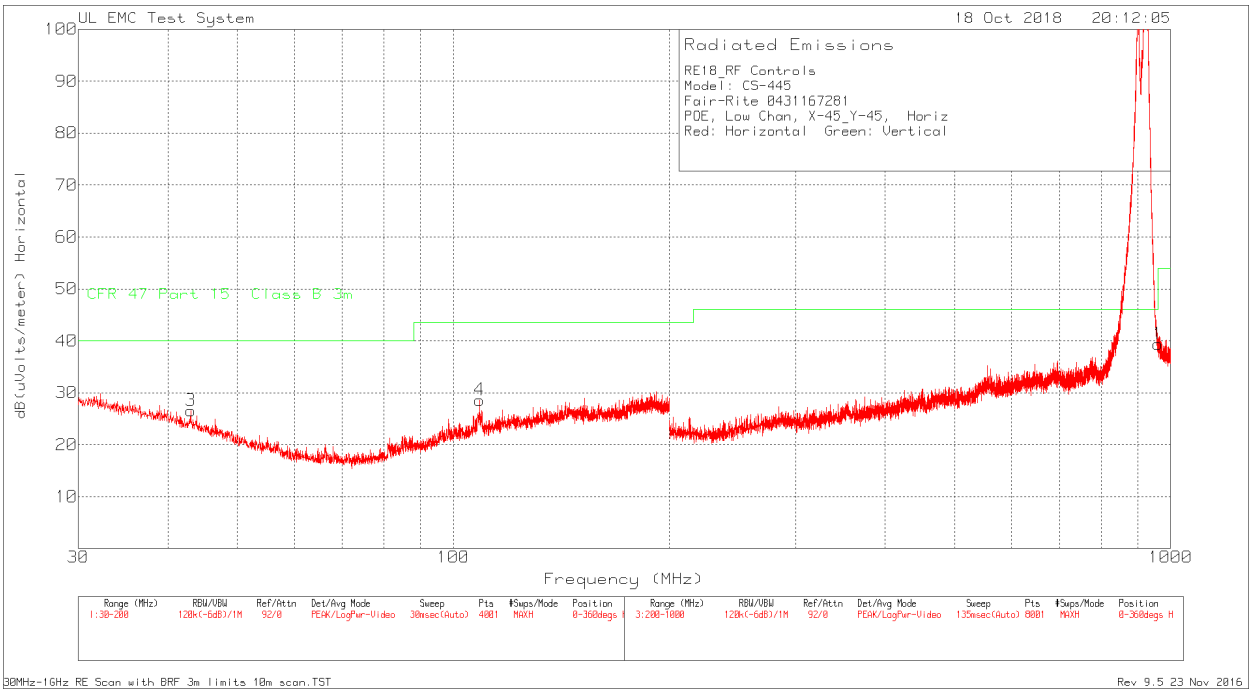
RE15_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, High Chan, X+45_Y+45, Horiz
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	43.0475	33.15	Pk	13	-30.1	10.5	N/A	26.55	40	-13.45	0-360	101	H
4	108.795	36.01	Pk	12	-29.9	10.5	N/A	28.61	43.52	-14.91	0-360	398	H
5	60.2175	48.11	Pk	6.8	-30.3	10.5	N/A	35.11	40	-4.89	0-360	252	V
6	60.8125	47.37	Pk	6.7	-30.2	10.5	N/A	34.37	40	-5.63	0-360	102	V
7	66.295	50.42	Pk	6.2	-30	10.5	N/A	37.12	40	-2.88	0-360	252	V
8	81.51	46.7	Pk	7.3	-30.1	10.5	N/A	34.4	40	-5.6	0-360	252	V
9	82.0625	46.11	Pk	7.4	-30.1	10.5	N/A	33.91	40	-6.09	0-360	398	V
10	86.015	45.77	Pk	8.2	-29.8	10.5	N/A	34.67	40	-5.33	0-360	252	V
11	85.505	45.71	Pk	8.2	-30	10.5	N/A	34.41	40	-5.59	0-360	252	V
12	108.795	44.58	Pk	12	-29.9	10.5	N/A	37.18	43.52	-6.34	0-360	102	V
1	960	27.57	Pk	23.9	-27.4	10.5	3.6	38.17	46.02	-7.85	0-360	102	H
2	960	27.16	Pk	23.9	-27.4	10.5	3.6	37.76	46.02	-8.26	0-360	102	V

Pk - Peak detector

9.2.16. Horizontal Polarization, -45° -45° TX Direction, Low Channel





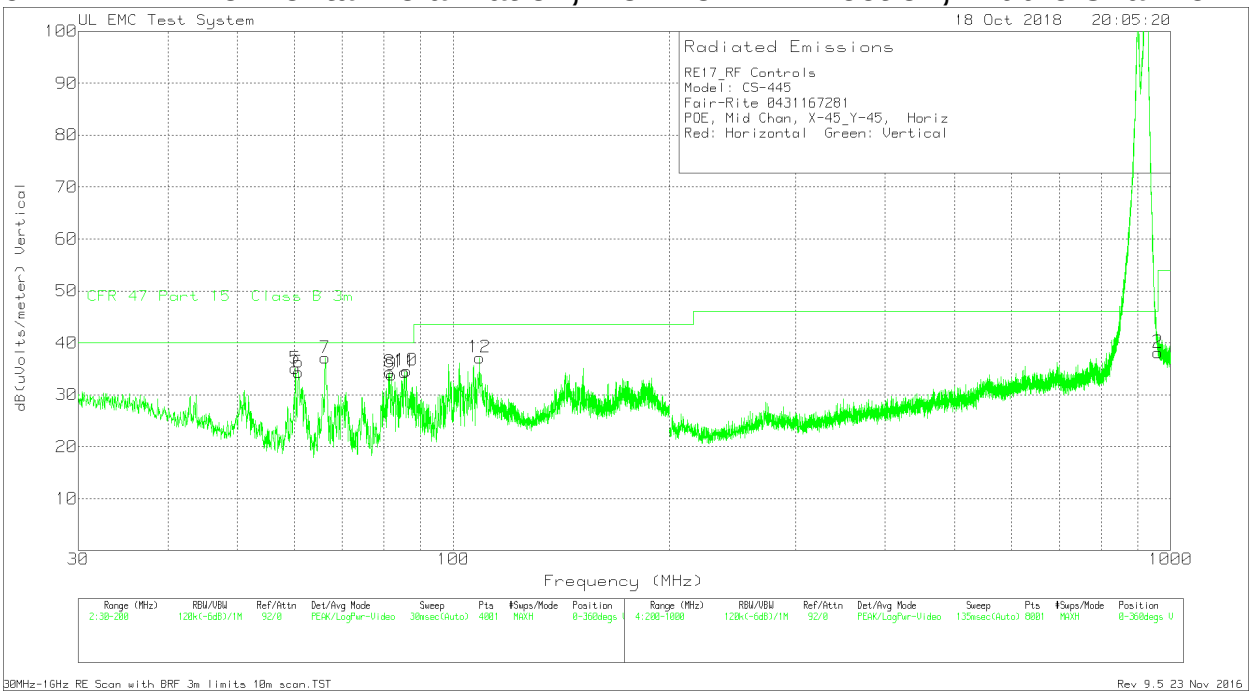
* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

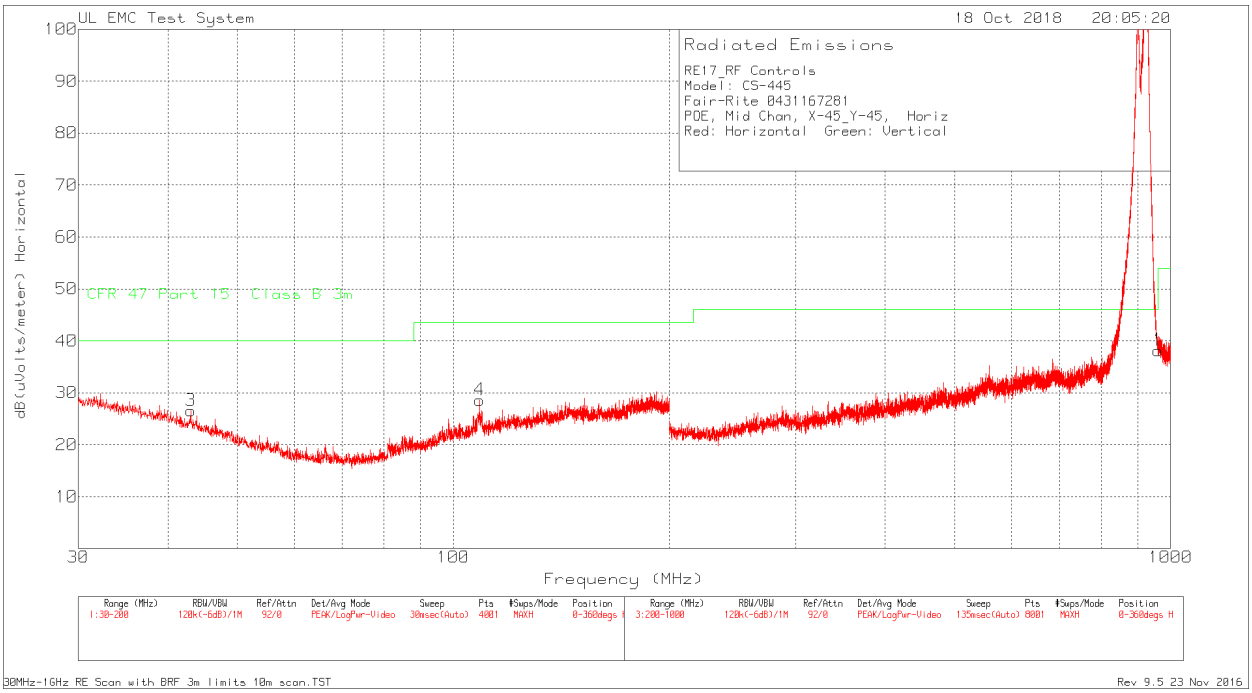
RE18_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Low Chan, X-45_Y-45, Horiz
Red: Horizontal Green: Vertical
Trace Markers

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	43.0475	33.15	Pk	13	-30.1	10.5	N/A	26.55	40	-13.45	0-360	101	H
4	108.795	36.01	Pk	12	-29.9	10.5	N/A	28.61	43.52	-14.91	0-360	398	H
5	60.2175	48.11	Pk	6.8	-30.3	10.5	N/A	35.11	40	-4.89	0-360	252	V
6	60.8125	47.37	Pk	6.7	-30.2	10.5	N/A	34.37	40	-5.63	0-360	102	V
7	66.295	50.42	Pk	6.2	-30	10.5	N/A	37.12	40	-2.88	0-360	252	V
8	81.51	46.7	Pk	7.3	-30.1	10.5	N/A	34.4	40	-5.6	0-360	252	V
9	82.0625	46.11	Pk	7.4	-30.1	10.5	N/A	33.91	40	-6.09	0-360	398	V
10	86.015	45.77	Pk	8.2	-29.8	10.5	N/A	34.67	40	-5.33	0-360	252	V
11	85.505	45.71	Pk	8.2	-30	10.5	N/A	34.41	40	-5.59	0-360	252	V
12	108.795	44.58	Pk	12	-29.9	10.5	N/A	37.18	43.52	-6.34	0-360	102	V
1	960	28.78	Pk	23.9	-27.4	10.5	3.6	39.38	46.02	-6.64	0-360	99	H
2	960	26.59	Pk	23.9	-27.4	10.5	3.6	37.19	46.02	-8.83	0-360	99	V

Pk - Peak detector

9.2.17. Horizontal Polarization, -45° -45° TX Direction, Middle Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

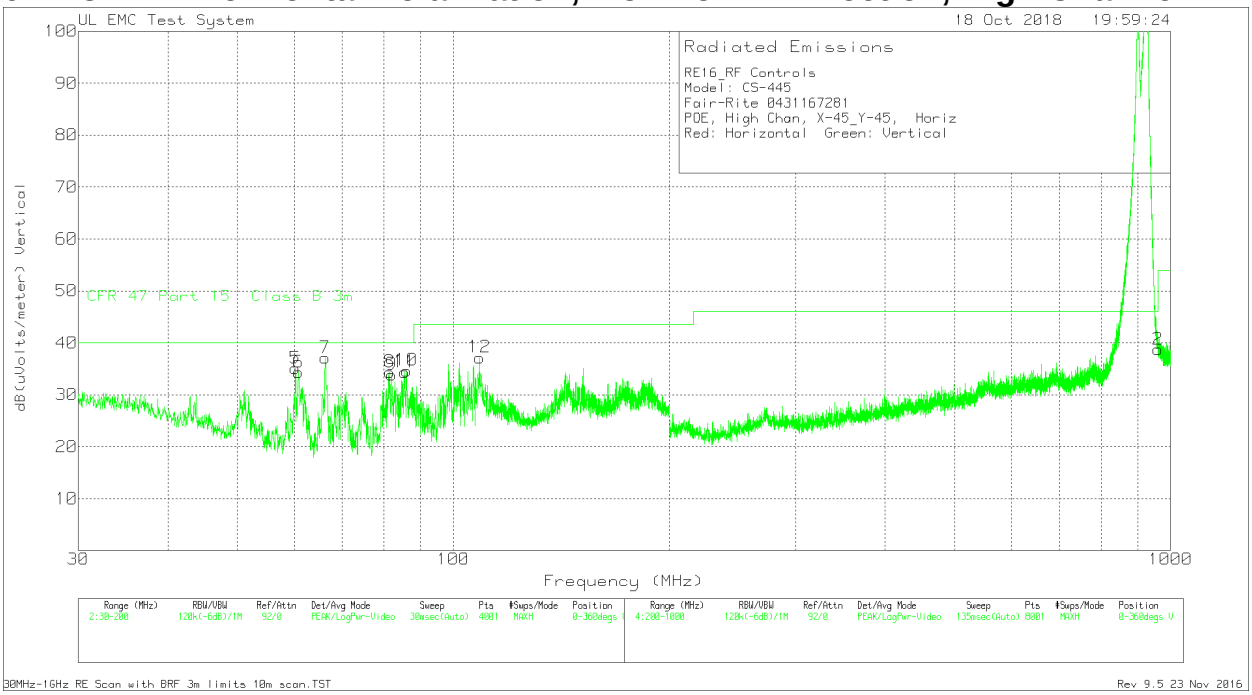
RE17_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Mid Chan, X-45_Y-45, Horiz
Red: Horizontal Green: Vertical

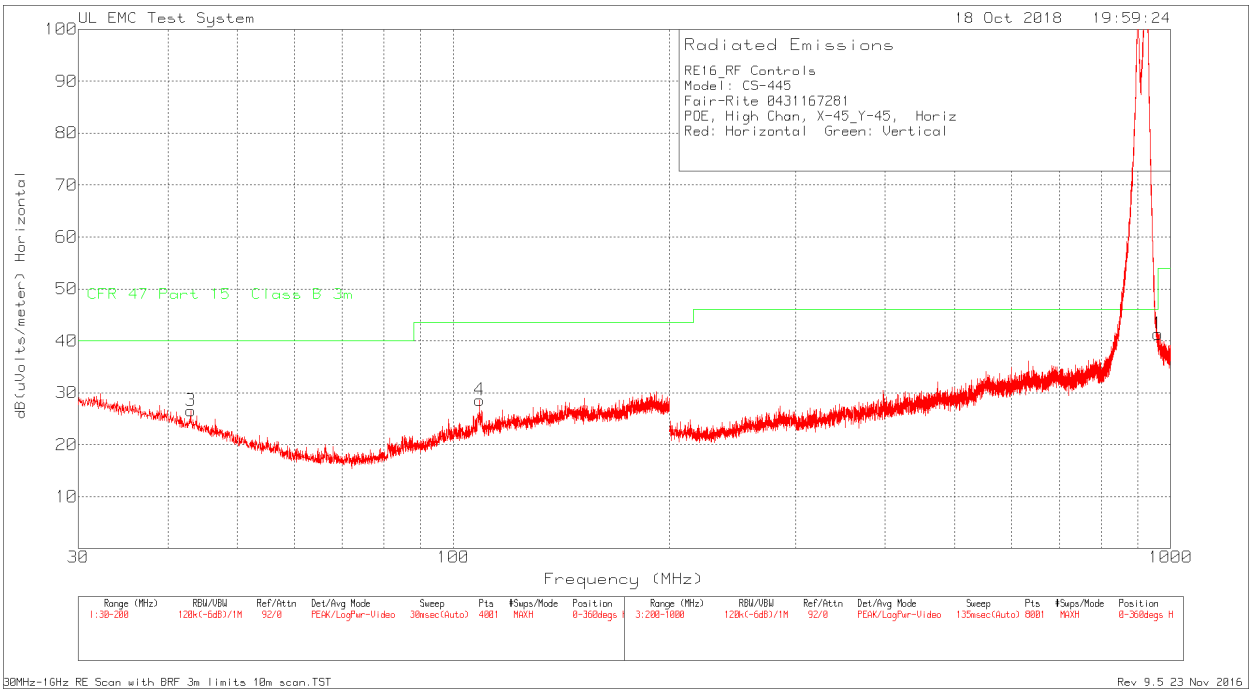
Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dB(uVolts/meter)	Limit:1
3	43.0475	33.15dBuV Pk	13	-19.6	26.55	40
		Azimuth:0-360	Height:101 Horz		Margin (dB)	-13.45
4	108.795	36.01dBuV Pk	12	-19.4	28.61	43.52
		Azimuth:0-360	Height:398 Horz		Margin (dB)	-14.91
5	60.2175	48.11dBuV Pk	6.8	-19.8	35.11	40
		Azimuth:0-360	Height:252 Vert		Margin (dB)	-4.89
6	60.8125	47.37dBuV Pk	6.7	-19.7	34.37	40
		Azimuth:0-360	Height:102 Vert		Margin (dB)	-5.63
7	66.295	50.42dBuV Pk	6.2	-19.5	37.12	40
		Azimuth:0-360	Height:252 Vert		Margin (dB)	-2.88
8	81.51	46.7dBuV Pk	7.3	-19.6	34.4	40
		Azimuth:0-360	Height:252 Vert		Margin (dB)	-5.6
9	82.0625	46.11dBuV Pk	7.4	-19.6	33.91	40
		Azimuth:0-360	Height:398 Vert		Margin (dB)	-6.09
10	86.015	45.77dBuV Pk	8.2	-19.3	34.67	40
		Azimuth:0-360	Height:252 Vert		Margin (dB)	-5.33
11	85.505	45.71dBuV Pk	8.2	-19.5	34.41	40
		Azimuth:0-360	Height:252 Vert		Margin (dB)	-5.59
12	108.795	44.58dBuV Pk	12	-19.4	37.18	43.52
		Azimuth:0-360	Height:102 Vert		Margin (dB)	-6.34
1	960	27.57dBuV Pk	23.9	-13.3	38.17	46.02
		Azimuth:0-360	Height:98 Horz		Margin (dB)	-7.85
2	960	27.56dBuV Pk	23.9	-13.3	38.16	46.02
		Azimuth:0-360	Height:99 Vert		Margin (dB)	-7.86

LIMIT 1: CFR 47 Part 15 Class B 3m
Pk - Peak detector

9.2.18. Horizontal Polarization, -45° -45° TX Direction, High Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

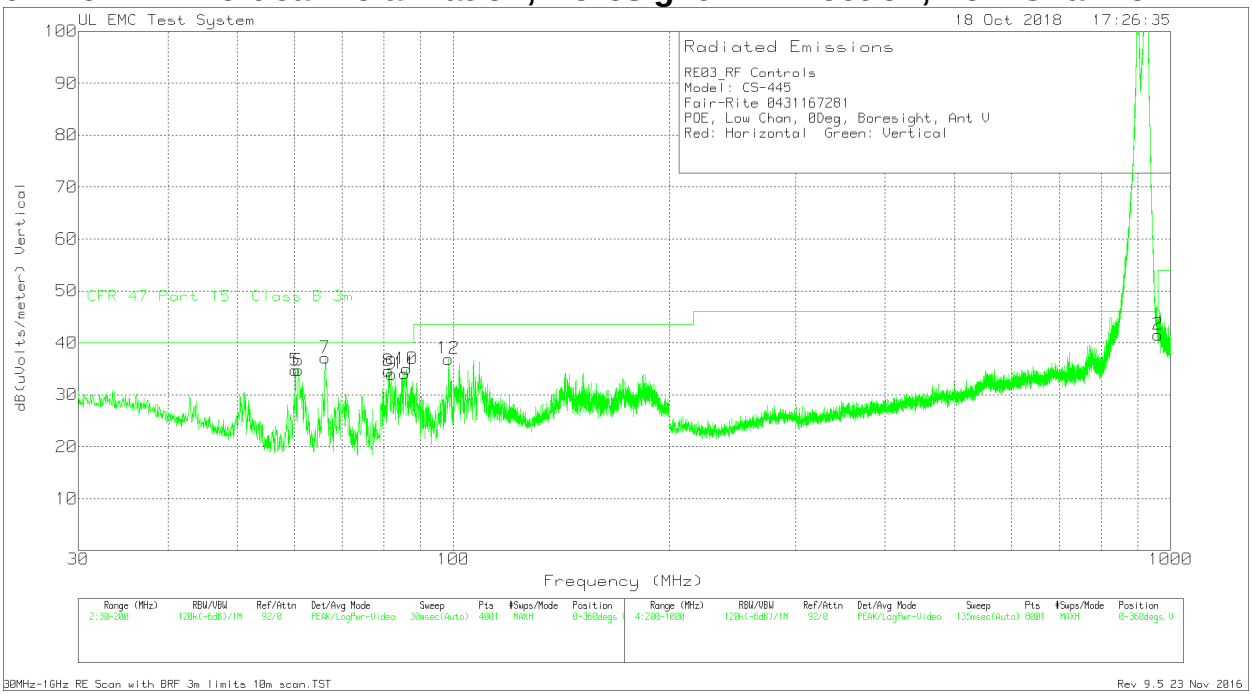
RE16_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, High Chan, X-45_Y-45, Horiz
Red: Horizontal Green: Vertical

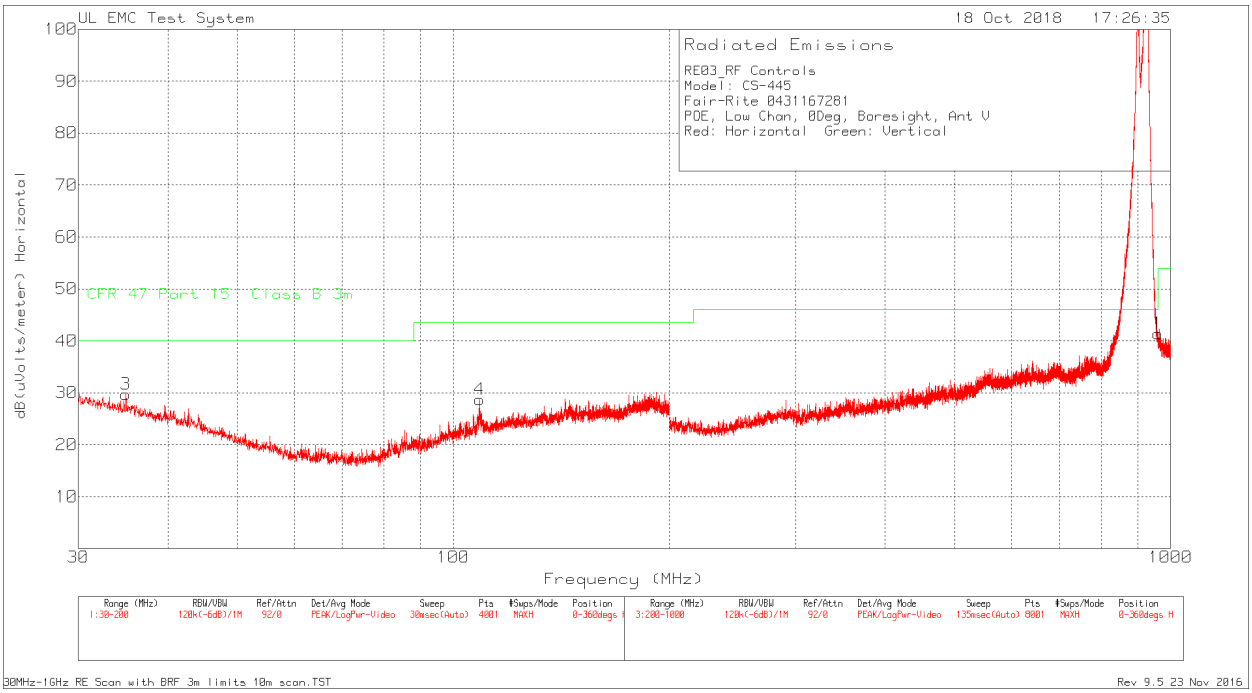
Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading dB(uVolts/meter)	Limit:1
3	43.0475	33.15dBuV Pk	13	-19.6	26.55	40
		Azimuth:0-360	Height:101	Horz	Margin (dB)	-13.45
4	108.795	36.01dBuV Pk	12	-19.4	28.61	43.52
		Azimuth:0-360	Height:398	Horz	Margin (dB)	-14.91
5	60.2175	48.11dBuV Pk	6.8	-19.8	35.11	40
		Azimuth:0-360	Height:252	Vert	Margin (dB)	-4.89
6	60.8125	47.37dBuV Pk	6.7	-19.7	34.37	40
		Azimuth:0-360	Height:102	Vert	Margin (dB)	-5.63
7	66.295	50.42dBuV Pk	6.2	-19.5	37.12	40
		Azimuth:0-360	Height:252	Vert	Margin (dB)	-2.88
8	81.51	46.7dBuV Pk	7.3	-19.6	34.4	40
		Azimuth:0-360	Height:252	Vert	Margin (dB)	-5.6
9	82.0625	46.11dBuV Pk	7.4	-19.6	33.91	40
		Azimuth:0-360	Height:398	Vert	Margin (dB)	-6.09
10	86.015	45.77dBuV Pk	8.2	-19.3	34.67	40
		Azimuth:0-360	Height:252	Vert	Margin (dB)	-5.33
11	85.505	45.71dBuV Pk	8.2	-19.5	34.41	40
		Azimuth:0-360	Height:252	Vert	Margin (dB)	-5.59
12	108.795	44.58dBuV Pk	12	-19.4	37.18	43.52
		Azimuth:0-360	Height:102	Vert	Margin (dB)	-6.34
1	960	30.74dBuV Pk	23.9	-13.3	41.34	46.02
		Azimuth:0-360	Height:102	Horz	Margin (dB)	-4.68
2	960	28.16dBuV Pk	23.9	-13.3	38.76	46.02
		Azimuth:0-360	Height:102	Vert	Margin (dB)	-7.26

LIMIT 1: CFR 47 Part 15 Class B 3m
Pk - Peak detector

9.2.19. Vertical Polarization, Boresight TX Direction, Low Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE03_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Low Chan, 0Deg, Boresight, Ant V
Red: Horizontal Green: Vertical
Trace Markers

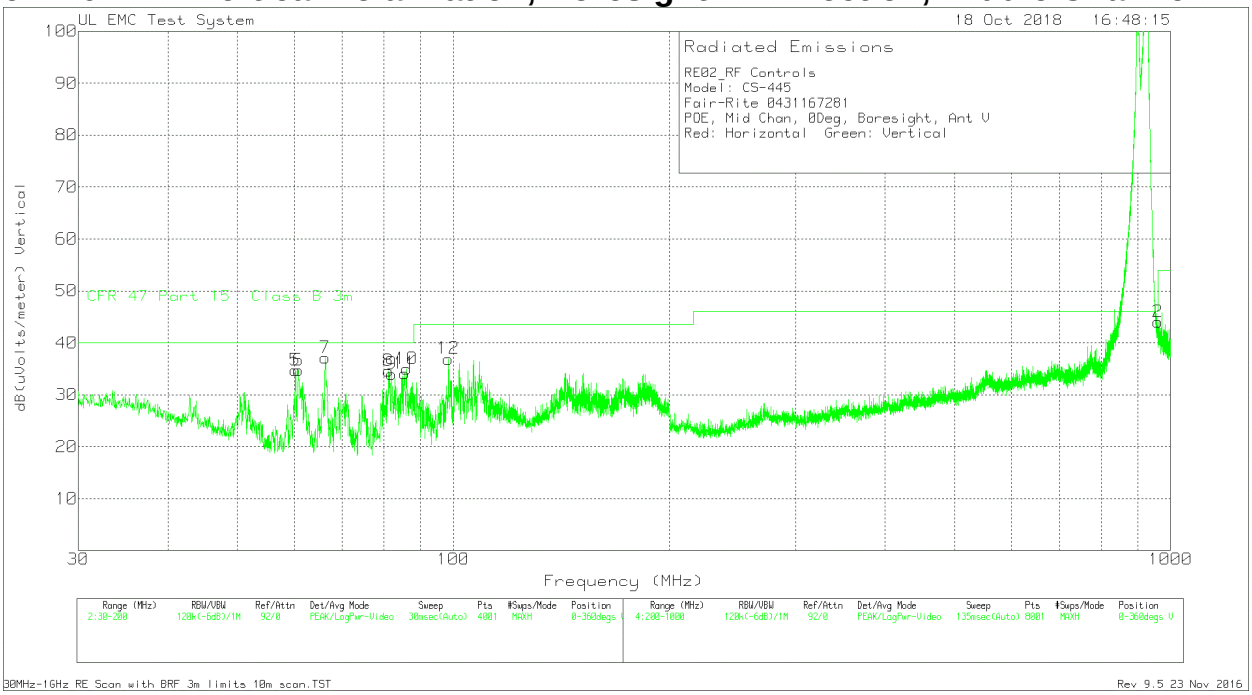
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	34.93	33.11	Pk	16.2	-30.1	10.5	N/A	29.71	40	-10.29	0-360	248	H
4	108.795	36.12	Pk	12	-29.9	10.5	N/A	28.72	43.52	-14.8	0-360	398	H
5	60.2175	47.74	Pk	6.8	-30.3	10.5	N/A	34.74	40	-5.26	0-360	252	V
6	60.8125	47.7	Pk	6.7	-30.2	10.5	N/A	34.7	40	-5.3	0-360	252	V
7	66.295	50.44	Pk	6.2	-30	10.5	N/A	37.14	40	-2.86	0-360	252	V
8	81.2125	47.17	Pk	7.2	-30.3	10.5	N/A	34.57	40	-5.43	0-360	101	V
9	82.02	46.22	Pk	7.4	-30.1	10.5	N/A	34.02	40	-5.98	0-360	398	V
10	86.0575	46.06	Pk	8.2	-29.8	10.5	N/A	34.96	40	-5.04	0-360	101	V
11	85.505	45.44	Pk	8.2	-30	10.5	N/A	34.14	40	-5.86	0-360	101	V
12	98.425	46.03	Pk	10.4	-30	10.5	N/A	36.93	43.52	-6.59	0-360	101	V
1	960	30.82	Pk	23.9	-27.4	10.5	3.6	41.42	46.02	-4.6	0-360	99	H
2	960	30.98	Pk	23.9	-27.4	10.5	3.6	41.58	46.02	-4.44	0-360	99	V

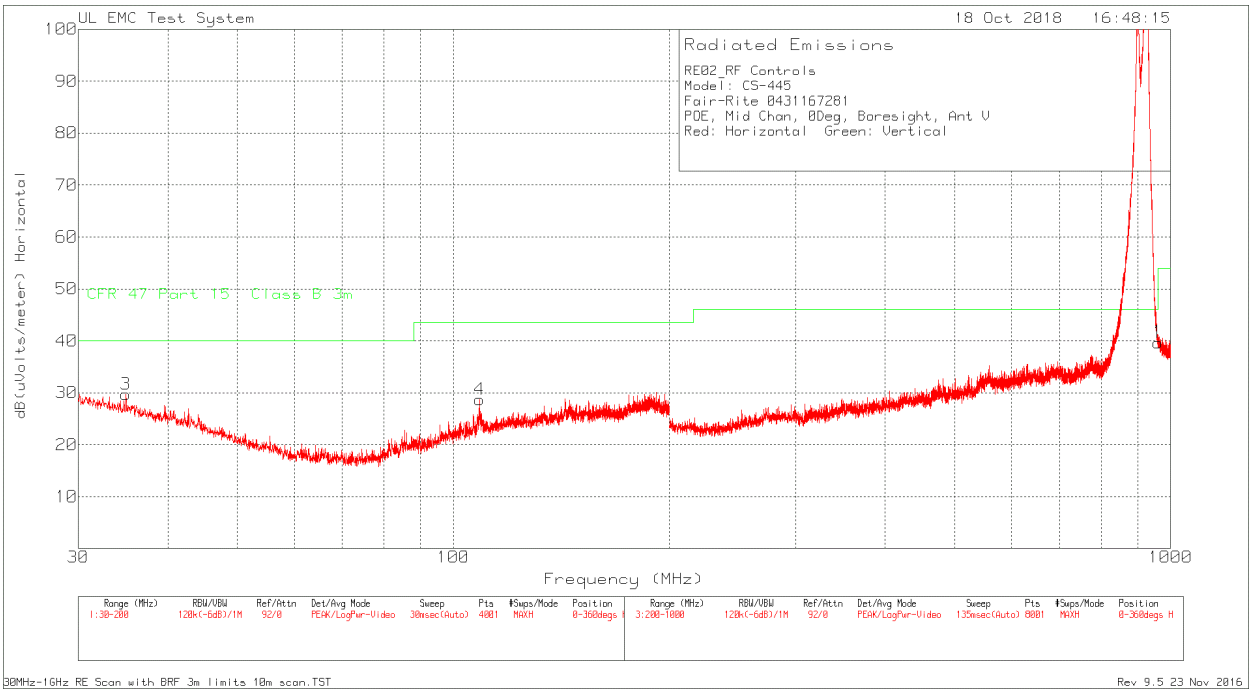
Radiated Emission Data

	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	60.2255	47.97	Qp	6.8	-30.3	10.5	N/A	34.97	40	-5.03	79	251	V
	60.8235	44.61	Qp	6.7	-30.2	10.5	N/A	31.61	40	-8.39	77	241	V
	66.2916	48.56	Qp	6.2	-30	10.5	N/A	35.26	40	-4.74	95	215	V
	81.1997	44.76	Qp	7.2	-30.3	10.5	N/A	32.16	40	-7.84	229	159	V
	82.051	44.92	Qp	7.4	-30.1	10.5	N/A	32.72	40	-7.28	169	146	V
	86.0305	43.08	Qp	8.2	-29.8	10.5	N/A	31.98	40	-8.02	130	158	V
	85.5229	44.21	Qp	8.2	-30	10.5	N/A	32.91	40	-7.09	122	144	V
	960	25.96	Qp	23.9	-27.4	10.5	3.6	36.56	46.02	-9.46	181	102	H
	960	33.1	Qp	23.9	-27.4	10.5	3.6	43.7	46.02	-2.32	192	114	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.2.20. Vertical Polarization, Boresight TX Direction, Middle Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE02_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Mid Chan, 0Deg, Boresight, Ant V
Red: Horizontal Green: Vertical
Trace Markers

