

EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Parts 15.107, 15.109
&
Industry Canada (IC), ICES-003



A division of Research In Motion Limited

REPORT NO.: RTS-6036-1305-03


PRODUCT MODEL NO.: RFS121LW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARFS120LW
IC: 2503A- RFS120LW

DATE: May 6, 2013

**RTS is accredited
according to
EN ISO/IEC 17025 by:**



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	EMI Test Report for the BlackBerry® smartphone Model RFS121LW	
Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26,2013	FCC ID: L6ARFS120LW IC : 2503A-RFS120LW

Statement of Performance:

The BlackBerry® smartphone, model RFS121LW, part number CER-54731-001 Rev2-906-00 and accessories when configured and operated per RIM's operation instructions, and performs within the requirements of the test standards.

Declaration:

We hereby certify that:

The test data reported herein is an accurate record of the performance of the sample(s) tested.

The test results are valid for the tested unit (s) only.

The test equipment used was suitable for the tests performed and within manufacturer's published specifications and operating parameters.

The test methods were consistent with the methods described in the relevant standards.

Documented by:

Reviewed by:

Mahmood Ahmed
Regulatory Compliance Specialist

Savtej S, Sandhu
Regulatory Compliance Specialist

Reviewed and Approved by:

Masud S. Attayi, P.Eng.
Manager, Regulatory Compliance



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A. Scope

This report details the results of compliance tests that were performed in accordance with the requirements of:

- FCC CFR 47 Part 15, Subpart B, October, 2012 Class B Digital Devices, Unintentional Radiators
- IC ICES-003 Issue 5, August 2012, Information Technology Equipment (ITE) – Limits and methods of measurement

B. Associated Documents

- 1) MultiSourceDeclaration_RFP121LW_b4081.
- 2) RFS121LW_HW_Declaration_CER-54731-001_Rev2-906-00.

C. Product Identification


Manufactured by Research In Motion Limited whose headquarters is located at:
 295 Phillip Street
 Waterloo, Ontario
 Canada, N2L 3W8
 Phone: 519 888 7465
 Fax: 519 888 6906

The equipment under test (EUT) was tested at the following locations:

RIM Testing Services EMI test facilities

305 Phillip Street	440 Phillip Street
Waterloo, Ontario	Waterloo, Ontario
Canada, N2L 3W8	Canada, N2L 5R9
Phone: 519 888 7465	Phone: 519 888 7465
Fax: 519 888 6906	Fax: 519 888 6906

The testing was performed on March 07-12, 28 and April 25 – 26, 2013

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The sample EUT included:


SAMPLE	MODEL	CER NUMBER	PIN	Software
1	RFS121LW	CER-54731-001 Rev1-906-00	2AB02A65	OS Version 127.0.1.4081 Bundle: 4081
2	RFS121LW	CER-54731-001 Rev1-906-00	2AB02A5A	OS Version 127.0.1.3901 Bundle: 3901
3	RFS121LW	CER-54731-001 Rev2-906-00	2AB04CFB	OS Version 127.0.1.3901 Bundle: 3901
4	RFS121LW	CER-54731-001 Rev1-906-00	2AB02A48	OS Version 127.0.1.4081 Bundle: 4081
5	RFS121LW	CER-54731-001 Rev1-906-00	2AB02A58	OS Version 127.0.1.4081 Bundle: 4081

AC conducted testing was performed on samples 1, 2 and 3
Radiated Emissions testing was performed on samples 4 and 5

To view the differences between software bundles 3901 to 4081, see document
MultiSourceDeclaration_RFS121LW_b4081 .


Only the characteristics that may have been affected by the changes from RFS121LW
Rev1-906-00 to Rev2-906-00 were re-tested

For more details, refer to RFS121LW_HW_Declaration_ CER-54731-001_Rev2-906-00

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BlackBerry® smartphone Accessories Tested

- 1) Fixed Blade Charger Rev2, part number HDW-24481-001 (model number RIM-C-4ADUUS-001 with an output voltage of 5.0 volts dc, 750mA.
- 2) Alt.1 Fixed Blade Charger Rev3, part number HDW-24481-001 (model number PSM04A-050QRIM-R), with an output voltage of 5.0 volts dc, 750mA
- 3) Alt.2 Fixed Blade Charger Rev 1, part number HDW-47725-001 with an output voltage of 5.0 volts dc, 850mA
- 4) Alt.3 Fixed Blade Charger Rev B, part number HDW-46445-001 with an output voltage of 5.0 volts dc, 850mA
- 5) Folding Blade Charger Rev1, part number HDW-34724-001 with an output voltage of 5.0 volts dc and current of 1.8 Amps
- 6) World Wide Travel Charger Rev 1, part number HDW 34725-002 with an output voltage of 5.0 volts, dc, 2A
- 7) 12 V DC Charger, part number HDW-46705-001, with an output of 5 volts, 1A
- 8) Alt.1 12 V DC Charger, part number HDW-46706-001, with an output of 5 volts, 1.8A
- 9) Wired Headset, part number HDW-44306-003, with a lead length of 1.1 metres
- 10) Alt.1 Wired Headset, part number HDW-44306-003,with a lead length of 1.1 metres
- 11) Alt.2 Wired Headset, part number HDW-49299-001, with a lead length of 1.1 metres
- 12) Alt.3 Wired Headset, part number HDW-53005-001, with a lead length of 1.1 metres
- 13) Alt.4 Wired Headset, part number HDW-55351-001, with a lead length of 1.1 metres
- 14) USB Data Cable, part number HDW-50071-001 RevB, 1.2 metre long.
- 15) Alt.1 USB Data Cable, part number HDW-50071-001 RevC, 1.2 metre long.
- 16) USB Data Cable, part number HDW-51800-001 RevB, 1.0 metre long
- 17) Alt.1 USB Data Cable, part number HDW-51800-001 RevC, 1.0 metre long


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D. Support Equipment Used for the Testing of the EUT

- 1) IBM Thinkpad Lenovo T60p laptop, type 8742-C2U, product ID 8742C2U
- 2) Samsung Monitor, Model Number S22A350H, Product Number LS22A3500HS/2A
- 3) Phillips Monitor, Model Number MWE12244T, Product ID 2444E1SB/27
- 4) 12 V DC Battery, Enerwatt AhM Series, WP12-12

E. Summary of Results


SPECIFICATION		TEST TYPE	Meets Requirement	Test Data APPENDIX
FCC CFR 47	IC			
Part 15.107	ICES-003,6.1	Conducted AC Line Emission	Yes	1
Part 15.109	ICES-003,6.1	Radiated Unintentional Spurious Emissions	Yes	2

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a) AC CONDUCTED EMISSIONS

The conducted emissions were measured using the test procedure outlined in CISPR Recommendation 22 through a 50 Ohm Line Impedance Stabilization Network (LISN), which was inserted in the power line to the equipment to provide the specified impedance for measurements. The EUT was placed on a nonconductive wooden table, 80 cm high that was positioned 40 cm from a vertical ground plane. The RF output of the network was connected to an EMI receiver system with characteristics that duplicate those of the receiver specified in CISPR Publication 16. BlackBerry® smartphone was in battery charging mode. The input voltage was 120 V, 60 Hz.


