

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-6012-1212-01


PRODUCT MODEL NO.: RFA91LW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARFA90LW
IC: 2503A- RFA90LW

DATE: December 03, 2012

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



592

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
Test Report No. RTS-6012-1212-01	Date of Test August 30-September 11 and November 19-29, 2012	FCC ID: L6ARFA90LW IC : 2503A-RFA90LW

Statement of Performance:

The BlackBerry® smartphone, model RFA91LW, part number CER-48926-001 Rev 2 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:

Feras Obeid
Regulatory Compliance Associate

Heng Lin
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, 2011 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_RFA91LW_b1107.
- 2) RFA91LW_HW_Declaration_CER-48926-001_Rev2


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 August 30-September 11 and November 19-29, 2012

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The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN	Software
1	RFA91LW	CER-48926-001 Rev1	332BED61	OS Version 127.0.1.1651 Bundle: 1651
2	RFA91LW	CER-48926-001 Rev1	332BED6A	OS Version 127.0.1.1651 Bundle: 1651
3	RFA91LW	CER-48926-001 Rev2	332F96D8	OS Version 10.0.9.602 Bundle: 602
4	RFA91LW	CER-48926-001 Rev2	332F96E0	OS Version 10.0.9.1107 Bundle: 1107


AC conducted testing was performed on sample 4.

Radiated Emissions testing was performed on sample 1, 2 and 3

To view the differences between software bundles 1651 to 1107, see document
MultiSourceDeclaration_RFA91LW_b1107.

Only the characteristics that may have been affected by the changes from RFA91LW
Rev1 to RFA91LW Rev2 were re-tested.

For more details, refer to RFA91LW_HW_Declaration_CER-48926-001_Rev2


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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. 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 B, part number HDW-47725-001 with an output voltage of 5.0 volts dc, 850mA
- 4) Folding Blade Charger, part number HDW-34724-001 with an output voltage of 5.0 volts dc and current of 1.8 Amps
- 5) Alt. 3 Fixed Blade Charger, part number HDW-44303-001 with an output voltage of 5.0 volts dc, 550mA
- 6) World Wide Travel Charger, part number HDW 34725-001 with an output voltage of 5.0 volts, dc, 2A
- 7) Alt. World Wide Travel Charger, part number HDW-34725-002 with an output voltage of 5.0 volts, dc, 2A
- 8) Captive Cable Charger, part number HDW-17957-003 with an output voltage of 5.0 volts dc, 750 mA.
- 9) 12 V DC Charger, part number HDW-46705-001, with an output of 5 volts, 1A
- 10) Alt. 12 V DC Charger, part number HDW-46706-001, with an output of 5 volts, 1.8A
- 11) Wired Headset, part number HDW-44306-001, with a lead length of 1.1 metres
- 12) Alt. Wired Headset, part number HDW-44306-001, with a lead length of 1.1 metres
- 13) Alt.2 Wired Headset, part number HDW-44306-003, with a lead length of 1.1 metres
- 14) USB Data Cable, part number HDW-28109-003, 1.2 metre long.
- 15) USB Data Cable, part number HDW-48415-001, 1.0 metre long.
- 16) USB Y-Cable, part number HDW-19137-002, lead lengths of 26 cm and 11 cm
- 17) HDMI Cable, part number HDW 29572-001, with a lead length of 1.83m
- 18) External Battery Charger, part number HDW-50225-001.

D. Support Equipment Used for the Testing of the EUT

- 1) IBM Thinkpad Lenovo T60p laptop, type 8742-C2U, product ID 8742C2U
- 2) Philips Monitor, type MWE12244T, product ID 2444E1SB/27

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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, 6.2	Radiated Unintentional Spurious Emissions	Yes	2

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.

The following test configurations were measured for model RFA91LW:

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	GSM1900 Idle Charging and Video Playback	Alt. Fixed Blade Charger + Alt. Wired Headset + 1.0m USB Cable
3	CDMA CELL Idle, Charging with Audio Playback	World Wide Travel Charger + Wired Headset + HDMI Cable + Monitor
4	CDMA PCS Idle, Charging	Alt. World Wide Travel Charger + Alt.2 Wired Headset
5	LTE 13 Idle, Charging	World Wide Travel Charger + Alt.2 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 ICES-003, 6.1 Table 2

The sample EUT had a worst case test margin of 5.10 dB below the QP limit at 1.271 MHz using the quasi-peak detector and a test margin of 4.04 dB below the AV limit at 0.479 MHz using the average detector in Test Configuration 3.

Measurement Uncertainty ±3.2 dB

To view the test data/plots, see APPENDIX 1.

