



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

CERTIFICATION TEST REPORT

FOR

CCO MODULE

MODEL NUMBER: LMJ-16RCC01-DV-B

**FCC ID: JPZ0096
IC: 2851A- JPZ0096**

REPORT NUMBER: 10012459

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Prepared for
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NVLAP LAB CODE 100255-0

Revision History

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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION	5
4. CALIBRATION AND UNCERTAINTY	5
4.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	<i>5</i>
4.2. <i>SAMPLE CALCULATION</i>	<i>5</i>
4.3. <i>MEASUREMENT UNCERTAINTY.....</i>	<i>5</i>
5. EQUIPMENT UNDER TEST	6
5.1. <i>DESCRIPTION OF EUT</i>	<i>6</i>
5.2. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	<i>6</i>
5.3. <i>SOFTWARE AND FIRMWARE.....</i>	<i>6</i>
5.4. <i>WORST-CASE CONFIGURATION AND MODE.....</i>	<i>6</i>
5.5. <i>MODIFICATIONS</i>	<i>6</i>
5.6. <i>DESCRIPTION OF TEST SETUP.....</i>	<i>7</i>
6. TEST AND MEASUREMENT EQUIPMENT	9
7. ANTENNA PORT TEST RESULTS	11
7.1. <i>20 dB AND 99% BW</i>	<i>11</i>
7.2. <i>DUTY CYCLE.....</i>	<i>15</i>
7.3. <i>TRANSMISSION TIME.....</i>	<i>19</i>
8. RADIATED EMISSION TEST RESULTS.....	21
8.1. <i>TX RADIATED SPURIOUS EMISSION</i>	<i>21</i>
8.2. <i>RX RADIATED SPURIOUS EMISSION.....</i>	<i>34</i>
9. AC MAINS LINE CONDUCTED EMISSIONS.....	39
10. SETUP PHOTOS	52

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Lutron Electronics Co Inc
7200 Suter Rd
Coopersburg, PA 18036 USA

EUT DESCRIPTION: CCO Module

MODEL: LMJ-16RCC01-DV-B

SERIAL NUMBER: Non-serialized production unit

DATE TESTED: 2013-06-03 through 2013-08-26

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:

Tested By:



Mike Antola
WiSE Project Lead
UL

Bob DeLisi
WiSE Principal Engineer
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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:

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

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 PowPak™ CCO Module is a low-voltage radio frequency (RF) control that provides a single dry contact closure output based on input from Pico® controls and Radio Powr Savr™ occupancy and daylight sensors. It is powered by 120Vac, 50Hz. Communication with RF input devices, such as Pico® controls and Radio Powr Savr™ sensors, is accomplished using Lutron Clear Connect® RF Technology.

The LMJ-16RCC01-DV-B testing represents the following model numbers:
LMJ-16R-DV-B, LMJ-16RCC01-DV-B, LMJ-5R-DV-B, LMJ-5RCC01-DV-B

The model differences are in the amount of current that can be handled by the device and devices with CC01 include a low voltage output where models without CC01 do not.

After testing was completed the manufacturer changed the model number to LMJ-16RCCO1-DV-B. Data in this report noted as RMJ-16RCCO1-DV-B represents the LMJ-16RCCO1-DV-B.

The EUT operates on frequencies between 431.6MHz and 436.6MHz

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral dipole antenna.

5.3. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was 0794667 version 1.44.

The test utility software used during testing was 0795001, rev. A.

5.4. WORST-CASE CONFIGURATION AND MODE

The CCO was tested at the high and low channels for transmit and receive modes of operation. For the transmit mode the worst case orientation was determined during preliminary investigations and it was determined the Z axis was the worst case axis. All radiated testing in transmit mode was tested in this orientation.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Not Applicable

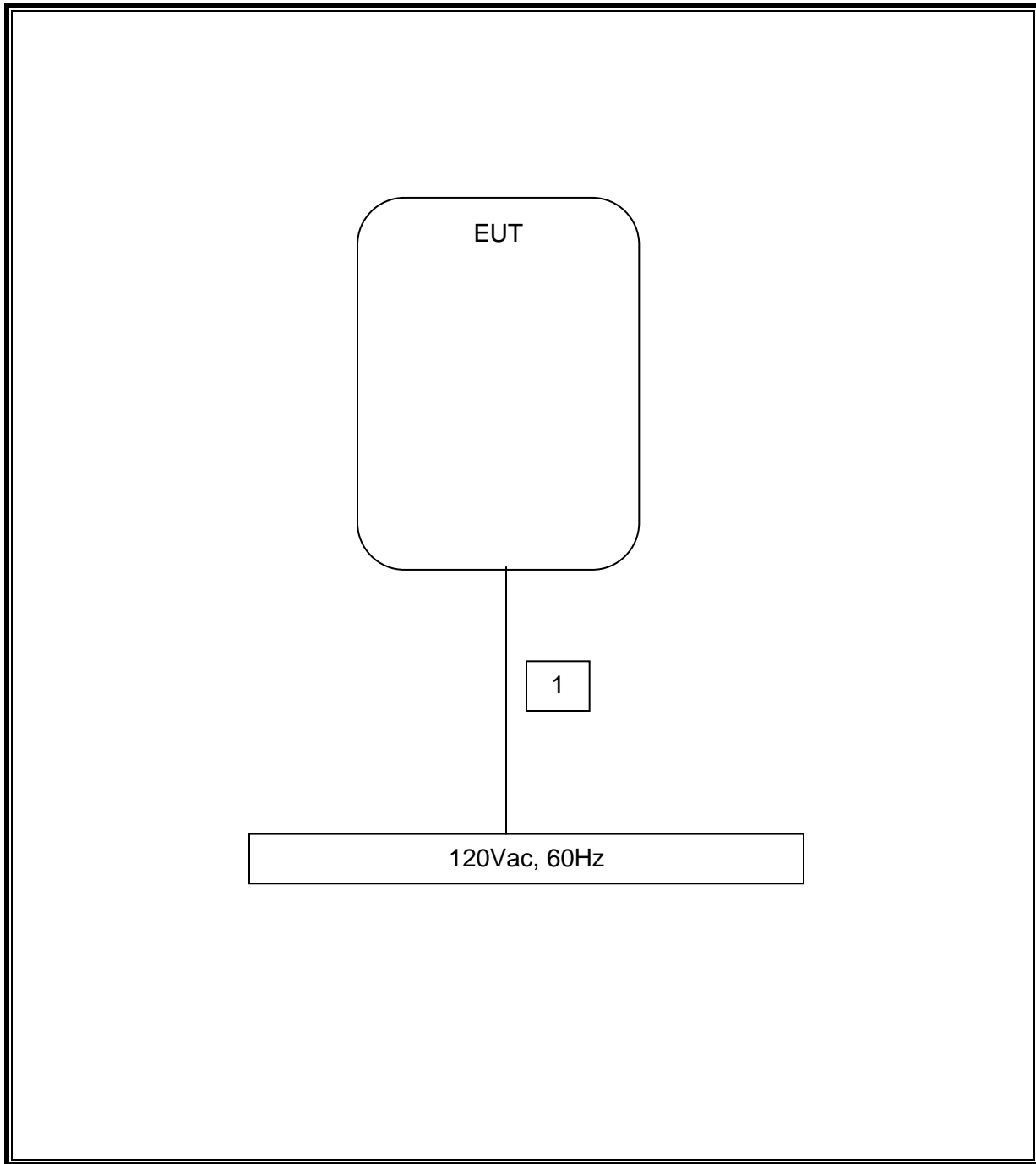
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	Hardwire	Unshielded	>3m	None

TEST SETUP

The EUT was tested as a standalone device.

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	ESCI 7	75141	2013-01-30	2014-01-31
Log-P Antenna	Schaffner	UPA6109	44068	2013-04-03	2014-04-03
Bicon Antenna	Schaffner	VBA6106A	54	2013-04-03	2014-04-03
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	2012-12-22	2014-12-22
Multimeter	Fluke	83III	ME5B-305	2013-01-29	2014-01-31
Above 1GHz (Band Optimized System)					
Spectrum Analyzer	Agilent	E4446A	72823	2013-01-29	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	83III	ME5B-305	2013-01-29	2014-01-31
<p>* - 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.</p> <p>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.</p> <p>** - Number in parentheses denotes antenna beam width.</p>					

Conducted Emissions					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
Conducted Emissions – GP 1					
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081	2013-01-29	2014-01-31
LISN	Solar	9252-50-R-24-BNC	ME5A-636	2013-02-01	2014-02-28
Switch Driver	HP	11713A	44397	N/A	N/A
RF Switch Box	UL	4	44404	N/A	N/A
Measurement Software	UL	Version 9.5	44736	N/A	N/A
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	43734	2012-03-12	2014-03-13
Multimeter	Fluke	87V	64386	2013-01-28	2014-01-31

Antenna Port					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
Conducted Emissions – GP 1					
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081	2013-01-29	2014-01-31
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	43734	2012-03-12	2014-03-13
Multimeter	Fluke	87V	64386	2013-01-28	2014-01-31
Dipole Antenna	EMCO	3121C	3359	2012-12-17	2013-12-27

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 30 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:

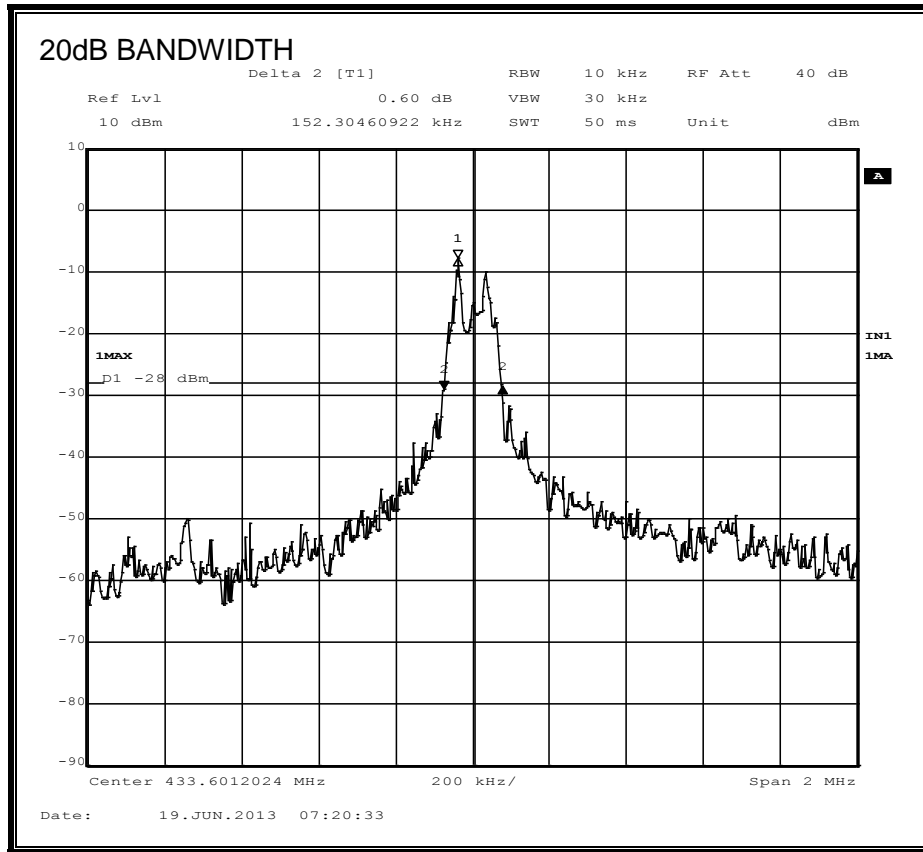
20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
433.6	152.3	1084	-931.7

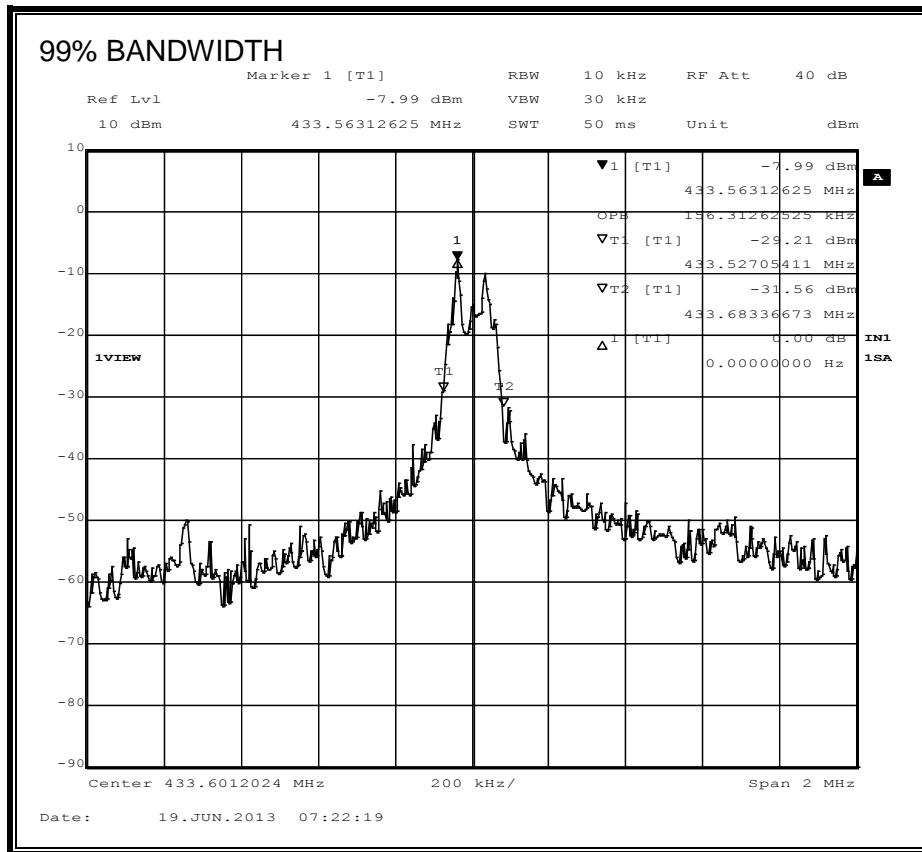
99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
433.6	156.3	1084	-927.7

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

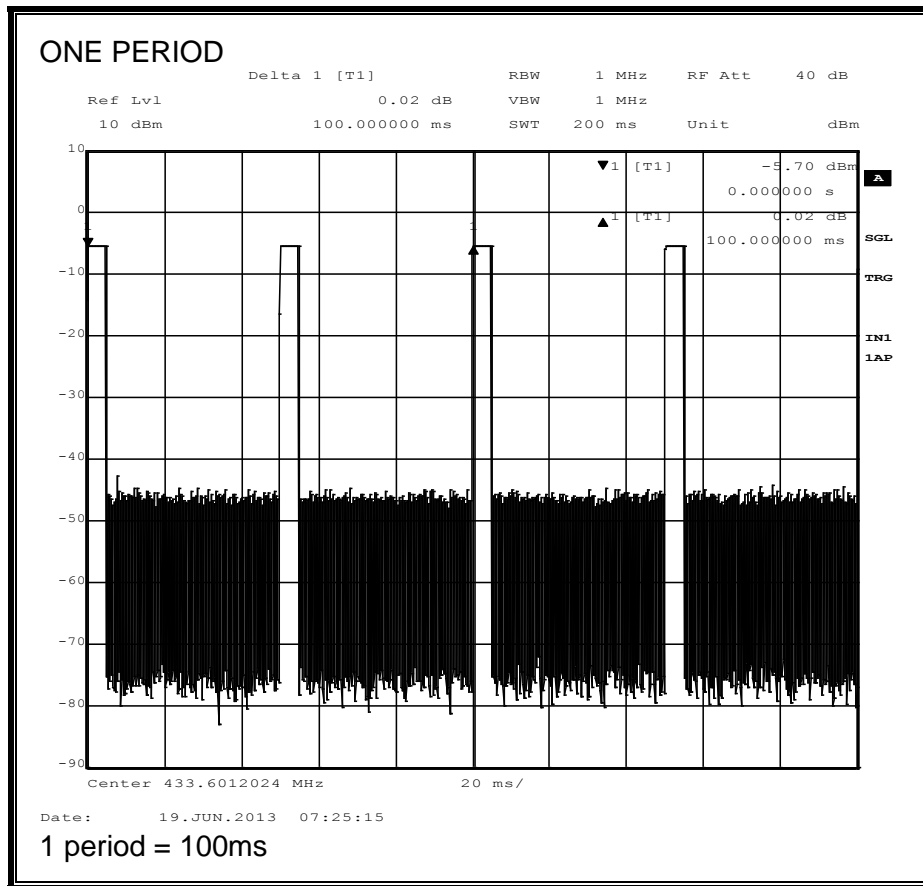
Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is (# of long pulses * long pulse width) + (# of short pulses * short pulse width) / 100 or T