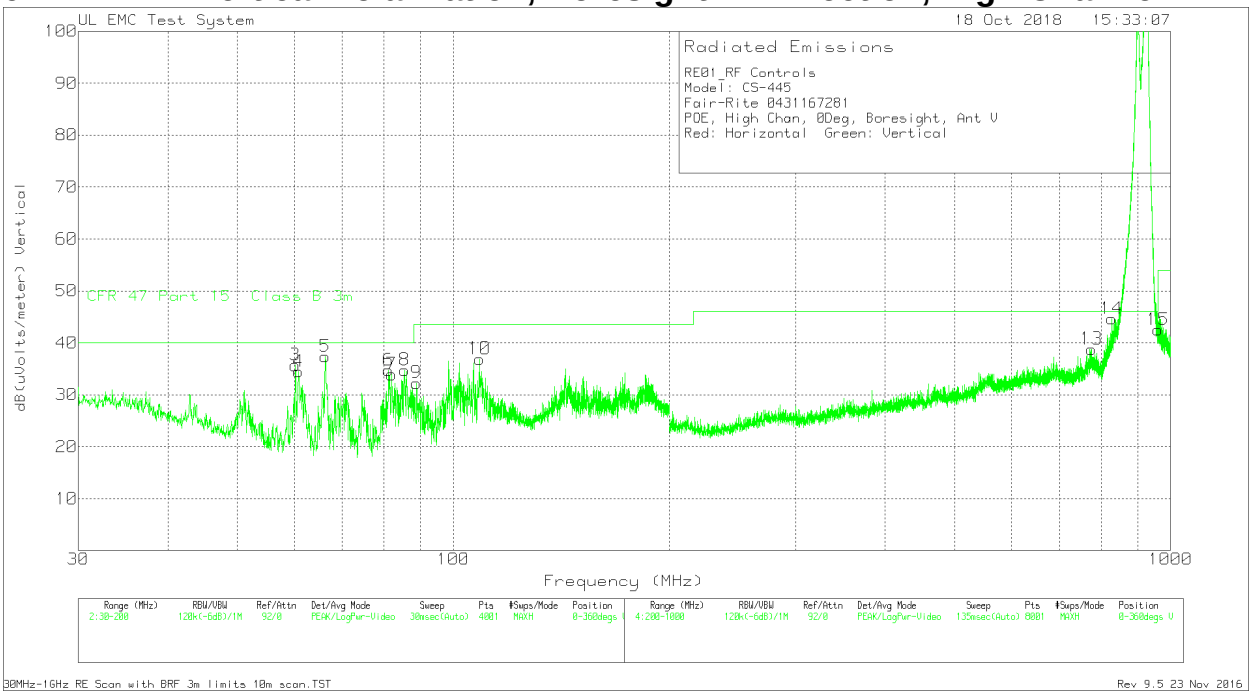
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	34.93	33.11	Pk	16.2	-30.1	10.5	N/A	29.71	40	-10.29	0-360	248	H
4	108.795	36.12	Pk	12	-29.9	10.5	N/A	28.72	43.52	-14.8	0-360	398	H
5	60.2175	47.74	Pk	6.8	-30.3	10.5	N/A	34.74	40	-5.26	0-360	252	V
6	60.8125	47.7	Pk	6.7	-30.2	10.5	N/A	34.7	40	-5.3	0-360	252	V
7	66.295	50.44	Pk	6.2	-30	10.5	N/A	37.14	40	-2.86	0-360	252	V
8	81.2125	47.17	Pk	7.2	-30.3	10.5	N/A	34.57	40	-5.43	0-360	101	V
9	82.02	46.22	Pk	7.4	-30.1	10.5	N/A	34.02	40	-5.98	0-360	398	V
10	86.0575	46.06	Pk	8.2	-29.8	10.5	N/A	34.96	40	-5.04	0-360	101	V
11	85.505	45.44	Pk	8.2	-30	10.5	N/A	34.14	40	-5.86	0-360	101	V
12	98.425	46.03	Pk	10.4	-30	10.5	N/A	36.93	43.52	-6.59	0-360	101	V
1	960	29.09	Pk	23.9	-27.4	10.5	3.6	39.69	46.02	-6.33	0-360	99	H
2	960	33.39	Pk	23.9	-27.4	10.5	3.6	43.99	46.02	-2.03	0-360	99	V

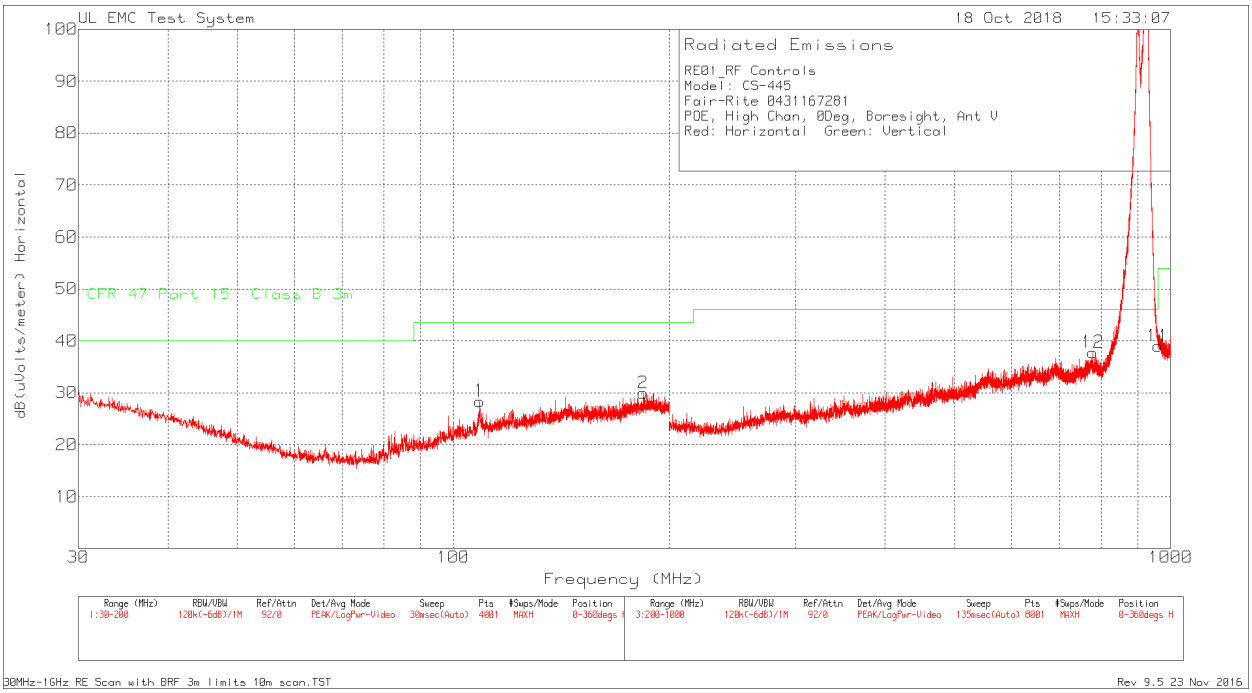
Radiated Emission Data

	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	60.2255	47.97	Qp	6.8	-30.3	10.5	N/A	34.97	40	-5.03	79	251	V
	60.8235	44.61	Qp	6.7	-30.2	10.5	N/A	31.61	40	-8.39	77	241	V
	66.2916	48.56	Qp	6.2	-30	10.5	N/A	35.26	40	-4.74	95	215	V
	81.1997	44.76	Qp	7.2	-30.3	10.5	N/A	32.16	40	-7.84	229	159	V
	82.051	44.92	Qp	7.4	-30.1	10.5	N/A	32.72	40	-7.28	169	146	V
	86.0305	43.08	Qp	8.2	-29.8	10.5	N/A	31.98	40	-8.02	130	158	V
	85.5229	44.21	Qp	8.2	-30	10.5	N/A	32.91	40	-7.09	122	144	V
	960	32.1	Qp	23.9	-27.4	10.5	3.6	42.7	46.02	-3.32	194	116	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.2.21. Vertical Polarization, Boresight TX Direction, High Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE01_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, High Chan, 0Deg, Boresight, Ant V
Red: Horizontal Green: Vertical
Trace Markers

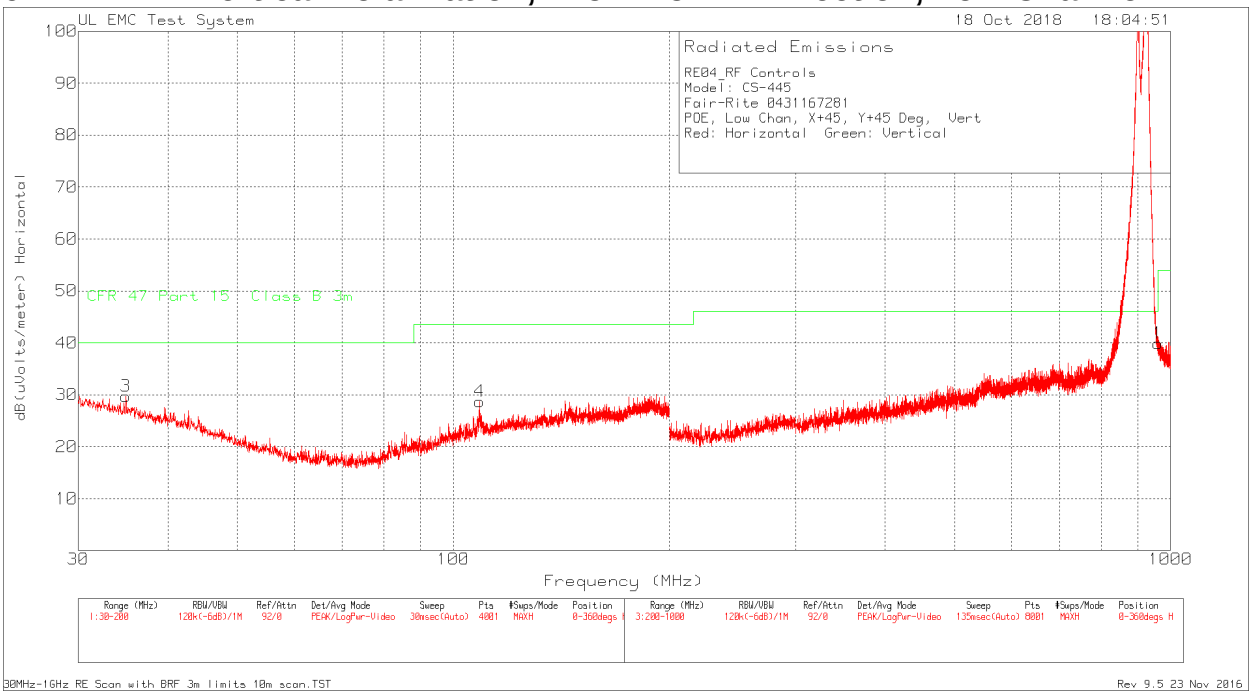
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	108.7525	35.77	Pk	12	-29.9	10.5	N/A	28.37	43.52	-15.15	0-360	398	H
2	183.935	32.97	Pk	15.8	-29.3	10.5	N/A	29.97	43.52	-13.55	0-360	398	H
3	60.2175	48.69	Pk	6.8	-30.3	10.5	N/A	35.69	40	-4.31	0-360	251	V
4	60.8125	47.45	Pk	6.7	-30.2	10.5	N/A	34.45	40	-5.55	0-360	251	V
5	66.295	50.63	Pk	6.2	-30	10.5	N/A	37.33	40	-2.67	0-360	251	V
6	81.2125	47.32	Pk	7.2	-30.3	10.5	N/A	34.72	40	-5.28	0-360	251	V
7	82.0625	46.13	Pk	7.4	-30.1	10.5	N/A	33.93	40	-6.07	0-360	398	V
8	85.5475	46.07	Pk	8.2	-30	10.5	N/A	34.77	40	-5.23	0-360	251	V
9	88.8625	42.88	Pk	8.8	-29.9	10.5	N/A	32.28	43.52	-11.24	0-360	101	V
10	108.795	44.32	Pk	12	-29.9	10.5	N/A	36.92	43.52	-6.6	0-360	101	V
11	960	28.43	Pk	23.9	-27.4	10.5	3.6	39.03	46.02	-6.99	0-360	199	H
12	778.7	31.48	Pk	22.2	-27	10.5	0.6	37.78	46.02	-8.24	0-360	99	H
13	775.4	32.49	Pk	22.2	-27	10.5	0.6	38.79	46.02	-7.23	0-360	102	V
14	827.3	35.74	Pk	23	-27.5	10.5	2.9	44.64	46.02	-1.38	0-360	102	V
15	960	31.95	Pk	23.9	-27.4	10.5	3.6	42.55	46.02	-3.47	0-360	102	V

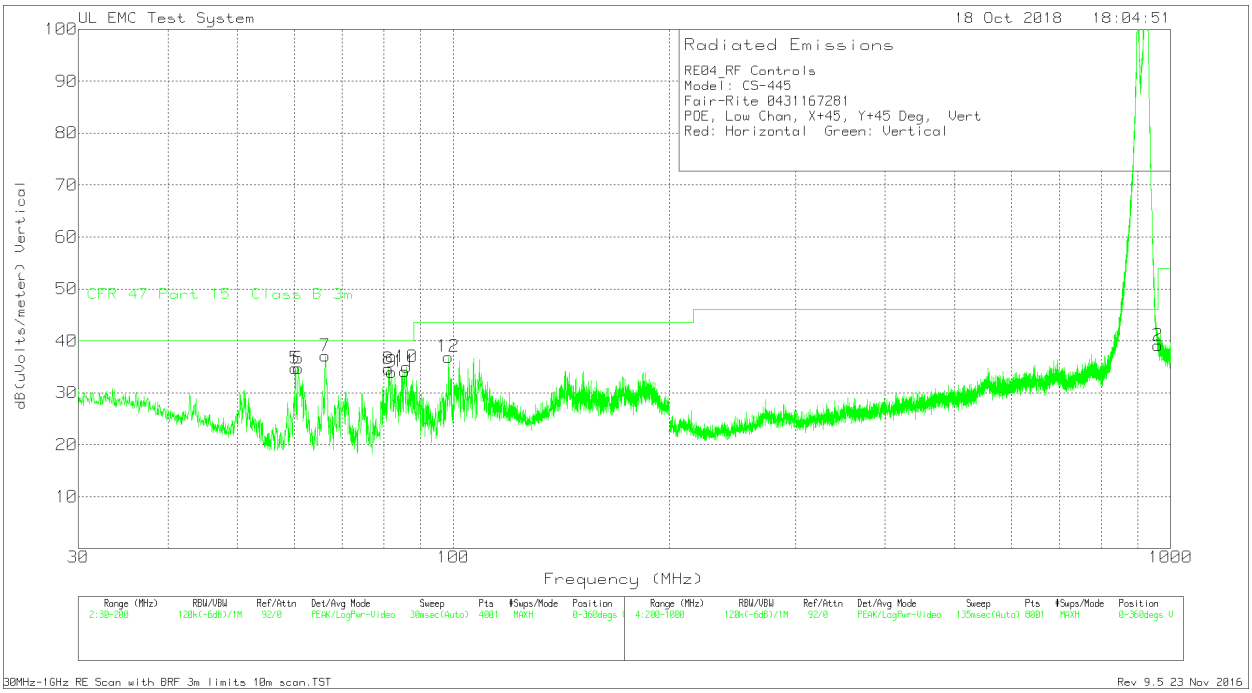
Radiated Emission Data

	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	66.2873	48.49	Qp	6.2	-30	10.5	N/A	35.19	40	-4.81	151	217	V
	60.2252	47.73	Qp	6.8	-30.3	10.5	N/A	34.73	40	-5.27	89	233	V
	60.8211	45.85	Qp	6.7	-30.2	10.5	N/A	32.85	40	-7.15	88	256	V
	81.2028	45.2	Qp	7.2	-30.3	10.5	N/A	32.6	40	-7.4	206	158	V
	85.5266	45.03	Qp	8.2	-30	10.5	N/A	33.73	40	-6.27	14	158	V
	960	32.73	Qp	23.9	-27.4	10.5	3.6	43.33	46.02	-2.69	193	120	V
	827.2517	37.41	Qp	23	-27.5	10.5	2.9	46.31	46.02	0.29	193	142	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.2.22. Vertical Polarization, +45° +45° TX Direction, Low Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE04_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Low Chan, X+45, Y+45 Deg, Vert
Red: Horizontal Green: Vertical
Trace Markers

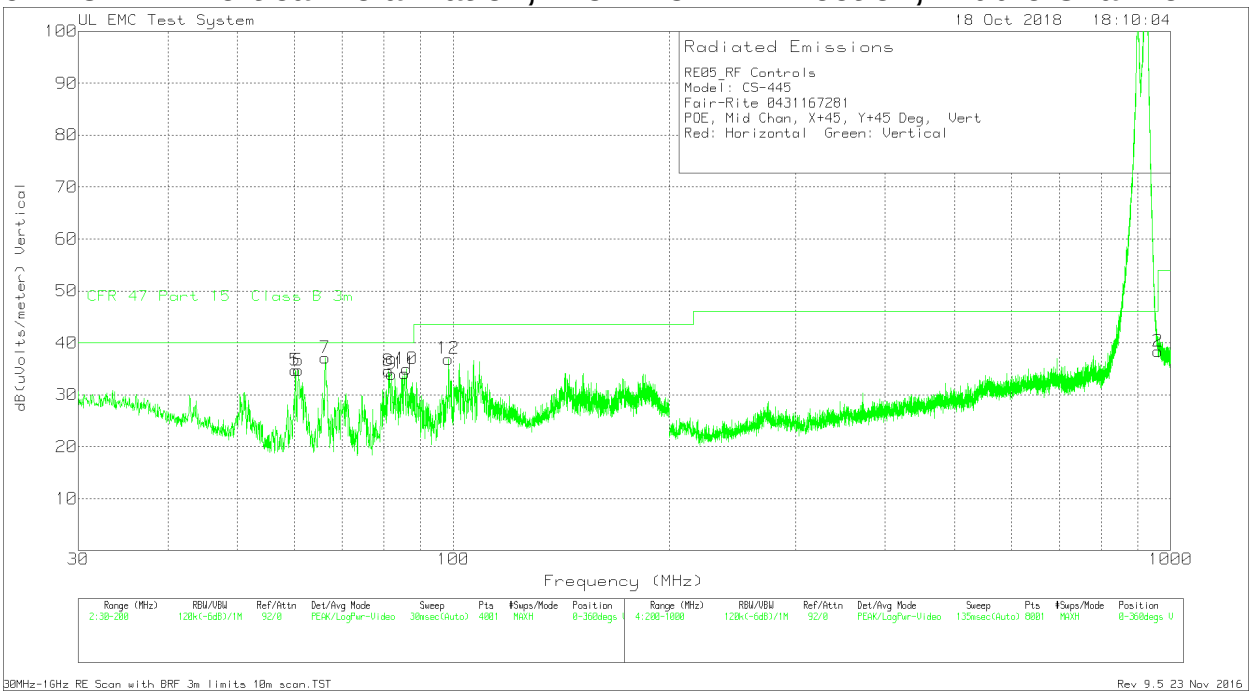
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	34.93	33.11	Pk	16.2	-30.1	10.5	N/A	29.71	40	-10.29	0-360	248	H
4	108.795	36.12	Pk	12	-29.9	10.5	N/A	28.72	43.52	-14.8	0-360	398	H
5	60.2175	47.74	Pk	6.8	-30.3	10.5	N/A	34.74	40	-5.26	0-360	252	V
6	60.8125	47.7	Pk	6.7	-30.2	10.5	N/A	34.7	40	-5.3	0-360	252	V
7	66.295	50.44	Pk	6.2	-30	10.5	N/A	37.14	40	-2.86	0-360	252	V
8	81.2125	47.17	Pk	7.2	-30.3	10.5	N/A	34.57	40	-5.43	0-360	101	V
9	82.02	46.22	Pk	7.4	-30.1	10.5	N/A	34.02	40	-5.98	0-360	398	V
10	86.0575	46.06	Pk	8.2	-29.8	10.5	N/A	34.96	40	-5.04	0-360	101	V
11	85.505	45.44	Pk	8.2	-30	10.5	N/A	34.14	40	-5.86	0-360	101	V
12	98.425	46.03	Pk	10.4	-30	10.5	N/A	36.93	43.52	-6.59	0-360	101	V
1	960	29.28	Pk	23.9	-27.4	10.5	3.6	39.88	46.02	-6.14	0-360	99	H
2	960	28.52	Pk	23.9	-27.4	10.5	3.6	39.12	46.02	-6.9	0-360	99	V

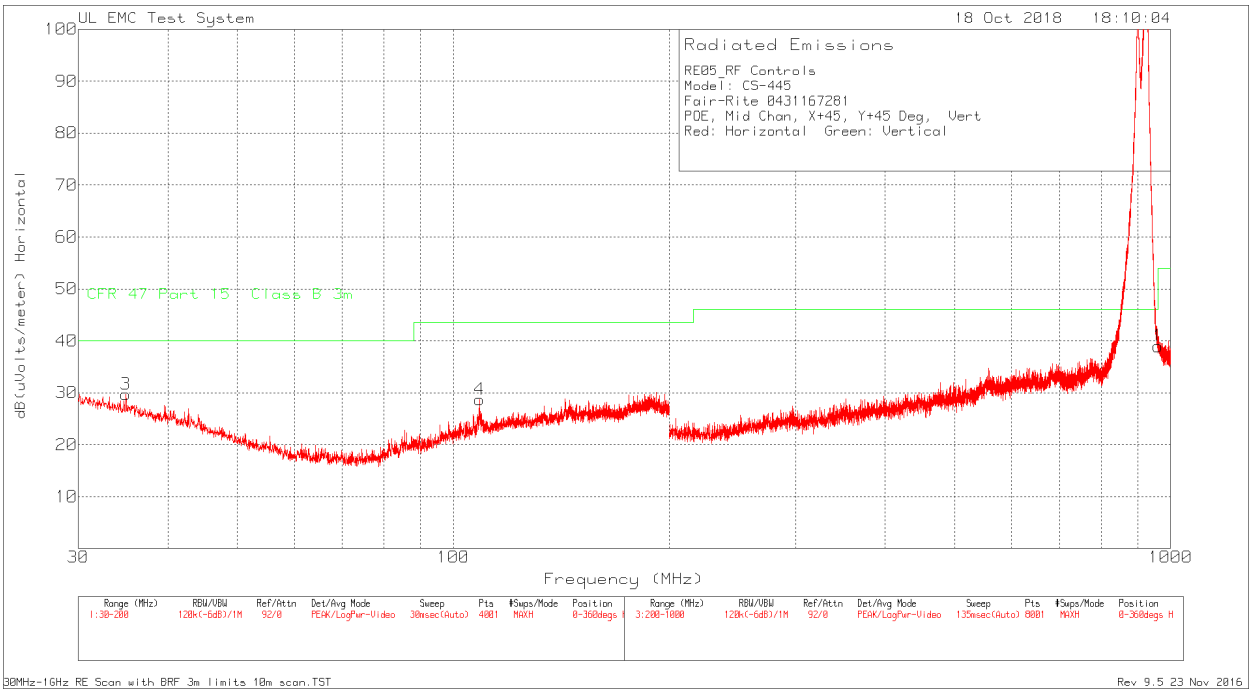
Radiated Emission Data

	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	60.2255	47.97	Qp	6.8	-30.3	10.5	N/A	34.97	40	-5.03	79	251	V
	60.8235	44.61	Qp	6.7	-30.2	10.5	N/A	31.61	40	-8.39	77	241	V
	66.2916	48.56	Qp	6.2	-30	10.5	N/A	35.26	40	-4.74	95	215	V
	81.1997	44.76	Qp	7.2	-30.3	10.5	N/A	32.16	40	-7.84	229	159	V
	82.051	44.92	Qp	7.4	-30.1	10.5	N/A	32.72	40	-7.28	169	146	V
	86.0305	43.08	Qp	8.2	-29.8	10.5	N/A	31.98	40	-8.02	130	158	V
	85.5229	44.21	Qp	8.2	-30	10.5	N/A	32.91	40	-7.09	122	144	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.2.23. Vertical Polarization, +45° +45° TX Direction, Middle Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE05_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Mid Chan, X+45, Y+45 Deg, Vert
Red: Horizontal Green: Vertical
Trace Markers

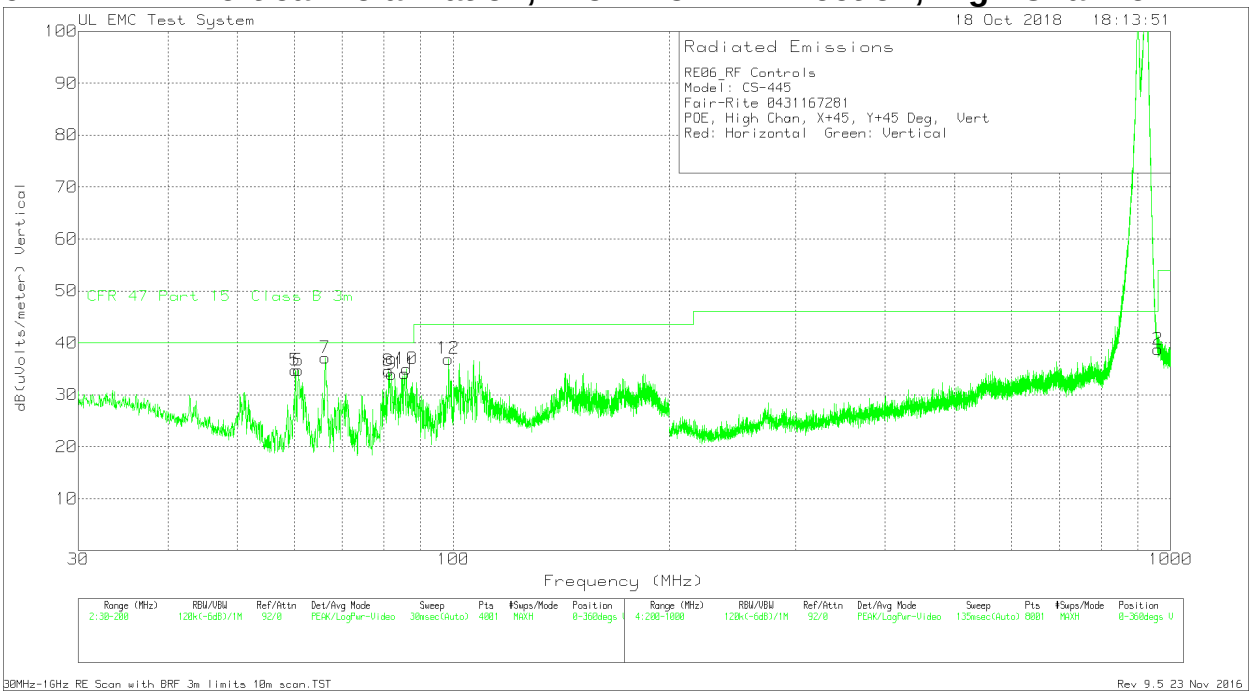
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	34.93	33.11	Pk	16.2	-30.1	10.5	N/A	29.71	40	-10.29	0-360	248	H
4	108.795	36.12	Pk	12	-29.9	10.5	N/A	28.72	43.52	-14.8	0-360	398	H
5	60.2175	47.74	Pk	6.8	-30.3	10.5	N/A	34.74	40	-5.26	0-360	252	V
6	60.8125	47.7	Pk	6.7	-30.2	10.5	N/A	34.7	40	-5.3	0-360	252	V
7	66.295	50.44	Pk	6.2	-30	10.5	N/A	37.14	40	-2.86	0-360	252	V
8	81.2125	47.17	Pk	7.2	-30.3	10.5	N/A	34.57	40	-5.43	0-360	101	V
9	82.02	46.22	Pk	7.4	-30.1	10.5	N/A	34.02	40	-5.98	0-360	398	V
10	86.0575	46.06	Pk	8.2	-29.8	10.5	N/A	34.96	40	-5.04	0-360	101	V
11	85.505	45.44	Pk	8.2	-30	10.5	N/A	34.14	40	-5.86	0-360	101	V
12	98.425	46.03	Pk	10.4	-30	10.5	N/A	36.93	43.52	-6.59	0-360	101	V
1	960	28.36	Pk	23.9	-27.4	10.5	3.6	38.96	46.02	-7.06	0-360	99	H
2	960	27.79	Pk	23.9	-27.4	10.5	3.6	38.39	46.02	-7.63	0-360	99	V

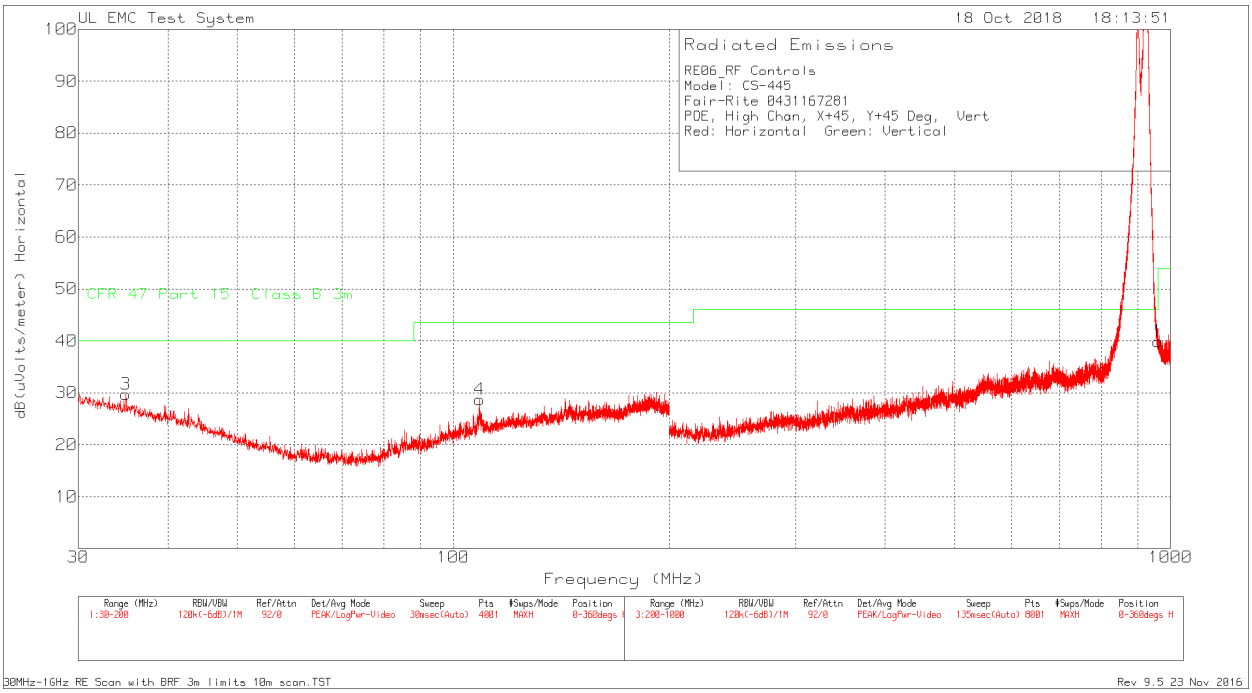
Radiated Emission Data

	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	60.2255	47.97	Qp	6.8	-30.3	10.5	N/A	34.97	40	-5.03	79	251	V
	60.8235	44.61	Qp	6.7	-30.2	10.5	N/A	31.61	40	-8.39	77	241	V
	66.2916	48.56	Qp	6.2	-30	10.5	N/A	35.26	40	-4.74	95	215	V
	81.1997	44.76	Qp	7.2	-30.3	10.5	N/A	32.16	40	-7.84	229	159	V
	82.051	44.92	Qp	7.4	-30.1	10.5	N/A	32.72	40	-7.28	169	146	V
	86.0305	43.08	Qp	8.2	-29.8	10.5	N/A	31.98	40	-8.02	130	158	V
	85.5229	44.21	Qp	8.2	-30	10.5	N/A	32.91	40	-7.09	122	144	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.2.24. Vertical Polarization, +45° +45° TX Direction, High Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE06_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, High Chan, X+45, Y+45 Deg, Vert
Red: Horizontal Green: Vertical
Trace Markers

