



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

CERTIFICATION TEST REPORT

FOR

BRIDGE

MODEL NUMBER: BDG-1

**FCC ID: JPZ0104
IC: 2851A-JPZ0104**

REPORT NUMBER: 10199581

ISSUE DATE: 2014-02-25

Prepared for
**LUTRON ELECTRONICS INC.
7200 SUTER RD.
COOPERBURG PA, 18036, USA**

Prepared by
**UL LLC
1285 WALT WHITMAN RD.
MELVILLE, NY 11747, U.S.A.
TEL: (631) 271-6200
FAX: (877) 854-3577**



NVLAP LAB CODE 100255-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	2014-02-25	Initial Issue	B. DeLisi

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LUTRON ELECTRONICS INC.
7200 SUTER RD.
COOPERBURG PA, 18036, USA

EUT DESCRIPTION: Bridge

MODEL: BDG-1

SERIAL NUMBER: Non-serialized production unit.

DATE TESTED: 2014-02-18 through 2014-02-25

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Pass
FCC PART 15 SUBPART B	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:



Michael Antola
WiSE Lead Engineer
UL LLC

Tested By:



Bob DeLisi
WiSE Principal Engineer
UL LLC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4:2009 (Applied to FCC Class B testing), ANSI C63.10-2009 (Applied to Transmitter testing), 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:

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

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 an Ethernet bridge that includes wireless lighting control and is intended for lighting applications.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral wire coil.

5.3. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was L-BDG-Alpha2.zip.

The test utility software used during testing was BDG_FCC_IMAGE_x84.s19.

5.4. WORST-CASE CONFIGURATION AND MODE

Testing was conducted on the lowest and highest channels for radiated tests. For conducted mains tests were conducted on a single channel.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Router	Cisco	AIR-OEAP602I-A-K9	FTX1522VOOL	LDK102C
Laptop	Compaq	Pesario Cq56	-	-

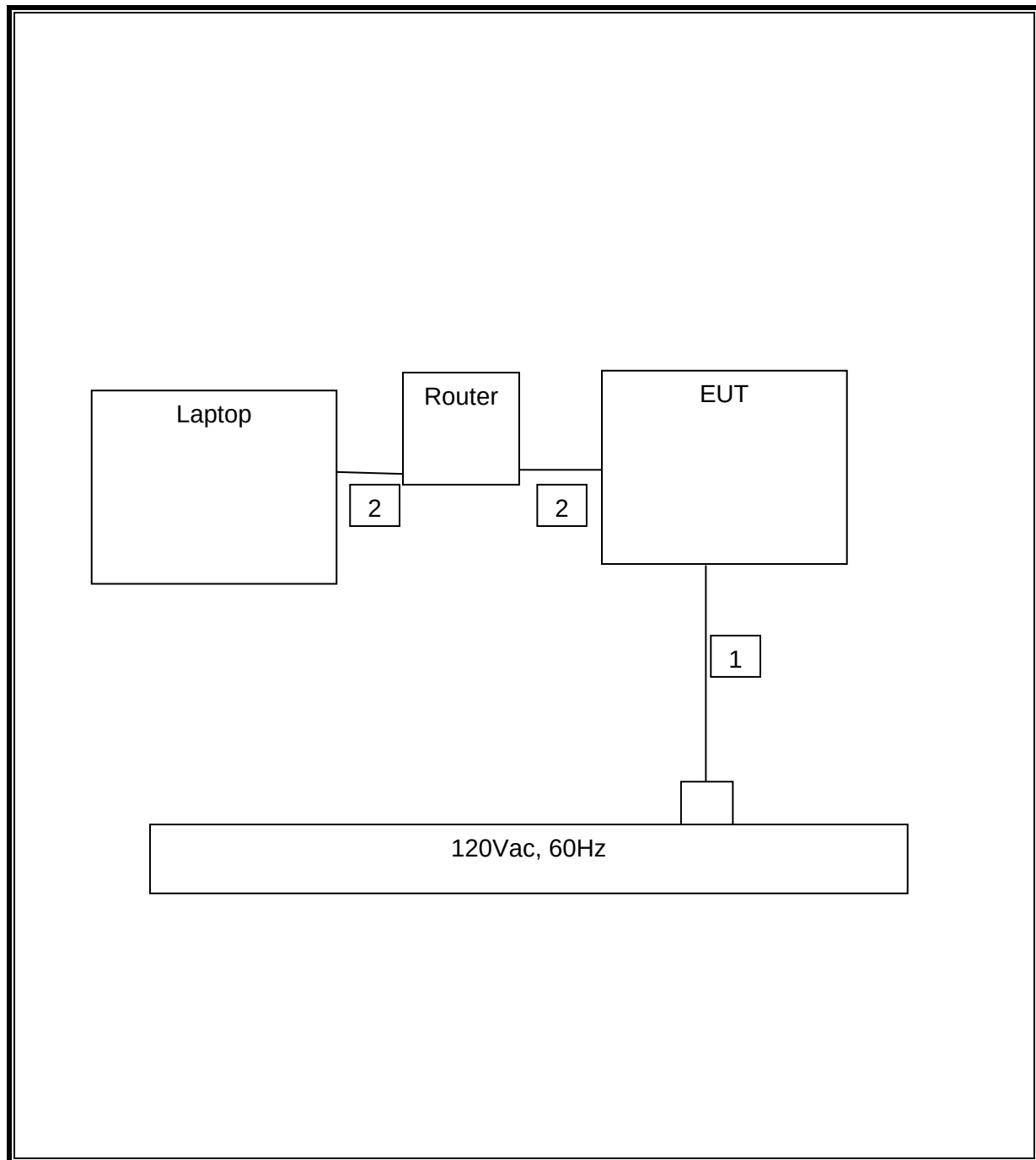
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	Mini-usb	Shielded	<3m	AC/DC power adapter
2	Ethernet	1	RJ-45	Unshielded	>3m	None

TEST SETUP

The EUT is a stand-alone device that connects to the LAN for communications. Test software exercised the radio.

SETUP DIAGRAM FOR TESTS



6. ANTENNA PORT TEST RESULTS

6.1. 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 10 KHz. 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:

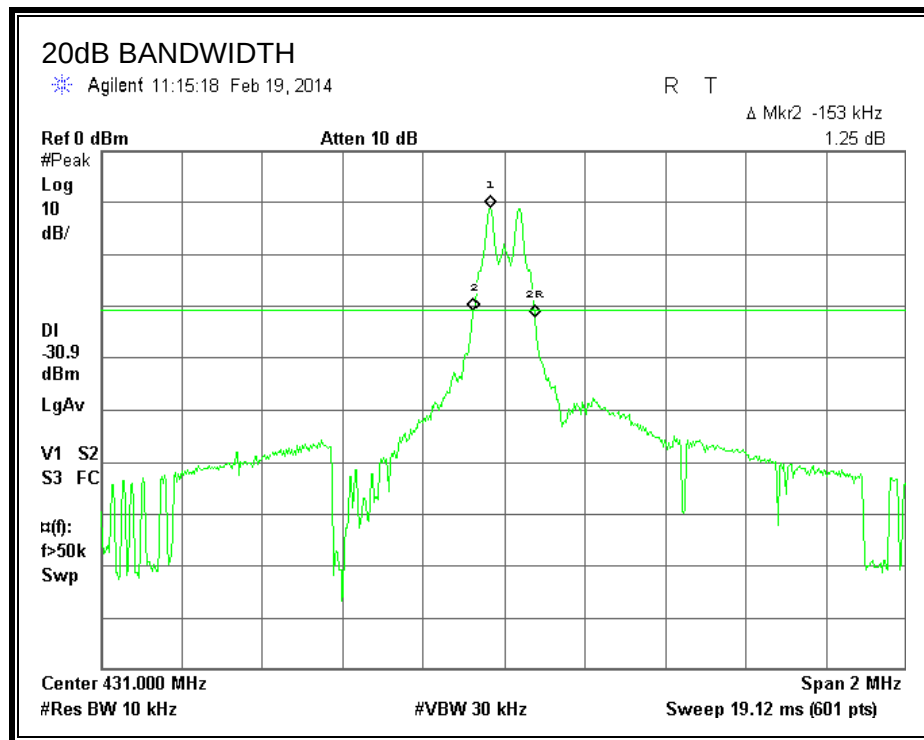
20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
431	153	1077.5	-924.5
437	153	1092.5	-939.5

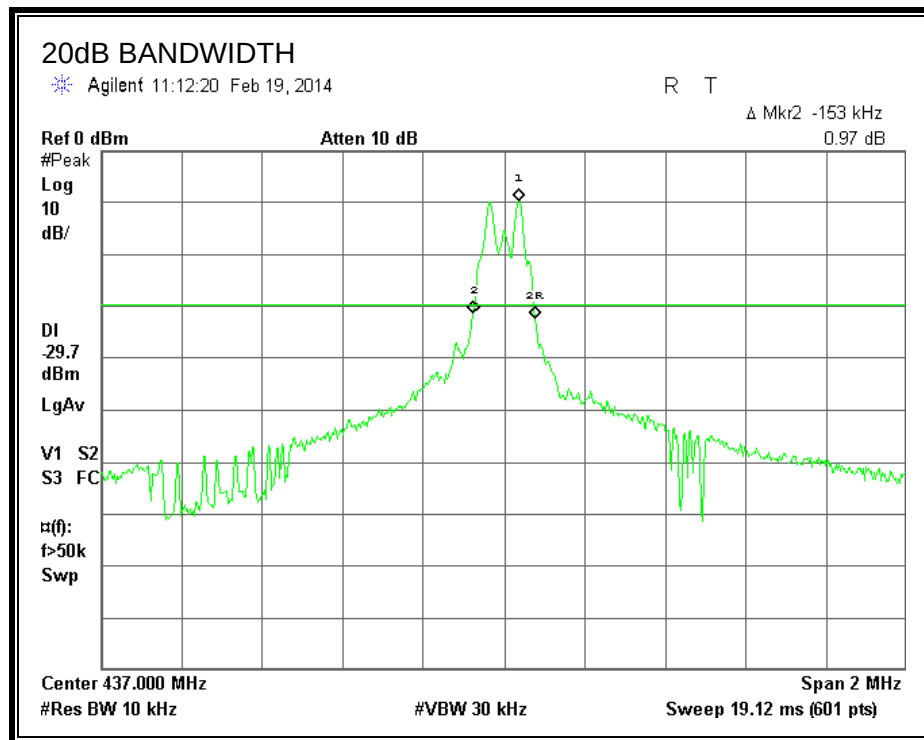
99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
431	137.4	1077.5	-940.1
437	134.9	1092.5	-957.6

