



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

CERTIFICATION TEST REPORT

FOR

IN-WALL DIMMER

MODEL NUMBER: PD-6WCL (IC Model: 6WCL)

**FCC ID: JPZ0098
IC: 2851A-JPZ0098**

REPORT NUMBER: 10019937

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NVLAP LAB CODE 100255-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	2014-03-26	Initial Issue	B. DeLisi
1	2014-04-7	Updated reference for IC model number and corrected typographical errors	B. DeLisi

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: In-Wall Dimmer

MODEL: PD-6WCL (IC Model: 6WCL)

SERIAL NUMBER: Non-serialized Production Unit

DATE TESTED: 2014-03-24 through 2014-03-25

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:



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WiSE Project Lead
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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, 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 EUT is a In-wall dimmer with wireless capabilities. The wireless functions operate on channels between 431MHz and 437MHz.

Testing conducted covers a Class 2 permissive change to the original filing under JPZ0098 and 2851A-JPZ0098.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral internal antenna.

5.3. SOFTWARE AND FIRMWARE

The test utility software used during testing was MmwDimmer_C5_8_1.sap

5.4. WORST-CASE CONFIGURATION AND MODE

The device was tested in normal packet mode at the low and high channels.

The EUT is only designed to be installed in one orientation and was tested as such.

5.5. MODIFICATIONS

No modifications required.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Lamp	GE	100W	NA	NA

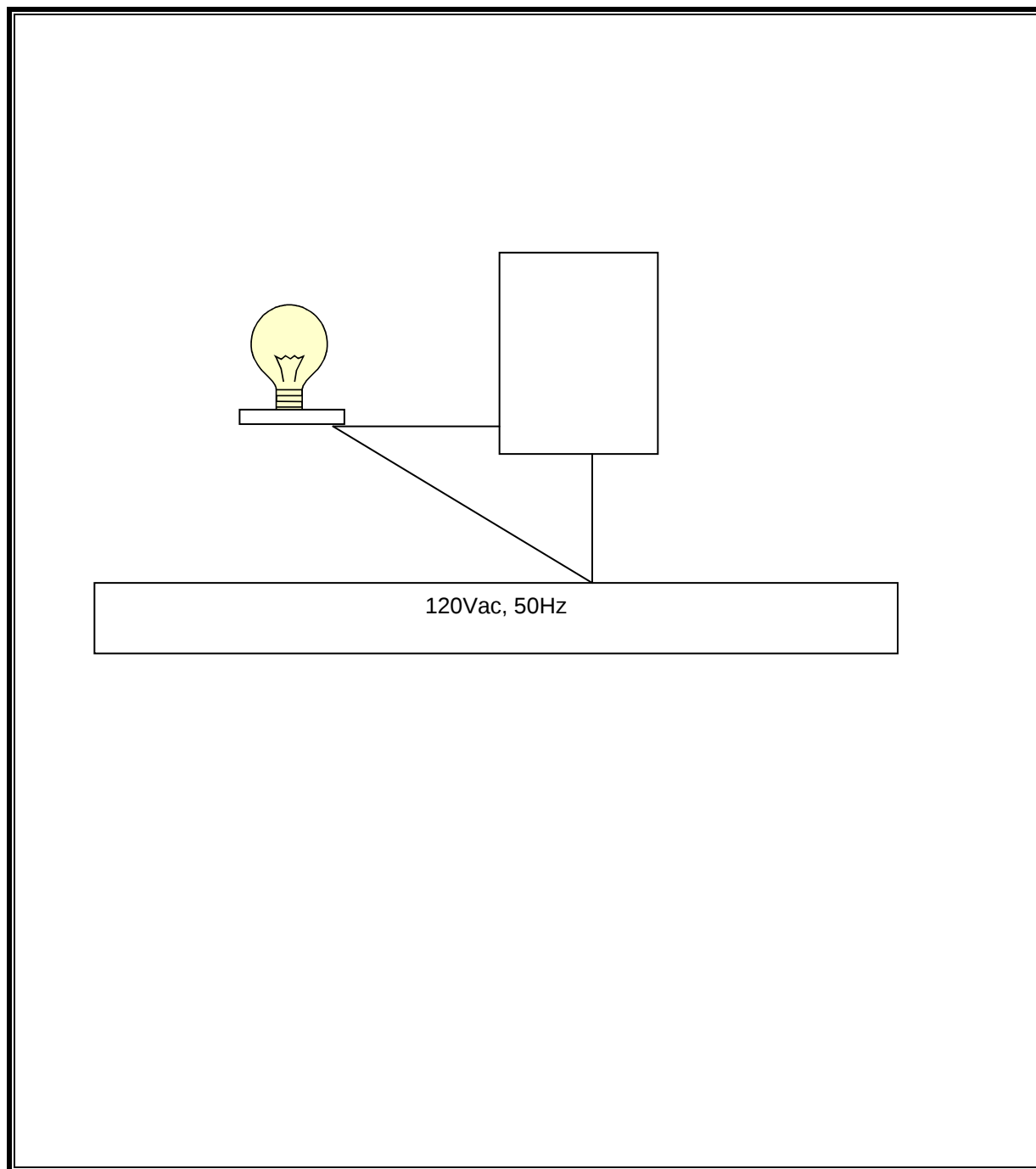
I/O CABLES

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 installed in a plastic electrical box to simulate intended use. A lamp load was used to complete the electrical path as it would be in normal installation.

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
60Hz-30MHz					
EMI Receiver	Rohde & Schwarz	ESCI7	75141	2014-01-29	2015-01-31
Active Loop Antenna	EMCO	6507	ME5A-288	2013-12-02	2014-12-02
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
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268	2012-12-22	2014-12-22
Multimeter	Fluke	83III	ME5B-305	2014-01-28	2015-01-31
30-1000MHz					
EMI Receiver	Rohde & Schwarz	ESCI7	75141	2014-01-29	2015-01-31
Hybrid Antenna	Sunol	JB-1	84106	2014-02-19	2015-02-19
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	2014-01-28	2015-01-31
Above 1GHz (Band Optimized System)					
Spectrum Analyzer	Agilent	E4446A	72823	2014-01-29	2015-01-31
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	2014-01-28	2015-01-31
* - 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.					

Conducted Emissions / Bench Tests					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
Conducted Emissions – GP 1					
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081	2014-01-28	2015-01-31
LISN	Solar	9252-50-R-24-BNC	ME5A-636	2014-01-28	2015-01-31
Dipole Antenna	EMCO	3121C	3359	2014-01-10	2015-01-10
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	4268	2012-12-22	2014-12-22
Multimeter	Fluke	83III	ME5B-305	2014-01-28	2015-01-31

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 C63.10

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:

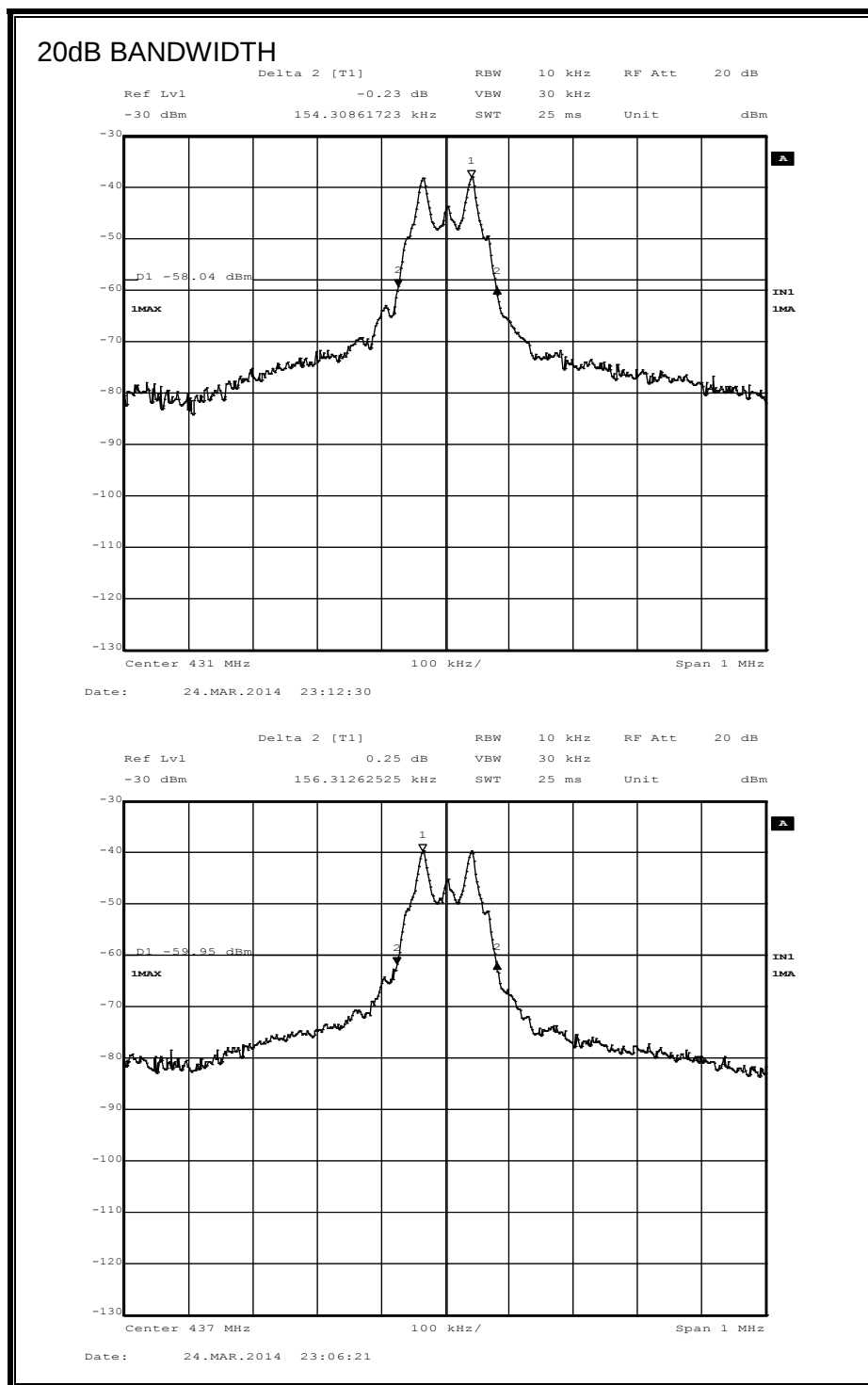
20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
431	154.3	1077.5	-923.2
437	156.3	1092.5	-936.2

