

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-6012-1211-25

PRODUCT MODEL NO.: RFH121LW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARFH120LW
IC: 2503A- RFH120LW

DATE: November 30, 2012

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW	
Test Report No. RTS-6012-1211-25	Date of Test October 30, November 01, 09, 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Statement of Performance:

The BlackBerry® smartphone, model RFH121LW, part number CER-52836-001 Rev2 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_RFH121LW_b785.
- 2) RFH121LW_HW_Declaration_CER-52836-001_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
Waterloo, Ontario
Canada, N2L 3W8
Phone: 519 888 7465
Fax: 519 888 6906

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

The testing was performed on October 30, November 01, 09, 11-13, 2012

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The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN	Software
1	RFH121LW	CER-52836-001 Rev1	2A76E98C	OS Version 10.0.9.341 Bundle: 341
2a	RFH121LW	CER-52836-001 Rev2	25B217A7	OS Version 10.0.9.341 Bundle: 341
2b	RFH121LW	CER-52836-001 Rev2	25B217A7	OS Version 10.0.9.785 Bundle:785
3	RFH121LW	CER-52836-001 Rev2	25B2184C	OS Version 10.0.9.785 Bundle:785


AC conducted testing was performed on sample 3

Radiated Emissions testing was performed on samples 1, 2a and 2b

To view the differences between software bundles 341 to 785, see document
MultiSourceDeclaration_RFH121LW_b785.

Only the characteristics that may have been affected by the changes from RFH121LW
Rev1 to RFH121LW Rev2 were re-tested.

For more details, refer to RFH121LW_HW_Declaration_ CER-52836-001_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) Dell Monitor, Model Number ST2220LC, Product Number CN-0YPY4N-64180-22S-043L

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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-003,6.1	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. Fixed Blade Charger + Alt. Wired Headset + 1.0m USB Cable
3	UMTS Band 5 Idle, Charging	Alt.3 Fixed Blade Charger + Wired Headset + 1.0m USB cable
4	UMTS Band 5 HSPA+ idle, Charging	World Wide Travel Charger + Alt.2 Wired Headset + USB Y Cable + External Battery Charger
5	GSM 850 Idle, Charging	Captive Cable Charger + Wired Headset + HDMI Cable+ Monitor

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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 1.46 dB below the QP limit at 0.425 MHz using the quasi-peak detector in Test Configuration 8 and a test margin of 5.11 dB below the AV limit at 0.425 MHz using the average 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. Fixed Blade Charger + Alt. Wired Headset + 1.0m USB Cable
3	Bluetooth Tx, Charging and Audio Playback	Alt.2 Fixed Blade Charger + Alt.2 Wired Headset + 1.2m USB Cable
4	802.11b Tx, Charging and Video Playback	Folding Blade Charger + Wired Headset
5	UMTS Band 5 idle, Charging	Alt. 3 Fixed Blade Charger + Alt. Wired Headset + 1.0m USB Cable
6	UMTS Band 5 HSDPA+ Idle, Charging and Video Playback	World Wide Travel Charger + Alt.2 Wired Headset + Y Cable + External Battery Charger
7	NFC Tx, Charging	Alt. World Wide Travel Charger+ Alt. Wired Headset
8	GSM 850 Idle, Charging	Captive Cable Charger + Wired Headset + HDMI Cable + Monitor
9	PCS 1900 Idle, Charging	12 V DC Charger + Alt.2 Wired Headset + 1.2m USB Cable + DC Battery
10	UMTS Band 5 Idle, Charging	Alt. 12 V DC Charger + Alt. Wired Headset + DC Battery
11	UMTS Band 5 Idle, Charging	Alt. Wired Headset + 1.0m USB Cable + Laptop

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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 1.29 dB below the QP limit at 148.518 MHz using quasi-peak detector in Test Configuration 8.


To view the test data see APPENDIX 2.

