

EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Part 15 Subpart C and E
&
Industry Canada (IC) RSS-210, RSS-GEN



A division of Research In Motion Limited

REPORT NO.: RTS-6026-1304-17A


PRODUCT MODEL NO.: RFM121LW, RFQ111LW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARFM120LW, L6ARFQ110LW
IC: 2503A-RFM120LW, 2503A-RFQ110LW

DATE: May 24, 2013

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



592

	EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW	
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW

Statement of Performance:

The BlackBerry® smartphone, model RFM121LW, part number CER-53013-001- Rev2-905-00, and its accessories perform within the requirements of the test standards when configured and operated under RIM's operation instructions.

The BlackBerry® smartphone, model RFQ111LW, part number CER-54353-001- Rev1-903-00, and its accessories perform within the requirements of the test standards when configured and operated under RIM's operation instructions.

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



	EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW	
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW

Table of Contents

A.	Scope.....	4
B.	Associated Documents	4
C.	Product Identification.....	4
D.	Support Equipment Used for the Testing of the EUT	5
E.	Test Results Chart	6
F.	Summary of Results.....	8
G.	Compliance Test Equipment Used.....	8
	APPENDIX 1 – NEAR FIELD COMMUNICATIONS TEST DATA/PLOTS	9

 EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW		
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW

A. Scope

This report details the results of compliance tests which were performed in accordance to the requirements of:

- o FCC CFR 47 Part 15, Subpart C, October, 2012
- o FCC CFR 47 Part 15, Subpart E, October, 2012
- o Industry Canada, RSS-210, Issue 8, December 2010, Licence-exempt Radio Apparatus
- o Industry Canada, RSS-GEN, Issue 3, December 2010, General Requirements and Information for the Certification of Radio Apparatus

B. Associated Documents

- 1) Test Report 1-5579_12-02-10-B
- 2) Test Report 1-5579_12-02-11-B
- 3) Test Report 1-5579_12-02-12-B
- 4) Test Report 1-5579_12-02-13-B
- 5) Test Report 1-5579_12-02-15-B
- 6) Test Report 1-5579_12-02-33-B
- 7) BlackBerrySystemSimilarity_Declaration_ RFM121LW _ RFQ111LW

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 April 01, 2013.

	EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW	
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW

The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN	SOFTWARE
1	RFM121LW	CER-53013-001- Rev2-905-00	303E5B46	OS Version: 127.0.1.4183

Near Field Communications testing was performed on sample 1


Only the characteristics that may have been affected by the changes from model RFM121LW to RFQ111LW.were re-tested. For more information, see BlackBerrySystemSimilarity_Declaration_RFM121LW_RFQ111LW.

BlackBerry® smartphone Accessories Tested

- 1) Battery, part number BAT-49702-002, capacity 1800mAh, 6.9Wh
- 2) Battery, part number BAT-52961-001, capacity 2100mAh, 8.0Wh


D. Support Equipment Used for the Testing of the EUT

No support equipment required; for list of equipment refer to section G, Compliance Test Equipment Used.

 EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW		
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW