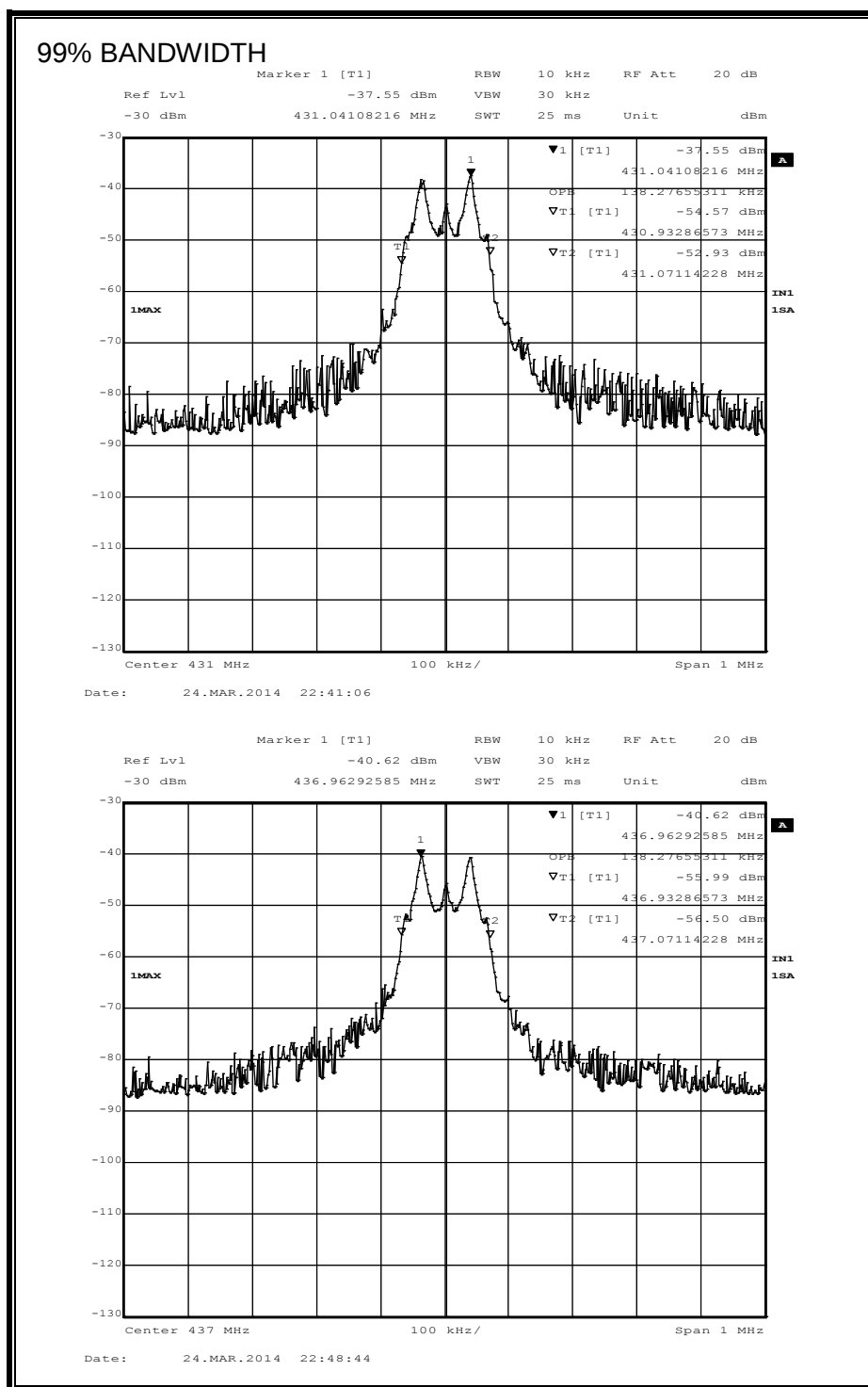
99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
431	138.2	1077.5	-939.3
437	138.2	1092.5	-954.3

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

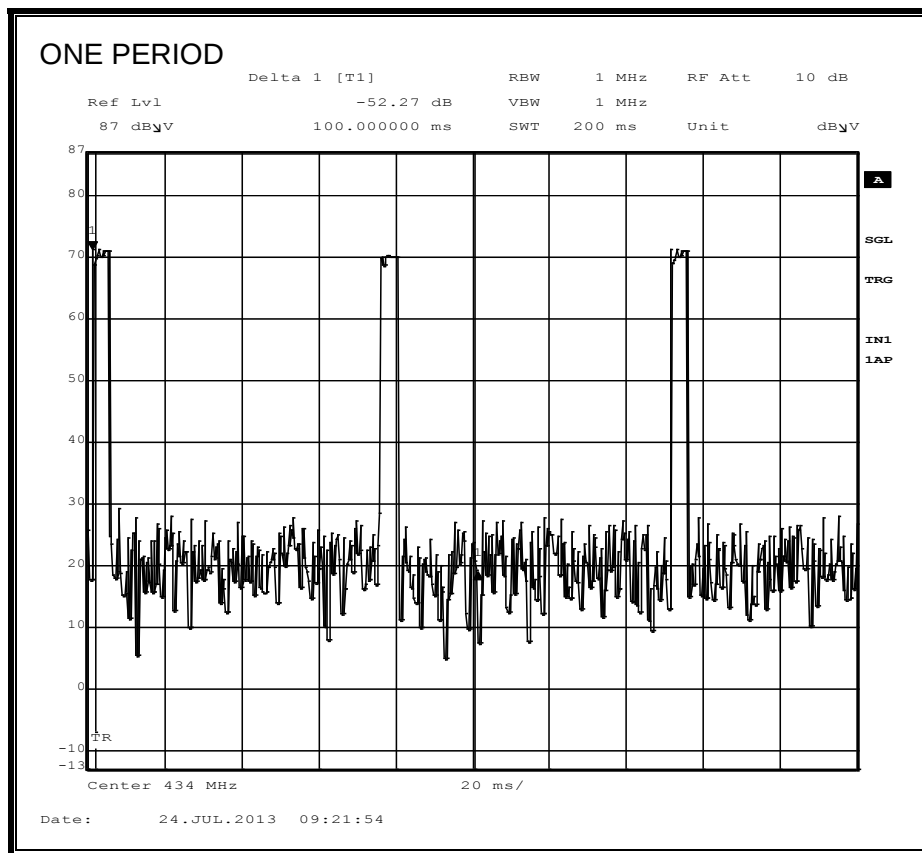
Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is (# of long pulses * long pulse width) + (# of short pulses * short pulse width) / 100 or T

RESULTS (Taken from original Filing)

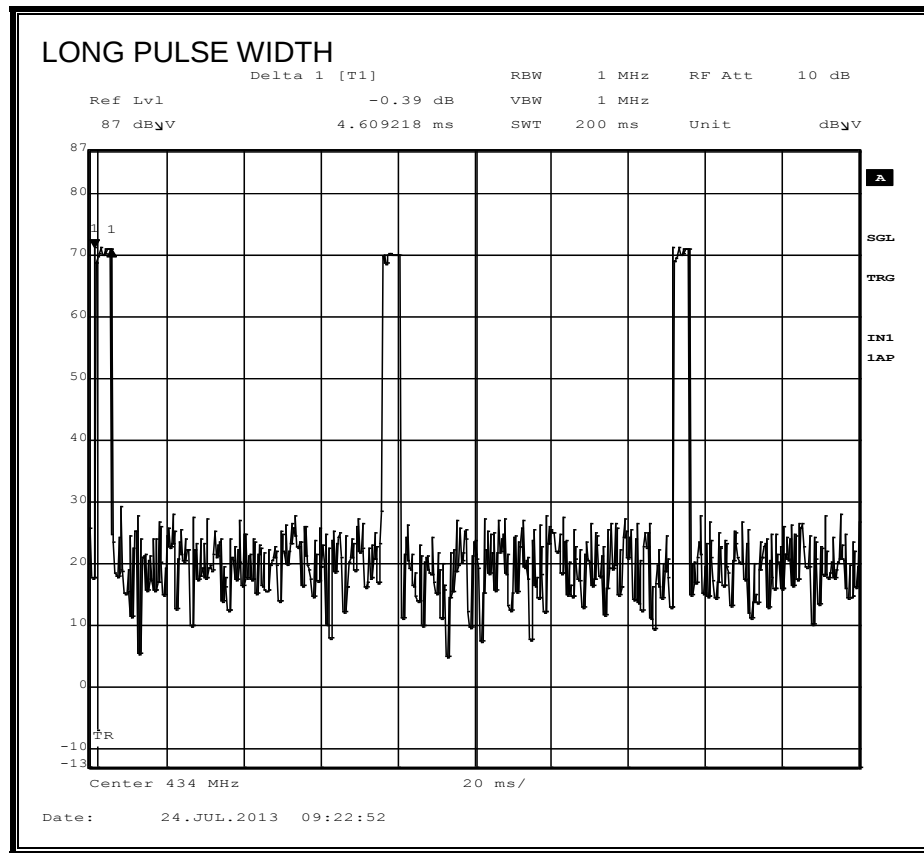
No non-compliance noted:

One Period (ms)	Long Pulse Width (ms)	# of Long Pulses	Short Width (ms)	# of Short Pulses	Duty Cycle	20*Log Duty Cycle (dB)
100	4.6	1	4.60	1	0.092	-20.72

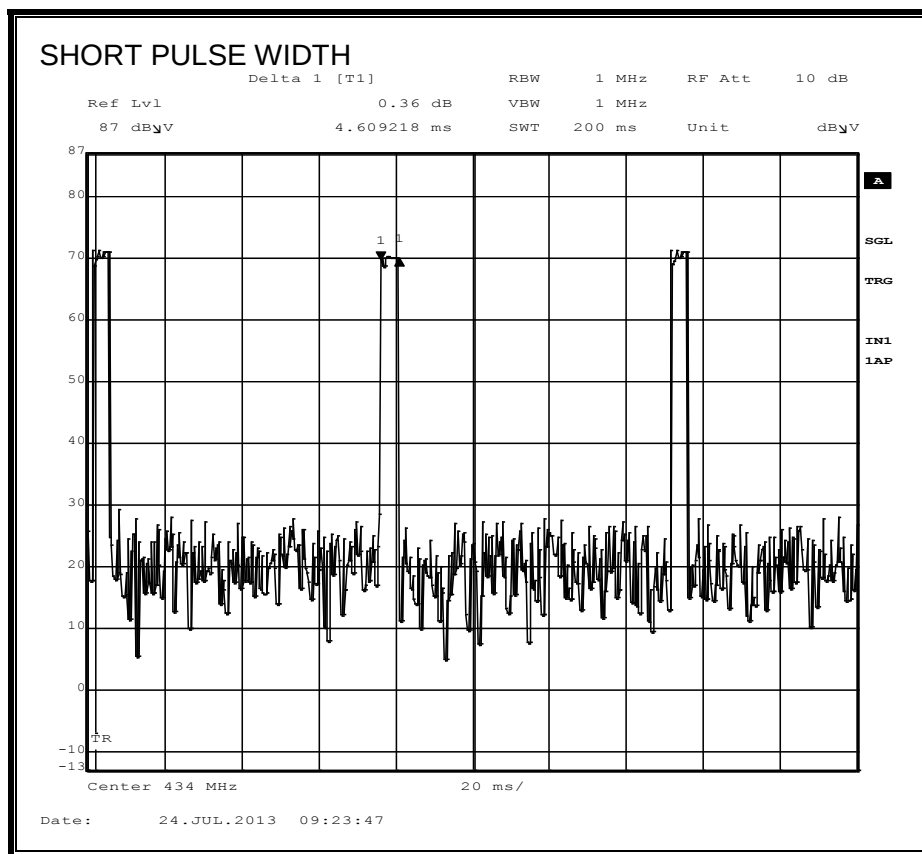
ONE PERIOD



LONG PULSE WIDTH



SHORT PULSE WIDTH



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 C63.10. The EUT is set to transmit in a continuous mode.