RESULTS

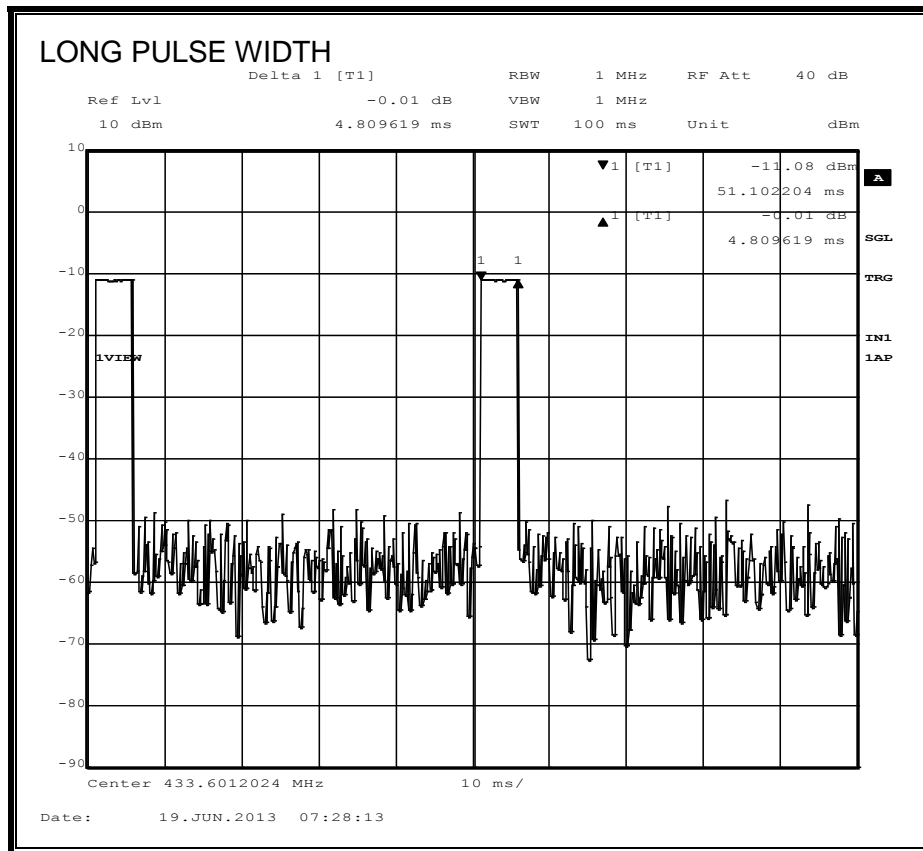
No non-compliance noted:

One Period (ms)	Long Pulse Width (ms)	# of Long Pulses	Short Width (ms)	# of Short Pulses	Duty Cycle	20*Log Duty Cycle (dB)
100	4.81	1	4.61	1	0.094	-20.52

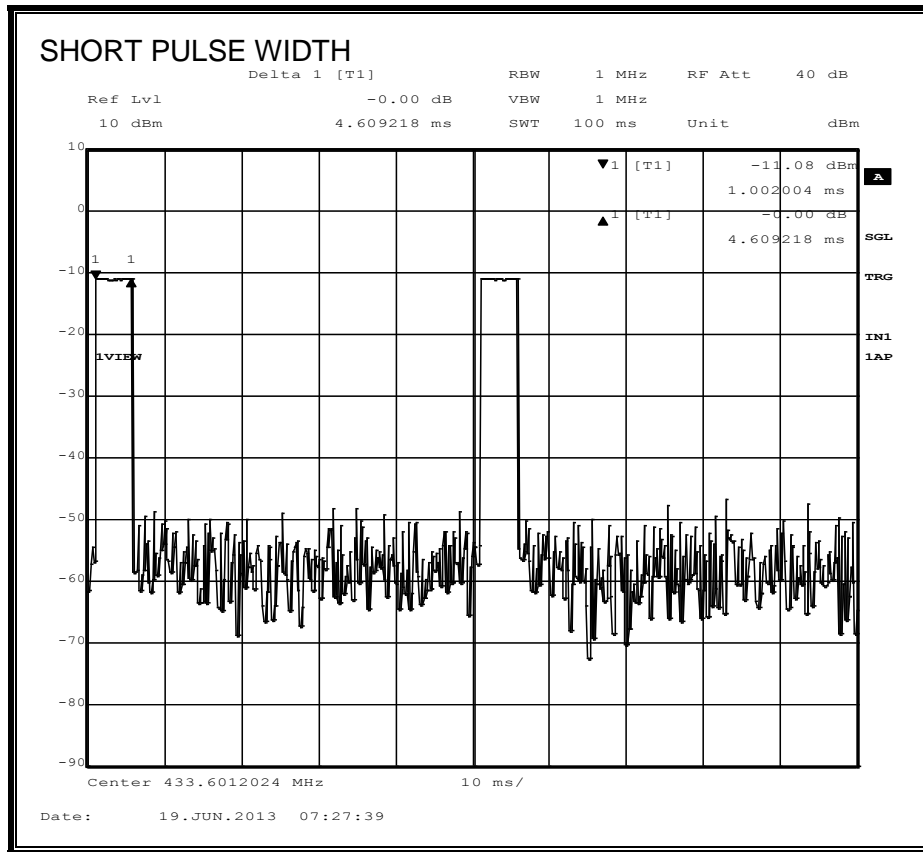
ONE PERIOD



LONG PULSE WIDTH



SHORT PULSE WIDTH



7.3. TRANSMISSION TIME

LIMITS

FCC §15.231 (a) (2)

IC A1.1.1 (b)

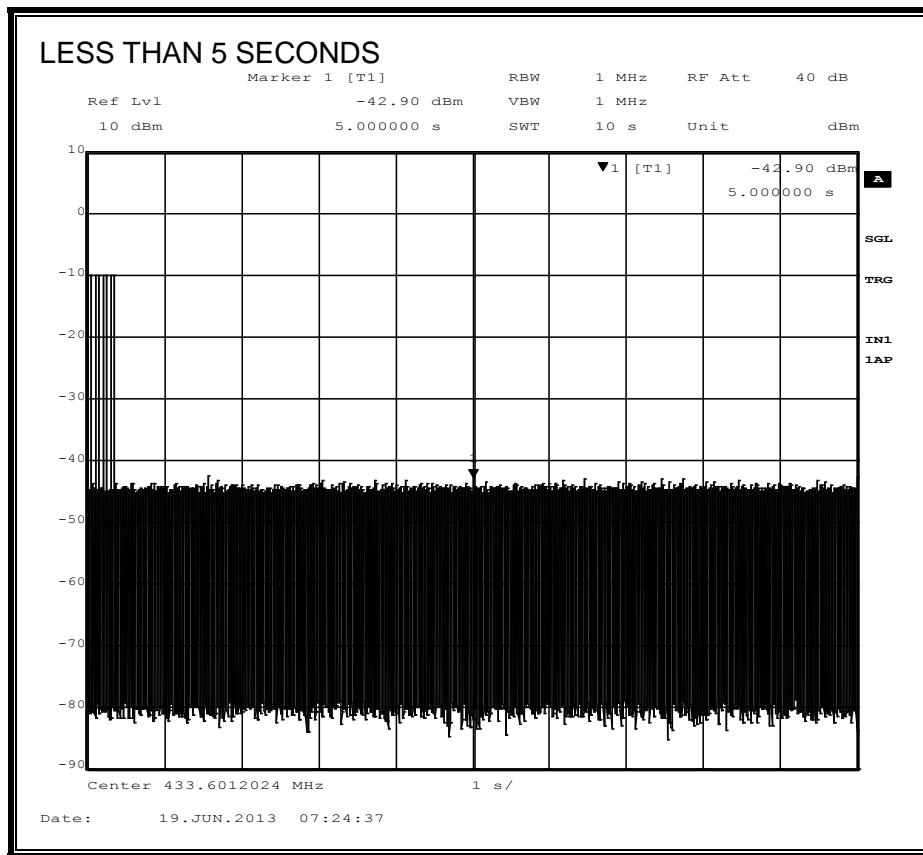
A transmitter activated automatically shall cease transmission within 5 seconds after activation.

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.

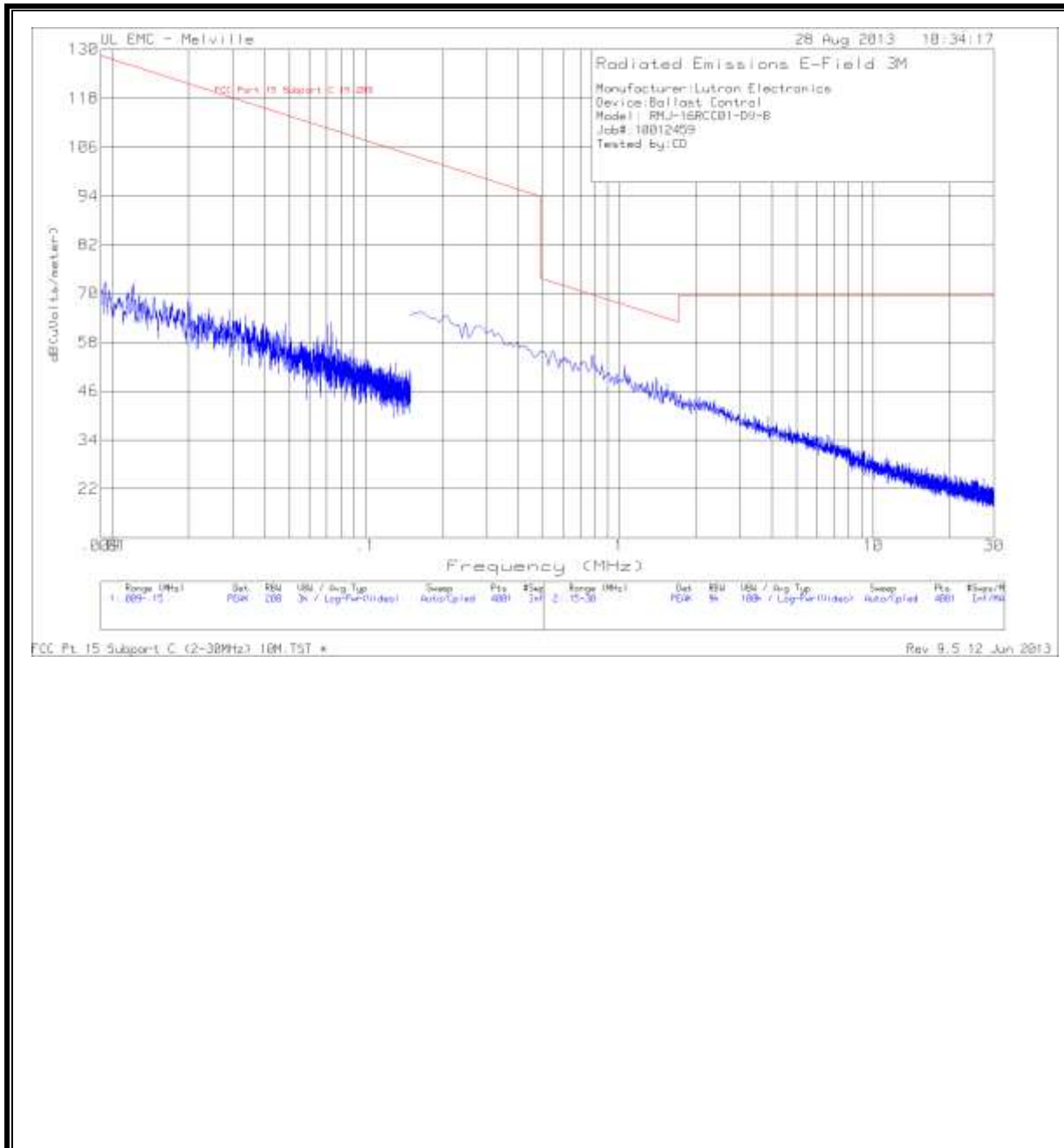
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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 (Below 30 MHz) – Worst Case

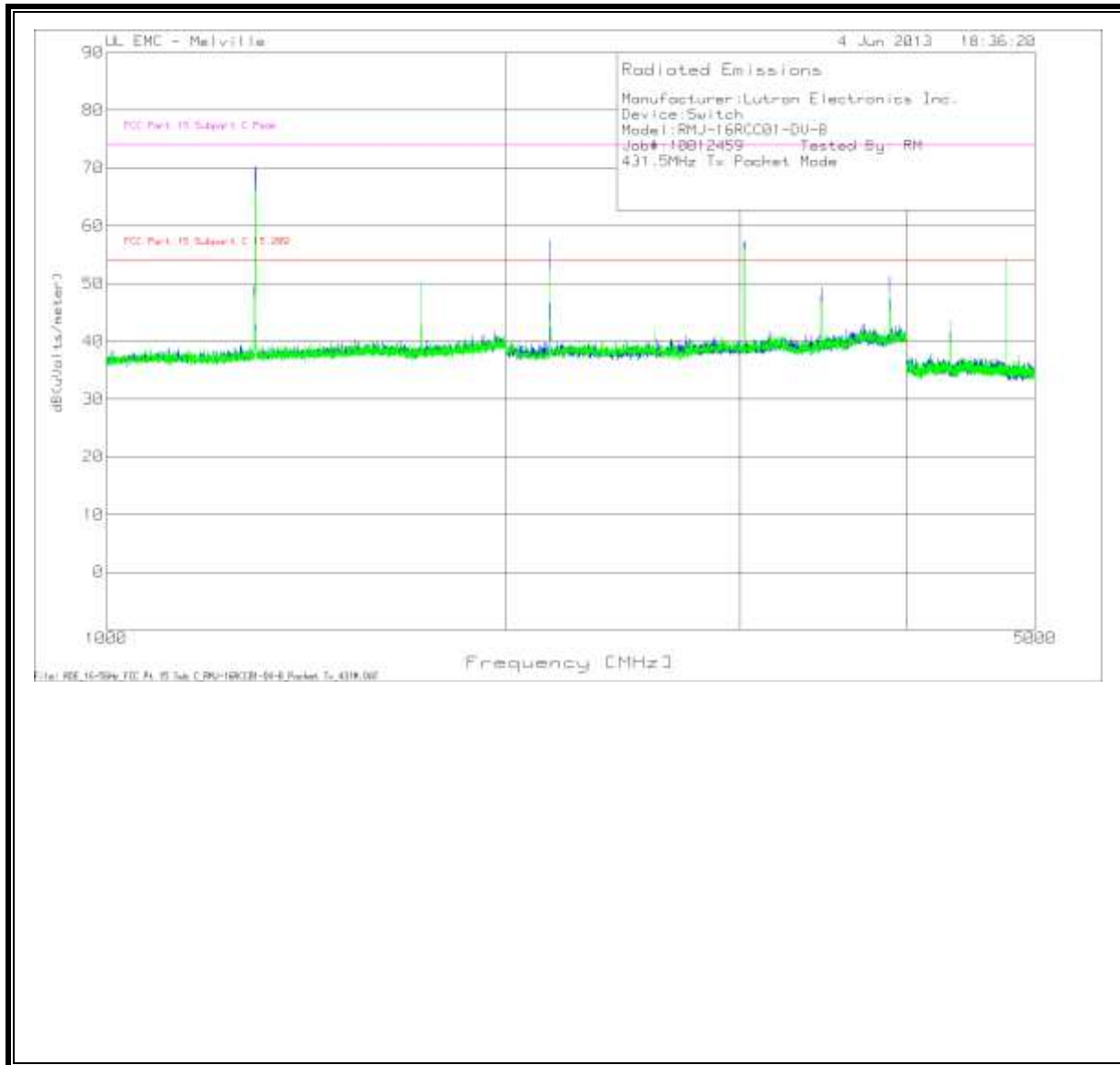


Frequency (MHz)	Meter Reading (dBuV)	Det	AF [dB/m]	GL [dB]	Corrected Reading dB(uVolts/meter)	FCC Part 15 Subpart C 15.209	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
.012102	43.8	PK	28.6	0	72.4	125.93	-53.53	0-360	100	V
.072662	45.57	PK	17.3	0	62.87	110.37	-47.5	0-360	100	V
.78431	38.81	PK	16.2	-.1	54.91	69.71	-14.8	0-360	100	V
1.0455	36.09	PK	16.4	-.1	52.39	67.22	-14.83	0-360	100	V
6.88864	16.79	PK	16.5	-.2	33.09	69.5	-36.41	0-360	100	V
24.96281	5.48	PK	16.8	-.5	21.78	69.5	-47.72	0-360	100	V