Test Configuration	Operating Mode(s)	Charger + Accessories
1	GSM 850 Idle, Charging and Audio Playback	Fixed Blade Charger + Wired Headset + 1.2m USB Cable
2	PCS 1900 Idle Charging and Video Playback	Alt.1 Fixed Blade Charger + Alt.1 Wired Headset + Alt.1 1.2m USB Cable
3	Bluetooth Tx, Charging and Audio Playback	Alt.2 Fixed Blade Charger + Alt.2 Wired Headset + 1.0m USB cable
4	802.11b Tx, Charging and Video Playback	Alt.3 Fixed Blade Charger + Wired Headset + Alt.1 1.0m USB Cable
5	NFC Tx, Charging and Video Playback	Folding Blade Charger + Alt.1 Wired Headset
6	UMTS B2 HSDPA Idle, Charging and Audio Playback	World Wide Travel Charger + Alt.2 Wired Headset
7	UMTS B5 DC HSDPA Idle, Charging	Folding Blade Charger + Alt.3 Wired Headset
8	NFC Tx, Charging and Video Playback	Folding Blade Charger + Alt.4 Wired Headset

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The sample EUT's conducted emissions were compared with respect to the FCC CFR 47 Part 15.107, Class B Limit, and IC ICES-003, 6.1. The sample EUT had a worst case test margin of 9.43 dB below the QP limit at 0.515 MHz using the QP detector and a test margin of 6.12 dB below the AVG limit at 0.420 MHz using the AVG detector in Test Configuration 5.

Measurement Uncertainty ±3.2 dB

To view the test data/plots, see APPENDIX 1

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b) RADIATED EMISSIONS


The radiated emissions from the EUT were measured using the methods outlined in CISPR Recommendation 22. The EUT was placed on a nonconductive Styrofoam table, 80 cm high that was positioned on a remote controlled turntable. The test distance used between the EUT and the receiving antenna was three metres. The turntable was rotated to determine the azimuth of the peak emissions. Then the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The maximum emission level was recorded. The radiated emissions were measured up to the fifth harmonic of the highest frequency of the band tested. Both the horizontal and vertical polarizations of the emissions were measured.

The measurements were done in a semi-anechoic chamber. The FCC registration number is **778487** and the Industry Canada(IC) file number is **2503B-1**. The EUT was configured and operated to produce the maximum radiated emissions while still keeping within RIM's specifications.

The BlackBerry® smartphone was in battery charging mode for all configurations. The ac input voltage was 120V, 60Hz.

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Test Configuration	Operating Mode(s)	Charger + Accessories
1	GSM 850 Idle, Charging and Audio Playback	Fixed Blade Charger + Wired Headset + 1.2m USB Cable
2	PCS 1900 Idle Charging and Video Playback	Alt.1 Fixed Blade Charger + Alt.1. Wired Headset + Alt.1 1.2m USB Cable
3	Bluetooth Tx, Charging and Audio Playback	Alt.2 Fixed Blade Charger + Alt.2 Wired Headset + 1.0m USB Cable
4	802.11b Tx, Charging and Video Playback	Alt.3 Fixed Blade Charger + Alt.3 Wired Headset + Alt.1 1.0m USB Cable
5	NFC Tx, Charging and Video Playback	Folding Blade Charger + Alt.3 Wired Headset
6	UMTS Band 2 HSDPA+ Idle, Charging and Audio Playback	World Wide Travel Charger + Alt.2 Wired Headset
7	UMTS Band 5 HSDPA+ Idle, Charging	Alt.1 12 V DC Charger + Wired Headset + DC Battery
8	UMTS Band 2 DC HSDPA+ Idle, Charging	12 V DC Charger + Alt.1 Wired Headset + 1.2m USB Cable + DC Battery
9	UMTS Band 5 DC HSDPA+ Idle, Charging	Alt.3 Wired Headset + Alt.1 1.2m USB Cable + Laptop
10	GSM 850 Idle, Charging and Audio Playback	Folding Blade Charger + Alt.4 Wired Headset

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The system's radiated emission levels were compared with respect to the FCC CFR 47 Part 15.109, Class B limit and IC ICES-003, 6.2.

The system met the requirements with a worst case emission test margin of 5.98 dB below the QP limit at 65.600 MHz using QP detector in Test Configuration 10.

To view the test data see APPENDIX 2.

Sample Calculation:

Field Strength (dBµV/m) is calculated as follows:

FS = Measured Level (dBµV) + A.F. (dB/m) + Cable Loss (dB) - Preamp (dB) + Filter Loss (dB)

Measurement Uncertainty ±4.5 dB


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F. Compliance Test Equipment Used

<u>UNIT</u>	<u>MANUFACTURER</u>	<u>MODEL</u>	<u>SERIAL NUMBER</u>	<u>CAL DUE DATE</u> (YY MM DD)	<u>USE</u>
Preamplifier	Sonoma	310N/11909A	185831	13-10-10	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	13-10-10	Radiated Emissions
EMI Receiver	Rohde & Schwarz	ESIB 40	100255	13-11-30	Radiated Emissions
Digital Multimeter	Hewlett Packard	34401A	US36042324	13-11-13	Conducted/Radiated Emissions
Environment Monitor	OMEGA	iTHX-SD	0380561	13-10-30	Radiated Emission
Environment Monitor	OMEGA	iTHX-SD	0380567	13-10-30	Radiated Emission
L.I.S.N.	Rohde & Schwarz	ENV216	100060	13-10-25	Conducted Emissions
Hybrid Log Antenna	EMC Automation	HLP-3003C	017401	13-08-23	Radiated Emissions
Horn Antenna	EMC Automation	HRN-0118	030101	14-07-08	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	837493/073	13-11-26	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112394	13-11-24	Radiated/Conducted Emissions
EMI Test Receiver	Rohde & Schwarz	ESU 40	100162	13-11-29	Radiated/Conducted Emissions
Bluetooth Tester	Rohde & Schwarz	CBT	100368	13-12-04	Radiated Emissions
Bluetooth Tester	Rohde & Schwarz	CBT	100737	14-12-05	Radiated/Conducted Emissions