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

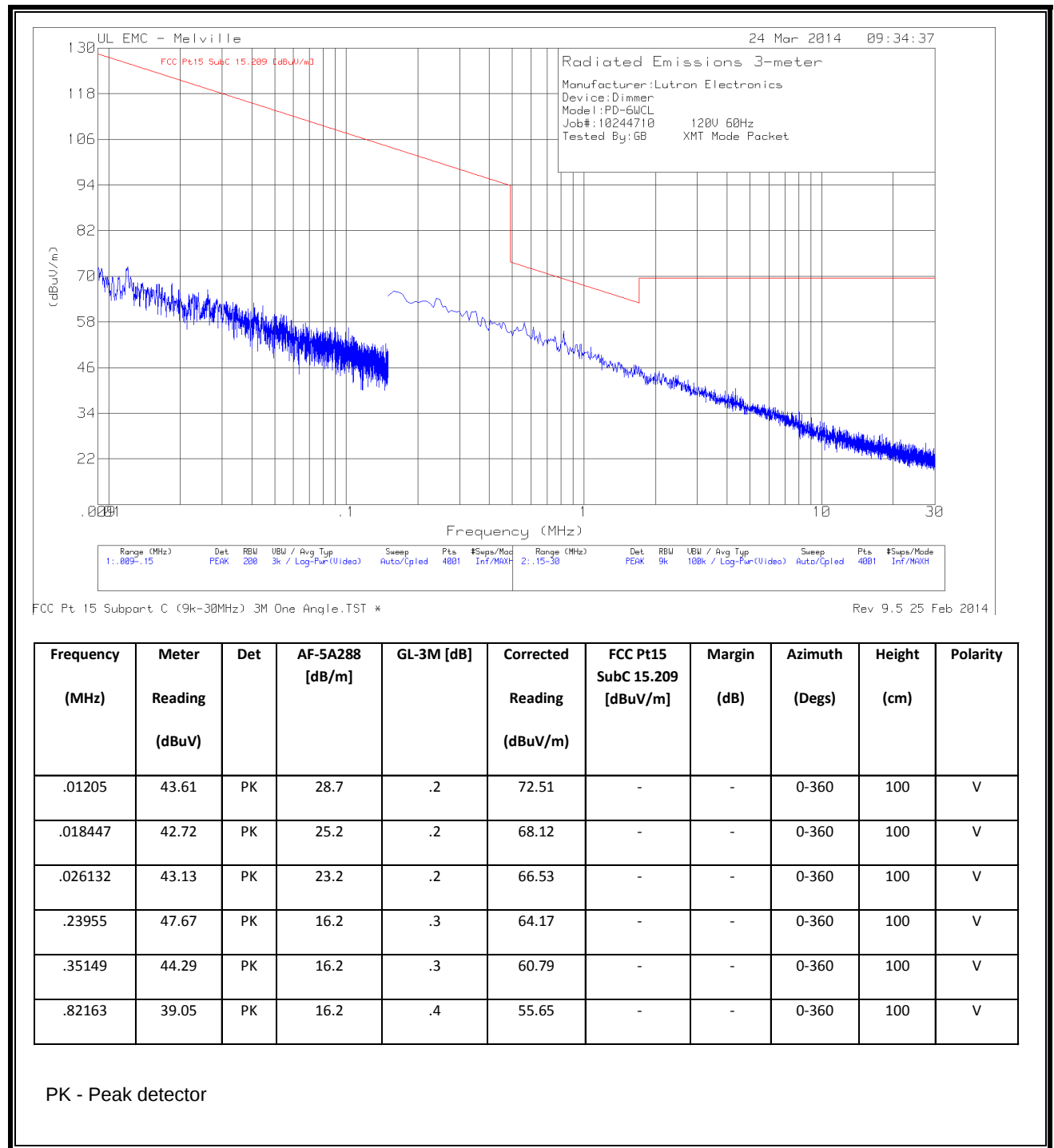
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements. Average emissions were determined by applying the duty cycle correction factor to the peak measurements.

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.

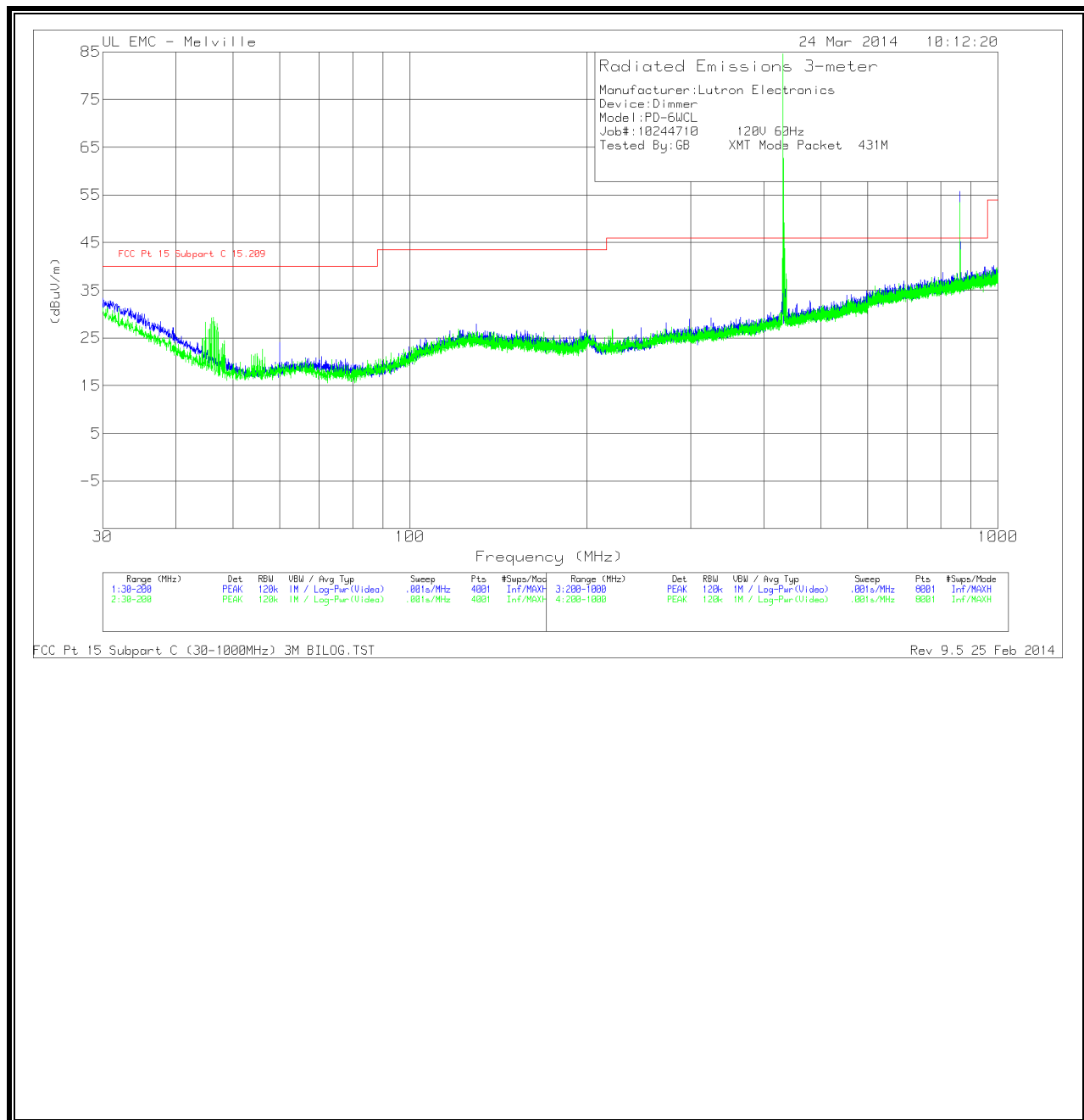
RESULTS

No non-compliance noted:

HARMONICS AND TX SPURIOUS EMISSION (9kHz – 30MHz), Worst Case TX condition

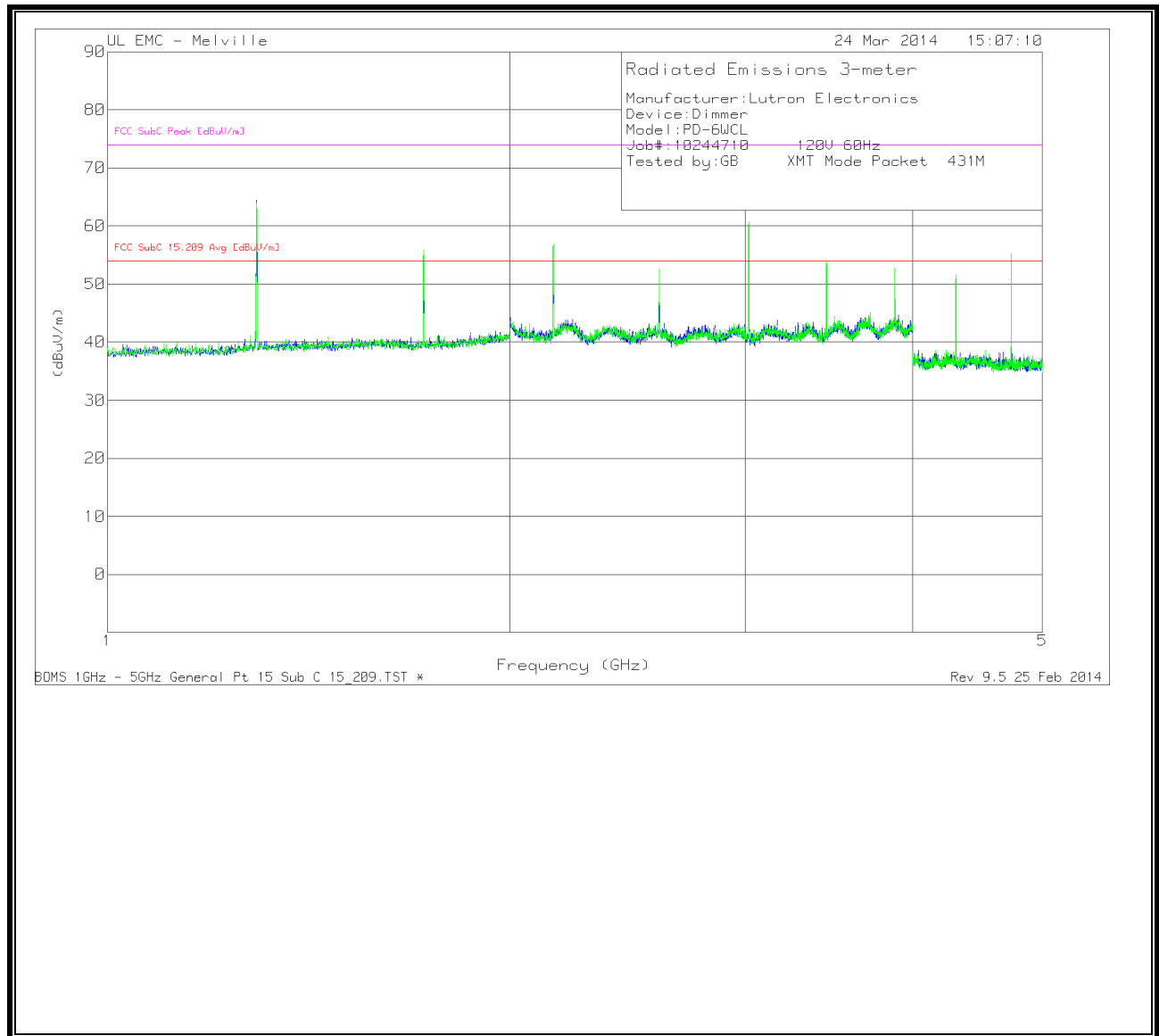


FUNDAMENTAL, HARMONICS AND TX SPURIOUS EMISSION (30 – 1000 MHz) – Low Channel



Frequency	Meter	Det	AF-84106 [dB/m]	GL-3M [dB]	Corrected Reading	DCF (dB)	Corrected Average Reading	FCC Pt 15 Subpart C 15.231	15.231 Margin	FCC Pt 15 Subpart C 15.209	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
(MHz)	Reading (dBuV)				(dBuV/m)		(dBuV/m)		(dB)							
431.0395	65.13	PK	16.8	1.4	83.33	-20.72	62.61	80.7	-18.09	-	-	100.7	-17.37	216	249	H
431.0395	69.87	PK	16.8	1.4	88.07	-20.72	67.35	80.7	-13.35	-	-	100.7	-12.63	193	117	V
862.0756	34.62	PK	22.3	2.2	59.12	-20.72	38.4	60.7	-22.3	-	-	80.7	-21.58	4	123	V
862.0756	33.63	PK	22.3	2.2	58.13	-20.72	37.41	60.7	-23.29	-	-	80.7	-22.57	352	147	H
PK - Peak detector																

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz – Low Channel



Frequency	Meter	Det	AF-51442 [dB/m]	Gain/Loss (dB)	Corrected	DCF	Corrected	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
(GHz)	Reading				Reading	(dB)	Average Reading							
	(dBuV)				(dBuV/m)		(dBuV/m)							
1.293	88.08	PK	20.5	-44.4	64.18	-20.72	43.46	54	-10.54	74	-9.82	259	219	V
1.293	86.76	PK	20.5	-44.4	62.86	-20.72	42.14	54	-11.86	74	-11.14	42	392	H
1.724	76	PK	20.8	-44.13	52.67	-20.72	31.95	54	-22.05	74	-21.33	250	389	H
1.724	66.66	PK	20.8	-44.13	43.33	-20.72	22.61	54	-31.39	74	-30.67	349	305	V

