FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

MOTORIZED SHADES DRIVE

MODEL NUMBER: QSFC-J-EDU-R2

FCC ID: JPZ0095
IC: 2851A-JPZ0095

REPORT NUMBER: 10052927-DC

ISSUE DATE: 2013-09-13

Prepared for
LUTRON ELECTRONICS CO INC
7200 SUTER RD
COOPERSBURG , PA 18036 USA

Prepared by
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NVLAP LAB CODE 100255-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	2013-09-13	Initial Issue	B. DeLisi

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UL LLC. FORM NO: CCSUP4701D
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LUTRON ELECTRONICS CO INC
7200 SUTER RD
COOPERSBURG , PA 18036 USA

EUT DESCRIPTION: Motorized Shade Drive

MODEL: QSFC-J-EDU-R2

SERIAL NUMBER: Non-serialized production unit

DATE TESTED: 2013-08-29 through 2013-09-06

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	Pass
INDUSTRY CANADA RSS-210 Issue 8, Annex 1	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards, using test results reported in the test report documents referenced below and/or documentation furnished by the applicant. All indications of Pass/Fail in this report are opinions expressed by UL LLC based on interpretations of these calculations. The results show that the equipment is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation, as described by the referenced documents. 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 any government.

Approved & Released For UL By:

Bob DeLisi
WiSE Principal Engineer
UL LLC

Tested By:

Joseph Danisi
WiSE Project Lead
UL LLC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 1285 Walt Whitman Rd. Melville, NY 11747, USA.

UL Melville is accredited by NVLAP, Laboratory Code 100255-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/1002550.htm.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.3 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.00 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a motor shade drive with wireless control capability that is powered by an external battery pack.

The model tested, QSFC-J-EDU-R2 represents SYC-J-EDU-R2. Electrically there is no difference between the two units. The model difference distinguishes types of other devices that work with the unit.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral monopole antenna constructed of a wire..

5.3. SOFTWARE AND FIRMWARE

RF_Godwit_1.68_FCC1_TXPow0x85 - Transmit
RF_Godwit_1.68_FCC2_TXPow0x85 - Receive
RF_Godwit_2.91_FCC4_TXPow0x85 – Transmit on Button Press

5.4. WORST-CASE CONFIGURATION AND MODE

Testing was conducted on the lowest and highest channels for all radiated tests. All other tests were conducted on a single channel. The antenna was oriented 90° from the motor housing for worst case emissions.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Not Applicable

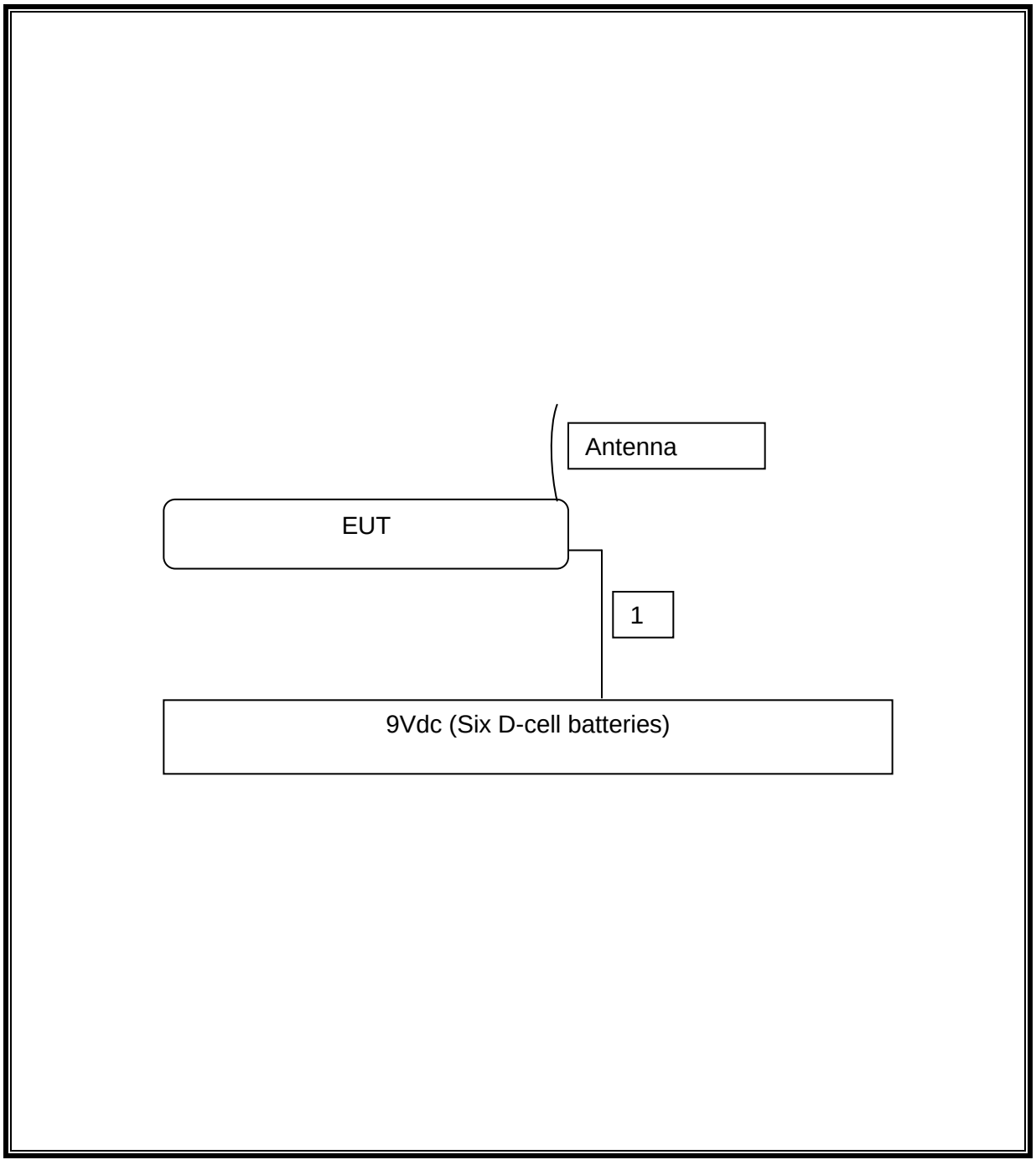
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identica Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	DC	1	plug-in	Unshielded	<3m	Cable between battery pack and motor

TEST SETUP

The EUT was tested as a stand-alone device connected to a Battery pack.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Radiated Emissions					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
30-1000MHz					
EMI Receiver	Rohde & Schwarz	ESCI7	75141	2013-01-30	2014-01-31
Bicon Antenna	Schaffner	VBA6106A	54	2013-04-03	2014-04-03
Log-P Antenna	Schaffner	UPA6109	44067	2013-07-09	2014-07-09
Bias Tee	Miteq	AM-1523-7687	44392	N/A	N/A
Bias Tee	Miteq	AM-1523-7687	44393	N/A	N/A
Preamp	Miteq	AM-3A-000110-7687	44391	N/A	N/A
Preamp	Miteq	AM-3A-000110-7687	44394	N/A	N/A
Switch Driver	HP	11713A	ME7A-627	N/A	N/A
System Controller	Sunol Sciences	SC99V	44396	N/A	N/A
Camera Controller	Panasonic	WV-CU254	44395	N/A	N/A
RF Switch Box	UL	1	44398	N/A	N/A
Measurement Software	UL	Version 9.5	44740	N/A	N/A
Multimeter	Fluke	87V	64386	2013-01-28	2014-01-31
Temp/Humidity/Pressure Meter	Cole Palmer	99760-00	4268	2012-12-22	2014-12-22
Above 1GHz (Band Optimized System)					
Spectrum Analyzer	Agilent	E4446A	72823	2013-01-30	2014-01-31
Horn Antenna (1-2 GHz)	ETS	3161-01 (26°)**	51442	2008-03-28	See * below
Horn Antenna (2-4 GHz)	ETS	3161-02 (22°)**	48107	2007-09-27	See * below
Horn Antenna (4-8 GHz)	ETS	3161-03 (22°)**	48106	2007-09-27	See * below
Signal Path Controller	HP	11713A	50250	N/A	N/A
Gain Controller	HP	11713A	50251	N/A	N/A
RF Switch / Preamp Fixture	UL	BOMS1	50249	N/A	N/A
System Controller	UL	BOMS2	50252	N/A	N/A
Measurement Software	UL	Version 9.5	44740	N/A	N/A
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268	2012-12-22	2014-12-22
Multimeter	Fluke	87V	79648	2013-01-30	2014-01-31

* - Note: As allowed by the calibration standard ANSI C63.4 Section 4.4.2, standard gain horns need only a one-time calibration. Only if physical damage occurs will the horn antenna require re-calibration.