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G. Test Software Used

<u>SOFTWARE</u>	<u>COMPANY</u>	<u>VERSION</u>	<u>USE</u>
EMC32	Rohde & Schwarz	8.52.0	Radiated Emissions
TDK Standard Emission Test	TDK RF Solutions	8.53.1.62	Radiated Emissions

	EMI Test Report for the BlackBerry® smartphone Model RFS121LW Appendix 1	
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APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA

	EMI Test Report for the BlackBerry® smartphone Model RFS121LW	
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AC Conducted Emissions Test Results

The following tests were performed by Mahmood Ahmed

Test Configuration 1

Date of the test: March 07, 2013

The environmental conditions were: Temperature: 24.6 °C
Humidity: 22.1 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.150	L1	34.80	11.20	46.00	66.00	56.00	-20.00
0.200	L1	29.29	10.86	40.15	63.60	53.60	-23.45
2.364	L1	28.65	9.84	38.50	56.00	46.00	-17.51
2.625	L1	29.61	9.86	39.47	56.00	46.00	-16.53
2.756	L1	29.34	9.86	39.21	56.00	46.00	-16.79
2.922	N	21.92	9.87	31.79	56.00	46.00	-24.21
3.273	L1	27.52	9.88	37.41	56.00	46.00	-18.59
3.512	L1	27.86	9.89	37.75	56.00	46.00	-18.25
3.692	L1	28.71	9.89	38.61	56.00	46.00	-17.39
4.236	N	24.49	9.91	34.40	56.00	46.00	-21.60
4.268	L1	29.48	9.90	39.38	56.00	46.00	-16.62
4.745	L1	29.11	9.90	39.02	56.00	46.00	-16.98

All other emissions are at least 25 dB below the limit.

Measurements were done with the quasi-peak detector.

See figure 1-1 and figure 1-2 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

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AC Conducted Emissions Test Graphs

Test Configuration 1

Figure 1-1: L1 lines

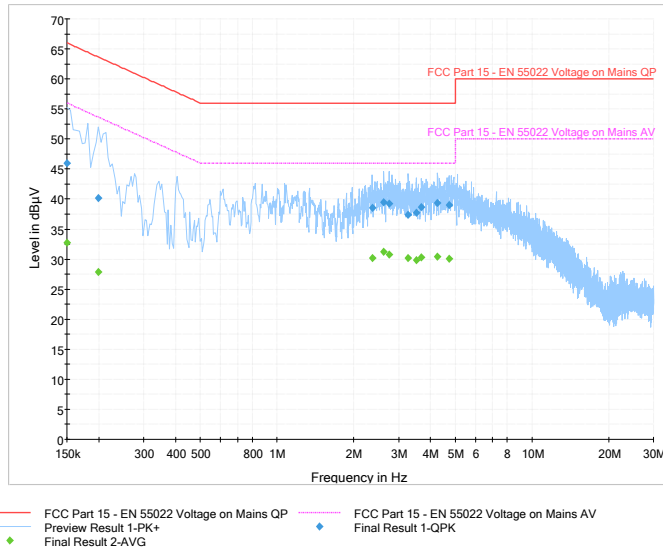
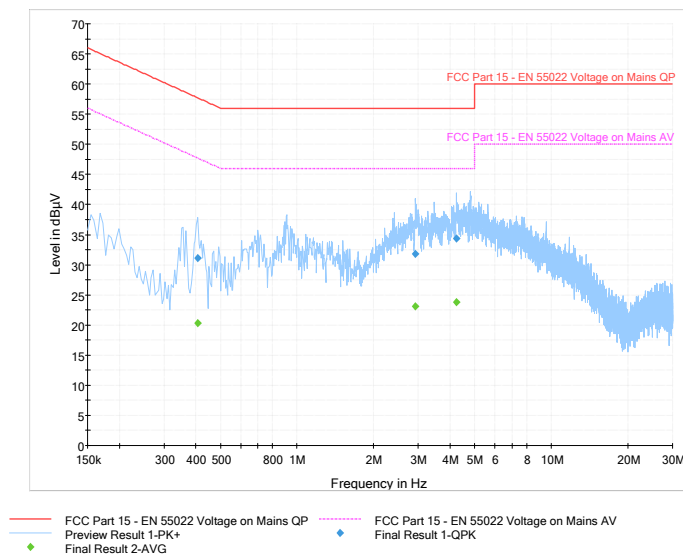



Figure 1-2: N Lines



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AC Conducted Emissions Test Results cont'd

Test Configuration 2

Date of the test: March 07, 2013

The environmental conditions were: Temperature: 24.6 °C
Humidity: 22.1 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.159	L1	36.58	11.14	47.72	65.50	55.50	-17.78
0.497	L1	27.66	9.91	37.57	56.10	46.10	-18.53
0.569	N	25.93	9.88	35.81	56.00	46.00	-20.19
9.501	N	26.41	9.98	36.39	60.00	50.00	-23.61
11.049	N	28.12	9.99	38.11	60.00	50.00	-21.89
11.513	N	27.85	10.01	37.86	60.00	50.00	-22.14
11.531	L1	36.41	10.00	46.41	60.00	50.00	-13.59
11.625	L1	36.41	10.00	46.41	60.00	50.00	-13.59
11.913	N	27.39	10.03	37.42	60.00	50.00	-22.58
11.936	L1	36.36	10.02	46.38	60.00	50.00	-13.62
11.994	L1	36.07	10.02	46.09	60.00	50.00	-13.91
12.183	L1	35.94	10.03	45.97	60.00	50.00	-14.03
12.354	L1	35.64	10.04	45.68	60.00	50.00	-14.32
12.440	N	25.79	10.05	35.85	60.00	50.00	-24.16
12.548	L1	34.56	10.05	44.61	60.00	50.00	-15.39
12.620	L1	34.56	10.05	44.60	60.00	50.00	-15.40

All other emissions are at least 25 dB below the limit.
Measurements were done with the quasi-peak detector.
See figure 1-3 and figure 1-4 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

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AC Conducted Emissions Test Graphs