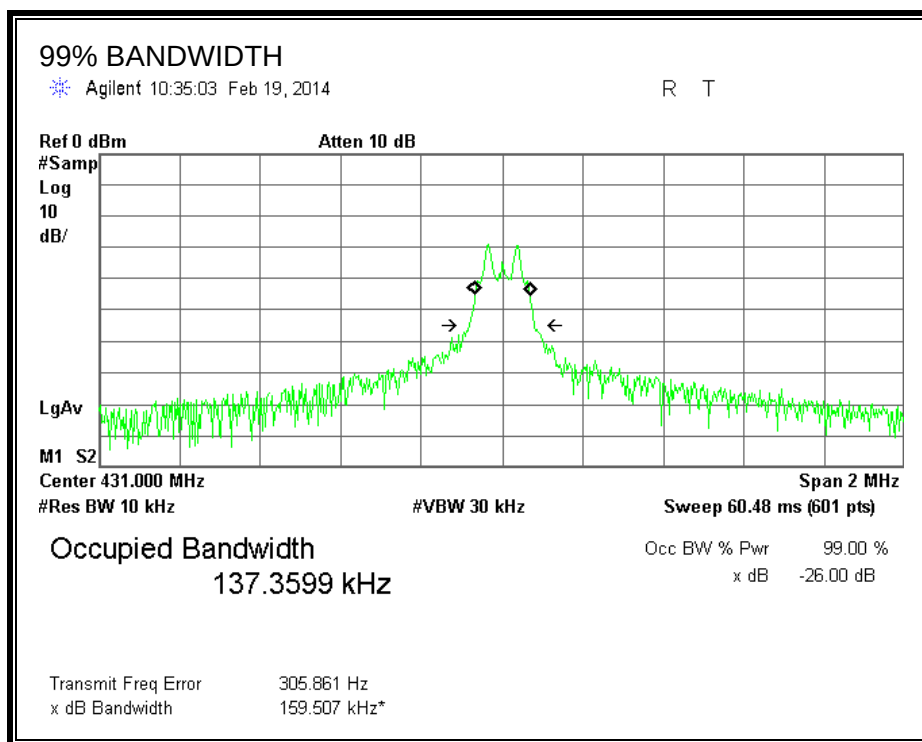
20dB BANDWIDTH – Low channel



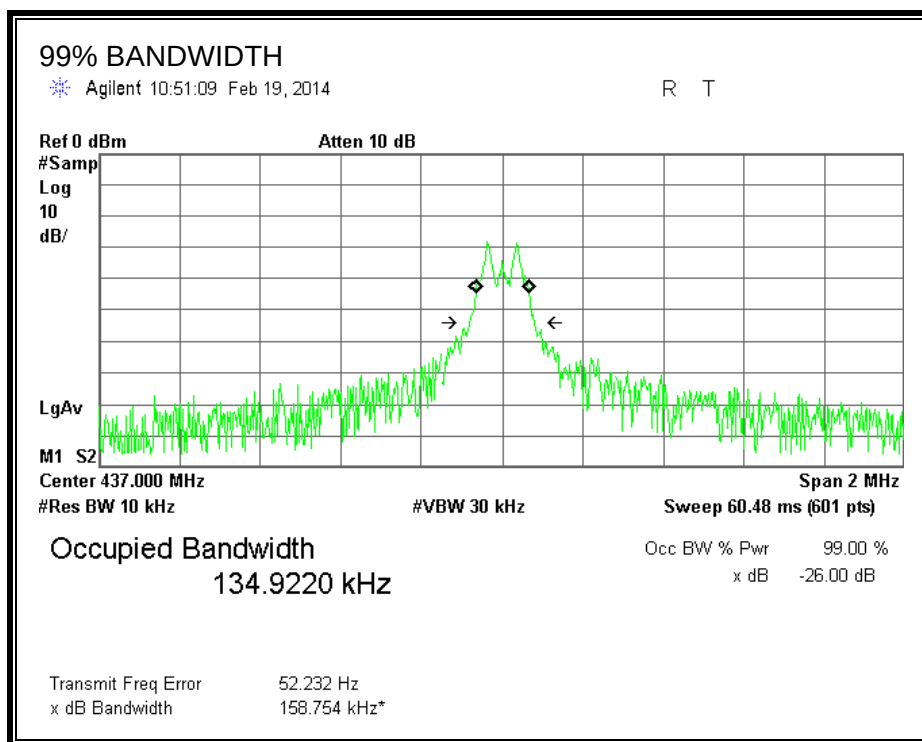
20dB BANDWIDTH – High channel



99% BANDWIDTH – Low channel



99% BANDWIDTH – Low channel



6.2. 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

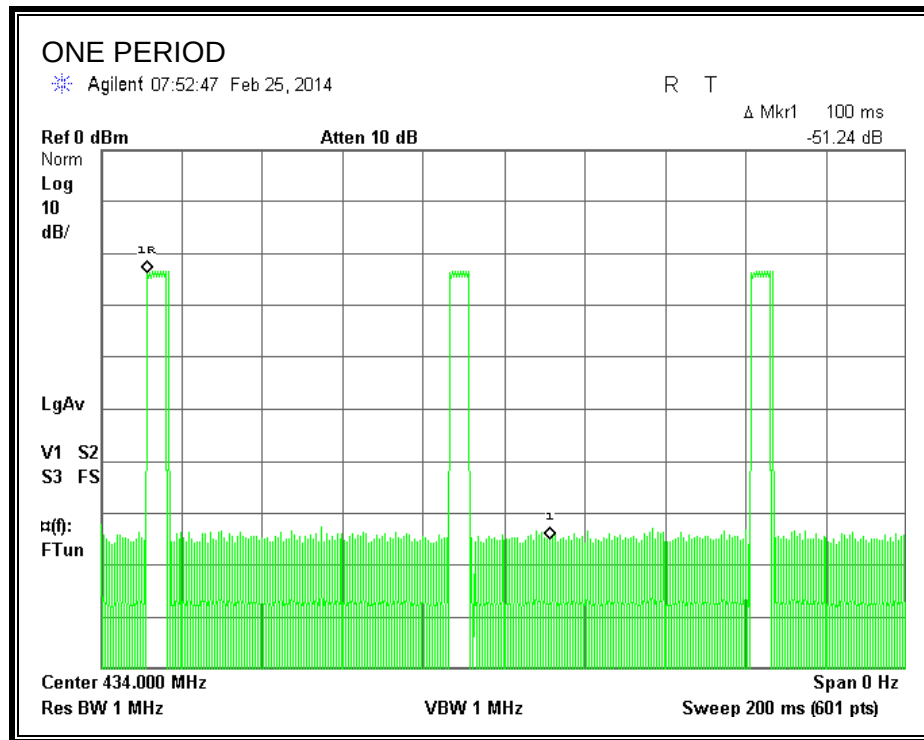
Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is (# of long pulses * long pulse width) + (# of short pulses * short pulse width) / 100 or T

RESULTS

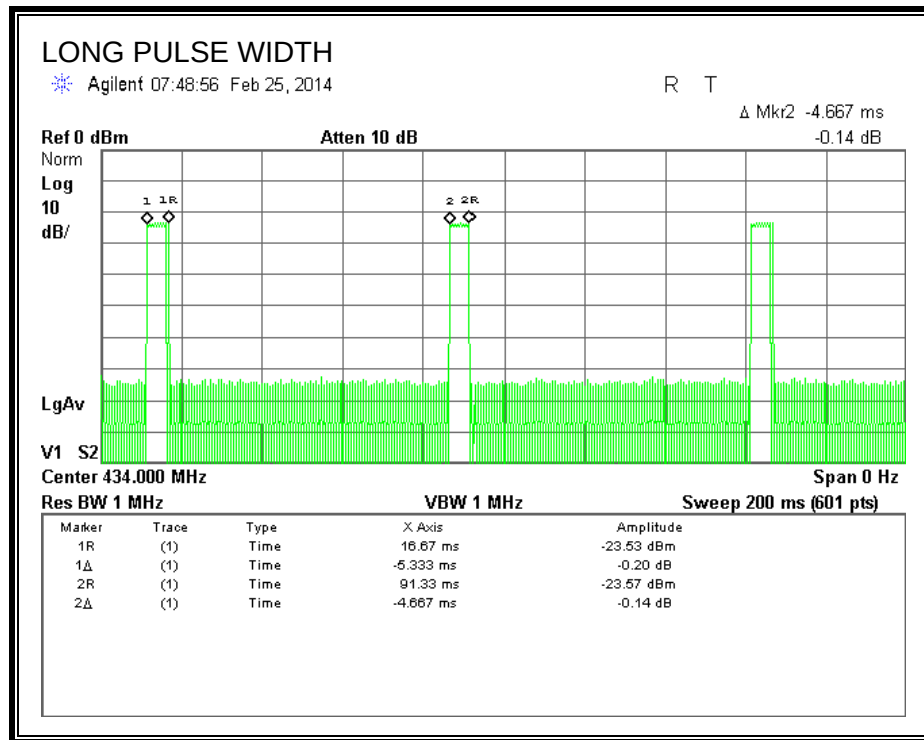
No non-compliance noted:

One Period (ms)	Long Pulse Width (ms)	# of Long Pulses	Short Width (ms)	# of Short Pulses	Duty Cycle	20*Log Duty Cycle (dB)
100	5.333	1	4.67	1	0.100	-20.00

ONE PERIOD



PULSE WIDTH



6.3. TRANSMISSION TIME

LIMITS

FCC §15.231 (a) (2)

IC A1.1.1 (b)

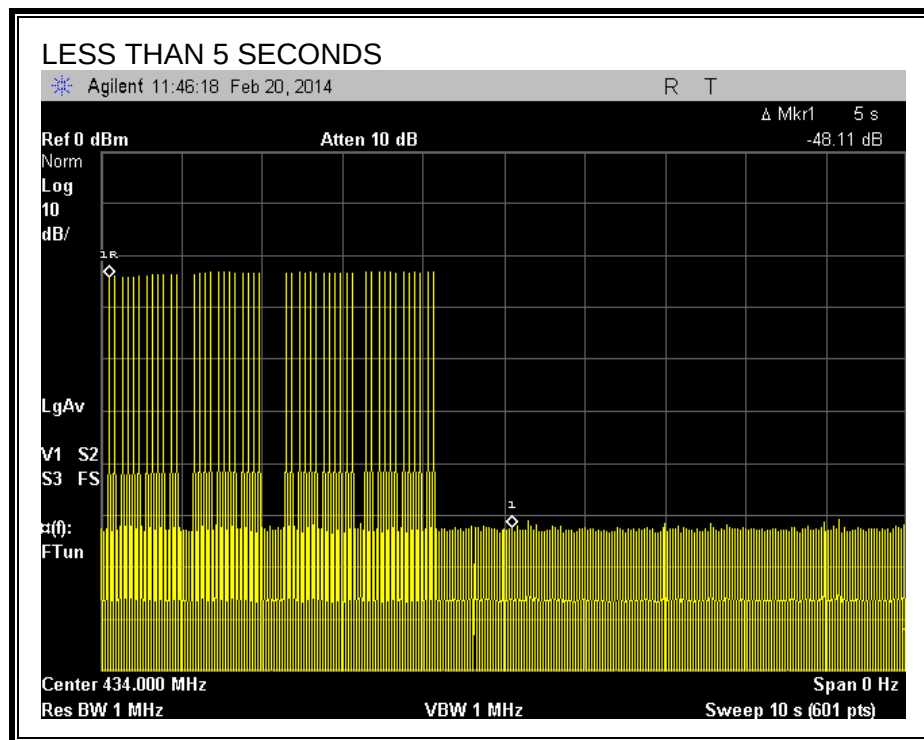
A transmitter activated automatically shall cease transmission within 5 seconds after activation.

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:



7. RADIATED EMISSION TEST RESULTS

7.1. 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 and corrected by the duty cycle correction factor for average measurements, where applicable.