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	GSM1900 Idle Charging and Video Playback	Alt. Fixed Blade Charger + Alt. Wired Headset + 1.0m USB Cable
3	Bluetooth Tx, Charging and Audio Playback	Alt.2 Fixed Blade Charger + Wired Headset + 1.2m USB Cable
4	802.11b Tx, Charging and Video Playback	Folding Blade Charger + Alt. Wired Headset
5	802.11a Tx, Charging and Audio Playback	Alt.3 Fixed Blade Charger Wired Headset 1.0m USB Cable
6	CDMA CELL Idle, Charging with Audio Playback	World Wide Travel Charger + Wired Headset + HDMI Cable + Monitor
7	CDMA PCS Idle, Charging	Alt. World Wide Travel Charger + Wired Headset
8	NFC Tx, Charging	Alt. Wired Headset + 1.0m USB Cable + Laptop
9	LTE 13 Idle, Charging with Video Playback	Captive Cable Charger + Alt. Wired Headset + Y Cable + External Battery Charger
10	PCS 1900 Idle, Charging	12 V DC Charger + Alt2. Wired Headset + 1.2m USB Cable + DC Battery
11	GSM 850 Idle, Charging	Alt. 12 V DC Charger + Alt. Wired Headset + DC Battery

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 Table 5 and Table 7.

The system met the requirements with a worst case emission test margin of 2.18 dB below the QP limit at 742.509MHz using quasi-peak detector in Test Configuration 6. To view the test data see APPENDIX 2.

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Sample Calculation:


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

$$FS = \text{Measured Level (dB}\mu\text{V)} + \text{A.F. (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp (dB)} + \text{Filter Loss (dB)}$$


Measurement Uncertainty ±4.5 dB

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
EMC Analyzer	Rohde & Schwarz	ESIB 40	100255	12-12-08	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	CMEU 200	837493/073	12-11-30	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112394	12-11-30	Radiated/Conducted Emissions
EMI Test Receiver	Rohde & Schwarz	ESU 40	100162	12-12-07	Radiated/Conducted Emissions
Bluetooth Tester	Rohde & Schwarz	CBT	100368	12-11-30	Radiated Emissions
Bluetooth Tester	Rohde & Schwarz	CBT	100370	12-11-30	Radiated/Conducted Emissions

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW APPENDIX 1	
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APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
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AC Conducted Emissions Test Results

The following tests were performed by Forhad Hasnat.

Test Configuration 1

Date of the test: November 24, 2012

The environmental conditions were: Temperature: 24.5 °C
 Humidity: 24%

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	37.40	11.20	48.61	66.00	56.00	-17.40
0.204	L1	33.66	10.83	44.49	63.40	53.40	-18.91
0.276	L1	27.77	10.33	38.10	60.90	50.90	-22.80
10.262	L1	30.28	9.97	40.25	60.00	50.00	-19.76
11.112	N	27.48	9.99	37.47	60.00	50.00	-22.53
11.162	N	27.76	10.00	37.76	60.00	50.00	-22.24
11.175	N	27.91	10.00	37.91	60.00	50.00	-22.10
11.216	N	27.69	10.00	37.69	60.00	50.00	-22.31
11.346	N	26.65	10.00	36.66	60.00	50.00	-23.34
11.486	L1	33.65	10.00	43.64	60.00	50.00	-16.36
11.571	N	27.80	10.01	37.82	60.00	50.00	-22.19
11.819	N	26.90	10.02	36.92	60.00	50.00	-23.08
11.850	N	27.36	10.03	37.38	60.00	50.00	-22.62
11.918	L1	33.83	10.02	43.85	60.00	50.00	-16.15
12.066	L1	33.60	10.02	43.62	60.00	50.00	-16.38
12.084	N	27.55	10.04	37.59	60.00	50.00	-22.41
12.183	L1	33.52	10.03	43.55	60.00	50.00	-16.45
12.215	L1	33.93	10.03	43.96	60.00	50.00	-16.04
12.399	L1	33.46	10.04	43.50	60.00	50.00	-16.51
12.588	L1	33.25	10.05	43.30	60.00	50.00	-16.70
13.245	L1	30.41	10.06	40.47	60.00	50.00	-19.53

All other emission levels had test margins of greater than 25 dB.