Sample Calculation:

Field Strength (dB μ V/m) is calculated as follows:


FS = Measured Level (dB μ V) + 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
EMC Analyzer	Rohde & Schwarz	ESIB 40	100255	12-12-08	Radiated Emissions
Digital Multimeter	Hewlett Packard	34401A	US36042324	12-11-16	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	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 RFH121LW APPENDIX 1	
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APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA

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AC Conducted Emissions Test Results

The following tests were performed by Heng Lin and Forhad Hasnat

Test Configuration 1


Date of the test: November 09, 2012

The environmental conditions were: Temperature: 24.5 °C
 Humidity: 41.3 %

Frequency (MHz)	Line	Reading (QP) (dBμV)	Correction Factor (dB)	Corrected Reading (QP) (dBμV)	Limit (QP) (dBμV)	Limit (AV) (dBμV)	Margin (QP) Limits (dB)
0.402	L1	34.03	10.01	44.04	57.80	47.80	-13.76
0.650	L1	31.39	9.85	41.23	56.00	46.00	-14.77
0.902	L1	32.52	9.81	42.32	56.00	46.00	-13.68
1.154	L1	34.14	9.80	43.94	56.00	46.00	-12.06
2.301	L1	23.34	9.84	33.18	56.00	46.00	-22.82
4.106	L1	26.02	9.90	35.93	56.00	46.00	-20.08
4.137	N	26.23	9.91	36.14	56.00	46.00	-19.86
4.308	L1	25.39	9.90	35.29	56.00	46.00	-20.71
4.340	N	26.47	9.91	36.38	56.00	46.00	-19.62
4.358	L1	25.55	9.90	35.46	56.00	46.00	-20.55
4.389	N	28.68	9.91	38.59	56.00	46.00	-17.41
4.407	L1	25.40	9.90	35.30	56.00	46.00	-20.70
4.592	N	28.75	9.91	38.66	56.00	46.00	-17.34
4.610	L1	25.78	9.90	35.69	56.00	46.00	-20.31
4.641	N	30.40	9.91	40.31	56.00	46.00	-15.69
4.691	N	29.59	9.91	39.50	56.00	46.00	-16.50
4.844	N	30.07	9.91	39.99	56.00	46.00	-16.01
4.857	L1	25.93	9.91	35.83	56.00	46.00	-20.17
4.893	N	30.87	9.91	40.78	56.00	46.00	-15.22

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

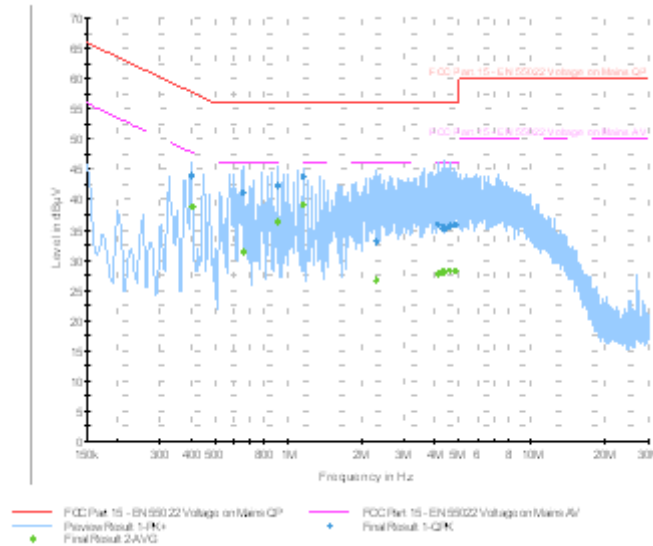
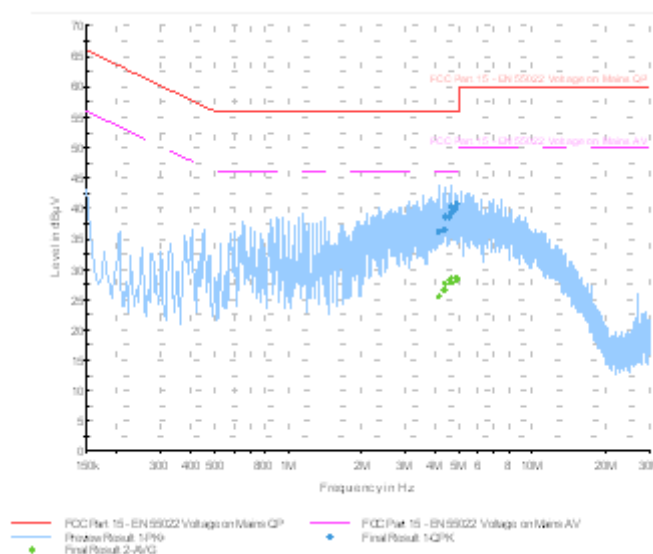