Gain standard horn antennas (sometimes called standard gain horn antennas) need not be calibrated beyond that which is provided by the manufacturer unless they are damaged or deterioration is suspected, or they are used at a distance closer than $2D^2/\lambda$. Gain standard horn antennas have gains that are fixed by their dimensions and dimensional tolerances.

** - Number in parentheses denotes antenna beam width.

Bench Tests					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
Conducted Emissions – GP 1					
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081	2013-01-28	2014-01-31
Dipole Antenna	EMCO	3121C	3359	2012-12-27	2013-12-27
Multimeter	Fluke	83V	43443	2013-01-28	2014-01-31

7. ANTENNA PORT TEST RESULTS

7.1. 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 A1.1.3
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 C63.4

The transmitter output is connected to the spectrum analyzer.

20dB Bandwidth: The RBW is set to 10 KHz. The VBW is set to 100 KHz. 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 3% 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.

RESULTS

No non-compliance noted:

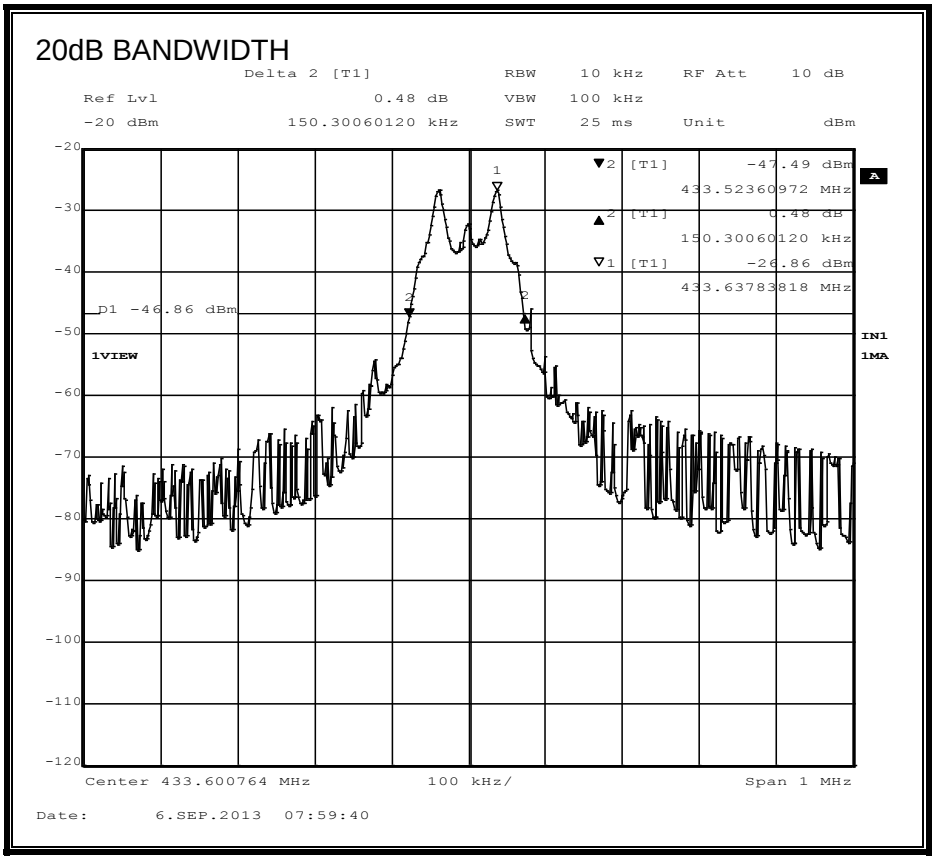
20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
433.6	150.3	1084	-933.7

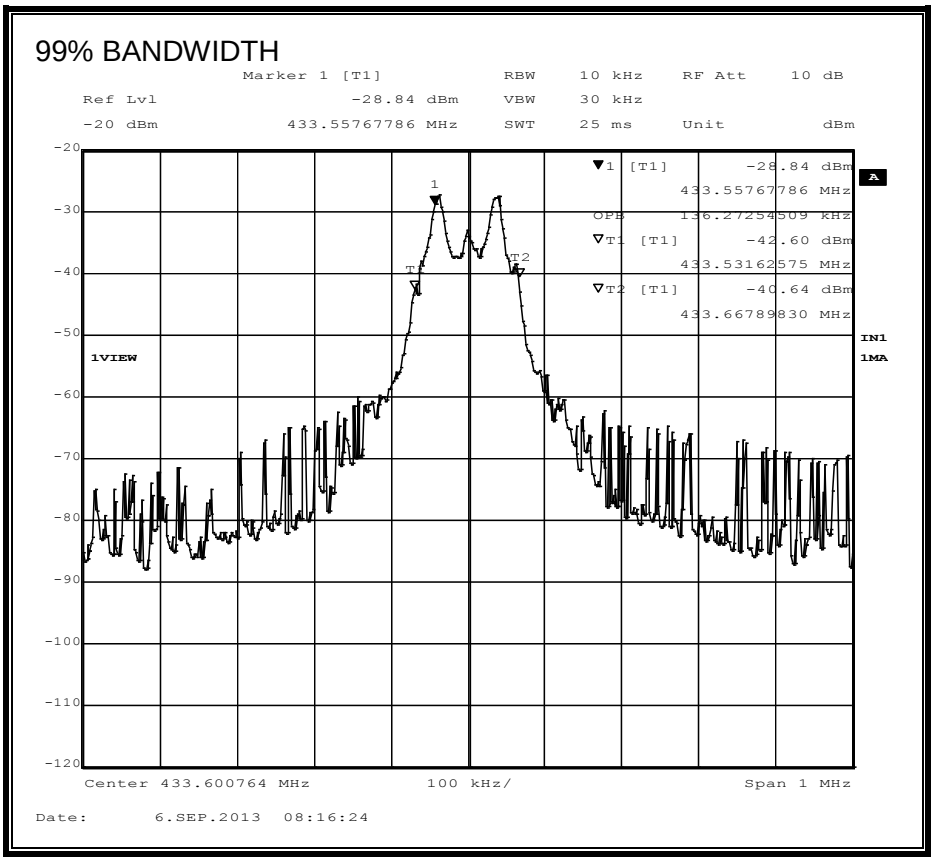
99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
433.6	136.3	1084	-947.7

20dB BANDWIDTH



99% BANDWIDTH



7.2. 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 1 MHz and the VBW is set to 1 MHz. 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