PK - Peak detector

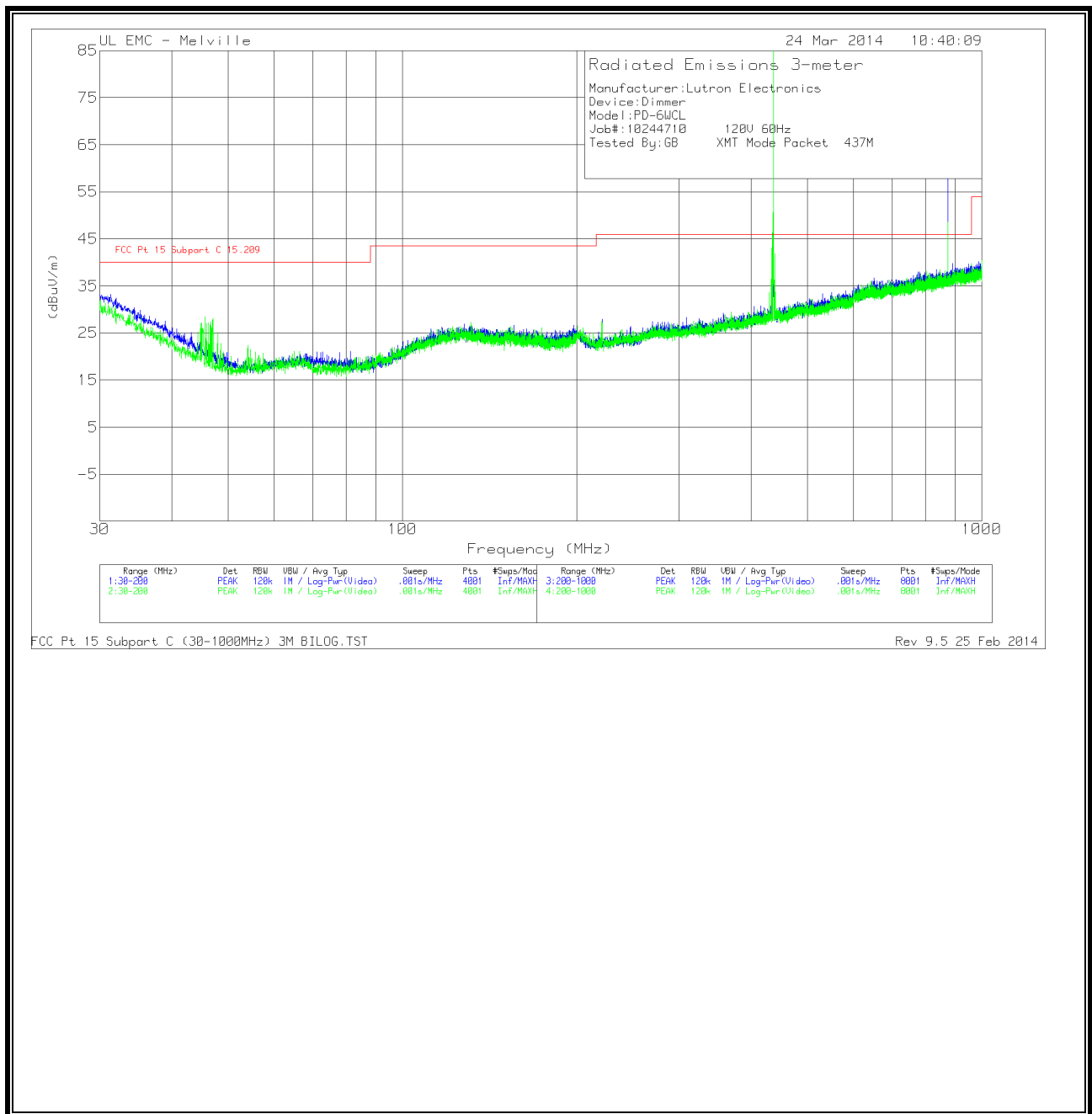
Frequency	Meter	Det	AF-48107 [dB/m]	Gain/Loss (dB)	Corrected	DCF	Corrected	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
(GHz)	Reading				Reading	(dB)	Average Reading							
	(dBuV)				(dBuV/m)		(dBuV/m)							
2.155	78.87	PK	21.4	-43.39	56.88	-20.72	36.16	54	-17.84	74	-17.12	130	307	V
2.155	73.15	PK	21.4	-43.39	51.16	-20.72	30.44	54	-23.56	74	-22.84	253	263	H
2.586	70.69	PK	21.3	-42.48	49.51	-20.72	28.79	54	-25.21	74	-24.49	248	351	H
2.586	71.56	PK	21.3	-42.48	50.38	-20.72	29.66	54	-24.34	74	-23.62	127	212	V
3.017	79.52	PK	21.5	-41.97	59.05	-20.72	38.33	54	-15.67	74	-14.95	289	379	H
3.017	55.46	PK	21.5	-41.97	34.99	-20.72	14.27	54	-39.73	74	-39.01	289	379	H
3.448	69.19	PK	22.1	-41.73	49.56	-20.72	28.84	54	-25.16	74	-24.44	255	394	H
3.448	71.56	PK	22.2	-41.73	52.03	-20.72	31.31	54	-22.69	74	-21.97	169	326	V
3.879	65.33	PK	22.6	-41.92	46.01	-20.72	25.29	54	-28.71	74	-27.99	143	249	H
3.879	71.1	PK	22.6	-41.92	51.78	-20.72	31.06	54	-22.94	74	-22.22	101	338	V

PK - Peak detector

Frequency	Meter	Det	AF-48106 [dB/m]	Gain/Loss (dB)	Corrected	DCF	Corrected	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
(GHz)	Reading				Reading	(dB)	Average Reading							
	(dBuV)				(dBuV/m)		(dBuV/m)							
4.31	75.04	PK	27.7	-51.73	51.01	-20.72	30.29	54	-23.71	74	-22.99	191	328	V
4.31	71.08	PK	27.7	-51.73	47.05	-20.72	26.33	54	-27.67	74	-26.95	247	372	H
4.741	81.54	PK	27.2	-52.59	56.15	-20.72	35.43	54	-18.57	74	-17.85	269	387	V
4.741	82.06	PK	27.2	-52.59	56.67	-20.72	35.95	54	-18.05	74	-17.33	54	229	H

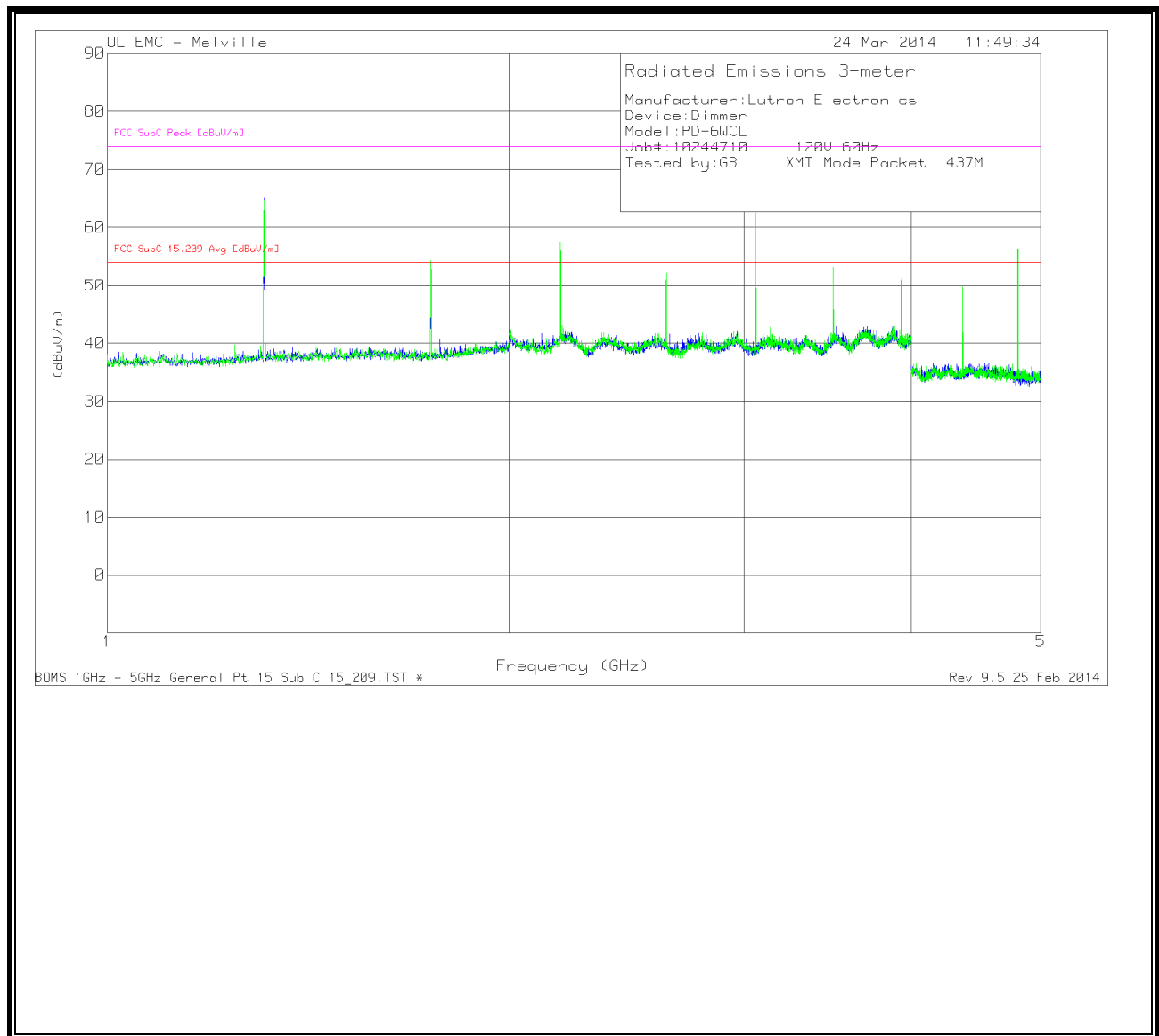
PK - Peak detector

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



Frequency	Meter	Det	AF-84106 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	DCF (dB)	Corrected Average Reading (dBuV/m)	FCC Pt 15 Subpart C 15.231	15.231 Margin (dB)	FCC Pt 15 Subpart C 15.209	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
436.9613	62.12	PK	17	1.5	80.62	-20.72	59.9	80.7	-20.8	-	-	100.7	-20.08	216	272	H
437	67.76	PK	17	1.5	86.26	-20.72	65.54	80.7	-15.16	-	-	100.7	-14.44	331	136	V
873.9194	33.72	PK	22.5	2.1	58.32	-20.72	37.6	60.7	-23.1	-	-	80.7	-22.38	212	105	H
874.0706	32.21	PK	22.5	2.1	56.81	-20.72	36.09	60.7	-24.61	-	-	80.7	-23.89	179	137	V
PK - Peak detector																

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz – High Channel



Frequency	Meter	Det	AF-51442 [dB/m]	Gain/Loss (dB)	Corrected	DCF	Corrected	FCC SubC 15.209 Avg [dBuV/m]	Margin	FCC SubC	PK Margin	Azimuth (Degs)	Height (cm)	Polarity
(GHz)	Reading				Reading	(dB)	Average Reading		(dB)	Peak	(dB)			
	(dBuV)				(dBuV/m)		(dBuV/m)			[dBuV/m]				
1.311	88.16	PK	20.5	-44.35	64.31	-20.72	43.59	54	-10.41	74	-9.69	210	285	H
1.311	80.17	PK	20.5	-44.35	56.32	-20.72	35.6	54	-18.4	74	-17.68	359	229	V
1.748	78.68	PK	20.8	-44.14	55.34	-20.72	34.62	54	-19.38	74	-18.66	102	133	V
1.748	75.51	PK	20.8	-44.14	52.17	-20.72	31.45	54	-22.55	74	-21.83	245	400	H