PK - Peak detector

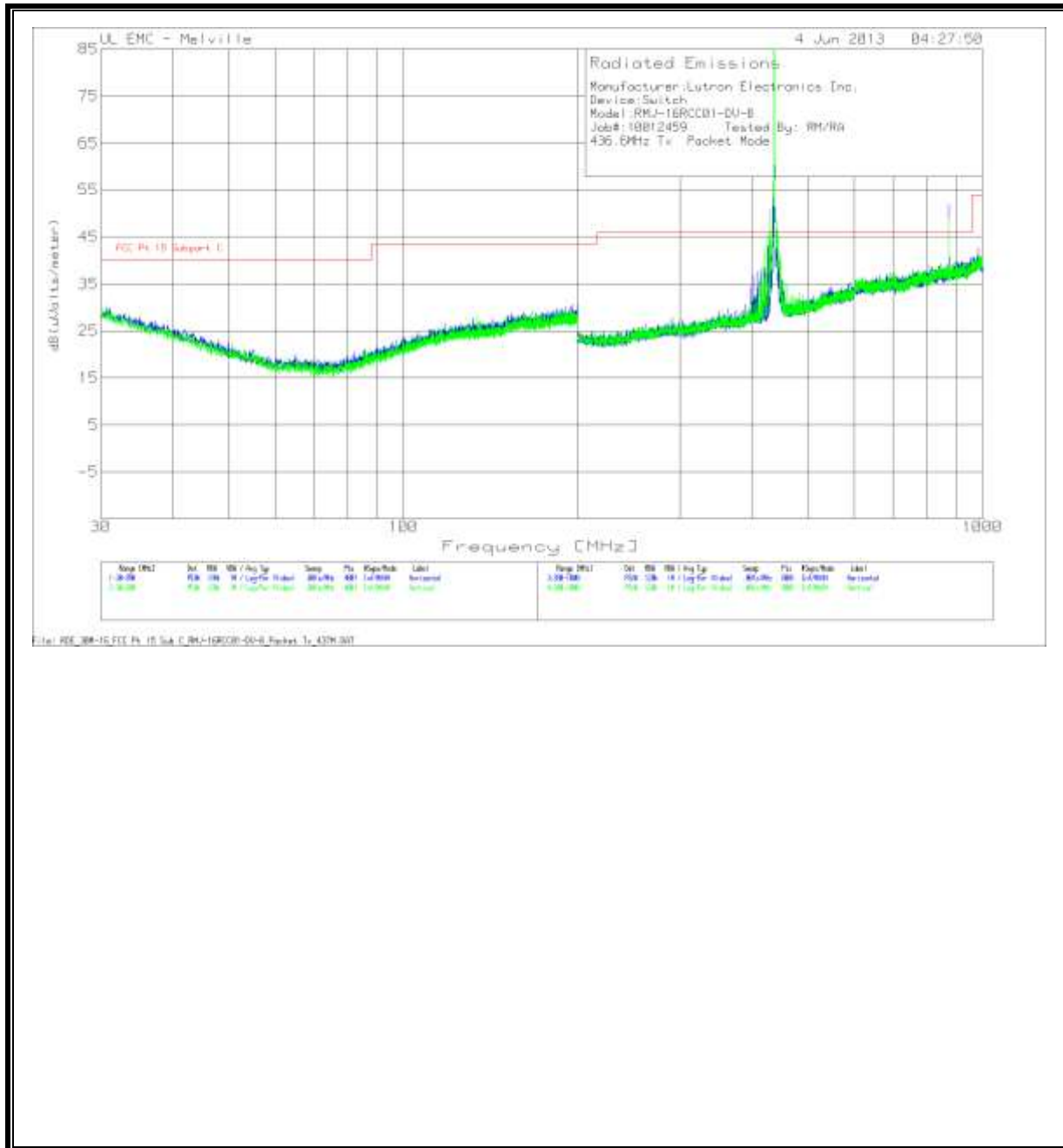
Manufacturer:Lutron Electronics Inc.																
Device:Switch																
Model:RMJ-16RCC01-DV-B																
Job#:10012459 Tested By: RM/RA																
431.5MHz Tx Packet Mode																
Test Frequency	Meter Reading	Detector	AF-44068 [dB/m]	GL-3M [dB]	dB(uVolts/meter)	DCF (dB)	Corrected Average (dBuV/m)	FCC Pt 15 Subpart C 15.231	Margin (dB)	FCC Pt 15 Subpart C 15.209	Margin (dB)	FCC Part 15 Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 200 - 1000MHz																
431.5036	77.47	PK	16.2	1.4	95.07	-20.52	74.55	80.7	-6.15	-	-	100.7	-5.63	34	218	Horz
863.0563	30.46	PK	22.1	2.3	54.86	-20.52	34.34	60.7	-26.36	-	-	80.7	-25.84	355	149	Horz
419.6	9.04	QP	15.7	1.4	26.14					46	-19.86			169	201	Horz
422.9	16.08	QP	15.8	1.4	33.28					46	-12.72			23	237	Horz
426.3	20.79	QP	15.9	1.4	38.09					46	-7.91			24	209	Horz
428.9	26.09	QP	16	1.5	43.59					46	-2.41			22	221	Horz
435.2	20.11	QP	16.4	1.4	37.91					46	-8.09			23	218	Horz
436.8	19.43	QP	16.5	1.5	37.43					46	-8.57			25	221	Horz
Vertical 200 - 1000MHz																
431.5394	71.54	PK	16.4	1.4	89.34	-20.52	68.82	80.7	-11.88	-	-	100.7	-11.36	6	132	Vert
862.9252	31.2	PK	22.5	2.3	56	-20.52	35.48	60.7	-25.22	-	-	80.7	-24.7	305	151	Vert
416.1	12.34	QP	15.8	1.3	29.44					46	-16.56			72	130	Vert
420	13.93	QP	16	1.4	31.33					46	-14.67			31	151	Vert
424.3	16.06	QP	16.1	1.4	33.56					46	-12.44			44	136	Vert
435.4	25.03	QP	16.5	1.4	42.93					46	-3.07			64	124	Vert
436.8	22.6	QP	16.5	1.5	40.6					46	-5.4			55	121	Vert
438.2	17.37	QP	16.6	1.5	35.47					46	-10.53			68	125	Vert
PK - Peak detector																
QP - Quasi-Peak detector																

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz – Low Channel



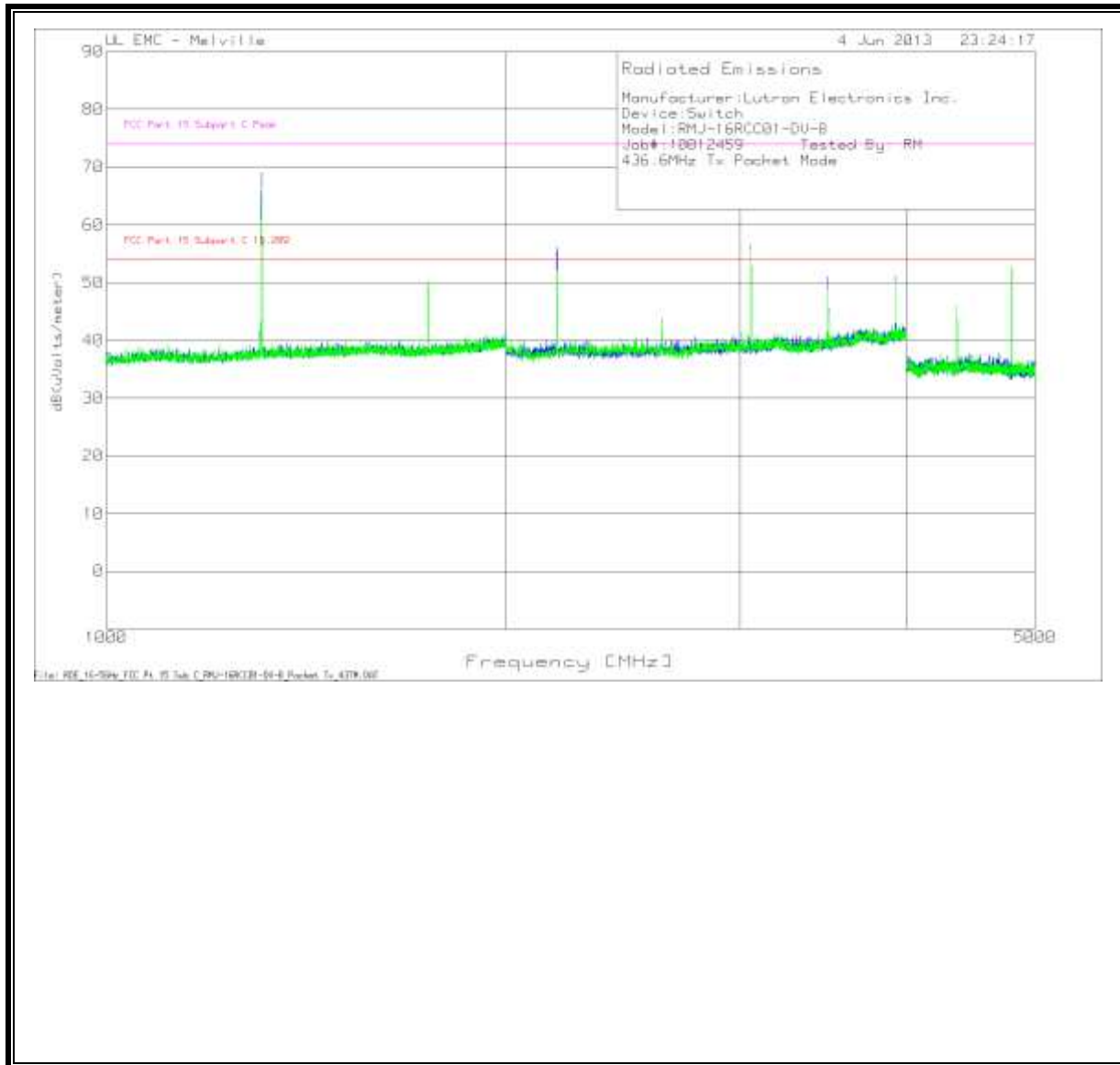
Manufacturer:Lutron Electronics Inc.														
Device:Switch														
Model:RMJ-16RCC01-DV-B														
Job#:10012459 Tested By: RM														
431.5MHz Tx Packet Mode														
Test	Meter	Detector	AF-51442	BOMS	dB(uVolts/		Corrected	FCC Part 15	Margin	FCC Part 15	Margin	Azimuth	Height	
Frequency	Reading			Factor [dB]	meter)	DCF (dB)	Average	Subpart C	(dB)	Subpart C	(dB)	[Degs]	[cm]	Polarity
							dBuV/m	15.209		Peak				
Horizontal 1000 - 2000MHz														
1294.5255	94.14	PK	20.5	-44.16	70.48	-20.52	49.96	54	-4.04	74	-3.52	10	159	Horz
1294.5255	91.43	PK	20.5	-44.16	67.77	-20.52	47.25	54	-6.75	74	-6.23	244	337	Vert
1726.085	70.35	PK	20.8	-43.83	47.32	-20.52	26.8	54	-27.2	74	-26.68	43	249	Horz
1726.085	73.7	PK	20.8	-43.83	50.67	-20.52	30.15	54	-23.85	74	-23.33	128	156	Vert
Horizontal 2000 - 4000MHz														
2157.6793	80.32	PK	21.4	-43.26	58.46	-20.52	37.94	54	-16.06	74	-15.54	4	391	Horz
2157.6793	75.13	PK	21.4	-43.26	53.27	-20.52	32.75	54	-21.25	74	-20.73	9	376	Vert
2589.0433	66.1	PK	21.3	-42.47	44.93	-20.52	24.41	54	-29.59	74	-29.07	339	220	Horz
2589.0433	66.05	PK	21.3	-42.47	44.88	-20.52	24.36	54	-29.64	74	-29.12	294	324	Vert
3020.7293	79.42	PK	21.5	-41.63	59.29	-20.52	38.77	54	-15.23	74	-14.71	260	397	Horz
3020.7293	75.91	PK	21.5	-41.63	55.78	-20.52	35.26	54	-18.74	74	-18.22	306	380	Vert
3452.0107	68.96	PK	22.2	-41.25	49.91	-20.52	29.39	54	-24.61	74	-24.09	19	177	Horz
3452.0107	67.3	PK	22.2	-41.25	48.25	-20.52	27.73	54	-26.27	74	-25.75	205	300	Vert
3883.4827	71.63	PK	22.6	-41.51	52.72	-20.52	32.2	54	-21.8	74	-21.28	49	370	Horz
3883.4827	70.33	PK	22.6	-41.51	51.42	-20.52	30.9	54	-23.1	74	-22.58	195	268	Vert
Horizontal 4000 - 5000MHz														
4315.201	68.68	PK	27.7	-51.37	45.01	-20.52	24.49	54	-29.51	74	-28.99	51	191	Horz
4315.201	69.26	PK	27.7	-51.37	45.59	-20.52	25.07	54	-28.93	74	-28.41	94	298	Vert
4746.576	78.82	PK	27.2	-52	54.02	-20.52	33.5	54	-20.5	74	-19.98	75	345	Horz
4746.576	78.27	PK	27.2	-52	53.47	-20.52	32.95	54	-21.05	74	-20.53	171	394	Vert
PK - Peak detector														