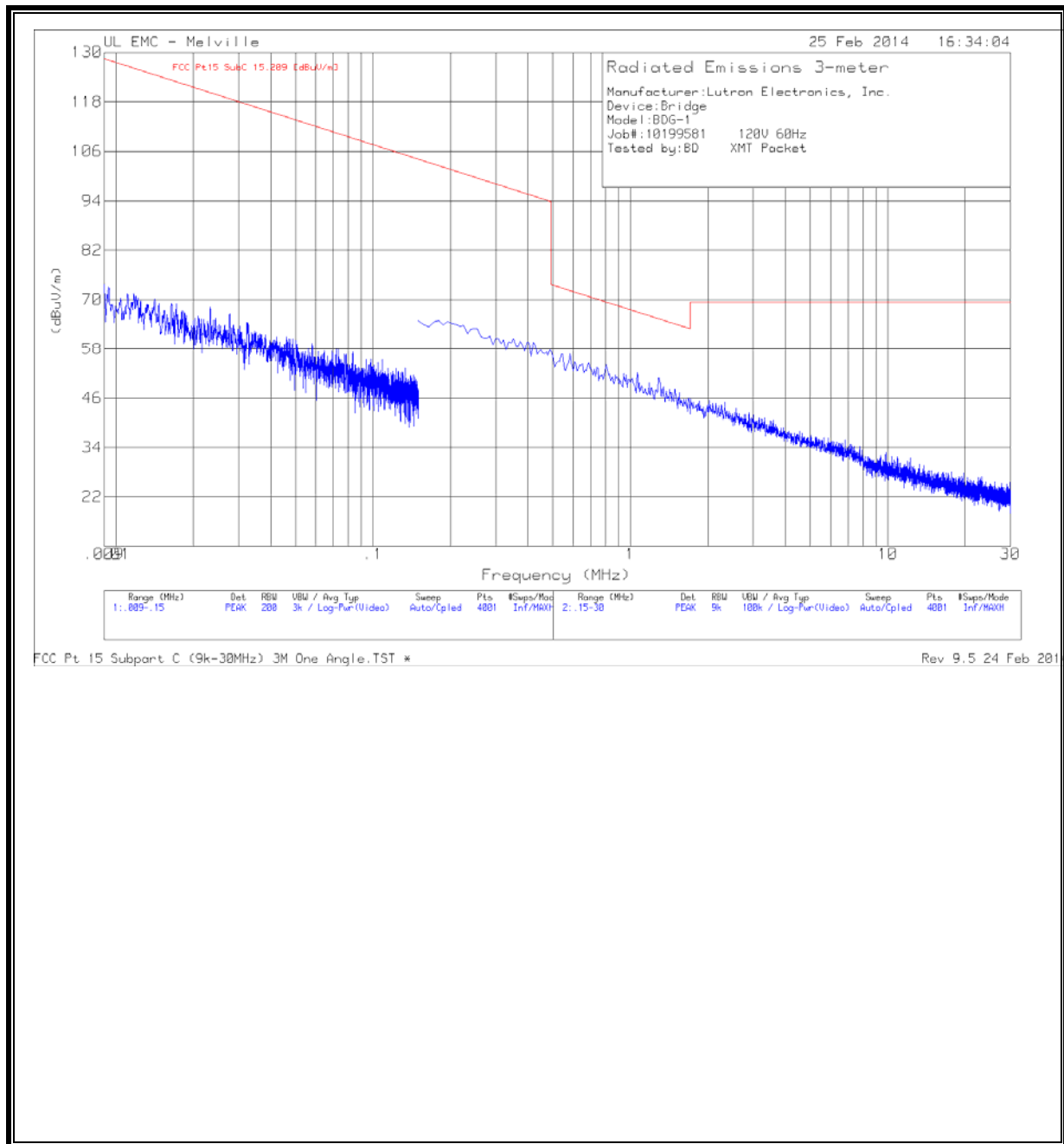
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

Below 30MHz the limit was extrapolated to a 3-meter test distance using 40dB/decade.

RESULTS

No non-compliance noted:

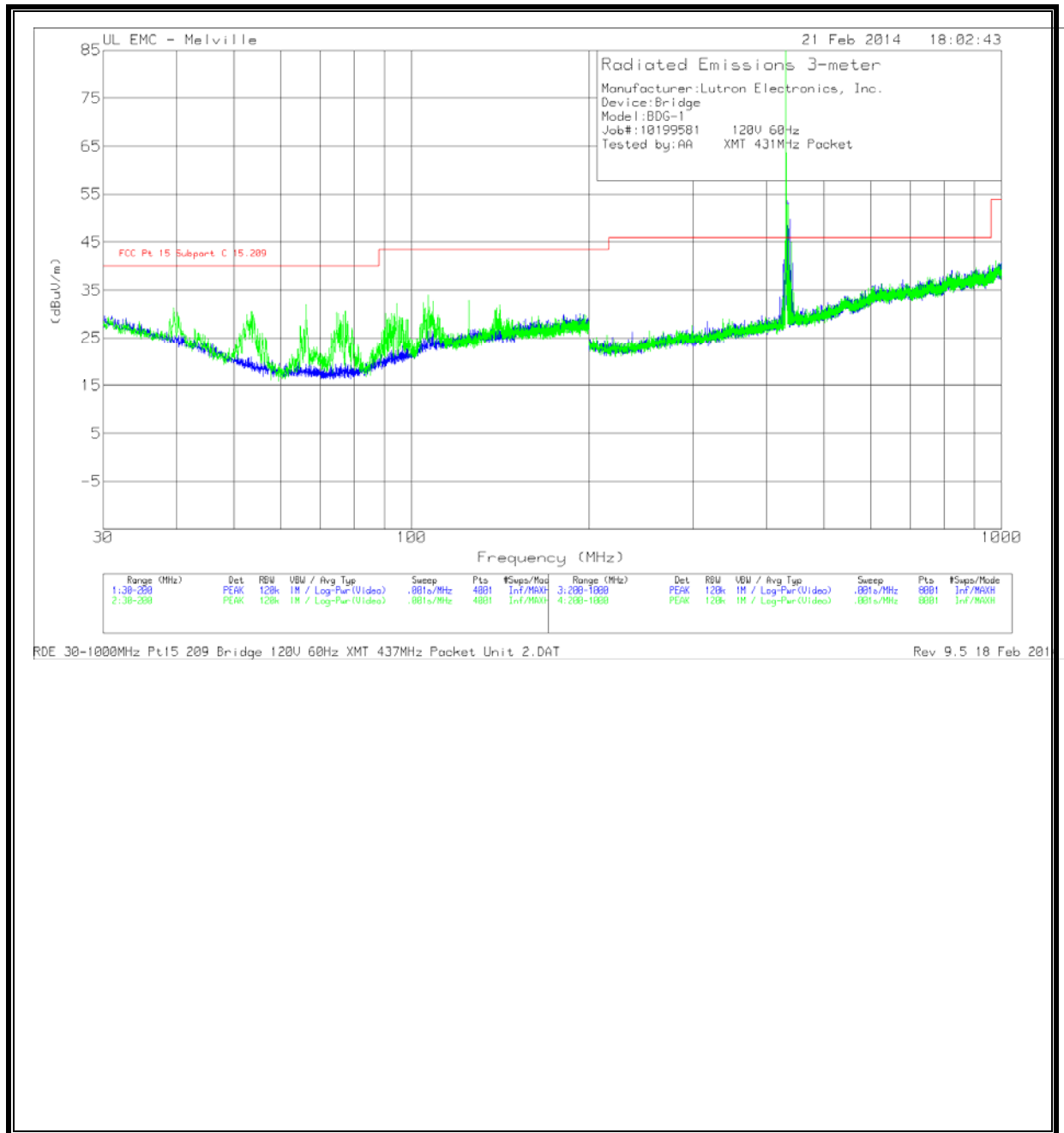
TX SPURIOUS EMISSION (9kHz - 30 MHz)



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
.009388	42.29	PK	30.5	.3	73.09	128.13	-55.04	0-360	100	V
.023276	44.47	PK	23.7	.2	68.37	120.25	-51.88	0-360	100	V
.027718	43.5	PK	22.9	.2	66.6	118.73	-52.13	0-360	100	V
.03235	42.3	PK	22	.2	64.5	117.39	-52.89	0-360	100	V
1.06043	35.55	PK	16.4	.4	52.35	67.09	-14.74	0-360	100	V
1.29176	34.12	PK	16.4	.4	50.92	65.38	-14.46	0-360	100	V

