



**FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 9**

CERTIFICATION TEST REPORT

FOR

In-wall RF fan speed controller for Caséta

MODEL NUMBER: PD-FSQN

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Revision History

Rev.	Issue Date	Revisions	Revised By
--		Initial Issue	

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: **LUTRON ELECTRONICS CO INC**
7200 Suter Rd
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US

EUT DESCRIPTION: In-wall RF fan speed controller for Caséta
MODEL: PD-FSQN-xx
SERIAL NUMBER: non-serialized
DATE TESTED: 2018-10-30 to 2018-10-31

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Complies
ICES RSS-210 Issue 9, Annex A	Complies
ICES 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 U.S. government.

Approved & Released For

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TEST METHODOLOGY

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

2. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL 60062 USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0, ISED Site registration #2180A-1.

3. CALIBRATION AND UNCERTAINTY

3.1. 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.

3.2. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable} \\ &\text{Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Final Voltage (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor} \\ &\text{(dB)} + \text{LISN Insertion Loss.} \\ 36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} &= 46.6 \text{ dBuV} \end{aligned}$$

3.3. MEASUREMENT UNCERTAINTY

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

Test	Range	Equipment	Uncertainty k=2
Radiated Emissions	30-200MHz	Bicon 10m Horz	4.27dB
Radiated Emissions	30-200MHz	Bicon 10m Vert	4.28dB
Radiated Emissions	200-1000MHz	LogP 10m Horz	3.33dB
Radiated Emissions	200-1000MHz	LogP 10m Vert	3.39dB
Radiated Emissions	30-200MHz	Bicon 3m Horz	3.30dB
Radiated Emissions	30-130MHz	Bicon 3m Vert	4.84dB
Radiated Emissions	130-200MHz	Bicon 3m Vert	4.94dB
Radiated Emissions	200-1000MHz	LogP 3m Horz	3.46dB
Radiated Emissions	200-1000MHz	LogP 3m Vert	4.98dB
Radiated Emissions	1-18GHz	Horn	4.24dB
Conducted Ant Port	30MHz-26GHz	Spectrum Analyzer	2.94

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

4. EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF EUT

The EUT is an In-wall RF fan speed controller for Caséta

4.2. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna is integral and features a peak gain of -16dBi and the bandwidth of approximately 4.800MHz.

4.3. SOFTWARE AND FIRMWARE

The normal unit software is PD-FSQN version 1.00
The FCC test image software is PD-FSQN version 250.03

4.4. WORST-CASE CONFIGURATION AND MODE

The EUT is wall mounted, single orientation only. The device is capable of transmitting on three channels between 431.5MHz and 436.6MHz. With 5.1MHz span it is required to measure two channels (one near bottom and one near top), however since middle channel produces the highest level of emissions it was measured as well.

4.5. MODIFICATIONS

No modifications were made during testing.

4.6. DESCRIPTION OF TEST SETUP

I/O CABLES

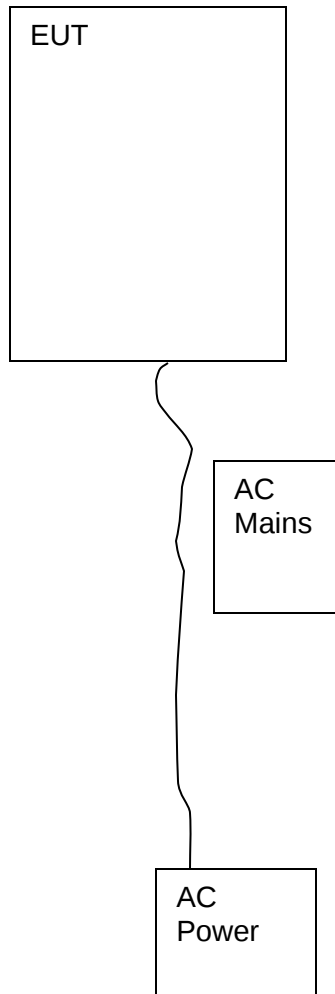
I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	none	three wire	2m	AC power into the device

TEST SETUP

The EUT is tested as standalone device.

SETUP DIAGRAM FOR TESTS

4.7.



TEST AND MEASUREMENT EQUIPMENT

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

1.1 Radiated Emissions

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	2017-12-21	2018-12-31
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	2018-01-10	2019-01-31
Antenna Array	UL	BOMS	EMC4276	2018-06-19	2019-06-30
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	2017-12-20	2018-12-31
Signal Analyzer	Aglient	N9030A PXA	EMC4360	2017-12-28	2018-12-31

1.2 Conducted Emissions

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESR	EMC4377	2017-12-23	2018-12-31
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	2017-12-29	2018-12-31
LISN - L2	Solar Electronics	8602-50-TS-50-N	EMC4064	2017-12-29	2018-12-31

5. ANTENNA PORT TEST RESULTS

5.1. 20 dB AND 99% BW

LIMITS

FCC §15.231 (c)

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

IC A1.3

For the purpose of Section A1.1, the 99% Bandwidth shall be no wider than 0.25% of the center frequency for devices operating between 70-900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.

TEST PROCEDURE

ANSI C63.10

The transmitter output is connected to the spectrum analyzer.

20dB Bandwidth: The RBW is set to 1% to 5% of the signal bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. Bandwidth is determined at the points 20 dB down from the modulated carrier.

99% Bandwidth: The RBW is set to 1% to 5% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

* For measurements as worst case condition slightly larger RBW was used for measurements.

RESULTS

No non-compliance noted:

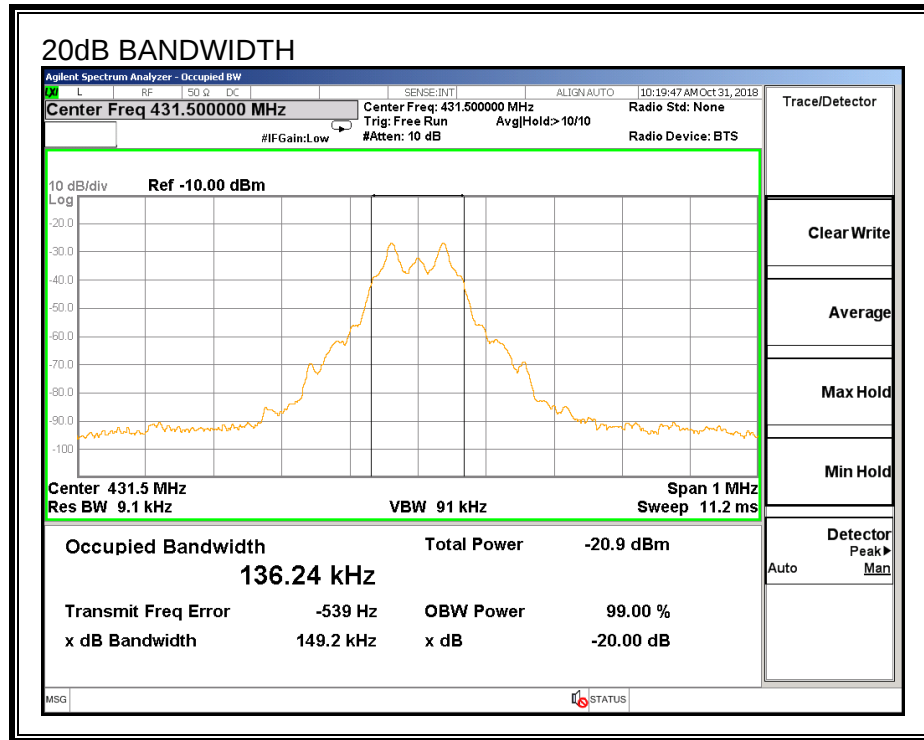
20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
431.5	149.2	1078.75	-929.55
433.6	149.5	1084	-934.5
436.6	149.5	1091.5	-942

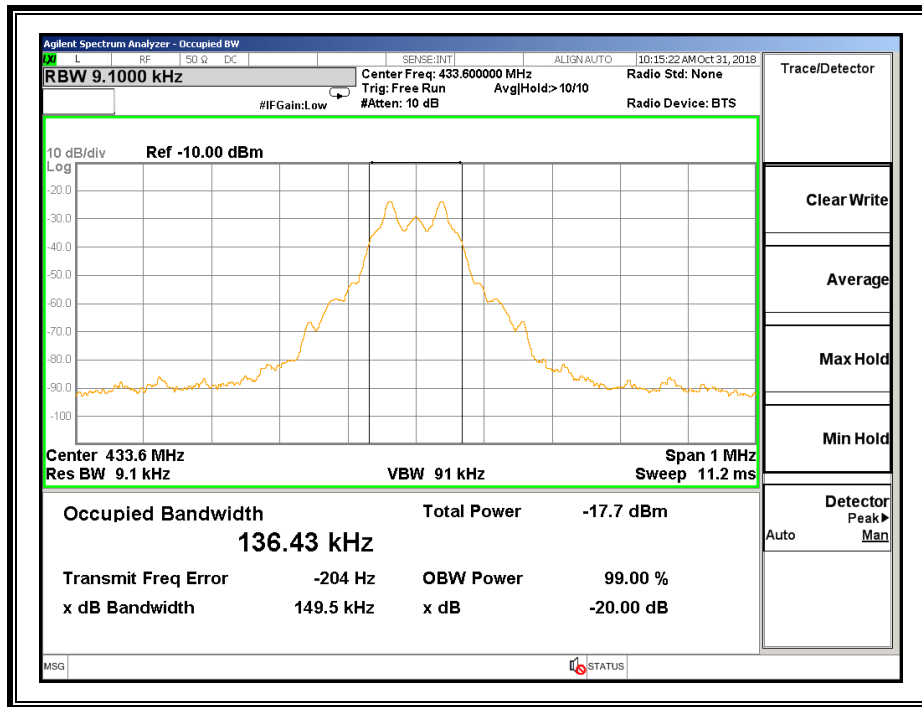
99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
431.5	136.24	1078.75	-942.51
433.6	136.43	1084	-947.57
436.6	136.58	1091.5	-954.92