Test Configuration 2

Figure 1-3: L1 lines

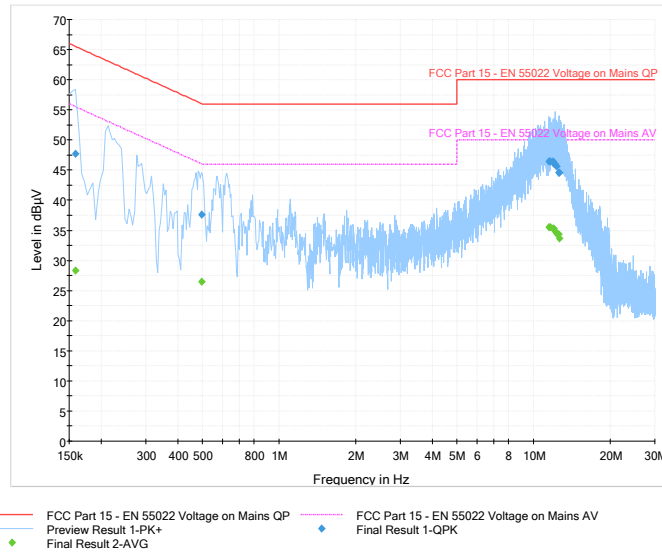
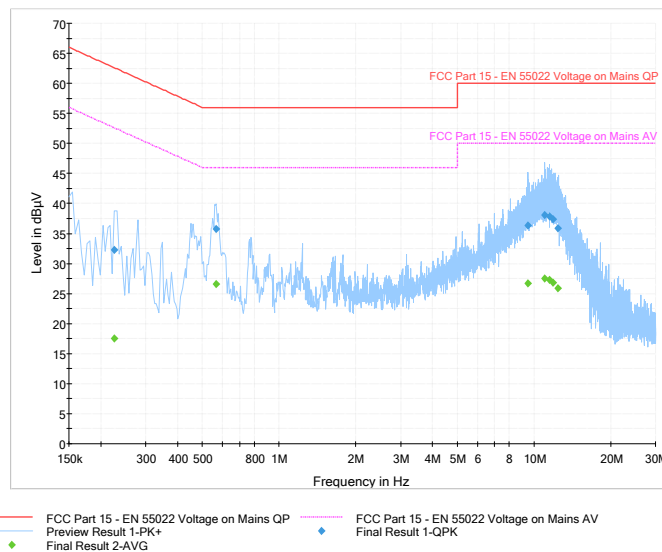



Figure 1-4: N Lines



	EMI Test Report for the BlackBerry® smartphone Model RFS121LW	
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AC Conducted Emissions Test Results cont'd

Test Configuration 3

Date of the test: March 08, 2013

The environmental conditions were: Temperature: 25.2 °C
Humidity: 21.2 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.420	L1	27.81	9.98	37.80	57.40	47.40	-19.61
0.429	N	25.28	9.98	35.26	57.30	47.30	-22.05
0.731	L1	26.15	9.83	35.98	56.00	46.00	-20.03
1.370	L1	31.59	9.80	41.39	56.00	46.00	-14.61
1.379	N	27.66	9.81	37.47	56.00	46.00	-18.53
2.738	N	23.04	9.87	32.91	56.00	46.00	-23.09

All other emissions are at least 25 dB below the limit.

Measurements were done with the quasi-peak detector.

See figure 1-5 and figure 1-6 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

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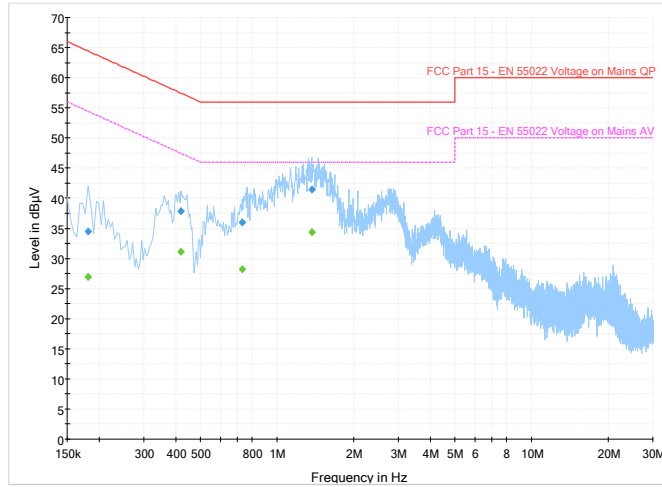
Date of Test
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AC Conducted Emissions Test Graphs

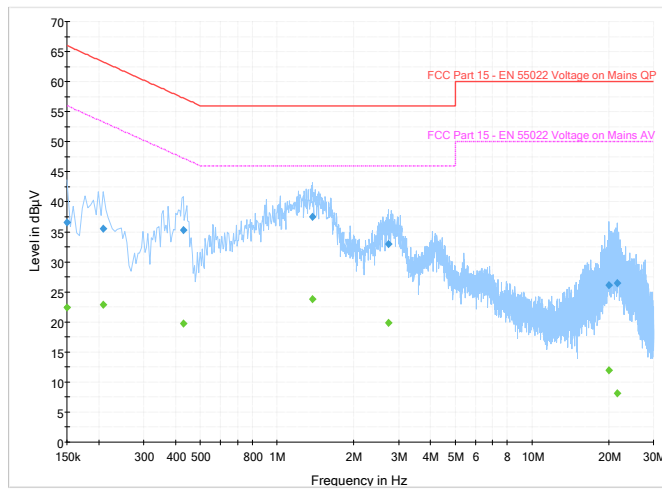
Test Configuration 3

Figure 1-5: L1 lines




— FCC Part 15 - EN 55022 Voltage on Mains QP
 — FCC Part 15 - EN 55022 Voltage on Mains AV
— Preview Result 1-PK+
 ◆ Final Result 1-QPK
◆ Final Result 2-AVG

Figure 1-6: N Lines



— FCC Part 15 - EN 55022 Voltage on Mains QP
 — FCC Part 15 - EN 55022 Voltage on Mains AV
— Preview Result 1-PK+
 ◆ Final Result 1-QPK
◆ Final Result 2-AVG

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AC Conducted Emissions Test Results cont'd