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



Manufacturer:Lutron Electronics Inc.																
Device:Switch																
Model:RMJ-16RCC01-DV-B																
Job#:10012459 Tested By: RM/RA																
436.6MHz Tx Packet Mode																
Test Frequency	Meter Reading	Detector	AF-44068 [dB/m]	GL-3M [dB]	dB(uVolts/meter)	DCF (dB)	Corrected Average (dBuV/m)	FCC Pt 15 Subpart C 15.231	Margin (dB)	FCC Pt 15 Subpart C 15.209	Margin (dB)	FCC Part 15 Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 200 - 1000MHz																
436.635	76.62	PK	16.5	1.5	94.62	-20.52	74.1	80.9	-6.8	46	48.82	100.9	-6.28	49	178	Horz
873.2799	32.4	PK	22.8	2.1	57.3	-20.52	36.78	60.9	-24.12	46	11.3	80.9	-23.6	3	156	Horz
425.8	7.47	QP	15.8	1.4	24.67	-	-	-	-	46	-21.33	-	-	38	201	Horz
427.3	14.09	QP	15.9	1.5	31.49	-	-	-	-	46	-14.51	-	-	30	208	Horz
431.4	19.95	QP	16.2	1.4	37.55	-	-	-	-	46	-8.45	-	-	23	212	Horz
439.5	19.25	QP	16.7	1.4	37.35	-	-	-	-	46	-8.65	-	-	26	210	Horz
442.2	16.61	QP	16.8	1.6	35.01	-	-	-	-	46	-10.99	-	-	26	213	Horz
Vertical 200 - 1000MHz																
431.5394	71.54	PK	16.4	1.4	89.34	-20.52	68.82	80.9	-12.08	46	51.42	100.9	-11.56	329	165	Vert
873.2715	33.95	PK	22.5	2.1	58.55	-20.52	38.03	60.9	-22.87	46	12.55	80.9	-22.35	187	151	Vert
419.6	8.25	QP	16	1.4	25.65	-	-	-	-	46	-20.35	-	-	38	135	Vert
424.3	15.44	QP	16.1	1.4	32.94	-	-	-	-	46	-13.06	-	-	44	130	Vert
427.9	19.32	QP	16.3	1.5	37.12	-	-	-	-	46	-8.88	-	-	48	133	Vert
430	17.63	QP	16.4	1.4	35.43	-	-	-	-	46	-10.57	-	-	42	133	Vert
439.6	22.62	QP	16.6	1.5	40.72	-	-	-	-	46	-5.28	-	-	58	119	Vert
442.2	19.34	QP	16.7	1.6	37.64	-	-	-	-	46	-8.36	-	-	44	115	Vert
444.6	18.38	QP	16.8	1.4	36.58	-	-	-	-	46	-9.42	-	-	52	120	Vert
447.6	14.18	QP	16.8	1.6	32.58	-	-	-	-	46	-13.42	-	-	51	124	Vert
PK - Peak detector																
QP - Quasi-Peak detector																

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz – High Channel



Manufacturer:Lutron Electronics Inc.														
Device:Switch														
Model:RMI-16RCC01-DV-B														
Job#:10012459 Tested By: RM														
436.6MHz Tx Packet Mode														
Test	Meter	Detector	AF-51442	BOMS Factor [dB]	dB(uVolts/meter)	DCF (dB)	Corrected Average dBuV/m	FCC Part 15 Subpart C 15.209	Margin (dB)	FCC Part 15 Subpart C Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 1000 - 2000MHz														
1309.826	91.98	PK	20.5	-44.23	68.25	-20.52	47.73	54	-6.27	74	-5.75	13	392	Horz
1309.826	90.84	PK	20.5	-44.23	67.11	-20.52	46.59	54	-7.41	74	-6.89	357	355	Vert
1746.378	71.18	PK	20.8	-43.46	48.52	-20.52	28	54	-26	74	-25.48	156	314	Horz
1746.378	74.38	PK	20.8	-43.46	51.72	-20.52	31.2	54	-22.8	74	-22.28	21	161	Vert
Horizontal 2000 - 4000MHz														
2183.1007	80.85	PK	21.4	-43.13	59.12	-20.52	38.6	54	-15.4	74	-14.88	17	383	Horz
2183.1007	76.91	PK	21.4	-43.13	55.18	-20.52	34.66	54	-19.34	74	-18.82	357	128	Vert
2619.6113	66.97	PK	21.4	-42.65	45.72	-20.52	25.2	54	-28.8	74	-28.28	350	208	Horz
2619.6113	66.3	PK	21.4	-42.65	45.05	-20.52	24.53	54	-29.47	74	-28.95	320	336	Vert
3056.2147	77.93	PK	21.6	-41.65	57.88	-20.52	37.36	54	-16.64	74	-16.12	269	321	Horz
3056.2147	77.17	PK	21.6	-41.65	57.12	-20.52	36.6	54	-17.4	74	-16.88	208	218	Vert
3492.752	72.02	PK	22.2	-41.46	52.76	-20.52	32.24	54	-21.76	74	-21.24	322	285	Horz
3492.752	70.22	PK	22.2	-41.46	50.96	-20.52	30.44	54	-23.56	74	-23.04	291	284	Vert
3929.3253	70.85	PK	22.7	-41.47	52.08	-20.52	31.56	54	-22.44	74	-21.92	47	235	Horz
3929.3253	70.71	PK	22.7	-41.47	51.94	-20.52	31.42	54	-22.58	74	-22.06	160	379	Vert
Horizontal 4000 - 5000MHz														
4365.92	71.64	PK	27.6	-51.54	47.7	-20.52	27.18	54	-26.82	74	-26.3	147	275	Horz
4365.92	68.68	PK	27.6	-51.54	44.74	-20.52	24.22	54	-29.78	74	-29.26	85	144	Vert
4802.6845	72.74	PK	27.1	-52.25	47.59	-20.52	27.07	54	-26.93	74	-26.41	64	310	Horz
4802.6845	76.96	PK	27.1	-52.25	51.81	-20.52	31.29	54	-22.71	74	-22.19	8	184	Vert
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 (dB μ V/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.

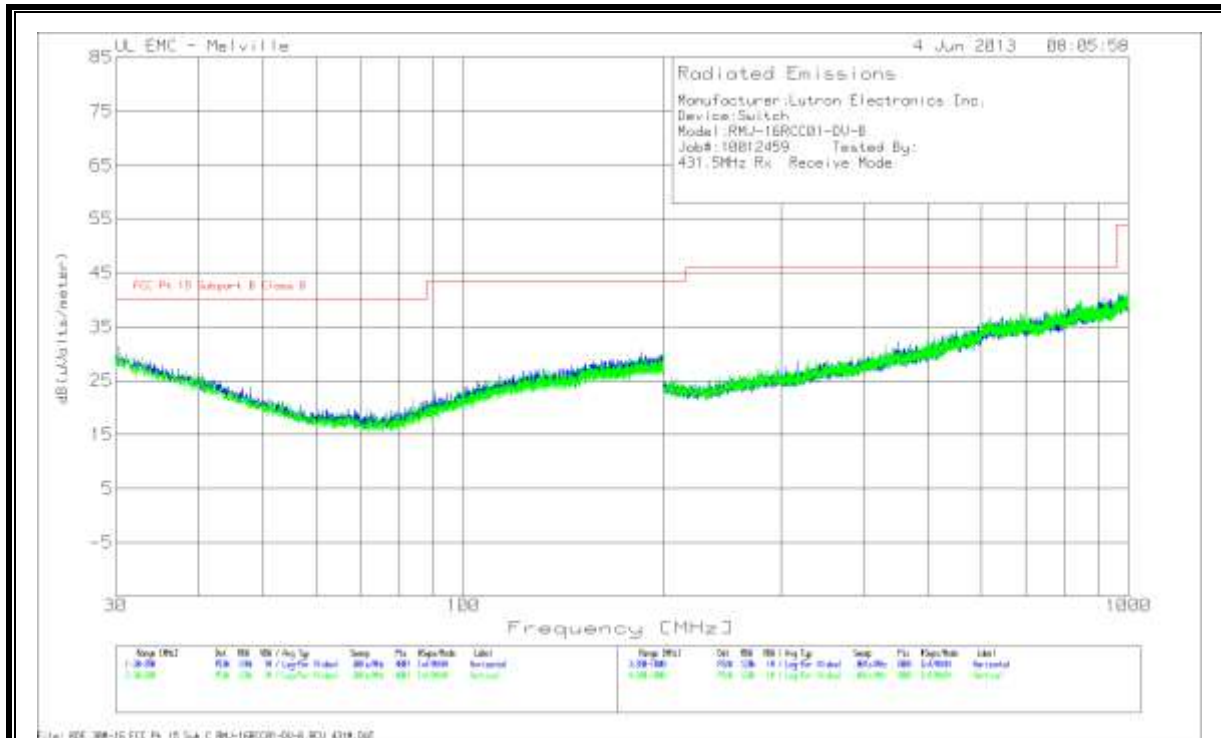
The spectrum from 30 MHz to 5th harmonic is investigated with the transmitter set to the middle channel.

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

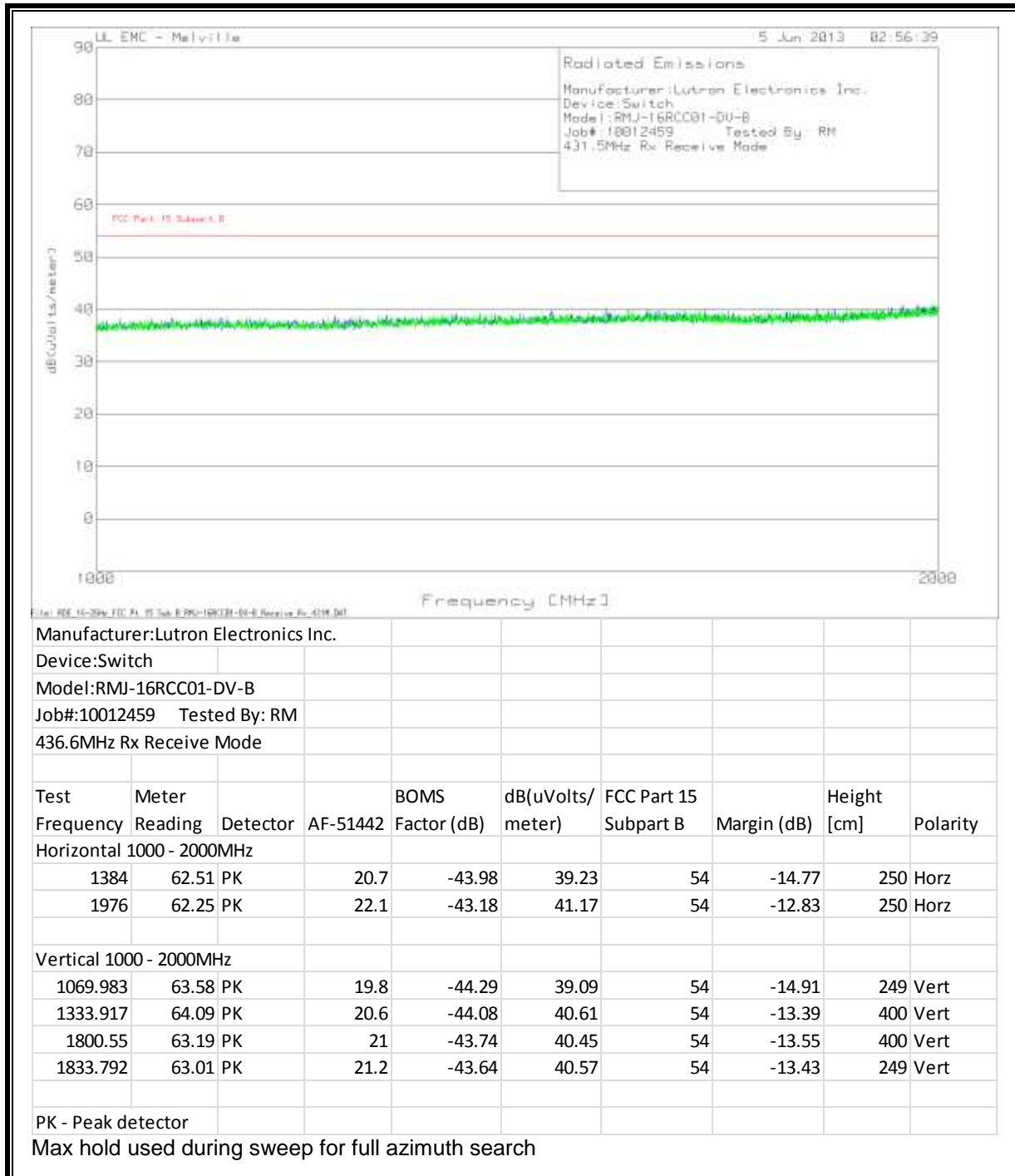


Manufacturer: Lutron Electronics Inc.
 Device: Switch
 Model: RMJ-16RCC01-DV-B
 Job#: 10012459 Tested By:
 431.5MHz Rx Receive Mode

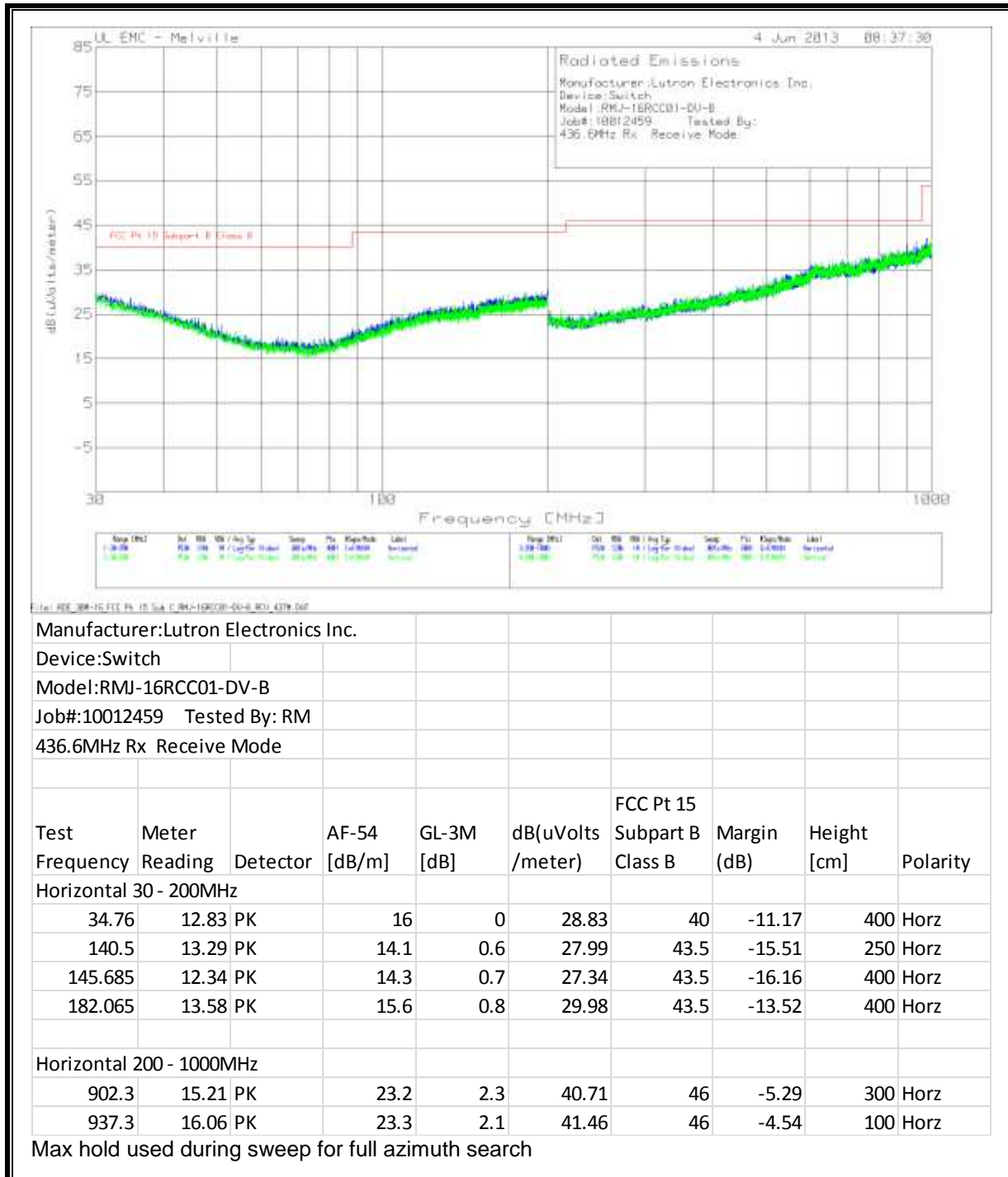
Test Frequency	Meter Reading	Detector	AF-54 [dB/m]	GL-3M [dB]	dB(uVolts/meter)	FCC Pt 15 Subpart B Class B	Margin (dB)	Height [cm]	Polarity
30.34	13.67	PK	17.6	0	31.27	40	-8.73	98	Horz
36.4175	12.13	PK	15.2	0	27.33	40	-12.67	98	Horz
184.955	13.93	PK	15.7	0.7	30.33	43.5	-13.17	249	Horz
318.8	13.96	PK	13.5	1.3	28.76	46	-17.24	200	Horz
449.4	13.75	PK	16.9	1.5	32.15	46	-13.85	200	Horz
844.5	14.82	PK	22.8	2.1	39.72	46	-6.28	400	Horz