Figure 1-2: N Lines



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AC Conducted Emissions Test Results cont'd

Test Configuration 2

Date of the test: November 09, 2012


The environmental conditions were: Temperature: 24.5 °C
 Humidity: 41.3 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.204	L1	36.97	10.83	47.80	63.40	53.40	-15.60
0.272	L1	31.59	10.36	41.95	61.10	51.10	-19.15
9.933	L1	29.88	9.97	39.85	60.00	50.00	-20.15
10.316	N	25.71	9.98	35.69	60.00	50.00	-24.31
10.770	N	26.11	9.98	36.09	60.00	50.00	-23.91
10.833	N	25.54	9.99	35.53	60.00	50.00	-24.47
11.072	N	26.97	9.99	36.97	60.00	50.00	-23.03
11.076	L1	32.22	9.99	42.20	60.00	50.00	-17.80
11.103	N	26.59	9.99	36.58	60.00	50.00	-23.42
11.130	N	25.55	10.00	35.54	60.00	50.00	-24.46
11.373	N	25.28	10.00	35.29	60.00	50.00	-24.71
11.454	N	25.09	10.01	35.10	60.00	50.00	-24.90
11.643	L1	32.20	10.00	42.20	60.00	50.00	-17.80
11.913	L1	32.69	10.02	42.71	60.00	50.00	-17.29
12.219	L1	31.99	10.03	42.03	60.00	50.00	-17.98
12.269	L1	32.36	10.03	42.39	60.00	50.00	-17.61
12.579	L1	31.35	10.05	41.39	60.00	50.00	-18.61
13.277	L1	29.07	10.06	39.14	60.00	50.00	-20.86
13.425	L1	28.64	10.07	38.71	60.00	50.00	-21.29

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

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

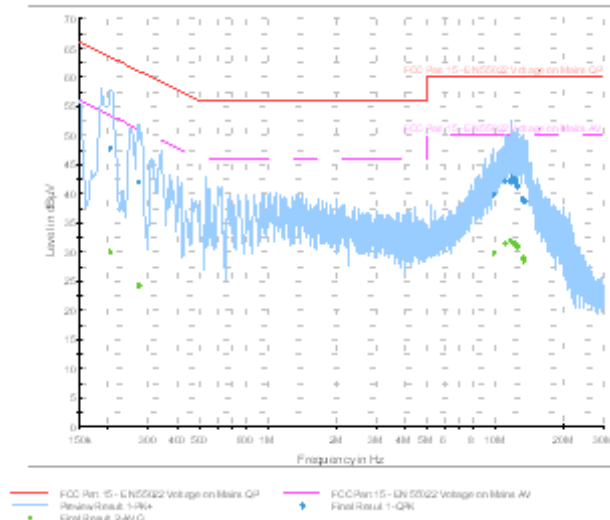
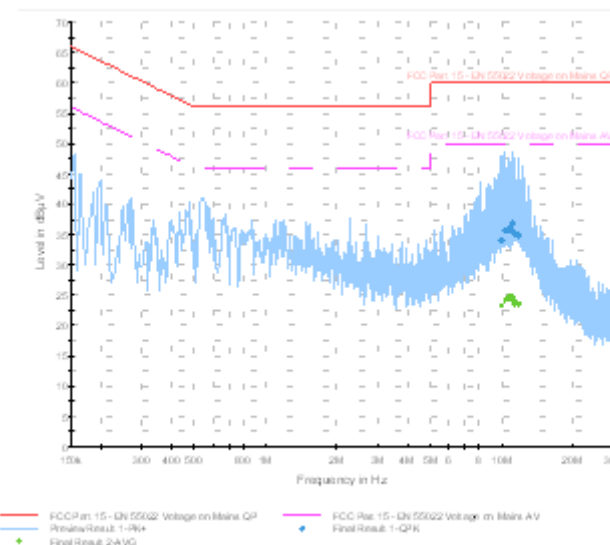



Figure 1-4: N Lines




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3.633	L1	31.58	9.89	41.48	56.00	-14.52
3.687	N	26.19	9.90	36.09	56.00	-19.91

All other emission levels had test margins greater than 25 dB.
Measurements were done with the quasi-peak detector.