PK - Peak detector

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

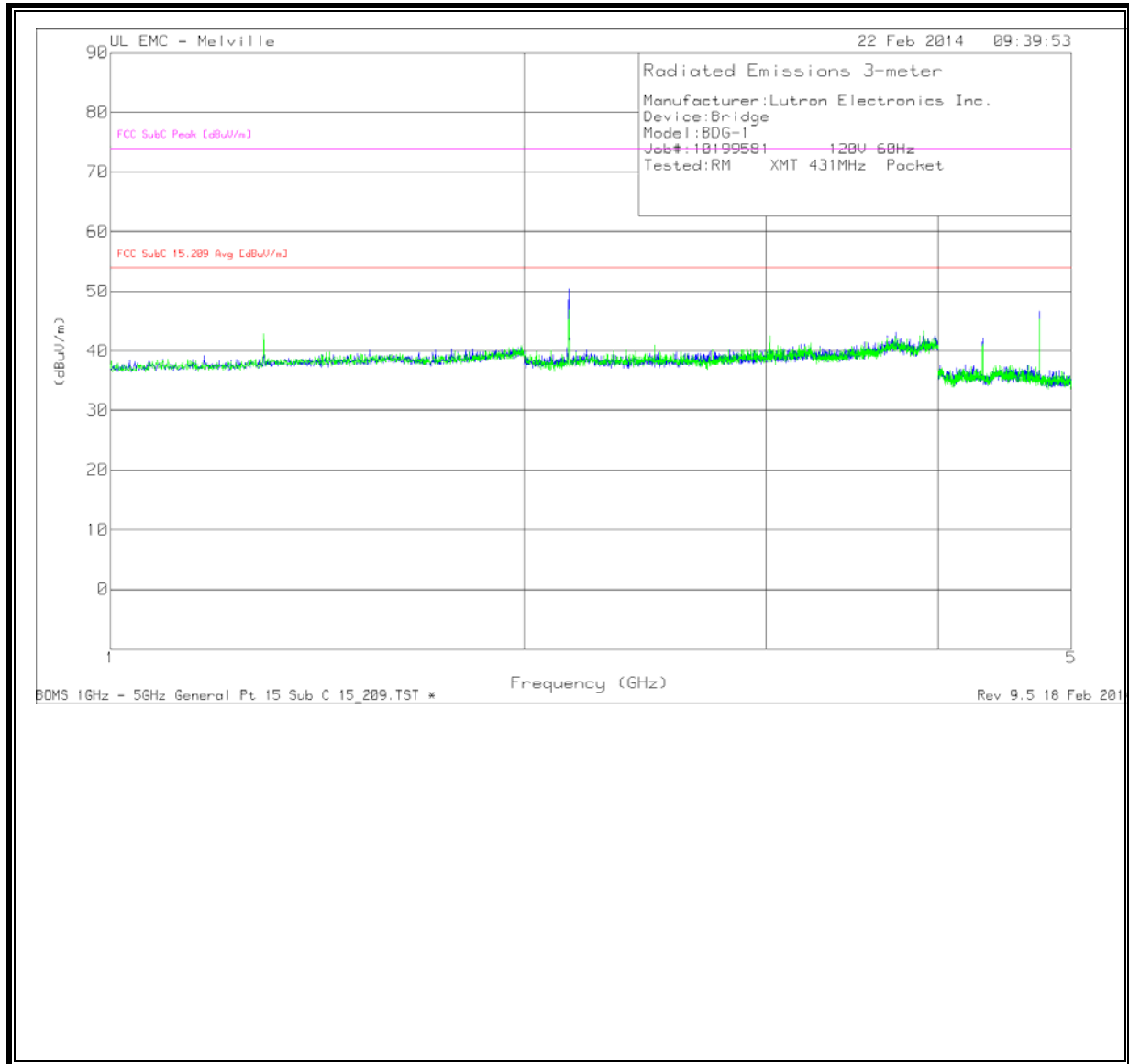


Frequency (MHz)	Meter Reading (dBuV)	Det	AF-67 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	DCF (dB)	Corrected Average (dBuV/m)	FCC Pt 15 Subpart C 15.231	Margin (dB)	FCC Pt 15 Subpart C Peak	Margin (dB)	FCC Pt 15 Subpart C 15.209	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
431.0367	78.06	PK	16.1	1.4	95.56	-20	75.56	80.7	-5.14	100.7	-5.14	-	-	188	103	H
430.9619	79.42	PK	16.1	1.4	96.92	-20	76.92	80.7	-3.78	100.7	-3.78	-	-	154	120	V
427.2	-2.96	QP	15.8	1.5	14.34	-	-	-	-	-	-	46	-31.66	105	121	H
432.6	20.06	QP	16.2	1.5	37.76	-	-	-	-	-	-	46	-8.24	203	103	H
433.6	15.55	QP	16.3	1.4	33.25	-	-	-	-	-	-	46	-12.75	199	100	H
434.7	12.68	QP	16.4	1.4	30.48	-	-	-	-	-	-	46	-15.52	199	103	H
435.3	12.07	QP	16.4	1.4	29.87	-	-	-	-	-	-	46	-16.13	204	100	H
435.7	11.67	QP	16.4	1.5	29.57	-	-	-	-	-	-	46	-16.43	202	101	H
435.5	11.8	QP	16.4	1.5	29.7	-	-	-	-	-	-	46	-16.3	202	101	H
440	4.56	QP	16.6	1.5	22.66	-	-	-	-	-	-	46	-23.34	204	102	H
440.6	2.41	QP	16.6	1.5	20.51	-	-	-	-	-	-	46	-25.49	199	106	H
442.3	-2.28	QP	16.7	1.6	16.02	-	-	-	-	-	-	46	-29.98	14	187	H
429.543	17.03	QP	16	1.4	34.43	-	-	-	-	-	-	46	-11.57	153	128	V
432.5	21.78	QP	16.2	1.5	39.48	-	-	-	-	-	-	46	-6.52	148	132	V
433.3	17.84	QP	16.3	1.5	35.64	-	-	-	-	-	-	46	-10.36	149	125	V
434.7433	14.18	QP	16.4	1.4	31.98	-	-	-	-	-	-	46	-14.02	144	129	V
435.5	12.91	QP	16.4	1.5	30.81	-	-	-	-	-	-	46	-15.19	149	133	V
437.4	8.05	QP	16.5	1.5	26.05	-	-	-	-	-	-	46	-19.95	48	163	V
440.1	2.51	QP	16.6	1.5	20.61	-	-	-	-	-	-	46	-25.39	52	160	V

PK - Peak detector

QP - Quasi-Peak detector

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz – Low Channel



Frequency (GHz)	Meter Reading (dBuV)	Det	AF-51442 [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.293	70.1	PK	20.5	-44.14	46.46	54	-7.54	74	-27.54	239	310	H
1.293	69.46	PK	20.5	-44.14	45.82	54	-8.18	74	-28.18	186	383	V
1.724	66.26	PK	20.8	-43.59	43.47	54	-10.53	74	-30.53	39	383	H
1.724	64.36	PK	20.8	-43.59	41.57	54	-12.43	74	-32.43	79	389	V

PK - Peak detector

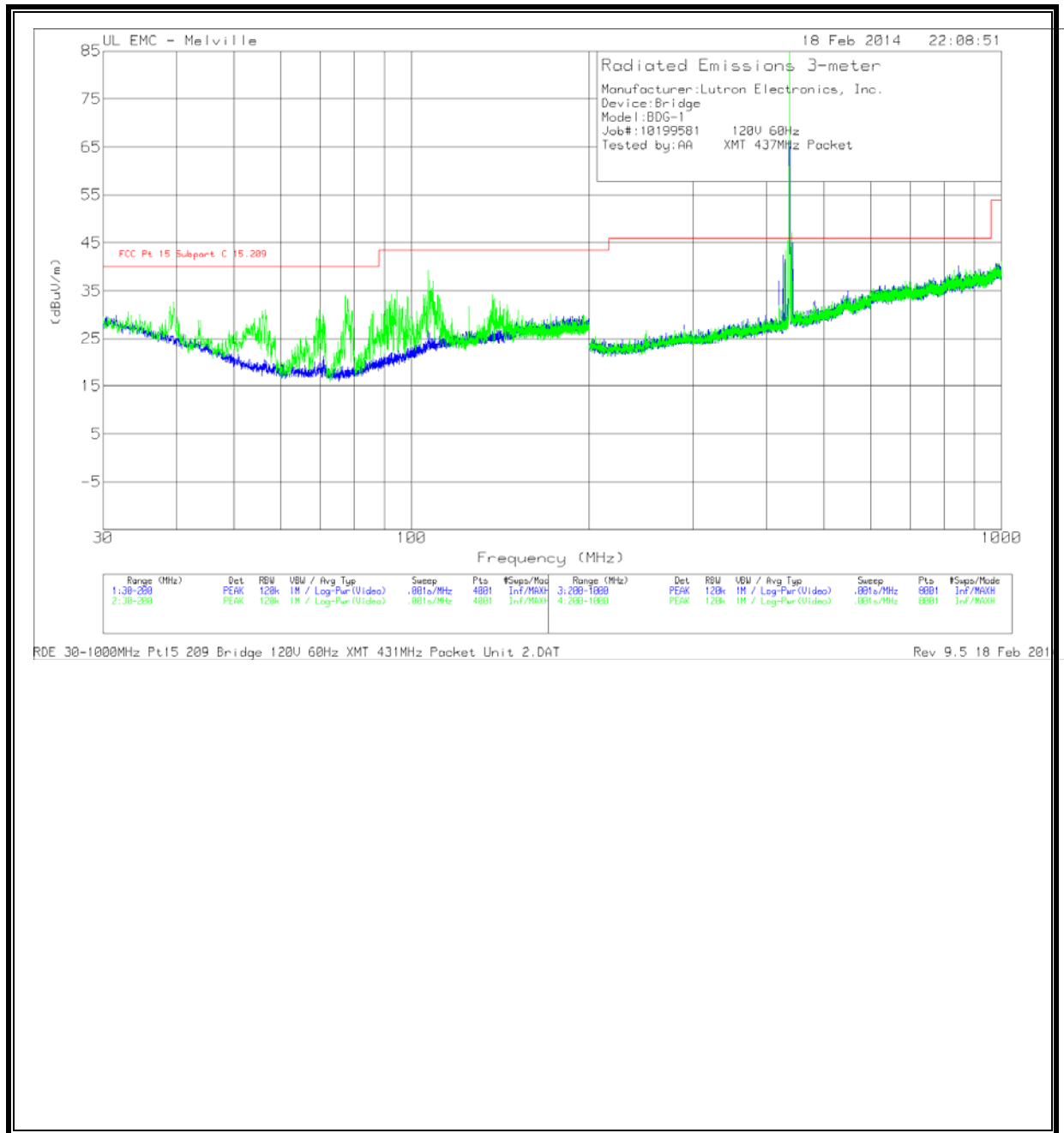
Frequency (GHz)	Meter Reading (dBuV)	Det	AF-48107 [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.155	73.03	PK	21.4	-43.11	51.32	54	-2.68	74	-22.68	206	206	H
2.155	71.75	PK	21.4	-43.11	50.04	54	-3.96	74	-23.96	75	395	V
3.017	66.12	PK	21.5	-41.62	46	54	-8	74	-28	297	372	H
3.017	64.41	PK	21.5	-41.62	44.29	54	-9.71	74	-29.71	238	394	V
3.448	60.94	PK	22.1	-41.31	41.73	54	-12.27	74	-32.27	20	312	H
3.448	61.44	PK	22.1	-41.31	42.23	54	-11.77	74	-31.77	57	298	V
3.879	65.41	PK	22.6	-41.56	46.45	54	-7.55	74	-27.55	145	339	H
3.879	65.93	PK	22.6	-41.56	46.97	54	-7.03	74	-27.03	104	346	V

PK - Peak detector

Frequency (GHz)	Meter Reading (dBuV)	Det	AF-48106 [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4.31	67.65	PK	27.7	-51.26	44.09	54	-9.91	74	-29.91	29	369	H
4.31	67.61	PK	27.7	-51.26	44.05	54	-9.95	74	-29.95	69	375	V
4.741	73.1	PK	27.2	-51.87	48.43	54	-5.57	74	-25.57	34	344	H
4.741	73.41	PK	27.2	-51.87	48.74	54	-5.26	74	-25.26	103	366	V

PK - Peak detector

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



Frequency (MHz)	Meter Reading (dBuV)	Det	AF-54 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	DCF (dB)	Corrected Average (dBuV/m)	FCC Pt 15 Subpart C 15.231	Margin (dB)	FCC Pt 15 Subpart C Peak	Margin (dB)	FCC Pt 15 Subpart C 15.209	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
77.2013	23	QP	6.6	0.4	30	-	-		-	-	-	40	-10	39	116	V
106.7215	22.78	QP	11.9	0.5	35.18	-	-		-	-	-	43.5	-8.32	307	113	V