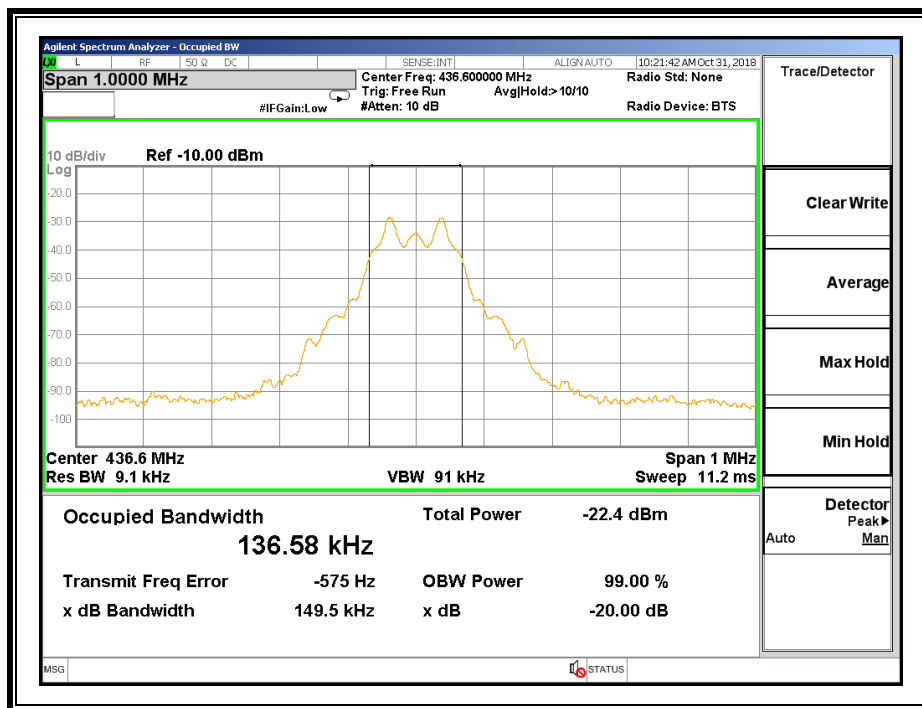
20dB & 99% BANDWIDTH (Low Ch: 431.5MHz)



20dB & 99% BANDWIDTH (Mid Ch: 433.6MHz)



20dB & 99% BANDWIDTH (High Ch: 436.6MHz)



5.2. DUTY CYCLE

LIMITS

FCC §15.35 (c)

The measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 1MHz and the VBW is set to 1MHz. The sweep time is coupled and the span is set to 0 Hz. The number of pulses is measured and calculated in a 100 ms scan.

CALCULATION

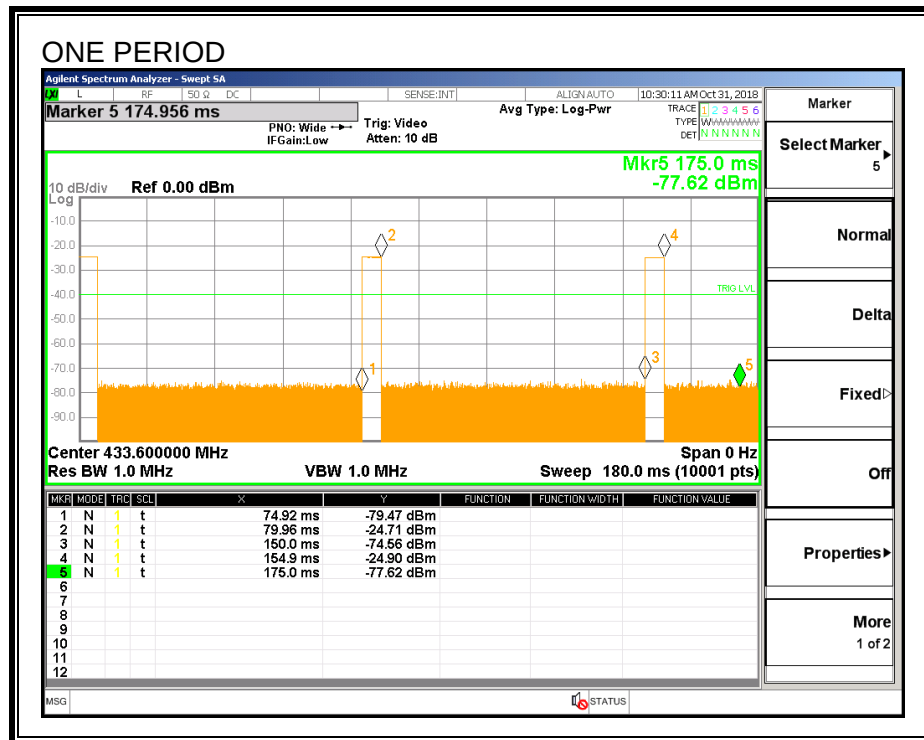
Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is (# of long pulses * long pulse width) + (# of short pulses * short pulse width) / 100 or T

RESULTS

No non-compliance noted:

One Period (ms)	Pulse Width (ms)	# of Pulses	Duty Cycle	20*Log Duty Cycle (dB)
100	5.04	2	0.101	-19.93

ONE PERIOD



Note: Marker 2 – 1 = 79.96 ms – 74.92 ms = 5.04 ms

6. RADIATED EMISSION TEST RESULTS

6.1. TX FUNDAMENTAL RADIATED & SPURIOUS EMISSION

LIMITS

FCC §15.231 (b)

IC A1.2

In addition to the provisions of § 15.205, the field strength of emissions from Intentional radiators operated under this section shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental Frequency (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66 - 40.70	2,250	225
70 - 130	1,250	125
130 - 174	1,250 to 3,750 ¹	125 to 375 ¹
174 - 260	3,750	375
260 - 470	3,750 to 12,500 ¹	375 to 1,250 ¹
Above 470	12,500	1,250

¹ Linear interpolation

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

1 Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

2 Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 88	100 **	3
88 216	150 **	3
216 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 72 MHz, 76 88 MHz, 174 216 MHz or 470 806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

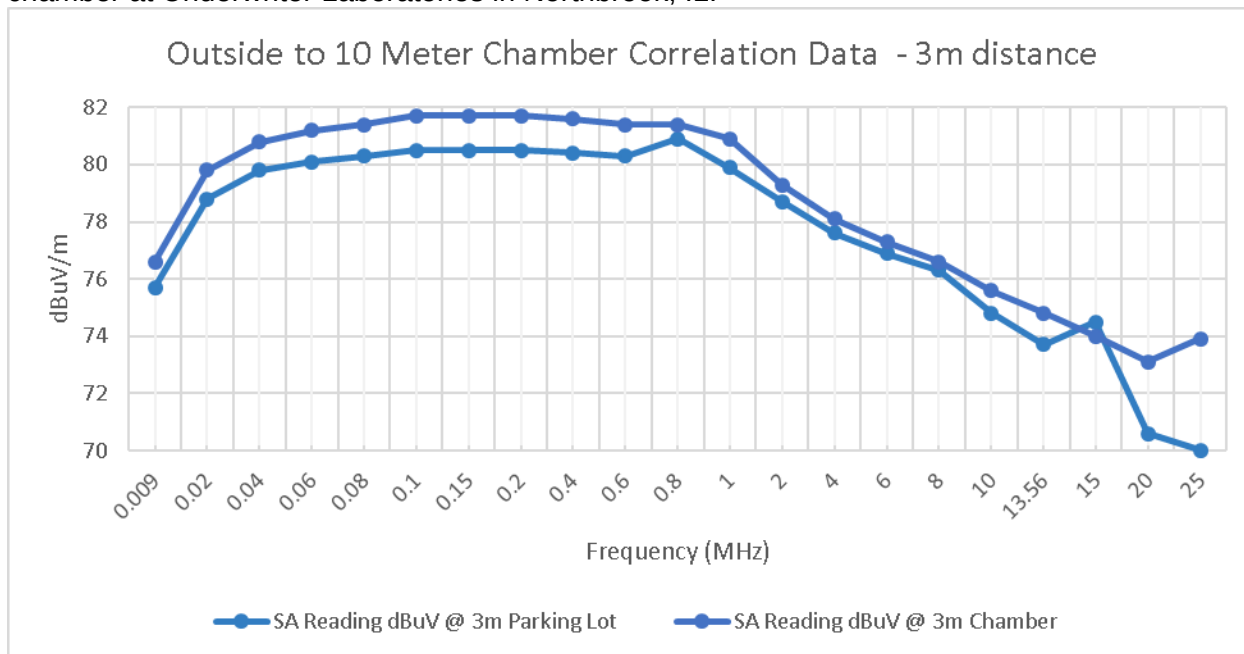
TEST METHOD

Radiated Emissions measurements were conducted per the following:

- 9kHz-490kHz – actual measurement distance of 3m and data extrapolated to distances specified by the limits using extrapolation factor of $40 \cdot \log(3/300)$.
- 490kHz-30MHz – actual measurement distance of 3m and data was extrapolated to distances specified by the limits using extrapolation factor of $40 \cdot \log(3/30)$.
- Fundamental measurements and second harmonic measurements were done at 3m distance
- 30MHz-1GHz pre-scans were conducted at 10m distance and data was extrapolated to distances specified by the limits using extrapolation factor of $20 \cdot \log(10/3)$.
- Above 1GHz measurement distance was 3m.