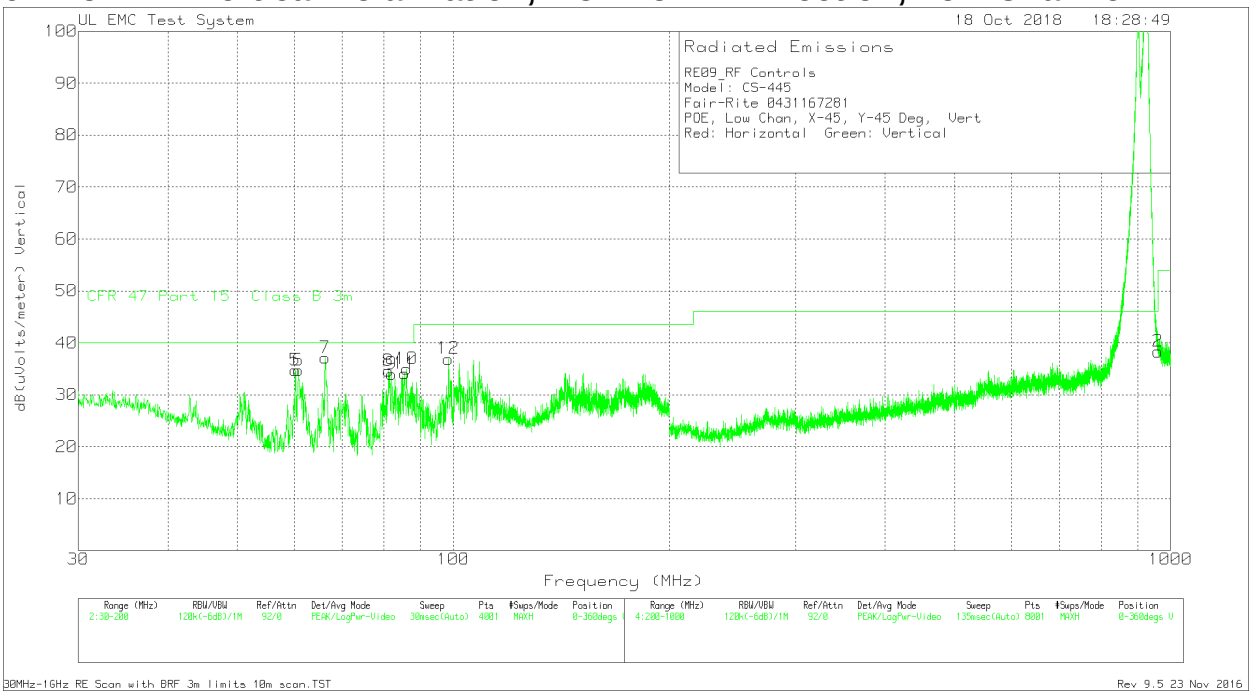
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	34.93	33.11	Pk	16.2	-30.1	10.5	N/A	29.71	40	-10.29	0-360	248	H
4	108.795	36.12	Pk	12	-29.9	10.5	N/A	28.72	43.52	-14.8	0-360	398	H
5	60.2175	47.74	Pk	6.8	-30.3	10.5	N/A	34.74	40	-5.26	0-360	252	V
6	60.8125	47.7	Pk	6.7	-30.2	10.5	N/A	34.7	40	-5.3	0-360	252	V
7	66.295	50.44	Pk	6.2	-30	10.5	N/A	37.14	40	-2.86	0-360	252	V
8	81.2125	47.17	Pk	7.2	-30.3	10.5	N/A	34.57	40	-5.43	0-360	101	V
9	82.02	46.22	Pk	7.4	-30.1	10.5	N/A	34.02	40	-5.98	0-360	398	V
10	86.0575	46.06	Pk	8.2	-29.8	10.5	N/A	34.96	40	-5.04	0-360	101	V
11	85.505	45.44	Pk	8.2	-30	10.5	N/A	34.14	40	-5.86	0-360	101	V
12	98.425	46.03	Pk	10.4	-30	10.5	N/A	36.93	43.52	-6.59	0-360	101	V
1	960	29.27	Pk	23.9	-27.4	10.5	3.6	39.87	46.02	-6.15	0-360	99	H
2	960	28.18	Pk	23.9	-27.4	10.5	3.6	38.78	46.02	-7.24	0-360	99	V

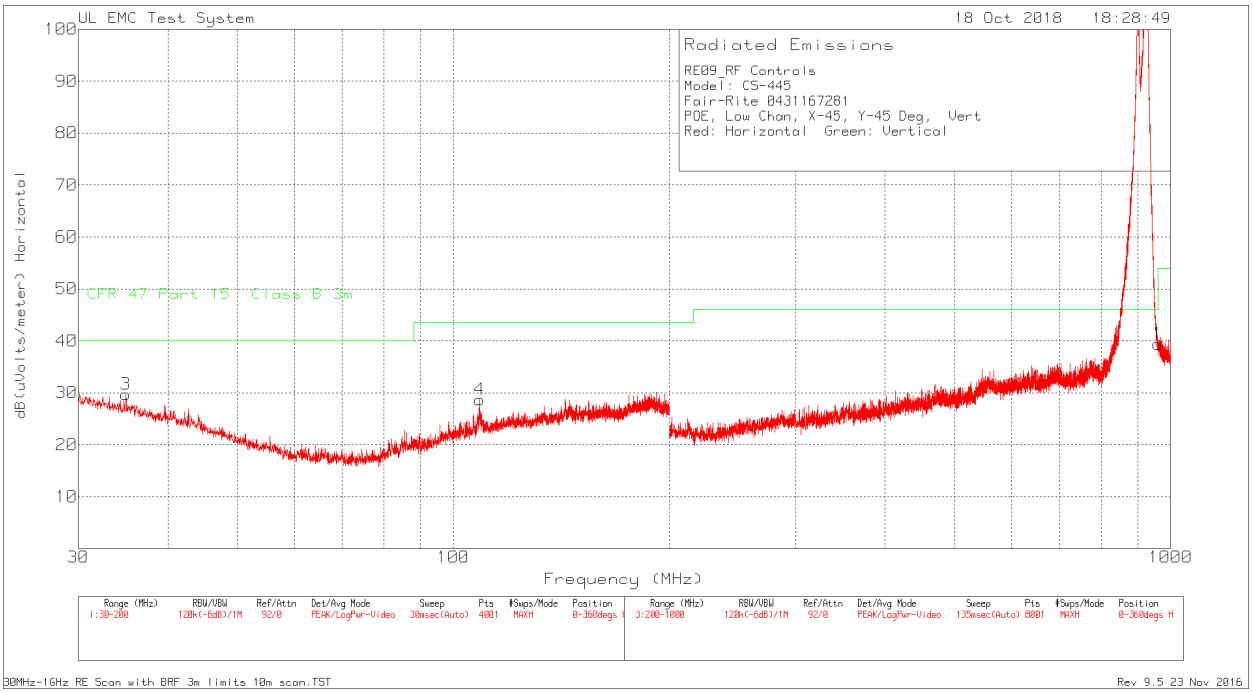
Radiated Emission Data

	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	60.2255	47.97	Qp	6.8	-30.3	10.5	N/A	34.97	40	-5.03	79	251	V
	60.8235	44.61	Qp	6.7	-30.2	10.5	N/A	31.61	40	-8.39	77	241	V
	66.2916	48.56	Qp	6.2	-30	10.5	N/A	35.26	40	-4.74	95	215	V
	81.1997	44.76	Qp	7.2	-30.3	10.5	N/A	32.16	40	-7.84	229	159	V
	82.051	44.92	Qp	7.4	-30.1	10.5	N/A	32.72	40	-7.28	169	146	V
	86.0305	43.08	Qp	8.2	-29.8	10.5	N/A	31.98	40	-8.02	130	158	V
	85.5229	44.21	Qp	8.2	-30	10.5	N/A	32.91	40	-7.09	122	144	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.2.25. Vertical Polarization, -45° -45° TX Direction, Low Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE09_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Low Chan, X-45, Y-45 Deg, Vert
Red: Horizontal Green: Vertical
Trace Markers

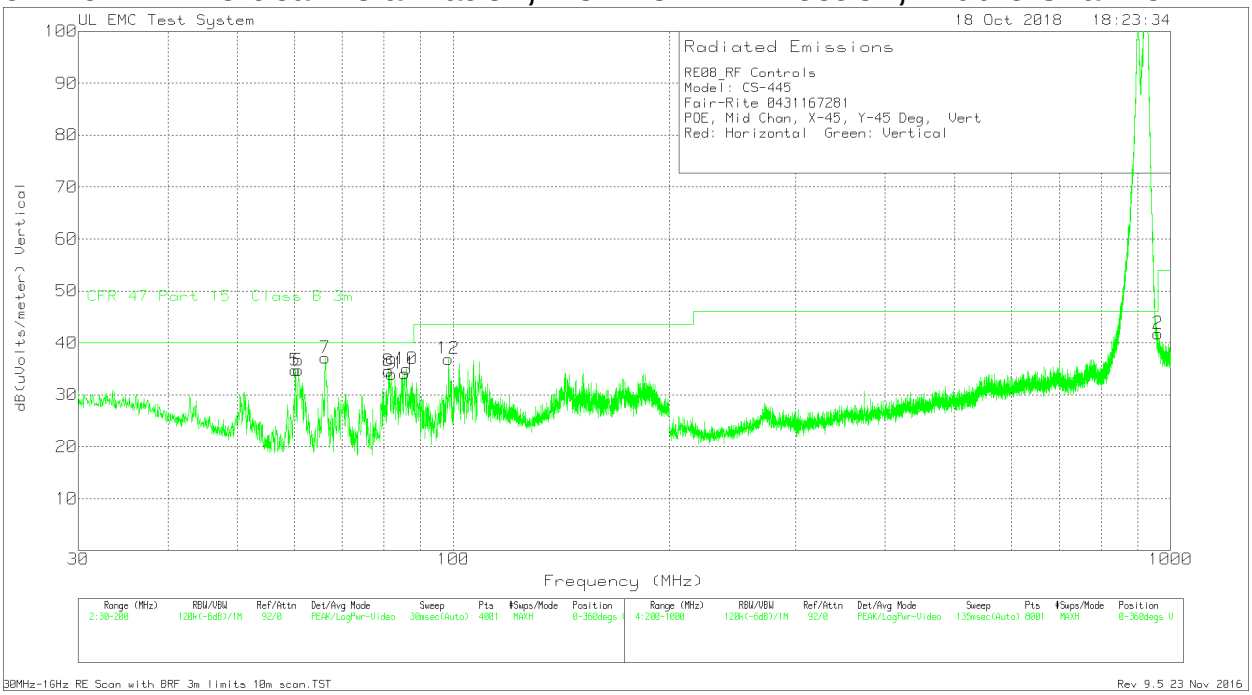
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	34.93	33.11	Pk	16.2	-30.1	10.5	N/A	29.71	40	-10.29	0-360	248	H
4	108.795	36.12	Pk	12	-29.9	10.5	N/A	28.72	43.52	-14.8	0-360	398	H
5	60.2175	47.74	Pk	6.8	-30.3	10.5	N/A	34.74	40	-5.26	0-360	252	V
6	60.8125	47.7	Pk	6.7	-30.2	10.5	N/A	34.7	40	-5.3	0-360	252	V
7	66.295	50.44	Pk	6.2	-30	10.5	N/A	37.14	40	-2.86	0-360	252	V
8	81.2125	47.17	Pk	7.2	-30.3	10.5	N/A	34.57	40	-5.43	0-360	101	V
9	82.02	46.22	Pk	7.4	-30.1	10.5	N/A	34.02	40	-5.98	0-360	398	V
10	86.0575	46.06	Pk	8.2	-29.8	10.5	N/A	34.96	40	-5.04	0-360	101	V
11	85.505	45.44	Pk	8.2	-30	10.5	N/A	34.14	40	-5.86	0-360	101	V
12	98.425	46.03	Pk	10.4	-30	10.5	N/A	36.93	43.52	-6.59	0-360	101	V
1	960	28.76	Pk	23.9	-27.4	10.5	3.6	39.36	46.02	-6.66	0-360	99	H
2	960	27.73	Pk	23.9	-27.4	10.5	3.6	38.33	46.02	-7.69	0-360	99	V

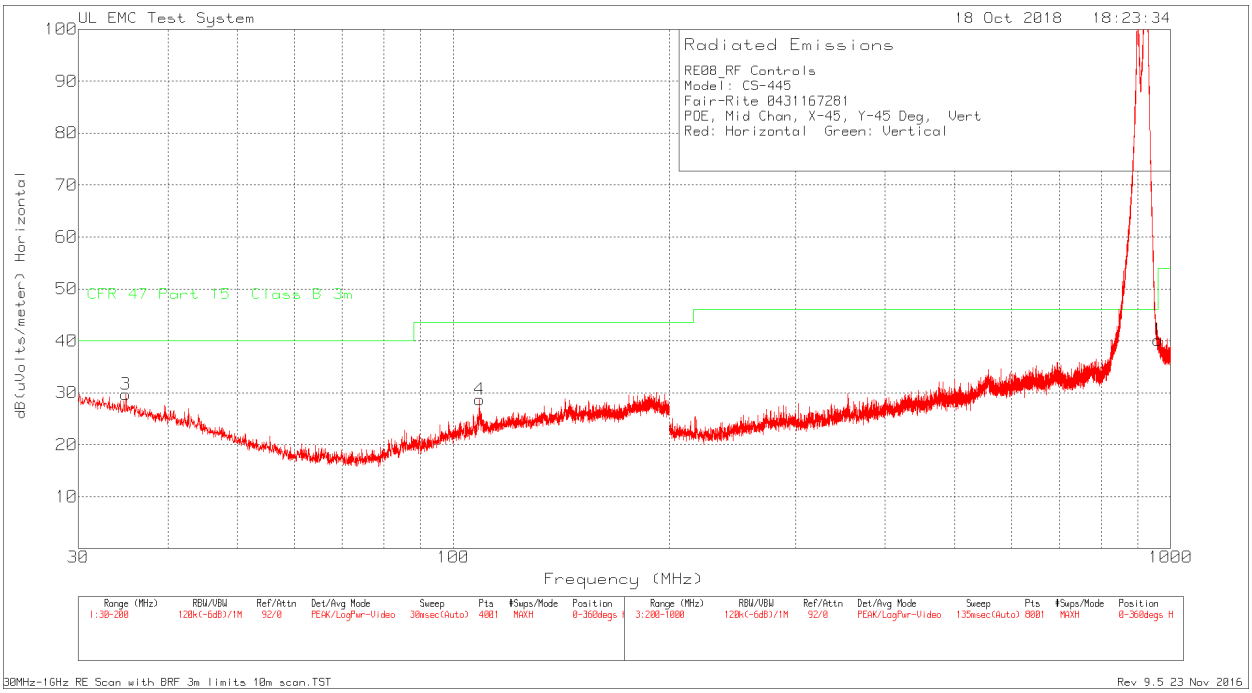
Radiated Emission Data

	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	60.2255	47.97	Qp	6.8	-30.3	10.5	N/A	34.97	40	-5.03	79	251	V
	60.8235	44.61	Qp	6.7	-30.2	10.5	N/A	31.61	40	-8.39	77	241	V
	66.2916	48.56	Qp	6.2	-30	10.5	N/A	35.26	40	-4.74	95	215	V
	81.1997	44.76	Qp	7.2	-30.3	10.5	N/A	32.16	40	-7.84	229	159	V
	82.051	44.92	Qp	7.4	-30.1	10.5	N/A	32.72	40	-7.28	169	146	V
	86.0305	43.08	Qp	8.2	-29.8	10.5	N/A	31.98	40	-8.02	130	158	V
	85.5229	44.21	Qp	8.2	-30	10.5	N/A	32.91	40	-7.09	122	144	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.2.26. Vertical Polarization, -45° -45° TX Direction, Middle Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE08_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, Mid Chan, X-45, Y-45 Deg, Vert
Red: Horizontal Green: Vertical
Trace Markers

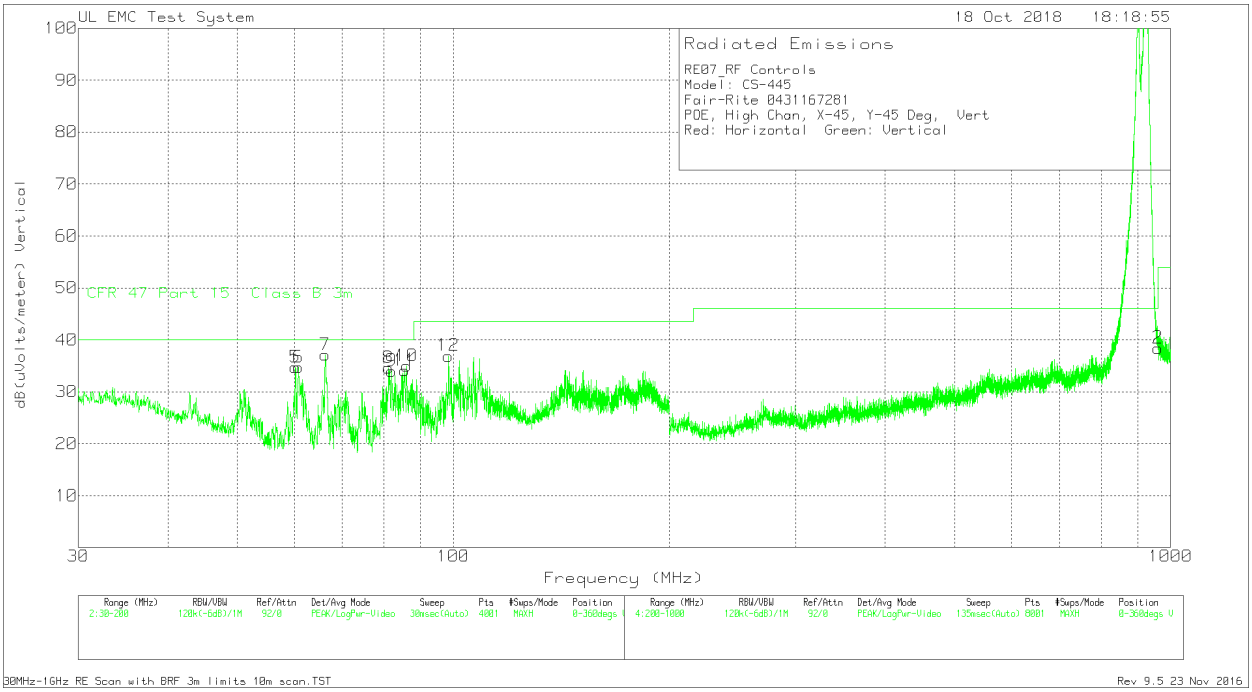
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	34.93	33.11	Pk	16.2	-30.1	10.5	N/A	29.71	40	-10.29	0-360	248	H
4	108.795	36.12	Pk	12	-29.9	10.5	N/A	28.72	43.52	-14.8	0-360	398	H
5	60.2175	47.74	Pk	6.8	-30.3	10.5	N/A	34.74	40	-5.26	0-360	252	V
6	60.8125	47.7	Pk	6.7	-30.2	10.5	N/A	34.7	40	-5.3	0-360	252	V
7	66.295	50.44	Pk	6.2	-30	10.5	N/A	37.14	40	-2.86	0-360	252	V
8	81.2125	47.17	Pk	7.2	-30.3	10.5	N/A	34.57	40	-5.43	0-360	101	V
9	82.02	46.22	Pk	7.4	-30.1	10.5	N/A	34.02	40	-5.98	0-360	398	V
10	86.0575	46.06	Pk	8.2	-29.8	10.5	N/A	34.96	40	-5.04	0-360	101	V
11	85.505	45.44	Pk	8.2	-30	10.5	N/A	34.14	40	-5.86	0-360	101	V
12	98.425	46.03	Pk	10.4	-30	10.5	N/A	36.93	43.52	-6.59	0-360	101	V
1	960	29.51	Pk	23.9	-27.4	10.5	3.6	40.11	46.02	-5.91	0-360	99	H
2	960	31.2	Pk	23.9	-27.4	10.5	3.6	41.8	46.02	-4.22	0-360	99	V

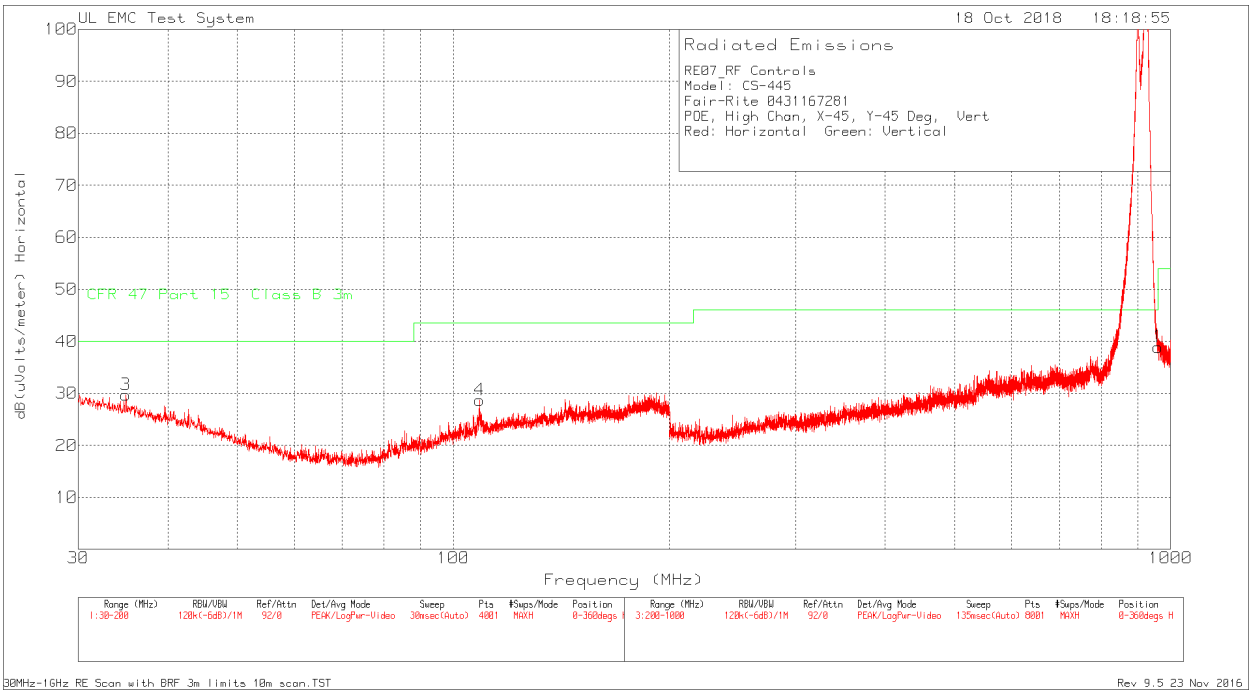
Radiated Emission Data

	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	60.2255	47.97	Qp	6.8	-30.3	10.5	N/A	34.97	40	-5.03	79	251	V
	60.8235	44.61	Qp	6.7	-30.2	10.5	N/A	31.61	40	-8.39	77	241	V
	66.2916	48.56	Qp	6.2	-30	10.5	N/A	35.26	40	-4.74	95	215	V
	81.1997	44.76	Qp	7.2	-30.3	10.5	N/A	32.16	40	-7.84	229	159	V
	82.051	44.92	Qp	7.4	-30.1	10.5	N/A	32.72	40	-7.28	169	146	V
	86.0305	43.08	Qp	8.2	-29.8	10.5	N/A	31.98	40	-8.02	130	158	V
	85.5229	44.21	Qp	8.2	-30	10.5	N/A	32.91	40	-7.09	122	144	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.2.27. Vertical Polarization, -45° -45° TX Direction, High Channel





* all emissions below 200MHz are result of digital circuitry and are not related to the TX part of the device.

RE07_RF Controls
Model: CS-445
Fair-Rite 0431167281
POE, High Chan, X-45, Y-45 Deg, Vert
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	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3	34.93	33.11	Pk	16.2	-30.1	10.5	N/A	29.71	40	-10.29	0-360	248	H
4	108.795	36.12	Pk	12	-29.9	10.5	N/A	28.72	43.52	-14.8	0-360	398	H
5	60.2175	47.74	Pk	6.8	-30.3	10.5	N/A	34.74	40	-5.26	0-360	252	V
6	60.8125	47.7	Pk	6.7	-30.2	10.5	N/A	34.7	40	-5.3	0-360	252	V
7	66.295	50.44	Pk	6.2	-30	10.5	N/A	37.14	40	-2.86	0-360	252	V
8	81.2125	47.17	Pk	7.2	-30.3	10.5	N/A	34.57	40	-5.43	0-360	101	V
9	82.02	46.22	Pk	7.4	-30.1	10.5	N/A	34.02	40	-5.98	0-360	398	V
10	86.0575	46.06	Pk	8.2	-29.8	10.5	N/A	34.96	40	-5.04	0-360	101	V
11	85.505	45.44	Pk	8.2	-30	10.5	N/A	34.14	40	-5.86	0-360	101	V
12	98.425	46.03	Pk	10.4	-30	10.5	N/A	36.93	43.52	-6.59	0-360	101	V
1	960	28.32	Pk	23.9	-27.4	10.5	3.6	38.92	46.02	-7.1	0-360	99	H
2	960	27.82	Pk	23.9	-27.4	10.5	3.6	38.42	46.02	-7.6	0-360	99	V

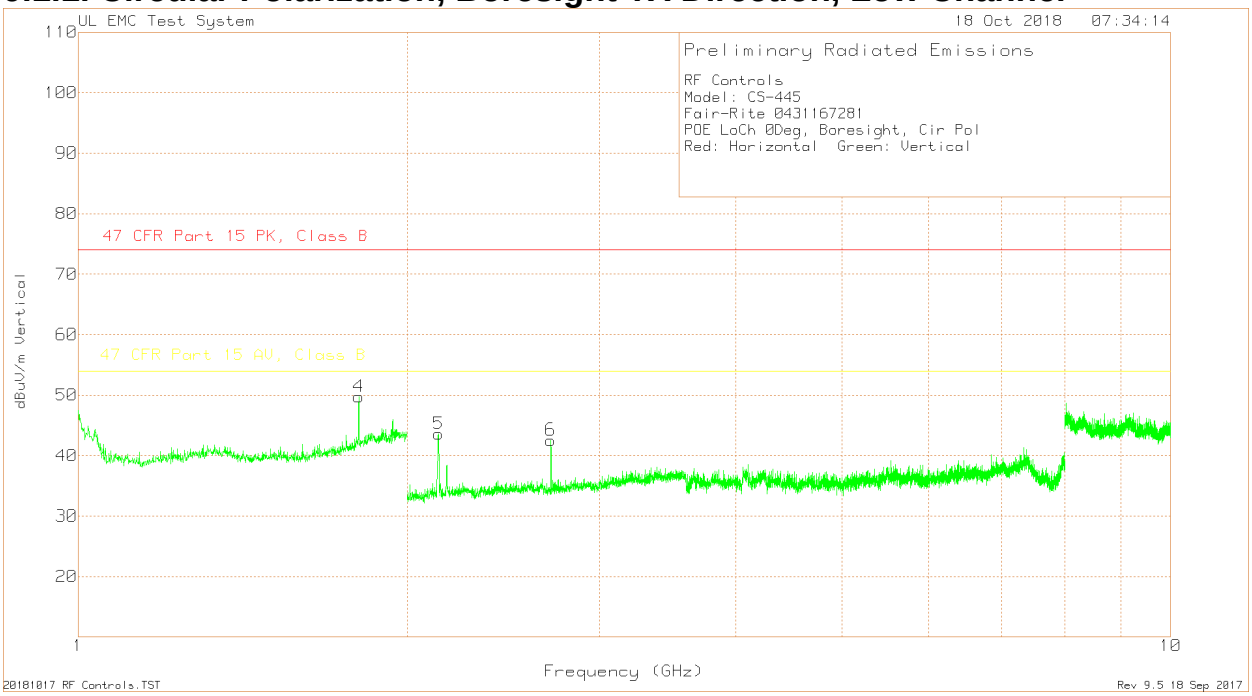
Radiated Emission Data

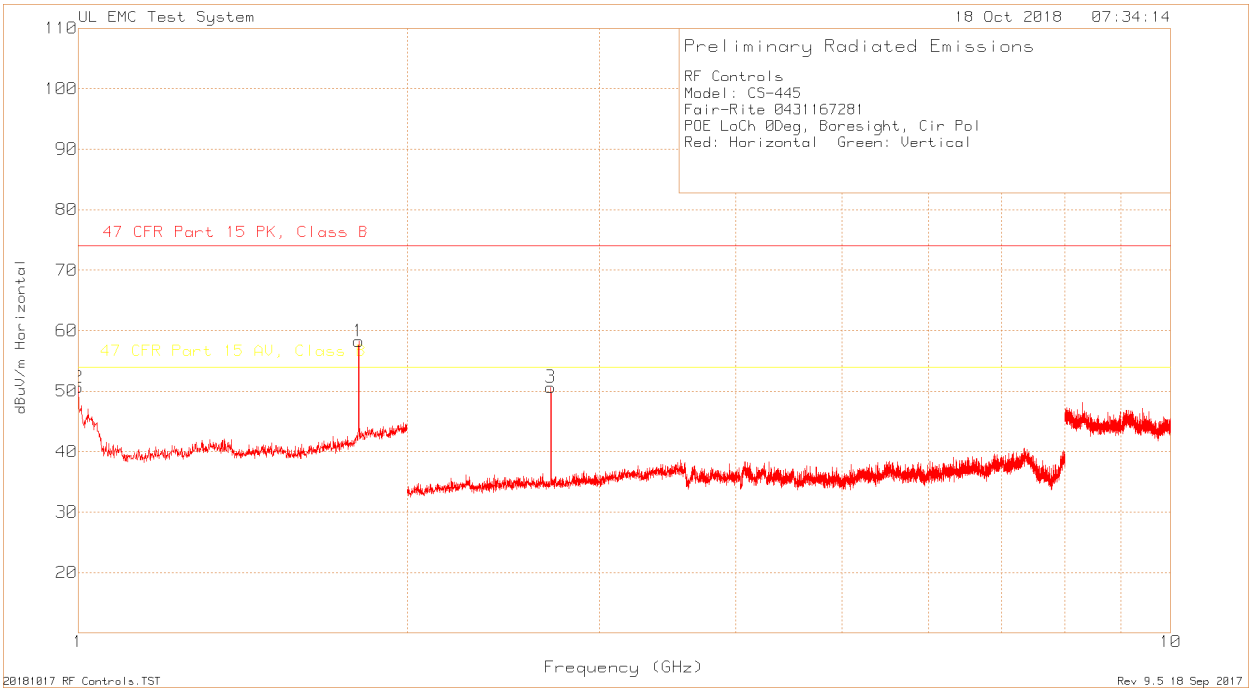
	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10M to 3M Factor dB	915MHz BRF Factor dB	Level dBuV/m	Limit 47 CFR Part 15.209 @ 3m dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	60.2255	47.97	Qp	6.8	-30.3	10.5	N/A	34.97	40	-5.03	79	251	V
	60.8235	44.61	Qp	6.7	-30.2	10.5	N/A	31.61	40	-8.39	77	241	V
	66.2916	48.56	Qp	6.2	-30	10.5	N/A	35.26	40	-4.74	95	215	V
	81.1997	44.76	Qp	7.2	-30.3	10.5	N/A	32.16	40	-7.84	229	159	V
	82.051	44.92	Qp	7.4	-30.1	10.5	N/A	32.72	40	-7.28	169	146	V
	86.0305	43.08	Qp	8.2	-29.8	10.5	N/A	31.98	40	-8.02	130	158	V
	85.5229	44.21	Qp	8.2	-30	10.5	N/A	32.91	40	-7.09	122	144	V

Pk - Peak detector
Qp - Quasi-Peak detector

9.1. Radiated Spurious Emissions 1GHz-10GHz

9.1.1. Circular Polarization, Boresight TX Direction, Low Channel





RF Controls
Model: CS-445
Fair-Rite 0431167281
POE LoCh 0Deg, Boresight, Cir Pol
Red: Horizontal Green: Vertical
Trace MArkers

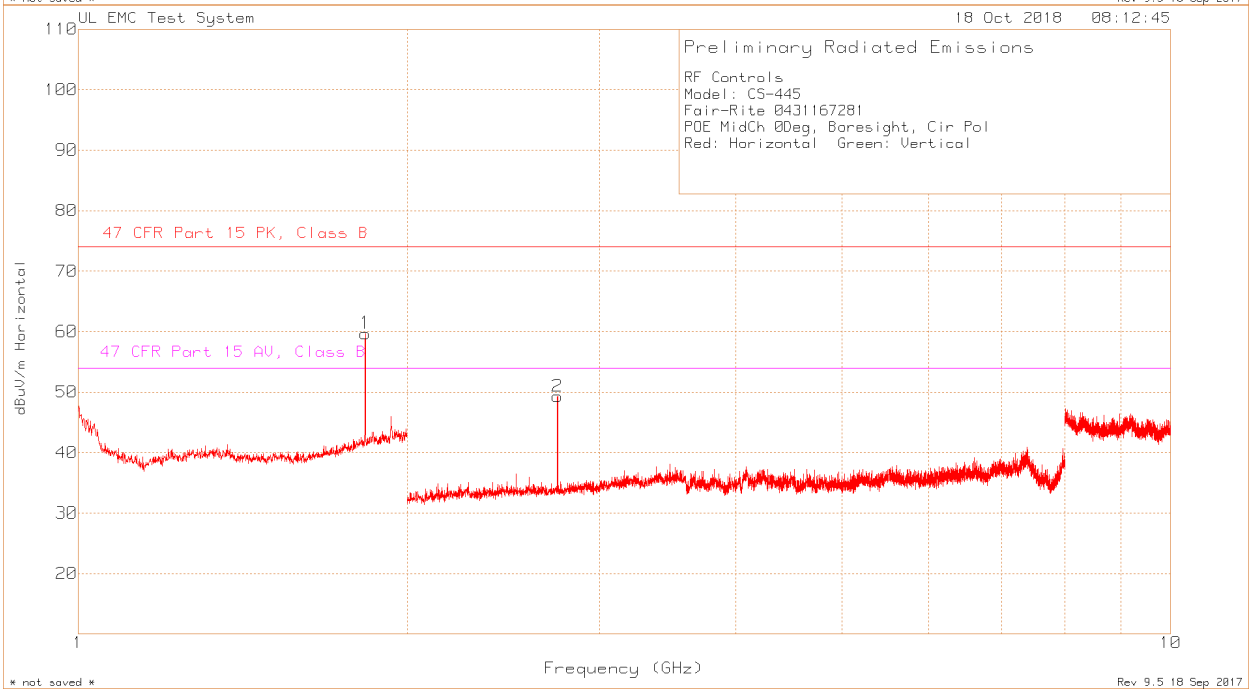
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.806	81.23	Pk	30.4	-53.35	58.28	74	-15.72	54	4.28	0-360	149	H
2	1	79.12	Pk	27.3	-55.84	50.58	74	-23.42	54	-3.42	0-360	149	H
3	2.708	78.94	Pk	22.1	-50.4	50.64	74	-23.36	54	-3.36	0-360	149	H
*4	1.806	72.68	Pk	30.4	-53.35	49.73	74	-24.27	54	-4.27	0-360	150	V
5	2.136	73.7	Pk	21.5	-51.64	43.56	74	-30.44	54	-10.44	0-360	150	V
6	2.708	70.84	Pk	22.1	-50.4	42.54	74	-31.46	54	-11.46	0-360	150	V