PK - Peak detector														

Frequency	Meter	Det	AF-48107 [dB/m]	Gain/Loss (dB)	Corrected	DCF	Corrected	FCC SubC 15.209 Avg [dBuV/m]	Margin	FCC SubC	PK Margin	Azimuth (Degs)	Height (cm)	Polarity
(GHz)	Reading				Reading	(dB)	Average Reading		(dB)	Peak	(dB)			
	(dBuV)				(dBuV/m)		(dBuV/m)			[dBuV/m]				
2.185	75.43	PK	21.5	-43.19	53.74	-20.72	33.02	54	-20.98	74	-20.26	261	390	H
2.185	78.78	PK	21.5	-43.19	57.09	-20.72	36.37	54	-17.63	74	-16.91	102	222	V
2.622	71.81	PK	21.4	-42.49	50.72	-20.72	30	54	-24	74	-23.28	78	198	V
2.622	70.26	PK	21.4	-42.49	49.17	-20.72	28.45	54	-25.55	74	-24.83	255	354	H
3.059	82.33	PK	21.6	-41.9	62.03	-20.72	41.31	54	-12.69	74	-11.97	198	124	H
3.059	83.95	PK	21.6	-41.9	63.65	-20.72	42.93	54	-11.07	74	-10.35	123	399	V
3.496	65.09	PK	22.2	-41.73	45.56	-20.72	24.84	54	-29.16	74	-28.44	90	308	H
3.496	72.67	PK	22.2	-41.73	53.14	-20.72	32.42	54	-21.58	74	-20.86	228	371	V
3.933	73.49	PK	22.7	-41.7	54.49	-20.72	33.77	54	-20.23	74	-19.51	117	394	V
3.933	71.81	PK	22.7	-41.7	52.81	-20.72	32.09	54	-21.91	74	-21.19	183	317	H

PK - Peak detector														

Frequency	Meter	Det	AF-48106 [dB/m]	Gain/Loss (dB)	Corrected	DCF	Corrected	FCC SubC 15.209 Avg [dBuV/m]	Margin	FCC SubC	PK Margin	Azimuth (Degs)	Height (cm)	Polarity
(GHz)	Reading				Reading	(dB)	Average Reading		(dB)	Peak	(dB)			
	(dBuV)				(dBuV/m)		(dBuV/m)			[dBuV/m]				
4.37	75.56	PK	27.6	-51.66	51.5	-20.72	30.78	54	-23.22	74	-22.5	271	363	V
4.37	71.12	PK	27.6	-51.66	47.06	-20.72	26.34	54	-27.66	74	-26.94	151	115	H
4.807	78.65	PK	27.1	-52.55	53.2	-20.72	32.48	54	-21.52	74	-20.8	200	112	H
4.807	81.08	PK	27.1	-52.55	55.63	-20.72	34.91	54	-19.09	74	-18.37	236	142	V

PK - Peak detector														

9. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207 (a)
IC RSS-GEN, Section 7.2.2

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:

6 WORST EMISSIONS – Low Channel

Frequency (MHz)	Meter Reading (dBuV)	Det	Line 1 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.15681	49.13	PK	10	59.13	65.63	-6.5	-	-
.18237	48.71	PK	10	58.71	64.38	-5.67	-	-
.19599	50.01	PK	10	60.01	63.78	-3.77	-	-
.21132	49.22	PK	10	59.22	63.15	-3.93	-	-
.24539	46.48	PK	10	56.48	61.91	-5.43	-	-
.28457	46.46	PK	10	56.46	60.68	-4.22	-	-
.33056	46.33	PK	10	56.33	59.44	-3.11	-	-
.39529	44.52	PK	10	54.52	57.95	-3.43	-	-
.46172	42.45	PK	10	52.45	56.66	-4.21	-	-
.53327	40.77	PK	10	50.77	56	-5.23	-	-
.60822	39.74	PK	10	49.74	56	-6.26	-	-
.67295	37.32	PK	10	47.32	56	-8.68	-	-
.26413	46.55	PK	10	56.55	61.3	-4.75	-	-
.22325	46.38	PK	10	56.38	62.7	-6.32	-	-
.30331	43.87	PK	10	53.87	60.15	-6.28	-	-
.37485	42.65	PK	10	52.65	58.39	-5.74	-	-
.43617	41.23	PK	10	51.23	57.13	-5.9	-	-
.47876	41.09	PK	10	51.09	56.36	-5.27	-	-
.54008	40.72	PK	10	50.72	56	-5.28	-	-
.5486	40.17	PK	10	50.17	56	-5.83	-	-

PK - Peak detector

Frequency (MHz)	Meter Reading (dBuV)	Det	Line 2 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.15511	47.82	PK	10.1	57.92	65.72	-7.8	-	-
.17726	47.89	PK	10	57.89	64.61	-6.72	-	-
.1977	48.95	PK	10	58.95	63.71	-4.76	-	-
.20792	47.69	PK	10	57.69	63.29	-5.6	-	-
.22836	46.49	PK	10	56.49	62.51	-6.02	-	-
.2522	45.73	PK	10	55.73	61.68	-5.95	-	-
.27435	47.45	PK	10	57.45	60.99	-3.54	-	-
.29649	44.59	PK	10	54.59	60.34	-5.75	-	-
.30501	45.41	PK	10	55.41	60.11	-4.7	-	-
.31864	44.89	PK	10	54.89	59.74	-4.85	-	-
.34078	44.17	PK	10	54.17	59.18	-5.01	-	-
.36974	44.08	PK	10	54.08	58.51	-4.43	-	-
.3987	44.64	PK	10	54.64	57.88	-3.24	-	-
.42766	41.76	PK	10	51.76	57.3	-5.54	-	-
.45832	41.68	PK	10	51.68	56.72	-5.04	-	-
.49068	40.45	PK	10.1	50.55	56.16	-5.61	-	-
.55711	37.89	PK	10.1	47.99	56	-8.01	-	-
.5767	39.06	PK	10.1	49.16	56	-6.84	-	-
.60822	36.36	PK	10.1	46.46	56	-9.54	-	-
.67295	36.62	PK	10.1	46.72	56	-9.28	-	-
.73257	36.54	PK	10.1	46.64	56	-9.36	-	-
.73938	36.65	PK	10.1	46.75	56	-9.25	-	-

PK - Peak detector

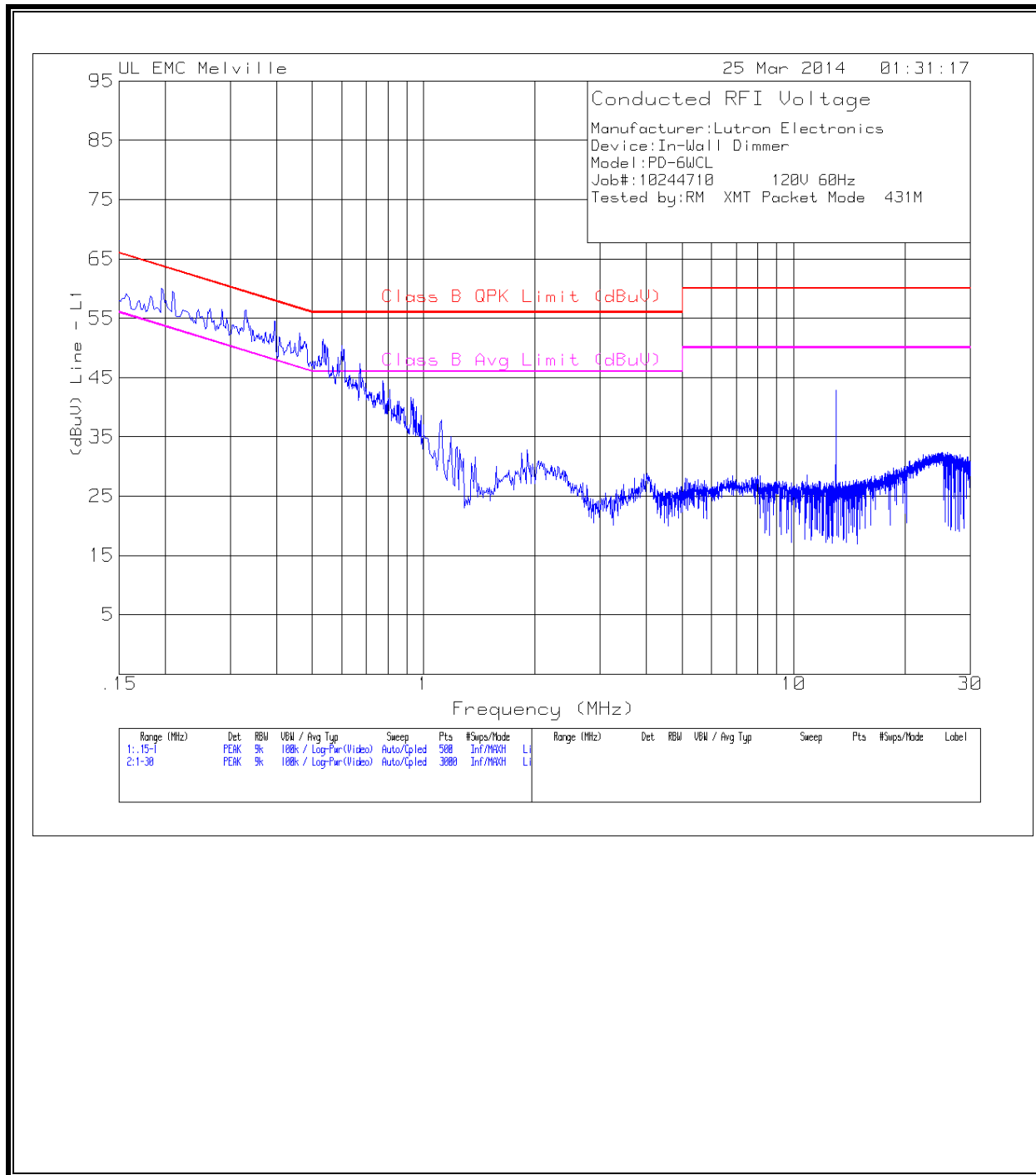
Frequency (MHz)	Meter Reading (dBuV)	Det	Line 1 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.15512	27.3	CAV	10	37.3	-	-	55.72	-18.42
.18188	27.86	CAV	10	37.86	-	-	54.4	-16.54
.19913	28.52	CAV	10	38.52	-	-	53.65	-15.13
.21497	28.06	CAV	10	38.06	-	-	53.01	-14.95
.24653	26.61	CAV	10	36.61	-	-	51.87	-15.26
.28532	25.68	CAV	10	35.68	-	-	50.66	-14.98
.32906	24.91	CAV	10	34.91	-	-	49.47	-14.56
.39264	23.74	CAV	10	33.74	-	-	48.01	-14.27
.46021	22.29	CAV	10	32.29	-	-	46.69	-14.4
.5355	20.58	CAV	10	30.58	-	-	46	-15.42
.6088	19.04	CAV	10	29.04	-	-	46	-16.96
.67196	18.3	CAV	10	28.3	-	-	46	-17.7
.26497	25.68	CAV	10	35.68	-	-	51.27	-15.59
.21958	26.56	CAV	10	36.56	-	-	52.83	-16.27
.30243	26.05	CAV	10	36.05	-	-	50.18	-14.13
.37472	23.98	CAV	10	33.98	-	-	48.4	-14.42
.43809	22.83	CAV	10	32.83	-	-	47.1	-14.27
.47691	21.4	CAV	10	31.4	-	-	46.39	-14.99
.54236	20.96	CAV	10	30.96	-	-	46	-15.04
.54538	20.92	CAV	10	30.92	-	-	46	-15.08