Frequency (MHz)	Line	Reading (QP) (dBμV)	Correction Factor (dB)	Corrected Reading (AV) (dBμV)	Limit (AV) (dBμV)	Margin (AV) Limits (dB)
0.186	L1	25.39	10.95	36.34	44.20	-17.86
0.186	N	22.43	10.98	33.41	44.20	-20.79
0.263	L1	26.97	10.42	37.39	41.40	-14.01
0.267	N	25.37	10.41	35.78	41.20	-15.42
0.569	L1	24.86	9.87	34.73	36.00	-11.27
0.690	N	19.92	9.84	29.77	36.00	-16.23
1.010	N	23.61	9.81	33.42	36.00	-12.58
1.059	L1	22.89	9.80	32.69	36.00	-13.31
1.779	N	22.60	9.82	32.41	36.00	-13.59
1.802	L1	26.15	9.82	35.96	36.00	-10.04
1.847	L1	26.67	9.82	36.49	36.00	-9.51
1.986	N	22.37	9.83	32.20	36.00	-13.80
2.049	L1	25.19	9.83	35.02	36.00	-10.98
2.094	N	23.87	9.83	33.70	36.00	-12.30
2.135	N	23.08	9.83	32.91	36.00	-13.09
2.220	N	22.24	9.84	32.07	36.00	-13.93
2.247	L1	25.62	9.84	35.46	36.00	-10.54
2.283	L1	25.87	9.84	35.71	36.00	-10.29
2.337	L1	25.36	9.84	35.20	36.00	-10.80
2.351	L1	26.22	9.84	36.07	36.00	-9.94
2.364	N	22.05	9.84	31.89	36.00	-14.11
2.405	N	21.73	9.85	31.58	36.00	-14.42
2.495	N	20.96	9.85	30.82	36.00	-15.18
2.549	L1	24.36	9.85	34.21	36.00	-11.79
2.612	L1	24.79	9.86	34.65	36.00	-11.35
2.720	N	20.33	9.87	30.20	36.00	-15.80

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3.633	L1	19.89	9.89	29.79	36.00	-16.21
3.687	N	16.43	9.90	26.33	36.00	-19.67

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

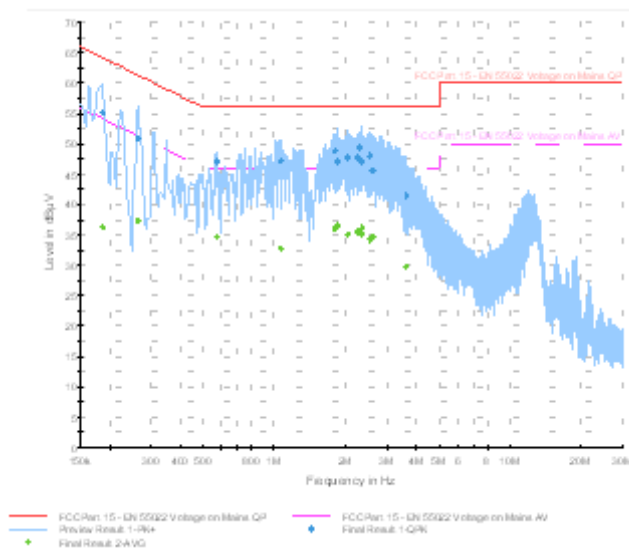
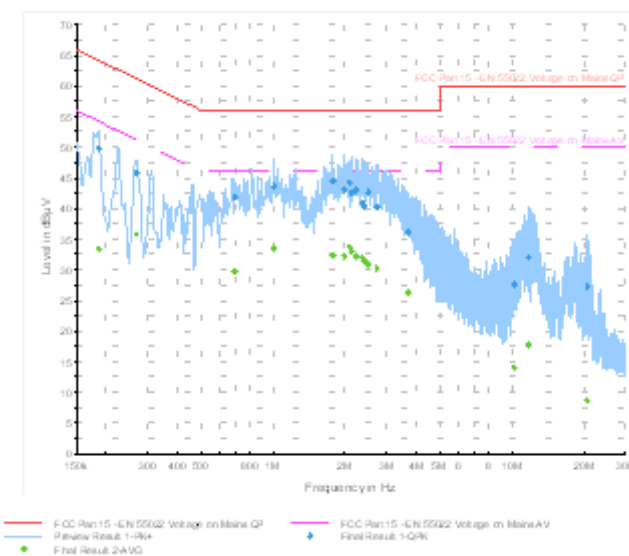