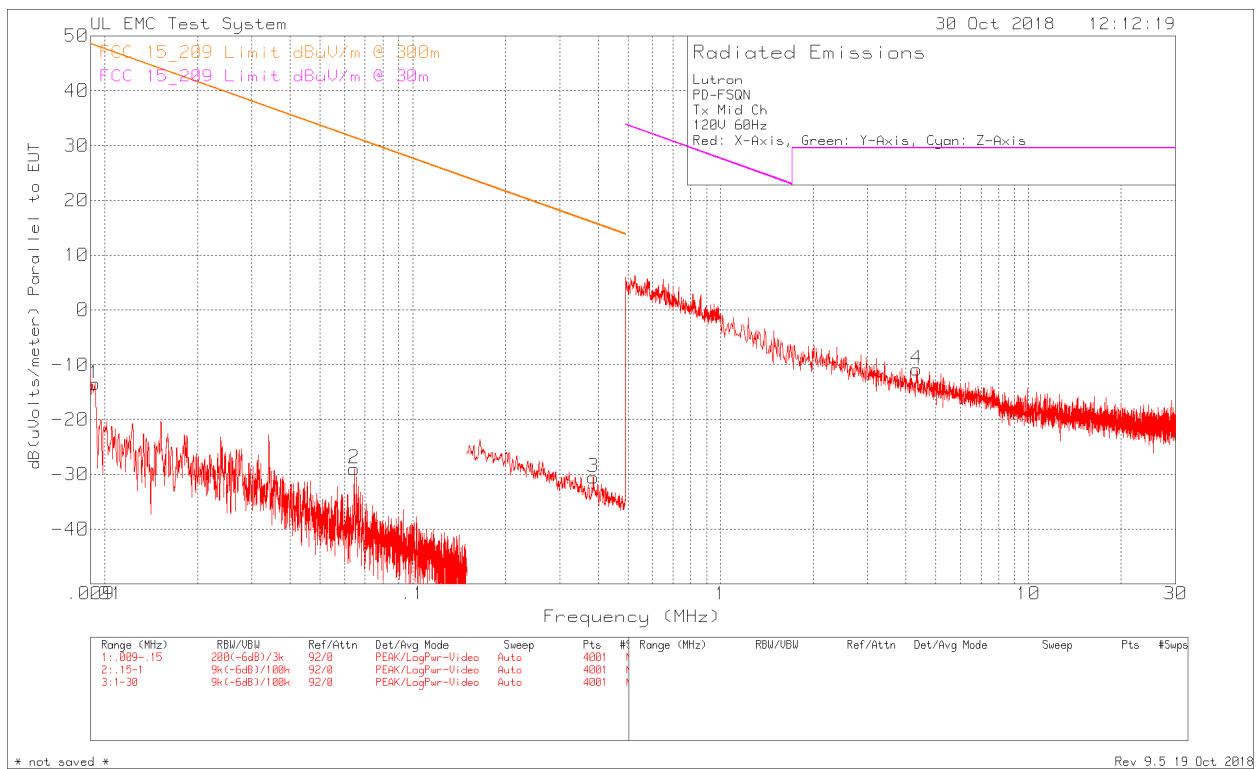
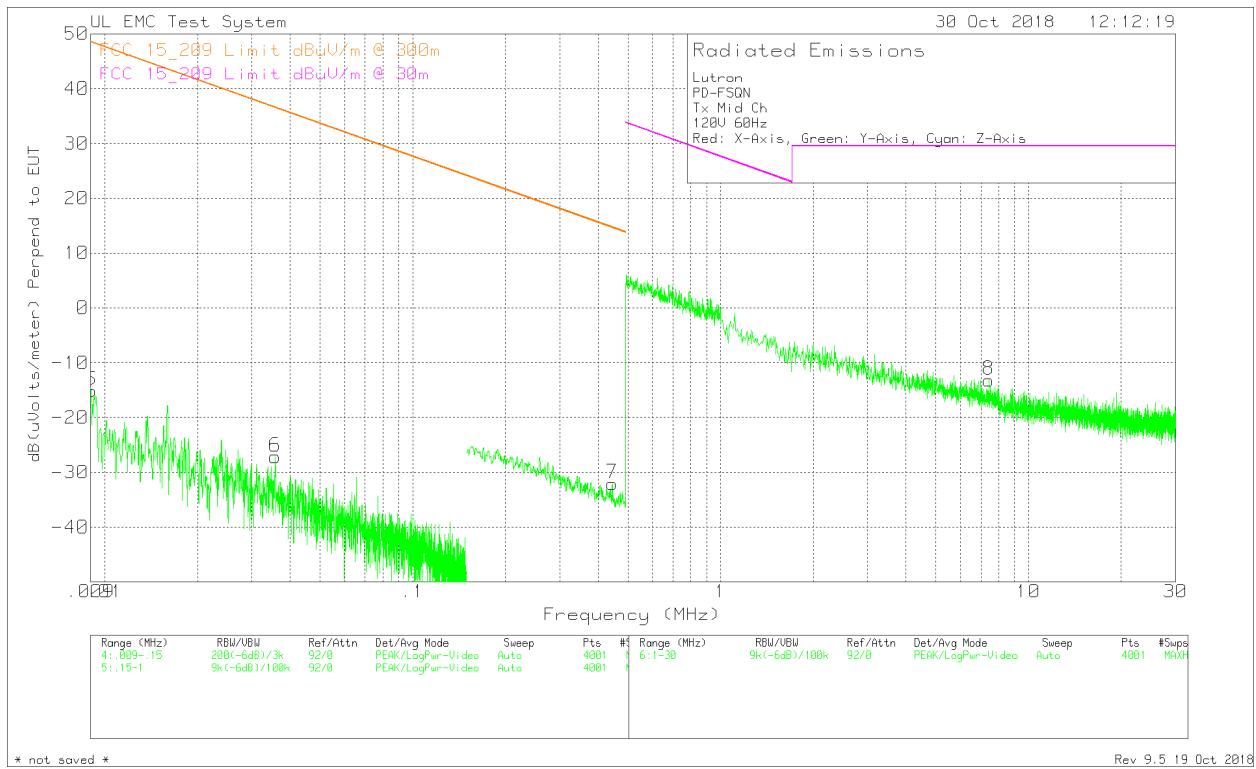
6.1.1. Outdoor to 10m SAC Correlation Data

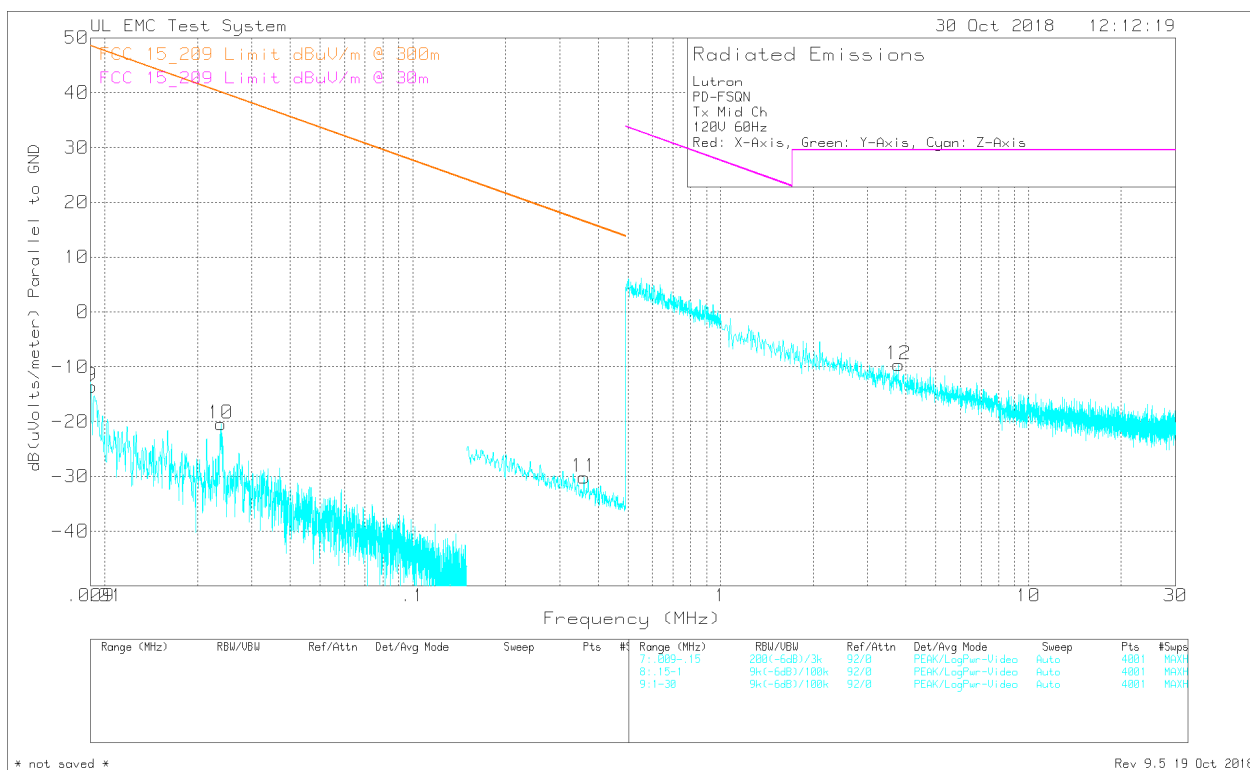
Correlation Data for measurements 9kHz-30MHz between Outside and 10m semi-anechoic chamber at Underwriter Laboratories in Northbrook, IL.