Radiated Emission Data

	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7083	79.06	Pk	22.1	-50.35	50.81	74	-23.19	54	-3.19	207	139	H
	2.7082	77.31	Av	22.1	-50.37	49.04	74	-24.96	54	-4.96	207	139	H

Pk - Peak detector
Av - Average detection
* not in restricted band, limit not applicable

9.1.2. Circular Polarization, Boresight TX Direction, Middle Channel



RF Controls
Model: CS-445
Fair-Rite 0431167281
POE MidCh 0Deg, Boresight, Cir Pol
Red: Horizontal Green: Vertical
Trace MArkers

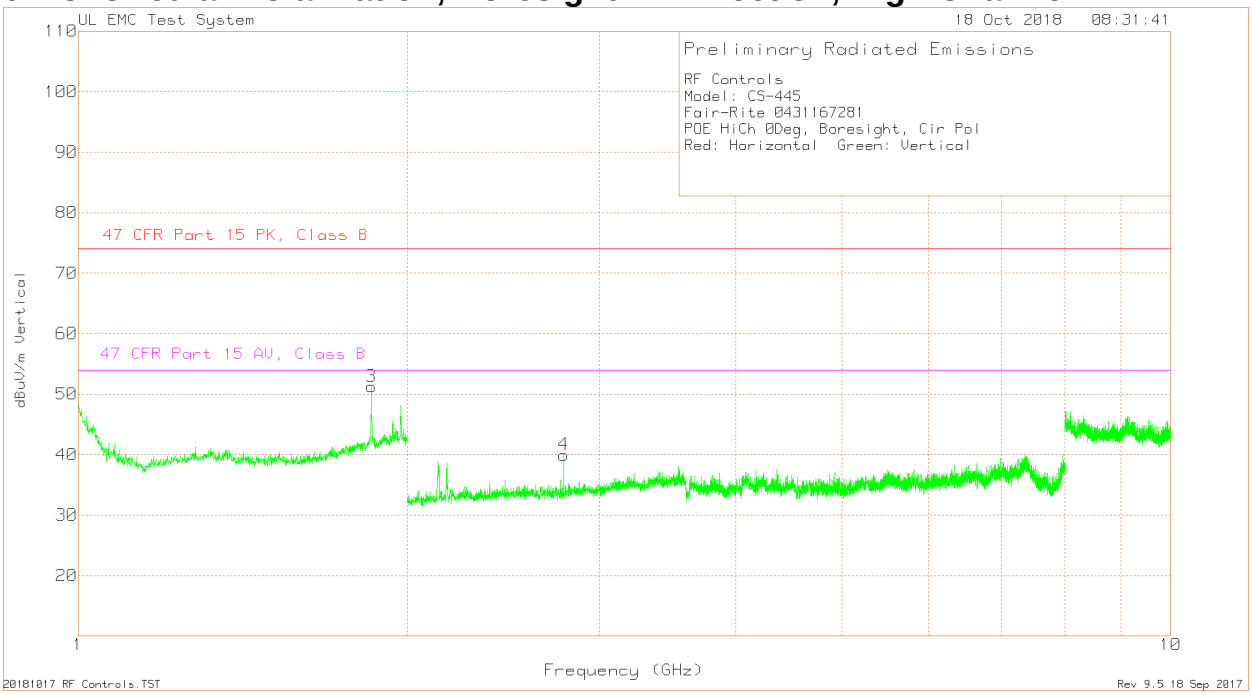
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.831	82.06	Pk	30.7	-53.05	59.71	74	-14.29	54	5.71	0-360	150	H
2	2.746	77.54	Pk	22.1	-50.32	49.32	74	-24.68	54	-4.68	0-360	150	H
*3	1.831	71.19	Pk	30.7	-53.05	48.84	74	-25.16	54	-5.16	0-360	150	V
4	2.746	71.37	Pk	22.1	-50.32	43.15	74	-30.85	54	-10.85	0-360	150	V

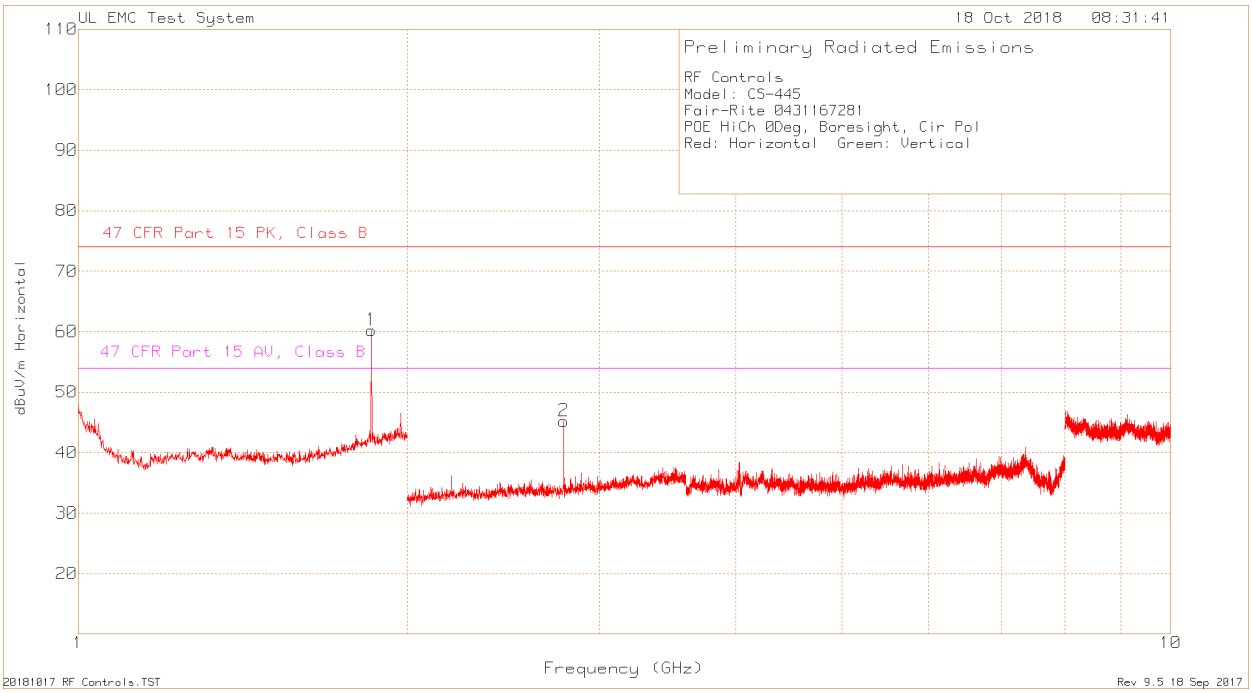
Radiated Emission Data

	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7457	78.23	Pk	22.1	-50.33	50	74	-24	54	-4	206	142	H
	2.7457	76.28	Av	22.1	-50.33	48.05	74	-25.95	54	-5.95	206	142	H

Pk - Peak detector
Av - Average detection
* not in restricted band, limit not applicable

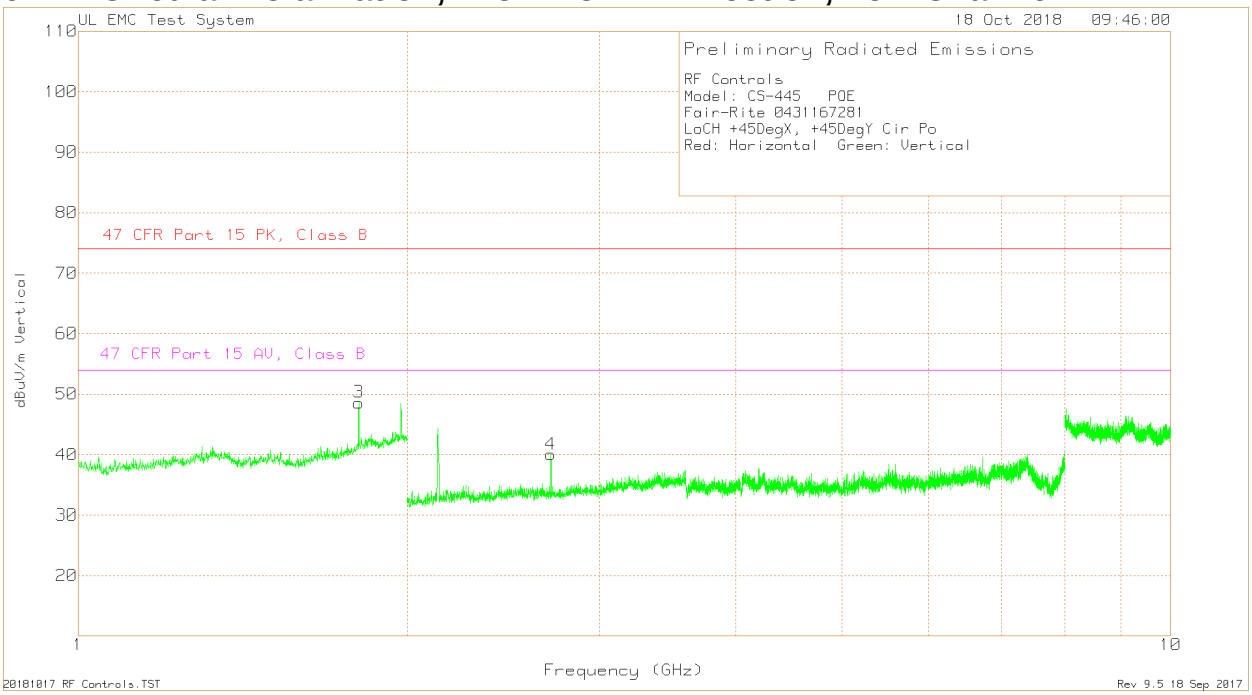
9.1.3. Circular Polarization, Boresight TX Direction, High Channel

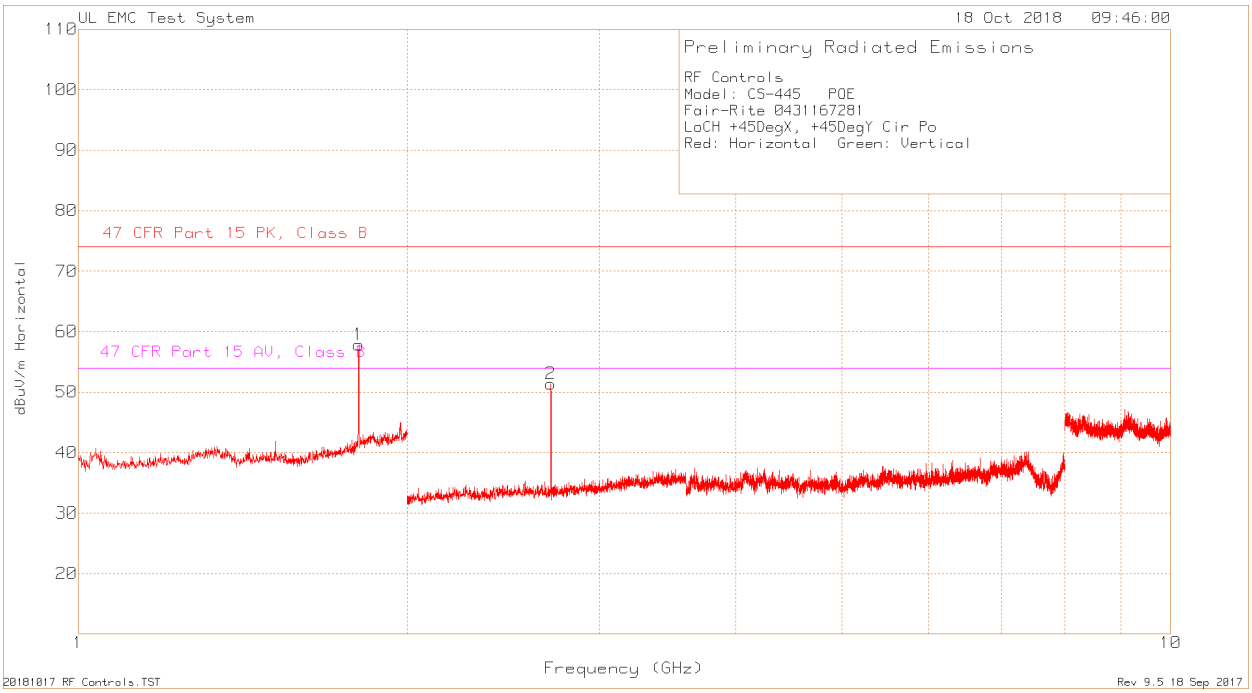




RF Controls													
Model: CS-445													
Fair-Rite 0431167281													
POE HiCh 0Deg, Boresight, Cir Pol													
Red: Horizontal Green: Vertical													
Trace MArkers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.855	82.7	Pk	30.9	-53.35	60.25	74	-13.75	54	6.25	0-360	150	H
2	2.782	73.21	Pk	22.2	-50.17	45.24	74	-28.76	54	-8.76	0-360	150	H
*3	1.855	73.71	Pk	30.9	-53.35	51.26	74	-22.74	54	-2.74	0-360	150	V
4	2.782	67.93	Pk	22.2	-50.17	39.96	74	-34.04	54	-14.04	0-360	150	V
Radiated Emission Data													
	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7819	73.73	Pk	22.2	-50.19	45.74	74	-28.26	54	-8.26	206	149	H
	2.7818	70.78	Av	22.2	-50.21	42.77	74	-31.23	54	-11.23	206	149	H
Pk - Peak detector													
Av - Average detection													
* not in restricted band, limit not applicable													

9.1.4. Circular Polarization, +45° +45° TX Direction, Low Channel





RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
LoCH +45DegX, +45DegY Cir Po
Red: Horizontal Green: Vertical
Trace MArkers

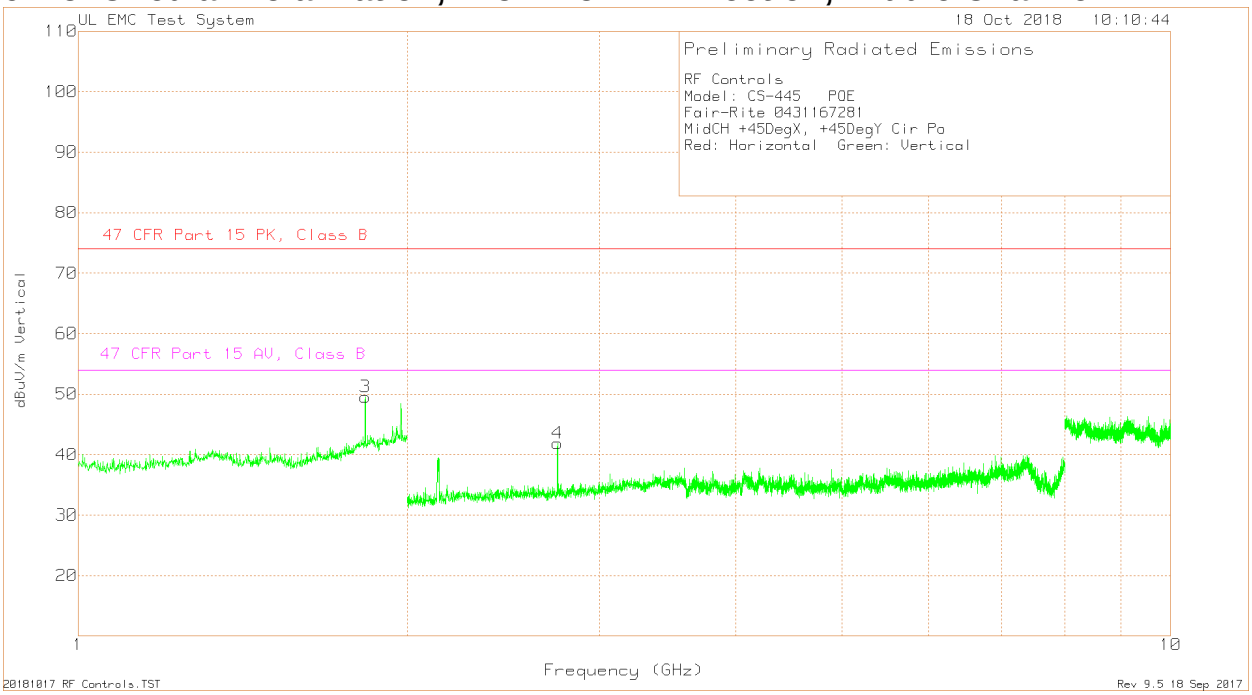
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1*	1.806	80.76	Pk	30.4	-53.35	57.81	74	-16.19	54	3.81	0-360	150	H
2	2.708	79.65	Pk	22.1	-50.4	51.35	74	-22.65	54	-2.65	0-360	150	H
3*	1.806	71.55	Pk	30.4	-53.35	48.6	74	-25.4	54	-5.4	0-360	150	V
4	2.708	68.29	Pk	22.1	-50.4	39.99	74	-34.01	54	-14.01	0-360	150	V

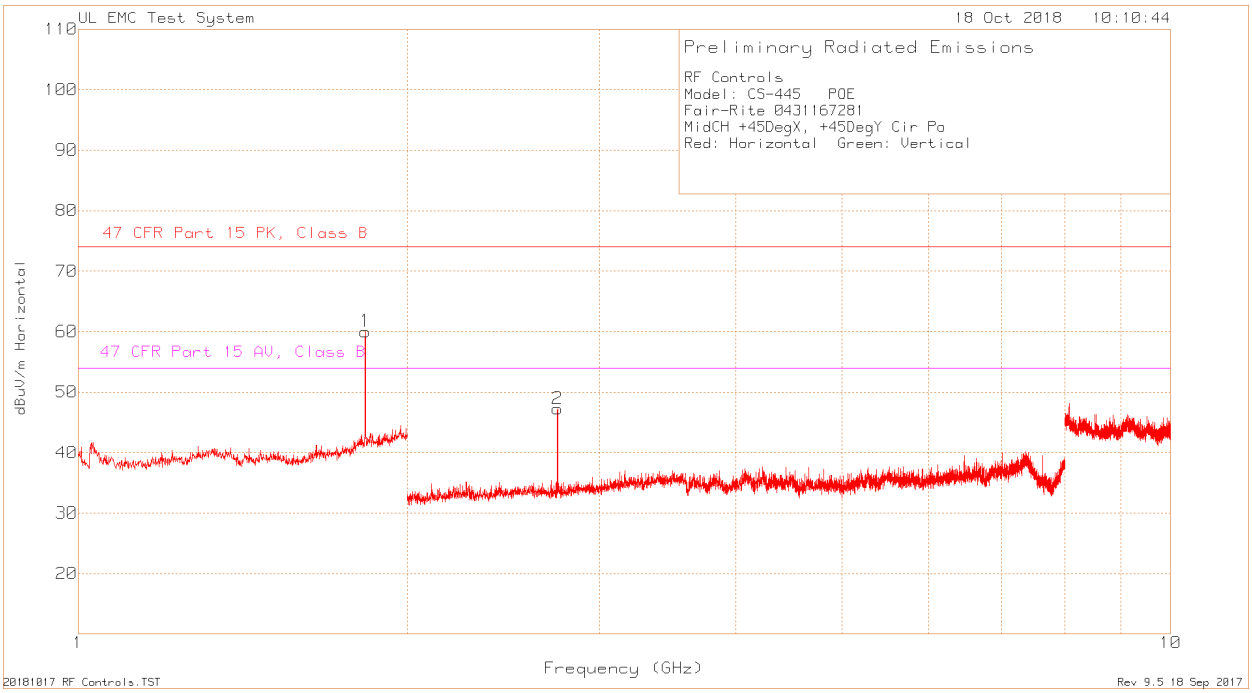
Radiated Emission Data

	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7083	80.23	Pk	22.1	-50.35	51.98	74	-22.02	54	-2.02	207	154	H
	2.7083	78.67	Av	22.1	-50.35	50.42	74	-23.58	54	-3.58	207	154	H

Pk - Peak detector
Av - Average detection
* not in restricted band, limit not applicable

9.1.5. Circular Polarization, +45° +45° TX Direction, Middle Channel





RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
MidCH +45DegX, +45DegY Cir Po
Red: Horizontal Green: Vertical
Trace MArkers

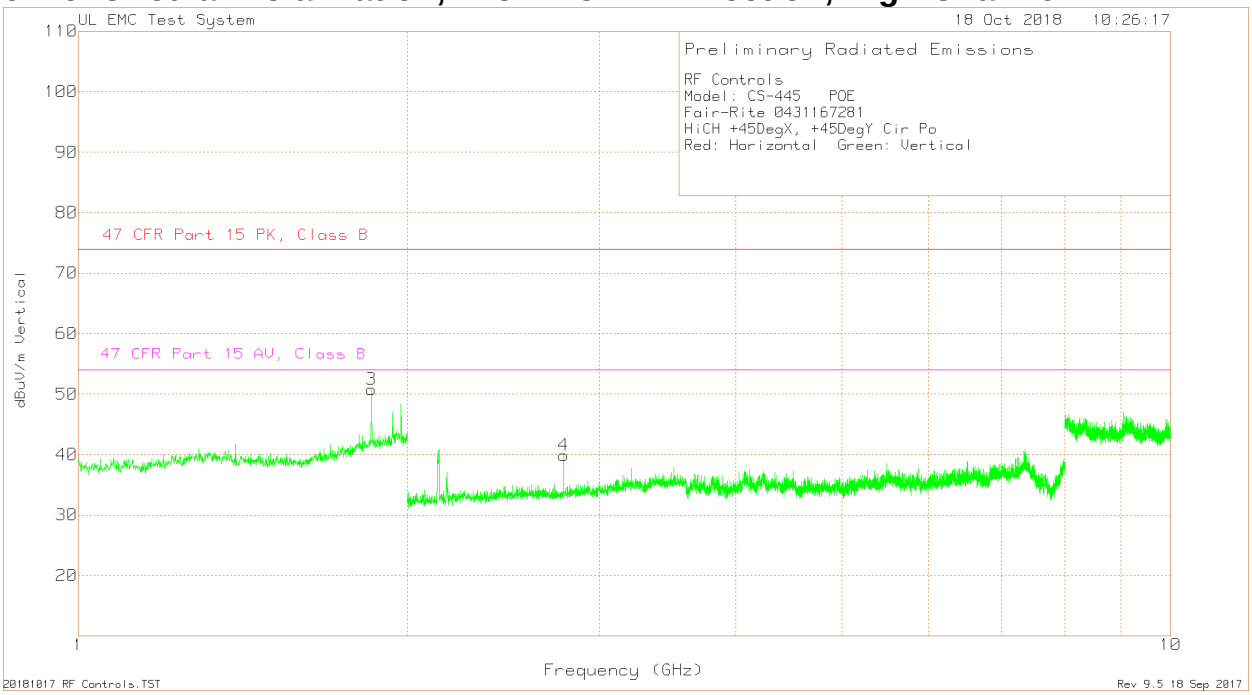
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.831	82.38	Pk	30.7	-53.05	60.03	74	-13.97	54	6.03	0-360	150	H
2	2.746	75.46	Pk	22.1	-50.32	47.24	74	-26.76	54	-6.76	0-360	150	H
*3	1.831	71.88	Pk	30.7	-53.05	49.53	74	-24.47	54	-4.47	0-360	150	V
4	2.746	70.07	Pk	22.1	-50.32	41.85	74	-32.15	54	-12.15	0-360	150	V

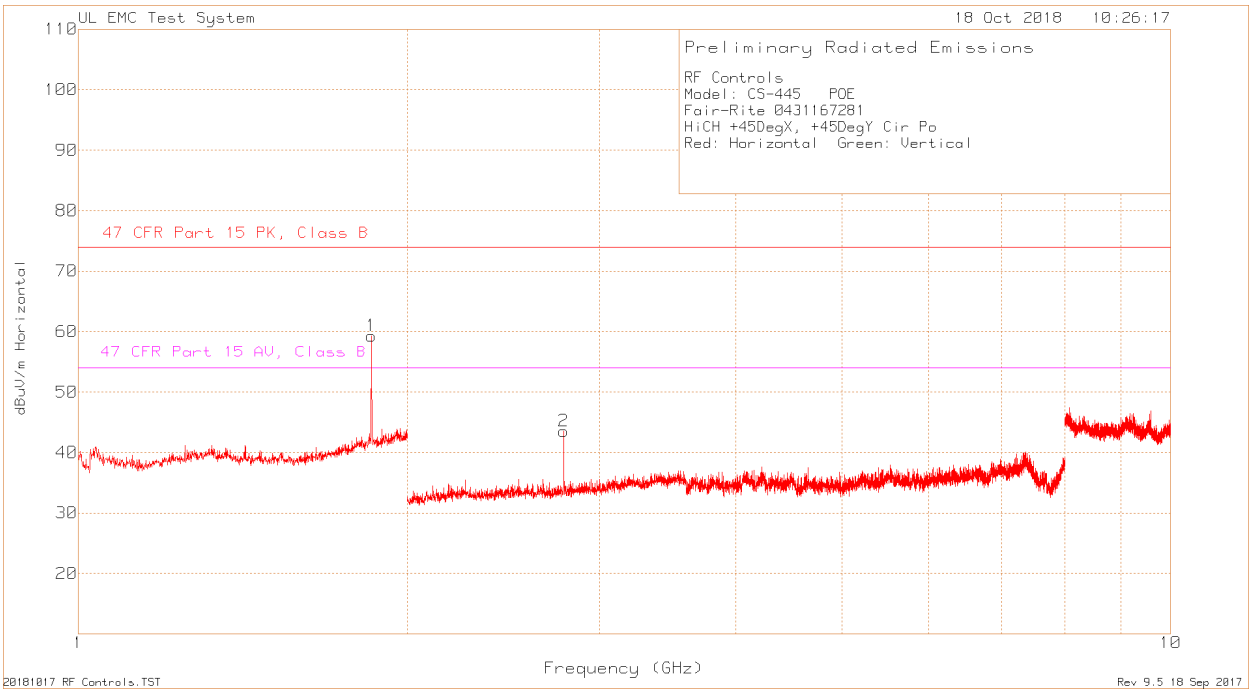
Radiated Emission Data

	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7458	77.46	Pk	22.1	-50.33	49.23	74	-24.77	54	-4.77	207	168	H
	2.7457	75.32	Av	22.1	-50.33	47.09	74	-26.91	54	-6.91	207	168	H

Pk - Peak detector
Av - Average detection
* not in restricted band, limit not applicable

9.1.6. Circular Polarization, +45° +45° TX Direction, High Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

HiCH +45DegX, +45DegY Cir Po

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	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.855	81.72	Pk	30.9	-53.35	59.27	74	-14.73	54	5.27	0-360	151	H
2	2.782	71.52	Pk	22.2	-50.17	43.55	74	-30.45	54	-10.45	0-360	151	H
*3	1.855	73.19	Pk	30.9	-53.35	50.74	74	-23.26	54	-3.26	0-360	151	V
4	2.782	67.85	Pk	22.2	-50.17	39.88	74	-34.12	54	-14.12	0-360	151	V

Radiated Emission Data

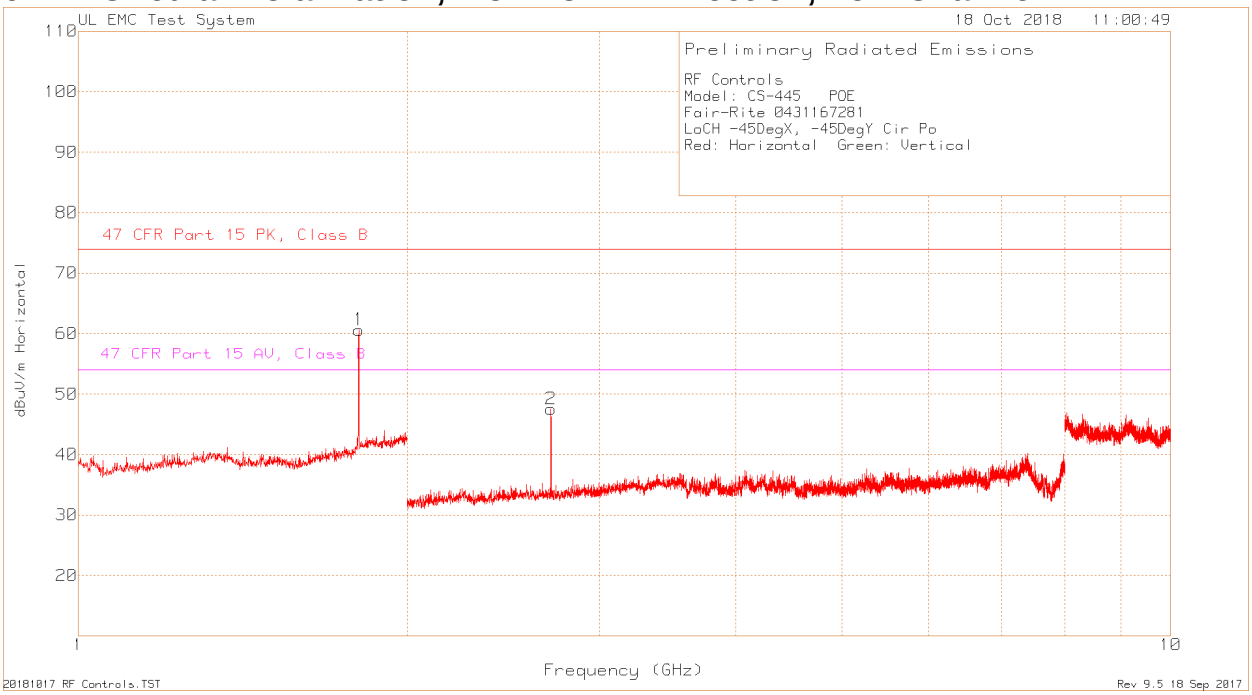
	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7817	74.18	Pk	22.2	-50.22	46.16	74	-27.84	54	-7.84	171	178	H
	2.7817	71.56	Av	22.2	-50.22	43.54	74	-30.46	54	-10.46	171	178	H

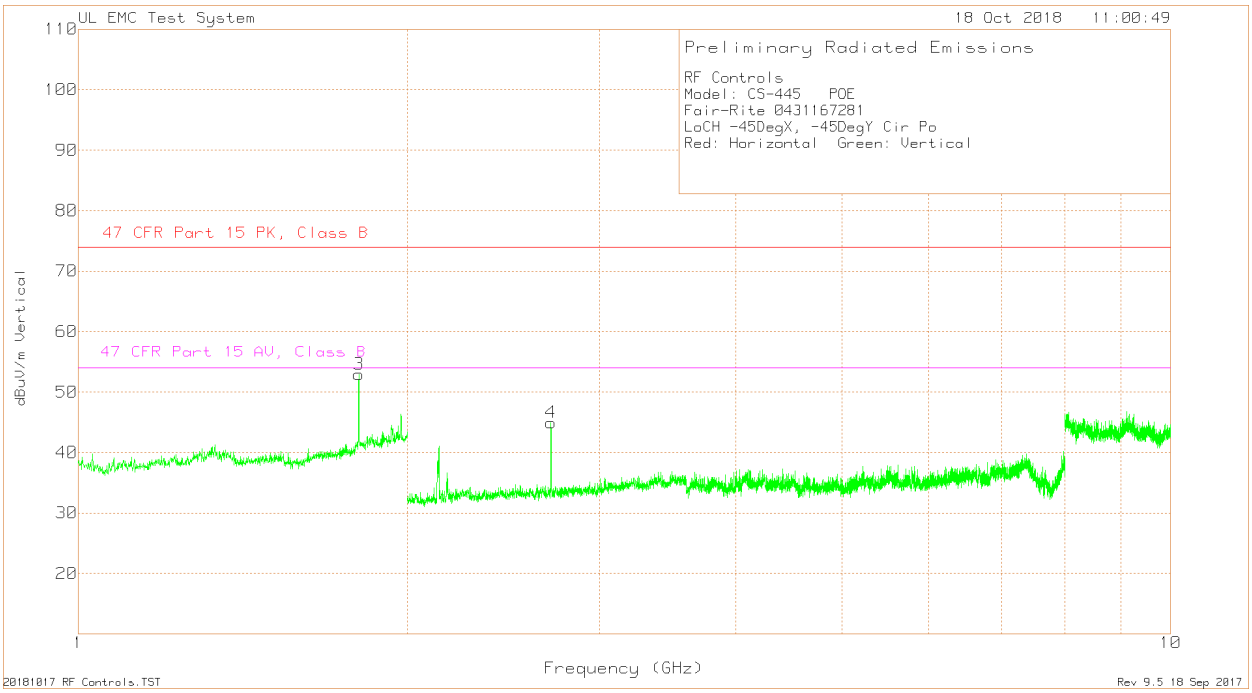
Pk - Peak detector

Av - Average detection

* not in restricted band, limit not applicable

9.1.7. Circular Polarization, -45° -45° TX Direction, Low Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

LoCH -45DegX, -45DegY Cir Po

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	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.806	83.56	Pk	30.4	-53.35	60.61	74	-13.39	54	6.61	0-360	149	H
2	2.708	75.8	Pk	22.1	-50.4	47.5	74	-26.5	54	-6.5	0-360	149	H
*3	1.806	75.88	Pk	30.4	-53.35	52.93	74	-21.07	54	-1.07	0-360	149	V
4	2.708	73.25	Pk	22.1	-50.4	44.95	74	-29.05	54	-9.05	0-360	149	V