Measurements were done with the QP detectors

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

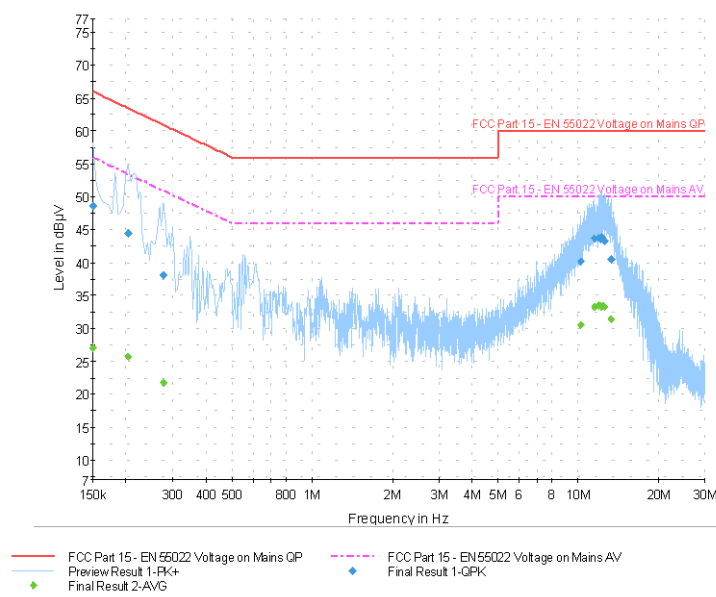
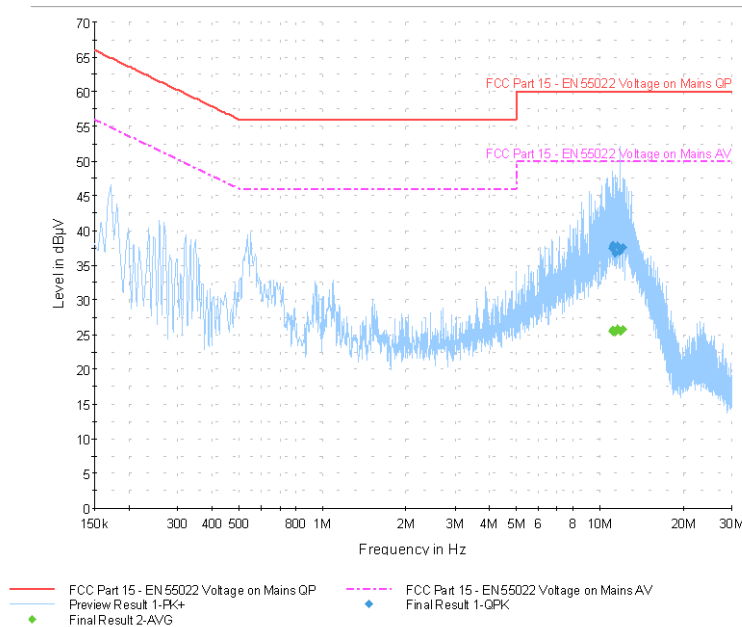



Figure 1-2: N Lines



	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
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AC Conducted Emissions Test Results cont'd

Test Configuration 2

Date of the test: November 24, 2012

The environmental conditions were: Temperature: 24.5 °C
 Humidity: 23 %

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	31.41	11.20	42.61	66.00	56.00	-23.39
0.150	N	30.99	11.23	42.22	66.00	56.00	-23.78

All other emission levels had test margins of greater than 25 dB.
 Measurements were done with the QP 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

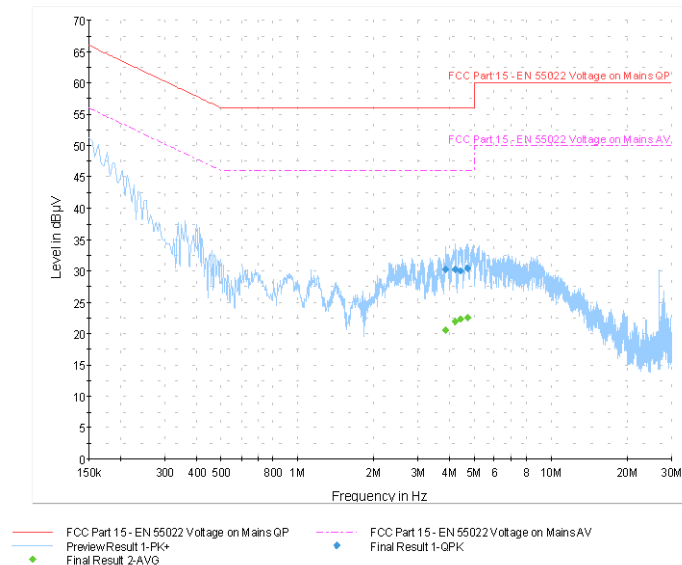
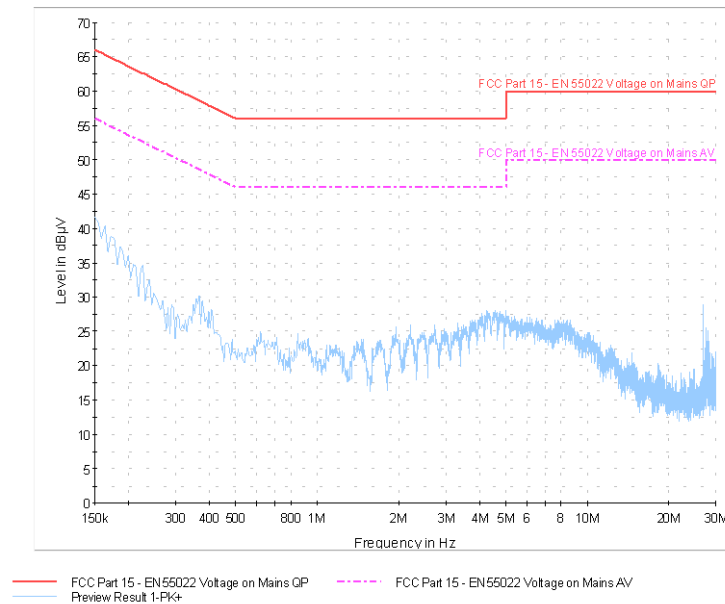