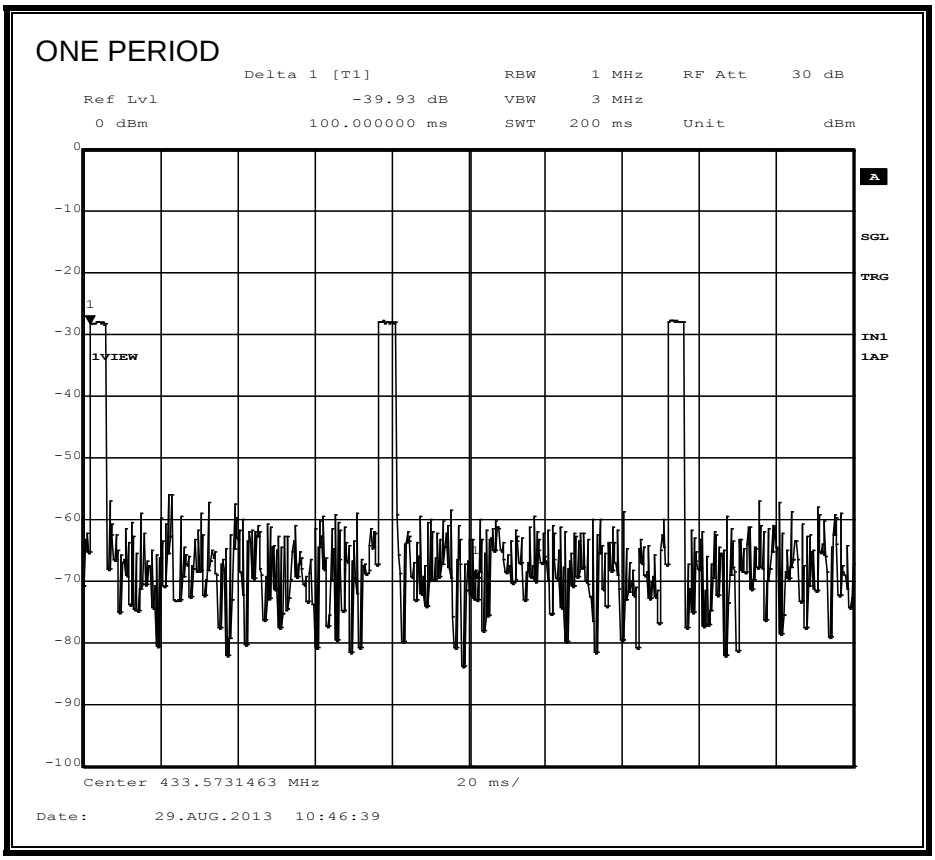
Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is
(# of long pulses * long pulse width) + (# of short pulses * short pulse width) / 100 or T

RESULTS

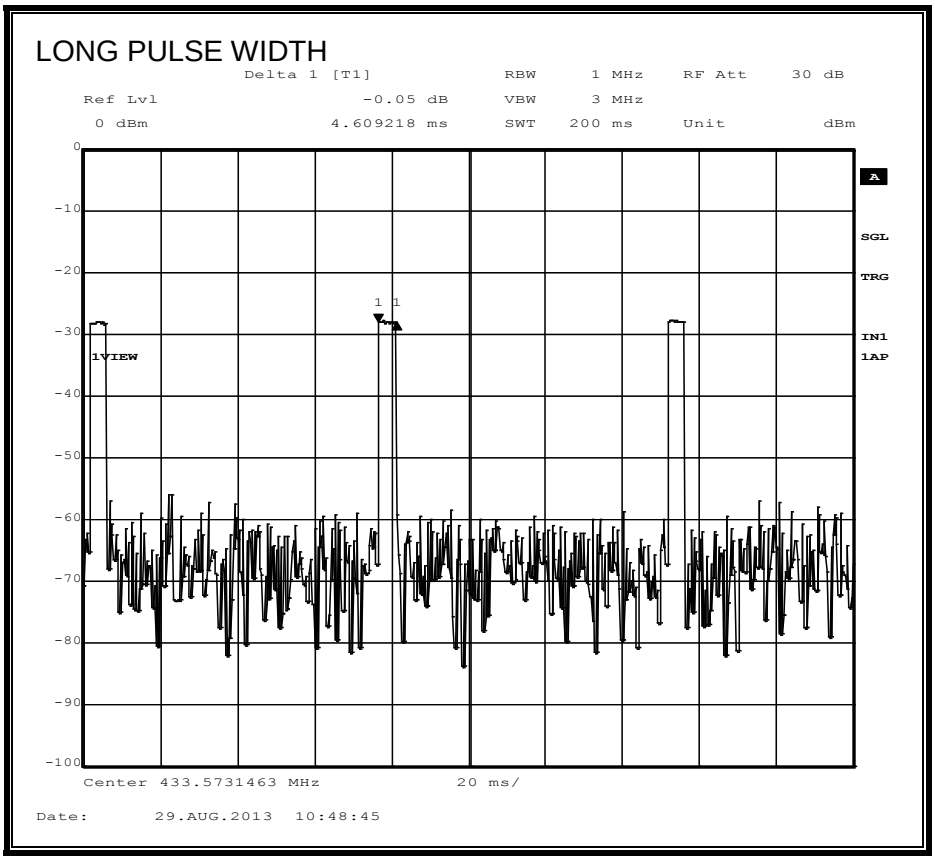
No non-compliance noted:

One Period (ms)	Long Pulse Width (ms)	# of Long Pulses	Short Width (ms)	# of Short Pulses	Duty Cycle	20*Log Duty Cycle (dB)
100	4.61	1	4.21	1	0.088	-21.09

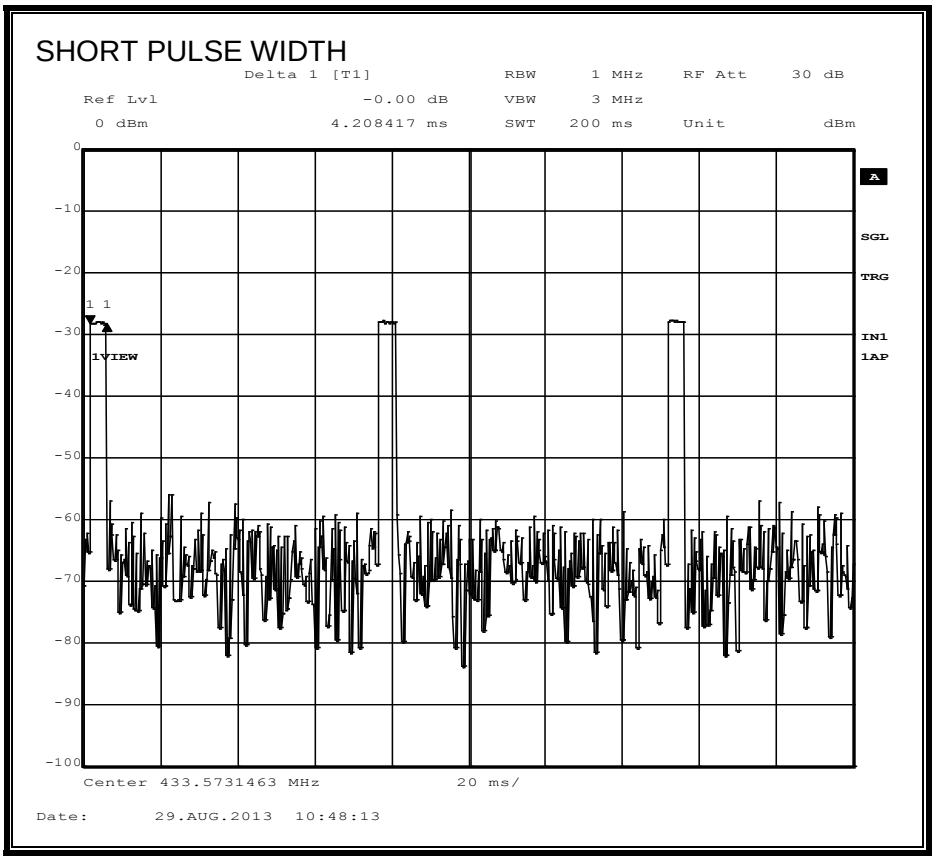
ONE PERIOD



LONG PULSE WIDTH



SHORT PULSE WIDTH



7.3. TRANSMISSION TIME

LIMITS

FCC §15.231 (a) (2)

IC A1.1.1 (b)

