

## Partial EMI Test Report

Tested in accordance with  
Federal Communications Commission (FCC)  
Personal Communications Services  
CFR 47, Parts 15, Subpart B  
&  
Industry Canada (IC), ICES-003



**A division of Research In Motion Limited**

**REPORT NO.:** RTS-2579-1107-69

**PRODUCT MODEL NO.:** RDX71UW  
**TYPE NAME:** BlackBerry® smartphone  
**FCC ID:** L6ARDX70UW  
**IC:** 2503A-RDX70UW

**DATE:** July 15, 2011

	EMI Test Report for the BlackBerry® smartphone Model RDX71UW		
<b>Test Report No.</b> RTS-2579-1107-69	<b>Date of Test</b> July 04 - July 06, 2011	<b>FCC ID:</b> L6ARDX70UW	<b>IC :</b> 2503A-RDX70CW

### **Statement of Performance:**

The BlackBerry® smartphone, model RDX71UW, part number CER-39229-001 Rev. 3 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:



Shuo Wang  
Regulatory Compliance Specialist  
Date: July 15, 2011

#### Reviewed by:



Heng Lin  
Regulatory Compliance Specialist  
Date: July 15, 2011

#### Reviewed and Approved by:



Masud S. Attayi, P.Eng.  
Manager, Regulatory Compliance  
Date: July 18, 2011

	EMI Test Report for the BlackBerry® smartphone Model RDX71UW	
<b>Test Report No.</b> RTS-2579-1107-69	<b>Date of Test</b> July 04 - July 06, 2011	<b>FCC ID:</b> L6ARDX70UW <b>IC :</b> 2503A-RDX70CW

## 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. Summary of Results .....	5
F. Compliance Test Equipment Used .....	9
APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA .....	10
APPENDIX 2 - RADIATED EMISSIONS TEST DATA (RDX71UW) .....	13

	EMI Test Report for the BlackBerry® smartphone Model RDX71UW		
<b>Test Report No.</b> RTS-2579-1107-69	<b>Date of Test</b> July 04 - July 06, 2011	<b>FCC ID:</b> L6ARDX70UW	<b>IC :</b> 2503A-RDX70CW

## 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, 2010 Class B Digital Devices, Unintentional Radiators
- IC ICES-003 Issue 4, February 2004, Class B Digital Devices, Unintentional Radiators

## B. Associated Documents

1. 1-3314-01-23\_11-A

## 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 from July 04 to July 06, 2011.

	EMI Test Report for the BlackBerry® smartphone Model RDX71UW		
<b>Test Report No.</b> RTS-2579-1107-69	<b>Date of Test</b> July 04 - July 06, 2011	<b>FCC ID:</b> L6ARDX70UW <b>IC :</b> 2503A-RDX70CW	

The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN	Software
1	RDX71UW	CER-39229-001 Rev 3	27BC6194	Bundle 1069 (Platform 8.0.0.267) V7.0.0.169
2	RDX71UW	CER-39229-001 Rev 3	27BC61A5	Bundle 1069 (Platform 8.0.0.267) V7.0.0.169

AC conducted testing was performed on sample 1.

Radiated Emissions testing was performed on sample 2.

#### BlackBerry® smartphone Accessories Tested

- 1) Fixed Blade Charger Rev.1, part number HDW-24481-001 (model number RIM-C-0004ADUUS-001), with an output current of 750mA and voltage of 5.0 volts dc.
- 2) Alt.1 Fixed Blade Charger part number HDW-24481-001 (model number PSM04A-050QRIM) with an output current of 750mA and voltage of 5.0 volts dc.
- 3) Premium Stereo Headset, part number HDW-15766-005, 1.3 meters long.
- 4) Straight Jack Stereo Headset part number HDW-24529-004.
- 5) USB Data Cable, part number HDW-06610-005, 1.5 meters long.