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.

6.1.2. Radiated Emissions Graph 9kHz-30MHz





6.1.3. Radiated Emissions Data 9kHz-30MHz

Lutron
PD-FSQN
Tx Mid Ch
120V 60Hz
Red: X-Axis, Green: Y-Axis, Cyan: Z-Axis

Trace Markers

Test No.	Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading (dB)	Limit:1 (uVolts/meter)	2
=====							
Antenna Parallel to EUT							
1	.00928	43.43dBuV Pk	23.1	-80	-13.47	48.24	-
		Azimuth:0-360	Height:102		Margin (dB)	-61.71	-
2	.06456	37.84dBuV Pk	13.1	-79.9	-28.96	31.4	-
		Azimuth:0-360	Height:102		Margin (dB)	-60.36	-
3	.386	37.66dBuV Pk	11.7	-79.9	-30.54	15.87	-
		Azimuth:0-360	Height:102		Margin (dB)	-46.41	-
4	4.32775	16.71dBuV Pk	12.3	-39.8	-10.79	-	29.54
		Azimuth:0-360	Height:102		Margin (dB)	-	-40.33
Antenna perpendicular to EUT							
5	.00904	41.78dBuV Pk	23.1	-80	-15.12	48.48	-
		Azimuth:0-360	Height:102		Margin (dB)	-63.6	-
6	.03578	37.35dBuV Pk	15.5	-80	-27.15	36.53	-
		Azimuth:0-360	Height:102		Margin (dB)	-63.68	-
7	.44522	36.07dBuV Pk	11.8	-79.9	-32.03	14.63	-
		Azimuth:0-360	Height:102		Margin (dB)	-46.66	-
8	7.43075	14.55dBuV Pk	12	-39.7	-13.15	-	29.54
		Azimuth:0-360	Height:102		Margin (dB)	-	-42.69
Antenna Parallel to Ground							
9	.00904	43.31dBuV Pk	23.1	-80	-13.59	48.48	-
		Azimuth:0-360	Height:102		Margin (dB)	-62.07	-
10	.02384	42.24dBuV Pk	17.3	-80	-20.46	40.05	-
		Azimuth:0-360	Height:102		Margin (dB)	-60.51	-
11	.36002	38.01dBuV Pk	11.7	-79.9	-30.19	16.48	-
		Azimuth:0-360	Height:102		Margin (dB)	-46.67	-
12	3.784	17.86dBuV Pk	12.3	-39.8	-9.64	-	29.54
		Azimuth:0-360	Height:102		Margin (dB)	-	-39.18

LIMIT 1: FCC 15_209 Limit dBuV/m @ 300m

LIMIT 2: FCC 15_209 Limit dBuV/m @ 30m

Pk - Peak detector

6.1.4. Radiated Emissions Data above 30MHz including fundamental

FUNDAMENTAL, HARMONICS AND TX SPURIOUS EMISSION

Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Path Factor (dB)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	DC Factor (dB)	Average Level with DC Correction (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
431.5384	66.01	Pk	16.4	8.5	90.91	100.74	-9.83	-19.93	70.98	80.74	-9.76	235	101	H	1
433.5595	65.15	Pk	16.5	8.5	90.15	100.81	-10.66	-19.93	70.22	80.81	-10.59	252	299	H	2
436.5593	56.48	Pk	16.7	8.5	81.68	100.91	-19.23	-19.93	61.75	80.91	-19.16	288	341	H	3
862.9245	30.81	Pk	21.8	9.6	62.21	66	-3.79	-19.93	42.28	46	-3.72	107	169	H	1
867.2675	26.57	Pk	22.1	9.6	58.27	66	-7.73	-19.93	38.34	46	-7.66	114	159	H	2
873.2745	31.83	Pk	22.3	9.7	63.83	66	-2.17	-19.93	43.9	46	-2.1	351	101	H	3
431.5373	71.21	Pk	16.4	8.5	96.11	100.74	-4.63	-19.93	76.18	80.74	-4.56	351	124	V	1
433.5606	72.06	Pk	16.5	8.5	97.06	100.81	-3.75	-19.93	77.13	80.81	-3.68	0	119	V	2
436.5548	67.41	Pk	16.7	8.5	92.61	100.91	-8.3	-19.93	72.68	80.91	-8.23	337	124	V	3
867.2765	28.59	Pk	22.1	9.6	60.29	66	-5.71	-19.93	40.36	46	-5.64	296	145	V	1
862.9208	31.17	Pk	21.8	9.6	62.57	66	-3.43	-19.93	42.64	46	-3.36	294	148	V	2
873.1208	33.68	Pk	22.3	9.7	65.68	66	-0.32	-19.93	45.75	46	-0.25	297	146	V	3
1294	78.55	Pk	29	-55.53	52.02	74	-21.98	-19.93	32.09	54	-21.91	0-360	150	H	1*
1726.1	86.45	Pk	29.3	-53.88	61.87	74	-12.13	-19.93	41.94	54	-12.06	96	205	H	1
2157.3	81.17	Pk	31.2	-51.98	60.39	74	-13.61	-19.93	40.46	54	-13.54	334	145	H	1
2588	67	Pk	32.4	-50.94	48.46	74	-25.54	-19.93	28.53	54	-25.47	0-360	150	H	1*
5179	65.11	Pk	34.5	-48.73	50.88	74	-23.12	-19.93	30.95	54	-23.05	0-360	150	H	1*
1301	79.72	Pk	29.1	-55.49	53.33	74	-20.67	-19.93	33.4	54	-20.6	0-360	150	H	2*
1734.2	85.94	Pk	29.4	-54.02	61.32	74	-12.68	-19.93	41.39	54	-12.61	100	215	H	2
2168.2	81.87	Pk	31.2	-51.99	61.08	74	-12.92	-19.93	41.15	54	-12.85	324	139	H	2
2602	65.65	Pk	32.4	-50.81	47.24	74	-26.76	-19.93	27.31	54	-26.69	0-360	100	H	2*
3035	64.89	Pk	32.9	-50.13	47.66	74	-26.34	-19.93	27.73	54	-26.27	0-360	150	H	2*
5204	65.06	Pk	34.6	-49.19	50.47	74	-23.53	-19.93	30.54	54	-23.46	0-360	150	H	2*
1309	80.12	Pk	29	-55.56	53.56	74	-20.44	-19.93	33.63	54	-20.37	0-360	100	H	3*
1746.6	86.52	Pk	29.6	-53.95	62.17	74	-11.83	-19.93	42.24	54	-11.76	94	194	H	3
2182.8	79.79	Pk	31.3	-51.83	59.26	74	-14.74	-19.93	39.33	54	-14.67	345	125	H	3
2620	64.43	Pk	32.4	-50.39	46.44	74	-27.56	-19.93	26.51	54	-27.49	0-360	100	H	3*
5240	64.23	Pk	34.7	-49.09	49.84	74	-24.16	-19.93	29.91	54	-24.09	0-360	149	H	3*
1294.4	81.39	Pk	29	-55.52	54.87	74	-19.13	-19.93	34.94	54	-19.06	163	206	V	1
1725.8	85.14	Pk	29.3	-53.92	60.52	74	-13.48	-19.93	40.59	54	-13.41	179	125	V	1
2157	73.52	Pk	31.2	-52.05	52.67	74	-21.33	-19.93	32.74	54	-21.26	0-360	100	V	1*
2589	65.63	Pk	32.4	-50.82	47.21	74	-26.79	-19.93	27.28	54	-26.72	0-360	150	V	1*
5179	64.25	Pk	34.5	-48.73	50.02	74	-23.98	-19.93	30.09	54	-23.91	0-360	100	V	1*
1300.7	83.56	Pk	29.1	-55.48	57.18	74	-16.82	-19.93	37.25	54	-16.75	162	150	V	2
1734.6	84.59	Pk	29.4	-54.02	59.97	74	-14.03	-19.93	40.04	54	-13.96	173	118	V	2
2168	74.86	Pk	31.2	-52.12	53.94	74	-20.06	-19.93	34.01	54	-19.99	0-360	150	V	2*
2601	64.78	Pk	32.4	-50.74	46.44	74	-27.56	-19.93	26.51	54	-27.49	0-360	100	V	2*
3035	63.91	Pk	32.9	-50.13	46.68	74	-27.32	-19.93	26.75	54	-27.25	0-360	100	V	2*
5204	64.91	Pk	34.6	-49.19	50.32	74	-23.68	-19.93	30.39	54	-23.61	0-360	100	V	2*
1309.7	83.62	Pk	29	-55.54	57.08	74	-16.92	-19.93	37.15	54	-16.85	153	193	V	3
1746.2	84.38	Pk	29.6	-53.97	60.01	74	-13.99	-19.93	40.08	54	-13.92	163	115	V	3
2183	74.06	Pk	31.3	-51.86	53.5	74	-20.5	-19.93	33.57	54	-20.43	0-360	150	V	3*
2619	64.65	Pk	32.4	-50.74	46.31	74	-27.69	-19.93	26.38	54	-27.62	0-360	150	V	3*
5240	63.33	Pk	34.7	-49.09	48.94	74	-25.06	-19.93	29.01	54	-24.99	0-360	150	V	3*