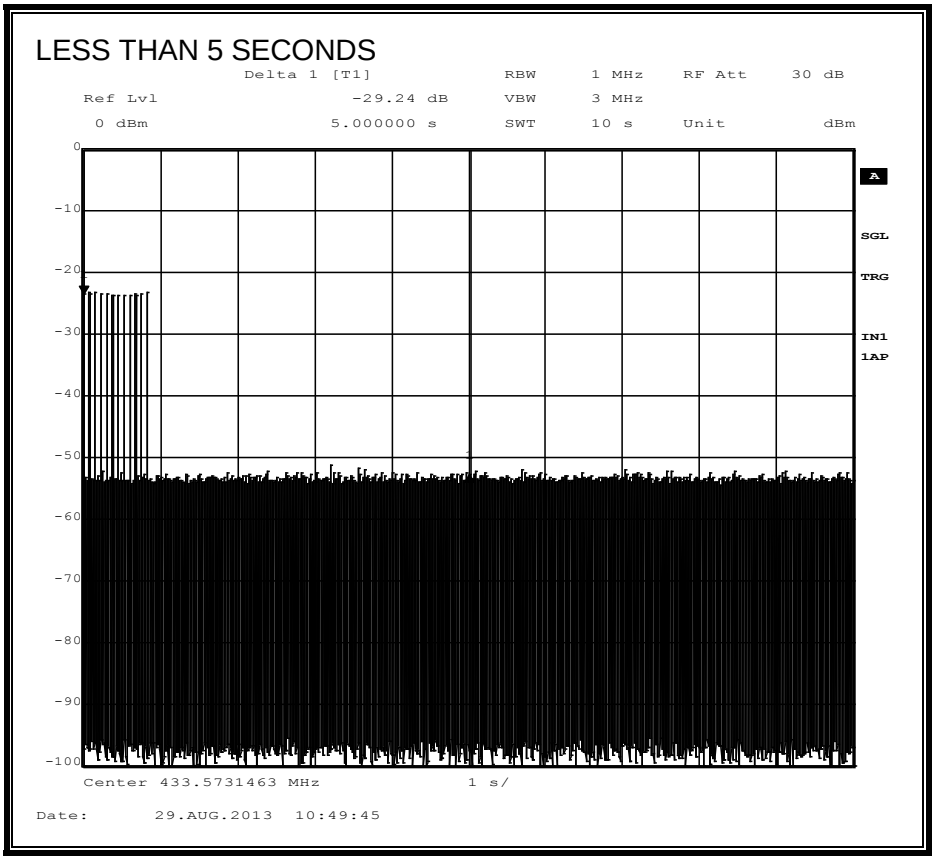
A transmitter activated automatically shall cease transmission within 5 seconds after activation.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 1 MHz and the VBW is set to 1 MHz. The sweep time is set to 10 seconds and the span is set to 0 Hz.

RESULTS

No non-compliance noted:



8. RADIATED EMISSION TEST RESULTS

8.1. TX RADIATED SPURIOUS EMISSION

LIMITS

FCC §15.231 (b)
IC A1.1.2
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)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
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 PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

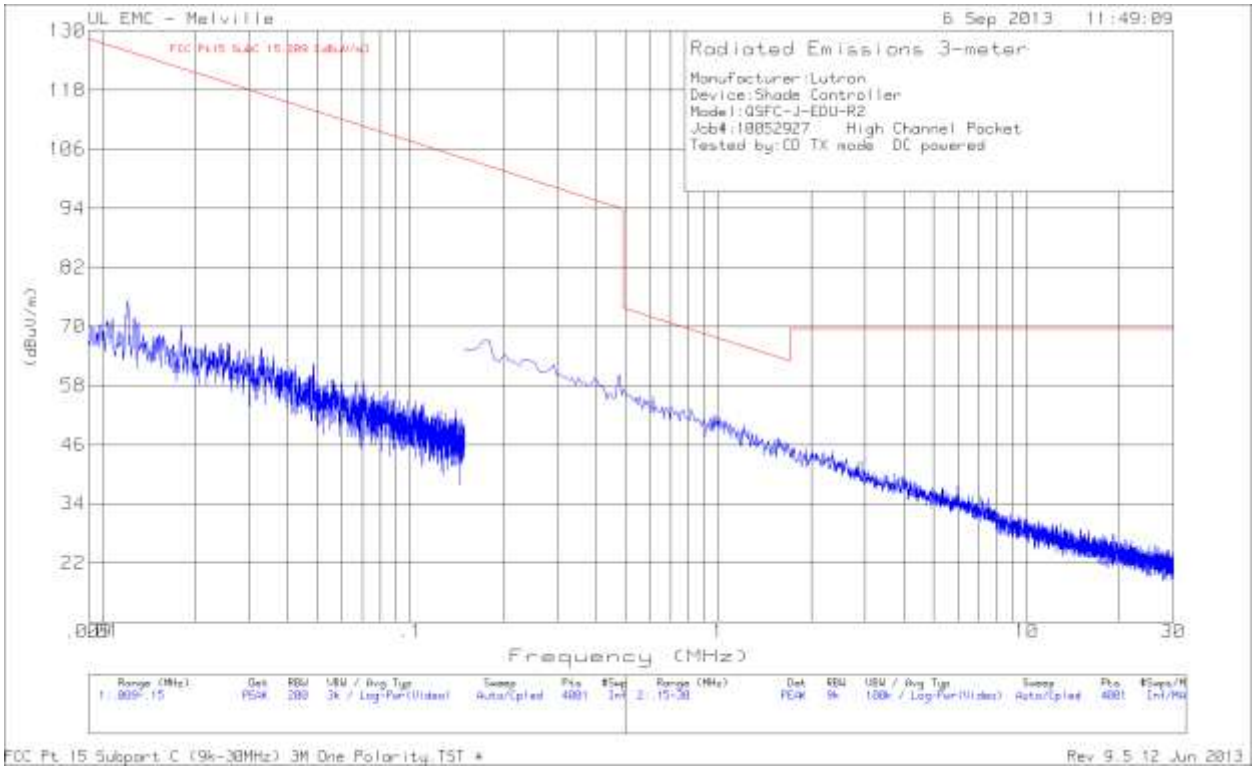
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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.

RESULTS

No non-compliance noted:

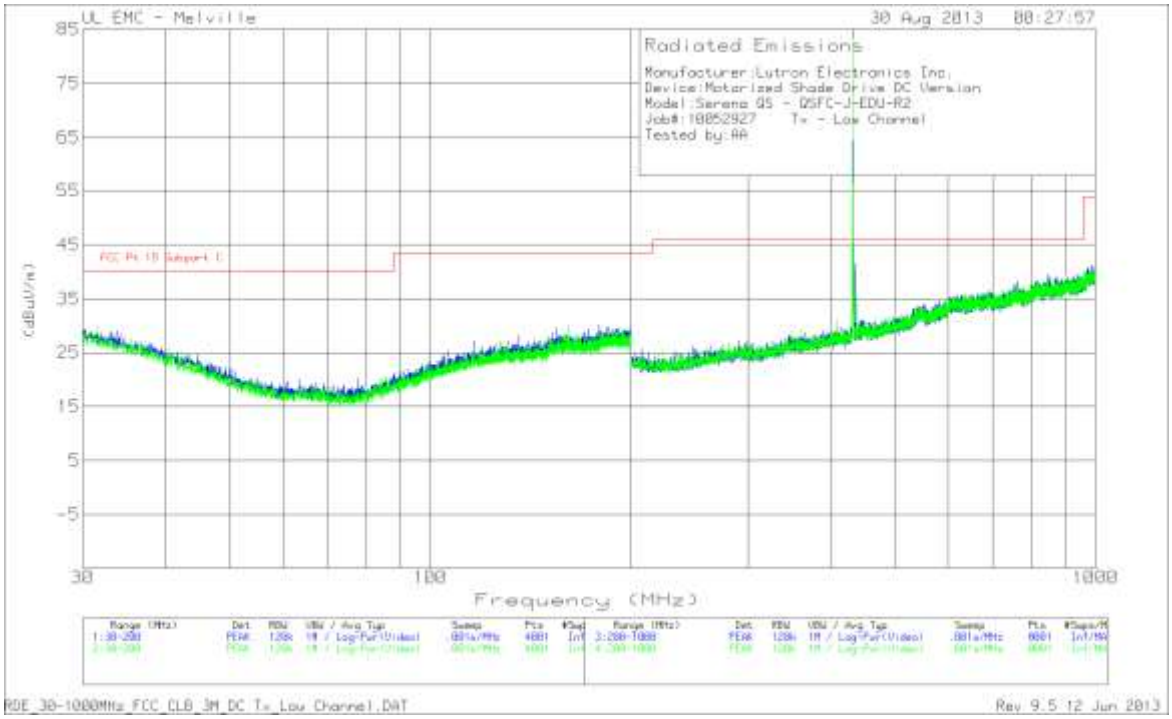
TX SPURIOUS EMISSION (9kHz – 30 MHz) – Worst Case