Figure 1-4: N Lines



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AC Conducted Emissions Test Results cont'd

Test Configuration 3

Date of the test: November 28, 2012

 The environmental conditions were: Temperature: 25.4 °C
 Humidity: 21.3 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Margin (QP) Limits (dB)
0.159	L1	39.23	11.14	50.37	65.50	-15.13
0.218	N	34.33	10.76	45.08	62.90	-17.82
0.384	N	39.96	10.05	50.01	58.20	-8.19
0.389	L1	39.44	10.03	49.47	58.10	-8.63
0.479	N	39.69	9.93	49.62	56.40	-6.78
0.479	L1	38.99	9.92	48.92	56.40	-7.49
0.704	N	32.74	9.84	42.58	56.00	-13.42
0.704	L1	31.39	9.83	41.22	56.00	-14.78
0.798	N	38.70	9.82	48.52	56.00	-7.48
0.798	L1	37.62	9.82	47.44	56.00	-8.56
0.893	N	38.04	9.82	47.86	56.00	-8.14
0.893	L1	37.05	9.81	46.86	56.00	-9.14
1.127	L1	37.16	9.80	46.96	56.00	-9.04
1.266	L1	39.05	9.80	48.86	56.00	-7.14
1.271	N	41.10	9.80	50.90	56.00	-5.10
1.419	L1	34.42	9.80	44.22	56.00	-11.78
3.539	L1	28.19	9.89	38.08	56.00	-17.92
4.128	N	30.85	9.91	40.76	56.00	-15.24
4.142	L1	31.78	9.90	41.68	56.00	-14.32
5.496	L1	35.00	9.91	44.91	60.00	-15.09
5.600	N	34.53	9.91	44.44	60.00	-15.56
18.272	N	32.96	10.23	43.19	60.00	-16.81
18.326	L1	32.24	10.22	42.46	60.00	-17.54

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Frequency (MHz)	Line	Reading (AV) (dBµV)	Correction Factor (dB)	Corrected Reading (AV) (dBµV)	Limit (AV) (dBµV)	Margin (AV) Limits (dB)
0.159	L1	29.51	11.14	40.65	45.50	-14.85
0.218	N	26.49	10.76	37.25	42.90	-15.65
0.384	N	32.70	10.05	42.75	38.20	-5.46
0.389	L1	33.08	10.03	43.10	38.10	-5.00
0.479	L1	31.83	9.92	41.75	36.40	-4.65
0.479	N	32.43	9.93	42.36	36.40	-4.04
0.704	L1	24.87	9.83	34.70	36.00	-11.30
0.704	N	26.53	9.84	36.37	36.00	-9.63
0.798	L1	29.71	9.82	39.53	36.00	-6.47
0.798	N	30.65	9.82	40.47	36.00	-5.53
0.893	L1	26.81	9.81	36.62	36.00	-9.38
0.893	N	26.98	9.82	36.80	36.00	-9.20
1.127	L1	30.60	9.80	40.41	36.00	-5.59
1.266	L1	30.53	9.80	40.33	36.00	-5.67
1.271	N	31.59	9.80	41.39	36.00	-4.61
1.419	L1	27.06	9.80	36.86	36.00	-9.14
3.539	L1	22.50	9.89	32.40	36.00	-13.61
4.128	N	24.79	9.91	34.70	36.00	-11.30
4.142	L1	25.81	9.90	35.71	36.00	-10.29
5.496	L1	29.25	9.91	39.16	40.00	-10.84
5.600	N	28.79	9.91	38.71	40.00	-11.29
18.272	N	26.44	10.23	36.68	40.00	-13.32
18.326	L1	26.89	10.22	37.11	40.00	-12.90