CAV - CISPR average detection

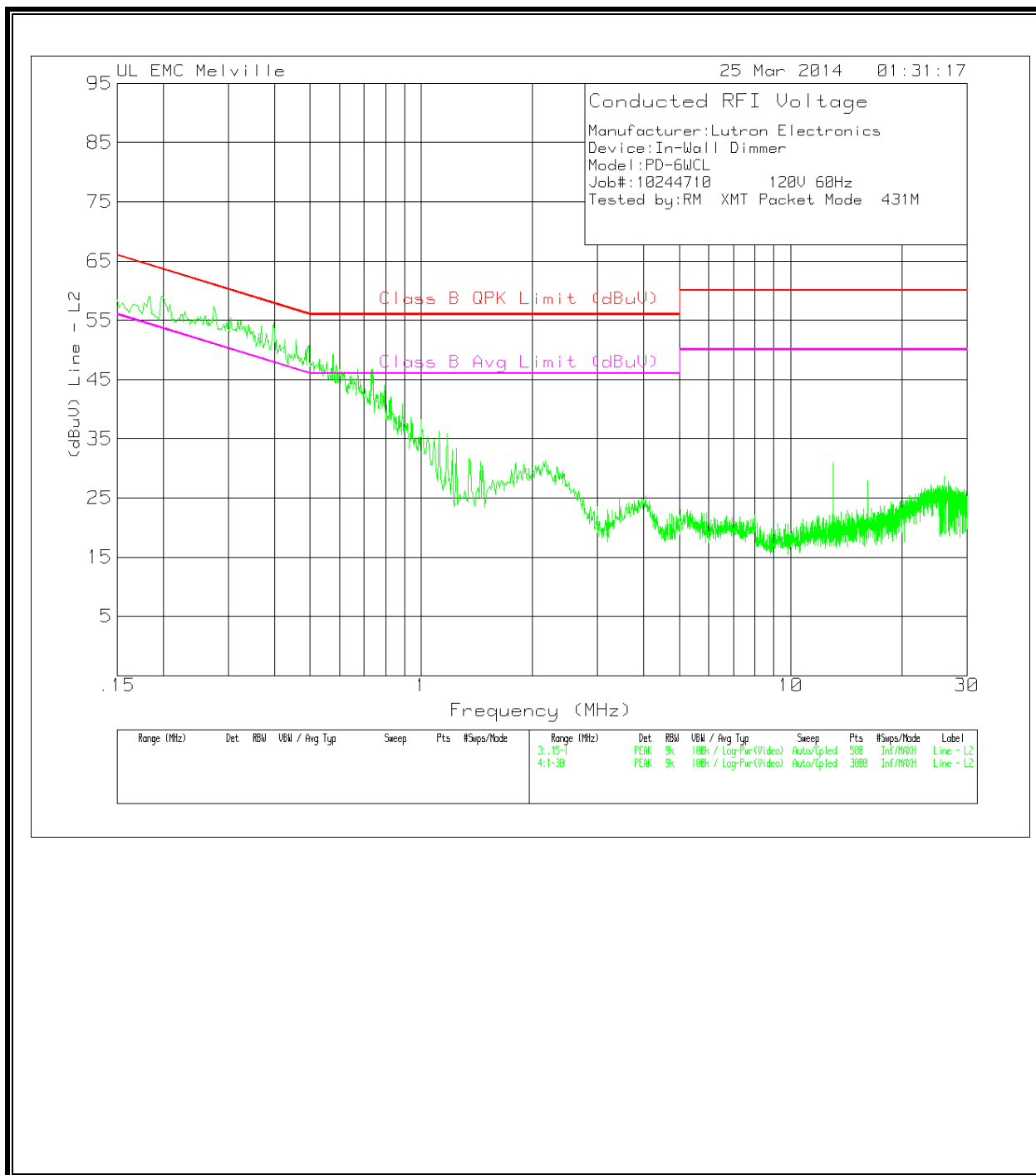
Frequency (MHz)	Meter Reading (dBuV)	Det	Line 2 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.15172	27.56	CAV	10.1	37.66	-	-	55.91	-18.25
.17968	27.44	CAV	10	37.44	-	-	54.5	-17.06
.19918	28.26	CAV	10	38.26	-	-	53.64	-15.38
.20413	27.93	CAV	10	37.93	-	-	53.44	-15.51
.23033	26.23	CAV	10	36.23	-	-	52.44	-16.21
.24892	25.98	CAV	10	35.98	-	-	51.79	-15.81
.27231	25.61	CAV	10	35.61	-	-	51.05	-15.44
.29628	24.8	CAV	10	34.8	-	-	50.35	-15.55
.30544	24.48	CAV	10	34.48	-	-	50.09	-15.61
.31588	24.21	CAV	10	34.21	-	-	49.81	-15.6
.34016	24.03	CAV	10	34.03	-	-	49.2	-15.17
.36947	23.77	CAV	10	33.77	-	-	48.51	-14.74
.39709	22.43	CAV	10.1	32.53	-	-	47.91	-15.38
.4275	21.97	CAV	10	31.97	-	-	47.3	-15.33
.45675	21.52	CAV	10	31.52	-	-	46.75	-15.23
.49084	21.24	CAV	10.1	31.34	-	-	46.15	-14.81
.55982	20.19	CAV	10.1	30.29	-	-	46	-15.71
.57442	19.2	CAV	10.1	29.3	-	-	46	-16.7
.61084	19.2	CAV	10.1	29.3	-	-	46	-16.7
.67117	18.3	CAV	10.1	28.4	-	-	46	-17.6
.73245	17.29	CAV	10.1	27.39	-	-	46	-18.61
.73772	16.44	CAV	10.1	26.54	-	-	46	-19.46

CAV - CISPR average detection

LINE 1 RESULTS – Low Channel



LINE 2 RESULTS – Low Channel



6 WORST EMISSIONS – High Channel

Frequency (MHz)	Meter Reading (dBuV)	Det	Line 1 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.15511	47.41	PK	10	57.41	65.72	-8.31	-	-
.17555	47.8	PK	10	57.8	64.69	-6.89	-	-
.1994	49.92	PK	10	59.92	63.64	-3.72	-	-
.22325	46.96	PK	10	56.96	62.7	-5.74	-	-
.24028	47.13	PK	10	57.13	62.09	-4.96	-	-
.26413	45.91	PK	10	55.91	61.3	-5.39	-	-
.27094	45.37	PK	10	55.37	61.09	-5.72	-	-
.29649	45.05	PK	10	55.05	60.34	-5.29	-	-
.30842	44.73	PK	10	54.73	60.01	-5.28	-	-
.32886	43.77	PK	10	53.77	59.48	-5.71	-	-
.34249	44.08	PK	10	54.08	59.14	-5.06	-	-
.36974	42.07	PK	10	52.07	58.51	-6.44	-	-
.3987	44.22	PK	10	54.22	57.88	-3.66	-	-
.41233	43.28	PK	10	53.28	57.6	-4.32	-	-
.42766	41.07	PK	10	51.07	57.3	-6.23	-	-
.47365	41.86	PK	10	51.86	56.45	-4.59	-	-
.4975	39.31	PK	10	49.31	56.04	-6.73	-	-
.52645	40.57	PK	10	50.57	56	-5.43	-	-
.59289	40.12	PK	10	50.12	56	-5.88	-	-
.66954	36.78	PK	10	46.78	56	-9.22	-	-
.71383	36.33	PK	10	46.33	56	-9.67	-	-
.73257	35.73	PK	10	45.73	56	-10.27	-	-

PK - Peak detector

Frequency (MHz)	Meter Reading (dBuV)	Det	Line 2 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.15681	48.5	PK	10.1	58.6	65.63	-7.03	-	-
.16703	49.05	PK	10	59.05	65.11	-6.06	-	-
.18066	47.92	PK	10	57.92	64.46	-6.54	-	-
.2011	48.15	PK	10	58.15	63.57	-5.42	-	-
.20792	47.4	PK	10	57.4	63.29	-5.89	-	-
.22154	46.84	PK	10	56.84	62.76	-5.92	-	-
.23347	47.72	PK	10	57.72	62.33	-4.61	-	-
.25476	46.38	PK	10	56.38	61.6	-5.22	-	-
.26754	46.8	PK	10	56.8	61.19	-4.39	-	-
.28968	45.73	PK	10	55.73	60.53	-4.8	-	-
.30842	43.97	PK	10	53.97	60.01	-6.04	-	-
.32886	44.72	PK	10	54.72	59.48	-4.76	-	-
.34078	45.04	PK	10	55.04	59.18	-4.14	-	-
.35441	42.51	PK	10	52.51	58.86	-6.35	-	-
.37826	42.23	PK	10	52.23	58.32	-6.09	-	-
.39529	42.37	PK	10.1	52.47	57.95	-5.48	-	-
.41403	42.13	PK	10	52.13	57.57	-5.44	-	-
.44469	40	PK	10	50	56.97	-6.97	-	-
.49409	38.29	PK	10	48.29	56.1	-7.81	-	-
.52645	36.66	PK	10.1	46.76	56	-9.24	-	-
.55371	38.95	PK	10.1	49.05	56	-6.95	-	-
.61673	37.51	PK	10.1	47.61	56	-8.39	-	-

Frequency (MHz)	Meter Reading (dBuV)	Det	Line 2 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.66102	35.02	PK	10.1	45.12	56	-10.88	-	-
.71212	33.46	PK	10.1	43.56	56	-12.44	-	-
.73427	34.25	PK	10.1	44.35	56	-11.65	-	-

PK - Peak detector

Frequency (MHz)	Meter Reading (dBuV)	Det	Line 1 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.15144	27.8	CAV	10	37.8	-	-	55.92	-18.12
.17684	27.56	CAV	10	37.56	-	-	54.63	-17.07
.19961	28.4	CAV	10	38.4	-	-	53.63	-15.23
.22041	27.97	CAV	10	37.97	-	-	52.8	-14.83
.24251	25.85	CAV	10	35.85	-	-	52.01	-16.16
.26548	25.7	CAV	10	35.7	-	-	51.26	-15.56
.26873	25.58	CAV	10	35.58	-	-	51.16	-15.58
.2959	25.37	CAV	10	35.37	-	-	50.36	-14.99
.30879	24.51	CAV	10	34.51	-	-	50	-15.49
.32771	24.23	CAV	10	34.23	-	-	49.51	-15.28
.34017	24.06	CAV	10	34.06	-	-	49.2	-15.14
.36956	23.89	CAV	10	33.89	-	-	48.51	-14.62
.39887	22.77	CAV	10	32.77	-	-	47.88	-15.11
.40965	22.43	CAV	10	32.43	-	-	47.66	-15.23
.42608	22.25	CAV	10	32.25	-	-	47.33	-15.08
.47586	21.63	CAV	10	31.63	-	-	46.41	-14.78
.49691	20.75	CAV	10	30.75	-	-	46.05	-15.3
.52291	20.32	CAV	10	30.32	-	-	46	-15.68
.59204	19.78	CAV	10	29.78	-	-	46	-16.22
.66731	18.19	CAV	10	28.19	-	-	46	-17.81
.71411	17.6	CAV	10	27.6	-	-	46	-18.4
.73206	16.98	CAV	10	26.98	-	-	46	-19.02