#### **D. Support Equipment Used for the Testing of the EUT**

- 1) IBM Thinkpad Lenovo T60p laptop, type 8742-C2U, product ID 8742C2U

#### **E. Summary of Results**

SPECIFICATION		TEST TYPE	Meets Requirement	Test Data APPENDIX
FCC CFR 47	IC			
Part 15, Subpart B	ICES-003	Conducted AC Line Emission	Yes	1
			Also see 1-3314-01-23_11-A	
Part 15, Subpart B	ICES-003	Radiated Unintentional Spurious Emissions	Yes	2
			Also see 1-3314-01-23_11-A	

This report shall NOT be reproduced except in full without the written consent of RIM Testing Services  
- A division of Research in Motion Limited.

	EMI Test Report for the BlackBerry® smartphone Model RDX71UW	
<b>Test Report No.</b> RTS-2579-1107-69	<b>Date of Test</b> July 04 - July 06, 2011	<b>FCC ID:</b> L6ARDX70UW <b>IC :</b> 2503A-RDX70CW

---

This report shall NOT be reproduced except in full without the written consent of RIM Testing Services  
- A division of Research in Motion Limited.

Copyright 2005-2011

Page 6 of 14

	EMI Test Report for the BlackBerry® smartphone Model RDX71UW	
<b>Test Report No.</b> RTS-2579-1107-69	<b>Date of Test</b> July 04 - July 06, 2011	<b>FCC ID:</b> L6ARDX70UW <b>IC :</b> 2503A-RDX70CW

### 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 RDX71UW:

Test Configuration	Operating Mode(s)	Charger + Accessories
1	PCS 1900 Idle, Audio Playback	Alt. 1 Fixed Blade Charger + Straight Jack Stereo Headset + 1.5m USB Cable

The sample EUT's conducted emissions were compared with respect to the FCC CFR 47 Part 15, Subpart B, and IC ICES-003, Class B limit. The sample EUT had a worst case test margin of 17.38 dB below the QP limit at 4.484 MHz using the quasi-peak detector in Test Configuration 1.

### Measurement Uncertainty $\pm 3.0$ dB

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

	EMI Test Report for the BlackBerry® smartphone Model RDX71UW		
<b>Test Report No.</b> RTS-2579-1107-69	<b>Date of Test</b> July 04 - July 06, 2011	<b>FCC ID:</b> L6ARDX70UW <b>IC :</b> 2503A-RDX70CW	

## 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 frequency range measured was from 30 MHz to 5.0 GHz. 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.

The following test configurations were measured for model RDX71UW:

Test Configuration	Operating Mode(s)	Charger + Accessories
1	UMTS B2 Idle	Fixed Blade Charger + Premium Stereo Headset + 1.5m USB Cable

The system's radiated emission levels were compared with respect to the FCC CFR 47 Part 15, Subpart B, and IC ICES-003, Class B limit.

The system met the requirements with a worst case emission test margin of 13.56 dB at 52.35 MHz using quasi-peak detector in Test Configuration 1.

To view the test data see APPENDIX 2.

### **Sample Calculation:**

Field Strength (dB $\mu$ V/m) is calculated as follows:

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

### **Measurement Uncertainty $\pm 4.6$ dB**



**Test Report No.**  
RTS-2579-1107-69

**Date of Test**  
July 04 - July 06, 2011

**FCC ID:** L6ARDX70UW  
**IC :** 2503A-RDX70CW

## 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	11-11-14	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	11-09-13	Radiated Emissions
EMC Analyzer	Rohde & Schwarz	ESIB 40	3942A00517	11-11-28	Radiated Emissions
T/RH Meter	OMEGA	iTHX-SD	0380561	11-10-13	Radiated Emission
T/RH Meter	OMEGA	iTHX-SD	0380567	11-10-13	Radiated Emission
L.I.S.N.	Rohde & Schwarz	ENV216	100060	11-12-10	Conducted Emissions
Hybrid Log Antenna	EMC Automation	HLP-3003C	017401	12-01-14	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	837493/073	11-09-23	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112394	11-11-29	Radiated/Conducted Emissions
EMI Test Receiver	Rohde & Schwarz	ESU 40	100162	11-10-30	Radiated/Conducted Emissions