Test Configuration 4

Date of the test: March 08, 2013

The environmental conditions were: Temperature: 24.8 °C
Humidity: 21.9 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.168	L1	30.85	11.08	41.93	65.10	55.10	-23.17
0.726	L1	25.80	9.83	35.63	56.00	46.00	-20.38
0.794	N	25.17	9.82	35.00	56.00	46.00	-21.01
0.938	L1	30.24	9.81	40.05	56.00	46.00	-15.96
0.951	N	25.42	9.81	35.23	56.00	46.00	-20.77
1.104	N	25.23	9.81	35.04	56.00	46.00	-20.96
1.190	N	25.89	9.80	35.69	56.00	46.00	-20.31
1.194	L1	30.91	9.80	40.71	56.00	46.00	-15.29
1.320	L1	30.76	9.80	40.56	56.00	46.00	-15.44
1.383	N	24.77	9.81	34.58	56.00	46.00	-21.42
2.099	N	28.27	9.83	38.10	56.00	46.00	-17.90
2.112	L1	33.17	9.83	43.00	56.00	46.00	-13.00
2.148	N	28.12	9.83	37.95	56.00	46.00	-18.05
2.211	N	27.47	9.84	37.30	56.00	46.00	-18.70
2.270	L1	33.70	9.84	43.53	56.00	46.00	-12.47
3.764	L1	25.29	9.90	35.18	56.00	46.00	-20.82

All other emissions are at least 25 dB below the limit.

Measurements were done with the quasi-peak detector.

See figure 1-7 and figure 1-8 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

Test Report No.
 RTS-6036-1305-03

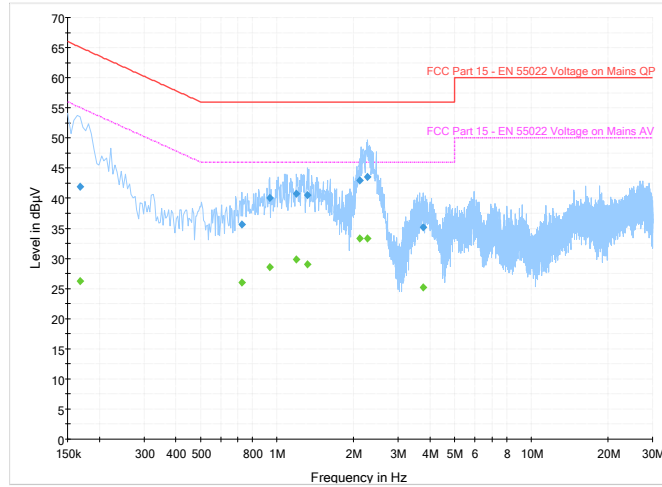
Date of Test
 March 07-12 and 28 and April 25-26, 2013

FCC ID: L6ARS120LW
IC : 2503A-RFS120LW

AC Conducted Emissions Test Graphs

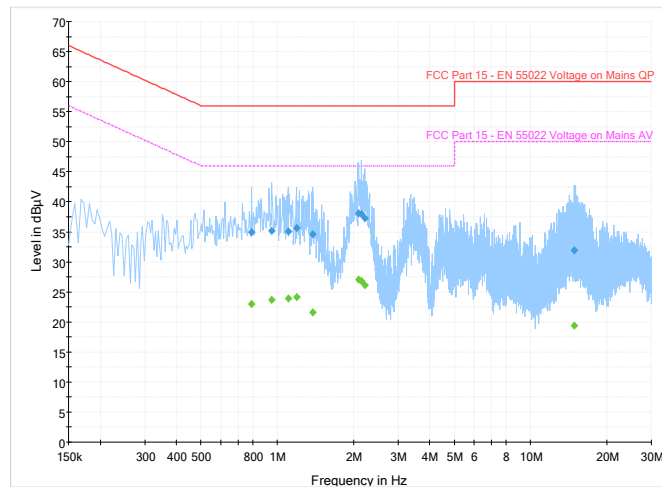
Test Configuration 4

Figure 1-7: L1 lines



— FCC Part 15 - EN 55022 Voltage on Mains QP — FCC Part 15 - EN 55022 Voltage on Mains AV
 — Preview Result 1-PK+ ◆ Final Result 1-QPK
 ◆ Final Result 2-AVG

Figure 1-8: N Lines



— FCC Part 15 - EN 55022 Voltage on Mains QP — FCC Part 15 - EN 55022 Voltage on Mains AV
 — Preview Result 1-PK+ ◆ Final Result 1-QPK
 ◆ Final Result 2-AVG

Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26,2013	FCC ID: L6ARS120LW IC : 2503A-RFS120LW
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Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (AV) (dBµV)	Limit (AV) (dBµV)	Margin (AV) Limits (dB)
0.186	L1	27.21	10.95	38.16	44.20	-16.04
0.420	L1	31.30	9.98	41.28	37.40	-6.12
0.425	N	31.08	9.98	41.07	37.40	-6.34
0.434	L1	26.93	9.96	36.90	37.20	-10.31
0.515	N	29.15	9.91	39.06	36.00	-6.95
0.614	L1	23.88	9.85	33.73	36.00	-12.27
0.969	N	20.32	9.81	30.13	36.00	-15.87
0.974	L1	19.02	9.80	28.83	36.00	-17.17
1.064	N	20.71	9.81	30.52	36.00	-15.48
1.199	L1	26.99	9.80	36.79	36.00	-9.21
2.108	N	26.02	9.83	35.85	36.00	-10.15
2.117	L1	26.56	9.83	36.39	36.00	-9.61
2.351	N	28.43	9.84	38.27	36.00	-7.73
2.423	L1	27.28	9.85	37.13	36.00	-8.88
3.539	L1	25.49	9.89	35.38	36.00	-10.62
3.656	N	26.20	9.90	36.10	36.00	-9.90
3.732	L1	24.77	9.89	34.67	36.00	-11.34
4.695	N	25.42	9.91	35.33	36.00	-10.67

All other emissions are at least 25 dB below the limit.

Measurements were done with the quasi-peak detector and the average detector.