PK - Peak detector
 Max hold used during sweep for full azimuth search

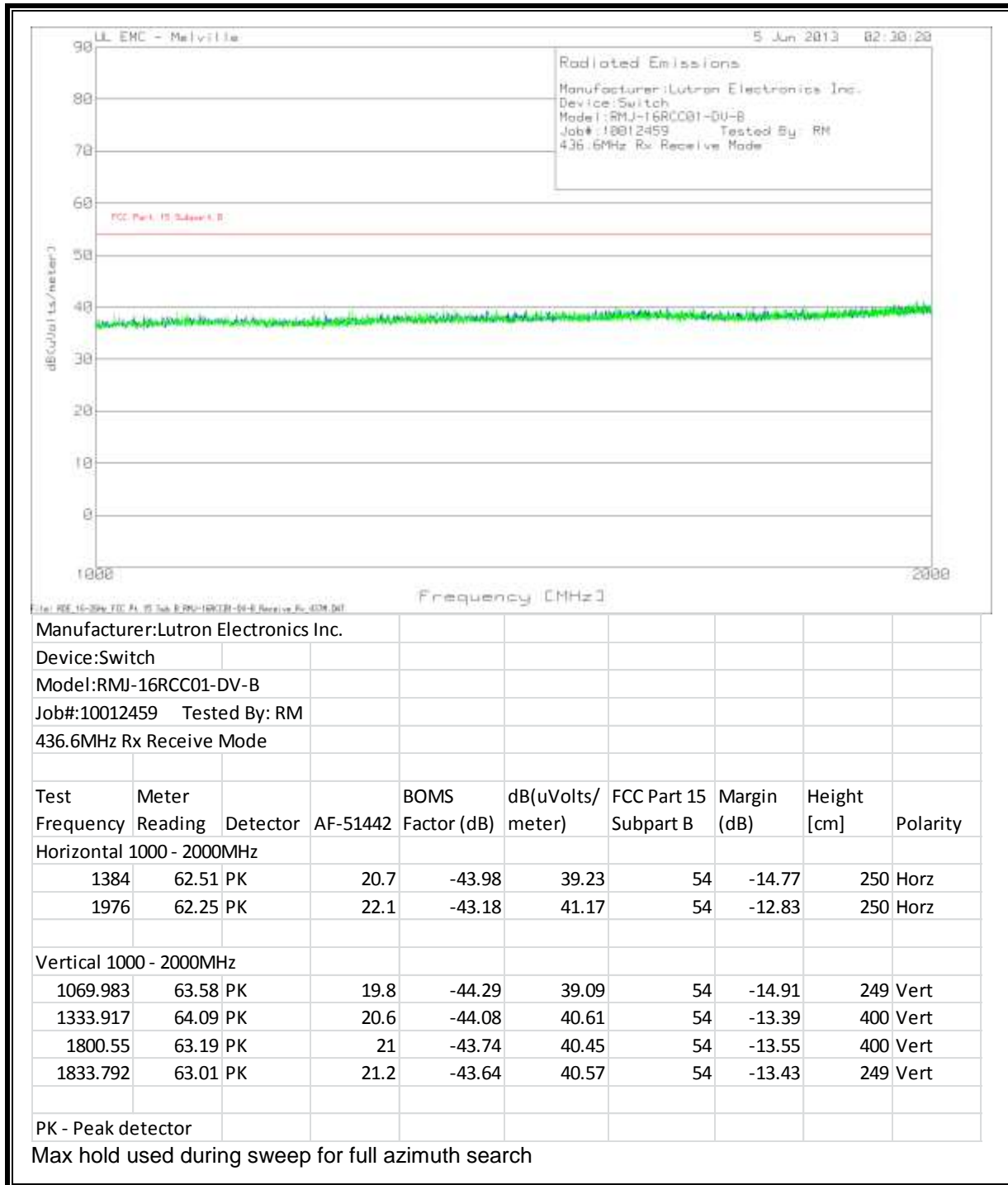
RECEIVER SPURIOUS EMISSION ABOVE 1GHz – Low Channel



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



RECEIVER SPURIOUS EMISSION ABOVE 1GHz – High Channel



9. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207 (a)
IC RSS-GEN, Section 7.2.2

Frequency of emission (MHz)	Conducted Limit (dB μ V)	
	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 C63.4

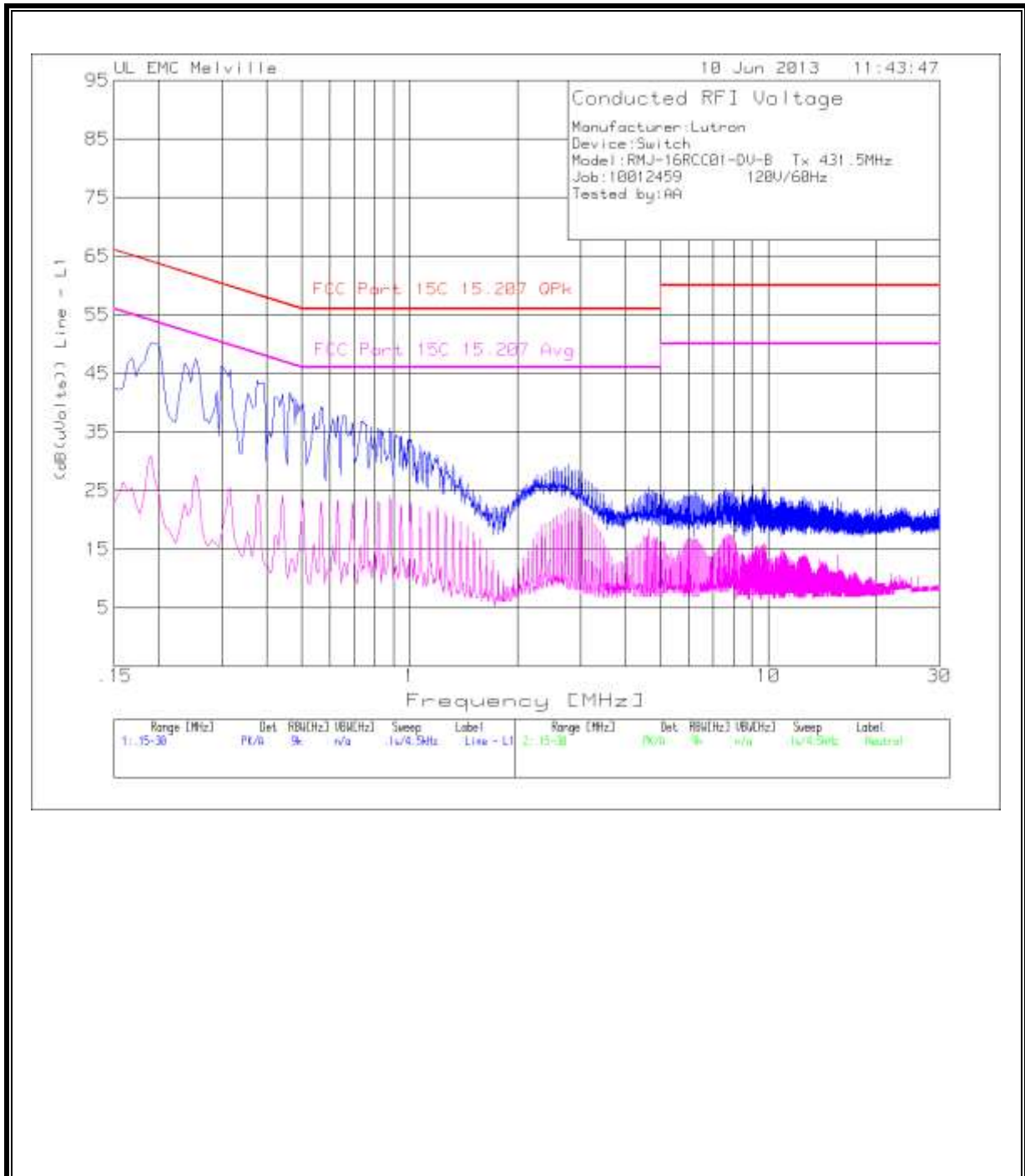
RESULTS

No non-compliance noted:

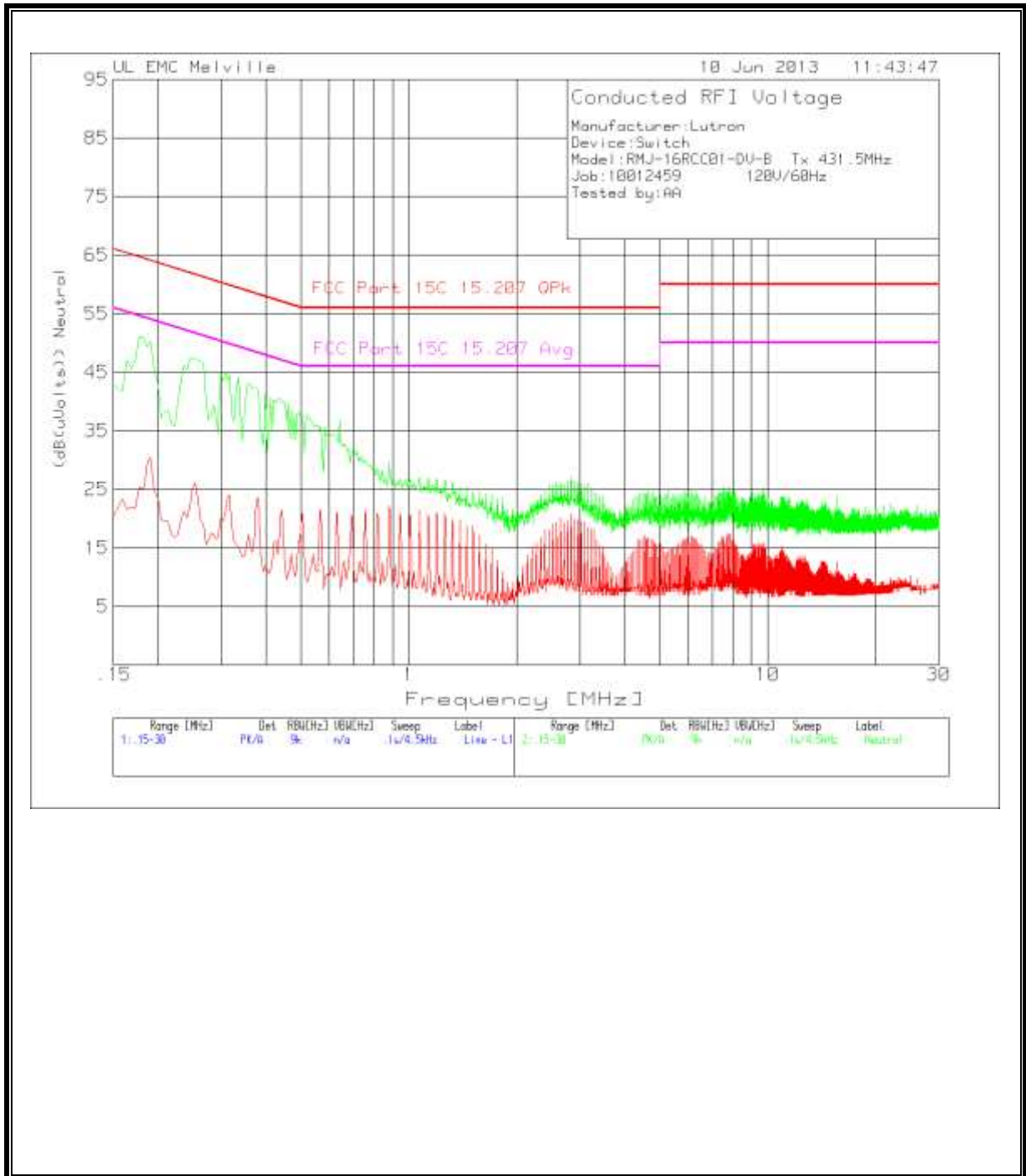
6 WORST EMISSIONS – Tx Low Channel

Manufacturer:Lutron									
Device:Switch									
Model:RMJ-16RCC01-DV-B Tx 431.5MHz									
Job:10012459 120V/60Hz									
Tested by:AA									
Test	Meter		5A636 L1		FCC Part 15C		FCC Part 15C		
Frequency	Reading	Detector	(dB)	(dB(uVolts))	15.207 QPk	Margin	15.207 Avg	Margin	
Line - L1 .15 - 30MHz									
0.1905	40.28	PK	10	50.28	64	-13.72	-	-	
0.2535	37.46	PK	10	47.46	61.6	-14.14	-	-	
0.2985	36.21	PK	10	46.21	60.3	-14.09	-	-	
0.375	33.78	PK	10	43.78	58.4	-14.62	-	-	
0.46275	31.59	PK	10	41.59	56.6	-15.01	-	-	
0.564	29.28	PK	10	39.28	56	-16.72	-	-	
0.1905	20.92	Av	10	30.92	-	-	54	-23.08	
0.2535	17.53	Av	10	27.53	-	-	51.6	-24.07	
0.2985	7.1	Av	10	17.1	-	-	50.3	-33.2	
0.375	14.36	Av	10	24.36	-	-	48.4	-24.04	
0.46275	3.07	Av	10	13.07	-	-	46.6	-33.53	
0.564	12.94	Av	10	22.94	-	-	46	-23.06	
Neutral .15 - 30MHz									
0.177	40.98	PK	10	50.98	64.6	-13.62	-	-	
0.2535	37.5	PK	10	47.5	61.6	-14.1	-	-	
0.3075	35.11	PK	10	45.11	60	-14.89	-	-	
0.35475	32.92	PK	10	42.92	58.9	-15.98	-	-	
0.4335	30.59	PK	10	40.59	57.2	-16.61	-	-	
0.501	27.74	PK	10	37.74	56	-18.26	-	-	
0.177	15.38	Av	10	25.38	-	-	54.6	-29.22	
0.2535	16.05	Av	10	26.05	-	-	51.6	-25.55	
0.3075	11.5	Av	10	21.5	-	-	50	-28.5	
0.35475	7.34	Av	10	17.34	-	-	48.9	-31.56	
0.4335	5.37	Av	10	15.37	-	-	47.2	-31.83	
0.501	10.61	Av	10	20.61	-	-	46	-25.39	
PK - Peak detector									
Av - Average detector									