All other emission levels had test margins greater than 25 dB. Measurements were done with the QP and the AV 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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AC Conducted Emissions Test Graphs

Test Configuration 3

Figure 1-5: L1 lines

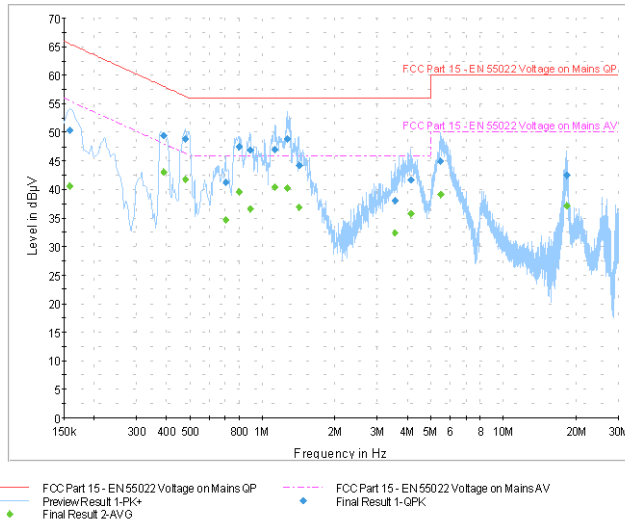
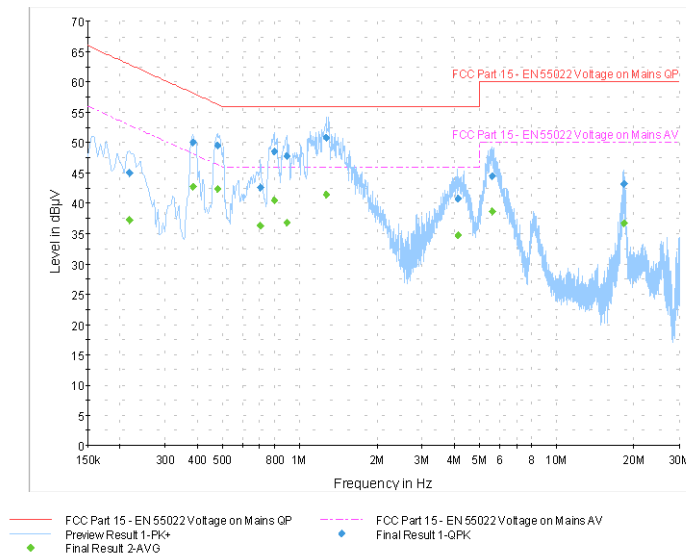



Figure 1-6: N Lines



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AC Conducted Emissions Test Results cont'd

Test Configuration 4

Date of the test: November 28, 2012

The environmental conditions were: Temperature: 25.4 °C
 Humidity: 21.3 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.173	L1	34.73	11.05	45.78	64.80	54.80	-19.03
0.173	N	31.03	11.08	42.11	64.80	54.80	-22.69
0.236	L1	29.69	10.61	40.30	62.30	52.30	-22.00
0.267	N	34.10	10.41	44.51	61.20	51.20	-16.69
0.335	N	31.50	10.12	41.62	59.30	49.30	-17.68
0.416	L1	29.88	9.99	39.86	57.50	47.50	-17.64
0.506	N	28.66	9.91	38.58	56.00	46.00	-17.42
0.519	L1	30.38	9.90	40.28	56.00	46.00	-15.72
0.839	L1	26.92	9.81	36.73	56.00	46.00	-19.27
0.933	N	26.38	9.81	36.19	56.00	46.00	-19.81
0.947	L1	28.33	9.81	38.14	56.00	46.00	-17.86
1.055	N	25.13	9.81	34.94	56.00	46.00	-21.06
1.401	L1	26.74	9.80	36.55	56.00	46.00	-19.45
1.824	N	26.05	9.82	35.87	56.00	46.00	-20.13

All other emission levels had test margins greater than 25 dB.
 Measurements were done with the QP 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.

