

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-2341-1005-77

PRODUCT MODEL NO.: RCW41GW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARCW40GW
IC: 2503A-RCW40GW

DATE: June 23, 2010

		EMI Test Report for the BlackBerry® smartphone Model RCW41GW
Test Report No. RTS-2341-1005-77	Dates of Test May 19, 2010	FCC ID: L6ARCW40GW IC: 2503A-RCW40GW

Statement of Performance:

The BlackBerry® smartphone, model RCW41GW, part number CER-30952-001 Rev 1 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:



IC: 2503A-RCW40GW
Regulatory Compliance Associate
Date: June 23, 2010

Reviewed by:



Michael Cino
Regulatory Compliance Associate
Date: June 23, 2010

Reviewed and Approved by:



Masud S. Attayi, P.Eng.
Manager, Regulatory Compliance
Date: July 19, 2010



	EMI Test Report for the BlackBerry® smartphone Model RCW41GW	
Test Report No. RTS-2341-1005-77	Dates of Test May 19, 2010	FCC ID: L6ARCW40GW IC: 2503A-RCW40GW

Table of Contents

A.	Scope	4
B.	Associated Documents.....	4
C.	Product Identification.....	4
D.	Summary of Results	5
E.	Compliance Test Equipment Used.....	8
APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA		9
APPENDIX 2 - RADIATED EMISSIONS TEST DATA.....		12

		EMI Test Report for the BlackBerry® smartphone Model RCW41GW
Test Report No. RTS-2341-1005-77	Dates of Test May 19, 2010	FCC ID: L6ARCW40GW IC: 2503A-RCW40GW

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 01, 2009 Class B Digital Devices, Unintentional Radiators
- IC ICES-003 Issue 4, February 2004, Class B Digital Devices, Unintentional Radiators

B. Associated Documents

- 1) Cetecom Test report number: 1-2166-01-10/10_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 location:


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

CETECOM ICT Services GmbH
Untertürkheimer Str. 6 – 10
D-66117 Saarbrücken
Germany
Phone: +49 (0) 681 5 98 84 55
Fax: +49 (0) 681 5 98 84 75

The testing was performed on May 19, 2010.

		EMI Test Report for the BlackBerry® smartphone Model RCW41GW	
Test Report No. RTS-2341-1005-77	Dates of Test May 19, 2010	FCC ID: L6ARCW40GW IC: 2503A-RCW40GW	

The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN
1	RCW41GW	CER-30952-001 Rev 1	316FA06F
2	RCW41GW	CER-30952-001 Rev 1	317658B9


Radiated Unintentional Emissions testing was performed on sample 1
AC conducted testing was performed on sample 2.

BlackBerry® smartphone Accessories Tested

- 1) Premium Stereo Headset, part number HDW-15766-005, 1.3 metres long.
- 2) USB Data Cable, part number HDW-06610-005, 1.50 metres long.
- 3) Alternate Fixed Blade Charger, part number HDW-24481-001, (model number PSM04A-050QRIM-R), with an output voltage of 5.0 volts dc.
- 4) Alternate Stereo Headset, part number HDW-24529-001, with a lead length of 1.1 metres.

D. 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 Also see 1-2166-01-10/10_A	1
Part 15, Subpart B	ICES-003	Radiated Unintentional Spurious Emissions	Yes Also see 1-2166-01-10/10_A	2

		EMI Test Report for the BlackBerry® smartphone Model RCW41GW
Test Report No. RTS-2341-1005-77	Dates of Test May 19, 2010	FCC ID: L6ARCW40GW IC: 2503A-RCW40GW

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:

Test Configuration	Operating Mode(s)	Charger + Accessories
1	GSM850 idle	Alternate Fixed Blade Charger + 1.5m USB Cable + Alternate Stereo Headset

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 worse case test margin of 7.99 dB below the QP limit at 0.159 MHz using the quasi-peak detector, test configuration 1.