LINE 1 RESULTS



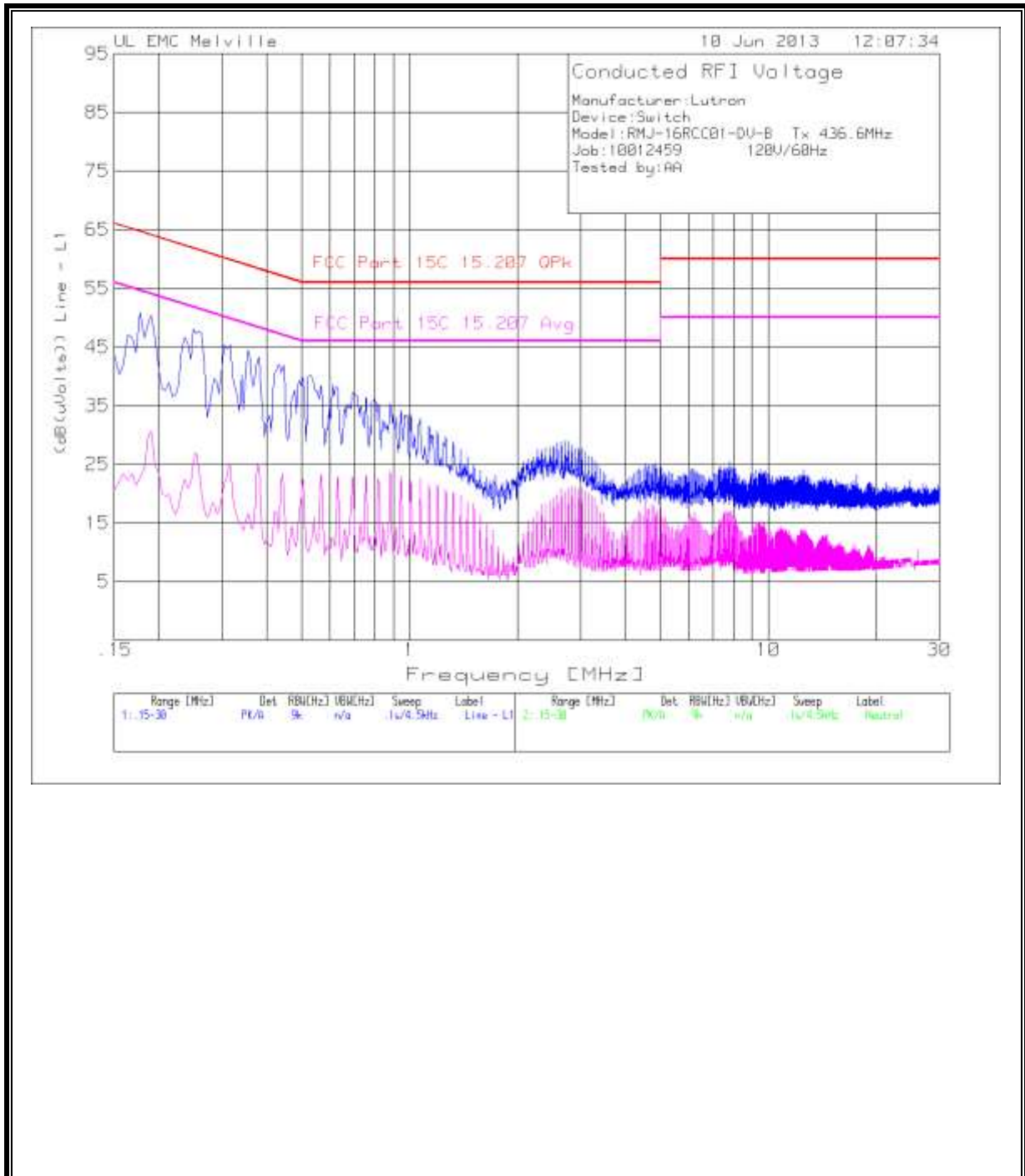
LINE 2 RESULTS



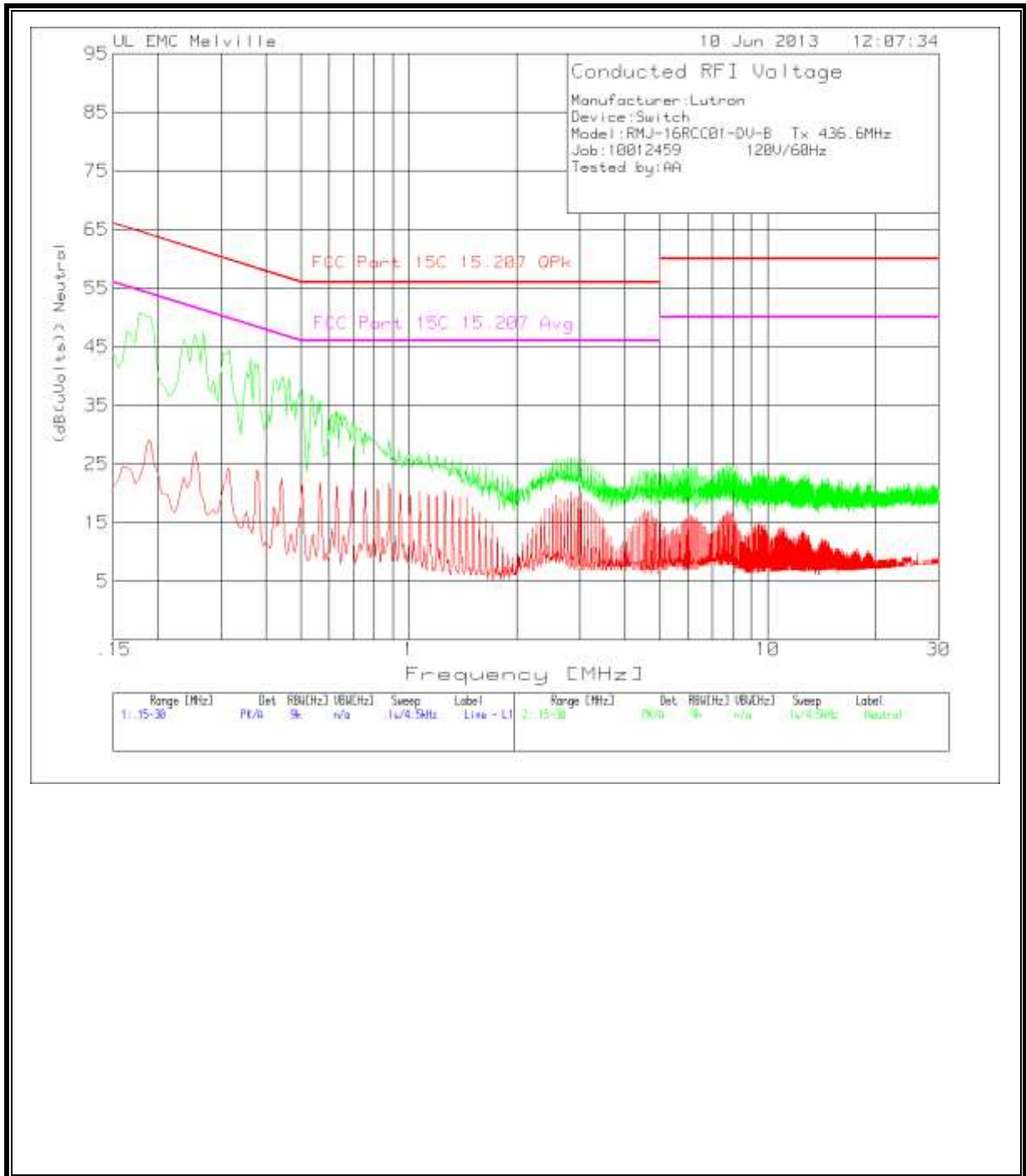
6 WORST EMISSIONS – Tx High Channel

Manufacturer:Lutron								
Device:Switch								
Model:RMJ-16RCC01-DV-B Tx 436.6MHz								
Job:10012459 120V/60Hz								
Tested by:AA								
Test	Meter		5A636 L1		FCC Part 15C		FCC Part 15C	
Frequency	Reading	Detector	(dB)	(dB(uVolts))	15.207 QPk	Margin	15.207 Avg	Margin
Line - L1 .15 - 30MHz								
0.177	40.94	PK	10	50.94	64.6	-13.66	-	-
0.249	38.09	PK	10	48.09	61.8	-13.71	-	-
0.3165	35.33	PK	10	45.33	59.8	-14.47	-	-
0.3795	33.28	PK	10	43.28	58.3	-15.02	-	-
0.429	31.96	PK	10	41.96	57.3	-15.34	-	-
0.528	30.29	PK	10	40.29	56	-15.71	-	-
0.177	12.6	Av	10	22.6	-	-	54.6	-32
0.249	15.65	Av	10	25.65	-	-	51.8	-26.15
0.3165	14.61	Av	10	24.61	-	-	49.8	-25.19
0.3795	14.95	Av	10	24.95	-	-	48.3	-23.35
0.429	3.39	Av	10	13.39	-	-	47.3	-33.91
0.528	1.3	Av	10	11.3	-	-	46	-34.7
Neutral .15 - 30MHz								
0.177	40.72	PK	10	50.72	64.6	-13.88	-	-
0.267	37.64	PK	10	47.64	61.2	-13.56	-	-
0.3165	34.59	PK	10	44.59	59.8	-15.21	-	-
0.3615	32.92	PK	10	42.92	58.7	-15.78	-	-
0.447	29.7	PK	10.1	39.8	56.9	-17.1	-	-
0.5055	27.74	PK	10	37.74	56	-18.26	-	-
0.177	12.32	Av	10	22.32	-	-	54.6	-32.28
0.267	8.79	Av	10	18.79	-	-	51.2	-32.41
0.3165	13.94	Av	10	23.94	-	-	49.8	-25.86
0.3615	4.02	Av	10	14.02	-	-	48.7	-34.68
0.447	6.43	Av	10.1	16.53	-	-	46.9	-30.37
0.5055	11.26	Av	10	21.26	-	-	46	-24.74
PK - Peak detector								
Av - Average detector								