E. Test Results Chart

SPECIFICATION		TEST TYPE	Meets Requirements	TEST DATA
FCC CFR 47	IC			APPENDIX
Part 15.207	RSS-GEN, 7.2.4	Conducted AC Line Emission	Pass	See Test Report 1-5579_12-01-11-D
Part 15.209 Part 15.247	RSS-210, A8.5 RSS-GEN, 7.2.2	BT/BLE Radiated Spurious Emissions	Pass	See Test Report 1-5579_12-02-10-B 1-5579_12-02-11-B
Part 15.209 Part 15.247	RSS-210, A8.5 RSS-GEN, 7.2.2	BT/BLE Radiated Band Edge Compliance	Pass	See Test Report 1-5579_12-02-10-B 1-5579_12-02-11-B
Part 15.209 Part 15.247	RSS-210, A8.5 RSS-GEN, 7.2.2	802.11b/g/n Radiated Spurious Emissions	Pass	See Test Report 1-5579_12-02-13-B
Part 15.209 Part 15.247	RSS-210 RSS-GEN, 7.2.2	802.11b/g/n Radiated Band Edge Compliance	Pass	See Test Report 1-5579_12-02-13-B
Part 15.209 Part 15.407	RSS-210, A9.2 RSS-GEN	802.11a Radiated Spurious Emissions	Pass	See Test Report 1-5579_12-02-12-B See Test Report 1-5579_12-02-33-B
Part 15.209 Part 15.407	RSS-210, A9.2 RSS-GEN	802.11a Radiated Band Edge Compliance	Pass	See Test Report 1-5579_12-02-12-B See Test Report 1-5579_12-02-33-B
Part 15.247(a)	RSS-210 A8.1(a)	BT, 20 dB Bandwidth	Pass	See Test Report 1-5579_12-02-10-B
Part 15.247(a)	RSS-210 A8.1(b)	BT, Carrier Frequency Separation	Pass	See Test Report 1-5579_12-02-10-B
Part 15.247(a)	RSS-210 A8.1(d)	BT, Number of Hopping Frequencies	Pass	See Test Report 1-5579_12-02-10-B
Part 15.247(a)	RSS-210 A8.1(d)	BT, Time of Occupancy (Dwell Time)	Pass	See Test Report 1-5579_12-02-10-B
Part 15.247(b)	RSS-210 A8.4(4)	BT, Maximum Peak Conducted Output Power	Pass	See Test Report 1-5579_12-02-10-B
Part 15.247(d)	RSS-210, A8.5	BT, Band-Edge Compliance of RF Conducted Emissions	Pass	See Test Report 1-5579_12-02-10-B
Part 15.247(d)	RSS-210, A8.5	BT, Spurious RF Conducted Emissions	Pass	See Test Report 1-5579_12-02-10-B
Part 15.247(a)	RSS-210, A8.2(a)	BLE, 6 dB Bandwidth	Pass	See Test Report 1-5579_12-02-11-B
Part 15.247(b)	RSS-210, A8.4(4)	BLE, Maximum Conducted Output Power	Pass	See Test Report 1-5579_12-02-11-B

 EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW		
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW

Test Results Chart cont'd

SPECIFICATION		TEST TYPE	Meets Requirements	TEST DATA
FCC CFR 47	IC			APPENDIX
Part 15.247(d)	RSS-210, A8.5	BLE, Band-Edge	Pass	See Test Report 1-5579_12-02-11-B
Part 15.247(e)	RSS-210, A8.2(b)	BLE, Peak Power Spectral Density	Pass	See Test Report 1-5579_12-02-11-B
Part 15.247(d)	RSS-210, A8.5	BLE, Spurious RF Conducted Emissions	Pass	See Test Report 1-5579_12-02-11-B
Part 15.247(a)	RSS-210, A8.2(a)	802.11b/g/n, 6 dB Bandwidth	Pass	See Test Report 1-5579_12-02-13-B
Part 15.247(b)	RSS-210, A8.4(4)	802.11b/g/n, Maximum Conducted Output Power	Pass	See Test Report 1-5579_12-02-13-B
Part 15.247(b)	RSS-210, A8.5	802.11b/g/n, Band-Edge	Pass	See Test Report 1-5579_12-02-13-B
Part 15.247(e)	RSS-210, A8.2(b)	802.11b/g/n, Peak Power Spectral Density	Pass	See Test Report 1-5579_12-02-13-B
Part 15.247(d)	RSS-210, A8.5	802.11b/g/n, Spurious RF Conducted Emissions	Pass	See Test Report 1-5579_12-02-13-B
Part 15.407	RSS-210, A9.2	802.11a, 6 dB Bandwidth	Pass	See Test Report 1-5579_12-02-12-B See Test Report 1-5579_12-02-33-B
Part 15.407	RSS-210, A9.2	802.11a, Maximum Conducted Output Power	Pass	See Test Report 1-5579_12-02-12-B See Test Report 1-5579_12-02-33-B
Part 15.407	RSS-210, A9.2	802.11a, Band-Edge	Pass	See Test Report 1-5579_12-02-12-B See Test Report 1-5579_12-02-33-B
Part 15.407	RSS-210	802.11a, Peak Power Spectral Density	Pass	See Test Report 1-5579_12-02-12-B See Test Report 1-5579_12-02-33-B
Part 15.407	RSS-210	802.11a, Spurious RF Conducted Emissions	Pass	See Test Report 1-5579_12-02-12-B See Test Report 1-5579_12-02-33-B
Part 15.209 Part 15.225(a)	RSS-210, A2.6	Near Field Communications, Radiated Emissions	Pass	See Test Report 1-5579_12-01-11-D
Part 15.225(e)	RSS-210, A2.6	Near Field Communications, Occupied Bandwidth	Pass	See Test Report 1-5579_12-01-11-D
Part 15.225(e)	RSS-210, A2.6	Near Field Communications, Frequency Stability	Pass	1

 EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW		
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW

F. Summary of Results

1) Near Field Communications (NFC)


The Near Field Communications emissions from the BlackBerry® smartphone were measured using the methods outlined in FCC CFR 47 Part 15, Subpart C.

a) Frequency Stability


The EUT met the requirements of the Frequency Stability as per 47 CFR 15.225(e) and RSS-210. The EUT was measured in test mode with modulation on and transmitting at 13.56 MHz.
See APPENDIX 4 for the test data.

G. 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>
Environmental Chamber	Test Equity	107	0900246	N/R	Frequency Stability
Spectrum Analyzer	Rohde & Schwarz	FSP-30	100884/030	13-12-02	RF Conducted Emissions

	EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW APPENDIX 1	
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW

APPENDIX 1 – NEAR FIELD COMMUNICATIONS TEST DATA/PLOTS

	EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW APPENDIX 1	
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW

Near Field Communications (NFC) Test Results cont'd

Frequency Stability


Date of test: April 01, 2013

The measurements were performed by Berkin Can

The test was performed on model RFM121LW

The environmental test conditions were: Temperature: 24 °C
 Relative Humidity: 46 %

Test Temperature (Celsius)	Nominal Freq. (MHz)	Measured Freq. (MHz)	Input Voltage (Volts)	Max Freq Error (Hz)	% Deviation (Limit .01%)	PPM
-20	13.56	13.559622	3.6	-0.000378	-378	-0.00279
-20	13.56	13.559686	3.8	-0.000314	-314	-0.00232
-20	13.56	13.559692	4.35	-0.000308	-308	-0.00227
-10	13.56	13.559570	3.6	-0.000430	-430	-0.00317
-10	13.56	13.559492	3.8	-0.000508	-508	-0.00375
-10	13.56	13.559519	4.35	-0.000481	-481	-0.00355
0	13.56	13.559516	3.6	-0.000484	-484	-0.00357
0	13.56	13.559478	3.8	-0.000522	-522	-0.00385
0	13.56	13.559712	4.35	-0.000288	-288	-0.00212
10	13.56	13.559557	3.6	-0.000443	-443	-0.00327
10	13.56	13.559578	3.8	-0.000422	-422	-0.00311
10	13.56	13.559581	4.35	-0.000419	-419	-0.00309
20	13.56	13.559584	3.6	-0.000416	-416	-0.00307
20	13.56	13.559652	3.8	-0.000348	-348	-0.00257
20	13.56	13.559316	4.35	-0.000684	-684	-0.00504

	EMI Test Report for the BlackBerry® smartphone Model RFM121LW, RFQ111LW APPENDIX 1	
Test Report No. RTS-6026-1304-17A	Dates of Test April 01, 2013	FCC ID: L6ARFM120LW, IC: 2503A-RFM120LW FCC ID: L6A RFQ110LW IC: 2503A- RFQ110LW

Near Field Communications (NFC) Test Results cont'd

Frequency Stability cont'd

Test Temperature (Celsius)	Nominal Freq. (MHz)	Measured Freq. (MHz)	Input Voltage (Volts)	Max Freq Error (Hz)	% Deviation (Limit .01%)	PPM
30	13.56	13.559355	3.6	-0.000645	-645	-0.00476
30	13.56	13.559747	3.8	-0.000253	-253	-0.00187
30	13.56	13.559482	4.35	-0.000518	-518	-0.00382
40	13.56	13.559512	3.6	-0.000488	-488	-0.00360
40	13.56	13.559643	3.8	-0.000357	-357	-0.00263
40	13.56	13.559451	4.35	-0.000549	-549	-0.00405
50	13.56	13.559496	3.6	-0.000504	-504	-0.00372
50	13.56	13.559630	3.8	-0.000370	-370	-0.00273
50	13.56	13.559594	4.35	-0.000406	-406	-0.00299
60	13.56	13.559485	3.6	-0.000515	-515	-0.00380
60	13.56	13.559654	3.8	-0.000346	-346	-0.00255
60	13.56	13.559307	4.35	-0.000693	-693	-0.00511