Frequency (MHz)	Meter Reading (dBuV)	Det	AF-5A288 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	FCC Pt15 SubC 15.209 [dBuV/m]	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
.012102	46.45	PK	28.6	.2	75.25	125.93	-50.68	0-360	100	V
.017989	44.47	PK	25.4	.2	70.07	122.49	-52.42	0-360	100	V
.048586	43.3	PK	19	.3	62.6	113.86	-51.26	0-360	100	V
.17239	50.47	PK	16.3	.3	67.07	102.87	-35.8	0-360	100	V
.47835	43.69	PK	16.2	.3	60.19	94.01	-33.82	0-360	100	V
13.79145	8.87	PK	16.7	.5	26.07	69.5	-43.43	0-360	100	V

PK - Peak detector

FUNDAMENTAL, HARMONICS AND TX SPURIOUS EMISSION (30 – 1000 MHz) – Low Channel



Manufacturer:Lutron Electronics Inc.																
Device:Motorized Shade Drive DC Version																
Model:Serena QS - QSFC-J-EDU-R2																
Job#:10052927 Tx - Low Channel																
Tested by:AA																
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	AF-44067 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	DCF (dB)	Corrected Average Reading (dBuV/m)	FCC Pt 15 Subpart C	Margin (dB)	FCC Pt 15.231	Margin (dB)	FCC Part 15 Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 200 - 1000MHz																
431.4581	76.72	PK	16.1	1.4	94.22	-21.09	73.13	-	-	80.7	-7.57	100.7	-6.48	190	247	H
434.5	9.83	QP	16.4	1.4	27.63	-	-	46	-18.37	-	-	-	-	359	232	H
435.2	2.19	QP	16.4	1.4	19.99	-	-	46	-26.01	-	-	-	-	44	173	H
864	4.25	PK	22	2.3	28.55	-21.09	7.46	-	-	60.7	-53.24	80.7	-52.15	235	350	H
Vertical 200 - 1000MHz																
864	4.14	PK	22	2.3	28.44	-21.09	7.35	-	-	60.7	-53.35	80.7	-52.26	242	105	V
434	-2.22	QP	16.3	1.4	15.48			46	-30.52	-	-	-	-	327	123	V
432.2	16.27	QP	16.2	1.5	33.97			46	-12.03	-	-	-	-	116	252	V
431.4596	70.18	PK	16.1	1.4	87.68	-21.09	66.59	-	-	80.7	-14.11	100.7	-13.02	99	258	V
PK - Peak detector																
QP - Quasi-Peak detector																

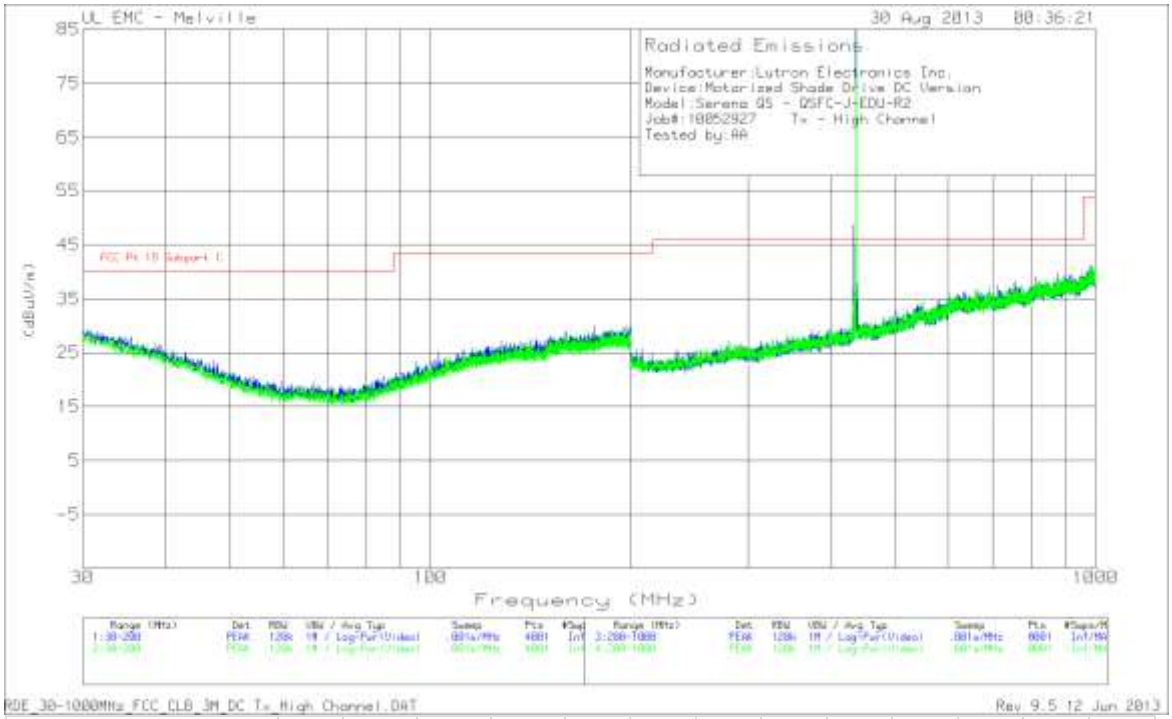
HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz – Low Channel

Test Frequency (GHz)	Meter Reading (dBuV)	Detector	AF-51442	BOMS Factor (dB)	Corrected Reading dB(uVolts/ meter)	DCF (dB)	Corrected Average Reading (dBuV/m)	FCC Part 15 Subpart C 15.209	Margin (dB)	FCC Part 15 Subpart C Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1.2944	86.34	PK	20.5	-44.15	62.69	-21.09	41.6	54	-12.4	74	-11.31	295	131	H
1.2944	81.48	PK	20.5	-44.15	57.83	-21.09	36.74	54	-17.26	74	-16.17	335	285	V
1.7265	65.79	PK	20.8	-43.82	42.77	-21.09	21.68	54	-32.32	74	-31.23	133	113	H

Test Frequency (GHz)	Meter Reading (dBuV)	Detector	AF-48107	BOMS Factor (dB)	Corrected Reading dB(uVolts/ meter)			FCC Part 15 Subpart C 15.209	Margin (dB)	FCC Part 15 Subpart C Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3.0202	75.32	PK	21.5	-41.65	55.17	-21.09	34.08	54	-19.92	74	-18.83	221	228	H
3.0202	72.25	PK	21.5	-41.65	52.1	-21.09	31.01	54	-22.99	74	-21.9	95	264	V

PK - Peak detector

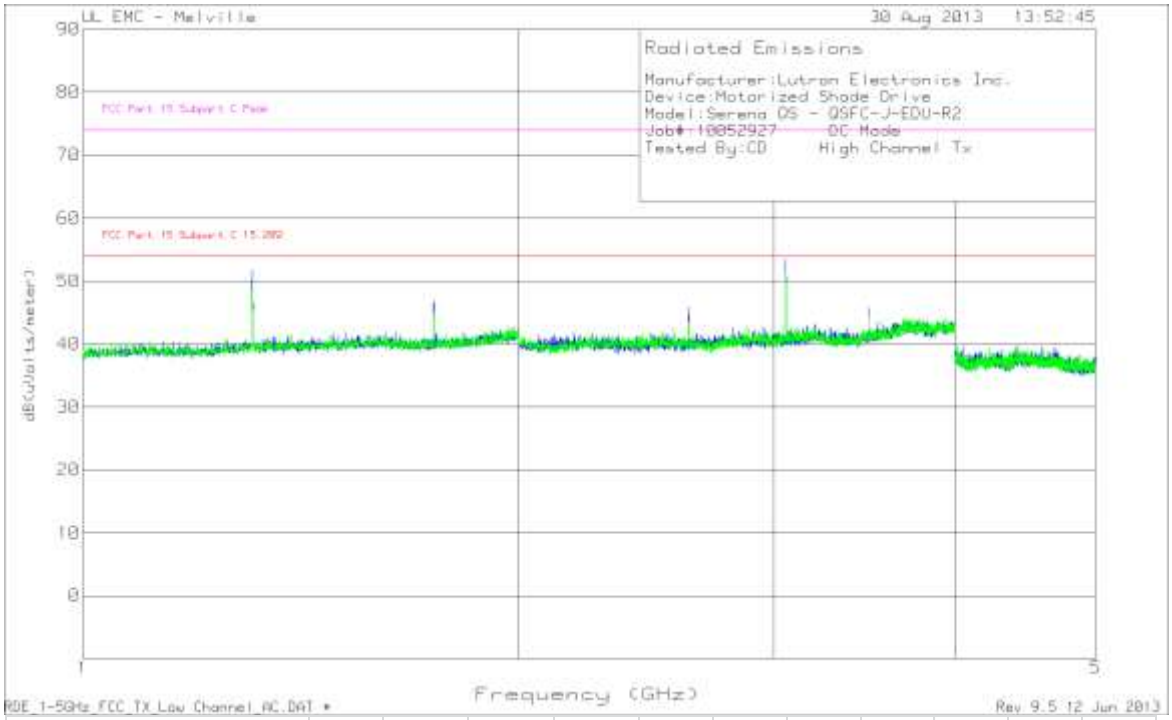
FUNDAMENTAL, HARMONICS AND TX SPURIOUS EMISSION (30 – 1000 MHz) – High Channel