See figure 1-9 and figure 1-10 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

Test Report No.
 RTS-6036-1305-03

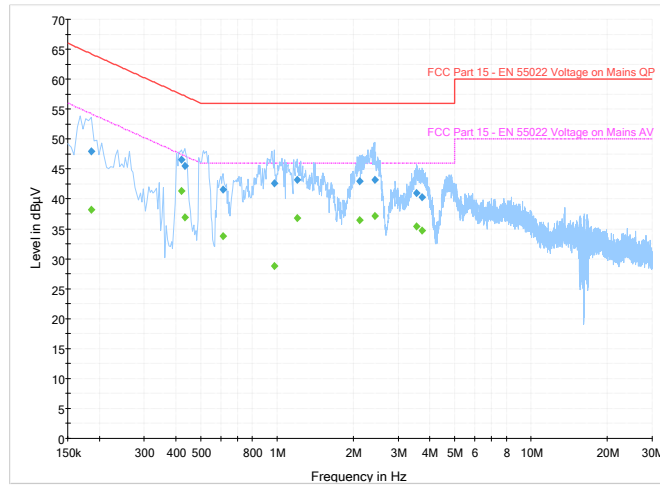
Date of Test
 March 07-12 and 28 and April 25-26, 2013

FCC ID: L6ARS120LW
IC : 2503A-RFS120LW

AC Conducted Emissions Test Graphs

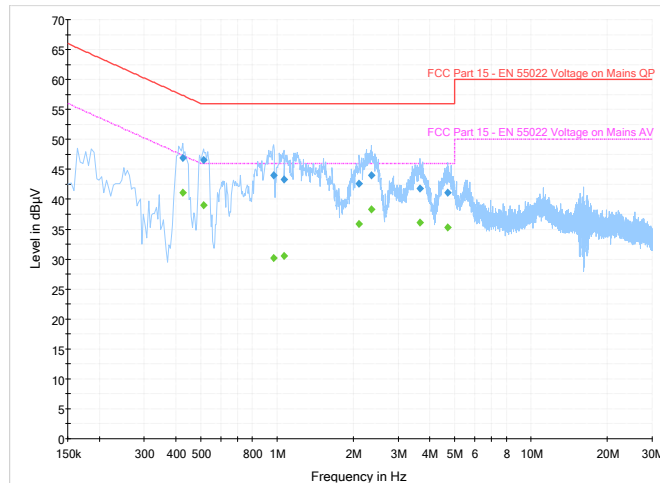
Test Configuration 5

Figure 1-9: L1 lines



— FCC Part 15 - EN 55022 Voltage on Mains QP — FCC Part 15 - EN 55022 Voltage on Mains AV
 — Preview Result 1-PK+ ◆ Final Result 1-QPK
 ◆ Final Result 2-AVG

Figure 1-10: N Lines



— FCC Part 15 - EN 55022 Voltage on Mains QP — FCC Part 15 - EN 55022 Voltage on Mains AV
 — Preview Result 1-PK+ ◆ Final Result 1-QPK
 ◆ Final Result 2-AVG

Test Report No.
 RTS-6036-1305-03

Date of Test
 March 07-12 and 28 and April 25-26, 2013

FCC ID: L6ARS120LW
IC : 2503A-RFS120LW

AC Conducted Emissions Test Graphs

Test Configuration 6

Figure 1-11: L1 lines

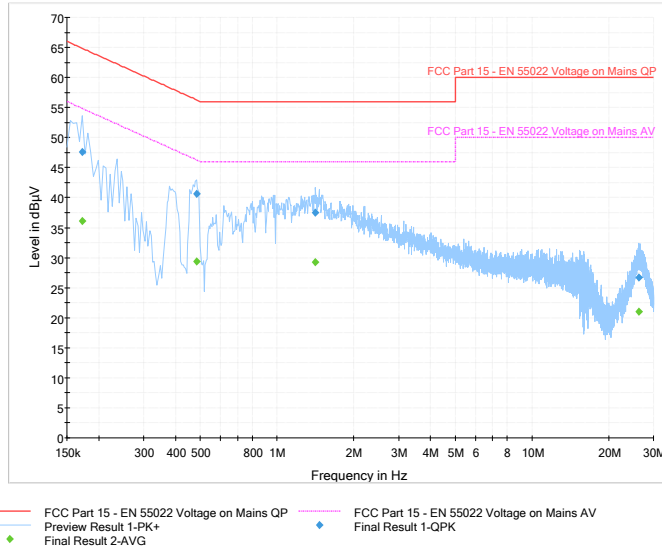
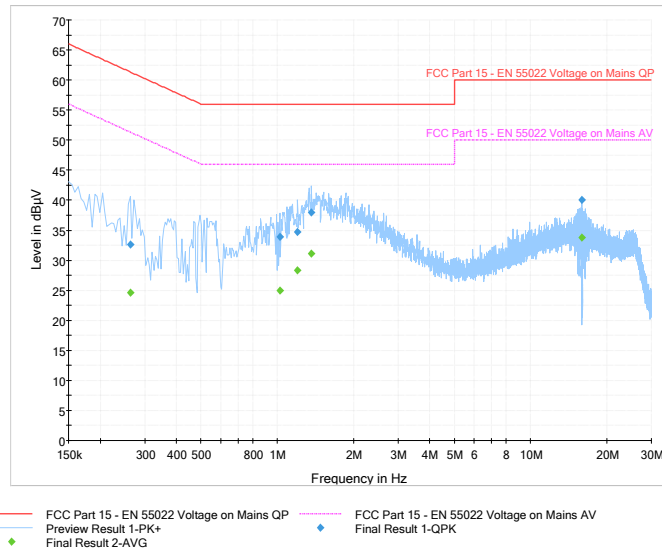


Figure 1-12: N Lines



Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26,2013	FCC ID: L6ARS120LW IC : 2503A-RFS120LW
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Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (AP) (dBµV)	Limit (AV) (dBµV)	Margin (AV) Limits (dB)
0.177	L1	27.64	11.02	38.66	44.60	-15.94
0.411	L1	28.47	9.99	38.47	37.60	-9.13
0.411	N	29.43	10.01	39.43	37.60	-8.17
0.434	L1	26.41	9.96	36.37	37.20	-10.83
0.519	L1	27.55	9.90	37.45	36.00	-8.55
0.519	N	27.20	9.91	37.11	36.00	-8.89
0.551	L1	15.09	9.88	24.97	36.00	-21.03
0.969	N	20.13	9.81	29.94	36.00	-16.06
0.992	L1	21.29	9.80	31.09	36.00	-14.91
1.050	N	21.57	9.81	31.38	36.00	-14.62
1.185	L1	26.15	9.80	35.95	36.00	-10.05
1.361	N	25.22	9.81	35.03	36.00	-10.97
2.099	L1	26.16	9.83	35.99	36.00	-10.01
2.364	L1	28.08	9.84	37.93	36.00	-8.08
2.405	N	27.76	9.85	37.60	36.00	-8.40
3.593	N	26.27	9.90	36.16	36.00	-9.84
3.647	L1	25.27	9.89	35.17	36.00	-10.83
3.705	N	25.92	9.90	35.81	36.00	-10.19
4.749	N	25.00	9.91	34.92	36.00	-11.08