Radiated Emission Data

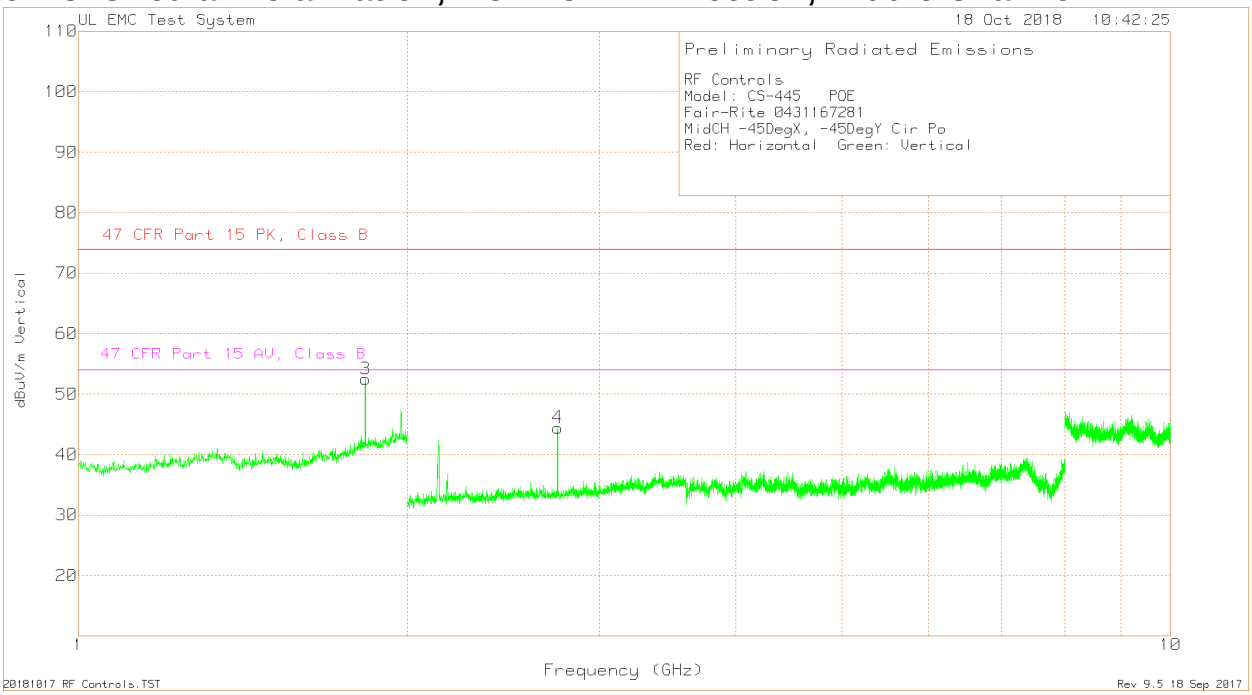
	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7083	79.66	Pk	22.1	-50.35	51.41	74	-22.59	54	-2.59	204	119	H
	2.7082	78.22	Av	22.1	-50.36	49.96	74	-24.04	54	-4.04	204	119	H
	2.7082	75.28	Pk	22.1	-50.36	47.02	74	-26.98	54	-6.98	168	134	V
	2.7082	72.91	Av	22.1	-50.35	44.66	74	-29.34	54	-9.34	168	134	V

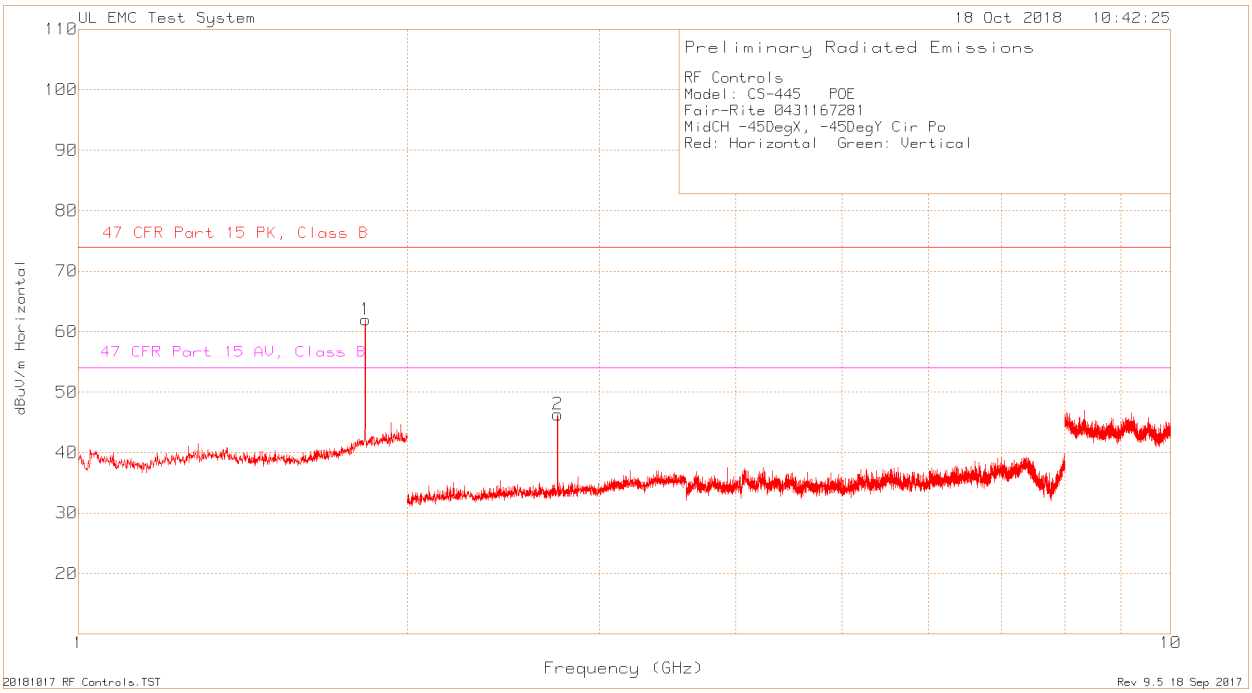
Pk - Peak detector

Av - Average detection

* not in restricted band, limit not applicable

9.1.8. Circular Polarization, -45° -45° TX Direction, Middle Channel





RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
MidCH -45DegX, -45DegY Cir Po
Red: Horizontal Green: Vertical
Trace MArkers

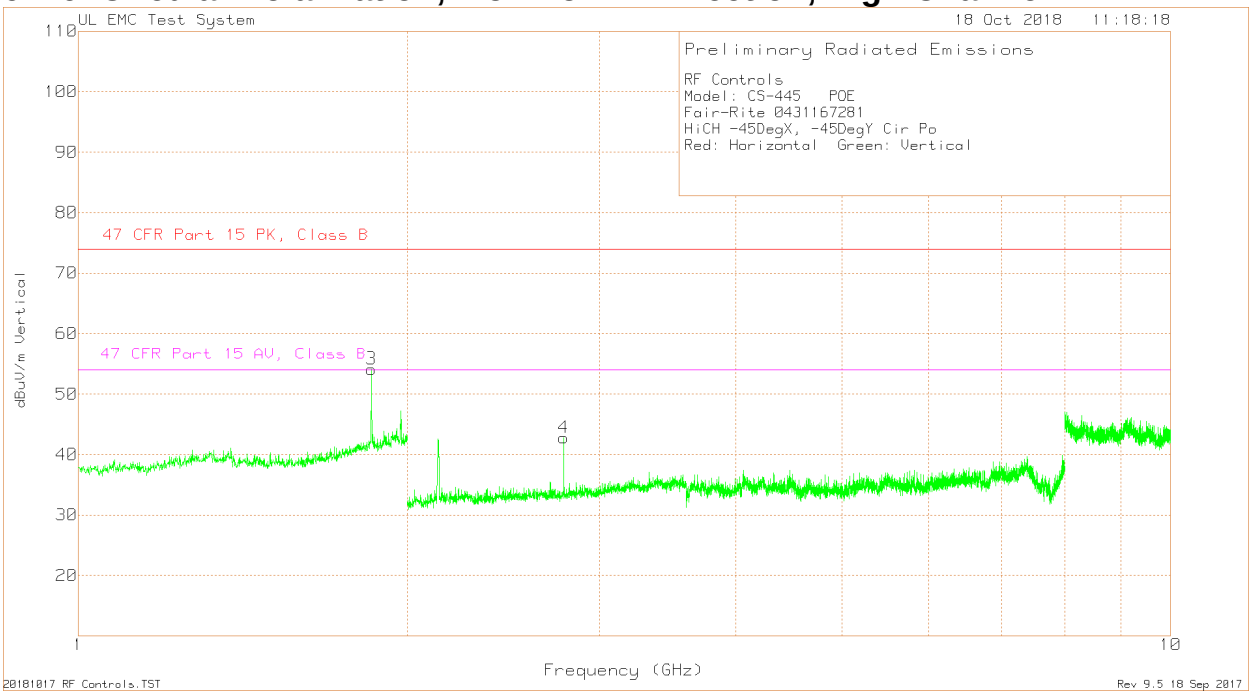
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.831	84.34	Pk	30.7	-53.05	61.99	74	-12.01	54	7.99	0-360	152	H
2	2.746	74.52	Pk	22.1	-50.32	46.3	74	-27.7	54	-7.7	0-360	152	H
*3	1.831	74.81	Pk	30.7	-53.05	52.46	74	-21.54	54	-1.54	0-360	150	V
4	2.746	72.66	Pk	22.1	-50.32	44.44	74	-29.56	54	-9.56	0-360	150	V

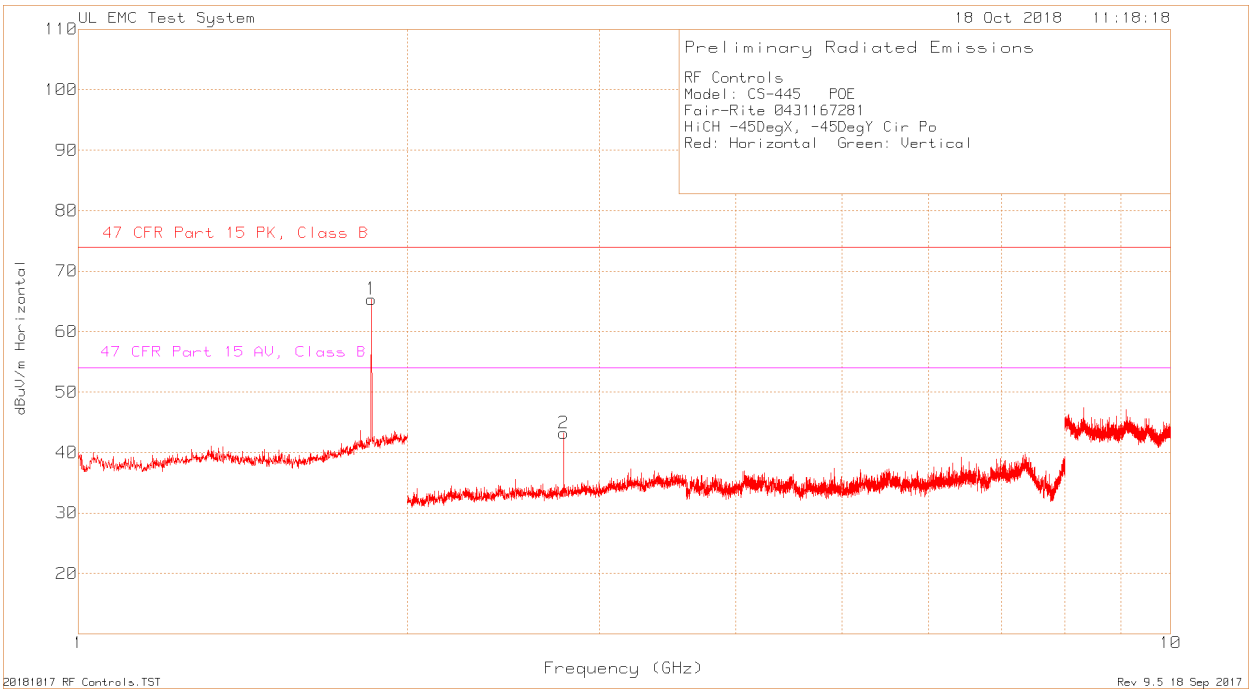
Radiated Emission Data

	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7457	76.79	Pk	22.1	-50.33	48.56	74	-25.44	54	-5.44	206	117	H
	2.7457	74.75	Av	22.1	-50.33	46.52	74	-27.48	54	-7.48	206	117	H

Pk - Peak detector
Av - Average detection
* not in restricted band, limit not applicable

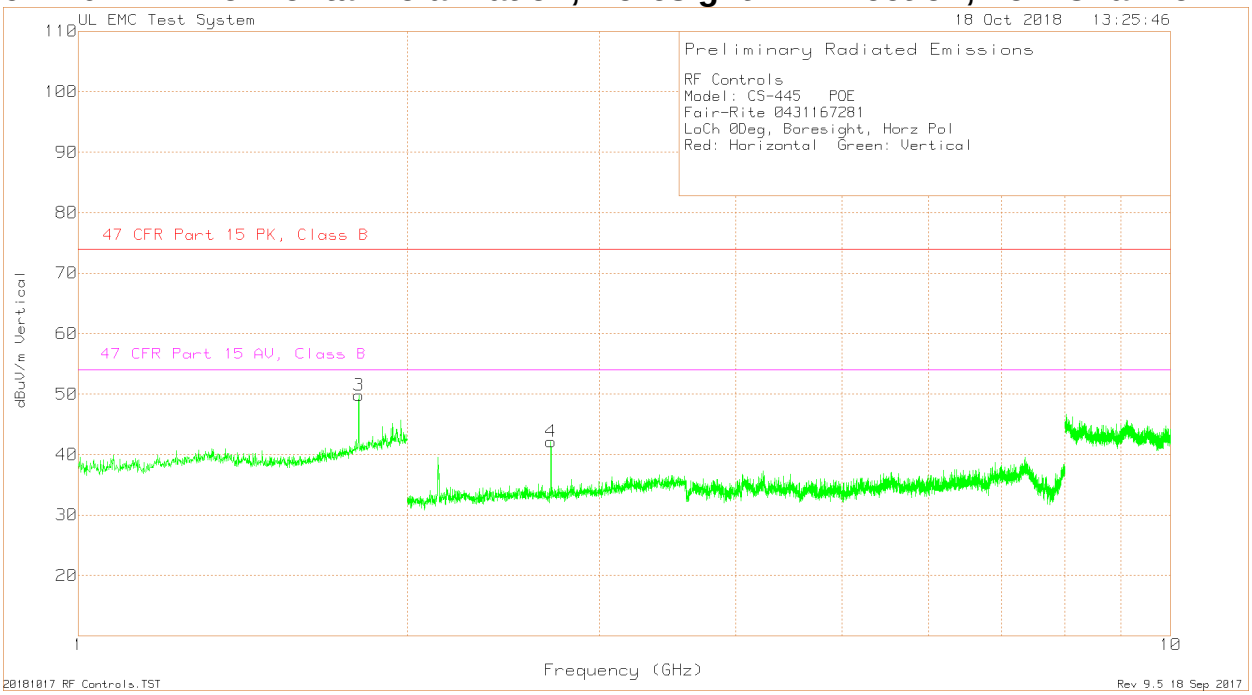
9.1.9. Circular Polarization, -45° -45° TX Direction, High Channel

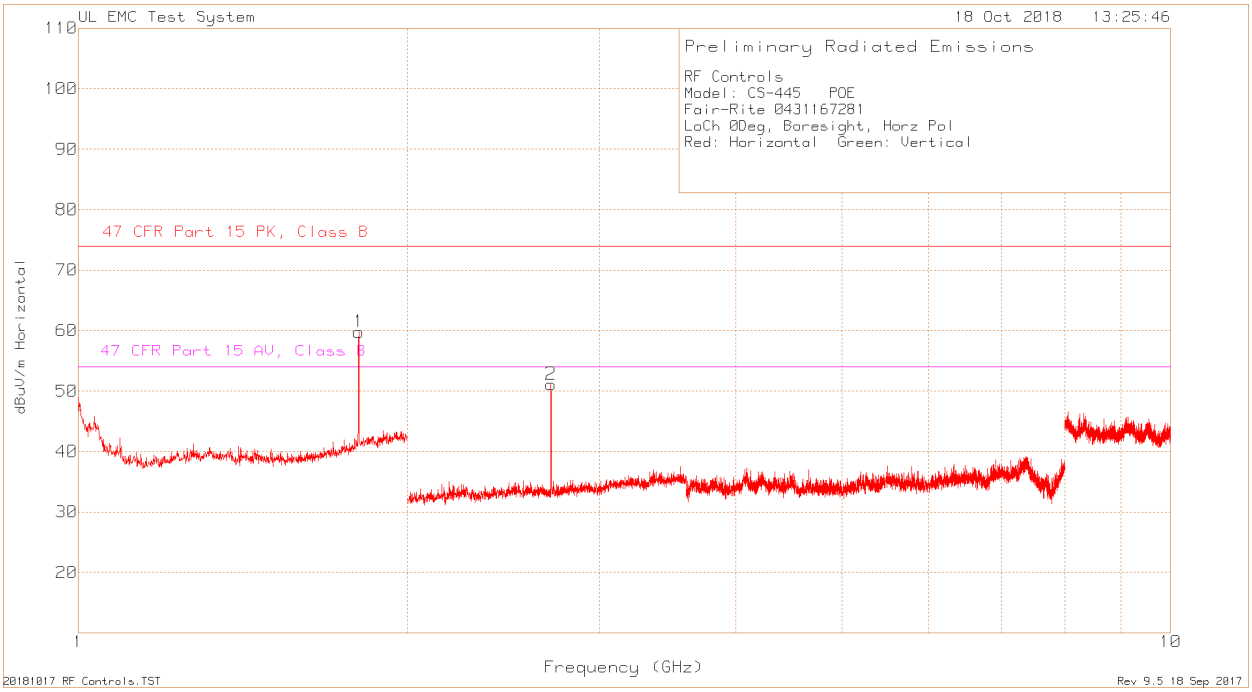




RF Controls													
Model: CS-445 POE													
Fair-Rite 0431167281													
HiCH -45DegX, -45DegY Cir Po													
Red: Horizontal Green: Vertical													
Trace MArkers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.855	87.82	Pk	30.9	-53.35	65.37	74	-8.63	54	11.37	0-360	149	H
2	2.782	71.17	Pk	22.2	-50.17	43.2	74	-30.8	54	-10.8	0-360	149	H
*3	1.855	76.59	Pk	30.9	-53.35	54.14	74	-19.86	54	0.14	0-360	149	V
4	2.782	70.76	Pk	22.2	-50.17	42.79	74	-31.21	54	-11.21	0-360	149	V
Radiated Emission Data													
	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7818	73.82	Pk	22.2	-50.2	45.82	74	-28.18	54	-8.18	201	119	H
	2.7817	71.02	Av	22.2	-50.22	43	74	-31	54	-11	201	119	H
Pk - Peak detector													
Av - Average detection													
* not in restricted band, limit not applicable													

9.1.10. Horizontal Polarization, Boresight TX Direction, Low Channel





RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
LoCh 0Deg, Boresight, Horz Pol
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	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.806	82.73	Pk	30.4	-53.35	59.78	74	-14.22	54	5.78	0-360	151	H
2	2.708	79.42	Pk	22.1	-50.4	51.12	74	-22.88	54	-2.88	0-360	151	H
*3	1.806	72.72	Pk	30.4	-53.35	49.77	74	-24.23	54	-4.23	0-360	151	V
4	2.708	70.44	Pk	22.1	-50.4	42.14	74	-31.86	54	-11.86	0-360	151	V

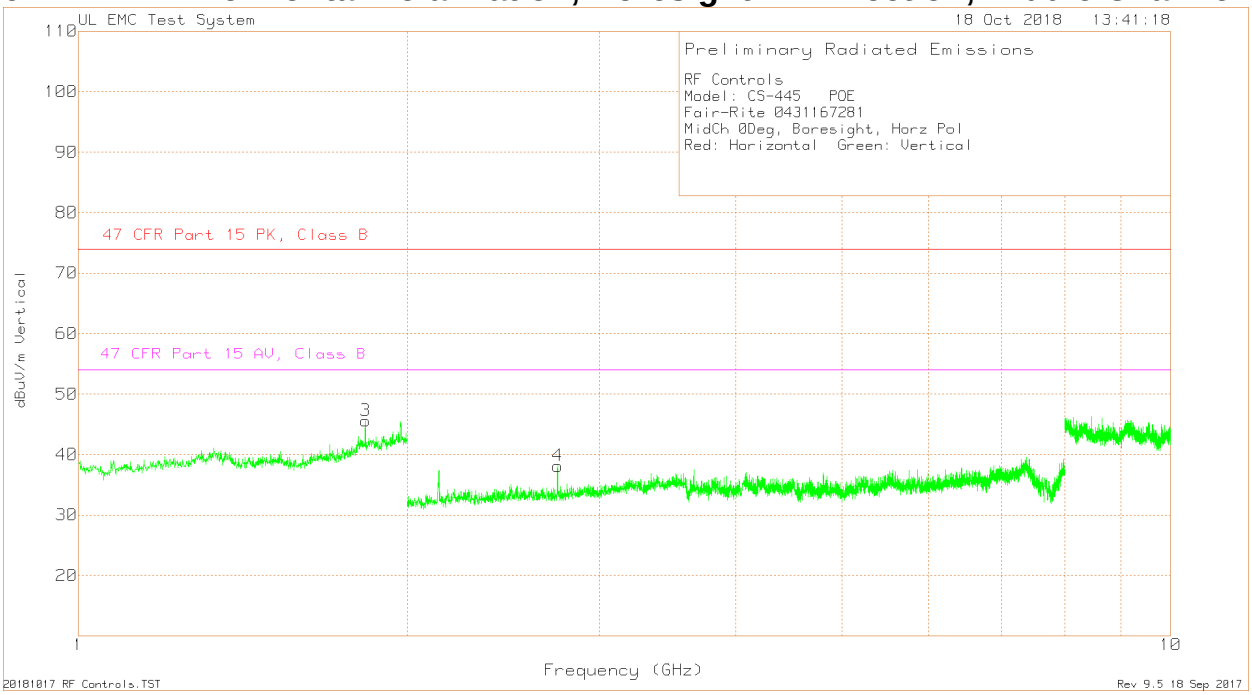
Radiated Emission Data

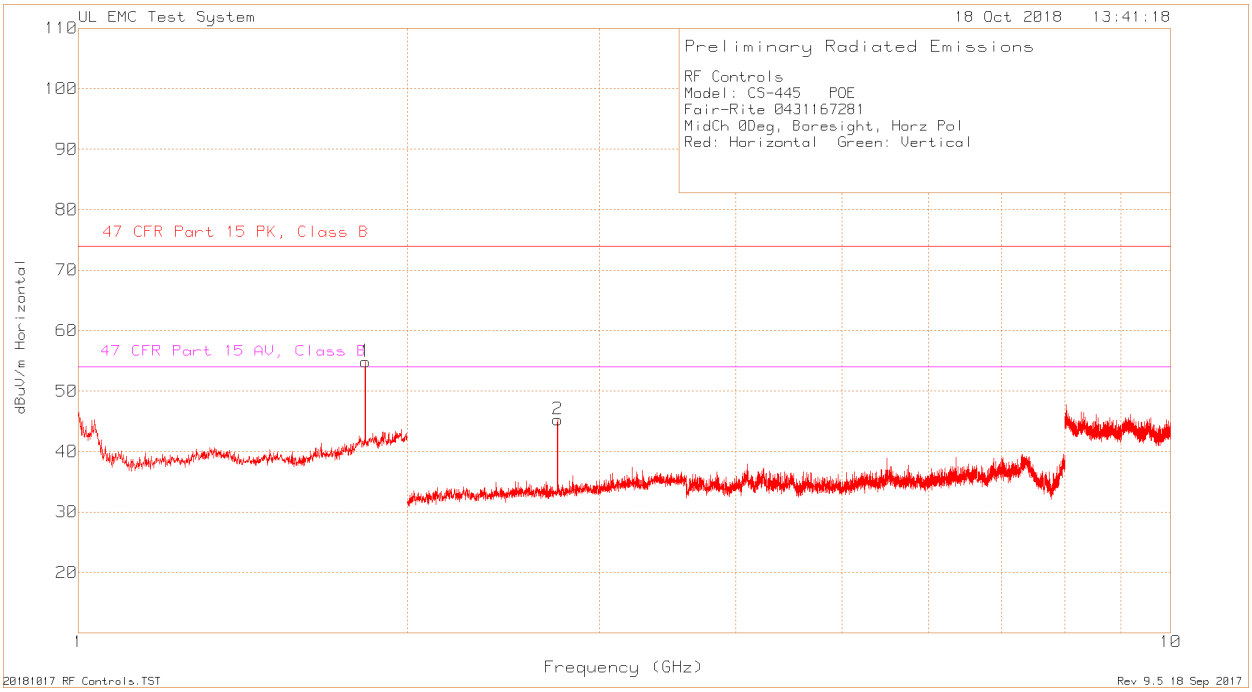
	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7082	79.41	Pk	22.1	-50.36	51.15	74	-22.85	54	-2.85	206	144	H
	2.7083	77.9	Av	22.1	-50.35	49.65	74	-24.35	54	-4.35	206	144	H

Pk - Peak detector
Av - Average detection
* not in restricted band, limit not applicable

UL LLC
333 Pfingsten Road, Northbrook, IL 60062; USA TEL:(847) 272-8800

9.1.11. Horizontal Polarization, Boresight TX Direction, Middle Channel



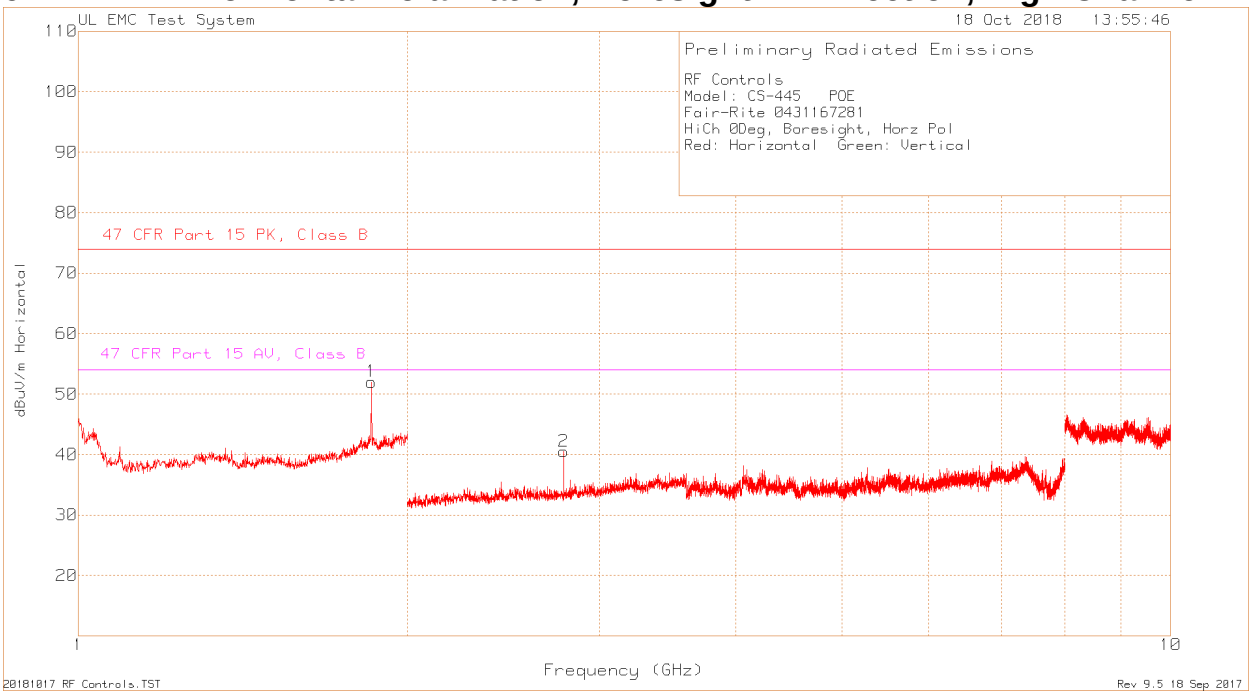


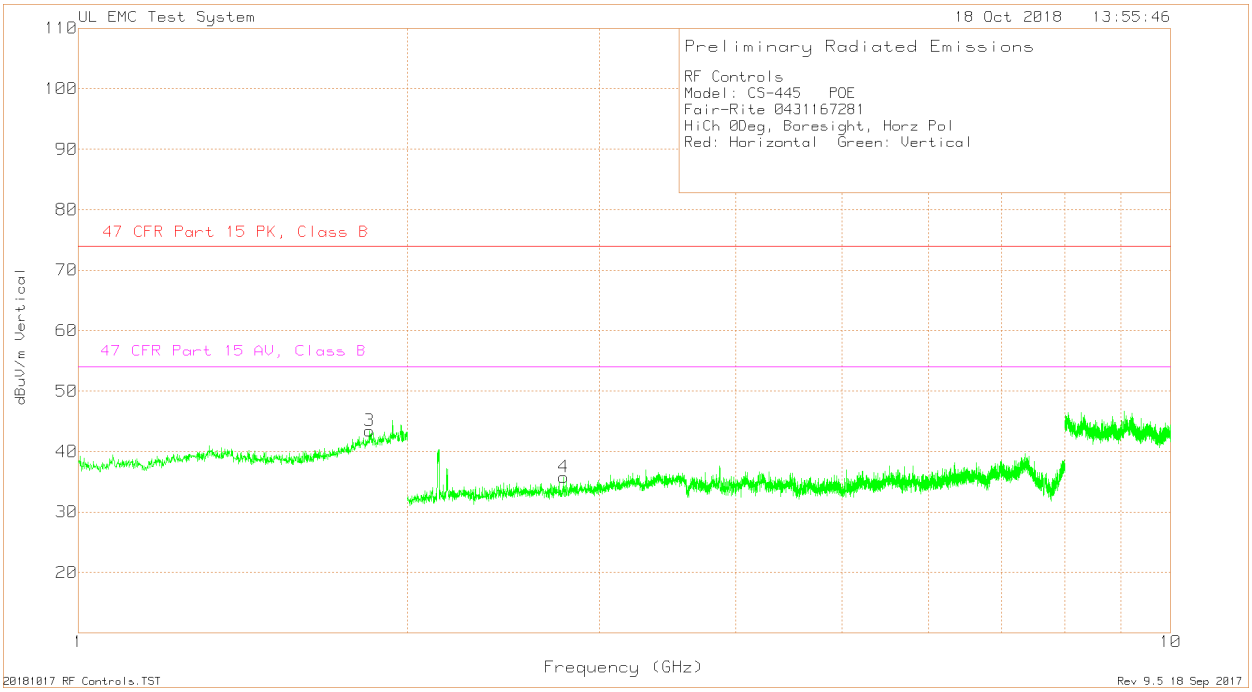
RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
MidCh 0Deg, Boresight, Horz Pol
Red: Horizontal Green: Vertical
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.831	77.24	Pk	30.7	-53.05	54.89	74	-19.11	54	0.89	0-360	148	H
2	2.746	73.54	Pk	22.1	-50.32	45.32	74	-28.68	54	-8.68	0-360	148	H
*3	1.831	67.95	Pk	30.7	-53.05	45.6	74	-28.4	54	-8.4	0-360	148	V
4	2.746	66.33	Pk	22.1	-50.32	38.11	74	-35.89	54	-15.89	0-360	148	V