Figure 1-6: N Lines



	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 1	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

AC Conducted Emissions Test Results cont'd

Test Configuration 4


Date of the test: November 09, 2012

The environmental conditions were: Temperature: 24.5 °C
 Humidity: 41.3 %

Frequency (MHz)	Line	Reading (QP) (dBμV)	Correction Factor (dB)	Corrected Reading (QP) (dBμV)	Limit (QP) (dBμV)	Limit (AV) (dBμV)	Margin (QP) Limits (dB)
0.159	L1	38.48	11.14	49.62	65.50	55.50	-15.88
0.182	N	29.16	11.01	40.17	64.40	54.40	-24.23
0.186	L1	35.43	10.95	46.38	64.20	54.20	-17.82
0.204	L1	34.36	10.83	45.19	63.40	53.40	-18.21
0.227	L1	34.57	10.67	45.25	62.60	52.60	-17.36
0.245	L1	33.61	10.55	44.16	61.90	51.90	-17.74
0.263	L1	32.70	10.42	43.12	61.40	51.40	-18.29
0.312	L1	31.24	10.14	41.39	59.90	49.90	-18.52
0.330	L1	29.69	10.12	39.81	59.50	49.50	-19.69
0.393	N	25.56	10.03	35.60	58.00	48.00	-22.40
0.398	L1	28.91	10.01	38.92	57.90	47.90	-18.98
0.551	L1	25.91	9.88	35.79	56.00	46.00	-20.21
0.578	N	19.42	9.88	29.29	56.00	46.00	-26.71
0.776	L1	23.80	9.82	33.62	56.00	46.00	-22.38
0.798	N	21.64	9.82	31.46	56.00	46.00	-24.54

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 1	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

AC Conducted Emissions Test Graphs

Test Configuration 4

Figure 1-7: L1 lines

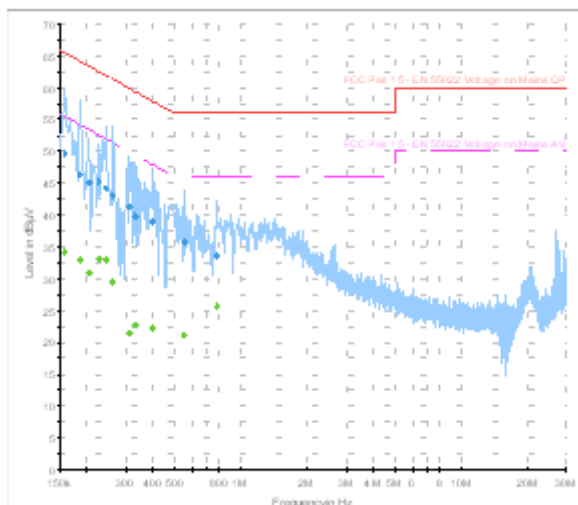
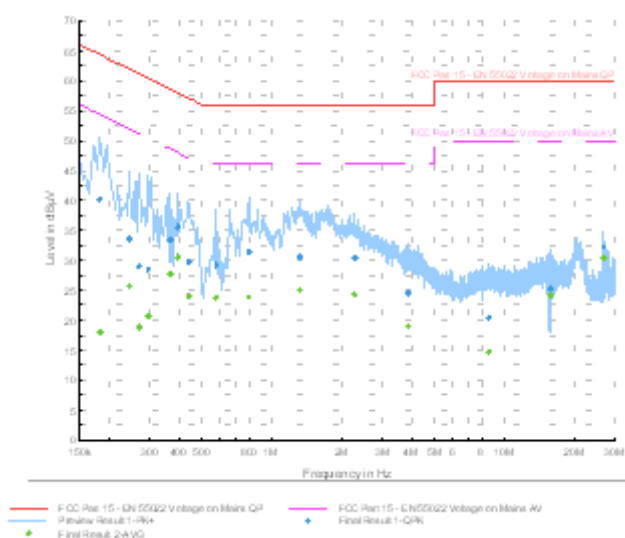