All other emissions are at least 25 dB below the limit.
 Measurements were done with the quasi-peak detector average detector.
 See figure 1-13 and figure 1-14 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

Test Report No.
 RTS-6036-1305-03

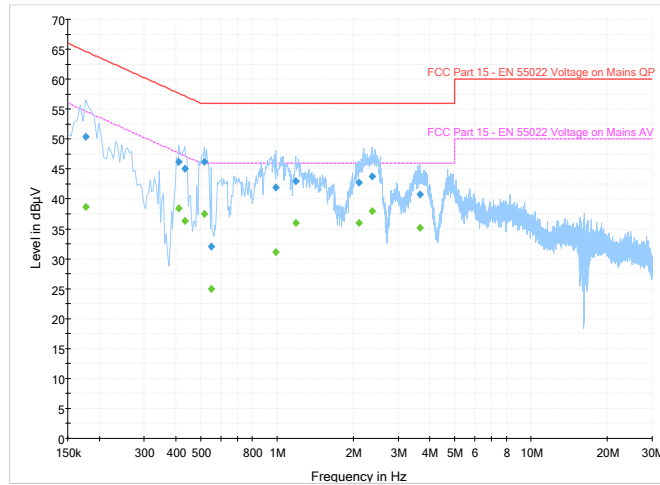
Date of Test
 March 07-12 and 28 and April 25-26, 2013

FCC ID: L6ARS120LW
IC : 2503A-RFS120LW

AC Conducted Emissions Test Graphs

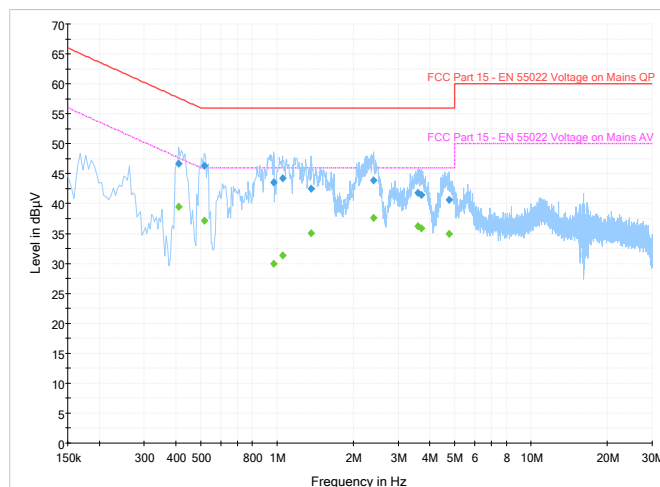
Test Configuration 7

Figure 1-13: L1 lines



— FCC Part 15 - EN 55022 Voltage on Mains QP
 — FCC Part 15 - EN 55022 Voltage on Mains AV
— Preview Result 1-PK+
 ◆ Final Result 1-QPK
◆ Final Result 2-AVG

Figure 1-14: N Lines



— FCC Part 15 - EN 55022 Voltage on Mains QP
 — FCC Part 15 - EN 55022 Voltage on Mains AV
— Preview Result 1-PK+
 ◆ Final Result 1-QPK
◆ Final Result 2-AVG

Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26,2013	FCC ID: L6ARS120LW IC : 2503A-RFS120LW
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Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (AV) (dBµV)	Limit (AV) (dBµV)	Margin (AV) Limits (dB)
0.173	L1	25.78	11.05	36.83	44.80	-17.97
0.177	N	26.81	11.05	37.86	44.60	-16.74
0.411	L1	28.43	9.99	38.42	37.60	-9.18
0.411	N	29.66	10.01	39.66	37.60	-7.94
0.510	L1	29.10	9.90	39.00	36.00	-7.00
0.519	N	27.25	9.91	37.16	36.00	-8.84
0.960	N	21.57	9.81	31.38	36.00	-14.62
0.965	L1	20.35	9.81	30.16	36.00	-15.84
1.064	L1	19.70	9.80	29.50	36.00	-16.50
1.185	N	28.07	9.80	37.87	36.00	-8.13
1.397	N	23.07	9.81	32.87	36.00	-13.13
2.085	L1	26.26	9.83	36.08	36.00	-9.92
2.328	L1	28.39	9.84	38.23	36.00	-7.77
2.346	N	28.33	9.84	38.17	36.00	-7.83
3.692	N	25.87	9.90	35.76	36.00	-10.24
3.696	L1	25.12	9.89	35.01	36.00	-10.99
4.565	N	25.43	9.91	35.34	36.00	-10.66
4.754	L1	23.88	9.90	33.79	36.00	-12.22
16.040	N	17.59	10.12	27.71	40.00	-22.29

All other emissions are at least 25 dB below the limit.

Measurements were done with the quasi-peak detector and the average detector.

See figure 1-15 and figure 1-16 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

Test Report No.
 RTS-6036-1305-03

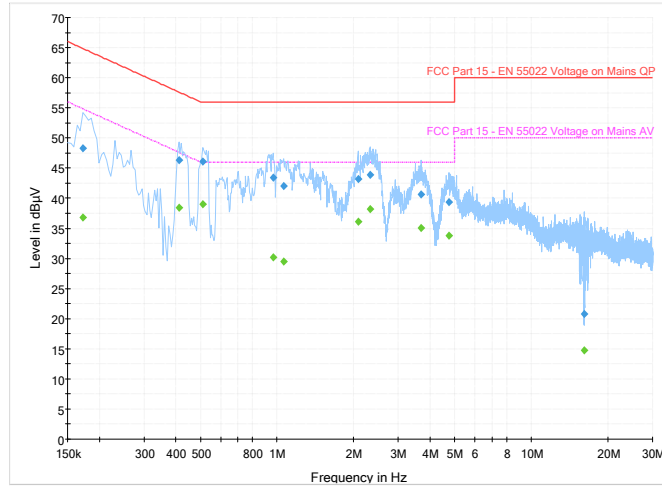
Date of Test
 March 07-12 and 28 and April 25-26, 2013