Pk - Peak detector
* not in restricted band, limit not applicable

9.1.12. Horizontal Polarization, Boresight TX Direction, High Channel



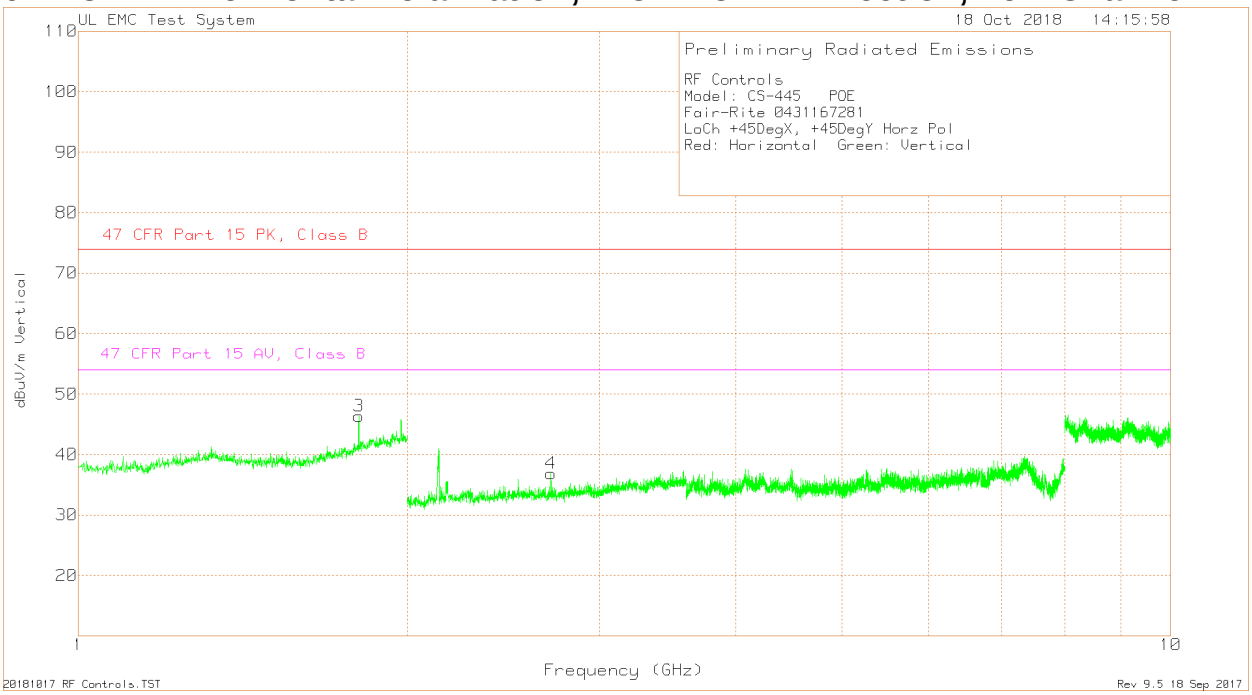


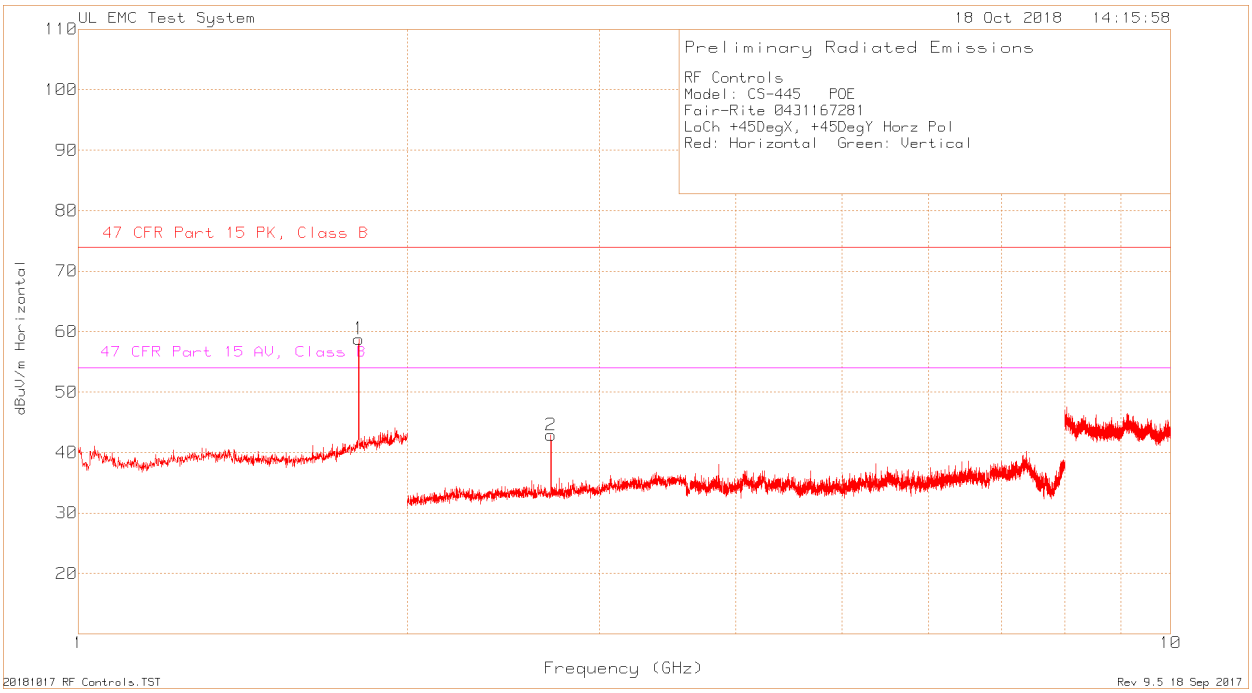
RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
HiCh 0Deg, Boresight, Horz Pol
Red: Horizontal Green: Vertical
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.855	74.46	Pk	30.9	-53.35	52.01	74	-21.99	54	-1.99	0-360	148	H
2	2.782	68.48	Pk	22.2	-50.17	40.51	74	-33.49	54	-13.49	0-360	148	H
*3	1.848	65.58	Pk	30.9	-53.03	43.45	74	-30.55	54	-10.55	0-360	148	V
4	2.782	63.75	Pk	22.2	-50.17	35.78	74	-38.22	54	-18.22	0-360	148	V

Pk - Peak detector
* not in restricted band, limit not applicable

9.1.13. Horizontal Polarization, +45° +45° TX Direction, Low Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

LoCh +45DegX, +45DegY Horz Pol

Red: Horizontal Green: Vertical

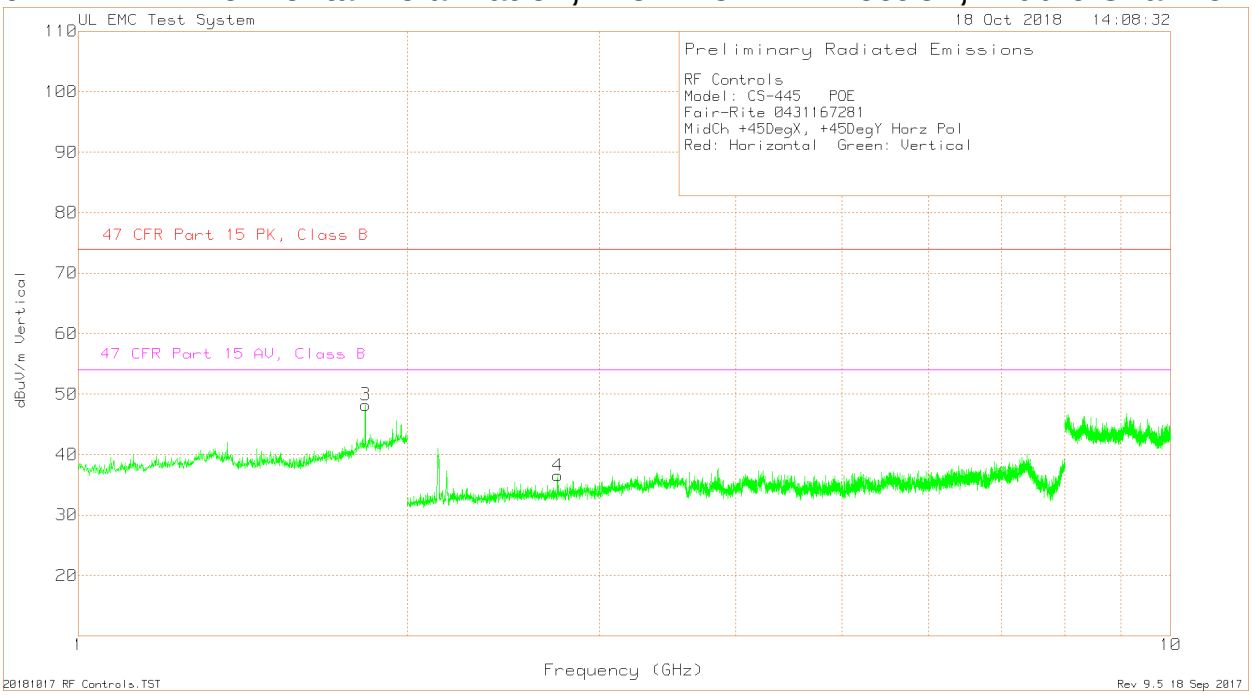
Trace MArkers

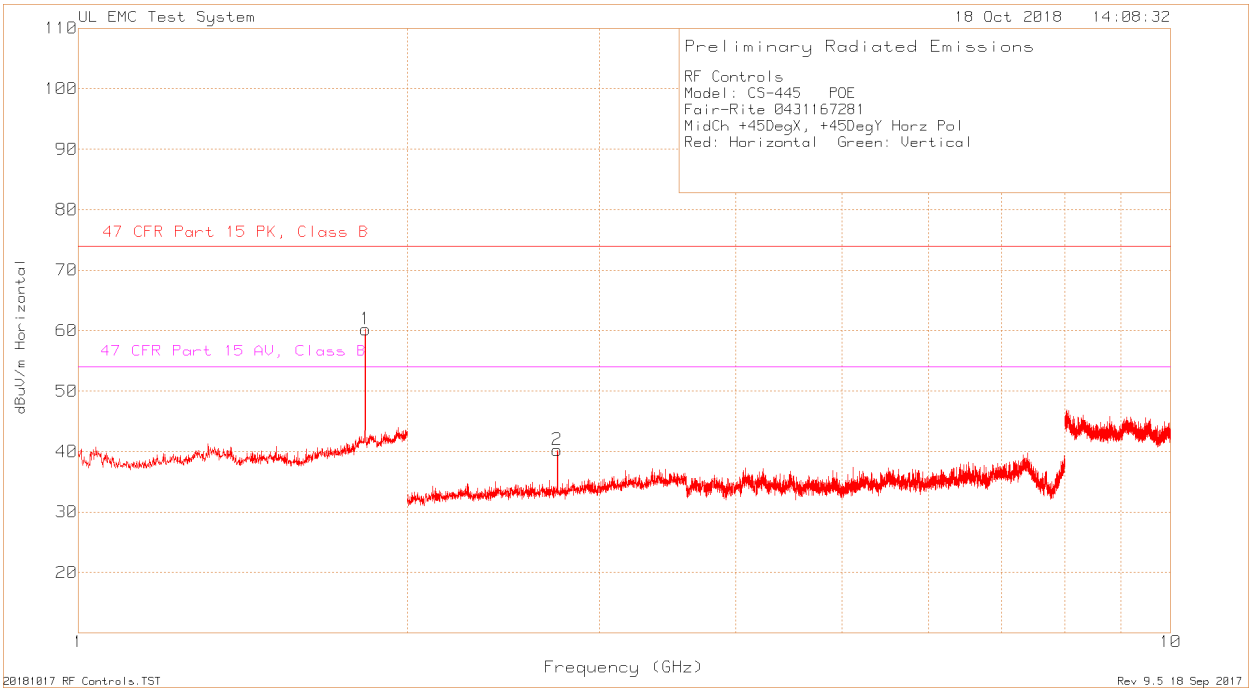
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.806	81.74	Pk	30.4	-53.35	58.79	74	-15.21	54	4.79	0-360	150	H
2	2.708	71.18	Pk	22.1	-50.4	42.88	74	-31.12	54	-11.12	0-360	150	H
*3	1.806	69.26	Pk	30.4	-53.35	46.31	74	-27.69	54	-7.69	0-360	150	V
4	2.708	65.17	Pk	22.1	-50.4	36.87	74	-37.13	54	-17.13	0-360	150	V

Pk - Peak detector

* not in restricted band, limit not applicable

9.1.14. Horizontal Polarization, +45° +45° TX Direction, Middle Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

MidCh +45DegX, +45DegY Horz Pol

Red: Horizontal Green: Vertical

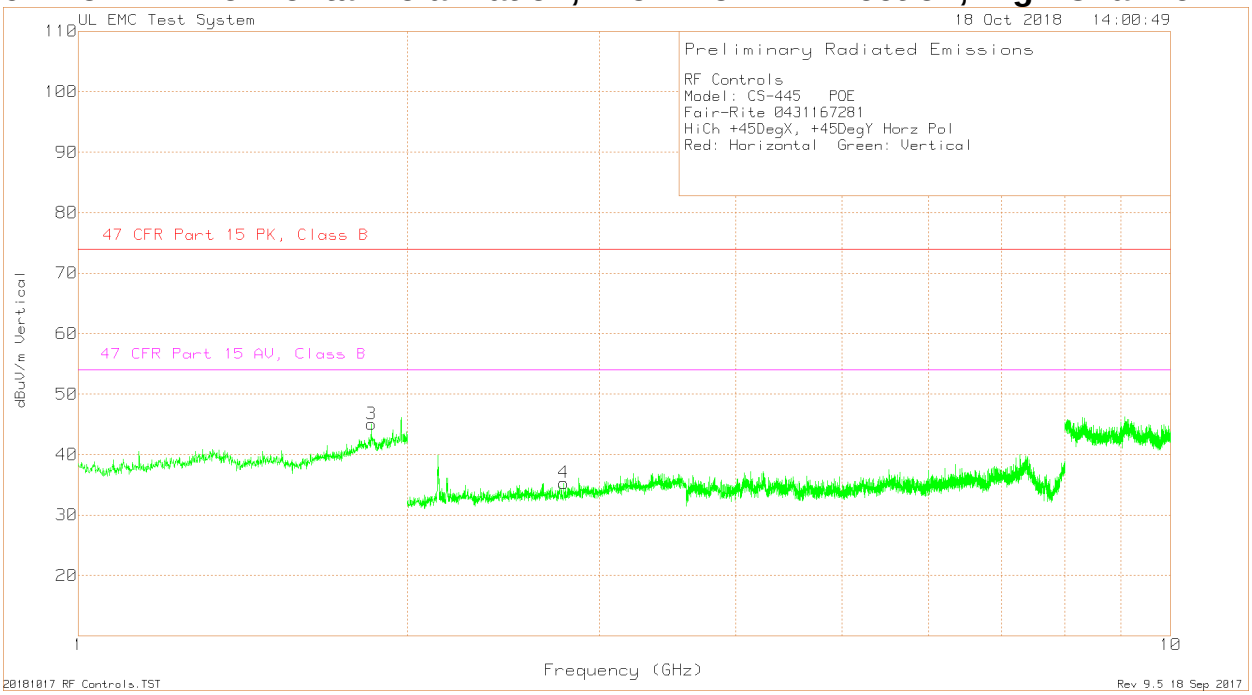
Trace MArkers

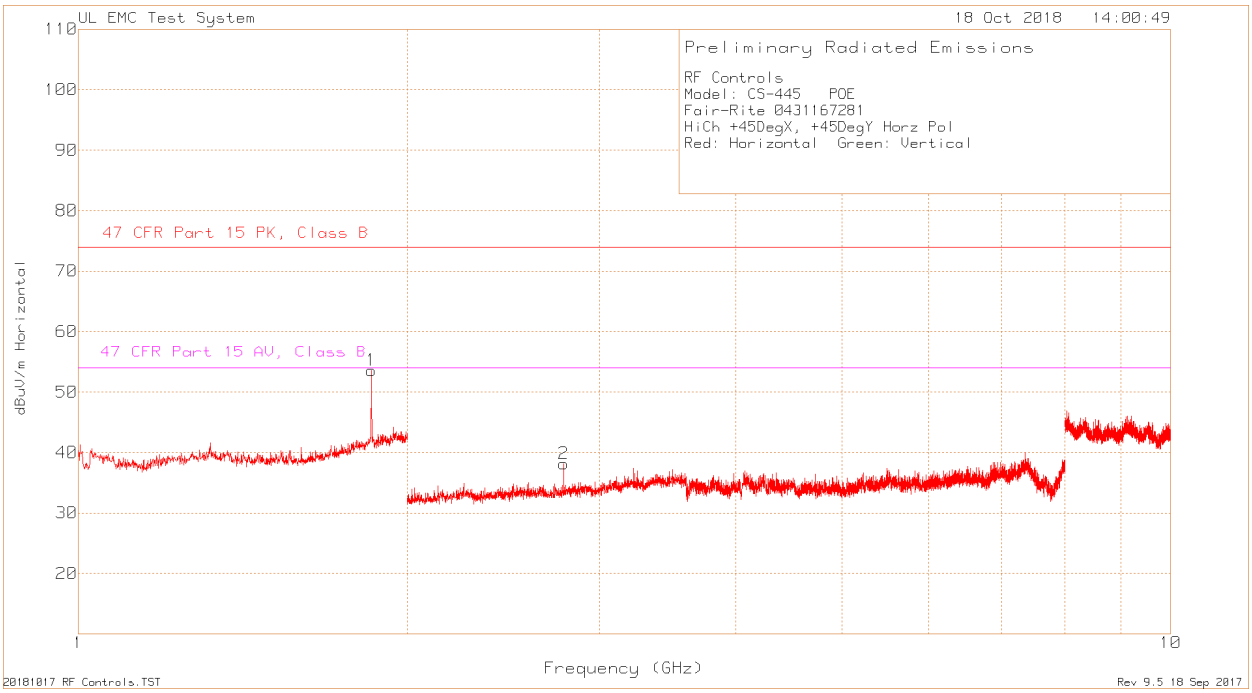
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1*	1.831	82.56	Pk	30.7	-53.05	60.21	74	-13.79	54	6.21	0-360	150	H
2	2.745	68.5	Pk	22.1	-50.34	40.26	74	-33.74	54	-13.74	0-360	150	H
3*	1.831	70.57	Pk	30.7	-53.05	48.22	74	-25.78	54	-5.78	0-360	150	V
4	2.746	64.77	Pk	22.1	-50.32	36.55	74	-37.45	54	-17.45	0-360	150	V

Pk - Peak detector

* not in restricted band, limit not applicable

9.1.15. Horizontal Polarization, +45° +45° TX Direction, High Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

HiCh +45DegX, +45DegY Horz Pol

Red: Horizontal Green: Vertical

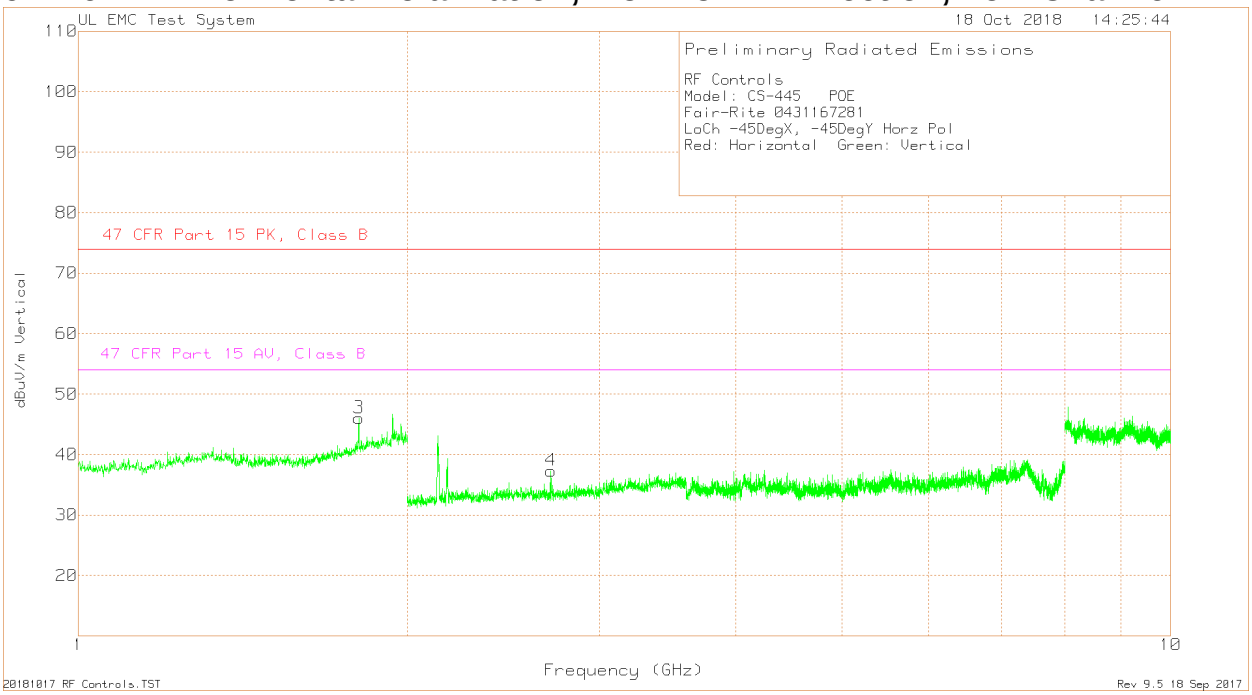
Trace MArkers

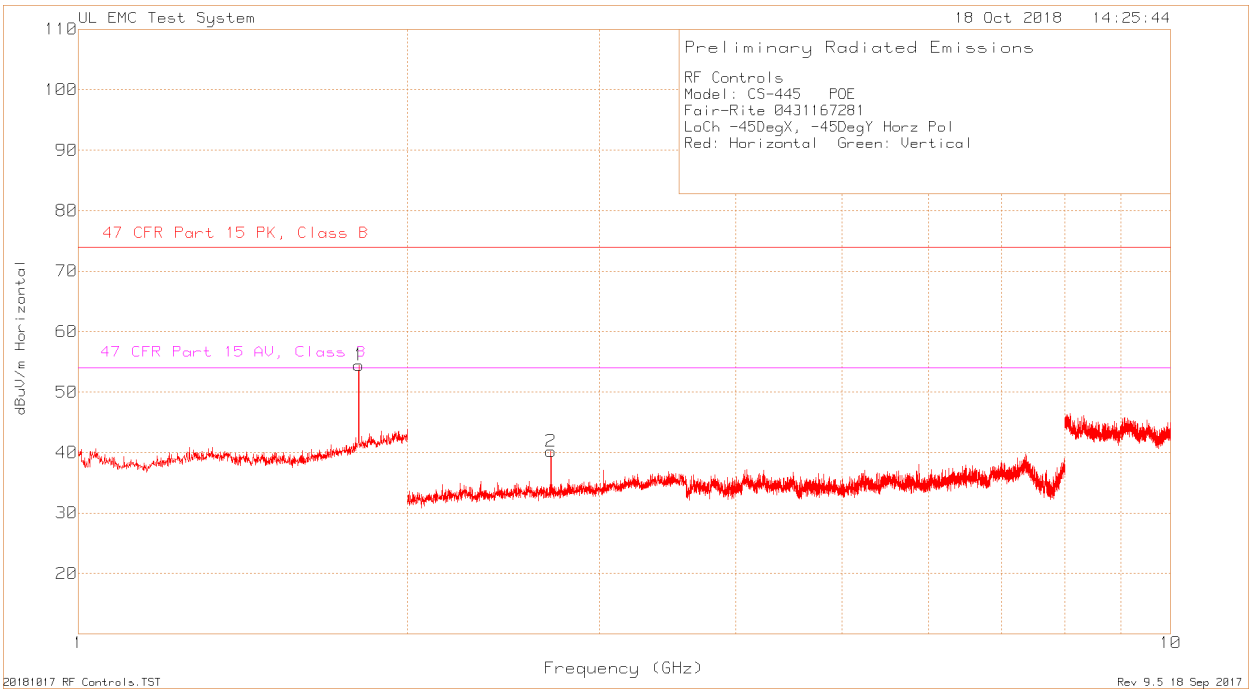
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.855	76.02	Pk	30.9	-53.35	53.57	74	-20.43	54	-0.43	0-360	152	H
2	2.782	66.09	Pk	22.2	-50.17	38.12	74	-35.88	54	-15.88	0-360	152	H
*3	1.855	67.52	Pk	30.9	-53.35	45.07	74	-28.93	54	-8.93	0-360	150	V
4	2.781	63.42	Pk	22.2	-50.32	35.3	74	-38.7	54	-18.7	0-360	150	V

Pk - Peak detector

* not in restricted band, limit not applicable

9.1.16. Horizontal Polarization, -45° -45° TX Direction, Low Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

LoCh -45DegX, -45DegY Horz Pol

Red: Horizontal Green: Vertical

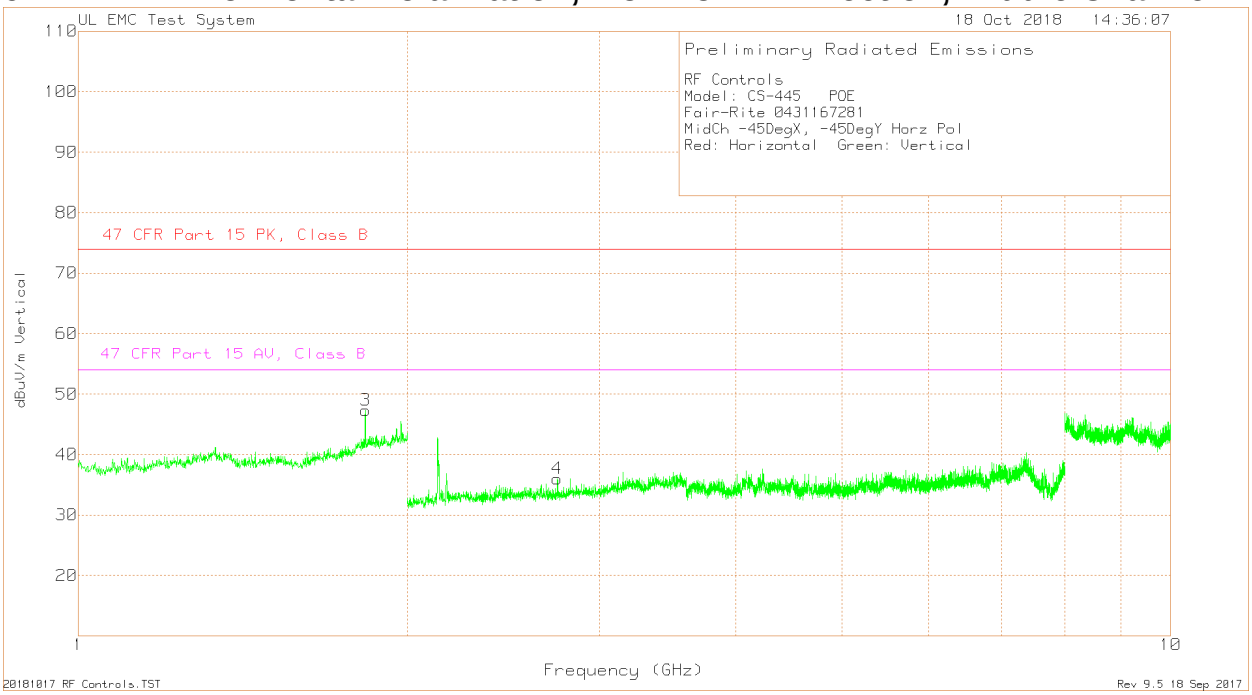
Trace MArkers

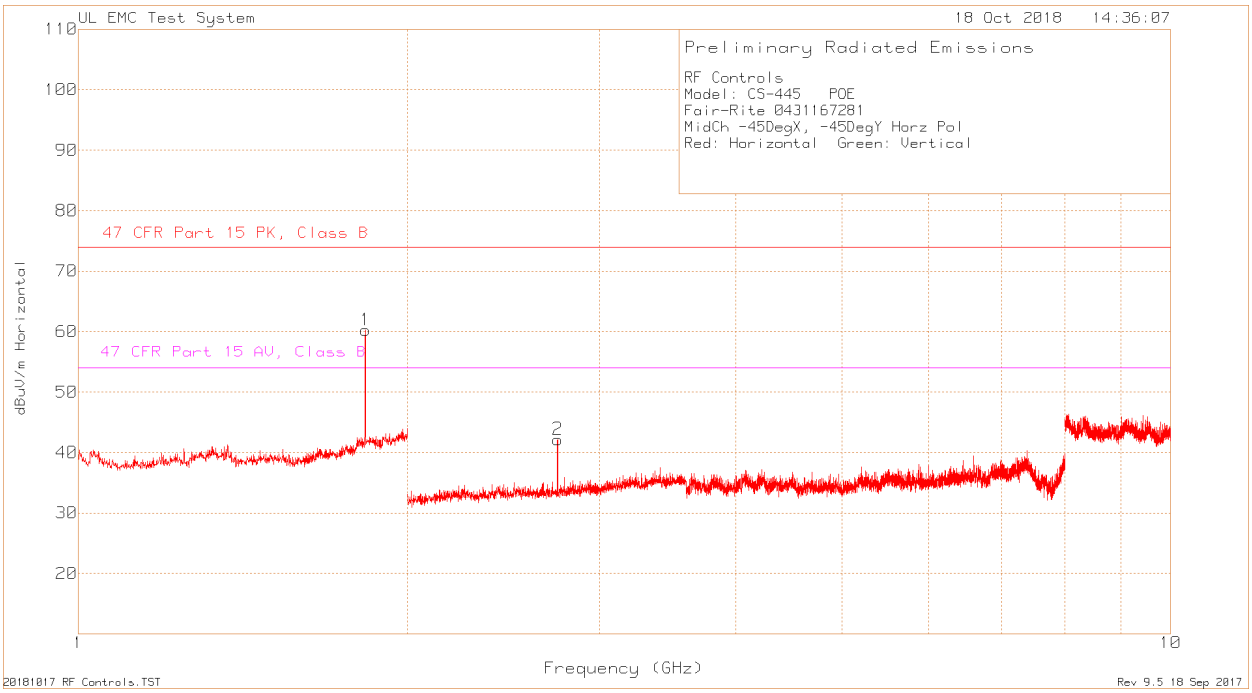
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.806	77.41	Pk	30.4	-53.35	54.46	74	-19.54	54	0.46	0-360	150	H
2	2.708	68.49	Pk	22.1	-50.4	40.19	74	-33.81	54	-13.81	0-360	150	H
*3	1.806	69.01	Pk	30.4	-53.35	46.06	74	-27.94	54	-7.94	0-360	150	V
4	2.708	65.64	Pk	22.1	-50.4	37.34	74	-36.66	54	-16.66	0-360	150	V

Pk - Peak detector

* not in restricted band, limit not applicable

9.1.17. Horizontal Polarization, -45° -45° TX Direction, Middle Channel



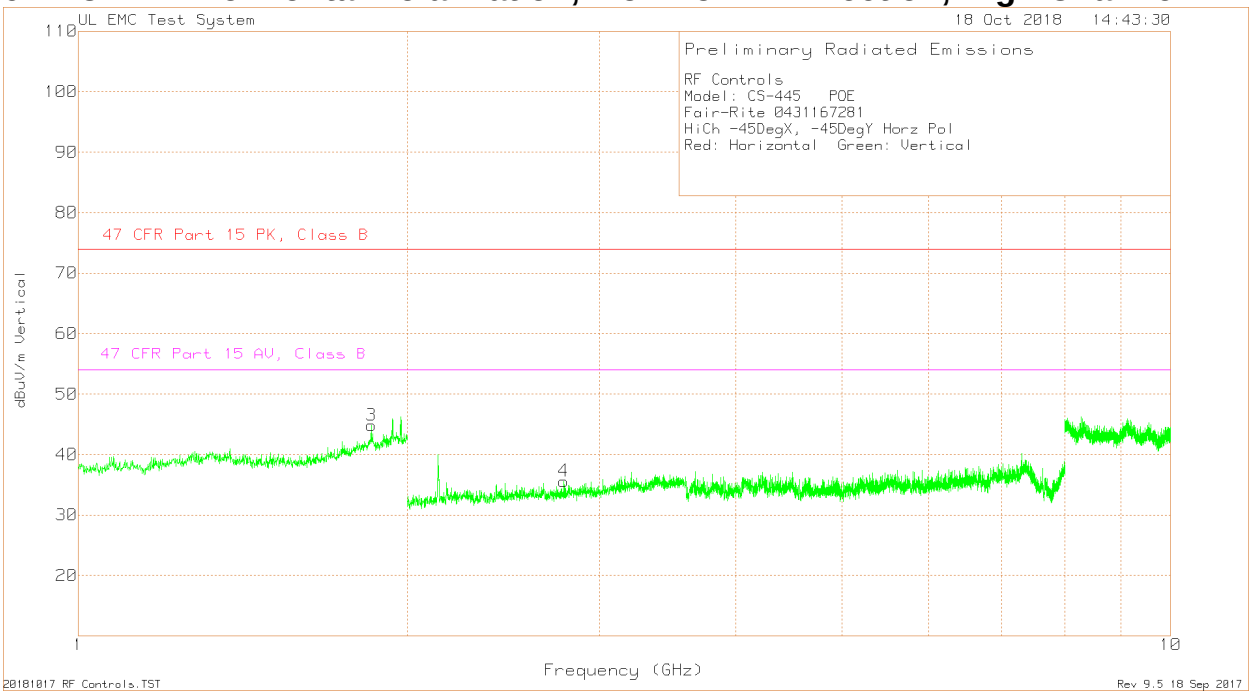


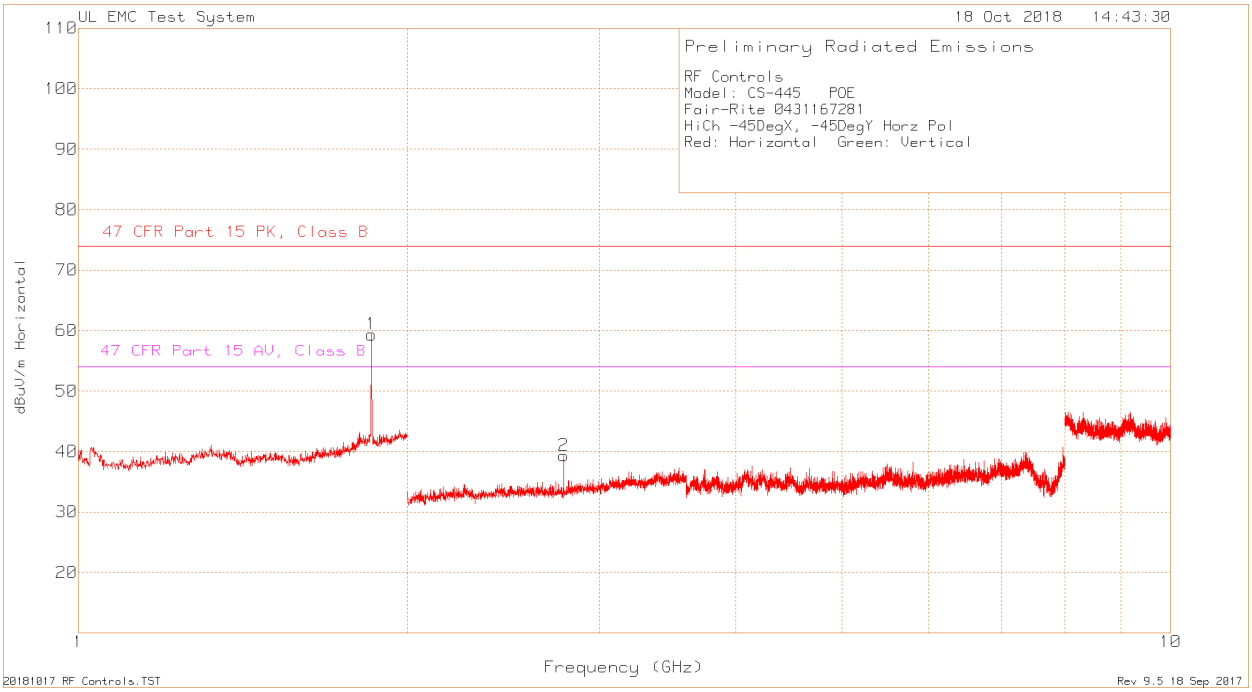
RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
MidCh -45DegX, -45DegY Horz Pol
Red: Horizontal Green: Vertical
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1*	1.831	82.6	Pk	30.7	-53.05	60.25	74	-13.75	54	6.25	0-360	150	H
2	2.746	70.39	Pk	22.1	-50.32	42.17	74	-31.83	54	-11.83	0-360	150	H
3*	1.831	69.67	Pk	30.7	-53.05	47.32	74	-26.68	54	-6.68	0-360	150	V
4	2.745	64.23	Pk	22.1	-50.34	35.99	74	-38.01	54	-18.01	0-360	150	V