Manufacturer:Lutron Electronics Inc.
Device:Motorized Shade Drive DC Version
Model:Serena QS - QSFC-J-EDU-R2
Job#:10052927 Tx - High Channel
Tested by:AA

Test Frequency (MHz)	Meter Reading (dBuV)	Detector	AF-44067 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	DCF (dB)	Corrected Average Reading (dBuV/m)	FCC Pt 15 Subpart C	Margin (dB)	FCC Pt 15.231	Margin (dB)	FCC Part 15 Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 200 - 1000MHz																
433.1	5.8	QP	16.2	1.5	23.5	-	-	46	-22.5	-	-	-	-	68	114	H
436.6375	76.94	PK	16.5	1.5	94.94	-21.09	73.85	-	-	80.9	-7.05	100.9	-5.96	63	226	H
438.9	-3.15	QP	16.6	1.4	14.85	-	-	46	-31.15	-	-	-	-	280	366	H
873.2	4.27	PK	22.6	2.1	28.97	-21.09	7.88	46	-17.03					48	353	H
Vertical 200 - 1000MHz																
434.3	-1.81	QP	16.3	1.4	15.89	-	-	46	-30.11	-	-	-	-	326	309	V
436.6358	71.84	PK	16.5	1.5	89.84	-21.09	68.75	-	-	80.9	-12.15	100.9	-11.06	90	241	V
PK - Peak detector																
QP - Quasi-Peak detector																

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz – High Channel



Manufacturer:Lutron Electronics Inc.
Device:Motorized Shade Drive
Model:Serena QS - QSFC-J-EDU-R2
Job#:10052927 DC Mode
Tested By:CD High Channel Tx

Test Frequency (GHz)	Meter Reading (dBuV)	Detector	AF-51442	BOMS Factor (dB)	Corrected Reading dB(uVolts/meter)	DCF (dB)	Corrected Average Reading (dBuV/m)	FCC Part 15 Subpart C 15.209	Margin (dB)	FCC Part 15 Subpart C Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1.3098	77.61	PK	20.5	-44.23	53.88	-21.09	32.79	54	-21.21	74	-20.12	43	143	H
1.3098	75.34	PK	20.5	-44.23	51.61	-21.09	30.52	54	-23.48	74	-22.39	49	299	V
1.7461	70.09	PK	20.8	-43.47	47.42	-21.09	26.33	54	-27.67	74	-26.58	92	278	V
1.7461	70.97	PK	20.8	-43.47	48.3	-21.09	27.21	54	-26.79	74	-25.7	118	281	H

Test Frequency (GHz)	Meter Reading (dBuV)	Detector	AF-48107	BOMS Factor (dB)	Corrected Reading dB(uVolts/meter)	DCF (dB)	Corrected Average Reading (dBuV/m)	FCC Part 15 Subpart C 15.209	Margin (dB)	FCC Part 15 Subpart C Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
3.056	75.4	PK	21.6	-41.67	55.33	-21.09	34.24	54	-19.76	74	-18.67	210	300	H
3.056	71.77	PK	21.6	-41.67	51.7	-21.09	30.61	54	-23.39	74	-22.3	340	271	V

PK - Peak detector

8.2. RX RADIATED SPURIOUS EMISSION

LIMITS

IC RSS-Gen Issue 2, section 7.2.3.2

All spurious emissions shall comply with the limits shown below:

Limits for radiated disturbance of Class B ITE at measuring distance of 3 m	
Frequency range (MHz)	Quasi-peak limits (dBµV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960 MHz	54
Note: The lower limit shall apply at the transition frequency.	

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to receive in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

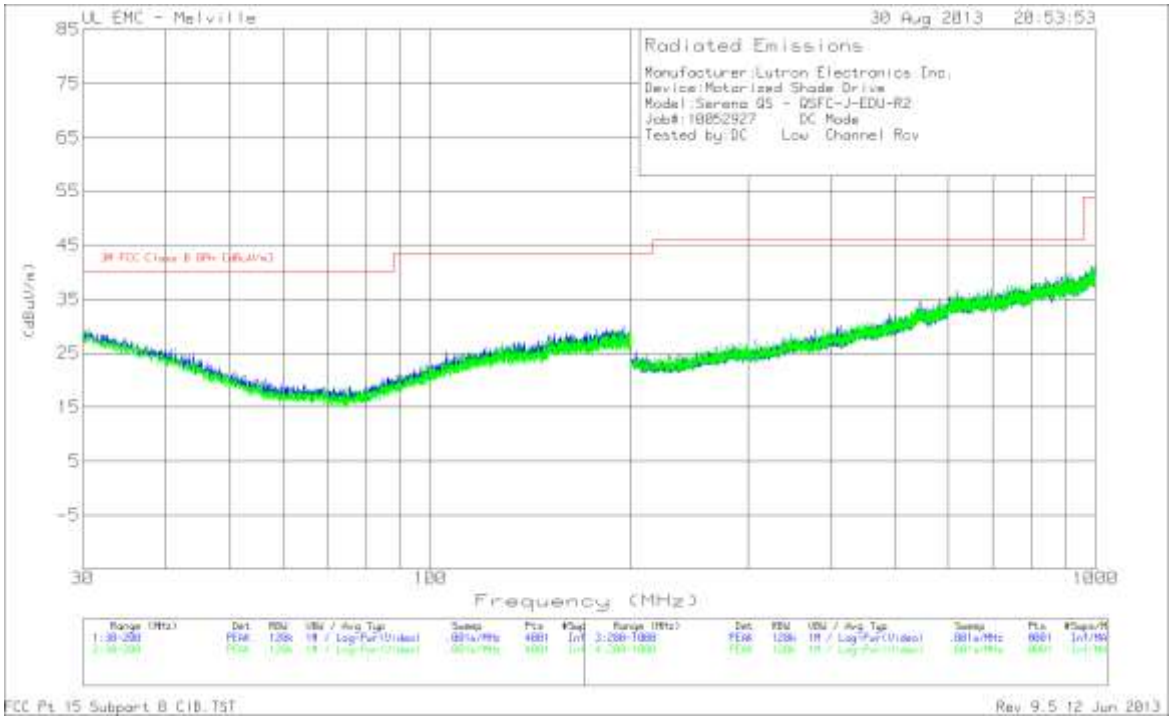
The spectrum from 30 MHz to 5th harmonic is investigated with the transmitter set to the middle channel.

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.