For all harmonics 15.209 limit was used as worst case

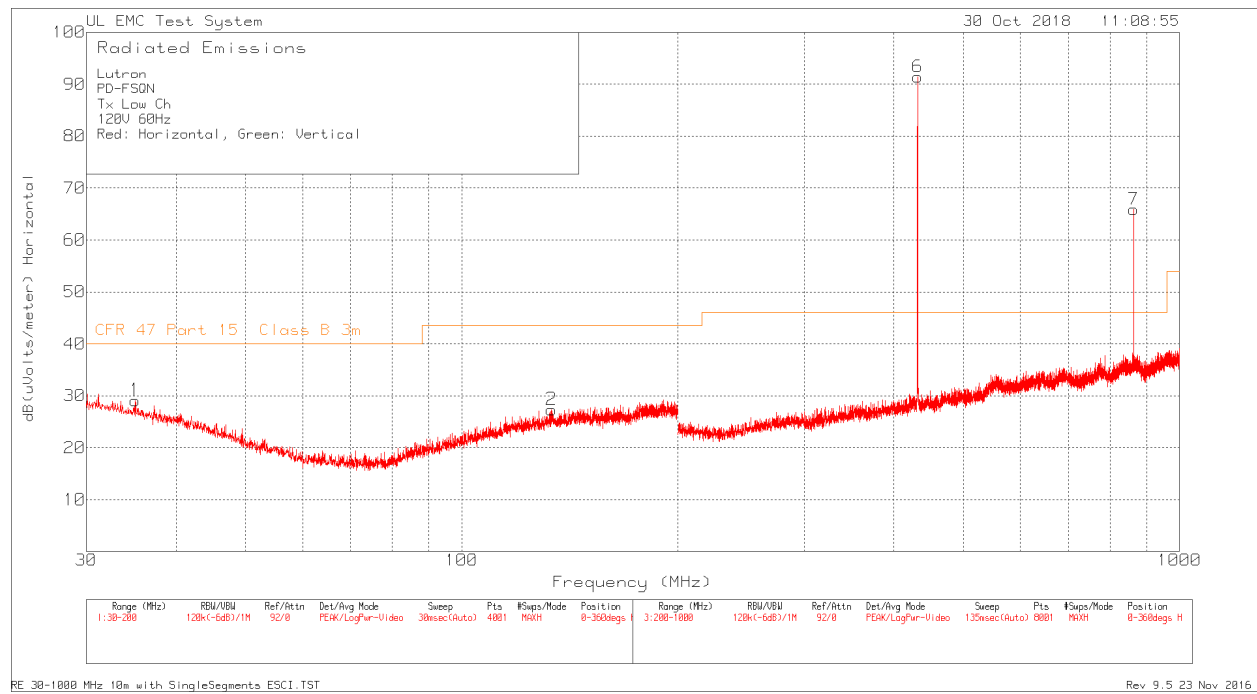
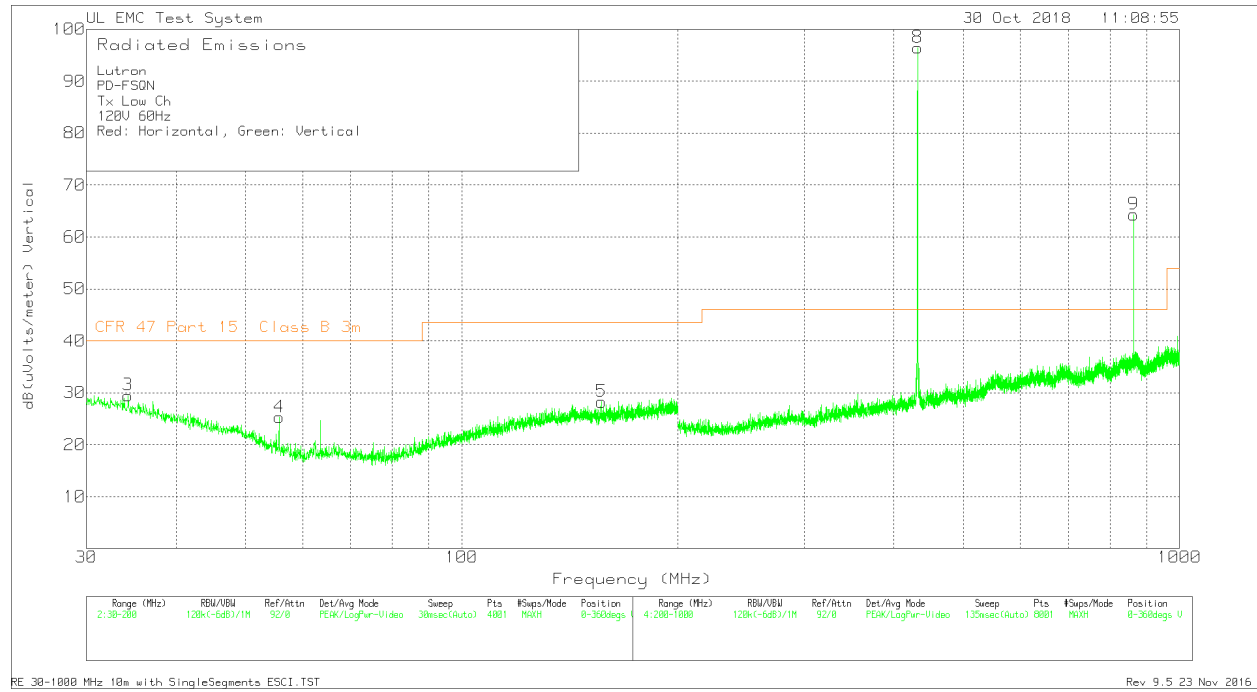
Notes:

- 1 - Low Ch (431.5MHz)
- 2 - Mid Ch (433.6MHz)
- 3 - High Ch (436.6MHz)

Pk - Peak Detector

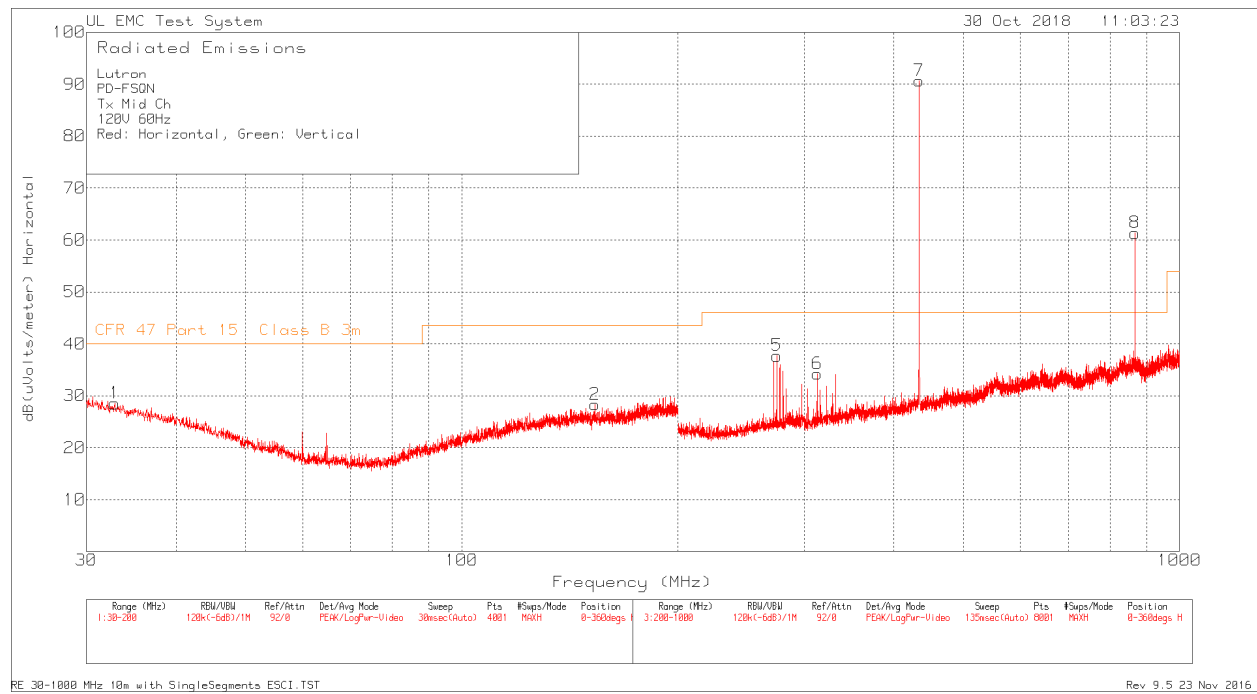
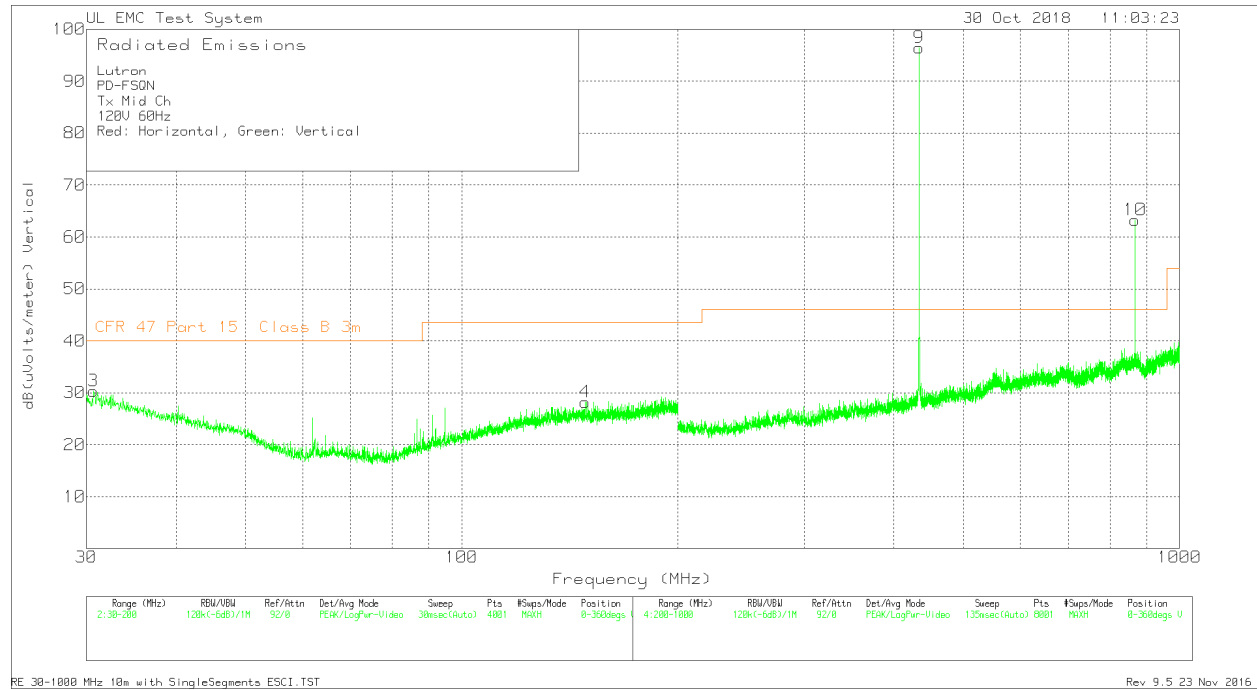
* - Pre-scan trace marker data with large margin. Maximized measurement considered not necessary.