Pk - Peak detector
* not in restricted band, limit not applicable

9.1.18. Horizontal Polarization, -45° -45° TX Direction, High Channel



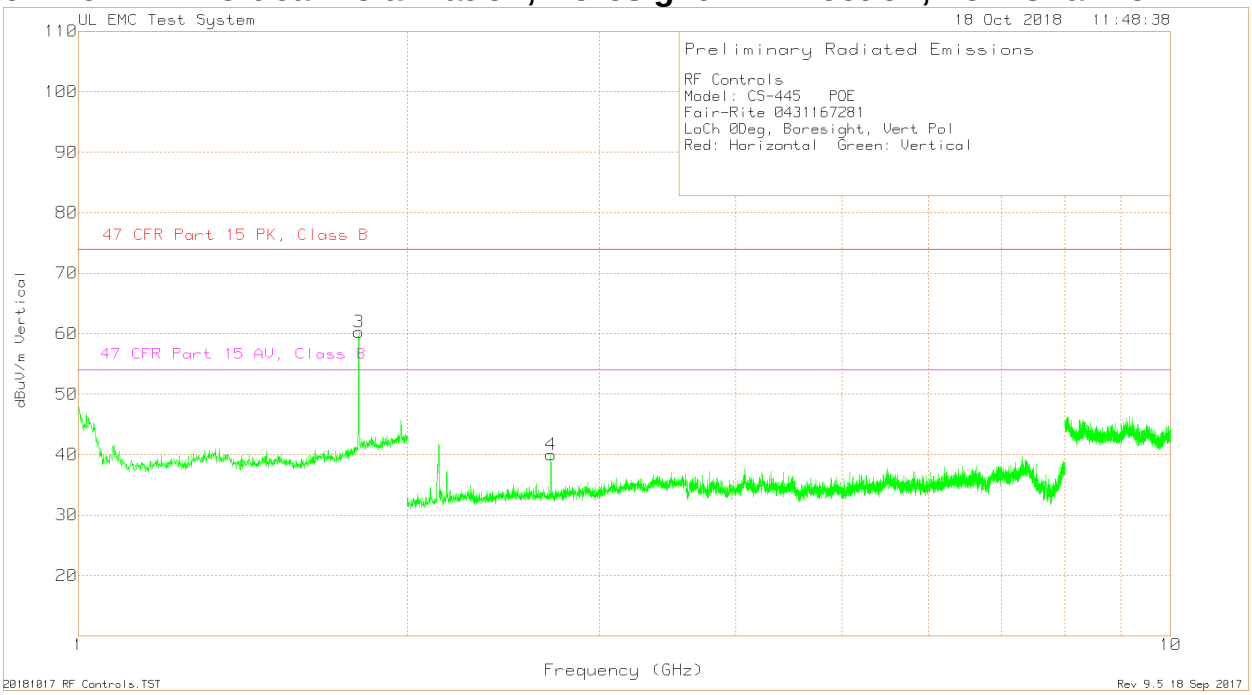


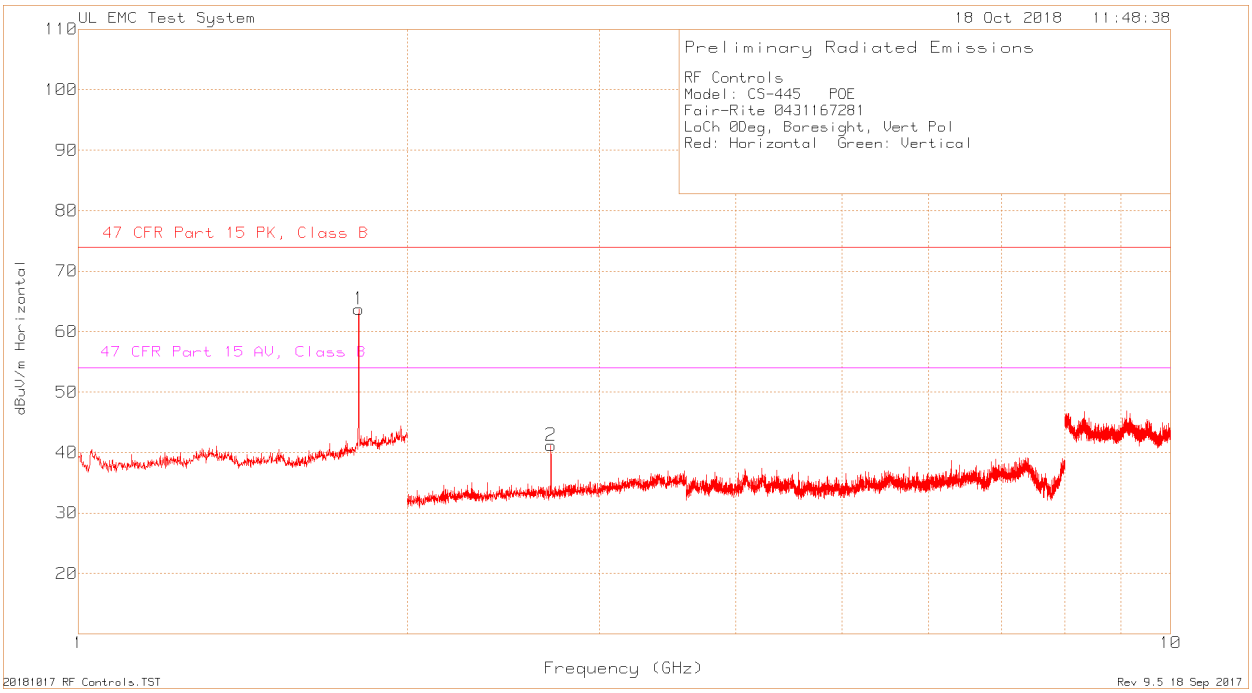
RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
HiCh -45DegX, -45DegY Horz Pol
Red: Horizontal Green: Vertical
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1*	1.855	81.8	Pk	30.9	-53.35	59.35	74	-14.65	54	5.35	0-360	150	H
2	2.782	67.32	Pk	22.2	-50.17	39.35	74	-34.65	54	-14.65	0-360	150	H
3*	1.855	67.26	Pk	30.9	-53.35	44.81	74	-29.19	54	-9.19	0-360	150	V
4	2.782	63.57	Pk	22.2	-50.17	35.6	74	-38.4	54	-18.4	0-360	150	V

Pk - Peak detector
* not in restricted band, limit not applicable

9.1.19. Vertical Polarization, Boresight TX Direction, Low Channel



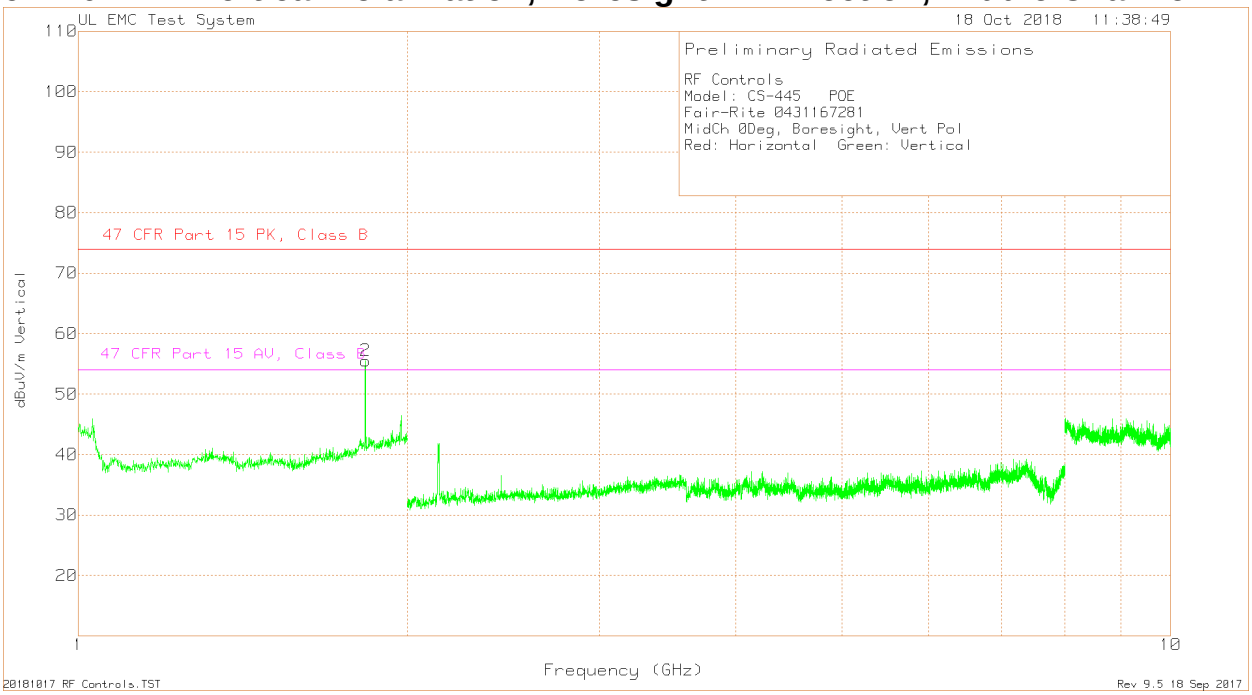


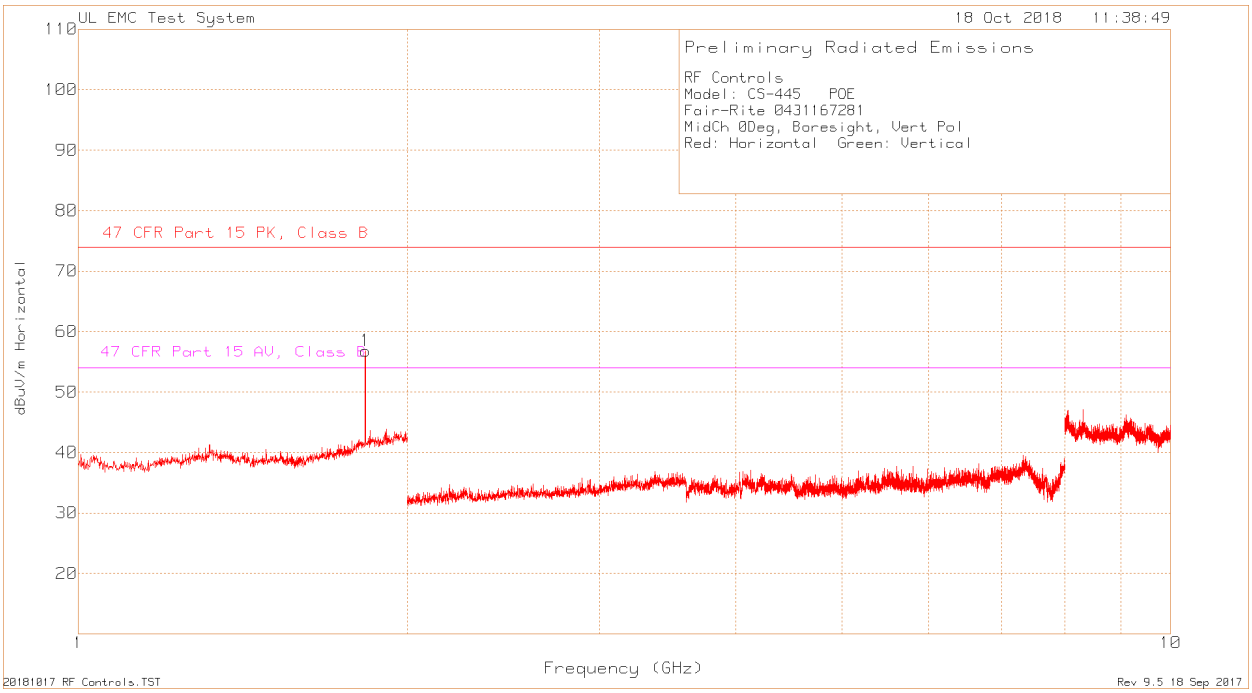
RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
LoCh 0Deg, Boresight, Vert Pol
Red: Horizontal Green: Vertical
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.806	86.69	Pk	30.4	-53.35	63.74	74	-10.26	54	9.74	0-360	150	H
2	2.708	69.5	Pk	22.1	-50.4	41.2	74	-32.8	54	-12.8	0-360	150	H
*3	1.806	83.22	Pk	30.4	-53.35	60.27	74	-13.73	54	6.27	0-360	150	V
4	2.708	68.25	Pk	22.1	-50.4	39.95	74	-34.05	54	-14.05	0-360	150	V

Pk - Peak detector
* not in restricted band, limit not applicable

9.1.20. Vertical Polarization, Boresight TX Direction, Middle Channel



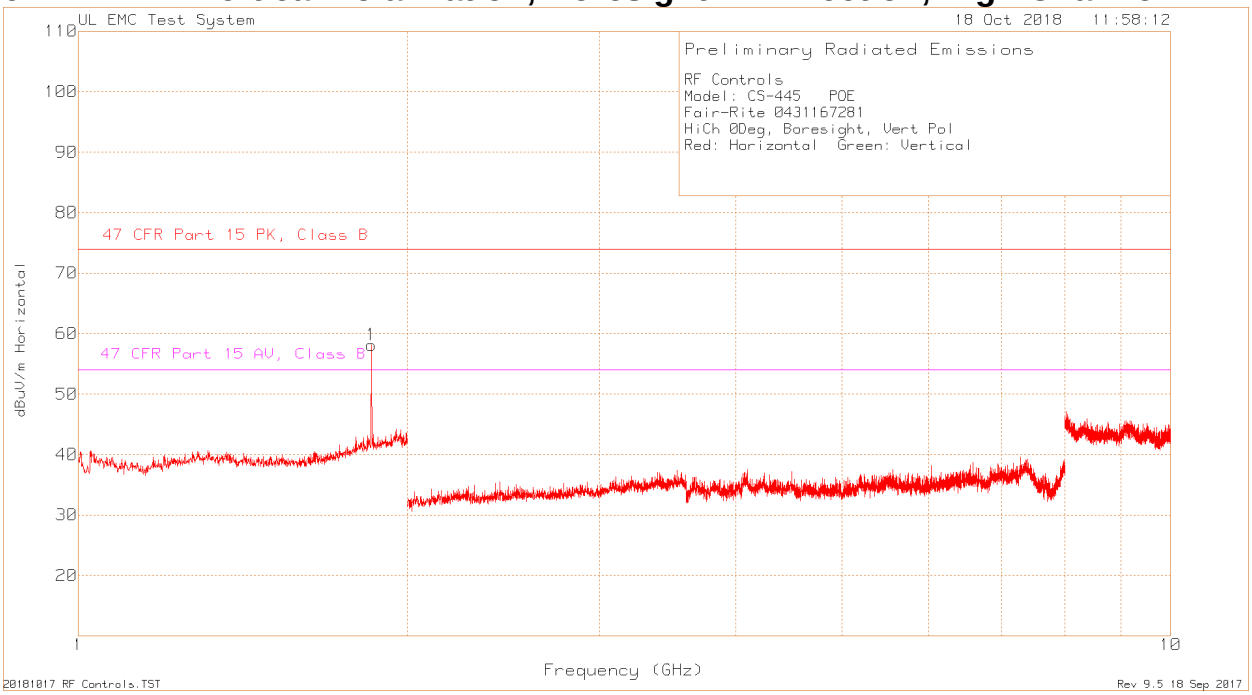


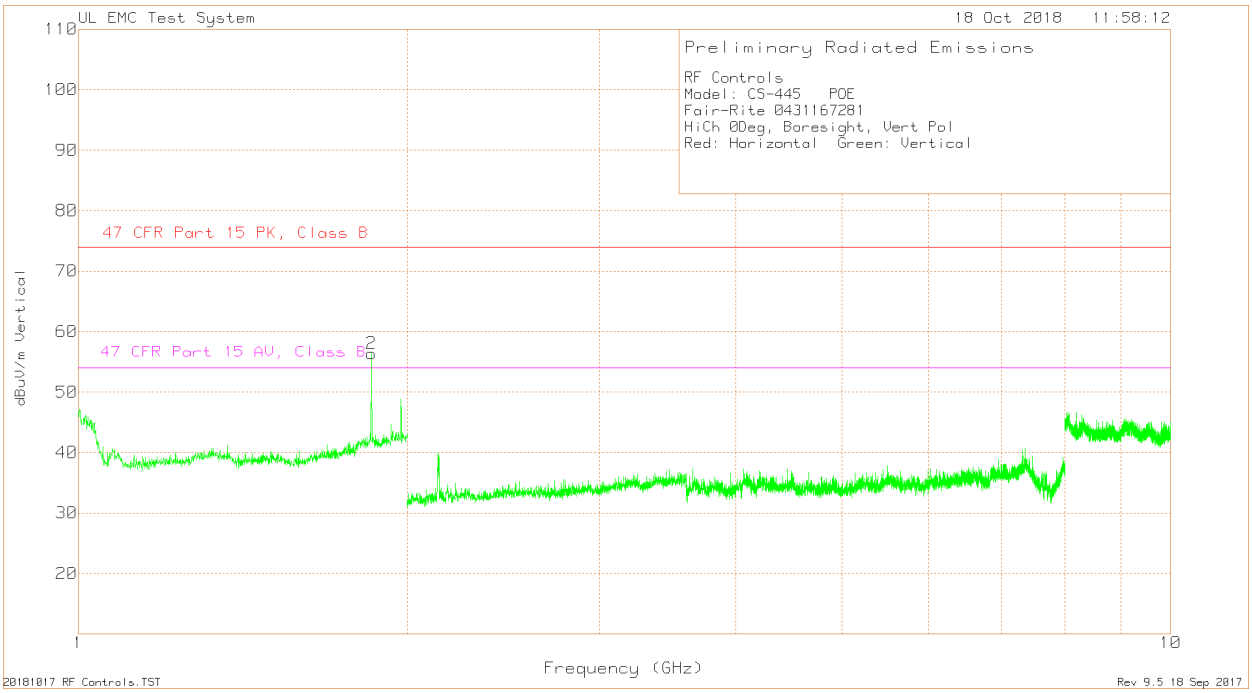
RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
MidCh 0Deg, Boresight, Vert Pol
Red: Horizontal Green: Vertical
Trace MArkers

Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.831	79.13	Pk	30.7	-53.05	56.78	74	-17.22	54	2.78	0-360	150	H
*2	1.831	77.86	Pk	30.7	-53.05	55.51	74	-18.49	54	1.51	0-360	150	V

Pk - Peak detector
* not in restricted band, limit not applicable

9.1.21. Vertical Polarization, Boresight TX Direction, High Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

HiCh 0Deg, Boresight, Vert Pol

Red: Horizontal Green: Vertical

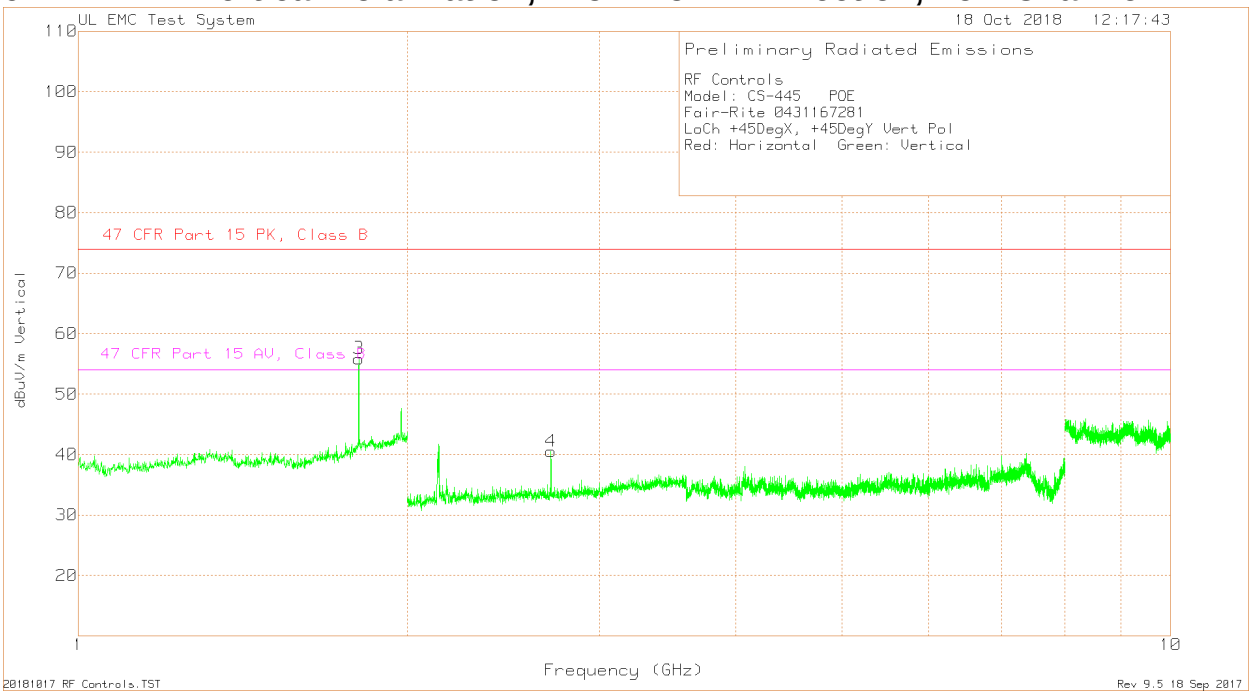
Trace MArkers

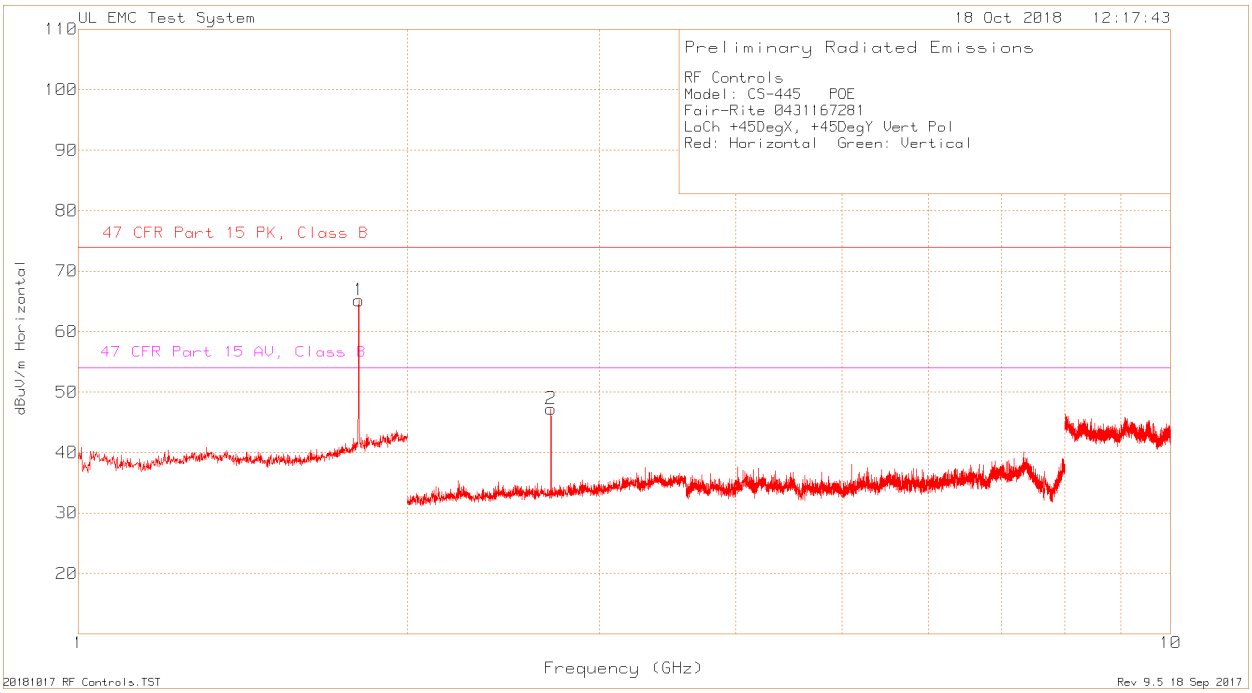
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.855	80.57	Pk	30.9	-53.35	58.12	74	-15.88	54	4.12	0-360	150	H
*2	1.855	78.83	Pk	30.9	-53.35	56.38	74	-17.62	54	2.38	0-360	150	V

Pk - Peak detector

* not in restricted band, limit not applicable

9.1.22. Vertical Polarization, +45° +45° TX Direction, Low Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

LoCh +45DegX, +45DegY Vert Pol

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	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.806	88.12	Pk	30.4	-53.35	65.17	74	-8.83	54	11.17	0-360	150	H
2	2.708	75.54	Pk	22.1	-50.4	47.24	74	-26.76	54	-6.76	0-360	150	H
*3	1.806	78.81	Pk	30.4	-53.35	55.86	74	-18.14	54	1.86	0-360	150	V
4	2.708	68.81	Pk	22.1	-50.4	40.51	74	-33.49	54	-13.49	0-360	150	V

Radiated Emission Data

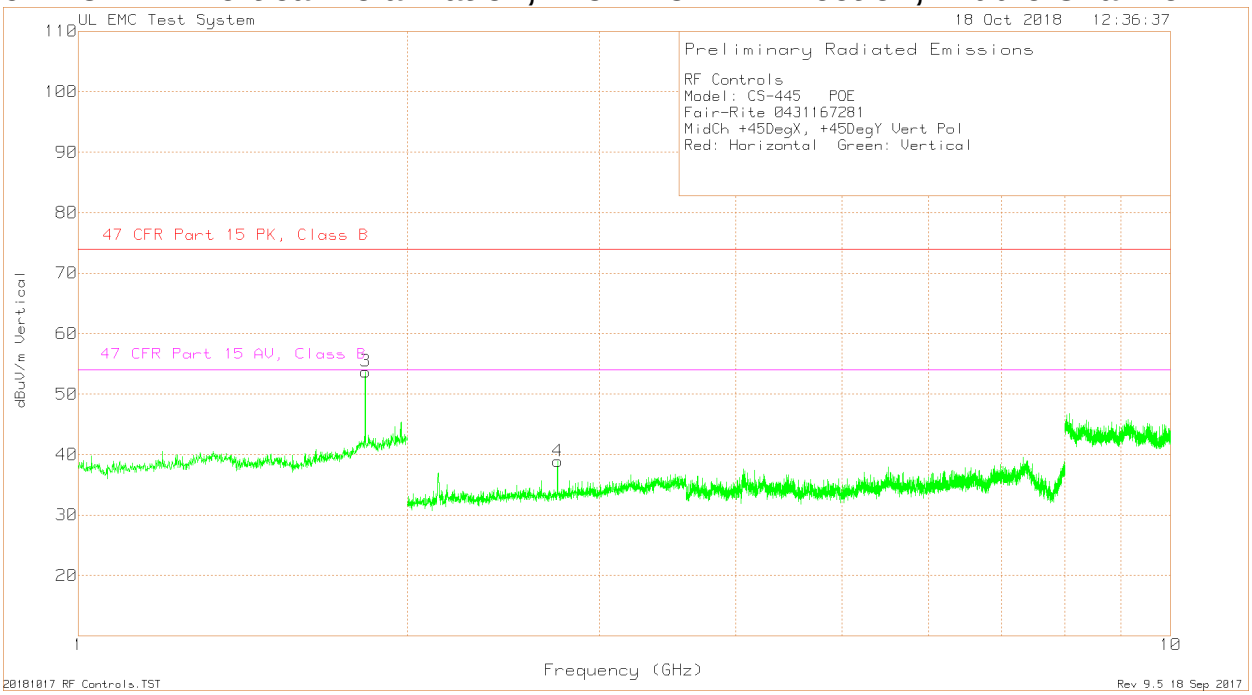
	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	2.7083	75.12	Pk	22.1	-50.35	46.87	74	-27.13	54	-7.13	138	167	H
	2.7082	72.65	Av	22.1	-50.36	44.39	74	-29.61	54	-9.61	138	167	H

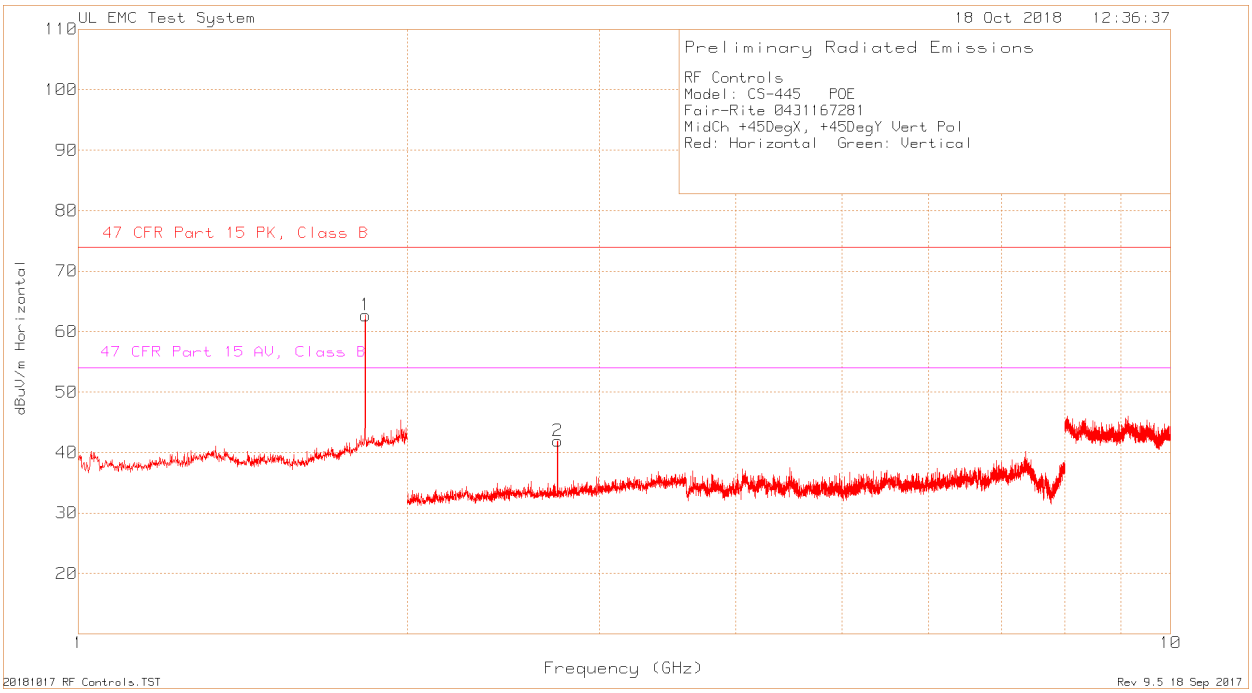
Pk - Peak detector

Av - Average detection

* not in restricted band, limit not applicable

9.1.23. Vertical Polarization, +45° +45° TX Direction, Middle Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

MidCh +45DegX, +45DegY Vert Pol

Red: Horizontal Green: Vertical

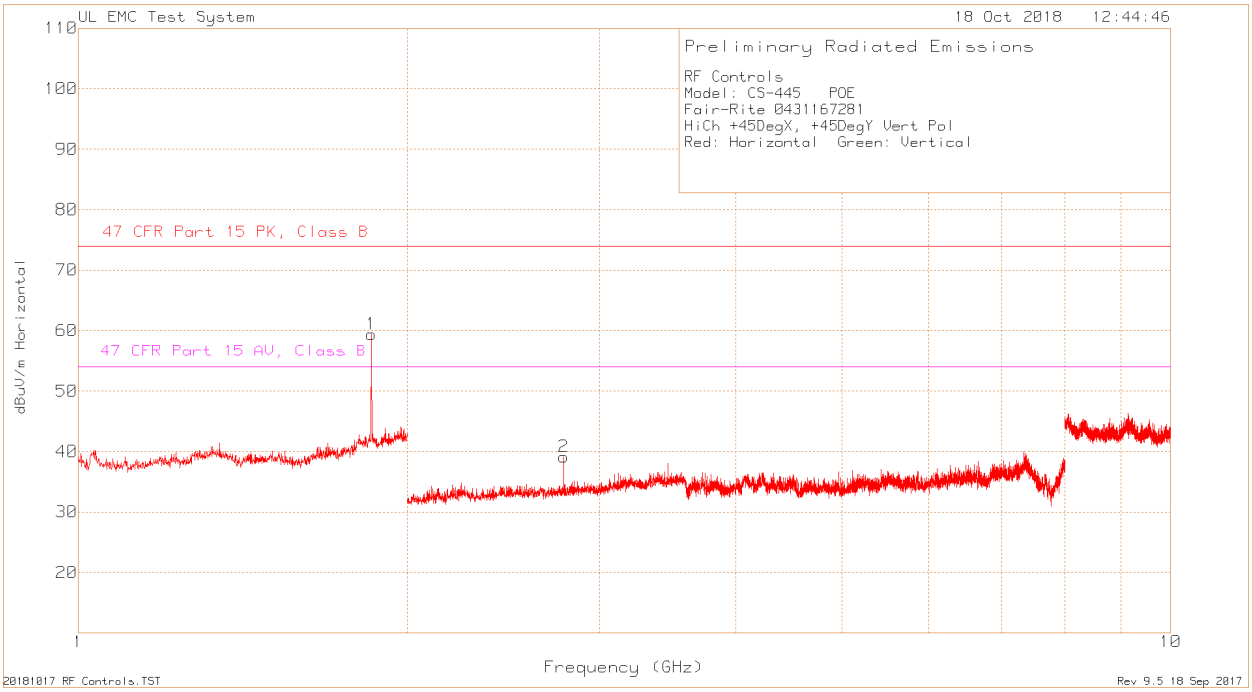
Trace MArkers

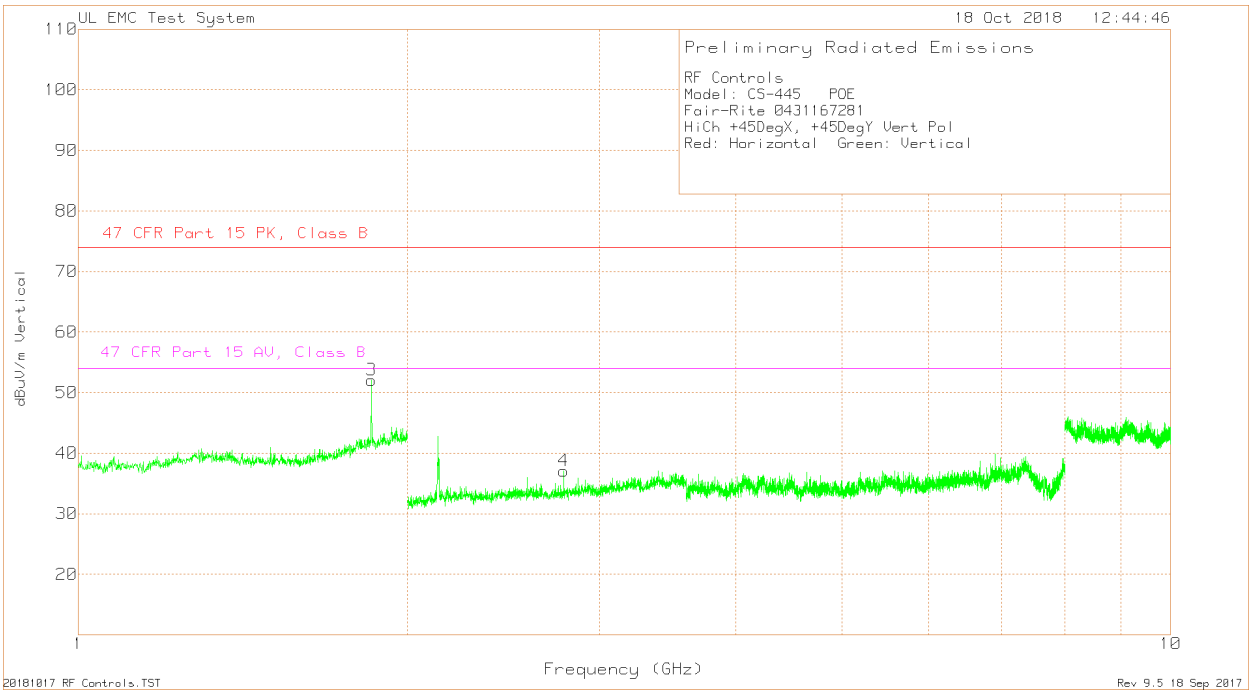
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.831	85.04	Pk	30.7	-53.05	62.69	74	-11.31	54	8.69	0-360	151	H
2	2.746	70.15	Pk	22.1	-50.32	41.93	74	-32.07	54	-12.07	0-360	151	H
*3	1.831	76.08	Pk	30.7	-53.05	53.73	74	-20.27	54	-0.27	0-360	151	V
4	2.746	67.1	Pk	22.1	-50.32	38.88	74	-35.12	54	-15.12	0-360	151	V