Measurement Uncertainty ±3.0 dB

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

		EMI Test Report for the BlackBerry® smartphone Model RCW41GW
Test Report No. RTS-2341-1005-77	Dates of Test May 19, 2010	FCC ID: L6ARCW40GW IC: 2503A-RCW40GW

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 configuration was measured:

Test Configuration	Operating Mode(s)	Charger + Accessories
1	GSM850 idle	Alternate Fixed Blade Charger + 1.5m USB Cable + Premium Stereo Headset

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 level of 23.96 dBµV/m, or test margin of 16.04 dB at 38.10 MHz using test configuration 1.


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 ±4.6 dB


To view the test data see APPENDIX 2.

		EMI Test Report for the BlackBerry® smartphone Model RCW41GW	
Test Report No. RTS-2341-1005-77	Dates of Test May 19, 2010	FCC ID: L6ARCW40GW IC: 2503A-RCW40GW	

E. 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	10-11-14	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	10-11-06	Radiated Emissions
EMC Analyzer	Rohde & Schwarz	ESIB 40	3942A00517	10-11-30	Radiated Emissions
Digital Multimeter	Hewlett Packard	34401A	US36042324	10-10-08	Conducted/Radiated Emissions
Environment Monitor	Control Company	1870	230355190	11-01-08	Radiated Emissions
Environment Monitor	Control Company	1870	80117164	11-01-08	Conducted/Radiated Emissions
Hybrid Log Antenna	EMC Automation	HLP-3003C	017401	10-09-11	Radiated Emissions
Horn Antenna	EMC Automation	HRN-0118	030101	10-07-22	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	837493/073	10-11-30	Radiated Emissions
Bluetooth Tester	Rohde & Schwarz	CBT	100368	10-11-26	Radiated Emissions

APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA

	EMI Test Report for the BlackBerry® smartphone Model RCW41GW	
	APPENDIX 1	
Test Report No. RTS-2341-1005-77	Dates of Test May 19, 2010	FCC ID: L6ARCW40GW IC: 2503A-RCW40GW

AC Conducted Emissions Test Results

The following test was performed by Michael Cino.

Test Configuration 1

Date of the test: May 19, 2010

The environmental conditions were: Temperature: 24 °C

Pressure: 1019 mb

Humidity: 23 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dB)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.159	N	42.81	11.17	53.98	65.52	55.52	-11.53
0.159	L1	46.38	11.14	57.52	65.52	55.52	-7.99
0.218	N	35.69	10.76	46.45	62.91	52.91	-16.47
0.218	L1	41.26	10.73	51.99	62.91	52.91	-10.92
0.240	N	37.61	10.60	48.21	62.10	52.10	-13.88
0.285	L1	35.46	10.26	45.72	60.67	50.67	-14.95
0.362	L1	30.14	10.07	40.21	58.69	48.69	-18.48
0.470	L1	30.60	9.93	40.53	56.52	46.52	-16.00
0.564	N	31.11	9.88	40.99	56.00	46.00	-15.01
0.578	L1	34.41	9.87	44.28	56.00	46.00	-11.72
0.717	L1	34.18	9.83	44.01	56.00	46.00	-11.99
0.735	N	27.83	9.83	37.67	56.00	46.00	-18.34
0.740	N	28.48	9.83	38.31	56.00	46.00	-17.69
0.875	L1	31.32	9.81	41.13	56.00	46.00	-14.87
0.956	L1	31.68	9.81	41.49	56.00	46.00	-14.51
1.032	L1	29.50	9.80	39.30	56.00	46.00	-16.70
1.590	L1	27.35	9.81	37.16	56.00	46.00	-18.84
9.303	N	27.72	9.98	37.71	60.00	50.00	-22.29
10.046	L1	29.70	9.97	39.67	60.00	50.00	-20.33
10.757	N	27.06	9.98	37.04	60.00	50.00	-22.96
11.531	L1	29.54	10.00	39.54	60.00	50.00	-20.46
11.567	N	26.77	10.01	36.78	60.00	50.00	-23.22
12.750	L1	29.35	10.05	39.40	60.00	50.00	-20.60


All other emission levels had a test margin 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.