6.1.5. RADIATED EMISSIONS GRAPHS 30MHz-1GHz 431.5MHz



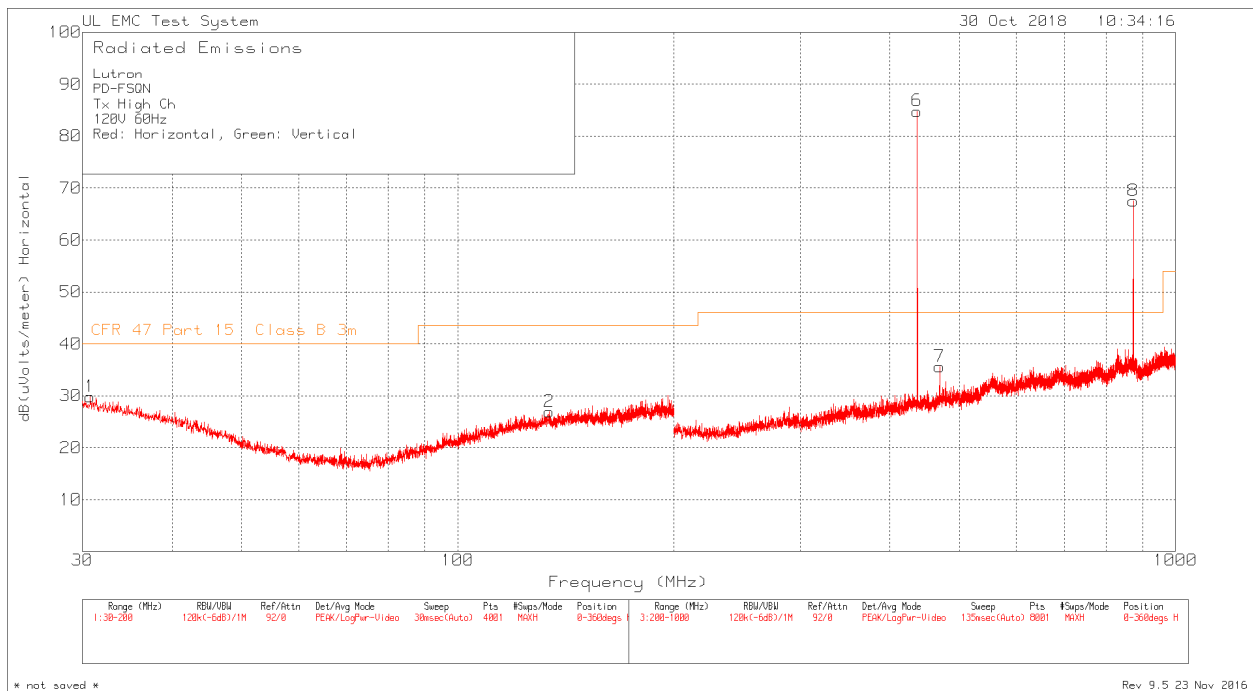
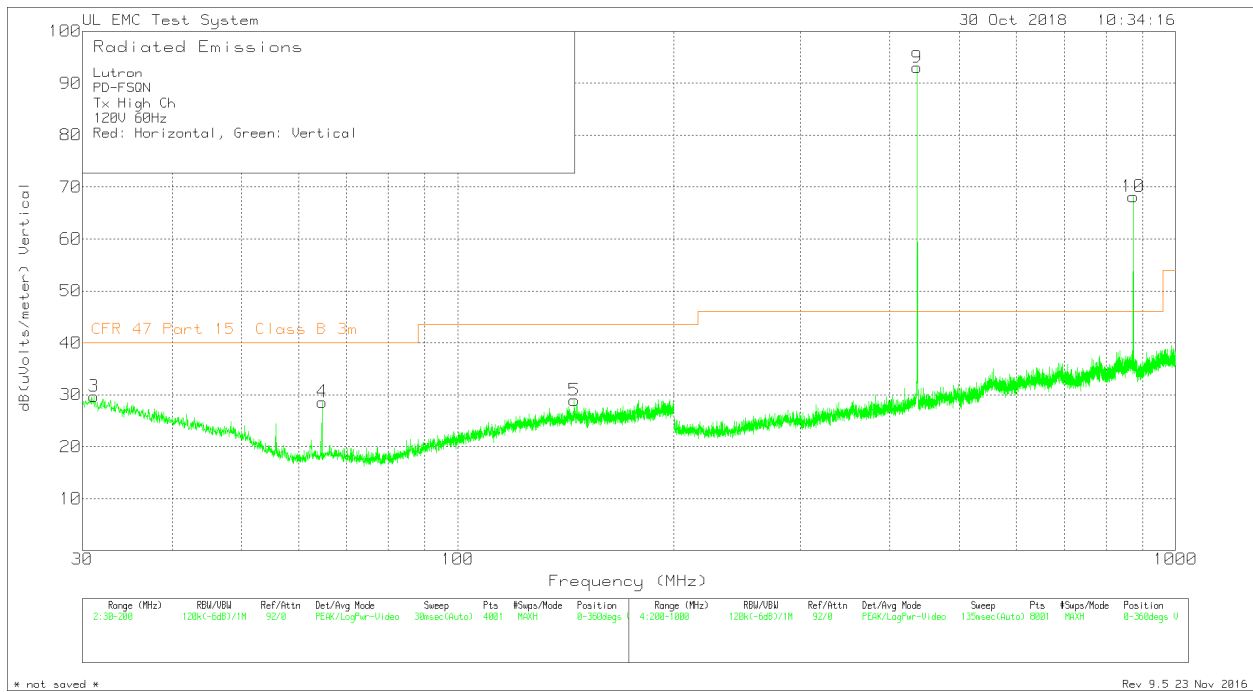
*other than the fundamental and the second harmonics all emissions are at least 10dB below the limit.