Pk - Peak detector

* not in restricted band, limit not applicable

9.1.24. Vertical Polarization, +45° +45° TX Direction, High Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

HiCh +45DegX, +45DegY Vert Pol

Red: Horizontal Green: Vertical

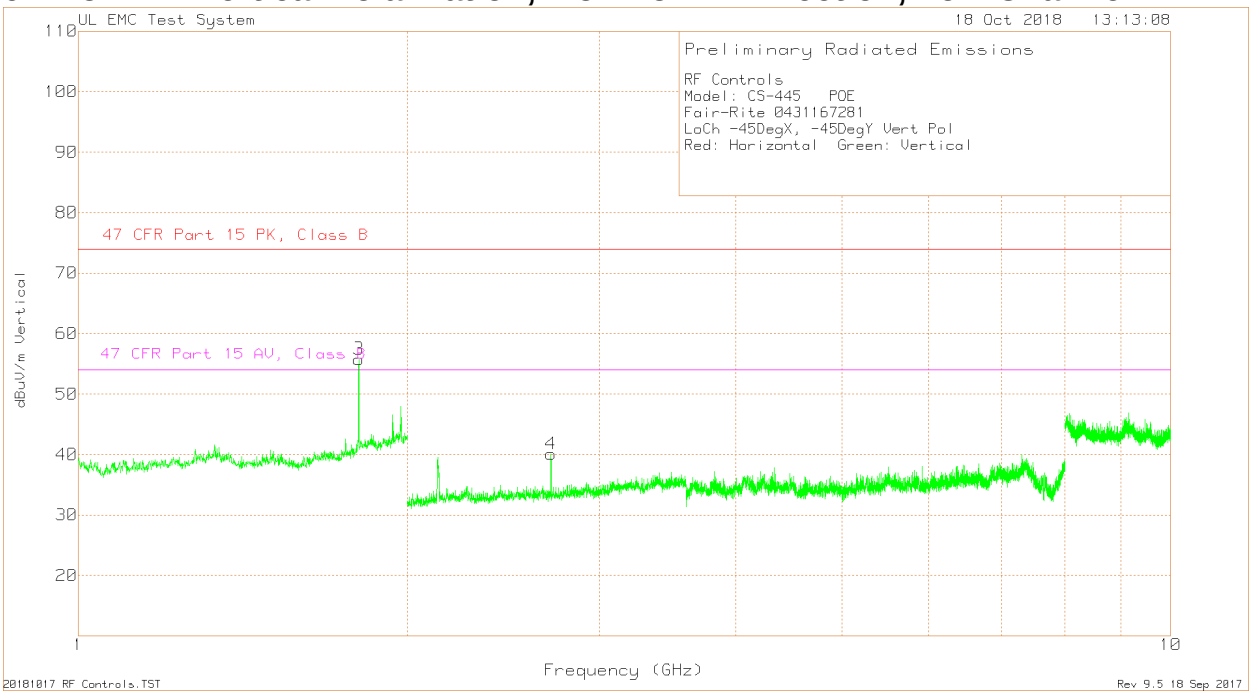
Trace MArkers

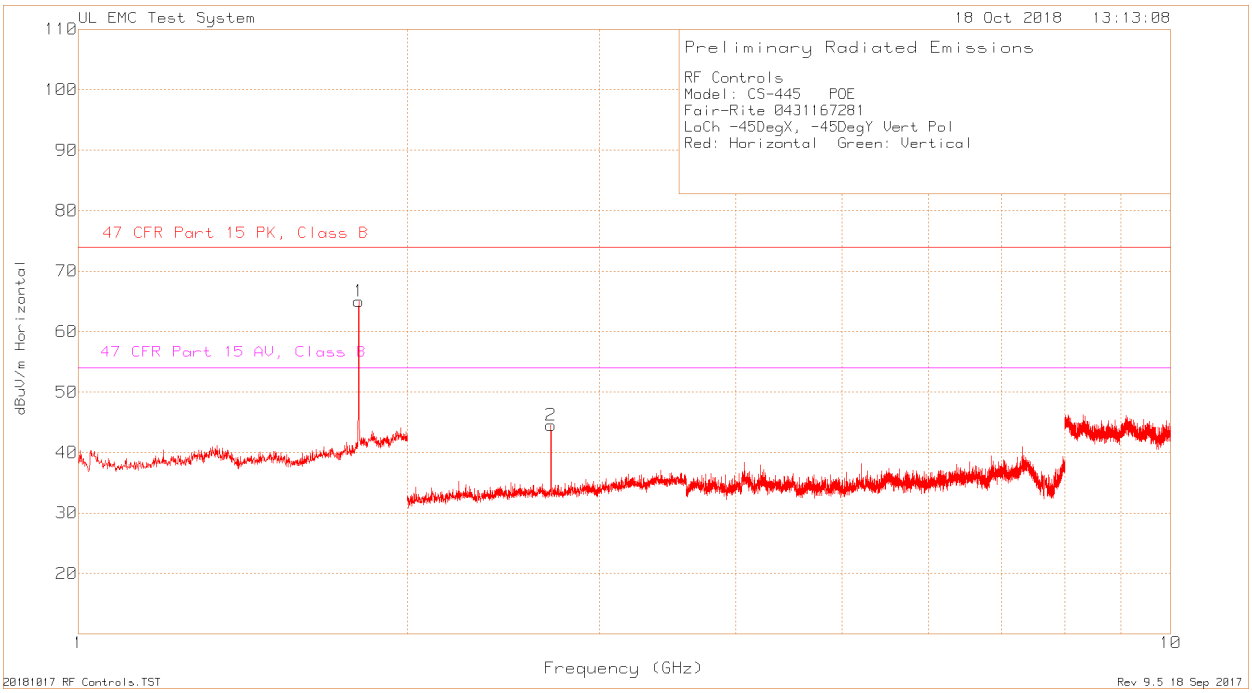
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.855	81.84	Pk	30.9	-53.35	59.39	74	-14.61	54	5.39	0-360	151	H
2	2.782	67.08	Pk	22.2	-50.17	39.11	74	-34.89	54	-14.89	0-360	151	H
*3	1.855	74.53	Pk	30.9	-53.35	52.08	74	-21.92	54	-1.92	0-360	151	V
4	2.782	65.05	Pk	22.2	-50.17	37.08	74	-36.92	54	-16.92	0-360	151	V

Pk - Peak detector

* not in restricted band, limit not applicable

9.1.25. Vertical Polarization, -45° -45° TX Direction, Low Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

LoCh -45DegX, -45DegY Vert Pol

Red: Horizontal Green: Vertical

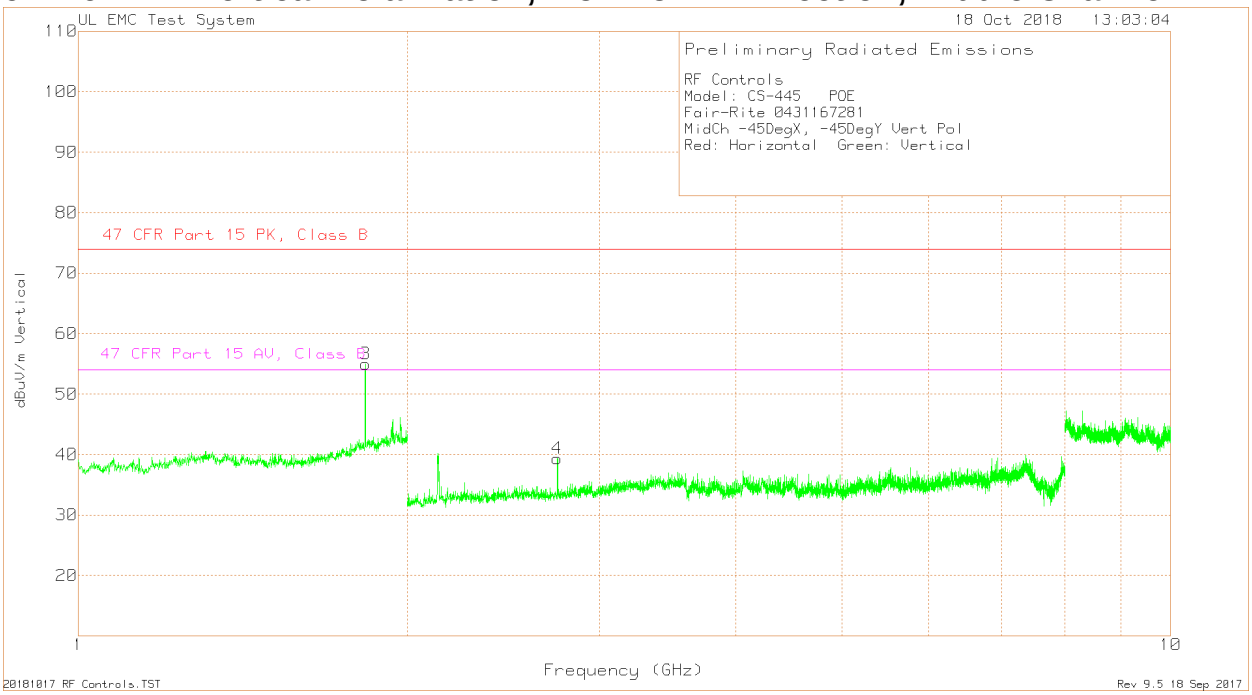
Trace MArkers

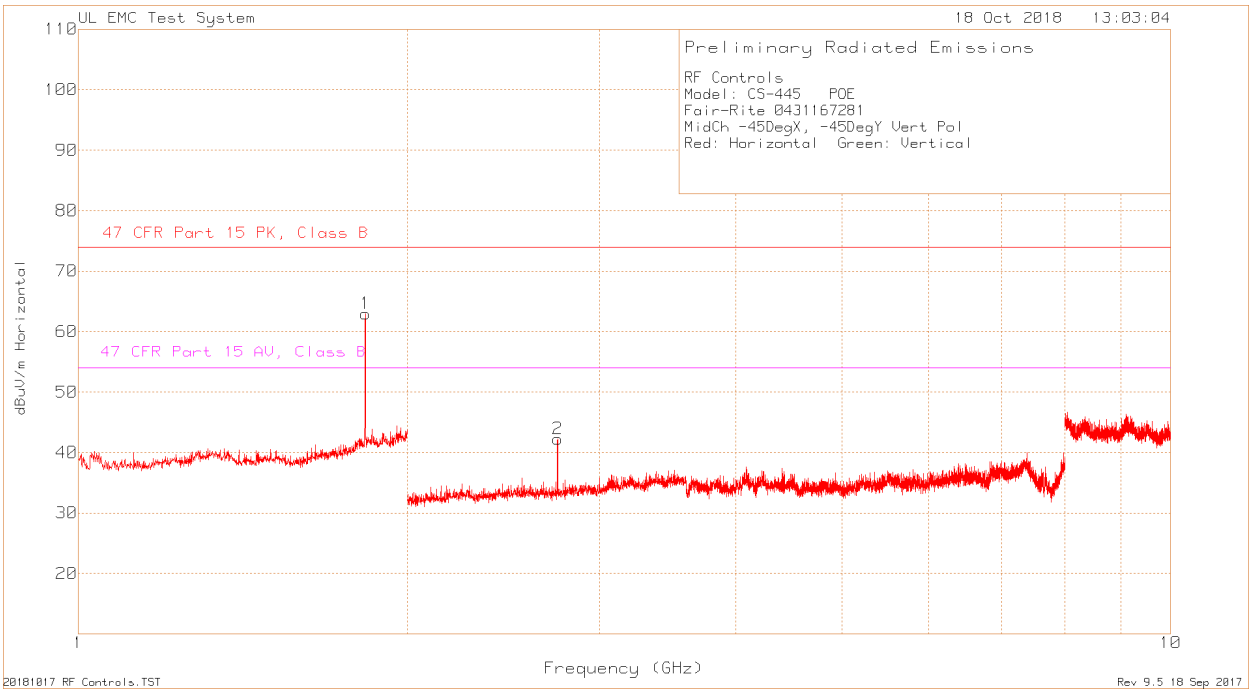
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.806	87.93	Pk	30.4	-53.35	64.98	74	-9.02	54	10.98	0-360	151	H
2	2.708	72.79	Pk	22.1	-50.4	44.49	74	-29.51	54	-9.51	0-360	151	H
*3	1.806	78.7	Pk	30.4	-53.35	55.75	74	-18.25	54	1.75	0-360	151	V
4	2.708	68.37	Pk	22.1	-50.4	40.07	74	-33.93	54	-13.93	0-360	151	V

Pk - Peak detector

* not in restricted band, limit not applicable

9.1.26. Vertical Polarization, -45° -45° TX Direction, Middle Channel





RF Controls

Model: CS-445 POE

Fair-Rite 0431167281

MidCh -45DegX, -45DegY Vert Pol

Red: Horizontal Green: Vertical

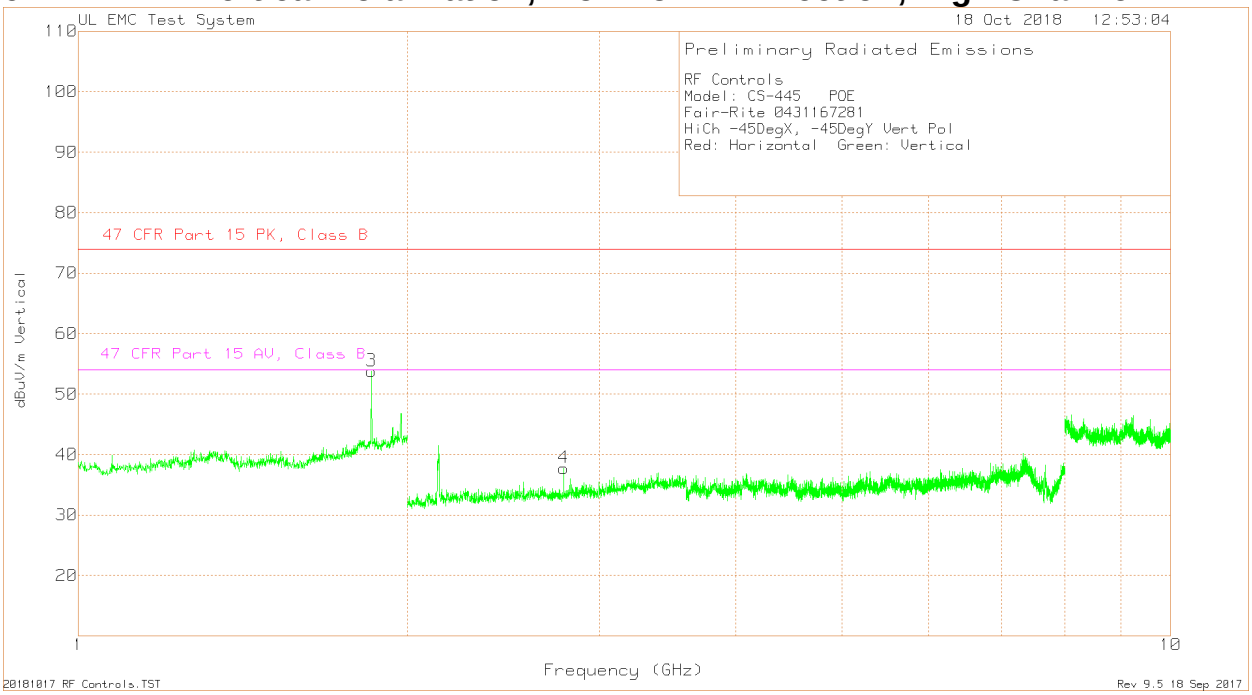
Trace MArkers

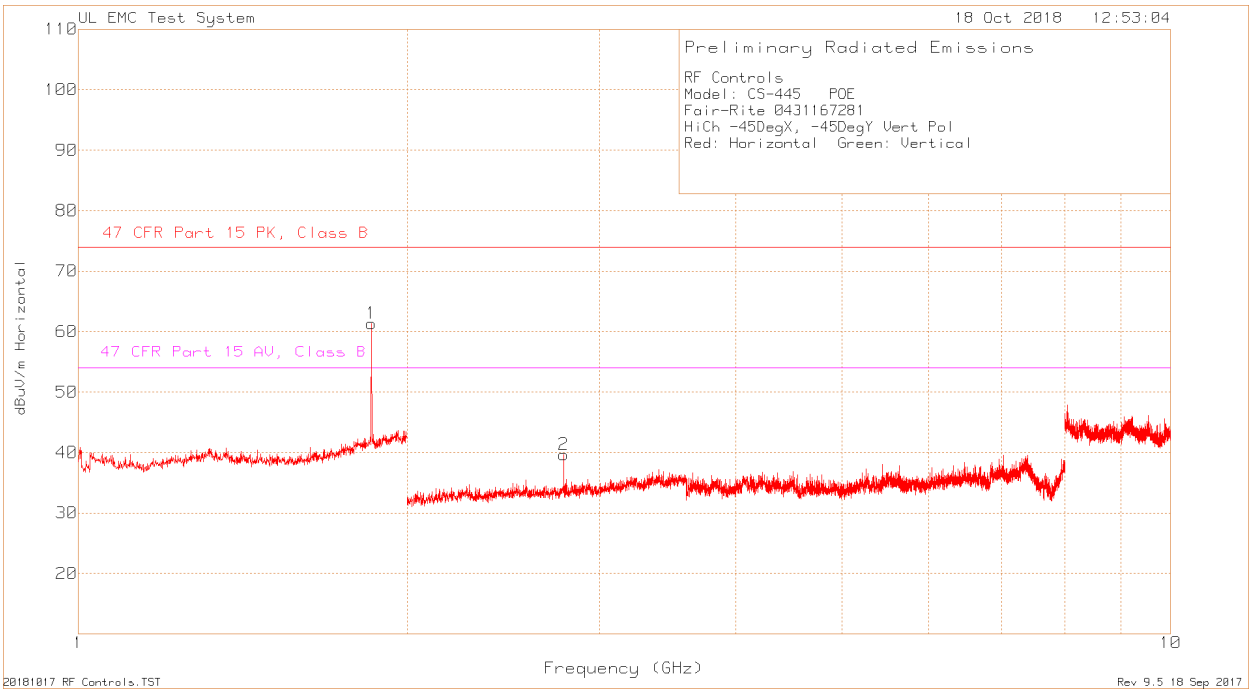
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Level dBuV/m	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.831	85.27	Pk	30.7	-53.05	62.92	74	-11.08	54	8.92	0-360	151	H
2	2.746	70.48	Pk	22.1	-50.32	42.26	74	-31.74	54	-11.74	0-360	151	H
*3	1.831	77.32	Pk	30.7	-53.05	54.97	74	-19.03	54	0.97	0-360	151	V
4	2.745	67.57	Pk	22.1	-50.34	39.33	74	-34.67	54	-14.67	0-360	151	V

Pk - Peak detector

* not in restricted band, limit not applicable

9.1.27. Vertical Polarization, -45° -45° TX Direction, High Channel





RF Controls
Model: CS-445 POE
Fair-Rite 0431167281
HiCh -45DegX, -45DegY Vert Pol
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	47 CFR Part 15.209 Peak Limit dBuV/m	Margin (dB)	47 CFR Part 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
*1	1.855	83.79	Pk	30.9	-53.35	61.34	74	-12.66	54	7.34	0-360	151	H
2	2.782	67.62	Pk	22.2	-50.17	39.65	74	-34.35	54	-14.35	0-360	151	H
*3	1.855	76.28	Pk	30.9	-53.35	53.83	74	-20.17	54	-0.17	0-360	151	V
4	2.782	65.74	Pk	22.2	-50.17	37.77	74	-36.23	54	-16.23	0-360	151	V

Pk - Peak detector
* not in restricted band, limit not applicable

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.

TEST PROCEDURE

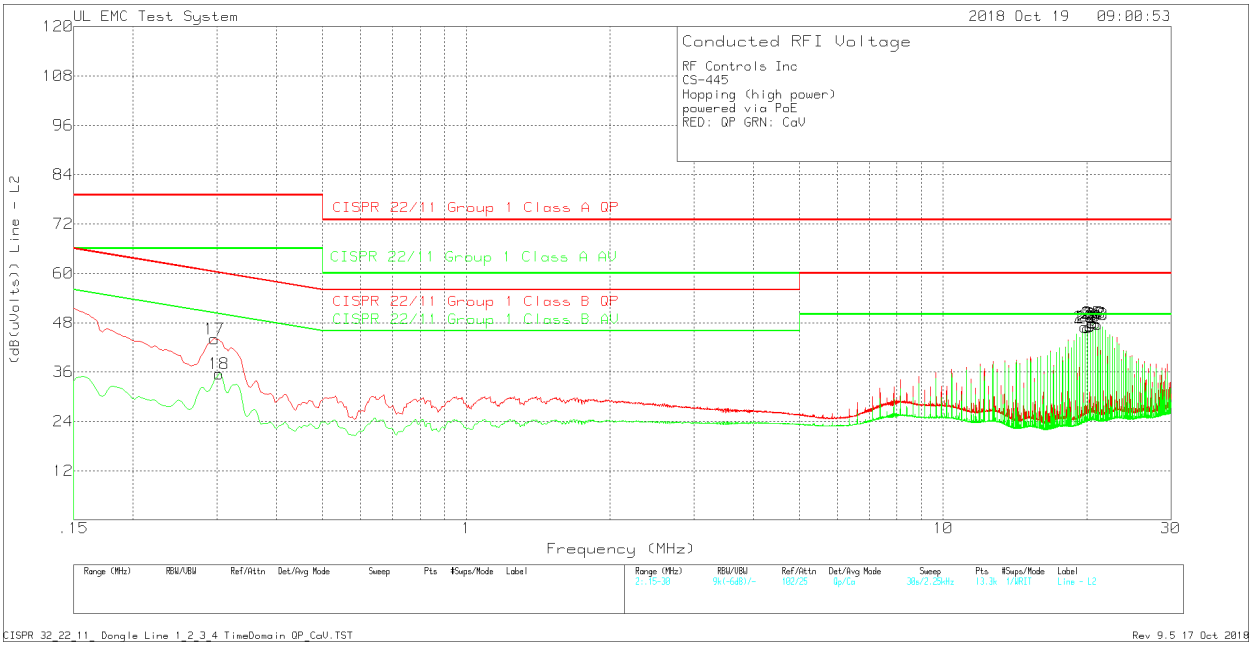
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

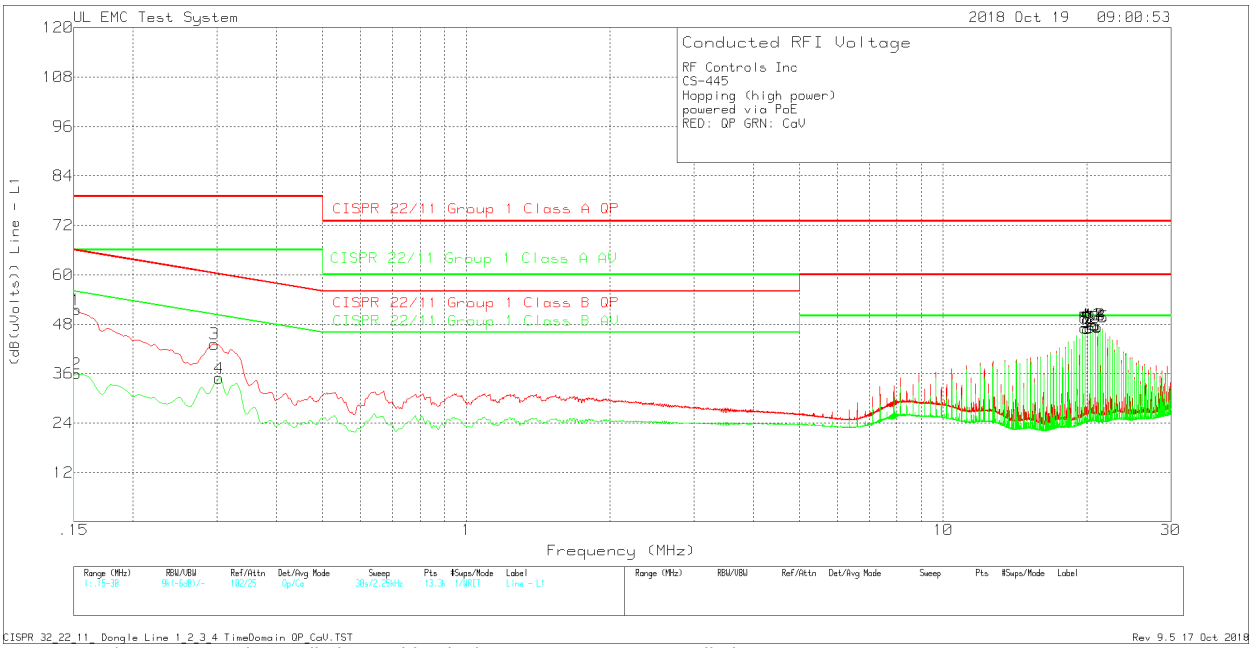
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

10.1.1. AC Power Line





* CISPR 22/11 Group 1 Class B limits are identical to 47 CFR Part 15.207 limits

RF Controls Inc
CS-445
Hopping (high power)
powered via PoE
RED: QP GRN: CaV

Trace Markers

No.	Test Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading (dB(uVolts))	Limit:1	2	3	4
Line									
1	.15225	37.74dBuV Qp	.1	13.7	51.54	79	-	65.88	-
					Margin (dB)	-27.46	-	-14.34	-
2	.15225	22.13dBuV Ca	.1	13.7	35.93	-	66	-	55.88
					Margin (dB)	-	-30.07	-	-19.95
3	.29625	32.28dBuV Qp	0	10.9	43.18	79	-	60.35	-
					Margin (dB)	-35.82	-	-17.17	-
4	.303	23.97dBuV Ca	0	10.9	34.87	-	66	-	50.16
					Margin (dB)	-	-31.13	-	-15.29
5	19.824	34.98dBuV Qp	0	12.1	47.08	73	-	60	-
					Margin (dB)	-25.92	-	-12.92	-
6	19.824	34.97dBuV Ca	0	12.1	47.07	-	60	-	50
					Margin (dB)	-	-12.93	-	-2.93
7	20.07825	34.63dBuV Qp	.1	12.1	46.83	73	-	60	-
					Margin (dB)	-26.17	-	-13.17	-
8	20.07825	34.66dBuV Ca	.1	12.1	46.86	-	60	-	50
					Margin (dB)	-	-13.14	-	-3.14
9	20.3325	34.86dBuV Qp	.1	12.3	47.26	73	-	60	-
					Margin (dB)	-25.74	-	-12.74	-
10	20.3325	34.8dBuV Ca	.1	12.3	47.2	-	60	-	50
					Margin (dB)	-	-12.8	-	-2.8
11	20.5845	35.53dBuV Qp	.1	12.3	47.93	73	-	60	-
					Margin (dB)	-25.07	-	-12.07	-
12	20.58675	35.42dBuV Ca	.1	12.3	47.82	-	60	-	50
					Margin (dB)	-	-12.18	-	-2.18
13	20.83875	35.38dBuV Qp	.1	12.3	47.78	73	-	60	-
					Margin (dB)	-25.22	-	-12.22	-
14	20.841	35.34dBuV Ca	.1	12.3	47.74	-	60	-	50
					Margin (dB)	-	-12.26	-	-2.26
15	21.093	34.9dBuV Qp	.1	12.3	47.3	73	-	60	-
					Margin (dB)	-25.7	-	-12.7	-
16	21.09525	34.93dBuV Ca	.1	12.3	47.33	-	60	-	50
					Margin (dB)	-	-12.67	-	-2.67
Neutral									
17	.29625	33.18dBuV Qp	0	10.9	44.08	79	-	60.35	-
					Margin (dB)	-34.92	-	-16.27	-
18	.303	24.66dBuV Ca	0	10.9	35.56	-	66	-	50.16
					Margin (dB)	-	-30.44	-	-14.6
19	19.824	34.87dBuV Qp	0	12.1	46.97	73	-	60	-
					Margin (dB)	-26.03	-	-13.03	-
20	19.824	34.82dBuV Ca	0	12.1	46.92	-	60	-	50
					Margin (dB)	-	-13.08	-	-3.08
21	20.07825	34.53dBuV Qp	0	12.2	46.73	73	-	60	-
					Margin (dB)	-26.27	-	-13.27	-
22	20.07825	34.49dBuV Ca	0	12.2	46.69	-	60	-	50
					Margin (dB)	-	-13.31	-	-3.31
23	20.3325	35.01dBuV Qp	0	12.2	47.21	73	-	60	-
					Margin (dB)	-25.79	-	-12.79	-
24	20.3325	34.93dBuV Ca	0	12.2	47.13	-	60	-	50
					Margin (dB)	-	-12.87	-	-2.87
25	20.58675	35.75dBuV Qp	0	12.2	47.95	73	-	60	-
					Margin (dB)	-25.05	-	-12.05	-
26	20.58675	35.63dBuV Ca	0	12.2	47.83	-	60	-	50
					Margin (dB)	-	-12.17	-	-2.17
27	20.841	35.66dBuV Qp	0	12.2	47.86	73	-	60	-
					Margin (dB)	-25.14	-	-12.14	-
28	20.841	35.62dBuV Ca	0	12.2	47.82	-	60	-	50
					Margin (dB)	-	-12.18	-	-2.18
29	21.09525	35.31dBuV Qp	0	12.2	47.51	73	-	60	-
					Margin (dB)	-25.49	-	-12.49	-
30	21.09525	35.27dBuV Ca	0	12.2	47.47	-	60	-	50
					Margin (dB)	-	-12.53	-	-2.53

LIMIT 1: CISPR 22/11 Group 1 Class A QP
LIMIT 2: CISPR 22/11 Group 1 Class A AV
LIMIT 3: CISPR 22/11 Group 1 Class B QP
LIMIT 4: CISPR 22/11 Group 1 Class B AV
* CISPR 22/11 Group 1 Class B limits are identical to 47 CFR Part 15.207 limits

Qp - Quasi-Peak detector
Ca - CISPR Average detection