Figure 1-8: N Lines



	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 1	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW


AC Conducted Emissions Test Results cont'd

Test Configuration 5

Date of the test: November 13, 2012


The environmental conditions were: Temperature: 24.5 °C
 Humidity: 41.3 %

Frequency (MHz)	Line	Reading (QP) (dBμV)	Correction Factor (dB)	Corrected Reading (QP) (dBμV)	Limit (QP) (dBμV)	Margin (QP) Limits (dB)
0.159	L1	42.62	11.14	53.76	65.50	-11.74
0.236	N	36.58	10.63	47.21	62.30	-15.09
0.420	N	41.40	9.99	51.39	57.40	-6.01
0.425	L1	45.97	9.97	55.95	57.40	-1.46
0.506	N	32.60	9.91	42.52	56.00	-13.48
0.893	L1	33.31	9.81	43.12	56.00	-12.88
1.680	N	27.59	9.82	37.41	56.00	-18.59
1.770	L1	31.96	9.82	41.77	56.00	-14.23
3.273	N	25.08	9.89	34.97	56.00	-21.03
4.016	L1	32.44	9.90	42.34	56.00	-13.66
6.072	N	31.63	9.93	41.55	60.00	-18.45
6.104	L1	39.78	9.92	49.71	60.00	-10.29
6.680	L1	43.90	9.94	53.84	60.00	-6.16
6.891	N	38.03	9.95	47.98	60.00	-12.02
6.905	N	38.70	9.95	48.65	60.00	-11.35
6.936	N	39.11	9.95	49.06	60.00	-10.94
6.950	L1	44.43	9.95	54.38	60.00	-5.62
7.053	L1	44.33	9.95	54.28	60.00	-5.72
7.076	N	39.31	9.96	49.27	60.00	-10.73
7.170	L1	44.94	9.96	54.90	60.00	-5.10
7.220	N	39.37	9.97	49.34	60.00	-10.66
7.224	L1	44.48	9.96	54.44	60.00	-5.56
7.265	N	39.25	9.97	49.22	60.00	-10.78
7.328	L1	43.80	9.97	53.77	60.00	-6.23
8.705	L1	42.24	9.98	52.22	60.00	-7.78

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 1	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW


8.930	N	40.30	9.98	50.29	60.00	-9.71
9.101	N	41.33	9.98	51.32	60.00	-8.69
9.371	N	38.52	9.98	48.51	60.00	-11.49

Frequency (MHz)	Line	Reading (QP) (dBμV)	Correction Factor (dB)	Corrected Reading (AV) (dBμV)	Limit (AV) (dBμV)	Margin (AV) Limits (dB)
0.236	N	20.30	10.63	30.93	42.30	-21.37
0.420	N	30.98	9.99	40.97	37.40	-6.43
0.425	L1	32.32	9.97	42.29	37.40	-5.11
0.506	N	18.32	9.91	28.24	36.00	-17.76
0.893	L1	19.45	9.81	29.26	36.00	-16.74
1.680	N	17.79	9.82	27.61	36.00	-18.39
1.770	L1	19.99	9.82	29.80	36.00	-16.20
3.273	N	15.69	9.89	25.57	36.00	-20.43
4.016	L1	19.77	9.90	29.68	36.00	-16.33
6.072	N	18.15	9.93	28.08	40.00	-21.92
6.104	L1	25.71	9.92	35.64	40.00	-14.36
6.680	L1	28.88	9.94	38.82	40.00	-11.18
6.891	N	21.77	9.95	31.72	40.00	-18.28
6.905	N	22.10	9.95	32.06	40.00	-17.94
6.936	N	22.53	9.95	32.48	40.00	-17.52
6.950	L1	30.00	9.95	39.95	40.00	-10.05
7.053	L1	30.55	9.95	40.50	40.00	-9.50
7.076	N	23.00	9.96	32.97	40.00	-17.04
7.170	L1	30.95	9.96	40.91	40.00	-9.09
7.220	N	23.34	9.97	33.31	40.00	-16.69
7.224	L1	31.45	9.96	41.42	40.00	-8.58
7.265	N	23.78	9.97	33.75	40.00	-16.25
7.328	L1	30.98	9.97	40.95	40.00	-9.05
8.705	L1	29.69	9.98	39.67	40.00	-10.33
8.930	N	24.27	9.98	34.25	40.00	-15.75
9.101	N	24.72	9.98	34.70	40.00	-15.30
9.371	N	23.76	9.98	33.74	40.00	-16.26