LINE 1 RESULTS



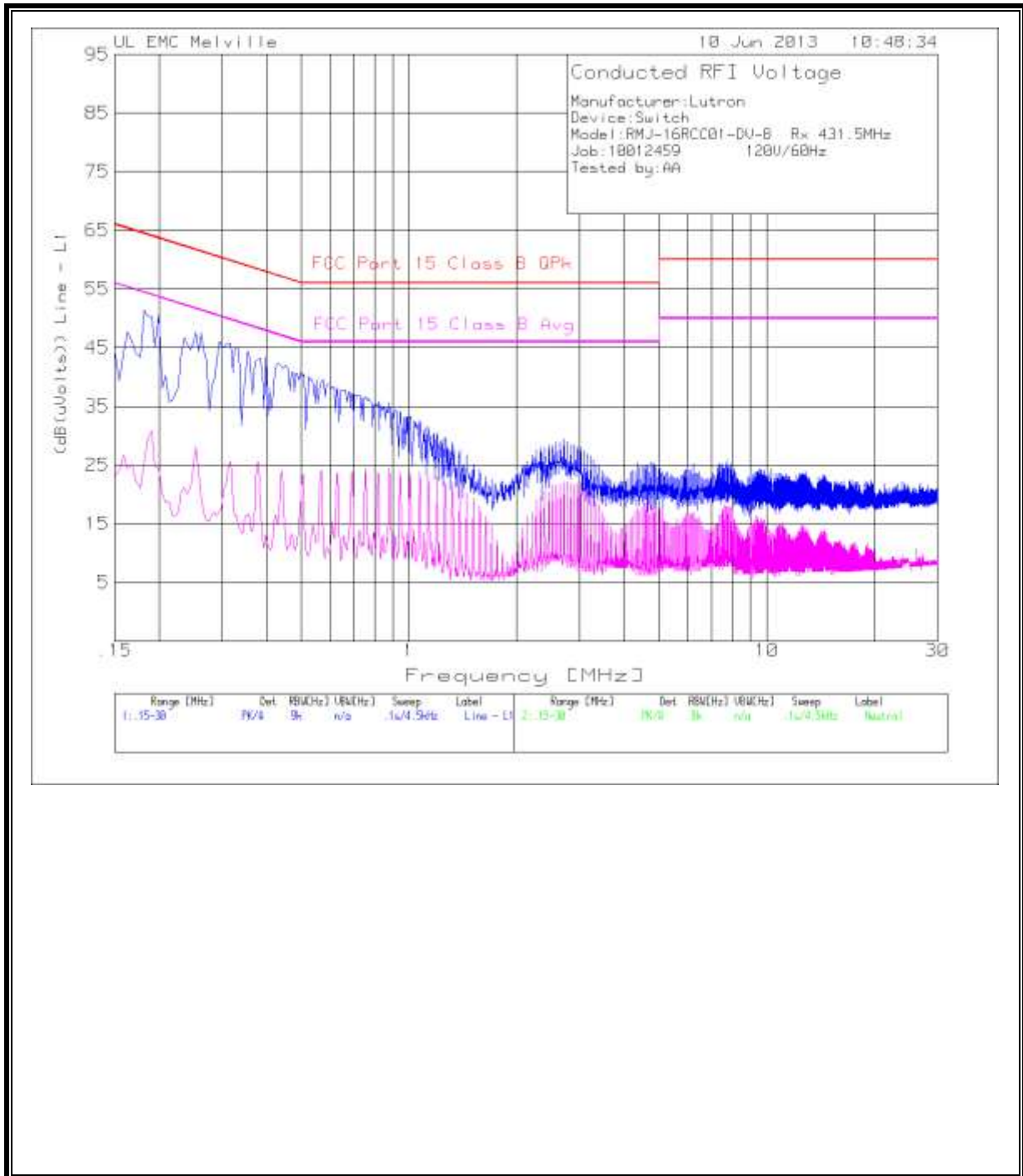
LINE 2 RESULTS



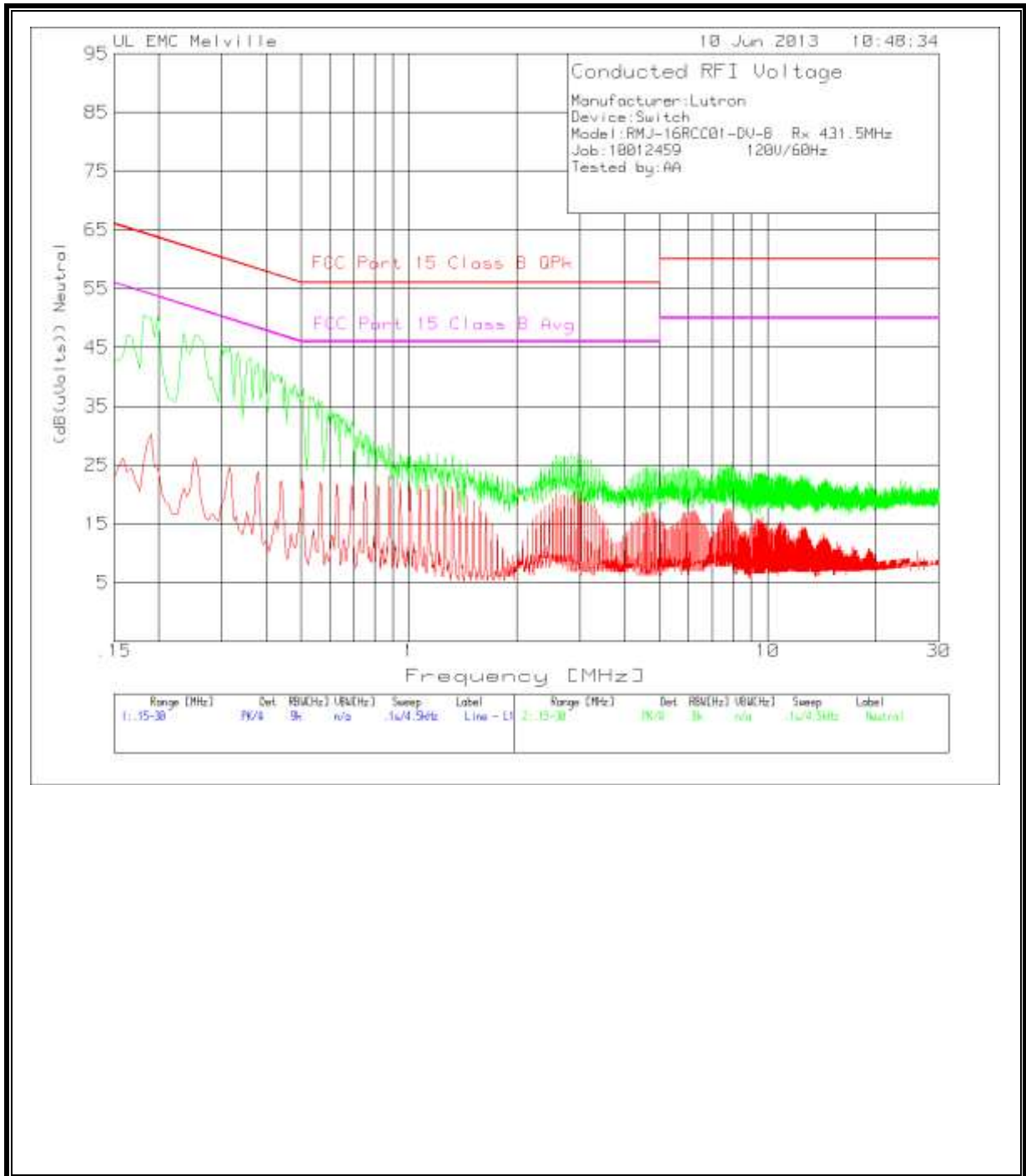
6 WORST EMISSIONS – Rx Low Channel

Manufacturer:Lutron								
Device:Switch								
Model:RMJ-16RCC01-DV-B Rx 431.5MHz								
Job:10012459 120V/60Hz								
Tested by:AA								
Test	Meter		5A636 L1		FCC Part 15		FCC Part 15	
Frequency	Reading	Detector	(dB)	(dB(uVolts))	Class B QPk	Margin	Class B Avg	Margin
Line - L1 .15 - 30MHz								
0.1815	41.36	PK	10	51.36	64.4	-13.04	-	-
0.2535	37.59	PK	10	47.59	61.6	-14.01	-	-
0.3165	35.71	PK	10	45.71	59.8	-14.09	-	-
0.3975	33.4	PK	10	43.4	57.9	-14.5	-	-
0.4335	32.22	PK	10	42.22	57.2	-14.98	-	-
0.474	30.95	PK	10	40.95	56.4	-15.45	-	-
0.1815	15.43	Av	10	25.43	-	-	54.4	-28.97
0.2535	18.18	Av	10	28.18	-	-	51.6	-23.42
0.3165	15.65	Av	10	25.65	-	-	49.8	-24.15
0.3975	3.07	Av	10	13.07	-	-	47.9	-34.83
0.4335	6.91	Av	10	16.91	-	-	47.2	-30.29
0.474	2.74	Av	10	12.74	-	-	46.4	-33.66
Neutral .15 - 30MHz								
0.1815	40.59	PK	10	50.59	64.4	-13.81	-	-
0.2535	37.25	PK	10	47.25	61.6	-14.35	-	-
0.2985	35.49	PK	10	45.49	60.3	-14.81	-	-
0.3795	32.26	PK	10	42.26	58.3	-16.04	-	-
0.4335	30.32	PK	10	40.32	57.2	-16.88	-	-
0.4785	28.64	PK	10	38.64	56.4	-17.76	-	-
0.1815	15.62	Av	10	25.62	-	-	54.4	-28.78
0.2535	16.33	Av	10	26.33	-	-	51.6	-25.27
0.2985	8.28	Av	10	18.28	-	-	50.3	-32.02
0.3795	13.85	Av	10	23.85	-	-	48.3	-24.45
0.4335	5.37	Av	10	15.37	-	-	47.2	-31.83
0.4785	1.32	Av	10	11.32	-	-	46.4	-35.08
PK - Peak detector								
Av - Average detector								

LINE 1 RESULTS



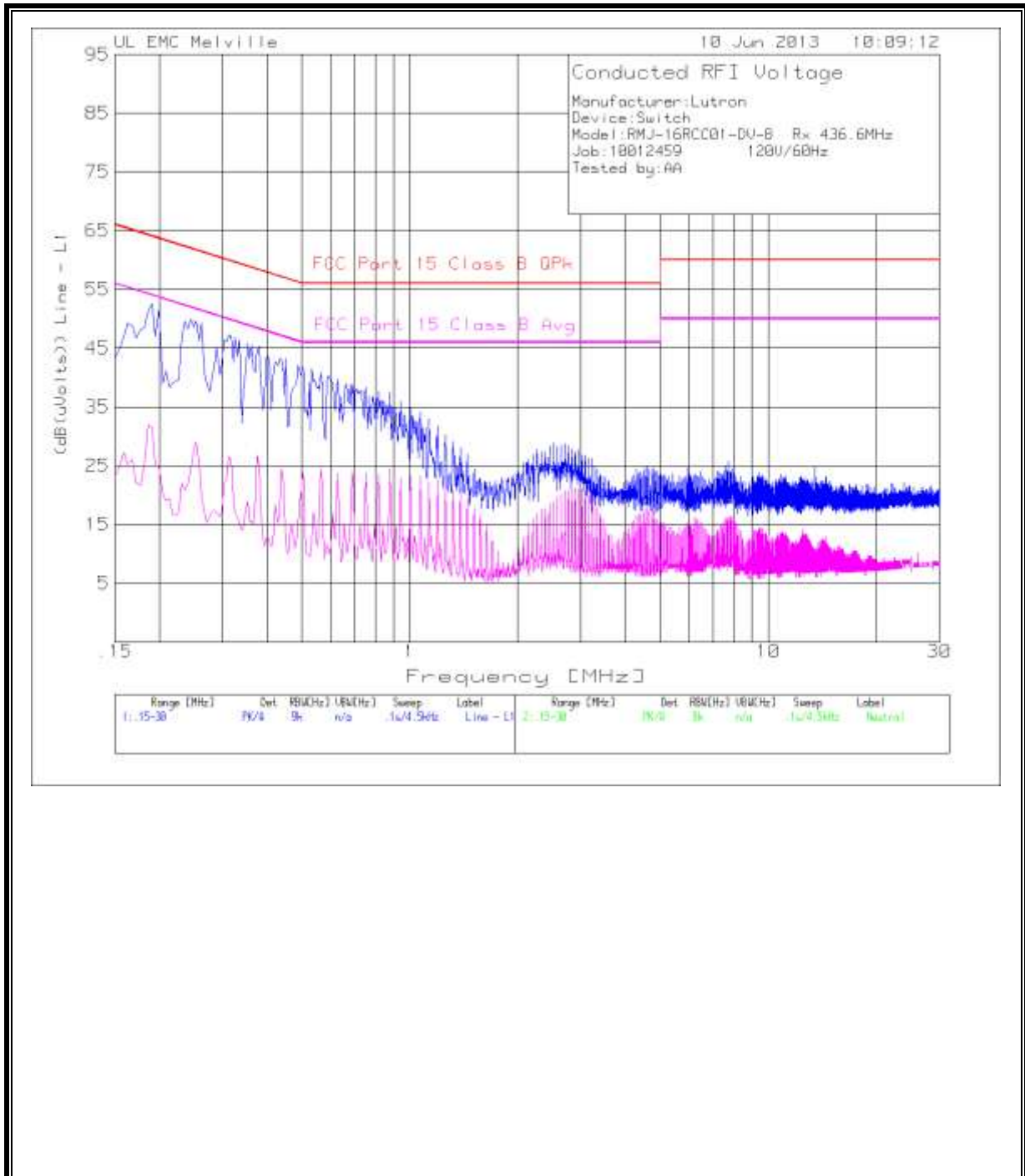
LINE 2 RESULTS



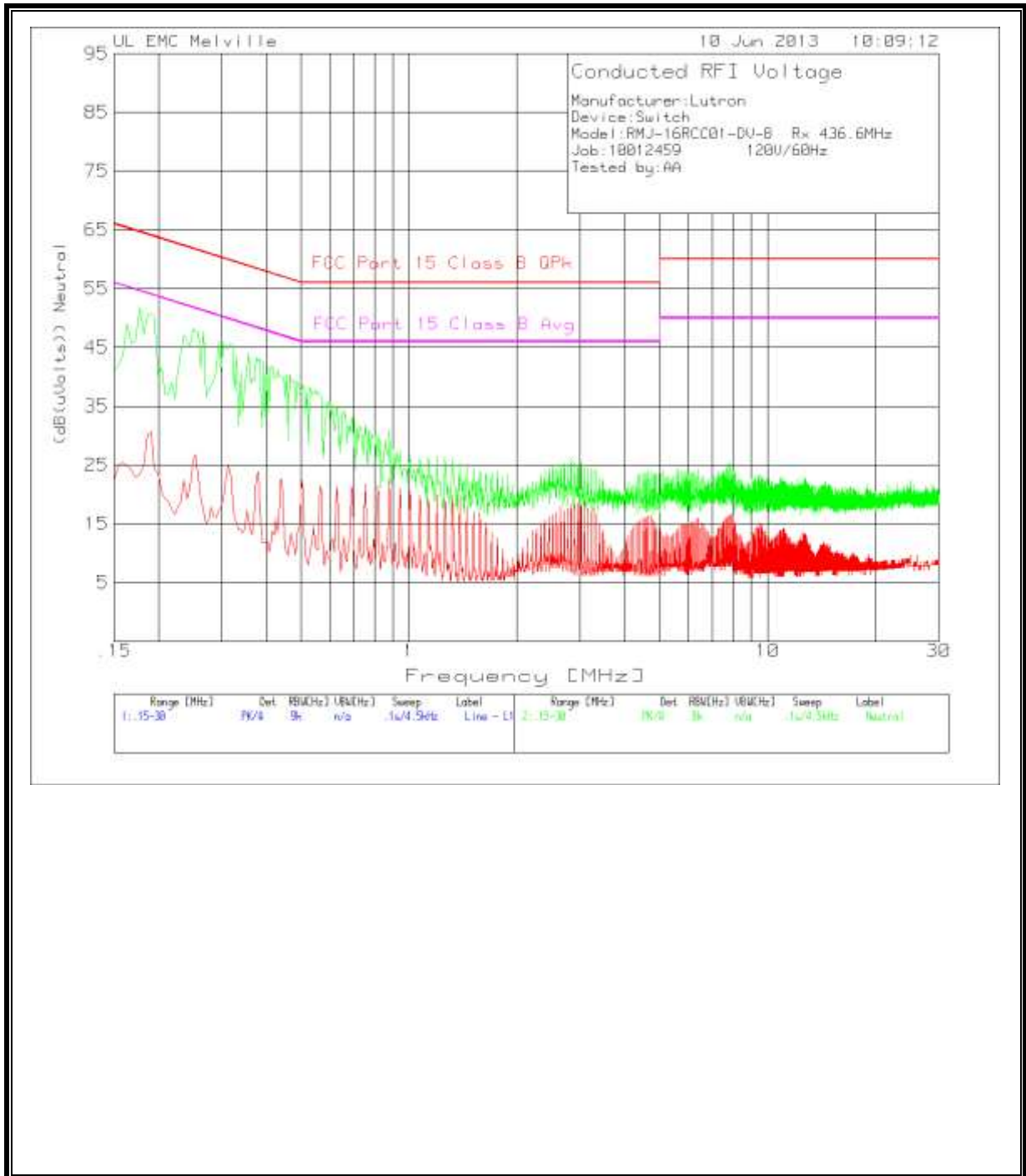
6 WORST EMISSIONS – Rx High Channel

Manufacturer:Lutron								
Device:Switch								
Model:RMJ-16RCC01-DV-B Rx 436.6MHz								
Job:10012459 120V/60Hz								
Tested by:AA								
Test	Meter		5A636 L1		FCC Part 15		FCC Part 15	
Frequency	Reading	Detector	(dB)	(dB(uVolts))	Class B QPk	Margin	Class B Avg	Margin
Line - L1 .15 - 30MHz								
0.1905	42.6	PK	10	52.6	64	-11.4	-	-
0.2445	39.89	PK	10	49.89	61.9	-12.01	-	-
0.312	37.22	PK	10	47.22	59.9	-12.68	-	-
0.3525	35.85	PK	10	45.85	58.9	-13.05	-	-
0.4515	33.28	PK	10	43.28	56.8	-13.52	-	-
0.4875	32.09	PK	10	42.09	56.2	-14.11	-	-
0.1905	21.52	Av	10	31.52	-	-	54	-22.48
0.2445	14.35	Av	10	24.35	-	-	51.9	-27.55
0.312	16.51	Av	10	26.51	-	-	49.9	-23.39
0.3525	8.93	Av	10	18.93	-	-	48.9	-29.97
0.4515	2.05	Av	10	12.05	-	-	46.8	-34.75
0.4875	4.82	Av	10	14.82	-	-	46.2	-31.38
Neutral .15 - 30MHz								
0.177	41.94	PK	10	51.94	64.6	-12.66	-	-
0.249	38.13	PK	10	48.13	61.8	-13.67	-	-
0.294	36.12	PK	10	46.12	60.4	-14.28	-	-
0.357	33.94	PK	10	43.94	58.8	-14.86	-	-
0.402	31.75	PK	10	41.75	57.8	-16.05	-	-
0.465	30.32	PK	10	40.32	56.6	-16.28	-	-
0.177	13.36	Av	10	23.36	-	-	54.6	-31.24
0.249	15.61	Av	10	25.61	-	-	51.8	-26.19
0.294	7.34	Av	10	17.34	-	-	50.4	-33.06
0.357	5.6	Av	10	15.6	-	-	48.8	-33.2
0.402	2.09	Av	10	12.09	-	-	47.8	-35.71
0.465	1.72	Av	10	11.72	-	-	46.6	-34.88
PK - Peak detector								
Av - Average detector								