FCC ID: L6ARS120LW
IC : 2503A-RFS120LW

AC Conducted Emissions Test Graphs

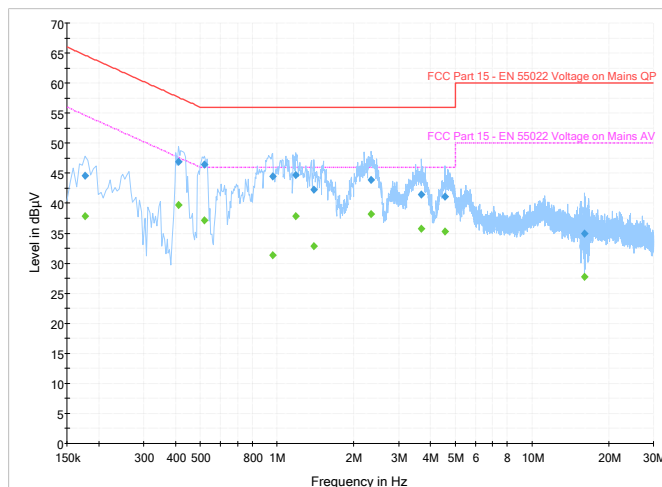
Test Configuration 8

Figure 1-15: L1 lines




— FCC Part 15 - EN 55022 Voltage on Mains QP
 — FCC Part 15 - EN 55022 Voltage on Mains AV
— Preview Result 1-PK+
 ◆ Final Result 1-QPK
◆ Final Result 2-AVG


Figure 1-16: N Lines



— FCC Part 15 - EN 55022 Voltage on Mains QP
 — FCC Part 15 - EN 55022 Voltage on Mains AV
— Preview Result 1-PK+
 ◆ Final Result 1-QPK
◆ Final Result 2-AVG

	EMI Test Report for the BlackBerry® smartphone Model RFS121LW Appendix 2	
Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26,2013	FCC ID: L6ARS120LW IC : 2503A-RFS120LW

APPENDIX 2 - RADIATED EMISSIONS TEST DATA

	EMI Test Report for the BlackBerry® smartphone Model RFS121LW	
	Appendix 2	
Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26,2013	FCC ID: L6ARS120LW IC : 2503A-RFS120LW

Radiated Emissions Test Results cont'd


Test Configuration 6

Date of the test: March 11, 2013

The environmental conditions were: Temperature: 24.9 °C
Humidity: 27.9 %

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+c orr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
214.400	V	1.48	87.00	Q.P.	33.15	-8.71	24.44	43.50	-19.06
384.050	H	2.78	149.00	Q.P.	30.18	-4.13	26.05	46.00	-19.95
515.250	V	2.52	212.00	Q.P.	32.63	0.42	33.05	46.00	-12.95
1933.000	V	1.12	161.00	Q.P.	49.74	5.24	54.98	74.00	-19.02

All other emissions are at least 25 dB below the limit.

	EMI Test Report for the BlackBerry® smartphone Model RFS121LW	
	Appendix 2	
Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26,2013	FCC ID: L6ARS120LW IC : 2503A-RFS120LW

Radiated Emissions Test Results cont'd


Test Configuration 7

Date of the test: March 12, 2013

The environmental conditions were: Temperature: 25.7 °C
Humidity: 18.7 %

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+c orr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
140.200	H	2.09	7.00	Q.P.	36.78	-11.79	24.99	43.50	-18.51
348.800	V	1.64	354.00	Q.P.	26.02	-2.45	23.57	46.00	-22.43
425.600	H	3.18	349.00	Q.P.	25.65	-2.69	22.96	46.00	-23.04

All other emissions are at least 25 dB below the limit.

	EMI Test Report for the BlackBerry® smartphone Model RFS121LW	
	Appendix 2	
Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26,2013	FCC ID: L6ARS120LW IC : 2503A-RFS120LW

Radiated Emissions Test Results cont'd


Test Configuration 8

Date of the test: March 12, 2013

The environmental conditions were: Temperature: 25.7 °C
Humidity: 18.7 %

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+c orr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
278.650	H	1.17	136.00	Q.P.	31.78	-8.41	23.37	46.00	-22.63
893.800	V	1.70	186.00	Q.P.	31.48	7.58	39.06	46.00	-6.94

All other emissions are at least 25 dB below the limit.

	EMI Test Report for the BlackBerry® smartphone Model RFS121LW	
	Appendix 2	
Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26, 2013	FCC ID: L6ARS120LW IC : 2503A-RFS120LW

Radiated Emissions Test Results cont'd


Test Configuration 9

Date of the test: March 11, 2013

The environmental conditions were: Temperature: 25.5 °C
Humidity: 17.2 %

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+c orr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
40.150	V	1.64	17.00	Q.P.	37.78	-14.80	22.98	40.00	-17.02
71.950	V	1.98	219.00	Q.P.	38.28	-15.43	22.85	40.00	-17.15
122.900	H	1.67	112.00	Q.P.	34.05	-11.50	22.55	43.50	-20.95
130.600	V	1.81	219.00	Q.P.	32.18	-11.88	20.30	43.50	-23.20
144.000	H	2.14	208.00	Q.P.	43.39	-11.78	31.61	43.50	-11.89
184.150	H	1.99	196.00	Q.P.	32.90	-10.60	22.30	43.50	-21.20
216.000	H	1.77	263.00	Q.P.	38.38	-8.81	29.57	43.50	-13.93
244.850	H	1.49	339.00	Q.P.	34.81	-9.44	25.37	46.00	-20.63
336.000	H	1.05	73.00	Q.P.	32.74	-3.48	29.26	46.00	-16.74
366.200	V	1.40	169.00	Q.P.	29.34	-4.90	24.44	46.00	-21.56
431.950	H	2.26	112.00	Q.P.	39.15	-2.65	36.50	46.00	-9.50
527.950	V	2.23	318.00	Q.P.	28.52	1.16	29.68	46.00	-16.32
664.150	V	1.86	21.00	Q.P.	27.60	2.57	30.17	46.00	-15.83

All other emissions are at least 25 dB below the limit.

	EMI Test Report for the BlackBerry® smartphone Model RFS121LW	
	Appendix 2	
Test Report No. RTS-6036-1305-03	Date of Test March 07-12 and 28 and April 25-26,2013	FCC ID: L6ARS120LW IC : 2503A-RFS120LW

Radiated Emissions Test Results cont'd

Test Configuration 10

Date of the test: April 26, 2013

The environmental conditions were: Temperature: 25.1 °C
Humidity: 17.1 %

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
34.350	V	1.47	45.00	Q.P.	39.86	-13.10	26.76	40.00	-13.24
50.600	V	1.59	6.00	Q.P.	40.47	-16.72	23.75	40.00	-16.25
65.600	V	1.43	86.00	Q.P.	50.42	-16.40	34.02	40.00	-5.98
342.450	H	1.01	229.00	Q.P.	27.66	-2.23	25.43	46.00	-20.57

All other emissions are at least 25 dB below the limit.