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 1	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 1	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

AC Conducted Emissions Test Graphs

Test Configuration 5

Figure 1-9: L1 lines

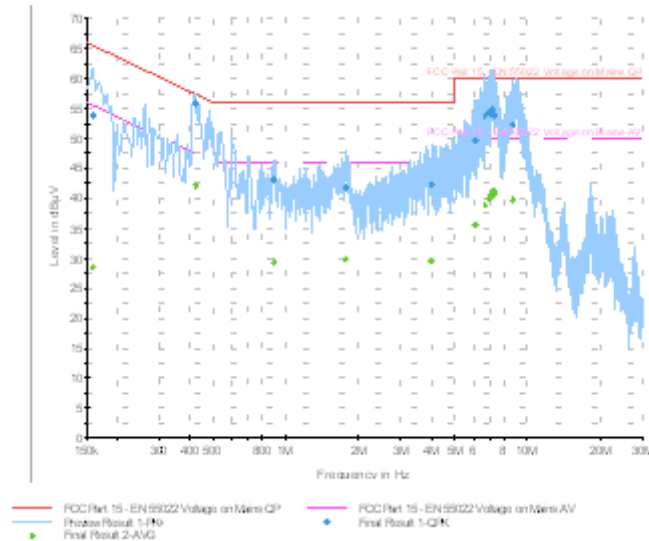
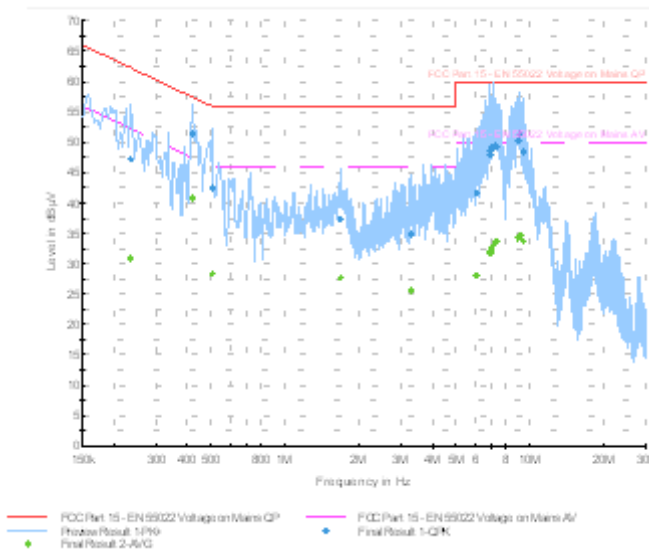




Figure 1-10: N Lines



	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

APPENDIX 2 - RADIATED EMISSIONS TEST DATA

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results

The following tests were performed by Savtej Sandhu.


Test Configuration 1

Date of the test: October 30, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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)							
45.299	V	1.50	240.00	Q.P.	33.98	-15.92	18.06	40.00	-21.94
54.331	V	1.52	107.00	Q.P.	45.17	-17.10	28.07	40.00	-11.93
71.949	V	2.94	82.00	Q.P.	37.77	-15.26	22.51	40.00	-17.49

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

		EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012		FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd


Test Configuration 2

Date of the test: October 30, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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)							
57.545	V	1.52	93.00	Q.P.	45.64	-17.08	28.56	40.00	-11.44

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd


Test Configuration 3

Date of the test: October 30, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
47.360	V	1.57	59.00	Q.P.	34.11	-16.23	17.88	40.00	-22.12
56.217	V	1.48	153.00	Q.P.	42.15	-17.21	24.94	40.00	-15.06
87.155	V	1.41	112.00	Q.P.	29.44	-13.53	15.91	40.00	-24.09

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd


Test Configuration 4

Date of the test: November 01, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
60.734	V	1.43	282.00	Q.P.	45.38	-16.83	28.55	40.00	-11.45
84.742	V	1.51	12.00	Q.P.	33.77	-13.77	20.00	40.00	-20.00