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AC Conducted Emissions Test Graphs

Test Configuration 4

Figure 1-7: L1 lines

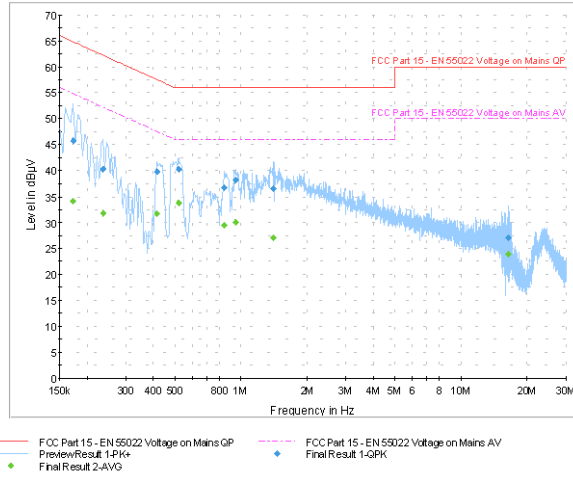
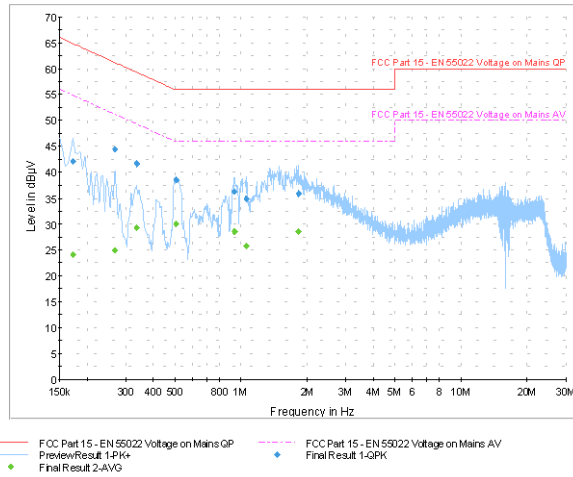



Figure 1-8: N Lines



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AC Conducted Emissions Test Results cont'd

Test Configuration 5

Date of the test: November 29, 2012

The environmental conditions were: Temperature: 25.1 °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)
0.159	N	35.60	11.17	46.78	65.50	55.50	-18.72
0.164	L1	36.92	11.11	48.03	65.30	55.30	-17.27
0.384	L1	28.52	10.04	38.55	58.20	48.20	-19.65
0.393	N	30.72	10.03	40.75	58.00	48.00	-17.25
0.461	L1	30.07	9.93	40.01	56.70	46.70	-16.70
0.474	N	25.87	9.93	35.80	56.40	46.40	-20.60
0.618	L1	24.12	9.85	33.97	56.00	46.00	-22.03
0.731	L1	22.71	9.83	32.54	56.00	46.00	-23.47
0.884	N	26.65	9.82	36.47	56.00	46.00	-19.53
0.915	L1	26.30	9.81	36.11	56.00	46.00	-19.89
0.978	N	25.85	9.81	35.66	56.00	46.00	-20.34
1.302	N	28.23	9.80	38.03	56.00	46.00	-17.97

All other emission levels had test margins greater than 25 dB.
 Measurements were done with the QP 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.

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AC Conducted Emissions Test Graphs

Test Configuration 5

Figure 1-9: L1 lines

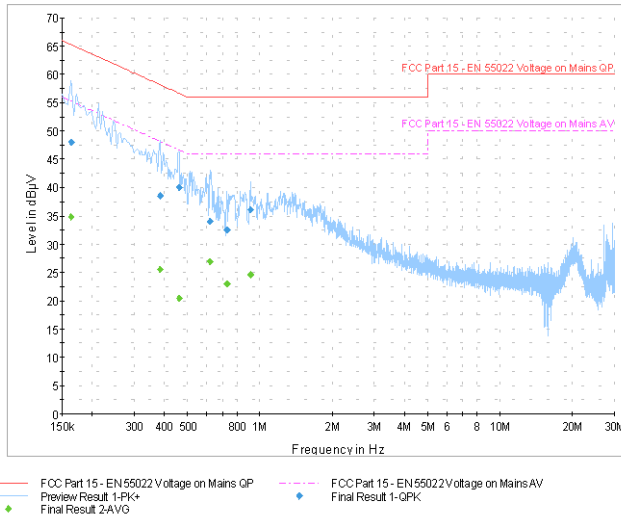
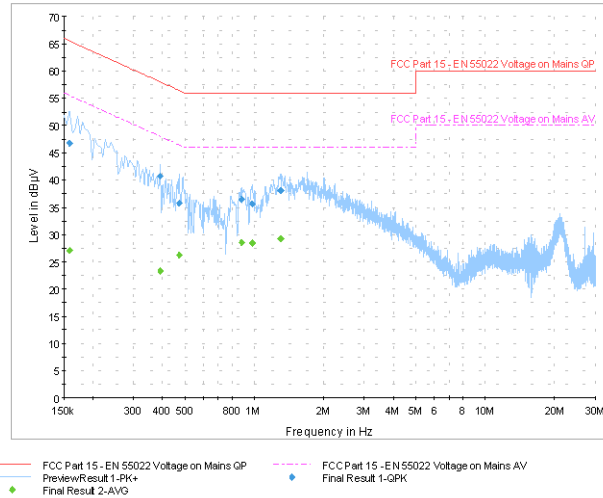




Figure 1-10: N Lines



	EMI Test Report for the BlackBerry® smartphone Model RFA91LW APPENDIX 2	
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APPENDIX 2 - RADIATED EMISSIONS TEST DATA

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
	APPENDIX 2	
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Radiated Emissions Test Results

The following tests were performed by Savtej Sandhu and Feras Obeid.