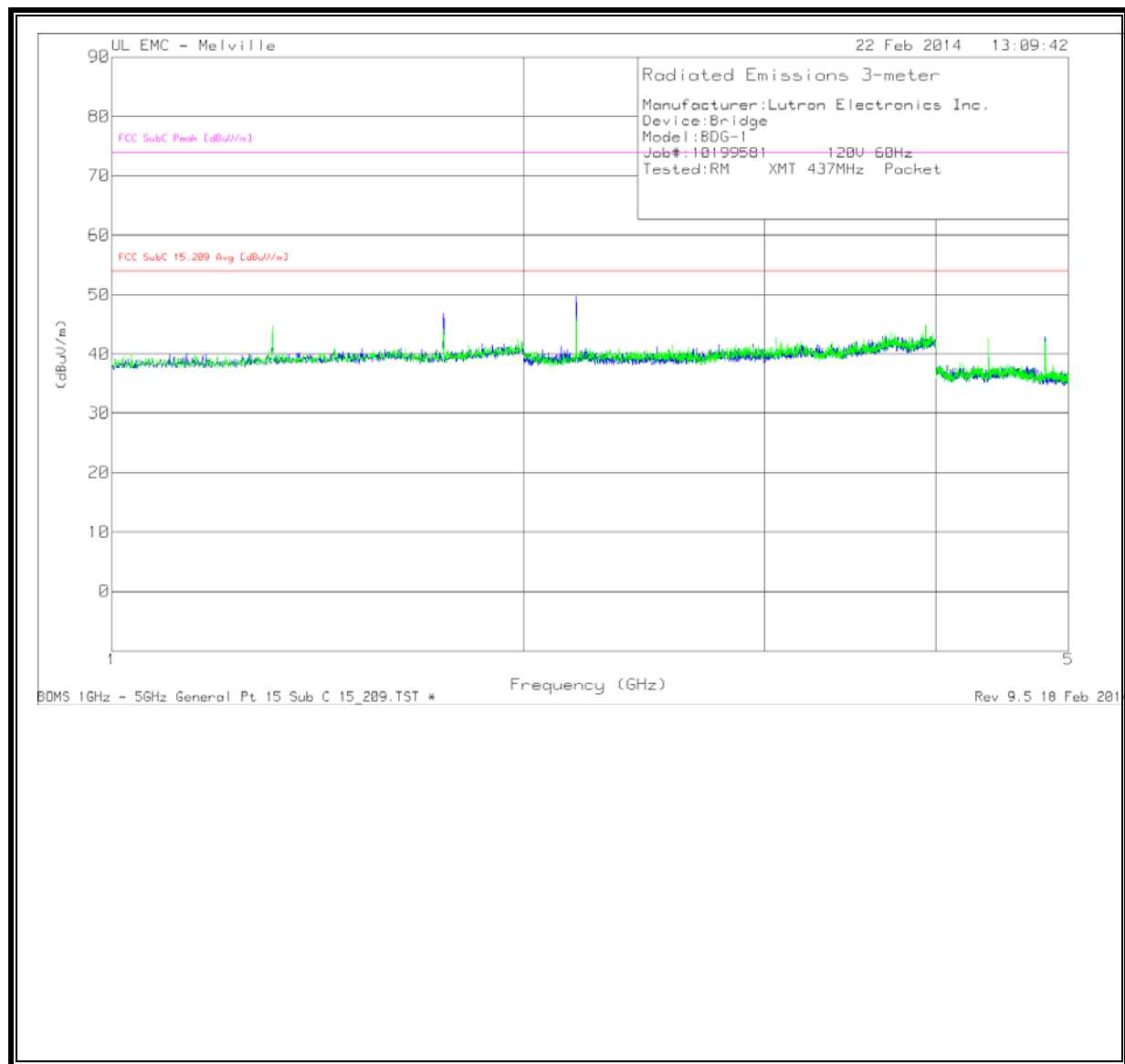
QP - Quasi-Peak detector

Frequency (MHz)	Meter Reading (dBuV)	Det	AF-67 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	DCF (dB)	Corrected Average (dBuV/m)	FCC Pt 15 Subpart C 15.231	Margin (dB)	FCC Pt 15 Subpart C Peak	Margin (dB)	FCC Pt 15 Subpart C 15.209	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
436.9619	79.21	PK	16.5	1.5	97.21	-20	77.21	80.9	-3.69	100.9	-3.69	-	-	168	134	H
436.9619	77.58	PK	16.5	1.5	95.58	-20	75.58	80.9	-5.32	100.9	-5.32	-	-	97	126	V
426.2138	-2.71	QP	15.8	1.4	14.49	-	-	-	-	-	-	46	-31.51	135	231	H
430.1038	4.41	QP	16	1.4	21.81	-	-	-	-	-	-	46	-24.19	166	108	H
435.8	20.36	QP	16.4	1.5	38.26	-	-	-	-	-	-	46	-7.74	159	101	H
441.9006	3.18	QP	16.7	1.6	21.48	-	-	-	-	-	-	46	-24.52	23	210	H
845.5538	-1.34	QP	22.6	2.1	23.36	-	-	-	-	-	-	46	-22.64	337	128	H
428.4205	-3	QP	15.9	1.5	14.4	-	-	-	-	-	-	46	-31.6	204	229	V
430.5	-2.26	QP	16	1.4	15.14	-	-	-	-	-	-	46	-30.86	87	355	V
434.2	11.08	QP	16.3	1.4	28.78	-	-	-	-	-	-	46	-17.22	25	156	V
435.7434	17.44	QP	16.4	1.5	35.34	-	-	-	-	-	-	46	-10.66	12	211	V
438.6	14.75	QP	16.5	1.5	32.75	-	-	-	-	-	-	46	-13.25	118	178	V
439.8	8.12	QP	16.6	1.5	26.22	-	-	-	-	-	-	46	-19.78	138	162	V
441.5	7.42	QP	16.7	1.5	25.62	-	-	-	-	-	-	46	-20.38	78	280	V

PK - Peak detector

QP - Quasi-Peak detector

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz – High Channel



Frequency (GHz)	Meter Reading (dBuV)	Det	AF-51442 [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.311	71.76	PK	20.5	-44.28	47.98	54	-6.02	74	-26.02	242	302	H
1.311	70.02	PK	20.5	-44.28	46.24	54	-7.76	74	-27.76	211	352	V
1.748	72.72	PK	20.8	-43.77	49.75	54	-4.25	74	-24.25	12	366	H
1.748	68.14	PK	20.8	-43.77	45.17	54	-8.83	74	-28.83	55	324	V

PK - Peak detector

Frequency (GHz)	Meter Reading (dBuV)	Det	AF-48107 [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.185	71.73	PK	21.5	-43.09	50.14	54	-3.86	74	-23.86	0	275	H
2.185	70.64	PK	21.5	-43.09	49.05	54	-4.95	74	-24.95	153	369	V
2.622	63.76	PK	21.4	-42.19	42.97	54	-11.03	74	-31.03	333	396	H
2.622	62.99	PK	21.4	-42.19	42.2	54	-11.8	74	-31.8	51	393	V
3.059	66.52	PK	21.6	-41.66	46.46	54	-7.54	74	-27.54	154	322	H
3.059	65.5	PK	21.6	-41.66	45.44	54	-8.56	74	-28.56	132	393	V
3.496	63.03	PK	22.2	-41.46	43.77	54	-10.23	74	-30.23	7	351	H
3.496	63.12	PK	22.2	-41.46	43.86	54	-10.14	74	-30.14	81	373	V
3.933	65.88	PK	22.7	-41.43	47.15	54	-6.85	74	-26.85	132	326	H
3.933	67.66	PK	22.7	-41.43	48.93	54	-5.07	74	-25.07	102	394	V

PK - Peak detector

Frequency (GHz)	Meter Reading (dBuV)	Det	AF-48106 [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC SubC 15.209 Avg [dBuV/m]	Margin (dB)	FCC SubC Peak [dBuV/m]	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4.37	68.58	PK	27.6	-51.53	44.65	54	-9.35	74	-29.35	18	363	H
4.37	68.3	PK	27.6	-51.53	44.37	54	-9.63	74	-29.63	71	357	V
4.807	70.28	PK	27.1	-52.24	45.14	54	-8.86	74	-28.86	27	330	H
4.807	69.67	PK	27.1	-52.24	44.53	54	-9.47	74	-29.47	114	398	V

PK - Peak detector

7.2. RX RADIATED SPURIOUS EMISSION

LIMITS

FCC Part 15, Subpart B

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.

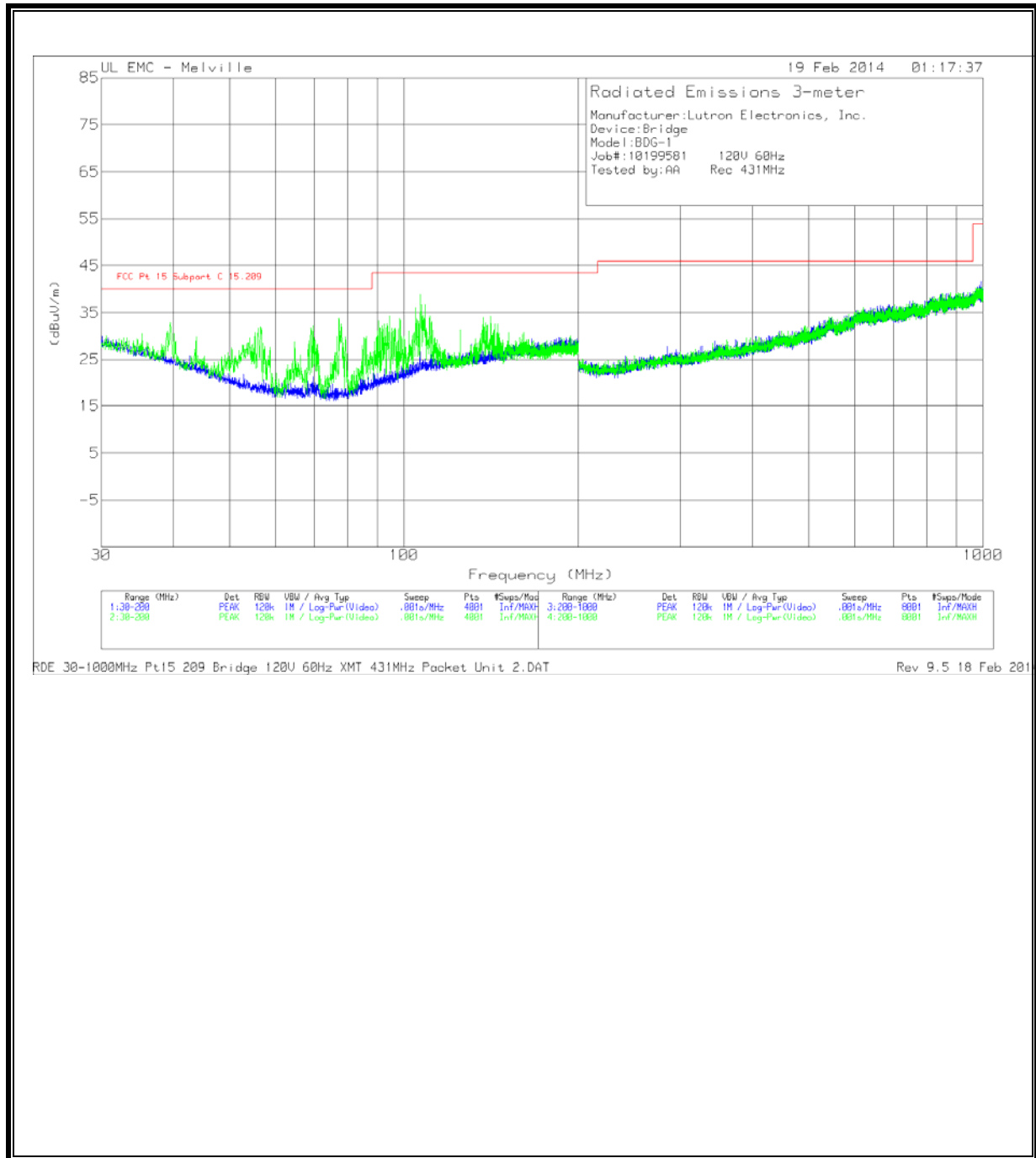
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The 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