	EMI Test Report for the BlackBerry® smartphone Model RDX71UW <b>APPENDIX 1</b>	
<b>Test Report No.</b> RTS-2579-1107-69	<b>Date of Test</b> July 04 - July 06, 2011	<b>FCC ID:</b> L6ARDX70CW <b>IC :</b> 2503A-RDX70CW

## APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA



**Test Report No.**  
RTS-2579-1107-69

**Date of Test**  
July 04 - July 06, 2011

**FCC ID:** L6ARDX70CW  
**IC :** 2503A-RDX70CW

### AC Conducted Emissions Test Results

The following test configurations were measured for model RDX71UW.

The following tests were performed by Shuo Wang.

#### Test Configuration 1

Date of the test: July 04, 2011

The environmental conditions were: Temperature: 24.8 °C  
Humidity: 44.1 %

Frequency (MHz)	Line	Reading (QP) (dB $\mu$ V)	Correction Factor (dB)	Corrected Reading (QP) (dB $\mu$ V)	Limit (QP) (dB $\mu$ V)	Limit (AV) (dB $\mu$ V)	Margin (QP) Limits (dB)
0.150	N	36.15	11.23	47.39	66.00	56.00	-18.61
0.164	L1	36.49	11.11	47.60	65.30	55.30	-17.70
0.168	N	34.34	11.11	45.45	65.10	55.10	-19.65
0.195	L1	31.55	10.89	42.45	63.80	53.80	-21.36
0.204	L1	29.29	10.83	40.12	63.40	53.40	-23.28
0.411	L1	24.08	9.99	34.07	57.60	47.60	-23.53
0.465	L1	23.16	9.93	33.09	56.60	46.60	-23.51
0.731	L1	25.54	9.83	35.37	56.00	46.00	-20.63
1.064	L1	22.75	9.80	32.55	56.00	46.00	-23.45
2.072	L1	25.73	9.83	35.56	56.00	46.00	-20.45
2.081	N	24.15	9.83	33.98	56.00	46.00	-22.02
3.413	L1	26.82	9.89	36.71	56.00	46.00	-19.29
3.548	N	25.74	9.90	35.64	56.00	46.00	-20.36
3.638	N	24.92	9.90	34.82	56.00	46.00	-21.18
3.831	N	26.55	9.90	36.45	56.00	46.00	-19.55
4.484	L1	28.71	9.90	38.62	56.00	46.00	<b>-17.38</b>
4.587	N	26.54	9.91	36.45	56.00	46.00	-19.55
8.453	L1	26.51	9.98	36.49	60.00	50.00	-23.51

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

Measurements were done with the quasi-peak and average 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.

**Test Report No.**  
 RTS-2579-1107-69

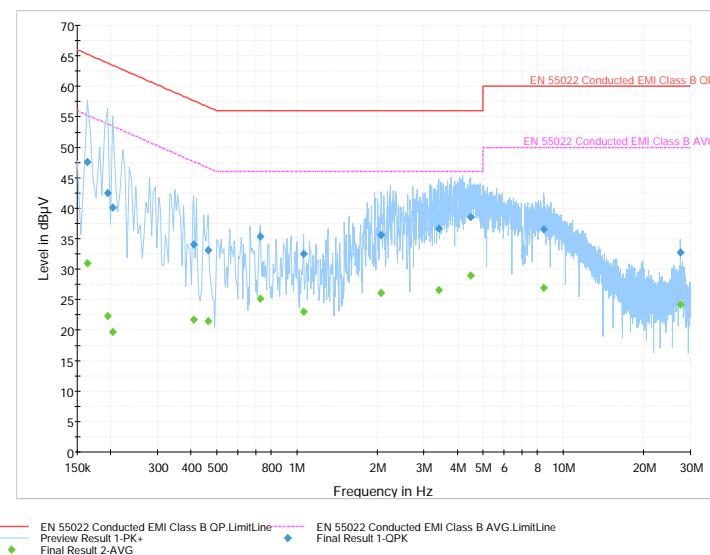
**Date of Test**  
 July 04 - July 06, 2011