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 2005-2010

	EMI Test Report for the BlackBerry® smartphone Model RCW41GW APPENDIX 1	
	Test Report No. RTS-2341-1005-77	Dates of Test May 19, 2010

AC Conducted Emissions Test Graphs

Test Configuration 1

Figure 1-1: L1 lines

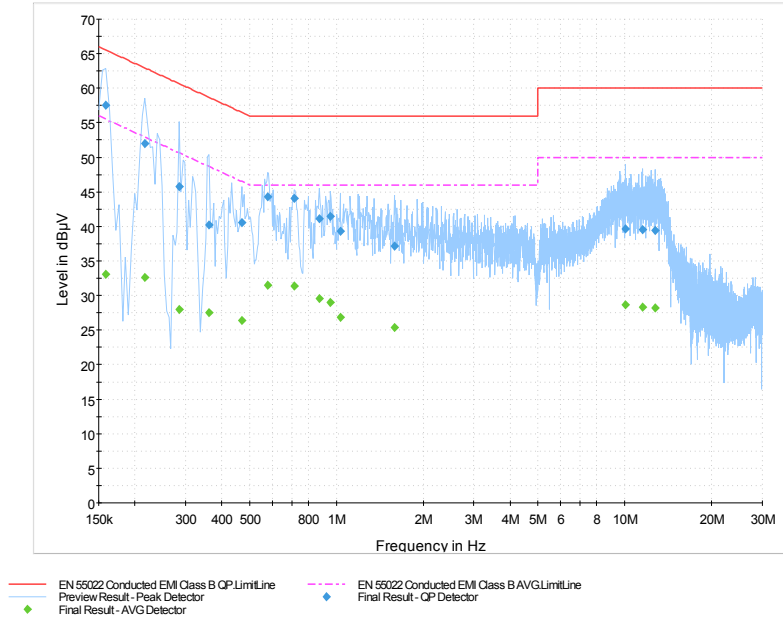
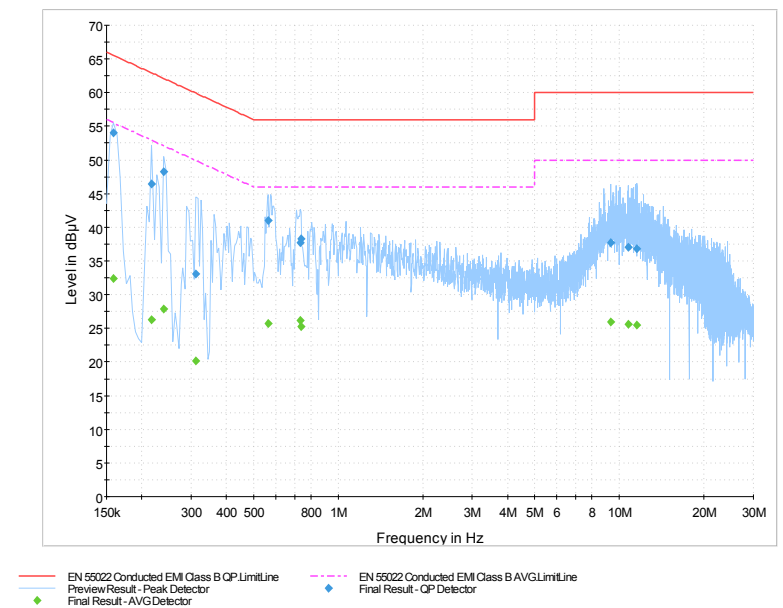


Figure 1-2: N Lines



APPENDIX 2 - RADIATED EMISSIONS TEST DATA