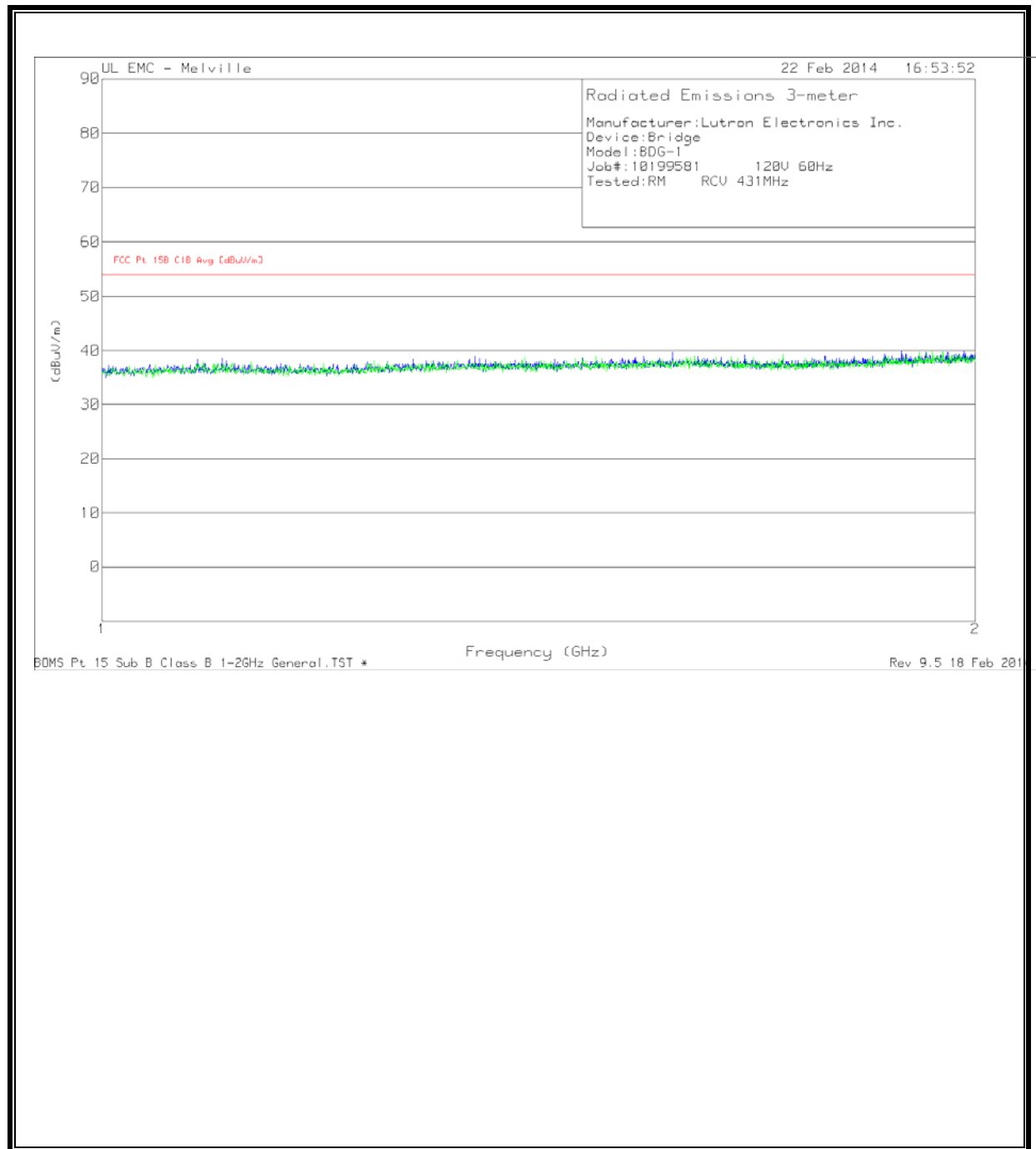
Frequency (MHz)	Meter Reading (dBuV)	Det	AF-54 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	FCC Pt 15 Subpart C 15.209	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
39.52	18.77	PK	14	.2	32.97	40	-7.03	0-360	100	V
56.52	24.33	PK	7.5	.2	32.03	40	-7.97	0-360	100	V
69.695	25.51	PK	6.5	.3	32.31	40	-7.69	0-360	100	V
77.175	26.84	PK	6.6	.4	33.84	40	-6.16	0-360	100	V
94.3875	24.19	PK	9.8	.4	34.39	43.5	-9.11	0-360	100	V
106.7125	26.43	PK	11.9	.5	38.83	43.5	-4.67	0-360	100	V

PK - Peak detector

Frequency (MHz)	Meter Reading (dBuV)	Det	AF-54 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	FCC Pt 15 Subpart C 15.209	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
106.7167	24.48	QP	11.9	.5	36.88	43.5	-6.62	297	101	V

QP - Quasi-Peak detector

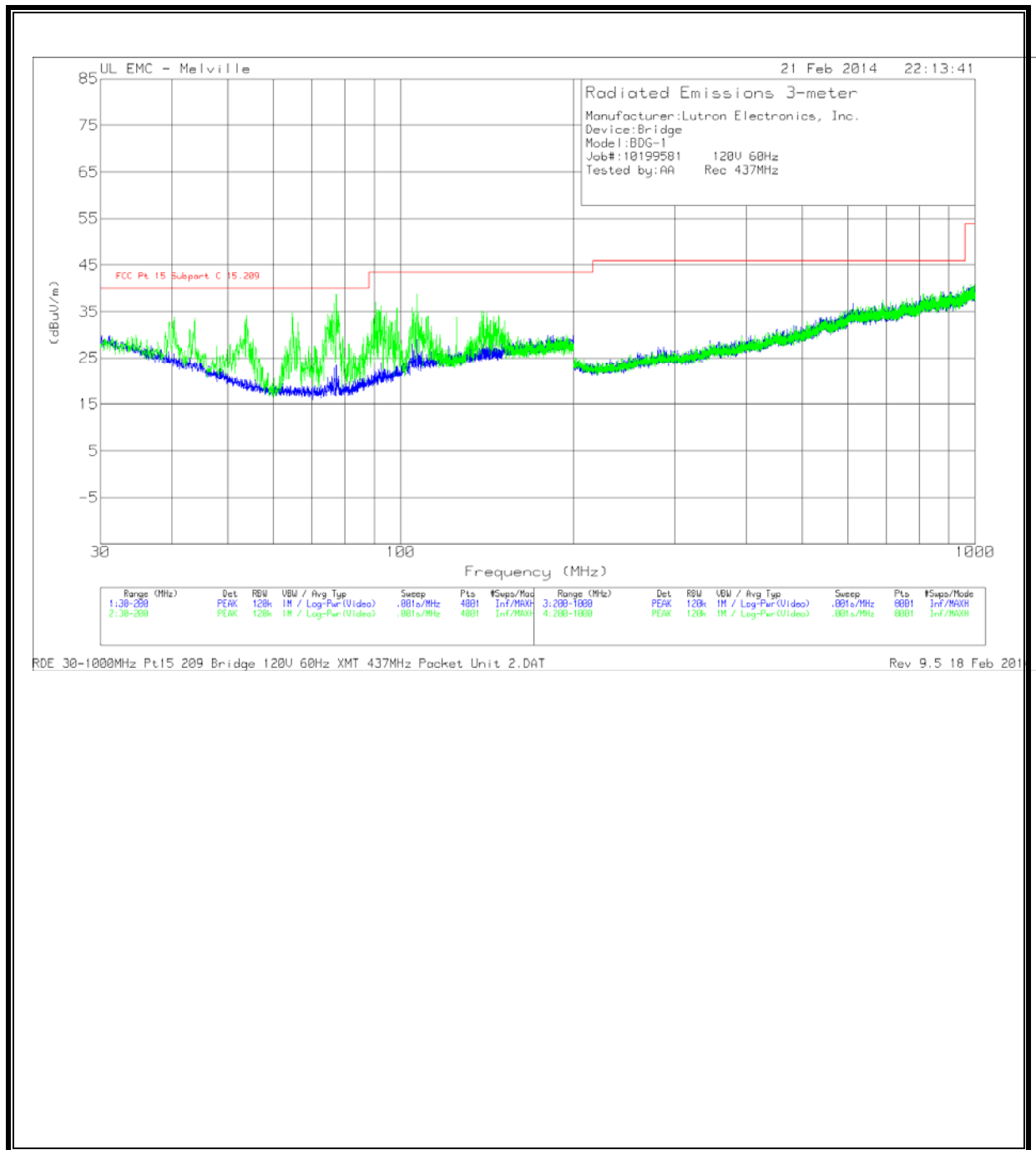
RECEIVER SPURIOUS EMISSION ABOVE 1GHz – Low Channel



Frequency (GHz)	Meter Reading (dBuV)	Det	AF-51442 [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC Pt 15B CIB Avg [dBuV/m]	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.1	62.95	PK	20	-44.23	38.72	54	-15.28	0-360	199	H
1.28	62.23	PK	20.4	-44.13	38.5	54	-15.5	0-360	103	H
1.573	62.38	PK	21.1	-43.79	39.69	54	-14.31	0-360	199	H
1.887	62.03	PK	21.5	-43.57	39.96	54	-14.04	0-360	103	H
1.242	62.41	PK	20.1	-44.38	38.13	54	-15.87	0-360	199	V
1.717	62.45	PK	20.8	-43.84	39.41	54	-14.59	0-360	199	V