**FCC ID:** L6ARDX70CW  
**IC :** 2503A-RDX70CW

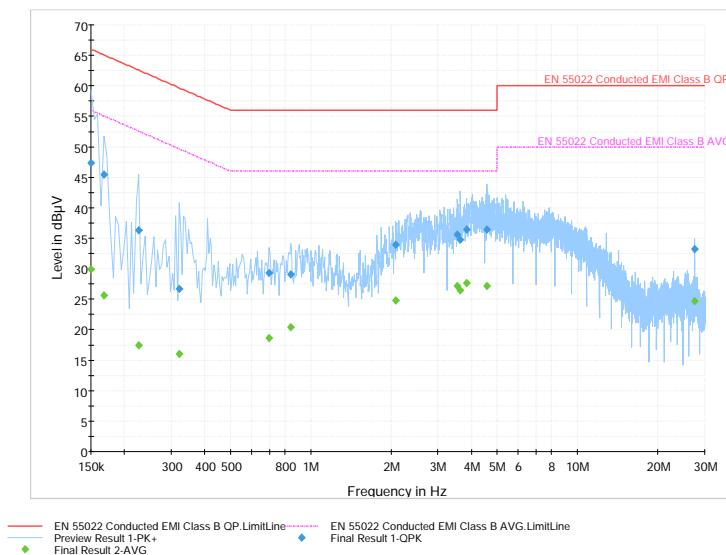
## AC Conducted Emissions Test Graphs

### Test Configuration 1

**Figure 1-1: L1 lines**



**Figure 1-2: N Lines**



	EMI Test Report for the BlackBerry® smartphone Model RDX71UW <b>APPENDIX 2</b>	
<b>Test Report No.</b> RTS-2579-1107-69	<b>Date of Test</b> July 04 - July 06, 2011	<b>FCC ID:</b> L6ARDX70CW <b>IC :</b> 2503A-RDX70UW

## APPENDIX 2 - RADIATED EMISSIONS TEST DATA (RDX71UW)

Test Report No.  
RTS-2579-1107-69Date of Test  
July 04 - July 06, 2011FCC ID: L6ARDX70CW  
IC : 2503A-RDX70CWRadiated Emissions Test Results

The following test configurations were measured for model RDX71UW.

The following tests were performed by Quan Ma

Test Configuration 1

Date of the test: July 06, 2011

The environmental conditions were: Temperature: 25.4 °C  
Humidity: 34.9 %

Frequency (MHz)	Antenna		Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dB $\mu$ V)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading +corr) (dB $\mu$ V/m)	Limit @ 3.0 m (dB $\mu$ V/m)	Test Margin (dB)
	Pol. (V/H)	Height (metres)							
38.450	V	1.40	354.00	Q.P.	36.54	-15.04	21.50	40.00	-18.50
52.350	V	1.40	354.00	Q.P.	43.75	-17.31	26.44	40.00	<b>-13.56</b>
72.450	H	3.68	165.00	Q.P.	35.69	-15.93	19.76	40.00	-20.24
72.700	V	1.81	72.00	Q.P.	41.19	-15.87	25.32	40.00	-14.68
89.700	V	1.40	354.00	Q.P.	34.18	-14.16	20.02	43.50	-23.48
381.100	H	2.14	164.00	Q.P.	26.85	-5.27	21.58	46.00	-24.42
394.800	H	2.74	351.00	Q.P.	27.42	-4.34	23.08	46.00	-22.92

All other emission levels had a test margin greater than 25 dB.