LINE 1 RESULTS



LINE 2 RESULTS

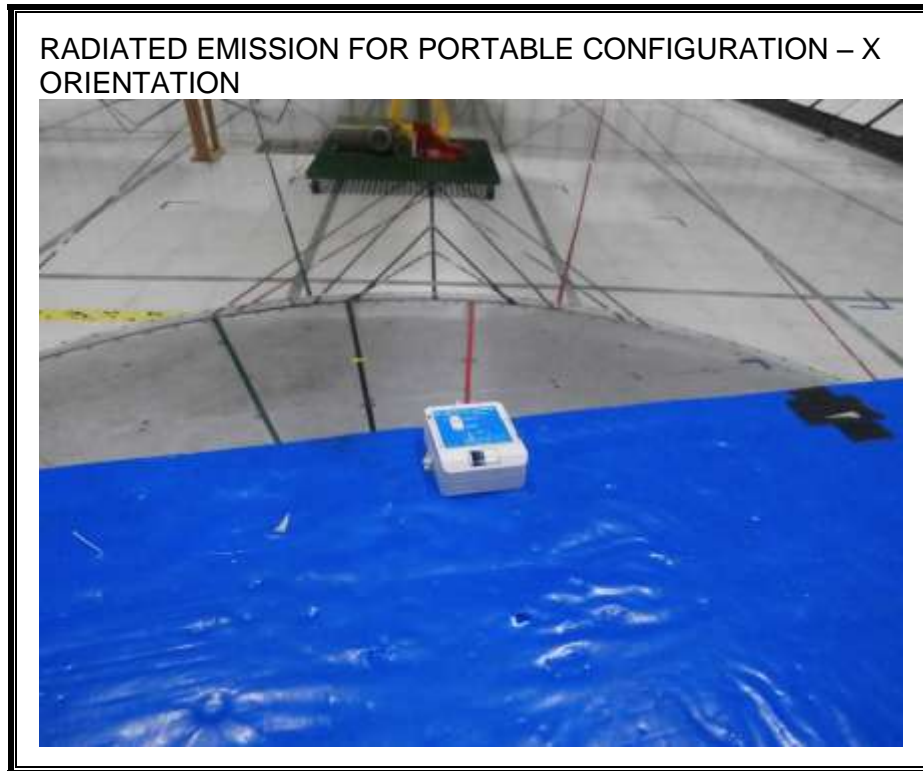


10. SETUP PHOTOS

ANTENNA PORT



RADIATED EMISSION FOR PORTABLE CONFIGURATION – X ORIENTATION



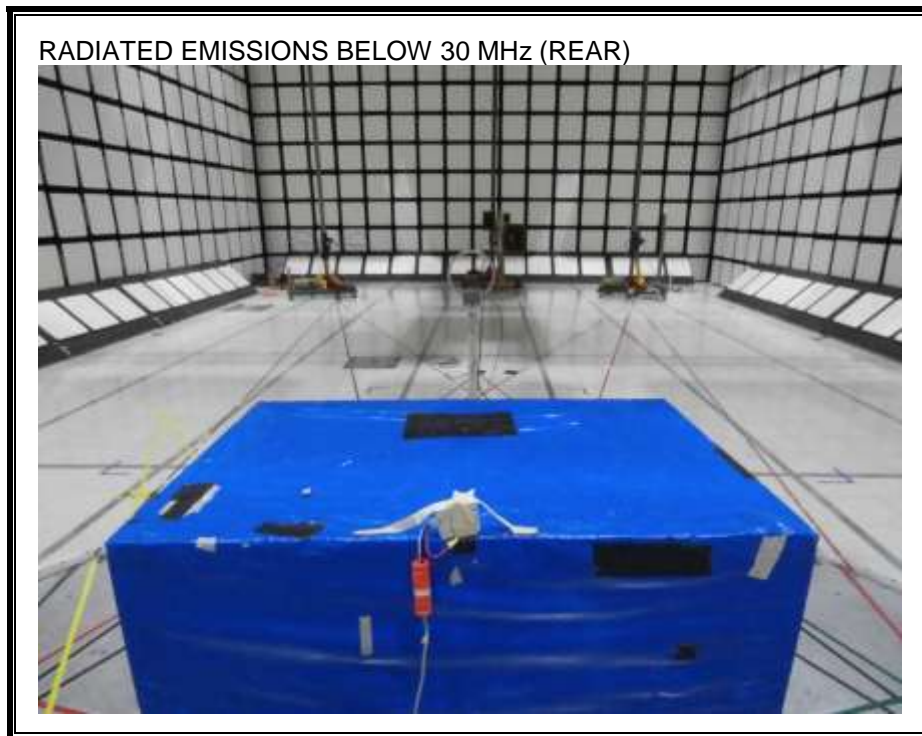
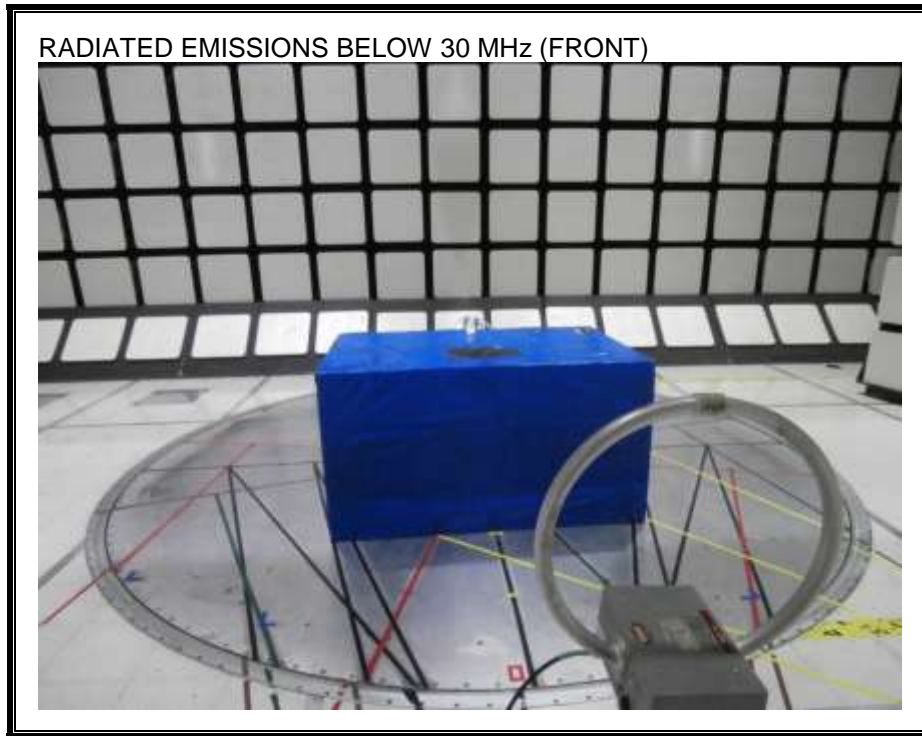
RADIATED EMISSION FOR PORTABLE CONFIGURATION – Y ORIENTATION



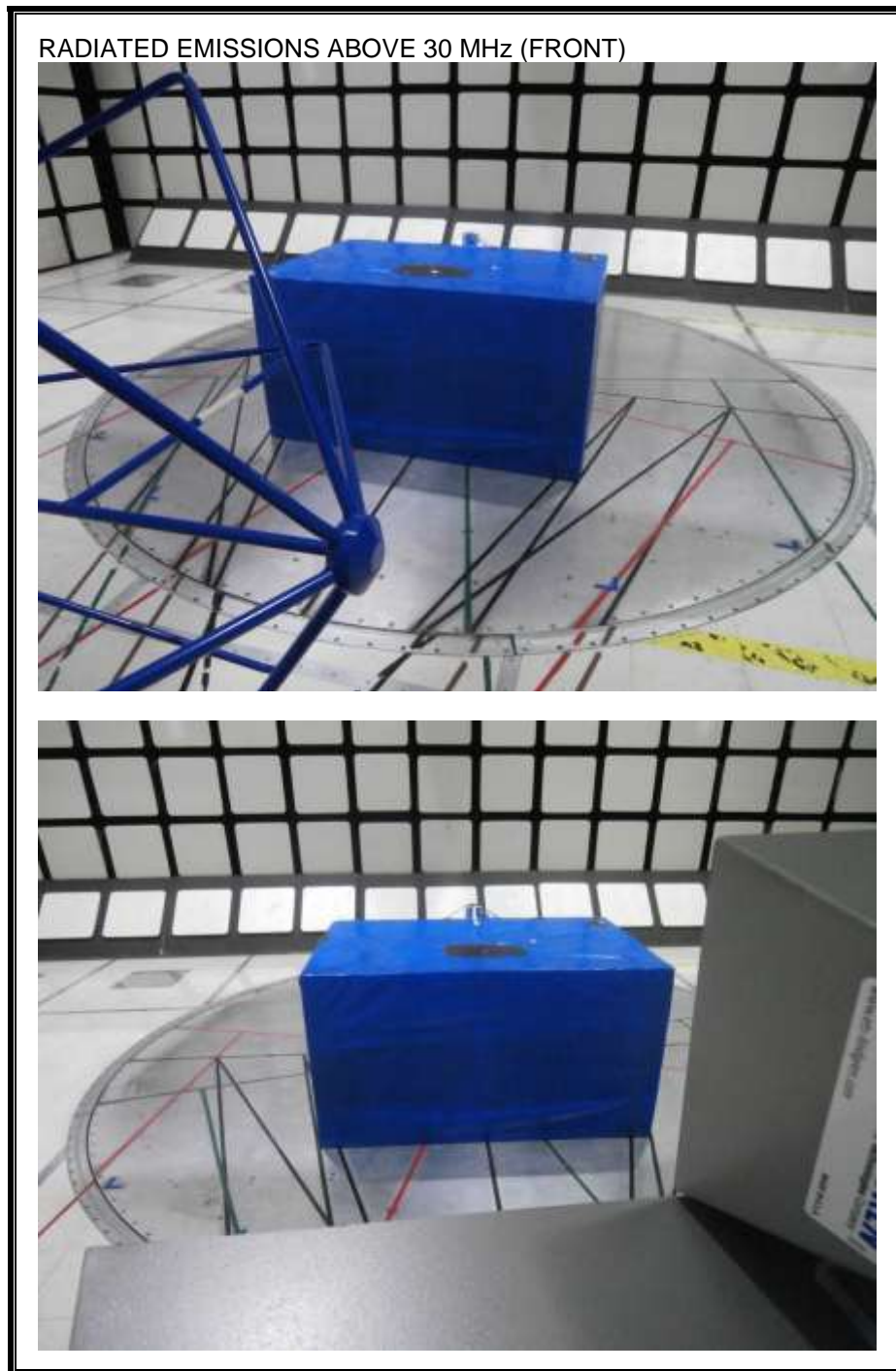
RADIATED EMISSION FOR PORTABLE CONFIGURATION – Z ORIENTATION



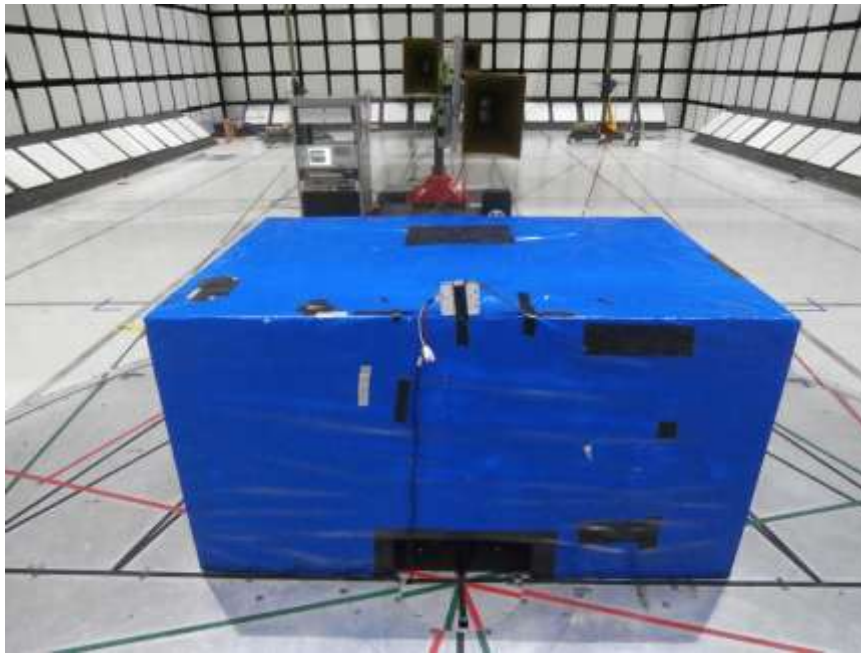
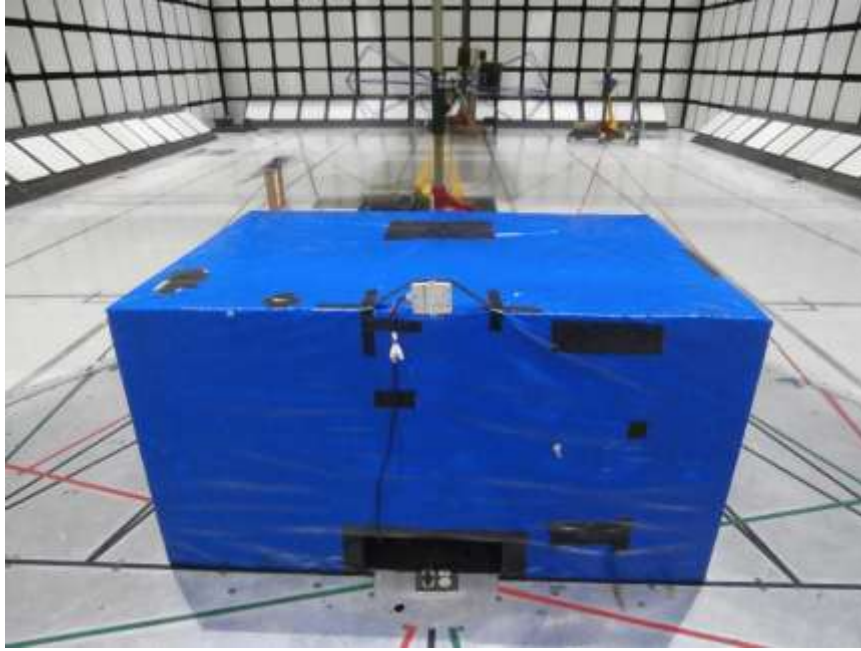
RADIATED EMISSION BELOW 30 MHz



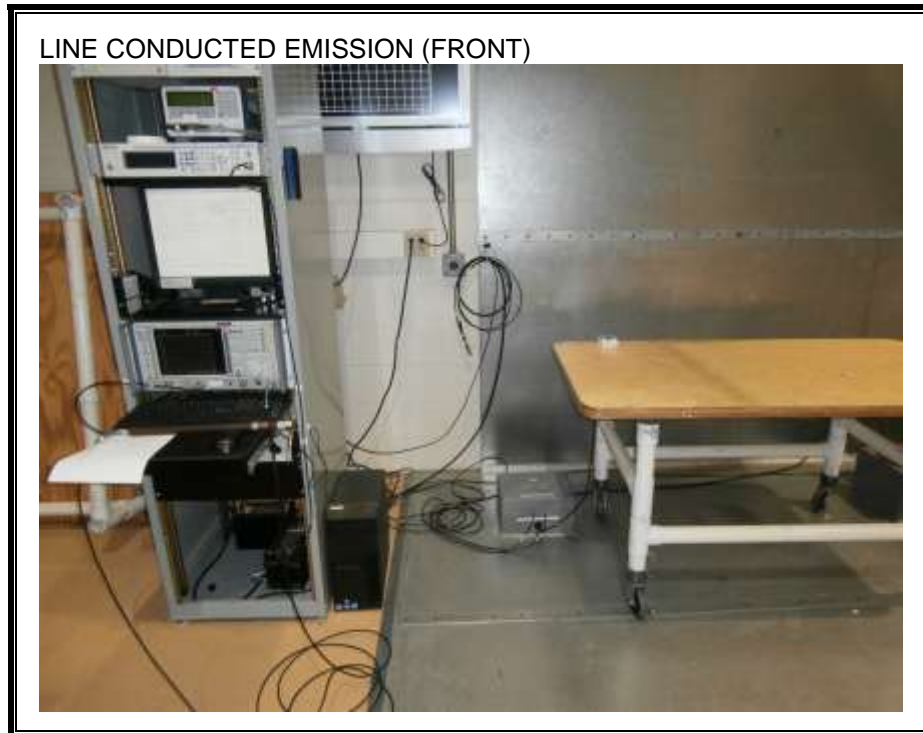
RADIATED EMISSION ABOVE 30 MHz



RADIATED EMISSIONS ABOVE 30 MHz (BACK)



AC MAINS LINE CONDUCTED EMISSION



LINE CONDUCTED EMISSION (BACK)



END OF REPORT