Test Configuration 1

Date of the test: August 31 and September 06, 2012

The environmental conditions were: Temperature: 24.2-25.6°C
 Humidity: 31.5-36.8 %

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)							
39.525	V	1.54	21.00	Q.P.	32.93	-14.77	18.16	40.00	-21.84
55.778	V	1.69	118.00	Q.P.	44.15	-17.22	26.93	40.00	-13.07
72.413	V	1.73	172.00	Q.P.	31.40	-15.26	16.14	40.00	-23.86
86.217	V	1.61	236.00	Q.P.	39.30	-13.58	25.72	40.00	-14.28
344.487	H	3.60	176.00	Q.P.	23.32	-1.98	21.34	46.00	-24.66

All other emission levels had test margins greater than 25 dB.

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
	APPENDIX 2	
Test Report No. RTS-6012-1212-01	Date of Test August 30-September 11 and November 19-29, 2012	FCC ID: L6ARFA90LW IC : 2503A-RFA90LW

Radiated Emissions Test Results cont'd


Test Configuration 3

Date of the test: August 30 and September 7, 2012

The environmental conditions were: Temperature: 26.1 °C
 Humidity: 32.0 %

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detect or (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)							
41.951	V	1.72	321.00	Q.P.	33.61	-15.40	18.21	40.00	-21.79
58.994	V	1.51	126.00	Q.P.	41.42	-16.95	24.47	40.00	-15.53
74.781	V	1.60	230.00	Q.P.	30.84	-15.05	15.79	40.00	-24.21
346.000	V	2.54	82.00	Q.P.	23.22	-2.14	21.08	46.00	-24.92

All other emission levels had test margins greater than 25 dB.

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW APPENDIX 2	
	Test Report No. RTS-6012-1212-01	Date of Test August 30-September 11 and November 19-29, 2012

FCC ID: L6ARFA90LW **IC :** 2503A-RFA90LW

Radiated Emissions Test Results cont'd


Test Configuration 4

Date of the test: August 30 and September 07, 2012

The environmental conditions were: Temperature: 26.1 °C
 Humidity: 32.0 %

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detect or (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)							
32.158	V	1.44	276.00	Q.P.	37.64	-12.30	25.34	40.00	-14.66
38.287	V	1.48	211.00	Q.P.	37.50	-14.22	23.28	40.00	-16.72
64.739	V	2.46	145.00	Q.P.	37.97	-16.51	21.46	40.00	-18.54
83.799	V	1.48	298.00	Q.P.	31.74	-13.82	17.92	40.00	-22.08
979.078	V	2.85	125.00	Q.P.	23.80	9.35	33.15	54.00	-20.85

All other emission levels had test margins greater than 25 dB.

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
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Test Report No. RTS-6012-1212-01	Date of Test August 30-September 11 and November 19-29, 2012	FCC ID: L6ARFA90LW IC : 2503A-RFA90LW

Radiated Emissions Test Results cont'd

Test Configuration 5


Date of the test: September 07 and November 21, 2012

The environmental conditions were: Temperature: 23.8-26.1 °C

Humidity: 28.1-32.4 %

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)							
42.543	V	1.60	339.00	Q.P.	37.59	-15.44	22.15	40.00	-17.85
59.256	V	1.45	112.00	Q.P.	35.75	-16.92	18.83	40.00	-21.17
535.649	V	2.41	200.00	Q.P.	23.62	1.49	25.11	46.00	-20.89

All other emission levels had test margins greater than 25 dB.