PK - Peak detector

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



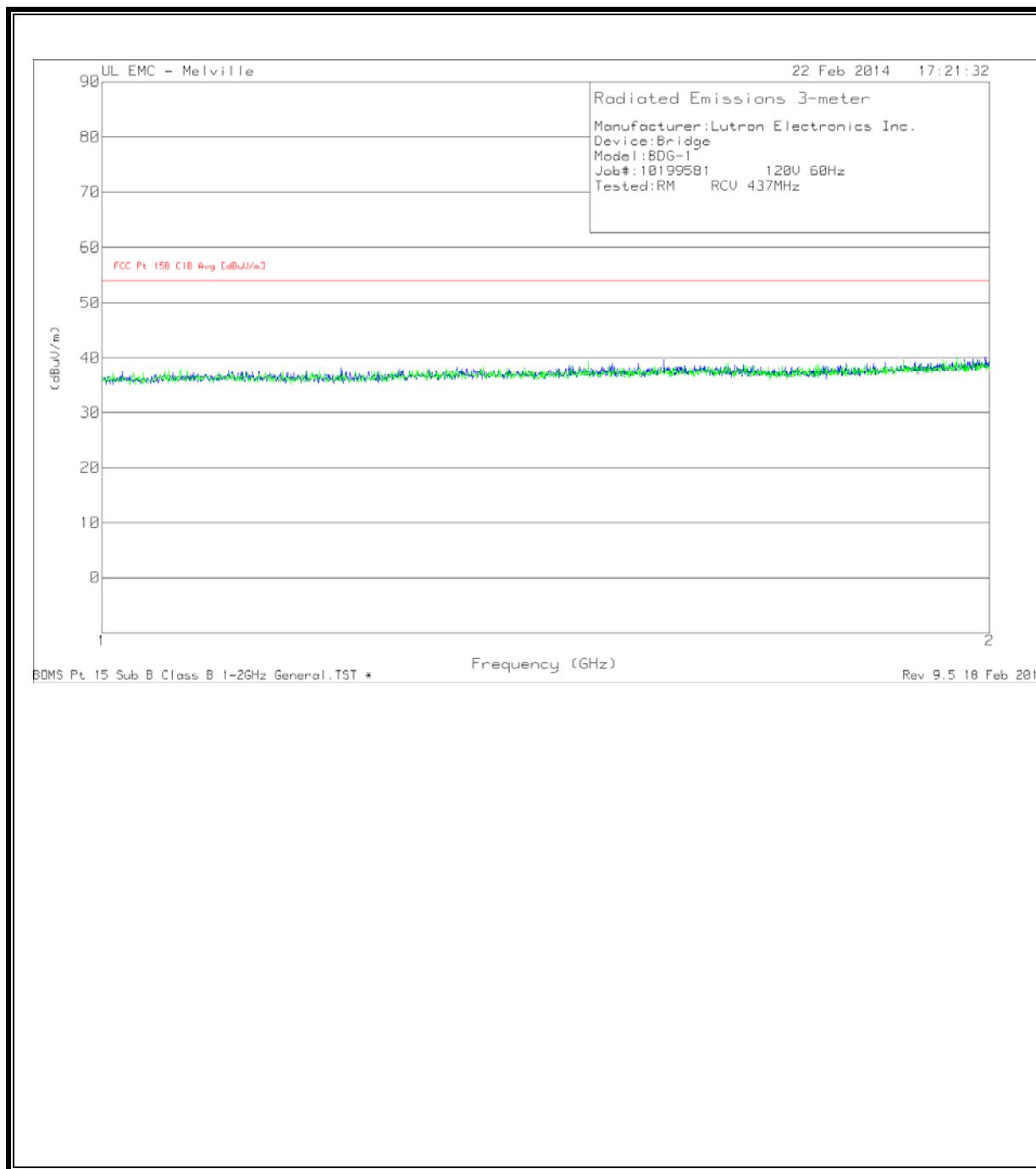
Frequency (MHz)	Meter Reading (dBuV)	Det	AF-54 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	FCC Pt 15 Subpart C 15.209	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
53.8425	25.84	PK	8.3	.1	34.24	40	-5.76	0-360	100	V
64.765	27.86	PK	6.7	.2	34.76	40	-5.24	0-360	100	V
77.175	31.74	PK	6.6	.4	38.74	40	-1.26	0-360	100	V
90.35	27.68	PK	9	.4	37.08	43.5	-6.42	0-360	100	V
106.755	25.06	PK	12	.5	37.56	43.5	-5.94	0-360	100	V
138.5025	19.46	PK	14.2	.5	34.16	43.5	-9.34	0-360	100	V

PK - Peak detector

Frequency (MHz)	Meter Reading (dBuV)	Det	AF-54 [dB/m]	GL-3M [dB]	Corrected Reading (dBuV/m)	FCC Pt 15 Subpart C 15.209	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
53.845	20.96	QP	8.3	.1	29.36	40	-10.64	98	100	V
64.7883	27.45	QP	6.7	.2	34.35	40	-5.65	24	142	V
77.2017	30.85	QP	6.6	.4	37.85	40	-2.15	307	119	V
106.7078	22.94	QP	11.9	.5	35.34	43.5	-8.16	63	102	V

QP - Quasi-Peak detector

RECEIVER SPURIOUS EMISSION ABOVE 1GHz – High Channel



Frequency (GHz)	Meter Reading (dBuV)	Det	AF-51442 [dB/m]	Gain/Loss (dB)	Corrected Reading (dBuV/m)	FCC Pt 15B CIB Avg [dBuV/m]	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.173	62.18	PK	19.9	-44.37	37.71	54	-16.29	0-360	101	H
1.206	62.67	PK	19.8	-44.23	38.24	54	-15.76	0-360	101	H
1.551	62.6	PK	21	-43.91	39.69	54	-14.31	0-360	200	H
1.993	61.32	PK	22.2	-43.27	40.25	54	-13.75	0-360	200	H
1.462	62.64	PK	20.8	-44.05	39.39	54	-14.61	0-360	199	V
1.871	62.04	PK	21.4	-43.67	39.77	54	-14.23	0-360	199	V

PK - Peak detector

8. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207 (a)
IC RSS-GEN, Section 7.2.2
FCC Part 15, Subpart B

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 C63.4 (unintentional) / C63.10 (intentional)

RESULTS

No non-compliance noted:

6 WORST EMISSIONS – TX Mode

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)
.17385	42.39	PK	10	52.39	64.77	-12.38	54.77	-2.38
.19429	42.67	PK	10	52.67	63.85	-11.18	53.85	-1.18
.43106	34.47	PK	10	44.47	57.23	-12.76	47.23	-2.76
1.21274	25.05	PK	10.1	35.15	56	-20.85	46	-10.85
18.91831	26.55	PK	11.1	37.65	60	-22.35	50	-12.35
19.71124	26.27	PK	11.1	37.37	60	-22.63	50	-12.63

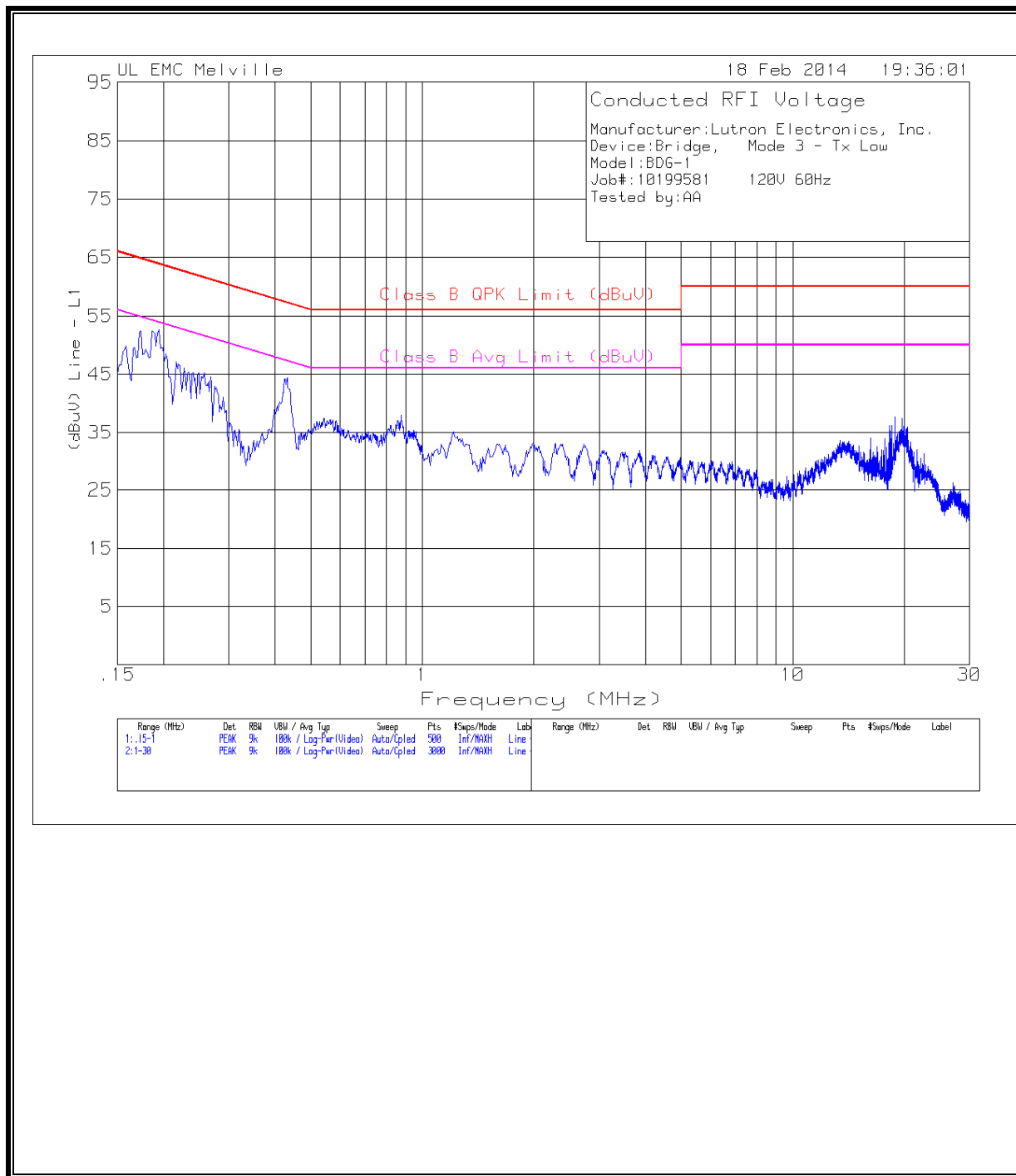
PK - Peak detector

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)
.42672	24.64	Av	10	34.64	57.32	-22.68	47.32	-12.68
.18237	43.73	PK	10	53.73	64.38	-10.65	54.38	-.65
.19599	43.53	PK	10	53.53	63.78	-10.25	53.78	-.25
.43277	38.54	PK	10	48.54	57.2	-8.66	-	-
1.22241	28.17	PK	10.1	38.27	56	-17.73	46	-7.73
1.61887	27.25	PK	10.1	37.35	56	-18.65	46	-8.65
14.14138	24.14	PK	10.9	35.04	60	-24.96	50	-14.96