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd


Test Configuration 5

Date of the test: November 01, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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)							
44.799	V	1.53	306.00	Q.P.	36.79	-15.80	20.99	40.00	-19.01
57.372	V	1.52	79.00	Q.P.	34.84	-17.07	17.77	40.00	-22.23

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd


Test Configuration 6

Date of the test: November 09, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1%

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)							
33.346	V	1.57	30.00	Q.P.	31.73	-12.83	18.90	40.00	-21.10
140.815	H	2.33	115.00	Q.P.	32.90	-11.99	20.91	43.50	-22.59
505.582	H	1.85	189.00	Q.P.	31.59	0.08	31.67	46.00	-14.33
614.652	V	1.53	205.00	Q.P.	23.13	2.63	25.76	46.00	-20.24
971.478	V	2.41	107.00	Q.P.	23.22	9.39	32.61	54.00	-21.39

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd


Test Configuration 7

Date of the test: October 31, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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)							
387.206	H	3.01	31.00	Q.P.	26.44	-3.98	22.46	46.00	-23.54
595.211	H	1.58	99.00	Q.P.	28.79	2.08	30.87	46.00	-15.13

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd


Test Configuration 8

Date of the test: November 09, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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)							
35.465	V	1.94	105.00	Q.P.	38.78	-13.49	25.29	40.00	-14.71
64.194	V	1.47	134.00	Q.P.	36.75	-16.52	20.23	40.00	-19.77
72.128	H	3.42	6.00	Q.P.	44.50	-15.26	29.24	40.00	-10.76
106.175	H	2.93	171.00	Q.P.	41.05	-11.93	29.12	43.50	-14.38
148.518	V	1.42	352.00	Q.P.	53.86	-11.65	42.21	43.50	-1.29
371.249	V	1.53	353.00	Q.P.	44.54	-4.92	39.62	46.00	-6.38
445.518	H	1.77	220.00	Q.P.	41.81	-2.39	39.42	46.00	-6.58
594.009	H	2.16	134.00	Q.P.	37.56	2.07	39.63	46.00	-6.37
742.499	H	1.19	354.00	Q.P.	40.41	4.00	44.41	46.00	-1.59

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd


Test Configuration 9

Date of the test: November 01, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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+c orr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
38.130	V	1.50	83.00	Q.P.	50.21	-14.20	36.01	40.00	-3.99
141.094	H	2.09	8.00	Q.P.	40.52	-11.99	28.53	43.50	-14.97
148.080	H	2.46	355.00	Q.P.	34.78	-11.74	23.04	43.50	-20.46
208.879	V	1.63	354.00	Q.P.	31.97	-8.05	23.92	43.50	-19.58
290.594	H	1.48	300.00	Q.P.	29.69	-7.95	21.74	46.00	-24.26

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd


Test Configuration 10

Date of the test: October 31, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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+c orr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
33.313	V	2.39	111.00	Q.P.	43.97	-12.82	31.15	40.00	-8.85
66.110	V	1.56	106.00	Q.P.	37.11	-16.30	20.81	40.00	-19.19
127.854	H	1.80	181.00	Q.P.	35.65	-11.88	23.77	43.50	-19.73
165.903	V	3.56	58.00	Q.P.	25.18	-11.18	14.00	43.50	-29.50
249.066	V	1.43	214.00	Q.P.	30.29	-9.55	20.74	46.00	-25.26

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

	EMI Test Report for the BlackBerry® smartphone Model RFH121LW APPENDIX 2	
Test Report No. RTS-6012-1211-25	Date of Test October 30-November 01, November 09, November 11-13, 2012	FCC ID: L6ARFH120LW IC : 2503A-RFH120LW

Radiated Emissions Test Results cont'd

Test Configuration 11

Date of the test: October 31, 2012

The environmental conditions were: Temperature: 23.8 °C
 Humidity: 28.1 %

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)							
65.368	H	3.59	184.00	Q.P.	36.24	-16.42	19.82	40.00	-20.18
184.352	H	2.14	282.00	Q.P.	36.78	-10.36	26.42	43.50	-17.08
240.004	H	1.33	87.00	Q.P.	45.76	-10.13	35.63	46.00	-10.37
305.600	H	1.00	354.00	Q.P.	27.72	-6.41	21.31	46.00	-24.69
431.993	H	3.37	102.00	Q.P.	44.61	-2.81	41.80	46.00	-4.20

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