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
	APPENDIX 2	
Test Report No. RTS-6012-1212-01	Date of Test August 30-September 11 and November 19-29, 2012	FCC ID: L6ARFA90LW IC : 2503A-RFA90LW

Radiated Emissions Test Results cont'd


Test Configuration 6

Date of the test: November 19, 2012

The environmental conditions were: Temperature: 25.4 °C
 Humidity: 22.5%

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)							
38.955	V	2.33	26.00	Q.P.	35.12	-14.52	20.60	40.00	-19.40
76.089	V	1.45	298.00	Q.P.	31.82	-14.75	17.07	40.00	-22.93
148.498	V	1.43	354.00	Q.P.	48.12	-11.65	36.47	43.50	-7.03
203.649	H	1.73	145.00	Q.P.	41.19	-7.72	33.47	43.50	-10.03
262.020	H	1.18	114.00	Q.P.	46.71	-8.23	38.48	46.00	-7.52
372.279	V	1.41	354.00	Q.P.	41.85	-4.79	37.06	46.00	-8.94
594.118	H	1.77	125.00	Q.P.	29.05	2.07	31.12	46.00	-14.88
742.509	H	1.00	35.00	Q.P.	39.82	4.00	43.82	46.00	-2.18

All other emission levels had test margins greater than 25 dB.

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
	APPENDIX 2	
Test Report No. RTS-6012-1212-01	Date of Test August 30-September 11 and November 19-29, 2012	FCC ID: L6ARFA90LW IC : 2503A-RFA90LW

Radiated Emissions Test Results cont'd


Test Configuration 7

Date of the test: September 10-11, 2012

The environmental conditions were: Temperature: 24.2-25.7 °C
 Humidity: 30.3-31.6 %

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)							
32.583	V	1.45	301.00	Q.P.	27.61	-12.57	15.04	40.00	-24.96
56.255	V	1.43	11.00	Q.P.	36.90	-17.19	19.71	40.00	-20.29
67.144	V	1.63	111.00	Q.P.	35.04	-16.22	18.82	40.00	-21.18
80.827	V	3.75	328.00	Q.P.	29.63	-14.23	15.40	40.00	-24.60
143.971	H	2.30	159.00	Q.P.	30.05	-11.95	18.10	43.50	-25.40
206.297	H	1.11	178.00	Q.P.	25.87	-7.82	18.05	43.50	-25.45
361.653	H	1.49	74.00	Q.P.	27.48	-4.86	22.62	46.00	-23.38
522.464	V	1.80	88.00	Q.P.	23.33	0.77	24.10	46.00	-21.90

All other emission levels had test margins greater than 25 dB.

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Radiated Emissions Test Results cont'd


Test Configuration 8

Date of the test: September 07, 2012

The environmental conditions were: Temperature: 25.7 °C
 Humidity: 30.3 %

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)							
31.936	V	1.45	295.00	Q.P.	32.18	-12.26	19.92	40.00	-20.08
98.308	H	2.19	202.00	Q.P.	40.29	-12.43	27.86	43.50	-15.64
143.937	H	2.44	122.00	Q.P.	39.19	-11.95	27.24	43.50	-16.26
244.225	H	1.37	283.00	Q.P.	35.46	-9.83	25.63	46.00	-20.37
366.222	H	1.00	88.00	Q.P.	26.71	-5.03	21.68	46.00	-24.32
432.041	V	1.63	79.00	Q.P.	37.09	-2.81	34.28	46.00	-11.72
528.009	V	2.39	78.00	Q.P.	31.21	1.02	32.23	46.00	-13.77

All other emission levels had test margins greater than 25 dB.

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
	APPENDIX 2	
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Radiated Emissions Test Results cont'd


Test Configuration 9

Date of the test: September 10, 2012

The environmental conditions were: Temperature: 25.7 °C
 Humidity: 30.3 %

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)							
51.712	V	2.85	206.00	Q.P.	42.54	-16.99	25.55	40.00	-14.45

All other emission levels had test margins greater than 25 dB.

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
	APPENDIX 2	
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Radiated Emissions Test Results cont'd


Test Configuration 10

Date of the test: November 21, 2012

The environmental conditions were: Temperature: 25.4 °C
 Humidity: 22.5 %

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)							
37.765	V	1.79	181.00	Q.P.	51.46	-14.08	37.38	40.00	-2.62
86.802	V	3.02	354.00	Q.P.	28.99	-13.56	15.43	40.00	-24.57
141.047	H	2.16	207.00	Q.P.	42.06	-11.99	30.07	43.50	-13.43

All other emission levels had test margins greater than 25 dB.

	EMI Test Report for the BlackBerry® smartphone Model RFA91LW	
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Radiated Emissions Test Results cont'd

Test Configuration 11

Date of the test: November 21, 2012

The environmental conditions were: Temperature: 25.4 °C
 Humidity: 22.5 %

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)							
31.296	V	0.00	0.00	Q.P.	48.11	-12.17	35.94	40.00	-4.06
154.415	H	0.00	0.00	Q.P.	44.66	-11.83	32.83	43.50	-10.67

All other emission levels had test margins greater than 25 dB.