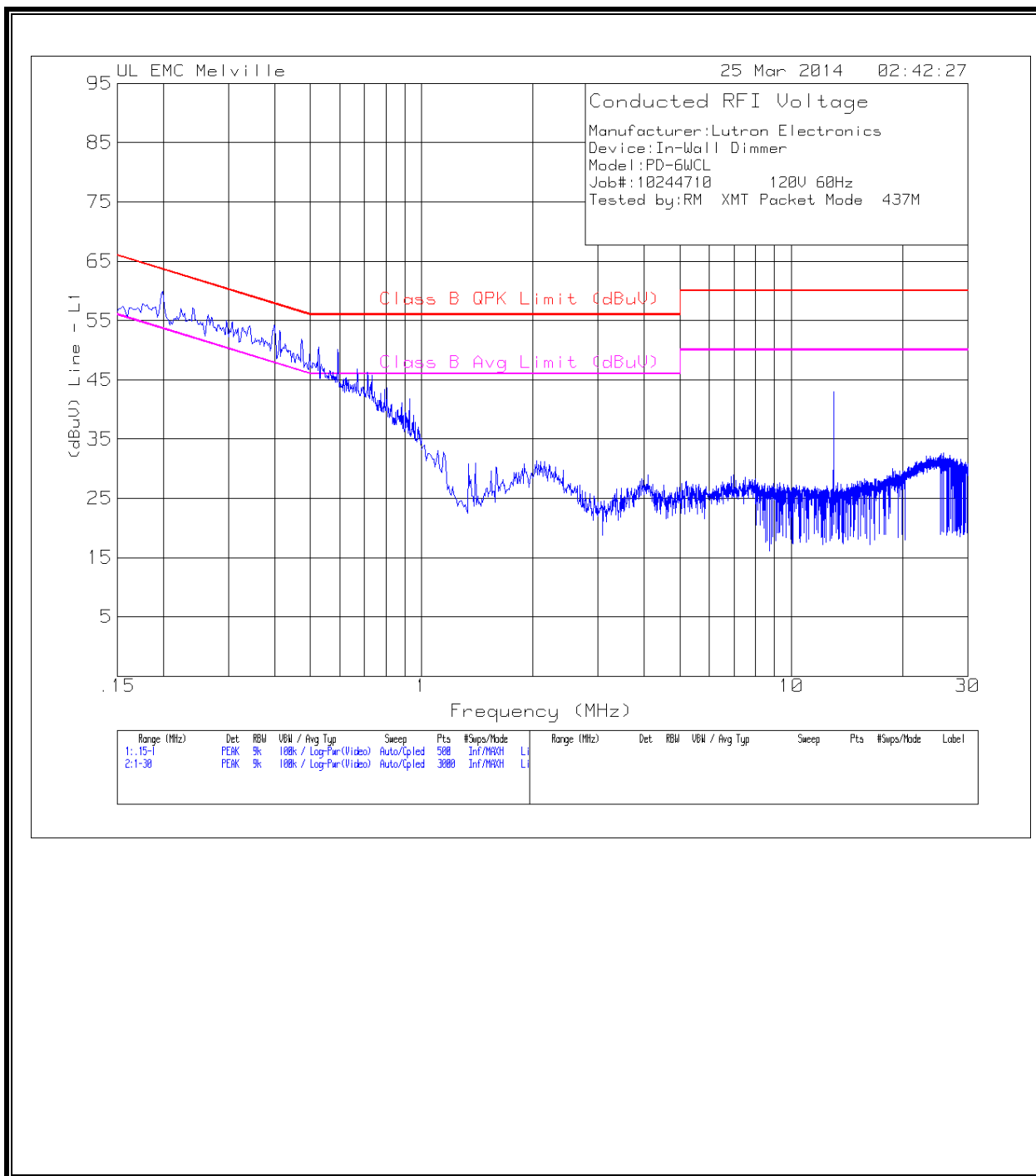
CAV - CISPR average detection

Frequency (MHz)	Meter Reading (dBuV)	Det	Line 2 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.15521	27	CAV	10.1	37.1	-	-	55.72	-18.62
.16615	27.46	CAV	10	37.46	-	-	55.15	-17.69
.1812	27.59	CAV	10	37.59	-	-	54.43	-16.84
.19927	28.15	CAV	10	38.15	-	-	53.64	-15.49
.20557	27.63	CAV	10	37.63	-	-	53.38	-15.75
.21852	26.32	CAV	10	36.32	-	-	52.87	-16.55
.23149	26.19	CAV	10	36.19	-	-	52.4	-16.21
.25111	25.66	CAV	10	35.66	-	-	51.72	-16.06
.26711	25.61	CAV	10	35.61	-	-	51.21	-15.6
.2871	25.29	CAV	10	35.29	-	-	50.61	-15.32
.31082	24.75	CAV	10	34.75	-	-	49.95	-15.2
.32932	24.46	CAV	10	34.46	-	-	49.47	-15.01
.33952	23.89	CAV	10	33.89	-	-	49.21	-15.32
.35552	23.65	CAV	10	33.65	-	-	48.83	-15.18
.37693	23.28	CAV	10	33.28	-	-	48.35	-15.07
.3931	23	CAV	10	33	-	-	48	-15
.41223	22.57	CAV	10	32.57	-	-	47.6	-15.03
.44163	21.86	CAV	10	31.86	-	-	47.03	-15.17
.49258	21.44	CAV	10.1	31.54	-	-	46.12	-14.58
.5231	20.37	CAV	10.1	30.47	-	-	46	-15.53
.55173	19.96	CAV	10.1	30.06	-	-	46	-15.94
.61528	18.84	CAV	10.1	28.94	-	-	46	-17.06

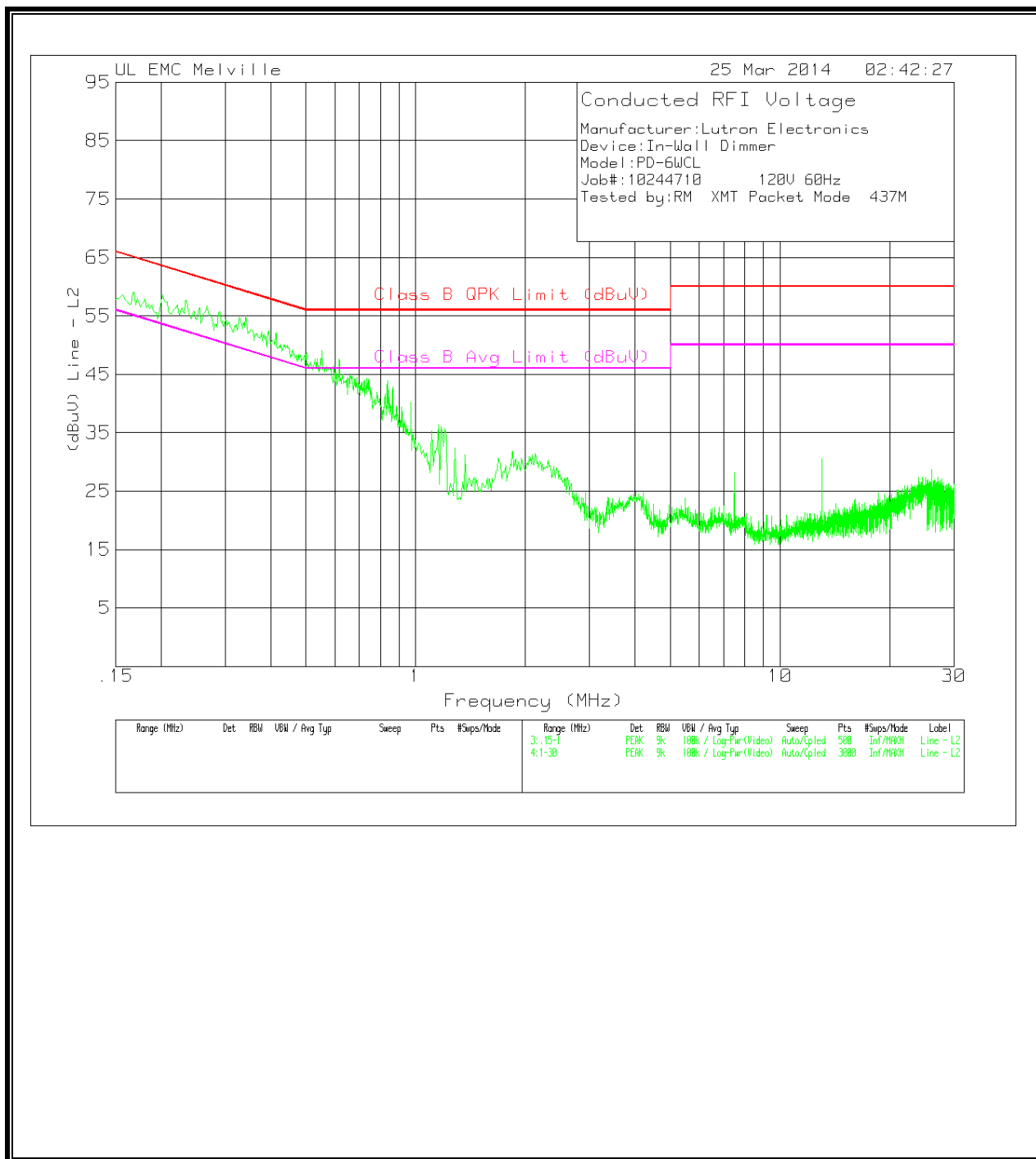
Frequency (MHz)	Meter Reading (dBuV)	Det	Line 2 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.664	18.35	CAV	10.1	28.45	-	-	46	-17.55
.71461	17.54	CAV	10.1	27.64	-	-	46	-18.36
.73298	16.98	CAV	10.1	27.08	-	-	46	-18.92