6.1.6. RADIATED EMISSIONS GRAPHS 30MHz-1GHz 433.6MHz



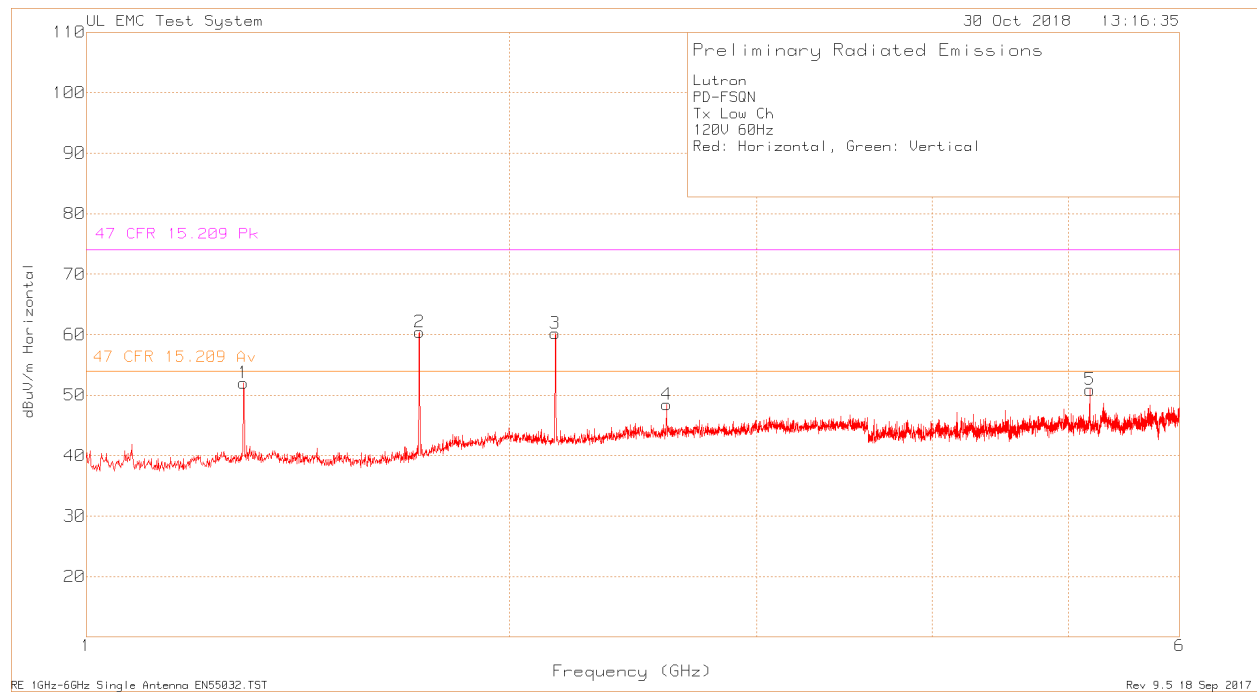
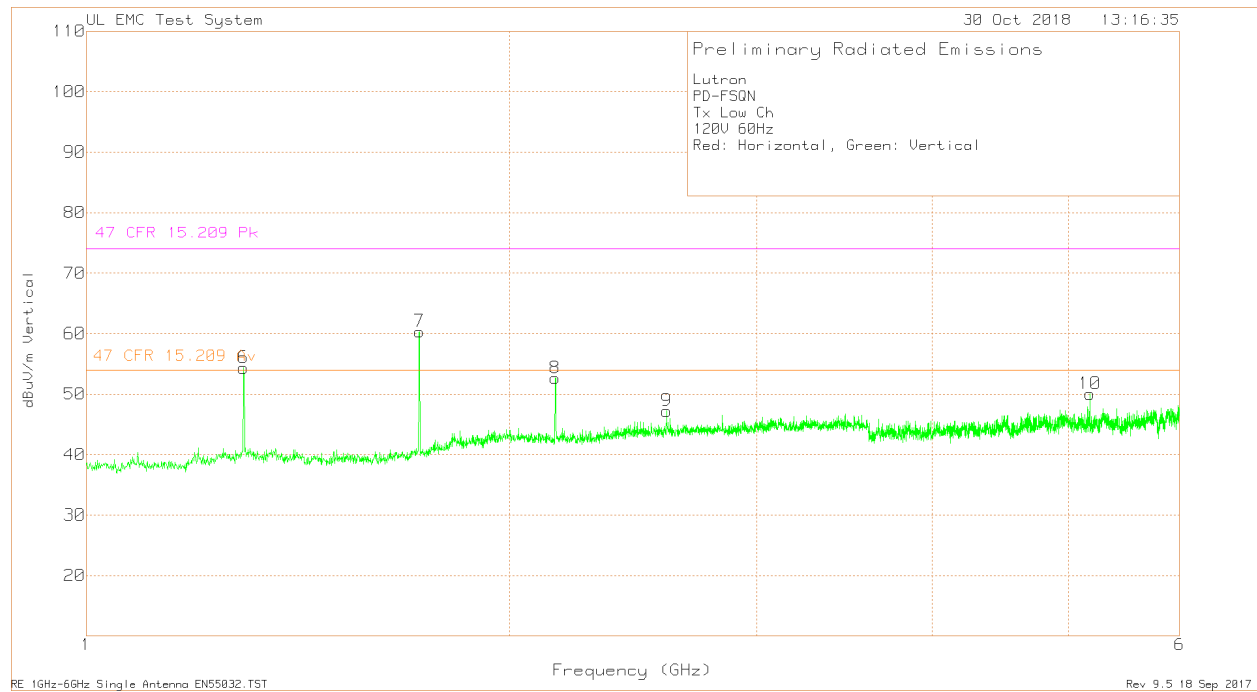
*other than the fundamental and the second harmonics all emissions are at least 10dB below the limit.

6.1.7. RADIATED EMISSIONS GRAPHS 30MHz-1GHz 436.6MHz

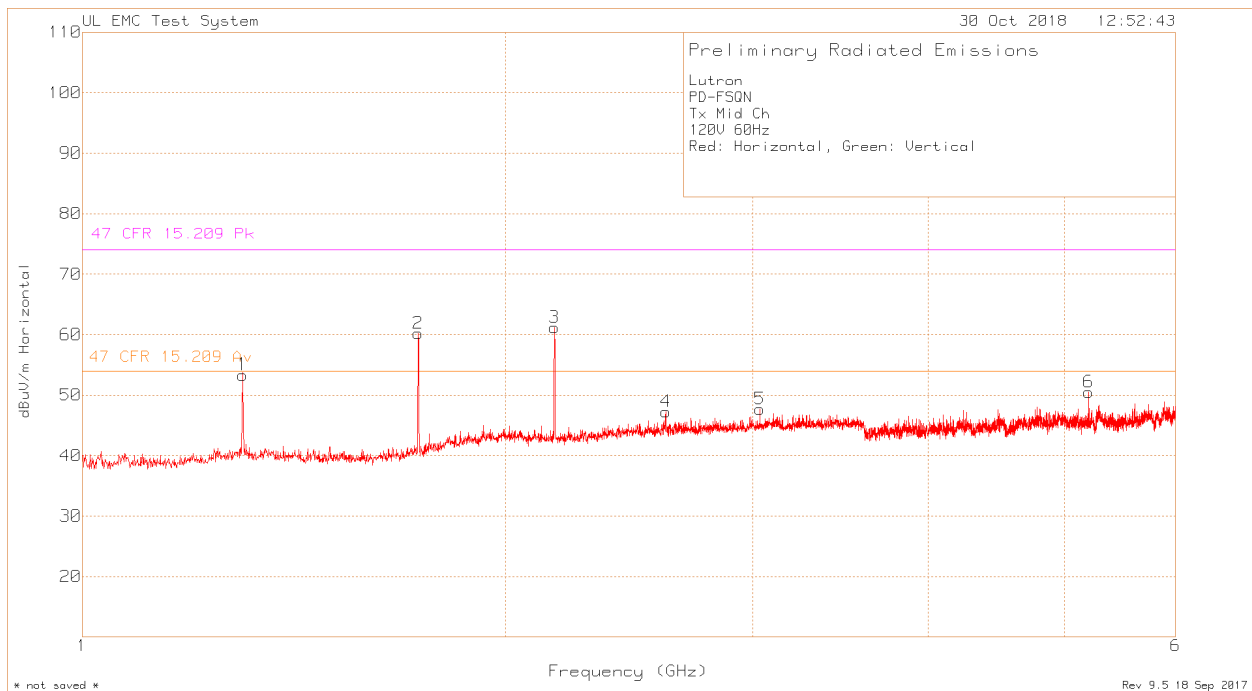
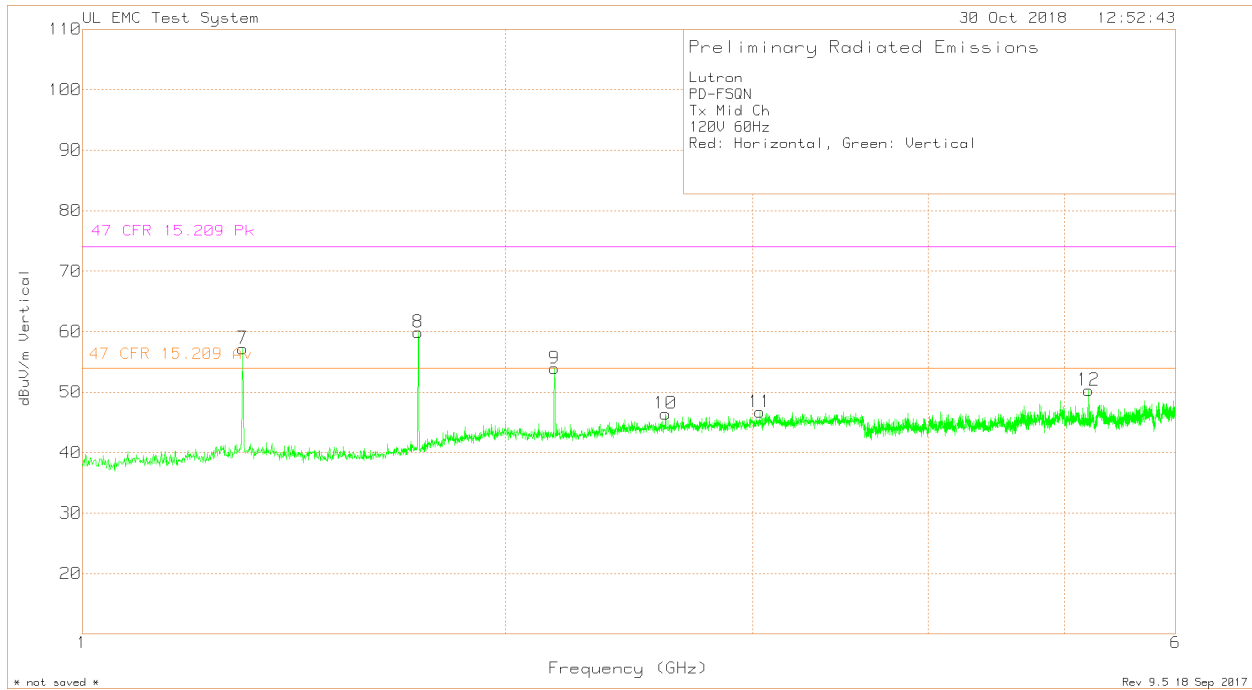


*other than the fundamental and the second harmonics all emissions are at least 10dB below the limit.