RESULTS

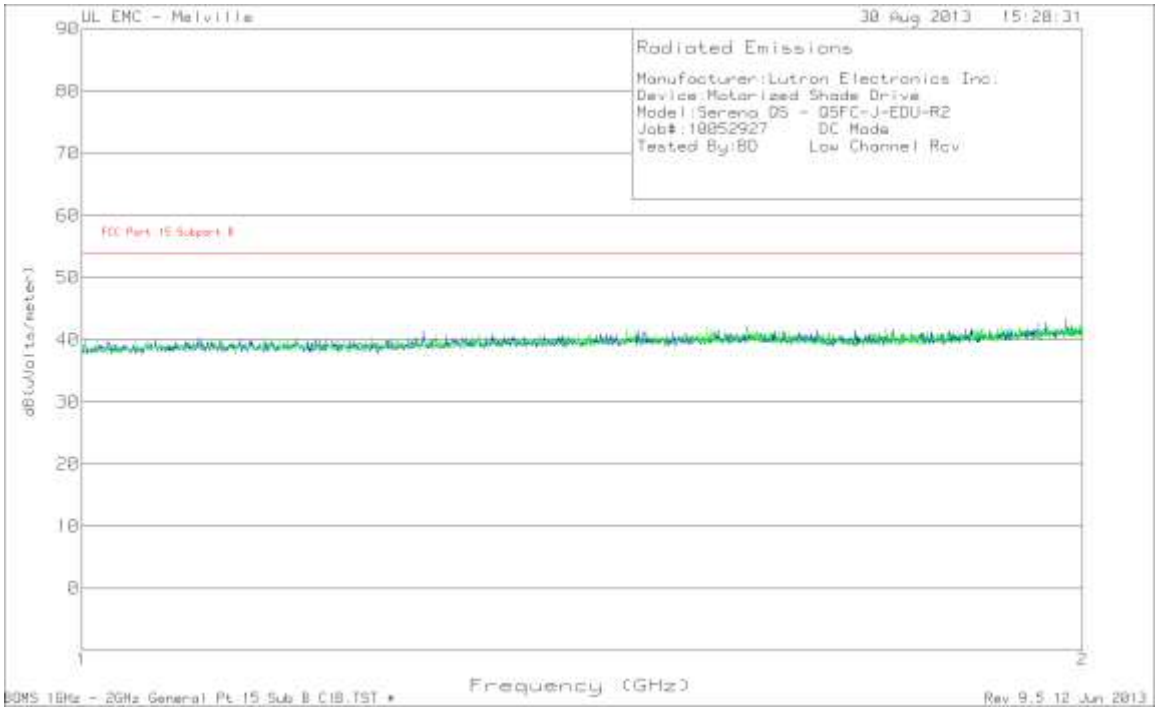
No non-compliance noted:

RECEIVER SPURIOUS EMISSION (30MHz - 1GHz) – Low Channel



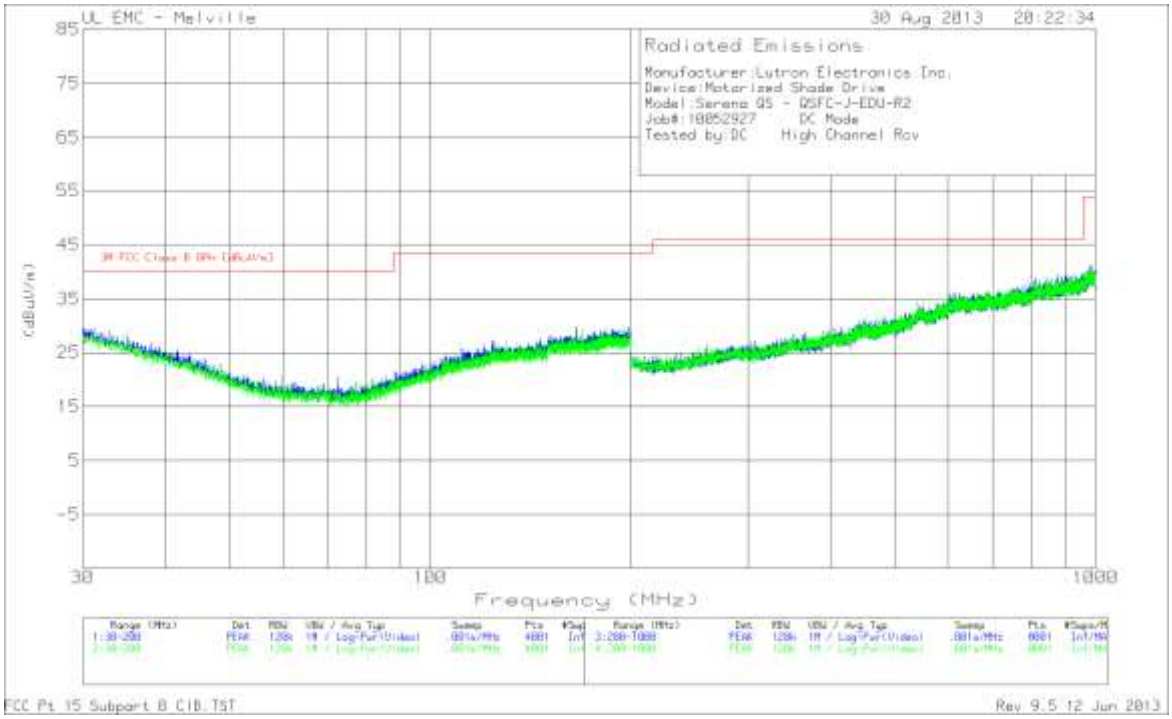
Manufacturer:Lutron Electronics Inc.										
Device:Motorized Shade Drive										
Model:Serena QS - QSFC-J-EDU-R2										
Job#:10052927 DC Mode										
Tested by:DC Low Channel Rcv										
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	AF-54 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	3M FCC Class B QPk [dBuV/m]	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
195.2825	13.78	PK	15.6	0.9	30.28	43.5	-13.22	0-360	399	H
128.515	12.43	PK	14.1	0.5	27.03	43.5	-16.47	0-360	100	V
Horizontal 200 - 1000MHz										
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	AF-44067 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	3M FCC Class B QPk [dBuV/m]	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
839.5	14.31	PK	22.5	2.2	39.01	46	-6.99	0-360	300	H
916.8	15.15	PK	22.6	2.1	39.85	46	-6.15	0-360	200	H
903.1	14.49	PK	23	2.3	39.79	46	-6.21	0-360	200	V
987	14.61	PK	24.4	2.3	41.31	54	-12.69	0-360	100	V
PK - Peak detector										

RECEIVER SPURIOUS EMISSION ABOVE 1GHz – Low Channel



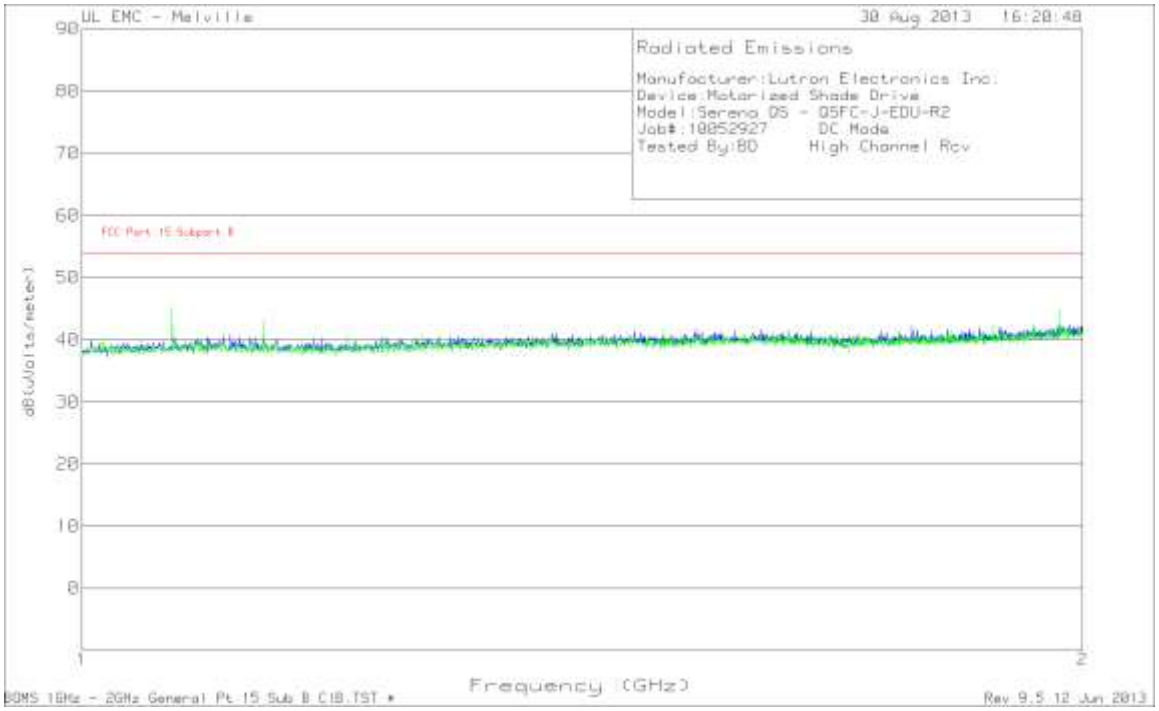
Manufacturer:Lutron Electronics Inc.										
Device:Motorized Shade Drive										
Model:Serena QS - QSFC-J-EDU-R2										
Job#:10052927 DC Mode										
Tested By:BD Low Channel Rcv										
Test Frequency (GHz)	Meter Reading(dBuV)	Detector	AF-51442	BOMS Factor (dB)	Corrected Reading dB(uVolts/ meter)	FCC Part 15 Subpart B	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1.067	64.18	PK	19.8	-44.36	39.62	54	-14.38	0-360	99	H
1.2715	63.57	PK	20.3	-44.15	39.72	54	-14.28	0-360	99	H
1.955	62.93	PK	21.9	-43.41	41.42	54	-12.58	0-360	200	H
1.0665	64.02	PK	19.8	-44.35	39.47	54	-14.53	0-360	200	V
1.4585	65	PK	20.8	-43.93	41.87	54	-12.13	0-360	99	V
1.9805	63.22	PK	22.1	-43.31	42.01	54	-11.99	0-360	99	V
PK - Peak detector										