CAV - CISPR average detection

LINE 1 RESULTS – High Channel

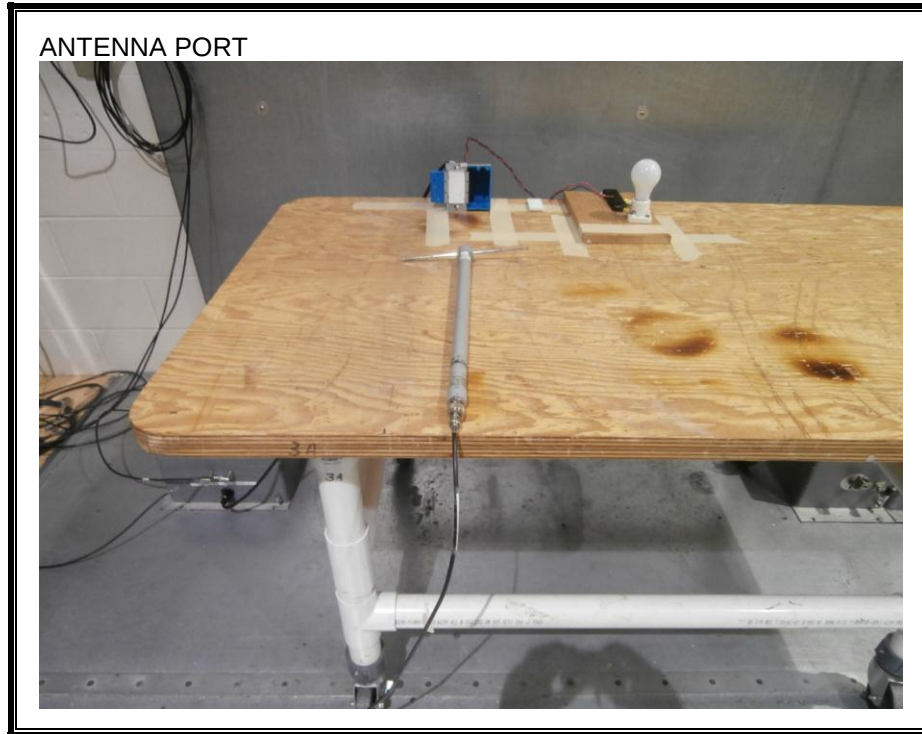


LINE 2 RESULTS – High Channel

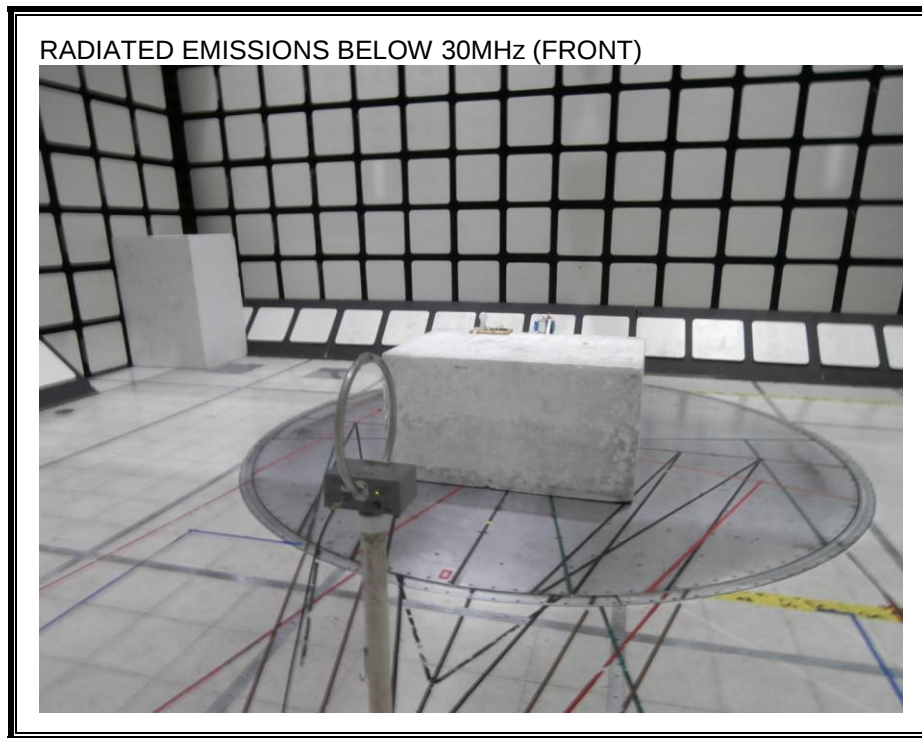


10. SETUP PHOTOS

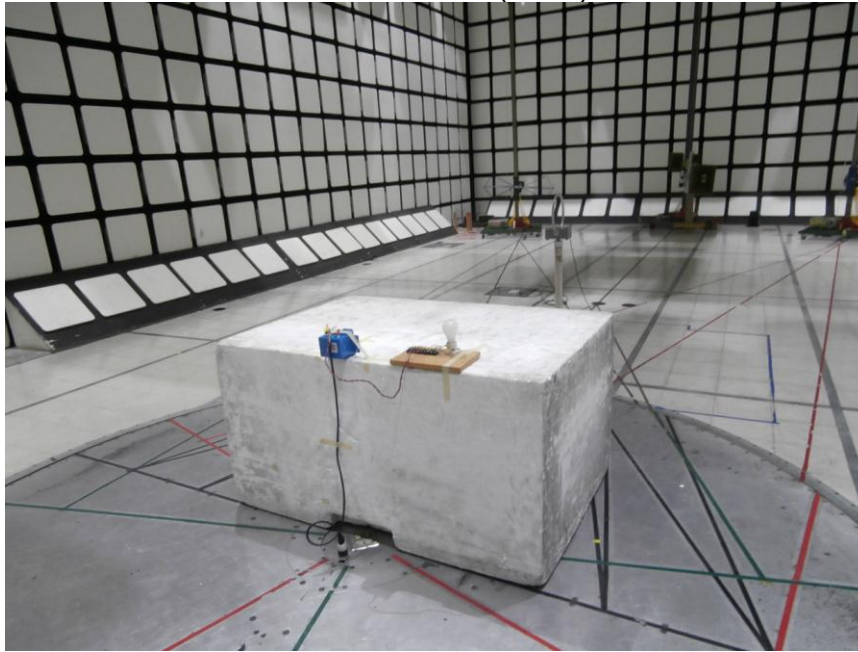
ANTENNA PORT



RADIATED EMISSION BELOW 30 MHz

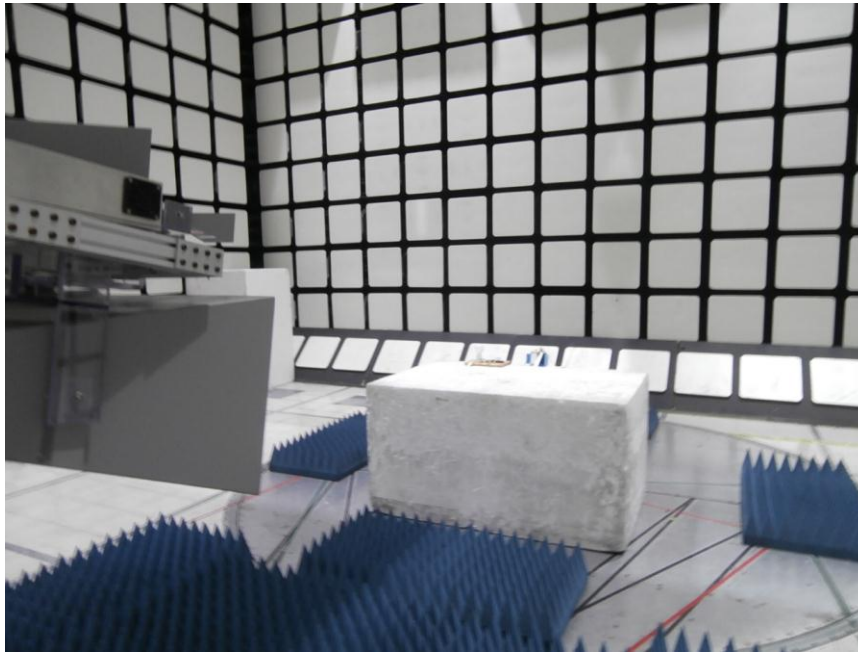
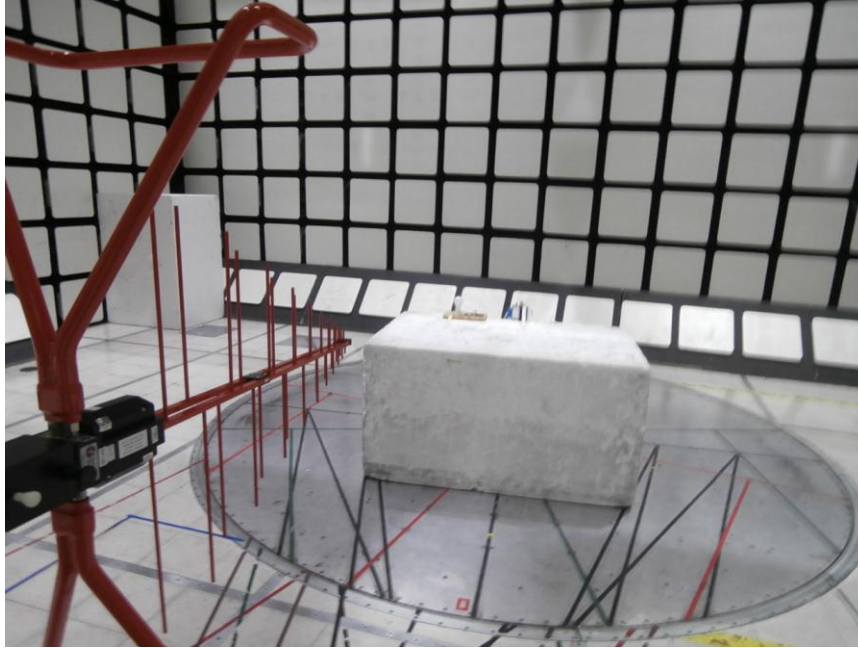


RADIATED EMISSIONS BELOW 30MHz (BACK)

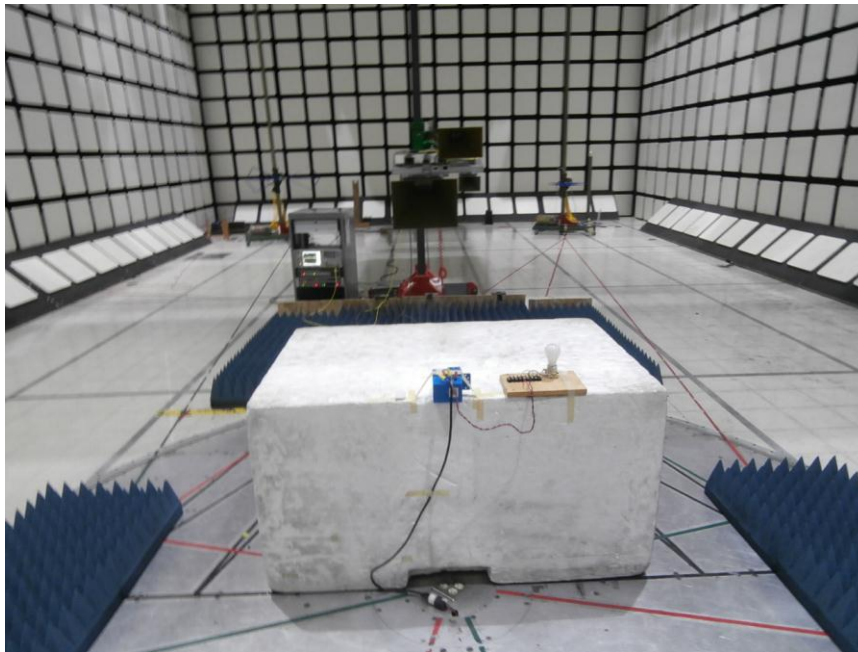
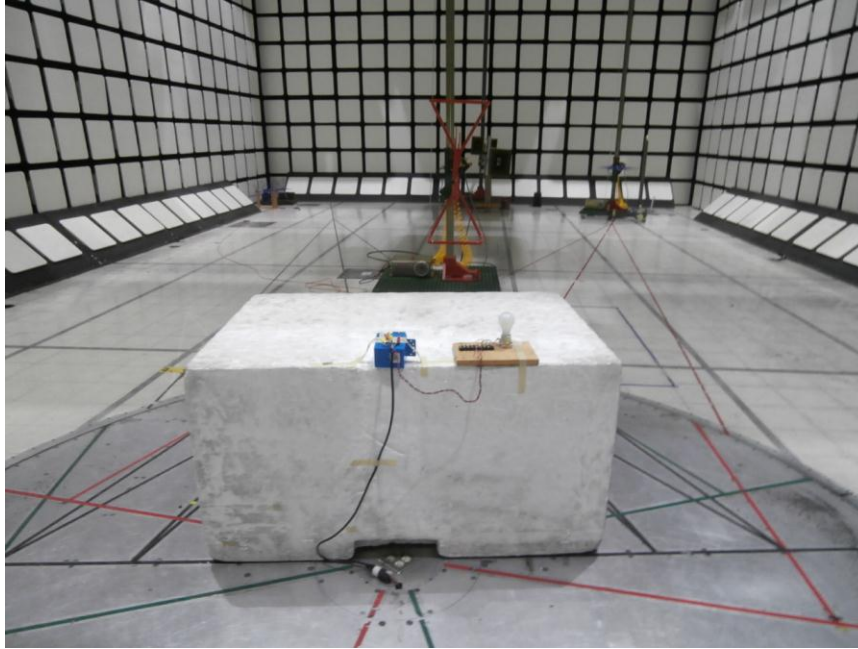


RADIATED EMISSION ABOVE 30 MHz

RADIATED EMISSIONS ABOVE 30 MHz (FRONT)

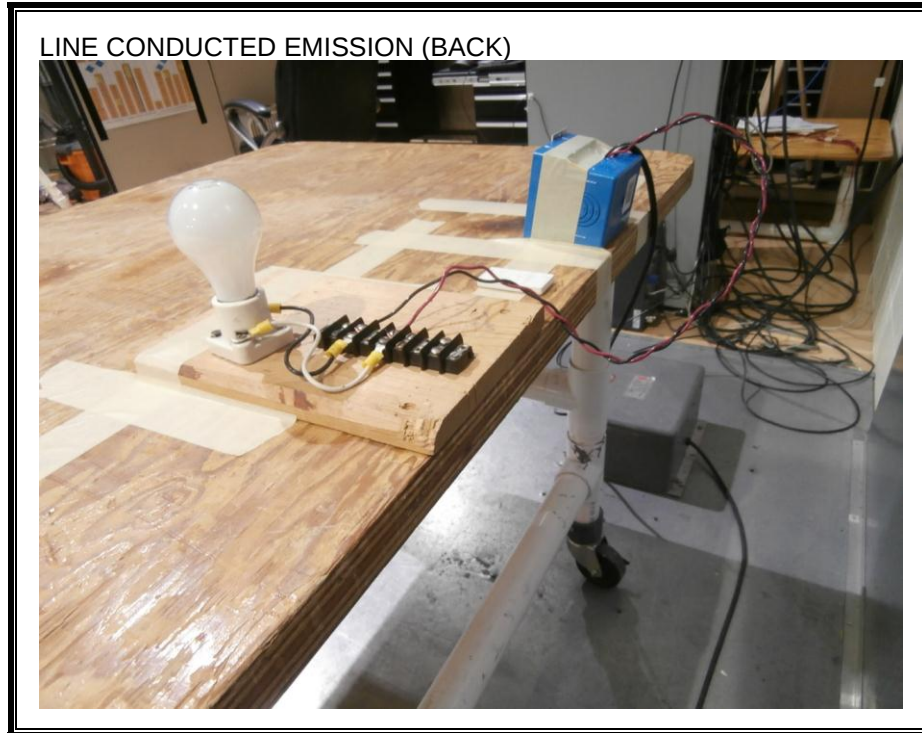


RADIATED EMISSIONS ABOVE 30 MHz (BACK)



AC MAINS LINE CONDUCTED EMISSION





END OF REPORT