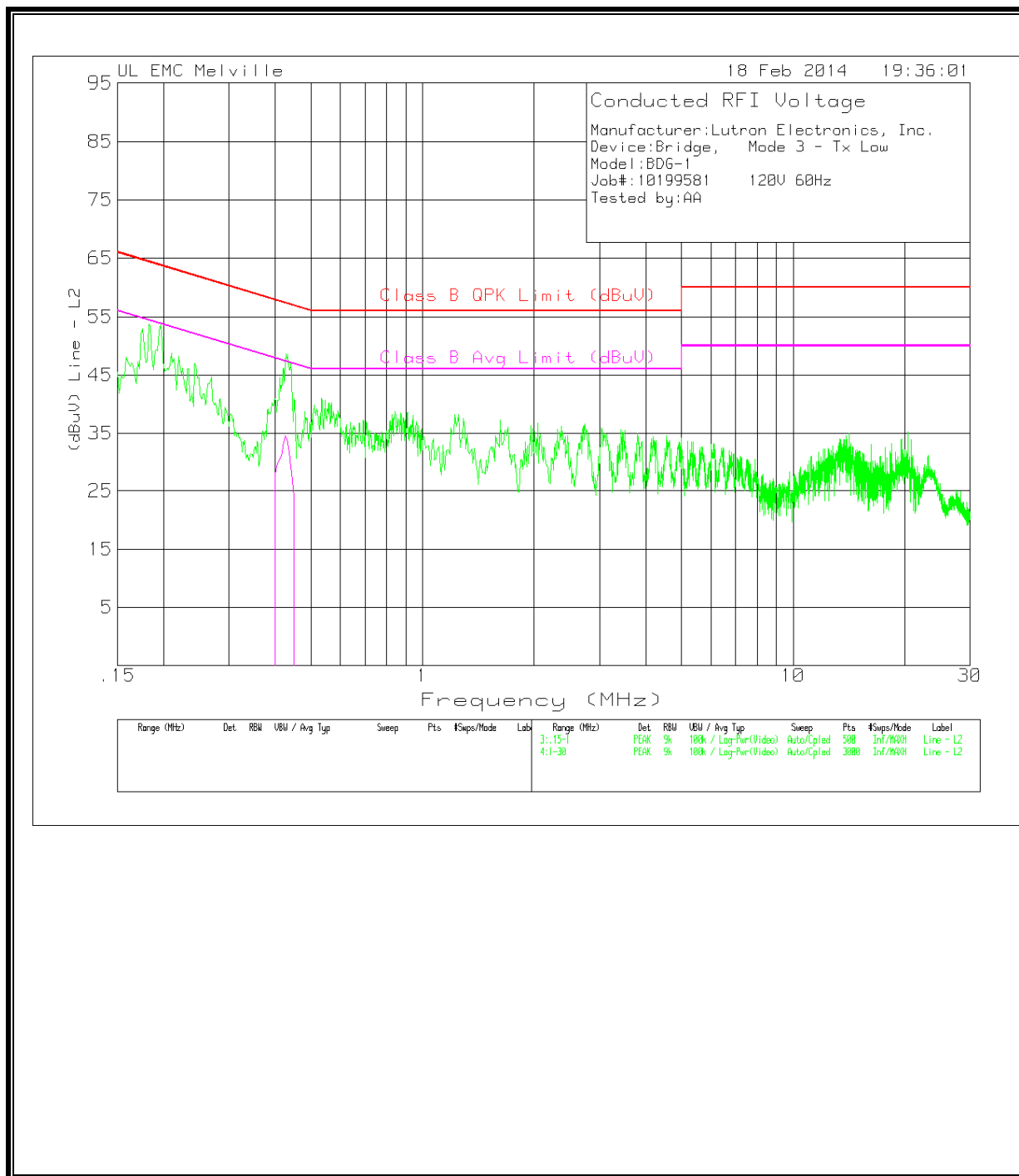
Pk - Peak detector

Av - average detection

LINE 1 RESULTS



LINE 2 RESULTS



6 WORST EMISSIONS – RX Mode

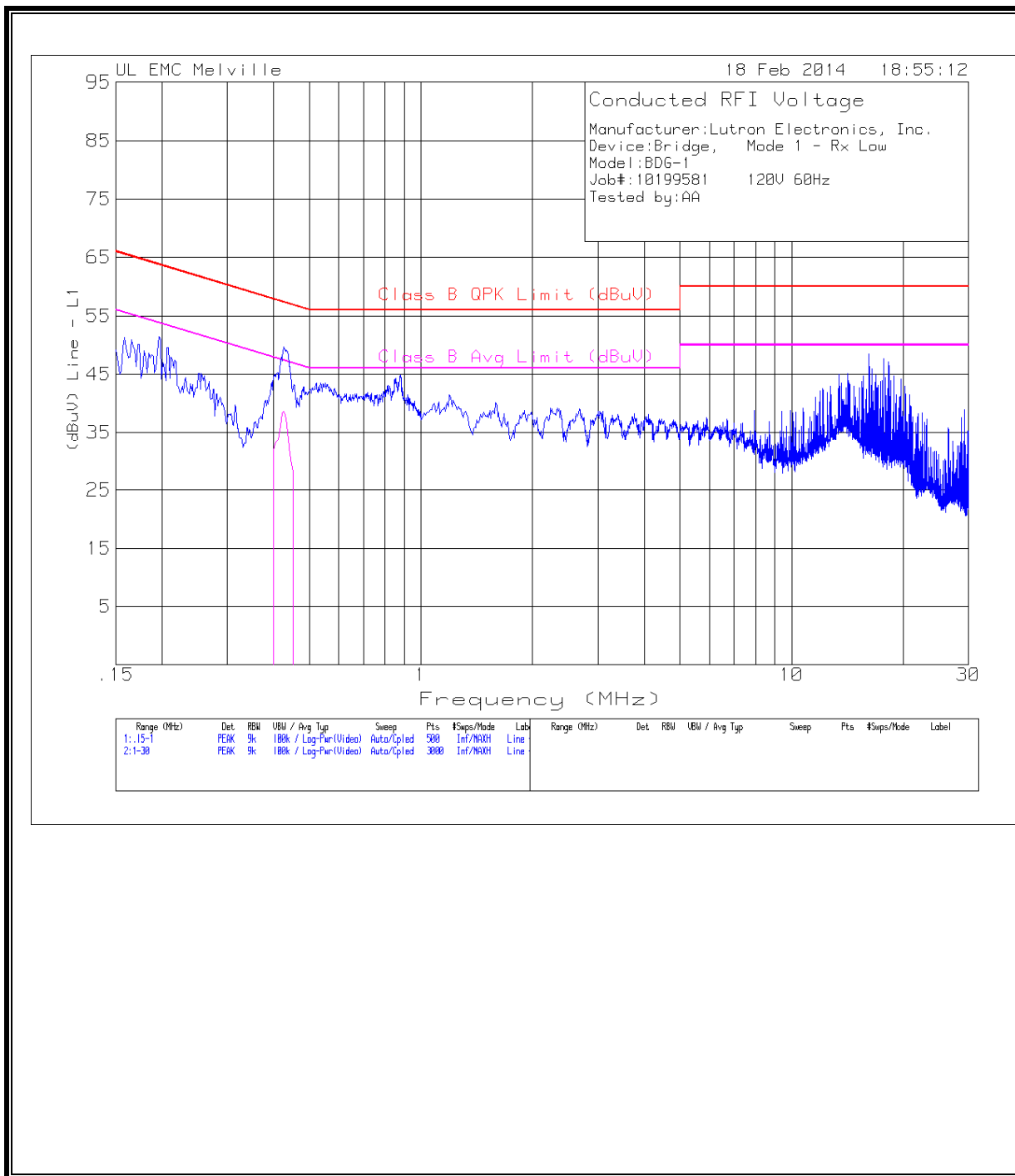
Frequency (MHz)	Meter Reading (dBuV)	Det	Line 1 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.19599	41.37	PK	10	51.37	63.78	-12.41	53.78	-2.41
.42595	39.65	PK	10	49.65	57.33	-7.68	-	-
.88247	34.1	PK	10	44.1	56	-11.9	46	-1.9
.42672	28.63	Av	10	38.63	57.32	-18.69	47.32	-8.69
16.17206	37.56	PK	10.9	48.46	60	-11.54	50	-1.54
17.6999	36.81	PK	10.9	47.71	60	-12.29	50	-2.29
18.3091	35.47	PK	11	46.47	60	-13.53	50	-3.53

PK - Peak detector
Av - average detection

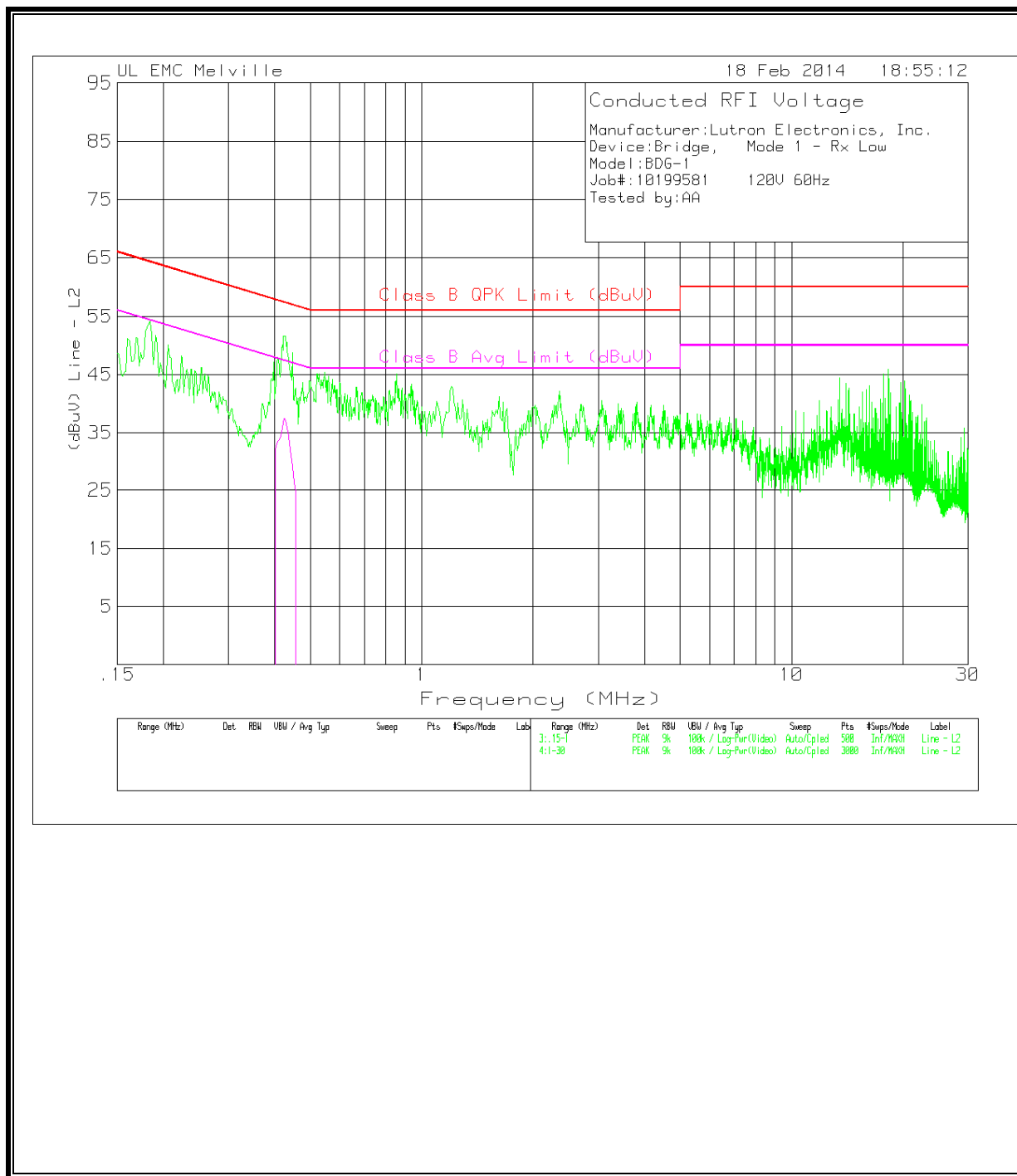
Frequency (MHz)	Meter Reading (dBuV)	Det	Line 2 G/L (dB)	Corrected Reading (dBuV)	Class B QPK Limit (dBuV)	Margin (dB)	Class B Avg Limit (dBuV)	Margin (dB)
.42418	27.5	Av	10	37.5	57.37	-19.87	47.37	-9.87
.18407	44.16	PK	10	54.16	64.3	-10.14	54.3	-.14
.42255	41.62	PK	10	51.62	57.4	-5.78	-	-
.85521	35.01	PK	10.1	45.11	56	-10.89	46	-.89
17.6999	34.09	PK	11	45.09	60	-14.91	50	-4.91
18.25108	34.98	PK	11	45.98	60	-14.02	50	-4.02
18.3091	33.29	PK	11	44.29	60	-15.71	50	-5.71

PK - Peak detector
Av - average detection

LINE 1 RESULTS



LINE 2 RESULTS



END OF REPORT