RECEIVER SPURIOUS EMISSION (30MHz - 1GHz) – High Channel



Manufacturer:Lutron Electronics Inc.										
Device:Motorized Shade Drive										
Model:Serena QS - QSFC-J-EDU-R2										
Job#:10052927 DC Mode										
Tested by:DC High Channel Rcv										
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	AF-54 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	3M FCC Class B QPk [dBuV/m]	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
166.255	14.32	PK	14.8	0.7	29.82	43.5	-13.68	0-360	249	H
130.3425	12.82	PK	14.2	0.5	27.52	43.5	-15.98	0-360	100	V
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	AF-44067 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	3M FCC Class B QPk [dBuV/m]	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
810	14.47	PK	22.2	2.2	38.87	46	-7.13	0-360	300	H
877.6	14.81	PK	22.5	2.2	39.51	46	-6.49	0-360	200	H
845.5	14.35	PK	22.6	2.1	39.05	46	-6.95	0-360	400	V
978.7	13.82	PK	24.2	2.3	40.32	54	-13.68	0-360	200	V
PK - Peak detector										

RECEIVER SPURIOUS EMISSION ABOVE 1GHz – High Channel



Manufacturer:Lutron Electronics Inc.										
Device:Motorized Shade Drive										
Model:Serena QS - QSFC-J-EDU-R2										
Job#:10052927 DC Mode										
Tested By:BD High Channel Rcv										
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	AF-51442	BOMS Factor (dB)	Corrected Reading dB(uVolts /meter)	FCC Part 15 Subpart B	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1.067	64	PK	19.8	-44.36	39.44	54	-14.56	0-360	200	H
1.3755	63.62	PK	20.7	-44.09	40.23	54	-13.77	0-360	99	H
1.911	63.21	PK	21.7	-43.7	41.21	54	-12.79	0-360	200	H
1.0645	69.68	PK	19.8	-44.24	45.24	54	-8.76	0-360	99	V
1.134	67.67	PK	19.9	-44.46	43.11	54	-10.89	0-360	99	V
1.968	65.83	PK	22	-43.26	44.57	54	-9.43	0-360	99	V
PK - Peak detector										

9. SETUP PHOTOS

ANTENNA PORT

ANTENNA PORT

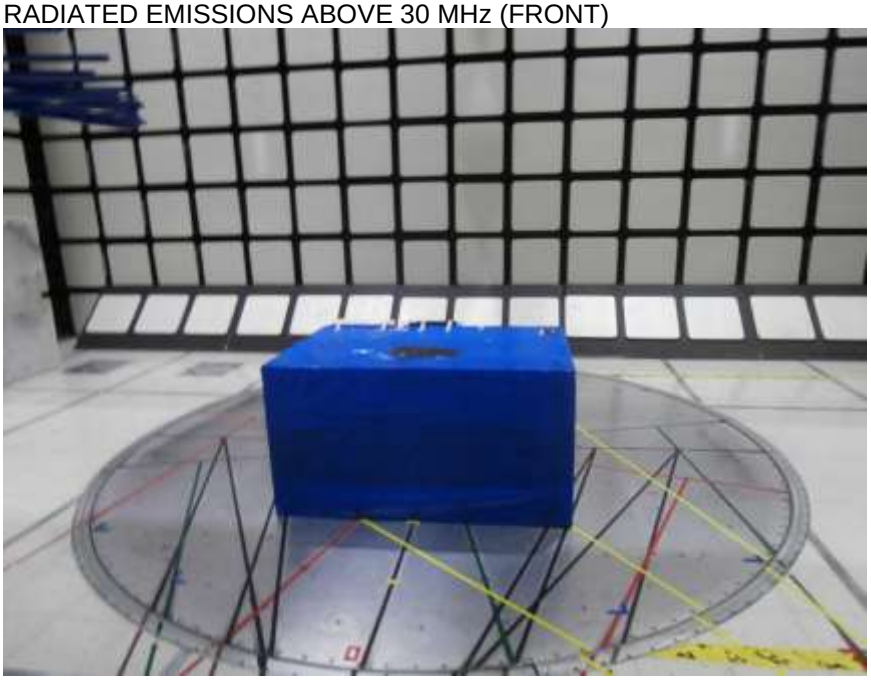
RADIATED EMISSION BELOW 30 MHz

RADIATED EMISSIONS BELOW 30MHz (FRONT)

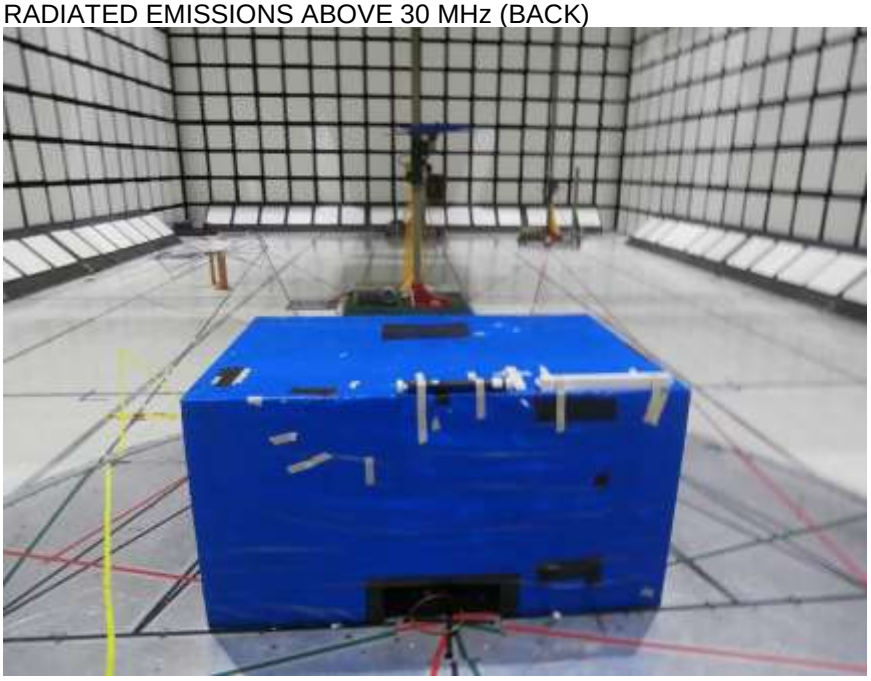
RADIATED EMISSIONS BELOW 30MHz (BACK)

RADIATED EMISSION ABOVE 30 MHz

RADIATED EMISSIONS ABOVE 30 MHz (FRONT)



RADIATED EMISSIONS ABOVE 30 MHz (BACK)



END OF REPORT