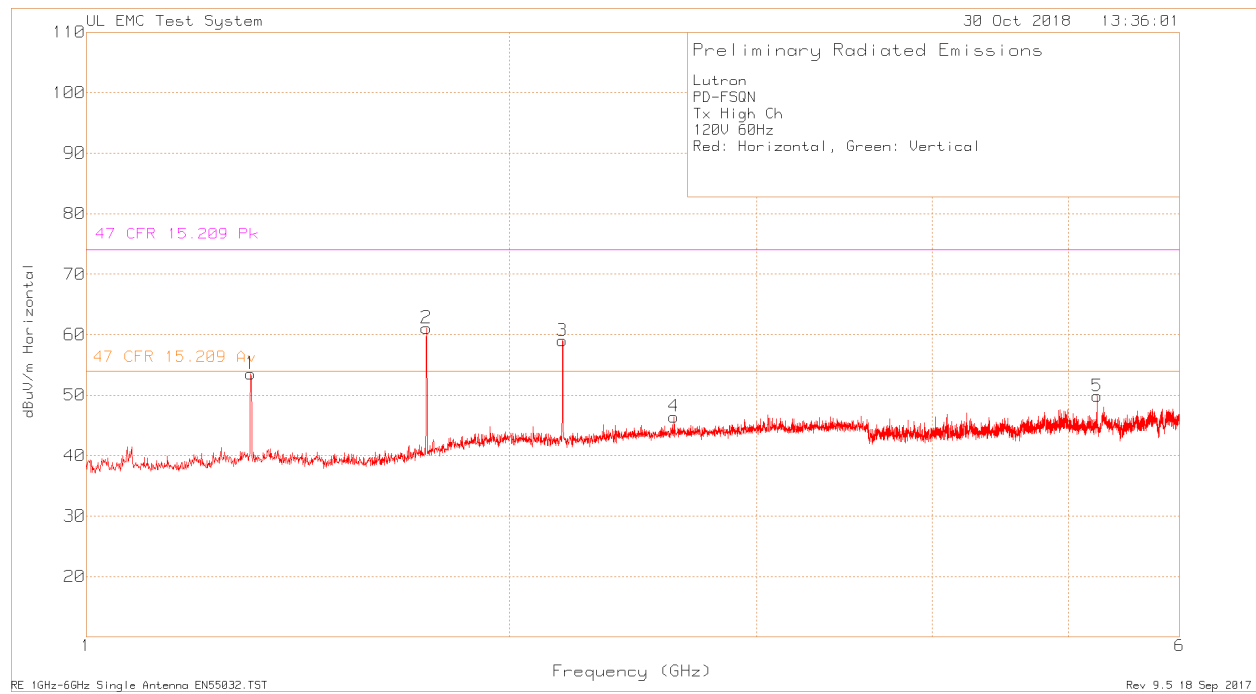
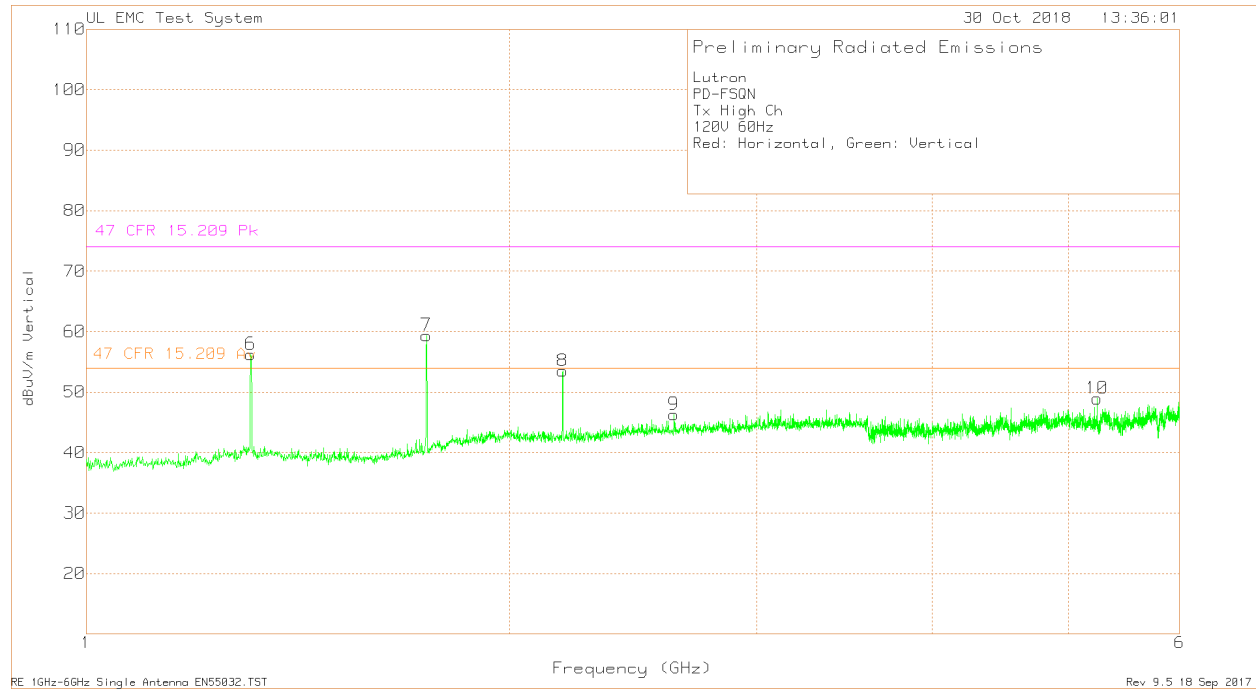
6.1.8. RADIATED EMISSIONS GRAPHS 1GHz-6GHz 431.5MHz



6.1.9. RADIATED EMISSIONS GRAPHS 1GHz-6GHz 433.6MHz



6.1.10. RADIATED EMISSIONS GRAPHS 1GHz-6GHz 436.6MHz



7. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207 (a)
IC RSS-GEN, Section 8.8

Frequency of emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50
* Decreases with the logarithm of the frequency.		

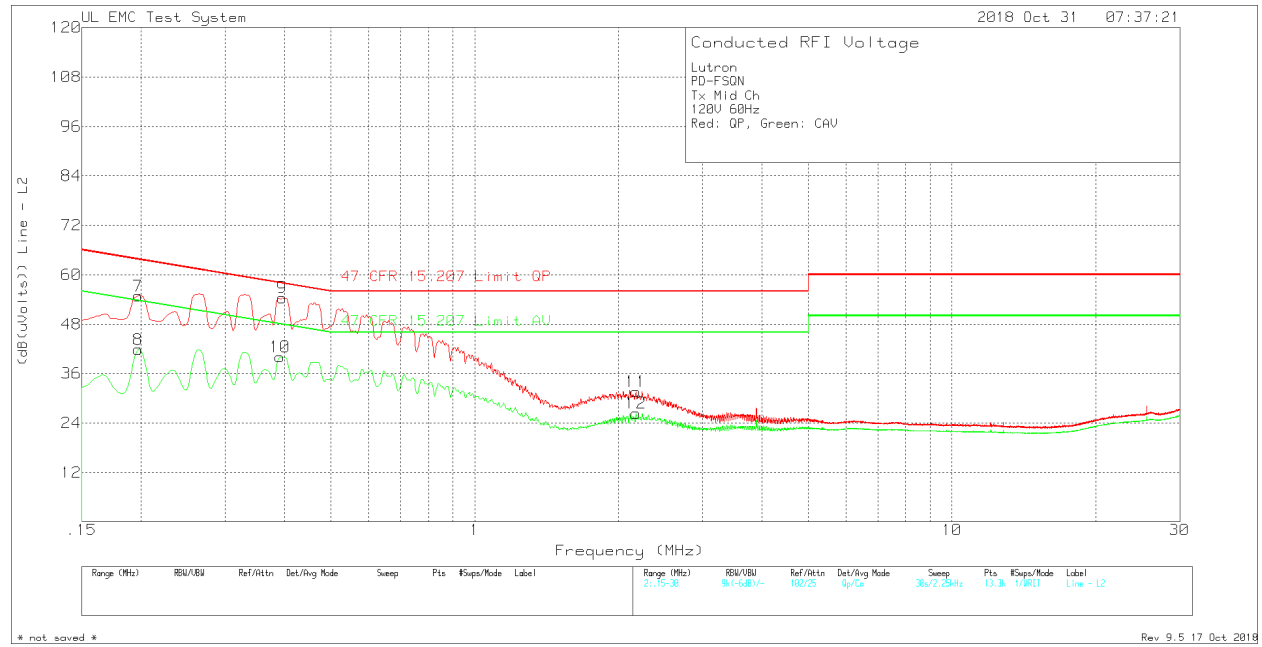
TEST PROCEDURE

ANSI C63.10

RESULTS

No non-compliance noted:

LINE 2 RESULTS



Lutron
PD-FSQN
Tx Mid Ch
120V 60Hz
Red: QP, Green: CAV

Trace Markers

Test No.	Frequency (MHz)	Meter Reading	Transducer Factor (dB)	Gain/Loss Factor (dB)	Corrected Reading (dB(uVolts))	Limit:1	2
7	.19725	43.24dBuV Qp	.1	11.5	54.84	63.73	-
					Margin (dB)	-8.89	-
8	.19725	30.26dBuV Ca	.1	11.5	41.86	-	53.73
					Margin (dB)	-	-11.87
9	.39525	43.63dBuV Qp	0	10.8	54.43	57.95	-
					Margin (dB)	-3.52	-
10	.39075	29.23dBuV Ca	0	10.8	40.03	-	48.05
					Margin (dB)	-	-8.02
11	2.17725	21.03dBuV Qp	0	10.6	31.63	56	-
					Margin (dB)	-24.37	-
12	2.17725	15.77dBuV Ca	0	10.6	26.37	-	46
					Margin (dB)	-	-19.63

LIMIT 1: 47 CFR 15.207 Limit QP
LIMIT 2: 47 CFR 15.207 Limit AV

Qp - Quasi-Peak detector
Ca - CISPR Average detection